LIFT-IT®

"When Only The Best Is Good Enough"

Quality System
Quality Endorsed Company
ISO 9001
Lic20307

SYNTHETIC PRODUCTS FOR THE PROFESSIONAL WHO KNOWS THERE IS NO SUBSTITUTE FOR QUALITY

CATALOG NO. 105 JUNE 15, 2006 $15.95

"When Only The Best Is Good Enough"

Lift-It® Manufacturing, has earned a reputation for quality, service and innovation, with over twenty-seven years of dedicated service to the material handling and rigging industries.

Only the finest materials are used in our products. These discriminating requirements, and the skill of our dedicated fabrication specialists, with combined experience, which must be expressed in terms of centuries, results in the finest quality products available.

Our company has always had stringent production standards, written quality control, inspection and material traceability procedures. Our commitment to excellence was further demonstrated as Lift-It® Manufacturing Company, Inc. successfully passed its registration audit and has been certified by SAI Global for ISO 9001:2000.

We are active members of the Web Sling and Tiedown Association (WSTDA). I serve as the Vice President, association director, chairman of the Legal Resource Committee and also am a member the technical subcommittees for web and round slings. We have maintained membership in the Associated Wire Rope Fabricators (AWRF) for the past twenty years. I serve on the technical subcommittee for web slings and am the chairman of the Tag and Warning Technical Subcommittee for the AWRF. I am a member of the ASME B30.9 sling subcommittee and belong to the Association of Crane and Rigging Professionals (ACRP). Our participation in these associations, and others requires a tremendous amount of time, travel and expense.

We have presented countless accident prevention training programs and have educated thousands of sling users and inspectors. Much of this training has been done, at our own expense and has been heralded as the best ever experienced by the participants.

Our goal is not be the "successful" low bidder. It is impossible to produce the best product, to bear the costs associated with our contributions to our industry and be the least expensive supplier. We manufacture the finest rigging available, but what we really offer is safety, service, technical expertise and solutions, which are just a phone call away.

Sincerely,
Lift-It® Manufacturing Company, Inc.

Michael J. Gelskey, Sr.
CEO and President

LIFT-IT® MANUFACTURING COMPANY, INC.
4780 CORONA AVENUE • LOS ANGELES, CA 90058-3808 • (323) 582-6076 • FAX (323) 587-1630
www.lift-it.com • email: liftit@pacbell.net

SLINGMAX®

Table of Contents

Lift Planning and Evaluation

Before using any rigging device it is important to “plan your work and work your plan”. The front end time required to develop a successful lift plan may seem unnecessary for small or “non-consequential” loads. There’s always time to pre-plan a “critical” lift. Two hundred pounds can cause death, serious injury and property damage, just as easily as 250 tons. After an incident, involving a “non-consequential” amount of weight, the time required to mitigate the situation will dwarf the time spent on what was considered an unnecessary pre-planning session. There’s always enough time to do the job right, the second time. We encourage you to make the initial investment to pre-plan and rig successfully, each and every time.

It is important for all parties involved in the handling and manipulation of materials to consider several variables to minimize the potential dangers to personnel and property. Please consider the following:

Environmental Considerations

Wind
Weather
Visibility
Temperature of the Object and Surroundings
Chemical Conditions and Exposure
Stability of the Ground
Underground Installations

Load Considerations

Weight
Dimensions
Center of Gravity
Attachment Point Integrity
Structural Stability: Bend and Flex
Susceptibility to Crushing or Compression
Secure or Remove Loose Parts
Combination Loads-Drain Fluids
Damaging Surfaces and/or Edges

Equipment and Lift Criteria

Single or Multiple Crane/Hoists
Maximum and Planned Operating Radius
Allowable Load (From Load Chart)
Ratio of Lift to Allowable Load
Clearance between Boom and Lift
Clearance to Surrounding Facilities
Power Lines and other Hazards
Clear Path for Load Movement
Emergency/Contingency Set Down Area
Thorough Equipment Inspection

Rigging Considerations

Sling Selection
Appropriate Hitch for CG (above or below)
Appropriate Hitch for Load Control
Load Control with Multiple Slings
Positive Sling to Load Engagement
Coefficient of Friction: Sling to Load
Lift Point over the CG
Load is Free to Move, not Snagged
Sling Adequate for Angle and Tension
Suitable Wear Protection

Personnel Considerations

Area Clear of Unnecessary Personnel
Personnel are Trained and Qualified
Tag Lines and Spotter Requirements
Signals: Visual, Audible, Electronic
Pre-Lift Plan and Meeting
Personnel Away from Danger

Engineering Services

Fee based engineering services, including analysis and consideration of the above variables are available. Please contact us for details.

⚠ Warning Icon

The Warning Icon, used throughout our publication is done to alert sling users to potentially hazardous conditions and situations.

⚠ WARNING All Products supplied and manufactured by Lift-It® Manufacturing are sold with express understanding that the purchaser and user are thoroughly familiar with the safe and proper use and application of the product. It is the explicit responsibility of the user, competent and/or qualified person to consider all risk factors prior to using any of our products. The user assumes all responsibility for the proper use and application of our products. The user should have sufficient training and knowledge of all applicable standards to responsibly use our products. Use by untrained persons is hazardous. If you have any questions or concerns, call us prior to use or visit our website, **www.lift-it.com** for additional copies of warnings and/or product information.

⚠ WARNING Read and understand the information contained in this publication and follow all OSHA and ASME guidelines.

⚠ WARNING Failure to follow proper use, care and inspection criteria could result in severe personal injury or death. Synthetic products will fail if damaged, abused, misused, overused, or improperly maintained.

⚠ WARNING Our products may contain chemicals known to cause cancer, birth defects and/or other reproductive harm.

HOW TO ORDER

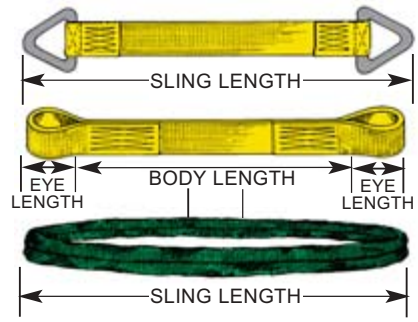
All orders must specify:

1. SLING STOCK NUMBER

EN1 - 9 02

- EN1 — SLING TYPE (ENDLESS)
- 9 — NUMBER OF BODY PLYS
- 9 — WEB CLASS
  - (9) HEAVY 9800 LBS.
  - (6) LIGHT 6800 LBS.
- 02 — WEB WIDTH

3. SLING WIDTH AND LENGTH



*NOTE: ALL SLING LENGTHS ARE MEASURED PULL TO PULL WHEN LAYING FLAT.

2. MATERIAL DESCRIPTION:
Nylon, Polyester, K-SPEC®, or Aramid.

4. WEAR PROTECTION:
Description, location and quantity of wear pads and/or sleeves (See pages 13-20).

ASSOCIATIONS WE SUPPORT AND PATRONIZE

SLINGMAX®

NATE National Association of Tower Erectors

S&RA

ASME SETTING THE STANDARD 1880 2005

WEB SLING & TIE DOWN ASSOCIATION MEMBER

REC

THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA AGC

ASSE

ASSOCIATED WIRE ROPE FABRICATORS

American Wind Energy Association

IRI

NWPPA

Purchase and Use Considerations

SLING SELECTION - Prior to selection, read and understand the information contained in this publication. Select the sling with suitable characteristics for the load, environment and configuration of lift.

RIGGING FACTORS

LOAD WEIGHT:
Is the weight of the load within the work load limit of the sling(s)?

WEIGHT DISTRIBUTION:
Uneven load weight distribution imposes disproportionate loading on the individual sling legs.

ADEQUATE SLING LENGTH:
Slings must be long enough to ensure the work load limit is adequate, after the sling-to-load angle is taken into account. Inadequate consideration has caused "under-rated" slings to fail.

LOAD CONTROL:
The sling user is responsible for load control. Slings must be rigged in a manner that provides for control of the load. Balancing and supporting the load, from the sides, above the center of gravity is critical. Use more than one sling to balance the load.

CENTER OF GRAVITY:
The lifting mechanism must be positioned directly over the center of gravity, before the load is lifted. If this is not done, the load will "change out" and the center of gravity will end up under the lifting fixture. The center of gravity must be addressed and determined through careful experimentation or calculation.

POSITIVE LOAD ENGAGEMENT:
Non-positive sling-to-load contact results in the sling "skipping" across the load edge. This unplanned movement can result in catastrophic sling failure and uncontrolled load descent. Slings equipped with wear protection have also been cut because of inadequate sling-to-load engagement.

TRAINING

The American Society of Mechanical Engineers, in the Sling Safety Standard, ASME B30.9-2006, clearly establishes the requirement for training. Sections 9-5.1 and 9-6.1-Training states, "Synthetic webbing and round sling users shall be trained in the selection, inspection, cautions to personnel, effects of the environment and rigging practices, covered by this chapter."

WEAR PROTECTION

Load edges in contact with the sling must be "padded" with materials of sufficient thickness or strength to prevent sling damage. The protection must be installed and evaluated for suitability by raising the load, slightly and then lowering the load for an inspection of the sling and the protection devices. Several "test" lifts may be necessary to determine the proper form of protection for a successful lift.

⚠ WARNING Wear protection may not prevent cutting or other forms of sling damage. To avoid severe personal injury or death, personnel should be kept away from the load and never be under or near the load, while it is being lifted or suspended.

⚠ WARNING ⚠ WARNING ⚠ WARNING

Failure to follow proper use, care and inspection criteria could result in severe personal injury or death. It is your explicit responsibility to consider all risk factors prior to using any rigging device or product. Read and understand the information contained in this publication and follow OSHA and ASME guidelines. Use by untrained persons is hazardous. Synthetic products will fail if damaged, abused, misused, overused, or improperly maintained.

A visual inspection of the sling must be made every time this sling is to be used. Slings that are damaged or determined to be unsafe shall not be used for any application. If the work load limit tag is missing, illegible or incomplete the sling shall not be used.

Do not exceed work load limits. You are cautioned that all published work load limits and break strengths apply to only new and unused slings, assemblies and hardware. Work Load Limits are based upon: destruction testing, done in controlled, laboratory conditions, which will never be duplicated during actual usage and a moderately dynamic lifting or pulling operation. Instantaneous changes (drops or sudden pick ups) in excess of 10% of the work load, constitutes hazardous shock loading and THE WORKING LOAD LIMITS AS STATED, DO NOT APPLY.

CHEMICAL FACTORS

Chemically active environments can affect the strength of synthetic products in varying degrees from moderate to total degradation. The materials used in the construction of the sling system must be compatible with the mechanical and environmental requirements imposed. Fumes, sprays, mists, vapors and liquids of acids or alkalis can degrade synthetic products. The chemical agents must be identified. Specific time, temperature and concentration factors will assist the user and manufacturer in the selection of the appropriate sling material components.

It may be necessary to conduct an on-site suitability test. A sling would be subjected to exposure, under no load. The length of exposure must be determined by the user. After exposure, the sling would be tested to destruction to determine the retention of tensile strength, when compared to the strength of an unexposed, "control" sling. We will match your efforts and assist you in determining the most suitable yarn selection and sling design for the specific application.

ENVIRONMENTAL CONSIDERATIONS

TEMPERATURE:
Conventional synthetic products can not be used in applications where temperatures exceed 194ºF (90ºC) or go below -40ºF (-40ºC). Applications outside those parameters can be addressed by consulting us for specific recommendations.

UV LIGHT DEGRADATION:
Continuous exposure to sources of ultraviolet light affect the strength of synthetic products in varying degrees from slight to total degradation. Factors which play a part in the degree of strength loss are: length of exposure, sling construction and design. Other environmental factors such as weather conditions, elevation and geographic location also affect the degree of degradation.

The Web Sling and Tiedown Association (WSTDA) conducted tests to determine the affects of strength loss, as a result of ultraviolet (UV) degradation. A report titled, "UV Light Degradation", report no. WSTDA-UV-Sling-2003 is available from the WSTDA web site, www.wstda.com

Many different variables were analyzed in slings that were exposed for a period of 36 months. Nylon and polyester slings, treated and untreated webbing slings, slings fabricated from 6800 lbs. per inch material (class 5) and 9800 lbs. per inch material (class 7) were evaluated in the study. Single ply and double ply construction slings were also analyzed.

Initially, nylon web slings lost strength at a slower rate, when compared to polyester slings, but continued to lose strength as the exposure time was extended. The loss of strength for nylon slings can be 40 to 60% after exposure for periods ranging from 12 to 36 months.

In the initial stages of the study, polyester web slings lost strength at a greater rate, when compared to nylon slings. Loss in strength for polyester slings was approximately 30% after 12 months exposure. Polyester sling strength loss seemed to subside and level off after the initial 12 month period.

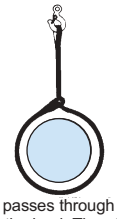
When slings are not in use, store them in a dark, cool, dry location, free from mechanical and environmental damage.

MOISTURE ABSORPTION:
When nylon products are "wet" there is an approximate strength loss of 15%. This loss of strength is documented in the DuPont Technical Information Multifiber bulletin X272, page 6, dated July 1988. When the nylon sling is no longer wet and returns to a dry state, there is no permanent loss in tenacity. Polyester and High Performance Fiber tenacity is unaffected by moisture absorption.

Sling Hitches

Slings carry their loads in one of three primary hitches. The work load limit of the sling is affected by the hitch that is used. Most slings can be used in all three hitches, but some slings are designed for use in only one hitch. Slings have the largest work load limit when used in a basket hitch. The work load limit of a vertical hitch is 50% of the basket hitch. The same sling would be assigned a different work load limit for the choker hitch. The choker work load limit is a maximum of 80% of the vertical work load limit per ASME recommendation.

CHOKER HITCH

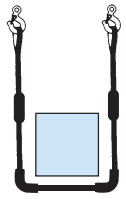


Sling passes through one eye around the load. The other eye is free to be placed on the hook.

VERTICAL HITCH

One eye is on the hook, while the other eye is attached directly to the load. Use a tagline to prevent load rotation.

BASKET HITCH



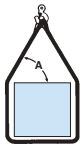
The sling cradles the load while both eyes are attached overhead.

Sling-To-Load Angle

Slings with adequate work load limits to handle the "scale" weight of the load have catastrophically failed because of an inadequate consideration of the sling angle and the increased tension.

Any load rigged in a hitch that is not vertical, develops increased tension on the sling. When selecting a sling, always consider the sling to load angle (horizontal angle) and the tension that will be applied to the sling.

SLING-TO-LOAD ANGLE



The horizontal angle formed between the sling leg and the "top" of the load.

Illustrated left- Increased load stress is magnified by any change from vertical toward horizontal lifting. The same stresses are imposed on sling legs when the legs are attached to the load at various angles.

SLING ANGLE - REDUCED WORK LOAD

For years sling users have used angles to determine sling work load adequacy. One approach has been to determine the sling-to-load angle and multiply the work load limit by the loss factor for the specific angle. The result is the REDUCED WORK LOAD.

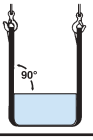
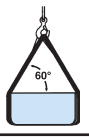
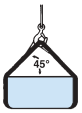
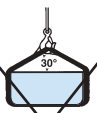
1. Calculate the sling to load angle
2. Determine the corresponding loss factor
3. Multiply the work load limit by the loss factor to determine the reduced work load.

The result is the reduced work load limit.

Single angles of less than 45° should not be used, unless approved by a qualified person.

LOSS FACTOR CHART

Angle "A" Degrees	Loss Factor	Angle "A" Degrees	Loss Factor
90	1.0000	55	.8192
85	0.9962	50	.7660
80	0.9848	45	.7071
75	0.9659	40	.6428
70	0.9397	35	.5736
65	0.9063	30	.5000
60	0.8660	25	.4226

A BASKET WORK LOAD LIMIT OF 10,000 LBS. CHANGES AS THE SLING TO LOAD ANGLE CHANGES **AT 90˚ - WORK LOAD LIMIT = 10,000 LBS.** **AT 60˚ - WORK LOAD LIMIT = 8,660 LBS.** **AT 45˚ - WORK LOAD LIMIT = 7,071 LBS.** **AT 30˚ - WORK LOAD LIMIT = 5,000 LBS.**				
SLING-TO-LOAD ANGLE (DEGREES)	90°	60°	45°	30°
WORK LOAD LIMIT X LOSS FACTOR	10,000 LBS X 1.00	10,000 LBS. X .866	10,000 LBS. X .7071	10,000 LBS. X .500
REDUCED WORK LOAD LIMIT	10,000 LBS	8660 LBS.	7071 LBS.	5000 LBS

Sling-To-Load Angle

SLING ANGLE – INCREASED TENSION

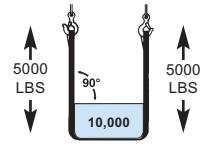
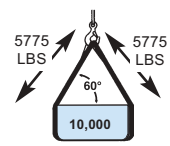
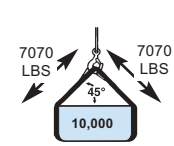
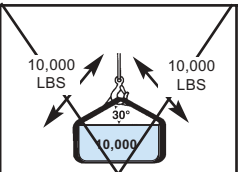
Another more salient approach is to determine the INCREASED TENSION by the angle of lift. This approach has the distinct advantage of enabling the sling user to determine the required sling strength requirement. The user must first determine the angle and multiply the load weight by the tension factor for the specific angle. The result is the INCREASED TENSION or actual loading on the sling leg(s).

1) Calculate the sling to load angle
2) Determine the corresponding tension factor
3) Multiply the load weight by the tension factor to determine the loading on the sling leg(s).

The result is the increased tension.

TENSION FACTOR CHART			
ANGLE "A" DEGREES	TENSION FACTOR	ANGLE "A" DEGREES	TENSION FACTOR
90	1.000	55	1.221
85	1.004	50	1.305
80	1.015	45	1.414
75	1.035	40	1.555
70	1.064	35	1.742
65	1.104	30	2.000
60	1.155	25	2.364

Sling angles of less than 45° should not be used, unless approved by a qualified person.

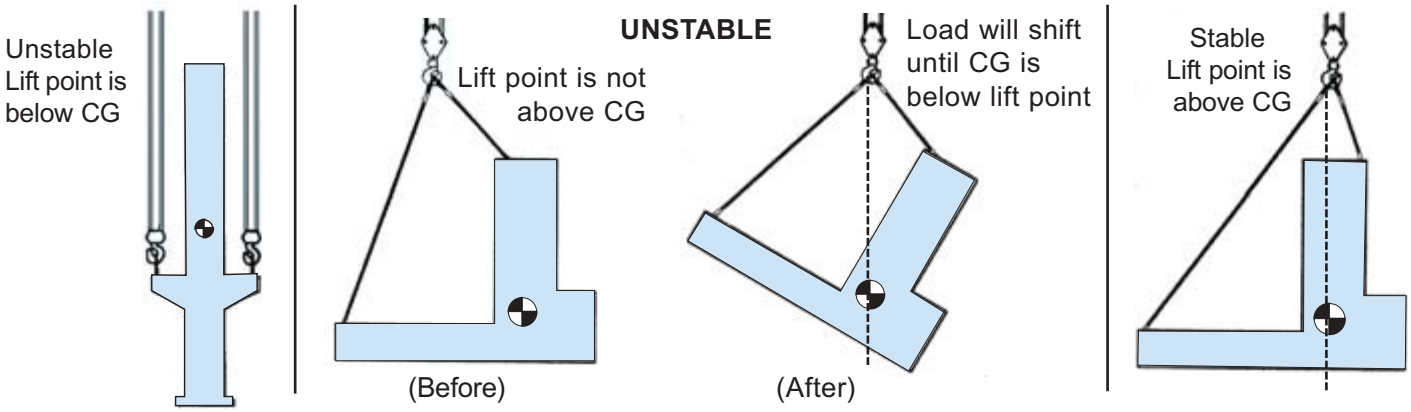
SLING TENSION INCREASES AS THE SLING-TO-LOAD ANGLE DECREASES **AT 90˚ - SLING TENSION = 5,000 PER LEG** **AT 60˚ - SLING TENSION = 5,775 PER LEG** **AT 45˚ - SLING TENSION = 7,070 PER LEG** **AT 30˚ - SLING TENSION = 10,000 PER LEG**				
SLING-TO-LOAD ANGLE (DEGREES)	90	60	45	30
LOAD WEIGHT X TENSION FACTOR	10,000 LBS X 1.00	10,000 LBS. X 1.155	10,000 LBS. X 1.414	10,000 LBS. X 2.000
INCREASED SLING TENSION	10,000 LBS	11,550 LBS.	14,140 LBS.	20,000 LBS

Center of Gravity (CG)

It is always important to rig and control the load so that stability is achieved. Determining the location of the Center of Gravity (CG) is vital to achieve load control. The CG is the point at which an object will balance. The CG of the load will do one of two things when suspended:

1) Unless restrained the CG will move directly below the point of support.
2) The CG will move to the lowest point possible.

For the best control, attach the slings above the CG. When this is not possible keep the CG contained with three or four sling legs. This measure alone will not guarantee load control.



⚠ WARNING **Multiple factors must be taken into consideration to ensure that load control and stability are attained. A load with a "high" center of gravity can rotate in certain sling hitches.**

Sling Tension-Length/Headroom

Sling tension is a result of the relationship that exists between the center of gravity and the sling connection or contact points.

Calculating the tension that will be imposed on the sling or individual legs of a multi-part sling system will enable the sling user to select slings with adequate work load limits.

Use the following steps to calculate the tension imposed upon the individual sling leg, when you know the leg length (L) and headroom (H).

1) Determine the Load Factor (LF):
Divide the leg length (L) by the headroom (H) to obtain the Load Factor (LF)

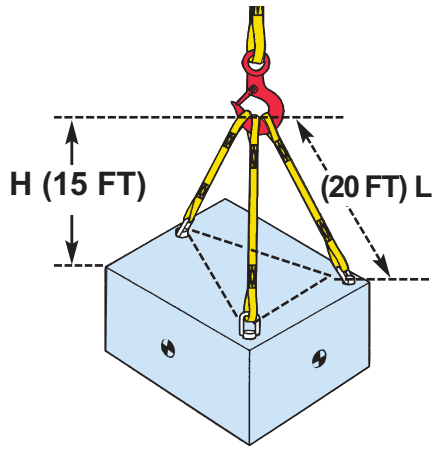
L ÷ H = LF
Example: 20 ÷ 15 = 1.33 Load Factor

2) Determine the Share of the Load (SL) for the individual sling legs:
Divide the load weight by the number of sling legs.

Load weight ÷ number of legs = Share of the Load (SL)
Example: 12,000 lbs ÷ 3 legs = 4,000 lbs.

3) Multiply Load Factor by the Share of the Load to determine Actual Sling Tension

Load Factor x Share of the Load = Actual Tension
LF x SL = Actual Tension
Example: 1.33 x 4,000 = 5,320 lbs.



Please Note: Tension calculations are based upon:

1) sling attachment points being equidistant from the center of gravity
2) sling attachment points being equidistant to each other.
3) sling attachment points being on the same horizontal plane
4) equal sling leg lengths

Advanced Tension Calculations

More complex calculations are required when the slings are not placed equidistantly from the center of gravity. The PROPORTIONAL SHARE OF THE LOAD must be determined and multiplied by the LOAD FACTOR (L/H) to determine the SLING TENSION.

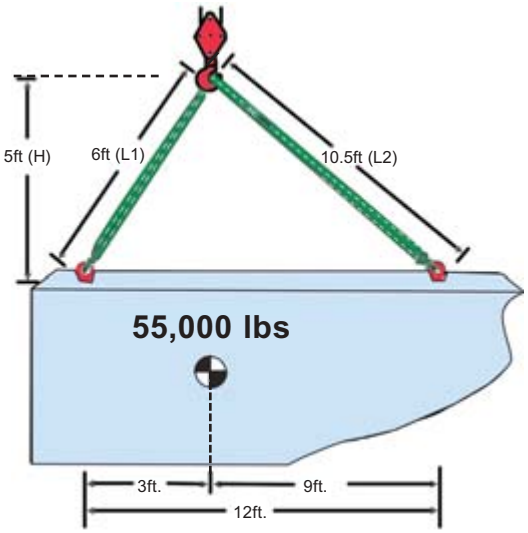
Sling tension is a function of the force and distance (load moment) between the sling and the center of gravity. An inverse proportion exists between the distance and the share of the load. If the attachment point is 25% of the distance from the center of gravity, that attachment point and sling will bear 75% of the share of the load. Likewise, if the sling is attached 75% of the distance from the center of gravity, that sling will bear 25% of the share of the load.

6 ft. Leg

Proportional Share of the Load	$\frac{3}{12}$	=	**.25 Distance .75 Share of the load**
	.75 x 55,000	=	**41,250 lbs.**
x			**x**
Load Factor	$\frac{L1}{H}$ = $\frac{6}{5}$	=	**1.2**
Sling Tension			**49,500 lbs.**

10.5 ft. Leg

Proportional Share of the Load	$\frac{9}{12}$	=	**.75 Distance .25 Share of the load**
	.25 x 55,000	=	**13,750 lbs.**
x			**x**
Load Factor	$\frac{L2}{H}$ = $\frac{10.5}{5}$	=	**2.10**
Sling Tension			**28,875 lbs.**



Advanced Tension Calculations

SLING TENSION - DIFFERENT HORIZONTAL PLANES

More complex calculations are required when the slings are attached at different horizontal planes.

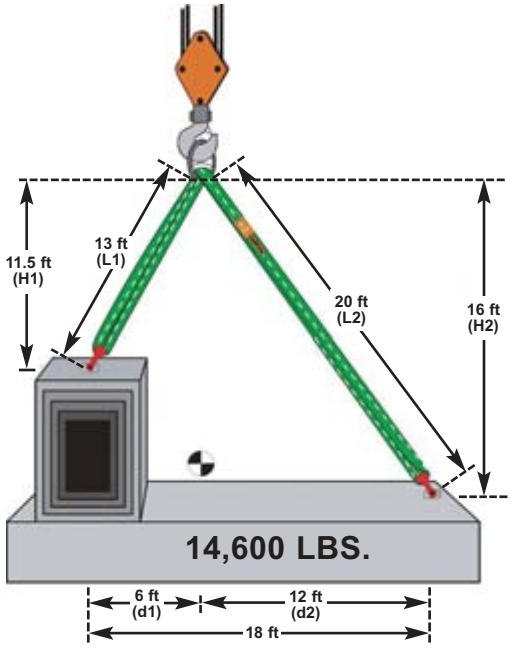
13 ft. Leg Sling Tension

$$\frac{W \times d2 \times L1}{(d2 \times H1) + (d1 \times H2)}$$

$$\frac{14{,}600 \times 12 \times 13}{(12 \times 11.5) + (6 \times 16)}$$

$$\frac{2{,}277{,}600}{234}$$

9,733 lbs.
TENSION



20 ft. Leg Sling Tension

$$\frac{W \times d1 \times L2}{(d2 \times H1) + (d1 \times H2)}$$

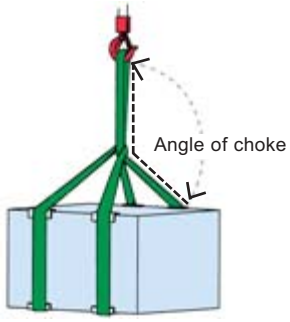
$$\frac{14{,}600 \times 6 \times 20}{(12 \times 11.5) + (6 \times 16)}$$

$$\frac{1{,}752{,}000}{234}$$

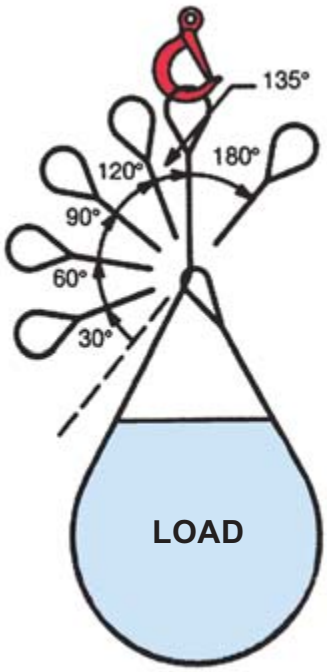
7,487 lbs.
TENSION

Choker Hitch Adjustment

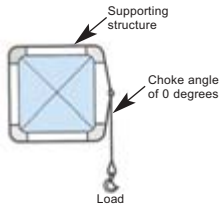
Whenever a choker hitch results in an angle of choke that is less than 120 degrees, the work load limit must be adjusted. Determine the angle of choke and multiply the choker hitch work load limit by the appropriate loss factor. The result is the actual and reduced sling work load.



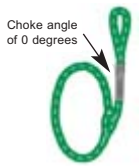
CHOKE HITCH REDUCTION CHART	
Angle of Choke (Degrees)	Loss Factor
120 - 180	1.00
90 - 119	.87
60 - 89	.74
30 - 59	.62
0 - 29	.49



Two Examples of a choke angle at 0 degrees



Rigging from a supportive structure



Controlling a load with a high center of gravity

Chemical Considerations

It is important to select a sling that has the proper chemical characteristics, making the sling compatible with its environment. Nylon, Polyester, Aramid, Nomex®, High Molecular Polyethylene and K-Spec® fibers are ideal materials for synthetic slings because they offer various resistance and compatibility with different chemical agents.

PERFORMANCE CHARACTERISTICS OF SYNTHETIC FIBERS

NYLON

Nylon is popular and general purpose synthetic fiber which is unaffected by common grease and oil. Nylon products have good resistance to aldehydes, hydrocarbons, ethers and some alkalis, while degradation ranging from none to moderate occurs with exposure to certain alkalis. Nylon slings are not suitable for use with acids and bleaching agents. Exposure can result in degradation from none to total. Dilute acids, such as, hydrochloric and sulfuric in 10% concentrations at room temperature cause a significant loss in strength in 10 hours.

Solvents for nylon include:

- Concentrated formic acid
- Phenolic compounds at room temperature
- Calcium chloride in methanol at room temperature
- Hot solutions of zinc chloride in methanol
- Benzyl alcohol at the boil

Hot solutions of calcium chloride in:

- Glacial acetic acid
- Ethylene Chlorohydrins
- Ethylene Glycol

Nylon is also not significantly affected by compounds of the following classes: alcohols, dry cleaning solvents, halogenated hydrocarbons, ketones, soaps and synthetic detergents or water (including sea water).

Nylon products lose 15% of their work load when wet. The acceptable temperature exposure range is -40ºF (-40ºC) to a maximum of 194ºF (90ºC). Stretch at work load limit is approximately 6-8%.

All webbing will become shorter, over time. Nylon webbing placed on a table, with no use, will shrink up to 5% in length after six months, as a result of the weave configuration. Tightly woven webbing shrinks less than a loose weave webbing. Nylon will shrink more than polyester webbing. Other factors that affect shrinkage are humidity, temperature and usage.

POLYESTER

Polyester is not significantly affected by most compounds of the following classes: alcohols, dry cleaning solvents, halogenated hydrocarbons, ketones, soaps and synthetic detergents or water (including sea water). Polyester also has good to excellent resistance to aqueous solutions of most weak acids at the boil and to most acids at room temperature, but is disintegrated by concentrated sulfuric acid (95%) at room temperature. Polyester products also have good resistance to most aqueous solutions or strong alkalis at room temperature, but are degraded by the same solution at the boil. Oxidizing agents and bleaching treatments ordinarily used by the textile industry also do not degrade polyester fiber. Stretch at work load limit is approximately 3-4% and polyester does not lose strength as a result of moisture absorption. The acceptable temperature exposure range is -40ºF (-40ºC) to a maximum of 194ºF (90ºC).

ARAMID

Aramid fibers are resistant to most weak acids, alkalis, ketones, alcohols, hydrocarbons, oils and dry cleaning solvents. Strong acids and bases and sodium hypo-chlorite bleach attack Aramid fibers, particularly at elevated temperatures of high concentrations. Stretch at work load limit is approximately 1%.

K-SPEC®

K-Spec® fibers are a specialty high performance combination of High Molecular Polyethylene and Aramid fibers. Chemical and performance characteristics are those of the primary fibers, Aramid and High Molecular Polyethylene. Stretch at work load limit is approximately 1% and the acceptable temperature exposure range is -40ºF (-40ºC) to a maximum of 194ºF (90ºC).

Chemical Considerations

PERFORMANCE CHARACTERISTICS OF SYNTHETIC FIBERS

HIGH MOLECULAR POLYETHYLENE

Resists many chemical agents and retained 100% of the original fiber strength when immersed for 6 months in the following:

- 1M Hydrochloric acid
- 5M Sodium Hydroxide
- Perchloroethylene
- 10% detergent solution
- Gasoline
- Toluene
- Kerosene
- Hypophosphite solution (10%)
- Sea water
- Glacial acetic acid
- Hydraulic fluid
- Ammonium Hydroxide (29%)

Clorox® degraded High Molecular Polyethylene Fiber by approximately 10% after a 6 month immersion test. Stretch at work load limit is approximately 1% and maximum temperature exposure is 140°F (60°C).

NOMEX®

Nomex® is resistant to most ketones, alcohols, dry cleaning solvents and many other organic solvents. Its acid resistance is superior to that of nylon, but is not as good as that of polyester. Nomex® shows good resistance to alkalis at room temperature, but is degraded by strong alkalis at higher temperatures.

Nomex® is compatible with fluorine-containing elastomers, resins and refrigerants at high temperatures and is resistant to fluorine compounds in concentrations usually encountered in stack gases from metallurgical and rock-processing operations.

The resistance of Nomex® to oxides of sulfur at temperatures above the acid dew point is superior to that of polyester. Below the dew point, concentrated sulfuric acid may condense on the fiber and cause a progressive loss in strength.

Fiber Characteristics

	NYLON	POLYESTER	ARAMID	HIGH MOLECULAR POLYETHYLENE	K-SPEC®
STRENGTH (GRAMS PER DENIER)	8.0 GPD - 9.0 GPD	6.5 GPD - 9.0 GPD	23 GPD	27 GPD	27 GPD
SPECIFIC GRAVITY	1.14	1.38	1.44	0.97	1.20
WEIGHT	1.00	1.21	1.26	0.85	1.01
ELASTICITY	16%	10 - 12%	3.6%	3.6%	3.6%
MOISTURE ABSORBENCY	9% of Weight	1% of Weight	5% of Weight	None	2% of Weight
MELTING POINT	460° F	480° F	800° F	297° F	297° F
CO-EFFICIENT OF FRICTION	.10 to .12	.12 to .15	.10 to .12	.08	.10
ABILITY TO FLOAT	SINKS	SINKS	SINKS	FLOATS	SINKS

Wear Protection

Synthetic slings can be damaged, abraded or cut as tension and compression between the sling, the connection points and the load develops. Edges and abrasive surfaces in contact with the sling must be "padded" with materials of sufficient strength and/or thickness to prevent damage and catastrophic sling failure.

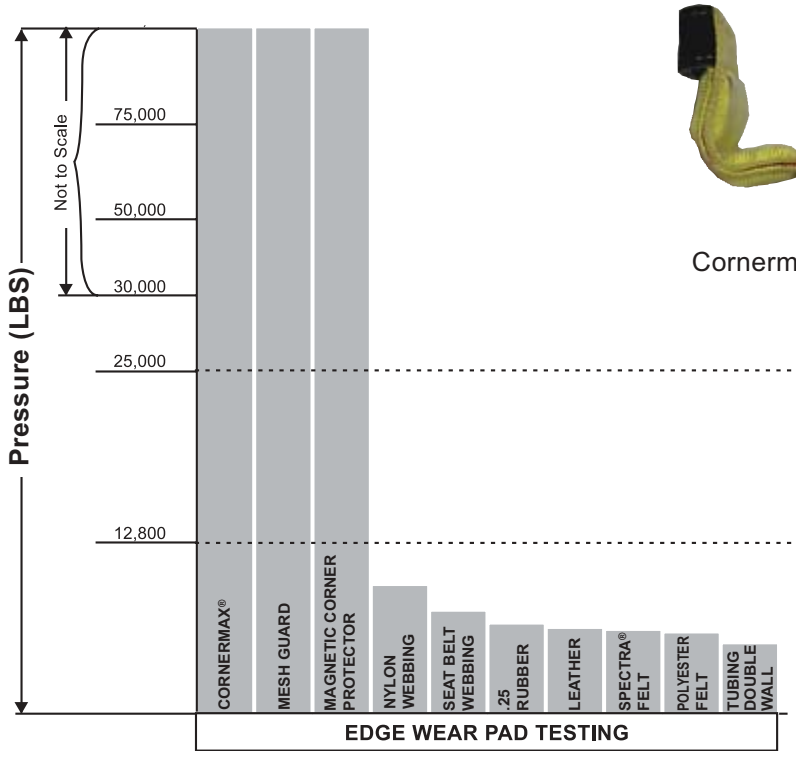
The edge of the load need not be "razor" sharp to damage the sling. A combination of non-positive sling to load contact (sling slipping across the load) and inadequate wear protection materials may result in wear protection damage and sling failure. The result is uncontrolled load descent. Wear protection may not prevent cutting or other forms of sling damage. Personnel should never be under or on the load, while the lift is in progress.

"Cut proof" wear protection does not exist. Materials must be evaluated and selected based upon the application and type of exposure. Some materials are suitable for abrasion resistance, but offer virtually no protection against the effects of cutting.

Twin-Path® Extra, High Performance Fiber Slings can develop a 25,000 pound per inch of width, work load limit. A web sling can develop a 12,800 pound per inch of width, work load limit.

Certain materials used in the construction of wear protection and protectors have been evaluated for cut resistance. Edge Wear Pad testing was conducted by pulling an EEI-901 in a basket hitch, around the trolley of a test machine to destruction. Magnetic Corner Protectors, Cornermax® and Meshguard® wear protectors have been evaluated and are "protection" rated for cut resistance, exceeding the 25,000 pounds per inch maximum loading requirement.

⚠ WARNING Materials of sufficient strength and resistance to damage must be employed to prevent injury, death and/or property damage.



Cornermax®

Mesh Guard

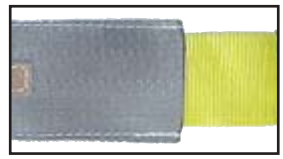
Magnetic Corner Protectors

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

Synthetic products are damaged and cut when lifting on load edges. Edges in contact with the sling must be "padded" with materials of sufficient strength and thickness to prevent damage and catastrophic sling failure. Wear protection must be installed and evaluated for suitability by raising the load slightly, and then lowering the load for an inspection of the sling and the protection devices. Several "test" lifts may be necessary to determine the proper form of protection for a successful lift. The length of the sleeve or wear pad material(s) must not interfere with the sling closing to the full gripping position on the load. Wear protection may not prevent cutting or other forms of sling damage. To avoid severe personal injury or death, personnel should be kept away from the load and never be under or near the load, while it is being lifted or suspended.

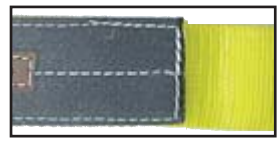
Wear Protection

SLEEVES



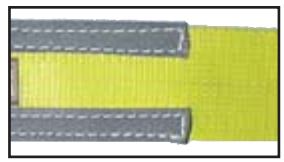
Sleeves cover both sides of the sling and can be shifted to a specific location. The sleeve can also be re-positioned for quick and easy inspection of the sling.
Available in six different materials: Cordura®, Heavy Duty Web, Leather, Neoprene, Felt and Aramid. Available in sewn edge, tubular and quick-sleeve constructions.

WEAR PADS



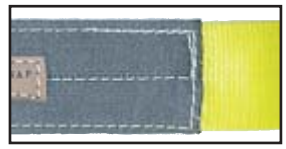
Wear pads are sewn to the sling for protection in critical wear areas. These pads can be sewn at any location, in single or multiple layers and can be attached to one or both sides of the sling. Leather wear pads in excess of 5 feet are not recommended.

EDGE WRAP



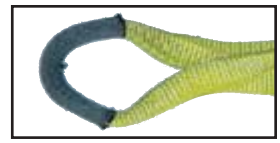
A strip of Cordura® or leather is sewn around the edge of the sling. This form of protection is necessary in applications where excessive edge wear and damage occur. Consider using Polyester Monster Edge® webbing. (See page 60)

BODY WRAP



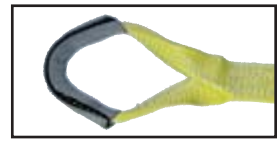
This form of protection is similar to the sleeve, but is sewn to the sling body and protects not only the body, but the edges of the sling.

EYE WRAP



Sling eyes can be wrapped with Cordura® and dipped in liquid latex for an extended and useful service life. The bearing point of the sling and the edges of the eyes are protected at your request.

EYE SLEEVE



When additional protection is needed in the sling eye, consider installing eye sleeves. Hook and loop tape makes installation effortless and removal is quick and easy for inspection.

Please specify:

- Eye width and thickness
- Sleeve length

CORNER PROTECTORS

Provide protection for the webbing and the load.

Standard length: 12 inches
Material: .18 thick
Reinforced rubber sheet

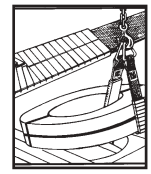
WEB WIDTH	ORDER CODE
2IN, 3IN OR 4IN	4E

FLEX-O-CLIP

Flex-O-Clip wear protection may be installed on slings for protection in handling loads with damaging or rough edges, such as steel coils, structural steel and concrete products. The surface of the wear pad protects the load, while the sling moves freely, permitting the centering and turning of loads.

Made of transparent material, Flex-O-Clip is sturdy and provides flexibility to conform to irregular shaped loads. The entire sling body can easily be inspected by peeling the Flex-O-Clip from the sling; when finished re-install the protector.
Available for: 2 , 3 , 4 , 6 , 8 , 10 and 12 inch web widths. Maximum length is 16 ft.

⚠ WARNING Maximum loading is 2500 lbs. per inch of web width.



•Do not use an oversized Flex-O-Clip on a sling having inadequate width for the pad. Match size to size.

•Remember to allow ample clearance for Flex-O-Clip to work properly.

•Make sure that the length of the wear pad does not interfere with the sling closing to the full gripping position on the load.

Shackle Pin Protector Pads

- Full length protection, including the ear seams
- Three connection points secure pad to shackle
- Installation and removal in seconds
- Full Protection in the pin and rib areas for Synthetic Sling Saver Shackles

Shackle Nominal Diameter (Inches)	Shackle Pin Protector Pad Stock No.
5/8	SPPP-580
3/4	SPPP-750
1	SPPP-1000
1-1/4	SPPP-1025
1-3/4 & 1-1/2	SPPP-1500
1-3/4	SPPP-1750
2	SPPP-2000
2-1/2	SPPP-2500

⚠ WARNING

Placing synthetic slings on the shackle pin should be avoided. Even a new shackle can have damaging, exposed threads. If the synthetic sling contacts this area, it can be cut and fail catastrophically. If you must rig on the pin, protect your sling with a shackle pin protector pad.

Wear Protection

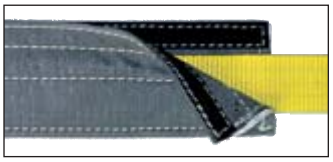
CHAP SLEEVES

Lift-It® Chap Sleeves blend two wear protection materials: Polyester Felt, covered by Tubular Cordura®.

Chap Sleeves provide protection from abrasion damage, caused by contact with rough surfaces.

Quick Chaps are available with hook and loop tape, making installation and removal, quick and easy.

Always Specify:
Sleeve Length
See pages 19 and 20 for ordering information

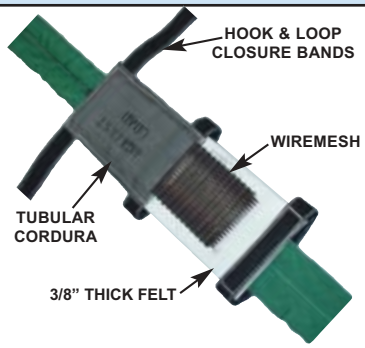


MESH GUARD

Lift-It® Mesh guard features a unique combination of wear protection materials.

A layer of felt buffers the sling, while carbon steel wire mesh covers the load edge.

Hook and loop closure bands make attachment and removal quick and easy.



MESH GUARD PART NUMBER	SLING WIDTH (INCHES)	MESH GUARD WIDTH (INCHES)	PROTECTION RATING (LBS)
MG 3	2	5	20,000
MG 4	3	6	20,000
MG 6	4 - 5	8	40,000
MG 8	6	10	40,000
MG 10	8	12	60,000
MG 12	10	14	60,000

MAGNETIC CORNER PROTECTORS

MAGNETIC CORNER PROTECTOR PART NO.	SLING WIDTH (INCHES)	CORNER PROTECTOR O.A.L. (INCHES)
MCP 9	UP TO 7	9-1/2
MCP 12	UP TO 10	12-1/4
MCP 18	UP TO 16	18-1/4

Magnetic corner protectors are fabricated from a durable synthetic material that protects synthetic and wire rope slings from damage. They work on any 90º "cornered" load and keep the sling from contacting the load.

Magnetic corner protectors are "protection rated" at 12,500 PSI and can be used at temperatures from -20º F (-29º C) to 220º F (104º C).
Heavy Duty Protectors, featuring larger diameters are also available.

⚠ WARNING The magnets are designed to keep the protector from falling from metallic loads and are not intended to prevent the protector or sling from sliding. Slings and protectors should be vertical or perpendicular to the load. The farther from vertical that the slings and protectors are, the more likely the protectors and slings will slide to become vertical and result in load instability and uncontrolled load descent. When using magnetic protectors always inspect for damage, prior to use. Keep magnets clean and free of debris.

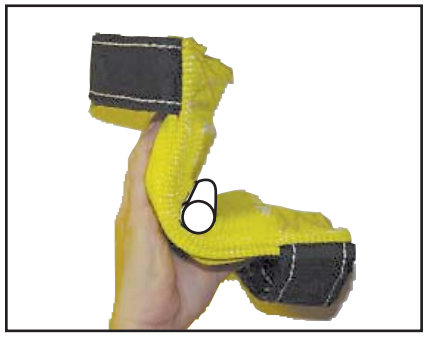
POZI-GRIP COATING

An additional coating of liquid latex can be applied after slings have been fabricated. The coating will stiffen the sling, resulting in increased abrasion resistance and sling life. The additional treatment also helps to minimize the absorption of dirt and foreign materials and provides for greater gripping power.

Cornermax® Wear Pads

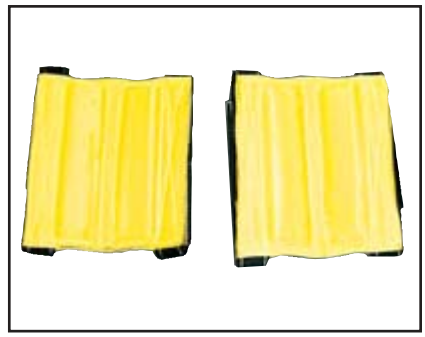
To be effective, conventional forms of wear protection must be of sufficient strength and thickness. Traditional wear protection has always relied on these attributes to prevent damage to the sling or tiedown, because of the direct contact with damaging load edges.

Cornermax® wear protection is truly remarkable because its design forms a tunnel between the load edge and the wear pad. This "barrier" greatly reduces the possibility of cutting. "Cut proof" wear protection does not exist.

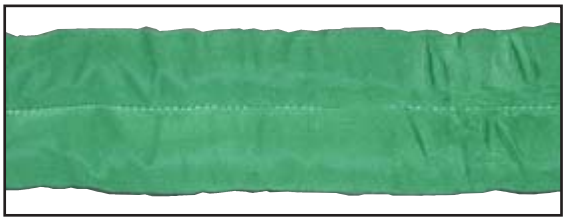


A "TUNNEL" IS FORMED BETWEEN THE PAD AND LOAD EDGE

DURING TEST



PADS AFTER TEST



SLING AFTER TEST

CORNERMAX® PART NUMBER	SLING WIDTH (INCHES)	CORNERMAX® WIDTH (INCHES)	PROTECTION RATING (LBS)
CM-6	1 - 2 IN.	6	25,000
CM-8	UP TO 5 IN.	8	60,000
CM-10	UP TO 6 IN.	10	100,000
CM-12	UP TO 8 IN.	12	100,000
CM-14	UP TO 12IN.	14	100,000

Please Note:
Cornermax® Wear Pads are 8 inches in length, unless otherwise specified

PRESSURE ON CORNERMAX® WEAR PADS

The protection of slings is dependent upon the Cornermax® Wear Pads to resist cutting and pressure imposed by the load. Suitability tests were conducted in a basket hitch configuration, where maximum forces per inch are realized. Cornermax® Wear Pads have been successfully tested to ensure a maximum exposure of 25,000 lbs. per inch.

The photographs depict a TUFXKS5000, Twin-Path® High Performance Fiber Sling. The sling is rated at: Choker- 40,000 lbs. Vertical- 50,000 lbs. Basket- 100,000 lbs. An individual sling leg is 5 inches in width.

The force is accentuated when the sling legs are placed on top of each other.

100,000 lbs. / 5 inches =
20,000 lbs. per inch pressure

Sling legs are separated for better load control and load force is spread over a wider surface area.

100,000 lbs. / (5 X 2) inches =
10,000 lbs. per inch pressure

Choker hitches can separate the sling legs for improved control and diminished load forces.

40,000 lbs. / (5 X 2) inches =
4,000 lbs. per inch pressure

Effects of “Minor” Edge Damage

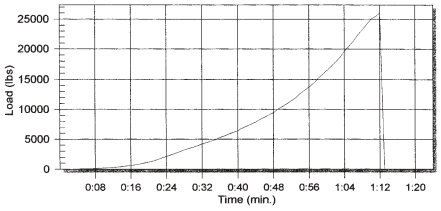
Four, identical, single ply slings (3 inches wide) were fabricated from a single roll of webbing. All independent variables were controlled, as the same thread, machine and sling fabricator were used for this exercise. With a vertical work load limit of 4800 lbs., we would expect a 24,000 lbs. break strength. The control sling broke at 26,050 lbs. The remaining three slings were cut on one edge to different depths. The “minor” damage resulted in very significant strength loss.

⚠WARNING “minor” damage is extremely serious and damaged slings must be removed from service, immediately to prevent injury and death.

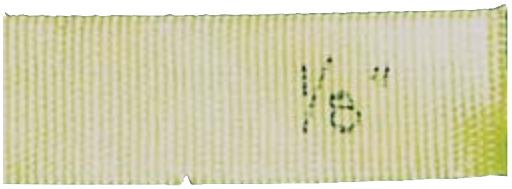
CONTROL BREAK- 26,050 LBS.

Certificate of Test

Customer: DESTRUCTION TESTINS
Serial No.: 1
Order No.: 131018 - 1
PO number:
Part No.: EE1-903 HT
Length: 8 ft.
Test Number: 7497
Test Date: 04/17/02
Description: VERTICAL BREAK TEST
Test Method: Break
Peak Load: 26,050 lbs.
Test Duration: 1.4 Minutes

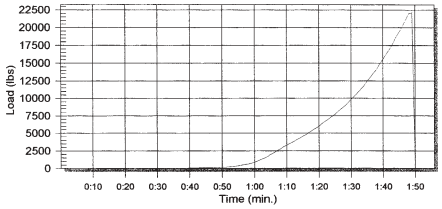


1/8 IN. CUT – 22,150 LBS.



Certificate of Test

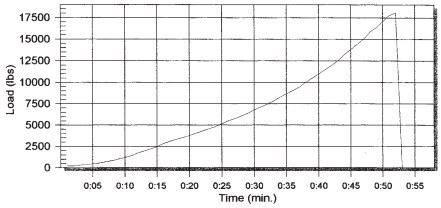
Customer: DESTRUCTION TESTINS
Serial No.: 2
Order No.: 131018 - 2
PO number:
Part No.: EE1-903 HT
Length: 8 ft.
Test Number: 7498
Test Date: 04/17/02
Description: VERTICAL BREAK TEST
Test Method: Break
Peak Load: 22,150 lbs.
Test Duration: 1.9 Minutes



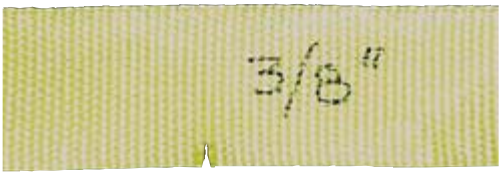
1/4 IN. CUT – 18,090 LBS.

Certificate of Test

Customer: DESTRUCTION TESTINS
Serial No.: 3
Order No.: 131018 - 3
PO number:
Part No.: EE1-903 HT
Length: 8 ft.
Test Number: 7499
Test Date: 04/17/02
Description: VERTICAL BREAK TEST
Test Method: Break
Peak Load: 18,090 lbs.
Test Duration: 0.9 Minutes

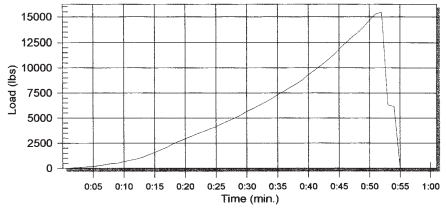


3/8 IN. CUT – 15,480 LBS.



Certificate of Test

Customer: DESTRUCTION TESTINS
Serial No.: 4
Order No.: 131018 - 4
PO number:
Part No.: EE1-903 HT
Length: 8 ft.
Test Number: 7500
Test Date: 04/17/02
Description: VERTICAL BREAK TEST
Test Method: Break
Peak Load: 15,480 lbs.
Test Duration: 1.0 Minutes



Reflections on Wear Protection

By Michael J. Gelskey, Sr.

Synthetic slings exposed to abrasion and cutting are the single greatest source of accidents, resulting in injuries, death and destruction. Synthetic slings are not the solution for every rigging application. The proper approach should always be to use the "best" type of sling for the specific situation. In other words, use the right tool for the job to minimize exposure and risk.

Synthetic slings have two primary limitations: susceptibility to damage from heat and damage from cutting. One may improperly rationalize and conclude that chain, wire rope and/or wire mesh slings should be used in every extreme and harsh situation that would limit the use of synthetic products. Chain and wire rope slings are not totally impervious in all applications and can be damaged and cut by forces exerted upon the sling when compression and tension combine.

ASME B30.9-2006, Section, 9.X.10.4(d), Rigging Practices, Chapters 1, 2 and 3, advises that sharp edges in contact with Chain, Wire Rope and Wire Mesh slings should be padded with materials of sufficient strength to protect the sling. The wear protection language in the ASME Sling Safety Standard, Rigging Practice section is identical in Chapters 4, 5 and 6 for synthetic rope, webbing and round slings. The profound difference is should (a recommendation to be considered in Chapters 1, 2, and 3), is changed to shall, which is a mandatory rule of the standard for all synthetic slings.

The word, sharp will be removed from the upcoming ASME B30.9-2006 Sling Safety Standard and has already been removed for the Recommended Standard Specification for Synthetic Web Slings (WSTDA-WS-1-2004), issued by the Web Sling and Tiedown Association. Both committees removed sharp because the edge need not be "razor" sharp to damage and cut any and all types of slings. Compression and tension, combined with a "moderate" edge and non-positive sling to load engagement, i.e., the sling skipping across the load edge, can result in sling damage and uncontrolled load descent. It is important that responsible parties protect all types of slings from damaging load edges, which contact the sling.

Another common misconception is that wear protection devices will perform equally well when subjected to abrasion or cutting. It is important to realize that abrasion protection materials, designs and technology should be different from those employed to provide protection from cutting.

Web slings can reach a 12,800 pound per inch, basket work load. Twin-Path® Extra, High Performance Fiber slings can attain a 25,000 pound per inch, basket work load. Testing conducted by Slingmax®, Unirope® and Lift-It® Manufacturing evaluated various wear protection materials and constructions. The results are featured on page 13 of this publication. Three wear protection devices provided a 2:1 wear protection "performance design factor" for the maximum 25,000 pound requirement: Cornermax®, Mesh Guard and Magnetic Corner Protectors.

I believe the initial steps of developing performance ratings for wear protection devices, by visionaries: Dennis St. Germain, Gary O'Rourke, Knut Buschmann and the author will profoundly influence the direction of the rigging and material handling industry. The Web Sling and Tiedown Association, Round Sling Technical Subcommittee is investigating and developing testing protocol to determine the effects of a range of edges on round slings of various work loads.

Up to this point, it has been left up to the sling user to determine the suitability and ultimately the success of wear protection devices. The sling user, inspector, loss control, safety and competent person(s) must continue to be involved in the proper application and assessment of protection devices. Cut proof wear does not exist. Poor load control can render even the best protection, ineffectual and inadequate.

We encourage all sling users to act responsibly and to evaluate wear protection devices and slings in a non-consequence set of circumstances. A test lift can easily be made to lift the load, slightly, just enough to clear the ground and be held for a reasonable period of time. The load is lowered and the slings and protection removed and inspected. Several "test" lifts may be necessary to determine the best sling, method of rigging, load control and wear protection devices to ensure success.

Remember, Successful Rigging = Successful Living.

SEWN & QUICK SLEEVES - CORDURA®, WEB AND CHAP

SEWN SLEEVE DIMENSIONAL DATA AND INFORMATION								
Cordura® Part No.	Web Part No.	Sleeve Width (Inches)	Web Sling Width (Inches)		Round Sling		Wire Rope Diameter (Inches)	Chain Size (Inches)
			1 & 2 Ply	3 & 4 Ply	Single Leg	Double Leg		
CS3	WS3	3	1		RS30-50-60		1/4 - 3/4	7/32
CS4	WS4	4	2	1	RS90	RS30-50-60	7/8 - 1-1/8	9/32 - 3/8
CS5	WS5	5	3	2	RS120-150-180	RS90-120	1-1/4 - 1-1/2	1/2
CS6	WS6	6	4	3	RS240-360	RS150-180	1-5/8 - 1-3/4	5/8
CS8	WS8	8	5 and 6	4 and 5	RS400-600	RS240-360	2 - 2-1/2	3/4 - 7/8
CS10	WS10	10	8	6	RS800	RS400		1
CS12	WS12	12	10	8	RS1000	RS600-800		1-1/4
CS14	WS14	14	12	10		RS1000		

For leather sleeves use the material code prefix- "LS". Example: Leather sleeve for 3 in. web sling- Part No. LS-5
For neoprene sleeves use the material code prefix- "NS". Example: Neoprene single leg sleeve for RS90- Part No. NS-4
Please Note: Single leg sewn sleeves for round slings must be installed at the time of order

QUICK SLEEVE DIMENSIONAL DATA AND INFORMATION										
Cordura® Part No.	Web Part No.	Sleeve Width (Inches)	Web Sling Width (Inches)		Round Sling		Wire Rope Diameter (Inches)	Chain Size (Inches)	Velcro® (inches)	
			1 & 2 Ply	3 & 4 Ply	Single Leg	Double Leg			1-2 ply sgl leg	3-4 ply dbl leg
CQS3	WQS3	3	1				1/4 - 7/16		1	1
CQS4	WQS4	4	2	1	RS30-50-60-90	RS30-50	1/2 - 3/4	7/32 - 9/32	1	1
CQS5	WQS5	5	3	2	RS120-150	RS60-90	7/8 - 1-1/8	3/8	1	2
CQS6	WQS6	6	4	3	RS180-240	RS120-150	1-1/4 - 1-1/2	1/2	1	2
CQS8	WQS8	8	5	4	RS360-400	RS180-240	1-5/8 - 2-1/4	5/8	2	2
CQS10	WQS10	10	6	5 and 6	RS600-800	RS360-400	1-1/2	3/4 - 7/8	2	2
CQS12	WQS12	12	8	8	RS1000	RS600		1	2	2
CQS14	WQS14	14	10	10		RS800			2	2
CQS16	WQS16	16	12	12		RS1000			2	2

For leather quick sleeves use the material code prefix- "LQS". Example: Leather sleeve for 3 in. web sling- Part No. LQS-5
For neoprene quick sleeves use the material code prefix- "NQS". Example: Neoprene single leg sleeve for RS90- Part No. NQS-4
For round slings we would recommend the use of tubular sleeves

SEWN CHAP SLEEVE DIMENSIONAL DATA AND INFORMATION								
Felt 1/8 IN (.125) Part No.	Felt 1/4 IN (.250) Part No.	Sleeve Width (Inches)	Web Sling Width (Inches)		Round Sling		Wire Rope Diameter (Inches)	Chain Size (Inches)
			1 & 2 Ply	3 & 4 Ply	Single Leg	Double Leg		
CHS125-3	CHS 250-3	3	1		RS30-50-60		1/4 - 3/4	7/32
CHS125-4	CHS 250-4	4	2	1	RS90	RS30-50-60	7/8 - 1-1/8	9/32 - 3/8
CHS125-5	CHS 250-5	5	3	2	RS120-150-180	RS90-120	1-1/4 - 1-1/2	1/2
CHS125-6	CHS 250-6	6	4	3	RS 240-360	RS150-180	1-5/8 - 1-3/4	5/8
CHS125-8	CHS 250-8	8	5 and 6	4 and 5	RS400-600	RS240-360	2 - 2-1/2	3/4 - 7/8
CHS125-10	CHS 250-10	10	8	6	RS800	RS400		1
CHS125-12	CHS 250-12	12	10	8	RS1000	RS600-800		1-1/4
CHS125-14	CHS 250-14	14	12	10		RS1000		

QUICK CHAP SLEEVE DIMENSIONAL DATA AND INFORMATION								
Cordura® 1/8 IN Felt Part No.	Cordura® 1/4 IN Felt Part No.	Sleeve Width (Inches)	Web Sling Width (Inches)		Round Sling		Wire Rope Diameter (Inches)	Chain Size (Inches)
			1 & 2 Ply	3 & 4 Ply	Single Leg	Double Leg		
CHQS125-3	CHQS 250-3	3	1				1/4 - 7/16	
CHQS125-4	CHQS 250-4	4	2	1	RS30-50-60-90	RS30-50	1/2 - 3/4	7/32 - 9/32
CHQS125-5	CHQS 250-5	5	3	2	RS120-150	RS60-90	7/8 - 1-1/8	3/8
CHQS125-6	CHQS 250-6	6	4	3	RS180-240-360	RS120-150	1-1/4 - 1-1/2	1/2
CHQS125-8	CHQS 250-8	8	5	4	RS360-400	RS180-240	1-5/8 - 2-1/4	5/8
CHQS125-10	CHQS 250-10	10	6	5 and 6	RS600-800	RS360-400	2-1/2	3/4 - 7/8
CHQS125-12	CHQS 250-12	12	8	8	RS1000	RS600		1
CHQS125-14	CHQS 250-14	14	10	10		RS800		
CHQS125-16	CHQS 250-16	16	12	12		RS1000		

SEWN, QUICK and TUBULAR SLEEVES

SEWN FELT SLEEVE DIMENSIONAL DATA AND INFORMATION

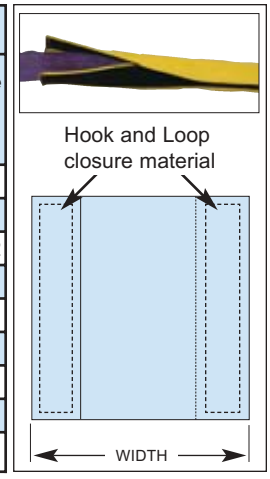
Felt 1/8 IN (.125) Part No.	Felt 1/4 IN (.250) Part No.	Felt 3/8 IN (.380) Part No.	Sleeve Width (Inches)	Web Sling Width (Inches)		Round Sling		Wire Rope Diameter (Inches)	Chain Size (Inches)
				1 & 2 Ply	3 & 4 Ply	Single Leg	Double Leg		
FS125-3	FS250-3	FS380-3	3	1		RS30-50-60		1/4 - 3/4	7/32
FS125-4	FS250-4	FS380-4	4	2	1	RS90	RS30-50-60	7/8 - 1-1/8	9/32 - 3/8
FS125-5	FS250-5	FS380-5	5	3	2	RS120-150-180	RS90-120	1-1/4 - 1-1/2	1/2
FS125-6	FS250-6	FS380-6	6	4	3	RS240-360	RS150-180	1-5/8 - 1-3/4	5/8
FS125-8	FS250-8	FS380-8	8	5 and 6	4 and 5	RS400-600	RS240-360	2 - 2-1/2	3/4 - 7/8
FS125-10	FS250-10	FS380-10	10	8	6	RS800	RS400		1
FS125-12	FS250-12	FS380-12	12	10	8	RS1000	RS600-800		1-1/4
FS125-14	FS250-14	FS380-14	14	12	10		RS1000		

QUICK FELT SLEEVE DIMENSIONAL DATA AND INFORMATION

Felt 1/8 IN (.125) Part No.	Felt 1/4 IN (.250) Part No.	Felt 3/8 IN (.380) Part No.	Sleeve Width (Inches)	Web Sling Width (Inches)		Round Sling		Wire Rope Diameter (Inches)	Chain Size (Inches)
				1 & 2 Ply	3 & 4 Ply	Single Leg	Double Leg		
FQS125-3	FQS250-3	FQS380-3	3	1				1/4 - 7/16	
FQS125-4	FQS250-4	FQS380-4	4	2	1	RS30-50-60-90	RS30-50	1/2 - 3/4	7/32 - 9/32
FQS125-5	FQS250-5	FQS380-5	5	3	2	RS120-150	RS60-90	7/8 - 1-1/8	3/8
FQS125-6	FQS250-6	FQS380-6	6	4	3	RS180-240	RS120-150	1-1/4 - 1-1/2	1/2
FQS125-8	FQS250-8	FQS380-8	8	5	4	RS360-400	RS180-240	1-5/8 - 2-1/4	5/8
FQS125-10	FQS250-10	FQS380-10	10	6	5 and 6	RS600-800	RS360-400	2-1/2	3/4 - 7/8
FQS125-12	FQS250-12	FQS380-12	12	8	8	RS1000	RS600		1
FQS125-14	FQS250-14	FQS380-14	14	10	10		RS800		
FQS125-16	FQS250-16	FQS380-16	16	12	12		RS1000		

QUICK TUBULAR SLEEVE DIMENSIONAL DATA AND INFORMATION

Cordura® Part No.	Web Part No.	Chap 1/4 IN (.250) Part No.	Felt 1/4 IN (.250) Part No.	Sleeve Width (Inches)	Chain Size (Inches)	Round Sling		Wire Rope Diameter (Inches)
						Single Leg	Double Leg	
CQTS-6	WQTS-6	CHQTS250-6	FQTS250-6	6	9/32 - 3/8			1 - 1-1/2
CQTS-8	WQTS-8	CHQTS250-8	FQTS250-8	8	1/2 - 5/8	RS30-50-60		1-3/4 - 2
CQTS-10	WQTS-10	CHQTS250-10	FQTS250-10	10	3/4	RS90-120-150	RS30-50-60-90	2-1/4 - 2-1/2
CQTS-12	WQTS-12	CHQTS250-12	FQTS250-12	12	7/8 - 1	RS180-240	RS120-150-180	
CQTS-14	WQTS-14	CHQTS250-14	FQTS250-14	14	1 - 1-1/4	RS360	RS240	
CQTS-16	WQTS-16	CHQTS250-16	FQTS250-16	16		RS400	RS360	
CQTS-18	WQTS-18	CHQTS250-18	FQTS250-18	18		RS600-800	RS400	
CQTS-20	WQTS-20	CHQTS250-20	FQTS250-20	20		RS1000	RS600	
CQTS-22	WQTS-22	CHQTS250-22	FQTS250-22	22			RS800	



HOW TO ORDER

1) **Select The Construction**
   - Sewn
   - Quick
   - Tubular

2) **Select The Material**
   - Cordura®
   - Web
   - Chap (specify thickness)
   - Felt (specify thickness)

3) **Select The Order Code, based upon the Sling Width or Model Number**

4) **Specify the Length of the Protection**

ORDER CODE DESIGNATIONS			
MATERIAL	CONSTRUCTION		
	SEWN	QUICK	TUBULAR
CORDURA®	CS	CQS	CQTS
WEB	WS	WQS	WQTS
CHAP 1/8"	CHS125	CHQS125	CHQTS125
CHAP 1/4"	CHS250	CHQS250	CHQTS250
FELT 1/8"	FS125	FQS125	FQTS125
FELT 1/4"	FS250	FQS250	FQTS250
FELT 3/8"	FS380	FQS380	FQTS380

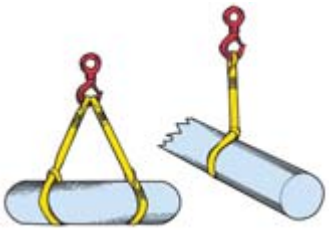
WEAR PROTECTION INFORMATION

Lift-It® wear protection is constructed from the following materials:

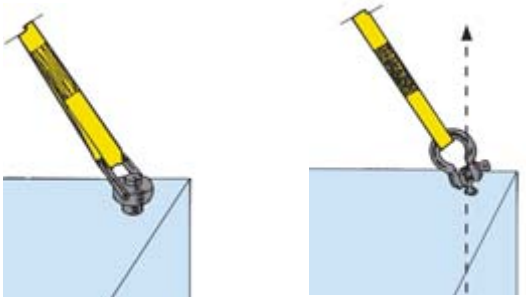
MATERIALS	THICKNESS
Cordura®	3/32"
Nylon/Polyester (9) Heavy	3/16"
Nylon/Polyester (6) Light	1/8"
Leather	3/32" - 1/8"
Neoprene	1/8"-3/16"-1/4"
Polyester Felt	1/8"-1/4"-3/8"
Aramid Felt	1/8" - 1/4"

GENERAL INFORMATION

The sling should be rigged in a manner that provides proper load control. It is dangerous to use only one sling to lift a load which tends to shift and slide out. (One sling is depicted for illustrative purposes only).

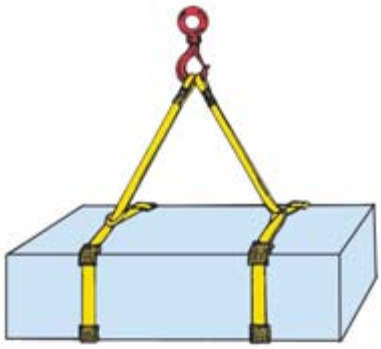


Ensure that the lifting device is directly over the center of gravity. If this is difficult to determine, it must be discovered by cautious experimentation or calculation. Raise the load carefully. If the load is not level, lower and correct the position of the slings until the balance point is achieved.

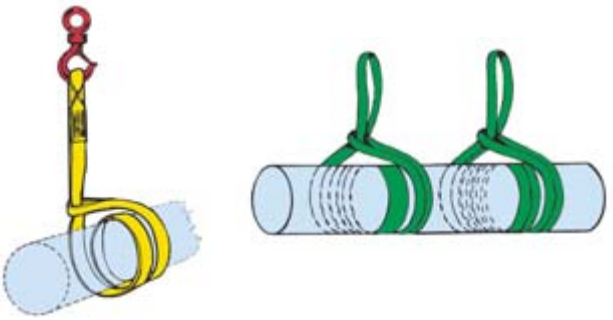


Swivel hoist rings are comparatively advantageous to rigid eye bolts. Connection points deserve consideration in any rigging system, which is only as strong as the weakest link. Uneven pull and side loading of rigid load connection points can result in a run-away load, see pages 47 and 48 for additional information.

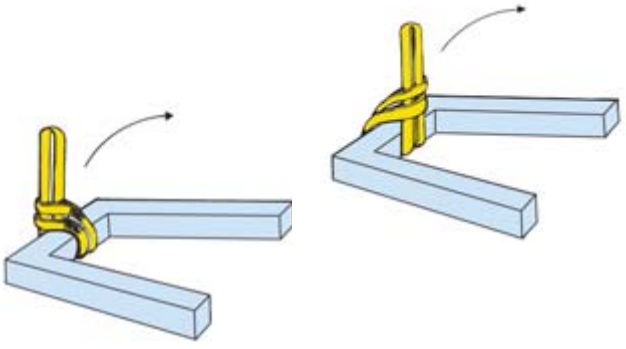
CHOKER HITCHES



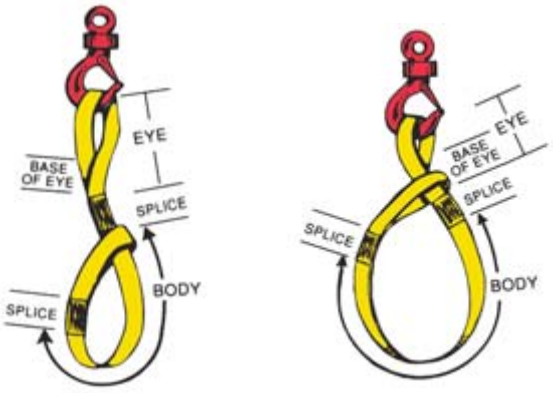
The choke hitch should always be pulled tight before the lift is made, not pulled down during the actual lift. A sling rigged in a choke hitch (not double wrapped) does not make full contact with the load. Use multiple slings, and wrap the load, when practical to ensure full contact. Ensure that multiple slings do not cross. Consideration must be given to the angle of choke. Choke on opposite sides of the load, if this will not damage the load.



For a tighter choke hitch, which provides a 360° contact with the load, take a full wrap around the load before choking the sling. Ensure that multiple slings do not cross. When the load is "wrapped" the sling work load limits do not increase, but load control does. (One sling is depicted for illustrative purposes only).



Always use a choker hitch when turning a load. If the sling is not rigged properly, the turning action will loosen the hitch, resulting in load slippage. Basket hitches should not be used to turn a load. Always downgrade the choker work load limit when the angle of choke is less than 120 degrees, see page 10.



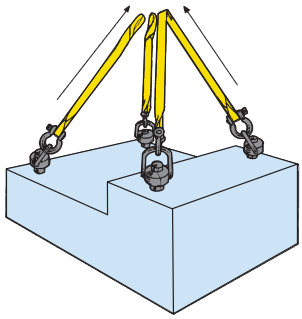
The sling should be of sufficient length to ensure that the choke action is on the sling body, never on the sling splice, fittings, tag, eye, or at the base of the sling eye or fitting.

BASKET HITCHES

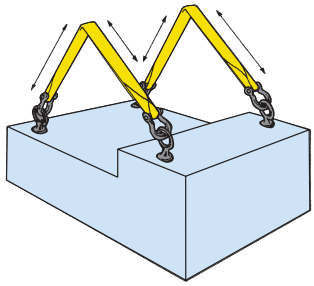
Inverted basket hitches are referred to as equalizing hitches because the sling is free to slip through the hook, according to the load weight distribution. Be sure to employ the four end down, east to west, load engagement system.

⚠ WARNING Slings "skipping" through hardware components in the sling system can become damaged. Balancing the load is critical and necessary to prevent sling damage and failure.

Right Way

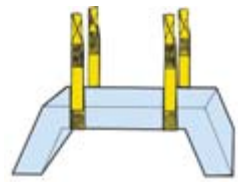


Wrong Way

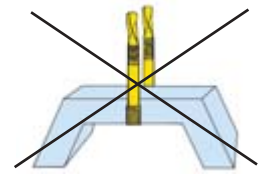


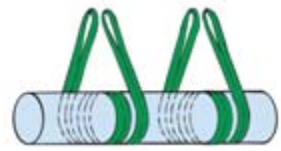
Extra care should be taken when using slings in a basket hitch to balance the load to prevent slippage. If practical, take a full wrap around the load to grip it firmly; be sure the slings do not cross each other. Wrapping the load is a legitimate method of minimizing excessive sling length. Other methods, such as, twisting and knotting radically reduce the sling work load limits. When the load is "wrapped" the sling work load limit is not increased, but load control is.

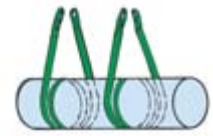
Right Way



Wrong Way



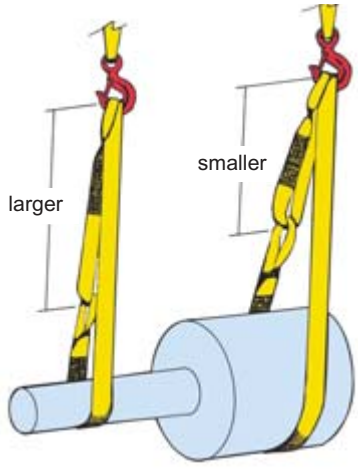




ADJUSTABLE HITCHES

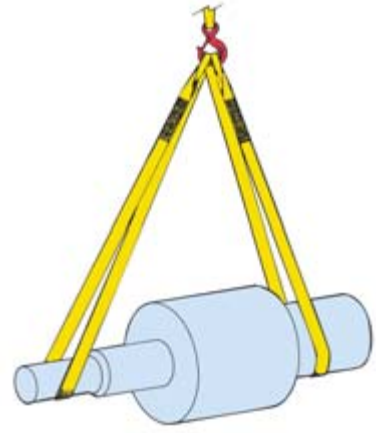
The adjustable choker and adjustable basket hitch allows the sling user to adjust the length of the legs to bring the load up, level. Adjustable hitches are particularly useful with loads possessing an uneven load weight distribution or an off-set center of gravity. Another effective solution is the adjustable rope sling featured on page 67.

ADJUSTABLE CHOKER HITCH



The work load limit for the adjustable choker hitch is identical to the "normal" sling choker hitch work load limit.

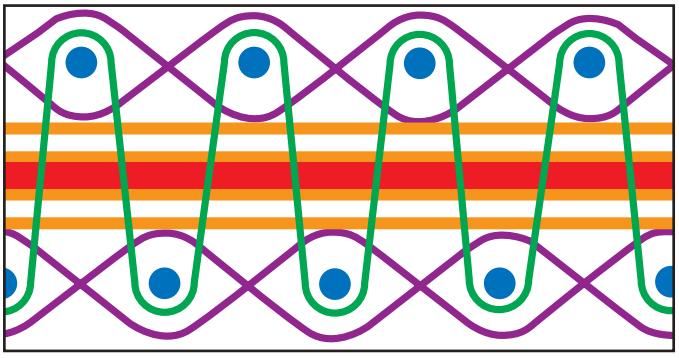
ADJUSTABLE BASKET HITCH



The work load limit for the adjustable basket hitch is identical to the "normal" sling basket hitch work load limit.

Design Features

SLING WEBBING

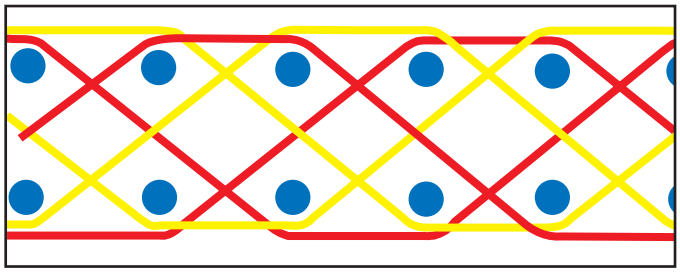


PURPLE: Surface yarns that carry a portion of the load.
ORANGE: Longitudinal yarns which carry the majority of the load.
RED: Warning yarns.
BLUE: Lateral yarns woven into the surface yarns.
GREEN: Binder yarns which secure the surface and core yarns.

Lift-It® web slings are fabricated from sling webbing. Sling webbing features a "stuffer" weave construction, where the inner load carrying yarns are jacketed by a protective outer cover. The longitudinal load yarns carry approximately 70% of the load, while the remaining strength is derived from the cover (side-to-side) yarns. Red core warning yarns are woven into the central load carrying area. The red core yarns may become visible, as the outer cover is worn away or becomes damaged, providing a signal to users and inspectors to remove the sling from service.

⚠ WARNING In some applications, slings become extremely dirty, making it difficult to see the red core yarns. DO NOT USE SLINGS THAT ARE STRUCTURALLY DAMAGED EVEN IF RED CORE YARNS ARE NOT VISIBLE.

"MIL-SPEC" WEBBING



RED & YELLOW: Load bearing surface yarns.
BLUE: Load carrying binder yarns.

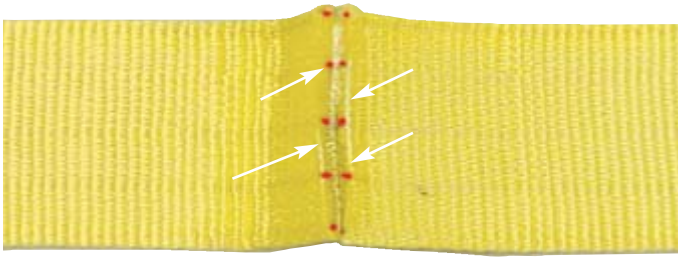
Military specification or "Mil-Spec" webbing was not designed for lifting. Nothing prevents its use in lifting applications except educated, informed sling purchasers, users and inspectors. "Mil-Spec" webbing does not feature red core warning yarns, and does not employ a stuffer weave design. Since the load carrying yarns are surface exposed, the tensile strength of Mil-Spec webbing, subjected to minor surface damage is radically reduced.

EFFECTS OF SURFACE ABRASION

	SLING WEBBING	VS	"MIL-SPEC" WEBBING
MATERIAL	NYLON		NYLON
WIDTH	2 IN.		1-3/4 IN.
THICKNESS	.12 -.14		.15 -.18
RED CORE YARNS	YES		NO
FINISH	PIGMENT DYE		CONDITION "U"
UNSEWN TENSILE STRENGTH	15,000 LBS		15,000 LBS
DAMAGE DESCRIPTION	HEAVY ABRASION		LIGHT ABRASION
TENSILE AFTER DAMAGE	7,000 LBS.		1,900 LBS.
% LOSS	53%		87%

⚠ WARNING WEAR OR DAMAGE TO THE COVER YARNS OF SLING WEBBING RESULTS IN IMMEDIATE STRENGTH LOSS

RED CORE WARNING YARNS



Lift-It® webbing has inner load bearing yarns that carry over 70% of the load. Woven into this same layer are red core warning yarns, which may become visible as the protective outer cover is worn away. The exposure of these yarns is one of the many signals that alerts the sling user/inspector to remove the sling from service.

⚠ WARNING DO NOT USE SLINGS THAT ARE STRUCTURALLY DAMAGED, EVEN IF THE RED CORE WARNING YARNS ARE NOT VISIBLE.

Design Features

A heavy duty, branded, leather tag is attached to all slings. The necessary information required by the various regulatory agencies is hot branded into genuine leather, resulting in the most durable tag available.

Hitch diagrams, date of manufacture and a unique sling identification number are also included. Custom tags can also be attached for a nominal charge.

In addition to the sling tag, a warning tag is also attached. It contains important product information in icon format to transcend language, literacy and comprehension barriers. The warning tag also contains information for removal from service, from an OSHA and ASME perspective.

Proper use, care, inspection and loss control measures are enhanced by the Lift-It® tag and warning system.

EYE PROTECTION

Fabric wear pads are sewn to the bearing point of the sling eyes. This is a critical wear area and the eye wear pad helps to increase the life cycle of the sling.

MANUFACTURING TOLERANCE

All Lift-It® web slings are manufactured to a tolerance of: +/- 2% for single and double ply slings and +/- 4% for three and four ply slings. (At the time of manufacture)

TREATED WEBBING

Lift-It® slings are manufactured from industrial sling webbing that has been treated in the final stages of looming. This coating helps seal out moisture and dirt and also helps to reduce the effects of abrasion, enhancing the service life of the sling. Untreated webbing slings are also available upon request.

DESIGN FACTOR

All Lift-It® slings are designed and rated with a factor of 5 to 1, unless otherwise stated. When specified, other design factors are available. Our slings can be used in compliance with OSHA and ASME specifications. The design factor applies to new slings and does not allow the user to exceed the work load limit. It is important for sling users to realize Work Load Limits are based upon: destruction testing done in laboratory controlled, testing conditions that will never be duplicated during actual usage and a moderately dynamic lifting or pulling operation.

⚠WARNING Instantaneous changes (drops or sudden pick ups) in excess of 10% of the work load constitutes hazardous shock loading and THE WORKING LOAD LIMITS AS STATED, DO NOT APPLY.

TRACEABILITY AND QUALITY CONTROL

Lift-It® Manufacturing is proud to join the growing number of elite companies that have met the quality standards established by the International Standards Organization. SAI Global certified our compliance to ISO 9001:2000 and issued registration number QEC 20307.

Only the finest materials are used in every product we manufacture. Only qualified vendors, with products liability insurance, supply components which meet or exceed our discriminating standards.

Samples of every lot of thread and load carrying yarn are pulled to destruction, prior to their release to manufacturing. Tests to destruction are done on a regular basis to ensure that quality expectations are realized.

Our material traceability system begins with the assignment of a unique “container” number for materials and components. This container number is permanently recorded on the fabrication order. The key to our traceability system is the unique serial number assigned to each product. The serial number is recorded on the product tag for the purpose of identifying not only the input materials, but product standards compliance. The sling serial number is also extremely valuable in duplicating regular and special sling designs, long after the original date of manufacture.

All products are inspected and signed by the fabrication specialist and the quality inspector.

Stringent material and production standards, written quality control procedures and inspection records demonstrate the ultimate in corporate responsibility. We are committed to quality that is generally not seen, but really does make a difference between the best and all the rest.

ISO Registration

ISO 9001 is a generic product standard that provides quality assurance requirements and quality management guidance. Essentially, ISO 9001:2000 requires a company to document what it does and do what it has documented.

To establish an ISO program a company works with a consultant to provide a blueprint for the many, necessary documents that must be created. Everything that a corporation does is written into administrative and quality implementation procedures. When this is completed and all parties are trained to fulfill their duties as specified by the procedures, the company will be audited for compliance by an independent registrar. If the audit is successfully accomplished the company will then be registered and issued a certificate indicating official ISO Quality Registration. Audits of the program occur annually to maintain a current certificate of registration.

In January 2002, Michael Gelskey, Jr. was appointed as the Lift-It® Quality Manager. He states, “Acquiring the ISO 9001 registration was not as difficult as we had expected, as many of the procedures were already in place. Our documented quality management systems demonstrate our commitment to continuous process improvements and complete customer satisfaction.”

Quality System™
Quality Endorsed Company

CERTIFICATE OF REGISTRATION

Lift-It Manufacturing Co., Inc.

4780 Corona Avenue, Los Angeles, California 90058

complies with the requirements of

ISO 9001:2000
Exclusions: Design and Development
Quality Management Systems - Requirements

for the following capability

This Registration Covers the Quality Management System for the Manufacture of Rigging Related Slings and Hardware

Registered by:
SAI Global Certification Services Pty Ltd (ACN 108 716 669) 286 Sussex Street Sydney NSW 2000 Australia with SAI Global Inc. (“SAI Global”) and subject to the SAI Global Terms and Conditions for Certification. While all due care and skill was exercised in carrying out this assessment, SAI Global accepts responsibility only for proven negligence. This certificate remains the property of SAI Global and must be returned to SAI Global upon its request.

Certificate No.: QEC20307 **Certified Date:** 01/16/2003
Issue Date: 01/16/2006 **Expiry Date:** 01/16/2009

Alex Ezrakhovich
General Manager Certification
for and on behalf of
SAI Global

Carl F. Blazik
Authorised Local Signatory
for and on behalf of
SAI Global

SAI GLOBAL ANAB JAS-ANZ IQNet

To verify that this certificate is current please refer to the SAI Global On-Line Certification Register: http://register.sai-global.com

In November 2002, the registration audit was performed by representatives of SAI Global, Inc., the largest supplier of independent conformity assessment, certification and registration. SAI Global verified that Lift-It® Mfg. had in place a well maintained quality program.

We will gladly take up that slack for those suppliers who choose not to develop and adhere to a documented quality program. We are proud to join the ever increasing number of companies throughout the world that have been certified to the ISO quality standard. We are particularly proud of Mike Gelskey, Jr., who headed up the conversion process, and we know that the implementation of this program has made us an even better manufacturer and supplier for our customers.

Would you put your triple bypass out for bid, and have it done by the "low" bidder?

It's easy to laugh at the scenario and come to the conclusion that when your life is on the line, there is absolutely no way that the "low bid" rule makes sense. Likewise a medical school graduate, who has completed their surgical training and internship, has to start somewhere. Given a choice, however, one would probably opt for a "seasoned" veteran and let the "beginner" practice on someone else.

If you purchase slings, you may be far removed from the location and consequences of the rigging you purchase. Synthetic slings and all rigging gear is serious equipment. The consequences of inferior materials or manufacturing procedures may have profound effects upon the lives and loved ones of an unsuspecting user or innocent third party.

We are a self regulated industry. It doesn't take much to get into the sling business. Start up costs are relatively low, sewing machines are readily available; webbing, yarn and thread suppliers, abundant. With any supplier, including the successful, low bidder, it comes down to one important element, TRUST. Trust me with your life, your limbs and your family's financial and emotional well being.

It wasn't easy spending 10% of our start up cost, years ago to set up a department that produces our heavy duty, branded, leather tags. It would have been much easier on the pocket book to supply plastic tags, filled in with magic marker. It wasn't easy to spend thousands of dollars to have destruction tests conducted at an independent facility for most of our commonly produced, popular items, before we opened our doors for business. It hasn't gotten any easier over the past twenty-seven years to fabricate and independently verify every lot of yarn and thread, or to spend thousands of dollars to build and break just one sling with a tensile strength of 840,000 pounds, let alone, several. There is nothing mandatory to require this, except a sense of responsibility, and a desire to best at what we do.

Machinery, production techniques and input materials appear to be similar, but they are not. The people that assemble your slings are just as important. We attract and keep the best and most talented sling fabricators in the country, because we pay a living wage, provide a retirement plan, funded solely from contributions made by the company and consider our people, our family.

Consider our approach, which is the "family" approach to rigging and safety. We build every sling with integrity, just as if one of our loved ones were destined to use it. When you purchase slings and rigging, for others, ask yourself if you would want your loved ones to use the cheapest or the best. It's an easy decision to make, once you look at the situation from a "family" perspective.

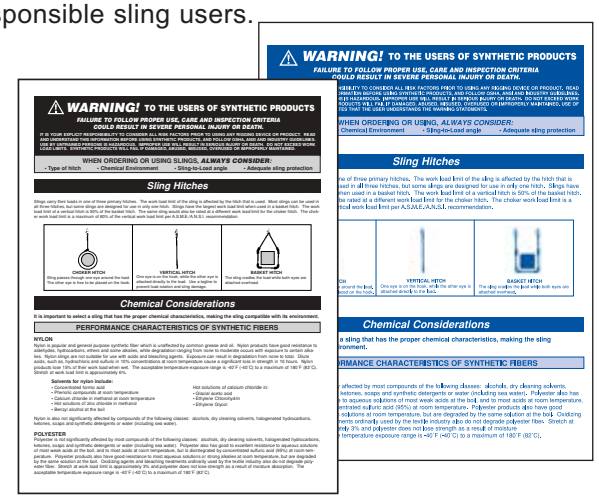
The idea is to go home to ones we love, under our own power, not to leave the jobsite in a paramedic vehicle or a coroner's van. The proper use of products made with pride and responsibility, purchased at a reasonable price are key ingredients in a commitment to excellence and longevity.

Sling Warning System

PRODUCT INFORMATION BULLETINS

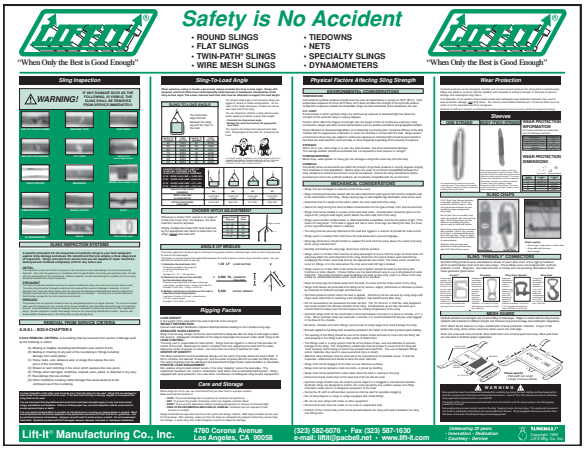
Proper use, care and inspection techniques are reinforced by the Lift-It® Product Information Bulletins, which accompany every product. The bulletins are color coordinated to match the supplemental warning tags.

The combination of the warning tag and product information bulletin enhances the loss control efforts of responsible sling users.



SLING WALL CHARTS

Flat and round sling posters are a valuable visual aid to enhance proper use, care and inspection techniques. The posters feature information on sling inspection, removal from service criteria, sling damage pictures, mechanical and environmental considerations, rigging factors, sling storage recommendations, sling angles and tension, as well as useful wear protection information.



Reference Materials

RIGGING REFERENCE CARDS

Rigging Reference Cards and Crane Reference Cards are multi-colored and laminated with an overall size of 3-3/8" x 11" The cards can be folded down to 2-1/8" x 3-3/8" for pockets or wallets. They contain a wealth of instant access information.

Rigging Reference Card----Order Code B-1
Crane Reference Card------Order Code B-2

RIGGING & CRANE HANDBOOKS

The handbook contains information on rigging, crane operations, sling details, inspection criteria, weight calculations, center of gravity determinations, critical lift parameters, regulatory and industry standards and other information for the responsible rigger, crane operator, engineer and safety director.

Pocket ---- Order Code B-3 (4-1/2 x 6")
Desk size Order Code B-4 (8-1/2 x 11")

Sling Inspection

A specific procedure for the inspection of synthetic slings is the best safeguard against sling damage and abuse. We recommend that you employ a three stage level of inspection. Slings removed from service that are not capable of repair should be destroyed and rendered completely unfit for any future use.

SLING INSPECTION SYSTEMS

INITIAL

The Web Sling and Tiedown Association defines the initial level of inspection as, "Before any new or repaired sling is placed in service, it shall be inspected by a designated person to ensure that the correct sling is being used, as well as to determine that the sling meets the applicable requirements."

The American Society of Mechanical Engineers also states in the initial inspection that, "prior to use, all new, altered, modified or repaired slings shall be inspected by a designated person to verify compliance to all applicable standards".

The initial level of inspection is done upon receipt to ensure that no damage has occurred during transit. The products must also be verified to be correct, as ordered, and that they comply with the manufacturer's specifications. Without printed product specifications, this comparison cannot be accomplished. If written records for individual slings are to be maintained, the specific sling information should be initiated at this level of inspection.

FREQUENT

The frequent level of inspection should be done by the person handling the sling, before every use. The entire sling should be thoroughly examined and removed from service if damage is detected. OSHA stipulates that, "each day before being used, the sling and all fastenings and attachments shall be inspected for damage and defects by a competent person designated by the employer."

The sling user and designated/qualified person must also determine that the sling is proper for the intended use, hitch, load and environment. Any condition that may result in a hazard shall cause the sling to be removed from service. Written inspection records are not required for frequent inspections.

PERIODIC

The periodic level of inspection should be done by designated personnel at regular intervals. The interval is based upon the frequency of use, severity of the service conditions and information derived through the inspection process. Recommendations to prevent damage must be evaluated to improve the service life of the replacement slings. Periodic inspection intervals shall not exceed one year intervals.

ASME states that guidelines for the inspection time intervals are as follows:

Normal Service - Yearly
Severe Service - Monthly or Quarterly
Special Service - As recommended by a qualified person

Written records of the most recent periodic inspection shall be maintained. Reference to a unique, sling identification number is not required. Records and documentation should be kept in the safety office or at the specific sling storage area.

REMOVAL FROM SERVICE CRITERIA

OSHA 1910.184 - REMOVAL FROM SERVICE CRITERIA

Synthetic web slings shall be immediately removed from service if any of the following conditions are present:

(I) Acid or caustic burns
(II) Melting or charring on any part of the sling surface
(III) Snags, punctures, tears, or cuts
(IV) Broken or worn stitches
(V) Distortion of fittings

ASME B30.9 – REMOVAL FROM SERVICE CRITERIA

a) Missing or illegible sling identification
Section 9-5.7.1 requires that each sling be marked to show the following:
1) name or trademark of the manufacturer
2) manufacturer's code or stock number
3) rated loads for the type(s) of hitch(es) used and the angle upon which it is based
4) type of synthetic material
b) Acid or caustic burns
c) Melting or charring of any part of the sling
d) Holes, tears, cuts or snags
e) Broken or worn stitching in the load bearing splices
f) Excessive abrasive wear
g) Knots in any part of the sling
h) Discoloration and brittle or stiff areas on any part of the sling, which may mean chemical or ultraviolet/ sunlight damage
i) Fittings that are pitted, corroded, cracked, bent, twisted, gouged or broken
j) For hooks, removal criteria as stated in ASME B30.10
k) For applicable fittings, removal criteria as stated in ASME B30.26
(l) Other conditions, including visible damage, that cause doubt as to the continued use of the sling.

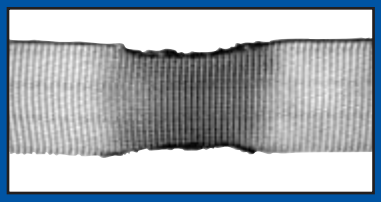
⚠ WARNING

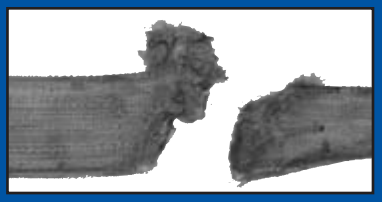
Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

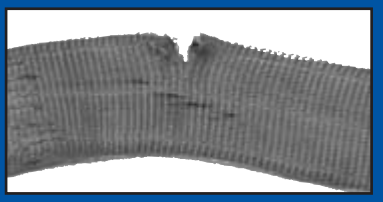
Web Sling Inspection

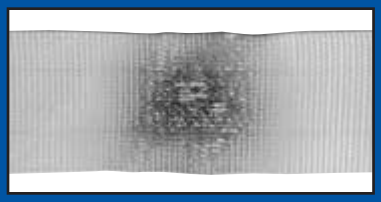
WARNING

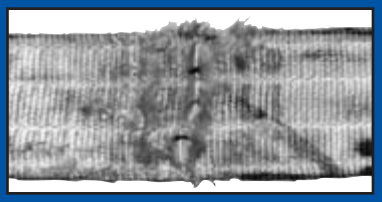
IF ANY DAMAGE SUCH AS THE FOLLOWING IS VISIBLE, THE SLING SHALL BE REMOVED FROM SERVICE IMMEDIATELY.

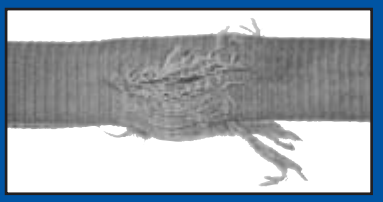

ACID OR CAUSTIC BURNS

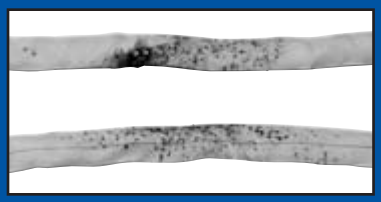

CUTS

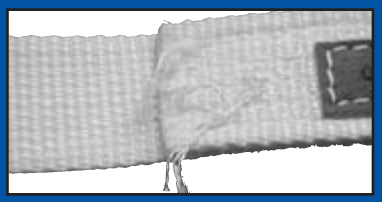

EDGE CUT


MELTING OR CHARRING

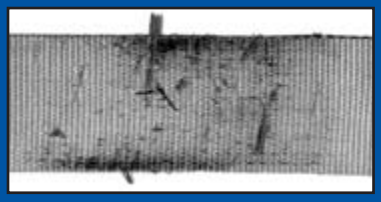

ABRASIONS

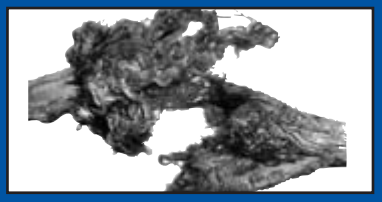

PUNCTURES

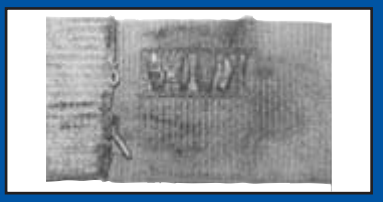

WELD SPATTER


BROKEN OR WORN STITCHES

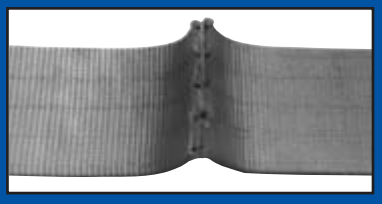

DAMAGED EYE


EMBEDDED MATERIALS

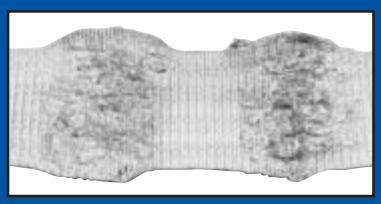

TENSILE BREAK

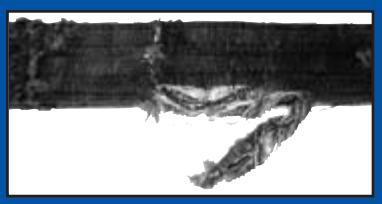

MISSING OR ILLEGIBLE TAGS


UV DEGRADATION


RED CORE YARNS


KNOTS


CRUSHED WEBBING


SNAGS


DISTORTED HARDWARE

Twin-Path® & Round Sling Inspection

WARNING

IF ANY DAMAGE SUCH AS THE FOLLOWING IS VISIBLE, THE SLING SHALL BE REMOVED FROM SERVICE IMMEDIATELY.

ACID OR CAUSTIC BURNS

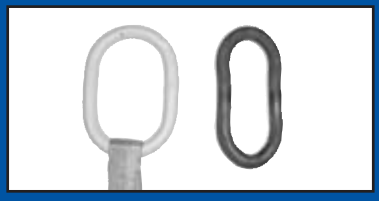
CUT OR DAMAGED YARNS

BUNCHED OR WADDED YARNS

MELTING OR CHARRING

MISSING OR ILLEGIBLE TAGS

FIBER OPTIC
Lack of light transfer

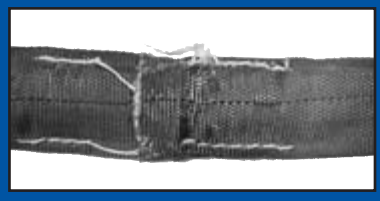


DISTORTED HARDWARE

KNOTS

✓FAST™ RIBBON AND EWI EXTEND FROM COVER
(Sling passes ✓FAST™ Criteria)

INNER COVER OR YARN VISIBILITY

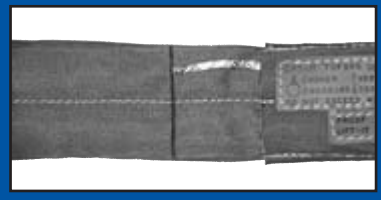


BROKEN STITCHES

EWI IS MISSING AND ✓FAST™ RIBBON PULLS EASILY OUT OF SLING
(Sling Fails ✓FAST™ Criteria)

EMBEDDED MATERIALS

SNAGS / PUNCTURES



TATTLE TAIL VISIBILITY

Repair • Testing • Certification

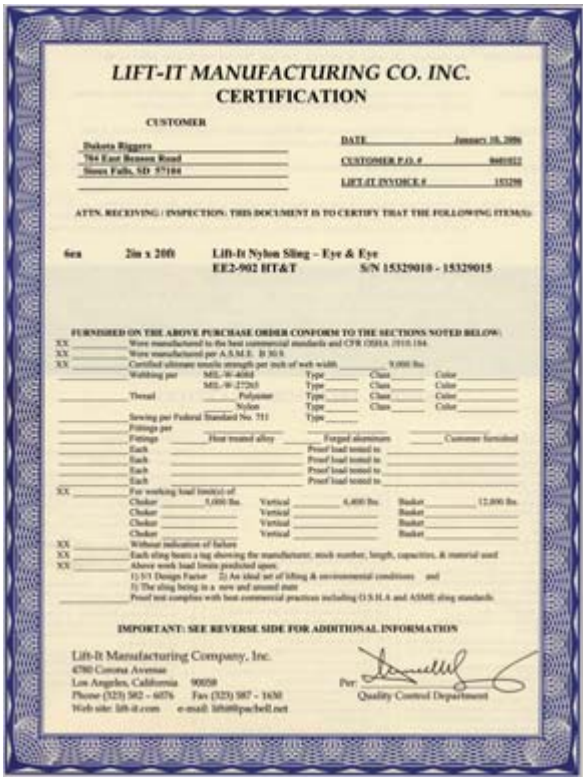
If repair work is necessary, it must be economically feasible and should only be done by a recognized sling manufacturer. Tent, awning, shoe and saddle shops are not equipped to test the repaired assembly and generally are not proficient in sling fabrication techniques.

Recycle your hardware, when the sling needs webbing replacement. Generally, the hardware components are reusable and utilization will substantially reduce overall sling costs. When we receive your components they are degreased and carefully inspected.

Repaired assemblies are proof tested to twice the assigned work load limit, per OSHA and ASME requirement. This procedure is done on equipment, which is annually certified to ASTM E4 standards and produces a machine generated record of each test. Beware of "testing" facilities that do not have the capabilities to offer a "machine" generated certificate of test.

An additional tag is attached to the assembly identifying Lift-It® as the repair agent. The test certificate is enclosed with the return shipment and your inspection records should be updated to reflect the repair activity, per OSHA requirements.

Lift-It® will provide certification of conformance for materials, strengths and work load limits for any of our products. A nominal charge will be applied if proof testing and certification are required.



LIFT-IT MANUFACTURING CO. INC.
CERTIFICATION

CUSTOMER

Dakota Riggers
704 East Benson Road
Sioux Falls, SD 57104

DATE January 10, 2006
CUSTOMER P.O. # 0601022
LIFT-IT INVOICE # 153298

ATTN. RECEIVING / INSPECTION: THIS DOCUMENT IS TO CERTIFY THAT THE FOLLOWING ITEM(S):

6ea 2in x 20ft Lift-It Nylon Sling – Eye & Eye
EE2-902 BT&T S/N 15329010 - 15329015

FURNISHED ON THE ABOVE PURCHASE ORDER CONFORM TO THE SECTIONS NOTED BELOW:

IMPORTANT: SEE REVERSE SIDE FOR ADDITIONAL INFORMATION

Lift-It Manufacturing Company, Inc.
4780 Corona Avenue
Los Angeles, California 90058
Phone (323) 582 - 6076 Fax (323) 587 - 1630
Web site: lift-it.com e-mail: lift-it@pacbell.net

Per:
Quality Control Department

Care and Storage

When slings are not in use, we recommend that they be stored in a proper location.
Make sure that the location is:

- COOL To prevent damage due to exposure to excessive temperatures.
- DRY To prevent the growth of bacteria, which can degrade synthetic fiber.
- DARK To prevent the deleterious effects of prolonged exposure to sources of ultraviolet light.
- FREE OF ENVIRONMENTAL/MECHANICAL DAMAGE
  Ventilated and not exposed to heat sources, sunlight, weld splatter or grit and splinters from grinding or machining.

Slings should also be kept clean and free of dirt, grime and foreign material. Mild soap and water can be used for this purpose. After cleaning, make sure that the slings are allowed to dry properly before being put back into storage. A clean sling, free of dirt and grime is much easier to inspect for damage.

⚠ WARNING Steam cleaning at temperatures in excess of 194 degrees F (90 degrees C) can damage the sling. Power or pressure washing can force residue inside web and yarn fibers. The foreign material can cause internal yarn and fiber damage.

Repair • Testing • Certification

SLING INSPECTION MADE EASY

The factory trained professionals at Lift-It® Manufacturing will inspect all makes of synthetic slings and tiedowns. Each item is thoroughly inspected per OSHA, ASME, industry standards and/or manufacturer recommendation.

A detailed summary identifying each sling, the condition and approval or removal from service criteria will be provided.

Slings that pass visual inspection will be proof tested to twice their assigned work load limit and certified.

BEFORE REPAIR

DURING REPAIR

PROOF TESTING

REPAIRS COMPLETED

Regulatory Resources

U.S. Department of Labor
O.S.H.A. (REGION IX)
71 Stevenson Street - Suite 420
San Francisco, California 94105
Phone (415) 975-4310
Fax (415) 975-4319
www.osha.gov

National Safety Council
1121 Spring Lake Drive
Itasca, Illinois 60143-3201
Phone (630) 285-1121
Fax (630) 285-1315
www.nsc.org

Commercial Vehicle Safety Association
5430 Grosvenor Lane, Suite 130
Bethesda, Maryland 20814
Phone (301) 564-1623
Fax (301) 564-0588
www.cvsa.org

American Society of Mechanical Engineers
22 Law Drive
Fairfield, New Jersey 07007-2300
Phone (800) 843-2763
Fax (973) 882-1717
www.asme.org

Associated Wire Rope Fabricators
P.O. Box 748
Walled Lake, Michigan 48390-0748
Phone (248) 994-7753
Fax (248) 994-7754
www.awrf.org

Web Sling and Tiedown Association, Inc.
2105 Laural Bush Road, Suite 200
Bel Air, Maryland 21015
Phone (443) 640-1070
Fax (443) 640-1031
www.wstda.com

Sling Safety Program

ACCIDENT PREVENTION THROUGH EDUCATION

The benefits of educating synthetic sling users, prior to death or injury, clearly outweigh any effort done in reaction to a liability incident. The Lift-It® Sling Safety Program is concise and coordinates the users, the inspection process and your facility. The program results in an ongoing and viable system that helps to protect the sling user, property and the corporate bottom line.

The Sling Safety Program provides detailed instruction to all parties who are involved in rigging and hoisting loads. Participants should include specialized and incidental riggers, sling inspectors, safety and training, loss control, quality assurance, tool room and purchasing personnel.

Our goal is accident prevention through education. The cost for our services is truly incidental when compared to expense of a single “incident”. If together we prevent just one accident, then we have accomplished our objective. Contact us for a mutually convenient training date and take the first step to improve overall efficiency and safety consciousness.

ON-SITE PROGRAMS

Thousands of sling users and inspectors have been educated, on location, through the Lift-It® Sling Safety Program.

The preferred program is a two day seminar. Day one features either an eight hour, sling user/inspector class or two of the four hour classes. Day two features a sling inspector class and a facility program. Arrange the four hour class modules in any sequence desired to attain your specific scheduling and training objectives. Invite other interested parties to your program and “share” not only the cost, but the benefit.

PROGRAM CURRICULUM

SLING USER CLASS

The Sling User Class includes: sling input materials, sling designs and design features, on a generic level, with the emphasis placed upon proper application and usage. Mechanical considerations and topics such as: sling angles and tension, center of gravity, load factors and wear protection are also explored in an interactive format. Environmental considerations such as: water, temperature, chemical exposure and ultraviolet light are also examined. Sling inspection systems, techniques and removal from service criteria are also presented in the sling user class.

Recommended class size: 12 to 75
Class duration: 4 hours or 8 hours

FACILITY PROGRAM

The Facility Program takes participants from the classroom into the “real” world, as actual inspections are conducted. Sling storage locations and consumption patterns are analyzed, from the perspective of inventory management. The need for wear protection is also reinforced to maximize sling service life and overall safety. The Designated Inspector Class is a mandatory prerequisite for the Facility Program.

Recommended class size: 12
Class duration: 4 hours or 8 hours

DESIGNATED INSPECTOR CLASS

The Designated Inspector Class provides detailed training in sling inspection techniques per ASME B30.9 and OSHA 1910.184. General information and sling damage, with a heavy emphasis upon cause-effect and recommendation are presented. In addition, sling inspection systems, techniques and removal from service criteria are covered. The Sling User Class is recommended as a prerequisite, but not required.

Recommended class size: 25
Class duration: 4 hours

ADVANCED RIGGING

Advanced Rigging features advanced weight calculations, center of gravity determinations, composite centers of gravity, load moment considerations and calculations, as well as compound angles. The Sling User class is a mandatory prerequisite.

Recommended class size: 12 to 25
Class duration: 4 hours

Sling Safety Program

SEMI-ANNUAL SAFETY CONFERENCES

Sling Safety Seminars are presented semi-annually, by Lift-It® Manufacturing. For specific dates and details, view the homepage of the Lift-It® web site at **www.lift-it.com**

The program is presented in Los Angeles and is generally two days in duration.

Sling user and inspector training, the basics of fall prevention and fall prevention demonstrations are presented on the first day. In addition, a plant tour of the Lift-It® facility, with fabrication and testing demonstrations is also included.

The second day features Advanced Rigging (classroom), as well as Hands-on Rigging. Early registrations are encouraged as the class size is deliberately limited to facilitate maximum participation.

SLING USER/ INSPECTOR

LIFT-IT® FACTORY TOUR

ADVANCED RIGGING: CLASSROOM

ADVANCED RIGGING: HANDS ON

COMMENTS FROM OUR CLIENTS

FROM OUR ON-SITE CUSTOMERS

We would like to commend you on the quality of the training that was provided by you; one word can sum it all up, “excellent.” With the type of education you provided, our people are one step closer to an accident free environment.
C.E. VANWINKLE,
BURLINGTON NORTHERN RAILROAD

Your presentation skills and information presented was outstanding and can definitely be recommended to anyone who uses synthetic rigging. This type of information training class helps our employees not only be more efficient, but, most importantly, safety conscious.
KEVIN CARHART,
SOUTHERN CALIFORNIA EDISON-MOGS

Thank you for a most informative seminar. The information presented was without a doubt, outstanding. We recommend the seminar to others without reservation. The personnel enjoyed your practical approach, which made the seminar interesting and informative.
DAVE ASKINS,
PACIFIC GAS AND ELECTRIC COMPANY

Thanks for putting on an excellent rigging course at our Annual Meeting. You lived up to your billing!! The people were interested and appreciated your information and delivery.
JOHN M. MILLER,
DEPARTMENT OF ENERGY - B.P.A.

FROM OUR SEMI-ANNUAL PARTICIPANTS

“I really enjoyed your seminar. I appreciate your approach to providing more education and information, rather than trying to market your company or its products. I also thought you were an excellent speaker, Mike. I learned more from you in the first 90 minutes than I did when attending another conference that lasted five, long days.”

“Very well presented, nice to see such passion about the subjects.”

“Excellent program and well worth the time. The seminar greatly enhanced my understanding of rigging practices.”

“Mike Gelskey is the best presenter that I have had the pleasure of experiencing, of all the seminars that I have ever attended. The wit, personal anecdotes, interaction with the audience and dynamic presentation all added up to an entertaining and informative seminar. Thank you.”

“I like the passion with Michael’s presentation. You can see that he truly cares about safety and not just money. Thanks and God bless.”

“The course material was excellent. Thank you for an excellent seminar.”

“Very good information on sling inspection. Definitive answers on what to look for.”

“Excellent learning experience!”

Physical Factors Affecting Sling Strength

ENVIRONMENTAL CONSIDERATIONS

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

ULTRAVIOLET (UV) LIGHT

Environments where synthetic webbing slings are continuously exposed to ultraviolet light can affect the strength of synthetic webbing slings in varying degrees ranging from slight to total degradation.

The Web Sling and Tiedown Association (WSTDA) conducted tests to determine the affects of strength loss, as a result of ultraviolet (UV) degradation. A report titled, "UV Light Degradation", Report No. WSTDA-UV-Sling-2003 is available from the WSTDA web site, www.wstda.com.

Factors which affect the degree of strength loss are the length of continuous exposure time, sling construction, design and other environmental factors such as, weather conditions, elevation and geographic location.

Initially, nylon web slings lose strength at a slower rate, when compared to polyester slings, but continued to lose strength as the exposure time is extended. The loss of strength for nylon slings can be 40 to 60% after exposure for periods ranging from 12 to 36 months.

Polyester web slings lose strength at a greater rate, when compared to nylon slings. Loss in strength for polyester slings was approximately 30% after 12 months exposure. Polyester sling strength loss seemed to subside and level off after the initial 12 month period.

Visual indicators of ultraviolet degradation are a bleaching out of sling color, increased stiffness of the sling material and the appearance of abrasion in areas not normally in contact with the load.

Slings used in environments where they are subject to continuous exposure to ultraviolet light should be proof tested to two times the work load limit, semi-annually, or more frequently depending on the severity of exposure.

TEMPERATURE

Conventional synthetic products should never be used at temperatures in excess of 194°F (90°C). Cold temperature exposure to -40°F/(-40°C) does not affect the strength of the synthetic sling. Temperature exposure outside the acceptable range must be considered and evaluated by the user.

STORAGE

When not in use, store slings in a cool, dry, dark location, free of mechanical and environmental damage. The storage location should be ventilated and not exposed to heat sources, weld splatter, or grit and splinters from grinding.

FOREIGN MATERIAL

Metal chips, weld splatter or heavy grit can damage a sling both externally and internally.

CHEMICAL

Chemically active environments can affect the strength of synthetic products in varying degrees ranging from moderate to total degradation. Before slings are used, the chemical compatibility between the sling components and the environment must be considered. Refer to pages 11 and 12. Aluminum fittings should never be exposed to chlorine environments or cleaned with chlorine based cleaning solutions. Consult the sling manufacturer before purchasing to ensure the synthetic products and their components are chemically compatible with the environment.

SALT WATER

Slings that have been exposed to saltwater should be thoroughly rinsed and allowed to dry, preferably out of direct sunlight.

Physical Factors Affecting Sling Strength

MECHANICAL CONSIDERATIONS

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

- Synthetic sling users shall be trained in the selection, inspection, cautions to personnel, effects of the environment and rigging practices.
- Select the sling having the most suitable characteristics for the type of load, hitch and environment.
- Slings that are damaged or defective shall not be used. Slings removed from service that are not capable of repair should be destroyed and rendered completely unfit for any future use.
- Slings shall be permanently marked with the work load limit for each type of hitch and the material used is the construction of the sling. Slings with missing tags or illegible tag information shall not be used.
- The sling manufacturer shall complete and install the sling tag. The replacement of the sling tag is considered a repair, but will not require proof testing and certification.
- The sling tag should be maintained and kept legible during the life cycle of the sling by the sling user.
- Determine that the weight of the load is within the work load limit of the sling.
- Slings shall not be loaded in excess of the work load limits. Consideration should be given to the angle of lift, (sling-to-load angle) which affects the work load limit of the sling. Diameters of pins and load contact edges also may affect the work load limit of the sling.
- Work load limits are based upon: material strength, design factor, type of hitch, angle of loading, the diameter and curvature that the sling contacts, and destruction testing done in laboratory controlled, testing conditions, which will never be duplicated during actual usage. Working Load limits are also based on a moderately dynamic lifting or pulling operation. Instantaneous changes (drops or sudden pick ups) in excess of 10% of the work load constitutes hazardous shock loading and THE WORKING LOAD LIMITS AS STATED, DO NOT APPLY.
- Work load limits for basket hitches and multi-leg bridle slings are based upon symmetrical loading of the individual legs. For non-symmetrical loads an analysis by a qualified person shall be done to avoid overloading any part of the sling system.
- Horizontal angles less than 45 degrees shall not be used, except as recommended and approved by a qualified person.
- The sling shall be securely attached to the load and rigged in a manner to provide for load control. The sling must be rigged to prevent slipping and sliding along the load edge.
- Slings used in any hitch shall have the load balanced to prevent slippage.
- Sling legs should contain or support the load from the sides above the center of gravity when using a basket hitch.
- Synthetic slings shall not be shortened, lengthened, tied in knots, or joined by knotting.
- Twisting and kinking the sling legs shall be avoided.
- Slings used in a choker hitch must be of adequate length for the choke action to occur on the sling body. The choke action should not occur on the fitting or eye, at the base of the fitting or eye, on the load carrying splice or the sling tag.
- Slings used in a choker hitch shall not be forced to tighten around the load by pounding with hammers or other objects. Choker hitches are the least efficient way to use a sling based on work load limit. Two slings should be used to balance the load. One sling used in a choker hitch may result in a situation where an unbalanced load could lead to an accident.
- A sling rigged in a choke hitch (not double wrapped) does not make full contact with the load. Use multiple slings, and wrap the load, when practical to ensure full contact. Do not allow the slings to cross over each other.
- Keep the sling tags and labels away from the load, the hook and the choke action of the sling. Do not place the load carrying splice in a connection point to the load or in the lifting mechanism.

Physical Factors Affecting Sling Strength

MECHANICAL CONSIDERATIONS

WARNING **WARNING** **WARNING** **WARNING**

- Slings shall always be protected from being cut by corners, edges, protrusions or abrasive surfaces by materials of sufficient strength and thickness. Wear protection may not prevent cutting or other forms of sling damage.
- Synthetic products stretch when the load is applied. Stretching can be reduced by using polyester slings, slings with larger work load limits or by selecting a low elongation, High Performance Fiber, Twin-Path® Sling.
- Do not accelerate or de-accelerate the load too fast. The "G" force on a 1000 lbs. load dropped 3 feet could surpass the ultimate strength of the sling. A load picked up too fast can develop a stretch/friction/surface heat that will surpass the melting temperature of the sling.
- Synthetic slings shall not be constricted or bunched between the ears of a clevis or shackle, or in a hook. When synthetic slings are used with a shackle, it is recommended that they be used (rigged) in the bow of the shackle. Placing synthetic slings on the pin should be avoided, unless the sling is protected.
- All hooks, shackles and other fittings must be free of edges and surfaces that could damage the sling.
- All loads applied to the lifting hook should be centered in the "bowl" of the hook to prevent point loading
- Avoid contacting and bending sling fittings over or across the load edge.
- The opening in the fitting should be one of the proper shape and size to ensure that the fitting will seat properly in the lifting hook or other points of attachment.
- The fittings used in a sling system must be of the proper shape, size and diameter to prevent damage to the sling. The "sling-fitting" relationship must be proper to ensure that the sling will seat properly and, in doing so, derive the greatest work load limit. The use of improper fittings and/or materials may result in severe personal injury or death.
- Sling hardware or any object in the sling eye should not be wider than one-third the length of the eye.
- Attached sling hardware may be returned to the manufacturer for possible reuse. It must be tested to twice the work load limit.
- Slings shall not be dragged on the ground, floor or over abrasive surfaces.
- Slings shall not be pulled from under loads when the load is resting on the sling.
- Loads resting on the sling could damage the sling. If feasible, place blocks under the load prior to setting down the load to allow removal of the sling.
- Synthetic slings should never be used to pull an object in a snagged or constrained condition. Synthetic slings are designed to stretch; the recoil caused by any sudden release of a lifting constraint could result in a dangerous projection of the load.
- During the lift, with or without load, personnel shall be alert for possible snagging.
- Do not drop objects on slings or slings equipped with metal fittings.
- Do not run over slings with trucks or other equipment.
- Personnel should stand clear of the load and shall not ride the load.
- Personnel should never be under, or on a live or suspended load.
- Portions of the human body shall not be placed between the sling and load or between the sling and lifting hook.
- Synthetic slings shall not be used as bridles on suspended personnel platforms.

Physical Factors - Rigging Hardware

Synthetic lifting products were developed decades after the rigging hardware which accommodates chain and wire rope slings. These fittings were not designed with synthetic products in mind. Slingmax® and other progressive manufacturers are now providing alternatives which make "geometric", good sense.

FLAT - STRAIGHT

G-Link

FLAT - STRAIGHT

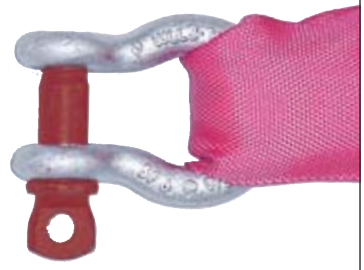
Hook

Shackle

FLAT - STRAIGHT

D-Masterlink

Rounded - Curved



Bunching

Round - Curved

Work load limits can only be obtained when there is a proper spatial and geometric relationship between the synthetic sling and the hardware connection point. When the sling is bunched or edge loaded, it loses strength.

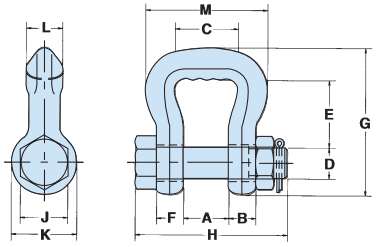
Loss of strength due to distortion can be overcome when the sling is properly supported over a fitting design that is flat and straight. Other desirable characteristics would be proper thickness, diameter, and finish. Synthetic sling saver shackles, D-Master, and G-Links™, support the sling efficiently, and in doing so allow for the greatest sling work load to be attained.

"Synthetic Sling Saver" Shackles

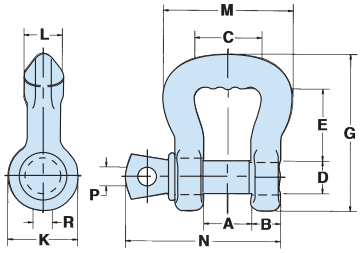
Bolt Type

- Eliminates "bunching" effect caused by traditional shackles
- Fatigue rated to 20,000 cycles at 1-1/2 times the working load limit
- Reduces sling tendency to slide
- Allows better load distribution on internal fibers
- All alloy construction
- Design Factor- 5 /1

Screw Pin



BOLT TYPE		SHACKLE SIZE (INCHES)	SCREW PIN	
WEIGHT (LBS)	ORDER CODE		WEIGHT (LBS)	ORDER CODE
1.4	BTWS 10	1	1.4	SPWS 10
2.4	BTWS 15	1.5	2.2	SPWS 15
4.1	BTWS 20	2	3.8	SPWS 20
8	BTWS 30	3	7.3	SPWS 30
16.9	BTWS 40	4	15.2	SPWS 40
35	BTWS 50	5	30.8	SPWS 50
57.5	BTWS 60	6	52	SPWS 60

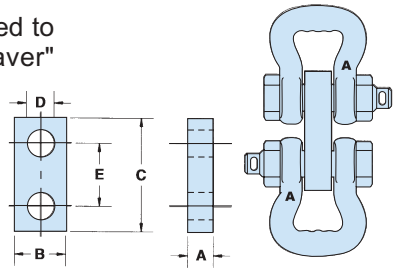


Shackle Size (inches)	Working Load Limit (LBS)	DIMENSIONAL DATA (INCHES)														
		A	B	C	D	E	F	G	H	J	K	L	M	N	P	R
1	6,500	.88	.62	1.38	.75	1.50	.44	3.38	3.68	1.12	1.50	.75	2.69	3.22	.44	1.00
1.5	13,000	1.25	.75	1.75	.88	1.88	.50	4.15	4.25	1.31	1.81	1.00	3.38	4.03	.50	1.19
2	17,500	1.38	.88	2.25	1.00	2.81	.56	5.50	4.72	1.50	2.09	1.12	4.19	4.50	.50	1.44
3	25,000	1.62	1.12	3.25	1.25	3.06	.75	6.34	5.88	1.88	2.62	1.38	5.62	5.59	.62	1.81
4	41,000	2.12	1.38	4.50	1.50	5.25	.88	9.45	7.19	2.25	3.12	1.75	7.50	6.88	.75	2.13
5	70,000	2.50	1.75	5.50	2.00	6.34	1.12	11.50	9.31	3.00	4.19	2.25	9.19	8.66	1.00	2.88
6	100,000	3.00	2.12	6.50	2.25	7.70	1.25	13.75	10.38	3.38	4.75	2.75	11.00	10.22	1.22	3.19

ACCESSORIES

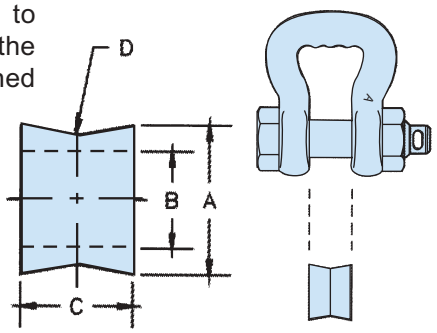
LINK PLATE

The "Link Plate" is designed to connect two "Sling Saver" Shackles together.



Shackle Size (inches)	Order Code	DIMENSIONS (IN.)					Weight Each (LBS)
		A	B	C	D	E	
1	LP10	.75	1.50	3.38	.81	1.88	.80
1.5	LP15	1.00	1.75	4.12	.94	2.25	1.60
2	LP20	1.25	2.00	4.75	1.06	2.62	2.70
3	LP30	1.50	2.50	6.00	1.31	3.37	5.20
4	LP40	1.75	3.00	7.00	1.62	3.75	8.20
5	LP50	2.00	4.00	9.25	2.12	5.00	17.20
6	LP60	3.00	5.00	10.50	2.38	5.75	37.40

The **"SPOOL"** is designed to keep the load centered on the pin, keeping the sling positioned correctly in the shackle bow.



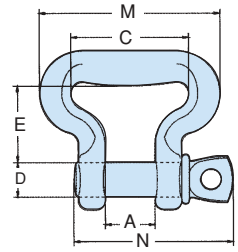
Shackle Size (inches)	Order Code	DIMENSIONS (IN.)				Weight Each (LBS)
		A	B	C	D	
1	CS10	1.25	.81	.75	.19	.33
1.5	CS15	1.50	.94	1.00	.25	.57
2	CS20	1.75	1.05	1.19	.31	.89
3	CS30	2.00	1.31	1.50	.38	1.45
4	CS40	2.50	1.63	1.88	.44	2.20
5	CS50	3.25	2.13	2.25	.50	2.40
6	CS60	3.75	2.38	2.75	.62	4.10

Crosby® Sling Saver Fittings

A variety of sling components are available for synthetic round or flat slings. The “bunching” effect is eliminated and sling efficiencies are increased.

WEB SLING SHACKLE

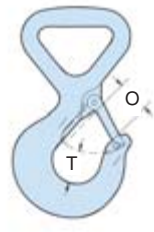
Designed to connect synthetic web and round slings to eyebolts and lifting lugs. Web Sling Shackles feature the same ear spread “A” as conventional, Crosby® shackles.

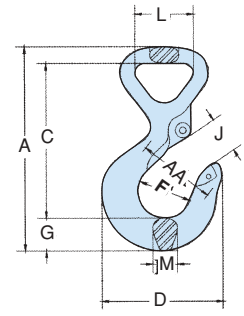


SHACKLE WLL (LBS)	ORDER CODE	FOR WEBBING WIDTH (INCHES)	FOR EYE WIDTH (INCHES)	FOR ROUNDSLING STOCK NUMBER(S)	DIMENSIONAL DATA (INCHES)							
					A	C	D	E	K	M	N	WEIGHT (LBS)
6,500	LWS 650	2	2	RS 30/60	1.06	2.50	.75	1.62	1.22	3.84	3.34	1.2
9,000	LWS 900	3	1.5	RS 90	1.25	2.00	.88	1.50	1.41	3.38	3.97	1.5
12,500	LWS 1250	4	2	RS 120	1.44	2.50	1.00	2.00	1.62	4.22	4.50	2.5
17,000	LWS 1700	6	3	RS 150/180	1.69	3.62	1.13	2.75	1.84	5.64	5.13	4.3

WEB SLING HOOK

Designed to connect to synthetic web and round slings. The eye is designed with a wide beam surface to eliminate bunching effects. Web Sling Hooks are supplied with a latch.

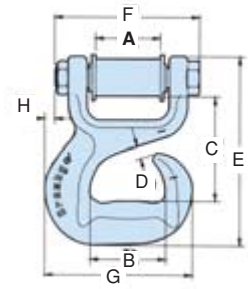


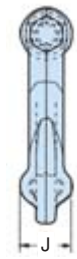


HOOK WLL (LBS)	ORDER CODE	FOR EYE WIDTH (INCHES)	FOR ROUNDSLING STOCK NUMBER(S)	DIMENSIONAL DATA (INCHES)											
				A	C	D	F	G	J	L	M	O	T	AA	WEIGHT (LBS)
3,000	WH3	1	RS 30	5.25	3.98	3.11	1.38	.84	.93	1.50	.63	.91	.98	2.00	1.10
6,000	WH6	2	RS 60	7.11	5.31	3.97	1.63	1.13	1.13	2.50	.85	1.09	1.16	2.00	2.86
10,000	WH10	3	RS 90	9.33	7.06	4.81	2.00	1.44	1.47	3.75	1.13	1.36	1.53	2.50	6.60

SLIDING CHOKER HOOK

The new Crosby® design is specifically for use in choker applications. Designed to reduce friction, abrasion and fraying in the area of choke.





CHOKER HOOK WLL (LBS)	ORDER CODE	FOR WEBBING WIDTH (INCHES)	FOR EYE WIDTH (INCHES)	FOR ROUNDSLING STOCK NUMBER(S)	DIMENSIONAL DATA (INCHES)									
					A	B	C	D	E	F	G	H	J	WEIGHT (LBS)
6,500	SC 650	2	2	RS 30/60	2.13	2.50	3.32	.38	6.03	4.77	4.88	.34	1.50	3.7
9,000	SC 900	3	1.5	RS 90	1.63	3.50	3.67	.38	7.06	4.53	6.51	1.36	1.88	6.1

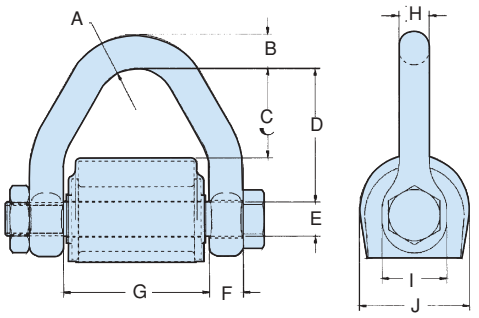
Crosby® Sling Saver Fittings

WEB SLING CONNECTOR

Designed to connect synthetic web slings to conventional hardware.

WARNING

Before use, tighten bolt, then tighten nut.



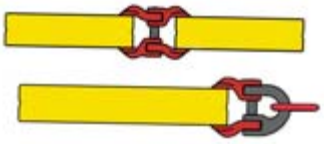
SHACKLE WLL (LBS)	ORDER CODE	WEBBING WIDTH (INCHES)	FOR EYE WIDTH (INCHES)	FOR ROUNDSLING STOCK NUMBER(S)	DIMENSIONAL DATA (INCHES)										
					A	B	C	D	E	F	G	H	I	J	WEIGHT (LBS)
6,500	WSC 650	2	2	RS 30/60	.75	.62	1.63	2.44	.63	.62	2.69	.56	1.19	2.02	1.5
9,000	WSC 900	3	1.5	RS 90	.75	.69	1.10	2.01	.75	.69	2.19	.60	1.38	2.34	1.9
12,500	WSC 1250	4	2	RS 120	.75	.81	1.66	2.56	.88	.75	2.69	.69	1.62	2.46	2.9
17,000	WSC 1700	6	3	RS 150/180	1.00	.94	2.47	3.50	1.00	.88	3.69	.88	1.88	2.84	5.1

HIGH PERFORMANCE SLING CONNECTOR

The High Performance Sling Connector is designed to facilitate the easy and efficient connection of slings to masterlinks and/or hooks for the formation of bridle sling assemblies.

- Increased bow radius for wider sling bearing surface
- Allows for better load distribution of load carrying fibers
- Maximized sling efficiency and work load limits are realized
- All alloy construction

Join two Slings



Connect to other hardware

Stock Number	Work Load Limit 5/1 Design Factor (LBS)	Nominal Sling Body Width (Inches)	Recommended Connection Diameter (Inches)
HPSC 100	10,000	3	1
HPSC 150	15,000	3	1-1/4
HPSC 250	25,000	4	1-1/2
HPSC 300	30,000	4	1-1/2
HPSC 400	40,000	5	1-3/4
HPSC 600	60,000	6	2

Crosby® Sling Saver hardware meets the requirements for minimum stock diameter or thickness and effective contact width shown in the Recommended Standards Specification for Synthetic Polyester Round slings by the Web Sling and Tiedown Association, WSTDA-RS1 (revised 2001)

WEB SLING QUICK DISCONNECTS

Product Features:

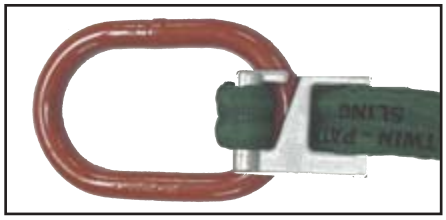
- Quick and Easy
- Sized for 2 and 3 inch web slings
- Ideal for handling loads quickly and efficiently
- Plated for corrosion resistance

WLL (LBS)	ORDER CODE	WEBBING SLOT		OVERALL LENGTH (INCHES)	WEIGHT (LBS)
		WIDTH (INCHES)	LENGTH (INCHES)		
2,500	QD-2	2-1/8	7/8	3-3/8	2
3,750	QD-3	3-1/4	1	3-5/8	5

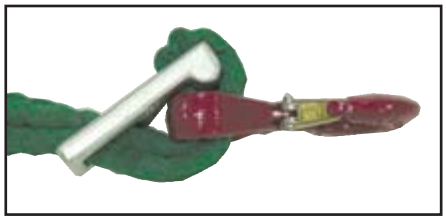
See page 64 for sling order codes.

G-Link™ Sling Connector

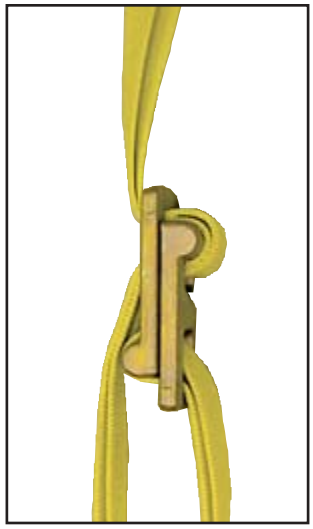
A multi-use connector specifically designed for connecting hardware to web, round or Twin-Path® slings. G-Links™ can be used to connect two slings together, or as a sliding choker hook. G-Links™ can also be used to construct bridles or to shorten sling length.



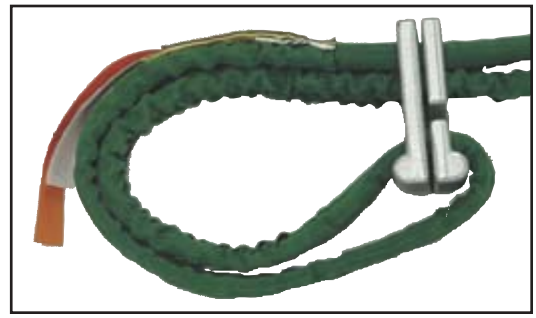
FITTING CONNECTION



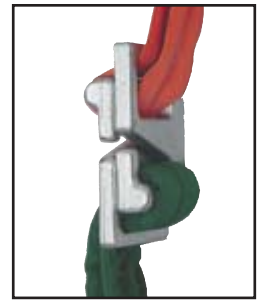
HOOK CONNECTION

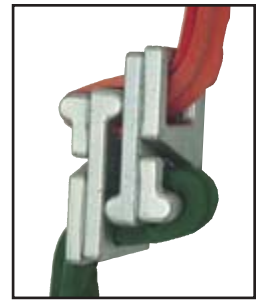


SHORTEN LENGTH



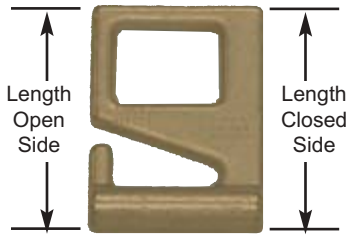
CHOKER SLING

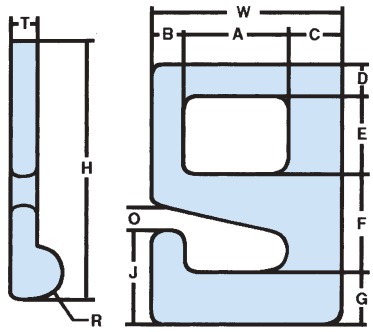




TWO SLING CONNECTION

Inspection Criteria
Open Side Length
must equal
Closed Side Length





Order Code	SINGLE G-LINK W.L.L.		Sling Size (Inches)	G-Link Weight (LBS)
	Vertical	Choker		
SC200L	5,000	4,000	2	2
SC300L	10,000	6,000	3	3-1/2
SC400L	15,000	8,000	4	7
SC500L*	30,000	16,000	5	15
SC600L*	50,000	24,000	6	29

*** Flame Cut Steel**

G-Link™ Dimensional Data

ORDER CODE	A	B	C	D	E	F	G	H	J	O	R	T	W
SC200L	2	5/8	1-1/8	5/8	1-1/2	1-15/16	1	5.00	1-13/16	1/2	.50	.50	3.50
SC300L	3	11/16	1-1/4	11/16	2-1/4	2-7/16	1-1/4	6.62	2-1/2	9/16	.75	.75	5.00
SC400L	4	13/16	1-3/8	13/16	2-1/2	2-7/8	1-3/8	7.50	2-3/4	3/4	.75	1.00	6.00
SC500L	5	1-1/16	2	1-1/16	3	3-3/4	2	10.00	3-3/4	1	1.00	1.25	8.00
SC600L	6	1-1/4	2-1/4	1-1/4	4	5	2-1/4	12.50	4-3/4	1-1/4	1.00	1.50	9.38

CAUTION: Use of G-Links™ on larger stock diameters may lower the design factor.

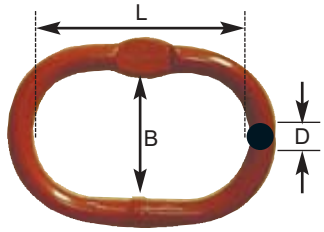
⚠ WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

ALWAYS USE G-LINKS™ OF CORRECT WIDTH AND STRENGTH. TWO G-LINKS™ USED TOGETHER WILL DOUBLE THE STRENGTH OF ONE G-LINK™.

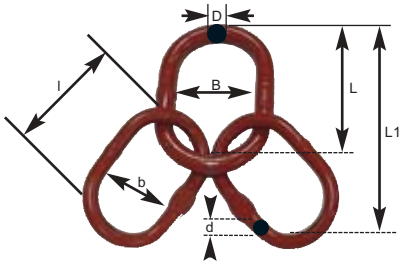
Hardware Specifications

OVERSIZED ALLOY MASTERLINKS



ORDER CODE	TRADE SIZE (IN)	DIMENSIONS (INCHES)			WLL (LBS) 5/1	WEIGHT (LBS)
		DIAMETER "D"	WIDTH "B"	LENGTH "L"		
ML040	7/16	.437	2.29	4.13	3,360	.50
ML050	1/2	.512	2.68	4.83	4,600	.80
ML063	5/8	.630	2.98	5.29	7,200	1.34
ML075	3/4	.750	3.72	6.61	11,360	2.36
ML087	7/8	.875	4.14	7.35	13,840	3.60
ML100	1	1.02	4.30	7.53	21,200	5.20
ML125	1-1/4	1.26	5.29	9.26	29,920	9.60
ML150	1-1/2	1.50	6.30	11.03	42,400	16.20
ML175	1-3/4	1.75	7.35	12.86	57,720	25.10
ML200	2	2.00	8.40	14.70	75,360	38.40
ML225	2-1/4	2.25	9.45	16.54	95,360	54.60
ML250	2-1/2	2.50	10.50	18.38	117,720	74.90
ML275	2-3/4	2.75	11.55	20.21	142,440	99.80
ML300	3	3.00	11.03	18.90	192,680	114.00
ML325	3-1/4	3.25	11.99	20.48	226,120	145.00
ML350	3-1/2	3.50	12.86	22.05	262,240	181.13

ALLOY MASTERLINKS WITH SUBASSEMBLIES



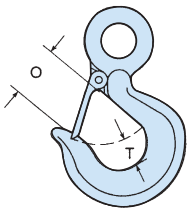
ORDER CODE	WLL (LBS)	DIMENSIONS (INCHES)							WEIGHT (LBS)
	5/1	L1	L	B	D	l	b	d	
MSA050	4,600	8.96	4.83	2.68	0.51	4.13	2.29	0.43	1.8
MSA062	7,200	10.13	5.29	2.97	0.63	4.83	2.68	0.51	2.9
MSA075	11,200	11.90	6.61	3.72	0.75	5.29	2.98	0.63	5
MSA087	13,840	12.64	7.35	4.14	0.88	5.29	2.98	0.63	6.3
MSA100	21,200	14.14	7.53	4.30	1.02	6.61	3.72	0.75	9.9
MSA125	29,920	16.79	9.26	5.29	1.26	7.53	4.30	1.02	19.9
MSA150	42,400	18.56	11.03	6.30	1.50	7.53	4.30	1.02	26.5
MSA175	57,720	22.12	12.86	7.35	1.75	9.26	5.29	1.26	44
MSA200	75,360	25.73	14.70	8.40	2.00	11.03	6.30	1.50	70.8
MSA225	95,360	29.40	16.54	9.45	2.25	12.86	7.35	1.75	104.8
MSA250	117,720	31.24	18.38	10.50	2.50	12.86	7.35	1.75	125.2
MSA275	142,400	34.91	20.21	11.55	2.75	14.70	8.40	2.00	176.5
MSA300	192,680	35.44	18.90	11.03	3.00	16.54	9.45	2.25	223.2
MSA325	226,120	38.85	20.48	11.99	3.25	18.38	10.50	2.50	294.9
MSA350	262,240	42.26	22.05	12.86	3.50	20.21	11.55	2.75	380.6

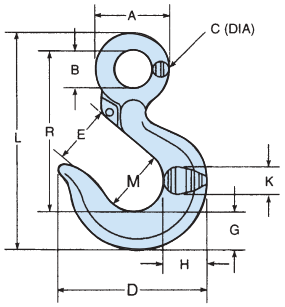
ALLOY EYE HOOKS

Product Features:
- Hot Forged
- Heat Treated
- Tempered
- Stainless Latch

⚠ WARNING

The latch is designed to retain slings under slack conditions. The latch is not intended to support the load.





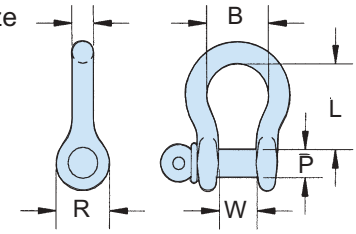
ORDER CODE	WLL (TONS)	DIMENSIONS (INCHES)												WEIGHT (LBS)
		A	B	C	D	E	G	H	K	L	M	R	T	O	
EH 10	1	1.50	.750	.375	3.00	1.00	.750	.875	.562	4.38	1.25	3.12	.812	.875	.63
EH 15	1.5	1.75	.875	.438	3.19	1.08	.844	.938	.625	4.94	1.38	3.66	.938	.938	.85
EH 20	2	2.12	1.12	.500	3.62	1.12	1.00	1.16	.750	5.59	1.44	4.09	1.00	1.00	1.38
EH 30	3	2.50	1.25	.625	4.22	1.25	1.27	1.43	.940	6.57	1.62	4.67	1.19	1.12	1.92
EH 50	5	3.06	1.56	.750	5.06	1.53	1.44	1.62	1.12	7.97	2.00	5.78	1.44	1.38	3.70
EH 70	7	3.88	2.00	.938	6.50	1.97	1.88	2.06	1.38	10.12	2.62	7.31	1.88	1.69	7.28
EH 110	11	4.69	2.44	1.12	7.69	2.25	2.25	2.62	1.90	12.43	3.00	9.03	2.30	2.05	15.40
EH 150	15	5.35	2.83	1.27	8.70	2.48	2.76	2.92	2.17	13.98	3.31	10.04	2.38	2.24	22.20
EH 220	22	6.61	3.50	1.56	11.10	3.35	3.23	3.52	2.60	17.13	3.94	12.48	2.50	2.99	37.60

Hardware Specifications

SCREW PIN ANCHOR SHACKLES

- Work Load Limit, Size (in and mm) Marked on Shackle
- Higher Work Load Limits than Required by Federal Specifications
- Alloy Pins – Heat Treated and Tempered
- Hot Dip Galvanized Per ASTM A153
- Self Colored and Alloy Shackles available
- Built In Distortion Detectors

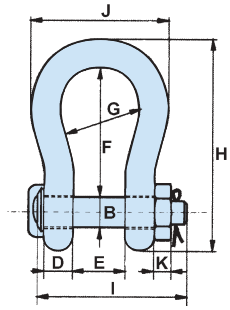
Screw pin anchor shackles meet the performance requirements of Federal Specification RR-C-271D, Type IVA, Grade A, Class 2

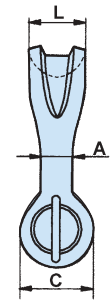


ORDER CODE	NOMINAL SIZE (INCHES)	WORK LOAD (TONS)	DIMENSIONS (INCHES)					APPROXIMATE WEIGHT EACH (LBS)
			P	W	L	B	R	
SPAS316	3/16	1/2	0.25	0.38	0.88	0.62	0.62	.06
SPAS140	1/4	3/4	0.31	0.47	1.12	0.75	0.88	.12
SPAS516	5/16	1	0.38	0.53	1.25	0.81	1.00	.20
SPAS380	3/8	1-1/2	0.44	0.66	1.44	0.94	1.12	.30
SPAS716	7/16	2	0.50	0.75	1.69	1.06	1.25	.50
SPAS120	1/2	3	0.62	0.81	1.88	1.19	1.38	.75
SPAS580	5/8	4-1/2	0.75	1.06	2.38	1.50	1.88	1.3
SPAS340	3/4	6-1/2	0.88	1.25	2.81	1.75	2.12	2.3
SPAS780	7/8	8-1/2	1.00	1.44	3.31	2.00	2.38	3.5
SPAS100	1	10	1.12	1.69	3.75	2.31	2.62	5.0
SPAS118	1-1/8	12	1.25	1.81	4.25	2.62	2.88	7.0
SPAS114	1-1/4	14	1.38	2.03	4.69	2.88	3.25	9.5
SPAS138	1-3/8	17	1.50	2.25	5.25	3.25	3.50	12.5
SPAS112	1-1/2	20	1.62	2.38	5.75	3.38	3.75	17.2
SPAS158	1-5/8	24	1.75	2.62	6.25	4.00	4.12	23.5
SPAS134	1-3/4	30	2.00	2.88	7.00	4.50	4.50	27.7
SPAS200	2	35	2.25	3.25	7.75	5.25	5.25	39.0

WIDE BODY SHACKLES

- Improved sling life when compared to normal shackles
- Pin is non-rotating
- Weld on handle for all sizes
- Metric ton rated with Work Load Limit embossed on body
- Forged alloy steel for all sizes
- All wide body shackles are UT and magnetic particle inspected
- All shackles are proof tested to approximately 150% of WLL
- Lloyd's serialized certificate of test for all wide body shackles
- All sizes quenched and tempered
- 5 to 1 design factor

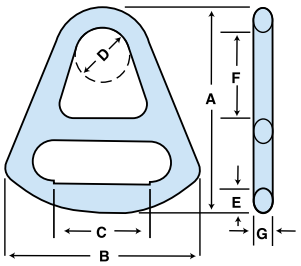




WIDE BODY SHACKLE DIMENSIONAL DATA														
ORDER CODE	WORK LOAD LIMIT (TONS)	BODY DIA. (A)	PIN DIA. (B)	EYE DIA. (C)	EYE WIDTH (D)	INSIDE WIDTH (E)	INSIDE LENGTH (F)	BOW WIDTH (G)	LENGTH (H)	WIDTH (I)	WIDTH (J)	THICKNESS NUT (K)	BEARING SURFACE (L)	WEIGHT EACH (LBS)
	TONS	INCH	INCH	INCH	INCH	INCH	INCH	INCH	INCH	INCH	INCH	INCH	INCH	LBS
WB 55	55	2.38	2.25	4.53	2.16	3.75	9.88	6.31	15.62	12.00	10.62	1.75	4.00	110
WB 75	75	2.75	2.75	5.53	2.75	4.12	11.38	7.31	18.38	14.12	13.62	2.12	4.75	148
WB 125	125	3.38	3.16	6.12	3.34	5.12	14.38	8.69	22.38	16.88	16.12	2.50	6.00	243
WB 150	150	3.75	3.75	7.12	3.53	5.53	15.38	9.88	24.69	17.38	18.00	2.00	6.75	353
WB 200	200	4.31	4.12	7.88	3.94	5.91	18.88	10.88	29.31	18.69	20.00	2.00	8.00	485
WB 250	250	5.00	4.75	9.00	4.31	6.72	21.25	11.88	33.12	20.75	23.62	2.38	9.50	705
WB 300	300	5.31	5.31	9.62	4.78	7.28	23.62	13.75	36.50	23.38	24.38	2.75	10.50	772
WB 400	400	6.31	6.31	11.62	5.72	8.69	22.62	14.56	38.00	27.00	28.25	3.12	12.62	1400
WB 500	500	6.75	7.12	13.00	6.31	9.88	26.75	17.75	43.62	30.00	31.88	3.56	13.38	1770

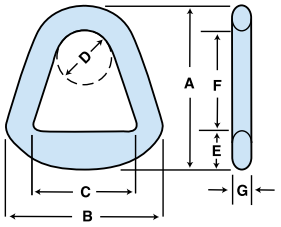
Hardware Specifications

FORGED ALUMINUM CHOKERS & TRIANGLES



ALUMINUM CHOKERS - DIMENSIONS & DATA (INCHES)

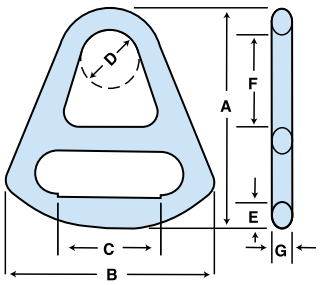
Stock Number	A	B	C	D	E	F	G	Approximate Weight (lbs.)
AC2	6-1/8	5-1/4	2-1/8	1-3/4	15/16	2-3/8	9/16	.75
AC3	7-1/2	7-1/8	3-1/8	2	1-1/8	3-5/16	5/8	1.20
AC4	8-3/4	8-3/4	4-1/8	2-3/8	1-7/16	4	11/16	1.80
AC6	11-5/16	11-3/4	6-1/8	3-1/8	1-3/4	5-1/2	15/16	5.10



ALUMINUM TRIANGLES - DIMENSIONS & DATA (INCHES)

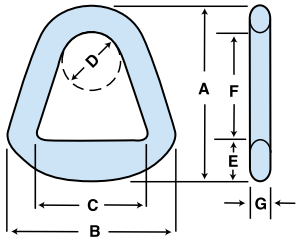
Stock Number	A	B	C	D	E	F	G	Approximate Weight (lbs.)
AT2	4	3-5/8	2-1/4	1-3/4	15/16	2-3/8	9/16	.32
AT3	5-1/4	5	3-1/4	2	1-3/16	3-5/16	5/8	.75
AT4	6-1/4	6-5/8	4-3/8	2-3/8	1-7/16	4	11/16	1.20
AT6	8-5/16	8-7/8	6-3/8	3-1/8	1-3/4	5-1/2	15/16	2.50

FLAME CUT STEEL CHOKERS & TRIANGLES



STEEL CHOKERS - DIMENSIONS & DATA (INCHES)

Stock Number	A	B	C	D	E	F	G	Approximate Weight (lbs.)
SC2	6-3/16	5-1/4	2-1/16	2	13/16	2-3/8	1/2	1.8
SC3	7-3/4	7	3-1/16	2	1-1/8	3-3/8	1/2	2.9
SC4	8-15/16	8-7/8	4-1/8	2-1/2	1-7/16	4-1/8	1/2	4.4
SC5	10-1/8	10-7/16	5-1/8	2-3/4	1-5/8	4-11/16	1/2	6.0
SC6	11-1/2	11-15/16	6-1/8	2-7/8	1-3/4	5-7/16	1/2	7.6
SC8	14-1/8	15-3/4	8-1/8	5	2-3/8	7-1/4	3/4	15.0
SC10	17	17-3/4	10-1/8	5-1/8	3-1/2	8-3/8	3/4	27.8
SC12	19-3/8	22-13/16	12-1/8	5-1/2	4-1/4	9-15/16	3/4	39.0



STEEL TRIANGLES - DIMENSIONS & DATA (INCHES)

Stock Number	A	B	C	D	E	F	G	Approximate Weight (lbs.)
ST2	4-1/8	4-1/8	2-1/4	1-3/4	15/16	2-7/16	1/2	1.0
ST3	5-5/16	5-1/8	3-1/32	2	1-3/16	3-3/8	1/2	1.6
ST4	6-1/2	6-3/4	4-1/2	2	1-5/8	4-1/16	1/2	2.4
ST5	7-7/16	8-1/16	5-9/16	2-1/2	1-15/32	5-1/32	1/2	3.2
ST6	8-9/16	8-5/8	6-1/4	2-3/4	1-11/16	5-3/4	1/2	4.2
ST8	10-7/8	11	8-1/8	3-5/8	1-13/16	7-1/2	3/4	6.4
ST10	12-7/8	13-3/8	10-1/4	4-7/8	2-11/16	8-11/16	3/4	13.9
ST12	13-3/4	16	12-1/4	5-1/8	3-5/8	8-3/8	3/4	18.2

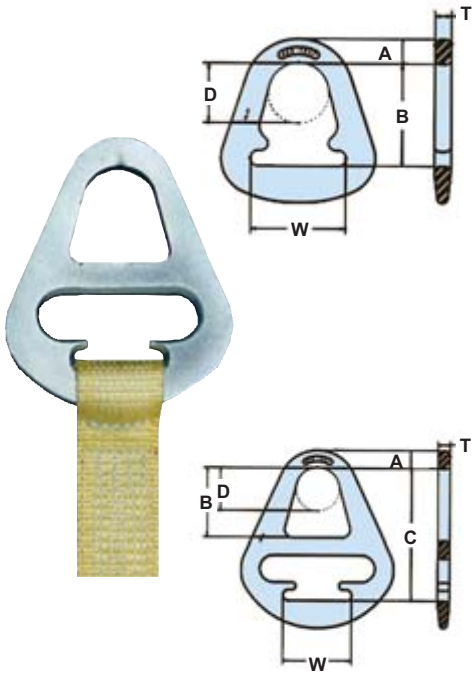
WARNING WARNING WARNING WARNING

Aluminum hardware is severely degraded by alkali, caustic and acidic environments. Salt water also degrades aluminum. Aluminum hardware should never be exposed to chlorine environments or cleaned with chlorine based solutions. Steel hardware is not impervious to these elements. Chemical and environmental compatibility must be assessed and suitability determined by the user. Avoid contact of hardware with load edges.

PLEASE NOTE: All dimensions are nominal and subject to change without notice. If dimensions are critical for your application, please specify and verify. Four ply steel hardware dimensional data available on request.

WEB-TRAP® STEEL HARDWARE

Triangle and Choker fittings are significantly improved as the webbing is positively captured. Web-Trap® fittings are light weight, alloy steel and are coated for corrosion resistance.



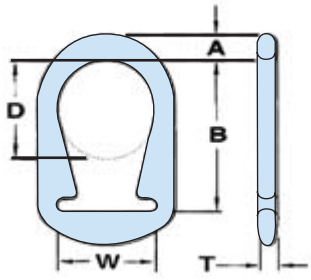
SPECIFICATIONS								
STOCK NO.	WORK LOAD LIMITS (LBS)	DIMENSIONS (INCHES)						WEIGHT (LBS)
		A	B	C	D	T	W	
WC2	8,000	11/16	2-7/16	5-1/8	1-3/4	9/16	2	1.9
WC3	8,600	13/16	3-1/4	6-3/16	2	9/16	3	3.6
WC4	11,500	15/16	3-3/4	6-15/16	2-3/8	9/16	4	5.1
WC6*	16,800	1-1/16	4-3/4	8-7/8	3-1/8	3/4	6	12
WC8*	22,400	1-7/16	5-5/8	10	4	3/4	8	25
WC10*	28,000	1-1/2	7	11-13/16	5	1	10	38
WC12*	33,600	1-3/4	7-3/4	12-13/16	5-1/2	1	12	54

SPECIFICATIONS							
STOCK NO.	WORK LOAD LIMITS (LBS)	DIMENSIONS (INCHES)					WEIGHT (LBS)
		A	B	D	T	W	
WT2	8,000	11/16	2-3/8	1-3/4	9/16	2	1
WT3	8,600	13/16	3-7/16	2	9/16	3	1.9
WT4	11,500	15/16	4	2-3/8	9/16	4	2.8
WT6*	16,800	1-1/16	5-9/16	3-1/8	3/4	6	6.6
WT8*	22,400	1-7/16	6-1/2	4	3/4	8	12
WT10*	28,000	1-1/2	8-1/4	5	1	10	21
WT12*	33,600	1-3/4	8-3/4	5-1/2	1	12	27

*Weldless Flame Cut Steel

UNILINK® COMBINATION HARDWARE

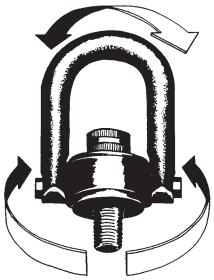
Unilink® hardware fittings function as triangle or choker fittings and facilitate choke action from either end of the sling. Unilink® fittings are carbon steel and are coated for corrosion resistance. These fittings have a rounded profile and feature larger openings for crane hooks. Unilink® fittings also positively capture the webbing.



Patent No. 4,789,193

SPECIFICATIONS							
STOCK NO.	WLL (LBS)	DIMENSIONS (INCHES)					WEIGHT (LBS)
		A	B	D	T	W	
UL2	8,000	11/16	3-11/16	2	9/16	2	1.1
UL3	8,600	7/8	5-1/16	3	5/8	3	2.4
UL4	11,500	3/4	6-3/16	4	5/8	4	4

TOP MOUNTING - CENTER PULL



Lift-It® Engineered Hoist Rings replace outmoded lifting devices and are available in 800 to 100,000 lbs. work load limits. Hoist rings prevent accidents when eyebolts break or lifting hooks disengage. Hoist rings pivot 180° and swivel 360°.

All Lift-It® Hoist Rings are manufactured in the USA and are proof tested to 200% of the work load limit and individually serialized. All alloy hoist rings are magnetic particle inspected. Stainless hoist rings are subjected to liquid penetrant testing per Mil-6868.

Hoist Rings are available in metric sizes and in forged models. Some hoist ring models are offered with two or more bolt lengths. Use the longer bolt lengths with soft materials and the shorter lengths with hard materials.

HOIST RING MATERIAL: Alloy steel, certified heat treatment, corrosion resistant finish.

RANGE OF MOVEMENT: 360° swivel and 180° pivot

INSTALLATION DATA: Tap work piece for hoist ring screw with axis vertical to mounting surface. Work surface should be flat and smooth to provide full 360° flush seating for the bushing flange. Tighten to the recommended torque loading.

⚠ WARNING Some loosening may develop after service in a permanent installation. It is advisable to periodically re-tighten the mounting screw to maintain the specified torque value. Do not use free fit spacers between the bushing flange and mounting surface; this will reduce the work load limit on angularly applied loads. Hoist ring must be free to swivel 360° and pivot 180° at all times.

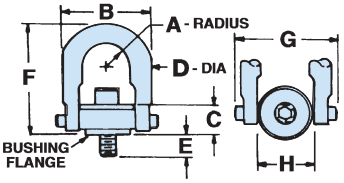
OTHER AVAILABLE MODELS


FORGED SWIVEL

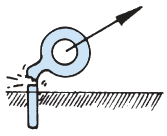

LIFTING RING


FORGED SIDE LOAD


PIVOT LIFT PLATE

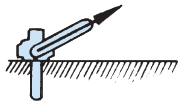


EXCESSIVE SIDE LOADS CAN CAUSE BOLT FAILURE.



The results of heavy side loads applied to a conventional eyebolt.

The same load applied to an appropriately rated, Engineered Hoist Ring is translated into a normal tension load at the screw axis. Do not exceed the work load limit of the hoist ring.



HOIST RING SPECIFICATIONS - INCHES

Stock No.	Work Load Limit (lbs.)	Thread Size	A	B	C	D	E	F	G	H	Torque ft. / lbs.	Weight (lbs.)
46102	800	5/16-18	7/16	1-5/8	45/64	3/8	9/32	2-5/8	1.00	.75	7	.3
46104	800	5/16-18	7/16	1-5/8	45/64	3/8	17/32	2-5/8	1.00	.75	7	.3
46106	1,000	3/8-16	7/16	1-5/8	45/64	3/8	17/32	2-5/8	1.00	.75	12	.3
46602	2,500	1/2-13	11/16	2-7/16	59/64	1/2	1-1/16	3-3/4	1.49	1.25	28	1
46008	2,500	1/2-13	7/8	3-1/4	1-7/32	3/4	3/4	4-3/4	1.99	1.50	28	2.6
46010	2,500	1/2-13	7/8	3-1/4	1-7/32	3/4	1	4-3/4	1.99	1.50	28	2.6
46012	2,500	1/2-13	7/8	3-1/4	1-7/32	3/4	1-1/4	4-3/4	1.99	1.50	28	2.6
46002	4,000	5/8-11	7/8	3-1/4	1-7/32	3/4	3/4	4-3/4	1.99	1.50	60	2.6
46004	4,000	5/8-11	7/8	3-1/4	1-7/32	3/4	1	4-3/4	1.99	1.50	60	2.6
46006	4,000	5/8-11	7/8	3-1/4	1-7/32	3/4	1-1/4	4-3/4	1.99	1.50	60	2.6
46014	5,000	3/4-10	7/8	3-1/4	1-7/32	3/4	1	4-3/4	1.99	1.50	100	3
46018	5,000	3/4-10	7/8	3-1/4	1-7/32	3/4	1-1/2	4-3/4	1.99	1.50	100	3
46204	7,000	3/4-10	1-13/32	4-13/16	1-11/16	1	1	6-1/2	3.00	2.37	100	7
46206	7,000	3/4-10	1-13/32	4-13/16	1-11/16	1	1-1/2	6-1/2	3.00	2.37	100	7
46202	8,000	7/8-9	1-13/32	4-13/16	1-11/16	1	1	6-1/2	3.00	2.37	160	7
46210	10,000	1-8	1-13/32	4-15/16	1-11/16	1	1-1/4	6-1/2	3.00	2.37	230	7.5
46212	10,000	1-8	1-13/32	4-15/16	1-11/16	1	1-1/2	6-1/2	3.00	2.37	230	7.5
46214	10,000	1-8	1-13/32	4-15/16	1-11/16	1	2-1/4	6-1/2	3.00	2.37	230	7.5
46802	15,000	1-1/4-7	1-3/4	6	2-7/64	1-1/4	1-57/64	8-3/4	3.76	3.20	470	14
46404	24,000	1-1/2-6	2-1/4	8	2-13/16	1-3/4	2-3/4	12-15/32	4.87	4.20	800	34
46400	30,000	2-4 1/2	2-1/4	8	2-13/16	1-3/4	3	12-15/32	4.87	4.20	800	36
47002	50,000	2-1/2-8	3	10-1/2	4-3/32	2-1/4	4	16-7/8	6.52	5.75	2100	88
47006	50,000	2-1/2-4	3	10-1/2	4-3/32	2-1/4	4	16-7/8	6.52	5.75	2100	88
47200	75,000	3-4	3-3/4	13	5-17/64	2-3/4	5-1/4	19-1/2	8.10	7.25	4300	166
47402	100,000	3 1/2-4	4	14	6-1/16	3-1/4	7	22-3/32	8.60	7.73	5100	265

All dimensions are approximate - variations do not affect use or design factor

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

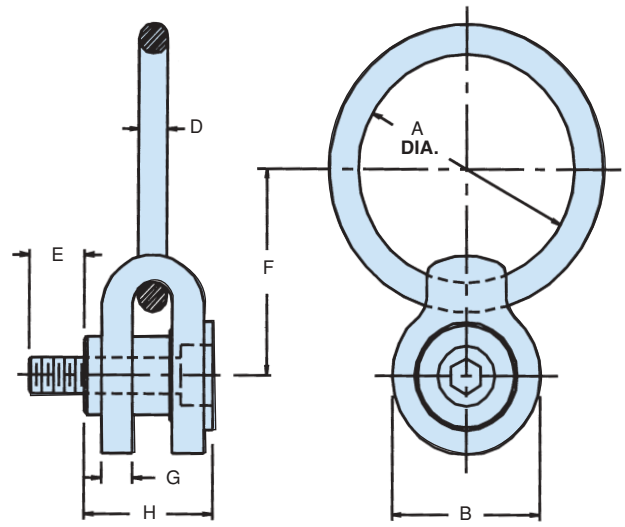
Read and understand the instruction sheet that accompanies each hoist ring, prior to use. Use by untrained personnel is hazardous. Do not use damaged or defective hoist rings. Do Not Overload. Do not allow the sling tension to exceed the hoist ring work load limit. See pages 7 and 8 for the effects of angle and tension on eye bolts. Ensure that the thread length is fully engaged and torqued, per specification. Re-torquing may be required.

SIDE LOAD HOIST RINGS

Lift-It® Side Load Hoist Rings are extremely versatile for use with loads that need to be rotated. Side Load Rings work equally as well for top lift applications.

All Side Load Rings are magnetic particle inspected, proof tested to twice work load and feature a unique serial number.

The standard finish is military specification, black oxide. Cadmium plated rings and metric size, side load rings are available. Stainless steel rings are also readily available.



SIDE LOAD HOIST RING SPECIFICATIONS (INCHES)

STOCK NO	WLL (LBS)	THREAD SIZE	A	B	C	D	E	F	G	TORQUE FT/LBS	WT. (LBS)
43510	650	5/16-18	2	1-1/2	1-7/16	3/8	5/8	1-15/16	3/8	3.5	.5
43515	800	3/8-16	2	1-1/2	1-7/16	3/8	3/4	1-15/16	3/8	4.5	.5
43520	1,800	1/2-13	3	2-3/8	2-1/4	5/8	1	3	1/2	15	3.5
43525	2,500	5/8-11	3	2-3/8	2-1/4	5/8	1-1/4	3	1/2	25	3.5
43530	4,000	3/4-10	4	3-3/4	3-3/8	1	1-1/2	4-1/2	3/4	50	11.5
43535	5,500	7/8-9	4	3-3/4	3-3/8	1	2	4-1/2	3/4	80	11.5
43540	7,000	1-8	4	3-3/4	3-3/8	1	2	4-1/2	3/4	90	11.5
43545	14,000	1 1/4-7	6	4-5/8	4-5/8	1-3/8	2	6-1/4	1	150	28
43547	14,000	1 1/4-8	6	4-5/8	4-5/8	1-3/8	2	6-1/4	1	150	28
43550	17,000	1 1/2-6	6	4-5/8	4-5/8	1-3/8	2-1/2	6-1/4	1	250	31.5
43552	17,000	1 1/2-8	6	4-5/8	4-5/8	1-3/8	2-1/2	6-1/4	1	250	31.5
43555	29,000	2-4-1/2	5-1/4 X 10-1/2	4-5/8	6-5/8	1-1/2	3-1/8	11-1/8	1	300	42
43557	29,000	2-8	5-1/4 X 10-1/2	4-5/8	6-5/8	1-1/2	3-1/8	11-1/8	1	300	42

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

Read and understand the instruction sheet that accompanies each hoist ring, prior to use. Use by untrained personnel is hazardous. Do not use damaged or defective hoist rings. Do Not Overload. Do not allow the sling tension to exceed the hoist ring work load limit. See pages 7 and 8 for the effects of angle and tension on eye bolts. Ensure that the thread length is fully engaged and torqued, per specification. Re-torquing may be required.

Lifting Slings

ENDLESS	EYE & EYE		REVERSED EYE		CARGO		CHOKER HARDWARE
	FLAT	HALF TWIST	STD.	FLAT	WIDE BODY	ATTACHED EYE	
							
EN TYPE V	EE TYPE III	EE TYPE IV	RE TYPE VI	RE TYPE VII	WBC	AEC	ACH SCH TYPE I

ENDLESS
(page 51)

A versatile sling design as hook and load contact points can be rotated. For use in choker, vertical and basket hitches.

EYE & EYE
(page 52)

FLAT EYE (TYPE III): Eyes are formed as the material is folded back and sewn flat to the sling body. A general purpose sling that can be used in choker, vertical or basket hitches.

HALF TWIST EYE (TYPE IV): Eyes are formed by turning the webbing 180° before sewing the sling body. The half twist eye provides for improved choking, when compared to the flat eye. The Half Twist Eye can be used in choker, vertical or basket hitches.

REVERSED EYE
(page 53)

STANDARD (TYPE VI): The standard model will out-perform other sling types. Both sides of the sling eyes and body are covered and protected by Cordura® wear pads.

FLAT (TYPE VII): A protective wear pad is attached to the body and sling eyes. The fabric is turned 180° to form a "flat" eye, which lies in the same plane as the body of the sling.

CARGO SLINGS
(page 54)

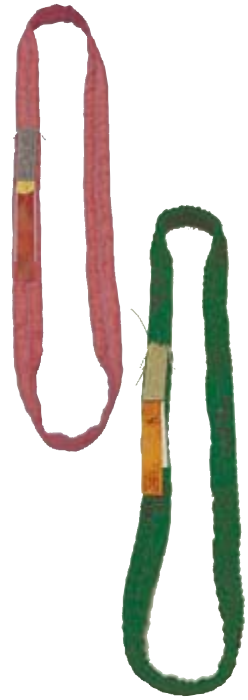
WIDE BODY CARGO: Wide body cargo slings basket the load, providing load stability. The load is distributed over a wide surface area, protecting load surfaces from crushing and damage. For use in basket hitches only.

ATTACHED EYE CARGO: A lighter duty, cargo sling, which is more economical than the wide body cargo model. This design features narrow eye widths to fit smaller hoist hooks. For use in basket hitches only.

CHOKER HARDWARE
(page 55)

Steel (SCH) or forged aluminum choker hardware (ACH) provides for efficient choke hitching. Choker hardware slings can also be used in vertical and basket hitches.

Lifting Slings

BASKET HARDWARE	BRIDLE SLINGS SINGLE & MULTI-LEG	WIRE MESH SLINGS	ROUND SLINGS	TWIN-PATH® SLINGS
				
ABH SBH TYPE II	SLB / MLB	WM1 / WM2	RS	TP / TUF TPXKS / TUFXKS

BASKET HARDWARE
(page 56)

Steel (SBH) or forged aluminum basket hardware (ABH) is attached to the sling. For use in vertical and basket hitches.

BRIDLE SLINGS SINGLE & MULTI-LEG
(pages 57-59)

Combinations of links, hooks and fabric eyes provide for the efficient handling of loads with fixed lifting points.

WIRE MESH SLINGS
(pages 101-102)

Basket or choker fittings are attached to welded edge mesh fabric.

ROUND SLINGS
(pages 95-100)

Single Path Round Slings feature a multiple wrap polyester yarn construction that is soft and flexible. Endless in configuration, Round Slings are ideal for choking and can be used in vertical and basket hitches.

TWIN-PATH® SLINGS
(pages 81-93)

Endless in configuration, patented Twin-Path® slings feature conventional polyester or K-Spec® high performance load carrying fibers, which are protected by Covermax® covers.

Endless

A very versatile sling design as hook and load contact points can be rotated. For use in choker, vertical and basket hitches. Hook contact points can be tapered and reinforced on request.

Width (inches)	Stock Number	Optional End Taper		WORK LOAD LIMIT (LBS)					Sling Weight (LBS)		Minimum Sling Length (FT)
				Choker	Vertical	Basket Hitches					
		Width	Length			90°	60°	45°	Base 8 FT	Adder Per Foot	
1"	EN1-601	-	-	1,900	2,400	4,800	4,150	3,390	.56	.06	2
1"	EN1-901	-	-	2,500	3,200	6,400	5,540	4,520	.95	.11	2
1"	EN2-601	-	-	3,800	4,800	9,600	8,310	6,780	1.15	.13	2
1"	EN2-901	-	-	5,000	6,400	12,800	11,080	9,050	1.96	.22	2
1"	EN3-901	-	-	7,600	9,600	19,200	16,620	13,570	2.97	.33	3
1-1/2"	EN1-915	-	-	3,700	4,650	9,300	8,050	6,570	1.58	.09	2
1-1/2"	EN2-915	-	-	7,400	9,300	18,600	16,100	13,150	3.26	.18	2
1-1/2"	EN3-915	-	-	11,000	13,950	27,900	24,160	19,720	4.93	.55	3
2"	EN1-602	1"	12"	3,800	4,800	9,600	8,310	6,780	1.36	.16	2
2"	EN1-902	1"	12"	5,000	6,400	12,800	11,080	9,050	1.90	.22	2
2"	EN2-602	1"	12"	7,600	9,600	19,200	16,620	13,570	2.80	.32	2
2"	EN2-902	1"	12"	10,000	12,500	25,000	21,650	17,670	3.92	.44	2
2"	EN3-902	-	-	14,000	17,500	35,000	30,310	24,740	5.94	.67	3
2"	EN4-902	-	-	18,000	23,500	47,000	40,700	33,230	7.95	.89	4
3"	EN1-603	1-1/2"	12"	5,700	7,200	14,400	12,470	10,180	2.38	.28	2
3"	EN1-903	1-1/2"	12"	7,600	9,600	19,200	16,620	13,570	2.99	.35	2
3"	EN2-603	1-1/2"	12"	10,000	12,500	25,000	21,650	17,670	4.90	.56	2
3"	EN2-903	1-1/2"	12"	14,000	17,500	35,000	30,310	24,740	6.16	.70	2
3"	EN3-903	-	-	21,000	26,500	53,000	45,890	37,470	9.33	1.05	3
3"	EN4-903	-	-	28,000	35,000	70,000	60,620	49,490	12.50	1.40	4
4"	EN1-604	1-1/2"	12"	7,600	9,600	19,200	16,620	13,570	2.92	.34	3
4"	EN1-904	1-1/2"	12"	10,000	12,500	25,000	21,650	17,670	3.74	.44	3
4"	EN2-604	2"	18"	14,000	17,500	35,000	30,310	24,740	6.02	.68	3
4"	EN2-904	2"	18"	18,000	23,500	47,000	40,700	33,230	7.70	.88	3
4"	EN3-904	-	-	28,000	35,000	70,000	60,620	49,490	11.66	1.32	4
4"	EN4-904	-	-	36,000	46,000	92,000	79,670	65,040	15.62	1.76	4
5"	EN1-905	1-3/4"	18"	12,800	16,000	32,000	27,710	22,620	4.56	.53	3
5"	EN2-905	2-1/2"	18"	22,000	27,500	55,000	47,630	38,880	9.38	1.07	4
5"	EN3-905	-	-	33,500	42,000	84,000	72,740	59,380	14.20	1.60	5
5"	EN4-905	-	-	44,800	56,000	112,000	96,900	79,180	19.03	2.14	5
6"	EN1-606	2"	18"	11,500	14,400	28,800	24,940	20,360	4.13	.48	3
6"	EN1-906	2"	18"	15,300	19,200	38,400	33,250	27,140	5.51	.64	3
6"	EN2-606	3"	24"	19,500	24,480	48,960	42,300	34,610	8.51	.97	3
6"	EN2-906	3"	24"	26,000	32,500	65,000	56,290	45,950	11.34	1.29	3
6"	EN3-906	-	-	39,000	48,900	97,800	84,690	69,140	17.17	1.94	5
6"	EN4-906	-	-	52,000	65,000	130,000	112,580	91,910	23.00	2.59	5
8"	EN1-908	3"	18"	20,000	25,600	51,200	44,330	36,190	7.62	.90	3
8"	EN2-908	4"	24"	32,700	40,960	81,920	70,940	57,910	15.68	1.79	4
8"	EN3-908	-	-	49,000	61,000	122,000	105,650	86,250	23.74	2.69	5
8"	EN4-908	-	-	65,500	81,900	163,800	158,230	141,850	31.81	3.58	6
10"	EN1-910	3-1/2"	24"	25,600	32,000	64,000	55,420	45,240	9.96	1.17	3
10"	EN2-910	5"	30"	38,400	48,000	96,000	83,130	67,870	20.51	2.34	4
10"	EN3-910	-	-	57,600	72,000	144,000	124,700	101,800	31.06	3.52	5
10"	EN4-910	-	-	76,800	96,000	192,000	166,270	135,740	41.61	4.69	6
12"	EN1-912	4"	30"	30,720	38,000	76,000	65,810	53,730	12.24	1.44	3
12"	EN2-912	6"	36"	43,000	53,000	106,000	91,790	74,940	25.20	2.88	5
12"	EN3-912	-	-	64,000	80,000	160,000	138,560	113,120	38.16	4.32	6
12"	EN4-912	-	-	86,000	107,000	214,000	185,324	151,298	51.12	5.76	8

Available in either nylon or polyester webbing.

Polyester webbing is available in the (9) heavy web class only.

Polyester Monster Edge is automatically provided for sling widths: 1 , 2 , 3 and 4 inch

For Polyester Monster Edge® webbing add the letters PME to the Stock Number. (Example: EN2-904PME)

Polyesters Slings wider than 4 inch are supplied with regular polyester webbing

For four ply slings wider than 6 inches, consider Twin-Path® Extra Slings with High Performance Fiber.

⚠ WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

Eye & Eye

EE (Flat) TYPE III

EE (Half Twist) TYPE IV

A versatile sling for use in choker, vertical and basket hitches. Flat Eye Slings (Type III) are easier to remove from under the load after it is in place, when compared to half twist eyes. The load should never be placed or left resting on the sling. Type III eyes are furnished unless HT (Type IV) eyes are specified.

The Half Twist (Type IV) Eye is recommended when slings are to be used in a choker hitch. The half twist eye performs equally as well in vertical or basket hitches. For Half Twist Eyes specify 'HT' after the Stock Number. (Example: EE1-903 HT)

Tapered eyes are furnished on slings over 2 inches wide to provide for a proper relationship between the sling and the lifting hook. Untapered eyes are available on request.

EE (Flat) & Tapered

EE (Half Twist) &Tapered

Width (inches)	Stock Number	Eye Dimensions (inches)		WORK LOAD LIMIT (LBS)					Sling Weight (LBS)		Minimum Sling Length (FT)
				Choker	Vertical	Basket Hitches					
						90°	60°	45°			
		Width	Length						Base 8 FT	Adder Per Foot	
1"	EE1-601	1"	9"	900	1,200	2,400	2,070	1,690	.40	.033	3
1"	EE1-901	1"	9"	1,200	1,600	3,200	2,770	2,260	.67	.056	3
1"	EE2-601	1"	9"	1,900	2,400	4,800	4,150	3,390	.59	.066	3
1"	EE2-901	1"	9"	2,500	3,200	6,400	5,540	4,520	1.00	.112	3
1"	EE4-601	1"	12"	3,800	4,800	9,600	8,310	6,780	1.22	.132	4
1"	EE4-901	1"	12"	5,000	6,400	12,800	11,080	9,050	2.07	.220	4
1-1/2"	EE1-915	1-1/2"	9"	1,800	2,300	4,600	3,980	3,250	1.11	.093	3
1-1/2"	EE2-915	1-1/2"	9"	3,600	4,600	9,200	7,960	6,500	1.67	.186	3
1-1/2"	EE4-915	1-1/2"	12"	7,200	9,200	18,400	15,930	13,000	3.44	.372	4
2"	EE1-602	2"	9"	1,900	2,400	4,800	4,150	3,390	.96	.080	4
2"	EE1-902	2"	9"	2,500	3,200	6,400	5,540	4,520	1.34	.112	4
2"	EE2-602	2"	9"	3,800	4,800	9,600	8,310	6,780	1.44	.160	3
2"	EE2-902	2"	9"	5,000	6,400	12,800	11,080	9,050	2.02	.220	3
2"	EE4-602	2"	12"	7,000	8,860	17,720	15,340	12,530	2.96	.320	4
2"	EE4-902	2"	12"	9,000	11,400	22,800	19,740	16,120	4.14	.440	4
3"	EE1-603	1-1/2"	12"	2,700	3,600	7,200	6,230	5,090	1.82	.140	4
3"	EE1-903	1-1/2"	12"	3,800	4,800	9,600	8,310	6,780	2.29	.180	4
3"	EE2-603	1-1/2"	12"	5,300	6,600	13,200	11,430	9,330	2.52	.280	4
3"	EE2-903	1-1/2"	12"	7,000	8,860	17,720	15,340	12,530	3.24	.350	4
3"	EE4-603	1-1/2"	18"	9,000	11,400	22,800	19,740	16,120	5.18	.560	6
3"	EE4-903	1-1/2"	18"	13,000	17,000	34,000	29,440	24,040	6.60	.700	6
4"	EE1-604	1-1/2"	12"	3,800	4,800	9,600	8,310	6,780	2.24	.172	4
4"	EE1-904	1-1/2"	12"	5,000	6,400	12,800	11,080	9,050	2.86	.220	4
4"	EE2-604	1-1/2"	12"	7,000	8,860	17,720	15,340	12,530	3.10	.340	4
4"	EE2-904	1-1/2"	12"	9,000	11,400	22,800	19,740	16,120	3.96	.440	4
4"	EE4-604	2"	18"	12,000	15,000	30,000	25,980	21,210	6.54	.690	6
4"	EE4-904	2"	18"	18,000	22,800	45,600	39,480	32,240	8.36	.880	6
5"	EE1-905	1-3/4"	12"	6,000	8,000	16,000	13,850	11,310	3.48	.268	5
5"	EE2-905	1-3/4"	12"	11,400	14,250	28,500	24,680	20,150	4.82	.540	5
5"	EE4-905	2-1/2"	18"	19,000	24,000	48,000	41,560	33,940	10.18	1.070	6
6"	EE1-606	2"	16"	5,700	7,200	14,400	12,470	10,180	3.16	.243	5
6"	EE1-906	2"	16"	7,600	9,600	19,200	16,620	13,570	4.21	.324	5
6"	EE2-606	2"	16"	9,700	12,240	24,480	21,200	17,310	4.37	.490	5
6"	EE2-906	2"	16"	13,000	17,000	34,000	29,440	24,040	5.83	.650	5
6"	EE4-606	3"	18"	18,000	22,800	45,600	39,490	32,240	9.23	.970	6
6"	EE4-906	3"	18"	24,000	30,000	60,000	51,960	42,420	12.31	1.300	6
8"	EE1-908	3"	18"	10,250	12,800	25,600	22,170	18,100	6.27	.448	6
8"	EE2-908	3"	18"	18,000	22,800	45,600	39,490	32,240	8.51	.900	6
8"	EE4-908	4"	24"	32,000	40,000	80,000	69,280	56,560	17.47	1.790	8
10"	EE1-910	3-1/2"	24"	12,000	15,000	30,000	25,980	21,210	8.20	.586	8
10"	EE2-910	3-1/2"	24"	19,000	24,000	48,000	41,560	33,940	11.13	1.170	8
10"	EE4-910	5"	30"	36,000	45,000	90,000	77,940	63,630	22.85	2.340	10
12"	EE1-912	4"	30"	15,000	19,000	38,000	32,910	26,860	10.08	.720	10
12"	EE2-912	4"	30"	24,000	30,000	60,000	51,960	42,420	13.68	1.440	10
12"	EE4-912	6"	36"	43,000	53,000	106,000	91,790	74,940	28.80	2.880	12

Available in either nylon or polyester webbing.
Polyester webbing is available in the (9) heavy web class only.
Polyester Monster Edge is automatically provided for sling widths: 1 , 2 , 3 and 4 inch
For Polyester Monster Edge® webbing add the letters PME to the Stock Number. (Example: EE2-904PME)
Polyesters Slings wider than 4 inch are supplied with regular polyester webbing
For four ply slings wider than 6 inches, consider Twin-Path® Extra Slings with High Performance Fiber.

Reversed Eye

RE (Standard) Type VI

REF (Flat) Type VII

Protective Cordura® wear pads cover both sides of the sling body and eyes. The Reversed Eye (RE-Standard-Type VI) has eyes that are 90° to the sling body; this eye type results in comparatively advantageous choke hitches, when compared to the flat (type VII) eye.

The "REF" (Flat Type VII) body is turned 180°, forming an eye, which is in the same plane as the sling body. The flat eye design permits easier removal of the sling from under the load, once it has been set. The load should be blocked up and never rested on the sling.

Both Type VI and Type VII Reversed Eye Slings can be used in choker, vertical or basket hitches.

Width (inches)	Stock Number	Eye Dimensions (inches)		WORK LOAD LIMIT (LBS)					Sling Weight (LBS)		Minimum Sling Length (FT)
				Choker	Vertical	Basket Hitches					
						90° 	60° 	45° 			
		Width	Length						Base 8 FT	Adder Per Foot	
2"	**1-601	1"	9"	1,900	2,400	4,800	4,150	3,390	1.40	.16	3
2"	**1-901	1"	9"	2,500	3,200	6,400	5,540	4,520	1.79	.21	3
2"	**2-601	1"	12"	3,800	4,800	9,600	8,310	6,780	1.99	.23	4
2"	**2-901	1"	12"	5,000	6,400	12,800	11,080	9,050	2.80	.32	4
3"	**1-915	1-1/2"	12"	3,700	4,650	9,300	8,050	6,570	2.90	.23	4
3"	**2-915	1-1/2"	12"	7,400	9,300	18,600	16,100	13,150	4.58	.32	4
3-1/2"	**1-675	1-3/4"	12"	3,200	4,000	8,000	6,930	5,650	2.80	.32	4
3-1/2"	**2-675	1-3/4"	12"	6,000	7,500	15,000	12,990	10,600	4.24	.48	4
4"	**1-602	1"	12"	3,800	4,800	9,600	8,310	6,780	2.68	.34	4
4"	**1-902	1"	12"	5,000	6,400	12,800	11,080	9,050	3.22	.40	4
4"	**2-602	2"	12"	7,600	9,600	19,200	16,630	13,574	4.48	.50	4
4"	**2-902	2"	18"	9,000	11,400	22,800	19,740	16,120	5.60	.62	6
4"	**3-902	2"	18"	13,000	17,000	34,000	29,440	24,040	7.62	.85	6
4"	**4-902	2"	18"	17,000	21,500	43,000	37,240	30,400	9.63	1.07	6
6"	**1-603	1-1/2"	12"	5,700	7,200	14,400	12,470	10,180	4.54	.56	5
6"	**1-903	1-1/2"	12"	7,600	9,600	19,200	16,630	13,570	5.15	.63	5
6"	**2-603	1-1/2"	18"	9,000	11,400	22,800	19,740	16,120	7.06	.84	6
6"	**2-903	1-1/2"	18"	13,000	17,000	34,000	29,440	24,040	8.32	.98	6
6"	**3-603	3"	24"	16,000	20,000	40,000	34,640	28,280	10.40	1.12	8
6"	**3-903	3"	24"	20,000	25,000	50,000	43,300	35,300	12.31	1.33	8
6"	**4-903	3"	28"	27,000	34,000	68,000	58,890	48,080	15.48	1.68	11

**** Use RE prefix for Standard Type VI** **** Use REF prefix for Flat Type VII**

Available in either nylon or polyester webbing.

Polyester webbing is available in the (9) heavy web class only.

Polyester Monster Edge is automatically provided for sling widths: 1 , 2 , 3 and 4 inch

For Polyester Monster Edge® webbing add the letters PME to the Stock Number. (Example: RE2-902PME)

Polyesters Slings wider than 4 inch are supplied with regular polyester webbing

For four ply slings wider than 6 inches, consider Twin-Path® Extra Slings with High Performance Fiber.

⚠ WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

Wide Body Cargo

Wide Body Cargo slings are designed for use in stabilizing loads over a wide surface area. The load is distributed and delicate, soft surfaces are protected.

⚠ WARNING For use in a basket hitch configuration only!

Width (inches)	Stock No.	Eye Dimensions (inches)		WORK LOAD LIMITS (LBS) Basket Hitches			Sling Weight (LBS)		Minimum Sling Length (FT)
		Width	Length	90°	60°	45°	Base 8 FT	Adder / FT	
6"	WBC2-603	1-1/2"	12"	14,000	12,120	9,900	3.40	.37	4
6"	WBC2-903	1-1/2"	12"	19,000	16,450	13,430	4.12	.44	4
6"	WBC4-603	1-1/2"	15"	26,000	22,510	18,380	6.06	.65	5
6"	WBC4-903	1-1/2"	15"	35,000	30,310	24,740	7.54	.79	5
8"	WBC2-604	1-1/2"	12"	19,000	16,450	13,430	4.16	.43	4
8"	WBC2-904	1-1/2"	12"	25,000	21,650	17,680	5.02	.53	4
8"	WBC4-604	2"	15"	34,500	29,870	24,390	7.60	.78	5
8"	WBC4-904	2"	15"	46,000	39,830	32,520	9.42	.97	5
10"	WBC2-905	1-3/4"	15"	31,000	26,840	21,920	6.45	.69	5
10"	WBC4-905	2-1/2"	18"	57,000	49,360	40,300	11.81	1.22	6
12"	WBC2-606	2"	16"	26,000	22,510	18,380	6.00	.64	5
12"	WBC2-906	2"	16"	37,000	32,040	26,160	7.46	.80	5
12"	WBC4-606	3"	20"	49,000	42,430	34,640	10.86	1.14	7
12"	WBC4-906	3"	20"	68,000	58,880	48,070	13.94	1.45	7
16"	WBC2-908	3"	20"	50,000	43,300	35,350	10.75	1.06	7
16"	WBC4-908	4"	24"	85,000	73,610	60,100	19.71	1.95	8
20"	WBC2-910	3-1/2"	24"	57,000	49,362	40,299	14.90	1.34	8
20"	WBC4-910	5"	30"	96,000	83,130	67,870	26.46	2.41	10
24"	WBC2-912	4"	30"	60,000	51,960	42,420	17.74	1.61	10
24"	WBC4-912	6"	36"	107,000	92,660	75,650	32.72	3.05	12

Attached Eye Cargo

The Attached Eye Cargo sling provides the same load control advantages as the Wide Body Cargo model. The special eye construction allows the Attached Eye Cargo to be used with small hoist hooks. The combination of small eye widths and large sling widths provide for the efficient handling of light loads.

⚠ WARNING For use in basket hitch configurations only!

Width (inches)	Stock No.	Eye Dimensions (inches)		WORK LOAD LIMITS (LBS) Basket Hitches			Sling Weight (LBS)		Minimum Sling Length (FT)
		Width	Length	90°	60°	45°	Base 8 FT	Adder / FT	
6"	AEC-606	1"	9"	3,000	2,590	2,120	3.22	.36	4
6"	AEC-906	1"	9"	6,000	5,190	4,240	3.61	.36	4
8"	AEC-608	1"	12"	3,000	2,590	2,120	4.09	.49	4
8"	AEC-908	1"	12"	6,000	5,190	4,240	4.54	.49	4
10"	AEC-610	1"	15"	3,000	2,590	2,120	5.10	.66	5
10"	AEC-910	1"	15"	6,000	5,190	4,240	5.61	.66	5
12"	AEC-612	1"	15"	3,000	2,590	2,120	5.84	.80	5
12"	AEC-912	1"	15"	6,000	5,190	4,240	6.35	.80	5
16"	AEC-916	2"	18"	10,000	8,660	7,070	9.41	1.06	6
20"	AEC-920	2"	24"	10,000	8,660	7,070	11.84	1.34	8
24"	AEC-924	2"	24"	10,000	8,660	7,070	13.37	1.61	8
30"	AEC-930	2"	30"	10,000	8,660	7,070	17.15	1.92	10
36"	AEC-936	2"	30"	10,000	8,660	7,070	19.82	2.33	12

Available in either nylon or polyester webbing.

Polyester webbing is available in the (9) heavy web class only.

Polyester Monster Edge is automatically provided for sling widths: 1 , 2 , 3 and 4 inch

For Polyester Monster Edge® webbing add the letters PME to the Stock Number. (Example: AEC-908PME)

Polyesters Slings wider than 4 inch are supplied with regular polyester webbing

For four ply slings wider than 6 inches, consider Twin-Path® Extra Slings with High Performance Fiber.

⚠ WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

Choker Hardware Slings

Forged aluminum and alloy steel choker fittings provide for the most efficient choke hitching of any sling design, particularly in wider webbing slings. **⚠ WARNING** Aluminum fittings should never be used where exposure to sprays, mists, vapors, fumes or liquids of acids, alkalis, chlorine or other corrosive agents are present. While aluminum fittings are non-sparking and do not rust, they are not as durable and cost more than steel hardware. Aluminum fittings are degraded by salt water.

Steel fittings are automatically supplied on two and four ply thickness slings. Exposure of steel hardware to acids, alkalis or other corrosive agents must be evaluated prior to use.

	Width (inches)	Stock No.	WORK LOAD LIMITS (LBS) Choker	Vertical	Basket Hitches 90°	60°	45°	Sling Weight (LBS) Base 8 FT	Sling Weight (LBS) Adder / FT	Minimum Sling Length (FT)
ALUMINUM	2"	ACH1-602	1,900	2,400	4,800	4,150	3,390	2.44	.080	3
	2"	ACH1-902	2,500	3,200	6,400	5,540	4,520	2.66	.112	3
	3"	ACH1-603	2,700	3,600	7,200	6,230	5,090	4.00	.140	3
	3"	ACH1-903	3,800	4,800	9,600	8,310	6,780	4.55	.180	3
	4"	ACH1-604	3,800	4,800	9,600	8,310	6,780	5.48	.172	4
	4"	ACH1-904	5,000	6,400	12,800	11,080	9,050	6.20	.220	4
	6"	ACH1-606	5,700	7,200	14,400	12,470	10,180	10.91	.243	5
	6"	ACH1-906	7,600	9,600	19,200	16,620	13,570	12.00	.324	5
STEEL	2"	SCH1-602	1,900	2,400	4,800	4,150	3,390	4.20	.080	3
	2"	SCH1-902	2,500	3,200	6,400	5,540	4,520	4.42	.112	3
	2"	SCH2-602	3,800	4,800	9,600	8,310	6,780	4.56	.160	3
	2"	SCH2-902	5,000	6,400	12,800	11,080	9,050	5.26	.220	3
	2"	SCH4-602	7,000	8,860	17,720	15,340	12,530	8.10	.320	4
	2"	SCH4-902	9,000	11,400	22,800	19,740	16,120	9.76	.440	4
	3"	SCH1-603	2,700	3,600	7,200	6,230	5,090	6.60	.140	3
	3"	SCH1-903	3,800	4,800	9,600	8,310	6,780	7.15	.180	3
	3"	SCH2-603	5,300	6,600	13,200	11,430	9,330	7.59	.280	3
	3"	SCH2-903	6,900	8,600	17,200	14,895	12,160	8.44	.350	3
	3"	SCH4-603	9,000	11,400	22,800	19,740	16,120	14.92	.560	4
	3"	SCH4-903	13,000	17,000	34,000	29,440	24,040	16.36	.700	4
	4"	SCH1-604	3,800	4,800	9,600	8,310	6,780	9.38	.170	4
	4"	SCH1-904	5,000	6,400	12,800	11,080	9,050	10.10	.220	4
	4"	SCH2-604	7,000	8,860	17,720	15,340	12,530	10.46	.340	3
	4"	SCH2-904	9,000	11,400	22,800	19,740	16,120	11.64	.440	3
	4"	SCH4-604	12,000	15,000	30,000	25,980	21,210	19.20	.690	5
	4"	SCH4-904	18,000	22,800	45,600	39,480	32,240	21.18	.880	5
	5"	SCH1-905	6,000	8,000	16,000	13,850	11,310	13.23	.268	5
	5"	SCH2-905	11,400	14,250	28,500	24,680	20,150	15.10	.540	4
	6"	SCH1-606	5,700	7,200	14,400	12,470	10,180	15.14	.243	5
	6"	SCH1-906	7,600	9,600	19,200	16,620	13,570	16.15	.324	5
	6"	SCH2-606	9,700	12,240	24,480	21,200	17,310	16.38	.490	4
	6"	SCH2-906	13,400	16,800	33,600	29,098	23,759	17.80	.650	4
	6"	SCH4-606	18,000	22,800	45,600	39,490	32,240	38.62	.970	6
	6"	SCH4-906	27,000	34,000	68,000	58,890	48,080	40.66	1.300	6
	8"	SCH1-908	10,250	12,800	25,600	22,170	18,100	46.86	.448	5
	8"	SCH2-908	17,900	22,400	44,800	38,797	31,678	49.26	.900	4
	8"	SCH4-908	32,000	40,000	80,000	69,280	56,560	67.68	1.790	7
	10"	SCH1-910	12,000	15,000	30,000	25,980	21,210	53.61	.586	5
	10"	SCH2-910	19,000	24,000	48,000	41,560	33,940	55.96	1.170	5
	12"	SCH1-912	15,000	19,000	38,000	32,910	26,860	66.44	.720	6
	12"	SCH2-912	24,000	30,000	60,000	51,960	42,420	69.44	1.440	5

Available in either nylon or polyester webbing.
Polyester webbing is available in the (9) heavy web class only.
Polyester Monster Edge is automatically provided for sling widths: 1 , 2 , 3 and 4 inch
For Polyester Monster Edge® webbing add the letters PME to the Stock Number.
(Example: SCH2-904PME)
Polyesters Slings wider than 4 inch are supplied with regular polyester webbing
For four ply slings wider than 6 inches, consider Twin-Path® Extra Slings with High Performance Fiber.
For Web-Trap® hardware use WT as a prefix in the stock number. (Example: WT2-904)
For UNILINK® hardware use UU as a prefix in the stock number. (Example: UU1-903)

See pages 45 and 46 for End Fittings Specifications

⚠ WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

Basket Hardware Slings

Basket Hardware Slings feature fittings of forged aluminum (ABH) or alloy steel (SBH). **⚠ WARNING** Aluminum fittings should never be used where exposure to sprays, mists, vapors, fumes or liquids of acids, alkalis, chlorine or other corrosive agents are present. While aluminum fittings are non-sparking and do not rust, they are not as durable and cost more than steel hardware. Aluminum fittings are degraded by salt water.

Steel fittings are automatically supplied on two and four ply thickness slings. Exposure of steel hardware to acids, alkalis or other corrosive agents must be evaluated prior to use.

			WORK LOAD LIMITS (LBS)						
			Vertical	Basket Hitches			Sling Weight (LBS)		Minimum Sling Length (FT)
	Width (inches)	Stock No.		90°	60°	45°	Base 8 FT	Adder / FT	
ALUMINUM	2"	ABH1-602	2,400	4,800	4,150	3,390	2.04	.080	3
	2"	ABH1-902	3,200	6,400	5,540	4,520	2.26	.112	3
	3"	ABH1-603	3,600	7,200	6,230	5,090	3.50	.140	3
	3"	ABH1-903	4,800	9,600	8,310	6,780	4.05	.180	3
	4"	ABH1-604	4,800	9,600	8,310	6,780	4.78	.172	3
	4"	ABH1-904	6,400	12,800	11,080	9,050	5.50	.220	3
	6"	ABH1-606	7,200	14,400	12,470	10,180	8.76	.243	4
	6"	ABH1-906	9,600	19,200	16,620	13,570	9.85	.324	4
STEEL	2"	SBH1-602	2,400	4,800	4,150	3,390	3.40	.080	3
	2"	SBH1-902	3,200	6,400	5,540	4,520	3.62	.112	3
	2"	SBH2-602	4,800	9,600	8,310	6,780	3.76	.160	3
	2"	SBH2-902	6,400	12,800	11,080	9,050	4.46	.220	3
	2"	SBH4-602	8,860	17,720	15,340	12,530	6.60	.320	3
	2"	SBH4-902	11,400	22,800	19,740	16,120	8.26	.440	3
	3"	SBH1-603	3,600	7,200	6,230	5,090	5.30	.140	3
	3"	SBH1-903	4,800	9,600	8,310	6,780	5.85	.180	3
	3"	SBH2-603	6,600	13,200	11,430	9,330	6.29	.280	3
	3"	SBH2-903	8,600	17,200	14,895	12,160	7.14	.350	3
	3"	SBH4-603	11,400	22,800	19,740	16,120	11.92	.560	4
	3"	SBH4-903	17,000	34,000	29,440	24,040	13.36	.700	4
	4"	SBH1-604	4,800	9,600	8,310	6,780	7.38	.170	3
	4"	SBH1-904	6,400	12,800	11,080	9,050	8.10	.220	3
	4"	SBH2-604	8,860	17,720	15,340	12,530	8.46	.340	3
	4"	SBH2-904	11,400	22,800	19,740	16,120	9.64	.440	3
	4"	SBH4-604	15,000	30,000	25,980	21,210	15.20	.690	4
	4"	SBH4-904	22,800	45,600	39,480	32,240	17.18	.880	4
	5"	SBH1-905	8,000	16,000	13,850	11,310	10.43	.268	4
	5"	SBH2-905	14,250	28,500	24,680	20,150	12.30	.540	3
	6"	SBH1-606	7,200	14,400	12,470	10,180	11.74	.243	4
	6"	SBH1-906	9,600	19,200	16,620	13,570	12.75	.324	4
	6"	SBH2-606	12,240	24,480	21,200	17,310	12.98	.490	3
	6"	SBH2-906	16,800	33,600	29,098	23,759	14.40	.650	3
	6"	SBH4-606	22,800	45,600	39,490	32,240	31.62	.970	4
	6"	SBH4-906	34,000	68,000	58,890	48,080	33.66	1.300	4
	8"	SBH1-908	12,800	25,600	22,170	18,100	31.11	.448	4
	8"	SBH2-908	22,400	44,800	38,797	31,678	33.51	.900	4
	8"	SBH4-908	40,000	80,000	69,280	56,560	51.68	1.790	5
	10"	SBH1-910	15,000	30,000	25,980	21,210	39.71	.586	5
	10"	SBH2-910	24,000	48,000	41,560	33,940	42.06	1.170	4
	12"	SBH1-912	19,000	38,000	32,910	26,860	45.64	.720	5
	12"	SBH2-912	30,000	60,000	51,960	42,420	48.64	1.440	5

See page 45 and 46 for End Fittings Specifications
See page 72 for Loosepin Hardware Shackles (LPH)
Available in either nylon or polyester webbing.
Polyester webbing is available in the (9) heavy web class only.
Polyester Monster Edge is automatically provided
For Polyester Monster Edge® webbing add the letters PME to the Stock Number. (Example SBH2-904PME)
Polyesters Slings wider than 4 inch are supplied with regular polyester webbing
For four ply slings wider than 6 inches, consider Twin-Path®
Extra Slings with High Performance Fiber.

⚠ WARNING

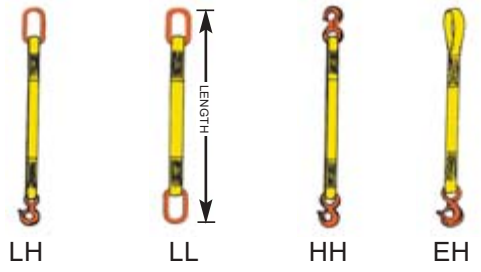
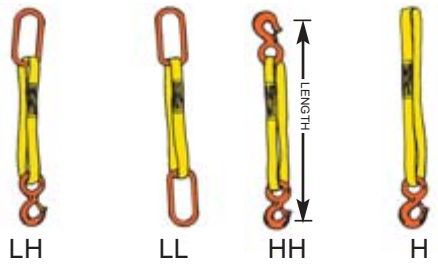
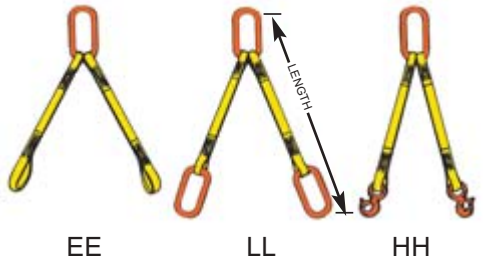
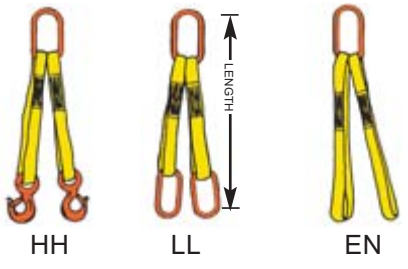
Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

Bridle Slings

Lift-It® nylon and polyester web Bridle Slings feature combinations of links, fabric eyes and hooks for the efficient handling of loads with permanent lifting points. Webbing bridles are lightweight and easy to handle when compared to wire and chain bridle assemblies.

All fittings are alloy steel and other types of attachments are available. Standard masterlinks are welded. Forged (non-welded) are available upon request. All hoist hooks are supplied with latches. Bottom fittings are placed in the same plane as the top lifting fixture, unless otherwise specified.

Endless type bridle slings allow for the rotation of the fittings for an infinite number of attachment and load contact points. Do not place the load carrying splice in a connection point to the load or in the lifting mechanism.

	EYE & EYE	ENDLESS
SINGLE LEG (SLB)		
MULTI-LEG BRIDLES (MLB2)		

Stock Number	Web Width	Sling Type	Web Ply	WORKING LOAD LIMITS (LBS.)		Top Master Link (Dia.)	BOTTOM ATTACHMENTS			Sling Weight** (LBS)		Minimum Sling Length (FT)
				Vertical	Basket		Eye Dimensions W" X L" (Code "E")	Hoist Hook Size (Tons) (Code "H")	Bottom Link Diameter (Inches) (Code "L")	Base 8 FT	Adder per FT	
SLB-EE2901	1"	Eye & Eye	2	3,200	6,400	1/2"	1" X 9"	2T	1/2"	1.82	.11	4FT
SLB-EE2902	2"	Eye & Eye	2	6,000	12,000	5/8"	1" X 9"	3T*	5/8"	3.54	.22	4FT
SLB-EE2903	3"	Eye & Eye	2	8,800	17,600	3/4"	1-1/2" X 12"	5T*	3/4"	5.31	.35	5FT
SLB-EN1901	1"	Endless	1	3,200	6,400	1/2"	-	2T*	1/2"	1.77	.11	3FT
SLB-EN2901	1"	Endless	2	6,400	12,800	5/8"	-	5T*	5/8"	3.48	.22	3FT
SLB-EN2902	2"	Endless	2	12,500	25,000	1"	-	11T	1"	8.77	.44	4FT

Stock Number	Web Width	Sling Type	Web Ply	WORKING LOAD LIMITS (LBS.) HORIZONTAL ANGLE		Top Master Link (Dia.)	BOTTOM ATTACHMENTS			Sling Weight** (LBS)		Minimum Sling Length (FT)
				60°	45°		Eye Dimensions W" X L" (Code "E")	Hoist Hook Size (Tons) (Code "H")	Bottom Link Diameter (Inches) (Code "L")	Base 8 FT	Adder per FT	
MLB2-EE1901	1"	Eye & Eye	1	2,700	2,200	3/4"	1" X 9"	2T*	1/2"	3.41	.11	4FT
MLB2-EE2901	1"	Eye & Eye	2	5,400	4,400	3/4"	1" X 9"	2T	1/2"	4.07	.22	4FT
MLB2-EE2902	2"	Eye & Eye	2	10,300	8,400	1"	1" X 9"	3T*	5/8"	8.89	.44	4FT
MLB2-EE2903	3"	Eye & Eye	2	15,000	12,500	1"	1-1/2" X 12"	5T*	3/4"	11.33	.70	5FT
MLB2-EN1901	1"	Endless	1	5,500	4,500	3/4"	-	2T	1/2"	3.97	.22	3FT
MLB2-EN2901	1"	Endless	2	11,000	9,000	1"	-	5T*	5/8"	8.77	.44	4FT
MLB2-EN2902	2"	Endless	2	21,000	17,000	1-1/4"	-	11T	1"	17.41	.88	4FT

* Web Hook available, specify order code "W"

**Bottom attachment weight must be added to base weight for the total sling weight.

Available in either nylon or polyester webbing.

Polyester webbing is available in the (9) heavy web class only.

Polyester Monster Edge is automatically provided for sling widths: 1 , 2 , 3 and 4 inch

For Polyester Monster Edge® webbing add the letters PME to the Stock Number. (Example MLB2-EE2901PME-HH)

Polyesters Slings wider than 4 inch are supplied with regular polyester webbing

For four ply slings wider than 6 inches, consider Twin-Path®

Extra Slings with High Performance Fiber.

WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

Bridle Slings

MULTI-LEG BRIDLES (MLB3)	EYE & EYE  3E 3L 3H	ENDLESS  EN 3L 3H
MULTI-LEG BRIDLES (MLB4)	EYE & EYE  4E 4L 4H	ENDLESS  EN 4L 4H

Stock Number	Web Width	Sling Type	Web Ply	WORKING LOAD LIMITS HORIZONTAL ANGLE (LBS.) 60°	45°	Top Master Link (Dia.) Inches	Master With Sub-Assys. (Dia.) Inches	BOTTOM ATTACHMENTS Eye Dimensions W" X L" (Code "E")	Hoist Hook Size (Tons) (Code "H")	Bottom Link Diameter (Code "L")	Sling Weight** (LBS) Base 8 FT	Adder Per FT	Minimum Sling Length (FT)
MLB3-EE2901	1"	EE	2	6,900	5,600	1"	3/4"	1" X 9"	2T	1/2"	7.85	.34	4FT
MLB3-EE2902	2"	EE	2	12,900	10,600	1-1/4"	1"	1" X 9"	3T*	5/8"	15.63	.66	4FT
MLB3-EE2903	3"	EE	2	19,000	15,600	1-1/2"	1-1/4"	1-1/2" X 12"	5T*	3/4"	26.00	1.05	5FT
MLB3-EN1901	1"	EN	1	6,900	5,600	1"	3/4"	-	2T	1/2"	7.70	.34	3FT
MLB3-EN2901	1"	EN	2	13,800	11,300	1"	1"	-	5T	5/8"	10.73	.66	3FT
MLB4-EE2901	1"	EE	2	8,300	6,700	1-1/4"	1"	1" X 12"	2T	1/2"	13.62	.45	4FT
MLB4-EE2902	2"	EE	2	15,500	12,700	1-1/4"	1-1/4"	1" X 12"	3T*	5/8"	17.70	.88	4FT
MLB4-EE2903	3"	EE	2	23,000	18,700	1-1/2"	1-1/4"	1-1/2" X 12"	5T*	3/4"	29.28	1.40	5FT

* Web Hook available, specify order code "W"

** Bottom component weight must be added to base weight for the total sling weight.

⚠ WARNING Working load limits for Multi-Leg Bridle Assemblies are based on the following conditions:

1. Even load weight distribution on all legs.

2. The bridle legs being same length. If the legs are not sharing the load equally, the assembly design factor is reduced.

3. All bridle legs used at the same horizontal angle.

If the conditions of the lift vary from those above, the work load limit must be recalculated.

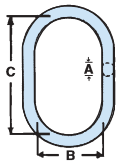
Many Lift-It® Bridle Sling fittings are substantially larger than those offered by our competitors. Larger fittings provide for a proper, spatial relationship, avoiding crowding and bunching at the sling connection points. Consider using Masterlinks with Subassemblies (MSA) on Bridles with more than two legs, see page 59.

⚠ WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

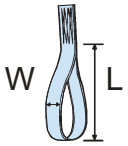
ATTACHMENT SPECIFICATIONS

CODE “L”



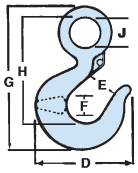
"A" STOCK DIA.	"B" INSIDE WIDTH	"C" INSIDE LENGTH	UNIT WEIGHT (LBS)
1/2"	2.68	4.83	.80
5/8"	2.98	5.29	1.34
3/4"	3.72	6.61	2.36
1"	4.30	7.53	5.20
1-1/4"	5.29	9.26	9.60
1-1/2"	6.30	11.03	16.20
1-3/4"	7.35	12.86	25.10
2"	8.40	14.70	38.40

CODE “E”



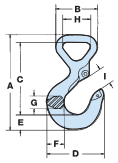
WEB WIDTH	EYE WIDTH "W"	EYE LENGTH "L"
1"	1"	9"
2"	1"	9"
3"	1-1/2"	12"

CODE “H”



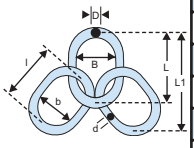
ALLOY HOOK SIZE (TONS)	"D" OVERALL WIDTH	"E" HOOK OPENING (W/LATCH)	"F"	"G"	"H"	"J"	UNIT WEIGHT (LBS)
1	3.00	.875	.562	4.37	3.12	.75	.63
1.5	3.18	.938	.625	4.93	3.65	.87	.85
2	3.62	1.00	.750	5.59	4.09	1.12	1.38
3	4.21	1.12	.940	6.56	4.66	1.25	1.92
5	5.06	1.37	1.12	7.96	5.78	1.56	3.70
7	6.50	1.68	1.37	10.12	7.31	2.00	7.28
11	7.68	2.05	1.90	12.43	9.03	2.43	15.40
15	8.70	2.24	2.16	13.98	10.03	2.83	22.20

CODE “W”



HOOK SIZE (TONS)	A	B	C	D	E	F	G	H	I	UNIT WT. (LBS)
1-1/2	5.25	2.26	3.98	3.11	.84	.94	.71	1.50	.93	.69
3	7.11	3.66	5.31	3.97	1.13	1.32	.94	2.50	1.13	2.07
5	9.33	5.13	7.06	4.81	1.44	1.63	1.31	3.75	1.47	4.30

CODE “MSA”



DIA. IN.	WLL (LBS) 5/1	DIMENSIONS (INCHES)							UNIT WT. (LBS)
		L1	L	B	D	l	b	d	
1/2"	4,600	8.96	4.83	2.68	0.51	4.13	2.29	0.43	1.8
5/8"	7,200	10.13	5.29	2.97	0.63	4.83	2.68	0.51	2.9
3/4"	11,200	11.90	6.61	3.72	0.75	5.29	2.98	0.63	5
7/8"	13,840	12.64	7.35	4.14	0.88	5.29	2.98	0.63	6.3
1 "	21,200	14.14	7.53	4.30	1.02	6.61	3.72	0.75	9.9
1-1/4"	29,920	16.79	9.26	5.29	1.26	7.53	4.30	1.02	19.9
1-1/2"	42,400	18.56	11.03	6.30	1.50	7.53	4.30	1.02	26.5
1-3/4"	57,720	22.12	12.86	7.35	1.75	9.26	5.29	1.26	44

⚠ WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

HOW TO ORDER

ALWAYS SPECIFY:

1. Complete Stock Number

MLB2 - EE2903 HH X 10 FT

- SLING CONFIGURATION: SLB - Single Leg; MLB - Multi-Leg
- NUMBER OF LEGS: 2 - 2 Legs; 3 - 3 Legs; 4 - 4 Legs
- SLING TYPE: EE - Eye & Eye; EN - Endless
- WEB PLY (THICKNESS): 1 - Single Ply; 2 - Double Ply
- WEBBING CODE: 9 - Heavy Duty
- WEBBING WIDTH (IN): 01 - 1 IN.; 02 - 2 IN.; 03 - 3 IN.
- BOTTOM ATTACHMENTS: “E” - Fabric Eye; “H” - Hoist Hook; “L” - Master Link; “W” - Web Hook
- ASSEMBLY LENGTH (FT)

2. SLING LENGTH:
All assembly lengths are bearing hardware unless otherwise specified

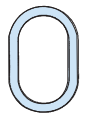
3. MATERIAL:
Nylon or Polyester
Polyester webbing is available in the (9) heavy web class only.
Polyester Monster Edge is automatically provided for sling widths: 1 , 2 , 3 and 4 inch
For Polyester Monster Edge® webbing add the letters PME to the Stock Number. (Example: MLB2-EE2902PME-HH)
Polyesters Slings wider than 4 inch are supplied with regular polyester webbing
For four ply slings wider than 6 inches, consider Twin-Path® Extra Slings with High Performance Fiber.

4. TOP FITTING:
Master links are automatically supplied. Consider using a masterlink with subassemblies, (MSA). For this option add the letters MSA to the stock number.
(Example: MLB2-EE2-903PME-HH-MSA)

5. WEAR PROTECTION:
Description, location and quantity of wear pads and/or sleeves, see pages 13-20.

6. DESCRIPTION OF END FITTINGS:

CODE “L” MASTERLINK



CODE “E” EYE

CODE “H” HOIST HOOK

CODE “W” WEB HOOK

⚠ WARNING ⚠ WARNING ⚠ WARNING

Synthetic products are damaged and cut when lifting on load edges. Edges in contact with the sling must be “padded” with materials of sufficient strength and thickness to prevent damage and catastrophic sling failure. Wear protection must be installed and evaluated for suitability by raising the load slightly, and then lowering the load for an inspection of the sling and the protection devices. Several “test” lifts may be necessary to determine the proper form of protection for a successful lift. The length of the sleeve or wear pad material(s) must not interfere with the sling closing to the full gripping position on the load. Wear protection may not prevent cutting or other forms of sling damage. To avoid severe personal injury or death, personnel should be kept away from the load and never be under or near the load, while it is being lifted or suspended.

Polyester Monster Edge® Webbing

Slings fabricated from Polyester Monster Edge® webbing are a cost effective and patented solution to premature sling retirement. Most web damage begins on the edge and this is significantly reduced with the use of Polyester Monster Edge® webbing.

A special bi-component, edge yarn is woven into the webbing, becoming an integral part of the polyester, webbing structure. Polyester webbing stretches at approximately half the rate of nylon webbing and does not lose strength when wet. Polyester webbing after prolonged exposure to ultraviolet light retains more tensile strength, when compared to nylon webbing.

Available as the webbing component in any of the designs featured throughout the catalog. Simply add the PME order code suffix to the stock number to obtain Polyester Monster Edge® webbing, which has revolutionized the rigging and material handling industries. Available in 1 , 2 , 3 and 4 inch widths.

Armor Jacket Slings

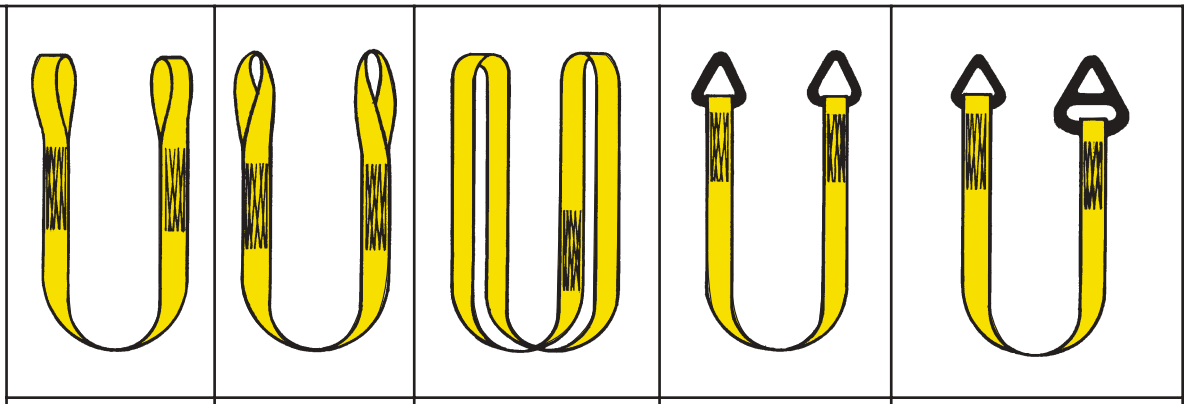
Lift-It® Armor Jacket slings are made from a specialty design webbing that is extremely abrasion resistant. Armor Jacket webbing features an external, Cordura® jacket that covers and protects the edges and face of the sling webbing. The Armor Jacket design is far superior to “sewn on”, wear protection devices, which can become detached as the attachment thread is worn away.

- Eye & Eye slings 3 inches and wider are automatically tapered.
- Steel hardware fittings are automatically supplied, unless otherwise specified, (see pages 45 and 46 for fitting specifications)

HOW TO ORDER

PLEASE SPECIFY:

1. **Complete Stock Number**
   SCH-STEEL CHOKER
   SBH-STEEL BASKET
   EEF- EYE & EYE FLAT
   EET- EYE & EYE TWIST
   EN - ENDLESS
2. **Sling Dimensions**
   Width X Length
   (Bearing to Bearing)
3. **SLEEVES**
   Material, length and quantity desired.
   (See pages 13-20)

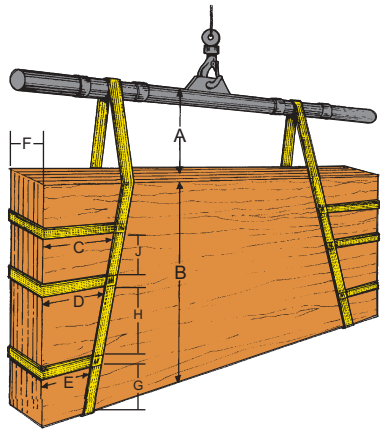


EEF | EET | EN | SBH | SCH

Width Inches	Stock Number	WORK LOAD LIMITS (LBS.)										
		Choker	Vertical	Basket	Choker	Vertical	Basket	Vertical	Basket	Choker	Vertical	Basket
1"	--1-701	800	1,000	2,000	1,600	2,000	4,000	-	-	-	-	-
1"	--2-701	1,600	2,000	4,000	3,100	3,900	7,800	-	-	-	-	-
1"	--4-701	3,200	4,000	8,000	6,200	7,800	15,600	-	-	-	-	-
2"	--1-702	1,600	2,000	4,000	3,200	4,000	8,000	2,000	4,000	1,600	2,000	4,000
2"	--2-702	3,200	4,000	8,000	6,100	7,600	15,200	4,000	8,000	3,200	4,000	8,000
2"	--4-702	6,400	8,000	16,000	12,200	15,200	30,400	8,000	16,000	6,400	8,000	16,000
3"	--1-703	2,400	3,000	6,000	4,800	6,000	12,000	3,000	6,000	2,400	3,000	6,000
3"	--2-703	4,300	5,400	10,800	8,200	10,200	20,400	6,000	12,000	4,800	6,000	12,000
3"	--4-703	8,600	10,800	21,600	16,300	20,400	40,800	12,000	24,000	9,600	12,000	24,000
4"	--1-704	3,200	4,000	8,000	6,400	8,000	16,000	4,000	8,000	3,200	4,000	8,000
4"	--2-704	5,700	7,200	14,400	10,300	12,900	25,800	8,000	16,000	6,400	8,000	16,000
4"	--4-704	11,500	14,400	28,800	20,600	25,800	51,600	16,000	32,000	12,800	16,000	32,000
6"	--1-706	4,800	6,000	12,000	9,600	12,000	24,000	6,000	12,000	4,800	6,000	12,000
6"	--2-706	9,600	12,000	24,000	19,200	24,000	48,000	12,000	24,000	9,600	12,000	24,000
6"	--4-706	19,200	24,000	48,000	37,400	48,000	96,000	24,000	48,000	19,200	24,000	48,000

Special Purpose Slings

FLAT-PAK SLINGS

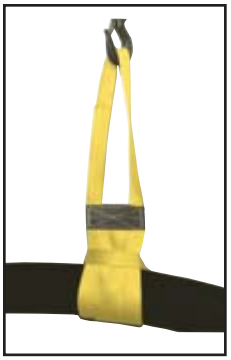


Lift-It® Flat-Pak slings allows the sling user to maneuver and stack glass panels or wood crates in tight areas.

Flat-Pak slings are protected from load edges by various types of wear protection material and feature side bridles for additional load control.

Flat-Pak slings are designed specifically for your requirements. Contact us for further information.

HOSE HANDLING SLINGS



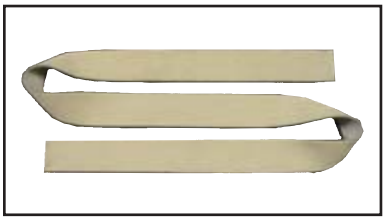
Hose Handling slings are used to prevent crushing, kinking and cutting of the hose by evenly distributing the load over the width of the sling webbing.

⚠ WARNING Lift-It® Hose Handling slings are designed for use in a choker hitch only.

Nylon webbing is standard, unless otherwise specified.

HOSE DIA.	SLING STOCK NUMBER	SLING WIDTH	SLING LENGTH	WORK LOAD LIMIT CHOKER (LBS)
4 IN	HH1-904	4"	3 FT - 6 IN	3,000
6 IN	HH1-906	6"	4 FT - 6 IN	4,000
8 IN	HH1-908	8"	6 FT	5,000
10 IN	HH1-910	10"	9 FT	6,000
12 IN	HH1-912	12"	11 FT	7,000

STONE HANDLING SLINGS



Lift-It® Stone Handling slings are manufactured from nylon webbing, which has been reinforced with a special woven facing of abrasion resistant cotton. This rugged webbing is specifically designed for use in the handling of granite, marble and concrete forms. The webbing is white and untreated to prevent color rub-off and transfer.

An application of Pozi-Grip provides additional abrasion resistance and also provides increased gripping action which may be necessary when handling wet stone.

STOCK NUMBER	Web Ply	WORK LOAD LIMITS (LBS.) Choker	Vertical	Basket Hitches 90°	60°	45°	Sling Weight (LBS) Base 8 FT	Adder / FT
EN1-904-SH	1	8,000	10,000	20,000	17,320	14,140	5.10	.60
EN2-904-SH	2	15,000	19,000	38,000	32,910	26,860	10.50	1.20
EE1-904-SH*	1	4,000	5,000	10,000	8,660	7,070	3.75	.30
EE2-904-SH*	2	7,000	9,000	18,000	15,590	12,730	5.40	.60
SCH1-904-SH	1	4,000	5,000	10,000	8,660	7,070	10.25	.30
SCH2-904-SH	2	7,000	9,000	18,000	15,590	12,730	11.60	.60
SBH1-904-SH	1	-	5,000	10,000	8,660	7,070	8.25	.30
SBH2-904-SH	2	-	9,000	18,000	15,590	12,730	9.60	.60

"EN" - ENDLESS "EE" - EYE & EYE *(STD. EYE DIMENSIONS - 2" X 12") "SCH" - STEEL CHOKER HARDWARE "SBH" - STEEL BASKET HARDWARE

Note: Stone Handling slings are available in a 4 inch web width only. Single Ply slings are not recommended, as the cotton facing is woven to only one side of the webbing.

⚠ WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

Special Purpose Slings

ADJUSTABLE CHAIN SLINGS

Many loads have attachment points at different levels or have an offset center of gravity. Conditions like these can cause the load to shift, when conventional chain slings are used with equal, non-adjustable length legs. The Chain Saddle Ring facilitates quick adjustment for awkward loads and also provides for the equalization of the sling leg length. With no expensive and heavy couplers, adjustable chain slings are far more versatile and economical than standard chain slings. Available in two or four leg styles, for chain sizes ranging from 9/32 in. to 1-1/2 in.

YOU MUST SPECIFY:
1) LENGTH OF SLING (REACH)
2) TYPE OF HOOK

CRADLE GRAB

SLING HOOK

Chain Size (Inches)	Single Branch Sling 90° Loading	TWO LEG STYLE		FOUR LEG STYLE	
		60°	45°	60°	45°
9/32"	3,500	6,100	4,900	9,100	7,400
3/8"	7,100	12,300	10,000	18,400	15,100
1/2"	12,000	20,800	17,000	31,200	25,500
5/8"	18,100	31,300	25,600	47,000	38,400
3/4"	28,300	49,000	40,000	73,500	60,000
7/8"	34,200	59,200	48,400	88,900	72,500
1"	47,700	82,600	67,400	123,900	101,200
1-1/4"	72,300	125,200	102,200	187,800	153,400
1-1/2"	80,000	138,600	113,100	-	-

GAS CYLINDER SLINGS

Made from nylon webbing 1/8 in. thick, Gas Cylinder Slings have a work load limit of 1,000 Lbs. The base of the cylinder rests securely in a leather lined, nylon pocket, while a loop around the bottle neck holds the cylinder tightly. An additional tightening band secures the cylinder to the sling and makes transportation easy and efficient. The CG10A accommodates model T, K, and S cylinders.

ORDER CODE	DESCRIPTIONS	DIMENSIONAL INFORMATION	
		DIAMETER	CYLINDER HEIGHT
CG 10A	SINGLE OXYGEN	9" TO 20"	40" - 56"
CG 20A	DOUBLE	9" OXYGEN	46" - 54"
	OXYGEN / ACETYLENE	13" ACETYLENE	38" - 46"
CG 30A	SINGLE AMMONIA	13" TO 16"	40" - 54"

⚠ WARNING If Cylinder Slings are to be exposed directly to weld spatter and sparks, protective measures must be taken.

MANUAL DRUM TILTER

The Manual Drum Turner is a material handling solution for handling and dumping drums, where precise control is not required.

The Manual Drum Turner (Order Code MDT) will accept 18 to 24 inch drums and is rated for a 1,000 lbs. Work Load Limit. Manufactured to comply with ASME B30.20, the “MDT” can be proof tested to 1250 lbs. on request.

The chain lifting bridle has a 24 inch approximate reach and connects to the spreader bar. Chain sling legs, 28 inches in length connect the spreader bar to the web band. The 6 inch nylon webbing band will not damage the drum and is easily replaceable. The webbing band is equipped with a ratchet roller tensioning device, which facilitates tightening.

Geared Drum Turners and Geared Tilters are also available.

Special Purpose Slings

DRUM HANDLING SLINGS

BOTTOM SUPPORT

The Lift-It® Bottom Support drum sling was specifically designed for handling drums that are non-metallic or larger than 55 gallon capacity. Also recommended for applications when drums cannot be kept to a minimum distance to clear the ground.

The sling consists of a bridle which is permanently attached to the circumferential tightening bands. Stability is facilitated by the connection of the sling bridle assembly to the bottom support at four locations.

The bottom support drum sling was designed for 55 gallon drums. (22 inch-diameter X 34 inch height). For drum sizes other than the standard, 55 gallon size, consult the factory.

⚠ WARNING Extra consideration should be given when handling partially filled drums to ensure load control.

SLING STOCK NO.	WORK LOAD LIMITS (LBS)
DS-BS	2000

STANDARD & ADJUSTABLE

Lift-It® Nylon Drum Handling Slings are specifically designed for the efficient handling of 55 gallon, ribbed, metal drums. Drum Slings can be used to lift open top drums, or drums fitted with spigots or pumps.

The sling consists of a 2-inch bridle and a 2-inch circumferential tightening band. The lift bridle is permanently attached to the tightening band, thus eliminating the need to position the bridle.

The circumferential tightening band is lined with leather and the bridle legs have sleeves attached for wear protection purposes. The tightening band securely grips the drum below the first rib.

⚠ WARNING Lift the drum only enough to clear the ground. Extra consideration should be given when handling partially filled drums to ensure load control.

SLING BAND WIDTH	SLING STOCK NO.	WORK LOAD LIMITS (LBS)
2 IN	DS1-602	750
2 IN	DS1-602 ADJ*	750

*Specify the DS1-602 ADJ, adjustable drum sling for use with drums of varying diameters. The DS1-602 ADJ is the same as the standard DS1-602 model, except only one of the lift loop legs is attached to the circumferential tightening band. The unattached leg is free to be positioned for varying drum diameters. The leather wear pad normally attached to the tightening band on the standard model is omitted on the adjustable model to facilitate usage.

HORIZONTAL DRUM SLING

The Horizontal Drum sling is ideal for efficiently handling steel drums in the horizontal position.

The HD-1 features one inch, polyester webbing and has a work load of 1000 lbs. The 1/2 inch masterlink connects to the lifting mechanism and 2-7/8 inch, drum hooks positively engage the ends of the drum.

⚠ WARNING

- DO NOT EXCEED WORK LOAD LIMITS.
- For use on metal drums only.
- Damaged drum contact areas will not allow the sling to work properly.
- Lift the drum only enough to clear the ground.
- Extra consideration should be given when handling partially filled drums to ensure load control.

⚠ WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

VERTICAL DRUM SLING

The Vertical Drum sling was initially developed for the US Department of Energy, and has become a very popular sling for use in many other industrial applications. The VD-1 has a 1500 pound work load and features heavy duty, one inch, nylon webbing. The one inch masterlink facilitates connection to the lifting mechanism, while three drum hooks positively engage the drum lip. As the lift is made a collector ring provides for a self tightening grip.

⚠ WARNING

- DO NOT EXCEED WORK LOAD LIMITS.
- For use on metal drums only.
- Damaged drum contact areas will not allow the sling to work properly.
- Lift the drum only enough to clear the ground.
- Extra consideration should be given when handling partially filled drums to ensure load control.

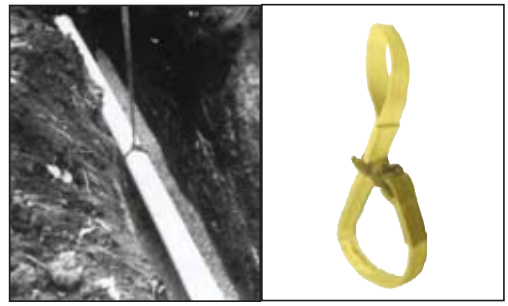
Special Purpose Slings

RADOME SLINGS

All Lift-It® Radome slings are fabricated from heavy duty, nylon or polyester webbing that is specifically made for lifting applications. Alloy masterlinks with subassemblies provide for an efficient relationship between the assembly legs and the lifting mechanism. Proof testing is available for an additional charge, and custom models are readily available.

Simply specify the SEA TEL radome diameter and model number. The radome sling of your choice will be shipped expeditiously, anywhere in the world.

PIPE LIFTING SLING



The Lift-It® Pipe Lifting sling is designed for quick and easy rigging. The specialty hardware allows for disengagement of the sling from the load, without disconnecting the sling from the lifting mechanism.

Available in two models, this versatile sling can be used in applications other than pipe lifting. Custom sling lengths are readily available.

SLING STOCK NO.	WORK LOAD LIMIT (LBS)*	WEB SLING	
		WIDTH	LENGTH
PL 2	2,500	2 IN	12 FT
PL 3	3,500	3 IN	12 FT

⚠ WARNING For use in choker hitches only.

NYLON TOW STRAPS

Lift-It® Tow Straps are a versatile tool for towing disabled vehicles. Manufactured from nylon webbing, that has been treated for abrasion resistance. Lift-It® Tow Straps feature a heavy duty, leather pad attached to the bearing points of the strap eyes. Available in three models, custom straps and lengths are readily available. Lift-It® will not fabricate tow straps with attached metal end fittings or components.

SPECIFICATIONS			
DIMENSIONS WIDTH x LENGTH	STOCK NUMBER	THICKNESS (BODY PLYS)	VERTICAL WORK LOAD LIMIT (LBS)*
2in x 20ft	TS1-90220	1	3,200
2in x 30ft	TS1-90230	1	3,200
2in x 20ft	TS2-90220	2	6,400
2in x 30ft	TS2-90230	2	6,400
4in x 20ft	TS2-90420	2	11,400
6in x 30ft	TS2-90630	2	17,000

*** Work Load Limits apply only to new and unused straps.**

TS2-90230

TS2-90420

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

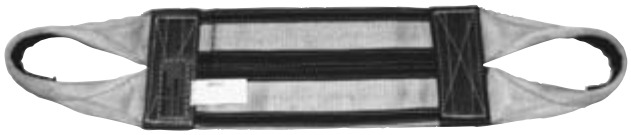
Inspect before each use. Do not use a damaged strap. Avoid dragging the strap. Do not tie into knots. Do not attach to bumpers. Avoid contact with hot exhaust systems. Do not exceed Work Load. Attachment points must be suitable for the application; detached connection points can be deadly projectiles. Stand at least twice the length of the strap away from the vehicle and strap while under load. Never stand near or in line of a strap under tension. Avoid edges or surfaces that could damage the strap, and use wear protection when necessary. Store in a cool, dark, dry location, which is free of environmental and mechanical damage.

Remove the strap from service and do not use for any application, if any of the following are visible:
Acid or Caustic Burns, Melting or Charring of any part of the strap, Ultraviolet/Sunlight Damage, Broken or Worn Stitching, Excessive Abrasive Wear, Holes, Tears, Cuts, Snags or Punctures, Red Core Warning Yarns and/or Other Visible Damage that causes doubt as to the strength of the strap. See pages 17, 23 and 29

Utility Slings

Lift-It® Manufacturing constantly strives to provide the best products available. The combined efforts of sling users and product engineers have resulted in the development of specialized products for sling users in the power generation, transmission and distribution industries.

WIDE BODY CARGO

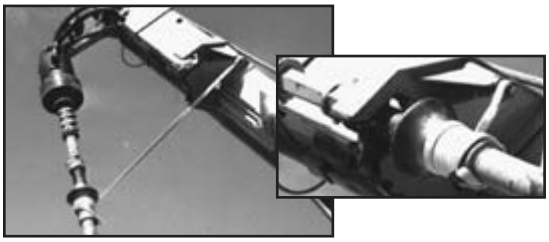


The Wide Body Cargo Sling is an acceptable way to stabilize wide loads and is ideal for handling cable reels. The load is distributed over a wide surface area, preventing crushing.

⚠ WARNING For use in a basket hitch only.

SLING WIDTH	STOCK NUMBER	EYE DIMENSIONS (INCHES)		WORK LOAD LIMITS (LBS.) BASKET HITCHES			SLING WEIGHT (LBS)	
		WIDTH	LENGTH	90°	60°	45°	BASE 8 FT	ADDER PER FT
12"	WBC2-906	2"	16"	37,000	32,040	26,160	7.46	.80
24"	WBC2-912	4"	30"	60,000	51,960	42,420	17.74	1.61

AUGER SLINGS



Lift-It® Auger Slings are designed to lift and secure the drilling auger to the truck boom. Impregnated for abrasion resistance, the standard model features nylon webbing, yellow in color. The Polyester Monster Edge® (PME) version is gray and features patented, Polyester Monster Edge® protection. Both models feature red core warning yarns. Auger slings are non-marring and non-kinking. Auger slings are double ply thick and have flat, leather reinforced eyes.

Available in three lengths: 102", 108", 120"
Other lengths are available.

SLING WIDTH	STOCK NUMBER	WORK LOAD LIMITS (LBS) CHOKER	VERTICAL	BASKET
1 IN	AS2-901	2,500	3,200	6,400
1 IN	AS2-901 PME	2,500	3,200	6,400

⚠ WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

REMOTE RELEASE SLINGS

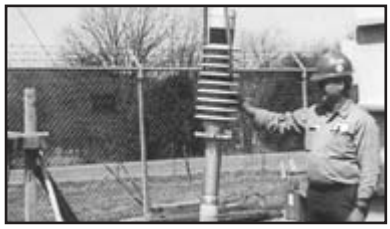
Lift-It® Remote Release slings are specifically designed for use in the erection of wood beams and trusses. Remote Release Slings feature six inch nylon or Polyester Monster Edge® webbing, which has been treated for abrasion resistance. A steel choker fitting is attached to one end, while the remote release clamp is attached to the opposite end. The release clamp facilitates a quick and easy release of the sling from the load, eliminating the need to climb ladders or walk the beam to disengage the sling.

- Cordura® edge wrap and/or body protection is recommended to enhance the life cycle of the sling.
- Sling material, length and wear pad alternatives must be specified.

⚠ WARNING For use in Choke Hitch Only.

SLING WIDTH	SLING STOCK NUMBER	PLY (THICKNESS)	FITTING TYPE	WORK LOAD LIMIT CHOKER (LBS)
6 IN	RRS1-906	1	STEEL	7,600
6 IN	RRS2-906	2	STEEL	13,000

BUSHING SLINGS



Lift-It® Bushing Slings are used in the installation and removal of transformer bushings. They can also be used to uncrate and rack bushings.

Nylon webbing protects the glass as the sling is attached to the inner diameter of the bushing. Lift-It® Bushing Slings provide damage free handling, installation and/or removal.

SLING WIDTH	SLING LENGTH	STOCK NUMBER	ASSEMBLY WORK LOAD LIMIT (LBS)
1 IN	10 FT	BS-901 SM	1,000
1 IN	12 FT	BS-901 MD	1,000
2 IN	12 FT	BS-902 LG	2,000

Utility Slings

THE ULTIMATE POLE SLING

· Does not kink like cable or fray like rope
· Slides down the pole, better than cable
· All fittings are Grade 8 Alloy
· Durable Tag with Certificate of Proof Test
· 4 to 1 Design Factor

STOCK NO.	WORK LOAD	UNIT WEIGHT
UPS 145	3,500 LBS	6 LBS
UPS 385	7,100 LBS	12 LBS
UPS 125	12,000 LBS	22 LBS
UPS 585	18,100 LBS	32 LBS

REEL LIFTING SLING

· Efficiently handles wood reels
· Stock Number-RL-1
· Work Load Limit-6,000 lbs.
· Durable Tag with Serial Number
· Standard length-6 foot
· Custom Lengths are Available

DIRT SLING

· Saves Time and Labor
· Replaces Rock Boxes and Barrels
· Folds and Stores, Easily
· Holds Soil and Transports Fill
· Eliminates Back Injuries
· Available in Two Sizes:
Stock Number- DSL-6X6
6 FT x 6 FT
700 lbs. Work Load

Stock Number-DSL-8X8
8 FT x 8 FT
1400 lbs. Work Load

⚠ WARNING

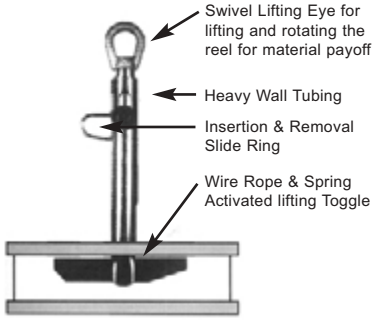
Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

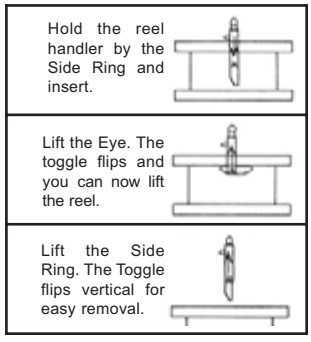
POLE CHOKER SLING

· Lightweight for easier ascent
· Stock Number PC1-602
· Choker-1200
Vertical-1500
Basket-3000
· Forged End Fittings
· Heavy Duty, Branded, Sling Tag
· Standard Lengths:
2, 3, 4, 5, and 6 ft.
· Custom Lengths are Available

REEL HANDLER

PART NO.	DESCRIPTION
RH2500	2" ARBOR 2500 LB. RATED
RH4500	4" ARBOR 4500 LB. RATED





Adjustable Rope Slings

Loads are handled easily and efficiently by Adjustable Rope Slings. These remarkable slings replace a variety of "non-adjustable" slings and accommodate a variety of different sized loads with infinite adjustability.

Available in single, double and four leg configurations, standard models feature Yalex, polyester rope. Yalex is a single braid, twelve strand, rope constructed of high tenacity polyester. Yalex rope is finished with a coating of Maxijacket to optimize the service life of the rope.

Higher work load limits are available with Vectrus rope. Vectrus is a single braid, high performance fiber rope, constructed of Liquid Crystal Polymer (LCP). Super strong and ultra light, adjustable rope slings fabricated from Vectrus are coated with Maxijacket to enhance abrasion resistance.

Adjustable Rope Slings feature wear protection sleeves in the lift and load connection points. Hooks and other load connection devices can also be attached by special request.

Adjustable Rope slings are labeled with the information currently required by the various regulatory agencies. Custom lengths are available.

Photos courtesy of Glenn Wargo, HW Farren Co., Inc.

SPECIFICATIONS

SINGLE LEG - ADJUSTABLE ROPE SLINGS

ROPE DIA.	STOCK NUMBER	YALEX W.L.L (LBS)			ADJ. RANGE	STOCK NUMBER	VECTRUS W.L.L. (LBS)			ADJ. RANGE
		CHOKER	VERTICAL	BASKET			CHOKER	VERTICAL	BASKET	
3/8 in	Y-S-382048	800	1,000	2,000	20-48"	V-S-383460	2,800	3,500	7,000	34-60"
1/2 in	Y-S-122860	1,600	2,000	4,000	28-60"	V-S-124372	4,400	5,500	11,000	43-72"
5/8 in	Y-S-583260	2,400	3,000	6,000	32-60"	V-S-5865108	8,000	10,000	20,000	65-108"
3/4 in	Y-S-343872	3,200	4,000	8,000	38-72"	V-S-3475108	10,400	13,000	26,000	75-108"
7/8 in	Y-S-784696	4,800	6,000	12,000	46-96"	V-S-7887120	14,800	18,500	37,000	87-120"
1 in	Y-S-10054120	6,000	7,500	15,000	54"-120"					

DOUBLE LEG- ADJUSTABLE ROPE SLINGS

ROPE DIAMETER	STOCK NUMBER	YALEX W.L.L. (LBS)		ADJ. RANGE	STOCK NUMBER	VECTRUS W.L.L. (LBS)		ADJ. RANGE
		60 DEG	45 DEG			60 DEG	45 DEG	
3/8 in	Y-D-382460	1,700	1,400	24-60"	V-D-383060	6,000	4,900	30-60"
1/2 in	Y-D-123260	3,400	2,800	32-60"	V-D-123672	9,500	7,700	36-72"
5/8 in	Y-D-583860	5,100	4,200	38-60"	V-D-5857108	17,300	14,100	57-108"
3/4 in	Y-D-344672	6,900	5,600	46-72"	V-D-3467108	22,500	18,300	67-108"
7/8 in	Y-D-785296	10,300	8,400	52-96"	V-D-7876120	32,000	26,100	76-120"
1 in	Y-D-10060120	12,100	9,800	60"-120"				

FOUR LEG- ADJUSTABLE ROPE SLINGS

ROPE DIAMETER	STOCK NUMBER	YALEX W.L.L. (LBS)		ADJ. RANGE	STOCK NUMBER	VECTRUS W.L.L. (LBS)		ADJ. RANGE
		60 DEG	45 DEG			60 DEG	45 DEG	
3/8 in	Y-Q-382460	2,500	2,100	24-60"	V-Q-383060	9,000	7,400	30-60"
1/2 in	Y-Q-123260	5,000	4,200	32-60"	V-Q-123672	14,200	11,600	36-72"
5/8 in	Y-Q-583884	7,700	6,300	38-84"	V-Q-5857108	25,900	21,200	57-108"
3/4 in	Y-Q-344684	10,300	8,400	46-84"	V-Q-3467108	33,700	27,500	67-108"
7/8 in	Y-Q-785296	15,500	12,700	52-96"	V-Q-7876120	48,000	39,200	76-120"
1 in	Y-Q-10060120	18,100	14,800	60"-120"				

Work Load Limits (WLL) are based upon the sling being new and unused, and as such, feature a 5/1 design factor.

Adjustable Rope Slings

CONSIDERATIONS

ABRASION:
Avoid all abrasive conditions. Adjustable rope slings will be severely damaged if subjected to rough surfaces or edges. Interfacing hardware and load attachment points must be maintained in good condition and kept free of burrs and rust. Do not drag slings over the ground or rough surfaces. Dirt and grit can work into the strands, damaging the internal fibers.

CHEMICALS:
Avoid chemical exposure. Adjustable rope slings are subject to damage by chemicals. Consider the chemical exposure, such as solvents, acids and alkalis or where fumes, vapors or mists are present. Consult us prior to purchase or use.

TEMPERATURE:
Adjustable rope slings have lower tensile strength and work load limits at elevated temperatures. Continued exposure at these levels can melt, part or cause permanent damage. Do not use at temperatures in excess of 194°(F)/90°(C).

CARE & STORAGE:
Adjustable slings should be stored clean, dry, out of direct sunlight, and away from sources of extreme heat. Ensure that the storage location is free of mechanical and environmental damage.

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

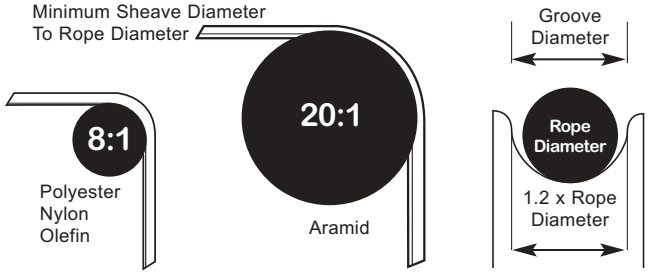
Absorbed moisture or impurities will dramatically increase the conductivity of the rope.

It is dangerous if personnel are in line with a rope under tension. Rope failure can result in a deadly recoil force. Personnel should never be under a rope sling or suspended load.

Working Load Limits are based on a moderately dynamic lifting or pulling operation. Instantaneous changes (drops or sudden pick ups) in excess of 10% of the work load constitutes hazardous shock loading and the working load limits as stated, DO NOT APPLY.

Dynamic loading affects ropes with less stretch, to a greater degree, when compared to ropes that have greater elongation properties. Likewise, a shorter length rope is more profoundly affected by dynamic loading, than a longer length rope.

Lifts can be made on any two or three legs of the Four Leg Adjustable Rope sling. The work load limit of Four Leg slings are based upon only three legs carrying the load. If only two or three of the four legs are used, the assembly work load limit is effectively the same as the work load for a double leg assembly.



⚠ WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

Adjustable Rope Slings

SLING INSPECTION

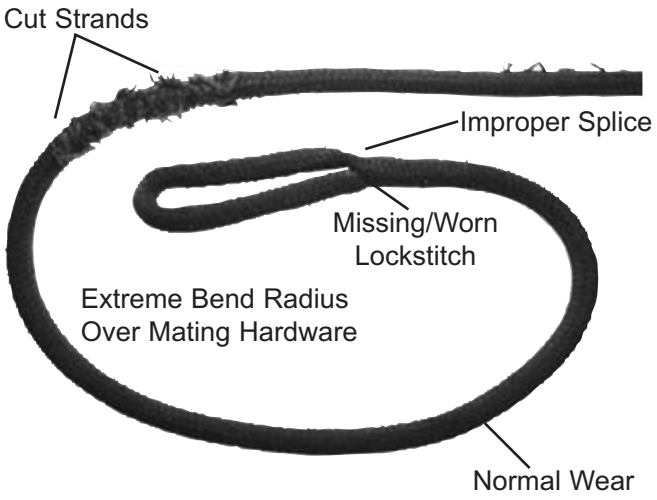
Avoid using adjustable rope slings that show signs of aging and wear. If there is any doubt, do not use the sling; remove it from service for evaluation.

No visual inspection can accurately determine the residual strength of the sling.

Inspect prior to each use for frayed strands and broken yarns. A pulled strand can snag during use.

Both outer and inner rope fibers contribute to the strength of the rope. When either is worn, the rope is weakened. Heavy use will cause the rope to be compacted or hard. This is an indication that the tensile strength and the dielectric strength of the rope have been reduced.

UV degradation is indicated by discoloration and the presence of splinters and slivers on the rope surface.



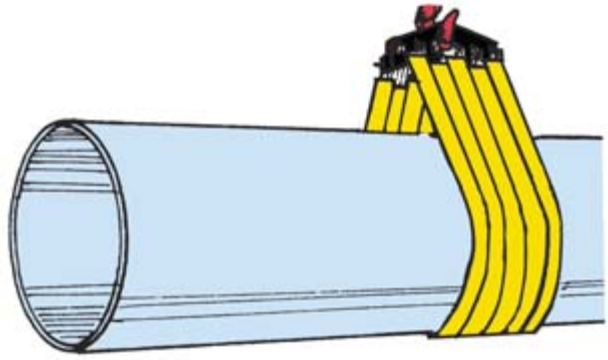
REMOVAL FROM SERVICE CRITERIA

ASME B30.9-2003 Removal Criteria 9-4.9.4
A synthetic rope sling shall be removed from service if conditions such as the following are present:

a) Missing or illegible sling identification
b) Cuts, gouges, areas of extensive fiber breakage along length, and abraded areas on the rope
c) Damage that is estimated to have reduced the effective diameter of the rope by more than 10%
d) Uniform fiber breakage along the major part of the length of the rope in the sling such that the entire rope appears covered with fuzz or whiskers
e) Inside the rope, fiber breakage, fused or melted fiber (observed by prying or twisting to open the strands) involving damage estimated at 10% of the fiber in any strand or the rope as a whole
f) Discoloration, brittle fibers, and hard of stiff areas that may indicate chemical damage, ultraviolet light damage or heat damage
g) Dirt and grime in the interior of the rope structure that is deemed excessive
h) Foreign matter that has permeated the rope and makes it difficult to handle and may attract and hold grit
i) Kinks and distortion in the rope structure, particularly if caused by forcibly pulling on loops (known as hockles)
j) Melted, hard or charred areas that affect more than 10% of the diameter of the rope or affect several adjacent strands along the length that affect more than 10% of strand diameters
k) Poor condition of thimbles or other components manifested by corrosion, cracks, distortion, sharp edges, or localized wear
l) Other visible damage that causes doubt as to the strength of the sling

ADJUSTABLE ROPE SLINGS IN ACTION

Lowering-In-Belts



Our experienced personnel have worked directly with pipe liners in developing our product line, which is your assurance of superior product performance.

All components are made of top-grade materials, including alloy steel end irons and abrasion resistant nylon webbing, which is coated for longer life. Lowering-In-Belts are strong enough to satisfy your strength requirements and are lightweight and flexible enough for maximum ease of handling.

For special lengths, please contact us.

LOWERING-IN-BELT SPECIFICATIONS

BELT PART NO.	MAXIMUM PIPE SIZE		BELT SIZE				WEIGHT				APPROXIMATE CUBE FOR SHIPPING				WORK LOAD BASKET	
			WIDTH		LENGTH		BELT		LIFTING IRON		BELT		LIFTING IRON			
	IN.	MM.	IN.	MM.	FT.-IN.	M.	LBS.	KG.	LBS.	KG.	FT.	M.	FT.	M.	LBS.	KG.
12940	12	305	12	305	4'9"	1.45	28	12.7	40	18.1	.9	.03	.8	.02	48,000	21,700
18700	18	457	18	457	7'0"	2.13	45	20.4	70	31.8	1.7	.05	1.5	.04	73,000	33,100
18760	20	508	18	457	7'6"	2.29	50	22.7	70	31.8	1.9	.05	1.5	.04	73,000	33,100
24860	24	610	24	610	8'6"	2.59	65	29.5	90	40.8	3.3	.09	2.5	.07	97,000	44,000
30100	30	762	30	762	10'0"	3.05	90	40.8	110	49.9	4.2	.12	3	.08	122,000	55,300
36116	36	914	36	914	11'6"	3.51	120	54.4	130	59	6.4	.18	4	.11	146,000	66,200
36136	42	1067	36	914	13'6"	4.11	135	61.2	130	59	6.8	.19	4	.11	146,000	66,200
36150	48	1219	36	914	15'0"	4.57	155	70.3	130	59	7	.20	4	.11	146,000	66,200
42136	42	1067	42	1067	13'6"	4.11	150	68	145	66.8	7.7	.22	4.8	.14	171,000	77,500
42150	48	1219	42	1067	15'0"	4.57	170	77.1	145	66.8	8	.23	4.8	.14	171,000	77,500
48150	48	1219	48	1219	15'0"	4.57	190	86.2	150	68	8.9	.25	5.2	.15	195,000	88,400
48170	56	1422	48	1219	17'0"	5.18	205	93	150	68	9	.25	5.2	.15	195,000	88,400
56170	56	1422	56	1422	17'0"	5.18	230	104.3	180	81	9.6	.27	6	.17	228,000	103,400
56180	60	1524	56	1422	18'0"	5.49	260	117.9	180	81	9.8	.28	6	.17	228,000	103,400

Pipe Handling Slings

Lift-It® Pipe Handling Slings have been specifically developed to satisfy the most demanding needs of the concrete pipe fabricating and handling facilities. The nylon webbing is formed into a double ply sling and is tapered for the installation of "weight saver" steel triangles. The transition area between the sling body and lifting triangle is Cordura® wrapped and buffered for a useful service life. If specified, carpet can be sewn to the sling body, enabling the sling to gently cradle and cushion the most delicate pipe finish.

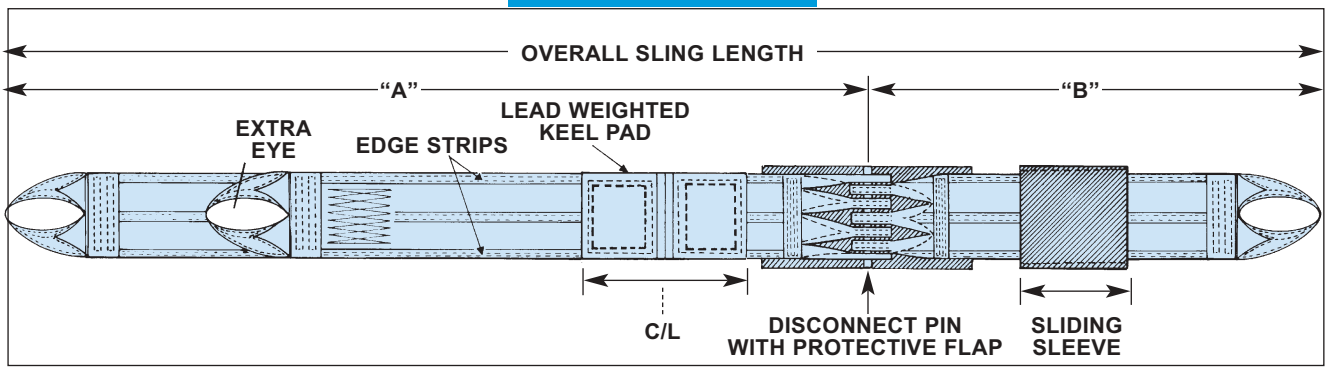
Please note: You must specify sling length.

SLING WIDTH	SLING STOCK NO.	WORK LOAD LIMIT (LBS)	SLING WEIGHT (LBS)		FITTING CODE
		BASKET HITCH ONLY	BASE 8 FT	ADDER Per FT	
10"	PH2-910	28,000	19.70	1.17	ST5
12"	PH2-912	34,000	24.08	1.44	ST6

Marine Slings

The marine slings manufactured by Lift-It® are the "standard" for marine sling users, world wide. Lift-It® Marine Slings are manufactured from nylon or polyester webbing that has been treated for abrasion resistance. Sling models range in width from 4 to 12 inches, with available basket work load limits of 9,600 lbs. to 60,000 lbs. Sling widths in excess of 12 inches, with greater work loads are readily available. For larger work load limits, also consider using Twin-Path® Extra, High Performance Fiber Slings.

SAMPLE SLING



CHOICE OF MATERIALS:
Nylon or polyester - Nylon stretches at a rate of 6 to 8% at work load and loses approximately 15% of the work load limit when wet. Polyester stretches at a rate of 3% at work load and maintains 100% of the work load limit when wet.

COLOR CODED MATERIALS:
Polyester webbing has a continuous blue surface marker to differentiate it from nylon webbing.

TREATED WEBBING:
Resists degradation from rot, mold, seawater and crude or lubricating oil.

WIDE SLING WIDTHS:
The most delicate hull is gently cradled as its weight is distributed over a wide surface area.

FLEXIBLE and LIGHTWEIGHT:
Lift-It® Marine Slings adjust to contour of all types and sizes of hull configurations. Easy to store and handle.

LARGE SELECTION:
Available sling options and corrosion resistant hardware.

GENTLE:
Non-marring and non-abrasive.

PROOF TEST AND CERTIFICATION:
Slings that are subjected to continuous ultraviolet/sunlight exposure lose strength, dramatically, and should be proof tested semi-annually or more frequently, depending upon the degree of exposure. (See pages 6 and 35 regarding the effects of UV degradation).

Lift-It® will design and fabricate special style marine slings to meet your specific handling requirements.

All slings are only as strong as their weakest component. Certain accessories (loosepin hardware and extra eyes) are not available options for two ply sling work load limits.

SPECIFICATIONS

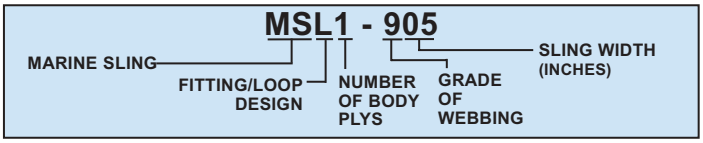
WIDTH (Inches)	WEB PLY	BASKET WORK LOAD (LBS)	SLING STOCK NUMBER	FABRIC EYE DIMENSIONS (INCHES) CODE "T" TWISTED EYE (Width X Length)	CODE "C" CARGO TYPE (Width X Length)	CODE "F" FLAT EYE (Width X Length)
4	1	9,600	MS_1-604	1-1/2 X 12	-	4 X 6
4	1	12,800	MS_1-904	1-1/2 X 12	-	4 X 6
4	2	17,720	MS_2-604	1-1/2 X 12	-	4 X 6
4	2	22,800	MS_2-904*	1-1/2 X 12	-	4 X 6
5	1	16,000	MS_1-905	1-3/4 X 12	-	5 X 6
5	2	28,500	MS_2-905*	1-3/4 X 12	-	5 X 6
6	1	14,400	MS_1-606	2 X 16	1-1/2 X 12	6 X 6
6	1	19,200	MS_1-906	2 X 16	1-1/2 X 12	6 X 6
6	2	24,480	MS_2-606	2 X 16	1-1/2 X 15	6 X 6
6	2	34,000	MS_2-906	2 X 16	1-1/2 X 15	6 X 6
8	1	25,600	MS_1-908	3 X 18	1-1/2 X 12	6 X 18
8	2	45,600	MS_2-908*	3 X 18	2 X 15	6 X 18
10	1	30,000	MS_1-910	3-1/2 X 24	1-3/4 X 15	6 X 18
10	2	48,000	MS_2-910*	3-1/2 X 24	2-1/2 X 18	6 X 18
12	1	38,000	MS_1-912	4 X 30	2 X 16	6 X 18
12	2	60,000	MS_2-912*	4 X 30	3 X 20	6 X 24

*Loosepin hardware is not available to match basket work load.

HOW TO ORDER

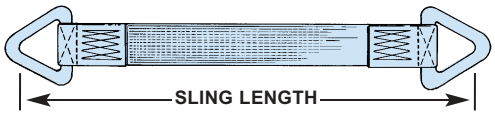
SPECIFY ON EVERY ORDER:

1. Complete sling stock number:



2. Sling material: nylon or polyester.
For polyester slings add the letter "P" to the stock number. Example: MSB2-906P

3. Sling Dimensions: Width x Length



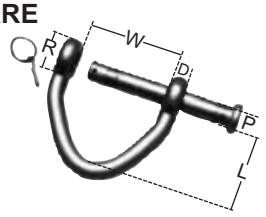
4. Optional Equipment:
A. Length and location of sleeves, pads, edge wrap or disconnect.
B. The location and type of extra eyes.

It is helpful if above length and locations are indicated by reference points shown in the sample sling diagram.

OPTIONAL EQUIPMENT

Code "L" --LOOSEPIN HARDWARE

Allows for on-site removal of fittings from the sling. Hot dip galvanized for corrosion resistance.



PART NUMBER	SLING WIDTH	VERTICAL* WORK LOAD LIMIT (LBS)
LPH-2	2"	6,400
LPH-3	3"	10,400
LPH-4	4"	8,600
LPH-5	5"	14,000
LPH-6 HD	6" HD	19,000

WEBBING WIDTH (inches)	W	L	D	P	R
2"	2"	2-1/4"	5/8"	3/4"	1-5/8"
3"	3"	3-1/4"	3/4"	7/8"	1-7/8"
4"	4"	3-3/4"	3/4"	7/8"	1-7/8"
5"	5"	4-1/4"	7/8"	1"	2-1/8"
6" HD	6"	4-3/4"	1-1/8"	1-1/4"	2-5/8"

***Vertical W.L.L. are based upon a 5/1 Design Factor**

CODE "B" – BASKET HARDWARE

Alloy steel fitting is permanently attached to the sling. Plated for corrosion resistance.

(See page 45 for fitting specifications).

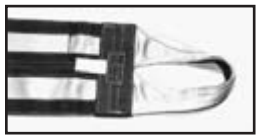
CODE "F" – FLAT EYE

The sling eye is sewn flat to the sling body. If the flat eye is to be used with existing shackles, please specify eye width.

CODE "T" – TWISTED EYE

The sling eye is turned 180° before sewing to the sling body.

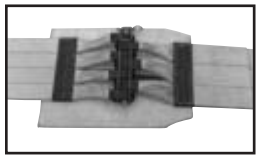
CODE "C" – CARGO EYE



The sling eye is formed by tapering the sling material for a narrower eye width than other eye designs. The cargo eye lays at 90° to the sling body.

⚠WARNING For use in basket hitch only.

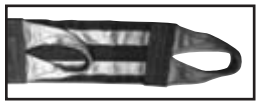
DISCONNECT



Allows for the removal of the sling from the boat, without detaching the sling from the lifting fixture. Protective flap is automatically included.

*Please specify location per diagram.

EXTRA EYES



Allows a single sling to adjust to varying load dimensions. Extra Eyes are available only in single ply construction slings.

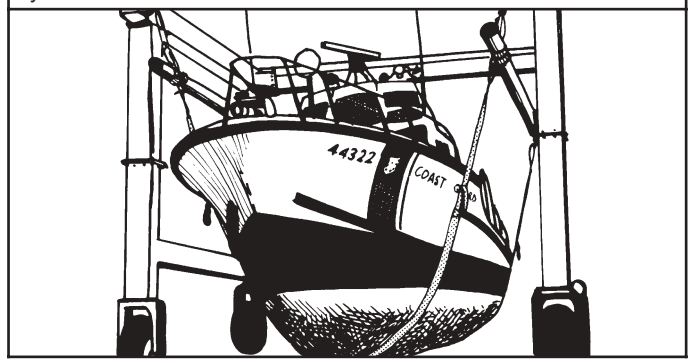
⚠ WARNING Add on eyes must always be rigged "in line" with the load path. Pulling against stitching shall never be permitted.

You must always specify:

1. Number and location of extra eyes.
2. Eye type: Cargo (Code "C")
   Twist (Code "T")
   Flat (Code "F")

MARINE SLING APPLICATIONS

Twin-Path® Extra Slings with High Performance Fiber make handling the 500 metric ton vessel module a breeze. Photo and slings furnished by Strider-Resource.

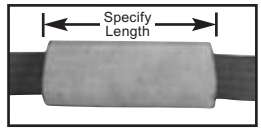


EDGE WRAP

A strip of fabric is sewn around the edge of the sling. This can be done on any location of the sling to ensure a useful service life.

*Please specify length and location for the edge wrap.

SLIDING CHINE AND RUBRAIL SLEEVES



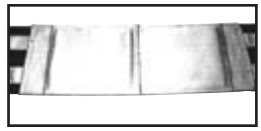
Sleeves can be positioned to prevent damage to the boat and sling at the chine and rubrails.

KEEL PAD

Webbing is sewn to the centerline of the sling to protect it from wear and abrasion.

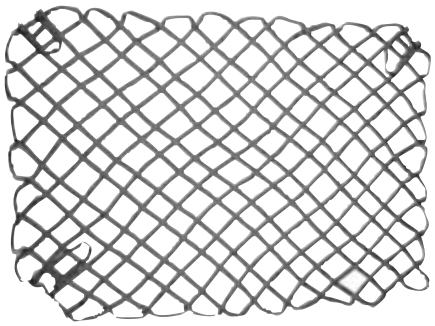
Standard keel pad length - 48 inches

LEAD WEIGHTS



Helps the sling lose buoyancy and keeps it underwater for easier positioning.

FLIGHT DECK NETS



Lift-It® Flight Deck Nets are fabricated from slotted webbing certifiable to MIL-W-23223A, specification for slotted webbing, with a standard haze gray latex finish.

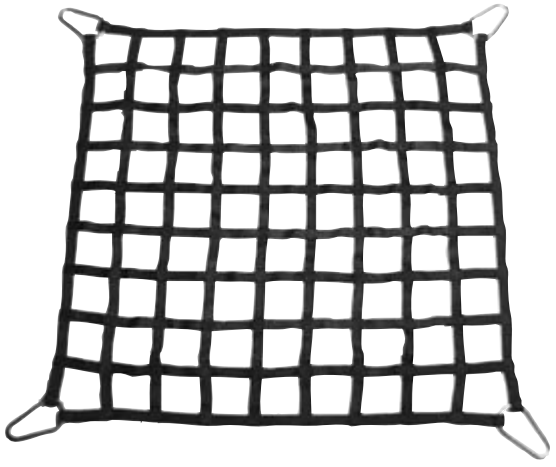
We manufacture rectangular and triangular shaped nets, as well as chock and causeway roller nets to both NAV Ship Drawing No. 804-1363948, Revision 'G' and Drawing No. 803-5184097.

CARGO NETS

Nylon webbing cargo nets are lightweight, flexible and more compact when compared to wire or manila rope nets. We manufacture cargo nets to MIL-S-18313G, Department of Defense specification for cargo nets, as well as a commercially produced line of cargo nets. The opening or mesh size is approximately 6.25 inches square.

Standard sizes:
4 ft. X 4 ft. 6 ft. X 6 ft. 8 ft. X 8 ft. 10 ft. X 10 ft.
12 ft. X 12 ft. 14 ft. X 14 ft. 16 ft. X 16 ft. 20 ft. X 20 ft.

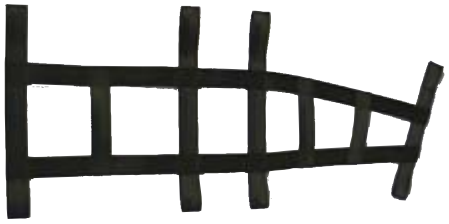
Other uses: Protective barriers and load tiedowns.

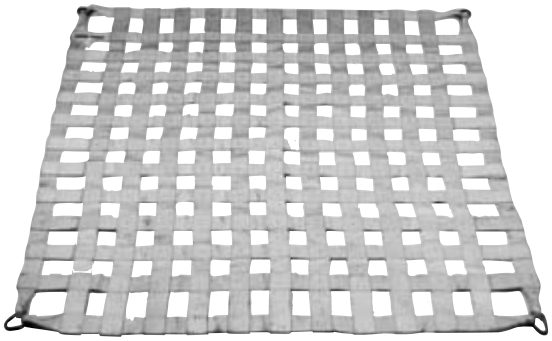


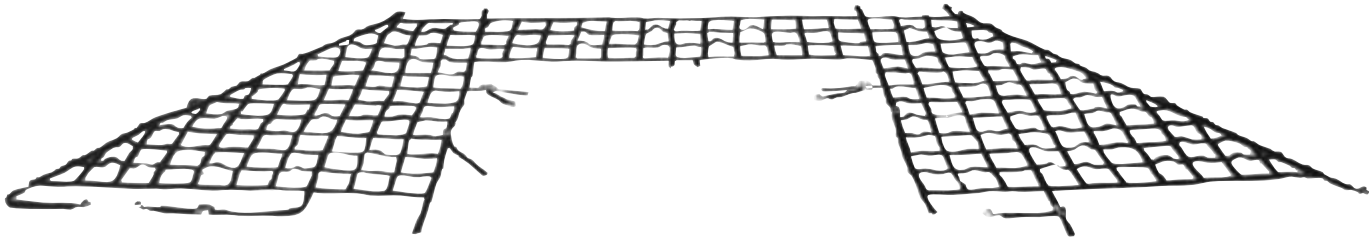
CARGO NET SPECIFICATIONS				
ORDER CODE	TYPE	WORK LOAD	CLASS	FINISH
CN4500	I	4500 LBS	A	ANTI-STATIC

NETS – CUSTOM DESIGN & FABRICATION

Custom designed nets are manufactured, on a regular basis for special applications. Exact material, fabrication and process guidelines are "not a problem" and are standard operating procedures at Lift-It®.



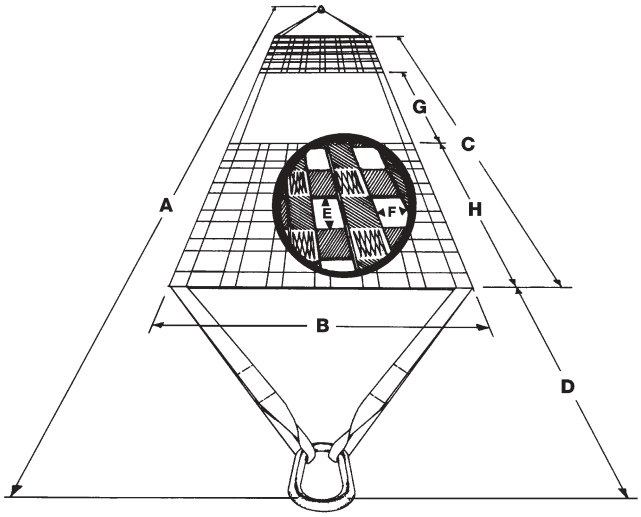




WHEEL NETS

Wheel nets are used in matched pairs to handle vehicles of various sizes and weights. These assemblies are designed and fabricated to meet specific application requirements.

"R" (RING) NET CONFIGURATION



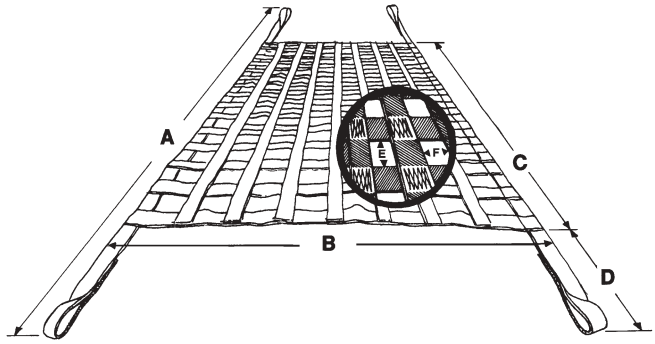
Please specify:

1. Net configuration - "R" (Ring) or "L" (Loop)
2. Body width "B" and length "A"
3. Lifting tail length "D"
4. Required work load limit per pair of wheel nets.
5. Grid size "E" and "F" are dictated by the overall strength requirement. Sizes are available on request.
6. Pad length "H" and spacing between pads "G" are necessary for "R" (Ring) net configurations.

Standard models are offered for "R" (Ring) net configurations only.

"R" (RING) NET SPECIFICATIONS			
Stock No.	**WN 5000**	**WN 17000**	**WN 30000**
W.L.L. (LBS)	10,000	34,000	60,000
Masterlink (Diameter)	1-1/4"	1-1/2"	1-3/4"
Body Width "B"	36"	48"	66"
Overall Length "A"	184"	212"	294"
Tail Length "D"	44"	46"	81"
Pad Length "H"	48"	48"	54"
Gap Distance "G"	-	24"	24"
Body O.A.L. "C"	96"	120"	132"

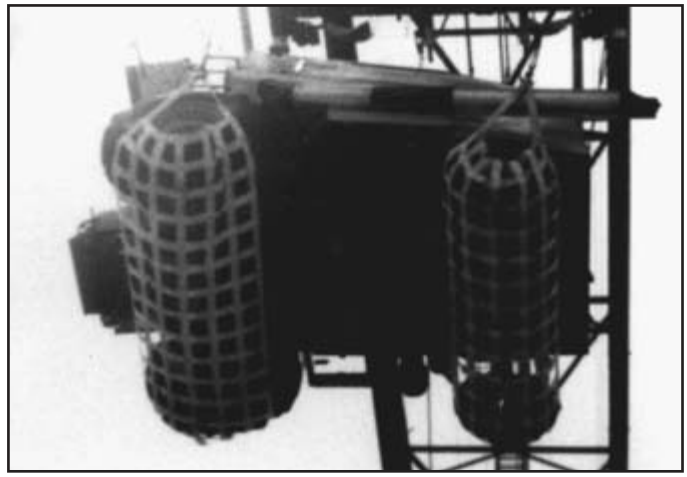
"L" (LOOP) NET CONFIGURATION



* The Work Load Limit (W.L.L.) is based on using two nets. Our design criteria calls for one net to be capable of lifting up to 75% of the total load.

WHEEL NET SYSTEMS

Wheel net systems are available with a wide range of working loads. The wheel net system features a spreader bar and sling bridles to connect the wheel net to the spreader bar. Reusable storage boxes can be supplied and are recommended.



⚠ WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

Nets

FALL PREVENTION NETS

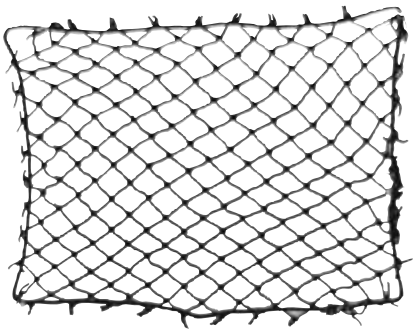
Fall Prevention nets are made from a 3-1/2 inch nylon rope mesh, proven to withstand an impact of 17,500 ft./lbs. (350 pounds dropped 50 feet).

Lift-It® Nets meet or exceed the requirements of the American National Standards Institute ANSI A10.11-1989 and of O.S.H.A. Paragraph 1926.105.

Fall prevention nets must incorporate border connection points to satisfy regulatory requirements. Forged snap hooks are placed at 48 inch intervals, with hook spacing staggered on opposite sides and ends. When nets are to be connected to each other, the staggering, previously mentioned, results in 2 foot, hook intervals.

- Lightweight cover nets can be installed for catching small tools/objects falling from the job.

NYLON ROPE NETS



NETTING SPECIFICATIONS:
MATERIALS:
No. 36 Cord - 325 lbs. tensile
No. 84 Cord - 805 lbs. tensile

BORDER - 5/16 in polypropylene
MESH SIZE - 2 in. knot-to-knot diamond pattern
FINISH - All materials are treated to retard UV light degradation, and are black in color.

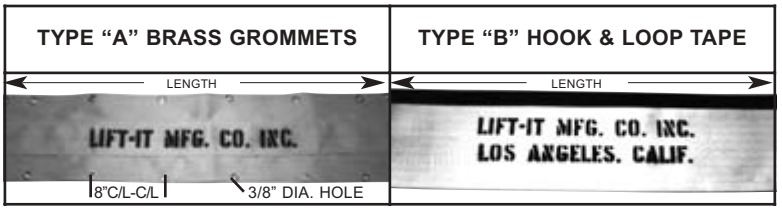
Chaffing Gear

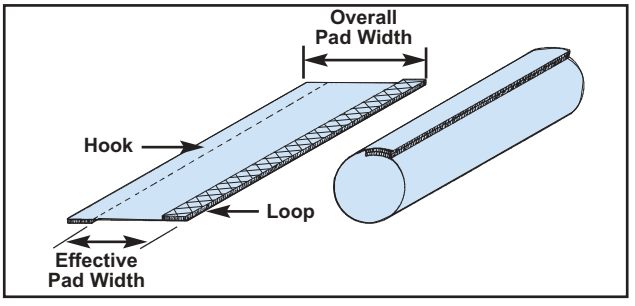
Lift-It® Chaffing Gear protects expensive mooring and tow lines from cutting and abrasion. Easy to install and remove, Chaffing Gear works equally as well with chain and wire rope assemblies, protecting the load and the sling.

Available in three materials: Webbing, Cordura® or 3/8 in. Felt. The standard material is webbing with an approximate 3/16 in. thickness. Bulked nylon material, also known as Cordura®, is five times more abrasion resistant than webbing, and is 3/32 inch thick. High Density Felt provides a “cushion” effect, when desired. Material selection should be based upon the application, abrasion resistance or need for additional chaffing gear thickness.

Chaffing gear is available in any width and length. It may be ordered as a single, long length for on-site cutting and installation of desired lengths, as required.

Available in three different materials: Webbing, Cordura®, Felt
Available in two different designs: Type “A” or Type “B”





TYPE "B" SPECIFICATIONS				
OVERALL PAD WIDTH (IN)	HOOK & LOOP WIDTH (IN)	EFFECTIVE PAD WIDTH (IN)	ROPE DIAMETER (IN)	ROPE CIRCUMFERENCE (IN)
8	1	7	1-1/2 to 1-3/4	4-3/4 to 5-1/2
10	2	8	2	6-1/4
12	2	10	2-1/2 to 2-3/4	7-3/4 to 8-5/8
14	2	12	3 to 3-1/2	9-1/2 to 11
16	2	14	4	12-1/2

YOU MUST SPECIFY:

1) Design Type:
Type “A” or “B”

2) Material Type:
Webbing
Cordura®
Felt

3) Overall width and length

4) Allow extra width to compensate for line swelling.

5) Please consider the effective width for TYPE “B” chaffing gear.

Container Lifting Assemblies

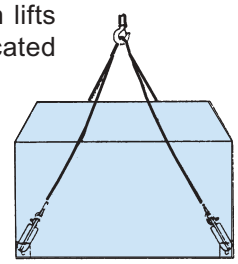
Lift-It® Container Lifting Assemblies provide an efficient way to handle containers which feature a bottom lifting slot.

Available in two models, standard and adjustable, Container Lifting Assemblies are rated to handle 20 and 40 ft containers with work load limits of 45,000 pounds for the standard model and 48,000 pounds for the adjustable model.

All assemblies feature wire rope slings (with thimbles), four screw pin anchor shackles (8-1/2 ton) and four container lifting lugs. The adjustable assembly features a Top Adjuster, designed and manufactured to comply with ASME B30.20. Container Assemblies and Lugs with larger work load limits are available.

STANDARD - 45,000 lbs. WLL

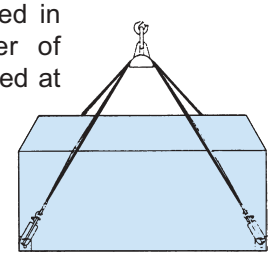
The standard assembly is used in lifts where the center of gravity is located at the center of the container.



STOCK NUMBER	CONTAINER SIZE	SLING LENGTH (FT)	WIRE ROPE DIA.	SINGLE ANGLE FROM HORIZONTAL	HEAD ROOM REQUIRED	ASSEMBLY WEIGHT (LBS)
CLS-45-20	20-FT.	38'	7/8"	60°	114 IN	260
CLS-45-40	40-FT.	55'	1"	45°	130 IN	353

ADJUSTABLE - 48,000 lbs. WLL

The adjustable assembly is used in applications where the center of gravity is offset and is not located at the center of the container.

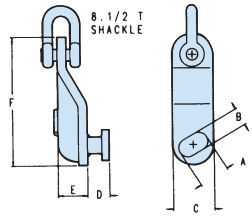


STOCK NUMBER	CONTAINER SIZE	SLING LENGTH (FT)	WIRE ROPE DIA.	SINGLE ANGLE FROM HORIZONTAL	HEAD ROOM REQUIRED	ASSEMBLY WEIGHT (LBS)
CLSA-48-20	20-FT.	32'	3/4"	52.5°	78 IN	532
CLSA-48-40	40-FT.	54'	3/4"	45°	162 IN	748

COMPONENT INFORMATION

CONTAINER LIFTING LUG

- Color identified to differentiate Right from Left hand models
  Right Hand Models- Yellow
  Left Hand Models--Red
- Handle Indicator shows that the lug is engaged for lifting.

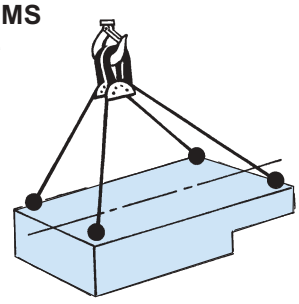


RIGHT HAND SHOWN

STOCK NUMBER	WORK LOAD (LBS)	LIFTING LUG DIMENSIONS (IN.)						WEIGHT (LBS)
		A	B	C	D	E	F	
CLL	17,000	3	1-3/4	4	2	2-7/8	12-3/4	17

TOP ADJUSTER MECHANISMS

- Allows the crane hook to be placed directly over the center of gravity.
- Quickly adjusts to the CG.
- Can be locked into place for repetitive lifts.



STOCK NUMBER	WORK LOAD (LBS)	CTAM DIMENSIONS (IN.)			WEIGHT (LBS)
		A	B	C	
CTAM24	48,000	1-3/4	6	12	175

LIFTING LUG OPERATION

Align Lug with Container Fitting

Insert Lug into Container Fitting

Apply Tension and Indicator Shows Lug in Locked Position.

⚠ WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. **DEATH or INJURY** can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

Recovery Slings

The finest materials and craftsmanship are put into every recovery sling we manufacture. Because of our extensive experience in heavy duty sling fabrication, we can offer narrower eye widths for a more proper and longer lasting relationship between the sling eye and attachment hardware.

Slings are only as strong as their weakest component. Slings equipped with certain accessories, like loosepin hardware, can not be assigned the full work load limit of the webbing, since the attachment hardware is not as strong as the webbing. For full strength applications use steel triangles or fabric eyes.

A 16 foot sling length is ideal for tanker roll over applications, while a 26 ft. sling length is recommended for the recovery of buses, trailers, cube vans and certain tankers.

SPECIFICATIONS

SLING WIDTH (IN)	STOCK NUMBER	THICKNESS (BODY PLYS)	WORK LOAD LIMITS		
			CHOKER	VERTICAL	BASKET
6	RS*1-906	1	7,600	9,600	19,200
6	RS*2-906	2	13,000	17,000	34,000
8	RS*1-908	1	10,250	12,800	25,600
8	RS*2-908**	2	18,000	22,800	45,600
12	RS*1-912	1	15,000	19,000	38,000
12	RS*2-912**	2	24,000	30,000	60,000

* Insert Fitting Order Code

**Loosepin hardware (Code "L") not available to match sling work load limits.

SEE PAGES 45, 46 and 72 FOR FITTINGS SPECIFICATIONS

FITTINGS/TERMINATIONS

ALUMINUM TRIANGLE ORDER CODE "A"

WEB WIDTH	VERTICAL WORK LOAD LIMIT
6"	9600

STEEL TRIANGLE ORDER CODE "B"

WEB WIDTH	VERTICAL WORK LOAD LIMITS	
	Single Ply	Double Ply
6"	9600	17000
8"	12800	22800
12"	19000	30000

HALF TWIST ORDER CODE "T"

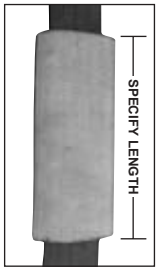
RECOMMENDED FOR CHOKE HITCHING

WEB WIDTH	EYE DIMENSIONS (WIDTH X LENGTH)
6"	2" X 16"
8"	3" X 18"
12"	4" X 30"

LOOSEPIN HARDWARE ORDER CODE "L"

WEB WIDTH	VERTICAL WORK LOAD LIMIT
6"	19000

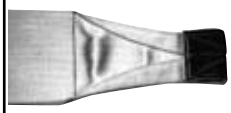
PROTECTIVE SLEEVE



(SPECIFY NUMBER OF SLEEVES REQUIRED)

SEE PAGES 13 - 20 FOR ADDITIONAL INFO

FLAT EYE ORDER CODE "F"



WEB WIDTH	EYE DIMENSIONS (WIDTH X LENGTH)
6"	6" X 6"
8"	6" X 18"
12"	6" X 18"

SLING FEATURES

YOU NEED NOT SPECIFY THESE OPTIONS, THEY ARE AUTOMATICALLY DONE FOR YOU BY LIFT-IT® MANUFACTURING.

BRANDED LEATHER TAGS

The sling work load limit is branded into genuine leather, resulting in the most durable tag currently available.

TREATED WEBBING

All webbing is treated for increased abrasion resistance and additional gripping power.

RED CORE YARNS

Lift-It® webbing has inner load bearing yarns that carry over 70% of the load. Woven into this same layer are red core warning yarns, which may become visible as the protective outer cover is worn away. The exposure of these yarns is one of the many signals that alerts the sling user/inspector to remove the sling from service.

⚠ WARNING DO NOT USE SLINGS THAT ARE STRUCTURALLY DAMAGED, EVEN IF THE RED CORE WARNING YARNS ARE NOT VISIBLE.

EYE BUFFERS

The bearing point of the eye is a critical wear area. An additional pad is attached at this point to enhance the service life of your sling.

HOW TO ORDER

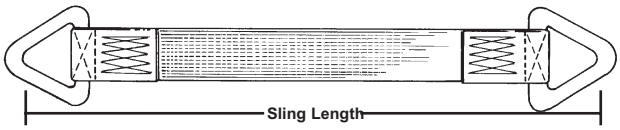
You must specify:

1. Complete stock number and order codes

RS * 2 - 912

- RS: RECOVERY SLING
- *: FITTING OR LOOP
  - "A"-Aluminum Triangle
  - "B"-Steel Triangle
  - "F"-Flat Eye
  - "L"-Loosepin Shackle
  - "T"-Twisted Eye
- 2: NUMBER OF BODY PLYS
  - (1) Single
  - (2) Double
- 9: MATERIAL GRADE
  - (9) Heavy
- 12: SLING WIDTH (Inches)

2. Width and length (bearing to bearing)



3. Optional equipment - protective sleeves
   Specify the number of sleeves and sleeve length
   (See pages 13-20 for additional information)

WHEEL LIFT/TOW DOLLY TIEDOWN STRAPS

Lift-It® offers a wide variety of assemblies and ratchet buckles to fit most wheel lifts. Manufactured from treated polyester webbing, tow dolly tiedown straps meet or exceed state regulations for tiedowns used with dolly and/or wheel lifts.

SPECIFY THE ASSEMBLY LENGTH - 80 IN. OR 110 IN.

	Assembly Order Code	Web Width	Fitting Code	Wrecker Models
 Width: 2"x2" Flat Loop: with: Plain End:	TDS-1 TDS-2	2"	2N	Century Challenger No-Mar
	TDS-3	2"	3J	Weldbuilt
	TDS-4	2"	2G (Hook) 2L (Delta)	American Wheel Lift Pro-West
	TDS-5	2"	2Q	Merlin Hyjacker Avenger
	TDS-6	2"	3F	

TOW BRIDLES

Designed specifically to eliminate the damage done to the plastic cowlings, on many types of vehicles. Only webbing contacts the vehicle surface.

Assembly Work Load Limit - 2000 lbs.

WEB WIDTH (INCHES)	WEB LENGTH (INCHES)	ASSY. ORDER CODE
2	20	TB2-20
2	32	TB2-32
3	20	TB3-20
3	32	TB3-32

RECYCLE YOUR FITTINGS FOR SUBSTANTIAL COST SAVINGS.

WHEEL TIEDOWN ASSEMBLIES

ASSY. ORDER CODE TDS-7 (FITTING CODE – 1N)

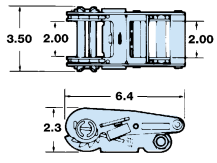
2500 LBS. ASSY. BREAK STRENGTH
833 LBS. ASSY. WORK LOAD LIMIT

ASSY. ORDER CODE TDS-8 (FITTING CODE – 3G)

5000 LBS. ASSY. BREAK STRENGTH
1666 LBS. ASSY. WORK LOAD LIMIT

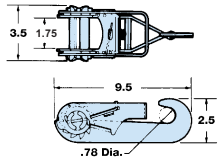
RATCHETS & ACCESSORIES

RATCHET BUCKLE (ORDER CODE 2A)



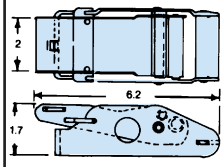
STRENGTH 5,000 lbs.
UNIT WEIGHT 2.10
WEB WIDTH - 2 IN.

RATCHET HOOK END 1 3/4 WEBBING (ORDER CODE 2B)



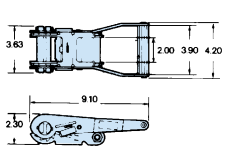
STRENGTH 5,000 lbs.
UNIT WEIGHT 1.65
WEB WIDTH - 1 3/4 IN.

OVERCENTER BUCKLE (ORDER CODE 2C)
(HOOK END VERSION - CODE 2D)



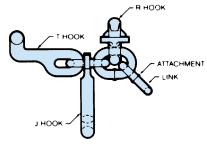
STRENGTH 5,000 lbs.
UNIT WEIGHT 1.18
WEB WIDTH - 2 IN.

RATCHET BUCKLE (ORDER CODE 3A)
LONG/WIDE HANDLE



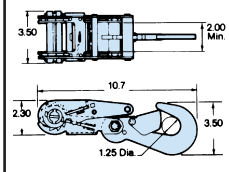
STRENGTH 10,000 lbs.
UNIT WEIGHT 2.30
WEB WIDTH - 2 IN.

CLUSTER HOOK (ORDER CODE 2R)



STRENGTH 12,000 lbs.
UNIT WEIGHT 2.5

RATCHET HOOK END (ORDER CODE 3B)



STRENGTH 10,000 lbs.
UNIT WEIGHT 2.80
WEB WIDTH - 2 IN.

⚠WARNING ALL STRENGTHS SHOWN ARE BREAKING STRENGTHS.

Working load requirements should be evaluated by the user before selecting appropriate hardware and strap assemblies. All strap assemblies or systems are as strong as the weakest component, including the point of attachment. Assemblies must be inspected for worn or damaged parts. Failure to replace worn or damaged assemblies or components may result in serious personal injury and/or death. Use by untrained personnel is hazardous. Read and understand the information contained in this publication and follow all DOT, CVSA and CHP rules, regulations and guidelines.

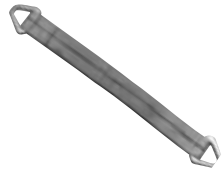
STEERING WHEEL STRAP

The Steering Wheel Strap loops around the steering wheel and hooks under the seat or to the brake pedal. With the buckle open, adjust the belt to length and in closing the buckle another inch of webbing is taken up. The belt is 1-3/4 in. nylon web with a 2C overcenter buckle and 2J flat hook for placement.

MOTORCYCLE SLINGS

Nylon Motorcycle Slings (Stock No. MS1-602) cradle the motorcycle, damage free. Standard sizes, 2 x 60 in. or 2 x 54 in. Eyes are tapered to 1 in. width for quick and easy hook ups. All motorcycle straps are treated for greater abrasion resistance.

AXLE STRAPS



2 in. x 24 in. Axle Straps are used to tiedown special vehicles where direct contact with a tow hook might result in damage. Wrap two straps around each axle, in opposing directions, for a secure tiedown.

Electronic Force Measurement

The MSI-7200 Dyna-Link has become a standard tool among test engineers, crane operators and riggers for applications ranging from pull testing in the laboratory to providing on-the-job load indication and overload warning for all types of industrial cranes in virtually every industry, worldwide. The Dyna-Link is designed and manufactured under the highest quality assurance levels for ensured safety, performance and reliability.

- Simple to Operate
- Environmentally Sealed Enclosure
- Microprocessor Based Electronics
- Multiple and Universal Display Capability
- Optional Accessories for Complete Product Versatility
- Made in the U.S.A.

Dyna-Link is the choice for riggers in construction and utility applications. Safety and reliability are primary concerns with regard to equipment used by personnel in all applications. As a rigger's tool, Dyna-Link provides the necessary reliability, whether used for monitoring or balancing cable line tension or indicating loads for proper rigging practices. The versatility provided by Dyna-Link's many features, along with its all environment tolerant package, makes it the industry's choice tension dynamometer and rigging tool.

Dyna-Link's portability and broad capacity range conveniently eliminates guesswork and risks associated with lifting unknown loads on all types of cranes. Crane operators and riggers are provided with an inexpensive solution for determining unknown loads. The Dyna-Link is portable and available in capacities up to 250 tons, so it can be easily called on for duty, whenever and wherever required. When installed at the dead-end of a crane line, Dyna-Link serves as a crane overload warning device. A combination of options allow direct AC or DC input power along with relay control of motors and overload warning signals for all types of cranes. Crane Safety Certifiers also find the Dyna-Link to be extraordinary equipment for convenient, on-site certification of cranes.

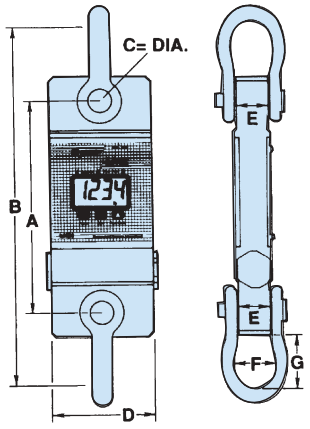
MSI-7200 DYNA-LINK DYNAMOMETERS

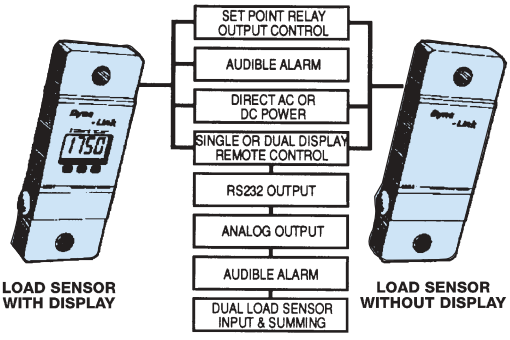
STANDARD PRODUCTION SPECIFICATIONS

Accuracy: 0.2% of rated capacity
Display: Four digit 1 inch/25mm high
Functions: On/Off, Zero (100%), Peak Hold, Set points (2 selectable)
Annunciators: Low Battery, Peak Hold, Setpoints I & II
Units Displayed: Lbs, Kgs, Tons, Metric Tons and dekaNewtons
Power: 2 each "C" alkaline batteries
Operating Time: Minimum 500 hours of continuous use (10 minute auto-shut off with non-use)
Operating Temperature: -4° to 140°F (-20° to +60°C)
Enclosure: Corrosion resistant and environmentally sealed
Overload: 200% safe - 500% ultimate

OPTIONS AND ACCESSORIES

- Top and bottom shackles (Crosby or equal)
- Portable carrying case
- Single display remote control (Hardwired)
- Dual display remote control (Hardwired)
- Quick disconnect for remote display options
- Set point relay output control kit
- AC or DC power input (specify power requirements)
- Analog output (available for remote display option only)
- RS232 output (available for remote display option only)
- Dual load sensor input and summing
- Audible set point alarm





CAPACITY	RESOLUTION	A	B	C	D	E	F	G	APPROXIMATE SHIP WEIGHT	OPTIONAL SHACKLE
500 LBS	0.5 LBS	9.25 IN	14.77	0.75	4.50	.99	1.69	1.87	5 LBS	3-1/4 T
250 KGS	0.2 KGS	235 MM	3.75	19	114	25	43	48	2.3 KGS	
1,000 LBS	1 LBS	9.25 IN	14.77	0.75	4.50	.99	1.69	1.87	5 LBS	3-1/4 T
500 KGS	0.5 KGS	235 MM	375	19	114	25	43	48	2.3 KGS	
2,000 LBS	2 LBS	9.25 IN	14.77	0.75	4.50	.99	1.69	1.87	5 LBS	3-1/4 T
1,000 KGS	1 KGS	235 MM	375	19	114	25	43	48	2.3 KGS	
5,000 LBS	5 LBS	9.50 IN	15.02	0.75	4.50	.99	1.69	2.00	7 LBS	3-1/4 T
2,500 KGS	2 KGS	241 MM	382	19	114	25	43	51	3.2 KGS	
10,000 LBS	10 LBS	9.50 IN	17.12	1.00	4.50	1.37	2.28	2.68	15 LBS	6-1/2 T
5,000 KGS	5 KGS	241 MM	435	25	114	35	58	68	6.8 KGS	
25,000 LBS	20 LBS	10.13 IN	23.26	1.63	4.80	2.24	3.88	4.81	30 LBS	17 T
12,500 KGS	10 KGS	257 MM	591	41	122	57	99	122	13.6 KGS	
50,000 LBS	50 LBS	10.88 IN	26.88	2.00	5.43	2.74	5.00	6.00	50 LBS	25 T
25,000 KGS	20 KGS	276 MM	683	51	138	70	127	152	22.7 KGS	
100,000 LBS	100 LBS	12.50 IN	30.25	2.25	6.86	3.10	5.75	6.37	85 LBS	50 T
50,000 KGS	50 KGS	318 MM	768	57	174	79	146	162	38.6 KGS	
160,000 LBS	200 LBS	13.50 IN	37.25	2.75	7.50	3.88	7.25	8.88	150 LBS	80 T
80,000 KGS	100 KGS	343 MM	946	70	190	99	184	225	68 KGS	
220,000 LBS	200 LBS	14.00 IN	43.25	3.25	7.50	4.74	7.88	11.36	185 LBS	110 T
110,000 KGS	100 KGS	356 MM	1099	83	190	120	200	288	84 KGS	
350,000 LBS	500 LBS	16.00 IN	49.25	4.25	9.00	5.24	10.00	12.13	285 LBS	175 T
175,000 KGS	200 KGS	406 MM	1250	108	229	133	254	308	130 KGS	
400,000 LBS	500 LBS	17.50 IN	53.25	4.75	9.50	6.99	11.00	12.88	450 LBS	200 T
200,000 KGS	200 KGS	445 MM	1353	121	241	178	279	327	204 KGS	
500,000 LBS	500 LBS	19.00 IN	64.00	5.00	10.00	7.99	13.00	17.00	575 LBS	250 T
250,000 KGS	200 KGS	483 MM	1626	127	254	203	330	432	260 KGS	

Consult factory for higher capacities. Specifications subject to change.

Emergency Response Kit

When disaster strikes, each moment is extremely precious and every action must be made with precision and accuracy. The right tools, immediately available, will help make the difference.

Emergency Response Kits provide immediate access to rigging equipment that connects the load to any available lifting or pulling mechanism. Available in regular and heavy-duty models, each kit also contains adjustable and heat resistant slings, allowing immediate reaction to demanding situations.

Inspection records and certification of testing is enclosed with each kit. Return the kit after use for inspection and recertification. Special kits can be developed to suit your needs and slings with work loads of 500,000 lbs. are readily available.

Be prepared and order your kit, today.

Regular Kit- Stock No. ERK-RG
(2 Bags – 50 lbs. each)

Heavy Duty Kit- Stock No. ERK-HD
(3 Bags—70 lbs. each)

RESPONSE KIT CONTENTS

FLAT ENDLESS SLINGS		Width (inches)	Length (ft.)	Vertical Work Load
Quantity	Part No.			
2	EN2-901**	1	2	6,400
2	EN2-901**	1	4	6,400
2	EN2-901**	1	6	6,400
FLAT EYE & EYE SLINGS		**Width (inches)**	**Length (ft.)**	**Vertical Work Load**
Quantity	**Part No.**			
2	EE2-902	2	8	6,400
2	EE2-902	2	10	6,400
2	EE2-902	2	12	6,400
2	EE2-902	2	16	6,400
2	EE2-902	2	20	6,400
2	EE2-904*	4	20	11,400
HIGH HEAT SPARKEATER		**Width (inches)**	**Length (ft.)**	**Vertical Work Load**
Quantity	**Part No.**			
2	TPSE2000	3	9	20,000
HIGH PERFORMANCE FIBER		**Width (inches)**	**Length (ft.)**	**Vertical Work Load**
Quantity	**Part No.**			
2	TUFXKS3000*	4	20	30,000
ADJUSTABLE ROPE SLING		**Diameter (inches)**	**Length (ft.)**	**Vertical Work Load**
Quantity	**Part No.**			
1	Y-Q-785296**	.88	5 TO 8	15,500
ADJUSTABLE CHAIN SLING		**Width (inches)**	**Length (ft.)**	**Vertical Work Load**
Quantity	**Part No.**			
1	QOS**	0.38	3	18,400
ENDLESS RATCHET ASSYS		**Width (inches)**	**Length (ft.)**	**Vertical Work Load**
Quantity	**Part No.**			
2	1-2A-20	2	20	1,666
WEAR PROTECTION		**Width (inches)**	**Length (ft.)**	
Quantity	**Description**			
4	Cornermax	6	1	
4	H.D. Nylon Sleeves	4	1	
4	H.D. Nylon Sleeves*	6	1	
MISCELLANEOUS		**Width (ft.)**	**Length (ft.)**	
Quantity	**Description**			
1	Cargo Net*	8	8	
		Size	Vertical	
2	Anchor Shackle	3/4 in.	9,500	
2	Eye Hoist Hook		10,000	
1	Rigger's Knife			

*** Not Included in the ERK-RG**

**** Sling with smaller work load limits furnished with the ERK-RG**

Twin-Path® Extra Slings In Action

Twin-Path® Extra Slings are the single greatest advance in the history of the rigging world. Leave the crushed fingers, back injuries, forklifts, transport vehicles and auxiliary cranes in the past. Twin-Path® Extra Slings allow sling users to do more, in less time, with less effort. Given the choice and the assumption of proper application, any informed rigger will select the Twin-Path® solution, over all alternative sling types and designs.

The 200 ton drive shaft was easily handled with Twin-Path® Extra Slings. Each sling is rated at a 250,000 lbs. basket work load and is 56 ft. long. Each sling weighs a mere 169 pounds, and one man rigged the load while three assistants viewed the process. The ease of handling reduced the normal two day procedure to a process requiring only minutes. It was heralded as one of the easiest ever performed by the rigging crew at the power generation facility.

60 Tons of Explosives- "I'll never buy wire again"

DEFENSE AND LAUNCH VEHICLE DIVISION
P.O. BOX 689
BRIGHAM CITY, UT 84302-0689
801-863-3511

THIOKOL
SPACE • DEFENSE • FASTENING SYSTEMS

12 September 1995
Q512-PY96-067

Lift-It Manufacturing Co., Inc.
4780 Corona Avenue
Los Angeles, California 90058-3808

Attention Mike Gelskey

Subject: Twin-Path Extra Slings

Gentlemen:

In my job with 120,000 lbs. of explosives in the air you don't take chances with your equipment. In early 1994 we were challenged to develop a mobile handling system to deliver our product to our customers. Your slings were selected for several reasons:

* SAFETY - Two protective covers
  - Contrasting color
  - Tattle Tails
* MOBILE - Two each 17500 X 35' and eight 7000 x 8' slings fit in a 4'x4'x3' container with room to spare.
* RIGGERS DREAM - Back injuries, pinched fingers, holes poked in your hands are all history.
* CYCLE TIME - One man can rig as much as a crew in one eighth the time.

I'll never buy wire again.

Sincerely,

Ron Secrist

Twin-Path® Extra Slings
K-Spec® High Performance Fiber

The first truly ergonomic sling, Twin-Path® Extra slings are used worldwide in place of wire rope slings for heavy lifts. A Twin-Path® Extra sling weighs approximately 10-15% of a comparable steel sling. Super strong and ultra-light, Twin-Path® Extra slings with 500,000 lbs. vertical work load limits are readily available. Larger capacity slings offered upon request.

The patented Twin-Path® design provides two, independent connections between the hook and the load for back up protection. Twin-Path® slings have tattle tails, inner red inspection covers and feature a fiber optic inspection system, or ✓Fast™ Inspection System when requested. Stretch at work load limit is approximately 1%, substantially lower than braided, polyester round slings, which stretch at approximately 9% at work load.

Twin-Path® Extra slings feature K-Spec® load carrying fibers. K-Spec® has been determined to be a resilient and abrasion resistant fiber, confirmed by independent testing. Covermax®, a bulked nylon, outer, protective cover provides superior abrasion resistance. Covermax® is furnished on all Twin-Path® slings with vertical work loads greater than 40,000 pounds.

The abrasion resistance of the K-Spec® load carrying fiber, combined with the durability of the Covermax® cover, make Twin-Path® slings the first, repairable sling. Twin-Path® Extra slings are definitely the slings of choice when ergonomics, productivity and safety are important considerations.

TWIN-PATH EXTRA® SPECIFICATIONS

		WORK LOAD LIMIT (LBS.) (5 TO 1 DESIGN FACTOR)						
Polyester Cover	Covermax® Cover	Choker	Vertical	Basket Hitches			Approximate Weight (LBS. per FT) (Bearing-Bearing)	Approximate Body Width (Inches)
				90°	60°	45°		
Twin-Path® Extra Stock No.	Twin-Path® Extra Stock No.							
TPXKS1000	TUFXKS1000	8,000	10,000	20,000	17,320	14,140	.31	3"
TPXKS1500	TUFXKS1500	12,000	15,000	30,000	25,980	21,210	.40	3"
TPXKS2000	TUFXKS2000	16,000	20,000	40,000	34,640	28,280	.55	3"
TPXKS2500	TUFXKS2500	20,000	25,000	50,000	43,300	35,350	.65	4"
TPXKS3000	TUFXKS3000	24,000	30,000	60,000	51,960	42,420	.80	4"
TPXKS4000	TUFXKS4000	32,000	40,000	80,000	69,280	56,560	1.12	5"
	TUFXKS5000	40,000	50,000	100,000	86,139	70,700	1.50	5"
	TUFXKS6000	48,000	60,000	120,000	103,920	84,840	1.60	5"
	TUFXKS7000	56,000	70,000	140,000	121,240	98,980	1.66	6"
	TUFXKS8500	68,000	85,000	170,000	147,220	120,190	1.85	6"
	TUFXKS10000	80,000	100,000	200,000	173,200	141,400	2.20	6"
	TUFXKS12500	100,000	125,000	250,000	216,500	176,750	3.00	8"
	TUFXKS15000	120,000	150,000	300,000	259,800	212,100	3.36	8"
	TUFXKS17500	140,000	175,000	350,000	303,100	247,450	4.00	10"
	TUFXKS20000	160,000	200,000	400,000	346,400	282,800	4.37	10"
	TUFXKS25000	200,000	250,000	500,000	433,000	353,500	5.50	11"
	TUFXKS27500	220,000	275,000	550,000	476,300	388,850	6.90	11"
	TUFXKS30000	240,000	300,000	600,000	519,600	424,200	7.50	13"
	TUFXKS40000	320,000	400,000	800,000	689,112	565,600	8.60	14"
	TUFXKS50000	400,000	500,000	1,000,000	861,390	707,000	11.00	16"

Please Note: Work loads include both paths and are for one complete sling. Sling work loads are based upon connection points that have equal or greater strength. Twin-Path® Extra slings conform to the specifications and standards of: ASME B30-9, Chapter 6, Web Sling and Tiedown Association, WSTDA-RS-1, US Navy, NAVFAC P307, Section 14.6.4.3 and the Round Sling Standard of the Cordage Institute.

Twin-Path® Considerations

TWIN-PATH® INSPECTION SYSTEM

INITIAL INSPECTION - Before any Twin-Path® is placed into service it shall be inspected by a designated person to ensure that the correct sling is being used, as well as to determine that the Twin-Path® meets the requirements of the specifications contained in this publication, and to all applicable requirements. The sling shall also be inspected to ensure that no damage occurred during transit. The products must also be verified to be correct, as ordered and that they comply with the manufacturer's specifications. Without printed product specifications, this comparison cannot be accomplished. If written records for individual slings are to be maintained, the specific sling information should be initiated at this level of inspection.

FREQUENT INSPECTION - This inspection shall be made by a qualified person handling the Twin-Path® before each use. Proper sling selection, hazard recognition and removal from service shall also be accessed by the sling user or competent person. Written inspections are not required for frequent inspections.

PERIODIC INSPECTION - This inspection shall be conducted by a designated person. Frequency of inspection should be based on: frequency of use, severity of the service conditions and experience gained on the service life of Twin Path® Slings used in similar applications.

Periodic inspection intervals shall not exceed one year intervals.

ASME states that guidelines for the inspection time intervals are as follows:
Normal Service - Yearly
Severe Service - Monthly or Quarterly
Special Service - As recommended by a qualified person

Written records of the most recent periodic inspection shall be maintained. Records and documentation should be kept in the safety office or at the specific sling storage area.

REMOVAL FROM SERVICE CRITERIA

Slings shall be inspected throughout their entire length for evidence of damage. Core integrity is determined by a hand over hand inspection of the entire sling, combined with a thorough visual inspection. Twin-Path® Slings shall be removed from service if any of the following is visible:

A) Missing or illegible work load limit tag.
B) Brittle or stiff areas that may indicate chemical damage, acid or alkali burns.
C) Melting, charring or weld spatter of any part of the sling.
D) Holes, tears, cuts, embedded particles, abrasive wear, or snags that expose the load carrying yarns.
E) Broken, cut or damaged load carrying yarns.
F) Broken or worn stitching in the cover which exposes the load carrying yarns.
G) Fitting distortion: elongated, damaged, corroded or chemical degradation of fittings or component hardware.
H) Slings that are knotted.
I) Tattle tails - if one or both of the tattle tails is not visible or is chemically degraded.
J) Fiber-Optic - Lack of fiber optic light transfer, in sling models with the fiber optic (FO) option.
K) For slings equipped with ✓Fast™ Inspection: External Warning Indicator (EWI) is not visible, The ✓Fast™ Ribbon pulls out of the sling cover.
L) For hooks, removal criteria as stated in ASME B30.10
M) For applicable fittings, removal criteria as stated in ASME B30.26
N) Other damage which causes any doubt as to the strength of the sling.

Slings removed from service that are not capable of repair shall be destroyed and rendered completely unfit for future use.

⚠ WARNING ⚠ WARNING

Failure to follow proper use, care and inspection criteria could result in severe personal injury or death.

It is your explicit responsibility to consider all risk factors prior to using any rigging device or product. Read and understand the information contained in this publication and follow OSHA and ASME guidelines. Use by untrained persons is hazardous. Synthetic products will fail if damaged, abused, misused, overused, or improperly maintained.

A visual inspection of the sling must be made every time this sling is to be used. Slings that are damaged or determined to be unsafe shall not be used for any application. If the work load limit tag is missing, illegible or incomplete the sling shall not be used.

Do not exceed work load limits. You are cautioned that all published work load limits and break strengths apply to only new and unused slings, assemblies and hardware. Work Load Limits are based upon destruction testing done in controlled, laboratory conditions, which will never be duplicated during actual usage and a moderately dynamic lifting or pulling operation. Instantaneous changes (drops or sudden pick ups), in excess of 10% of the work load constitutes hazardous shock loading and THE WORK LOAD LIMITS AS STATED, DO NOT APPLY.

The use of improper fittings and/or materials may result in severe personal injury or death.

A combination of non-positive sling-to-load engagement and/or inadequate wear protection materials may result in wear protection damage and sling failure, resulting in uncontrolled load descent.

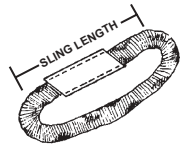
Synthetic products are damaged and cut when lifting on load edges. Edges in contact with the sling must be "padded" with materials of sufficient strength and thickness to prevent damage and catastrophic sling failure. Wear protection must be installed and evaluated for suitability by raising the load slightly, and then lowering the load for an inspection of the sling and the protection devices. Several "test" lifts may be necessary to determine the proper form of protection for a successful lift. The length of the sleeve or wear pad material(s) must not interfere with the sling closing to the full gripping position on the load. Wear protection may not prevent cutting or other forms of sling damage. To avoid severe personal injury or death, personnel should be kept away from the load and never be under or near the load, while it is being lifted or suspended.

ALWAYS CONSIDER

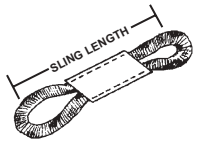
- TYPE OF HITCH AND CORRESPONDING WORK LOAD LIMIT
- CHEMICAL ENVIRONMENT
- SLING-TO-LOAD ANGLE
- ADEQUATE SLING PROTECTION TO AVOID SLING DAMAGE
- LOAD CONTROL

HOW TO ORDER

ALWAYS SPECIFY:
1. COMPLETE STOCK NUMBER
2. SLING LENGTH: Unless otherwise specified:
   - All assembly lengths are measured as bearing hardware
   - All sling lengths are bearing sling
3. WEAR PROTECTION: Description, location and quantity of wear pads and/or sleeves. See pages 13-20.



ONE STRAND SLEEVE (NON-REMOVABLE)

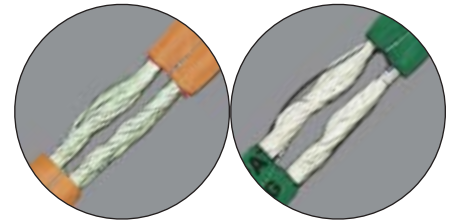


TWO STRAND SLEEVE (REMOVABLE)

4. DESCRIPTION OF END FITTINGS

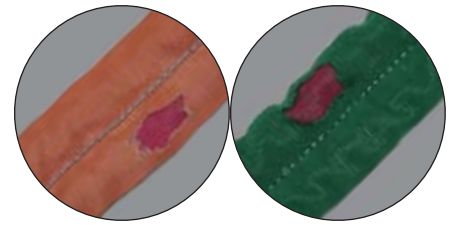
Twin-Path® Features

PATENTED BACK-UP PROTECTION



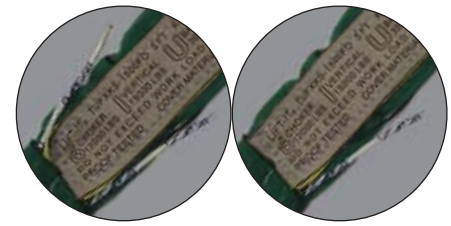
Twin-Path® slings are actually two complete and separate slings in one. Each path makes its own separate connection between the hook and the load and accounts for 50% of the total sling work load. This patented, design feature provides sling users redundant back up protection.
U.S. Patent Number 4,850,629 - Canadian Patent Number 1,280,458

EASY TO INSPECT



The Twin-Path® sling design provides the sling user with an early warning and inspection system. The load carrying yarns never come into contact with the load. The Twin-Path® sling design features two independent covers that are contrasting in color for easy inspection. When the protective outer cover is damaged, the inner red cover becomes visible providing the sling user with a visual alert to remove the sling from service and return to the manufacturer for repair evaluation.

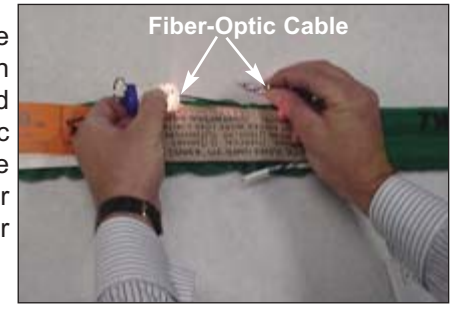
TATTLE TAILS



Before each use, inspect the entire sling. Tattle Tails are not a precision force measurement device, or a dynamometer. The tattle tail is an extension of the internal yarn bundle. Tattle Tails will retract and eventually disappear as the sling is overloaded and/or used as a load manipulating device.

Tattle Tails should extend past the tag area of the sling. If both tattle tails are not visible, remove the sling from service. If the tattle tails or any part of the sling shows evidence of chemical degradation, remove it from service and return to the manufacturer for repair evaluation.

FIBER-OPTIC INSPECTION



Fiber-optic inspection cables assist the sling user and inspector to evaluate the condition of the load carrying yarns. The condition of the internal load carrying yarn can be inspected by checking the conductivity of the fiber optic cable. If the load carrying yarns have suffered chemical, heat or crushing damage, the fiber optic cable will lose its ability to transmit light from one end to the other, giving the inspector a reason to remove the sling from service and return it for repair evaluation. The fiber optic cable will conduct light from natural, overhead or flashlight sources. US Patent No. 5,651,572

For fiber-optic option add FO to the sling stock number.
Example: TUFXKS 4000 FO.

SLING TAG AND TAG FLAP

Twin-Path® slings feature a heavy duty, branded, leather tag reflecting all information, currently required by the various regulatory agencies. The tag also includes a unique sling serial number, hitch diagrams, depicting the angle upon which the work loads are based, and the date of manufacture.

A Tag Flap is also attached, which indicates the vertical work load of the sling and other important information for the user.

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

Tattle Tails, Fiber Optics and/or the ✓Fast™ Inspection System can not be used exclusively to determine the condition of the load carrying fibers or sling. These patented, inspection devices must be used in conjunction with visual and tactile inspection techniques to determine sling condition. If there is any doubt, do not use questionable slings or any other rigging product. Return the sling to the manufacturer for factory repair evaluation.

Twin-Path® Features

✓FAST™ INSPECTION SYSTEM

The ✓Fast™ Inspection System provides subjective, not objective “pass/fail” criteria for Twin-Path® and roundslings of different constructions, types and materials. The ✓Fast™ Inspection System, combined with thorough visual and tactile inspection techniques, provides the sling user and inspector with an effective inspection system. For the ✓Fast™ Sling Inspection System, add CF to the sling stock number. Example: TUFXKS2000CF

The ✓Fast™ Inspection System provides a warning to sling users and inspectors of the following conditions:

- Internal load carrying fiber damage from fiber on fiber abrasion.
- Overloading beyond the proof test of twice the vertical work load limit.

The ✓Fast™ Inspection System assists responsible employers to comply with the training and inspection requirements, detailed in the ASME B30.9 Sling Safety Standards.

✓FAST™ COMPONENTS

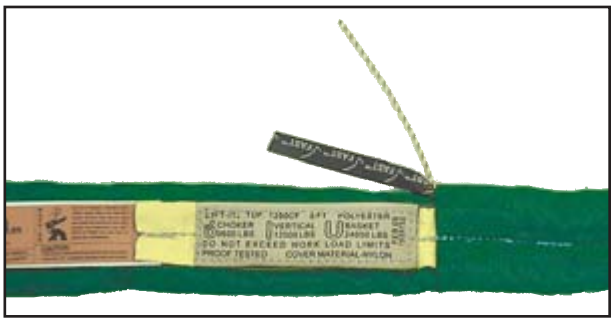
The ✓Fast™ Inspection System is composed of:

- ✓Fast™ Ribbon, black in color with silver lettering, extending from the sling cover.
- External Warning Indicator (EWI): an extension of double-braided cordage, which lays parallel to the sling tag and the ✓Fast™ Ribbon.
- An independent sacrificial ring, which is not a part of the actual load carrying structure of the sling. If the ✓Fast™ System indicates damage, it does so without further weakening the load carrying yarns.

EXTERNAL WARNING INDICATOR (EWI)

If the sling is loaded beyond the work load limit, the External Warning Indicator will disappear before the sling fails. If the sling passes a visual and tactile inspection, the ✓Fast ™ Ribbon cannot be pulled easily from the sling and the Early Warning Indicator is visible, the sling may be used.

PASS



External Warning Indicator and ✓ Fast™ Ribbon extend from the cover. ✓Fast™ Ribbon cannot be easily pulled from the sling.

FAIL

✓ Fast™ Ribbon pulls easily out of the sling. Early warning indicator (EWI) is not visible.

Patent Pending - Application Number 60/683,987

INSTRUCTIONS FOR ✓FAST™ INSPECTION

Ensure that the External Warning Indicator (EWI) is visible. Grasp the sling above the tag area. Pull lightly on the ✓Fast™ Ribbon to ensure that it is secure. If the ribbon pulls out easily, do not use the sling and return it to Lift-It® for factory evaluation.

Ensure that the sling tag is legible, complete and compliant with existing standards and regulations.

Inspect the entire sling for holes, tears, cuts or broken stitching that reveal load carrying fibers or damage to the load carrying fibers. Brittle or stiff areas may indicate chemical damage; melting, charring and weld splatter are also criteria for removal from service. Remove the sling from service if fittings are distorted or if the sling has been knotted.

✓FAST™ INSPECTION CRITERIA

INTERNAL LOAD CARRYING FIBER DAMAGE- FIBER ON FIBER ABRASION

The External Warning Indicator (EWI) extends from the sling cover. When the EWI is no longer visible and disappears under the cover it gives an indication to the user and inspector to remove the sling from service. A sacrificial ring is placed inside the cover and is attached to the External Warning Indicator (EWI). The EWI will move under the sling cover if the sacrificial ring fails as a result of damage from fiber on fiber abrasion.

SLING OVERLOADING

For the External Warning Indicator (EWI) to be activated, the sling would have to be loaded to more than twice the assigned work load limit. A sling with a 20,000 pound work load limit would have to be loaded to approximately 50,000 pounds to activate the EWI. Once the sacrificial ring fails from overload, the EWI will disappear under the sling cover.

✓FAST™ INSPECTION SYSTEM FOR DIFFERENT SLING TYPES, WORK LOADS AND LOAD CARRYING FIBERS

Roundslings and Twin-Path® slings contain multiple wraps of the load carrying fibers that share the load weight. The ✓Fast™ Inspection System features an internal, independent strand that lays parallel to the other load carrying fibers. The ✓Fast™ Inspection System works in slings with various work load limits and materials such as: Polyester, K-Spec®, Aramid, High Molecular Polyethylene (HMPE), Liquid Crystal Polymer (LCP) and Polypropylene fibers.

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

Tattle Tails, Fiber Optics and/or the ✓Fast™ Inspection System can not be used exclusively to determine the condition of the load carrying fibers or sling. These patented, inspection devices must be used in conjunction with visual and tactile inspection techniques to determine sling condition. If there is any doubt, do not use questionable slings or any other rigging product. Return the sling to the manufacturer for factory repair evaluation.

Twin-Path® Characteristics

TREMENDOUS SAVINGS - Time is money and the ease of handling ultra-light Twin-Path® Extra Slings adds up to substantial, cumulative savings. A TUFXKS 7000 x 35 ft. weighs a mere 60 lbs. and is rated at a basket work load of 140,000 lbs. A wire rope sling of equal length and strength weighs 588 lbs. Extra cranes, forklifts, transport vehicles and personnel are no longer required. Twin-Path® Extra Slings have documented savings and prove to be the least expensive sling you can buy.

USER FRIENDLY - Twin-Path® Extra Slings are easy to handle and will not "choke lock", deterring the removal of the sling from the load. Lightweight Twin-Path® Extra Slings help eliminate back, hand, foot and head injuries that occur when handling heavy, awkward, cumbersome wire rope and chain slings.

LOAD FRIENDLY- Twin-Path® Slings provide load protection through a wide, contacting bearing surface. Twin-Path® Slings will not mar, scratch or deface the most delicate metallic surface and are equally gentle on non-metallic loads.

LITTLE OR NO STRETCH - A Twin-Path® Extra Sling (TUFXKS 11000 x 328 in.), with High Performance, K-Spec® fibers was vertically proof tested to 220,000 lbs. After a ten minute period, a total elongation of 2 inches was recorded. Low elongation extends sling longevity. Twin-Path® Extra Slings do not abrade like nylon or polyester slings, which stretch over load contact areas.

LIFTING AND PULLING – Destruction testing demonstrates that Twin-Path® Extra Slings, featuring K-Spec® High Performance yarn recoils very little at break. High modulus, low stretch materials eliminate most of the devastating whiplash effects, characteristic of chain, wire rope, and web slings. **⚠WARNING** Never stand near or in line with a sling, under tension.

SUPERIOR ABRASION RESISTANCE - Twin-Path® Slings feature polyester or Covermax® covers. The seamless covers are specifically woven to provide abrasion resistance. Covermax® is approximately four times more abrasion resistant than polyester covers.

MATCHED SLING LENGTHS - Twin-Path® slings can be made in matched lengths, to unbelievable tolerances, on a consistent basis. The accuracy of our products is unparalleled.

SPACE SAVER - Storage problems are easily resolved as Twin-Path® Extra Slings require substantially less space than the bulky, cumbersome wire rope and chain slings.

ENVIRONMENTALLY SENSITIVE - Twin-Path® Slings do not require lubrication and will not corrode, rot or mildew, thereby eliminating the harmful release of chemical agents or by-products. Twin-Path® slings are more resistant to UV degradation than unprotected slings, as the outer covers protect and shield the load carrying fibers. Twin-Path® Slings do not lose strength when wet.

CYCLE TESTING - Cyclic, vertical, fatigue testing was performed on Twin-Path® Extra slings with K-Spec® High Performance yarn, and produced incredible results. The independent test facility confirmed an 85 % retention of the original tensile strength after 50,000 cycles to 150% of work load. Twin-Path® Extra Slings with Covermax® covers will outlast and outperform synthetic and wire rope slings.

REPAIRABILITY - The abrasion resistance of K-Spec®, High Performance Yarn facilitates repair to the protective outer covers, when the load carrying yarns are not damaged. Slings that appear to be extremely distressed have been successfully repaired for a fraction of the original price. Slings are carefully inspected at every area of damage. If the yarn is undamaged, the cover is repaired and the sling is proof tested to 200% of the work load. When abrasion resistance and longevity are considerations, and when only the best is good enough, choose Twin-Path® Extra slings with Covermax®.

CREEP - Twin-Path® Extra High Performance Fiber Slings with K-Spec® Fiber do not vary in length with usage. Creep is defined as non-recoverable stretch. Other sling designs and materials "creep". Sling users generally add shackles to equalize sling length for a level load. Spend less money on "heavy metal" shackles by specifying, Twin-Path® Extra Slings with K-Spec® Fiber, a Slingmax® solution sling.

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

Tattle Tails, Fiber Optics and/or the ✓Fast™ Inspection System can not be used exclusively to determine the condition of the load carrying fibers or sling. These patented, inspection devices must be used in conjunction with visual and tactile inspection techniques to determine sling condition. If there is any doubt, do not use questionable slings or any other rigging product. Return the sling to the manufacturer for factory repair evaluation.

Twin-Path® Considerations

EXPOSURE TEMPERATURE: Twin-Path® slings with polyester load carrying fibers, and Twin-Path® Extra slings with K-Spec® High Performance load carrying yarns should not be exposed to temperatures above 194ºF (90ºC). or below -40ºF (-40ºC). Twin-Path® Sparkeater® slings should not be exposed to temperatures above 300ºF/149ºC.

COLD WEATHER EXPOSURE: Twin-Path® Extra slings with K-Spec® High Performance load carrying yarns have been used successfully in Northern Canada and Alaska for many years, without incident. The same yarn components that make up K-Spec® load carrying yarn are also used in deep space exploration applications. Twin-Path® Extra slings with K-Spec® High Performance load carrying yarns are a viable alternative for cold weather applications.

TATTLE TAILS: Twin-Path® Extra slings have been extensively tested in all possible hitch configurations. The tattle tails performed as expected. If the sling is used as a load manipulator, i.e., used to turn or rotate a load, the tattle tales will malfunction. This is a direct result of the differences in the coefficient of friction, developed between the sling cover and the manipulated object and the coefficient of friction developed between the load carrying yarns and the internal sling jacket. Simply stated, the cover binds to the load, while the load carrying yarns rotate within the sling cover.

LOAD MANIPULATION: When Twin-Path® Slings are used to change the orientation of an object, from the vertical to the horizontal, or visa versa, the cross over point on the sling paths, becomes a “hinge point” for this action. The Covermax® cover will become damaged at this point. If load carrying yarns are visible, return the sling for a factory repair evaluation and do not continue to use the sling.

PATH ORIENTATION: Twin-Path® Slings feature two independent paths that must be kept side by side. Folding one path on top of the other path, to fit into a small area, results in differential path lengths. The top path will see more tension than the lower path, resulting in a 50% reduction of the sling work load limit.

RADIATION EXPOSURE - Information on the properties of aramid fiber performance in nuclear environments is detailed in a report titled, “Radiation Effects on Organic Materials in Nuclear Power Plants” – EPRI Report NP 2129, dated November 1981. When aramid fibers were exposed to radiation at a level of 1,000,000,000 rads, there was no effect on the performance characteristics of the fiber.

COMPONENT HARDWARE- When synthetic slings are used with a shackle, it is recommended that they be rigged in the bow of the shackle and not on the pin. The pin of the shackle can damage synthetic slings, resulting in sling failure. Placing the sling on the shackle pin should be avoided, unless the sling is protected. Crane manufacturers are using smaller, stronger crane hooks, produced from improved alloys. Twin-Path® slings forced into a hook or fitting may incur damage at the connection point. The relationship must be proper to ensure that the sling will seat properly and derive the greatest strength and longevity.

TESTING - Proof testing is mandatory for every newly manufactured and repaired Twin-Path® slings. The sling is pulled to twice the work load limit and held for a minimum of 15 seconds. Our test machine is certified annually to meet or exceed the standards as described in ASTM-E4 or other equivalent standards.

STATIONARY TAG AREA - It is important that any signal given by the External Warning Indicator (EWI) be reliable and accurate, indicating overloading or internal fiber damage. The sling cover must not be allowed to shift during use, covering the EWI and giving the user/inspector a false reading. To prevent a false reading from the cover shifting, the cover is locked in place.

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

Tattle Tails, Fiber Optics and/or the ✓Fast™ Inspection System can not be used exclusively to determine the condition of the load carrying fibers or sling. These patented, inspection devices must be used in conjunction with visual and tactile inspection techniques to determine sling condition. If there is any doubt, do not use questionable slings or any other rigging product. Return the sling to the manufacturer for factory repair evaluation.

Twin-Path® Bridle

Twin-Path® Bridle slings are the lightest and strongest synthetic bridles available. The Twin-Path® bridle, with K-Spec® load carrying yarn, is less than half the weight of an equivalent, steel bridle assembly. With no heavy masterlink, the top eye fits effortlessly over the lifting mechanism. Please specify the top eye length and any component hardware, required to connect to the load. For additional versatility, hooks can easily be removed, if connected with G-Link™ couplers, see page 42.

Work load limits of 200,000 lbs. are readily available. If a four leg bridle is required, consider using two Twin-Path® Bridle assemblies for this purpose.

TWIN-PATH® BRIDLE SPECIFICATIONS

STOCK NUMBER	VERTICAL	60 DEG (HORIZONTAL)	45 DEG (HORIZONTAL)	EYE WIDTH	WEIGHT LBS / FT
TUFXKSB 1000	10,000	8,500	7,000	3 IN	.34
TUFXKSB 1500	15,000	12,750	10,500	3 IN	.44
TUFXKSB 2000	20,000	17,000	14,000	3 IN	.61
TUFXKSB 3000	30,000	25,500	21,000	4 IN	.88
TUFXKSB 4000	40,000	34,000	28,000	5 IN	1.23
TUFXKSB 5000	50,000	42,500	35,000	5 IN	1.65

Twin-Path® Eye & Eye

Usually an “Eye and Eye” round sling is made by passing a sleeve over an endless configuration to form eyes at each end. The Twin-Path® Eye and Eye is truly an Eye and Eye configuration.

Twin-Path® Eye and Eye slings are fabricated with K-Spec® High Performance load carrying yarns and feature a Covermax® outer cover.

TWIN-PATH® EYE & EYE SPECIFICATIONS

STOCK NUMBER	CHOKER	VERTICAL	BASKET	WEIGHT LBS / FT	WIDTH
TUFXKS 1000EE	8,000	10,000	20,000	.28	3"
TUFXKS 1500EE	12,000	15,000	30,000	.36	3"
TUFXKS 2000EE	16,000	20,000	40,000	.50	3"
TUFXKS 2500EE	20,000	25,000	50,000	.60	4"
TUFXKS 3000EE	24,000	30,000	60,000	.75	4"
TUFXKS 4000EE	32,000	40,000	80,000	1.00	5"
TUFXKS 5000EE	40,000	50,000	100,000	1.40	5"

Please Note: Work loads include both paths and are for one complete sling. Sling work loads are based upon connection points that have equal or greater strength. Twin-Path® Extra slings conform to the specifications and standards of: ASME B30-9, Chapter 6, Web Sling and Tiedown Association, WSTDA-RS-1, US Navy, NAVFAC P307, Section 14.6.4.3 and the Round Sling Standard of the Cordage Institute.

Twin-Path® Sparkeater® Slings

Twin-Path® Sparkeater® Slings provide exceptional thermal stability and withstand temperatures up to 300°F/149°C. Fire exposure testing was performed by London Scientific, in conjunction with the Offshore Certification Bureau. Sparkeater® slings were identified as being, as good as, wire rope or chain for off-shore applications in the oil industry. Available in 10,000 to 90,000 lbs. vertical work loads.

The aramid, load carrying fibers in Twin-Path® Sparkeater® Slings have high tenacity, low stretch and desirable, thermal properties. The protective, outer cover is constructed from Dupont Nomex®, a temperature resistant, aramid fiber. The outer cover contrasts against the inner, red cover, providing an early warning alert.

Sparkeater® Slings feature the patented benefits of the Twin-Path® sling design: two paths for back up, redundant, protection, two, contrasting covers and tattle tails, with the additional advantage of increased temperature tolerance.

The Twin-Path® Stage Rigging Sparkeater® Sling is a perfect Slingmax® solution for the inherent dangers posed by pyrotechnical displays. Stage Rigging Sparkeater® Slings are furnished with a black, Nomex® cover.

SPARKEATER® SPECIFICATIONS			
WIDTH	**3 IN**	**3 IN**	**4 IN**
Twin-Path® Sparkeater® Stock No.	TPSE 1000	TPSE 2000	TPSE 3000
Stage Rigging Sparkeater® Stock No.	SRSE 1000	SRSE 2000	SRSE 3000
Choker	8,000	16,000	24,000
Vertical	10,000	20,000	30,000
Basket	20,000	40,000	60,000
Sling Weight Lbs. / Ft. (Bearing)	.31	.55	.80

Twin-Path® Slings
Polyester Load Carrying Fiber

TWIN-PATH SPECIFICATIONS

		WORK LOAD LIMIT (LBS.) (5 TO 1 DESIGN FACTOR)						
Polyester Cover	**Covermax® Cover**	**Choker**	**Vertical**	**Basket Hitches**			**Approximate Weight (lbs. per ft.) (bearing)**	**Approximate Body Width (inches)**
				90°	**60°**	**45°**		
Twin-Path® Stock No.	**Twin-Path® Stock No.**							
TP 600	TUF 600	4,800	6,000	12,000	10,392	8,484	.48	3"
TP 750	TUF 750	6,000	7,500	15,000	12,990	10,605	.65	3"
TP 900	TUF 900	7,200	9,000	18,000	15,588	12,726	.70	3"
TP 1200	TUF 1200	9,600	12,000	24,000	20,784	16,968	.90	4"
TP 1400	TUF 1400	11,200	14,000	28,000	24,248	19,796	.95	4"
TP 1700	TUF 1700	13,600	17,000	34,000	29,440	24,038	1.20	4"
TP 2200	TUF 2200	17,600	22,000	44,000	38,104	31,108	1.40	5"
TP 2600	TUF 2600	20,800	26,000	52,000	45,032	36,764	1.70	5"
TP 3200	TUF 3200	25,600	32,000	64,000	55,424	45,248	1.90	5"
	TUF 5000	40,000	50,000	100,000	86,600	70,700	2.70	6"
	TUF 6000	48,000	60,000	120,000	103,920	84,840	3.00	6"

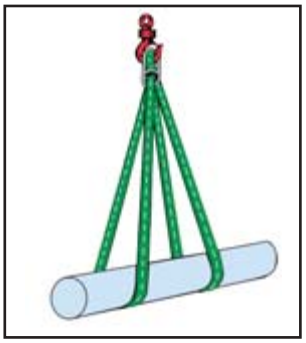
Please Note: Work loads include both paths and are for one complete sling. Sling work loads are based upon connection points that have equal or greater strength. Twin-Path® Extra slings conform to the specifications and standards of: ASME B30-9, Chapter 6, Web Sling and Tiedown Association, WSTDA-RS-1, US Navy, NAVFAC P307, Section 14.6.4.3 and the Round Sling Standard of the Cordage Institute.

Twin-Path® Adjustable Bridle

The Twin-Path® Adjustable Bridle is the ultimate, multiple use, rigging tool. It replaces standard two or four leg bridles, with the additional value of self-adjustment to awkward loads. The Twin-Path® Adjustable Bridle self adjusts over the center of gravity to find the lifting point and can also be used as a complete rigging tool for choker, vertical, or basket hitches.

CHOKER

VERTICAL



BASKET

SINGLE OR MULTIPLE BRIDLES

TWIN-PATH BRIDLE SPECIFICATIONS

Stock Number	Sling Width	WORK LOAD LIMITS (LBS.) Choker	Vertical	Basket or Single Bridle 90°	60°	45°	Shackle Specs. Nominal Size (inches)	Tonnage W.L.L.	Sling Weight (LBS) 3 Foot Base	Adder Per Foot
TUFA 6	2"	2,400	3,000	6,000	5,196	4,242	5/8	3-1/4 T	4.40	1.35
TUFXKSA 12	3"	4,800	6,000	12,000	10,392	8,484	7/8	6-1/2 T	6.80	1.95
TUFXKSA 20	4"	8,000	10,000	20,000	17,320	14,140	1-1/4	12 T	13.60	2.70
TUFXKSA 40	5"	16,000	20,000	40,000	34,640	28,280	1-3/4	25 T	31.10	4.20
TUFXKSA 60	5"	24,000	30,000	60,000	51,960	42,420	2	35 T	60.00	5.70
TUFXKSA 90	6"	36,000	45,000	90,000	77,940	63,630	2-1/4	55 T	86.00	8.10

TUFA slings feature polyester load carrying fiber. TUFXKSA slings feature K-Spec® High Performance load carrying fiber.

Please Note: Work loads include both paths and are for one complete sling. Sling work loads are based upon connection points that have equal or greater strength. Twin-Path® Extra slings conform to the specifications and standards of: ASME B30-9, Chapter 6, Web Sling and Tiedown Association, WSTDA-RS-1, US Navy, NAVFAC P307, Section 14.6.4.3 and the Round Sling Standard of the Cordage Institute.

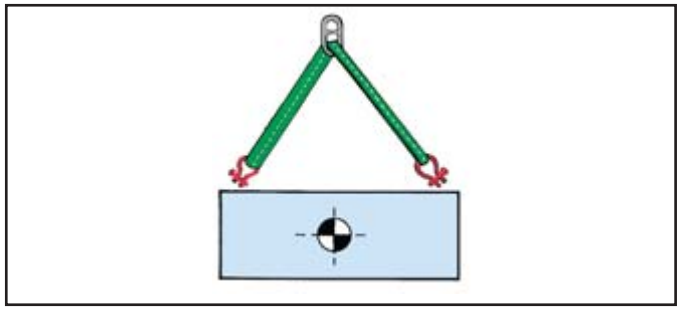
⚠ WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

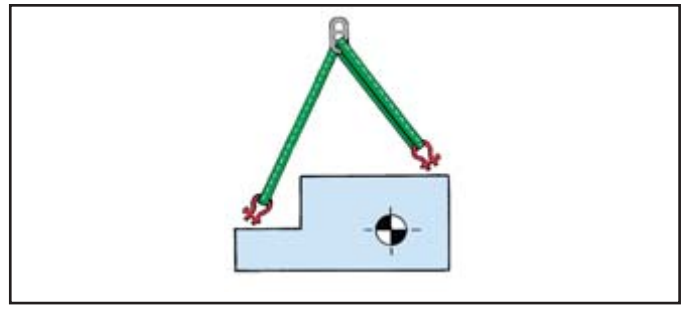
⚠ WARNING Never use Twin-Path® Adjustable Bridles in situations where the sling-to-load angle is less than 45°, unless approved by a competent person. Always connect above the center of gravity. If connections are made below the center of gravity, the load may turn when lifted.

Twin-Path® Adjustable Bridle

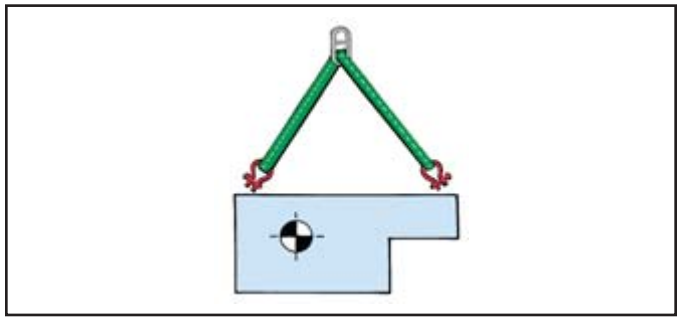
The Twin-Path® Adjustable Bridle Sling is a multiple-purpose rigging tool and proper use is extremely important. The adjustment ring has a double sling on one side and a single sling on the opposite side.



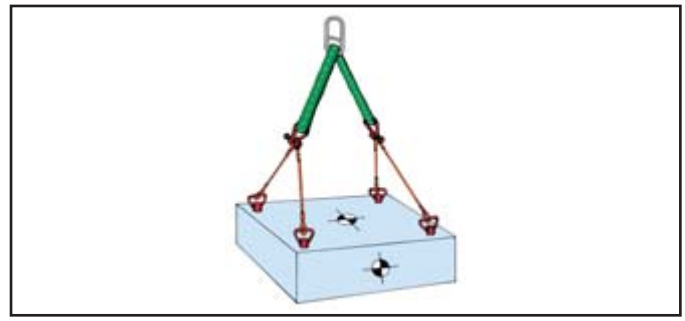
If the lifting points are equal in distance from the center of gravity, the Twin-Path® Adjustable can be attached with the double or single sling on either lifting point.



If the lifting points are an equal distance on either side of the center of gravity, but one is higher; the double sling should be attached to the higher lifting point.



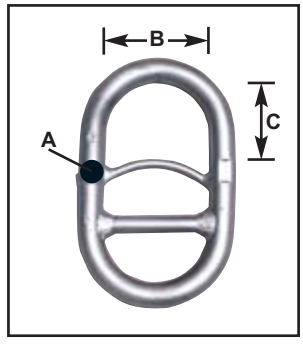
If one of the lifting points is closer to the center of gravity, attach the double sling to this lifting point. If the Twin-Path® Adjustable is attached with the single sling nearest the center of gravity, it will not allow the lift to be made.



⚠ WARNING Never use Twin-Path® Adjustable Bridles in situations where the sling-to-load angle is less than 45°, unless approved by a competent person. Always connect above the center of gravity. If connections are made below the center of gravity, the load may turn when lifted.

TWIN-PATH® ADJUSTABLE RING

Stock Number	ADJUSTABLE RING DIMENSIONS			Unit Weight (LBS)
	Ring Stock Diameter "A"	Main Hook Area Width "B"	Ring Area Length "C"	
TPA 6	1/2"	2-1/2"	2-1/2"	1.7
TPXKSA 12	3/4"	3"	3"	2.5
TPXKSA 20	1"	4"	4"	5.5
TPXKSA 40	1-1/2"	5-1/4"	5-1/4"	18.7
TPXKSA 60	2"	7"	7"	47.3
TPXKSA 90	2-1/4"	8"	8"	67.5



⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

Failure to follow proper use, care and inspection criteria could result in severe personal injury or death. It is your explicit responsibility to consider all risk factors prior to using any rigging device or product. Read and understand the information contained in this publication and follow OSHA and ASME guidelines. Use by untrained persons is hazardous. Synthetic products will fail if damaged, abused, misused, overused, or improperly maintained. A visual inspection of the sling must be made every time this sling is to be used. Slings that are damaged or determined to be unsafe shall not be used for any application. If the work load limit tag is missing, illegible or incomplete that sling shall not be used. Do not exceed work load limits. You are cautioned that all published work load limits and break strengths apply to only new and unused slings, assemblies and hardware. Work Load Limits are based upon destruction testing done in controlled, laboratory conditions, which will never be duplicated during actual usage and a moderately dynamic lifting or pulling operation. Instantaneous changes (drops or sudden pick ups) in excess of 10% of the work load constitutes hazardous shock loading and THE WORKING LOAD LIMITS AS STATED, DO NOT APPLY. Synthetic products are damaged and cut when lifting on load edges. Edges in contact with the sling must be “padded” with materials of sufficient strength and thickness to prevent damage and catastrophic sling failure. Wear protection may not prevent cutting or other forms of sling damage. To avoid severe personal injury or death, personnel should be kept away from the load and never be under or near the load, while it is being lifted or suspended.

Specialty High Performance Fiber Slings

SINGLE PATH HPF ROUND SLINGS

Patents Pending

Covermax™ covers and K-Spec® High Performance Load Carrying Yarns are the components of Single Path HPF Round Slings. Single Path HPF Round Slings feature the versatility of the endless configuration, the advantages of rotating hook and load contact points, as well as compact size. Single Path HPF Slings automatically feature the ✓Fast™ Inspection System.

Single-Path Extra Covermax® Cover Stock No.	WORK LOAD LIMITS (LBS.) 5 TO 1 DESIGN FACTOR					WEIGHT LBS./FT. (Bearing)	Nominal Body Width (Inches)
	Choker	Vertical	Basket Hitches				
			90°	60°	45°		
SP 500CF	4,000	5,000	10,000	8,660	7,070	.18	2"
SP 1000CF	8,000	10,000	20,000	17,320	14,140	.29	2"
SP 1500CF	12,000	15,000	30,000	25,980	21,210	.38	2"
SP 2000CF	16,000	20,000	40,000	34,640	28,280	.52	2"
SP 2500CF	20,000	25,000	50,000	43,300	35,350	.61	2.5"
SP 3000CF	24,000	30,000	60,000	51,960	42,420	.76	2.5"
SP 4000CF	32,000	40,000	80,000	69,280	56,560	1.06	3.5"
SP 5000CF	40,000	50,000	100,000	86,600	70,700	1.42	3.5"
SP 6000CF	48,000	60,000	120,000	103,920	84,840	1.52	3.5"
SP 7000CF	56,000	70,000	140,000	121,240	98,980	1.60	4.5"
SP 8500CF	68,000	85,000	170,000	147,220	120,190	1.70	4.5"
SP 10000CF	80,000	100,000	200,000	173,200	141,400	2.00	4.5"

Polypropylene Round Slings

Lift-It® Polypropylene Round Slings offer improved resistance to certain alkalis, acids, organic solvents and other chemical exposures and applications, when compared to conventional nylon and polyester slings. Polypropylene load carrying yarns are encapsulated by a double layer, spun-dyed, polypropylene, protective outer cover. The outer cover has been specifically made to be abrasion resistant. Contact and exposure temperatures for polypropylene slings are -40°F (-40°C) to a maximum of 176°F (80°C).

POLYPROPYLENE ROUND SLING SPECIFICATIONS								
STOCK NUMBER	COLOR CODE	WORK LOAD LIMITS (Lbs.)			MINIMUM LENGTH (Inches)	WEIGHT LBS./FT. (Bearing)	WIDTH WHEN LOADED (Inches)	MINIMUM HARDWARE DIAMETER (Inches)
		CHOKER	VERTICAL	BASKET				
RS3PP	PURPLE	1,760	2,200	4,400	18"	.15	1.80	.50
RS6PP	GREEN	3,520	4,400	8,800	18"	.24	2.24	.50
RS9PP	YELLOW	5,280	6,600	13,200	18"	.35	2.75	.75
RS12PP	GRAY	7,040	8,800	17,600	36"	.48	3.66	.75
RS15PP	RED	8,800	11,000	22,000	36"	.59	3.74	.87
RS18PP	TAN	10,560	13,200	26,400	36"	.71	4.05	1.00
RS24PP	BLUE	14,080	17,600	35,200	36"	.92	4.80	1.38

⚠ WARNING

Do not use Polypropylene Round Slings at temperatures above 176°F (80°C). Contact and exposure temperatures in excess of 176°F (80°C) reduce the sling Work Load Limit by 50%, causing an overload which may result in severe personal injury and/or death.

⚠ WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

Polypropylene Roundsling Considerations

TEMPERATURE CONSIDERATIONS

⚠ WARNING Do not use Polypropylene Round Slings at temperatures above 176°F (80°C). Contact and exposure temperatures in excess of 176°F (80°C) reduce the sling Work Load Limit by 50%, causing an overload which may result in severe personal injury and/or death.

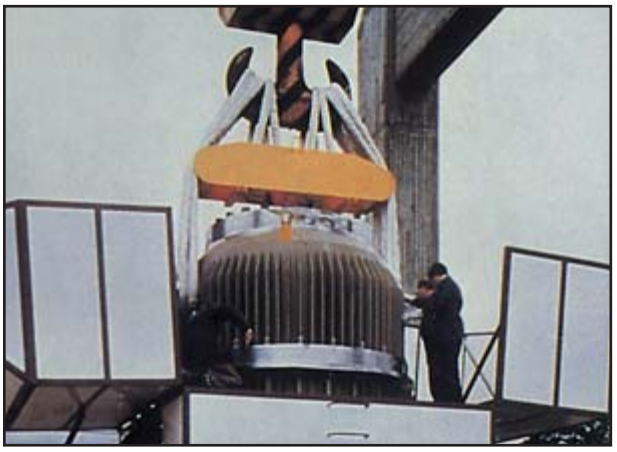
CHEMICAL CONSIDERATIONS

Polypropylene Round Slings are resistant to a wide variety of chemicals, however, the sling user must evaluate the exposure conditions, prior to use, to determine suitability. Please refer to the chemical information chart. Prior to usage, slings can be immersed and/or exposed to chemicals, under no load, to determine suitability.

CHEMICAL INFORMATION CHART

CHEMICALS	CONCENTRATION	IMMERSION TEMPERATURE	IMMERSION TIME	RESIDUAL STRENGTH	CHEMICALS	CONCENTRATION	IMMERSION TEMPERATURE	IMMERSION TIME	RESIDUAL STRENGTH
	%	F°	HR	%		%	F°	HR	%
SULFURIC ACID	5	140	100	94	ZINC CHLORIDE	10	140	500	98
	5	140	500	88	SODIUM THIOSULFATE	1	140	500	100
	5	140	1,000	80		5	140	500	99
	10	140	100	94	SODIUM SULFATE	10	140	500	96
	10	140	500	87	SODIUM PHOSPHATE	10	140	500	100
	10	140	1,000	74	MAGNESIUM SULFATE	10	140	500	96
	20	140	500	79	CALCIUM CHLORIDE	10	140	500	93
	20	140	1,000	74	POTASSIUM SULFATE	5	140	500	100
	40	140	100	92	ALUMINUM CHLORIDE	10	140	500	97
	40	140	1,000	60	IRON CHLORIDE	10	140	500	90
	98	140	100	40	MANGANESE CHLORIDE	10	140	500	93
	98	140	500	23	LEAD NITRATE	10	140	500	92
HYDROCHLORIC ACID	1	140	100	100	COPPER CHLORIDE	10	140	500	92
	5	140	100	100	SODIUM HYPOCHLORITE	1	140	100	62
	5	140	500	100		3	140	100	22
	10	140	500	94	HYDROGEN PEROXIDE	1	140	100	58
	20	140	100	92		3	140	100	39
	20	68	120	100	POTASSIUM BICHROMATE	5	140	500	58
	35	68	120	95	POTASSIUM PERMANGANATE	5	140	500	--
NITRIC ACID	5	140	100	99	FORMIC ACID	75	68	96	100
	5	140	600	98		90	140	72	83
	10	140	100	97	OXALIC ACID	1	140	500	100
	10	140	600	94		3	140	500	100
	20	140	600	93	OLIVE OIL	100	140	500	99
	40	140	100	91	KEROSENE	100	140	1000	99
	40	140	600	32	INSULATING OIL	100	140	500	100
					SPINDLE OIL	100	140	1000	96
PHOSPHORIC ACID	70	68	500	85	GASOLINE	100	68	1000	100
HYDROFLUORIC ACID	40	68	150	100	BENZENE	100	140	1000	96
CAUSTIC SODA	5	140	500	100	FORMALIN	37	140	1000	100
	10	140	500	100	TOLUENE	100	140	1000	100
	10	68	500	100	ETHYL ALCOHOL	100	140	1000	93
	40	140	500	97	METHYL ETHYL KETONE	100	140	1000	56
	40	68	500	98	TRICHLOROETHYLENE	100	68	1000	96

Round Slings



LIFT-IT® ROUND SLING CONSTRUCTION

Lift-It® Polyester Round Slings are constructed of 100% polyester load carrying, internal yarns. The load carrying yarns are protected by a seamless cover. The seamless construction and tubular design of the protective cover eliminates the weakening of the cover materials, characteristic of seamed round slings.

Each sling has a durable, hot branded, leather tag permanently attached. The tag contains work load limits, hitch diagrams, a unique serial number and all information currently required by the various regulatory agencies. Sleeves can be sewn around the cover of the Round Sling for positioning to a specific area.

⚠ WARNING

Synthetic products are damaged and cut when lifting on load edges. Edges in contact with the sling must be "padded" with materials of sufficient strength and thickness to prevent damage and catastrophic sling failure. Wear protection must be installed and evaluated for suitability by raising the load slightly, and then lowering the load for an inspection of the sling and the protection devices. Several "test" lifts may be necessary to determine the proper form of protection for a successful lift. The length of the sleeve or wear pad material(s) must not interfere with the sling closing to the full gripping position on the load. Wear protection may not prevent cutting or other forms of sling damage. To avoid severe personal injury or death, personnel should be kept away from the load and never be under or near the load, while it is being lifted or suspended. See pages 13-20 for additional information on wear protection.

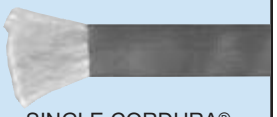
The use of improper fittings and/or materials may result in severe personal injury or death. Prior to use, read and understand the information in this section and the general information section of our catalog, pages 3-48.

COVER SELECTIONS

SINGLE POLYESTER
• STOCK NO. RS90

DOUBLE POLYESTER CONTRASTING COLORS
• STOCK NO. RS90D

DOUBLE CONTRASTING OUTER-CORDURA® INNER POLYESTER
• STOCK NO. RS90DC



SINGLE CORDURA®
• STOCK NO. RS90C

LIFT-IT® ROUND SLING FEATURES

- Hook and load contact points can be changed through the rotation of endless, polyester round slings. An extended service life and worker safety will be gained by rotating the sling.
- Wide variety of lengths and work load limits.
- Protects the load, and the user's hands.
- Adapts to varying sizes and load configurations.
- SEAMLESS COVER - no rigid edges to rupture or hang up
- Lightweight - easy to handle and store.
- Excellent resistance to rot and mildew.
- Load bearing yarns are protected from UV degradation.
- Only 3% elongation for polyester round slings.
- Color coded for work load limits.
- Maximum temperature exposure 194ºF/90ºC.
- No loss of strength in water.

⚠ WARNING Always refer to the sling tag for work load limits.

- Soft and pliable- releases easily after use.
- Spreading the sling legs can improve balance and stability.

⚠ WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

Round Sling Specifications

ENDLESS CONFIGURATION

STOCK NUMBER	RS 30	RS 50	RS60	RS90	RS 120	RS 150	RS 180	RS 240
COLOR CODE	PURPLE	BLACK	GREEN	YELLOW	TAN	RED	WHITE	BLUE
WORK LOAD LIMIT (LBS.) VERTICAL	2,650	4,000	5,300	8,400	10,600	13,200	16,800	21,200
CHOKER	2,120	3,200	4,240	6,720	8,500	10,560	13,400	17,000
BASKET AT 90°	5,300	8,000	10,600	16,800	21,200	26,400	33,600	42,400
BASKET AT 60°	4,500	6,900	9,100	14,500	18,300	22,800	29,000	36,700
BASKET AT 45°	3,600	5,600	7,400	11,800	14,900	18,600	23,750	29,900
MINIMUM LENGTH	18"	18"	18"	2 FT	3 FT	3 FT	3 FT	3 FT
MINIMUM CONNECTION DIA. CHOKER/VERTICAL	.50	.50	.62	.75	.87	1.0	1.0	1.38
MINIMUM CONNECTION DIA. BASKET	.62	.62	.88	1.00	1.25	1.38	1.62	1.75
WEIGHT-LBS PER FOOT (BEARING TO BEARING)	.18	.27	.30	.37	.50	.60	.90	1.15
BODY DIAMETER (RELAXED)	.50	.70	.80	1.10	1.20	1.40	1.60	1.80
THICKNESS WHEN LOADED	.30	.50	.50	.60	.70	.90	.90	1.30
WIDTH WHEN LOADED	1.20	1.30	1.50	1.90	2.00	2.00	2.10	2.30
BODY DIA. WHEN LOADED	.80	.90	1.00	1.40	1.40	1.50	1.80	2.00

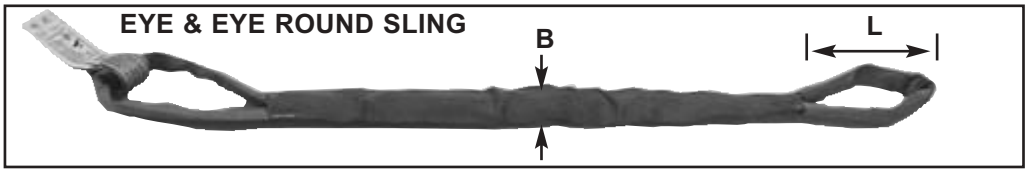
STOCK NUMBER	RS 360	RS 400	RS 600	RS 800	RS 1000
COLOR CODE	GRAY	GRAY	GRAY	GRAY	GRAY
WORK LOAD LIMIT (LBS.) VERTICAL	31,000	40,000	53,000	66,000	90,000
CHOKER	24,800	32,000	43,000	52,800	72,000
BASKET AT 90°	62,000	80,000	106,000	132,000	180,000
BASKET AT 60°	53,600	69,280	91,796	114,312	155,880
BASKET AT 45°	43,800	56,568	74,942	93,324	127,260
MINIMUM LENGTH	3 FT	8 FT	8 FT	8 FT	8 FT
MINIMUM CONNECTION DIA. CHOKER/VERTICAL	1.62	2.25	2.40	2.40	3.00
MINIMUM CONNECTION DIA. BASKET	2.00	2.38	2.75	3.00	3.50
WEIGHT-LBS PER FOOT (BEARING TO BEARING)	2.00	3.00	4.00	5.25	7.15
BODY DIAMETER (RELAXED)	2.80	2.90	3.00	3.20	3.90
THICKNESS WHEN LOADED	1.40	1.60	1.80	2.00	2.20
WIDTH WHEN LOADED	3.60	4.25	5.00	5.30	7.40
BODY DIA. WHEN LOADED	2.70	3.00	3.40	3.90	6.20

⚠ WARNING

Polyester Fibers are adversely affected by aldehydes, ethers, concentrated sulfuric acid and alkalis at elevated temperatures. Nylon fiber is adversely affected by acids and bleaching agents. RS360 and larger capacity slings feature a bulked nylon, Cordura® cover and polyester load carrying yarns. In active chemical environments, where a combination of chemicals could be deleterious to either or both yarn types, the sling user or competent person must make a hazard assessment.

Please Note: 100 ft (Bearing to Bearing) sling lengths are available

EYE & EYE CONFIGURATION



Stock Number	Color Code	WORK LOAD LIMITS (LBS.)			Minimum Length	DIMENSIONAL DATA		
		Choker	Vertical	Basket		Weight Lbs. / Ft.	Body Width at Load (B)	Standard Eye Length (L)
RS30EE	PURPLE	2,120	2,650	5,300	4 FT	.4	2-1/4"	10"
RS60EE	GREEN	4,240	5,300	10,600	4 FT	.5	2-1/2"	10"
RS90EE	YELLOW	6,720	8,400	16,800	4 FT	.7	2-1/2"	12"
RS120EE	TAN	8,500	10,600	21,200	5 FT	1.0	3-1/2"	12"
RS150EE	RED	10,560	13,200	26,400	5 FT	1.2	3-1/2"	14"
RS180EE	WHITE	13,400	16,800	33,600	7 FT	1.7	3-1/2"	16"
RS240EE	BLUE	17,000	21,200	42,400	7 FT	1.9	4-1/4"	16"

Lift-It® Round Slings are supplied with an outer sleeve of Cordura® to encapsulate the endless sling. Cordura® eye sleeves are also furnished. For use in choker, vertical and basket hitches.

PLEASE NOTE:
Double Cover Cordura® (DC) and Single Cover Cordura® (C) Round Sling models are available in Gray. A color coded tag patch will be attached, adjacent to the work load limit tag.

Round Sling Bridles

Lift-It® Round Sling Bridles feature combinations of links, hooks and shackles for the efficient handling of loads with fixed lifting points. Easier to handle than wire rope or chain bridles, round sling bridles provide extended sling service life through the rotation of the sling connection points. Hardware specifications can be found on pages 39-48. All hooks are supplied with latches.

⚠ WARNING Working load limits for Polyester Round Sling Multi-Leg Bridle Assemblies are based on the following conditions:

1. Even load weight distribution on all legs.
2. The bridle legs must be the same length. If the legs are not sharing the load equally the assembly design factor is reduced.
3. All bridle legs used at the same horizontal angle.

If the conditions of the lift vary from those above, the work load limit must be recalculated.

SINGLE LEG SLINGS (SLB) SPECIFICATIONS						
STOCK NUMBER	COLOR CODE	VERTICAL WORK LOAD (LBS)	BASKET WORK LOAD (LBS)	MINIMUM LENGTH (Bearing)	MASTER LINK (Diameter)	ALLOY HOOK SIZE (Tons)
SLB-RS30	PURPLE	2,650	5,300	4 ft.	1/2"	2 T
SLB-RS60	GREEN	5,300	10,600	4 ft.	3/4"	5 T
SLB-RS90	YELLOW	8,400	16,800	4 ft.	3/4"	7 T
SLB-RS150	RED	13,200	26,400	4 ft.	1"	11 T
SLB-RS240	BLUE	21,200	42,400	6 ft.	1-3/8"	15 T
SLB-RS360	GRAY	31,000	62,000	8 ft.	1-5/8"	22 T

TWO LEG BRIDLES (MLB2) SPECIFICATIONS								
STOCK NUMBER	COLOR CODE	Assembly Work Load (Lbs.) Horizontal Angle		MINIMUM LENGTH (Bearing)	TOP FITTING		BOTTOM FITTINGS	
		60°	45°		MASTER LINK (Diameter)	MASTER W/ SUB-ASSYS. (Diameter)	MASTER LINK (Diameter)	ALLOY HOOK SIZE (Tons)
MLB2-RS30	PURPLE	4,500	3,700	4 ft.	3/4"	3/4"	1/2"	2 T
MLB2-RS60	GREEN	9,100	7,400	4 ft.	3/4"	1"	3/4"	5 T
MLB2-RS90	YELLOW	14,500	11,800	4 ft.	1"	1-1/4"	3/4"	7 T
MLB2-RS150	RED	22,800	18,600	4 ft.	1-1/4"	1-1/2"	1"	11 T
MLB2-RS240	BLUE	36,700	29,900	6 ft.	1-3/4"	2"	1-3/8"	15 T
MLB2-RS360	GRAY	53,600	43,800	8 ft.	2"	2-1/4"	1-5/8"	22 T

THREE LEG BRIDLES (MLB3) SPECIFICATIONS								
STOCK NUMBER	COLOR CODE	Assembly Work Load (Lbs.) Horizontal Angle		MINIMUM LENGTH (Bearing)	TOP FITTING		BOTTOM FITTINGS	
		60°	45°		MASTER LINK (Diameter)	MASTER W/ SUB-ASSYS. (Diameter)	MASTER LINK (Diameter)	ALLOY HOOK SIZE (Tons)
MLB3-RS30	PURPLE	5,700	4,600	4 ft.	1"	1"	1/2"	2 T
MLB3-RS60	GREEN	11,400	9,300	4 ft.	1"	1"	3/4"	5 T
MLB3-RS90	YELLOW	18,100	14,800	4 ft.	1-1/4"	1-1/4"	3/4"	7 T
MLB3-RS150	RED	28,500	23,300	4 ft.	1-3/4"	1-3/4"	1"	11 T
MLB3-RS240	BLUE	45,800	37,400	6 ft.	2"	2-1/4"	1-3/8"	15 T
MLB3-RS360	GRAY	67,100	54,800	8 ft.	2-1/2"	2-3/4"	1-5/8"	22 T

FOUR LEG BRIDLES (MLB4) SPECIFICATIONS								
STOCK NUMBER	COLOR CODE	Assembly Work Load (Lbs.) Horizontal Angle		MINIMUM LENGTH (Bearing)	TOP FITTING		BOTTOM FITTINGS	
		60°	45°		MASTER LINK (Diameter)	MASTER W/ SUB-ASSYS. (Diameter)	MASTER LINK (Diameter)	ALLOY HOOK SIZE (Tons)
MLB4-RS30	PURPLE	6,800	5,600	4 ft.	1"	1"	1/2"	2 T
MLB4-RS60	GREEN	13,700	11,200	4 ft.	1-1/4"	1"	3/4"	5 T
MLB4-RS90	YELLOW	21,800	17,800	4 ft.	1-1/2"	1-1/2"	3/4"	7 T
MLB4-RS150	RED	34,200	28,000	4 ft.	2"	1-3/4"	1"	11 T
MLB4-RS240	BLUE	55,000	44,900	6 ft.	2-1/2"	2-1/4"	1-3/8"	15 T
MLB4-RS360	GRAY	80,500	65,760	8 ft.	2-3/4"	2-3/4"	1-5/8"	22 T

Some hardware sizes have been increased to conform to the latest WSTDA standards

Braided Polyester Round Slings

Braided polyester round slings are constructed by joining 3 (for 6 part slings) or 4 (for 8 part slings) slings together. Braided polyester round slings can be taken apart and the individual component slings used for general purpose lifts, if they are tagged properly. After the large lift requirement has been satisfied, consider returning the braided sling, for disassembly, inspection and re-tagging at our factory.

Braided round slings will stretch at a greater rate (9-11%) when compared to regular polyester round slings. Sling length tolerances for braided polyester round slings are 5-10%. Consider ordering a Twin-Path® Extra, High Performance Fiber Sling for consistent, matched sling lengths, see pages 81-93.

6 PART BRAIDED POLYESTER ROUND SLING SPECIFICATIONS

STOCK NUMBER	COLOR CODE	WORK LOAD LIMITS (Lbs.)			MINIMUM LENGTH (FT.)	STD. EYE LENGTH (Inches)	WEIGHT LBS./FT. (Bearing)	WIDTH WHEN LOADED (Inches)	MINIMUM HARDWARE* Dia. (Inches)
		CHOKER	VERTICAL	BASKET					
6BR30	PURPLE	5,300	6,700	13,400	5 Ft.	14 In.	1.10	3-1/4"	5/8"
6BR60	GREEN	10,800	13,500	27,000	5 Ft.	15 In.	1.45	3-3/4"	1"
6BR90	YELLOW	17,100	21,400	42,800	6 Ft.	18 In.	1.90	4-1/4"	1-1/4"
6BR120	TAN	21,600	27,000	54,000	6 Ft.	18 In.	2.25	4-1/2"	1-3/8"
6BR150	RED	26,800	33,600	67,200	7 Ft.	25 In.	3.00	5-1/4"	1-1/2"
6BR180	WHITE	34,200	42,800	85,600	7 Ft.	25 In.	3.50	5-1/2"	1-3/4"
6BR240	BLUE	43,200	54,000	108,000	9 Ft.	30 In.	4.95	6-5/8"	1-3/4"
6BR360	GRAY	63,200	79,000	158,000	10 Ft.	38 In.	7.75	11"	2-1/2"

8 PART BRAIDED POLYESTER ROUND SLING SPECIFICATIONS

STOCK NUMBER	COLOR CODE	WORK LOAD LIMITS (Lbs.)			MINIMUM LENGTH (FT.)	STD. EYE LENGTH (Inches)	WEIGHT LBS./FT. (Bearing)	WIDTH WHEN LOADED (Inches)	MINIMUM HARDWARE* Dia. (Inches)
		CHOKER	VERTICAL	BASKET					
8BR30	PURPLE	7,200	9,000	18,000	5 Ft.	14 In.	1.40	3-1/2"	3/4"
8BR60	GREEN	14,400	18,000	36,000	5 Ft.	15 In.	1.85	4"	1-1/8"
8BR90	YELLOW	22,800	28,500	57,000	6 Ft.	18 In.	2.40	4-3/4"	1-1/2"
8BR120	TAN	28,800	36,000	72,000	6 Ft.	18 In.	2.85	5"	1-1/2"
8BR150	RED	35,900	44,900	89,800	7 Ft.	25 In.	3.80	6"	1-3/4"
8BR180	WHITE	45,600	57,100	114,200	7 Ft.	25 In.	4.40	6-1/4"	2"
8BR240	BLUE	57,600	72,000	144,000	9 Ft.	30 In.	6.25	7-1/2"	2"
8BR360	GRAY	84,200	105,300	210,600	10 Ft.	38 In.	9.75	13"	2-1/2"

* Smallest recommended connection hardware diameter to be used for choker and vertical hitches.

⚠ WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

Round Sling Bearing Stress

Lift-It® Round Sling product specifications reflects minimum hardware diameters for choker, vertical and basket hitches. These recommendations are the result of work done by the Round Sling Technical Sub-Committee, Web Sling and Tiedown Association. The minimum diameter recommendations and others can be found in the Recommended Standard Specification for Synthetic Polyester Round Slings- WSTDA- RS-1.

Another approach to determine the correct relationship between round slings and connection hardware is also found in the abovementioned specification. While not relying on tables, this system establishes a maximum bearing stress at 7000 PSI and provides instruction in calculating this maximum value.

Slings are subjected to compression and tension factors. The lower the compressive forces, the higher the breaking strength of the sling. Likewise, the higher the compressive force, the lower the sling breaking strength.

Damage at the sling connection point is a result of pressures exceeding the maximum allowable compression limit per square unit of exposed surface area.

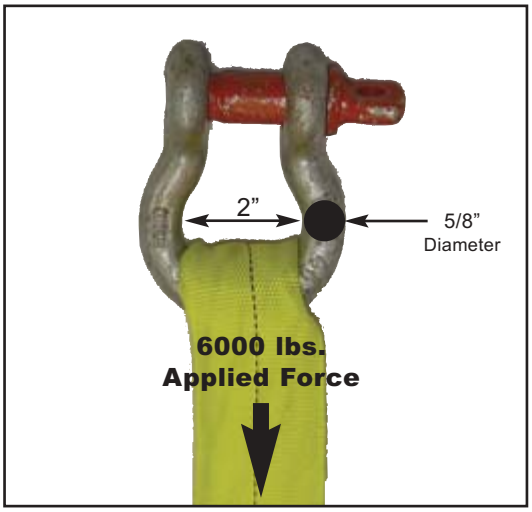
The first step to determine the bearing stress is to calculate the LOAD BEARING AREA. To accomplish this, the effective contact width must be computed. The effective contact width is obtained by multiplying the effective inside width by the diameter of the interfacing hardware. The effective inside width for straight bearing surfaces equals 100% of the actual inside width of the connection point. The effective contact width for a curved bearing surface is 75% of the actual inside width of the connection point.

Once the LOAD BEARING AREA has been calculated, divide the APPLIED FORCE by the LOAD BEARING AREA to determine the BEARING STRESS.

A round sling with a vertical work load of 8400 lbs. is connected to the round bow of a 5/8" anchor shackle. The shackle has an inside width of 2 inches and a diameter of .625.

The sling will be loaded (applied force) to 6,000 lbs.

Will the shackle be suitable, with a bearing stress, less than 7,000 PSI?



1. Calculate Effective Contact Width

Actual Inside Width	X	Curved Adjustment	=	Effective Contact Width
2.0 Inch	X	.75	=	1.5 Inch

2. Calculate Load Bearing Area

Effective Contact Width	X	Hardware Diameter	=	Load Bearing Area
1.5 Inch	X	.62	=	$.93^2$

3. Calculate Bearing Stress

Applied Force	÷	Load Bearing Area	=	Bearing Stress
6000 lbs.	÷	$.93^2$	=	6,451 PSI

Polyester Round Sling Considerations

POLYESTER ROUND SLING INSPECTION SYSTEM

INITIAL INSPECTION - Before any round sling is placed into service it shall be inspected by a designated person to ensure that the correct sling is being used, as well as to determine that the round sling meets the requirements of the specifications contained in this publication, and to all applicable requirements. The sling shall also be inspected to ensure that no damage occurred during transit. The sling(s) must also be verified to be correct, as ordered and that they comply with the manufacturer's specifications. Without printed product specifications, this comparison cannot be accomplished. If written records for individual slings are to be maintained, the specific sling information should be initiated at this level of inspection.

FREQUENT INSPECTION - This inspection shall be made by a qualified person handling the round sling before each use. Proper sling selection, hazard recognition and removal from service shall also be accessed by the sling user or competent person.

PERIODIC INSPECTION - This inspection shall be conducted by a designated person. Frequency of inspection should be based on: frequency of use, severity of the service conditions and experience gained on the service life of Round Slings used in similar applications.

Periodic inspection intervals shall not exceed one year intervals. ASME states that guidelines for the inspection time intervals are as follows:
Normal Service - Yearly
Severe Service - Monthly or Quarterly
Special Service - As recommended by a qualified person

Written records of the most recent periodic inspection shall be maintained. Records and documentation should be kept in the safety office or at the specific sling storage area.

REMOVAL FROM SERVICE CRITERIA

Slings shall be inspected throughout their entire length for evidence of damage. Core integrity is determined by a hand over hand inspection of the entire sling, combined with a thorough visual inspection. Round Slings shall be removed from service if any of the following is visible:

A) Missing or illegible work load limit tag
B) Acid or Caustic burns
C) Discoloration and brittle or stiff areas that may indicate Chemical or UV/Sunlight damage.
D) Melting, charring or weld spatter of any part of the sling
E) Holes, tears, cuts, embedded particles, abrasive wear, or snags that expose the load carrying yarns
F) Broken, cut or damaged load carrying yarns
G) Broken or worn stitching in the cover which exposes the load carrying yarns.
H) Slings that are knotted.
I) Fitting distortion: elongated, damaged, cracked, twisted bent, gouged, pitted, corroded or broken
J) For hooks, removal criteria as stated in ASME B30.10
K) For applicable fittings, removal criteria as stated in ASME B30.26
L) For slings equipped with ✓Fast™ Inspection:
External Warning Indicator (EWI) is not visible
The ✓Fast™ Ribbon pulls out of the sling cover.
M) Other conditions, including visible damage that may cause doubt as to the continued use of the sling.

Slings removed from service that are not capable of repair shall be destroyed and rendered completely unfit for future use.

⚠ WARNING ⚠ WARNING

Failure to follow proper use, care and inspection criteria could result in severe personal injury or death.

It is your explicit responsibility to consider all risk factors prior to using any rigging device or product. Read and understand the information contained in this publication and follow OSHA and ASME guidelines. Use by untrained persons is hazardous. Synthetic products will fail if damaged, abused, misused, overused, or improperly maintained.

A visual inspection of the sling must be made every time this sling is to be used. Slings that are damaged or determined to be unsafe shall not be used for any application. If the work load limit tag is missing, illegible or incomplete the sling shall not be used.

Do not exceed work load limits. You are cautioned that all published work load limits and break strengths apply to only new and unused slings, assemblies and hardware. Work Load Limits are based upon destruction testing done, in controlled, laboratory conditions, which will never be duplicated during actual usage and a moderately dynamic lifting or pulling operation. Instantaneous changes (drops or sudden pick ups) in excess of 10% of the work load, constitutes hazardous shock loading and THE WORKING LOAD LIMITS AS STATED, DO NOT APPLY.

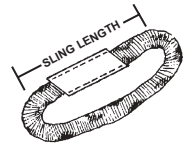
When synthetic slings are used with a shackle, it is recommended that the sling be rigged in the bow and not on the pin. The pin of the shackle can cause synthetic slings to be damaged and fail. Placing the sling on the pin should be avoided, unless the sling is protected. The use of improper fittings and/or materials may result in severe personal injury or death.

A combination of non-positive sling-to-load engagement and/or inadequate wear protection materials may result in wear protection damage and sling failure, resulting in uncontrolled load descent.

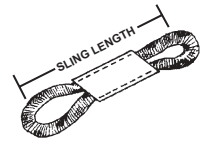
Synthetic products are damaged and cut when lifting on load edges. Edges in contact with the sling must be "padded" with materials of sufficient strength and thickness to prevent damage and catastrophic sling failure. Wear protection must be installed and evaluated for suitability by raising the load slightly, and then lowering the load for an inspection of the sling and the protection devices. Several "test" lifts may be necessary to determine the proper form of protection for a successful lift. The length of the sleeve or wear pad material(s) must not interfere with the sling closing to the full gripping position on the load. Wear protection may not prevent cutting or other forms of sling damage. To avoid severe personal injury or death, personnel should be kept away from the load and never be under or near the load, while it is being lifted or suspended.

HOW TO ORDER

ALWAYS SPECIFY:
1. COMPLETE STOCK NUMBER
2. SLING LENGTH: Unless otherwise specified:
   • All assembly lengths are measured as bearing hardware
   • All sling lengths are bearing sling
3. WEAR PROTECTION: Description, location and quantity of wear pads and/or sleeves. See pages 13-20.



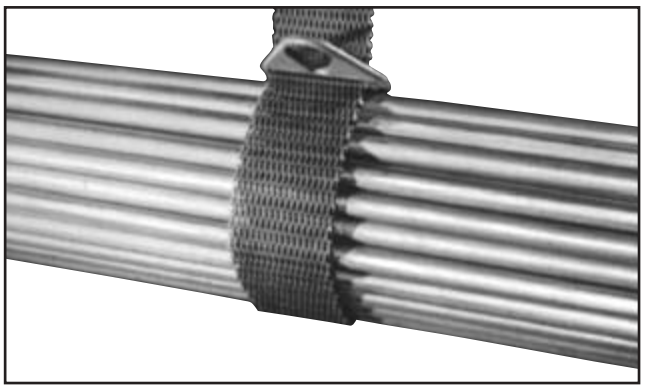
ONE STRAND SLEEVE
(NON-REMOVABLE)



TWO STRAND SLEEVE
(REMOVABLE)

4. DESCRIPTION OF END FITTINGS

Wire Mesh Slings



Lift-It® Manufacturing is the Western Regional Service Center for the Cambridge Wire Cloth Company. The Welded Edge construction of the Lift-It® Wire Mesh Sling will outlast and outperform the brazed edge, offered by other manufacturers. Wire Mesh slings are fabricated in a timely manner and you will receive the same service level that you have come to know and expect.

The unique woven wire construction of the Lift-It® Wire Mesh Sling consists of a series of smooth, spiral wires joined together across the body of the sling. This construction gives the sling flexibility and long life. Standard mesh materials are high strength, Carbon Steel (10, 12 or 14 gauge), 4130 Heat Treated Alloy Steel, Stainless Steel (Type 304 or 316), Monel (Type 400) and Carpenter 20, a corrosion resistant alloy.

Lift-It® Wire Mesh Slings are widely used in metal working applications and are ideal for positioning coiled strip for slitting and for handling sheet steel, hot rolled flat bar stock and cold drawn flats. Other applications include the efficient handling of pre-stressed concrete pre-fabricated wall panels and pre-cast hollow core concrete beams.

Lift-It® Wire Mesh Slings are recommended for use where loads are hot, abrasive or tend to cut synthetic lifting products. They grip the load with little stretch and will withstand temperatures to 550°(F)/287°(C). **⚠ WARNING** Do not use Wire Mesh Slings in pairs, unless used vertically and attached to a spreader bar.

SLING AND HARDWARE SPECIFICATIONS

	MESH WIDTH	WORK LOAD LIMITS				Sling Wt. (Lbs)		Terminal Dimensions (In.)		
		Choker	Basket Hitches							
			90°	60°	45°	3 Ft. Sling	Adder Per Ft.	"A"	"B"	"C"
10 GAUGE CARBON	2	1,600	3,200	2,700	2,200	5	1.25	1-3/4	4	6
	3	3,000	6,000	5,100	4,200	8	1.88	2-1/2	5-1/4	7-1/2
	4	4,400	8,800	7,600	6,220	10	2.50	2-1/2	5-1/2	7-3/4
	6	6,600	13,200	11,430	9,300	15	3.88	2-3/4	6-1/2	9
	8	8,800	17,600	15,000	12,400	20	5.13	4	8-3/4	12
	10	11,000	22,000	19,050	15,550	26	6.38	3-1/2	7-3/4	10-3/4
	12	13,200	26,400	22,860	18,660	33	7.63	3-1/2	8	11-1/4
	14	15,400	30,800	26,670	21,775	47	8.78	4-1/2	10-5/8	14-11/16
	16	17,600	35,200	30,480	24,886	55	10.12	4-1/2	11-1/4	15-9/16
	18	19,800	39,600	34,290	27,990	64	11.38	4-1/2	11-7/8	16-9/16
	20	22,000	44,000	38,100	31,100	73	12.75	4-1/2	12-1/2	17-9/16

CHEMICAL AND ENVIRONMENTAL INFORMATION

Metal Mesh Composition	Weak Sulphuric Acid	Weak Hydrochloric Acid	Alkaline Caustic Solutions	Salt Solutions	Organic Solvents	Water
Carbon Steel	No	No	No	No	Yes	No
T-304 Stainless Steel	No	No	Yes	No	Yes	Yes
T-316 Stainless Steel	No	No	Yes	No	Yes	Yes
Monel	No	No	Yes	Yes	Yes	Yes
AISI 4130 Alloy Steel*	No	No	No	No	Yes	No
Urethane-Coated	No	Yes	No	Yes	No	Yes
Carpenter 20	Yes	No	Yes	Yes	Yes	Yes

*Heat Treated. The above chart provides some general guidelines and all data listed is based upon a 70 degree (F) exposure. For specific time, temperature and concentration factors, consult us prior to purchase or use.

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

Failure to follow proper use, care and inspection criteria could result in severe personal injury or death.

It is your explicit responsibility to consider all risk factors prior to using any rigging device or product. Read and understand the information contained in this publication and follow OSHA and ASME guidelines. Use by untrained persons is hazardous. Wire Mesh slings will fail if damaged, abused, misused, overused, or improperly maintained.

A visual inspection of the sling must be made every time this sling is to be used. Slings that are damaged or determined to be unsafe shall not be used for any application. If the work load limit is illegible or incomplete the sling shall not be used.

Do not exceed work load limits. You are cautioned that all published work load limits and break strengths apply to only new and unused slings, assemblies and hardware. Work Load Limits are based upon destruction testing, done in controlled, laboratory conditions, which will never be duplicated during actual usage and a moderately dynamic lifting or pulling operation. Instantaneous changes (drops or sudden pick ups) in excess of 10% of the work load, constitutes hazardous shock loading and THE WORKING LOAD LIMITS AS STATED, DO NOT APPLY.

To avoid severe personal injury or death, personnel should be kept away from the load and never be under or near the load, while it is being lifted or suspended.

Wire Mesh Slings

SPECIAL MESH MATERIALS

Lift-It® Wire Mesh Slings can be manufactured of special alloys to meet operating conditions involving elevated temperatures or exposure to corrosive materials.

4130 Heat Treated Alloy Steel
Provides more strength and abrasion resistance and greater work load limits than standard, carbon steel slings.

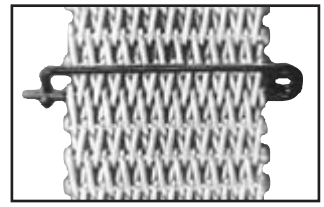
Stainless Steel, Type 304 or 316
Resistant to corrosion and temperature, both in the atmosphere and in a wide variety of corrosive media, including: many acid solutions, alkalis, organic liquids and certain gases.

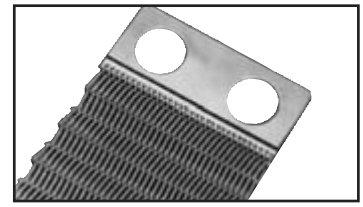
Carpenter 20
A corrosion resistant alloy, which is useful in sulfuric acid applications. It is not normally used for high temperature applications.

Monel, Type 400
An excellent selection for use with chloride salts, alkalis, food products, organic materials and atmospheric conditions at normal and elevated temperatures.

CUSTOM DESIGN

Our engineering department has designed many special attachments. We can assist you in adapting the basic wire mesh sling to meet specific requirements. A perfect example is the disconnect pin, which allows for the formation of an endless, Wire Mesh sling.





REPAIR AND CERTIFICATION

Wire Mesh Slings manufactured by Lift-It® are proof tested to twice the vertical work load limit. Each sling is assigned a unique serial number and supplied with proof test certificates.

Lift-It® Manufacturing will repair and certify all types and brands of Wire Mesh Slings. Repairs are charged on a material and labor basis, after a thorough inspection of the used sling. All repaired slings are tested to twice the vertical work load limit and certified.

SPECIAL COVERINGS

For maximum load protection, specify a covered wire mesh sling. The soft, smooth, elastic coverings enhance the gentleness and service life of the sling and ease of handling. The covering increases sling thickness by about 5/16", yet flexes to a radius as small as 2".

⚠ WARNING Maximum operating temperature for coated Wire Mesh slings is 150°(F)/65°(C).

URETHANE COVERING
Urethane covering is well known for its flexibility, without checking, its toughness and its long service. Urethane resists attack by lower concentrations of: nitric, sulfuric, hydrochloric, hydrofluoric acids and sodium hydroxide.

NEOPRENE COVERING
Neoprene resists attack by oils, greases, and stronger concentrations of sodium hydroxide, sulfuric and hydrochloric and hydrofluoric acids.

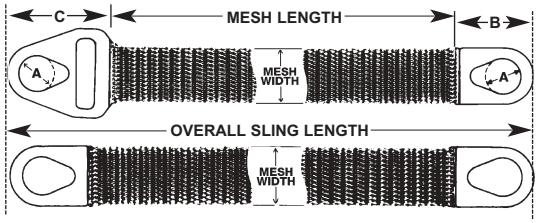
HOW TO ORDER

DETERMINE SLING STOCK NUMBER

WM - 1 - 10 - 4 - X 10 FT

- WM — WIRE MESH
- 1 — SLING TYPE (Type 1: Choker, Type 2: Basket)
- 10 — MESH GAUGE (10: 10 Gauge, 12: 12 Gauge, 14: 14 Gauge)
- 4 — MESH WIDTH (INCH)
- X — (blank)
- 10 FT — OVERALL SLING LENGTH (FEET)

1) Select the Sling Material:
Carbon Steel , Alloy, Stainless,
Monel or Carpenter 20



TYPE I

TYPE 2

2) Select sling type: Choker or Basket
3) Specify gauge for carbon steel
4) Specify mesh width: (inches)
5) Specify sling length: Feet (overall)

REMOVAL FROM SERVICE CRITERIA

Slings must be inspected before each use and shall be removed from service if any of the following defects are present:

- **Missing or illegible sling identification**
- **Broken weld along the sling edge**
- **Broken wire in any part of the mesh**
- **A reduction in wire diameter of 25% due to abrasion or 15% from corrosion**
- **Lack of flexibility due to mesh distortion**
- **Distortion of the choker fitting so the depth of the slot is increased by more than 10%.**
- **Distortion of either fitting so the width of the eye opening is decreased by more than 10%.**
- **A 15% reduction of the original cross sectional area of any point around the hook opening**
- **Visible distortion of either fiting out of its plane**
- **Cracked end fittings**
- **Slings with locked spirals or without free articulation or movement**
- **Fittings that are pitted, corroded, cracked, bent, twisted, gouged or broken.**
- **Other conditions, including visible damage, that cause doubt as to the continued use of the sling.**

Wire Rope Slings

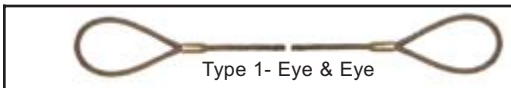
WIRE ROPE SLING CONSIDERATIONS

Flemish eye, mechanically swaged, single body wire rope slings feature 6 x 19 or 6 x 37 Construction, Extra Improved Plow Steel (EIPS), with an Independent Wire Rope Core (IWRC) for good abrasion resistance and a reasonable service life. Mechanically swaged, single body wire rope slings provide additional security, superior to return loop slings, should the swage sleeve become damaged during use. Thimbles greatly improve sling longevity, by protecting the rope at the connection points.

Stainless Steel Slings, slings with fiber cores (with reduced work load limits), Cable Laid Slings with a galvanized finish, and larger diameter slings are also available.

You must specify the sling type, diameter and length.

SINGLE BODY SLING TYPES


Type 1- Eye & Eye

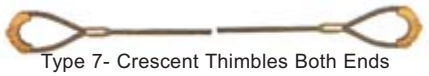

Type 2- Eye & Hook


Type 3- Eye & Thimble


Type 4- Eye & Slip-Thru Thimble


Type 5- Eye & Crescent Thimble


Type 6- Crescent Thimble & Hook

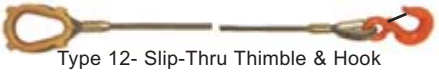

Type 7- Crescent Thimbles Both Ends


Type 8- Thimble & Thimble


Type 9- Thimble & Hook


Type 10- Thimble & Slip-Thru Thimble


Type 11- Thimble & Crescent Thimble


Type 12- Slip-Thru Thimble & Hook


Type 13- Slip-Thru Thimble - Both Ends

Please Note: Heavy duty, galvanized thimbles are standard. Eye Hooks will be supplied with latches.

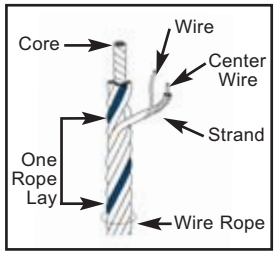
Sliding Chokers


Type 14- Eye & Thimble With Sliding Choker Hook

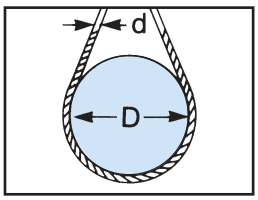

Type 15- Eye & Eye With: Sliding Choker Hook Latches not furnished on Sliding Choker Hooks, unless requested.

SINGLE BODY - WIRE ROPE SPECIFICATIONS

Wire Rope Construction



(D/d) Considerations



When wire rope is bent around the load diameter, the rope strength is decreased. The D/d ratio is the diameter of the object around which the rope is bent (D), divided by the diameter (d) of the rope.

ROPE DIA. (IN.)	WORK LOAD LIMITS (TONS) D/d = 25/1 TON = 2000 LBS. CHOKER	VERTICAL	VERTICAL BASKET	MIN. SLING LENGTH (TYPE I)	STANDARD EYE SIZE (Inches) W X L	THIMBLED EYE SIZE (Inches) W X L	EYE HOOK WLL (TONS)	CRESCENT THIMBLE EYE SIZE (Inches) W X L	SLIP-THRU THIMBLE EYE SIZE (Inches) W X L	SLIDING CHOKER HOOK (Inches)
1/4	.48	.65	1.3	1'-6"	2 X 4	7/8 X 1-5/8	1	2 X 4	2-1/8 X 4-1/8	3/8
5/16	.74	1.0	2.0	1'-9"	2-1/2 X 5	1-1/16 X 1-7/8	1	2 X 4	2-1/8 X 4-1/8	3/8
3/8	1.1	1.4	2.9	2'-0"	3 X 6	1-1/8 X 2-1/8	1-1/2	2 X 4	2-1/8 X 4-1/8	3/8
7/16	1.4	1.9	3.9	2'-3"	3-1/2 X 7	1-1/4 X 2-1/4	2	2 X 5	2-3/8 X 4-3/8	1/2
1/2	1.9	2.5	5.1	2'-6"	4 X 8	1-1/2 X 2-1/4	3	2-1/4 X 6	2-3/8 X 4-3/8	1/2
9/16	2.4	3.2	6.4	2'-9"	4-1/2 X 9	1-1/2 X 2-3/4	5	2-1/4 X 7	2-3/8 X 4-3/8	5/8
5/8	2.9	3.9	7.8	3'-0"	5 X 10	1-3/4 X 3-1/4	5	2-3/4 X 7	3-3/8 X 6-5/8	5/8
3/4	4.1	5.6	11	3'-6"	6 X 12	2 X 3-3/4	7	3-1/4 X 8-1/2	3-3/8 X 6-5/8	3/4
7/8	5.6	7.6	15	4'-0"	7 X 14	2-1/4 X 4-1/4	11	4-1/2 X 10	3-3/4 X 7-1/8	7/8
1	7.2	9.8	20	4'-6"	8 X 16	2-1/2 X 4-1/2	11	4-1/2 X 11-1/2	3-3/4 X 7-1/8	1
1-1/8	9.1	12	24	5'-0"	9 X 18	2-7/8 X 5-1/8	15	4-7/8 X 13	4-3/8 X 8-3/8	1-1/8
1-1/4	11	15	30	5'-6"	10 X 20	31/2 X 6-1/2	15	5-1/2 X 14-1/2	4-3/8 X 8-3/8	1-1/4
1-3/8	13	18	36	6'-0"	11 X 22	3-1/2 X 6-1/4	22	6 X 16	5 X 9-1/2	1-3/8
1-1/2	16	21	42	7'-0"	12 X 24	3-1/2 X 6-1/4	22	6 X 17-1/2	5 X 9-1/2	1-1/2
1-3/4	21	28	57	8'-0"	14 X 28	4-1/2 X 9	30	7 X 20	6-3/4 X 11-3/4	-
2	28	37	73	9'-0"	16 X 32	6 X 12	37	7 X 23-1/2	8 X 14-1/2	-
2-1/4	35	44	89	10'-0"	18 X 36	7 X 14	45	8-1/2 X 26	8 X 15-1/2	-
2-1/2	42	54	109	11'-0"	20 X 40	-	-	8-1/2 X 29-1/2	-	-

WIRE ROPE SLING CONSIDERATIONS

WIRE ROPE SLING INSPECTION SYSTEM

INITIAL INSPECTION - Before any Wire Rope Sling is placed into service it shall be inspected by a designated person to ensure that the correct sling is being used, as well as to determine that the Wire Rope Sling meets the requirements of the specifications contained in this publication, and all applicable requirements.
The sling shall also be inspected to ensure that no damage occurred during transit. The sling(s) must also be verified to be correct, as ordered and that they comply with the manufacturer's specifications. Without printed product specifications, this comparison cannot be accomplished. If written records for individual slings are to be maintained, the specific sling information should be initiated at this level of inspection.

FREQUENT INSPECTION - This inspection shall be made by a qualified person handling the Wire Rope Sling before each use. Proper sling selection, hazard recognition and removal from service shall also be accessed by the sling user or competent person. Written inspections are not required for frequent inspections.

PERIODIC INSPECTION - This inspection shall be conducted by a designated person. Frequency of inspection should be based on: Frequency of use, Severity of the Service Conditions, Experience gained on the service life of Wire Rope Slings used in similar applications. Periodic inspection intervals shall not exceed one year intervals. ASME states that guidelines for the inspection time intervals are as follows:
Normal Service - Yearly
Severe Service - Monthly or Quarterly
Special Service - As recommended by a qualified person

Written records of the most recent periodic inspection shall be maintained. Records and documentation should be kept in the safety office or at the specific sling storage area.

WIRE ROPE SLING REMOVAL CRITERIA

Slings shall be inspected throughout their entire length for evidence of damage. Wire Rope Slings shall be removed from service if any of the following is visible:

A) Missing or illegible work load limit tag
B) Broken Wires
   1) For strand laid and single part slings, ten randomly distributed broken wires in one rope lay, or five broken wires in one strand in one rope lay
   2) For cable-laid slings, 20 broken wires per lay
   3) For 6 part braided slings, 20 broken wires per braid
   4) For 8 part braided slings, 40 broken wires per braid
C) Severe localized abrasion and scraping
D) Kinking, crushing, birdcaging, or any other damage resulting in damage to the rope structure
E) Evidence of heat damage.
F) End attachments that are cracked, deformed or worn to the extent that the strength of the sling is substantially affected
G) Severe corrosion of the rope, end attachments or fittings
H) For hooks, removal criteria, as stated in ASME B30.10
I) For other applicable hardware, removal criteria as stated in ASME B30.26
J) Other conditions, including visible damage that cause doubt as to the continued use of the sling.

⚠ WARNING Do not inspect a sling by passing bare hands over the wire rope body. Broken wires, if present, may puncture the hands.

USE, CARE, MAINTENANCE AND REPAIR

Identification Requirements:
ASME B30.9-2006, Section 9-2.7.1
Each sling shall be marked to show:
a) name or trademark of manufacture
b) rated load(s) for the types of hitches and the angle upon which it is based
c) diameter or size
Sling identification should be maintained during the life of the sling by the sling user.

Prior to initial use all new swaged, socket, poured socket, turned back eye, mechanical joint grommets, and endless wire rope slings shall be proof tested by the manufacturer or qualified person. All wire rope slings incorporating used or repaired fittings and all repaired slings shall be proof tested by the manufacturer or qualified person.

Store slings in a dry, clean area away from chemicals, dust, grit, elevated temperatures or conditions that cause ropes to kink.

⚠ WARNING **⚠ WARNING**

Any hazardous condition disclosed by an inspection shall require sling replacement. Temporary repairs are not permitted. Damage and wear seriously reduce sling work load limits.

Always know the load weight and select the appropriate sling for the load, configuration of lift necessary to ensure load control and any chemical exposure.

Always take into account sling angles and refer to pages 8-10 to calculate changes in the sling work load limits, when used in choker and non-perpendicular vertical, basket or bridle configurations.

Ensure that the load will not cut the sling during the lift by padding corners, edges, protrusions or abrasive surfaces with suitable materials of sufficient strength and/or thickness.

The strength of Wire Rope Slings can be affected by chemically active environments. Sling materials may be susceptible to damage from caustic or acid substances or fumes. Strong oxidizing environments attack all common sling materials and components. Consult the manufacturer prior to selection and use. Fiber Core Wire Rope Slings should not be subjected to degreasing or solvents because of possible damage to the core.

Fiber Core Wire Rope Slings of all grades shall not be exposed to temperatures in excess of 180° F/82° C. Fiber core slings are less crush resistant and not as strong as IWRC wire rope slings. IWRC Wire Rope Slings shall not be exposed to temperatures in excess of 400° F/ 204° C or below -40° F /-40° C

The Sling and load shall not be allowed to rotate when hand tucked spices are used in a single leg vertical lift application. Care should be taken to minimize sling rotation. Rotation resistant wire rope shall not be used in the construction of the slings and assemblies featured in our catalog.

Slings made with wire rope clips shall not be used in a choker hitch.

⚠ WARNING Failure to follow all instructions and/or use by untrained personnel may result in death, injury and/or property damage.

MULTIPLE LEG BRIDLE ASSEMBLIES

- SINGLE PART BODY
- THIMBLES PROTECT SLING EYES
- 6 X 19 OR 6 X 37 ROPE CONSTRUCTION
- IWRC RESISTS CRUSHING
- OTHER FITTINGS ARE AVAILABLE

2-Leg Bridle

3-Leg Bridle

4-Leg Bridle

DO NOT EXCEED WORK LOAD LIMITS			WORK LOAD LIMIT (TONS)*			WORK LOAD LIMIT (TONS)*			WORK LOAD LIMIT (TONS)*		
ROPE DIA.(IN.)	MIN. SLING LENGTH	EYE HOOK CAP. (TONS)	60°	45°	LINK STOCK DIA. (Inches)	60°	45°	LINK STOCK DIA. (Inches)	60°	45°	LINK STOCK DIA. (Inches)
1/4	1' - 3"	1	1.1	.91	1/2	1.7	1.4	1/2	2.2	1.8	1/2
5/16	1' - 6"	1	1.7	1.4	1/2	2.6	2.1	1/2	3.5	2.8	3/4
3/8	1' - 8"	1 1/2	2.5	2.0	1/2	3.7	3.0	3/4	5.0	4.1	3/4
7/16	1' - 10"	2	3.4	2.7	3/4	5.0	4.1	3/4	6.7	5.5	1
1/2	2'	3	4.4	3.6	3/4	6.6	5.4	1	8.8	7.1	1
9/16	2' - 2"	5	5.5	4.5	3/4	8.3	6.8	1	11	9.0	1-1/4
5/8	2' - 4"	5	6.8	5.5	1	10	8.3	1-1/4	14	11	1-1/2
3/4	2' - 9"	7	9.7	7.9	1-1/4	15	12	1-1/2	19	16	1-3/4
7/8	3' - 3"	11	13	11	1-1/4	20	16	1-1/2	26	21	2
1	3' - 6"	11	17	14	1-1/2	26	21	1-3/4	34	28	2-1/4
1-1/8	4'	15	21	17	1-1/2	31	26	1-3/4	42	34	2-3/4
1-1/4	4' - 6"	15	26	21	1-3/4	38	31	2	51	42	2-3/4
1-3/8	5'	22	31	25	1-3/4	46	38	2-1/4	-	-	-
1-1/2	5' - 6"	22	37	30	2	55	45	2-1/4	-	-	-
1-3/4	6' - 6"	30	49	40	2-1/4	-	-	-	-	-	-
2	8'	37	63	52	2-3/4	-	-	-	-	-	-

Length tolerance for single body slings is +/- two rope diameters or +/- .5% of the sling length, whichever is greater.
Bridle or matched slings are +/- one rope diameter.

*TON = 2000 LBS.

T&D ULTRA-FLEX SLINGS

T&D ULTRA-FLEX slings are extremely flexible and were specifically developed for general rigging applications in the utility industry. The extreme flexibility makes the T&D ULTRA-FLEX particularly useful when choking and handling poles. The development of this remarkable sling design was made possible through the collaboration of members from the utility community and members of the Slingmax® design team.

⚠ WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

COMPONENT WIRE ROPE DIA. (IN.)	SPLICE LENGTH (FT.)	STANDARD EYE SIZE (INCHES)	FINISHED DIAMETER (INCHES)	WORK LOAD LIMITS (TONS)*			WEIGHT PER FT. (LBS.)	MINIMUM LENGTH (FT.)
				CHOKER	VERTICAL	BASKET		
1/8	-	8	1/2	.9	1.3	2.6	.26	-
5/32	-	10	5/8	1.3	1.7	3.4	.40	-
3/16	-	12	3/4	1.9	2.6	5.2	.59	-
7/32	-	14	7/8	2.6	3.5	7.0	.77	-
1/4	-	16	1	3.4	4.6	9.2	.99	-
5/16	-	18	1-1/4	5.2	7.0	14.0	1.56	-
3/8	-	20	1-1/2	7.5	10.0	20.0	2.19	-
7/16	3	22	1-3/4	10.3	13.8	27.6	3.15	10.5
1/2	3-1/2	24	2	13.5	18.0	36.0	4.14	12.0
9/16	4	26	2-1/4	18.1	22.7	45.4	5.31	140
5/8	4-1/2	28	2-1/2	20.8	27.8	55.6	6.48	15.0
3/4	5	30	3	29.8	39.7	79.4	9.36	17.5
7/8	5-1/2	35	3-1/2	40.3	53.7	107.4	12.78	19.0
1	6	40	4	52.3	69.8	139.6	16.65	21.5
1-1/8	8	45	4-1/2	65.8	87.7	175.4	21.06	27.5
1-1/4	9	50	5	81.0	108.8	216	26.01	31.0
1-3/8	10	55	5-1/2	97.5	130	260	31.50	34.5
1-1/2	11	60	6	115.5	154	308	37.44	37.5
1-3/4	13	70	7	154.5	206	412	51.03	44.5
2	14	80	8	200.2	267	534	66.51	48.0
2-1/4	16	90	9	249.7	333	666	84.24	55.0
2-1/2	18	100	10	306	408	816	104.00	62.0

* TON = 2000 LBS

Work Load Limits are based upon: 5/1 design factor and EIPS-IWRC Wire Rope or GAC
Loop D/d is 1/1, where “D” = the pin or loop connection diameter and “d”= the sling body diameter.
Body D/d is 5/1, where “D”= the load or contact diameter and “d” = the sling body diameter

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

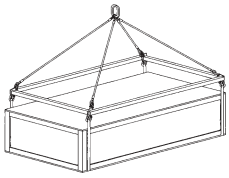
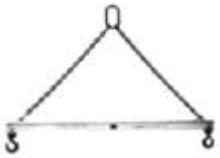
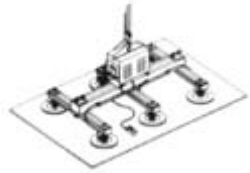
Failure to follow proper use, care and inspection criteria could result in severe personal injury or death. It is your explicit responsibility to consider all risk factors prior to using any rigging device or product. Read and understand the information contained in this publication and follow OSHA and ASME guidelines. Use by untrained persons is hazardous. Wire rope slings will fail if damaged, abused, misused, overused, or improperly maintained.

A visual inspection of the sling must be made every time this sling is to be used. Slings that are damaged or determined to be unsafe shall not be used for any application. If the work load limit tag is missing, illegible or incomplete the sling shall not be used.

Wire rope slings can become damaged and cut when lifting on load edges. Edges in contact with the sling must be “padded” with materials of sufficient strength and thickness to prevent damage and catastrophic sling failure. Wear protection must be installed and evaluated for suitability by raising the load slightly, and then lowering the load for an inspection of the sling and the protection devices. Several “test” lifts may be necessary to determine the proper form of protection for a successful lift. The length of the sleeve or wear pad material(s) must not interfere with the sling closing to the full gripping position on the load. Wear protection may not prevent cutting or other forms of sling damage. To avoid severe personal injury or death, personnel should be kept away from the load and never be under or near the load, while it is being lifted or suspended.

Do not exceed work load limits. You are cautioned that all published work load limits and break strengths apply to only new and unused slings, assemblies and hardware. Work Load Limits are based upon destruction testing, done in controlled, laboratory conditions, which will never be duplicated during actual usage and a moderately dynamic lifting or pulling operation. Instantaneous changes (drops or sudden pick ups) in excess of 10% of the work load, constitutes hazardous shock loading and THE WORKING LOAD LIMITS AS STATED, DO NOT APPLY.

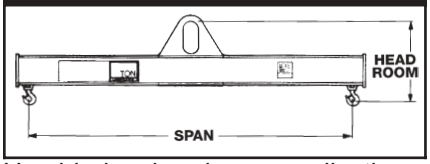
Material Handling Devices

Lifting Beams 	**Twin Basket Beam** 	**Two Hoist Lift Beams** 	**Adjustable Bail Lifting Beams** 	**Three and Four Point Lifting Beams** 
Container Handling Systems 	**Powered Rotation Load Positioning Beam** 	**Fixed Spreader Beams** 	**Adjustable Spreaders** 	**Adjustable Spreader/Lifter** 
Drum Lifters/Rotators 	**Drum Tilters** 	**Two Sided Coil Lifters** 	**Coil Hooks** 	**Dixon Coil Hooks** 
Coil Upenders 	**Combination Coil/Pallet Lifter** 	**Fixed and Adjustable Pallet Lifters** 	**Concrete Housing Lifter** 	**Manhole Sleeve Lifter** 
Sheet Lifter 	**Beam Tong** 	**Pallet Puller** 	**Rail Tong** 	**Pipe Grab** 
Fork Hook 	**Adjust-a-Leg Two or Four Point** 	**Concrete Barrier Tool** 	**Battery or Electric Magnets** 	**Vacuum Lifters** 

ENGINEERED LIFTING BEAMS

A complete line of Engineered Lifting Beams designed to solve many lifting and handling problems. Designed to meet or exceed ASME B30.20 for "Below the Hook" lifting devices. Engineered Lifting Beams feature a 3/1 design factor. Contact us for work load limits, lengths and designs not listed. Please refer to ASME B30.20 and B30.9 for lifting and rigging guidelines.

LOW HEADROOM LIFTING BEAM



Used in low headroom applications. The beam design is able to pick up and structurally handle the load weight through the beam spread.

WARNING

Visually inspect the lifting device and slings before each use for:

Structural deformation, cracks or excessive wear

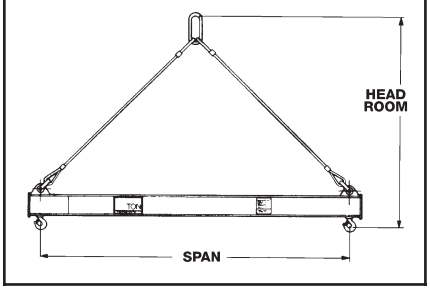
Loose or missing parts

Inoperable mechanisms:
Hold or release mechanisms

Excessive wear or damage to: Mechanical Parts, Load pins, Gears, Pulleys, Bearings, Sheaves or Sprockets.

WORK LOAD LIMITS	MODEL NO. HEADROOM WEIGHT	LOW HEADROOM SPECIFICATIONS (SPAN- FEET)								
		4	6	8	10	12	14	16	18	20
1/2 TON	MOD.	LB1/2T4F	LB1/2T6F	LB1/2T8F	LB1/2T10F	LB1/2T12F	LB1/2T14F	LB1/2T16F	LB1/2T18F	LB1/2T20F
	H.R.	15-1/2	15-1/2	15-1/2	15-1/2	16-1/2	16-1/2	16-1/2	16-1/2	16-1/2
	WT.	40 LBS.	84 LBS.	108 LBS.	145 LBS.	155 LBS.	176 LBS.	257 LBS.	286 LBS.	293 LBS.
1 TON	MOD.	LB1T4F	LB1T6F	LB1T8F	LB1T10F	LB1T12F	LB1T14F	LB1T16F	LB1T18F	LB1T20F
	H.R.	15-1/2	16-1/2	16-1/2	17-1/2	17-1/2	17-1/2	18-1/2	18-1/2	18-1/2
	WT.	46 LBS.	100 LBS.	128 LBS.	160 LBS.	186 LBS.	278 LBS.	288 LBS.	392 LBS.	433 LBS.
2 TON	MOD.	LB2T4F	LB2T6F	LB2T8F	LB2T10F	LB2T12F	LB2T14F	LB2T16F	LB2T18F	LB2T20FT
	H.R.	16-1/2	17-1/2	17-1/2	18-1/2	19-1/2	19-1/2	20-1/2	20-1/2	20-1/2
	WT.	80 LBS.	110 LBS.	170 LBS.	241 LBS.	272 LBS.	405 LBS.	450 LBS.	532 LBS.	787 LBS.
3 TON	MOD.	LB3T4F	LB3T6F	LB3T8F	LB3T10F	LB3T12F	LB3T14F	LB3T16F	LB3T18F	LB3T20F
	H.R.	17-1/2	18-1/2	18-1/2	19-1/2	20-1/2	20-1/2	21-1/2	21-1/2	22-1/2
	WT.	106 LBS.	148 LBS.	192 LBS.	347 LBS.	382 LBS.	578 LBS.	692 LBS.	773 LBS.	853 LBS.
4 TON	MOD.	LB4T4F	LB4T6F	LB4T8F	LB4T10F	LB4T12F	LB4T14F	LB4T16F	LB4T18F	LB4T20F
	H.R.	19	20	20	21	22	23	23	23	23
	WT.	130 LBS.	176 LBS.	248 LBS.	440 LBS.	545 LBS.	625 LBS.	865 LBS.	965 LBS.	1265 LBS.
5 TON	MOD.	LB5T4F	LB5T6F	LB5T8F	LB5T10F	LB5T12F	LB5T14F	LB5T16F	LB5T18F	LB5T20F
	H.R.	23-1/4	24-1/2	24-1/4	26-1/4	27-1/4	27-1/4	27-1/4	29-1/4	29-1/4
	WT.	165 LBS.	220 LBS.	384 LBS.	485 LBS.	565 LBS.	785 LBS.	985 LBS.	1045 LBS.	1285 LBS.
10 TON	MOD.	LB10T4F	LB10T6F	LB10T8F	LB10T10F	LB10T12F	LB10T14F	LB10T16F	LB10T18F	LB10T20F
	H.R.	25-1/4	27-1/4	27-1/4	32-1/4	32-1/4	32-1/4	32-1/4	32-1/4	32-1/4
	WT.	256 LBS.	300 LBS.	586 LBS.	784 LBS.	920 LBS.	1056 LBS.	1190 LBS.	1546 LBS.	2106 LS.
15 TON	MOD.	LB15T4F	LB15T6F	LB15T8F	LB15T10F	LB15T12F	LB15T14F	LB15T16F	LB15T18F	LB15T20F
	H.R.	27-1/4	29-1/4	29-1/4	32-1/4	32-1/4	32-1/4	CALL FACTORY	CALL FACTORY	CALL FACTORY
	WT.	300 LBS.	415 LBS.	682 LBS.	818 LBS.	1100 LBS.	1540 LBS.			

FIXED SPREADER BEAM



Top rigging directs most of the load stress through the rigging, directly to the hooks or load connection devices. Structurally, this spreader beam is not intended to equally handle the load weight at all points across the beam span. Increasing the length of the spreader legs, will result in more load stability.

NOTE: WEIGHT OF BEAM DOES NOT INCLUDE THE SUSPENSION BRIDLE WEIGHT.

HEADROOM (H.R.) EXPRESSED IN INCHES

WORK LOAD LIMITS	MODEL NO. HEADROOM WEIGHT	FIXED SPREADER BEAM SPECIFICATIONS (SPAN- FEET)								
		4	6	8	10	12	14	16	18	20
1/2 TON	MOD.	SB1/2T4F	SB1/2T6F	SB1/2T8F	SB1/2T10F	SB1/2T12F	SB1/2T14F	SB1/2T16F	SB1/2T18F	SB1/2T20F
	H.R.	32	44	56	68	80	92	104	116	128
	WT.	40 LBS.	56 LBS.	73 LBS.	89 LBS.	108 LBS.	122 LBS.	140 LBS.	155 LBS.	172 LBS.
1 TON	MOD.	SB1T4F	SB1T6F	SB1T8F	SB1T10F	SB1T12F	SB1T14F	SB1T16F	SB1T18F	SB1T20F
	H.R.	32	44	56	68	80	92	104	116	128
	WT.	42 LBS.	57 LBS.	75 LBS.	91 LBS.	116 LBS.	128 LBS.	145 LBS.	160 LBS.	181 LBS.
2 TON	MOD.	SB2T4F	SB2T6F	SB2T8F	SB2T10F	SB2T12F	SB2T14F	SB2T16F	SB2T18F	SB2T20F
	H.R.	32	44	56	68	80	92	104	117	128
	WT.	44 LBS.	58 LBS.	78 LBS.	94 LBS.	120 LBS.	132 LBS.	150 LBS.	165 LBS.	186 LBS.
3 TON	MOD.	SB3T4F	SB3T6F	SB3T8F	SB3T10F	SB3T12F	SB3T14F	SB3T16F	SB3T18F	SB3T20F
	H.R.	32-3/4	44	56	68	80	93	105	117	129
	WT.	45 LBS.	59 LBS.	79 LBS.	96 LBS.	122 LBS.	160 LBS.	181 LBS.	205 LBS.	270 LBS.
4 TON	MOD.	SB4T4F	SB4T6F	SB4T8F	SB4T10F	SB4T12F	SB4T14F	SB4T16F	SB4T18F	SB4T20F
	H.R.	32-3/4	44-1/2	56-1/2	68-1/2	80-1/2	93-1/2	106-1/2	118-1/2	130-1/2
	WT.	46 LBS.	60 LBS.	80 LBS.	98 LBS.	124 LBS.	170 LBS.	224 LBS.	255 LBS.	272 LBS.
5 TON	MOD.	SB5T4F	SB5T6F	SB5T8F	SB5T10F	SB5T12F	SB5T14F	SB5T16F	SB5T18F	SB5T20F
	H.R.	32-3/4	44-1/2	56-1/2	68-1/2	81-1/2	94-1/2	106-1/2	118-1/2	131-1/2
	WT.	46 LBS.	62 LBS.	82 LBS.	100 LBS.	142 LBS.	200 LBS.	225 LBS.	255 LBS.	340 LBS.
10 TON	MOD.	SB10T4F	SB10T6F	SB10T8F	SB10T10F	SB10T12F	SB10T14F	SB10T16F	SB10T18F	SB10T20F
	H.R.	35	47	59	72	85	95-1/2	107-1/2	120-1/2	132-1/2
	WT.	60 LBS.	75 LBS.	88 LBS.	133 LBS.	200 LBS.	255 LBS.	370 LBS.	385 LBS.	625 LBS.
15 TON	MOD.	SB15T4F	SB15T6F	SB15T8F	SB15T10F	SB15T12F	SB1TT14F	SB15T16F	SB15T18F	SB15T20F
	H.R.	36-3/4	48-3/4	60-3/4	74-3/4	87-3/4	96-1/2	108-1/2	121-1/2	133-1/2
	WT.	70 LBS.	85 LBS.	100 LBS.	170 LBS.	230 LBS.	310 LBS.	505 LBS.	535 LBS.	790 LBS.

Tiedown Assemblies

Lift-It® Tiedown Assemblies are easy to use and quickly tighten to the contour of the load. Typical applications include rail, truck, ship, aerospace and manufacturing applications.

Lift-It® Tiedown Assemblies are fabricated with high strength nylon or polyester webbing that has been treated for abrasion resistance. Webbing widths of 1", 1-3/4", 2", 3" and 4" are available, resulting in assembly work loads ranging from 166 to 8,000 lbs. Assemblies with larger work loads are available. The buckles and fittings are fabricated from the finest materials and are treated for corrosion resistance.

TIEDOWN INSPECTION

TIEDOWN INSPECTION SYSTEMS

INITIAL INSPECTION - Before any tiedown is placed into service it shall be inspected by a designated person to ensure that the correct tiedown is being used, as well as to determine that the tiedown meets the requirements of the specifications contained in this publication, and all applicable requirements. The tiedown will be inspected to ensure that no damage occurred during transit.

FREQUENT INSPECTION - This inspection shall be made by a qualified person handling the tiedown before each use. Proper tiedown selection, hazard recognition and removal from service shall also be accessed by the tiedown user or competent person.

PERIODIC INSPECTION - This inspection shall be conducted by a designated person, at least monthly. Frequency of inspection should be based on:

1. Frequency of use
2. Severity of the service conditions
3. Experience gained on the service life of tiedowns used in similar applications.

Tiedown assembly inspection records should be established by the user and maintained. The inspection record should include the description and condition of the tiedown, as well as the date of the inspection and identity of the inspector.

REMOVAL FROM SERVICE CRITERIA

A tiedown assembly shall be removed from service, if any of the following are visible:

1) Tag illegibility - illegible or missing tag
   Tag Requirements:
   Name or trademark of manufacturer
   Working Load Limits in pounds and kilograms
2) Acid or alkali burns
3) Melting, charring, or weld splatter of the webbing
4) Holes, tears, cuts, snags or embedded particles
5) Broken or worn stitching in load bearing stitch patterns
6) Excessive abrasive wear
7) Knots in any part of the webbing
8) Fittings or tension devices that are: broken, bent, twisted, cracked, corroded, pitted, nicked or gouged
9) Crushed webbing
10) Splices, patches or other temporary repairs
11) Damaged loop ends
12) Other apparent defects which cause doubt as to the strength of the tiedown.

Temporary repairs of assemblies or components shall not be permitted. See page 29 for illustrations of damage.

REGULATORY RESOURCES

Web Sling and Tiedown Association (WSTDA)
PH 410.931-8100 • FX 410.931-8111
WWW.WSTDA.COM

U.S. Department of Transportation (USDOT)
Federal Highway Administration
PH 202.366-4009 • FX 202.366-8842
WWW.FHWA.DOT.GOV

Commercial Vehicle Safety Alliance (CVSA)
PH 301.564-1623 • FX 301.564-0588
WWW.CVSA.ORG

California Highway Patrol (CHP)
PH 800.888-3600 • FX 415. 732-8861
WWW.CHP.CA.GOV

Specialized Carriers and Rigging Association (SC&RA)
PH 703.689-0291 • FX 703.698-0267
WWW.SCRANET.ORG

ENVIRONMENTAL CONSIDERATIONS

Synthetic webbing used in tiedown assemblies is degraded at temperatures above 194 degrees(F)/ 90 degrees (C).

Chemically active environments can affect the strength of tiedown assemblies ranging from slight to total degradation. Synthetic tiedowns shall not be used where liquids, sprays, mists, vapors or fumes of alkalis or acids are present. Contact us before purchase and use.

Aluminum fittings shall not be exposed to chlorine environments or be cleaned with chlorine based cleaning solutions.

Continual exposure to sources of ultraviolet light can affect the strength of the tiedown webbing from slight to total degradation. Visual indicators of UV damage are webbing stiffness, a bleaching out of the original webbing color, or signs of abrasion, in areas, normally not in contact with the load. When assemblies are not in use, store them in a dry, dark, cool location, free of environmental and mechanical damage. See pages 6 and 35.

MECHANICAL AND OPERATIONAL CONSIDERATIONS

Tiedown assemblies shall be used in accordance with all federal, state, provincial, local and industry regulations and standards.

Select the tiedown that is suitable for the load, environment and application. Inspect the assembly and all hardware, before every use.

Factors to consider in determining the number and location of tiedowns:

1) Article weight and expected dynamic “G” forces
2) Configuration of the load: pipe, coil, equipment, stacking, length, etc.
3) Work load limit, number and placement of tiedowns
4) Need for wear protection
5) Strength of anchorage points
6) Other factors affecting normal and emergency conditions

The aggregate working load limit of the tiedown assemblies used to secure an article against movement in any direction must be at least 1/2 times the weight of the article.

A minimum of three tiedown assemblies is required to secure an article, based only on the weight of the article. It is the responsibility of the user to determine the proper work load limit for the application.

The U.S. Department of Transportation Federal Highway Administration has published its final rule, Section 393.102(a) for shifting and falling cargo in 49CFR. “Securement must withstand .8 deceleration in the forward direction; .5 deceleration in rearward and lateral direction.”

The tiedown work load limit shall be based upon the strength of the completed assembly and not the component parts. The work load is also based upon a straight pull and the tiedown assembly being in a new and unused condition. The tiedown is only as strong as the weakest component, including the point of attachment. Tiedown work load limits are based upon destruction testing done in controlled, laboratory conditions, that will never be duplicated, exactly, during actual usage.

Users must be knowledgeable in commodity specific rules governing tiedown determination, as stipulated by the Federal Motor Carrier Safety Administration standard.

Tiedown assemblies shall not be loaded in excess of their work load limit. Consider the angle from the vertical (tiedown to load angle), which affects the work load limit of the assembly, See page 116.

The load should be securely blocked and stabilized before applying tension to the tiedowns. Before using any tiedown, the user shall secure their footing to prevent slips and falls, particularly in freezing and icy conditions.

The tiedown shall be attached to provide load control and positioned in accordance with all applicable regulations.

A minimum of two raps of webbing and a maximum of four raps shall be on the ratchet or winch. Additional raps will reduce the work load limit of the winch or ratchet.

The opening in fittings shall have the proper shape and size to fit properly in all attachment or anchorage points.

Tiedowns must be protected from cutting, abrasion and other forms of damage by materials of sufficient strength and thickness.

Tiedowns shall be checked and adjusted during use per applicable standards.

Beware of dangers resulting from tossing assemblies over the load.

Tiedown assemblies with fittings shall not be dropped.

Tiedowns shall not be dragged across the floor, ground or over abrasive surfaces.

Tiedowns shall not be pulled from under the load, while the load is resting on the tiedown.

Always maintain a firm grip on winch bars. A slip resistant handle is recommended and only winch bars designed for use with winches shall be used. The tip of the winch bar must engage both holes on the ratchet end cap. Never release the winch bar until the pawl is firmly engaged between the winch teeth. Cheater bars shall not be used and the user must always stand clear (to one side) of the winch bar handle, during operation.

⚠ WARNING Flying winch bars are deadly projectiles that can cause injury, death and/or property damage.

Tiedowns shall not be tied in knots or joined by knotting.

Tiedowns and attached hardware subjected to snow, ice, mud, road salt, dirt, fecal matter and cleaning solutions require inspection, cleaning and lubrication to ensure compliance with acceptable operation procedures.

Do not use tiedown assemblies for lifting, lowering, suspending loads or towing.

In some applications, frictional tiedowns may not be suitable. Always consider dynamic forces and the ability of the article to slide (coefficient of friction).

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

ALL STRENGTHS SHOWN ARE BREAK STRENGTHS. Working load requirements should be evaluated by the user before selecting appropriate hardware and strap assemblies, see pages 109 and 110 for guidelines and recommendations. All strap assemblies or systems are as strong as the weakest component including the point of attachment. Assemblies must be inspected for worn or damaged parts, before each use. Failure to replace worn or damaged assemblies or components may result in serious personal injury and/or death. Use by untrained personnel is hazardous. Read and understand the information contained in this publication and follow all DOT, CVSA and CHP rules, regulations and guidelines.

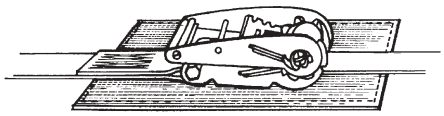
Tiedown Assemblies

AVAILABLE TIEDOWN ASSEMBLY OPTIONS

SLEEVES

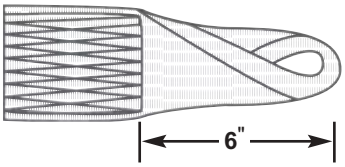
MATERIALS	ORDER CODE
Webbing	WS
Cordura®	CS
Leather	LS

BUCKLE PROTECTOR PADS



MATERIAL - WEBBING
ORDER CODE - BPP

LOOPS (HALF TWIST & TAPERED)



NOTE: Standard loop length is 6 inches

ORDER CODE - LP

MATERIAL SPECIFICATIONS

IMPORTANT DETAILS TO CONSIDER:

- END FITTINGS ON ALL ASSEMBLIES FACE DOWN UNLESS OTHERWISE SPECIFIED.
- ALL ASSEMBLIES INCLUDE AN EXTRA 6 IN. OF WEBBING FOR A PULL TAB.
- SPECIFIED LENGTHS INCLUDE THE FITTINGS.

WEB WIDTH	WEB THICKNESS (INCHES)	MATERIALS	ASSEMBLY WORK LOAD LIMITS (LBS.)
1"	.08 - .125	NYLON	166 - 1,000
1-3/4" - 2"	.10 - .12	POLYESTER	833 - 1,666
2"	.10 - .12	POLYESTER	10,000
3" & 4"	.10 - .12	POLYESTER	15,000

DEFINITION OF TERMS

BREAKING STRENGTH: Breaking strengths are the minimum load a component or assembly will withstand before failing.

DESIGN FACTOR: The ratio of the break strength to the work load limit (WLL) assigned to each tiedown assembly. The design factor for Lift-It® tiedown assemblies is 3/1and applies to new and unused tiedowns.

ELONGATION: The measurement of webbing stretch, expressed as a percentage of the original unloaded webbing length at a given applied load.

LENGTH: The distance between the end bearing points or fittings of the tiedown assembly.

PROOF LOAD TEST: A non-destructive load test of the tiedown assembly, to some multiple of the work load limit. The test should not exceed 40% of the assembly work load limit.

WORKING LOAD LIMIT: The maximum combined static and dynamic load that shall be applied in direct tension to a tiedown assembly, in a straight line, with no angle.

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

ALL STRENGTHS SHOWN ARE BREAK STRENGTHS. Working load requirements should be evaluated by the user before selecting appropriate hardware and strap assemblies, see pages 109 and 110 for guidelines and recommendations. All strap assemblies or systems are as strong as the weakest component including the point of attachment. Assemblies must be inspected for worn or damaged parts, before each use. Failure to replace worn or damaged assemblies or components may result in serious personal injury and/or death. Use by untrained personnel is hazardous. Read and understand the information contained in this publication and follow all DOT, CVSA and CHP rules, regulations and guidelines.

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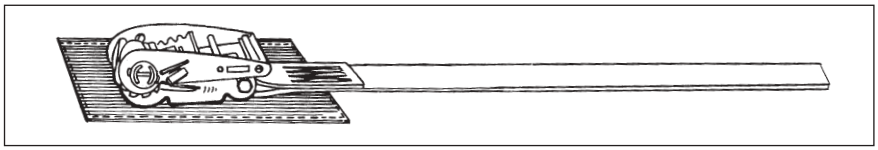
HOW TO ORDER

To construct a tiedown assembly with various combinations of buckles and fittings, first choose the assembly type and follow the steps that are necessary in constructing the assembly stock number.

TYPE 1

A one piece assembly with your choice of buckle or fitting attached to one end.



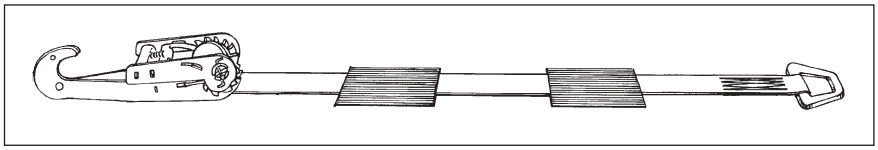
STEPS

A. Specify assembly type.
B. Select buckle or fitting.
C. Determine overall length in feet.
D. Specify options (sleeves or buckle protector pad)

STEP A Specify assembly type.		STEP B Select buckle or fitting.		STEP C Determine overall length in feet.		STEP D Specify options (sleeves or buckle protector pad).
1	–	2A	–	12	–	BPP
ASSEMBLY TYPE		BUCKLE OR FITTING		OVERALL LENGTH (FEET)		OPTIONS

TYPE 2

An assembly with a buckle or fitting attached to each end.



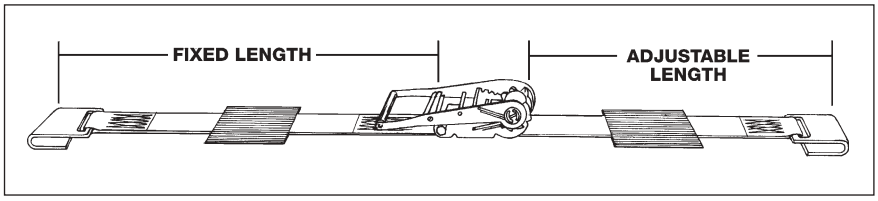
STEPS

A. Specify assembly type.
B. Select buckle or fitting.
C. Determine overall length in feet.
D. Choose buckle or fitting for opposite end.
E. Specify options

STEP A Specify assembly type.		STEP B Select buckle or fitting.		STEP C Determine overall length in feet.		STEP D Choose buckle or fitting for opposite end.		STEP E Specify options
2	–	2B	–	12	–	3F	–	2 EA. CODE LS AT 12 IN.
ASSEMBLY TYPE		BUCKLE OR FITTING		OVERALL LENGTH (FEET)		BUCKLE OR FITTING		OPTIONS WITH LENGTHS SPECIFIED IN INCHES

TYPE 3

An assembly consisting of three pieces of hardware, a buckle/tightener located between two fittings.



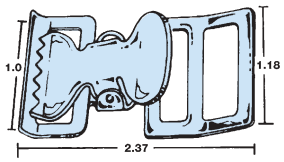
STEPS

A. Specify assembly type.
B. Select fitting for the fixed end.
C. Specify fixed length in inches. (Standard length is 18 inches)
D. Choose buckle.
E. Specify adjustable length in feet.
F. Select fitting for the adjustable end.
G. Specify options.

STEP A Specify assembly type.		STEP B Select fitting for the fixed end.		STEP C Specify fixed length in inches.		STEP D Choose buckle.		STEP E Specify adjustable length in feet.		STEP F Select fitting for the adjustable end.		STEP G Specify options
3	–	3G	–	36	–	3A	–	03	–	3G	–	2 EA. CODE WS AT 12 IN.
ASSEMBLY TYPE		FITTING FIXED END		FIXED LENGTH (INCHES)		BUCKLE		ADJUSTABLE LENGTH (FEET)		FITTING ADJUSTABLE END		OPTIONS WITH LENGTHS SPECIFIED IN INCHES

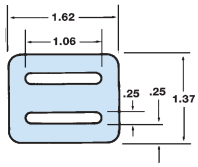
Buckles and Fittings - 1inch

ALLIGATOR SNAP (ORDER CODE 1A)



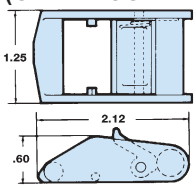
STRENGTH 150 lbs.
UNIT WEIGHT .09

ADJUSTER (ORDER CODE 1B)



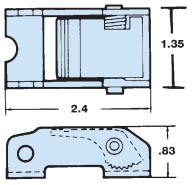
STRENGTH 1,500 lbs.
UNIT WEIGHT .05

CAM BUCKLE (DIE CAST) (ORDER CODE 1C)



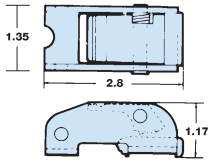
STRENGTH 500 lbs.
UNIT WEIGHT .14

CAM BUCKLE (ORDER CODE 1D)



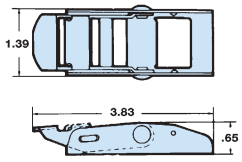
STRENGTH 1,500 lbs.
UNIT WEIGHT .25

CAM BUCKLE (ORDER CODE 1E)



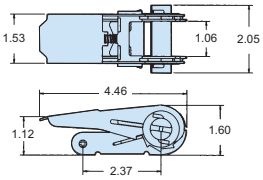
STRENGTH 1,800 lbs.
UNIT WEIGHT .28

OVERCENTER BUCKLE (ORDER CODE 1F)



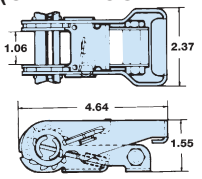
STRENGTH 1,800 lbs.
UNIT WEIGHT .15

RATCHET BUCKLE (ORDER CODE 1G)



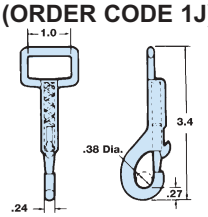
STRENGTH 1,200 lbs.
UNIT WEIGHT .56

RATCHET BUCKLE (ORDER CODE 1H)



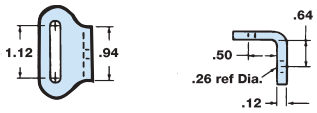
STRENGTH 3,000 lbs.
UNIT WEIGHT .81

SNAP HOOK (ORDER CODE 1J)



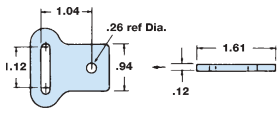
STRENGTH 500 lbs.
UNIT WEIGHT .10

STRAP END (BENT) (ORDER CODE 1K)



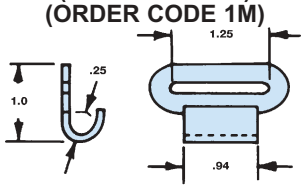
STRENGTH 750 lbs.
UNIT WEIGHT .06

STRAP END (ORDER CODE 1L)



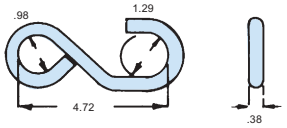
STRENGTH 1,000 lbs.
UNIT WEIGHT .06

FLAT HOOK (VINYL COATED) (ORDER CODE 1M)



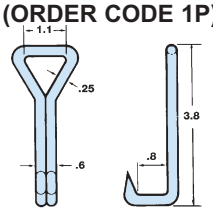
STRENGTH 1,000 lbs.
UNIT WEIGHT .06

"S" HOOK (VINYL COATED) (ORDER CODE 1N)



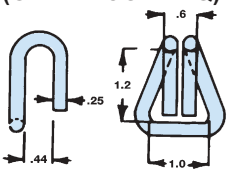
STRENGTH 2,205 lbs.
UNIT WEIGHT .30

PALLET HOOK (ORDER CODE 1P)



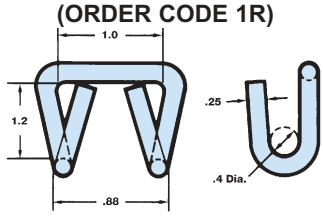
STRENGTH 2,500 lbs.
UNIT WEIGHT .16

NARROW HOOK (ORDER CODE 1Q)



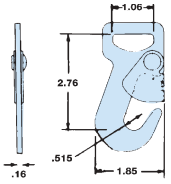
STRENGTH 3000 lbs.
UNIT WEIGHT .10

WIDE HOOK (ORDER CODE 1R)



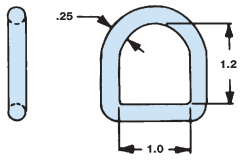
STRENGTH 3,000 lbs.
UNIT WEIGHT .10

KEEPERED HOOK (ORDER CODE 1S)



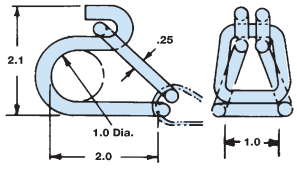
STRENGTH 3,000 lbs.
UNIT WEIGHT .19

DEE RING (ORDER CODE 1T)



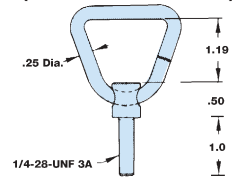
STRENGTH 5,000 lbs.
UNIT WEIGHT .07

HOOK AND KEEPER (ORDER CODE 1W)



STRENGTH 3,000 lbs.
UNIT WEIGHT .25

RING AND STUD (ORDER CODE 1X)



STRENGTH 1,800 lbs.
UNIT WEIGHT .25

WARNING **WARNING** **WARNING** **WARNING**

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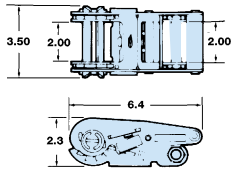
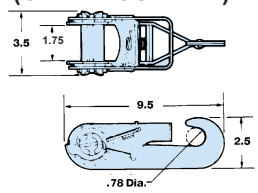
Buckles and Fittings 1-3/4 & 2 inch

RATCHET BUCKLE (ORDER CODE 2A)



STRENGTH 5,000 lbs.
UNIT WEIGHT 2.10

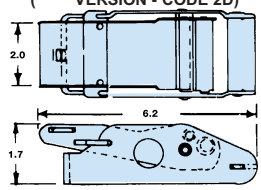
RATCHET HOOK END - 1-3/4 (ORDER CODE 2B)



STRENGTH 5,000 lbs.
UNIT WEIGHT 1.65

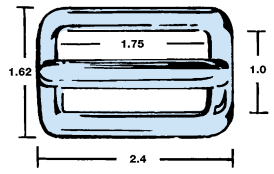
OVERCENTER BUCKLE (ORDER CODE 2C)

(VERSION - CODE 2D)



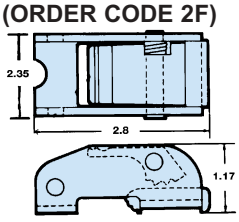
STRENGTH 5,000 lbs.
UNIT WEIGHT 1.18

WEBBING ADAPTER -1-3/4 (ORDER CODE 2E)



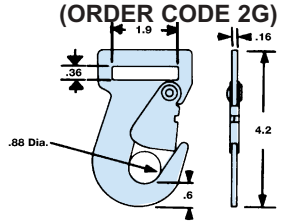
STRENGTH 2,500 lbs.
UNIT WEIGHT .19

CAM BUCKLE (ORDER CODE 2F)



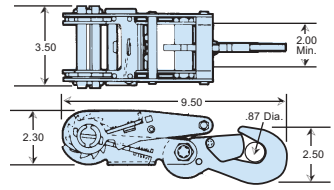
STRENGTH 2,800 lbs.
UNIT WEIGHT .69

KEEPERED HOOK (ORDER CODE 2G)



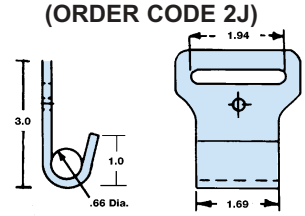
STRENGTH 5,000 lbs.
UNIT WEIGHT .35

RATCHET HOOK END (ORDER CODE 2H)



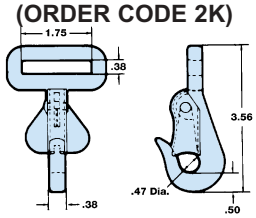
STRENGTH 5,000 lbs.
UNIT WEIGHT 2.70

FLAT HOOK (ORDER CODE 2J)



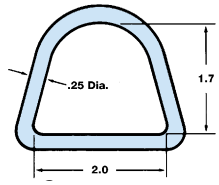
STRENGTH 5,000 lbs.
UNIT WEIGHT .21

BUTTERFLY SNAP (ORDER CODE 2K)



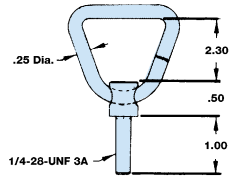
STRENGTH 5,000 lbs.
UNIT WEIGHT .50

DEE RING - WIRE (ORDER CODE 2L)



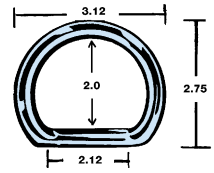
STRENGTH 5,000 lbs.
UNIT WEIGHT .09

RING & STUD (ORDER CODE 2M)



STRENGTH 2,500 lbs.
UNIT WEIGHT .132

DEE RING - FORGED (ORDER CODE 2N)

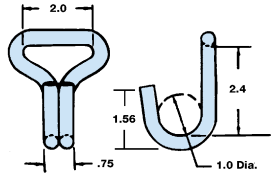


STRENGTH 5,000 lbs.
UNIT WEIGHT .30

DEE RING - FORGED - 1-3/4 (ORDER CODE 2P)

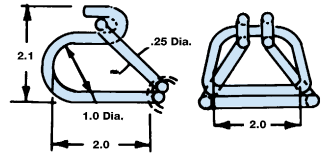
STRENGTH 5,000 lbs.
UNIT WEIGHT .22

NARROW HOOK (ORDER CODE 2Q)



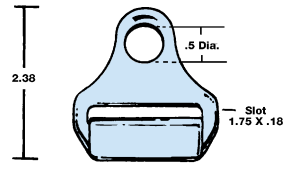
STRENGTH 5,000 lbs.
UNIT WEIGHT .40

HOOK & KEEPER (ORDER CODE 2S)



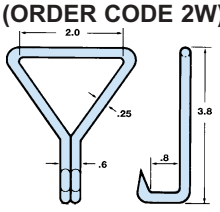
STRENGTH 5,000 lbs.
UNIT WEIGHT .283

STRAP END - 1-3/4 (ORDER CODE 2T)



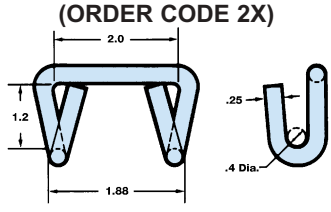
STRENGTH 2,500 lbs.
UNIT WEIGHT .14

PALLET HOOK (ORDER CODE 2W)



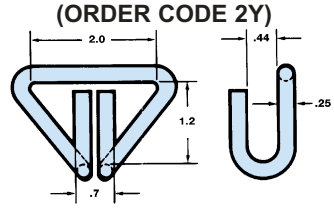
STRENGTH 2,500 lbs.
UNIT WEIGHT .19

WIDE HOOK (ORDER CODE 2X)



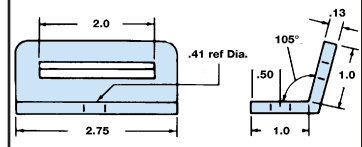
STRENGTH 2,500 lbs.
UNIT WEIGHT .10

NARROW HOOK (ORDER CODE 2Y)



STRENGTH 2,500 lbs.
UNIT WEIGHT .11

STRAP END - BENT (ORDER CODE 2Z)



STRENGTH 1,300 lbs.
UNIT WEIGHT .16

WARNING **WARNING** **WARNING** **WARNING**

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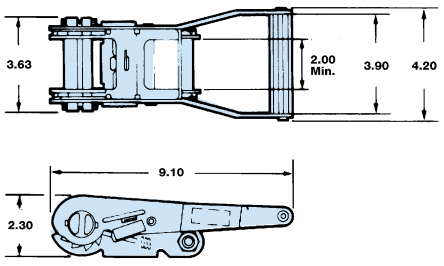
ALL DIMENSIONS ARE APPROXIMATE AND SUBJECT TO CHANGE, WITHOUT NOTICE

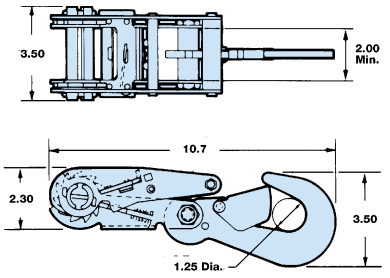
Buckles and Fittings 2 Inch Hvy Duty

RATCHET BUCKLE (ORDER CODE 3A)
LONG/WIDE HANDLE



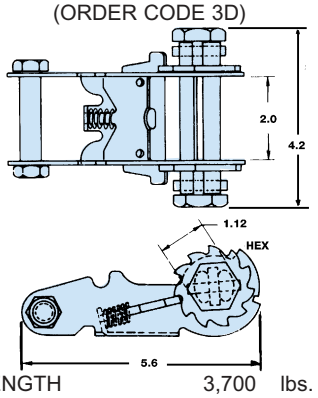
STRENGTH	10,000	lbs.
UNIT WEIGHT	2.30	

RATCHET BUCKLE (ORDER CODE 3B)
HOOK END



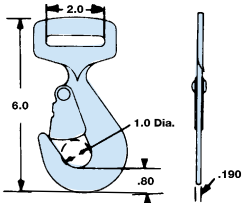
STRENGTH	10,000	lbs.
UNIT WEIGHT	2.80	

RATCHET BUCKLE (ORDER CODE 3C)
*Available with handle (ORDER CODE 3D)



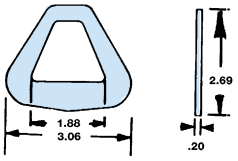
STRENGTH	3,700	lbs.
UNIT WEIGHT	1.85	

KEEPERED HOOK (ORDER CODE 3E)



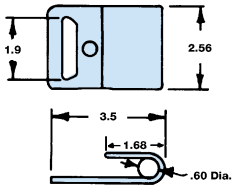
STRENGTH	10,000	lbs.
UNIT WEIGHT	.56	

DELTA RING (ORDER CODE 3F)



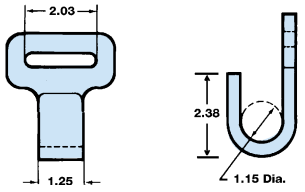
STRENGTH	10,000	lbs.
UNIT WEIGHT	.28	

FLAT HOOK (ORDER CODE 3G)



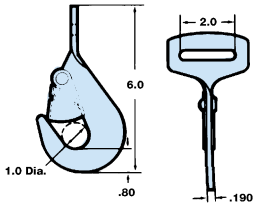
STRENGTH	10,000	lbs.
UNIT WEIGHT	.75	

FLAT HOOK - NARROW (ORDER CODE 3H)



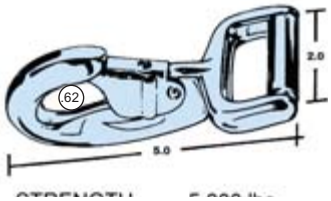
STRENGTH	10,000	lbs.
UNIT WEIGHT	1.00	

TWISTED HOOK (ORDER CODE 3J)



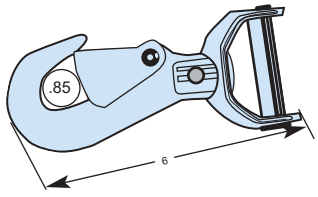
STRENGTH	10,000	lbs.
UNIT WEIGHT	.56	

SNAP HOOK - FORGED (ORDER CODE 3K)



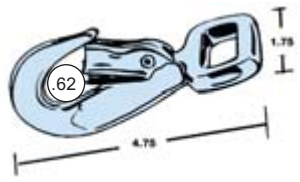
STRENGTH	5,000	lbs.
UNIT WEIGHT	.69	

SNAP HOOK - SWIVEL (ORDER CODE 3L)



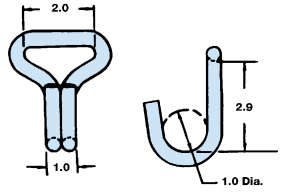
STRENGTH	5,000	lbs.
UNIT WEIGHT	.85	

SNAP HOOK - FORGED (ORDER CODE 3M)



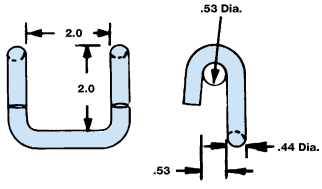
STRENGTH	10,000	lbs.
UNIT WEIGHT	.69	

NARROW HOOK (ORDER CODE 3N)



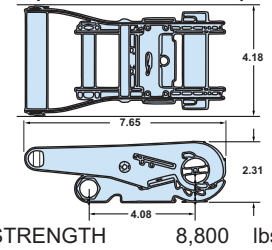
STRENGTH	10,000	lbs.
UNIT WEIGHT	.80	

RAIL HOOK (ORDER CODE 3P)



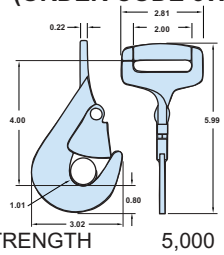
STRENGTH	3,000	lbs.
UNIT WEIGHT	.25	

STAINLESS RATCHET (ORDER CODE 3T)



STRENGTH	8,800	lbs.
UNIT WEIGHT	2.92	

STAINLESS - TWISTED HOOK (ORDER CODE 3W)



STRENGTH	5,000	lbs.
UNIT WEIGHT	.61	

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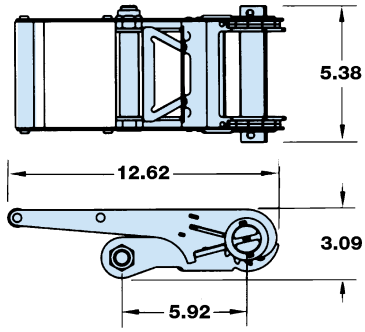
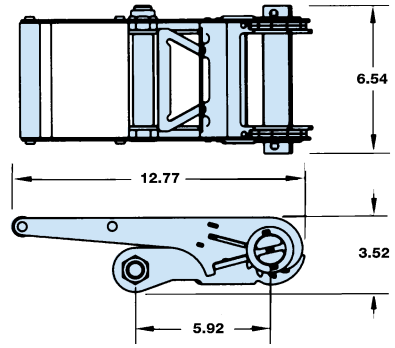
Buckles and Fittings 3 & 4 inch

3 IN. RATCHET - LONG HANDLE (ORDER CODE 3S)



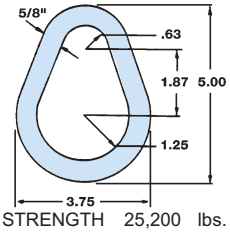
STRENGTH	17,000	lbs.
UNIT WEIGHT	7.0	lbs.

4 IN. RATCHET - LONG HANDLE (ORDER CODE 5R)



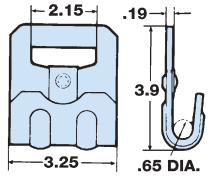
STRENGTH	24,000	lbs.
UNIT WEIGHT	7.94	lbs.

5/8" PEAR LINK (ORDER CODE 5W)



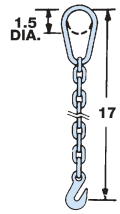
STRENGTH	25,200	lbs.
UNIT WEIGHT	1.10	

FLAT HOOK (ORDER CODE 3Y)



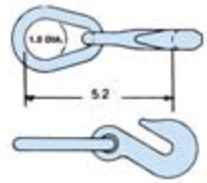
STRENGTH	15,000	lbs.
UNIT WEIGHT	1.00	

CHAIN ANCHOR (ORDER CODE 3Q)



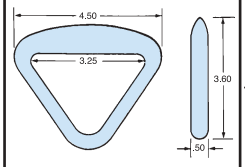
STRENGTH	16,200	lbs.
UNIT WEIGHT	3.30	

GRAB HOOK (ORDER CODE 3R) (3/8" CHAIN)



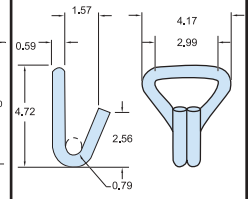
STRENGTH	16,200	lbs.
UNIT WEIGHT	1.60	

FORGED DELTA (ORDER CODE 3V) (3" WEB)



STRENGTH	16,000	lbs.
UNIT WEIGHT	.90	

WIRE HOOK (ORDER CODE 3Z)



STRENGTH	22,000	lbs.
UNIT WEIGHT	1.39	

HOW TO OPERATE RATCHET BUCKLES

Pull webbing through split drum to take up slack.

Operate handle back and forth until webbing is wrapped around the split drum a minimum of 2, and a maximum of 4 wraps.

Close handle fully to lock and hold webbing.

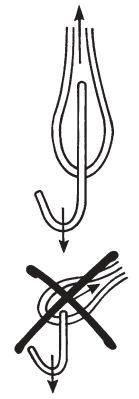
To release, disengage locking latch and rotate handle over center.

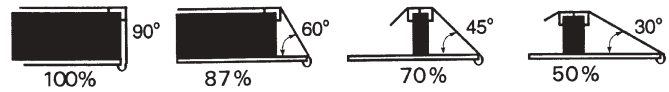
LOAD ANGLE FACTOR

The tiedown assembly strength can be affected and radically reduced by more than 50% if the load path is not in a straight line in the fitting area.

The Load Angle Factor must be calculated and applied to determine the reduced tiedown Work Load Limit, when the load path is not in a straight line in the fitting area.

Determine the Load Angle and multiply the tiedown Work Load Limit by the appropriate percentage. The result is the actual and reduced tiedown assembly Work Load Limit.





ANGLE	%	ANGLE	%	ANGLE	%	ANGLE	%
90°	100	70°	94	50°	77	30°	50
85°	99	65°	91	45°	70	25°	42
80°	98	60°	87	40°	64	20°	34
75°	97	55°	82	35°	57	15°	26

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Pre-Assembled Tiedown Assemblies

2 In. x 30 Ft. 1,666 lbs. WORK LOAD LIMIT - 5,000 lbs. BREAK STRENGTH

STOCK NO 5-3F-30 	STOCK NO 5-2G-30 	STOCK NO 5-LP-30 
STOCK NO 5-2J-30 	STOCK NO 5-3J-30 	STOCK NO 5-2Q-30 

2 In. x 30 Ft. 3,333 lbs. WORK LOAD LIMIT - 10,000 lbs. BREAK STRENGTH

STOCK NO 10-3F-30 	STOCK NO 10-3E-30 	STOCK NO 10-LP-30 
STOCK NO 10-3G-30 	STOCK NO 10-3J-30 	STOCK NO 10-3N-30 

3 In. x 30 Ft. 5,000 lbs. WORK LOAD LIMIT - 15,000 lbs. BREAK STRENGTH

STOCK NO 15-3V-30 	STOCK NO 15-F7-30 	STOCK NO 15-LP-30 
STOCK NO 15-3Y-30 	STOCK NO 15-T7-30 	STOCK NO 15-3Z-30 

4 In. x 30 Ft. 6,666 lbs. WORK LOAD LIMIT - 20,000 lbs. BREAK STRENGTH

STOCK NO 20-4A-30 	STOCK NO 20-F7-30 	STOCK NO 20-LP-30 
STOCK NO 15-3Y/5R-30*  (*AVAILABLE IN 5000 LBS WLL ONLY)	STOCK NO 20-T7-30 	STOCK NO 20-3Z-30 

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

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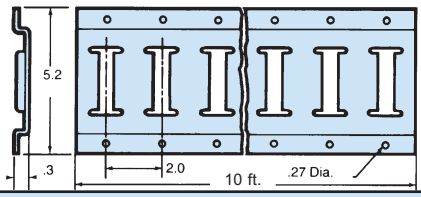
Logistic/Interior Van Strap Assys.

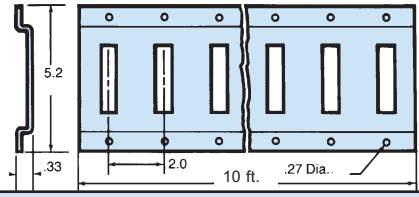
Logistics/Interior Van Strap Assemblies feature special purpose fittings for the restraint of cargo in trailers and vans equipped with logistic tracks. The two part assembly includes a standard 48 inch fixed length and standard assembly lengths of 12 ft., 16 ft. and 20 ft. See page 112, How to Order, Type 3 Assembly to construct the part number.

TRACK

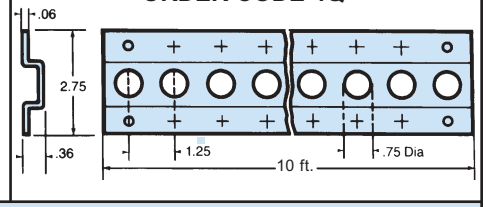
SERIES E TRACK ORDER CODE 4M



SERIES A TRACK ORDER CODE 4P

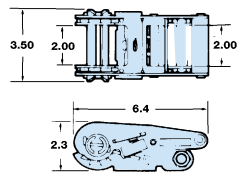


SERIES F TRACK ORDER CODE 4Q



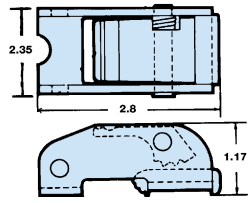
FITTINGS AND ACCESSORIES

RATCHET BUCKLE (ORDER CODE 2A)



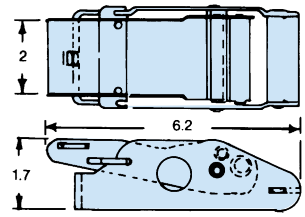
STRENGTH 5,000 lbs.
UNIT WEIGHT 2.10

CAM BUCKLE (ORDER CODE 2F)



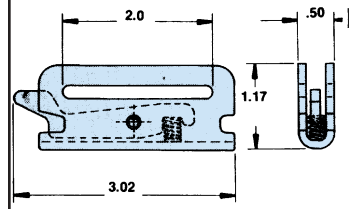
STRENGTH 2,800 lbs.
UNIT WEIGHT .69

OVERCENTER BUCKLE (ORDER CODE 2C)



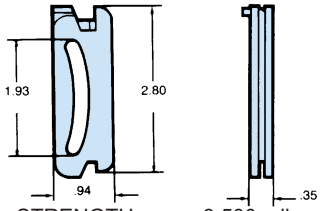
STRENGTH 5,000 lbs.
UNIT WEIGHT 1.18

SERIES E TRACK FITTING SPRING ACTUATED (ORDER CODE 4R)



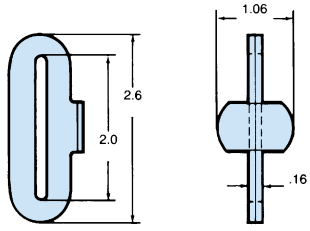
STRENGTH 3,500 lbs.
UNIT WEIGHT .25

SERIES E TRACK FITTING THREE PIECE (ORDER CODE 4S)



STRENGTH 3,500 lbs.
UNIT WEIGHT .20

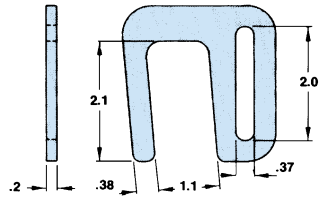
SERIES F TRACK FITTING (ORDER CODE 4T)



STRENGTH 1,500 lbs.
UNIT WEIGHT .06

SLAT HOOK (ORDER CODE 4W)

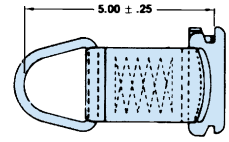
USED IN VANS EQUIPPED WITH WOODEN SLATS



STRENGTH 3,000 lbs.
UNIT WEIGHT .22

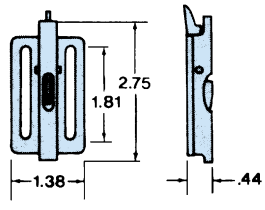
ROPE TIEOFF

ALLOWS ROPE TO BE USED WITH LOGISTIC TRACK



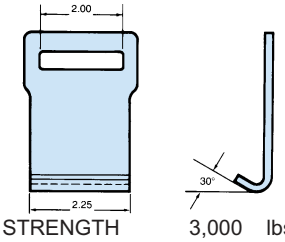
FITTING TYPE	ASSY. ORDER CODE	ASSY. STRENGTH
E (1 PIECE)	4X	3500 LBS.
E (3 PIECE)	4Y	3500 LBS.
F (2 PIECE)	4Z	1500 LBS.

SERIES E TRACK FITTING (ORDER CODE 5A)



STRENGTH 2,500 lbs.
UNIT WEIGHT .02

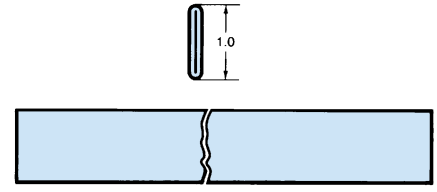
SERIES E TRACK FITTING (ORDER CODE 5B)



STRENGTH 3,000 lbs.
UNIT WEIGHT .65

FURNITURE TIE (Order Code - 5C)

Soft finish tubular nylon webbing, 1” wide, remains pliable, easy to tie and untie. Will hold furniture securely in place inside vans. Supplied in standard 50 yard roll.



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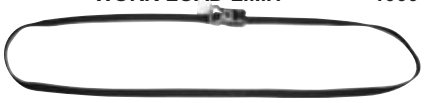
1 inch Ratchet/Utility Tiedown Assemblies

Lift-It® Manufacturing offers a complete line of one inch, pre-assembled ratchet and utility straps. Popular models are featured for your ordering convenience. Standard overall lengths are 12 ft. and 20 ft. You must specify the overall assembly length.

ORDER CODE HP — BREAKING STRENGTH 3000 LBS. / WORK LOAD LIMIT 1000 LBS.



ORDER CODE NH — BREAKING STRENGTH 2205 LBS. / WORK LOAD LIMIT 735 LBS.

ORDER CODE QTH — BREAKING STRENGTH 3000 LBS. / WORK LOAD LIMIT 1000 LBS.

ORDER CODE NE — BREAKING STRENGTH 1200 LBS. / WORK LOAD LIMIT 400 LBS.

TIEDOWN ACCESSORIES

WB1 CHROME KNURLED WINCH BAR

WB1- One end tapered and angled for truck winch application. Knurled handle provides a positive grip. Approximately 32 inches long.

WB2 CHROME COMBINATION BAR

WB2- One end is tapered and angled for truck winch application. The other end features a special end fitting for chain binder application. Approximately 32 inches long.

Always maintain a firm grip on winch bars. A slip resistant handle is recommended and only winch bars designed for use with winches shall be used.

The tip of the winch bar must engage both holes on the ratchet end cap. Never release the winch bar until the pawl is firmly engaged between the winch teeth. Cheater bars shall not be used and the user must always stand clear (to one side) of the winch bar handle, during operation.

⚠ WARNING Flying winch bars are deadly projectiles that can cause injury, death and/or property damage.

J HOOKS

J1 - 1/2" STOCK DIA.
J2 - 5/8" STOCK DIA.
J3 - 3/4" STOCK DIA.

DOUBLE J HOOKS

JJ4 - 5/8" STOCK DIA.
JJ5 - 3/4" STOCK DIA.

C HOOKS

C1 - 5/8" STOCK DIA.

RUBBER ROPE

High quality rubber rope is available in either solid core or hollow core constructions. Rope is packaged in 150 ft. rolls.

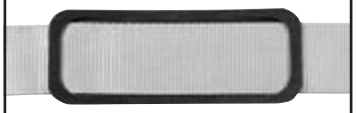
RR3S - 3/8" Solid Core
RR3H - 3/8" Hollow Core

RR7S - 7/16" Solid Core
RR7H - 7/16" Hollow Core

***Rubber rope hooks 100 per carton. Order Code - RRSJ**

CORNER PROTECTORS

Corner protectors provide protection for the webbing and the secured cargo. See pages 13-20 for additional wear protection devices.

ORDER CODE 4D	ORDER CODE 4E
 For web widths up to 4 inches. Reinforced rubber sheet Material thickness .18 Standard length of 12 inches.	For web widths up to 4 inches. Copolymer corner guard 

TARP STRAPS

⚠ WARNING USE EXTREME CAUTION WHEN USING TARP STRAPS

- All natural rubber with negligible amounts of filler
- Exceptional UV resistance & cold weather working abilities
- Hooks are attached
- Superior tensile strength
- Packaged 50 pieces per pack

ORDER CODE	STRAP LENGTH	LENGTH w/ "S" HOOKS	SPAN RANGE
RT9	9"	13"	15" - 20"
RT15	15"	19"	20" - 30"
RT21	21"	25"	30" - 40"
RT31	31"	35"	40" - 55"
RT41	41"	45"	50" - 60"

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

ALL STRENGTHS SHOWN ARE BREAK STRENGTHS. Working load requirements should be evaluated by the user before selecting appropriate hardware and strap assemblies, see pages 109 and 110 for guidelines and recommendations. All strap assemblies or systems are as strong as the weakest component including the point of attachment. Assemblies must be inspected for worn or damaged parts, before each use. Failure to replace worn or damaged assemblies or components may result in serious personal injury and/or death. Use by untrained personnel is hazardous. Read and understand the information contained in this publication and follow all DOT, CVSA and CHP rules, regulations and guidelines.

NAS Strap Assemblies

NAS 1212 and NAS 1213 are ordered by using the part numbers shown below. NAS 1212 strap assemblies do not include a buckle. NAS 1213 assemblies include a buckle. The two different NAS assemblies may be combined to form an assembly as shown below. All webbing is nylon per military specifications for webbing: MIL-W-4088 or MIL-W-27265.

NAS 1383, NAS1384 AND NAS1385 Assemblies are also available

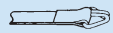
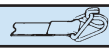
TABLE I - FITTINGS	
END STYLE	NAS CODE LETTER
	A
	B
	C
	D
	E
	H
	J
	K

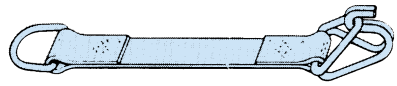
TABLE II - WEB SIZE CODE		
NAS CODE	WEB SIZE	ASSEMBLY STRENGTH
10	1" WIDE	1800 LBS.
15	1-1/2" WIDE	2100 LBS.
20	2" WIDE	2500 LBS.

TABLE III - WEB COLOR CODE	
NAS CODE	COLOR
P	NATURAL
R	OLIVE DRAB

NAS PART NUMBER EXAMPLES

NAS 1212 STRAPS

1 in. wide, natural, nylon strap with a delta ring at one end and a hook and keeper at the other end, 48 inch length

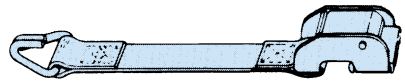


NAS 1212 P 10 AH 48

- 48 — LENGTH (Inches)
- AH — END STYLE CODE (Table I)
- 10 — WEB SIZE CODE (Table II)
- P — WEB COLOR CODE (Table III)

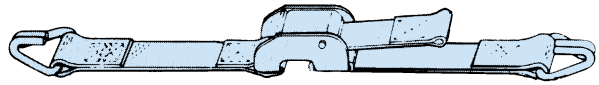
NAS 1213 STRAPS

2 in. wide, olive drab, nylon strap with a narrow hook on one end and a cam buckle on the other end, 22 inch length



NAS 1213 R 20 D 22

- 22 — LENGTH (Inches)
- D — END STYLE CODE (Table I)
- 20 — WEB SIZE CODE (Table II)
- R — WEB COLOR CODE (Table III)

NAS 1213  NAS 1212

COMBINED STRAPS

For combined assemblies the NAS 1212 strap must have one plain end, code J. Add 8 inches to the length for the hand hold.

Please Note:

1. LOOP SIZE
   Loop ends are made to fit a 1" diameter bar.
2. LENGTH TOLERANCES
   Length is measured to the inside of rings and hooks; to the end of plain straps; to the tangent point of the pressure bar on buckles. Tolerance is + 1/4 in. up to 12 in., + 1/2 in. over 12 in. long.

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

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ALL DIMENSIONS ARE APPROXIMATE AND SUBJECT TO CHANGE, WITHOUT NOTICE

Cargo Winches

Lift-It® Cargo Winches feature high strength-to-weight ratios in adopting the lightweight design trends now incorporated in the surface transportation industry.

Lift-It® Cargo Winches are designed and manufactured using materials and techniques which provide the utmost in quality. Mandrels are made from seamless tubing, ratchets and pawls are flame cut from high strength steel and pawls are secured with alloy steel rivets. Lift-It® cargo winches comply with Federal (DOT), State (CHP) and Commercial Vehicle Safety Alliance (CVSA) guidelines, and are subject to stringent quality control requirements.

STANDARD

ORDER CODE - 4G

The standard winch is for use with 4 inch webbing.

LOW PROFILE

ORDER CODE - 4K

The low profile winch, also known as a sidemount, is for use when clearance problems exist.

COMBINATION

ORDER CODE - 4H

The combination winch is ideal for use when cable or web tiedowns are necessary.

PORTABLE - STD

ORDER CODE - 4J

The portable winch is for special use when additional winches are needed temporarily, for securing a load. The lip is made to accept 1/2" trailer frames.

PORTABLE - LOW PROFILE

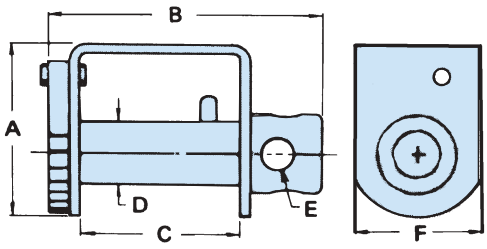
ORDER CODE - 4L

Similar to order code 4K, but has the added advantage of portability.

PORTABLE - COMBO

ORDER CODE - 4HP

Similar to order code 4H, but has the added advantage of portability.



CARGO WINCH DIMENSIONAL DATA (INCHES)										
ORDER CODES	A	B	C	D	E	F	UNIT WEIGHT (LBS)		POST	SLOT
							STD	PORT		
4G / 4J	5.62	7.75	4.80	1.90	.937	3.50	8	8.5		XX
4K / 4L	4.00	7.75	4.80	1.90	.937	3.50	8.5	9		XX
4H / 4HP	5.62	9.50	6.50	1.90	.937	3.50	10	10.5	XX	XX

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

Set screws on portable winches should be snug tightened only. Over tightening of screws may cause bracket to bend, weakening the winch and causing it to fail with resulting loss of tiedown. Portable winches must be removed from the trailer when not in use.

Low Profile winches are for side mount applications only. Low Profile winch models must not be used in undermount applications.

Standard height winches are for under mount or bottom mount applications only. Standard winch models must not be used in side mount applications.

Combination or Cable Only winches must be used with the appropriate cable and/or wire rope during application. Selection must be consistent with the cable manufacturer's work load limits.

NOTE: All winches should be installed so the user can readily see the pawl to ensure proper engagement. Additionally, the winch should be positioned so the pawl drops into the ratchet wheel by gravity. Winches should never be installed so the user cannot see the pawl engagement or in a position where the user must hold the pawl to engage the ratchet tooth. All winches, except portable and slider styles, must be welded to the trailer frame. Minimum welding requirements are 1/4" fillet weld, 4 inches long on both sides of frame, 1/8" penetration.

ALL DIMENSIONS ARE APPROXIMATE AND SUBJECT TO CHANGE, WITHOUT NOTICE

Truck Tiedown Assemblies

Manufactured from high strength, treated, polyester webbing, Lift-It® Truck Tiedown assemblies are available in 3 inch and 4 inch web widths. Truck Tiedown assemblies are lighter than chain or cable binders and are much easier to use and store. Polyester webbing is low stretch (approximately 3% at work load limit) and webbing strength is unaffected by moisture. All loose ends are heat seared to prevent fraying. All assemblies meet or exceed federal (DOT), state (CHP) and Commercial Vehicle Safety Alliance (CVSA) regulations and guidelines.

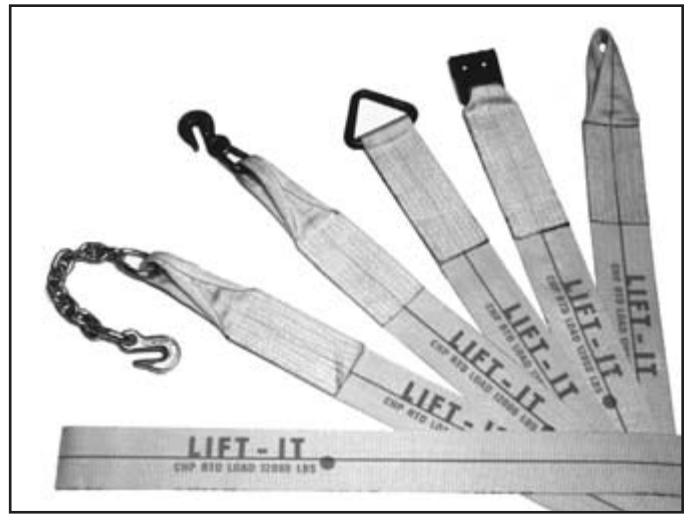
WEB WIDTH	WEB TYPE	WEB THICKNESS	UNSEWN WEBBING TENSILE	ASSEMBLY BREAK STRENGTH	WORK LOAD LIMITS
3 IN	A	.105	18,000 LBS	12,000 LBS	4,000 LBS
4 IN	B	.105	24,000 LBS	15,000 LBS	5,000 LBS

HOW TO ORDER

1) Select fitting or end termination.
2) Specify webbing type.
3) Specify overall assembly length (ft.).

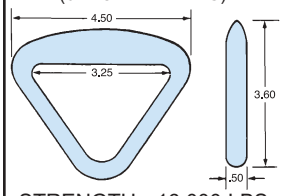
COMPLETE ASSEMBLY STOCK NUMBER

FITTING ORDER CODE	–	WEB TYPE	–	ASSEMBLY LENGTH (FT.)
	–		–	



FITTINGS & ACCESSORIES

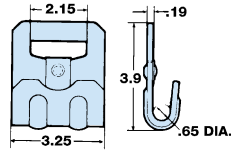
FORGED DELTA
(ORDER CODE 3V)
(3 INCH WEBBING)



STRENGTH - 16,000 LBS.
UNIT WEIGHT - .90

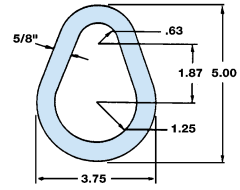
FABRIC LOOP
(ORDER CODE 4B)

FLAT HOOK
(ORDER CODE 3Y)
(AVAILABLE WITH KEEPER)



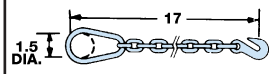
STRENGTH - 15,000 LBS.
UNIT WEIGHT - 1.00

5/8" PEAR LINK
(ORDER CODE 5W)



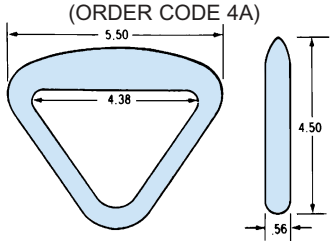
STRENGTH - 25,200 LBS.
UNIT WEIGHT - 1.10

CHAIN ANCHOR
(ORDER CODE 3Q)



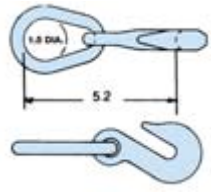
STRENGTH - 16,200 LBS.
UNIT WEIGHT - 3.30

FORGED DELTA
(ORDER CODE 4A)



STRENGTH - 20,000 LBS.
UNIT WEIGHT - 1.25

GRAB HOOK
(ORDER CODE 3R)
(3/8" CHAIN)



STRENGTH - 16,200 LBS.
UNIT WEIGHT - 1.6

PLAIN ENDS-4 INCH
(ORDER CODE P)

STRENGTH - 15,000 LBS.
UNIT WEIGHT - 5.13

WEB WINDER
(ORDER CODE 4C)

UNIT WEIGHT - 3.23
FOR 2", 3", & 4" ASSEMBLIES

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

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PRODUCTS FOR THE RAIL INDUSTRY

Lift-It® product specialists have worked closely with representatives of the railroad industry to provide light weight, rigging solutions. Slings that once required several persons, just to manipulate, have been replaced by Lift-It® Rail Slings that one person can efficiently handle, injury free. Drawbar Slings, Tanker Slings, Coupler Slings, Traction Motor Slings and Wheel Slings are readily available, in standard or custom lengths.

All Lift-It® Rail Slings feature patented, Twin-Path®, High Performance Fiber Slings, with additional wear protection, automatically supplied. All Lift-It® rail products are proof tested and certified. Beware of imitations!

DRAW BAR SLINGS

Supplied with or without arcs, please specify part number and length.

Send us your distressed, single path draw bar slings. Your arc will be recycled for substantial savings and the new Draw Bar sling will feature a genuine Twin-Path®.

Work Load Limit (Lbs)*	Stock Number		Sling Length (Brg. to Brg.) Ft.
	With Arc	Without Arc	
60,000	DB30A	DB30	9'-6", 11' or 13'
120,000	DB60A	DB60	13', 14' or 15'
150,000	DB75AS	DB75	13'
200,000	DB100S	DB100	13'

Arc Materials:

A - Aluminum
AS - Aluminum (with steel insert)
S - Steel

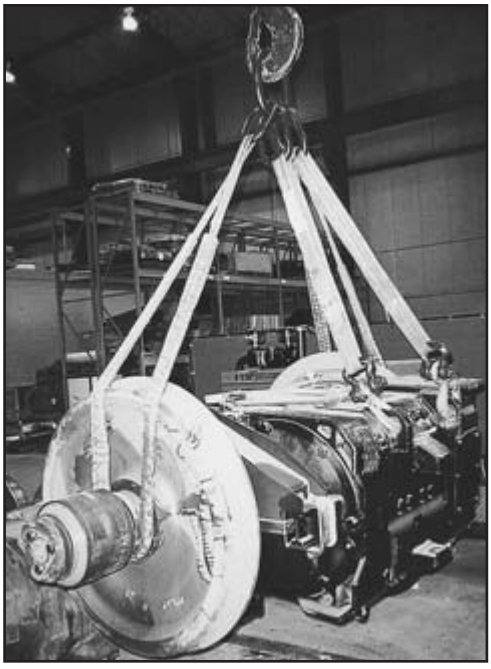
*Work Load Limits are based upon a 3.5/1 design factor

TRACTION MOTOR SLING

Traction motor slings feature a masterlink with subassemblies, sling saver shackles and 7 ton eye hoist hooks and special wear protection, as standard features.

Traction Motor Slings can also be furnished with non-removable, swivel hooks. Standard hook size, 7 Ton, unless otherwise specified.

Work load limit- 16,000 lbs at 45 degrees



Work Load Limit (Lbs) (45° Horizontal)	Stock Number		Masterlink Diameter
	Removable Hooks	Swivel Hooks	
16,000	TM-RH	TM-SH	1-1/2 in.

⚠ WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

PRODUCTS FOR THE RAIL INDUSTRY

WHEEL SLINGS

Wheel slings, feature two legs and the same special wear protection, which is provided on traction motor slings.

Standard Assembly Length	10 ft Reach
Assy. Work Load Limit (45 degrees horizontal)	21,200 lbs
Masterlink Diameter	1-1/2 inches
Stock Number RP-WS	

TANKER SLINGS

Super strong and ultra light, Lift-It® Tanker Slings are the perfect solution to minimize damage during re-railing operations or car shop applications.

Available in standard sling lengths of 50 ft. Larger work loads and sling lengths are available, see page 82.

Stock Number	Width (Inches)	Basket* WLL (Lbs)	Weight (Lbs/Ft)
RPTS 200	6	200,000	2.20
RPTS 300	8	300,000	3.36
RPTS 400	10	400,000	4.37
RPTS 500	11	500,000	5.50
RPTS 600	13	600,000	7.50
RPTS 800	14	800,000	8.60
RPTS 1000	16	1,000,000	11.00

*90° Basket

COUPLER SLINGS

Available in two strengths, with a standard length of 6ft. Other strengths and lengths are readily available, see page 82.

Stock Number	Choker WLL (Lbs)	Unit Weight (Lbs)
RPCS1500	10,000	2.40
RPCS2500	20,000	3.90

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

Failure to follow proper use, care and inspection criteria could result in severe personal injury or death. It is your explicit responsibility to consider all risk factors prior to using any rigging device or product. Read and understand the information contained in this publication and follow OSHA and ASME guidelines. Use by untrained persons is hazardous. Synthetic products will fail if damaged, abused, misused, overused, or improperly maintained.

A visual inspection of the sling must be made every time this sling is to be used. Slings that are damaged or determined to be unsafe shall not be used for any application. If the work load limit tag is missing, illegible or incomplete the sling shall not be used.

Do not exceed work load limits. You are cautioned that all published work load limits and break strengths apply to only new and unused slings, assemblies and hardware. Work Load Limits are based upon destruction testing, done in controlled, laboratory conditions, which will never be duplicated during actual usage and a moderately dynamic lifting or pulling operation. Instantaneous changes (drops or sudden pick ups) in excess of 10% of the work load, constitutes hazardous shock loading and THE WORKING LOAD LIMITS AS STATED, DO NOT APPLY.

Synthetic products are damaged and cut when lifting on load edges. Edges in contact with the sling must be “padded” with materials of sufficient strength and thickness to prevent damage and catastrophic sling failure. Wear protection may not prevent cutting or other forms of sling damage. To avoid severe personal injury or death, personnel should be kept away from the load and never be under or near the load, while it is being lifted or suspended.

MINE TOW STRAPS

Equipment recovery in surface mining operations has been improved dramatically, with the use of Lift-It® High Performance Fiber, Twin-Path® Slings. Super strong and ultra-light, the high modulus, low elongation, K-Spec® fiber does not store energy, to the same degree, as other materials, like wire and chain. Subsequently, High Performance Fiber Mine Tow Straps do not dissipate stored energy and have very little, if any whiplash effect at failure. Mine Tow Straps include two sleeves for protection at the connection points. See page 78 for larger work load limits.

Stock Number	Vertical Work Load (Lbs.)	Weight (Lbs/Ft)	Width (Inches)
MTS 10000	100,000	2.20	6
MTS 15000	150,000	3.36	8
MTS 20000	200,000	4.37	10
MTS 30000	300,000	7.50	13

REMOVAL FROM SERVICE CRITERIA

Mine Tow Straps shall be inspected throughout their entire length for evidence of damage. Core integrity is determined by a hand over hand inspection of the entire sling, combined with a thorough visual inspection. Mine Tow Straps shall be removed from service if any of the following is visible:

A) Missing or illegible work load limit tag.
B) Brittle or stiff areas that may indicate chemical damage, acid or alkali burns.
C) Melting, charring or weld spatter of any part of the sling.
D) Holes, tears, cuts, embedded particles, abrasive wear, or snags that expose the load carrying yarns.
E) Broken, cut or damaged load carrying yarns.
F) Broken or worn stitching in the cover which exposes the load carrying yarns.
G) Fitting distortion: elongated, damaged, corroded or chemical degradation of fittings or component hardware.
H) Slings that are knotted.
I) Tattle tails - if one or both of the tattle tails is not visible or is chemically degraded.
J) Fiber-Optic - Lack of fiber optic light transfer, in sling models with the fiber optic (FO) option.
K) For slings equipped with ✓Fast™ Inspection: External Warning Indicator (EWI) is not visible, The ✓Fast™ Ribbon pulls out of the sling cover
L) For hooks, removal criteria as stated in ASME B30.10
M) For applicable fittings, removal criteria as stated in ASME B30.26
N) Other damage which causes any doubt as to the strength of the sling.

Tow Straps removed from service that are not capable of repair shall be destroyed and rendered completely unfit for future use.

See Pages 81-93 for additional product information. Read and understand the information contained in this publication, before purchase and use.

⚠ WARNING ⚠ WARNING ⚠ WARNING

Failure to follow proper use, care and inspection criteria could result in severe personal injury or death. It is your explicit responsibility to consider all risk factors prior to using any rigging device or product. Read and understand the information contained in this publication and follow OSHA and ASME guidelines. Use by untrained persons is hazardous. Synthetic products will fail if damaged, abused, misused, overused, or improperly maintained.

A visual inspection of the sling must be made every time this sling is to be used. Slings that are damaged or determined to be unsafe shall not be used for any application. If the work load limit tag is missing, illegible or incomplete the sling shall not be used.

Do not exceed work load limits. You are cautioned that all published work load limits and break strengths apply to only new and unused slings, assemblies and hardware. Work Load Limits are based upon destruction testing, done in controlled, laboratory conditions, which will never be duplicated during actual usage and a moderately dynamic lifting or pulling operation. Instantaneous changes (drops or sudden pick ups) in excess of 10% of the work load, constitutes hazardous shock loading and THE WORKING LOAD LIMITS AS STATED, DO NOT APPLY.

Synthetic products are damaged and cut when lifting on load edges. Edges in contact with the sling must be "padded" with materials of sufficient strength and thickness to prevent damage and catastrophic sling failure. Wear protection may not prevent cutting or other forms of sling damage. To avoid severe personal injury or death, personnel should be kept away from the load and never be under or near the load, while it is being lifted or suspended.

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

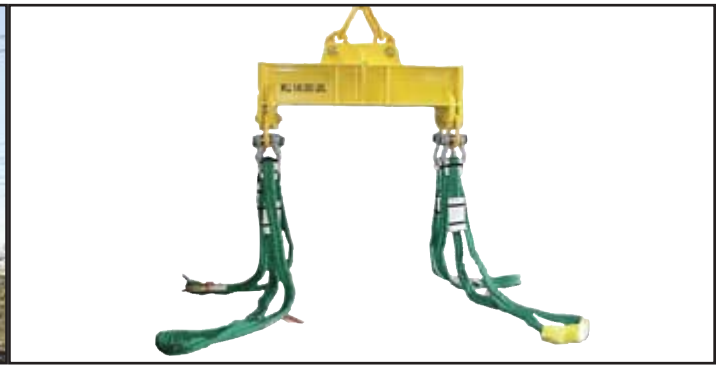
Inspect before each use. Do not use a damaged strap. Avoid dragging the strap. Do not tie into knots. Do not attach to bumpers. Avoid contact with hot exhaust systems. Do not exceed Work Load. Attachment points must be suitable for the application; detached connection points can be deadly projectiles. Stand at least twice the length of the strap away from the vehicle and strap while under load. Never stand near or in line of a strap under tension. Avoid edges or surfaces that could damage the strap, and use wear protection when necessary. Store in a cool, dark, dry location, which is free of environmental and mechanical damage.

NEVER USE A TOW STRAP FOR A LIFTING APPLICATION. ALWAYS ROTATE THE STRAP TO CHANGE OUT THE CONNECTION POINTS

Remove the strap from service and do not use for any application, if any of the following are visible: Acid or Caustic Burns, Melting or Charring of any part of the strap, Ultraviolet/Sunlight Damage, Broken or worn stitching, Excessive Abrasive Wear, Holes, Tears, Cuts, Snags or Punctures, and/or Other Visible Damage that causes doubt as to the strength of the strap. Tattle Tails, Fiber Optics and/or the ✓Fast™ Inspection System can not be used exclusively to determine the condition of the load carrying fibers or sling. These patented, inspection devices must be used in conjunction with visual and tactile inspection techniques to determine sling condition. If there is any doubt, do not use questionable slings or any other rigging product. Return the sling to the manufacturer for factory repair evaluation.See pages 17, 23 and 29

WIND POWER SLINGS AND ACCESSORIES

Lift-It® product specialists worked with the pioneers of the wind energy business to perfect a light-weight and non-damaging sling handling system. Initially used in the manufacturing operation of wind turbines, High Performance Fiber, Twin-Path® slings are now used extensively for field installation and maintenance operations. Level, non-damaging handling is achieved through precision sling lengths. Sling longevity is enhanced by special wear protection at the connection points. These factors, combined with stellar service have made our sling design the standard for the industry. Whether you are handling 60 or 300 ton turbines, we have a system for the application. Complete handling systems are readily available.



Bucket Slings

Manufactured from 28 oz. polyester reinforced vinyl, Lift-It® Bucket Slings provide for the efficient handling of five (5) gallon buckets or pails. The 14 in. diameter x 21 in. height vinyl bucket includes a captivated bridle.

Overall Height with Bridle- 34 inches
Work load limit- 100 lbs.
Stock No. WP-BS

⚠ WARNING

Bucket sling must be used with plastic bucket. Do not fill the bucket with objects that could pierce or damage the bucket. A cut or damaged bag will drop the contents causing serious personal injury or death. Never stand under or near a suspended bag. Inspect the sling and vinyl material for damage before each use. Damaged products cannot be used.

Wind Blade Assemblies

Blade Number (Manufacturer)	Wind Blade Assembly Stock No.
GE-LM 37	WPWB-1
TESIS	WPWB-2
34P3	WPWB-3
VESTAS	WPWB-4

Developed to replace expensive, European blade socks. Lift-It® Wind Blade Assemblies provide for handling and manipulation, with structural integrity, positive attachment points and no seams to rupture. Work Load Limit- 1,000 lbs.

⚠ WARNING

Can fail if damaged, misused or overloaded. Inspect before use. Use by untrained personnel is hazardous. Observe and do not exceed work load limit. DEATH or INJURY can occur from improper use or maintenance. **DO NOT EXCEED WORK LOAD LIMITS.**

Specialty Products

SLING TOTE BAG

Order Code - TBL
12 x 16 x 22 (W) x (H) x (L)
Dimensions in inches

Lift-It® Tote Bags are made from heavy duty nylon materials. All seams are over lock stitched and sewn together with nylon binding tape. Additional features include heavy duty zippers and comfortable webbing handles. The 1-3/4 in. webbing which forms the handle is sewn completely around the bag for additional strength and support. The perfect solution to the age old problem of grouping and transporting "dedicated" slings for specific rigging applications.

SLING INSPECTOR KNIFE

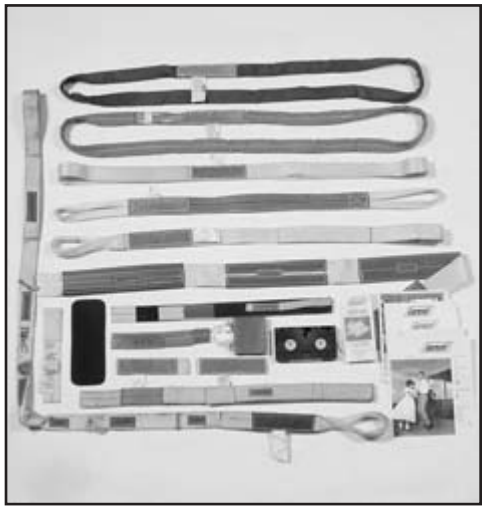
PLASTIC BODY - ORDER CODE BM-PB

METAL BODY
ORDER CODE BM-MB

Designated sling inspectors have come to know and love the "Big Mike-Big Knife." The pocket clip makes retrieval, quick and easy. The serrated edge renders damaged slings unusable.

INSPECTOR/TRAINER KIT

Safety professionals, who participated in the Lift-It® Sling Safety Program requested we develop a kit that would assist them in their training and accident prevention presentations. Slings, Wear Protection, Webbing and Tag Samples are conveniently enclosed in a sling tote bag. Also enclosed are disks, which feature several destruction tests. The cornerstone of the training kit is the "defect" sling, which features many forms of damage. The defect sling is an effective tool to help reinforce the need for visual and tactile inspection techniques. (Kit Order Code- ITK-1)



TRAINER KIT CONTENTS

SAMPLE SLINGS:

Defect Sling		
Endless	EN1-902	X 4 Ft.
Eye & Eye	EE1-902	X 4 Ft.
Reversed Eye	RE1-601	X 4 Ft.
Twin Path® Sling	TP 600FO	X 4 Ft.
Round Sling	RS 60	X 4 Ft.

DOCUMENTS:

OSHA 1910.184
ASME B30.9
Inspection Log Sheet
Inspection Schematic
Lift-It® Catalog
Safety Program Overview
Destruction Test Disks

WEAR PROTECTION SAMPLES:

Sleeve
Wear Pad
Edge Wrap
Body Wrap
Corner Protector
Flex-O-Clip
Cornermax®

WEBBING SAMPLES :

Sling Webbing Swatches
Tiedown Web Swatches

TAG SAMPLES:

Endless
Eye & Eye
Tiedown

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

Failure to follow proper use, care and inspection criteria could result in severe personal injury or death. It is your explicit responsibility to consider all risk factors prior to using any rigging device or product. Read and understand the information contained in this publication and follow OSHA and ASME guidelines. Use by untrained persons is hazardous. Synthetic products will fail if damaged, abused, misused, overused, or improperly maintained.

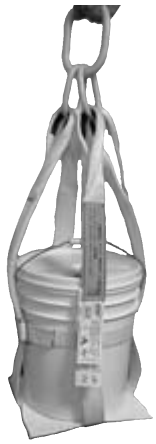
A visual inspection of the sling must be made every time this sling is to be used. Slings that are damaged or determined to be unsafe shall not be used for any application. If the work load limit tag is missing, illegible or incomplete the sling shall not be used.

Do not exceed work load limits. You are cautioned that all published work load limits and break strengths apply to only new and unused slings, assemblies and hardware. Work Load Limits are based upon destruction testing, done in controlled, laboratory conditions, which will never be duplicated during actual usage and a moderately dynamic lifting or pulling operation. Instantaneous changes (drops or sudden pick ups) in excess of 10% of the work load, constitutes hazardous shock loading and THE WORKING LOAD LIMITS AS STATED, DO NOT APPLY.

Synthetic products are damaged and cut when lifting on load edges. Edges in contact with the sling must be "padded" with materials of sufficient strength and thickness to prevent damage and catastrophic sling failure. Wear protection may not prevent cutting or other forms of sling damage. To avoid severe personal injury or death, personnel should be kept away from the load and never be under or near the load, while it is being lifted or suspended.

Specialty Products

FIVE GALLON PAIL SLING



Lift-It® product engineers developed the Five Gallon Pail Sling at the request of sling users in tower industry. Five gallon pails (12 in, dia. x 14-1/4 in. tall) are securely and efficiently handled by the Lift-It® Five Gallon Pail Sling.

Order Code FG-PS

HOSE BUNDLE STRAPS

Only the finest materials are used in the Lift-It® Hose Bundle Straps, treated nylon tiedown webbing and zinc plated adjusters.

Order Code HB
You must specify length. (For a 3 ft assembly- HB-3)

OVERHEAD DOOR SLINGS

The difficult task of installing overhead doors is now done efficiently with Lift-It® Overhead Door Slings. Available in five models.

Order Code	Width x Length	Assy. Work Load
OD-5-7	5in x 7ft	500 lbs.
OD-6-8	6in x 8ft	500 lbs.
OD-6-12	6in x 12ft	500 lbs.
OD-8-8	8in x 8ft	1250 lbs.
OD8-12	8in x 12ft	1250 lbs.

STAGE RIGGING

Assemblies incorporating color coordinated webbing and components are used to lift and suspend “flying” speakers. Exacting tolerances result in the exact “pitch” of the speaker cabinet for optimum acoustical clarity. See page 90 for stage rigging Sparkeater® slings, a perfect solution for pyrotechnical applications, and page 96 for black round slings.

⚠ WARNING ⚠ WARNING ⚠ WARNING ⚠ WARNING

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Special Fabrication

In addition to our standard products, we custom design and fabricate special slings and assemblies to handle a wide range of applications. Several examples are illustrated which exemplify the results of the challenges presented by special design criteria.

CUSTOM DESIGN & FABRICATION

Wheel nets with a work load limit of 100,000 lbs per set were fabricated by our experienced fabrication specialists. All intersections are sewn with an intense sew pattern, making Lift-It® Wheel Nets the standard, worldwide.

A hydro-electric, utility company, operating a dam, contacted us because their original net manufacturer refused to duplicate a 28 ft. x 30 ft. oval net, claiming it was to difficult to remake. The production experts at Lift-It® produced the net, which included over 14,280 sew patterns and shipped ahead of schedule.

42 in. X 228 in. slings were fabricated and tested in a matter of hours. Two slings were used to basket a 60 ton rocket motor. The slings were tested by an independent facility to 60,000 vertical pounds. The testing was done, not by customer request, but as an expression of corporate responsibility.

Twin-Path® Sparkeater® Slings were selected to lift a two million dollar stainless cask, filled with spent nuclear fuel. The slings (50,000 lbs. vertical work load) were tested to 100,000 lbs. Sling tolerances of 445 inches (+/-.50 in.) were documented by a facility source inspector at 445.12 inches. Precision fabrication is done daily at Lift-It®.

HEAVY DUTY FABRICATION

The United States Navy-Civil Engineering needed to lift a 200 ton causeway section. Two 12 in. x 40 ft. slings with 3 in. thick flame cut fittings were fabricated for the job.

Lift-It® production specialists fabricated four, high performance fiber slings, each with a vertical work load limit of 125 tons. The 50 ft. slings featured attached 4-1/2 inch diameter, D-Master links. The four slings were used to pick a 375 ton nuclear “object”.

SERVICE WITH A SMILE

Friday afternoon and Shaw Construction needed eight slings, Monday morning in a remote town in Arizona. The slings would be used to make a series of 500,000 lbs. lifts at a power plant construction site. Mike Gelskey, Jr. and the Twin-Path® production experts began work on the slings, each rated at 300,000 lbs. vertical work load. Team Lift-It® worked late that evening, and completed the job on Saturday. All slings were tested on Sunday to 600,000 lbs. and then delivered to the airport. The slings arrived earlier than the customer expected. Great Job, Junior and Team Lift-It®.

If you need a fabric two leg bridle with an 80,000 lbs. work load, or a bridle assembly with five legs to lift a 50 ton water wheel, we've got just the sling for you. Custom Master Subassemblies were fabricated for the Five Leg Assembly and both designs featured patented, High Performance Fiber, Twin-Path® Extra Slings. The perfect problem solver, Twin-Path® Extra Slings, just one of many Slingmax® Solutions.

Three fabrication specialists worked simultaneously on very large, 60 ft slings. The customer in Scoville, Idaho arranged and received same day delivery from our facility in Los Angeles for a critical lift that had to be made, on time. Now, that's moving and shaking. When you say, "Jump", we say "bring out the trampoline".

The Safety professionals at Alyeska Pipeline Service were amazed that 90 Web Slings, four ply thick, weighing a total of 1100 pounds, were received within 48 hours in Fairbanks, Alaska. In addition to the enormous job of fabrication, every sling was tested to 45,600 lbs, twice the vertical work load. Unparalleled service made possible by the dedicated people, who make Lift-It® Manufacturing, the leader in unparalleled service.

Fall Prevention Equipment

Lift-It® Manufacturing stocks and distributes the finest fall protection equipment from the recognized, industry leader, DBI/SALA. ISO certification drives superior engineered and manufactured products to meet or exceed OSHA and ANSI standards. Most items are in stock, at competitive prices.

BODY HARNESS

CONFINED SPACE

RETRACTING LIFELINES

ANCHORAGE DEVICES

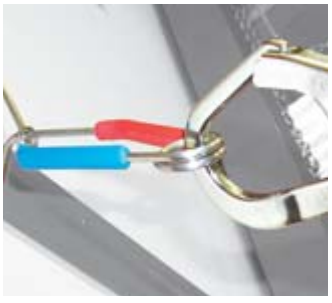
SHOCK ABSORBING LANYARD

ESCAPE DEVICES

POSITIONING DEVICES

ROPE GRABS

CONNECTING DEVICES



COMPLIANCE IN A CAN

HORIZONTAL LIFELINES

VERTICAL LIFELINES

FALL PREVENTION TRAINING AND SERVICES

The key to effective fall prevention training is practical, hands-on experience. We offer a wide variety of fall prevention and rescue courses, either on-site or at one of our training facilities. Courses include: general awareness, fall prevention fundamentals, competent skills, competent person, qualified person, equipment inspection, competent trainer, competent tower climber and industrial rescue. Custom courses can also be developed to suit specific site requirements. In addition, special courses for oil field, tower and confined space are available.

Hands on demonstrations are available through a fleet of mobile demonstration vehicles. Call today to schedule an onsite demonstration.

Examples of the consulting services we offer: site surveys, employer specific fall prevention program development, employer specific training and manual review/development and equipment inspections.

Fall Prevention Considerations

EQUIPMENT INSPECTION AND MAINTENANCE

Conscientious Inspection of Fall Protection Equipment is essential to ensure proper product performance and ultimately the safety of the user.

INSPECTION FREQUENCY

1) Equipment should be inspected by the user before each use.
2) A Formal Inspection should be performed annually by a competent person.
3) After fall arrest, equipment shall not be used again, until inspected and determined by a competent person to be undamaged and suitable for reuse.
4) RECORDKEEPING: Inspections should be recorded in a centralized logbook and should include: date of purchase, date of inspection, serial number, any service or maintenance performed and the signature of the inspector.

INSPECTION GUIDELINES- REMOVAL FROM SERVICE

HARDWARE- Check all hardware components for damage such as: Distortion, Corrosion, Burrs, Cracks and Worn Parts. Moving parts should move freely.

WEBBING- Inspect Webbing for: Frays, Cuts, Broken Fibers, Tears, Abrasion, Mold, Burns, Heavy Soiling and Discoloration. Inspect all Stitching for Snags, Cutting or Broken Stitches.

WIRE AND SYNTHETIC ROPE—Inspect for: Cuts, Kinks, Broken Wires, Abrasions, Corrosion or Chemical Contact.

ACCESSORIES- All Pads and Keepers should be in place and free of Cuts or Cracks. Inspect Impact Indicators if present.

LABELS—All Labels must be Present and Legible.

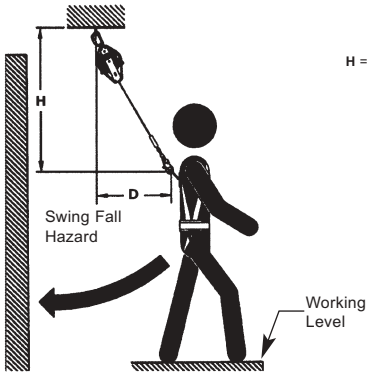
If inspection or operation reveals damage, remove the product immediately from service, destroy it or send it to an authorized service center for evaluation.

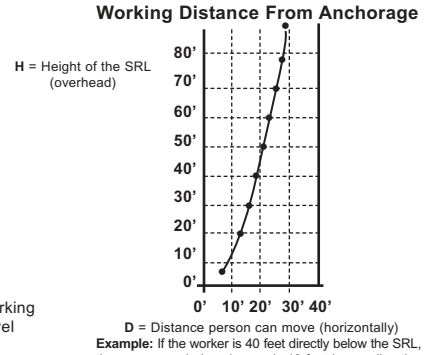
MAINTENANCE AND STORAGE

Most webbing and hardware can be washed with mild soap and detergent, using water and a rag to remove excess grease, dirt or grime. The equipment should be allowed to air dry, out of direct sunlight. Some hardware may require lubrication; however any hardware that comes into contact with webbing should be free from grease or solvents. Service and maintenance should only be performed by Factory Authorized Service Centers.

Equipment should be stored in a cool, dry, dark location that is free from environmental and mechanical damage. Protective bags should be used for storage.

FALL CLEARANCE AND SWING FALL HAZARD



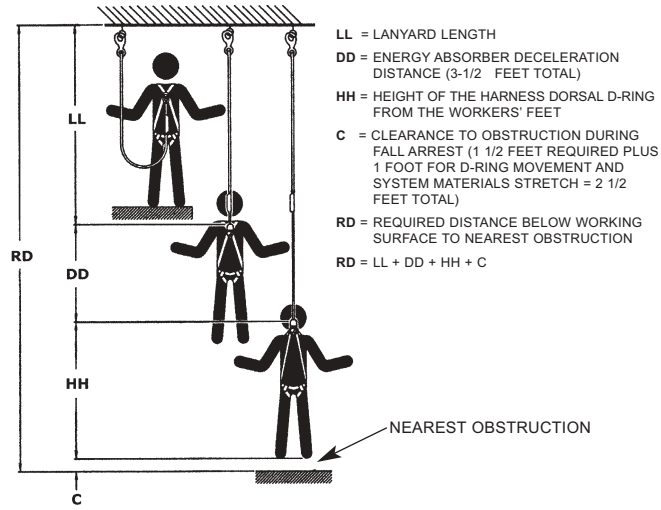


Swing Falls occur when the anchorage point is not directly above where the fall occurs.

Self Retracting Lifelines provide greater mobility than lanyards, but also increase the opportunity for swing falls. Minimize Swing Falls by working as close as practical, below the anchorage point. Please refer to the chart.

⚠ WARNING The force of striking an object, as a result of this "pendulum" effect may cause serious injury or death.

⚠ WARNING Read and understand the information in this bulletin and instructions supplied with all equipment.



When setting up and using a personal fall arrest system, clearance and swing fall hazards are critical issues. There must be sufficient clearance below to prevent the user from striking the ground or any other object. This determination must be made by the user, please refer to the chart.

⚠ WARNING Lack of planning or understanding can lead to serious personal injury or death.

Fall Prevention Harnesses

All Exo-Fit™ and Exo-Fit™ XP harnesses feature a wrap around, no tangle design that slips on easily like a vest. Ventilation, comfort and security are the trademarks of ExoFit™. With removable padding, this is truly the first washable harness. Spring loaded, stand up D-Rings with an impact indicator ensures easy connection. Integral Lanyard Keepers provide storage for lanyards, when not in use and prevent trip and falls. The keeper will snap free if snagged.

EXOFIT™ XP HARNESS MODELS & FEATURES

Stand-Up D-Ring	Impact Indicator	Removable Padding	Lanyard Keeper
			

CONSTRUCTION HARNESS

- Stand-Up Back D-ring with Impact Indicator
- Tongue Buckle Body Belt with Back Pad and Side D-rings
- Breathable 3D Mesh
- Removable Shoulder, Back and Leg Padding
- Quick Connect Chest Buckle
- Loops for Body Belt

Quick Buckle Part No.	Size	Tongue Buckle Part No.
1110150	Small	1110175
1110151	Med	1110176
1110152	Large	1110177
1110153	XL	1110178

CROSSOVER HARNESS

- Stand-up Back D-ring with Impact Indicator
- Breathable 3D Mesh
- Removable Shoulder, Back and Leg Padding
- Quick-Connect Buckles
- Loops for Body Belt

EXTRA FEATURES
- Front Delta
- Crossover Design is Ideal for Female Workers

1109800-Small
1109801-Med
1109802-Large
1109803-XL

ARC FLASH HARNESS

The Arc Flash Harness Meets the ASTM F887-04 Standard for Arc Flash. Shoulder, Back and Leg Padding is Nomex® and Kevlar®. No Metal Parts Above the Waist and All Hardware is PVC Coated and Features Insulators. A Dorsal Web Loop and Rescue Loops for Bucket Truck and High Angle Rescue are Standard.

1110830 - Universal

RETRIEVAL HARNESS

- Stand-Up Back D-ring with Impact Indicator
- Shoulder D-Rings for Retrieval
- Breathable 3D Mesh
- Removable Shoulder, Back and Leg Padding
- Quick Connect Chest Buckle
- Loops for Body Belt

1110375- Small
1110376- Med
1110377- Large
1110378- XL

Fall Prevention Harnesses

ExoFit™ HARNESSES

ExoFit™ harnesses feature fixed D-Rings and sewn on padding that will not slip and slide. Tear and abrasion resistant, ballistic cloth ensures strength, durability and comfort.

CONSTRUCTION HARNESS

- Back D-Ring
- Tongue Buckle Body Belt with Back Pad and Side D-Rings
- Built in Shoulder, Leg and Hip Padding
- Breathable Lining with Soft Edging for Comfort
- Quick Disconnect Buckles
- Loops for Body Belt

1108500- Small
1108501- Medium
1108502- Large
1108507- XL

STANDARD HARNESS

- Back D-Ring
- Built in Shoulder, Leg and Hip Padding
- Breathable Lining with Soft Edging for Comfort
- Quick Disconnect Buckles
- Loops for Body Belt

1107975- Small
1107976- Medium
1107977- Large
1107981- XL

LINEMAN'S HARNESS

- Back D-Ring
- Tongue Buckle Body Belt with Back Pad and Side D-Rings
- Built in Shoulder, Leg and Hip Padding
- Breathable Lining with Soft Edging for Comfort
- Quick Disconnect Buckles
- Leather Insulators behind Hardware
- Seat Sling with Positioning D-Rings
- Six Tool Loops on Belt

ExoFit™

1107300	Small
1107300	Medium
1107301	Large
1107302	XL

TOWER CLIMBING HARNESS

Vest style with Front and Back D-Rings. Belt with Back Pad and Side D-Rings, Seat Sling with D-Rings, Quick Disconnect Buckles. Ergonomic Back Pad and Seat Sling are Extremely Comfortable. Constructed with a Moisture Wicking Liner and Cushioned Padding.

ExoFit™		ExoFit™ XP
1108650	Small	1110300
1108651	Medium	1110301
1108652	Large	1110302
1108653	XL	1110303

Specialty Harnesses & Work Vests

DELTA II - NOMEX®/KEVLAR®

Model No. 1105475

The Delta II Nomex®/Kevlar® harness features flame resistant web and PVC coated hardware. A spring loaded, stand up D-Ring, five point adjustment and the exclusive Delta No-Tangle® design, which holds the shape of the harness, provides for fast and easy donning.

DELTA II - WORK VEST

Model No. 1107404

- Constructed from Certified Hi-Vis Fabric and Tape Meeting the Requirements of ANSI / ISEA 107-1999, Class 1 and 2.
- Padded Shoulders and Neck Liner Enhance Comfort and Mobility.
- Velcro Tool Fastener Support for Accessory Attachment
- Two Chest Pockets, One with a Snap Closure, the Other is Slotted for Pens and Pencils.
- Tongue Buckle Leg Straps
- Size- Vest is Large with a Universal Fit Harness. Other Sizes are Available.

The DELTA II Work Vest and Harness is for use when visibility and protection are needed. The Work Vest incorporates a sleeveless, waist length vest. Chest, shoulder and leg buckles are visible.

PROTECTA SILVER BACK™ HARNESSES

Protecta Silverback™ full body harnesses incorporate built in shoulder, back and leg padding for extra comfort. The integral lanyard keepers help secure lanyards, when not in use. Loops are supplied for optional body belt use and quick connect buckles make donning fast and easy.

CONTRACTOR MODEL

- Body Belt with Hip Pad and Side Deltas
- Vest Style with Back D-Ring
- Built in Padding
- Five Point Adjustment
- Loops for Body Belt
- Quick Connect Buckles
- Integral Lanyard Keepers

Model No. AB2004A13

INDUSTRIAL MODEL

- Vest Style with Back D-Ring
- Built in Padding
- Five Point Adjustment
- Loops for Body Belt
- Quick Connect Buckles
- Integral Lanyard Keepers

Model No. AB2001AB

Lanyards & Positioning Devices

A wide variety of shock absorbing lanyards, designed to reduce impact forces is readily available.
Single and double leg models with combinations of anchorage options, meet OSHA and ANSI standards.


AE542AW1


AE550AW1


CE550AW1-SN


Pro-Stop AE560A6


AE549AW2


AE550AW2T

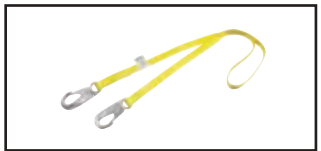

AE57610


AE57620

MODEL NO.	TYPE	MATERIAL	SINGLE LEG	DOUBLE LEG	TIE-BACK	LENGTH	CONNECTOR(S)
AE542AW1	PRO	1" Nylon Web	X		No	6ft	2 Standard
AE550AW1	PRO	1" Nylon Web		X	No	6ft	3 Standard
AE549AW1	PRO	1" Nylon Web		X	No	6ft	1 Standard, 2 Rebar
AE542AW2	PRO	1-3/4" Polyester Web	X		No	6ft	2 Standard
AE542AW2T	PRO	1-3/4" Polyester Web	X		Yes-D-Ring	6ft	2 Standard
AE550AW2	PRO	1-3/4" Polyester Web		X	No	6ft	3 Standard
AE549AW2	PRO	1-3/4" Polyester Web		X	No	6ft	1 Standard, 2 Rebar
AE550AW2T	PRO	1-3/4" Polyester Web		X	Yes-D-Ring	6ft	3 Standard
CE542AW1-518	PRO	1" Nylon Web	X		Yes-Carabiner	6ft	1 Standard, 1 Tie-back 5K Lbs.
CE550AW1-SN	PRO	1" Nylon Web		X	Yes-Carabiner	6ft	1 Standard, 2 Tie-back 5K Lbs.
AE560A6	PRO	1" Tubular Web	X		No	6ft	2 Standard
AE57610	FIRST	1-3/4" Polyester Web	X		No	6ft	2 Standard FIRST Hooks
AE57620	FIRST	1-3/4" Polyester Web		X	No	6ft	1 Standard FIRST, 1 Rebar
AE57630	FIRST	1-3/4" Polyester Web		X	No	6ft	3 Standard FIRST Hooks
AE57640	FIRST	1-3/4" Polyester Web	X		No	6ft	1 Standard FIRST, 2 Rebar
AL305AW16	Positioning	1" Nylon Web	X		No	6ft	2 Standard
AL305A6	Positioning	1/2" Twisted Rope	X		No	6ft	2 Standard
AF77710	Positioning	Rebar Chain		X	No	20in	2 Standard FIRST, 1 Rebar

POSITIONING LANYARDS

Positioning lanyards are used to maintain a working position at a height or to restrict movement in a hazardous position.


AL305AW16


AL305A6
1/2" X 6FT ROPE


AF77710 REBAR ASSEMBLY

WRAPBAX™ TIEBACK LANYARD

Traditional hooks are not designed for tying back, however, many workers mistakenly engage in this practice. In the event of a fall, with a standard hook tied back, the forces may end up on the gate, face or side of the hook. Since standard hooks are not designed to bear impact forces from tying back, hook failure or release and injury or death could occur. The WrapBax™ hook is easily differentiated from standard hooks and provides a 5000 lbs. hook capacity from any direction.

- Heavy Duty, Abrasion Resistant Web
- Pistol Grip Design for Easy Handling
- Web Guide for Simple and Quick Use

WrapBax™ Tie-Back Single Leg
Shock Absorbing Lanyard
Model No. 1221901

Anchorage & Connector Devices

Anchorage and connector devices are designed to be adaptable in circumstances where connection of a fall prevention system to an anchorage point is necessary. All devices have a 5,000 lbs. rating (22kN) and conform to OSHA and ANSI Z359.1 standards for anchorage devices.

ROOF ANCHOR
Model No. AJ730 A

- Forged Alloy D-Ring
- Zinc Plated Steel
- 16D Single Use Nails (20 each included)
- Reusable after Inspection
- 3 lbs. Total Weight

WEB SLING ANCHOR
Model No. AJ450A

- 1-3/4 in. Nylon Strap
- 3 inch Scuff Guard
- Pass-Thru D-Rings
- 3 Ft.- AJ450A3
- 6 Ft.- AJ450A6
- Custom Lengths Available

I-BEAM ANCHOR
Model No. AJ201A

- Drop Forged Eyebolt
- Fits Holes- 3/4 to 7/8 in. Thicknesses 1-3/8 to 1-9/16 in.
- Vertical or Horizontal
- Model No. AJ201AS2 for Attached Shock Absorber and D-Ring

CABLE SLING ANCHOR
Model No. AJ408J

Model No. AJ408J
- 1/4in. X 6 Ft. Coated Cable
- Galvanized Finish
- Standard Snap Hook
- Pass Thru Ring
- Available in Stainless Model No. 5900551

FIXED BEAM ANCHOR
Model No. 2108406

- Works Horizontally or Vertically
- Fits 1-1/2 In. Thick Flange 2-1/2 to 12 in. Widths
- Larger Models Available

GLYDER™ BEAM ANCHOR
Model No. 2110808

- Channel Locks
- Spring Loaded Engagement
- Pin Retention System
- Smooth Operation

⚠WARNING When Used at Foot Level, Must Be Used with Force 2 Shock Absorbing Lanyard.

LARGE TWIST LOCK CARABINER
Model No. AJ593A

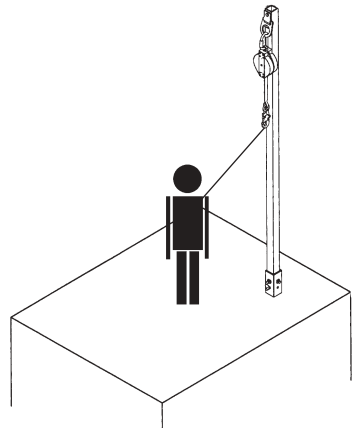
- 5,000 lbs. Anchor
- 2 inch Opening
- Carbon Steel
- Zinc Plated
- 1.4 lbs.

SMALL TWIST LOCK CARABINER
Model No. AJ514A

- 5,000 lbs. Anchor
- 3/4 inch Opening
- Forged Steel
- Galvanized Finish
- Twist Lock Closure
- .4 lbs.

TRANSFORMER ANCHORS

Transformer Anchors provide workers with a method of working on above ground transformers or machinery. The transformer mast is a steel anchorage post intended to be used as a portable and removable anchorage for use with winches or retractable lifelines. The mast attaches to the tops of transformers or other machinery by a permanently welded base. Depending upon the mechanical device chosen, the transformer anchor provides a reliable system that can be used for work support, fall protection and rescue. Work load limit for work support is 350 lbs and 310 lbs for fall arrest. The all steel construction provides for a 5,000 lbs. anchorage point.



Transformer Mast -- Order Code 2104312
Transformer Base -- Order Code 2104313

PORTABLE VACUUM ANCHORAGE SYSTEMS

Finally, a portable fall arrest anchor. These systems provide mechanics in the aircraft industry a way to work on plane wings, fuselages and tail sections, and are approved for use on Boeing and Airbus aircraft, in Class 1, Division 2 locations. Utility and workers in other industries can also use this OSHA fall arrest compliant system. The specialty anchor pad attaches to non-porous surfaces, without damage.

Installation is quick and easy. Simply turn on the vacuum switch, wait for the green light and hook up to the D-Ring. There is no need for overhead lines that can get in the way. All Vacuum Anchor Systems incorporate a fail-safe back up system with both visual and audible alarms.

Available in electric or compressed air models, simply add a second Vacuum Anchor Pad, Soft Hose Assembly and a 40 ft. Horizontal Lifeline System to create a Horizontal System.

Electric Vacuum System with Cart	Compressed Air System	Electric Vacuum System with Pelican Cases
		

Horizontal Anchor System

SYSTEM ORDER CODES

Order Code 2200019 .....Electric Vacuum Pump
Order Code 2200050 .....Compressed Air Pump
Order Code 2200041 .....50 ft. Soft Hose Assy.
Order Code 2200025 .....Vacuum Anchor Pad
Order Code 2200400 .....40 ft. Horizontal Lifeline
Order Code 2200030 .....Cart for the Electric System
Order Code 9500478 .....Pelican Case for Pads
Order Code 9500620 .....Pelican Case-Electric Pump

Compliance Products

FALL ARRESTORS

AD211B 11 FT. CABLE

AD111A 11' WEB

AD107AP 20' WEB

AD212AG 30' CABLE

AD515AG 50' CABLE

Retrieval Model

MODEL NO.	LENGTH	LINE TYPE	CONNECTOR	HOUSING
AD111A	11ft	Web	Standard	Aluminum
AD111AR	11ft	Web	Standard	Aluminum W/ Swivel
AD111B	11ft	Web	Swivel	Aluminum
AD111BR	11ft	Web	Swivel	Aluminum W/ Swivel
AD111E	11ft	Web	Rebar Hook	Aluminum
AD111ER	11ft	Web	Rebar Hook	Aluminum W/ Swivel
AD211B	11ft	Galvanized Cable	Swivel	Aluminum
AD107AP	20ft	Polyester Web	Standard	Thermoplastic
AD210AS	30ft	Stainless Cable	Standard	Thermoplastic
AD212AG	30ft	Galvanized Cable	Standard	Thermoplastic
AD215AS	50ft	Stainless Cable	Standard	Thermoplastic
AD222AG	66ft	Galvanized Cable	Standard	Thermoplastic
AD225AS	75ft	Stainless Cable	Standard	Thermoplastic
AD515AG	50ft	Galvanized Cable	Twist-Lock	Aluminum

Self Retracting Lifelines are available in a wide variety of lengths, constructions and housings. Our Lifelines utilize stainless steel or parts that have been coated for corrosion resistance. Housings are made from aluminum, impact resistant thermoplastic, or painted steel. Each model includes a carabiner for attachment to the anchorage point.

All Lifelines meet OSHA and ANSI standards and come with a two year warranty with no recertification required.

COMPLIANCE IN A CAN

A complete fall prevention system, available in a convenient container. Select the Compliance in a Can Model that best suits your needs. All Models Meet or Exceed OSHA and ANSI Requirements.

REGULAR COMPLIANCE IN A CAN MODELS

MODEL NO.	HARNESS	ANCHOR TYPE	ROPE AND ROPE GRAB	SRL
AA7050A	3 Point	Roof	Yes	No
AA7051A	5 Point	Roof	Yes	No
AA7052A	3 Point	Concrete	Yes	No
AA7054A	3 Point	Wire Rope Sling	Yes	No
AA7056A	3 Point	Webstrap Sling	Yes	No
AA7057A	5 Point	Webstrap Sling	No	11ft Web
AA7058A	5 Point	Roof	No	30ft Cable
AA7061A	3 Point	Temporary HLL / Wire Rope Sling	No	No
AA7062A	3 Point	Temporary HLL / Wire Rope Sling	No	No

COMPLIANCE IN A CAN "LIGHT"

Model No. AA7010AS
Includes:
Harness (AB17530)
Shock Absorbing Lanyard
(AE57610)

CONFINED SPACE EQUIPMENT

Confined Space Equipment is used for entry into vertical and non-vertical spaces. It provides a means of controlled ascent and descent, as well as protection from falls, should it be necessary. All equipment and components meet or exceed OSHA and ANSI requirements for this specific equipment type. Model No. AA805AG2 is our most popular system.

CONFINED SPACE SYSTEM Model No. AA 805AG2

- AK105A Tripod
- AK205AG Cable Winch (50 ft.)
- AS215AS Retractable Lifeline (50 ft.)
- AK020A1 Pulley
- AB101A Harness
- AK067A Tripod Carrying Bag. (The kit does not include an AK 47)

AK 205AG WINCH (50ft.)

- Person Rated at 310 lbs.
- Can be supplied in 30, 40, 60, 75, and 110 ft. Lengths
- Attaches to Tripod with Two Locking Pins
- Works with Galvanized or Stainless Cable
- Detachable Handle
- Installable on Any Leg
- Oil Impregnated Bearings
- Manual Safety Lock
- Corrosion Resistant Finish
- 4/1 Ratio at 20 ft./minute
- Four Disc Brakes
- 16 lbs. Without Cable

AK020A1 PULLEY

- High Strength Aluminum Alloy
- Sintered Bronze Bearings
- Anodized Gold Finish
- Includes AJ514A Carabiner
- 10,000 lbs. Min. Break Load
- Works with Rope Diameters up to 1/2 inch
- Pivoting Sheave Pulley Guide

OTHER CONFINED SPACE ENTRY SYSTEMS

SYSTEM NUMBER	TRIPOD	WINCH	LENGTH	SRL	PULLEY	HARNESS	BAG
AA803AG	AK105A	AK203AG	30ft	AD210AS 30'	Yes	Yes	No
AA803AG2	AK105A	AK203AG	30ft	AD210AS 30'	Yes	Yes	Yes
AA805AG	AK105A	AK205AG	50ft	AD215AS 50'	Yes	Yes	No
AA815AG	AK105A	No	N/A	AD515AG 50'	Yes	No	No
AA805AG1	AK105A	AK205AG	50ft	AD215AS 50'	Yes	No	No
AA807AG2	AK105A	AK207AG	75ft	AD225AS 75'	Yes	Yes	Yes

CABLOC® LADDER DEVICE

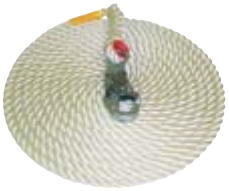
- Stainless Steel Construction
- Attach or Remove Anywhere Along the Lifeline
- Hands Free Operation
- Includes Carabiner (AJ514A)
- Order Code AC350A for 5/16 in.
- Order Code AC351C for 3/8 in.

COBRA® ROPE GRAB

- High Impact Resistant Steel
- Automatic or Manual Modes
- Remove or Reattach at Any Point, During Traverse
- OSHA and ANSI Compliant
- For Use with Nylon or Polyester Ropes
- Accommodates 9/16-5/8 or 3/4 in. Rope Diameters
- Weight- 1.75 lbs.
- Order Code. AC202D

ROPE LIFELINES

- 3/8 in. 3 Strand Nylon Rope
- Snap Hook- One End
- Standard Lengths from 25 ft. to 175 ft. in 25 ft. increments
- Order Code. AC200



SUSPENSION TRAMA STRAP

The most effective device specifically to help relieve the negative effects of suspension trauma.
Order Code 9501403

- Allows the worker to stand up in their harness to relieve pressure.
- Can be field installed on all makes and models of harnesses.
- The compact and lightweight design is non-obstructive.
- Deployment and operation is extremely quick and easy.
- Allows for one or two foot suspension without pinching.

Attaches to side of harness

Step 1
Unzip packs to deploy

Step 2
Pull out straps and hook together

Step 3
Put foot into web loop

Step 4
Stand for relief

LINEMAN'S BODY BELTS

The Lineman's full floating body belt features a 5-3/4 inch cushioned body pad. The inside lining is fully padded with 3D mesh film that breathes and will not absorb moisture. The ergonomical design makes the body belt lighter, cooler and more comfortable to wear. The belt body and tool loops are made from the finest 10 oz. full top grain leather, fastened with stainless steel rivets. The waist belt is made of leather and heavy duty webbing for durability and flexibility. Full floating D-Rings allow for lateral movement of the belt, reducing wear on the pole strap. Available in D-sizes from 20-29, Lineman's' Body Belts meet OSHA and ASTM F887-04 standards.

BODY BELT

Body Belt
Order Code 1000660

- 5-3/4 in. Cushioned Pad
- Side Positioning D-Rings
- Tape Thong
- 2 Leather Tabs for Pouches
- 4 Leather Tool Loops
- Accessory Snap and Ring

BACK SUPPORT BODY BELT

Back Support Body Belt
Order Code 10000670

- 7-9 in. Cushioned Pad
- Side Positioning D-Rings
- Tape Thong
- 2 Leather Tabs for Pouches
- 4 Leather Tool Loops
- Accessory Snap and Ring

Please Note: D-Size is the distance between the heels of the D-Rings. The D-Rings should be located one inch in front of the hip bones. To determine the proper D-Size, measure across the back from hip bone to hip bone and add 2 inches. This will ensure that the D-Ring heels will be forward of the hip bones, rather than on them. All measurements should be taken over clothing, to be worn under the belt. Measurements taken while unclothed are unreliable, immoral and illegal in some states.

LINEMAN'S COMFORT CLIMBER

Comfort, safety and ease of use make the Comfort Climber the best choice for the serious lineman. A fully articulating, non-metallic foot plate with a puncture and slip resistant urethane sole meets or exceeds dielectric footwear standards. Neoprene impregnated boot and leg straps secure with tongue buckles for a comfortable and reliable fit. Impact resistant, the reinforced, nylon 66 shaft has a thick, non-woven pad with a top grain leather exterior for adjustment.

Order Code 5900260

POLE POSITIONING STRAP

1-3/4 In. nylon, heavy duty webbing, forged snap hooks and friction buckles ensure the integrity of the Pole Positioning Strap and the lineman using it. The forged snap and buckle are stitched to the webbing and fastened by a metal clip and stainless steel rivets. The webbing has red core indicators that become visible, alerting the user to remove the strap from service.

⚠WARNING DO NOT USE SLINGS THAT ARE STRUCTURALLY DAMAGED, EVEN IF THE RED CORE WARNING YARNS ARE NOT VISIBLE.

Available in three lengths.
Order Code 1204030—6 ft.
Order Code 1204031—6-1/2 ft.
Order Code 1204032—7 ft

CM Puller

The CM Puller is designed for heavy duty construction and industrial applications. Used to pull, lift, stretch or drag.

- Tough Aluminum Alloy Construction for outdoor service
- Hoistaloy hardened link load chain
- Weatherized Automatic Braking
- Forged Hooks with Latches
- Fewer Parts for Repair and Inventory
- Easy One Hand Operation
- Metric Rated
- Free Wheeling for Fast Attachment
- Lifetime Warranty- Made in the USA

OPTIONS
Load Limiter Protection Device
Space Saver Anchor Sling
Load Sentry Device
Shorter Lever for 3/4 and 1-1/2 Ton
Zinc Plated Chain
Latchlok Hooks

653 PULLER

The Series 653 lever operated hoist is a rugged tool for close quarter operation.
The short handle and minimal lever pull effort, make the 635 ideal for a broad range of lifting, pulling and stretching operations.

- Impact Resistant, Stamped Steel
- Powder Coated for Corrosion Resistance
- Hardened Steel Gears
- Weston Type Braking System
- Hardened Steel Chain
- Forged Hooks with Latches
- Rubber Handle Grip
- Double Pawl for Load Control
- Two Chain Guide Rollers
- One Handed Free Chaining
- Minimal Maintenance
- Metric Rated
- ASME B30.21 Compliant

OPTIONS
Can be furnished with Shipyard Hooks, on request.
Lifts longer than 20 ft. Available

OVERLOAD INDICATOR OPTIONS

Two methods to protect personnel, loads and pullers are available as options. These can be installed at the time of order or be field installed.
(Not available for the Model 653 Puller)

LOAD SENTRY

Bending and deflection of the handle warns the user when excessive force is being applied.

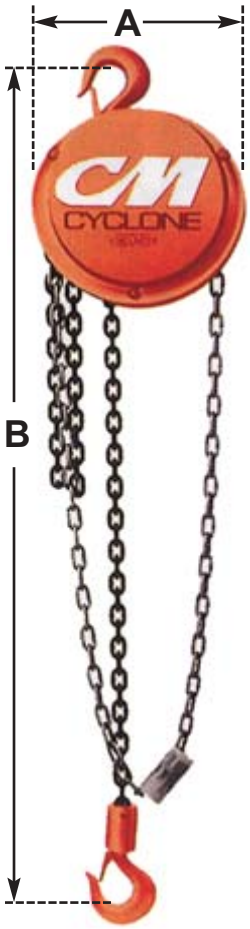
LOAD LIMITER
Will not allow excessive force to be transmitted to the Puller.

Stock Number	Std. Lengths (Ft.)	Work Load Limit (Tons)	Lever Pull (Lbs.)	Min. Hook Distance (In.)	Lever Length (In.)	Hook Throat Opening (In.)	5 Ft. Net Wt. (Lbs.)
CM PULLER							
CMP 75	5, 10, 20	3/4	58	10-3/4	21-1/4	1-1/32	16
CMP 150	5, 10, 20	1-1/2	89	14-1/4	21-1/4	1-1/8	26
CMP 300	5, 10, 20	3	95	17	21-1/4	1-7/32	38
CMP 600	5	6	96	21-3/8	21-1/4	1-3/4	73
653 PULLER							
CM 63575	5, 10, 15, 20	3/4	33	12-5/8	11	1-1/8	15
CM 635150	5, 10, 15, 20	1-1/2	51	14-13/16	16-1/4	1-1/4	27
CM 635300	5, 10	3	77	18-11/16	16-1/4	1-9/16	45

⚠ WARNING ⚠ WARNING ⚠ WARNING

OVERLOADING AND IMPROPER USE CAN RESULT IN INJURY AND DEATH. TO AVOID INJURY DO NOT EXCEED WORKING LOAD LIMIT, LOAD RATING OR CAPACITY. DO NOT USE TO LIFT PEOPLE OR LOADS OVER PEOPLE. USE ONLY ALLOY CHAIN FOR LIFTING. READ AND FOLLOW ALL INSTRUCTIONS.

CM Hand Chain Hoists



CYCLONE HAND CHAIN HOIST

One of the most popular and reliable hoists available, providing efficiency and durability.

- High Strength Aluminum Alloy Frame and Covers
- High Efficiency Spur Gear
- Rugged Hoistaloy Lifting Chain
- Enclosed, Contoured Weston Braking System
- Load Limiter- Standard
- Forged and Machined Lift Pockets
- Hand chain is 2 ft. Less in Length than Lift Chain
- Metric Rated
- Lifetime Warranty- Made in USA

OPTIONS
Chain Containers
Zinc Plated Load and Hand Chain
Aluminum, Unwelded Hand Chain
Latchlok Hooks
Bronze Hooks
Bullard Hooks
Eye Type Suspension

622 HAND CHAIN HOIST

- Lightweight Steel
- Hardened Load Chain
- Weston Load Brake that requires no lubrication
- Hand chain is 2 ft. less in length than load chain
- Forged Swivel Hooks with Latches
- Compact, Efficient Design
- Hand Wheel Cover with Guide Slots
- Metric Rated
- One Year Warranty
- Imported

Stock Number	Standards Lengths (Ft.)	Work Load Limit (Tons)	Strands of Load Chain	Hand Chain		"A" O. A. Width (Inches)	"B" Minimum (Inches)	Throat Opening (Inches)	8 Ft. Net Wt. (Lbs.)
				Pull (Lbs.)*	Overhaul (Ft.)**				
CYCLONE CHAIN HOIST									
CM 4621	8	1/4	1	23	22-1/2	10-7/8	12-7/8	1-11/32	33
CM 4622	8	1/2	1	46	22-1/2	10-7/8	12-7/8	1-11/32	33
CM 4624	8	1	1	69	30	10-7/8	14	1-1/8	36
CM 4625	8	1-1/2	1	80	40-1/2	10-7/8	17-5/16	1-5/16	59
CM 4626	8	2	1	83	52	10-7/8	17-5/16	1-5/16	60
CM 4627	8	3	2	85	81	12-1/4	21-1/2	1-5/8	84
CM 4628	8	4	2	88	104	12-1/4	21-1/2	1-5/8	91
CM 4629	8	5	3	75	156	14-1/2	24-1/2	1-5/8	122
CM 4630	8	6	3	90	156	14-1/2	25-1/4	1-3/4	127
CM 4631	8	8	4	89	208	17-1/2	34-1/2	2-5/16	207
CM 4632	8	10	5	95	260	17-1/2	35-1/2	2-5/16	219
622 CHAIN HOIST									
CM 62250	8, 12, 15, 20	1/2	1	45	32	4-15/16	11-5/8	3/4	15
CM 622100	8, 12, 15, 20	1	1	74	39	5-19/32	13	7/8	22
CM 622200	8, 12, 15, 20	2	1	70	77	8-5/16	18-1/8	1-1/16	53
CM 622300	8, 12, 20	3	2	54	154	8-5/16	21-29/32	1-1/4	69
CM 622500	8, 12, 20	5	2	88	154	8-5/16	23-7/8	1-11/16	74
CM 6221000	8	10	4	90	308	14-3/32	27-9/16	2-3/16	139

YOU MUST SPECIFY LENGTH OF CHAIN FOR THE 622 CHAIN HOIST

* PULL REQUIRED TO LIFT THE WORK LOAD LIMIT

** OVERHAUL DISTANCE TO LIFT THE LOAD ONE FOOT

⚠ WARNING ⚠ WARNING ⚠ WARNING

OVERLOADING AND IMPROPER USE CAN RESULT IN INJURY AND DEATH. TO AVOID INJURY DO NOT EXCEED WORKING LOAD LIMIT, LOAD RATING OR CAPACITY. DO NOT USE TO LIFT PEOPLE OR LOADS OVER PEOPLE. USE ONLY ALLOY CHAIN FOR LIFTING. READ AND FOLLOW ALL INSTRUCTIONS.

Personal Hydration Systems

When it comes to maintaining energy, mental focus, dexterity and strength in regular and demanding situations, proper hydration is an absolute must. By the time you are thirsty, your body is already dehydrated.

Rules To Remember

- Drink enough water, but not too much, a few sips every ten minutes.
- For every hour of moderate activity, your body requires 33 ounces (1 liter) of water.
- Drink often and always keep water available.
- Stay clear, not yellow. (We'll let you figure this last one out, call us, if you require assistance.)

SABRE™

Hydration is an important part of a safe and productive work day. SABRE™ delivers clean, cool water, whether at work or play. The SABRE is Basic, Tough and Cost Effective.

FEATURES

- Quick Release Shoulder Straps Unclip for easy removal
- External Zippered Pocket for Storage
- Tough, Abrasion Resistant Cover
- Closed Cell Insulation and Tube
- Cool Water for Hours

Capacity 70 ounces
Dimensions 17 in. x 10 in. x 1 in.
Weight empty reservoir .9 lbs.
filled reservoir 5.3 lbs.

Order Code
20322- Color Black

HAWG™

The HAWG™ allows you to carry up to 1280 cu. in. of gear and water on an independent, comfortable suspension harness. An optional second reservoir of 100 ounces (3 liters) can be added.

FEATURES

- Small Gear is Easily Organized in The Secure Lower Pouch.
- Ports for All Sizes of Antennas
- Ventilated Back Panel for Comfort
- Multiple MOLLE/PAL Attachment Points
- Integrated Velcro® Strips for Tag and Unit Badges
- Closed Cell Insulation and Tube Cover Keeps Fluid Cold for Hours

Dimensions
19 in. x 12 in. x 6 in.

Weight
empty reservoir 2.6 lbs.
full reservoir 8.9 lbs.

Order Codes
Woodland Cameo
8465-01-517-3142

Desert Cameo
8465-01-517-4772

Black
8465-01-396-9922

HOTSHOT™ 2L

Bulky Canteens and Water Bottles are cumbersome when you are supposed to be focused on the job, or having fun. The HOTSHOT™ delivers clean water, when you need it. It attaches easily to "H" style harnesses, web gear and packs, via four Velcro® attachment points.

FEATURES

- Easy Filling with External Access to the Reservoir
- Low-Profile Baffled Reservoir
- Closed Cell Insulation and Tube
- Cool Water for Hours
- Bite Valve Cover stays clean from Dirt and Debris

Capacity
72 ounces

Dimensions
14 in. x 8 in. x 2 in.

Weight
empty reservoir .4 lbs.
filled reservoir 4.9 lbs.

Order Code
Olive Drab Foliage
30112

Personal Hydration Systems

PAKTEEN™

Canteens are a thing of the past. Look to the future with Camelbak's Pakteen™. The wide mouth, stand-alone hydration system provides 50 ounces (1.5 liters) and will integrate with a load bearing belt or harness. Pakteen™ can be combined with other systems for increased capacities.

FEATURES
- Integrated Attachment System
- D- Rings allow placement, anywhere
- Exterior Fill Port with Two Finger Ease
- Closed Cell Insulation and Tube
- Cool Water for Hours

Capacity
50 ounces

Dimensions
12 in. x 7 in. x 1 in.

Weight
empty reservoir - .6 lbs.
filled reservoir - 3.6 lbs.

Order Code
8465-01-396-9921- Black

HI-VIZ™

When Safety and visibility are concerns, the HI-VIZ™ stands out in a crowd. Available in International Orange or Lime Green, HI-VIZ delivers all the features and capacity of the WATERMASTER™.

FEATURES
- High Visibility
- Tear Away Harness Prevents Accidents
- Integrated Cover Keeps Fill Port Clean
- Convenient Strap Management
- Bite Valve Cover stays clean from Dirt and Debris

Capacity
70 ounces

Dimensions
17.5 in. x 8.75 in. x 1 in.

Weight
empty reservoir - 1.2 lbs.
filled reservoir - 5.6 lbs.

Order Codes
8465-01-517-4767 - International Orange
8465-01-517-4769 - Lime Green

OMEGA WATER BEAST™ RESERVOIR

The Water Beast ™ provides the ultimate protection for the water supply. The rugged texture provides durability, while the OMEGA wide mouth opening, external opening makes filling quick and convenient. Hydroguard™ Anti-Microbial Technology and Big Bite™ Valve ensure the delivery of clean, safe water.

Order Codes
2 Liter - 8465-01-517-4768
3 Liter - 8465-01-495-6522

WATERMASTER™

WATERMASTER™ Delivers 70 ounces (2 Liters) of on the go hydration. Refills are quick and easy with the external access Water Beast™ Reservoir.

FEATURES
- Tear Away Harness Prevents Accidents
- Integrated Cover Keeps Fill Port Clean
- Convenient Strap Management
- Bite Valve Cover stays clean from Dirt and Debris

Capacity
70 ounces

Dimensions
17.5 in. x 8.75 in. x 1 in.

Weight
empty reservoir - 1.2 lbs.
filled reservoir - 5.6 lbs.

Order Code 30022 - Abyss Blue

Definition of Terms

ABRASION The mechanical wearing of the sling surface resulting from frictional contact with materials or objects.

BREAKING STRENGTH The total force (lbs. or kgs.) at which the sling fails. The total weight strain which can be applied before failure, also known as Ultimate Load.

COEFFICIENT OF FRICTION Reluctance of two objects to slip or slide

COMPETENT PERSON A person who is trained and qualified by knowledge and practical experience and who has the necessary instructions to enable the required test or examination to be carried out.

DESIGN FACTOR An industry term denoting theoretical reserve capability. Usually computed by dividing ultimate load by working load limit and generally expressed as a ratio, i.e., 5 to 1 or 7 to 1.

ELONGATION The measurement of stretch, at a given load, expressed as a percentage of the original, unloaded length.

FITTING A load bearing metal component which is attached to the sling.

LENGTH The distance between the extreme bearing points of the sling, including fittings, if applicable.

PROOF TEST A non-destructive test of the sling to a multiple of the work load limit. The multiple of test is usually twice the work load, not to exceed 40% of the break strength.

WORK LOAD LIMIT The maximum recommended load that should be exerted on the item. The following terms are also used for the term work load limit: "Safe Working Load", "Working Load", "Rated Load", "Rated Capacity" and "Resultant Safe Working Load." All work load limit values, unless noted otherwise, are for in-line pull with respect to the centerline of the item, with no shock load.

SHOCK LOAD A resulting load from the rapid change of movement, such as impacting or jerking of a static load. A shock load is generally significantly greater than the static load.

SYNTHETIC FIBER Man-made materials used for the cover, core, webbing and thread in synthetic sling products.

THREAD The synthetic yarn which is used to sew the slings, sling covers and tags.

Conversion & Weight Tables

METRIC / ENGLISH CONVERSIONS:

LENGTH
1 CM = .3937 In.
2.54 CM = 1 In.
.3048 M = 1 Ft.
1 M = 3.281 Ft.

WEIGHT
.4536 Kg. = 1 Lb.
1 Kg. = 2.2046 Lb.

VOLUME
.028 Cu. M = 1 Cu. Ft.
1 Cu. M = 35.314 Ft.
1 Cu. Ft. = 7.5 Gals.

POUNDS / CUBIC FT.							
Aluminum	165	Coal	56	Glass	162	Paper	60
Asphalt	81	Concrete	150	Iron Casting	470	Rubber	94
Brass	524	Crushed Rock	95	Lead	708	Sand - Dry	105
Brick	120	Diesel	52	Lumber - Fir	32	Sand - Wet	120
Bronze	534	Earth - Dry	75	Lumber - Oak	62	Steel	490
Cement - Loose	94	Earth - Wet	100	Lumber - RR Ties	50	Water	63
Cement - Set	183	Gasoline	45	Oil, Motor	58	Zinc	437

POUNDS / SQUARE FT.						COEFFICIENTS OF FRICTION	
Steel Plate		Aluminum Plate		Lumber		Steel on Steel	.10
1/8"	5	1/8"	1.75	3/4" Fir	2	Concrete on Concrete	.65
1/4"	10	1/4"	3.50	3/4" Oak	4	Wood on Wood	.50
1/2"	20	POUNDS PER GALLON				Load on Wheels	.05
1"	40	Gasoline - 6.0		Diesel - 7.0	Water - 8.3	Load on Ice	.01

Limited Warranty

Lift-It® Manufacturing Company, Inc.
Limited Warranty

Warranties and Disclaimers

Except as expressly provided to the contrary elsewhere, Lift-It® Mfg. Co., Inc. makes no, and hereby disclaims all warranties, express, implied, statutory or arising by custom or trade usage or otherwise, including for example, but not limited to the implied warranties of merchantability and fitness for a particular use or purpose, and warranties that any product will 1) Meet the requirements of the purchaser, 2) Operate as required by purchaser, or 3) Operate error free. Lift-It® further disclaims any responsibility whatsoever to the purchaser or to any other third party for any injury to person or property caused by any Lift-It® product, regardless of whether that product has been subject to misuse, negligence, accident, improper installation or modification by unauthorized persons. Notwithstanding the above, Lift-It® Mfg. Co., Inc. warrants that for the first twelve (12) months from purchase, its product will be free from defects in workmanship and materials and that if any such problem occurs within the warranty period, Lift-It® will replace such products that are returned to Lift-It® Mfg. Co, Inc., 4780 Corona Avenue, Los Angeles, Ca. 90058 USA. This limited warranty shall not apply to any product that has been misused, repaired or modified by any unauthorized person or if it is used in a manner not consistent with its intended purpose. Upon termination of the aforementioned 12-month period, the purchased product carries no warranty whatsoever. Any authorized adjustments to the product, made pursuant to the warranty does not void the warranty, nor does it imply an extension of the original twelve (12) month warranty period. Any question regarding any Lift-It® product should be directed to our office located at : 4780 Corona Avenue, Los Angeles, California 90058

Limitations of Liability

Lift-It® Mfg. Co., Inc. shall not be liable for any direct, special, indirect, incidental, consequential, punitive or exemplary damages of any kind, irrespective of the form of action, irrespective of how it arises, and even if Lift-It® knew or had reason to know of the possibility of such damages, irrespective of whether arising from activities performed with its product, or the negligence or other tort of Lift-It®. In addition, Lift-It® shall not be liable for any non-party claim related to the use of is product. Lift-It® hereby expressly disclaims all such damages. Notwithstanding the foregoing, in the event of any claim for breach of any of Lift-It®'s obligations, whether express or implied, and particularly of any other claim or breach of warranty contained in the above warranties and disclaimers, or of any other warranties, express or implied, or claim of liability that might, despite the abovementioned warranties and disclaimers, be decided against Lift-It® by lawful authority, Lift-It® shall under no circumstances be liable for any consequential damages, losses, or expenses arising in connection with the use of, or inability to use, Lift-It®'s product for any purpose whatsoever. If for any reason any of the foregoing provisions shall be ineffective, any claim against Lift-It® for damages arising out of its manufacture or sale of equipment, or use thereof, whether such liability is based on warranty, contract, negligence, strict liability in tort, or otherwise, shall not in any event exceed the full purchase price of the product. The Laws of the State of California shall govern all disputes arising out of or based upon the use of Lift-It® products. Any action against Lift-It® based upon any liability or obligation arising hereunder or under any law applicable to the sale of equipment or use thereof, must be commenced within one year after the cause of action arises or is waived. Synthetic products should never be used by children under the age of eighteen or be used to ward off shark or polar bear attacks.

The Lift-It® Family

Knowledge • Quality • Integrity • Courtesy • Service • Innovation

Lift-It® Manufacturing Company offers the above with dedicated employees who have years of manufacturing and sales experience. Any organization is only as good as the people who make it up and our people are the best.

Michael J. Gelskey, Jr.
General Manager
16 Years of Service
"Junior"

Michelle Brown
Asst. Gen. Manager
16 Years of Service
"Power Point Princess"

Christina Arajuo
Team Leader
10 Years of Service
"Tina"

Dave Barthule
Friend and Teacher
40 Years of Service
1923-2003

Antonio Rocha
Sales-Data Entry
5 Years of Service
"The Banderas Man"

Myra Huerta
Sales/Accounting
2 Years of Service
(Very nice lady)

Viviana Collazo
Accounting
2 Years of Service
(Erika's sister)

Wolfgang Keil
Heavy Duty
Production Specialist
26 Years of Service
"Big Daddy Wolf"

Misiafa Lepule
Heavy Duty
Production Specialist
18 Years of Service
"Mr. Missy"

Edna Quintero
Production/ Q.C.
26 Years of Service
Mama "Q"

Dorothy Smith
Production Specialist
23 Years of Service
"Mama"

Sailini Smith
Special Fabrication
Production Specialist
19 Years of Service
"Little Mama"

The Lift-It® Family

Sergio Dominguez
Shipping Department
6 Years of Service
Mr. “Go L.A. Clippers”

Anthony Mitchell
Layout Team Leader
16 Years of Service
Mr. “T”

Gwena McKnight
Twin-Path® Team Leader
19 Years of Service
Little “G”

Andre Lyles
Twin-Path® Specialist
10 Years of Service
“The Doctor- Dr. Dre”

Satini Maluia
Production Specialist
10 Years of Service
“Grandpa”

Jose Sanchez
Production Specialist
5 Years of Service
“AKA Jordan -- AKA JJ”

Guadalupe Quijada
Tag Department
11 Years of Service
(Christina’s Mother)

Genaro Claros
Production Specialist
6 Years of Service
(Very nice man)

Elias Rivas
Production Specialist
5 Years of Service
(All Around Great Guy)

Rosie Carrillo
Production Specialist
6 Years of Service
“Rosie the Riveter”

Erika Collazo
Production Specialist
5 Years of Service
(Net Producer No. 1)

Josue Granados
Assistant Team Leader
4 Years of Service
(Elias’s cousin)

Martin Tejada
Twin-Path® Dept.
2 Years of Service
“Mr. Million Dollar Smile”

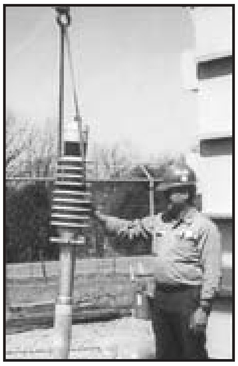
Anthony Vista
Test Coordinator
2 Years of Service
“MacGyver”

Jamie Romero
Twin-Path® Dept.
3 Years of Service
(Serious and Dedicated)

Jose Rivas
Production Specialist
5 Years of Service
(Elias’s Brother)

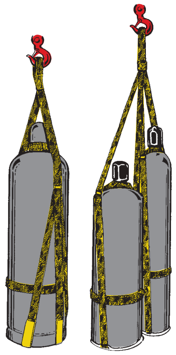
SYNTHETIC PRODUCTS FOR THE PROFESSIONAL WHO KNOWS THERE IS NO SUBSTITUTE FOR QUALITY

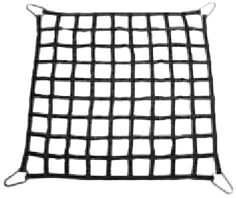


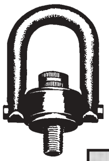
















Adjustable Chain Slings

Adjustable Rope Slings

Bucket Slings

Chain Hoists

Confined Space Entry

Container Lifting Slings

Cornermax® Protectors

Crane Books

Dirt Slings

Drum Slings

Dynamometers

Fall Prevention Devices

Gas Cylinder Slings

Harnesses

High Performance Fiber Slings

Hydration Systems

Hooks

Lanyards

Lineman's Products

Magnetic Corner Protectors

Material Handling Devices

Monster Edge® Slings

Nets

Polypropylene Slings

Rigger Cards

Round Slings

Shackles

Spreader Beams

Swivel Hoist Rings

Tiedown Assemblies

Tow Straps

Training

Twin-Path® Slings

Web Slings

Wire Mesh Slings

Wire Rope Slings

Lift-It® Manufacturing Co., Inc.
4780 Corona Avenue
Los Angeles, CA 90058-3808
(323) 582-6076
Fax (323) 587-1630
E-mail: liftit@pacbell.net
www.lift-it.com

LIFT-IT®

"When Only The Best Is Good Enough"

Quality System Quality Endorsed Company ISO 9001 Lic20307

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