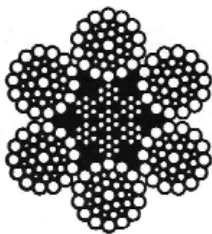

West Coast *Wire Rope*



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WEST COAST WIRE ROPE & Rigging, Inc.



West Coast Wire Rope has served the construction, marine, logging and OEM markets for the past 40 years. With the largest full service rigging facilities on the West Coast, in 3 locations to serve you our staff has the capability to meet all your rigging needs from small cable assemblies and railing systems to large slings and crane wires.

We service what we sell with qualified rigging inspectors in all stores and on site training. We sell reels and full containers of wire rope and cable from 1/16" to 5-inch diameter, and have the largest inventory of rigging hardware and specialty items for immediate delivery. We will fabricate to your prints and specifications and will help you in choosing the correct rigging to meet your needs. Most products are ready the same day.

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IMPORTANT WARNINGS

READ ALL WARNINGS BEFORE USING THIS PUBLICATION

Failure to follow warnings and instructions may result in serious injury or death.

Anyone using this publication **must read and understand all warnings and other information listed below and preceding and/or adjacent to the product description. The following apply to all of the products in this catalog.**

All warning and safety information will be highlighted in red.

All products are sold with the express understanding that the purchaser is thoroughly familiar with their correct application and safe use. **Use all products properly, in a safe manner and for the application for which they were intended.** West Coast Wire Rope & Rigging Inc. assumes no responsibility for the use or misapplication of any product sold by design and use decisions rests with the user.

REMEMBER: ANY PRODUCT WILL BREAK IF ABUSED, MISUSED, OVERUSED OR NOT MAINTAINED PROPERLY. Such breaks can cause loads to fall or swing out of control, possibly resulting in serious injury or death as well as major property damage.

Therefore:

1. Never exceed the Working Loadlimit(WLL).
2. Match components properly.
3. Keep out from under a raised load.
4. Avoid shock loads.
5. Inspect products regularly.

It would be impossible in the scope of this publication to list all possible dangers and misapplications associated with the use of all products contained herein. However, in order to promote safe rigging habits, the most common hazards associated with the use of these products are outlined.

Working Load Limit

This is the term used throughout the catalog. There are, however, other terms used in the industry which are interchangeable with the term Working Load Limit. These are: WLL, SWL, Safe Working Load, Rated Load Value, Resulting Safe Working Load, and Rated Capacity. **Never** exceed the Working Load Limit.

The Working Load Limit is the maximum load which should ever be applied to a product, even when the product is new and when the load is uniformly applied - straight line pull only. **Avoid side loading.** All catalog ratings are based upon usual environmental conditions, and consideration must be given to unusual conditions such as extreme high or low temperatures, chemical solutions or vapors, prolonged immersion in salt water, etc. Such conditions or high-risk applications may necessitate reducing the Working Load Limit.

Working Load Limit will not apply if product has been welded or otherwise modified.

Matching of Components

Components must match. Make certain that components such as hooks, links or shackles, etc. used with wire rope (or chain or cordage) are of suitable material size and strength to provide adequate safety protection. Attachments must be properly installed and must have a Working Load Limit at least equal to the product with which they are used. Remember: Any chain is only as strong as its weakest link.

Raised Loads

Keep out from under raised load. Take notice of the recommendation from the National Safety Council Accident Prevention Manual concerning all lifting operations:

“All employees working at cranes or hoists or assisting in hooking or arranging a load should be instructed to **keep out from under the load.** From a safety standpoint, one factor is paramount: Conduct all lifting operations in such a manner, that if there were an equipment failure, no personnel would be injured. This means **keep out from under a raised load and keep out of the line of force of any load. Do not operate a load over people. Do not ride on loads.**”

1 Shock Loads

Avoid impacting, jerking or swinging of load as the Working Load Limit could be exceeded and the Working Load Limit will not apply. A shock load is generally significantly greater than the static load. **Avoid Shock Loads.**

Regular Inspections

Inspect products regularly for visible damage, cracks, wear, elongation, rust, etc. **Protect all products from corrosion.** The need for periodic inspections cannot be overemphasized. **No product can keep operating at its rated capacity indefinitely.** Periodic inspections help determine when to replace a product and reduce rigging hazards. **Keep inspection records** to help pinpoint problems and to ensure periodic inspection intervals.

Due to the diversity of the products involved and uses to which they can be put, it would be counterproductive to make blanket recommendations for inspection procedures and frequency. Best results will be achieved when qualified personnel base their decisions on information from rigging and engineering manuals and on experience from actual use in the field.

Frequency of inspection will depend on environmental conditions, application, storage of product prior to use, frequency of use, etc. **When in doubt, inspect products prior to each use.** Carefully check each item for wear, deformation, cracks or elongation - a sure sign of imminent failure. Immediately withdraw such items from service.

Rust damage is another potential hazard. When in doubt about the extent of corrosion or other damage, withdraw the items from service.

Destroy, rather than discard, items that have been judged defective. They might be used again by someone not aware of the hazard involved.

DEFINITIONS

Information contained in this catalog is subject to change: all weights and dimensions are approximate. Ratings are stated in short tons (2,000lbs.) or pounds. All dimensions are in inches; all weights are in pounds, unless otherwise.

Working Load Limit (WLL)

The Working Load Limit is the maximum load which should ever be applied to the product, even when the product is new and when the load is uniformly applied - straight line pull only. **Avoid side loading.** All catalog ratings are based upon usual environmental conditions and consideration must be given to unusual conditions such as extreme high or low temperatures, chemical solutions or vapors, prolonged immersion in salt water, etc. **Never exceed the Working Load Limit.**

Proof Test Load (Proof Load)

The term "Proof Test" designates a quality control test applied to the product for the sole purpose of detecting defects in material or manufacture. The Proof Test Load (usually twice the Working Load Limit) is the load which the product withstood without deformation when new and under laboratory test conditions. A constantly increasing force is applied in direct line to the product at a uniform rate of speed on a standard pull testing machine. The Proof Test Load does not mean the Working Load Limit should ever be exceeded.

Breaking Strength/Ultimate Strength

Do not use breaking strength as a criterion for service design purposes. Refer to the Working Load Limit instead. Breaking

Strength is the average force at which the product, in the condition it would leave the factory, has been found by representative testing to break, when a constantly increasing force is applied in direct line to the product at a uniform rate of speed on a standard pull testing machine. Proof testing to twice the Working Load limit does not apply to hand-spliced slings. **Remember:** Breaking Strengths, when published, were obtained under controlled laboratory conditions. Listing of Breaking Strength does not mean the Working Load Limit should ever be exceeded.

Design Factor (sometimes referred to as safety factor)

An industry term usually computed by dividing the catalog Breaking Strength by the catalog Working Load Limit and generally expressed as a ratio. For example: 5 to 1.

Shock Load

A load resulting from rapid change of movement, such as impacting, jerking or swinging of a static load. Sudden release of tension is another form of shock loading. Shock loads are generally significantly greater than static loads. Any shock loading must be considered when selecting the item for use in a system. **Avoid shock loads as they may exceed the Working Load Limit.**

FURTHER EXPLANATIONS AND CAUTIONS IF LIFTING ANGLES ARE INVOLVED

Numerical values published for Breaking Strength and Working Load Limit in the catalog are very specific in one point: They refer to straight, inline pull or force and are obtained under laboratory conditions.

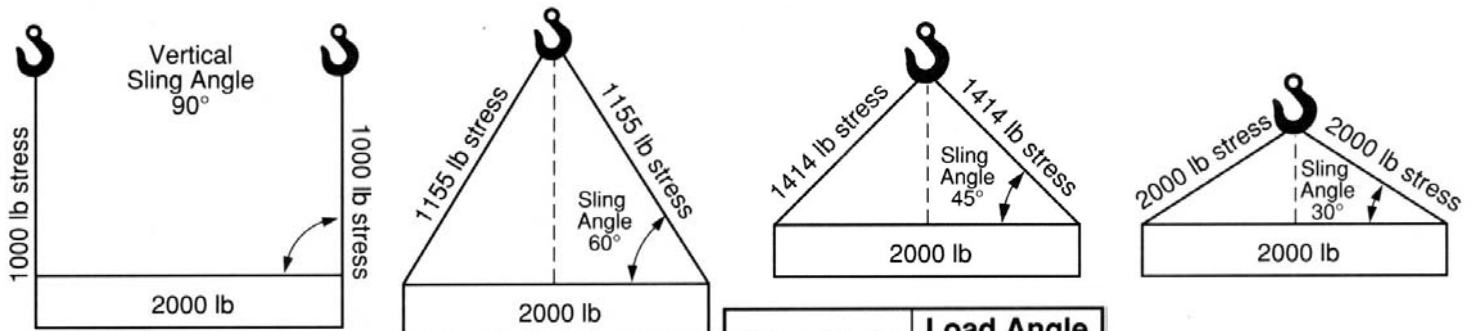
There are, however, many applications where a straight line pull is not possible or even desirable. When a tackle block system is reeved, wire rope may be bent over many sheaves; multiple leg wire rope or chain slings involve dif-

fering lifting angles; angular loads on shackles or eyebolts alter Working Load Limits of the equipment used.

All these and other factors influencing the Working Load Limit must be taken into account when systems are designed and used.

The following is an example intended to demonstrate the effects of angles on the Working Load limit.

Effect of Angles on Sling Capacities



The rated capacity of a multiple leg sling is directly affected by the angle of the sling leg with the load. As this angle decreases, the stress on each leg increases with the same load. If the sling angle is known, the capacity can be readily determined by multiplying the sling's vertical capacity by the appropriate load angle factor from the table at right.

Sling Angle	Load Angle Factor
90° (vertical)	1.000
75°	.966
60°	.866
45°	.707
30°	.500
15°	.259

Example:

A multiple leg sling with a rated capacity of 2000 lb. will have a reduced capacity of 1000 lb. and (2000 x .500) when sling legs are at an angle of 30° with the load.

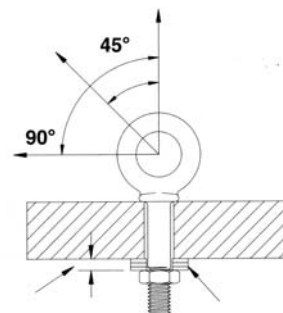
EYEBOLTS

If a load is applied at an angle, only shoulder nut eyebolts must be used. The Working Load Limits as shown in the tables on page 102 - 103 (drop forged, hot galvanized) of this catalog refer to straight-line pull only.

Angular loads on shoulder nut eyebolts reduce the Working Load Limit.

The following table shows reduced Working Load Limit for hot galvanized shoulder nut eyebolts using 45° and 90° angles as an example.

WORKING LOAD LIMITS - POUNDS			
Shank Diameter	Hot Galvanized		
	Straight	45°	90°
1/4	500	150	125
5/16	800	240	200
3/8	1200	360	300
1/2	2200	660	550
5/8	3500	1050	875
3/4	5200	1560	1300



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WIRE ROPE

IMPORTANT WARNINGS

Failure to follow warnings and instructions can result in serious injury or death.

WIRE ROPE IS A MACHINE.

Understand and respect it.

Like any machine, it needs proper care and maintenance for optimal safety and long service life. For a better understanding of wire rope we highly recommend the Wire Rope Users Manual by the American Iron & Steel Institute.

Excerpts of that manual have been reprinted in the wire rope section of this catalog.

Refer to the general warnings on page 4 & 5.

These warnings also apply to wire rope. Only **additional** warnings and information are listed below.

Rated capacity

Rated capacity is the load which a new wire rope may handle under given operating conditions and at assumed design factor. A design factor of 5 is chosen most frequently for wire rope. (operating loads not to exceed 20% of catalog Breaking Strength.) Operating loads may have to be reduced when life, limb or valuable property are at risk or other than new rope is used. A design factor of 10 is usually chosen when wire rope is used to carry personnel. (Operating loads not to exceed 10% of catalog Breaking Strength.)

Responsibility for choosing a design factor rests with the user.

Attachments must have at least the same Working Load Limit as the wire rope used.

Clips, sockets, thimbles, sleeves, hooks, links, shackles, sheaves, blocks, etc. must match in size, material and strength to provide adequate safety protection. **Proper installation is crucial for maximum efficiency and safety.**

Keep out from under a raised load.

Do not operate load over people. Do not ride on load. Conduct all lifting operations in such a manner that if equipment were to fail or break, no personnel would be injured. This means **KEEP OUT FROM UNDER A RAISED LOAD, DO NOT OPERATE LOADS OVER PEOPLE AND KEEP OUT OF THE LINE OF FORCE OF ANY LOAD.**

Avoid shock loads.

Avoid impacting, jerking or swinging of load. Working Load limit will not apply in these circumstances because a shock load is generally significantly greater than the static load.

Inspect wire rope regularly.

Use inspections as guidelines only. Two of the most important prerequisites for inspecting wire rope are technical knowledge and **experience.**

Check the general condition of the wire rope. Also, look for localized damage and wear, especially at wire rope attachments. Inspect all parts that come in contact with the wire rope. Poor performance of wire rope can often be traced back to worn or wrong-sized sheaves, drums, rollers, etc.. Look for kinks, broken wires, abrasions, lack of lubrication, rust damage, crushing, reduction of diameter, stretch or other obvious damage. If **any** of these conditions exists or if there is any other apparent damage to the wire rope, retire the wire rope according to the instructions below. When in doubt about the extent of the damage, retire the wire rope in question immediately. Without laboratory analysis, it is **impossible** to determine the strength of damaged or used wire. Thus, you will not be able to tell whether wire rope with any amount of damage is safe to use. Retire the wire rope that is damaged. For specific inspection procedures check various OSHA and ANSI publications.

Destroy, rather than discard, wire rope to be retired.

Wire rope that is not destroyed might be used again by someone not aware of the hazard associated with that use. Destroying wire rope is best done by cutting it up into short pieces.

Refer to General Information on Wire Rope

for important characteristics and properties of wire rope.

WIRE ROPE

General Information

Wire Rope Design and Construction

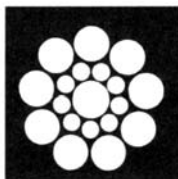
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Single Size



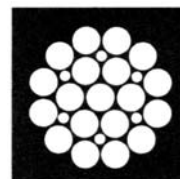
The basic strand construction has wires of the same wound around a center.

Seale



Larger outer wires with the same number of smaller inner wires around a core wire. Provides excellent abrasion resistance but less fatigue resistance. When used with an IWRC, it offers excellent crush resistance over drums.

Filler Wire



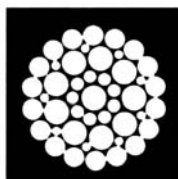
Small wires fill spaces between large wires to produce crush resistance and a good balance of strength, flexibility and resistance to abrasion.

Warrington



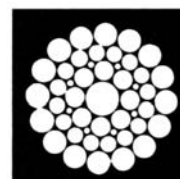
Outer wires of alternately large and small wires provides good flexibility and strength but low abrasion and crush resistance.

Seale Filler Wire



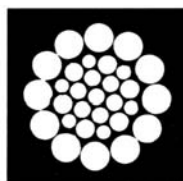
Many commonly used wire ropes use combinations of these basic constructions.

Filler Wire Seale



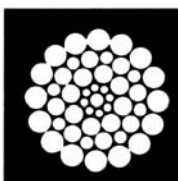
Many commonly used wire ropes use combinations of these basic constructions.

Warrington Seale



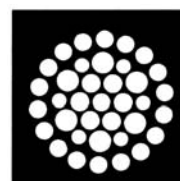
Many commonly used wire ropes use combinations of these basic constructions.

Seale Warrington Seale



Many commonly used wire ropes use combinations of these basic constructions.

Multiple Operation



One of the above strand designs may be covered with one or more layers of uniform-sized wires.

Wire ropes are composed of independent parts -- wires, strands and cores--that continuously interact with each other during service.

Wire rope engineers design those parts in differing steel grades, finishes and a variety of constructions to attain the best balance of strength, abrasion resistance, crush resistance, bending fatigue resistance and corrosion resistance for each application.

To select the best wire rope for each application, one must know the required performance characteristics for the job and enough about wire rope design to select the optimum combination of wire rope properties.

The following information is presented as a basic guide. West Coast Wire Rope sales personnel are available to provide more specific recommendations.

Strand Constructions

Strands are designed with various combinations of wires and wire sizes to produce the desired resistance to fatigue and abra-

sion. Generally, a small number of large wires will be more abrasion resistant and less fatigue resistant than a large number of small wires.

Finish

Bright finish is suitable for most applications. Galvanized finish is available for corrosive environments. Plastic jacketing and encapsulation is also available on some constructions.

Wire Grades

The most common steel wire grades are: IPS (Improved Plow Steel), EIP (Extra Improved Plow Steel) and EEIPS (Extra Extra Improved plow Steel). Stainless steels and other special grades are provided for special applications. Most wire ropes are made with round wires. Both triangular and shaped wires are also used for special constructions.

Generally, the higher the strength of the wire, the lower its ductility will be.

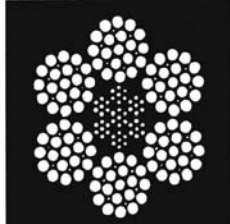
WIRE ROPE

General Information

Wire Rope Design and Construction

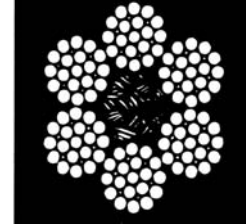
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IWRC Core



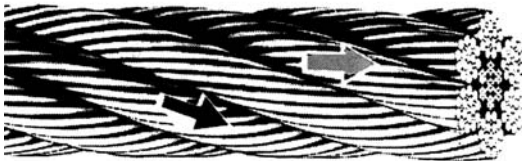
IWRC (Independent Wire Rope Core) provides good crush resistance and increased strength.

Fiber core



Fiber Core provides excellent flexibility.

Regular Lay



Definition

Most common lay in which the wires wind in one direction and the strands the opposite direction. (right lay shown)

Characteristics

Less likely to kink and untwist; easier to handle; more crush resistant than lang lay.

Lang Lay



Definition

Wires in strand and strands of rope wind the same direction. (right lay shown)

Characteristics

Increased resistance to abrasion; greater flexibility and fatigue resistance than regular lay; will kink and untwist.

Right Lay



Definition

Strands wound to the right around the core; (regular lay shown)

Characteristics

The most common construction.

Left Lay



Definition

Strands wound to the left around the core. (regular lay shown)

Characteristics

Used in a few special situations--cable tool drilling line, for example.

Alternate Lay



Definition

Alternate strands of right regular lay and right lang lay.

Characteristics

Combines the best features of regular and lang lay for boom hoist or winch lines.

INSTALLATION, OPERATION AND MAINTENANCE RECOMMENDATIONS

2

The primary factor in wire rope performance is selecting a wire rope with the best combination of properties for the job. The service life of that rope can be greatly extended by following a planned program of installation, operation, maintenance and inspection to avoid the most common causes of wire rope failure:

KINKING will result in permanent rope deformation and localized wear. It is generally caused by allowing a loop to form in a slack line and then pulling the loop down to a right permanent set.

OVERLOADING results in accelerated wear, abrasion, rope crushing and distortion on drums and sheaves, and could result in complete rope failure.

DRAGGING wire rope over a bank or some other object results in localized wear, which means shorter life.

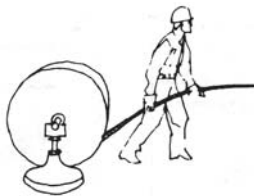
IMPROPER SPOOLING results in crushed and distorted ropes and comes from careless installation and operation of the rope.

WHIPPING a line, which results in many squared off broken wires, comes from jerking or running the line loose.

The following recommendations are general guides for getting the longest life from your wire rope. West Coast Wire Rope representatives are available to provide advice in specific situations. Our technology and experience are as close as your telephone.

Unloading, Unreeling and Uncoiling

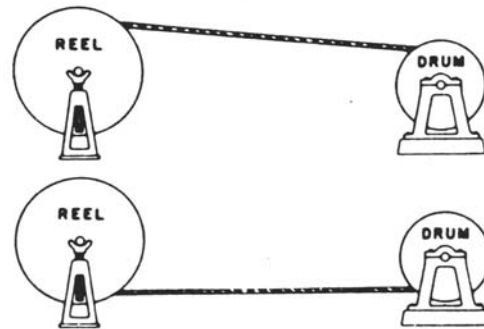
Suitable precautions should be taken to prevent dropping of reels or coils during unloading and moving. If the reel should collapse, it may be impossible to remove the rope without serious damage.



Special care should be taken in unreeling wire rope to avoid kinking, which can result in permanent damage to the rope. The reel should be mounted on jacks or a turntable so that it will move freely. It should be unreeled straight and under enough tension to keep it from starting a loop.

A coil should be unwound by rolling along the floor like a hoop. Coils should never be laid flat and the free end pulled out.

Winding on a Drum



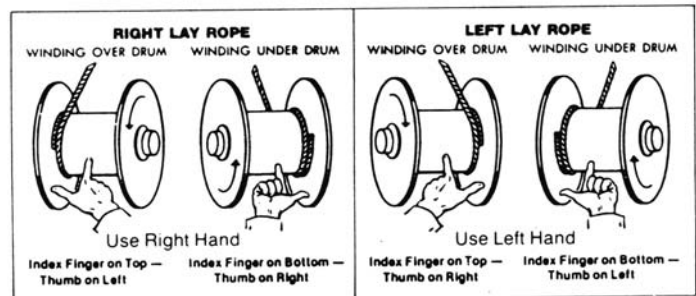
Proper practices for transferring rope from reel to drum:

The reel should be placed as far from the drum as possible in order to avoid putting any turn into the rope.

Rope should be wound from top-to-top or bottom-to-bottom to avoid reverse bends, which tend to make a rope harder to handle.

Use enough tension to avoid kinking.

There is usually only one way to install rope on a grooved drum.

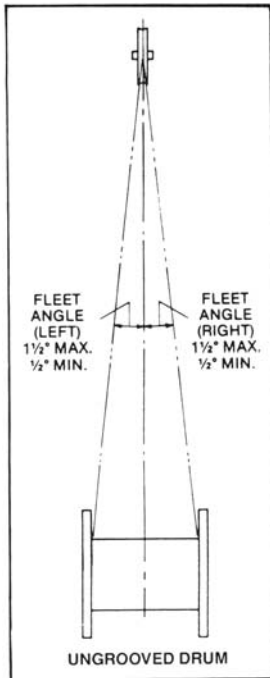


On ungrooved drums, the "rule of thumb" guides installation. The first represents the drum; the index finger the wire rope; and the thumb the direction of the proper dead end location. Use the right hand for right lay ropes, left hand for left lay ropes. For overwinding, the palm is down; for underwinding, the palm is up. Most drum anchors are set for right lay rope since it is the most common specification.

WIRE ROPE

INSTALLATION, OPERATION AND MAINTENANCE RECOMMENDATIONS

2



On installations where the rope passes over a sheave onto the drum, the maximum fleet angle (angle between the center line of the sheave and the rope) should be not more than 1 1/2 degrees for a smooth-faced drum and 2 degrees for a grooved drum. A 1 1/2 degree fleet angle is equivalent to 38 feet of lead for each foot of rope travel on either side of the center line of the sheave. Smaller fleet angles may result in the rope piling up on the drum. Larger fleet angles may cause excessive wear from rubbing against the flanges of the sheave as well as excessive crushing and abrasion of the rope on the drum.

Break In

A few trips through the working cycle at slow speed and light load will set the strands firmly in place for smooth, efficient operation.

On applications using a wedge socket, such as drag and hoist ropes, it is also a good idea to cut off a short section of rope to allow twist to run out and to equalize the strands.

Operation

Skillfull operation is important to wire rope performance. Rapid acceleration, shock loading and excessive vibration can cause premature rope failure. Smooth, steady application of power by the equipment operator can add significantly to wire rope service life.

Shifting Wear Points

Some sections of most wire ropes get more wear than others. A regular inspection program will identify points of wear and lead to wear-shift practices that will extend wire rope life.

In many commom situations, cutting off short lengths of the rope will redistribute the points of maximum wear:

Rope on a drum with two or more layers will wear at the point where the rope starts each successive layer.

Crane ropes will fatigue at an equalizer sheave. Careful inspection is required to identify fatigue points.

Hoist ropes will frequently fail from vibration fatigue at sockets, clips and dead end points.

On most installations, wear and fatigue are more severe on one half of the rope than the other. Changing a rope end-for-end more evenly distributes wear and fatigue from repeated bending and vibration.

Lubrication

Factory lubrication is not always sufficient to last the useful life of wire rope. Periodic field lubrication may be required to minimize friction and provide corrosion protection. Important guides for field lubrication.

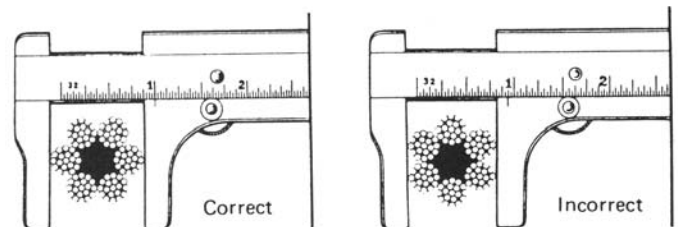
Ropes should be inspected frequently to determine the need for lubrication.

Clean the rope thoroughly with a wire brush, scraper or compressed air to remove foreign material and old lubricant from the valleys between the strands and the spaces between the outer wires.

The lubricant should be applied at a point where the rope is being bent in order to promote penetration within the strands. It may be applied by pouring, dripping or brushing.

Used motor oil is not recommended as a wire rope lubricant.

Measuring Wire Rope



The diameter if a wire rope is the diameter of the smallest circle which will enclose all the strands. Measurements should be made to the outer wires.

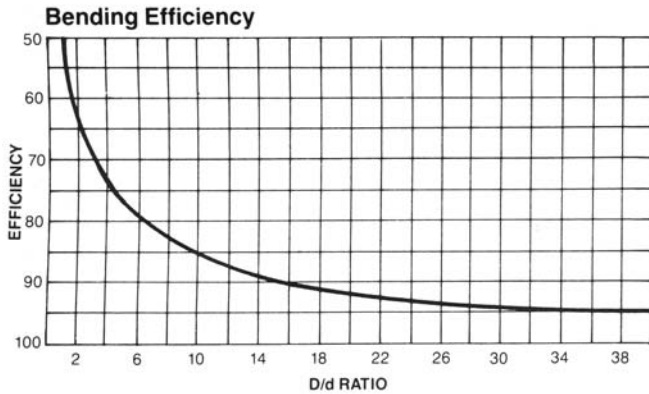
WIRE ROPE

INSTALLATION, OPERATION AND MAINTENANCE RECOMMENDATIONS

2

Matching the Wire Rope with Sheaves and Drums

The ratio of the diameter of the wire rope to the diameter of operating sheaves and drums (D/d ratio) is particularly important to service life. A sheave or drum that is too small for the rope diameter will cause premature failure due to bending stresses.



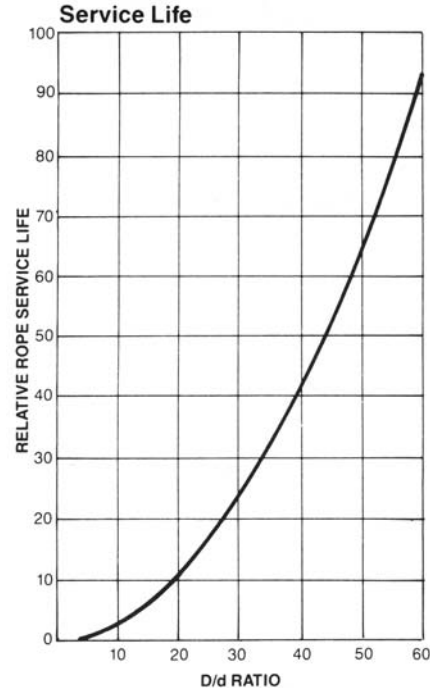
Efficiency falls as the D/d ratio becomes smaller. This curve, based on static test data only, illustrates the decline of bending efficiency for 6 x 19 and 6 x 37 classifications ropes as the D/d ratio is reduced.

Sheave Diameter Factors	
Suggested Minimum D/d* Ratios	
*D-Sheave Tread Diameter d-Nominal	
Rope Construction	Minimum
6 x 7	42
19 x 7	34
6 x 19 S	34
6 x 21 FW	30
6 x 25 FW	26
6 x 36 WS	23
8 x 25 FW	21
6 x 41 WS	21

B 30.5 allows minimum hoist rope D/d ratio of 18 and boom hoist rope D/d ratio of 15.

To calculate the recommended or minimum sheave diameter for any given rope, find the rope construction and multiply the rope diameter by the value shown. (Ex.; Recommended sheave diameter for a 6 x 19 classification wire rope of 3/4" diameter would be 51 x .75 = 38 1/4") Rope speed also affects fatigue life. Higher operating rates require larger sheaves.

Reverse bends from one sheave to another should be avoided. Other factors that affect bending fatigue life are load, number of cycles and condition of the sheaves and drums. Consult the wire rope manufacturer for recommendations.



Service life increases as the D/d ratio becomes larger. This curve, based on bending and tensile stresses only, illustrates the relative performance increase.

Other values are permitted by various standards. For example ASME

Matching Grooves to the Wire Rope

Grooves should be spaced so that one wrap of rope does not rub against the next wrap during operation. Grooves in sheaves and drums should be slightly larger than the wire rope to permit the rope to adjust itself to the groove. Tight grooves will cause excessive wear to outer wires; large grooves do not support the rope properly.

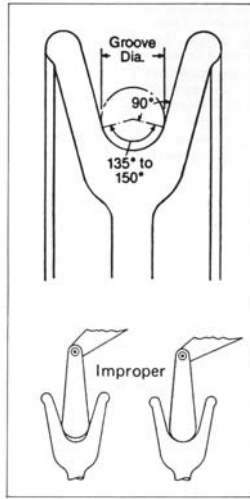
Wire ropes are manufactured slightly larger than nominal size. maximum allowable oversize tolerances are shown in the following table.

Nominal Rope Diameter Inches	Tolerances	
	Under	Over
up to 1/8	0	8%
over 1/8 to 3/16	0	7%
over 3/16 to 1/4	0	6%
over 1/4	0	5%

WIRE ROPE

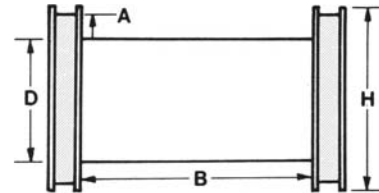
INSTALLATION, OPERATION AND MAINTENANCE RECOMMENDATIONS

As a rope is run through a groove, both become smaller. A used groove can be too small for a new rope; thus accelerating rope wear. A compromise between rope life and machining frequency must be made.



Grooves should have an arc of contact with the wire rope between 135 and 150 degrees. They should be tapered to permit the rope to enter and leave the groove smoothly. Field inspection groove gauges are made to the nominal diameter of the rope plus 1/2 of the allowable rope oversize tolerance. When the field inspection gauge fits perfectly, the groove is at the minimum permissible contour.

Calculating Drum Capacity



The length of rope that can be wound on a drum or reel may be calculated as follows. L = length of rope in feet. All other dimensions are in inches.

$$L = (A + D) \times A \times B \times K$$

K = Constant obtained by dividing .2618 by the square of the actual rope diameter.

$$A = \frac{H - D}{2} - \text{Desired clearance, in inches.}$$

B = Traverse in inches.

D = Barrel Diameter in inches.

H = Flange Diameter in inches.

L = Rope length in feet.

Values of K			
Rope Dia.	K	Rope Dia.	K
1/4"	3.29	1 1/2"	0.107
5/16"	2.21	1 5/8"	0.0886
3/8"	1.58	1 3/4"	0.077
7/16"	1.19	1 7/8"	0.0675
1/2"	0.925	2"	0.0597
9/16"	0.741	2 1/8"	0.0532
5/8"	0.607	2 1/4"	0.0476
3/4"	0.428	2 3/8"	0.0421
7/8"	0.308	2 1/2"	0.038
1"	0.239	2 5/8"	0.0345
1 1/8"	0.191	2 3/4"	0.0314
1 1/4"	0.152	2 7/8"	0.0287
1 3/8"	0.127	3"	0.0264

WIRE ROPE

INSPECTION AND WIRE ROPE AND STRUCTURAL STRAND

2 Wire Rope

Carefully conducted inspections are necessary to ascertain the condition of wire rope at various states of its useful life. The object of wire rope inspection is to allow for removal of the rope from service before the rope's condition, as a result of usage, could post a hazard to continued normal operations.

The individual making the inspection should be familiar with the product and the operation as his judgment is a most critical factor. Various safety codes, regulations, and publications give inspection requirements for specific applications.

The following inspection procedure, taken from the ASME B-30 series, serves as a model of typical inspection requirements.

Frequent Inspection

All running ropes and slings in service should be visually inspected once each working day. A visual inspection consists of observation of all rope and end connections which can reasonably be expected to be in use during daily operations. These visual observations should be concerned with discovering gross damage such as listed below, which may be an immediate hazard:

Distortion of the rope such as kinking, crushing, unstranding, birdcaging, main strand displacement or core protrusion.

General Corrosion.

Broken or cut strands.

Number, distribution and type of visible broken wires.

Lubrication

Special care should be taken when inspecting portions subjected to rapid deterioration such as flange points, crossover points and repetitive pickup points on drums. Special care should also be taken when inspecting portions subjected to rapid deterioration such as flange points, crossover points and repetitive pickup points on drums. Special care should also be taken when inspecting certain ropes such as:

Rotation-resistant ropes such as 19x7 and 8x19, because of their higher susceptibility to damage and increased deterioration when working on equipment with limited design parameters.

Boom hoist ropes because of the difficulties of inspection and important nature of these ropes.

When damage is discovered, the rope should either be removed from service or given an inspection as detailed in the section below.

Periodic inspection

The inspection frequency should be determined by a

qualified person and should be based on such factors as: expected rope life as determined by experience on the particular installation or similar installations, severity of environment, percentage of capacity lifts, frequency rates of operation, and exposure to shock loads.

Periodic inspections with a signed report should be performed by an appointed or authorized person. This inspection should cover the entire length of rope. The individual wire in the strands of the rope should be visible to this person during the inspection. Any deterioration resulting in appreciable loss of original strength, such as described below, should be noted and determination made as to whether further use of the rope would constitute a hazard:

Distortion of the rope such as kinking, birdcaging, crushing, unstranding, main strand displacement, or core protrusion.

Reduction of rope diameter below normal diameter due to loss of core support, internal or external corrosion, wear of outside wires.

Severely corroded or broken wires at end connections.

Severely corroded, cracked, bent, worn, or improperly applied end connections.

Lubrication.

Special care should be taken when inspecting portions subjected to rapid deterioration such as the following:

Portions in contact with saddles, equalizer sheaves, or other sheaves where rope travel is limited.

Portions of the rope at or near terminal ends where corroded or broken wires may protrude.

Rope Replacement

No precise rules can be given for determination of the exact time for replacement of rope, since many variable factors are involved. Continued use in this respect depends largely upon good judgment by an appointed or authorized person in evaluating remaining strength in a used rope, after allowance for deterioration disclosed by inspection. Continued rope operation depends upon this remaining strength.

Conditions such as the following should be sufficient reason for questioning continued use of the rope or increasing the frequency of inspection.

In running ropes, six randomly distributed broken wires in one lay, or three broken wires in one strand in one lay. (The number of wire breaks beyond which concern should be shown varies with rope usage and construction. For general application 6 and 3 are satisfactory. Ropes used on overhead and gantry cranes (as defined in ASME B-30, 2-1983) can be inspected to 12 and 4. Rotation resistant ropes should be inspected to 4 and 2.)

WIRE ROPE

INSPECTION OF WIRE ROPE AND STRUCTURAL STRAND

Wire rope removal criteria are based on the use of steel sheaves. If synthetic sheaves are used, consult the sheave or equipment manufacturer.

One outer wire broken at the contact point with the core of the rope which has worked its way out of the rope structure and protrudes or loops out from the rope structure.

Wear of one-third the original diameter of outside individual wires.

Kinking, crushing, birdcaging, or any other damage resulting in distortion of the rope structure.

Evidence of any heat damage from any cause.

Valley breaks.

Reductions from nominal rope diameter of more than:

Reduction of	Nominal Rope Diameters
1/64"	Up to & inc. 5/16"
1/32"	Over 5/16" thru 1/2"
3/64"	Over 1/2" thru 3/4"
1/16"	Over 3/4" thru 1-1/8"
3/32"	Over 1-1/8"

In standing ropes, more than two broken wires in one lay in section beyond end connections or more than one broken wire at an end connection.

Replacement rope shall have a strength rating at least as great as the original rope furnished by the equipment manufacturer or as originally specified. Any deviation from the original size, grade, or construction shall be specified by the equipment manufacturer, original design engineer, or a qualified person.

Ropes not in regular use

All rope which has been idle for a period of a month or more due to shutdown or storage of equipment on which it is installed should be given inspections as previously described before being placed in service. This inspection should be for all types of deterioration and should be performed by an appointed or authorized person.

Inspection records

Frequent inspection-no records required.

Periodic inspection: In order to establish data as a basis for judging the proper time for replacement a signed report of rope condition at each periodic inspection should be kept on file. This report should include points of deterioration previously described.

A long range inspection program should be established and include records of examination of ropes removed from service so a relationship can be established between visual observation and actual condition of the internal structure.

Galvanized Structural Wire Strand

Carefully conducted inspections performed and recorded on a regular basis are necessary to ascertain the condition of structural strand at various stages of its useful life. The object of inspection is to allow for removal of the strand from service before its condition, as a result of usage, could pose a hazard to continued normal operations. The individual making the inspection should be familiar with the operation, as his judgment is a most critical factor. Special care should be taken at end terminations or at dampener devices, as these are generally the most critical areas.

Conditions such as corrosion, number, type and distribution of broken wires, and diameter reduction should be evaluated and compared with previous inspection results. The actual condition of the strand and inspection history together can then be used to decide if continued use of the product is advisable.

Note: Special methods and techniques may be used by wire rope engineers or qualified persons to determine the possible existence of internal corrosion or broken wires in structural strand or similar conditions which may exist out of sight in terminal connections.

Example: Wire breaks may sometimes occur just inside the nose of the socket making visual inspection difficult. Judgments on wire integrity can be made by tapping or "sounding" the wire by a person experienced in this inspection technique. If you have doubt about the method to use for inspection or the condition of the strand or fitting, contact your nearest West Coast Wire Rope location.

For further information on wire rope inspection refer to the American Iron & Steel Institute's Wire Rope Users Manual.

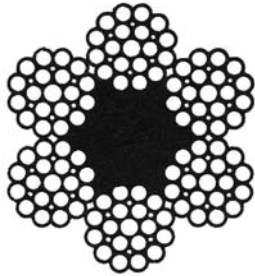
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WIRE ROPE

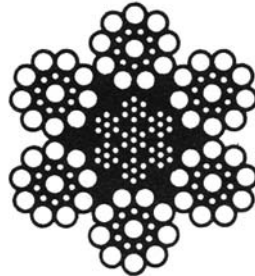
GENERAL PURPOSE

BRIGHT 6X19 CLASS (6x19, 6X21, 6X25, 6X26)

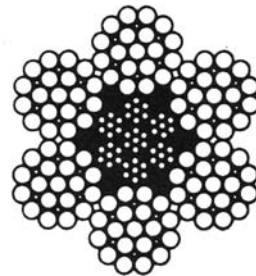
2



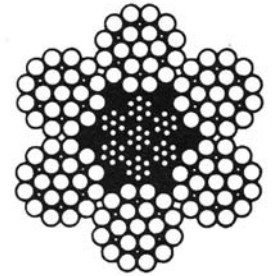
6 x 25 FILLER WIRE
FIBER CORE



6 X 19 SEALE
IWRC



6 X 25 FILLER WIRE
IWRC



6 X 26 IWRC
WARRINGTON SEALE

(IWRC: INDEPENDENT WIRE ROPE CORE OR CENTER)

According to Federal Specifications RR-W-410D, preformed, right regular lay, light to heavy lubrication.

Read important warnings and information on pages 6 - 7 and 12 preceding wire rope section.

Diameter In Inches	FIBER CORE (EIPS)		IWRC (EIPS)	
	Approx. weight per foot in pounds	Breaking strength in Tons*	Approx. weight per foot in pounds	Breaking strength in Tons *
1/4	0.105	3.02	0.116	3.4
5/16	0.164	4.69	0.18	5.27
3/8	0.236	6.71	0.26	7.55
7/16	0.32	9.09	0.35	10.2
1/2	0.42	11.8	0.46	13.3
9/16	0.53	14.09	0.59	16.8
5/8	0.66	18.3	0.72	20.6
3/4	0.95	26.2	1.04	29.4
7/8	1.29	35.4	1.42	39.8
1	1.68	46	1.85	51.7
1 1/8	2.13	57.9	2.34	65
1 1/4	2.63	71	2.89	79.9
1 3/8	3.18	85.4	3.5	96
1 1/2	3.78	101	4.16	114
1 5/8	4.44	118	4.88	132
1 3/4	5.15	136	5.67	153
2	6.72	176	7.39	198
2 1/4	8.51	220	9.36	247
2 1/2	10.5	269	11.6	302
2 3/4	-	-	14	361
3	-	-	16.6	425
3 1/2	-	-	22.6	564

NOTE: Lang Lay, left lay, alternate lay, seale available in some sizes.
Heavy lubrication on request.

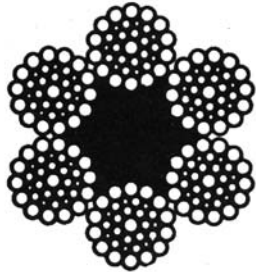
*Listed for comparison only. Actual operating loads may vary, but should never exceed the recommended design factor or 20% of catalog Breaking Strength.

WIRE ROPE

GENERAL PURPOSE

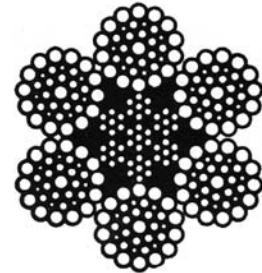
BRIGHT 6X37 CLASS (6X29,6X31,6X36,6X37,6x41)

2



**6 x 36 FIBER CORE
WARRINGTON SEALE**

Read important warnings and information on
pages 6 - 7 and 12 preceding wire rope section.



**6 X 36 IWRC
WARRINGTON SEALE**

According to Federal Specification RR-W-410D, preformed, right regular lay.

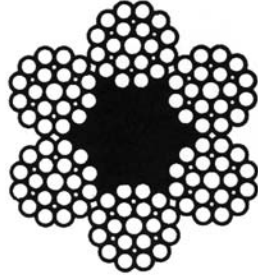
Diameter In Inches	FIBER CORE (EIPS)		IWRC (EIPS)	
	Approx. weight per foot in pounds	Breaking strength in Tons*	Approx. weight per foot in pounds	Breaking strength in Tons *
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5/16	0.164	4.69	0.18	5.27
3/8	0.236	6.71	0.26	7.55
7/16	0.32	9.09	0.35	10.2
1/2	0.42	11.8	0.46	13.3
9/16	0.53	14.09	0.59	16.8
5/8	0.66	18.3	0.72	20.6
3/4	0.95	26.2	1.04	29.4
7/8	1.29	35.4	1.42	39.8
1	1.68	46	1.85	51.7
1 1/8	2.13	57.9	2.34	65
1 1/4	2.63	71	2.89	79.9
1 3/8	3.18	85.4	3.5	96
1 1/2	3.78	101	4.16	114
1 5/8	4.44	118	4.88	132
1 3/4	5.15	136	5.67	153
2	6.72	176	7.39	198
2 1/4	8.51	220	9.36	247
2 1/2	10.5	269	11.6	302
2 3/4	-	-	14	361
3	-	-	16.6	425
3 1/4	-	-	19.5	492
3 1/2	-	-	22.7	564
3 3/4	-	-	26	641
4	-	-	29.6	720
4 1/2	-	-	37.4	889

*Listed for comparison only. Actual operating loads may vary, but should never exceed the recommended design factor or 20% of catalog Breaking Strength.

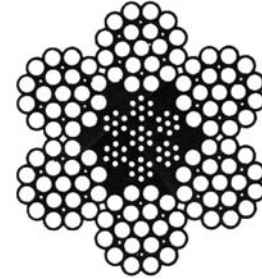
WIRE ROPE

GENERAL PURPOSE GALVANIZED 6X19 CLASS (6x19,6x21,6x25,6x26)

2



6 x 25 FIBER CORE
FILLER WIRE



6X25 IWRC FILLER
WIRE

According to Federal Specification RR-W-410D, preformed, right regular lay, Drawn Galvanized.

Read important warnings and information on pages 6 - 7 and 12 preceding wire rope section.

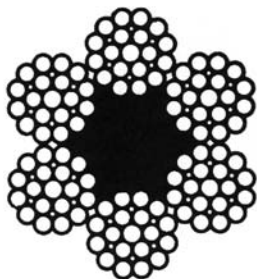
Diameter In Inches	FIBER CORE (EIPS)		IWRC (EIPS)	
	Approx. weight per foot in pounds	Breaking strength in Tons*	Approx. weight per foot in pounds	Breaking strength in Tons *
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5/16	0.164	4.69	0.18	5.27
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1/2	0.42	11.8	0.46	13.3
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2 1/4	8.51	197	9.36	247
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*Listed for comparison only. Actual operating loads may vary, but should never exceed the recommended design factor or 20% of catalog Breaking Strength.

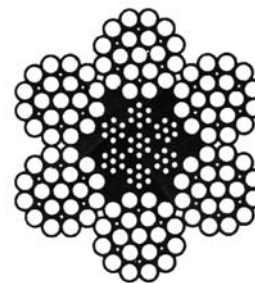
WIRE ROPE

GENERAL PURPOSE GALVANIZED 6X36 CLASS (6x29,6x31,6x36,6x37,6x41)

2



6X36 FIBER CORE
WARRINGTON SEALE



6X36 IWRC
WARRINGTON SEALE

According to Federal Specification RR-W-410D, preformed, right regular lay, Drawn Galvanized.

Read important warnings and information on pages 6 - 7 and 12 preceding wire rope section.

Diameter In Inches	FIBER CORE (EIPS)		IWRC (EIPS)	
	Approx. weight per foot in pounds	Breaking strength in Tons*	Approx. weight per foot in pounds	Breaking strength in Tons *
1/4	0.105	3.02	0.116	3.4
5/16	0.164	4.69	0.18	5.27
3/8	0.236	6.71	0.26	7.55
7/16	0.32	9.09	0.35	10.2
1/2	0.42	11.8	0.46	13.3
9/16	0.53	14.9	0.59	16.8
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1 1/2	3.78	101	4.16	114
1 5/8	4.44	118	4.88	132
1 3/4	5.15	136	5.67	153
2	6.72	176	7.39	198
2 1/4	8.51	220	9.36	247
2 1/2	10.5	269	11.6	302

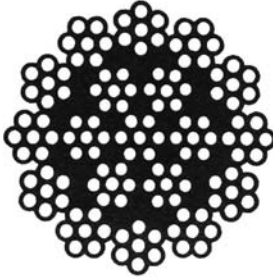
*Listed for comparison only. Actual operating loads may vary, but should never exceed the recommended design factor or 20% of catalog Breaking Strength.

WIRE ROPE

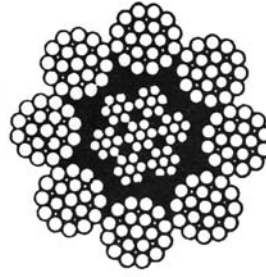
SPECIALTY ROPES

NON-ROTATING, SPIN RESISTANT, ROTATION RESISTANT (19X7, 8X19, 8X25, COMPACT 18)

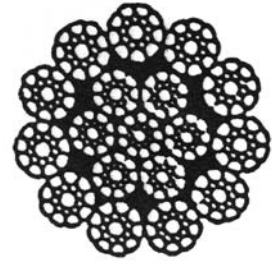
2



19X7 NON ROTATING



8X25 SPIN RESISTANT



COMPACT 18
ROTATION RESISTANT

Read important warnings and information on pages 6 - 7 and 12 preceding wire rope section.
According to Federal Specification RR-W-410D, preformed, EIPS.

Diameter In Inches	19X7 ROTATION RESISTANT	
	Approx. weight per foot in pounds	Breaking strength in Tons*
1/4"	0.113	2.77
5/16"	0.177	4.3
3/8"	0.25	6.15
7/16"	0.35	8.33
1/2"	0.45	10.8
9/16"	0.58	13.6
5/8"	0.71	16.8
3/4"	1.02	24
7/8"	1.39	32.5
1"	1.82	42.2
1-1/8"	2.3	53.1
1-1/4"	2.8	65.1
1-3/8"	3.43	78.4
1-1/2"	4.08	92.8

Diameter In Inches	8X19 SPIN RESISTANT	
	Approx. weight per foot in pounds	Breaking strength in Tons*
3/8"	0.26	6.63
7/16"	0.36	8.97
1/2"	0.47	11.7
9/16"	0.6	14.7
5/8"	0.73	18.1
3/4"	1.06	25.9
7/8"	1.44	35
1"	1.88	45.5
1-1/8"	2.39	57.3
1-1/4"	2.94	70.5
1-3/8"	3.56	84.9
1-1/2"	4.24	100

Diameter In Inches	COMPACT 18 ROTATION RESISTANT	
	Approx. weight per foot in pounds	Breaking strength in Tons*
1/2"	0.51	14.6
9/16"	0.64	18.5
5/8"	0.79	22.7
3/4"	1.1	32.4

*Listed for comparison only. Actual operating loads may vary, but should never exceed the recommended design factor or 20% of catalog Breaking Strength.

WIRE ROPE

GALVANIZED CABLE (7X7, 7X19, 7X7X7 CABLE LAID)

2

Small diameter 7x7 and 7x19 construction wire rope is sometimes referred to as “aircraft cable”. **IT IS NOT INTENDED FOR AIRCRAFT USE** but designed for industrial and marine applications. According to Federal Specification RR-W-410D, preformed, right regular lay, strand core, drawn galvanized.

Read important warnings and information on pages 6 - 7 and 12 preceding wire rope section.



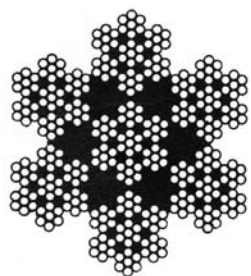
7 x 7

Diameter In Inches	7 X 7 GALVANIZED CABLE	
	Approx. weight per 1000 Ft. in pounds	Breaking strength in Pounds*
1/16	7.5	480
3/32	16	920
1/8	28	1,700
5/32	43	2,600
3/16	62	3,700
1/4	106	6,100
5/16	167	9,200

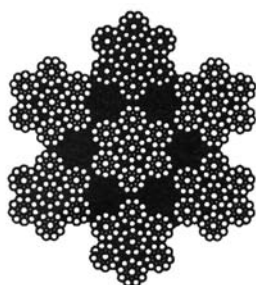


7 x 19

Diameter In Inches	7 X 19 GALVANIZED CABLE	
	Approx. weight per 1000 Ft. in pounds	Breaking strength in Pounds*
3/32	17.4	1,000
1/8	29	2,000
5/32	45	2,800
3/16	65	4,200
7/32	86	5,600
1/4	110	7,000
5/16	173	9,800
3/8	243	14,400
7/16	356	17,600



7 x 7 x 7
CABLE LAID



7 x 7 x 19
CABLE LAID

Diameter In Inches	CABLE-LAID WIRE ROPE, GALVANIZED	
	Approx. weight per Foot in pounds	Breaking strength in Tons*
1/4	0.09	2
3/8	0.21	5.7
1/2	0.37	9.75
5/8	0.58	14.6
3/4	0.88	21.4
7/8	1.19	28.4
1	1.56	36.2

*Listed for comparison only. Actual operating loads may vary, but should never exceed the recommended design factor or 20% of catalog Breaking Strength.

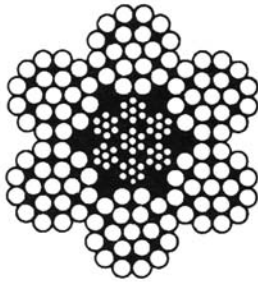
WIRE ROPE

STAINLESS STEEL CABLE

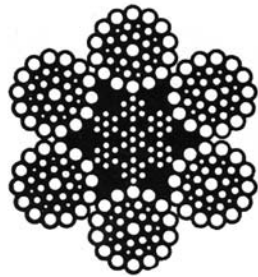
(TYPE 304 6X19, 6X36, 1X19)

According to Federal Specification RR-W-410D, preformed, right regular lay.

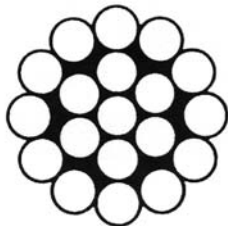
Read important warnings and information on pages 6 - 7 and 12 preceding wire rope section.



6 X 19 IWRC



6 x 36 IWRC
WARRINGTON SEALE



1 X 19

Diameter In Inches	6 X 19 STAINLESS STEEL TYPE 304		6 X 36 TYPE 304
	Approx. weight per Foot in pounds	Breaking strength in Pounds*	Breaking strength in Pounds*
5/16"	0.18	-	8,300
3/8"	0.24	12,000	11,700
7/16"	0.35	16,300	15,800
1/2"	0.46	22,800	20,800
9/16"	0.59	28,500	25,600
5/8"	0.72	35,000	31,400
3/4"	1.04	49,600	44,400
7/8"	1.42	66,500	59,700
1"	1.85	85,400	77,300

Diameter In Inches	1 X 19 STAINLESS STEEL STRAND TYPE 304	
	Approx. weight per 1000 Ft. in pounds	Breaking strength in Pounds*
1/8"	35	2,100
3/16"	77	4,700
1/4"	135	8,200
5/16"	210	12,500
3/8"	300	17,500

*Listed for comparison only. Actual operating loads may vary, but should never exceed the recommended design factor or 20% of catalog Breaking Strength.

WIRE ROPE

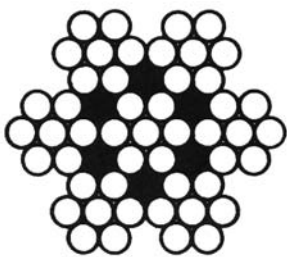
STAINLESS STEEL CABLE

(TYPE 304 7X7, 7X19)

2

According to Federal Specification RR-W-410D, preformed, right regular lay, strand core. Small diameter 7x7 and 7x19 construction wire rope is sometimes referred to as "aircraft cable". **IT IS NOT INTENDED FOR AIRCRAFT USE** but designed for industrial and marine applications.

Read important warnings and information on pages 6 - 7 and 12 preceding wire rope section.



7 X 7

Diameter In Inches	7 X 7 STAINLESS STEEL CABLE	
	Approx. weight per 1000 Ft. in pounds	Breaking strength in Pounds*
1/16	7.5	480
3/32	16	920
1/8	28	1,700
5/32	43	2,400
3/16	62	3,700
1/4	106	6,100



7 X 19

Diameter In Inches	7 X 19 STAINLESS STEEL CABLE	
	Approx. weight per 1000 Ft. in pounds	Breaking strength in Pounds*
3/32	17.4	920
1/8	29	1,760
5/32	45	2,400
3/16	65	3,700
7/32	86	5,000
1/4	110	6,400
5/16	173	9,000
3/8	243	12,000
7/16	356	16,300

*Listed for comparison only. Actual operating loads may vary, but should never exceed the recommended design factor or 20% of catalog Breaking Strength.

WIRE ROPE

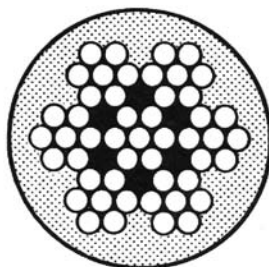
VINYL COATED CABLE - GALVANIZED & STAINLESS STEEL

(TYPE 304 7X7, 7X19)

2

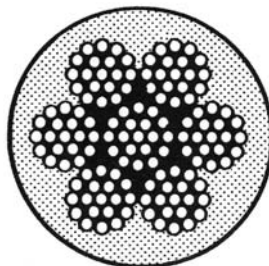
Uncoated cable according to Federal Specification RR-W-410D, preformed, right regular lay, strand core. Small diameter 7x7 and 7x19 construction wire rope is sometimes referred to as "aircraft cable". **IT IS NOT INTENDED FOR AIRCRAFT USE** but designed for industrial and marine applications. When using wire rope clips with plastic coated cable, match clip size to **uncoated** cable diameter (3/16" cable coated to 1/4" takes 3/16" clip). Strip plastic coating off cable where clips will be positioned for full holding power.

Read important warnings and information on pages 6 - 7 and 12 preceding wire rope section.



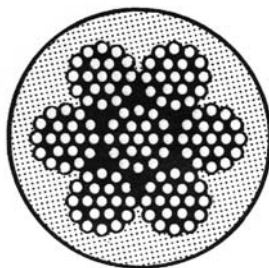
7 X 7

Diameter In Inches	7 X 7 CLEAR VINYL COATED, GALVANIZED		
	Coated to	Approx. weight per 1000 Ft. in pounds	Breaking strength in Pounds*
1/16	5/32	9.3	480
1/16	1/8	11.8	480
3/32	1/8	18.5	920
3/32	3/16	25.8	920
1/8	3/16	35.2	1,700



7 X 19

Diameter In Inches	7 X 19 CLEAR VINYL COATED, GALVANIZED		
	Coated to	Approx. weight per 1000 Ft. in pounds	Breaking strength in Pounds*
1/8	3/16	36.2	2,000
3/16	1/4	77.5	4,200
1/4	5/16	123	7,000
5/16	3/8	197	9,800
3/8	7/16	270	14,400



7 X 19

Diameter In Inches	7 X 7, 7 X 19 CLEAR VINYL COATED, STAINLESS STEEL		
	Coated to	Approx. weight per 1000 Ft. in pounds	Breaking strength in Pounds*
1/16	3/32	12	480
1/16	1/8	13	480
3/32	1/8	20	920
1/8	3/16	36.2	1,700
3/16	1/4	77.5	3,700
1/4	5/16	123	6,100
5/16	3/8	197	9,000
3/8	7/16	270	12,000

*Listed for comparison only. Actual operating loads may vary, but should never exceed the recommended design factor or 20% of catalog Breaking Strength. Also available on special order: nylon and vinyl in various colors.

WIRE ROPE

GALVANIZED

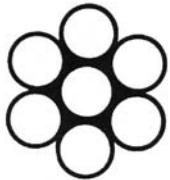
(1 X 7 STRAND, 6 X 3 X 19 SPRING LAY)

2

Strand is not intended for operation over sheaves or drums. It should be used only where very infrequent flexing will occur.

According to ASTM A 475, class "A" coating, left regular lay, Extra High Strength.

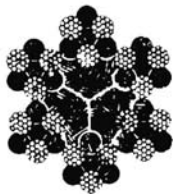
Read important warnings and information on pages 6 - 7 and 12 preceding wire rope section.



1 X 7

Diameter In Inches	1 X 19 GALVANIZED STRAND	
	Approx. weight per 1000 Ft. in pounds	Breaking strength in Pounds*
3/16	73	3,990
1/4	121	6,650
5/16	205	11,200
3/8	273	15,400
1/2	517	26,900

*Listed for comparison only. Design factors vary between 6:1 and 3:1 depending on application.



6 X 3 X 19
SPRING LAY

Diameter In Inches	6 X 3 X 19 GALVANIZED SPRING LAY	
	Approx. weight per foot in pounds	Breaking strength in Tons*
1/2	0.22	4.47
9/16	0.28	5.64
5/8	0.34	6.95
3/4	0.49	9.96
7/8	0.63	13.5
1	0.88	17.5
1 1/8	1.14	22.1
1 1/4	1.36	27.2
1 3/8	1.66	32.8
1 1/2	1.97	38.9
1 5/8	2.28	45.6
1 3/4	2.67	52.7
1 7/8	3.09	60.3
2	3.53	68.5
2 1/4	4.56	86.3
2 1/2	5.44	106
2 3/4	6.65	127

*Listed for comparison only. Actual operating loads may vary, but should never exceed the recommended design factor or 20% of catalog Breaking Strength.

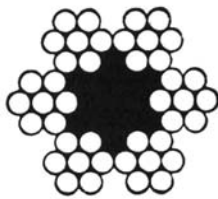
WIRE ROPE

GALVANIZED MARINE ROPES

(6X7, 6X24)

According to Federal Specification RR-W-410D, preformed, right regular lay, Drawn Galvanized.

Read important warnings and information on pages 6 - 7 and 12 preceding wire rope section.



6 X 7

Diameter In Inches	6 X 7 FIBER CORE IPS, GALVANIZED	
	Approx. weight per foot in pounds	Breaking strength in Tons*
1/4	0.094	2.38
5/16	0.15	3.69
3/8	0.21	5.27
7/16	0.29	7.14
1/2	0.38	9.27
9/16	0.48	11.7
5/8	0.59	14.3
3/4	0.84	20.4
7/8	1.15	27.6
1	1.5	35.7
1 1/8	1.9	44.8
1 1/4	2.34	54.9
1 3/8	2.84	65.8
1 1/2	3.38	77.6



6 X 24

Diameter In Inches	6 x 24 w/7 FIBER CORE (EIPS)	
	Approx. weight per foot in pounds	Breaking strength in Tons*
3/8	0.194	4.77
1/2	0.35	8.4
9/16	0.44	10.6
5/8	0.54	13
3/4	0.78	18.6
7/8	1.06	25.2
1	1.38	32.8

*Listed for comparison only, Actual operating loads may vary, but should never exceed the recommended design factor or 20% of catalog Breaking Strength.

WIRE ROPE

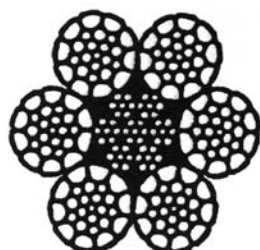
LOGGING ROPES

6 X 19 CLASS(DYPAC 6, SWAGED, CUSHIONED)

According to Federal Specification RR-W-410D, preformed, right regular lay, Drawn Galvanized.

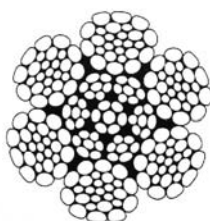
Read important warnings and information on pages 6 - 7 and 12 preceding wire rope section.

2



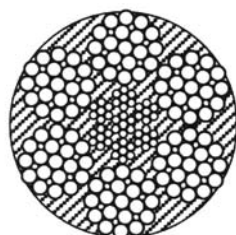
DYPAC 6

Diameter In Inches	DYPAC 6 IWRC	
	Approx. weight per foot in pounds	Breaking strength in Tons*
9/16	0.63	19.2
5/8	0.78	22.7
3/4	1.13	32.3
7/8	1.54	43.8
1	2	56.9
1 1/8	2.54	71.5
1 1/4	3.14	87.9
1 3/8	3.8	106



6 X 26 SWAGED

Diameter In Inches	6X26 SWAGED IWRC	
	Approx. weight per foot in pounds	Breaking strength in Tons*
9/16	0.68	19.3
5/8	0.85	23.9
3/4	1.28	34.5
7/8	1.66	47
1	2.15	61.5
1 1/8	2.8	75
1 1/4	3.46	90
1 3/8	4.2	110



6 X 26 IWRC
PLASTIC FILLED

Diameter In Inches	6X19 CLASS IWRC CUSHIONED EIPS	
	Approx. weight per foot in pounds	Breaking strength in Tons*
3/8	0.27	7.55
7/16	0.37	10.2
1/2	0.49	13.3
9/16	0.61	16.8
5/8	0.76	20.6
3/4	1.09	29.4
7/8	1.49	39.8
1	1.94	51.7
1 1/8	2.46	65
1 1/4	3.03	79.9
1 3/8	3.67	96

*Listed for comparison only. Actual operating loads may vary, but should never exceed the recommended design factor or 20% of catalog Breaking Strength.

WIRE ROPE

Domestic Brands Available

The following brands we represent, have available or have in stock.

Bridon American

Cal Wire Stranding

Carolina Steel & Wire

Loos

Macwhyte

Paulsen

W.R.I LTD

Williamsport WRW

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SECTION 3

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WIRE ROPE SLINGS

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SLINGS

WIRE ROPE

GENERAL INFORMATION



Figure 1.

NOMINAL SLING STRENGTH is based upon the nominal (catalog) rope strength of the wire rope used in the sling and other factors which affect the overall strength of the sling. These other factors include splicing efficiency, number of parts of rope in the sling, type of hitch (e.g. straight pull, choker hitch, basket hitch, etc.), diameter around which the body of the sling is bent (D/d) and the diameter of pin used in the eye of the sling (Figure 1).

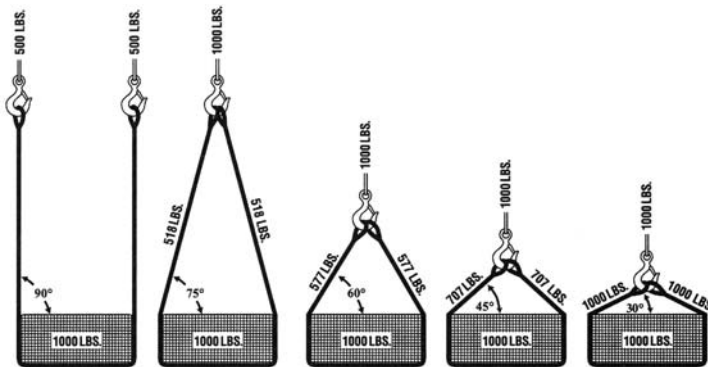


Figure 2.

SLING ANGLE is the angle measured between a horizontal line and the sling leg of the body. This angle is very important and can have a dramatic effect on the rated capacity of the sling. As illustrated above, when this principle applies whether one sling is used to pull at an angle, in a basket hitch or for multi-legged bridle slings. Sling angles of less than 30 degrees are not recommended.

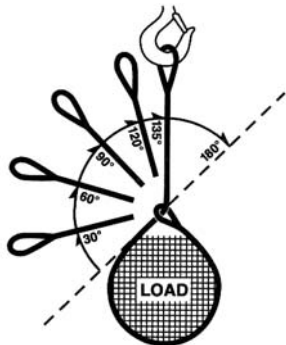


Figure 3.

CHOKER HITCH CAPACITY ADJUSTMENT		RATED
ANGLE OF CHOKER IN DEGREES**	RATED CAPACITY IWRC AND FC ROPE PERCENT	
OVER 120	100	
90-120	87	
60-89	74	
30-59	62	
0-29	49	

**Percent of sling rated capacity in a choker hitch.

CHOKER HITCH configurations affect the rated capacity of a sling. This is because the sling leg or body is passed around the load, through one end attachment or eye. The contact of the sling body with the end attachment or eye causes a loss of sling strength at this point. If a load is hanging free, the normal choke angle is approximately 135 degrees. When the angle is less than 135 degrees an adjustment in the sling rated capacity must be made (Figure 3). As can be seen, the decrease in rated capacity is dramatic. Choker hitches at angles greater than 135 degrees are not recommended since they are unstable. Extreme care should be taken to determine the angle of choke as accurately as possible.

NOMINAL SPLICE EFFICIENCY is the efficiency of the sling splice. Any time wire rope is disturbed such as in splicing an eye, the strength of the rope is reduced. This reduction must be taken into account when determining the nominal sling strength and in calculating the rated the capacity. Each type of splice has a different efficiency, thus the difference in rated capacities for different types of slings. Nominal splice efficiencies have been established after many hundreds of tests over years of testing.

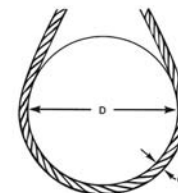


Figure 4.

D/d ratio is the ratio of the diameter around which the sling is bent divided by the body diameter of the sling (Figure 4). This ratio has an effect on the rated capacity of the sling only when the sling is used in a basket hitch. Tests have shown that whenever wire rope is bent around a diameter the strength of the rope is decreased. Figure 5 illustrates the percentage of decrease to be expected.

SLINGS

WIRE ROPE

GENERAL INFORMATION

This D/d ratio is applied to wire rope slings to assure that the strength in the body of the sling is at least equal to the splice efficiency. When D/d ratios smaller than those listed in the rated capacity tables are necessary, the rated capacity of the sling must be decreased.

RATED CAPACITY is the maximum static load a sling is designed to lift. The tables give rated capacities in tons of 2000 pounds. Rated capacities contained in all the tables were calculated by computer. Each value was calculated starting with the nominal component rope strength and working up from there. Due to computer rounding of numeric values, rated capacity values for 2, 3 or 4 leg slings may not be even multiples of single leg values and may differ by a small amount. This represents the state-of-the-art technology and tables found in other publications which differ by this small amount should not be construed to be in error. The difference is generally no more than one unit for any sling diameter.

When a wire rope is bent around any sheave or other circular object, there is a loss of strength due to this bending action. As the D/d ratio becomes smaller this loss of

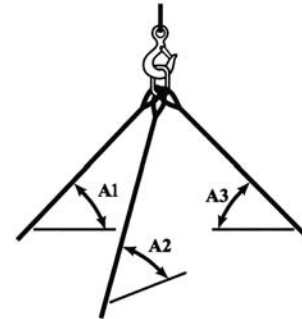


Figure 7.

PROOF LOAD is a specific load applied to a sling or assembly in a non-destructive test to verify the workmanship of the sling. All swaged socket or poured socket assemblies should be proof loaded. The proof load is generally two (2) times the vertical rated capacity for mechanical splice slings. The maximum proof load for hand tucked slings is 1.25 times the vertical rated capacity. Care should be taken to assure that sling eyes are not damaged during the proof load.

EYE DIMENSIONS are generally eight (8) sling body diameters wide by sixteen (16) body diameters long. Whenever possible thimbles are recommended to protect the rope in the sling eye. Eye dimensions for thimbles are contained in table 2. Table 2 contains only dimensions for thimbles used in standard single part slings. Other specialized thimbles are available. Consult your sling manufacturer for details.

PIN DIAMETER should not be any greater than the natural width of the sling eye. For any sized eye and type of sling body, the maximum allowable pin diameter may be calculated as follows.

$$\text{Maximum pin diameter} = (2L + W) \times 0.2$$

Where

L = length of eye

W = width of eye

The minimum pin diameter should never be smaller than the nominal sling diameter.

GRADE & CONSTRUCTION of wire rope for slings is generally accepted to be bright Improved Plow Steel or Extra Improved Plow Steel grade 6x19 or 6x37 classification regular lay. IWRC rope has a higher rated capacity than Fiber Core rope for mechanically spliced slings, but the same rated capacity for hand tucked slings. This is because when making a hand tucked splice, the core (IWRC) of the

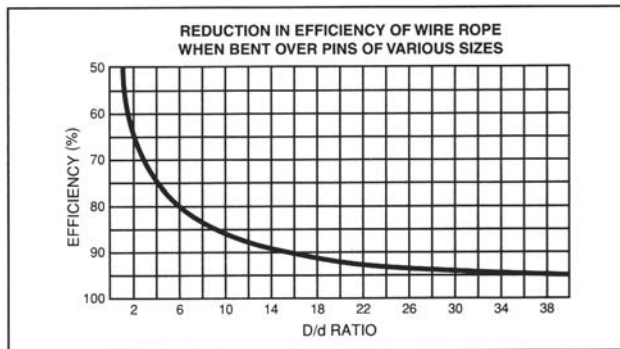


Figure 5.

strength becomes greater and the rope becomes less efficient. This curve, derived from actual test data, relates the efficiency of a rope to different D/d ratios. This curve is based on static loads only and applies to 6X19 and 6X37 class ropes.



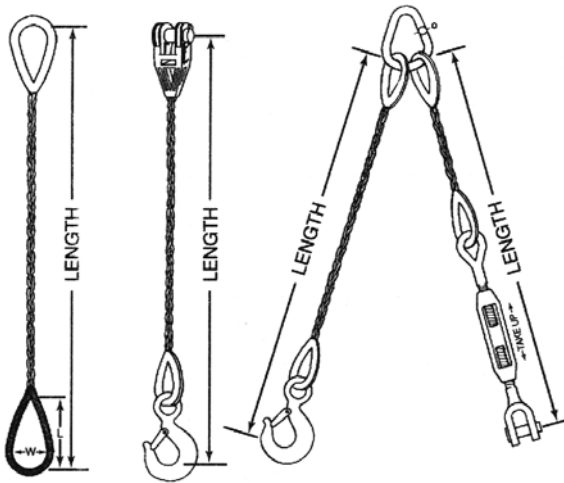
Figure 6.

SLINGS WIRE ROPE

GENERAL INFORMATION

rope is cut in the splice area and doesn't add to the overall strength of the sling. Rated capacities of slings using galvanized rope depend on the method of galvanizing. The sling manufacturer should be consulted regarding rated capacities for these types of slings.

A "forming tuck" is made by prying two adjacent strands apart, inserting a dead end strand into the opening and passing the strand under one, two, or three adjacent strands in the body of the rope. The dead end strand is set or locked tightly.



MINIMUM SLING BODY LENGTH is the minimum length of wire rope between splices, sleeves or fittings. Generally the minimum body length is equal to ten (10) times the sling body diameter. This allows approximately one and one half (1 1/2) rope lays between splices. For multi-part slings the minimum body length between splices is equal to forty (40) times the component rope diameter.

LENGTH TOLERANCE is generally plus or minus two (2) body diameters, or plus or minus 0.5% of the sling length, whichever is greater. The legs of bridle slings, or matched slings are normally held to within one (1) body diameter. Tolerances on poured or swaged socket assemblies are generally much closer. Tolerances should always be specified to the sling manufacturer before the order is placed. This eliminates a lot of frustration and confusion later.

HAND TUCKED SPLICE

A HAND TUCKED splice is made by passing the wire rope around a thimble or forming an eye and splicing the dead end (short end) into the live and (long end) of the rope. Normally, each dead end strand is given one forming tuck and three full tucks around the same strand in the body of the rope. One additional full tuck is made when splicing more pliable wire ropes such as 6X37 classification.

A "full tuck" is made by inserting a dead end strand under and rotating in one full 360 degrees turn around and strand in the body of the wire rope. The tucked strand is set or locked tightly. Each subsequent full turn of the dead end strand around the live end strand constitutes an additional full tuck.

"Setting" or "locking" of a dead end strand is accomplished by pulling the strand end in under considerable force. A marlin spike is inverted in the same opening in the body of the rope ahead of the tucked strand and is rotated about the axis of the rope back to the start of the tuck. Certain end useages may indicate the desirability of special splices such as the Navy Admiralty Splice or logging splice. Splices made by these special methods may also attain the efficiencies used in calculating the rated capacity tables where the rope quality and number of tucks are equivalent to that outlined above. Development of such efficiencies should be confirmed by the sling fabricators making such splices.

Serving or wrapping of wire rope sling splices does not affect the splicing efficiencies nor rated capacities. Such servings are optional, although unserved splices are preferred because they permit visual inspection of the spliced area.

NOMINAL SPLICE EFFICIENCIES are measured in terms of efficiency (where efficiency = actual breaking strength of spliced termination divided by actual breaking strength of the rope). The efficiency will change from splice to splice because of the many variable factors involved in producing the splice. Splice efficiencies given in table 3 were established so that these normal variations are accommodated. The design factor used in establishing the rated capacities further assures that the sling will lift the load even in those rare instances when the splice efficiency falls slightly below the values given in the tables. Rated capacities shown in this manual have met with the most exacting test, that of the test of time and use in over fifty years of actual field experience.

SLINGS

WIRE ROPE

GENERAL INFORMATION

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TABLE 3			
NOMINAL SPLICE EFFICIENCIES HAND TUCKED SPLICE IPS AND EIPS 6X19 AND 6X37 CLASS ROPES			
Rope Dia.	Nominal Eff. Factor	Rope Dia.	Nominal Eff. Factor
1/4	0.9	1 1/4	0.8
5/16	0.89	1 3/8	0.8
3/8	0.88	1 1/2	0.8
7/16	0.87	1 5/8	0.8
1/2	0.86	1 3/4	0.8
9/16	0.85	1 7/8	0.8
5/8	0.84	2	0.8
3/4	0.82	2 1/8	0.8
7/8	0.8	2 1/4	0.8
1	0.8	2 3/8	0.8
1 1/8	0.8	2 1/2	0.8

GENERAL PRECAUTION for hand tucked slings are about the same as for any other type of sling. The use of a swivel on a single leg lifts as well as free hanging loads which may rotate is not recommended. A tag line should always be used to prevent rotation of the sling body. When the sling body of a hand tucked splice is allowed to rotate, the splice could unlay and pull out, thus causing the load to drop.

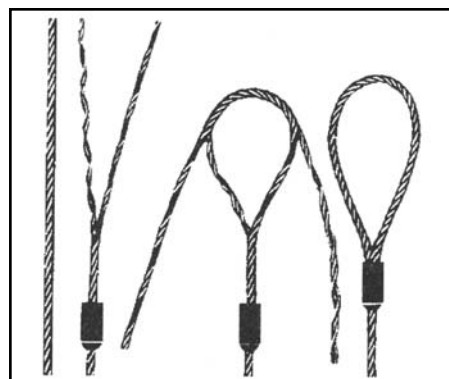
MECHANICAL SPLICE

MECHANICAL SPLICE slings come in two basic types. One being the Returned Loop and the other the Flemish Eye or farmers splice. In either case, the splice is completed by pressing (swaging) one or more metal sleeves over the rope juncture.

The returned loop is fabricated by forming a loop at the end of the rope, sliding one or more metal sleeves over the short end of the loop eye and pressing these sleeves to secure the end of the rope to the sling body. This makes an economical sling and in most cases one that will give satisfactory service. A drawback to this type of sling is that the lifting capacity of the sling depends 100% upon the integrity of the pressed or swaged joint. Should the metal sleeves(s) fail, the entire eye will also fail.

The flemish eye splice is fabricated by opening or unlaying the rope body into two parts, one having three strands and

the other having the remaining three strands and the core. The rope is unlayed far enough back to allow the loop or eye to be formed by looping one part in one direction and the Flemish eye splice other part in the other direction and laying the rope back together. The strands are rolled back around the rope body. A metal sleeve is then slipped over the ends of the splice and pressed (swaged) to secure the ends to the body of the sling. Nominal splice efficiencies expressed in table 4 and in the rated capacity tables are based on this splicing method. Splice efficiencies for other splicing methods should be confirmed by the sling manufacturer.



Flemish eye Splice

SLINGS

WIRE ROPE

GENERAL INFORMATION

3

TABLE 4		
NOMINAL SPLICE EFFICIENCIES MECHANICAL SPLICED SLINGS IMPROVED PLOW STEEL 6X19 AND 6X37 CLASS ROPES		
Diameter	IWRC	FIBER CORES
1/4" through 1"	0.95	0.925
1 1/16" through 2"	0.925	0.9
2 1/16" & larger	0.9	Not Established
EXTRA IMPROVED PLOW STEEL:		
1/4" through 1"	0.95	
1 1/16" through 2"	0.925	
2 1/16" & larger	0.9	
STAINLESS STEEL, 302 & 304 GRADE:		
1/4" through 1"	0.95	
1 1/16" through 2"	0.925	
2 1/16" & larger	0.9	

Notice that the splice efficiency factor plays no role in the calculation of the Choker Hitch rated capacity. This is because as the rope passes through the eye of the sling in a choke, the weakest part of the sling is in the body of the sling at the choke point. Thus the splice being higher in efficiency, has no effect on the rated capacity, because the efficiency factors are not additive.

Rated capacities for single part, choker and basket hitches are calculated exactly the same as for hand tucked slings except for the nominal splice efficiencies. The rated capacities adjustment table 1 for choker hitches also applies for mechanical spliced slings. Minimum D/d ratio for basket hitches is 25. This larger D/d ratio is required because the Nominal Splice Efficiency is higher.

GENERAL PRECAUTIONS

Are no different from other slings except care should be taken not to deform or damage the sleeve.

Stainless Steel slings which have sleeves made of a different grade or type metal than the rope body may experience accelerated deterioration due to an electro chemical reaction between the two metals. This is particularly evident in salt water or brackish conditions.

ZINC OR RESIN POURED SOCKET TYPE TERMINATIONS

While some people may debate whether zinc or resin poured sockets are truly slings, they are generally included in the sling category. This type of termination has traditionally been the method for determining the rope's actual breaking strength. All other types of end terminations have been compared to poured sockets. Their efficiency is therefore established to be 100% for all grades and constructions of rope.

Choker hitches are not used as much with poured sockets as which the other more general types of slings. When such slings are used in a choker hitch, the rated capacity adjustment table 1 applies.

Rope assemblies with poured attachments are generally used as a straight tension member where the rope body does not contact the load and is otherwise kept free from distortion or physical abuse. In such cases the minimum recommended design factor is 3.0. If the assembly is used as a sling then a design factor of 5.0 should be used to calculate the rated capacity. Rated capacities for these slings used in basket hitches are the same as mechanical spliced slings and use the same D/d ratio factors.

SLINGS WIRE ROPE

GENERAL INFORMATION

Length tolerances or poured attachments can be somewhat more stringent than other types of slings. The manufacturer should be contacted and agreement reached before the order is placed. Tolerance as small as plus or minus 1/8" is not out of the ordinary for this type of assembly. Specifications such as type of fitting, pin orientation, whether zinc or resin is to be used and type of application should also be supplied to the manufacturer when ordering these types of assemblies. Those inexperienced in the socketing process should not try to fabricate assemblies without first getting expert training. It is far better to leave fabrication of this type of assembly to the experts. The following socketing methods are general in nature and have withstood the test of time. Slight variations to these methods will produce equal results.

The two procedures, while achieving the same end result, differ significantly. It is highly recommended that all poured sockets whether they be zinc or resin, be proof loaded.

CABLE-LAID WIRE ROPE SLINGS

Cable-laid slings are fabricated from a machine made rope comprised of seven small wire ropes. The cable-laid body is typically 7x7x7, 7x7x19, 7x6x19, 7X6X36 Classification IWRC. This construction makes for a pliable rope and sling. These slings are used where flexibility and resistance to kinking and setting are more important than resistance to abrasion. Since the rope is made up of many smaller wire ropes, the slings can bend around smaller diameters without taking a permanent set or a kink. The many small wires are susceptible to abrasion.

The rated capacity adjustment Table 1 for choker hitches applies to cable-laid slings as well. Note the difference in the efficiency factor for calculating vertical choker hitch rated capacities.

Rated capacity for a basket hitch is based on a D/d ratio of 10, where "d" is the diameter of the cable-laid fabric. Tolerances and minimum sling lengths are also figured using the cable-laid fabric diameter.

BRAIDED MULTI-PART SLINGS

Multi-part braided slings or Multi-parts as they are known, are generally hand fabricated slings which are "braided" from 2,3,4 and up to as many as 48 pieces or parts of rope. Generally 4,6,8&9 parts are the more common. They can be either flat or round and offer the ultimate in flexibility and versatility. These are truly the heavy weights of the lifting industry. This book covers only the round

type slings. They snug up tightly to the load in a choker hitch and resist kinking and setting. Loads in excess of 4000 tons have been lifted with multi-part slings.

Nominal Splice Efficiency for multi-part slings is 0.70 for component rope 3/32" through 2" diameters. For larger component rope slings, consult the sling manufacturer for splice efficiencies.

Because of the multi-rope component construction, multi-part slings react differently than standard wire rope slings in a choker hitch therefore the nominal splice efficiency is present in the equation. The adjustment Table 1 applies to multi-part slings also.

Rated capacity for a basket hitch is based on a minimum D/d ratio of 25, where "d"=component rope diameter.

Length tolerances for component ropes of 3/8" diameter and smaller are plus or minus 10 component rope diameters, or plus or minus 1.5% of the sling length whichever is greater. The legs of matched slings shall be within 5 component rope diameters of each other. For component rope diameters 7/16" and larger, the tolerance is plus or minus 6 component rope diameters, or plus or minus 1% of the sling length whichever is the greater. Legs of matches slings shall be within 3 component rope diameters of each other. Minimum Sling Length between loops, sockets of sleeves is recommended to be 40 times the component rope diameter of the braided body.

GROMMETS

Grommets are a unique type of sling. They form a complete circle and automatically double the number of lifting legs. Several types are available, such as strand laid hand tucked and cable laid mechanical. Grommets work well in basket and choker hitches and general applications will find them used in this manner. Another unique advantage to grommets is that the load contact points may be rotated or moved around the sling to even out the wear points. The only area that should not come into contact with the load is the splice area. The sling manufacturer will usually mark the area of hand tucked grommets with paint to help the user more easily identify the splice area.

Tolerances for grommets are generally plus or minus 1% of the circumferential length or 6 body diameters whichever is the greater.

A minimum circumference of 96 body diameters is recommended. This measurement is normally an inside circum-

SLINGS

WIRE ROPE

GENERAL INFORMATION

TABLE 6			
NOMINAL SPLICE EFFICIENCIES STRAND LAID TUCKED GROMMETS			
Rope Dia.	Nominal Eff. Factor	Rope Dia.	Nominal Eff. Factor
1/4	0.78	1 3/8	0.745
5/16	0.78	1 1/2	0.735
3/8	0.78	1 5/8	0.73
7/16	0.78	1 3/4	0.725
1/2	0.78	1 7/8	0.72
9/16	0.78	2	0.715
5/8	0.78	2 1/8	0.71
3/4	0.78	2 1/4	0.705
7/8	0.78	2 3/8	0.7
1	0.775	2 1/2	0.695
1 1/8	0.765	2 3/4	0.69
1 1/4	0.755	3	0.685

3

ferential measurement. The requirement for a minimum circumference of 96 times the body diameter for grommets and endless slings was based on the requirement to have at least three free rope lays on either side of the tuck of a hand spliced endless grommet prior to being bent around a hook or pin five times the body diameter. To eliminate the possibility of confusion, this requirement was adopted for mechanically spliced endless grommets as well. consult the sling manufacturer for smaller circumferences.

The same general precautions apply to grommets as apply to all other types of slings. However, it should be noted that since a grommet is a continuous circle, the noted D/d ratio becomes a very important consideration. The D/d ratio must be applied to the lifting pins as well as the load. normally the lifting pins will be the smallest diameter in the system other than the diameter of the grommet. No loads should be handled on the D/d smaller than the 5 times the sling body diameter. If they must, consult the sling manufacturer. Rated capacities covered in the section are based on a D/d ratio of 5.

STRAND LAID HAND TUCKED GROMMET

A Strand Laid Hand Tucked Grommet is made from one continuous length of strand. No sleeves are used to make the joint. This results in a very smooth circular sling.

Because of the sling body construction, grommet slings react differently than standard wire rope slings in a choker

type hitch therefore the presence of the nominal splice efficiency factor in the equation. Rated capacity adjustment table 1 applies.

STRAND LAID MECHANICAL SPLICE GROMMET

Strand Laid Mechanical Splice grommets are made from one continuous length of wire rope joined by pressing or swaging one or more sleeves over the rope juncture. This type of grommet is not as smooth as the hand tucked, but offers economy and ease of manufacture. An advantage is that the swaged sleeves give clear indication of the splice area.

CABLE LAID HAND TUCKED GROMMET

Cable Laid Hand Tucked Grommets are fabricated in the same manner as strand laid hand tucked grommets except one continuous length of wire rope is used. This makes for a flexible smooth sling. the body diameters are somewhat odd sized because the grommet body is built up from a standard diameter component rope.

CABLE LAID MECHANICAL SPLICE

(See Rated Capacity Tables Section)

Cable Laid Mechanical Splice Grommets are fabricated from one continuous length of cable laid wire rope fabric with the ends joined by one or more mechanical sleeves.

SLINGS WIRE ROPE

GENERAL INFORMATION

TABLE 7

**NOMINAL SPLICE EFFICIENCIES
CABLE LAID HAND TUCKED GROMMETS**

Rope Dia.	Nominal Eff. Factor	Rope Dia.	Nominal Eff. Factor
3/8	0.78	1 11/16	0.75
9/16	0.78	1 7/8	0.745
5/8	0.78	2 1/4	0.735
3/4	0.775	2 5/8	0.725
15/16	0.77	3	0.715
1 1/8	0.765	3 3/8	0.705
1 1/2	0.755		

SLINGS

WIRE ROPE

WIRE ROPE SLING INSPECTION AND REMOVAL CRITERIA

BASIC INSPECTION CRITERIA FOR WIRE ROPE SLINGS

The goal of a sling inspection is to evaluate remaining strength in a sling which has been used previously to determine if it is suitable for continued use.

The specific inspection intervals and procedures are required by the Occupation Safety and Health Act (OSHA) and by ANSI B30.9 Regulations, and the responsibility for performance of inspections is placed squarely upon the sling user by Federal Legislation.

As a starting point, the same work practices which apply to all "working" wire ropes apply to wire rope which has been fabricated into a sling. Therefore, a good working knowledge of wire rope design and construction will be not only useful but essential in conducting a wire rope sling inspection.

Because wire rope is a rather complex machine, no precise rules can be given to determine exactly when a wire rope sling should be replaced. There are many variables, and all must be considered.

OSHA specifies that a wire rope sling shall be removed from service immediately if ANY of the following conditions are present:

1. Broken Wires: For sing-part slings, 10 randomly distributed broken wires in one rope lay, or five broken wires in one strand of one rope lay. For multi-part slings these same criteria apply to each of the component ropes. For this inspection, a broken wire shall only be counted once; that is, each break should have two ends.
2. Metal Loss: Wear or scraping of one third the original diameter of outside individual wires. This is quite difficult to determine on slings an experience should be gained by the inspector by taking apart old slings and actually measuring wire diameters.
3. Distortion:Kinking, crushing, birdcaging or other damage which distorts the rope structure. The main thing to look for is wires or strands that are pushed out of their original positions in the rope. Slight bends in a rope where wires or strands are still relatively in their original positions would not be considered serious damage. But good judgment is indicated.
4. heat Damage: Any metallic discoloration or loss of

internal lubricant caused by exposure to heat.

5. Bad End Attachments: Cracked, bent or broken end fittings caused by abuse, wear or accident.
6. Bent hooks: No more than 15 percent over the normal throat openings, measured at the narrowest point, or twisting more than 10 degrees is permissible.
7. Metal Corrosion: Severe Corrosion of the rope or end attachments which has caused pitting or binding of wires should be cause for replacing the sling. Light rusting usually does not affect strength of a sling, however.

In addition to these seven conditions specified by OSHA, the following are also important:

8. Pulled Eye Splices: Any evidence that they eye splices have slipped, tucked strands have moved, or pressed sleeves show serious damage may have sufficient cause to reject a sling.
9. Unbalance: A very common cause of damage is the kink which results from pulling through a loop while using a sling, thus causing wires and strands to be deformed and pushed out of their original position. This unbalances the sling, reducing it's strength.

Disposition of Retired Slings: the best inspection program available is of no value if slings which are worn out an have been retired are not disposed of properly. when it is determined by the inspector that a sling is worn out or damaged beyond use, it should be tagged immediately DO NOT USE.

this sling should then be destroyed as soon as possible by cutting the eye an fittings from the rope with a torch. This will help assure that an employee will not mistakenly use a sling which has been retired from service.

It should also be obvious that a good inspection program will not only provide safer lifting conditions, but will also extend the life of the slings and thereby reduce lifting costs.

FEDERAL WORK RULES REQUIRE SPECIFIC INSPECTION INTERVALS

Government regulations are also specific on WHEN to inspect.

SLINGS WIRE ROPE

WIRE ROPE SLING INSPECTION AND REMOVAL CRITERIA

3

Both ANSI Standard B30.9 and OSHA require that wire rope slings receive two types of inspections: a DAILY visual inspection, and additional inspections where service conditions warrant.

Daily visual inspections are intended to detect serious damage or deterioration which would weaken the sling. This inspection is usually performed by the person using the sling in a day-to-day job. He should look for obvious things, such as broken wires, kinks, crushing, broken attachments, severe corrosion, etc.

Additional inspections should be performed at regular intervals based on, (1) frequency of sling use, (2) severity of service conditions, (3) nature of lifts, and (4) prior experience based on service life of slings used in similar circumstances.

It is required that these additional inspections be carried out by a designated person who must have good knowledge of wire rope. An accurate WRITTEN and dated record of all conditions observed should be kept. Any deterioration of the sling which could result in appreciable loss of original strength should be carefully noted, and determination made on whether further use would constitute a safety hazard.

HOW TO INSPECT

Precisely how to make proper, adequate inspections is not detailed by OSHA- yet it is in the HOW of inspection that the big difference between a good inspection and something less become apparent.

(1) First, it is necessary that all parts of the sling are readily visible. The sling should be laid out so every part is accessible.

(2) Next, the sling should be sufficiently cleaned of dirt and grease so wires and fittings are easily seen. This can usually be accomplished with wire brush or rags.

(3) The sling should then be given a thorough, systematic examination throughout its entire length, paying particular attention to sections showing the most wear.

(4) Special attention should also be paid to fittings and end attachments and areas of the sling adjacent to these fittings.

(5) When the worst section of a sling has been located, this area should then be carefully checked against the OSHA criteria.

(6) Label or identify slings that are inspected.

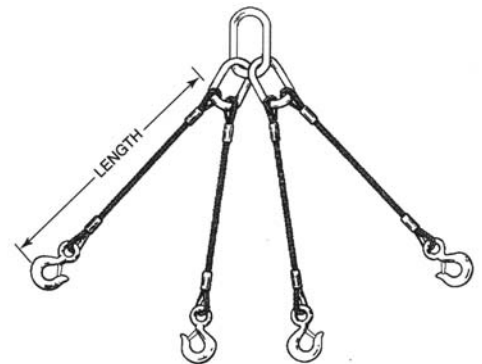
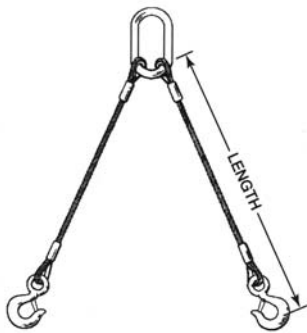
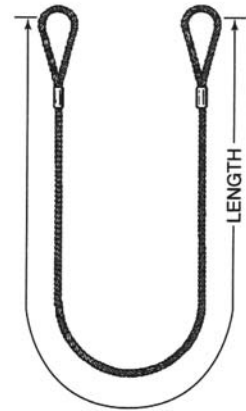
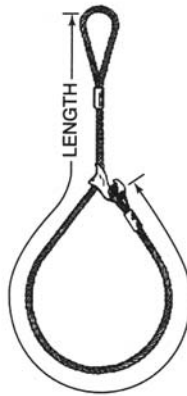
(7) Keep records of inspections that include dates and corresponding conditions of slings.

(8) Dispose immediately of slings that are rejected.

A knowledgeable inspector will also insist on proper storage for out of use slings- to make his job easier if not for the good of the slings. Inspections are much easier- and probably more thorough- when slings are available for inspection in an orderly arrangement, out of the weather, away from heat and dirt.

SLINGS WIRE ROPE

WORKING LOAD LIMITS
MECHANICAL SPLICE



The information provided on Working Load Limits in the Slings section were obtained from the Wire Rope Technical Board out of the Wire Rope Sling Users Manual.

SLINGS WIRE ROPE




WORKING LOAD LIMITS MECHANICAL SPLICE IWRC

3

1-PART SLINGS VERTICAL, CHOKER OR VERTICAL BASKET

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

ROPE DIA. (IN)	VERTICAL	CHOKER	BASKET
			
	EIPS	EIPS	EIPS
1/4	0.65	0.48	1.3
5/16	1.0	0.74	2.0
3/8	1.4	1.1	2.9
7/16	1.9	1.4	3.9
1/2	2.5	1.9	5.1
9/16	3.2	2.4	6.4
5/8	3.9	2.9	7.8
3/4	5.6	4.1	11
7/8	7.6	5.6	15
1	9.8	7.2	20
1 1/8	12	9.1	24
1 1/4	15	11	30
1 3/8	18	13	36
1 1/2	21	16	42
1 5/8	24	18	49
1 3/4	28	21	57
1 7/8	32	24	64
2	37	28	73
2 1/8	40	31	80
2 1/4	44	35	89
2 3/8	49	38	99
2 1/2	54	42	109
2 5/8	60	46	119
2 3/4	65	51	130
2 7/8	71	55	141
3	77	60	153
3 1/8	82	64	165
3 1/4	89	69	177
3 3/8	95	74	190
3 1/2	102	79	203

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25.

RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.

RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.

HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.


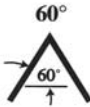
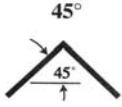
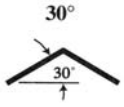
SLINGS WIRE ROPE

WORKING LOAD LIMITS MECHANICAL SPLICE IWRC

1-PART SLINGS 2-LEG BRIDLE

RATED CAPACITY IN TONS OF 2,000 LBS.
RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

3

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	EIPS	EIPS	EIPS	EIPS
1/4	1.3	1.1	0.91	0.65
5/16	2.0	1.7	1.4	1.0
3/8	2.9	2.5	2.0	1.4
7/16	3.9	3.4	2.7	1.9
1/2	5.1	4.4	3.6	2.5
9/16	6.4	5.5	4.5	3.2
5/8	7.8	6.8	5.5	3.9
3/4	11	9.7	7.9	5.6
7/8	15	13	11	7.6
1	20	17	14	9.8
1 1/8	24	21	17	12
1 1/4	30	26	21	15
1 3/8	36	31	25	18
1 1/2	42	37	30	21
1 5/8	49	42	35	24
1 3/4	57	49	40	28
1 7/8	64	56	46	32
2	73	63	52	37
2 1/8	80	69	56	40
2 1/4	89	77	63	44
2 3/8	99	85	70	49
2 1/2	109	94	77	54
2 5/8	119	103	84	60
2 3/4	130	113	92	65
2 7/8	141	122	100	71
3	153	133	108	77
3 1/8	165	143	117	82
3 1/4	177	153	125	89
3 3/8	190	165	135	95
3 1/2	203	176	144	102

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25.
RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.
RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.
HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.

SLINGS WIRE ROPE


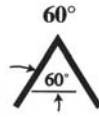
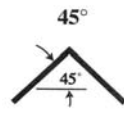
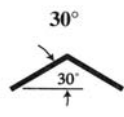
WORKING LOAD LIMITS MECHANICAL SPLICE IWRC

3

1-PART SLINGS 3-LEG BRIDLE

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	EIPS	EIPS	EIPS	EIPS
1/4	1.9	1.7	1.4	0.97
5/16	3.0	2.6	2.1	1.5
3/8	4.3	3.7	3.0	2.2
7/16	5.8	5.0	4.1	2.9
1/2	7.6	6.6	5.4	3.8
9/16	9.6	8.3	6.8	4.8
5/8	12	10	8.3	5.9
3/4	17	15	12	8.4
7/8	23	20	16	11
1	29	26	21	15
1 1/8	36	31	26	18
1 1/4	44	38	31	22
1 3/8	53	46	38	27
1 1/2	63	55	45	32
1 5/8	73	63	52	37
1 3/4	85	74	60	42
1 7/8	97	84	68	48
2	110	95	78	55
2 1/8	119	103	84	60
2 1/4	133	116	94	67
2 3/8	148	128	105	74
2 1/2	163	141	115	82
2 5/8	179	155	126	89
2 3/4	195	169	138	97
2 7/8	212	183	150	106
3	230	199	162	115
3 1/8	247	214	175	124
3 1/4	266	230	188	133
3 3/8	286	247	202	143
3 1/2	305	264	215	152

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25.

RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.

RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.

HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.


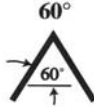
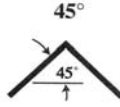
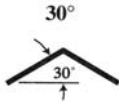
SLINGS WIRE ROPE

WORKING LOAD LIMITS MECHANICAL SPLICE IWRC

1-PART SLINGS 4-LEG BRIDLE

RATED CAPACITY IN TONS OF 2,000 LBS.
RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

3

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	EIPS	EIPS	EIPS	EIPS
1/4	2.6	2.2	1.8	1.30
5/16	4.0	3.5	2.8	2.0
3/8	5.7	5.0	4.1	2.9
7/16	7.8	6.7	5.5	3.9
1/2	10	8.8	7.1	5.1
9/16	13	11	9.0	6.4
5/8	16	14	11	7.8
3/4	22	19	16	11
7/8	30	26	21	15
1	39	34	28	20
1 1/8	48	42	34	24
1 1/4	59	51	42	30
1 3/8	71	62	50	36
1 1/2	84	73	60	42
1 5/8	98	85	69	49
1 3/4	113	98	80	57
1 7/8	129	112	91	64
2	147	127	104	73
2 1/8	159	138	113	80
2 1/4	178	154	126	89
2 3/8	197	171	139	99
2 1/2	217	188	154	109
2 5/8	238	206	169	119
2 3/4	260	225	184	130
2 7/8	282	244	200	141
3	306	265	216	153
3 1/8	330	286	233	165
3 1/4	354	307	250	177
3 3/8	381	330	269	190
3 1/2	406	352	287	203

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25.
RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.
RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.
HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.

SLINGS WIRE ROPE



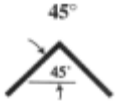
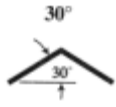
WORKING LOAD LIMITS MECHANICAL SPLICE IWRC

3

1-PART SLINGS 2-LEG CHOKER

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	EIPS	EIPS	EIPS	EIPS
1/4	0.95	0.82	0.67	0.48
5/16	1.5	1.3	1.0	0.74
3/8	2.1	1.8	1.5	1.1
7/16	2.9	2.5	2.0	1.4
1/2	3.7	3.2	2.6	1.9
9/16	4.7	4.1	3.3	2.4
5/8	5.8	5.0	4.1	2.9
3/4	8.2	7.1	5.8	4.1
7/8	11	9.7	7.9	5.6
1	14	13	10	7.2
1 1/8	18	16	13	9.1
1 1/4	22	19	16	11
1 3/8	27	23	19	13
1 1/2	32	28	23	16
1 5/8	37	32	26	18
1 3/4	43	37	30	21
1 7/8	49	42	34	24
2	55	48	39	28
2 1/8	62	54	44	31
2 1/4	69	60	49	35
2 3/8	77	66	54	38
2 1/2	85	73	60	42
2 5/8	93	80	66	46
2 3/4	101	88	71	51
2 7/8	110	95	78	55
3	119	103	84	60
3 1/8	128	111	91	64
3 1/4	138	119	97	69
3 3/8	148	128	105	74
3 1/2	158	137	112	79

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25.

RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.

RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.

HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.

SLINGS WIRE ROPE




**WORKING LOAD LIMITS
MECHANICAL SPLICE
FIBER CORE**

**1-PART SLINGS
VERTICAL, CHOKER OR VERTICAL BASKET**

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

3

ROPE DIA. (IN)	VERTICAL	CHOKER	BASKET
			
	EIPS	EIPS	EIPS
1/4	0.56	0.42	1.1
5/16	0.87	0.66	1.7
3/8	1.2	0.94	2.5
7/16	1.7	1.3	3.4
1/2	2.2	1.6	4.4
9/16	2.7	2.1	5.5
5/8	3.4	2.6	6.8
3/4	4.8	3.7	9.7
7/8	6.6	5.0	13
1	8.3	6.4	17
1 1/8	10	8.1	21
1 1/4	13	9.9	26
1 3/8	15	12	31
1 1/2	18	14	36
1 5/8	21	16	42
1 3/4	25	19	49
1 7/8	28	22	56
2	32	25	63

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25.
 RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.
 RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.
 HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.





SLINGS WIRE ROPE

WORKING LOAD LIMITS MECHANICAL SPLICE FIBER CORE

1-PART SLINGS 2-LEG BRIDLE

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	EIPS	EIPS	EIPS	EIPS
1/4	1.1	0.97	0.79	0.56
5/16	1.7	1.5	1.2	0.87
3/8	2.5	2.2	1.8	1.2
7/16	3.4	2.9	2.4	1.7
1/2	4.49	3.8	3.1	2.2
9/16	5.5	4.8	3.9	2.7
5/8	6.8	5.9	4.8	3.4
3/4	9.7	8.4	6.8	4.8
7/8	13	11	9.3	6.6
1	17	14	12	8.3
1 1/8	21	18	15	10
1 1/4	26	22	18	13
1 3/8	31	27	22	15
1 1/2	36	32	26	18
1 5/8	42	37	30	21
1 3/4	49	43	35	25
1 7/8	56	48	39	28
2	63	55	45	32

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25.

RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.

RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.

HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.


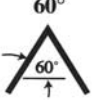
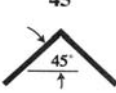
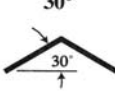
SLINGS WIRE ROPE

WORKING LOAD LIMITS MECHANICAL SPLICE FIBER CORE

1-PART SLINGS 3-LEG BRIDLE

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	EIPS	EIPS	EIPS	EIPS
1/4	1.7	1.40	1.2	0.84
5/16	2.6	2.3	1.8	1.3
3/8	3.7	3.2	2.6	1.9
7/16	5.0	4.4	3.6	2.5
1/2	6.5	5.7	4.6	3.3
9/16	8.2	7.1	5.8	4.1
5/8	10	8.8	7.2	5.1
3/4	15	13	10	7.3
7/8	20	17	14	9.8
1	25	22	18	12
1 1/8	31	27	22	16
1 1/4	38	33	27	19
1 3/8	46	40	33	23
1 1/2	55	47	39	27
1 5/8	64	55	45	32
1 3/4	74	64	52	37
1 7/8	84	73	59	42
2	95	82	67	48

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25.
 RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.
 RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.
 HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.


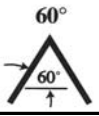
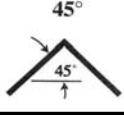
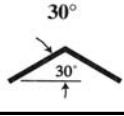
SLINGS WIRE ROPE

WORKING LOAD LIMITS MECHANICAL SPLICE FIBER CORE

1-PART SLINGS 4-LEG BRIDLE

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	EIPS	EIPS	EIPS	EIPS
1/4	2.2	1.9	1.6	1.1
5/16	3.5	3.0	2.5	1.7
3/8	5.0	4.3	3.5	2.5
7/16	6.7	5.8	4.8	3.4
1/2	8.7	7.5	6.2	4.4
9/16	11	9.5	7.8	5.5
5/8	14	12	9.6	6.8
3/4	19	17	14	9.7
7/8	26	23	19	13
1	33	29	23	17
1 1/8	42	36	29	21
1 1/4	51	44	36	26
1 3/8	62	53	44	31
1 1/2	73	63	52	36
1 5/8	85	73	60	42
1 3/4	98	85	69	49
1 7/8	112	97	79	56
2	127	110	90	63

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25.

RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.

RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.

HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.


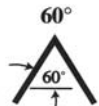
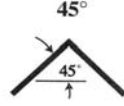
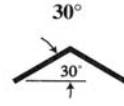
SLINGS WIRE ROPE

WORKING LOAD LIMITS
MECHANICAL SPLICE
FIBER CORE

1-PART SLINGS
2-LEG CHOKER

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	EIPS	EIPS	EIPS	EIPS
1/4	0.84	0.73	0.60	0.42
5/16	1.3	1.1	0.93	0.66
3/8	1.9	1.6	1.3	0.94
7/16	2.5	2.2	1.8	1.3
1/2	3.3	2.9	2.3	1.6
9/16	4.2	3.6	2.9	2.1
5/8	5.1	4.5	3.6	2.6
3/4	7.3	6.3	5.2	3.7
7/8	9.9	8.6	7.0	5.0
1	13	11	9.1	6.4
1 1/8	16	14	11	8.1
1 1/4	20	17	14	9.9
1 3/8	24	21	17	12
1 1/2	28	25	20	14
1 5/8	33	29	23	16
1 3/4	38	33	27	19
1 7/8	43	38	31	22
2	49	43	35	25

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25.
 RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.
 RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.
 HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.

SLINGS WIRE ROPE




**WORKING LOAD LIMITS
STAINLESS STEEL TYPE 302 & 304
MECHANICAL SPLICE
IWRC**

3

**1-PART SLINGS
VERTICAL, CHOKER OR VERTICAL BASKET**

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

ROPE DIA. (IN)	VERTICAL 	CHOKER 	BASKET 
	302 & 304	302 & 304	302 & 304
1/4	0.61	0.45	1.2
5/16	0.86	0.63	1.7
3/8	1.1	0.84	2.3
7/16	1.5	1.1	3.1
1/2	2.2	1.6	4.3
9/16	2.7	2.0	5.4
5/8	3.3	2.5	6.7
3/4	4.7	3.5	9.4
7/8	6.3	4.7	13
1	8.1	6.0	16
1 1/8	10	7.4	20
1 1/4	12	9.1	25
1 3/8	14	11	29
1 1/2	17	13	34
1 5/8	20	15	40
1 3/4	22	17	45
1 7/8	25	19	51
2	28	21	57
2 1/8	32	23	63
2 1/4	35	25	69

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25.

RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.

RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.

HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.


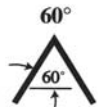
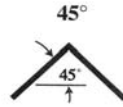
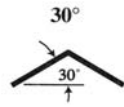
SLINGS WIRE ROPE

WORKING LOAD LIMITS STAINLESS STEEL TYPE 302 & 304 MECHANICAL SPLICE IWRC

1-PART SLINGS 2-LEG BRIDLE

RATED CAPACITY IN TONS OF 2,000 LBS.
RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

3

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	302 & 304	302 & 403	302 & 304	302 & 304
1/4	1.2	1.1	0.86	0.61
5/16	1.7	1.5	1.2	0.86
3/8	2.3	2.0	1.6	1.1
7/16	3.1	2.7	2.2	1.5
1/2	4.3	3.8	3.1	2.2
9/16	5.4	4.7	3.8	2.7
5/8	6.7	5.8	4.7	3.3
3/4	9.4	8.2	6.7	4.7
7/8	13	11	8.9	6.3
1	16	14	11	8
1 1/8	20	17	14	10
1 1/4	24	21	17	12
1 3/8	28	24	20	14
1 1/2	33	29	24	17
1 5/8	38	33	27	19
1 3/4	44	38	31	22
1 7/8	49	43	35	25
2	55	48	39	28
2 1/8	60	52	42	30
2 1/4	66	57	46	33

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25.
RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.
RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.
HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.


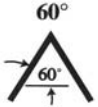
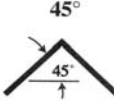
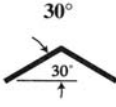
SLINGS WIRE ROPE

WORKING LOAD LIMITS STAINLESS STEEL TYPE 302 & 304 MECHANICAL SPLICE IWRC

1-PART SLINGS 3-LEG BRIDLE

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	302 & 304	302 & 304	302 & 304	302 & 304
1/4	1.8	1.6	1.3	0.91
5/16	2.6	2.2	1.8	1.3
3/8	3.4	3.0	2.4	1.7
7/16	4.6	4.0	3.3	2.3
1/2	6.5	5.6	4.6	3.2
9/16	8.2	7.1	5.8	4.1
5/8	10	8.6	7.1	5.0
3/4	14	12	10	7.1
7/8	19	16	13	9.5
1	24	21	17	12
1 1/8	30	26	21	15
1 1/4	36	31	25	18
1 3/8	42	36	30	21
1 1/2	50	43	35	25
1 5/8	58	50	41	29
1 3/4	65	57	46	33
1 7/8	74	64	52	37
2	83	72	58	41
2 1/8	90	78	63	45
2 1/4	98	85	69	49

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25.

RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.

RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.

HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.



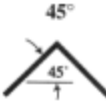
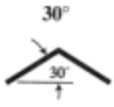
SLINGS WIRE ROPE

WORKING LOAD LIMITS STAINLESS STEEL TYPE 302 & 304 MECHANICAL SPLICE IWRC

1-PART SLINGS 4-LEG BRIDLE

RATED CAPACITY IN TONS OF 2,000 LBS.
RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

3

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	302 & 304	302 & 304	302 & 304	302 & 304
1/4	2.4	2.1	1.7	1.2
5/16	3.4	3.0	2.4	1.7
3/8	4.6	3.9	3.2	2.3
7/16	6.2	5.4	4.4	3.1
1/2	8.7	7.5	6.1	4.3
9/16	11	9.4	7.7	5.4
5/8	13	12	9.4	6.7
3/4	19	16	13	9.4
7/8	25	22	18	13
1	32	28	23	16
1 1/8	39	34	28	20
1 1/4	48	41	34	24
1 3/8	56	49	40	28
1 1/2	67	58	47	33
1 5/8	77	67	54	38
1 3/4	87	76	62	44
1 7/8	98	85	70	49
2	110	95	78	55
2 1/8	120	104	85	60
2 1/4	131	113	93	66

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25.
RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.
RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.
HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.



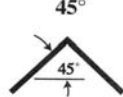
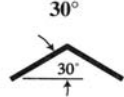
SLINGS WIRE ROPE

**WORKING LOAD LIMITS
STAINLESS STEEL TYPE 302 & 304
MECHANICAL SPLICE
IWRC**

**1-PART SLINGS
2-LEG CHOKER**

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	302 & 304	302 & 304	302 & 304	302 & 304
1/4	0.90	0.78	0.63	0.45
5/16	1.3	1.1	0.89	0.63
3/8	1.7	1.5	1.2	0.84
7/16	2.3	2.0	1.6	1.1
1/2	3.2	2.8	2.3	1.6
9/16	4.0	3.5	2.8	2.0
5/8	4.9	4.2	3.5	2.5
3/4	6.9	6.0	4.9	3.5
7/8	9.3	8.1	6.6	4.7
1	12	10	8.5	6.0
1 1/8	15	13	11	7.4
1 1/4	18	16	13	9.1
1 3/8	21	18	15	11
1 1/2	25	22	18	13
1 5/8	29	25	21	15
1 3/4	33	29	23	17
1 7/8	37	32	26	19
2	42	36	30	21
2 1/8	46	40	33	23
2 1/4	51	44	36	25

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25.

RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.

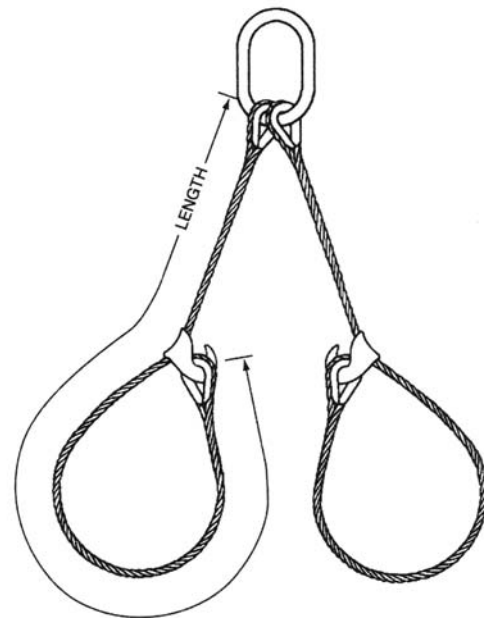
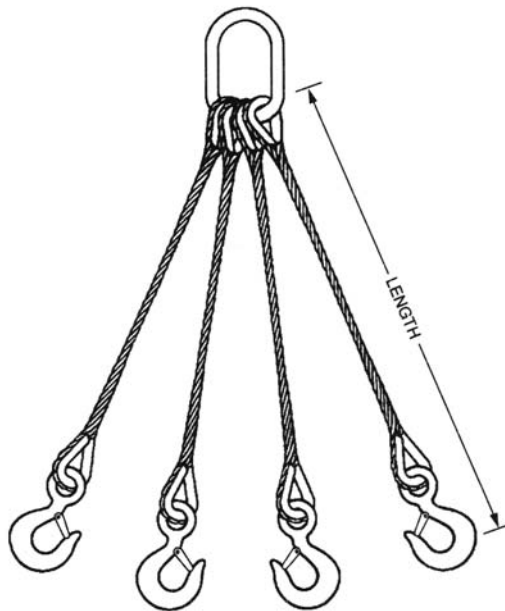
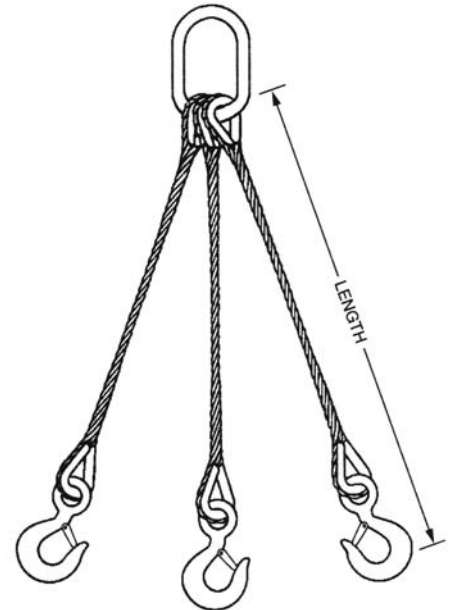
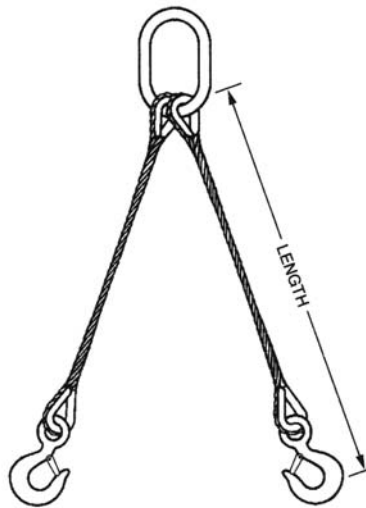
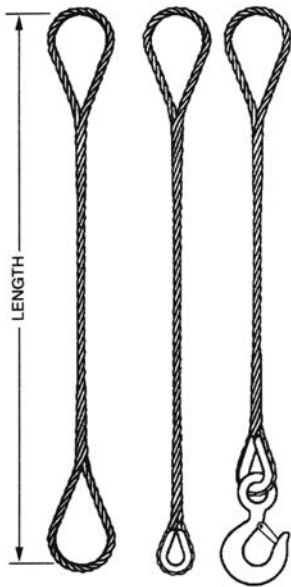
RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.

HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.

SLINGS WIRE ROPE

WORKING LOAD LIMITS
HAND TUCKED SPLICE
FIBER CORE & IWRC

3



SLINGS WIRE ROPE




**WORKING LOAD LIMITS
HAND TUCKED SPLICE
FIBER CORE & IWRC**

3

1-PART SLINGS VERTICAL, CHOKER OR VERTICAL BASKET

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

ROPE DIA. (IN)	VERTICAL	CHOKER	BASKET
			
	EIPS	EIPS	EIPS
1/4	0.54	0.42	1.1
5/16	0.83	0.66	1.7
3/8	1.2	0.94	2.4
7/16	1.6	1.3	3.2
1/2	2.0	1.6	4.0
9/16	2.5	2.1	5.0
5/8	3.1	2.6	6.2
3/4	4.3	3.7	8.6
7/8	5.7	5.0	11
1	7.4	6.4	15
1 1/8	9.3	8.1	19
1 1/4	11	9.9	23
1 3/8	14	12	27
1 1/2	16	14	32
1 5/8	19	16	38
1 3/4	22	19	44
1 7/8	25	22	50
2	28	25	56
2 1/8	32	28	63
2 1/4	35	31	70
2 3/8	39	34	78
2 1/2	43	38	86

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 15.

RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAN NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.

RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.

HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.





SLINGS WIRE ROPE

**WORKING LOAD LIMITS
HAND TUCKED SPLICE
FIBER CORE & IWRC**

1-PART SLINGS 2-LEG BRIDLE

RATED CAPACITY IN TONS OF 2,000 LBS.
RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

3

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	EIPS	EIPS	EIPS	EIPS
1/4	1.1	0.94	0.77	0.54
5/16	1.7	1.4	1.2	0.83
3/8	2.4	2.0	1.7	1.2
7/16	3.2	2.7	2.2	1.6
1/2	4.0	3.5	2.9	2.0
9/16	5.0	4.4	3.6	2.5
5/8	6.2	5.3	4.4	3.1
3/4	8.6	7.4	6.1	4.3
7/8	11	9.8	8.0	5.7
1	15	13	10	7.4
1 1/8	19	16	13	9.3
1 1/4	23	20	16	11
1 3/8	27	24	19	14
1 1/2	32	28	23	16
1 5/8	38	33	27	19
1 3/4	44	38	31	22
1 7/8	50	43	35	25
2	56	49	40	28
2 1/8	63	55	45	32
2 1/4	70	61	50	35
2 3/8	78	68	55	39
2 1/2	86	74	61	43

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 15.
 RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.
 RATED CAACITIES BASED ON DESIGN FACTOR OF 5.
 HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.

SLINGS WIRE ROPE


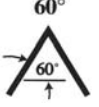
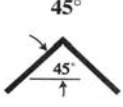
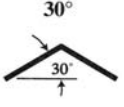
**WORKING LOAD LIMITS
HAND TUCKED SPLICE
FIBER CORE & IWRC**

3

1-PART SLINGS 3-LEG BRIDLE

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	EIPS	EIPS	EIPS	EIPS
1/4	1.6	1.4	1.2	0.81
5/16	2.5	2.2	1.8	1.3
3/8	3.5	3.1	2.5	1.8
7/16	4.7	4.1	3.4	2.4
1/2	6.1	5.3	4.3	3.0
9/16	7.6	6.6	5.4	3.8
5/8	9.3	8.0	6.5	4.6
3/4	13	11	9.1	6.4
7/8	17	15	12	8.5
1	22	19	16	11
1 1/8	28	24	20	14
1 1/4	34	30	24	17
1 3/8	41	36	29	21
1 1/2	49	42	34	24
1 5/8	56	49	40	28
1 3/4	65	57	46	33
1 7/8	74	64	53	37
2	84	73	60	42
2 1/8	95	82	67	47
2 1/4	106	91	75	53
2 3/8	117	102	83	59
2 1/2	129	112	91	64

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 15.

RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAN NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.

RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.




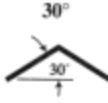
HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.

SLINGS WIRE ROPE

**WORKING LOAD LIMITS
HAND TUCKED SPLICE
FIBER CORE & IWRC**

1-PART SLINGS 4-LEG BRIDLE

RATED CAPACITY IN TONS OF 2,000 LBS.
RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	EIPS	EIPS	EIPS	EIPS
1/4	2.2	1.9	1.5	1.1
5/16	3.3	2.9	2.4	1.7
3/8	4.7	4.1	3.3	2.4
7/16	6.3	5.5	4.5	3.2
1/2	8.1	7.0	5.7	4.0
9/16	10	8.7	7.1	5.0
5/8	12	11	8.7	6.2
3/4	17	15	12	8.6
7/8	23	20	16	11
1	29	25	21	15
1 1/8	37	32	26	19
1 1/4	45	39	32	23
1 3/8	55	47	39	27
1 1/2	65	56	46	32
1 5/8	75	65	53	38
1 3/4	87	76	62	44
1 7/8	99	86	70	50
2	113	98	80	56
2 1/8	126	109	89	63
2 1/4	141	122	100	70
2 3/8	156	135	111	78
2 1/2	172	149	121	86

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 15.
RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAN NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.
RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.
HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.

SLINGS WIRE ROPE


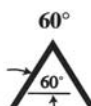
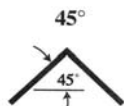
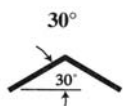
**WORKING LOAD LIMITS
HAND TUCKED SPLICE
FIBER CORE & IWRC**

3

1-PART SLINGS 2-LEG CHOKER

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	EIPS	EIPS	EIPS	EIPS
1/4	0.84	0.73	0.60	0.42
5/16	1.3	1.1	0.93	0.66
3/8	1.9	1.6	1.3	0.94
7/16	2.5	2.2	1.8	1.3
1/2	3.3	2.9	2.3	1.6
9/16	4.2	3.6	2.9	2.1
5/8	5.1	4.5	3.6	2.6
3/4	7.3	6.3	5.2	3.7
7/8	9.9	8.6	7.0	5.0
1	13	11	9.1	6.4
1 1/8	16	14	11	8.1
1 1/4	20	17	14	9.9
1 3/8	24	21	17	12
1 1/2	28	25	20	14
1 5/8	33	29	23	16
1 3/4	38	33	27	19
1 7/8	43	38	31	22
2	49	43	35	25
2 1/8	55	48	39	28
2 1/4	62	53	44	31
2 3/8	68	59	48	34
2 1/2	75	65	53	38

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 15.

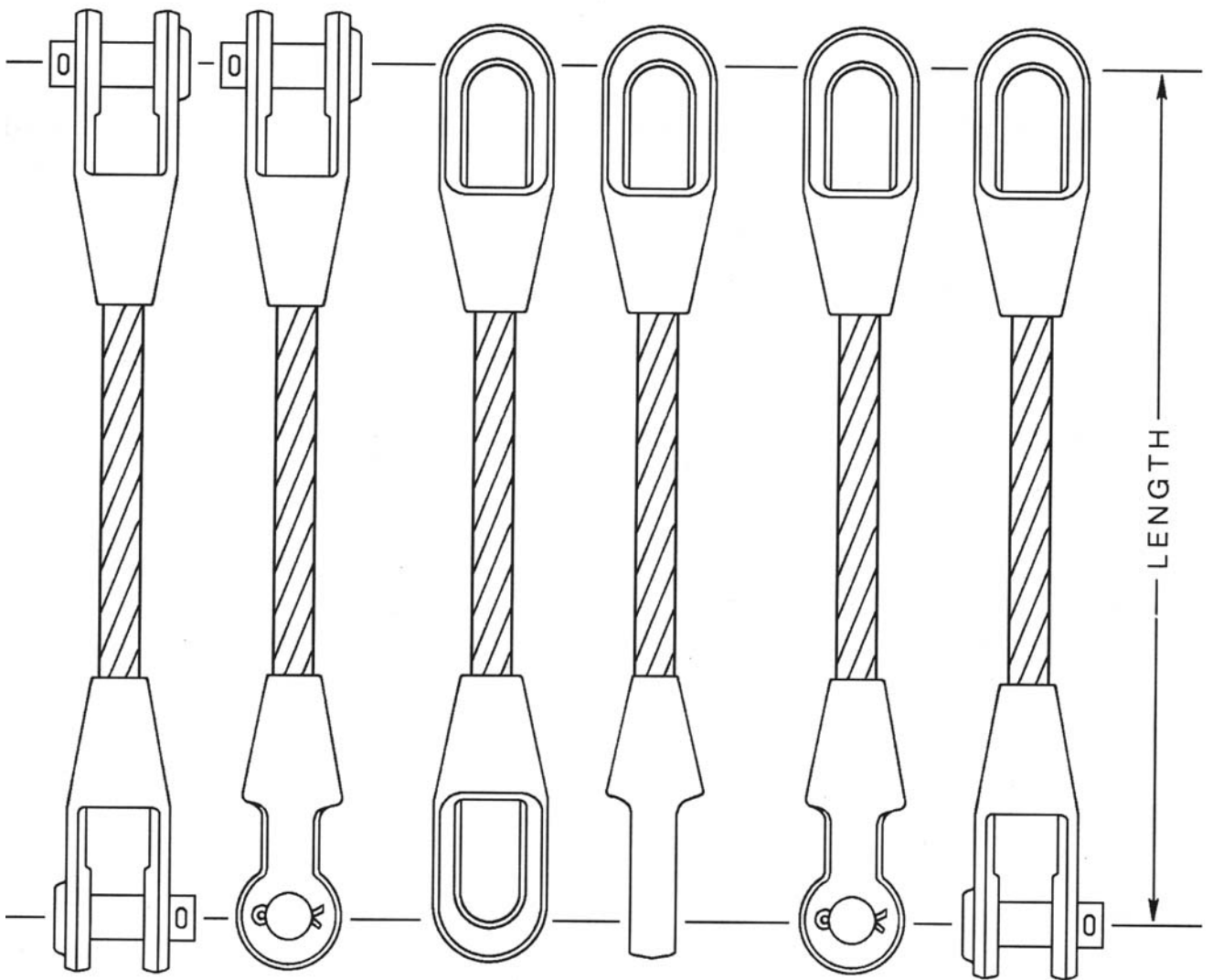
RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAN NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.

RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.

HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.

SLINGS WIRE ROPE

WORKING LOAD LIMITS
POURED SOCKETS
FIBER CORE & IWRC



SLINGS

WIRE ROPE





**WORKING LOAD LIMITS
POURED SOCKETS
FIBER CORE & IWRC**

1-PART SLINGS

VERTICAL, CHOKER OR VERTICAL BASKET

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

ROPE DIA. (IN)	Fiber Core		IWRC	
	VERTICAL 	VERT. BASKET 	VERTICAL 	VERT. BASKET 
	EIPS	EIPS	EIPS	EIPS
1/4	0.60	1.1	0.68	1.3
5/16	0.94	1.7	1.1	1.9
3/8	1.3	2.5	1.5	2.8
7/16	1.8	3.4	2.0	3.8
1/2	2.4	4.4	2.7	4.9
9/16	3.0	5.5	3.4	6.2
5/8	3.7	6.8	4.1	7.6
3/4	5.2	9.7	5.9	11
7/8	7.1	13	8.0	15
1	9.2	17	10	19
1 1/8	12	21	13	24
1 1/4	14	26	16	30
1 3/8	17	32	19	36
1 1/2	20	37	23	42
1 5/8	24	44	26	49
1 3/4	27	50	31	57
1 7/8	31	57	35	64
2	35	65	40	73
2 1/8	39	73	44	82
2 1/4	44	81	49	91
2 3/8	49	90	55	101
2 1/2	54	99	60	112
2 5/8			66	122
2 3/4			72	134
2 7/8			78	145
3			85	157
3 1/8			92	169
3 1/4			98	182
3 3/8			106	196
3 1/2			113	209

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25.

RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.

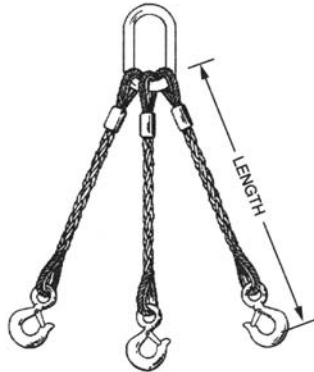
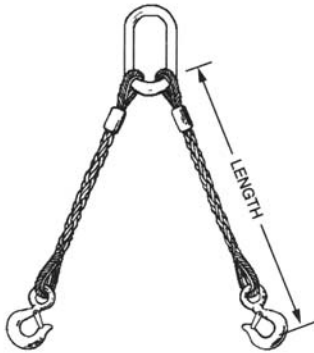
RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.

HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.

SLINGS WIRE ROPE

8 - PART BRAID
IWRC & FIBER CORE

3



SLINGS WIRE ROPE




**WORKING LOAD LIMITS
HAND TUCKED SPLICE
IWRC**

8-PART SLING

VERTICAL, CHOKER OR VERTICAL BASKET

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

ROPE DIA. (IN)	VERTICAL	CHOKER	BASKET
			
	EIPS	EIPS	EIPS
3/16	2.2	1.9	4.3
1/4	3.8	3.3	7.6
5/16	5.9	5.2	12
3/8	8.5	7.4	17
7/16	11	10	23
1/2	15	13	30
9/16	19	16	38
5/8	23	20	46
3/4	33	29	66
7/8	45	39	89
1	58	51	116
1 1/8	73	64	146
1 1/4	89	78	179
1 3/8	108	94	215
1 1/2	128	112	255
1 5/8	148	129	296
1 3/4	171	150	343
1 7/8	195	171	390
2	222	194	444

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25 TIMES THE COMPONENT ROPE DIAMETER.
 RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.
 RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.
 HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.


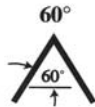
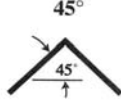
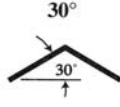
SLINGS WIRE ROPE

**WORKING LOAD LIMITS
HAND TUCKED SPLICE
IWRC**

**8-PART SLING
2-LEG BRIDLE**

RATED CAPACITY IN TONS OF 2,000 LBS.
RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

3

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	EIPS	EIPS	EIPS	EIPS
3/16	4.3	3.7	3.0	2.2
1/4	7.6	6.6	5.4	3.8
5/16	12	10	8.3	5.9
3/8	17	15	12	8.5
7/16	23	20	16	11
1/2	30	26	21	15
9/16	38	33	27	19
5/8	46	40	33	23
3/4	66	57	47	33
7/8	89	77	63	45
1	116	100	82	58
1 1/8	146	126	103	73
1 1/4	179	155	127	89
1 3/8	215	186	152	108
1 1/2	255	221	181	128
1 5/8	296	256	209	148
1 3/4	343	297	242	171
1 7/8	390	338	276	195
2	444	384	314	222

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25 TIMES THE COMPONENT ROPE DIAMETER.
 RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.
 RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.
 HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.


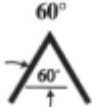

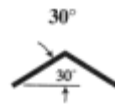
SLINGS WIRE ROPE

WORKING LOAD LIMITS HAND TUCKED SPLICE IWRC

8-PART SLING 3-LEG BRIDLE

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	EIPS	EIPS	EIPS	EIPS
3/16	6.5	5.6	4.6	3.2
1/4	11	9.9	8.1	5.7
5/16	18	15	13	8.9
3/8	25	22	18	13
7/16	34	30	24	17
1/2	45	39	32	22
9/16	56	49	40	28
5/8	69	60	49	35
3/4	99	86	70	49
7/8	134	116	95	67
1	174	150	123	87
1 1/8	218	189	154	109
1 1/4	268	232	190	134
1 3/8	323	279	228	161
1 1/2	383	332	271	192
1 5/8	444	384	314	222
1 3/4	514	445	364	257
1 7/8	585	506	413	292
2	665	576	470	333



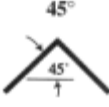
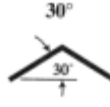
RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25 TIMES THE COMPONENT ROPE DIAMETER.
 RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.
 RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.
 HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.

SLINGS WIRE ROPE

WORKING LOAD LIMITS
HAND TUCKED SPLICE
IWRC

8-PART SLING
4-LEG BRIDLE

RATED CAPACITY IN TONS OF 2,000 LBS.
RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	EIPS	EIPS	EIPS	EIPS
3/16	8.6	7.5	6.1	4.3
1/4	15	13	11	7.6
5/16	24	20	17	12
3/8	34	29	24	17
7/16	46	40	32	23
1/2	60	52	42	30
9/16	75	65	53	38
5/8	92	80	65	46
3/4	132	114	93	66
7/8	178	154	126	89
1	232	201	164	116
1 1/8	291	252	206	146
1 1/4	358	310	253	179
1 3/8	430	372	304	215
1 1/2	511	442	361	255
1 5/8	591	512	418	296
1 3/4	685	594	485	343
1 7/8	780	675	551	390
2	887	768	627	444

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25 TIMES THE COMPONENT ROPE DIAMETER.
 RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.
 RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.
 HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.


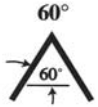
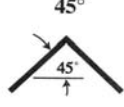
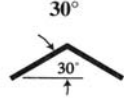
SLINGS WIRE ROPE

WORKING LOAD LIMITS HAND TUCKED SPLICE IWRC

8-PART SLING 2-LEG CHOKER

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	EIPS	EIPS	EIPS	EIPS
3/16	3.8	3.3	2.7	1.9
1/4	6.7	5.8	4.7	3.3
5/16	10	8.9	7.3	5.2
3/8	15	13	10	7.4
7/16	20	17	14	10
1/2	26	23	18	13
9/16	33	29	23	16
5/8	40	35	29	20
3/4	58	50	41	29
7/8	78	68	55	39
1	101	88	72	51
1 1/8	127	110	90	64
1 1/4	157	136	111	78
1 3/8	188	163	133	94
1 1/2	223	194	158	112
1 5/8	259	224	183	129
1 3/4	300	260	212	150
1 7/8	341	295	241	171
2	388	336	274	194


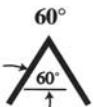
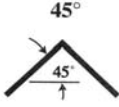
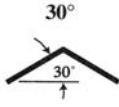
RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25 TIMES THE COMPONENT ROPE DIAMETER.
 RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.
 RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.
 HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.

SLINGS WIRE ROPE

**WORKING LOAD LIMITS
HAND TUCKED SPLICE
IWRC**

8-PART SLING 3-LEG CHOKER

RATED CAPACITY IN TONS OF 2,000 LBS.
RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	EIPS	EIPS	EIPS	EIPS
3/16	5.7	4.9	4.0	2.8
1/4	10	8.7	7.1	5.0
5/16	15	13	11	7.7
3/8	22	19	16	11
7/16	30	26	21	15
1/2	39	34	28	20
9/16	49	43	35	25
5/8	61	52	43	30
3/4	86	75	61	43
7/8	117	101	83	59
1	152	132	107	76
1 1/8	191	165	135	96
1 1/4	235	203	166	117
1 3/8	282	244	200	141
1 1/2	335	290	237	168
1 5/8	388	336	274	194
1 3/4	450	390	318	225
1 7/8	512	443	362	256
2	582	504	412	291

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25 TIMES THE COMPONENT ROPE DIAMETER.
RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.
RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.
HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.

SLINGS WIRE ROPE


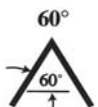
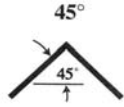
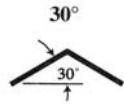
**WORKING LOAD LIMITS
HAND TUCKED SPLICE
IWRC**

**8-PART SLING
4-LEG CHOKER**

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

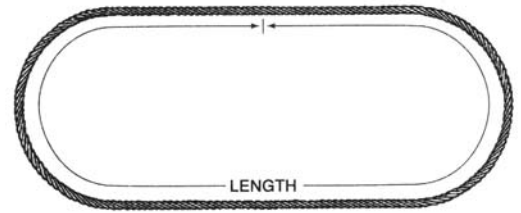
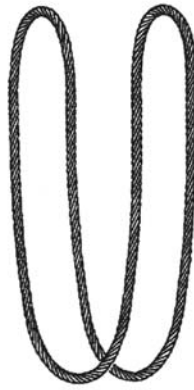
3

ROPE DIA. (IN)	VERTICAL	60 DEGREES	45 DEGREES	30 DEGREES
				
	EIPS	EIPS	EIPS	EIPS
3/16	7.5	6.5	5.3	3.8
1/4	13	12	9.4	6.7
5/16	21	18	15	10
3/8	30	26	21	15
7/16	40	35	28	20
1/2	52	45	37	26
9/16	66	57	47	33
5/8	81	70	57	40
3/4	115	100	81	58
7/8	156	135	110	78
1	203	176	143	101
1 1/8	255	221	180	127
1 1/4	313	271	221	157
1 3/8	376	326	266	188
1 1/2	447	387	316	223
1 5/8	517	448	366	259
1 3/4	600	519	424	300
1 7/8	682	591	482	341
2	776	672	549	388

RATED CAPACITIES BASKET HITCH BASED ON D/d RATIO OF 25 TIMES THE COMPONENT ROPE DIAMETER.
 RATED CAPACITIES BASED ON PIN DIAMETER NO LARGER THAT NATURAL EYE WIDTH OR LESS THAN THE NOMINAL SLING DIAMETER.
 RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.
 HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.

SLINGS WIRE ROPE

WORKING LOAD LIMITS
HAND TUCKED SPLICE
FIBER CORE
GROMMETS



SLINGS WIRE ROPE




**WORKING LOAD LIMITS
HAND TUCKED SPLICE
FIBER CORE**

STRAND LAID GROMMETS VERTICAL, CHOKER OR VERTICAL BASKET

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

3

ROPE DIA. (IN)	VERTICAL	CHOKER	BASKET
			
	EIPS	EIPS	EIPS
1/4	0.94	0.66	1.9
5/16	1.5	1.0	2.9
3/8	2.1	1.5	4.2
7/16	2.8	2.0	5.7
1/2	3.7	2.6	7.3
9/16	4.6	3.2	9.3
5/8	5.7	4.0	11
3/4	8.2	5.7	16
7/8	11	7.7	22
1	14	10	29
1 1/8	18	12	35
1 1/4	21	15	43
1 3/8	25	18	51
1 1/2	30	21	60
1 5/8	34	24	69
1 3/4	40	28	79
1 7/8	45	31	89
2	50	35	101
2 1/8	56	39	112
2 1/4	62	43	124
2 3/8	68	48	137
2 1/2	75	52	149
2 5/8	82	57	164
2 3/4	89	62	177
2 7/8	95	67	191
3	104	73	207

RATED CAPACITIES BASKET HITCH AND VERTICAL LIFT BASED ON D/d RATIO OF 5 WHERE "d" = BODY DIAMETER OF THE FINISHED GROMMET.

RATED CAPACITIES BASED ON PIN DIAMETER NO SMALLER THAN 5 TIMES THE BODY DIAMETER.

RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.

HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.

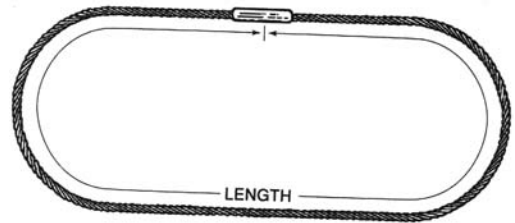
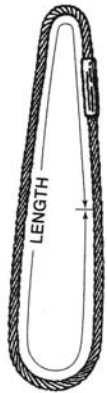
SLINGS WIRE ROPE

WORKING LOAD LIMITS

MECHANICAL SPLICE

IWRC

GROMMETS



SLINGS WIRE ROPE




WORKING LOAD LIMITS MECHANICAL SPLICE IWRC

STRAND MECHANICAL SPLICE VERTICAL, CHOKER OR VERTICAL BASKET

RATED CAPACITY IN TONS OF 2,000 LBS.

RATED CAPACITIES SHOWN APPLY ONLY TO 6X19 AND 6X37 CLASSIFICATION WIRE ROPE.

3

ROPE DIA. (IN)	VERTICAL	CHOKER	BASKET
			
	EIPS	EIPS	EIPS
1/4	1.1	0.74	2.1
5/16	1.6	1.2	3.3
3/8	2.4	1.6	4.7
7/16	3.2	2.2	6.4
1/2	4.1	2.9	8.3
9/16	5.2	3.7	10
5/8	6.4	4.5	13
3/4	9.2	6.4	18
7/8	12	8.7	25
1	16	11	32
1 1/8	20	14	41
1 1/4	25	17	50
1 3/8	30	21	60
1 1/2	36	25	71
1 5/8	41	29	82
1 3/4	48	33	95
1 7/8	54	38	109
2	62	43	124
2 1/8	69	48	138
2 1/4	77	54	154
2 3/8	85	60	171
2 1/2	94	66	188
2 5/8	103	72	207
2 3/4	113	79	225
2 7/8	122	86	245
3	133	93	265

RATED CAPACITIES BASKET HITCH AND VERTICAL LIFT BASED ON D/d RATIO OF 5 WHERE "d" = BODY DIAMETER OF THE FINISHED GROMMET.

RATED CAPACITIES BASED ON PIN DIAMETER NO SMALLER THAN 5 TIMES THE BODY DIAMETER.

RATED CAPACITIES BASED ON DESIGN FACTOR OF 5.

HORIZONTAL SLING ANGLES LESS THAN 30 DEGREES SHALL NOT BE USED.

SECTION 4

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RIGGING HARDWARE

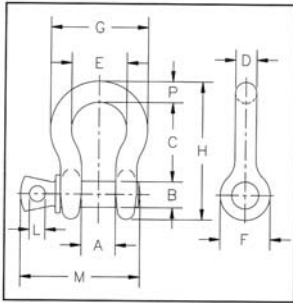
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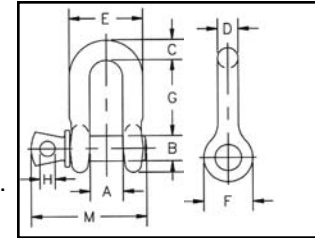
RIGGING HARDWARE

SHACKLES

FORGED



Working Load Limit permanently shown on every shackle.
 Capacities 1/3 to 55 tons.
 Hot Dip Galvanized.
 Meet the performance requirements of Federal Specification RR-C-271D TYPE IVA, Grade A, Class 2.



SCREW PIN ANCHOR SHACKLE

Nominal Size (in.)	Working Load Limit (tons)*	Dimensions											
		A	B	C	D	E	F	G	H	L	M	N	P
3/16	1/3	0.38	0.25	0.88	0.19	0.60	0.56	0.98	1.47	0.16	1.12	-	0.19
1/4	1/2	0.47	0.31	1.13	0.25	0.78	0.61	1.28	1.84	0.19	1.38	1.34	0.25
5/16	3/4	0.53	0.38	1.22	0.31	0.84	0.75	1.47	2.09	0.22	1.66	1.59	0.31
3/8	1	0.66	0.44	1.44	0.38	1.03	0.91	1.78	2.49	0.25	2.03	1.86	0.38
7/16	1 1/2	0.75	0.50	1.69	0.44	1.16	1.06	2.03	2.91	0.31	2.38	2.13	0.44
1/2	2	0.81	0.63	1.88	0.50	1.31	1.19	2.31	3.28	0.38	2.69	2.38	0.50
5/8	3 1/4	1.06	0.75	2.38	0.63	1.69	1.50	2.94	4.19	0.44	3.34	2.91	0.69
3/4	4 3/4	1.25	0.88	2.81	0.75	2.00	1.81	3.50	4.97	0.50	3.97	3.44	0.81
7/8	6 1/2	1.44	1.00	3.31	0.88	2.28	2.09	4.03	5.83	0.50	4.50	3.81	0.97
1	8 1/2	1.69	1.13	3.75	1.00	2.69	2.38	4.69	6.56	0.56	5.07	4.53	1.06
1 1/8	9 1/2	1.81	1.25	4.25	1.16	2.91	2.69	5.16	7.47	0.63	5.59	5.13	1.25
1 1/4	12	2.03	1.38	4.69	1.29	3.25	3.00	5.75	8.25	0.69	6.16	5.50	1.38
1 3/8	13 1/2	2.25	1.50	5.25	1.42	3.63	3.31	6.38	9.16	0.75	6.84	6.13	1.50
1 1/2	17	2.38	1.63	5.75	1.54	3.88	3.63	6.88	10.00	0.81	7.35	6.50	1.62
1 3/4	25	2.88	2.00	7.00	1.84	5.00	4.19	8.86	12.34	1.00	9.08	7.75	2.25
2	35	3.25	2.25	7.75	2.08	5.75	4.81	9.97	13.68	1.22	10.34	8.75	2.40
2 1/2	55	4.13	2.75	10.50	2.71	7.25	5.69	12.87	17.84	1.38	13.00	-	3.13

SCREW PIN CHAIN SHACKLE

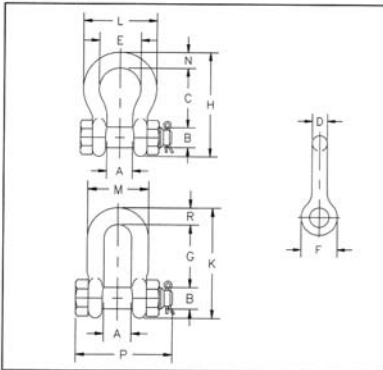
Nominal Size (in.)	Working Load Limit (tons)*	Dimensions										
		A	B	C	D	E	F	G	K	L	M	N
1/4	1/2	0.47	0.31	0.25	0.25	0.97	0.61	0.88	1.59	0.19	1.38	1.34
5/16	3/4	0.53	0.38	0.31	0.31	1.16	0.75	1.03	1.91	0.22	1.66	1.59
3/8	1	0.66	0.44	0.38	0.38	1.41	0.91	1.50	2.30	0.25	2.03	1.86
7/16	1 1/2	0.75	0.50	0.44	0.44	1.63	1.06	1.44	2.66	0.31	2.38	2.13
1/2	2	0.81	0.63	0.50	0.50	1.81	1.19	1.63	3.03	0.38	2.69	2.38
5/8	3 1/4	1.06	0.75	0.62	0.63	2.31	1.50	2.00	3.75	0.44	3.34	2.91
3/4	4 3/4	1.25	0.88	0.81	0.75	2.75	1.81	2.38	4.53	0.50	3.97	3.44
7/8	6 1/2	1.44	1.00	0.97	0.88	3.19	2.09	2.81	5.33	0.50	4.50	3.81
1	8 1/2	1.69	1.13	1.00	1.00	3.69	2.38	3.19	5.94	0.56	5.07	4.53
1 1/8	9 1/2	1.81	1.25	1.25	1.13	4.06	2.69	3.58	6.78	0.63	5.59	5.13
1 1/4	12	2.03	1.38	1.38	1.25	4.53	3.00	3.94	7.50	0.69	6.16	5.50
1 3/8	13 1/2	2.25	1.50	1.50	1.38	5.00	3.31	4.38	8.28	0.75	6.84	6.13
1 1/2	17	2.38	1.63	1.62	1.50	5.38	3.62	4.81	9.06	0.81	7.35	6.50
1 3/4	25	2.88	2.00	2.12	1.75	6.38	4.19	5.75	10.97	1.00	9.08	7.75
2	35	3.25	2.25	2.00	2.00	7.25	4.81	6.75	12.28	1.22	10.34	8.75
2 1/2	55	4.13	2.75	2.62	2.62	9.38	5.69	8.00	14.84	1.38	13.00	-

NOTE: Maximum Proof load is 2.2 times the Working Load Limit. Minimum Ultimate Strength is 6 times the Working Load Limit.

RIGGING HARDWARE

SHACKLES

FORGED



Working Load Limit permanently shown on every shackle.

Capacities 1/3 to 150 tons.

Hot Dip Galvanized.

Anchor Shackles meet the performance requirements of Federal Specification RR-C-271D TYPE IVA, Grade A, Class 3.

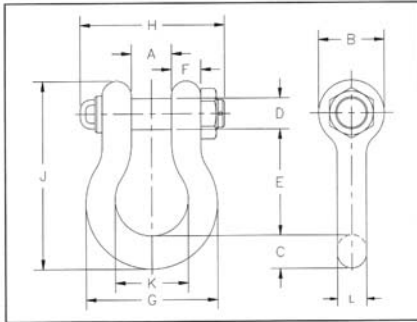
Chain Shackles meet the performance requirements of Federal Specification RR-271D TYPE IVB, Grade A, Class 3.

BOLT TYPE ANCHOR AND CHAIN SHACKLE

Nominal Size (in.)	Working Load Limit (tons)*	Dimensions													
		A	B	C	D	E	F	G	H	K	L	M	N	P	R
3/16	1/3	0.38	0.25	0.88	0.19	0.60	0.56	-	1.47	-	0.98	-	0.19	1.29	-
1/4	1/2	0.47	0.31	1.13	0.25	0.78	0.61	0.75	1.84	1.59	1.28	0.97	0.25	1.56	0.25
5/16	3/4	0.53	0.38	1.22	0.31	0.84	0.75	1.00	2.09	1.91	1.47	1.16	0.31	1.82	0.31
3/8	1	0.66	0.44	1.44	0.38	1.03	0.91	1.22	2.49	2.30	1.78	1.41	0.38	2.17	0.38
7/16	1 1/2	0.75	0.50	1.69	0.44	1.16	1.06	1.42	2.91	2.66	2.03	1.62	0.44	2.51	0.44
1/2	2	0.81	0.63	1.88	0.50	1.31	1.19	1.63	3.28	3.03	2.31	1.81	0.50	2.80	0.50
5/8	3 1/4	1.06	0.75	2.38	0.63	1.69	1.50	2.00	4.19	3.75	2.94	2.31	0.69	3.53	0.63
3/4	4 3/4	1.25	0.88	2.81	0.75	2.00	1.81	2.38	4.97	4.53	3.50	2.75	0.81	4.07	0.81
7/8	6 1/2	1.44	1.00	3.31	0.88	2.28	2.09	2.81	5.83	5.33	4.03	3.19	0.97	4.71	0.97
1	8 1/2	1.69	1.13	3.75	1.00	2.69	2.38	3.19	6.56	5.94	4.69	3.69	1.06	5.31	1.00
1 1/8	9 1/2	1.81	1.25	4.25	1.16	2.91	2.69	3.58	7.47	6.78	5.16	4.06	1.25	5.90	1.25
1 1/4	12	2.03	1.38	4.69	1.25	3.25	3.00	3.94	8.25	7.50	5.75	4.53	1.38	6.51	1.38
1 3/8	13 1/2	2.25	1.50	5.25	1.38	3.63	3.31	4.38	9.16	8.28	6.38	5.00	1.50	7.21	1.50
1 1/2	17	2.38	1.63	5.75	1.50	3.88	3.63	4.81	10.00	9.06	6.88	5.38	1.62	7.73	1.62
1 3/4	25	2.88	2.00	7.00	1.75	5.00	4.19	5.75	12.34	10.97	8.86	6.38	2.25	9.05	2.12
2	35	3.25	2.25	7.75	2.00	5.75	4.81	6.75	13.68	12.28	9.97	7.25	2.40	10.41	2.00
2 1/2	55	4.13	2.75	10.50	2.62	7.25	5.69	8.00	17.84	14.84	12.87	9.38	3.13	13.56	2.62
3	85	5.00	3.25	13.00	3.00	7.88	6.50	8.50	21.50	16.88	14.36	11.00	3.62	16.50	3.50
3 1/2	120	5.25	3.75	14.63	3.62	9.00	8.00	-	24.63	-	16.50	-	4.12	19.00	-
4	150	5.50	4.25	14.50	4.10	10.00	9.00	-	25.69	-	18.42	-	4.56	19.75	-

NOTE: Maximum Proof load is 2.2 times the Working Load Limit. Minimum Ultimate Strength is 6 times the Working Load Limit.

SHACKLES FORGED ALLOY



Working Load Limit is permanently shown on every shackle.
Alloy bows and alloy bolts.
Forged Alloy Steel 30 ton thru 175 tons. Cast alloy steel 200 thru 400 tons.
Meets the performance requirements of Federal Specifications RR-C-271D, TYPE IVA, Grade B, Class 3.

ALLOY BOLT TYPE ANCHOR SHACKLE

Nominal Size (in.)	Working Load Limit (tons)*	Dimensions										
		A	B	C	D	E	F	G	H	J	K	L
1 1/2	30	2.38	3.62	1.62	1.63	5.75	1.39	6.88	7.75	10.00	3.88	1.54
1 3/4	40	2.88	4.19	2.25	2.00	7.00	1.75	8.86	9.06	12.34	5.00	1.84
2	50	3.25	4.81	2.40	2.25	7.75	2.00	9.97	10.41	13.68	5.75	2.08
2 1/2	80	4.12	5.69	3.12	2.75	10.50	2.62	12.87	13.56	17.84	7.25	2.71
3	110	5.00	6.50	3.62	3.25	13.00	3.00	14.36	16.50	21.50	7.88	3.11
3 1/2	140	5.25	8.00	4.12	3.75	14.63	3.75	16.50	19.00	24.62	9.00	3.62
4	175	5.50	9.00	4.56	4.25	14.50	4.00	18.42	19.75	25.69	10.00	4.10
4 3/4	200	7.25	10.50	6.00	4.75	15.62	3.75	21.00	20.50	29.25	11.00	4.50
5	250	8.50	12.00	6.50	5.00	20.00	3.88	24.50	21.97	35.00	13.00	4.50
6	300	8.38	12.00	6.75	6.00	19.50	4.75	25.00	24.35	35.25	13.00	5.00
7	400	8.25	14.00	7.25	7.00	22.50	6.50	26.00	27.97	40.25	13.00	6.00

NOTE: Maximum Proof load is 2.2 times the Working Load Limit. Minimum Ultimate Strength is 6 times the Working Load Limit. Minimum Ultimate Strength is 4 times the Working Load Limit on 200 thru 400 tons.

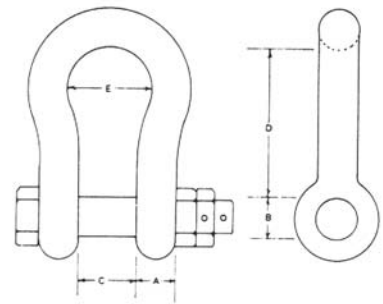
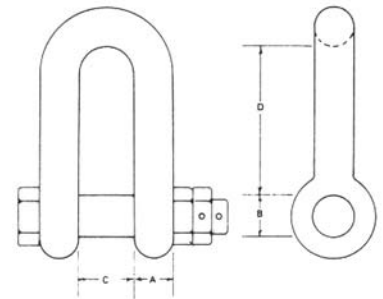
Tow shackles suitable for marine towing and for heavy lift construction applications.

High strength alloy steel bodies and pins.

Pull test certificates are available.

MARINE TOW SHACKLES

A Nominal Size (in.)	B Pin Dia. (in.)	C Jaw Width (in.)	D Reach (in.)		Working Load Limit	Weight Each (lbs.)	
			Anchor	Chain		Anchor	Chain
2	2	3.25	7.75	6.75	44	41	36
2 1/4	2.25	4.5	9	7	57	62	62
2 1/2	2.5	4.5	10	10.5	71	88	86
2 3/4	2.75	4.5	11	11	80	112	110
3	3	4.5	13	13	94	133	125



NOTE: Maximum Proof load is 2.2 times the Working Load Limit. Minimum Ultimate Strength is 6 times the Working Load Limit.

RIGGING HARDWARE

TURNBUCKLES

FORGED



Drop Forged Hex Body Hot Dipped Galvanized

Ultimate Load 5 times the Working Load Limit Use for straight or in-line pulls only

Jaw & Jaw meets Federal Specifications
FF-T-791 b Type 1, Form 1, Class 7

Jaw & Eye meets Federal Specifications
FF-T-791 b Type 1, Form 1, Class 8

Eye & Eye meets Federal Specifications
FF-T-791 b Type 1, Form 1, Class 4

Hook & Hook meets Federal Specifications
FF-T-791 b Type 1, Form 1, Class 5

Hook & Eye meets Federal Specifications
FF-T-791 b Type 1, Form 1, Class 6

Stub ends meets Federal Specifications
FF-T-791 b Type 1, Form 1, Class 3

DIAMETER & TAKE UP (in.)	Avg. OVERALL length in closed position (in.)	WEIGHT EACH (lbs.)		
		with HOOKS or EYES	JAW and EYES	JAW and JAW
1/4 x 4	8 1/4	0.30	0.32	0.36
5/16 x 4-1/2	9 9/16	0.63	0.47	0.52
3/8 x 6	11 7/8	0.75	0.76	0.81
1/2 x 6	13 5/16	1.60	1.53	1.50
1/2 x 9	16 5/16	1.83	1.71	1.74
1/2 x 12	19 5/16	2.25	2.06	2.40
5/8 x 6	15 1/2	2.75	2.35	3.02
5/8 x 9	18 1/2	3.13	3.06	3.31
5/8 x 12	21 1/2	3.50	3.78	4.00
3/4 x 6	17	3.89	4.00	4.11
3/4 x 9	20	4.61	4.75	5.10
3/4 x 12	23	5.43	5.36	5.65
3/4 x 18	29	7.25	7.00	7.00
7/8 x 12	24 5/8	8.10	8.00	8.17
7/8 x 18	30 5/8	9.25	9.75	9.00
1 x 6	20 5/8	9.33	9.00	9.75
1 x 12	26 5/8	11.93	11.20	12.00
1 x 18	32 5/8	14.00	13.30	14.00
1 x 24	38 5/8	17.25	17.00	17.00
1-1/4 x 12	29 7/8	18.00	20.00	21.50
1-1/4 x 18	35 7/8	23.00	24.18	25.50
1-1/4 x 24	41 7/8	27.00	27.50	28.70
1-1/2 x 12	32 3/8	27.50	28.50	30.05
1-1/2 x 18	38 3/8	31.00	35.00	34.25
1-1/2 x 24	44 3/8	37.50	38.73	40.67
1-3/4 x 18	41 3/4	52.50	53.75	55.04
1-3/4 x 24	47 3/4	58.00	61.00	63.36
2 x 24	51 3/4	85.25	89.00	94.00
2-1/2 x 24	58 1/2	144.25	150.00	165.00
2-3/4 x 24	61 1/2	194.00	183.00	198.00

Stainless Steel turnbuckles available - See page
Stub end turnbuckles available.

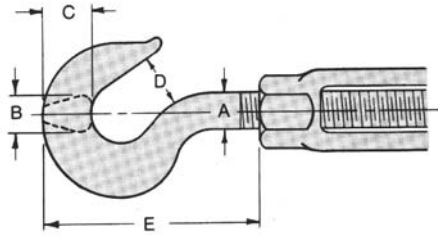
NOTE: Never exceed Working Load Limits - Read
important warnings and cautions on pages

Note: Use weights if eye & eye turnbuckles for
approximate weights of stub end turnbuckles.

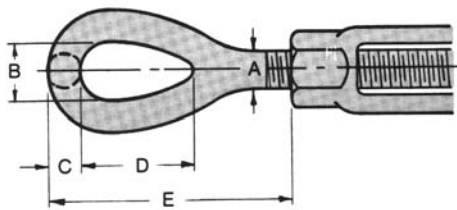
RIGGING HARDWARE

TURNBUCKLES

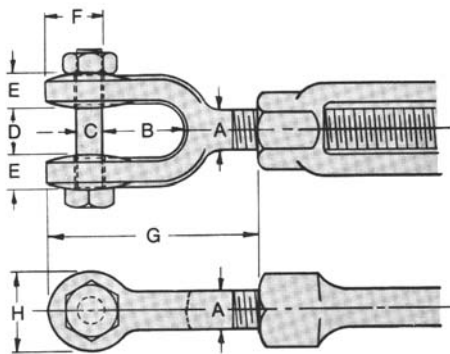
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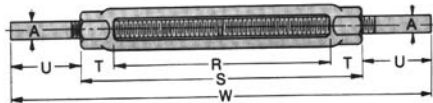
DIMENSIONS (in.)					WORKING LOAD LIMIT (lbs.)
A	B	C	D	E	
1/4	0.25	0.41	0.45	1.66	400
5/16	0.31	0.50	0.50	1.97	700
3/8	0.38	0.61	0.56	2.36	1000
1/2	0.50	0.78	0.66	2.94	1500
5/8	0.63	1.00	0.84	3.69	2250
3/4	0.75	1.20	0.98	4.52	3000
7/8	0.88	1.38	1.13	5.19	4000
1	1.00	1.53	1.25	5.84	5000
1 1/4	1.25	1.81	1.50	7.22	5000
1 1/2	1.31	1.75	1.88	8.34	7500



DIMENSIONS (in.)					WORKING LOAD LIMIT (lbs.)
A	B	C	D	E	
1/4	0.34	0.22	0.78	1.78	500
5/16	0.44	0.28	0.94	2.18	800
3/8	0.53	0.34	1.13	2.56	1200
1/2	0.72	0.44	1.44	3.22	2200
5/8	0.88	0.50	1.75	3.88	3500
3/4	1.00	0.63	2.13	4.69	5200
7/8	1.25	0.75	2.38	4.25	7200
1	1.44	0.88	3.00	6.38	10000
1 1/4	1.81	1.13	3.56	7.75	15200
1 1/2	2.13	1.25	4.13	8.63	21400
1 3/4	2.38	1.50	4.68	10.00	28000
2	2.69	1.75	5.75	12.13	37000
2 1/2	3.13	2.00	6.50	13.56	60000
2 3/4	3.25	2.25	7.00	15.00	75000



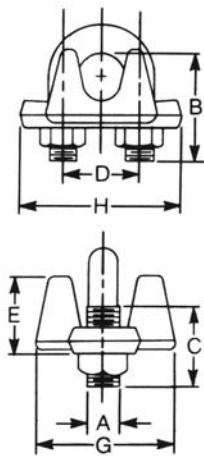
DIMENSIONS (in.)								WORKING LOAD LIMIT (lbs.)
A	B	C	D	E	F	G	H	
1/4	0.63	0.25	0.41	0.28	0.50	1.63	0.63	500
5/16	0.88	0.25	0.47	0.28	0.50	2.00	0.69	800
3/8	0.88	0.31	0.50	0.31	0.59	2.19	0.81	1200
1/2	1.06	0.38	0.63	0.41	0.75	2.75	1.00	2200
5/8	1.31	0.50	0.75	0.50	1.03	3.50	1.31	3500
3/4	1.50	0.63	0.94	0.56	1.28	4.13	1.63	5200
7/8	1.75	0.75	1.13	0.69	1.47	4.84	1.88	7200
1	2.06	0.88	1.19	0.78	1.66	5.53	2.13	10000
1 1/4	2.81	1.13	1.75	1.00	2.09	7.19	2.63	15200
1 1/2	2.81	1.38	2.06	1.06	2.47	7.88	3.13	21400
1 3/4	3.38	1.63	2.38	1.25	2.91	9.38	3.50	28000
2	3.75	2.00	2.50	1.56	3.53	10.88	4.19	37000
2 1/2	4.19	2.25	2.88	1.56	4.63	13.34	5.63	60000
2 3/4	4.40	2.75	3.50	1.63	5.38	15.00	6.13	75000



DIMENSIONS (in.)						WORKING LOAD LIMIT (lbs.)
A	R	S	T	U	W	
1/4	4.00	4.75	0.38	2.63	10.00	500
5/16	4.50	5.44	0.47	2.66	10.75	800
3/8	6.00	7.13	0.56	4.44	16.00	1200
1/2	6.00	7.50	0.75	4.25	16.00	2200
5/8	6.00	7.88	0.94	4.06	16.00	3500
3/4	6.00	8.25	1.13	4.38	17.00	5200
7/8	6.00	8.63	1.31	4.69	18.00	7200
1	6.00	9.00	1.50	5.00	19.00	10000
1 1/4	6.00	9.13	1.56	5.44	20.00	15200
1 1/2	6.00	9.75	1.88	5.38	20.50	21400
1 3/4	6.00	10.38	2.19	5.81	22.00	28000
2	6.00	11.00	2.50	6.00	23.00	37000
2 1/2	6.00	13.50	3.75	6.25	26.00	60000
2 3/4	24.00	31.50	3.75	6.50	44.50	75000

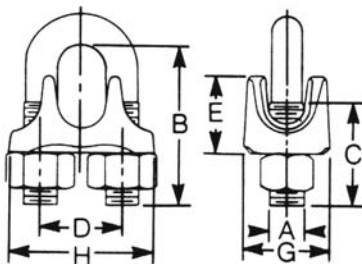
WIRE ROPE CLIPS FORGED & MALLEABLE

Clips meet Federal Specification FF-C-450 TYPE 1 Class 1
Forged Carbon steel clip base
Heavy Hex Type nuts



CLIP AND ROPE SIZE (in.)	Min. No of CLIPS Required	DIMENSIONS (in.)							WEIGHT PER 100 (lbs.)
		A	B	C	D	E	G	H	
1/8	2	0.22	0.72	0.44	0.47	0.41	0.81	0.94	6
3/16	2	0.25	0.97	0.56	0.59	0.50	0.94	1.16	10
1/4	2	0.31	1.03	0.50	0.75	0.66	1.19	1.44	18
5/16	2	0.38	1.38	0.75	0.88	0.72	1.31	1.69	30
3/8	2	0.44	1.50	0.75	1.00	0.91	1.63	1.94	47
7/16	2	0.50	1.88	1.00	1.19	1.03	1.81	2.28	76
1/2	3	0.50	1.88	1.00	1.19	1.13	1.91	2.28	80
9/16	3	0.56	2.25	1.25	1.31	1.22	2.06	2.50	104
5/8	3	0.56	2.38	1.25	1.31	1.34	2.06	2.50	106
3/4	4	0.62	2.75	1.44	1.50	1.41	2.25	2.84	150
7/8	4	0.75	3.12	1.62	1.75	1.59	2.44	3.16	212
1	5	0.75	3.50	1.81	1.88	1.78	2.63	3.47	260
1 1/8	6	0.75	3.88	2.00	2.00	1.91	2.81	3.59	290
1 1/4	7	0.88	4.25	2.13	2.31	2.19	3.13	4.13	430
1 3/8	7	0.88	4.63	2.31	2.38	2.31	3.13	4.19	460
1 1/2	8	0.88	4.94	2.38	2.59	2.44	3.41	4.44	540
1 5/8	8	1.00	5.31	2.62	2.75	2.66	3.63	4.75	700
1 3/4	8	1.13	5.75	2.75	3.06	2.94	3.81	5.28	925
2	8	1.25	6.44	3.00	3.38	3.28	4.44	5.88	1300
2 1/4	8	1.25	7.13	3.19	3.88	3.19	4.50	6.38	1600
2 1/2	9	1.25	7.69	3.44	4.13	3.69	4.05	6.63	1900
2 3/4	10	1.25	8.31	3.56	4.38	4.88	5.00	6.88	2300
3	10	1.50	9.19	3.88	4.75	4.69	5.88	7.63	3300
3 1/2	12	1.50	10.75	4.50	5.50	6.00	6.19	8.38	4000

Clips meet Federal Specification FF-C-450 TYPE 1 Class 2
Malleable Iron Zinc plated
All nuts regular hex type



NOTE: Malleable clips are not designed for overhead lifting.

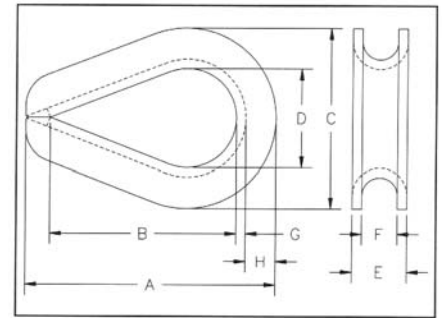
CLIP AND ROPE SIZE (in.)	Min. No of CLIPS Required	DIMENSIONS (in.)							WEIGHT PER 100 (lbs.)
		A	B	C	D	E	G	H	
1/8	2	0.25	0.81	0.50	0.50	0.44	0.50	0.94	6
3/16	2	0.25	0.97	0.63	0.59	0.50	0.59	1.06	10
1/4	2	0.31	1.22	0.88	0.69	0.63	0.69	1.38	18
5/16	2	0.31	1.22	0.88	0.69	0.69	0.69	1.38	30
3/8	2	0.38	1.63	1.00	0.88	0.82	0.88	1.63	47
7/16	3	0.38	1.63	1.00	0.88	0.82	0.92	1.63	76
1/2	3	0.44	2.00	1.25	1.00	1.06	1.00	1.88	80
9/16	3	0.50	2.31	1.47	1.19	1.13	1.13	2.13	104
5/8	3	0.50	2.31	1.47	1.19	1.31	1.13	2.13	106
3/4	4	0.56	2.56	1.75	1.35	1.50	1.25	2.44	150
7/8	4	0.63	3.06	1.81	1.63	1.75	1.75	2.88	212
1	4	0.63	3.38	2.06	1.75	1.92	2.00	3.00	260
1 1/8	5	0.75	3.88	2.19	2.06	2.13	2.25	3.44	290
1 1/4	5	0.75	3.88	2.19	2.06	2.38	2.50	3.44	430
1 3/8	6	0.88	4.50	2.00	2.59	2.88	3.13	4.13	460
1 1/2	6	0.88	4.50	2.00	2.59	3.00	3.25	4.25	540

Stainless steel wire rope clips on pages 103.

RIGGING HARDWARE

WIRE ROPE THIMBLES

HEAVY DUTY GALVANIZED



As per U.S. Federal Specifications No. FF-T-276b, TYPE III.
 Also available with welded gusset.
 Available in stainless steel - See page 103.

WIRE ROPE DIA. SIZE (in.)	DIMENSIONS (in.)								MAX. PIN DIA (in.)	WEIGHT PER 100 (lbs.)
	A	B	C	D	E	F	G	H		
1/4	2.19	1.63	1.50	0.88	0.41	0.28	0.06	0.23	0.81	6.50
5/16	2.50	1.88	1.81	1.06	0.50	0.34	0.08	0.28	0.94	11.80
3/8	2.88	2.13	2.13	1.13	0.63	0.41	0.11	0.34	1.06	21.60
7/16	3.25	2.38	2.38	1.25	0.72	0.47	0.13	0.38	1.19	34.70
1/2	3.63	2.75	2.75	1.50	0.81	0.53	0.14	0.41	1.44	51.00
9/16	3.63	2.75	2.69	1.50	0.88	0.59	0.14	0.41	1.44	51.00
5/8	4.25	3.25	3.13	1.75	0.97	0.66	0.16	0.50	1.63	75.70
3/4	5.00	3.75	3.81	2.00	1.22	0.78	0.22	0.66	1.88	158.10
7/8	5.50	4.25	4.25	2.25	1.38	0.94	0.22	0.75	2.13	177.80
1	6.13	4.50	4.94	2.50	1.56	1.06	0.25	0.88	2.38	313.90
1 1/8 - 1 1/4	7.00	5.13	5.88	2.88	1.81	1.31	0.25	1.13	2.75	400.00
1 1/4 - 1 3/8	9.06	6.50	6.81	3.50	2.19	1.44	0.38	1.13	3.25	811.00
1 3/8 - 1 1/2	9.00	6.25	7.13	3.50	2.56	1.56	0.50	1.13	3.38	1294.80
1 5/8	11.25	8.00	8.13	4.00	2.72	1.72	0.50	1.38	3.88	1700.00
1 3/4	12.19	9.00	8.50	4.50	2.84	1.84	0.50	1.31	4.38	1775.00
1 7/8 - 2	15.13	12.00	10.38	6.00	3.09	2.09	0.50	1.50	5.88	2775.00
2 1/4	17.13	14.00	11.88	7.00	3.63	2.38	0.63	1.63	6.88	3950.00
2 1/2	17.50	15.75	13.50	8.50	4.25	2.63	0.75	1.75	8.25	5000.00

RIGGING HARDWARE

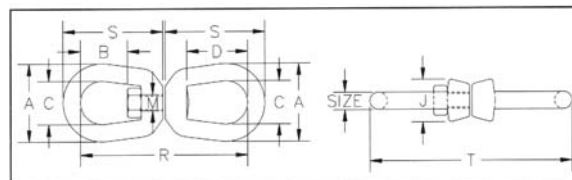
FORGED SWIVELS

GALVANIZED

ULTIMATE LOAD 5 TIMES WORKING LOAD LIMIT
HOT DIPPED GALVANIZED

4

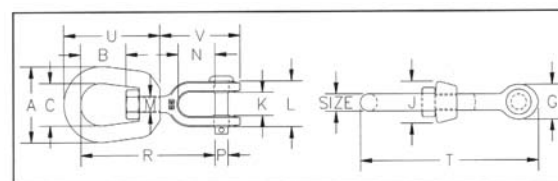
EYE & EYE Meets the performance requirements of Federal Specifications RR-C-271D, TYPE VII, Class 2.



SIZE (in.)	WORKING LOAD LIMIT (lbs.)	DIMENSIONS (in.)									WEIGHT EACH (lbs.)
		A	B	C	D	J	M	R	S	T	
1/4	850	1.25	0.69	0.75	1.06	0.69	0.31	2.94	1.69	3.44	0.21
5/16	1250	1.63	0.81	1.00	1.25	0.81	0.38	3.56	2.06	4.19	0.39
3/8	2250	2.00	0.94	1.25	1.50	1.00	0.50	4.31	2.50	5.06	0.71
1/2	3600	2.50	1.31	1.50	2.00	1.31	0.63	5.44	3.19	6.44	1.32
5/8	5200	3.00	1.56	1.75	2.38	1.50	0.75	6.56	3.88	7.81	2.49
3/4	7200	3.50	1.75	2.00	2.63	1.88	0.88	7.19	4.31	8.69	4.02
7/8	10000	4.00	2.06	2.25	3.06	2.13	1.00	8.38	5.00	10.13	6.25
1	12500	4.50	2.31	2.50	3.50	2.38	1.13	9.63	5.75	11.63	8.95
1 1/4	18000	5.63	2.69	3.13	3.69	3.00	1.38	11.13	6.75	13.36	16.37
1 1/2	45200	7.00	4.19	4.00	4.19	4.00	2.25	17.13	10.00	20.13	45.79

Ultimate Load is 5 times with Working Load Limit.

JAW & EYE Meets the performance requirements of Federal Specifications RR-C-271D, TYPE VII, Class 3.



SIZE (in.)	WORKING LOAD LIMIT (lbs.)	DIMENSIONS (in.)													
		A	B	C	G	J	K	L	M	N	P	R	T	U	V
1/4	850	1.25	0.69	0.75	0.69	0.69	0.47	1.03	0.31	0.88	0.25	2.63	3.38	1.69	1.69
5/16	1250	1.63	0.81	1.00	0.81	0.81	0.50	1.13	0.38	0.88	0.31	2.94	3.88	2.06	1.81
3/8	2250	2.00	0.94	1.25	1.00	1.00	0.63	1.41	0.50	1.06	0.38	3.63	4.75	2.50	2.25
1/2	3600	2.50	1.31	1.50	1.31	1.31	0.75	1.75	0.63	1.31	0.50	4.50	6.06	3.19	2.88
5/8	5200	3.00	1.56	1.75	1.63	1.50	0.94	2.06	0.75	1.50	0.63	5.31	7.31	3.88	3.44
3/4	7200	3.50	1.75	2.00	1.88	1.88	1.13	2.53	0.88	1.75	0.75	6.06	8.31	4.31	4.00
7/8	10000	4.00	2.06	2.25	2.13	2.13	1.19	2.75	1.00	2.06	0.88	7.00	9.53	5.00	4.53
1	12500	4.50	2.31	2.50	2.63	2.38	1.75	3.72	1.13	2.81	1.13	8.56	11.69	5.75	5.94
1 1/4	18000	5.69	2.69	3.13	3.13	3.00	2.06	4.31	1.50	2.81	1.38	9.44	13.13	6.75	6.38
1 1/2	45200	7.00	4.19	4.00	5.63	4.00	2.88	6.00	2.25	4.44	2.25	14.74	20.84	10.00	10.84

Ultimate Load is 5 times with Working Load Limit.

RIGGING HARDWARE

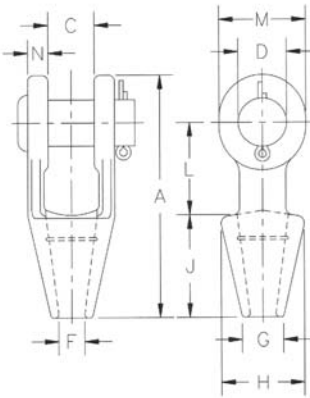
WIRE ROPE SPELTER SOCKETS

GALVANIZED OPEN & CLOSED

FORGED STEEL THROUGH 1-1/4"
 CAST ALLOY STEEL FROM 1-1/2" THROUGH 4"
 AVAILABLE IN DOMESTIC

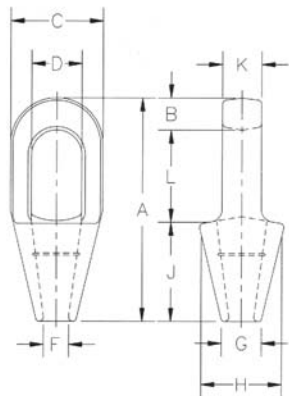
Spelter socket terminations have an efficiency rating of 100%, based on the catalog strength of wire rope. Ratings are based on the recommended use with 6x7, 6x19 or 6x37, IPS or XIP(EIP), XXIP(EIIP), RRL, FC or IWRC wire rope.

Open wire rope sockets meet the requirements of Federal Specification RR-S-550D, TYPE A.



ROPE SIZE (in.)	STRUCTURAL STRAND DIA. (in.)	DIMENSIONS (in.)										WEIGHT EACH (lbs.)
		A	C	D	F	G	H	J	L	M	N	
1/4	-	4.56	0.91	0.69	0.38	0.69	1.56	2.25	1.56	1.31	0.36	1.10
5/16-3/8	-	4.84	0.81	0.81	0.50	0.81	1.69	2.25	1.75	1.50	0.44	1.30
7/16-1/2	-	5.56	1.00	1.00	0.56	0.94	1.88	2.50	2.00	1.88	0.50	2.25
9/16-5/8	1/2	6.75	1.25	1.19	0.69	1.13	2.25	3.00	2.50	2.25	0.56	3.60
3/4	9/16-5/8	7.94	1.50	1.38	0.81	1.5	2.62	3.50	3.00	2.62	0.62	5.83
7/8	11/16-3/4	9.25	1.75	1.63	0.94	1.50	3.25	4.00	3.50	3.13	0.80	9.65
1	13/16-7/8	10.56	2.00	2.00	1.13	1.75	3.75	4.50	4.00	3.75	0.88	15.50
1 1/8	15/16-1	11.81	2.25	2.25	1.25	2.00	4.12	5.00	4.62	4.12	1.00	21.50
1-1/4 - 1-3/8	1-1/16 - 1-1/8	13.19	2.50	2.50	1.50	2.25	4.75	5.50	5.00	4.75	1.13	31.00
1 1/2	1-3/16 - 1-1/4	15.12	3.00	2.75	1.63	2.75	5.25	6.00	6.00	5.38	1.19	47.25
1 5/8	1-5/16 - 1-3/8	16.25	3.00	3.00	1.75	3.00	5.50	6.50	6.50	5.75	1.31	55.00
1-3/4 - 1-7/8	1-7/16 - 1-5/8	18.25	3.50	3.50	2.00	3.13	6.38	7.50	7.00	6.50	1.56	82.00
2 - 2-1/8	1-11/16 - 1-3/4	21.50	4.00	3.75	2.25	3.75	7.38	8.50	9.00	7.00	1.81	129.00
2-1/4 - 2-3/8	1-13/16 - 1-7/8	23.50	4.50	4.25	2.50	4.00	8.25	9.00	10.00	7.75	2.13	167.00
2-1/2 - 2-5/8	1-15/16 - 2-1/8	25.50	5.00	4.75	2.88	4.50	9.25	9.75	10.75	8.50	2.38	252.00
2-3/4 - 2-7/8	2-3/16 - 2-7/16	27.25	5.25	5.00	3.12	4.88	10.50	11.00	11.00	9.00	2.88	315.00
3 - 3-1/8	2-1/2 - 2-5/8	29.00	5.75	5.25	3.38	5.25	11.12	12.00	11.25	9.50	3.00	380.00
3-1/4 - 3-3/8	2-3/4 - 2-7/8	30.88	6.25	5.50	3.62	5.75	11.88	13.00	11.75	10.00	3.12	434.00
3-1/2 - 3-5/8	3 - 3-1/8	33.25	6.75	6.00	3.88	6.50	12.38	14.00	12.50	10.75	3.25	563.00
3-3/4 - 4	-	36.25	7.50	7.00	4.25	7.25	13.62	15.00	13.50	12.50	3.50	783.00

Closed spelters sockets meet the requirements of Federal Specification RR-S-550D, TYPE B.



ROPE SIZE (in.)	STRUCTURAL STRAND DIA. (in.)	DIMENSIONS (in.)										WEIGHT EACH (lbs.)
		A	B	C	D	F	G	H	J	K	L	
1/4	-	4.50	0.50	1.50	0.88	0.38	0.69	1.56	2.25	0.50	1.75	0.50
5/16-3/8	-	4.88	0.62	1.69	0.97	0.50	0.81	1.69	2.25	0.69	2.00	0.75
7/16-1/2	-	5.44	0.69	2.00	1.16	0.56	0.94	1.88	2.50	0.88	2.25	1.50
9/16-5/8	1/2	6.31	0.81	2.63	1.41	0.69	1.12	2.38	3.00	1.00	2.50	2.50
3/4	9/16-5/8	7.56	1.06	3.00	1.66	0.81	1.25	2.75	3.56	1.25	3.00	4.25
7/8	11/16-3/4	8.75	1.25	3.63	1.88	0.94	1.50	3.25	4.00	1.50	3.50	7.25
1	13/16-7/8	9.88	1.38	4.13	2.30	1.13	1.75	3.75	4.44	1.75	4.00	10.50
1 1/8	15/16-1	11.00	1.50	4.50	2.56	1.25	2.00	4.13	5.00	2.00	4.50	14.25
1-1/4 - 1-3/8	1-1/16 - 1-1/8	12.12	1.63	5.30	2.81	1.50	2.25	4.75	5.50	2.25	5.00	19.75
1 1/2	1-3/16 - 1-1/4	13.94	1.94	5.33	3.19	1.63	2.75	5.25	6.00	2.50	6.00	29.20
1 5/8	1-5/16 - 1-3/8	15.13	2.13	5.75	3.25	1.75	3.00	5.50	6.50	2.75	6.50	36.00
1-3/4 - 1-7/8	1-7/16 - 1-5/8	17.25	2.19	6.75	3.75	2.00	3.13	6.38	7.50	3.00	7.56	57.25
2 - 2-1/8	1-11/16 - 1-3/4	19.50	2.44	7.63	4.38	2.25	3.75	7.38	8.50	3.25	8.56	79.00
2-1/4 - 2-3/8	1-13/16 - 1-7/8	21.13	2.63	8.50	5.00	2.50	4.00	8.25	9.00	3.63	9.50	105.00
2-1/2 - 2-5/8	1-15/16 - 2-1/8	23.50	3.12	9.50	5.50	2.88	4.50	9.25	9.75	4.00	10.62	140.00
2-3/4 - 2-7/8	2-3/16 - 2-7/16	25.38	3.12	10.75	6.25	3.12	4.88	10.19	11.00	4.88	11.25	220.00
3 - 3-1/8	2-1/2 - 2-5/8	27.00	3.25	11.50	6.75	3.38	5.25	11.50	12.00	5.25	11.75	276.00
3-1/4 - 3-3/8	2-3/4 - 2-7/8	29.25	4.00	12.25	7.25	3.62	5.75	12.25	13.00	5.75	12.25	313.00
3-1/2 - 3-5/8	3 - 3-1/8	31.00	4.00	13.00	7.75	3.88	6.50	13.00	14.00	6.25	13.00	400.00
3-3/4 - 4	-	33.25	4.25	14.25	8.50	4.25	7.25	14.25	15.00	7.00	14.00	542.00

RIGGING HARDWARE

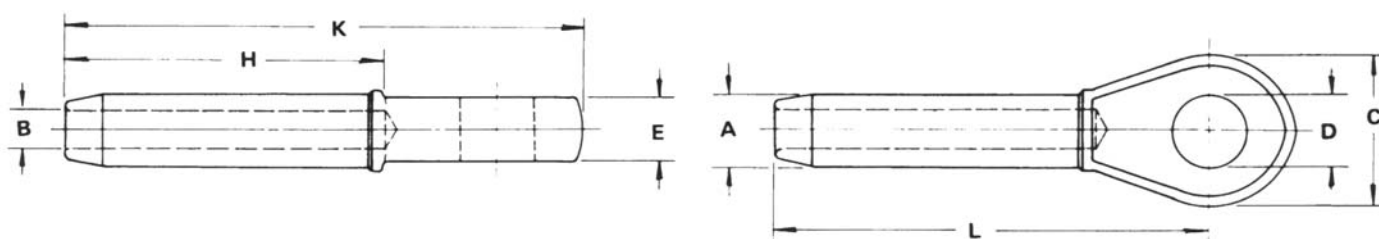
FORGED SWAGED SOCKETS

UPSON-WALTON

CLOSED SWAGE TYPE

Forged from special C-1035 steel, fine grain, special bar quality. Spheroidized annealed for cold swaging. Swage sockets are recommended for use on 6x19 or 6x37 IWRC regular lay ropes. They are also satisfactory on galvanized bridge rope. They are not recommended for use on fiber core or lang lay ropes.

Sockets properly applied have an efficiency rating of 100% of the catalog breaking of the wire rope.



ROPE SIZE (in.)	DIMENSIONS (in.)								AFTER SWAGE	WEIGHT EACH (lbs.)
	A	B	C	D	E	H	K	L		
1/4	0.495	0.272	1.437	0.750	0.500	2.125	4.375	3.500	0.438	0.35
5/16	0.770	0.339	1.688	0.875	0.688	3.188	5.500	4.500	0.688	0.77
3/8	0.770	0.406	1.688	0.875	0.688	3.188	5.500	4.500	0.688	0.73
7/16	0.982	0.484	2.000	1.063	0.875	4.250	6.937	5.750	0.875	1.47
1/2	0.982	0.547	2.000	1.063	0.875	4.250	6.937	5.750	0.875	1.38
9/16	1.257	0.609	2.500	1.250	1.125	5.312	8.750	7.250	1.125	2.90
5/8	1.257	0.672	2.500	1.250	1.125	5.312	8.750	7.250	1.125	2.80
3/4	1.545	0.796	3.000	1.438	1.312	6.375	10.375	8.625	1.375	5.16
7/8	1.700	0.938	3.500	1.688	1.500	7.437	12.125	10.125	1.500	7.40
1	1.975	1.062	4.000	2.063	1.750	8.500	13.750	11.500	1.750	11.20
1 1/8	2.245	1.188	4.500	2.313	2.000	9.562	15.250	12.750	2.000	16.00
1 1/4	2.525	1.328	5.000	2.563	2.250	10.625	17.250	14.375	2.250	22.70
1 3/8	2.800	1.453	5.250	2.563	2.250	11.688	18.875	15.750	2.500	29.00
1 1/2	3.075	1.578	5.500	2.813	2.500	12.750	20.375	17.000	2.750	37.50
1 3/4	3.385	1.859	6.750	3.563	3.000	14.875	24.000	20.000	3.000	55.70
2	3.935	2.109	7.750	3.813	3.125	17.000	27.500	23.000	3.500	90.00
2 1/4	4.450	2.360	8.625	4.312	4.000	19.125	29.750	24.875	3.960	125.00
2 1/2	4.930	2.657	8.625	4.312	4.000	19.625	31.125	26.250	4.360	142.00
3	5.930	3.166	9.250	5.312	5.375	23.750	37.750	32.125	5.250	252.00

RIGGING HARDWARE

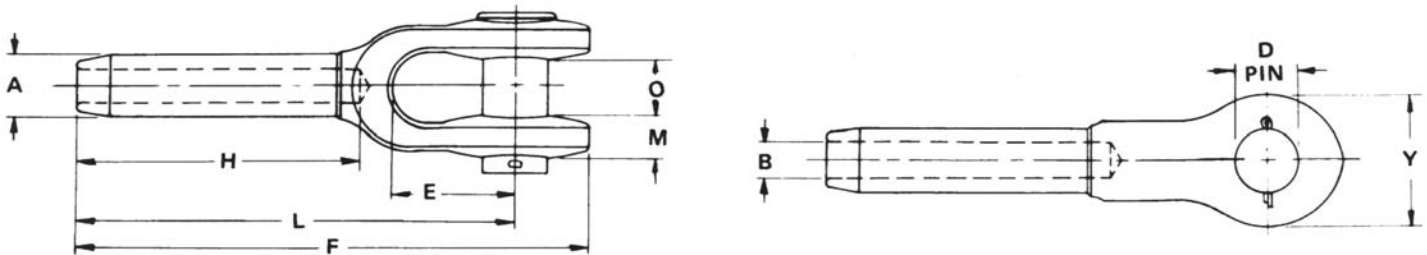
FORGED SWAGED SOCKETS

UPSON-WALTON

OPEN SWAGE TYPE

Forged from special C-1035 steel, fine grain, special bar quality. Spheroidized annealed for cold swaging. Swage sockets are recommended for use on 6x19 or 6x37 IWRC regular lay ropes. They are also satisfactory on galvanized bridge rope. They are not recommended for use on fiber core or lang lay ropes. Sockets properly applied have an efficiency rating of 100% of the catalog breaking of the wire rope.

4

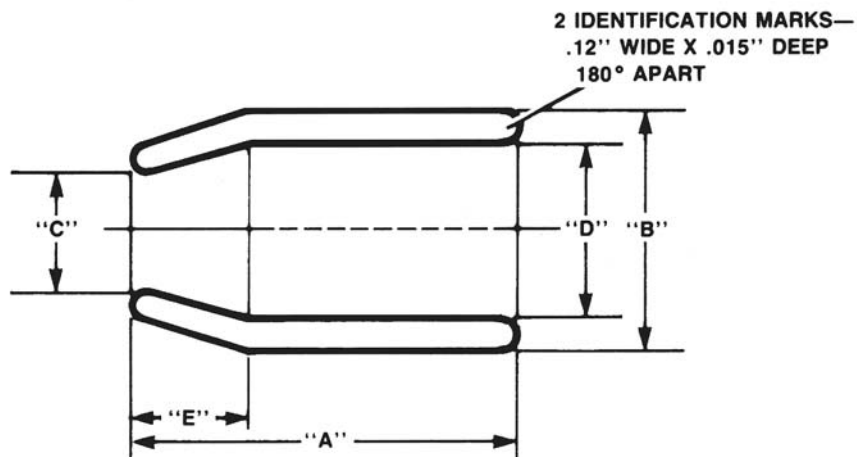


ROPE SIZE (in.)	DIMENSIONS (in.)										AFTER SWAGE	WEIGHT EACH (lbs.)
	A	B	D	E	F	H	L	M	O	Y		
1/4	0.495	0.272	0.688	1.500	4.750	2.125	4.000	0.312	0.688	1.375	4.380	0.57
5/16	0.770	0.339	0.812	1.750	6.250	3.187	5.312	0.406	0.813	1.625	0.688	1.24
3/8	0.770	0.406	0.812	1.750	6.250	3.187	5.312	0.406	0.813	1.625	0.688	1.20
7/16	0.982	0.484	1.000	2.000	7.812	4.250	6.688	0.500	1.000	2.000	0.875	2.45
1/2	0.982	0.547	1.000	2.000	7.812	4.250	6.688	0.500	1.000	2.000	0.875	2.40
9/16	1.257	0.609	1.190	2.250	9.562	5.312	8.125	0.625	1.250	2.500	1.125	4.80
5/8	1.257	0.672	1.190	2.250	9.562	5.312	8.125	0.625	1.250	2.500	1.125	4.50
3/4	1.545	0.796	1.380	2.750	11.687	6.375	10.000	0.750	1.500	3.000	1.375	7.80
7/8	1.700	0.938	1.630	3.250	13.625	7.437	11.625	0.938	1.750	3.375	1.500	11.80
1	1.975	1.062	2.000	3.750	15.625	8.500	13.375	1.031	2.000	4.000	1.750	17.80
1 1/8	2.245	1.188	2.250	4.250	17.500	9.562	15.000	1.187	2.250	4.500	2.000	28.90
1 1/4	2.525	1.328	2.500	4.750	19.437	10.625	16.500	1.187	2.500	5.000	2.250	36.20
1 3/8	2.800	1.453	2.500	5.250	21.250	11.688	18.125	1.312	2.500	5.250	2.500	47.70
1 1/2	3.075	1.578	2.750	5.750	23.250	12.750	19.750	1.437	3.000	5.750	2.750	64.40
1 3/4	3.385	1.859	3.500	6.750	27.125	14.875	23.000	1.688	3.500	7.000	3.000	93.40
2	3.935	2.109	3.750	8.000	31.437	17.000	26.750	1.813	4.000	8.000	3.500	148.00
2 1/4	4.450	2.360	4.250	6.750	32.875	19.125	27.750	2.562	4.500	8.750	3.960	173.00
2 1/2	4.930	2.657	4.250	6.750	34.625	19.625	29.500	2.562	4.500	8.750	4.360	233.00
3	5.930	3.166	5.250	8.625	41.125	23.750	35.625	3.000	5.750	9.500	5.250	382.00

RIGGING HARDWARE

CARBON STEEL SLEEVES

4



ROPE SIZE (in.)	DIMENSIONS (in.)							WEIGHT EACH (lbs.)
	A	B	C	D	E	WALL THICKNESS	AFTER SWAGE DIA.	
1/4	1.000	0.656	0.328	0.469	0.281	0.094	0.50	0.04
5/16	1.500	0.906	0.437	0.609	0.437	0.141	0.73	0.14
3/8	1.500	0.906	0.469	0.656	0.437	0.125	0.73	0.12
7/16	2.000	1.219	0.563	0.844	0.593	0.187	0.98	0.32
1/2	2.000	1.220	0.625	0.906	0.593	0.156	0.98	0.28
9/16	2.750	1.469	0.688	1.031	0.703	0.219	1.20	0.63
5/8	2.750	1.469	0.750	1.094	0.703	0.187	1.20	0.56
3/4	3.187	1.719	0.922	1.281	0.859	0.219	1.41	0.88
7/8	3.562	2.031	1.031	1.531	1.000	0.250	1.63	1.38
1	4.000	2.281	1.156	1.719	1.125	0.281	1.88	1.90
1 1/8	4.813	2.500	1.281	1.938	1.250	0.281	2.08	2.60
1 1/4	5.203	2.781	1.438	2.156	1.406	0.312	2.27	3.40
1 3/8	5.810	3.000	1.563	2.375	1.562	0.312	2.46	4.30
1 1/2	6.250	3.250	1.688	2.625	1.688	0.312	2.65	5.00
1 3/4	7.250	3.844	1.938	3.125	1.969	0.359	3.04	8.40
2	8.500	4.375	2.250	3.625	2.250	0.375	3.50	11.30
2 1/4	9.562	5.031	2.500	4.031	2.531	0.500	4.06	19.20
2 1/2	10.500	5.500	2.750	4.500	2.813	0.500	4.44	23.20

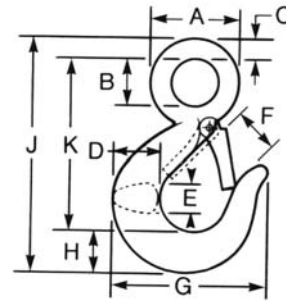
RIGGING HARDWARE

EYE HOOKS

CAUTION: NEVER EXCEED THE WORKING LOAD LIMIT

ALLOY EYE HOIST HOOK

Drop forged alloy steel.
Quenched and Tempered.
Available in Domestic mfr.

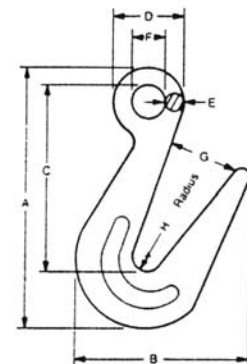
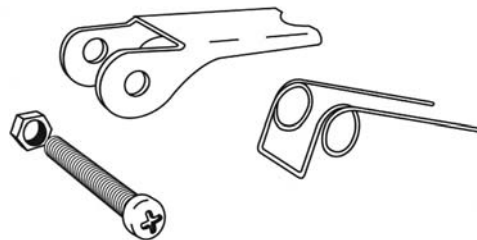


SIZE (WLL)*		DIMENSIONS (in.)										WEIGHT EACH (lbs.)
CARBON IN TONS	ALLOY IN TONS	A	B	C	D	E	F	G	H	J	K	
3/4	1	1.50	0.75	0.38	0.88	0.63	0.94	2.88	0.75	4.38	3.25	0.50
1	1 1/2	1.75	0.88	0.44	1.00	0.69	1.06	3.13	0.81	4.88	3.63	0.75
1 1/2	2	2.00	1.13	0.44	1.19	0.81	1.06	3.50	1.00	5.50	4.13	1.00
2	3	2.38	1.25	0.59	1.38	0.94	1.22	3.94	1.19	6.31	4.56	1.70
3	4 1/2	3.00	1.56	0.69	1.63	1.19	1.50	5.00	1.50	7.94	5.75	3.60
5	7	3.81	2.00	0.88	2.06	1.50	1.88	6.25	1.75	10.00	7.38	7.50
7 1/2	11	4.69	2.44	1.13	2.63	1.63	2.25	7.56	2.25	12.44	9.06	13.00

*Working Load Limit applies only when the load is applied to the center of the saddle of the hook.

STAINLESS STEEL LATCH KITS

HOOK SIZE		WEIGHT EACH (lbs.)
CARBON IN TONS	ALLOY IN TONS	
3/4	1	0.02
1	1 1/2	0.02
1 1/2	2	0.03
2	3	0.03
3	4 1/2	0.05
5	7	0.09
7 1/2	11	0.17



2 TON SORTING HOOK

Drop forged, Heat treated Alloy steel.
Easy attachment to cylinders, flat plate, links, and lifting eyes.
Ultimate Breaking Strength is 5 times Working Load Limit.
Available in Domestic mfg.

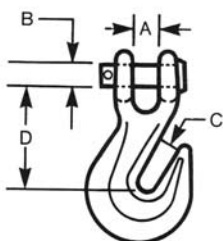
WORKING LOAD LIMIT (Tons)		DIMENSIONS (in.)								WEIGHT EACH (lbs.)
At TIP	At Bottom	A	B	C	D	E	F	G	H	
2.00	7 1/2	10.00	6.50	7.50	2.88	0.72	1.38	2.75	0.63	6

RIGGING HARDWARE

CHAIN HOOKS

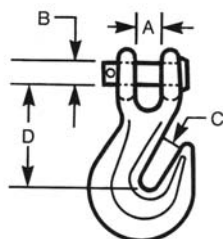
CAUTION: NEVER EXCEED THE WORKING LOAD LIMIT
DO NOT USE FOR OVERHEAD LIFTING.

HIGH TEST CLEVIS GRAB HOOK, GRADE 43 Forged steel, heat treated, self colored.



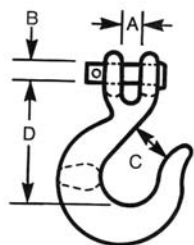
SIZE	WORKING LOAD LIMIT (lbs.)	WEIGHT EACH (lbs.)	DIMENSIONS (in.)			
			A	B	C	D
1/4"	2,600	0.43	0.38	0.38	0.34	1.94
5/16"	3,900	0.72	0.44	0.44	0.41	2.38
3/8"	5,400	1.15	0.56	0.47	0.50	2.63
1/2"	9,200	2.35	0.69	0.63	0.66	3.50
5/8"	11,500	4.1	0.81	0.63	0.81	4.19

ALLOY G-70 CLEVIS GRAB HOOK Forged steel, heat treated, electro-galv.



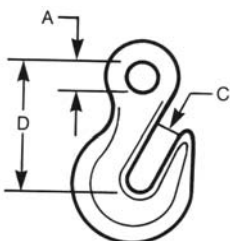
SIZE	WORKING LOAD LIMIT (lbs.)	WEIGHT EACH (lbs.)	DIMENSIONS (in.)			
			A	B	C	D
1/4"	3,150	0.43	0.38	0.38	0.34	1.94
5/16"	4,700	0.72	0.44	0.44	0.41	2.38
3/8"	6,600	1.15	0.56	0.47	0.50	2.63
1/2"	11,300	2.35	0.69	0.63	0.66	3.50

HIGH TEST CLEVIS SLIP HOOK, GRADE 43 Forged steel, heat treated, electro-galv.



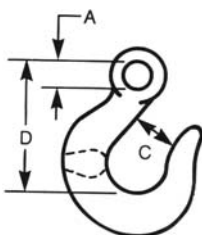
SIZE	WORKING LOAD LIMIT (lbs.)	WEIGHT EACH (lbs.)	DIMENSIONS (in.)			
			A	B	C	D
1/4"	1,950	0.58	0.38	0.38	0.88	2.56
5/16"	2,875	0.86	0.44	0.44	1.00	2.81
3/8"	4,000	1.40	0.56	0.47	1.28	3.25
1/2"	6,500	2.20	0.63	0.56	1.38	4.00

HIGH TEST EYE GRAB HOOK, GRADE 43 Forged steel, heat treated, electro-galv.



SIZE	WORKING LOAD LIMIT (lbs.)	WEIGHT EACH (lbs.)	DIMENSIONS (in.)		
			A	B	C
1/4"	2,600	0.30	0.50	0.31	1.88
5/16"	3,900	0.57	0.56	0.44	2.25
3/8"	5,400	0.95	0.69	0.50	2.56
1/2"	9,200	2.14	0.88	0.59	3.50

HIGH TEST EYE SLIP HOOK, GRADE 43 Forged steel, heat treated, electro-galv.



SIZE	WORKING LOAD LIMIT (lbs.)	WEIGHT EACH (lbs.)	DIMENSIONS (in.)		
			A	B	C
1/4"	1,950	0.36	0.50	0.69	2.00
5/16"	2,875	0.60	0.75	1.00	2.56
3/8"	4,000	0.91	0.75	1.06	3.00
1/2"	6,500	1.84	1.06	1.38	4.13

RIGGING HARDWARE

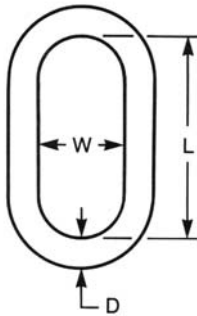
WELDLESS MASTER & SLING LINKS

CAUTION: NEVER EXCEED THE WORKING LOAD LIMIT

ULTIMATE LOAD 6 TIMES WORKING LOAD LIMIT

ALLOY OBLONG MASTER LINKS

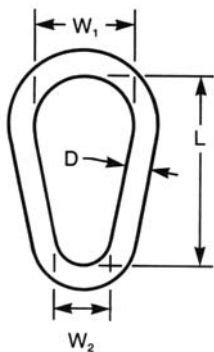
Grade 80 alloy, heat treated, painted.



SIZE D	WORKING LOAD LIMIT (lbs.)	WEIGHT EACH (lbs.)	DIMENSIONS (in.)	
			L	W
1/2	4,100	0.89	5.00	2.50
5/8	5,500	1.63	6.00	3.00
3/4	8,600	2.25	5.50	2.75
1	20,300	4.60	8.00	4.00
1 1/4	29,300	9.75	8.75	4.38
1 1/2	39,900	17.12	10.50	5.25
1 3/4	52,100	26.12	12.00	6.00
2	81,400	41.12	14.00	7.00
2 1/4	99,500	54.80	16.00	8.00
2 1/2	122,750	71.60	16.00	8.00
2 3/4	148,500	87.70	16.00	9.50
3	190,000	115.00	18.00	9.00
3 1/4	218,500	145.00	20.00	10.00
3 1/2	232,500	200.00	24.00	12.00

HIGH TEST PEAR SHAPED SLING LINKS

Heat treated, painted.



SIZE D	WORKING LOAD LIMIT (lbs.)	WEIGHT EACH (lbs.)	DIMENSIONS (in.)		
			L	W ₁	W ₂
3/8	1,800	0.13	2.25	1.50	0.75
1/2	2,900	0.55	3.00	2.00	1.00
5/8	4,200	1.10	3.75	2.50	1.25
3/4	6,000	1.95	4.50	3.00	1.50
7/8	8,300	2.78	5.25	3.50	1.75
1	10,800	4.30	6.00	4.00	2.00
1 1/4	16,750	9.00	8.00	5.00	2.50
1 3/8	20,500	11.60	8.25	5.50	2.75

RIGGING HARDWARE

SNATCH BLOCKS & CABLE GRIPS

CAUTION: NEVER EXCEED THE WORKING LOAD LIMIT

4

RED IMPORT SNATCH BLOCK

Snatch block with bail.
 All steel ball bearing.
 Heavy Duty cast shell.
 Pressure Grease fitting.
 Shell construction prevents lodging of rope between sheave and shell.
 Wire rope will not lose position in block even when slack.

Ultimate Load 4 times Working Load Limit.

SHEAVE SIZE (in.)	WIRE ROPE DIA. (in.)	WORKING LOAD LIMIT (tons)	WEIGHT EACH (lbs.)
3	1/4 - 3/8	1.5	2.75
4	1/4 - 7/16	3	4.25
5	3/8 - 1/2	4.5	7.25
6	1/2 - 3/4	6	12.25
8	3/4 - 1.	8	27.50



KLEIN "HAVEN" CABLE GRIPS

DO NOT USE FOR OVERHEAD LIFTING!
 Designed for use when light, compact grip is desired and where conductor damage is not a factor.

Part No.	WORKING LOAD LIMIT (lbs.)	WIRE ROPE SIZE (in.)	WEIGHT EACH (lbs.)
1604-10	5,000	1/16 - 1/4	1
1604-20L	8,000	1/8 - 1/2	2.5
1625-20	8,000	9/32 - 3/4	3.5
1625-20 1	8,000	1/2 - 1.	3.5



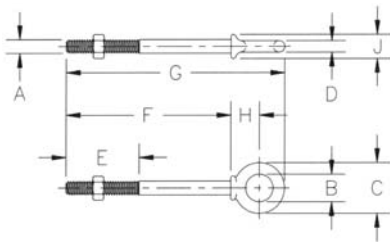
RIGGING HARDWARE

FORGED EYE BOLTS

**CAUTION: NEVER EXCEED THE WORKING LOAD LIMIT.
NEVER INSERT THE POINT OF A HOOK IN AN EYEBOLT. ALWAYS USE A SHACKLE.**

SHOULDER NUT EYE BOLTS

Forged steel.
Hot dipped galvanizing after threading.
Furnished with standard hot dipped galvanized, heavy hex nuts.

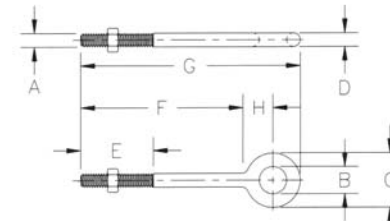


SHANK DIA. & LENGTH (in.)	WORKING LOAD LIMIT *(lbs.)	WEIGHT Per 100 (lbs.)	DIMENSIONS (in.)									
			A	B	C	D	E	F	G	H	J	
1/4 X 2	650	6.60	0.25	0.50	0.88	0.19	1.50	2.00	2.94	0.50	0.47	
1/4 X 4	650	9.10	0.25	0.50	0.88	0.19	2.50	4.00	4.94	0.50	0.47	
5/16 X 2-1/4	1,200	12.50	0.31	0.62	1.12	0.25	1.50	2.25	3.50	0.69	0.56	
5/16 X 4-1/4	1,200	18.80	0.31	0.62	1.12	0.25	2.50	4.25	5.50	0.69	0.56	
3/8 X 2-1/2	1,550	21.40	0.38	0.75	1.38	0.31	1.50	2.50	3.97	0.78	0.66	
3/8 X 4-1/2	1550	25.30	0.38	0.75	1.38	0.31	2.50	4.50	5.97	0.78	0.66	
1/2 X 3-1/4	2600	42.60	0.50	1.00	1.75	0.38	1.50	3.25	5.12	1.00	0.91	
1/2 X 6	2600	56.80	0.50	1.00	1.75	0.38	3.00	6.00	7.88	1.00	0.91	
5/8 X 4	5200	68.60	0.62	1.25	2.25	0.50	2.00	4.00	6.44	1.31	1.12	
5/8 X 6	5200	102.40	0.62	1.25	2.25	0.50	3.00	6.00	8.44	1.31	1.12	
3/4 X 4-1/2	7200	144.50	0.75	1.50	2.75	0.62	2.00	4.50	7.44	1.56	1.38	
3/4 X 6	7200	167.50	0.75	1.50	2.75	0.62	3.00	6.00	8.94	1.56	1.38	
7/8 X 5	10600	225.00	0.88	1.75	3.25	0.75	2.50	5.00	8.46	1.84	1.56	
1 X 6	13300	366.30	1.00	2.00	3.75	0.88	3.00	6.00	9.97	2.09	1.81	
1 X 9	13300	422.50	1.00	2.00	3.75	0.88	4.00	9.00	12.97	2.09	1.81	

*Ultimate Load is 5 times the Working Load Limit. Working Load Limit shown is for in-line pull.

REGULAR NUT EYE BOLTS

Forged steel.
Hot dipped galvanizing after threading.
Furnished with standard hot dipped galvanized, heavy hex nuts.
Recommended for straight-line pull.



SHANK DIA. & LENGTH (in.)	WORKING LOAD LIMIT *(lbs.)	WEIGHT Per 100 (lbs.)	DIMENSIONS (in.)							
			A	B	C	D	E	F	G	H
1/4 X 2	650	8.20	0.25	0.50	1.00	0.25	1.50	2.00	3.06	0.56
1/4 X 4	650	11.70	0.25	0.50	1.00	0.25	2.50	4.00	5.06	0.56
5/16 X 2-1/4	1,200	13.30	0.31	0.62	1.25	0.31	1.50	2.25	3.56	0.69
5/16 X 4-1/4	1,200	25.00	0.31	0.62	1.25	0.31	2.50	4.25	5.56	0.69
3/8 X 2-1/2	1,550	23.30	0.38	0.75	1.50	0.38	1.50	2.50	4.12	0.88
3/8 X 4-1/2	1550	29.50	0.38	0.75	1.50	0.38	2.50	4.50	6.12	0.88
3/8 X 6	1550	35.20	0.38	0.75	1.50	0.38	2.50	6.00	7.62	0.88
1/2 X 3-1/4	2600	50.30	0.50	1.00	2.00	0.50	1.50	3.25	5.38	1.12
1/2 X 6	2600	66.10	0.50	1.00	2.00	0.50	3.00	6.00	8.12	1.12
1/2 X 8	2600	82.00	0.50	1.00	2.00	0.50	3.00	8.00	10.12	1.12
1/2 X 10	2600	88.00	0.50	1.00	2.00	0.50	3.00	10.00	12.12	1.12
1/2 X 12	2600	114.20	0.50	1.00	2.00	0.50	3.00	12.00	14.12	1.12
5/8 X 4	5200	103.10	0.62	1.25	2.50	0.62	2.00	4.00	6.69	1.44
5/8 X 6	5200	118.20	0.62	1.25	2.50	0.62	3.00	6.00	8.69	1.44
5/8 X 8	5200	135.10	0.62	1.25	2.50	0.62	3.00	8.00	10.69	1.44
5/8 X 10	5200	153.60	0.62	1.25	2.50	0.62	3.00	10.00	12.69	1.44
5/8 X 12	5200	167.10	0.62	1.25	2.50	0.62	4.00	12.00	14.69	1.44
3/4 X 4-1/2	7200	168.60	0.75	1.50	3.00	0.75	2.00	4.50	7.69	1.69
3/4 X 6	7200	184.50	0.75	1.50	3.00	0.75	3.00	6.00	9.19	1.69
3/4 X 8	7200	207.90	0.75	1.50	3.00	0.75	3.00	8.00	11.19	1.69
3/4 X 10	7200	235.00	0.75	1.50	3.00	0.75	3.00	10.00	13.19	1.69
3/4 X 12	7200	257.50	0.75	1.50	3.00	0.75	4.00	12.00	15.19	1.69
7/8 X 5	10600	270.00	0.88	1.75	3.50	0.88	2.50	5.00	8.75	2.00
1 X 6	13300	421.00	1.00	2.00	4.00	1.00	3.00	6.00	10.31	2.31
1 X 9	13300	468.50	1.00	2.00	4.00	1.00	4.00	9.00	13.31	2.31

*Ultimate Load is 5 times the Working Load Limit. Working Load Limit shown is for in-line pull.

RIGGING HARDWARE

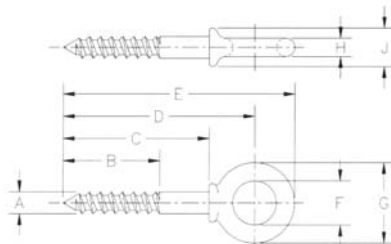
FORGED EYE BOLTS

CAUTION: NEVER EXCEED THE WORKING LOAD LIMIT.
NEVER INSERT THE POINT OF A HOOK IN AN EYEBOLT. ALWAYS USE A SHACKLE.
 Read important warnings and information preceding fittings section.

4

SCREW EYE BOLTS

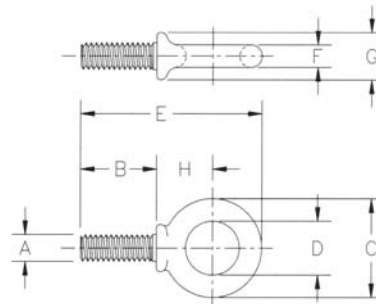
Forged steel.
 Hot dipped galvanized.



SHANK DIA. & LENGTH (in.)	WEIGHT PER 100 (lbs.)	DIMENSIONS (in.)								
		A	B	C	D	E	F	G	H	J
1/4 x 2	4.30	0.25	1.50	2.00	2.50	2.94	0.50	0.88	0.19	0.47
5/16 x 2-1/4	9.90	0.31	1.69	2.25	2.94	3.50	0.63	1.13	0.25	0.56
3/8 x 2-1/2	18.88	0.38	1.88	2.50	3.28	3.97	0.75	1.38	0.31	0.66
1/2 x 3-1/4	37.50	0.50	2.44	3.25	4.25	5.12	1.00	1.75	0.38	0.91
5/8 x 4	85.50	0.63	3.00	4.00	5.31	6.44	1.25	2.25	0.50	1.12

SHOULDER TYPE MACHINERY EYE BOLTS

Forged steel.
 Working Load Limits shown are for in-line pull.
 Recommended for straight line pull.
 All bolts threaded UNC.



SHANK DIA. & LENGTH (in.)	WORKING LOAD LIMIT *(lbs.)	WEIGHT Per 100 (lbs.)	DIMENSIONS (in.)							
			A	B	C	D	E	F	G	H
1/4 x 1	650	5.10	0.25	1.00	0.88	0.50	1.94	0.19	0.47	0.50
5/16 x 1-1/8	1200	6.20	0.31	1.13	1.12	0.62	2.38	0.25	0.56	0.69
3/8 x 1-1/4	1,550	12.50	0.38	1.25	1.38	0.75	2.72	0.31	0.66	0.78
1/2 x 1-1/2	2,600	25.00	0.50	1.50	1.75	1.00	3.38	0.38	0.91	1.00
5/8 x 1-3/4	5,200	50.00	0.63	1.75	2.25	1.25	4.19	0.50	1.12	1.31
3/4 x 2	7200	87.50	0.75	2.00	2.75	1.50	4.94	0.62	1.38	1.56
7/8 x 2-1/4	10600	157.20	0.88	2.25	3.25	1.75	5.72	0.75	1.56	1.84
1 x 2-1/2	13300	218.00	1.00	2.50	3.75	2.00	6.47	0.88	1.81	2.09
1-1/4 x 3	21000	380.00	1.25	3.00	4.50	2.50	7.72	1.00	2.28	2.47
1-1/2 x 3-1/2	24000	700.00	1.50	3.50	5.50	3.00	9.25	1.25	2.75	3.00

*Ultimate Load is 5 times the Working Load Limit.

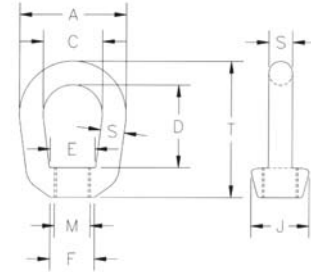
RIGGING HARDWARE

FORGED EYE NUTS & PAD EYES

**CAUTION: NEVER EXCEED THE WORKING LOAD LIMIT.
NEVER INSERT THE POINT OF A HOOK IN AN EYEBOLT. ALWAYS USE A SHACKLE.**

EYE NUTS

Forged steel.
Hot dipped galvanized.
Tapped with standard UNC class 2
threads after galvanizing.

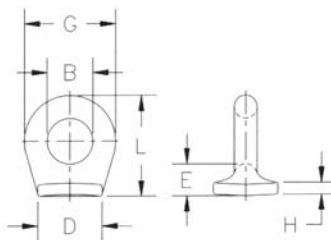


SIZE No.	STOCK SIZE (in.) S	Std. Tap SIZE	WORKING LOAD LIMIT (lbs.)	DIMENSIONS (in.)								Weight (Each lbs.)
				A	C	D	E	F	J	M	T	
1	0.25	1/4	520	1.25	0.75	1.06	0.66	0.50	0.69	0.25	1.69	0.09
2	0.31	3/8	1250	1.63	1.00	1.25	0.75	0.56	0.81	0.38	2.06	0.17
3A	0.38	1/2	2250	2.00	1.25	1.50	1.00	0.81	1.00	0.50	2.50	0.28
4	0.50	5/8	3600	2.50	1.50	2.00	1.19	1.00	1.31	0.63	3.19	0.60
5	0.63	3/4	5200	3.00	1.75	2.38	1.38	1.13	1.50	0.75	3.88	1.00
6	0.75	7/8	7200	3.50	2.00	2.63	1.63	1.31	1.88	0.88	4.31	1.65
7	0.88	1	10000	4.00	2.25	3.06	1.88	1.56	2.13	1.00	5.00	2.69
8	1.00	1 1/4	15500	4.50	2.50	3.50	1.94	1.88	2.38	1.25	5.75	3.87
9	1.13	1 3/8	18500	5.00	2.75	3.75	2.00	2.00	2.56	1.38	6.25	5.00
10	1.25	1 1/2	22500	5.63	3.13	4.00	2.38	2.25	3.00	1.50	6.75	6.78
11	1.50	2	40000	7.00	4.00	6.25	4.00	3.38	4.00	2.00	10.00	14.60

Ultimate Load is 5 times the Working load Limit. Rating based on standard tap size.

PAD EYES

Forged steel.
Forged from 1035 carbon steel.
Excellent welding qualities.
Widely used on farm machinery, trucks, steel hulled marine vessels and material handling equipment.



SIZE No.	WEIGHT PER 100 (lbs.)	DIMENSIONS (in.)						
		B	C	D	E	G	H	L
*0	2.80	0.25	0.19	0.63	0.31	0.63	0.09	0.75
*1	6.50	0.38	0.25	0.88	0.41	0.88	0.13	1.03
*1-1/2	10.40	0.63	0.25	1.00	0.44	1.13	0.16	1.31
2	21.10	0.75	0.38	1.06	0.50	1.50	0.19	1.63
4	52.20	1.00	0.56	1.44	0.78	2.13	0.22	2.34
5	82.50	1.25	0.69	1.75	0.81	2.63	0.25	2.75

*Meets the requirements of Military Specification MS-51930A.

RIGGING HARDWARE

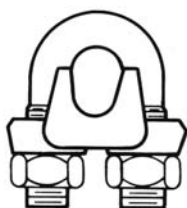
STAINLESS STEEL FITTINGS & CHAIN

CAUTION: NEVER EXCEED THE WORKING LOAD LIMIT.

4

STAINLESS STEEL WIRE ROPE CIPS

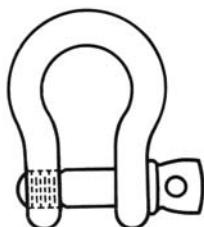
Type 316 stainless steel



SIZE (in.)	MIN. NUMBER OF CLIPS REQUIRED	AMOUNT OF WIRE ROPE TO TURN BACK	TORQUE IN (lbs.) FT.*	WEIGHT EACH (lbs.)
1/8	2	3-1/4"	4.5	0.05
3/16	2	3-3/4"	7.5	0.11
1/4	2	4-3/4"	15	0.19
5/16	2	5-1/4"	30	0.30
3/8	2	6-1/2"	45	0.46
1/2	3	11-1/2"	65	0.68
5/8	3	12"	95	1.00
3/4	4	18"	130	1.50
7/8	4	19"	225	2.40
1	5	26"	225	2.69

STAINLESS STEEL SCREW PIN ANCHOR SHACKLE

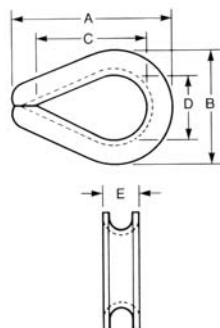
Type 316 stainless steel



SIZE (in.)	WORKING LOAD LIMIT (lbs.)	PIN DIA. (in.)	WEIGHT EACH (lbs.)
1/4	450	0.312	0.10
5/16	650	0.375	0.18
3/8	1000	0.437	0.29
1/2	1990	0.625	0.74
5/8	3050	0.75	1.40
3/4	4475	0.875	2.30
7/8	6000	1	3.50
1	7950	1.125	5.10

STAINLESS STEEL HEAVY DUTY THIMBLES

Type 316 stainless steel



SIZE (in.)	WEIGHT EACH (lbs.)	DIMENSIONS (in.)				
		A	B	C	D	E
1/4	0.08	2.19	1.50	1.63	0.88	0.44
5/16	0.10	2.50	1.88	1.88	1.13	0.50
3/8	0.25	2.88	2.09	2.09	1.13	0.66
1/2	0.45	3.63	2.63	2.75	1.50	0.88
5/8	0.68	4.25	3.09	3.25	1.75	1.00
3/4	1.20	5.00	3.50	3.75	2.00	1.25
7/8	1.85	5.66	4.19	4.31	2.25	1.50
1	2.20	6.13	4.63	5.00	2.50	1.56

RIGGING HARDWARE

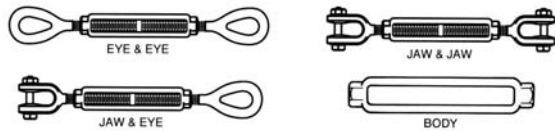
STAINLESS STEEL FITTINGS & CHAIN

CAUTION: NEVER EXCEED THE WORKING LOAD LIMIT.

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STAINLESS STEEL TURNBUCKLES

Type 316 Stainless steel



SIZE (in.)	WORKING LOAD LIMIT (lbs.)	WEIGHT EACH (lbs.)	AVERAGE OVERALL LENGTH WITH ENDS IN CLOSED POSITION (in.)
1/4 x 4	460	0.35	8.75
5/16 x 4-1/2	780	0.50	9.56
3/8 x 6	1160	0.77	12
1/2 x 6	2150	1.60	13
3/4 x 6	5140	4.25	17

STAINLESS STEEL CHAIN

Type 316 Stainless steel



SIZE (in.)	WORKING LOAD LIMIT (lbs.)	FEET PER DRUM	WEIGHT PER FT. (lbs.)
1/8	375	800	0.17
3/16	1150	800	0.38
1/4	1860	400	0.61
5/16	2425	275	0.84
3/8	3800	200	1.40

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SECTION 5

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LOGGING HARDWARE

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LOGGING HARDWARE

MISC. RIGGING HOOKS

CHOKER HOOKS



CHOKER ROPE SIZE (in.)	3/8 - 7/16	1/2 - 9/16	9/16 - 5/8	5/8 - 3/4	3/4 - 7/8	3/4 - 7/8	7/8 - 1.	1 - 1-1/8
HOOK SIZE	Micro - Midget	Midget	Dwarf	Bantam	Light Light	Light	Light Jr.	Junior
WEIGHT EACH	0.75	1.5	3	4	6.5	9	11.5	13.25

STRAWLINE HOOKS



Used to pull heavier rigging lines into brush. Hook will pass easily through blocks.

WIRE ROPE SIZE (in.)	WEIGHT EACH (lbs.)
5/16	0.140
3/8	0.215
7/16	0.340

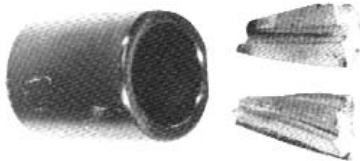
MIDGET WINCHLINE HOOKS



WIRE ROPE SIZE (in.)	WEIGHT EACH (lbs.)
1/2 - 9/16	3.07

QUICKWAY FERRULES

Wedges are 2 piece bronze. Super strength aluminum wedges also available.



ITEM NUMBER	COLOR CODE	DIA. (in.)	SIZE KNOB	WEIGHT EACH (lbs.)
M-4	Silver	1/2	Midget	0.25
M-4 1/2	Light blue	9/16	Midget	0.25
D-4	Cream	1/2	Dwarf	0.45
D-5	Pink	5/8	Dwarf	0.50
B-4	Brown	1/2	Bantam	0.90
B-5	Maroon	5/8	Bantam	0.85
B-6	Gray	3/4	Bantam	0.75
L-6	White	3/4	Light	1.90
L-7	Black	7/8	Light	1.75
L-8	Green	1	Light	1.60
LJ-7	Red	7/8	Light Jr.	2.40
LJ-8	Blue	1	Light Jr.	2.25
LJ-9	Yellow	1 1/8	Light Jr.	2.20
LJ-10	Orange	1 1/4	Light Jr.	2.00
S-10	Purple	1 1/4	Standard	3.50
S-11	Gold	1 3/8	Standard	3.25

LOGGING HARDWARE

MARLING SPIKES



Forged or machined from special analysis steel. Ground and Polished from end to end. Spike sizes from 30" and up are manufactured without upset heads.

NOTE: 20"-24"-30" are domestic dropped forged.

LENGTH (in.)	WEIGHT EACH (lbs.)
6	0.345
8	0.475
10	0.655
12	1.08
14	1.325
16	2.115
18	2.665
20	2.145
24	2.495
30	6.51

RAFTING PEAVY



SIZE HANDLE (HICKORY)	WEIGHT EACH (lbs.)
2-1/4 x 4	6.25

HAMMERHEAD RAFTNG DOGS



SIZE (in.)	WEIGHT EACH (lbs.)
5/8	1

GALVANIZED STAPLES



SIZE (in.)	WEIGHT EACH (lbs.)
3/8 x 4	0.25
1/2 x 4	1

ALUMINUM PIKE POLES



PARTS ONLY	
Points Alum. & Steel	
Knob Ends	
Tubing (per foot)	
6" Drilled plug Ends	

LENGTH (ft.)	WEIGHT EACH (lbs.)
6	3.25
8	4.05
10	4.80
12	5.55
14	6.25
16	7.05
18	7.75
20	8.55
22	9.25
24	10.00

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LOGGING HARDWARE

LOG DUMPERS



MUSHROOM DUMPERS

WEIGHT EACH is 11.5 lbs.



TRIANGLE DUMPERS

WEIGHT EACH is 14.5 lbs.



LIGHT WEIGHT RIBBED DUMPERS

WEIGHT EACH is 16.5 lbs.



BEARCLAW

WEIGHT EACH is 11 lbs.

DOUBLE ENDER



SIZE NAME	JUNIOR				STANDARD	
Line	7/8	1	1 1/8	1 1/4	1 1/4	1 3/8
Poured Ferrule	J7	J8	J9	J10	S10	S11
WEIGHT (lbs.)	18				25	

Use anywhere you need to join two lines for straight pulls.

Requires a ferrule on the end of each line.

Each hook proof loaded, certified and stamped.

LOGGING HARDWARE

FERRULES AND SLEEVES

MACHINED CHOKER FERRULE

To obtain 100% efficiency, use pocket dies to swage Light choker ferrules. Always follow the swaging press manufacturers swaging instructions.



*Also in 1" open channel die.

WIRE ROPE SIZE (in.)	DESCRIPTION	DIE USED	STANDARD PACKAGE PIECE
3/8	M-3-P	MID. POCKET	100
7/16	M-7/16-P	MID. POCKET	100
1/2	M-4-P	MID. POCKET	100
9/16	M-9/16-P	MID. POCKET	100
5/8	D-5-P	DWF. POCKET	50
5/8	B-5-P	BTM. POCKET	40
3/4	B-6-P	BTM. POCKET	40
7/8	B-7-P	BTM. POCKET	40
5/8	L-5-P	*LT. POCKET	25
3/4	L-6-P	*LT. POCKET	25
7/8	L-7-P	*LT. POCKET	25
1	L-8-P	*LT. POCKET	25

MACHINED DRUMLINE FERULE

Drumline ferrules do not develop the full strength of the wire rope and should only be used on winch drums. Never use drumline ferrules in place of the choker ferrules. Direct loads should never be applied on drumline ferrules. Always leave at least three wraps of wire rope on the winch drum.



WIRE ROPE SIZE (in.)	DESCRIPTION	DIE USED OPEN CHANNEL	STANDARD PACKAGE PIECE
5/8	B-5-DL	3/4	50
3/4	B-6-DL	3/4	50
7/8	B-7-DL	3/4	50
3/4	L-6-DL	1	25
7/8	L-7-DL	1	25
1	L-8-DL	1	25
7/8	J-7-DL	1 1/8	20
1	J-8-DL	1 1/8	20
1 1/8	J-9-DL	1 1/8	20
1 1/4	J-10-DL	1 1/8	20

STAINLESS STEEL DUPLEX SLEEVES

To insure maximum efficiency, make sure the end of the rope bottoms in tyhe sleeve. Always follow the swaging press manufactures swaging instructions. Make sure to always chekc the sleeve size, rope size, and die size before swaging.



WIRE ROPE SIZE (in.)	SLEEVE TYPE (piece)	DIE USED OPEN CHANNEL	WEIGHT EACH (lbs.)
1/8	1	1/8	0.02
3/16	1	3/16	0.03
1/4	1	1/4	0.05
5/16	1	3/8	0.15
3/8	1	3/8	0.15
7/16	1	1/2	0.30
1/2	1	1/2	0.30
9/16	1	5/8	0.57
5/8	1*	5/8	0.57
3/4	1*	3/4	1.12
7/8	1*	7/8	1.84
1	1	1	2.19
1	2	1	2 per pair
1 1/8	2	1 1/8	2.8 per pr.
1 1/4	2	1 1/4	4.08 per pr.
1 3/8	2	1 1/4	4.08 per pr.
1 1/2	2	1 1/2	4.08 per pr.

*Available in 2 pc.

SECTION 6

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TRUCKING SUPPLIES	120 - 121

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SYNTHETIC ROPE

NYLON, POLY-DAC, POLYPRO, MANILA



MANILA 3-STRAND

DIA. (in.)	FOOTAGE	WEIGHT EACH (lbs.)
1/4	1250	25
5/16	1725	50
3/8	600	25
1/2	600	45
5/8	600	80
3/4	600	100
7/8	600	134
1	600	162
1 1/8	600	216
1 1/4	600	251

NYLON 3-STRAND

DIA. (in.)	FOOTAGE	WEIGHT EACH (lbs.)
3/16	600	7
1/4	600	14
5/16	600	15
3/8	600	21
1/2	600	40
5/8	600	63
3/4	600	87
7/8	600	120
1	600	158

POLYPROPYLENE

DIA. (in.)	FOOTAGE	WEIGHT EACH (lbs.)
1/4	600	16
5/16	600	18
3/8	600	24
1/2	600	41
5/8	600	59
3/4	600	79
7/8	600	107
1	600	138
1 1/8	600	168
1 1/4	600	202
1 1/2	600	278

POLY-DAC COMBINATION 3-STRAND

DIA. (in.)	FOOTAGE	WEIGHT EACH (lbs.)
1/4	600	8
5/16	600	12
3/8	600	17
1/2	600	28
5/8	600	45
3/4	600	64
7/8	600	90
1	600	108
1 1/8	600	143
1 1/4	600	164

SYNTHETIC ROPE

REFERENCE GUIDE

Type of Rope	Characteristics	Uses
MANILA	Strongest vegetable fiber. Handles and knots well. Good abrasion resistance. Low elongation. Absorbs	Where high strength and elasticity are not of prime importance. General purpose ropes for farm, home, industry, tree and tent ropes, utility rigging, pleasure marine.
NYLON	Over twice the strength of Manila. Excellent energy absorption under shock loading. Good abrasion resistance. Finest handling rope.	Where high strength and elasticity are important. Marine towing, anchoring and mooring lines, slings, commercial fishing, utility ropes, pleasure marine.
DACRON/POLYESTER	Approximately twice the strength of Manila. Lowest elongation. Highest resistance to abrasion of all fibers. Handles repeat loading well.	Where high strength and minimal stretch are required. Running rigging, skitows, tree ropes, derrick and block lines, abseiling towing.
ESTERLENE COMBOS	Approaches twice the strength of Manila. Elongation between polyester and nylon. Very flexible, lightweight, floats 1-1/4" and up. Fine abrasion and chemical resistance. Polyester cover over	Where abrasion resistance and lightweight are required. Locking lines, mooring lines, tree rope, carpullers, skitow ropes, stringing lines, fishing.
POLYPRO	Almost twice the strength of Manila. Floats will not decay or rot. Good resistance to acids, alkalis and solvents. Fine energy absorption.	Where lightweight, strength and minimal stretch are important. Mooring lines, skitows, pulling lines, general utility ropes.

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SPECIFICATIONS THREE STRAND and EIGHT STRAND - STANDARD LAY ROPES

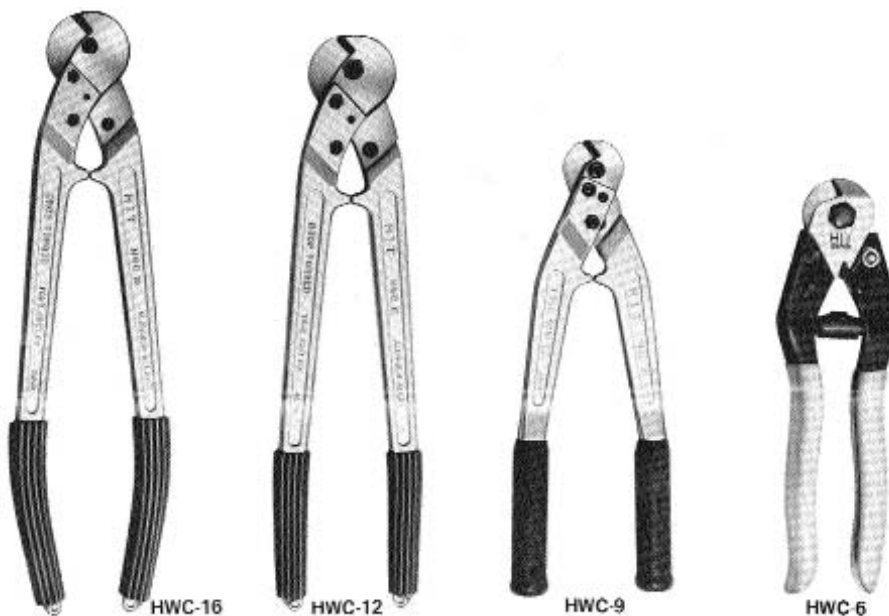
Nominal Dia. (in.)	MANILA			POLYPRO			DACRON-POLYESTER			POLY-COMBO			NYLON		
	(1) Linear Density (lbs./100 ft.)	(2) New Rope Tensile Strength (lbs.)	(3) Working Load (lbs.)	(1) Linear Density (lbs./100 ft.)	(2) New Rope Tensile Strength (lbs.)	(3) Working Load (lbs.)	(1) Linear Density (lbs./100 ft.)	(2) New Rope Tensile Strength (lbs.)	(3) Working Load (lbs.)	(1) Linear Density (lbs./100 ft.)	(2) New Rope Tensile Strength (lbs.)	(3) Working Load (lbs.)	(1) Linear Density (lbs./100 ft.)	(2) New Rope Tensile Strength (lbs.)	(3) Working Load (lbs.)
3/16	1.50	406	41	0.70	720	72	1.20	900	90	0.94	720	72	1.00	900	75
1/4	2.00	540	54	1.20	1,130	113	2.00	1,490	149	1.61	1,130	113	1.50	1,490	124
5/16	2.90	900	90	1.80	1,710	171	3.10	2,300	230	2.48	1,710	171	2.50	2,300	192
3/8	4.10	1,220	122	2.80	2,440	244	4.50	3,340	334	3.60	2,440	244	3.50	3,340	278
7/16	5.25	1,580	176	3.80	3,160	352	6.20	4,500	500	5.00	3,160	352	5.00	4,500	410
1/2	7.50	2,380	264	4.70	3,780	420	8.00	5,750	640	6.50	3,780	440	6.50	5,750	525
9/16	10.4	3,100	388	6.10	4,600	575	10.2	7,200	900	8.00	4,600	610	8.15	7,200	720
5/8	13.3	3,960	496	7.50	5,600	700	13.0	9,000	1,130	9.50	5,600	720	10.5	9,350	935
3/4	16.7	4,860	695	10.7	7,650	1,090	17.5	11,300	1,610	12.5	7,650	1,080	14.5	12,800	1,420
13/16	19.5	5,850	835	12.7	8,900	1,270	21.0	14,000	2,000	15.2	8,900	1,310	17.0	15,300	1,700
7/8	22.4	6,950	995	15.0	10,400	1,490	25.0	16,200	2,320	18.0	10,400	1,540	20.0	18,000	2,000
1	27.0	8,100	1,160	18.0	12,600	1,800	30.4	19,800	2,820	21.8	12,600	1,870	26.4	22,600	2,520
1 1/16	31.2	9,450	1,350	20.4	14,400	2,060	34.4	23,000	3,280	25.6	14,400	2,180	29.0	26,000	2,880
1 1/8	36.0	10,800	1,540	23.8	16,500	2,360	40.0	26,600	3,800	29.0	16,500	2,480	34.0	29,800	3,320
1 1/4	41.6	12,200	1,740	27.0	18,900	2,700	46.2	29,800	4,290	33.4	18,900	2,820	40.0	33,800	3,760
1 5/16	47.8	13,500	1,930	30.4	21,200	3,020	52.5	33,800	4,820	35.6	21,200	3,020	45.0	38,800	4,320
1 1/2	60.0	16,700	2,380	38.4	26,800	3,820	67.0	42,200	6,050	45.0	26,800	3,820	55.0	47,800	5,320
1 5/8	74.5	20,200	2,880	47.6	32,400	4,620	82.0	51,500	7,350	55.5	32,400	4,620	66.5	58,500	6,500
1 3/4	89.5	23,800	3,400	59.0	38,800	5,550	98.0	61,000	8,700	66.5	38,800	5,550	83.0	70,000	7,800
2	108.0	28,000	4,000	69.0	46,800	6,700	118.0	72,000	10,300	78.0	46,800	6,700	95.0	83,000	9,200

CAUTION! WORKING LOADS ARE GUIDELINES ONLY.

1. Linear density (pounds per 100 feet) is shown as "average". Maximum is 5% higher.
2. New rope tensile strengths are based on test of new and unused rope of standard construction in accordance with Cordage Institute Standard Test.
3. Working Loads are for rope in good condition with appropriate splices, in non-critical applications, and under normal service conditions. Working loads should be exceeded only with expert knowledge of conditions and professional estimates of risk. Working loads should be reduced where life, limb, or valuable property are involved, or for exceptional service conditions such as shock load, sustained loads, etc.
4. Manila rope tensile and weight specifications are based on Federal Specification TR-605B.

HYDRAULIC CUTTERS ALSO AVAILABLE

WIRE ROPE CUTTER



Part Number	Weight in lbs.	Length in inches	Capacity	
			Wire Rope	Steel Wire
WC6	0.56	7.5	0.187	0.16
WC9HIT	1.57	13.2	0.313	0.24
WC12HIT	3.31	20.5	0.500	0.28
WC16HIT	5.52	25.6	0.625	0.36

HAND SWAGER

MODEL	WEIGHT (lbs.)	SIZE CAPACITY (in.)
WCHS-600	7	1/16" - 3/16"
WCHS-350	5	1/16" - 1/8"



IMPACT CUTTER

MODEL	SIZE CAPACITY (in.)	WEIGHT (lbs.)
No. 1	5/8	8
No. 1A	1	16
No. 2	1 1/2	29



OVAL SLEEVE



FINISHED EYE SPLICE

DIA (in.)	PLAIN COPPER oval sleeves	ZINC PLATED COPPER oval sleeves	ALUMINUM oval sleeves	HAND TOOL TO USE
1/32	COS132	COZ132	AOS132	HS-3
3/64	COS364	COZ364	AOS364	HS-3
1/16	COS116	COZ116	AOS116	HS-3,HS-350, HS-600
3/32	COS332	COZ332	AOS332	HS-350,HS-600
1/8	COS018	COZ018	AOS018	HS-350,HS-600
5/32	COS532	COZ532	AOS532	HS-600
3/16	COS316	COZ316	AOS316	HS-600
7/32	COS732	COZ732	AOS732	
1/4	COS014	COZ014	AOS014	HS014
5/16	COS516	COZ516	AOS516	HS516
3/8	COS038	COZ038	AOS038	

STOP SLEEVE



FINISHED STOP

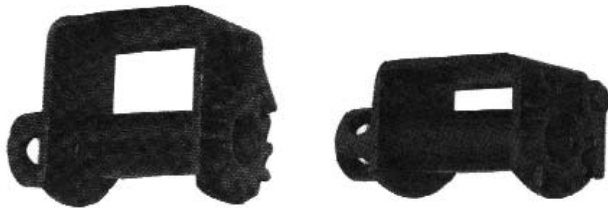
DIA(in.)	Copper	Aluminum
1/32	CSS132	ASS132
3/64	CSS364	ASS364
1/16	CSS116	ASS116
3/32	CSS332	ASS332
1/8	CSS018	ASS018
5/32	CSS532	ASS532
3/16	CSS316	ASS316
7/32	CSS732	ASS732
1/4	CSS014	ASS014
5/16	CSS516	ASS516
3/8	CSS038	ASS038

For convenient and proper compression of sleeves, both in the field and in the shop, many types of tools are available. Splices made with these tools typically hold military specification grade aircraft control cable in tension until the cable breaks. To insure good splices, make the proper number of presses in each sleeve. Applications that require continuous and frequent sleeve pressings call for the use of our larger toggle action tools, or power press equipment.

TRUCK WINCHES

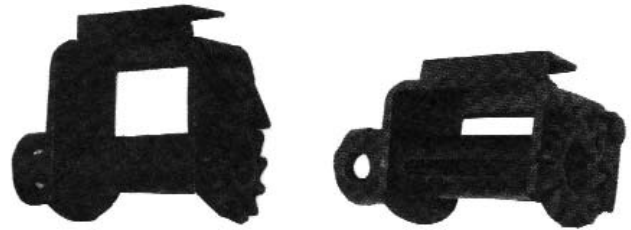
STANDARD

4" High and Low weld-on



PORTABLE

4" High and Low portable



WINCH BARS



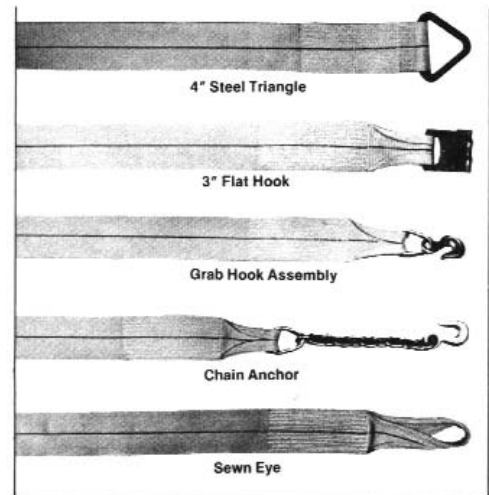
Combination Bar
One end tapered for application other end with special fitting for chain binder application.



Knurled Winch Bar
One end tapered for winch application, other end knurled for easy gripping.

4" NYLON TRUCK STRAPS

These yellow, heavy duty, wear and weather resistant straps meet or exceed California Highway Patrol specifications. Typical terminations for the other end are a 3" flat hook, a 4" forged steel triangle, a grab hook assembly, a chain anchor, also a twisted and tapered eye or another plain and unsewn end. Standard lengths are 27' and 30'. Winches, tightening bars and special lengths and assemblies are available upon request. Heavy duty winch style load huggers are also available in 2" and 3" wide webbing.



WIRE ROPE TIE-DOWNS

3/8" 6X37 CLASS fiber core EIPS with c/s swaged eye one end and ferrule other end, 30' long.

TRUCKING SUPPLIES

LOAD BINDERS, CHAIN ASSEMBLIES

LOAD BINDERS

CAUTION! NEVER EXCEED WORKING LOAD LIMITS!

Forged steel, heat treated, painted orange



SIZE (in.)	WORKING LOAD LIMIT (lbs.)	BREAKING STRENGTH (lbs.)	WEIGHT EACH (lbs.)	TAKE-UP (in.)
1/4	2,600	9,100	3.10	2 1/2
5/16 - 3/8	5,400	19,000	8.25	3 3/4
3/8 - 1/2	9,200	27,600	11.50	4 1/4
1/2 - 5/8	11,500	34,500	12.70	4

CHAIN ASSEMBLIES

High Test chain and Transport chain are available with clevis grab hooks each end. Available in ready to use custom lengths with grab hook each end for truck tie-down and lashing uses.

All attachments, hooks, connecting links, swivels, sling links, etc. are available on request.

Stainless steel chain available on request.

HIGH TEST CHAIN

Tow & binder - Log & Utility chain

SIZE (in.)	LENGTH (ft.)	WORKING LOAD LIMIT (in.)	PROOF LOAD LIMIT (lbs.)	BREAKING LOAD (lbs.)
5/16	16	3900	6400	11600
5/16	20	3900	6400	11600
3/8	16	5400	8900	16200
3/8	20	5400	8900	16200
1/2	20	9200	15300	27600

TRANSPORT CHAIN

Truck tie-down chain - Tow & binder chain with clevis grab hook each end.

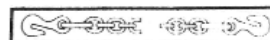
SIZE (in.)	LENGTH (ft.)	WORKING LOAD LIMIT (in.)	PROOF LOAD LIMIT (lbs.)	BREAKING LOAD (lbs.)
5/16	16	4700	9400	18800
5/16	20	4700	9400	18800
3/8	16	6600	13200	26400
3/8	20	6600	13200	26400
1/2	20	11300	22600	45200

POLYPROPYLENE ROPES

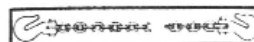
For tying down small loads and tarps.

DIA. (in.)	FOOTAGE	WEIGHT EACH (lbs.)
1/4	600	16
5/16	600	18
3/8	600	24
1/2	600	41
5/8	600	59
3/4	600	79
7/8	600	107
1	600	138
1 1/8	600	168
1 1/4	600	202
1 1/2	600	278

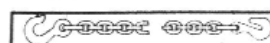
EYE GRAB HOOK EACH END



CLEVIS GRAB HOOK EACH END



SLIP HOOK ONE END
GRAB HOOK OTHER END



SECTION 7

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CHAIN

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CHAIN

PROOF COIL & HIGH TEST

PROOF COIL GRADE 30

Design factor 4:1

Bright Finished - Hot Dipped Galvanized - Zinc plated - Low Carbon Steel

Do not use for overhead lifting.

NEVER EXCEED WORKING LOAD LIMIT FOR CHAIN OR ACCESSORIES!

SIZE (in.)	MATERIAL DIA		INSIDE DIA (in.)		WEIGHT PER 100 ft. (lbs.)	LINKS PER ft.	WORKING LOAD LIMIT (lbs.)	FEET PER DRUM	
	(in.)	mm	LENGTH	WIDTH				HALF DRUM	FULL DRUM
3/16	0.22	5.50	0.95	0.40	40	12.50	750	800	1600
1/4	0.28	7.00	1.00	0.50	71	12.00	1250	400	800
5/16	0.34	8.50	1.10	0.50	105	10.80	1900	275	550
3/8	0.41	10.30	1.23	0.62	150	9.80	2650	200	400
1/2	0.53	13.50	1.50	0.81	270	8.00	4500	150	300
5/8	0.66	16.60	1.87	1.00	400	6.40	6900	75	150
3/4	0.78	20.00	2.12	1.12	575	5.60	9750	50	100
7/8	0.91	23.00	2.50	1.37	780	4.80	10750	-	80
1	1.03	25.40	2.75	1.50	1000	4.40	13950	-	60

HIGH TEST GRADE 43

Design factor 3:1

Bright Finished - Hot Dipped Galvanized - High Carbon Steel

The Working Load Limit is reduces up to 20% when chain is Hot Dipped Galvanized

Heat Treated when required - Test Certificates furnished upon request

Do not use for overhead lifting

NEVER EXCEED WORKING LOAD LIMIT FOR CHAIN OR ACCESSORIES!

SIZE (in.)	MATERIAL DIA		INSIDE DIA (in.)		WEIGHT PER 100 ft. (lbs.)	LINKS PER ft.	WORKING LOAD LIMIT (lbs.)	FEET PER DRUM	
	(in.)	mm	LENGTH	WIDTH				HALF DRUM	FULL DRUM
1/4	0.28	7.00	0.82	0.39	74	14.50	2600	400	800
5/16	0.34	8.50	1.01	0.48	104	12.30	3900	275	550
3/8	0.41	10.30	1.15	0.56	155	10.50	5400	200	400
1/2	0.53	13.50	1.43	0.75	260	8.30	9200	150	300
5/8	0.66	16.60	1.79	0.90	385	7.00	11500	75	150
3/4	0.78	20.00	1.96	1.06	605	6.10	16200	50	100

CHAIN

TRANSPORT & ALLOY

TRANSPORT GRADE 70

Design factor 4:1

Self Colored - Zinc plated - Special High Carbon Steel (Heat Treated)

Test Certificates furnished upon request

Do not use for overhead lifting

NEVER EXCEED WORKING LOAD LIMIT FOR CHAIN OR ACCESSORIES!

SIZE (in.)	MATERIAL DIA		INSIDE DIA (in.)		WEIGHT PER 100 ft. (lbs.)	LINKS PER ft.	WORKING LOAD LIMIT (lbs.)	FEET PER DRUM	
	(in.)	mm	LENGTH	WIDTH				HALF DRUM	FULL DRUM
1/4	0.281	7.00	0.84	0.47	74	14.50	3150	400	800
5/16	0.327	8.50	0.98	0.46	100	12.30	4700	275	550
3/8	0.406	10.30	1.14	0.54	156	10.50	6600	200	400
1/2	0.531	13.50	1.43	0.72	259	8.30	11300	150	300

7

ALLOY GRADE 80

Design factor 3.4:1

G-80 Alloy chain and higher grades are the 'Only' Grades used for Overhead Lifting

For accessories use only the same grade of material with the same load limits

Test Certificates furnished upon request

NEVER EXCEED WORKING LOAD LIMIT FOR CHAIN OR ACCESSORIES!

SIZE (in.)	WORKING LOAD LIMIT (lbs.)	FEET per DRUM	WEIGHT per 100 ft.
9/32	3500	500	74
5/16	4500	500	90
3/8	7100	500	145
1/2	12000	300	257
5/8	18100	200	387
3/4	28300	100	622
7/8	34200	100	776

CHAIN

CHAIN ASSEMBLIES

CAUTION! NEVER EXCEED WORKING LOAD LIMITS!

CHAIN ASSEMBLIES

High test chain and Transport chain are available with clevis grab hooks each end.

Available in ready to use custom lengths with grab hook each end for truck tie-down and lashing uses.

All attachments, hooks, connecting links, swivels, slings links, etc. are available on request.

Stainless steel chain available on request.

HIGH TEST CHAIN

Tow & binder chain - Log & Utility chain

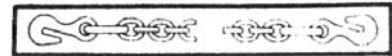
SIZE (in.)	LENGTH (ft.)	WORKING LOAD LIMIT (in.)	PROOF LOAD LIMIT (lbs.)	BREAKING LOAD (lbs.)
5/16	16	3900	6400	11600
5/16	20	3900	6400	11600
3/8	16	5400	8900	16200
3/8	20	5400	8900	16200
1/2	20	9200	15300	27600

TRANSPORT CHAIN

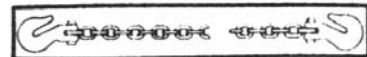
Truck tie-down chain - Tow & binder chain with clevis grab hook each end.

SIZE (in.)	LENGTH (ft.)	WORKING LOAD LIMIT (in.)	PROOF LOAD LIMIT (lbs.)	BREAKING LOAD (lbs.)
5/16	16	4700	9400	18800
5/16	20	4700	9400	18800
3/8	16	6600	13200	26400
3/8	20	6600	13200	26400
1/2	20	11300	22600	45200

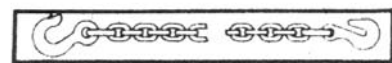
EYE GRAB HOOK EACH END



CLEVIS GRAB HOOK EACH END



SLIP HOOK ONE END
GRAB HOOK OTHER END



LOAD BINDERS

CAUTION! NEVER EXCEED WORKING LOAD LIMITS!

Forged steel, heat treated, painted orange.



SIZE (in.)	WORKING LOAD LIMIT (lbs.)	BREAKING STRENGTH (lbs.)	WEIGHT EACH (lbs.)	TAKE-UP (in.)
1/4	2600	9100	3.10	2 1/2
5/16 - 3/8	5400	19000	8.25	3 3/4
3/8 - 1/2	9200	27600	11.50	4 1/4
1/2 - 5/8	11500	34500	12.70	4

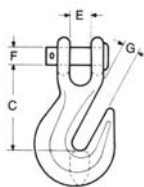
CHAIN

CLEVIS & EYE HOOKS

FORGED STEEL QUENCHED AND TEMPERED

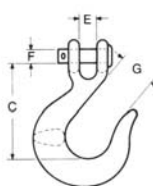
**CAUTION! NEVER EXCEED WORKING LOAD LIMITS!
WORKING LOAD LIMITS BASED ON 4:1 DESIGN FACTOR**

CLEVIS GRAB HOOKS



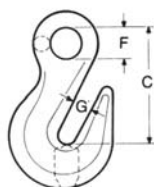
SIZE OF CHAIN (in.)	RATED LOAD (lbs.)		DIMENSIONS (in.)				WEIGHT EACH (lbs.)
	HIGHT TEST	ALLOY G-70*	C	E	F	G	
1/4	2600	3150	1.81	0.44	0.38	0.34	0.36
5/16	3900	4700	2.16	0.50	0.44	0.44	0.63
3/8	5400	6600	2.47	0.59	0.47	0.50	1.00
7/16	7200	8750	2.78	0.66	0.56	0.56	1.31
1/2	9200	11300	3.22	0.75	0.63	0.66	2.06

CLEVIS SLIP HOOKS



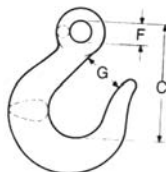
SIZE OF CHAIN (in.)	RATED LOAD (lbs.)		DIMENSIONS (in.)				WEIGHT EACH (lbs.)
	HIGHT TEST		C	E	F	G	
1/4	3900		2.44	0.44	0.38	0.94	0.44
5/16	3900		2.72	0.41	0.44	1.06	0.75
3/8	5400		3.25	0.59	0.47	1.31	1.13
7/16	7200		3.66	0.56	0.56	1.56	2.06
1/2	9200		4.00	0.75	0.63	1.69	2.75

EYE GRAB HOOKS



SIZE OF CHAIN (in.)	RATED LOAD (lbs.)		DIMENSIONS (in.)			WEIGHT EACH (lbs.)
	HIGHT TEST		C	F	G	
1/4	2600		1.97	0.50	0.35	0.26
5/16	3900		2.25	0.56	0.44	0.45
3/8	5400		2.56	0.66	0.50	0.79
7/16	7200		2.94	0.75	0.56	1.19
1/2	9200		3.38	0.88	0.66	1.75

EYE SLIP HOOKS



SIZE OF CHAIN (in.)	RATED LOAD (lbs.)		DIMENSIONS (in.)			WEIGHT EACH (lbs.)
	HIGHT TEST		C	F	G	
1/4	2600		2.53	0.50	0.94	0.40
5/16	3900		2.59	0.63	1.06	0.70
3/8	5400		3.31	0.72	1.31	1.00
7/16	7200		3.88	0.81	1.56	1.56
1/2	9200		4.28	0.94	1.69	2.31

CHAIN

CONNECTING, QUICK, COLD SHUTS

NEVER EXCEED WORKING LOAD LIMIT.

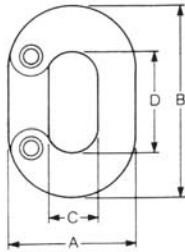
CONNECTING LINKS Design factor 4:1

To be used with proof coil chain only.

Not to be used for lifting.

Drop forged, weldless carbon steel, heat treated.

Galvanized finish.



SIZE (in.)	DIMENSIONS (in.)				WEIGHT EACH (lbs.)	WORKING LOAD LIMIT	
	A	B	C	D		lbs.	kgs.
3/16	0.81	1.13	0.31	0.63	0.03	800	363
1/4	1.00	1.50	0.44	0.88	0.06	1400	635
5/16	1.19	1.75	0.50	1.00	0.11	2000	907
3/8	1.38	2.13	0.56	1.13	0.19	2800	1270
1/2	1.72	2.69	0.66	1.44	0.39	4750	2155

COLD SHUTS Design factor 4:1

To be used with proof coil chain only.

Not to be used for lifting.

Use one size larger than chain size.



SIZE (in.)	DIMENSIONS (in.)			WEIGHT EACH (lbs.)	WORKING LOAD LIMIT	
	DIA.	INSIDE WIDTH	LENGTH		lbs.	kgs.
1/8	0.13	0.38	1.25	0.02	220	100
3/16	0.19	0.50	1.38	0.045	660	299
1/4	0.25	0.56	1.56	0.08	880	399
5/16	0.31	0.63	1.94	0.17	1760	798
3/8	0.38	0.63	2.13	0.23	2220	998
1/2	0.50	1.00	2.75	0.51	3300	1497

QUICK LINKS Design factor 4:1

To be used with proof coil chain only.

Not to be used for lifting.



SIZE (in.)	DIMENSIONS (in.)		WEIGHT EACH (lbs.)	WORKING LOAD LIMIT	
	DIA.	GAP		lbs.	kgs.
1/8	0.14	0.20	0.03	220	109
3/16	0.34	0.94	0.03	450	204
1/4	0.38	1.19	0.06	750	340
5/16	0.44	1.38	0.10	1250	567
3/8	0.63	1.50	0.18	1900	862
1/2	0.75	1.88	0.38	3500	1588

7

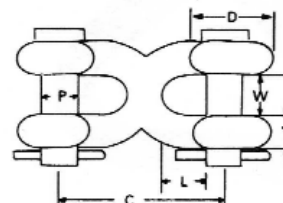
CHAIN

MID-LINK & LAP REPAIR LINKS

NEVER EXCEED WORKING LOAD LIMIT.

MID-LINK OR CLEVIS LINK Design factor 3:1

For permanent or temporary use.
 Forged and Heat treated. Heat treated pins.
 Zinc plated to resist rust.
 Reusable - easy to install or remove.



SIZE (in)	WORKING LOAD LIMIT (lbs.)	DIMENSIONS (in.)						WEIGHT PER 100 PCS (lbs.)
		W	T	L	C	P	D	
1/4 - 5/16	4700	0.44	0.31	0.38	1.56	0.38	0.94	40
3/8	6600	0.50	0.38	0.47	1.81	0.44	1.00	50
7/16 - 1/2	11300	0.63	0.50	0.59	2.31	0.56	1.31	100
5/8	15800	0.75	0.63	0.75	2.81	0.69	1.50	170

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LAP REPAIR LINKS Design factor 4:1

To be used with proof coil chain only.
 Not to be used for lifting.



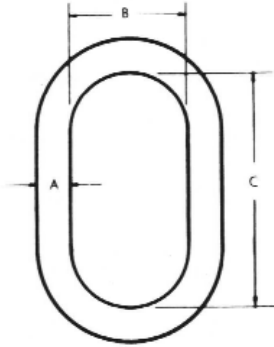
SIZE (in.)	WEIGHT PER 100 PCS (lbs.)	WORKING LOAD LIMIT	
		lbs.	kgs.
1/8 x 3/4	1.125	190	86
3/16 x 1	3.25	240	10
1/4 x 1-1/4	6.75	400	181
1/4 x 2	9.75	400	181
5/16 x 1-1/2	13	950	431
3/8 x 1-5/8	23	1250	567
1/2 x 2-1/2	53	2125	964

CHAIN ALLOY LINKS

NEVER EXCEED WORKING LOAD LIMIT.

ALLOY MASTER LINK

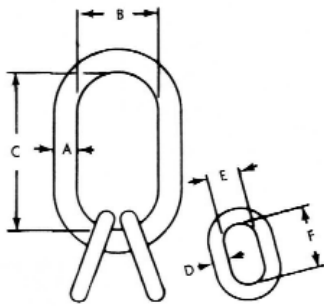
Forged alloy steel and painted.
Weldless.
Quenched and tempered. Design factor 6:1.



SIZE (in.)			WORKING LOAD LIMIT (lbs.)	WEIGHT EACH (lbs.)
A	B	C		
1/2	2.50	5.00	4100	0.89
5/8	3.00	6.00	5500	1.63
3/4	2.75	5.50	8600	2.25
1	4.00	8.00	20300	4.60
1 1/4	4.38	10.50	29300	9.75
1 1/2	6.00	12.00	39900	17.12
1 3/4	6.00	12.00	52100	26.12
2	7.00	14.00	81400	41.12
2 1/4	8.00	16.00	99500	54.80
2 1/2	8.00	16.00	122750	71.60

ALLOY MASTER LINK SUB-ASSEMBLY

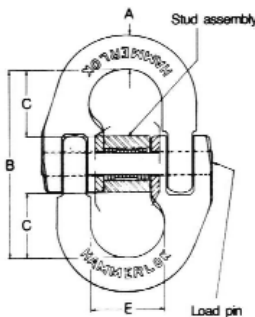
Forged alloy steel.
Quenched and tempered and heat treated.
Design factor 6:1.



SIZE (in.)						WORKING LOAD LIMIT (lbs.)	WEIGHT EACH (lbs.)
A	B	C	D	E	F		
1/2	2.50	5.00	0.34	0.63	1.13	6100	1.00
3/4	2.75	5.50	0.47	0.88	1.56	12300	2.60
1	3.50	7.00	0.66	1.25	2.25	20800	6.10
1 1/4	4.38	8.75	0.91	1.75	3.13	31300	13.30
1 1/2	5.25	10.50	1.16	2.25	4.00	49000	24.30
1 3/4	6.00	12.00	1.28	2.38	4.38	73500	36.10
2	7.00	14.00	1.53	2.75	5.25	88900	57.40

ALLOY COUPLING LINK

Forged alloy steel.
Heat treated.
Design factor 6:1.



SIZE (in.)	WORKING LOAD LIMIT (lbs.)	DIMENSIONS (in.)					WEIGHT EACH (lbs.)
		A	B	C	E*	Max. Width	
9/32	3500	0.31	1.81	0.63	0.50	1.69	0.23
3/8	7100	0.50	2.41	0.83	0.75	2.22	0.65
1/2	12000	0.69	3.38	1.22	1.00	3.13	1.50
5/8	18100	0.81	4.06	1.50	1.25	3.69	2.60
3/4	28300	0.94	4.78	1.80	1.50	4.31	3.80
7/8	34200	1.05	5.13	1.91	1.75	5.31	6.30
1	47700	1.25	5.75	2.19	2.00	6.19	9.30
1 1/4	72300	1.53	6.81	2.63	2.25	7.75	17.30

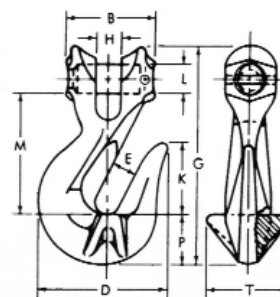
CHAIN

ALLOY HOOKS GRADE 80

NEVER EXCEED WORKING LOAD LIMIT.

ALLOY CLEVIS GRAB HOOK

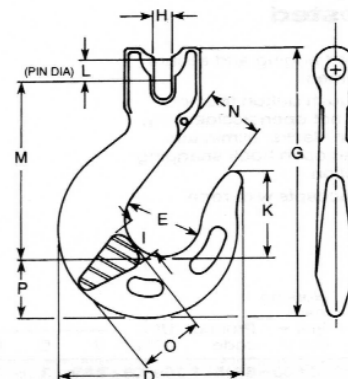
Forged alloy steel.
Heat treated and quenched and tempered.
Design factor 6:1.



CHAIN SIZE (in.)		WORKING LOAD LIMIT (lbs.)	DIMENSIONS (in.)											WEIGHT EACH (lbs.)
In.	mm		B	D	E Dim.	E Tol. +/-	G	H	K	L	M	P	T	
9/32	7	3500	1.250	1.781	0.359	0.016	3.000	0.328	0.984	0.357	1.625	0.718	1.187	0.46
3/8	10	7100	1.812	2.562	0.468	0.031	4.078	0.453	1.406	0.507	2.109	1.062	1.750	1.23
1/2	13	12000	2.156	3.250	0.595	0.031	5.266	0.593	1.875	0.625	2.875	1.281	2.125	2.40
5/8	16	18100	2.687	4.078	0.750	0.031	6.531	0.750	2.375	0.750	3.562	1.593	2.500	4.17
3/4	20	28300	3.125	5.234	0.875	0.031	9.083	0.875	3.503	0.906	5.500	1.867	2.875	9.56

ALLOY CLEVIS SLING HOOK

Forged alloy steel.
Heat treated and quenched and tempered.
Design factor 6:1.
Available with latches.

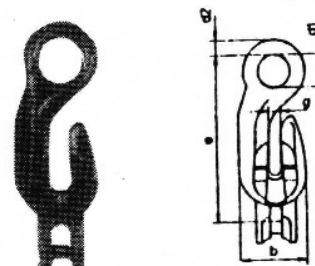


CHAIN SIZE (in.)		WORKING LOAD LIMIT (lbs.)	DIMENSIONS (in.)											WEIGHT EACH (lbs.)
In.	mm		D	E	G	H	I	K	L	M	N	O	P	
9/32	7	3500	3.500	1.500	5.156	0.328	0.734	1.594	0.357	3.437	1.187	1.203	1.051	0.64
3/8	10	7100	4.343	1.875	6.672	0.453	0.953	2.187	0.507	4.468	1.437	1.453	1.281	1.91
1/2	13	12000	5.500	2.250	8.000	0.593	1.172	2.562	0.625	5.265	1.781	1.938	1.656	4.33
5/8	16	18100	6.281	2.625	9.687	0.750	1.438	2.281	0.750	6.078	2.031	2.375	2.188	5.20
3/4	20	28300	7.827	3.000	11.688	0.875	1.688	3.437	0.906	7.344	2.500	2.828	2.563	11.40

ALLOY CLEVIS SHORTENING HOOK

For mounting into assemblies requiring a shortening capability.
Can be used with any master link assembly. Compact and convenient fitting.

SIZE (in.)	WORKING LOAD LIMIT (lbs.)	DIMENSIONS (in.)							WEIGHT EACH (lbs.)
		e	b	a	d1	d2	g		
9/32	3500	4.84	2.08	1.53	0.94	0.43	0.35	1.5	
5/16	4500	4.8	2.08	1.53	0.94	0.43	0.35	1.5	
3/8	7100	6.26	2.73	1.96	1.22	0.55	0.51	2.7	
1/2	12000	8.03	3.62	2.51	1.53	0.66	0.59	6.0	
5/8	18100	8.7	4.01	3.15	1.57	0.78	0.66	8.8	



CHAIN

ALLOY HOOKS GRADE 80

WORKING LOAD LIMIT

The “Working Load Limit” is the maximum load in pounds which should ever be applied to chain, when the chain is new “in as new” condition, and when the load is uniformly applied in direct tension to a straight length of chain.

PROOF TEST

The proof test is a term designating the tensile test applied to new chain for the sole purpose of detecting injurious defects in the material or manufacture. It is the load in pounds which the chain has withstood under a test in which the load has been applied in direct tension to a straight length of chain.

ANSI / ASME B30.9c-1994

Paragraph 9-1.4.2 “Mechanically assembled slings shall be comprised entirely of proof tested components.” Paragraph 9-1.4.2c “If untested components are employed, the sling shall be proof tested per Paragraph 9-1.4.1 prior to initial use.”

MINIMUM ULTIMATE LOAD

The “Minimum Ultimate Load” is the minimum load at which new chain will break when tested by applying direct tension to a straight length of chain at a uniform rate of speed in a testing machine.

ATTACHMENTS

Any attachments, such as hooks or links, should have a rated “Working Load Limit” at least equal to the chain with which it is used.

CAUTION

Only Alloy Grade 80 chain should be used for overhead lifting applications.

It must be recognized that certain factors in the usage of chain and attachments can be abusive and lessen the load that the chain or attachments can withstand. Some examples are twisting of the chain; disfigurement; deterioration by straining, usage, weathering and corrosion; rapid application of load or jerking; and applying excessive loads.

CHAIN INSPECTION

INSPECTION AND REMOVAL FROM SERVICE PER ANSI B30.9

FREQUENT INSPECTION

Normal Service - Monthly

Severe Service - Daily to Monthly

Check chain and attachments for wear, nicks, cracks, breaks, gouges, stretch, bend, weld splatter, discoloration from excessive temperature, and throat openings of hooks.

1. Chain links and attachments should hinge freely to adjacent links.
2. Latches on hooks, if present, should hinge freely and seat properly without evidence of permanent distortion.

PERIODIC INSPECTION - INSPECTION RECORDS REQUIRED

Normal Service - Yearly

Severe Service - Monthly

This inspection shall include everything in a frequent inspection plus each link and end attachment shall be examined individually, taking care to expose inner link surfaces of the chain and chain attachments.

1. Worn links should not exceed values given in table 1 or recommended by the manufacturer.
2. Sharp transverse nicks and gouges should be round out by grinding and the depth of the grinding should not exceed values in table 1.
3. Hooks should be inspected in accordance with ANSI B30.10.
4. If present, latches on hooks should seat properly, rotate freely, and show no permanent distortion.

TABLE 1 MAXIMUM ALLOWABLE WEAR AT ANY POINT OF LINK	
Normal Chain or Coupling Link Cross Section	Maximum Allowable Wear Diameter (in.)
0.281	0.037
0.375	0.052
0.500	0.069
0.625	0.084
0.750	0.105
0.875	0.116
1.000	0.137
1.250	0.169
REFER TO ANSI B30.9 FOR FULL DETAILS	

USE OF GRADE 80 ALLOY CHAIN UNDER HEAT CONDITION		
Temperature of Chain Degress F.	Reduction in Working Load Limit Because of Chain Temperature*	Permanent Reduction in Working Load Limit Because of Chain Temperature**
500	None	None
600	10%	None
700	20%	5%
800	30%	15%
900	40%	20%
1000	50%	30%

*Do not use alloy chain at temperatures above 800 degrees F.

**When chain is used at room temperature after being heated to temperatures shown in the first column.

CHAIN

ALLOY GRADE 80

GRADE 80 ALLOY CHAIN		SINGLE LEG	DOUBLE LEG				TRIPLE AND QUAD LEG		
(in.)	(mm)	90 DEGREES	60 DEGREES	45 DEGREES	30 DEGREES	60 DEGREES	45 DEGREES	30 DEGREES	
7/32	6	2100	3600	3000	2100	5450	4450	3150	
9/32	7	3500	6100	4900	3500	9100	7400	5200	
5/16	8	4500	7800	6400	4500	11700	9500	6800	
3/8	10	7100	12300	10000	7100	18400	15100	10600	
1/2	13	12000	20800	17000	12000	31200	25500	18000	
5/8	16	18100	31300	25600	18100	47000	38400	27100	
3/4	20	28300	49000	40000	28300	73500	60000	42400	
7/8	22	34200	59200	48400	34200	88900	72500	51300	
1	26	47700	82600	67400	47700	123900	101200	71500	
1 1/4	32	72300	125200	102200	72300	187800	153400	108400	

7

TO MAKE YOUR ALLOY GRADE 80 CHAIN SLING

Follow these simple steps in making a sling assembly.

Determine the maximum load to be lifted by the sling.

Choose the type of sling assembly suited for the shape of the load and the size of the sling assembly for the load to be lifted. The decision must take into account the angle of the sling legs in multileg slings.

Determine the overall reach for bearing point of master link to bearing point on hook.

Select components, assemble chain and components.

Affix sling identification tag to sling. The tag is available from West Coast Wire Rope. The tag should be stamped with size chain, reach, type sling. Working Load Limit at a specific angle of lift, and identifying number for record keeping.

If measurement comes in the link, cut the following link. For two leg type count the links and use an even number for clevis hooks and an odd number for eye hooks. This will position hooks in the same plane, In multileg slings always use the same number of links in each leg.

CHAIN

ALLOY GRADE 80 CHAIN SLINGS

KEY TO SELECTING PROPER COMPONENTS

To locate proper size chain fittings required chain size, use the following steps.

1. Locate proper table (below) for type of sling being assembled (Single, Double, Triple, or Quad leg.)
2. Determine size of chain required from the Working Load Limit table on page 131.
3. Locate proper chain size in the Grade 80 column in the proper table below.
4. Follow row across until desired style of fitting is found. The size shown indicates the proper size chain fitting to be used.



SINGLE LEG SLING



DOUBLE LEG SLING



TRIPLE LEG SLING



QUADRUPLE LEG SLINGS

SINGLE LEG SLING

SIZE GRADE 80 CHAIN	SIZE MASTER LINK	MASTER LINK SUB ASSEMBLY	GRADE 80 COUPLING LINK	G-80 CLEVIS SLING HOOK*	G-80 CLEVIS GRAB HOOK*	G-80 EYE FOUNDRY HOOK
1/4	1/2	-	1/4	1/4	1/4	1/4
5/16	5/8	-	5/16	5/16	5/16	3/8
3/8	3/4	-	3/8	3/8	3/8	3/8
1/2	1	-	1/2	1/2	1/2	1/2
5/8	1	-	5/8	5/8	5/8	5/8
3/4	1 1/4	-	3/4	3/4	3/4	3/4
7/8	1 1/2	-	7/8	7/8	7/8	7/8

DOUBLE LEG SLING

SIZE GRADE 80 CHAIN	SIZE MASTER LINK	MASTER LINK SUB ASSEMBLY	GRADE 80 COUPLING LINK	G-80 CLEVIS SLING HOOK*	G-80 CLEVIS GRAB HOOK*	G-80 EYE FOUNDRY HOOK
1/4	1/2	-	1/4	1/4	1/4	1/4
5/16	5/8	-	5/16	5/16	5/16	3/8
3/8	3/4	-	3/8	3/8	3/8	3/8
1/2	1	-	1/2	1/2	1/2	1/2
5/8	1 1/4	-	5/8	5/8	5/8	5/8
3/4	1 1/2	-	3/4	3/4	3/4	3/4
7/8	1 3/4	-	7/8	7/8	7/8	7/8

TRIPLE AND QUADRUPLE LEG SLING

SIZE GRADE 80 CHAIN	SIZE MASTER LINK	MASTER LINK SUB ASSEMBLY	GRADE 80 COUPLING LINK	G-80 CLEVIS SLING HOOK*	G-80 CLEVIS GRAB HOOK*	G-80 EYE FOUNDRY HOOK
1/4	-	3/4	1/4	1/4	1/4	1/4
5/16	-	1	5/16	5/16	5/16	3/8
3/8	-	1	3/8	3/8	3/8	3/8
1/2	-	1 1/4	1/2	1/2	1/2	1/2
5/8	-	1 1/2	5/8	5/8	5/8	5/8
3/4	-	1 3/4	3/4	3/4	3/4	3/4
7/8	-	2	7/8	7/8	7/8	7/8

*Also includes eye type hook.

CHAIN

ALLOY GRADE 80 CHAIN SLINGS

The Slings shown here are standard assemblies that can be made from Proof Tested components and alloy chain supplied by West Coast Wire Rope



TYPE	DESCRIPTION	TYPE	DESCRIPTION
CO	Single Chain Sling with Master Link each end	SSS	Single Chain Sling with Sling Hook each end
SOS	Single Chain Sling with Master Link and Sling Hook	SGG	Single Chain Sling with Grab Hook each end
SOG	Single Chain Sling with Master Link and Grab Hook	SGS	Single Chain Sling and Grab Hook and Sling Hook
SOF	Single Chain Sling with Master Link and Foundry Hook	ASOS	Adjustable Single Chain Sling with Master Link and Sling Hook



TYPE DOS



TYPE DOG



TYPE DOF



TYPE ADOS

TYPE	DESCRIPTION
DOS	Double Chain Sling with Master Link and Sling Hook
DOG	Double Chain Sling with Master Link and Grab Hook
DOF	Double Chain Sling with Master Link and Foundry Hook
ADOS	Adjustable Chain Sling with Master Link and Sling Hook



TYPE TOS



TYPE TOG



TYPE TOF



TYPE QOS



TYPE QOG



TYPE QOF

TYPE	DESCRIPTION	TYPE	DESCRIPTION
TOS	Triple Chain Sling with Master Link and Sling Hook	QOS	Quadruple Chain Sling with Master Link and Sling Hook
TOG	Triple Chain Sling with Master Link and Grab Hook	QOG	Quadruple Chain Sling with Master Link and Grab Hook
TOF	Triple Chain Sling with Master Link and Foundry Hook	QOF	Quadruple Chain Sling with Master Link and Foundry Hook

SECTION 8

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NYLON SLINGS

SAFETY PRECAUTIONS

The user of West Coast Wire Rope brand nylon lifting slings must insure all safety precautions are used during the application and storage of our sling and web assembly products.

All RATED CAPACITIES shown in the catalog are based on new and unused products. Inspect each sling prior to each and every use. Check for cuts, tears, chemical burns

and excessive abrasion of the web. If the inner core RED safety threads are visible, immediately remove from service. We strongly recommend that any sling not meeting complete safety criteria be cut in half and discarded. Safety to people and equipment must be the primary objective.

USER'S GUIDE

WEB SLING CHARACTERISTICS

LOAD PROTECTION - Will not mar, deface, or scratch the most highly sensitive loads.

CONVENIENCE - Lightweight and extremely flexible.

SAFETY - Will hold with non-slip grip. Load bearing inner fibers are completely covered and protected by tough outer fibers. Non-sparking. All slings have a minimum 5 to 1 design factor. All slings are provided with a vinyl tag marked with capacities and information currently required by OSHA.

LONG LIFE - Very resistant to rot, mildew or bacteria. Unaffected by many chemicals and have excellent abrasion resistance. (See environmental consideration chart)

SHOCK ABSORBENT - Synthetic web slings have elongation characteristics which minimize the effects of shock loading.

INDICATOR CORE - All slings have RED indicator core yarns to assist in determining sling wear or damage. If the core yarns are visible, the sling must be replaced.

ULTRA VIOLET DEGRADATION - Continuous exposure to ultraviolet light can affect strength of synthetic slings ranging from slight to total degradation. Store in a dark, cool area.

INSPECTIONS

The user should make a thorough visual inspection of the sling prior to each use. Users should insure that the proper sling is being used for each specific application. Remove the sling from use if any of the following conditions exist:

Acid or Caustic burns.

Excessive abrasive wear.

Melted, charred, or welding splatter.

Knots in any part of the sling.

Broken or worn stitching.

Holes, tears, cuts, snags, or embedded particles.

RED core yarn showing.

Any other damage.

Damaged loop eye.

ENVIRONMENTAL CONSIDERATIONS

To prevent mechanical or chemical damage when not in use, slings should not be exposed to sunlight and must be stored in a cool, dry and dark place.

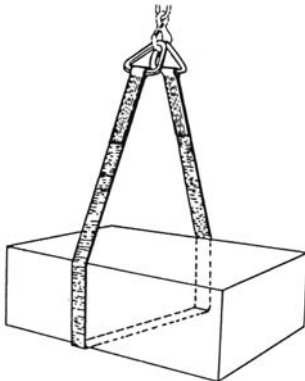
	ACIDS	ALCOHOL	ALDEHYDES	STRONG ALKALIS	BLEACHING AGENTS	DRY CLEANING SOLVENTS	ETHERS	KETONES	CRUDE OILS	LUBRICATING OILS	SOAPS & DETERGENTS	WATER & SEAWATER	WEAK ALKALIS	HYDROCARBONS
NYLON	NO	OK	OK	OK	NO	OK	OK	OK	OK	OK	OK	OK	OK	OK
POLYESTER	*	OK	NO	**	OK	OK	NO	OK	OK	OK	OK	OK	OK	OK

*Disintegrated by concentrated sulphuric acids.

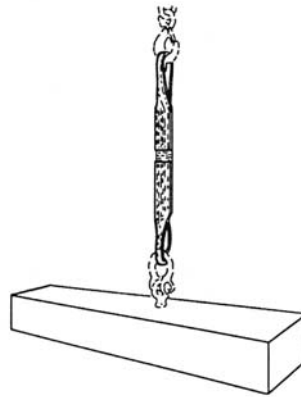
**Degraded by strong alkalines at elevated temperatures.

**NYLON AND POLYESTER
SLINGS SHOULD NOT BE
USED AT TEMPERATURES
IN EXCESS OF 194°F (90°C)**

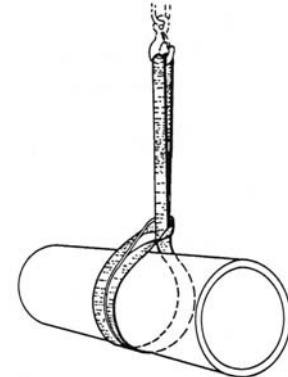
APPLICATIONS & HOW TO ORDER



BASKET SLING
(Commonly used in pairs)

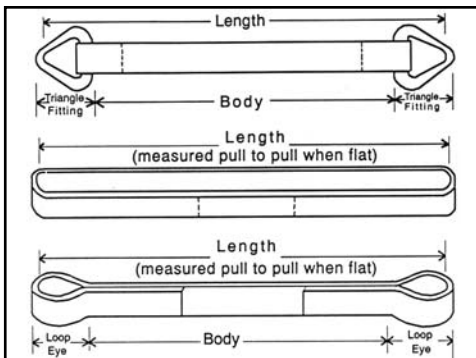


VERTICAL PULL



CHOKER HITCH

HOW TO ORDER SLINGS



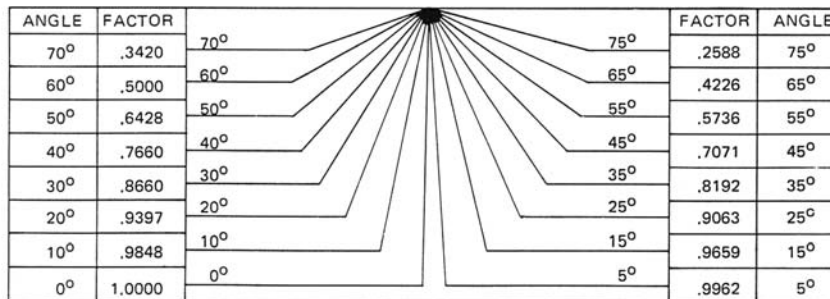
SAMPLE				
#1	#2	#3	#4	#5
EET	2	- 9	01	- ?

#1 - Type of sling
 #2 - Sling thickness (1 to 4 Plies)
 #3 - Type of Web (6800 lbs. or 9800 lbs.)
 #4 - Sling Width (1" to 24")
 #5 - Length of sling (per application)

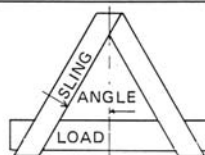
OPTIONS

EYE LENGTH	STEEL OR ALUMINUM HARDWARE
TYPE OF MATERIAL	COATINGS
WEAR PADS	END FITTINGS
PROOF LOADED	SPECIAL TAGGING

SLING STRENGTH LOSS AT VARIOUS ANGLES



The increased angle of the sling leg reduces its capacity. See chart for loss factor. Determine the angle between the sling leg and the vertical plane. Then multiply the sling rating by the appropriate loss factor from the chart. This will determine the slings reduced rating.



EXAMPLE:
 Assume sling capacity = 2,000 #
 If angle = 50° then loss factor = .6428
 Multiply: 2,000 # X .6428 = 1,286 # — rated capacity of sling at 50°.

NYLON SLINGS

EYE & EYE, FLAT AND TWISTED

NEVER EXCEED WORKING LOAD LIMITS.

This style of lifting sling is the most popular type based on cost and versatility. Cordura eye protection is added to the inside of each eye for added durability. Tapered eyes are standard on slings 3" wide and over.

TYPE 4

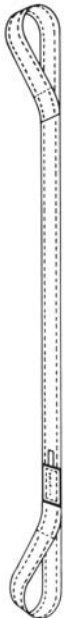
(EET)

The twisted eye design allows for choker applications as well as basket and vertical picks.



TYPE 3

(EE)



SLING WIDTH (in.)	STOCK NUMBER	STOCK NUMBER	EYE WIDTH (in.)	EYE LENGTH (in.)	RATED CAPACITIES (lbs.)			SLING WEIGHTS (lbs.)	
					CHOKER	VERTICAL	BASKET	BASE 8'	ADDER FT
1	EE1-601	EET1-601	1	9	960	1200	2400	0.40	0.033
1	EE1-901	EET1-901	1	9	1280	1600	3200	0.67	0.056
1	EE2-601	EET2-601	1	9	1920	2400	4800	0.59	0.066
1	EE2-901	EET2-901	1	9	2560	3200	6400	1.00	0.112
1	EE4-601	EET4-601	1	12	3360	4200	8400	1.22	0.132
1	EE4-901	EET4-901	1	12	4960	6200	12400	2.07	0.220
2	EE1-602	EET1-602	2	9	1920	2400	4800	0.96	0.080
2	EE1-902	EET1-902	2	9	2570	3200	6400	1.34	0.112
2	EE2-602	EET2-602	2	9	3840	4800	9600	1.44	0.160
2	EE2-902	EET2-902	2	9	5120	6400	12800	2.02	0.220
2	EE4-602	EET4-602	2	12	6400	8000	16000	2.96	0.320
2	EE4-902	EET4-902	2	12	8800	11000	22000	4.14	0.440
3	EE1-603	EET1-603	1.5	9	2880	3600	7200	1.82	0.140
3	EE1-903	EET1-903	1.5	9	3840	4800	9600	2.29	0.180
3	EE2-603	EET2-603	1.5	12	5280	6600	13200	2.52	0.280
3	EE2-903	EET2-903	1.5	12	7040	8800	17600	3.24	0.350
3	EE4-603	EET4-603	1.5	16	9600	12000	24000	5.18	0.560
3	EE4-903	EET4-903	1.5	16	12800	16000	32000	6.60	0.700
4	EE1-604	EET1-604	1.5	12	3840	4800	9600	2.24	0.172
4	EE1-904	EET1-904	1.5	12	5120	6400	12800	2.86	0.220
4	EE2-604	EET2-604	1.5	12	6880	8600	17200	3.10	0.340
4	EE2-904	EET2-904	1.5	12	8960	11200	22400	3.96	0.440
4	EE4-604	EET4-604	2	16	12800	16000	32000	6.54	0.690
4	EE4-904	EET4-904	2	16	15840	19800	39600	8.36	0.880
5	EE1-905	EET1-905	1.75	12	6400	8000	16000	3.48	0.268
5	EE2-905	EET2-905	1.75	12	10960	13700	27400	4.82	0.540
6	EE1-906	EET1-906	2	16	7680	9600	19200	4.21	0.324
6	EE2-906	EET2-906	2	16	13200	16500	33000	5.83	0.650
6	EE4-906	EET4-906	3	20	23840	29800	59600	12.31	1.300
8	EE1-908	EET1-908	3	18	10240	12800	25600	6.27	0.448
8	EE2-908	EET2-908	3	18	17600	22000	44000	8.51	0.900
10	EE1-910	EET1-910	3.5	22	12800	16000	32000	8.20	0.586
10	EE2-910	EET2-910	3.5	22	19200	24000	48000	11.13	1.170

Flat eyes provide for both vertical and basket pick applications.

NYLON SLINGS

ENDLESS NYLON SLINGS

NEVER EXCEED WORKING LOAD LIMITS.

A very popular style as the endless sling can be used in all three standard picks. Since there are no fixed eyes, the body can be rotated to provide longer in-service use. Taper points in the body can be provided upon request.

NOTE: Length is determined by measuring from pull to pull, not by circumference.

TYPE 5 (EN)



SLING WIDTH (in.)	STOCK NUMBER	RATED CAPACITIES (lbs.)			SLING WEIGHTS (lbs.)	
		CHOKER	VERTICAL	BASKET	BASE 8'	ADDER FT
1	EN1-601	1900	2400	4800	0.56	0.06
1	EN1-901	2400	3100	6200	0.95	0.11
1	EN2-601	3600	4500	9000	1.15	0.13
1	EN2-901	4600	5800	11600	1.96	0.22
2	EN1-602	3800	4800	9600	1.36	0.16
2	EN1-902	4900	6200	12400	1.90	0.22
2	EN2-602	7200	9000	18000	2.80	0.32
2	EN2-902	9300	11700	23400	3.92	0.44
3	EN1-603	5400	6800	13600	2.38	0.28
3	EN1-903	7300	9200	18400	2.99	0.35
3	EN2-603	10400	13000	26000	4.90	0.56
3	EN2-903	13700	17200	34400	6.16	0.70
4	EN1-604	7200	9000	18000	2.92	0.34
4	EN1-904	9700	12200	24400	3.74	0.44
4	EN2-604	13100	16400	32800	6.02	0.68
4	EN2-904	17900	22400	44800	7.70	0.88
5	EN1-905	11500	14400	28800	4.56	0.53
5	EN2-905	22000	27500	55000	9.38	1.07
6	EN1-906	14200	17800	35600	5.51	0.64
6	EN2-906	26000	32600	65200	11.34	1.29
8	EN1-908	18400	23000	46000	7.62	0.90
8	EN2-908	34500	43200	86400	15.68	1.79
10	EN1-910	22800	28600	57200	9.96	1.17
10	EN2-910	43360	54200	108400	20.51	2.34
12	EN1-912	27600	34600	69200	12.24	1.40
12	EN2-912	51800	64800	129600	25.20	2.88

NYLON SLINGS

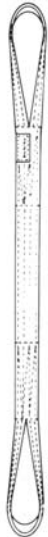
REVERSE EYE & WIDE BODY

NEVER EXCEED WORKING LOAD LIMITS.

The workhorse of all slings. This type has Cordura wear pad material on both sides of the body along with Cordura wrapping of each eye. The complete protection provides the ultimate in abrasion resistance and will further extend the life of the sling.

TYPE 6

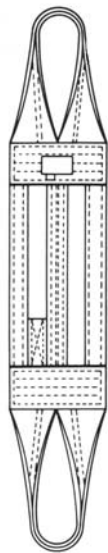
(RE)



SLING WIDTH (in.)	STOCK NUMBER	EYE WIDTH (in.)	EYE LENGTH (in.)	RATED CAPACITIES (lbs.)			SLING WEIGHTS (lbs.)	
				CHOKER	VERTICAL	BASKET	BASE 8'	ADDER FT
2	RE1-602	1	9	1900	2400	4800	1.40	0.16
2	RE1-902	1	9	2400	3100	6200	1.79	0.21
2	RE2-602	1	12	3600	4500	9000	1.99	0.23
2	RE2-902	1	12	4600	5800	11600	2.80	0.32
4	RE1-604	2	12	3800	4800	9600	2.68	0.34
4	RE1-904	2	12	4900	6200	12400	3.22	0.40
4	RE2-604	2	12	7200	9000	18000	4.48	0.50
4	RE2-904	2	12	9300	11700	23400	5.60	0.62
4	RE3-904	2	18	12800	16000	32000	7.62	0.85
6	RE1-606	1.5	14	5400	6800	13600	4.54	0.56
6	RE1-906	1.5	14	7300	9200	18400	5.15	0.63
6	RE2-606	1.5	18	10400	13000	26000	7.06	0.84
6	RE2-906	1.5	18	13700	17200	34400	8.32	0.98
6	RE3-906	3	24	18400	23000	46000	12.31	1.33

(WBH)

Wide body Hitch slings are designed to be used in the basket configuration only. The width of the sling provides for better product stability as the sling body makes contact with the load over a greater surface area. Wide Body Hitch slings protect delicate loads from damage and provide rated capacities for heavy loads. Slings wider than 24" are available upon request.



SLING WIDTH (in.)	STOCK NUMBER	EYE WIDTH (in.)	EYE LENGTH (in.)	RATED CAPACITIES (lbs.) BASKET	SLING WEIGHTS (lbs.)	
					BASE 8'	ADDER FT
6	WBH1-906	1.5	12	16000	4.25	0.50
6	WBH2-906	1.5	12	28500	4.50	0.88
8	WBH1-908	1.5	12	21500	5.25	0.65
8	WBH2-908	2	12	38000	5.50	1.00
10	WBH1-910	1.75	15	26000	6.50	0.93
10	WBH2-910	2.5	15	47000	7.00	1.62
12	WBH1-912	2	16	32000	8.31	1.40
12	WBH2-912	3	16	57200	8.83	1.75
16	WBH1-916	3.5	20	43000	10.33	1.25
16	WBH2-916	4	20	76800	11.20	1.95
20	WBH1-920	3.5	26	73000	11.00	2.13
20	WBH2-920	5	26	91000	13.33	2.59
24	WBH1-924	4	26	55000	14.72	1.71
24	WBH2-924	6	26	98000	15.73	3.08

NYLON SLINGS

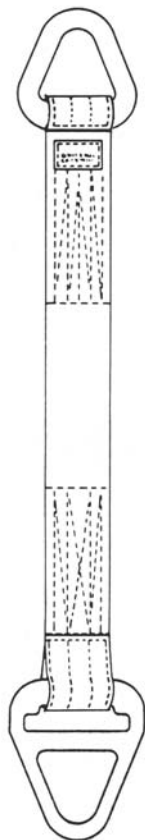
CHOKER HITCH

NEVER EXCEED WORKING LOAD LIMITS.

Hardware end fittings mate to provide snug non-slip choker grip. Available in either steel (SCH) or aluminum (ACH). Commonly used in a choke hitch but also can be used in both vertical and basket picks. Existing hardware can be rewedded. Factory will advise if hardware is no longer suitable.

NOTE: Aluminum hardware (ACH) available in single ply thickness only.

TYPE 1
(ACH & SCH)



ALUMINUM (ACH)						
SLING WIDTH	STOCK NUMBER	RATED CAPACITIES (lbs.)			SLING WEIGHTS (lbs.)	
		CHOKER	VERTICAL	BASKET	BASE 8'	ADDER FT
2	ACH1-602	1920	2400	4800	2.44	0.080
2	ACH1-902	2560	3200	6400	2.66	0.112
3	ACH1-603	2880	3600	7200	4.00	0.140
3	ACH1-903	3840	4800	9600	4.55	0.180
4	ACH1-604	3840	4800	9600	5.48	0.172
4	ACH1-904	5120	6400	12800	6.20	0.220
5	ACH1-905	6400	8000	16000	8.53	0.268
6	ACH1-906	7680	9600	19200	12.00	0.324

STEEL (SCH)						
SLING WIDTH	STOCK NUMBER	RATED CAPACITIES (lbs.)			SLING WEIGHTS (lbs.)	
		CHOKER	VERTICAL	BASKET	BASE 8'	ADDER FT
2	SCH1-602	1920	2400	4800	4.20	0.080
2	SCH1-902	2560	3200	6400	4.42	0.112
2	SCH2-602	3840	4800	9600	4.56	0.160
2	SCH2-902	5120	6400	12800	5.26	0.220
3	SCH1-603	2880	3600	7200	6.60	0.140
3	SCH1-903	3840	4800	9600	7.15	0.180
3	SCH2-603	5280	6600	13200	7.59	0.280
3	SCH2-903	7040	8800	17600	8.44	0.350
4	SCH1-604	3840	4800	9600	9.34	0.170
4	SCH1-904	5120	6400	12800	10.10	0.220
4	SCH2-604	6880	8600	17200	10.46	0.340
4	SCH2-904	8960	11200	22400	11.64	0.440
5	SCH1-905	6400	8000	16000	13.23	0.268
5	SCH2-905	10960	13700	27400	15.10	0.540
6	SCH1-906	7680	9600	19200	16.15	0.324
6	SCH2-906	13200	16500	33000	17.80	0.650
8	SCH1-908	10240	12800	25600	46.86	0.448
8	SCH2-908	17600	22000	44000	49.26	0.900
10	SCH1-910	12800	16000	32000	53.61	0.568
10	SCH2-910	19200	24000	48000	55.96	1.170
12	SCH1-912	15360	19200	38400	66.44	0.720
12	SCH2-912	23200	29000	58000	69.44	1.440

NYLON SLINGS

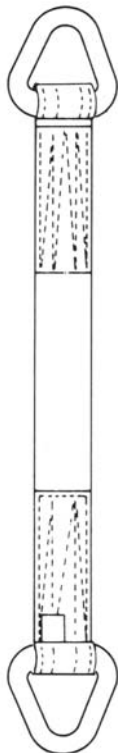
BASKET HITCH

NEVER EXCEED WORKING LOAD LIMITS.

Hardware eyes allow longer sling life over an Eye & Eye type sling. Can be used in the basket and vertical pick only. Existing hardware can be rewedded. Factory will advise if hardware is no longer suitable.

NOTE: Aluminum hardware (BHA) available in single ply thickness only.

TYPE 2
(BHA)



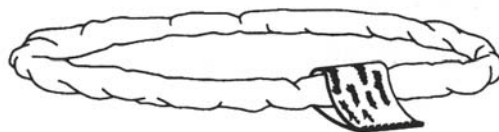
ALUMINUM (BHA)					
SLING WIDTH	STOCK NUMBER	RATED CAPACITIES (lbs.)		SLING WEIGHTS (lbs.)	
		VERTICAL	BASKET	BASE 8'	ADDER FT
2	BHA1-602	2400	4800	2.04	0.080
2	BHA1-902	3200	6400	2.26	0.112
3	BHA1-603	3600	7200	3.50	0.140
3	BHA1-903	4800	9600	4.06	0.180
4	BHA1-604	4800	9600	4.78	0.172
4	BHA1-904	6400	12800	5.50	0.220
5	BHA1-905	8000	16000	7.23	0.268
6	BHA1-906	9600	19200	9.85	0.324

STEEL (BHS)					
SLING WIDTH	STOCK NUMBER	RATED CAPACITIES (lbs.)		SLING WEIGHTS (lbs.)	
		VERTICAL	BASKET	BASE 8'	ADDER FT
2	BHS1-602	2400	4800	3.40	0.080
2	BHS1-902	3200	6400	3.62	0.112
2	BHS2-602	4800	9600	3.76	0.160
2	BHS2-902	6400	12800	4.46	0.220
3	BHS1-603	3600	7200	5.30	0.140
3	BHS1-903	4800	9600	5.85	0.180
3	BHS2-603	6600	13200	6.29	0.280
3	BHS2-903	8800	17600	7.14	0.350
4	BHS1-604	4800	9600	7.38	0.170
4	BHS1-904	6400	12800	8.10	0.220
4	BHS2-604	8600	17200	8.46	0.340
4	BHS2-904	11200	22400	9.64	0.440
5	BHS1-905	8000	16000	10.43	0.268
5	BHS2-905	13700	27400	12.30	0.540
6	BHS1-906	9600	19200	12.75	0.324
6	BHS2-906	16500	33000	14.40	0.650
8	BHS1-908	12800	25600	31.11	0.448
8	BHS2-908	22000	44000	33.51	0.900
10	BHS1-910	16000	32000	39.71	0.568
10	BHS2-910	24000	48000	42.06	1.170
12	BHS1-912	19200	38400	45.64	0.720
12	BHS2-912	29000	58000	48.64	1.440

NYLON SLINGS

POLYESTER ROUNDSLINGS

NEVER EXCEED WORKING LOAD LIMITS.



ENDLESS POLYESTER ROUNDSLINGS

Roundsling features:

Super flexible, conforms to shape of load, flattens and grabs the load securely.

Won't mar painted or polished surfaces.

Resistant to acids, ultra violet rays, rot and mildew.

Maximum temperature 194^o F.

Internal red wear marker to tell when sling has reached its maximum life expectancy.

COLOR CODED AND TAGGED ACCORDING TO RATED CAPACITIES

ITEM NUMBER	COLOR CODE	CAPACITIES (lbs.)			MIN. LENGTH
		VERTICAL	CHOKER	BASKET	
E30	Purple	2650	2120	5300	3
E60	Green	5300	4240	10600	3
E90	Yellow	8400	6720	16800	3
E120	Tan	10600	8500	21200	3
E150	Red	13200	10560	26400	3
E180	Orange	16800	13440	33600	6
E240	Blue	21200	17000	42400	6
E360	Gray	31700	25300	63400	6
E600	Brown	52900	42300	105800	6
E800	Olive	66100	52880	132200	6
E1000	Black	90000	72000	18000	6

Our polyester roundsling is a major advancement in securing almost any object to be pulled or lifted. It consists of a continuous, or endless, loop of 100% polyester fiber.

The accumulation of numerous fiber strands determine the strength factor, as the capacity above shows.

The multiple fiber construction makes the roundsling soft and flexible - perfect for a choked lift. The sling contours itself around the load.

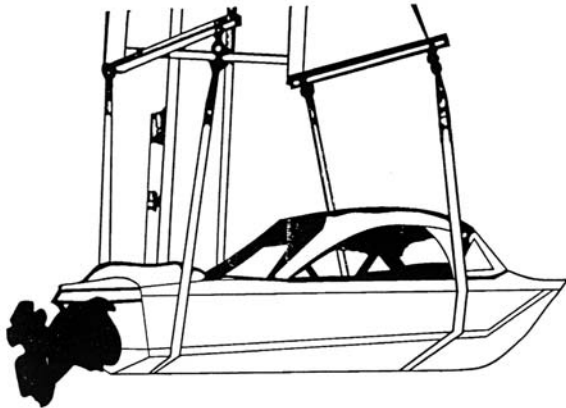
The bundle of fibers is protected by a double cover of woven polyester fabric. Because the load bearing fibers never come in contact with the load, there is no wear to them as long as the cover remains intact. In addition, the endless roundsling can be constantly rotated, further extending the wear life of the protective covering and the sling as a whole.

Load drop safety is inherent in the polyester fiber principle. Even if the sling is greatly overstressed, it will not completely break apart at once, it will stretch slowly as the individual fibers start to break, allowing time to put the load down.

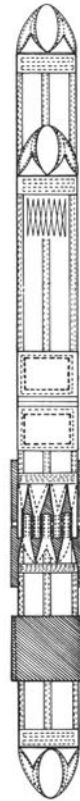
Each sling has a tough, branded leather label permanently attached, with load capacities marked. The ultimate breaking load is a minimum of five times the rated capacity.

NYLON SLINGS

MARINE BOAT SLINGS (MBS)




Our marine boat slings are designed for long lasting use and will not mar or scratch the hull. We offer fabric eyes with added reinforcement, steel triangles and forged loose pin shackles. Coupled with our optional equipment choices, our Marine Boat slings are your very best choice for boat lifting.




OPTIONAL EQUIPMENT

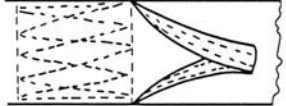
LEAD WEIGHTS
Keeps slings under water. Allows easier positioning of slings under boat.



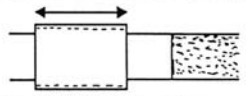
KEEL PAD
Fastened to sling at the center to protect the sling from wear at the greatest load point.



EXTRA EYES
Available in tapered fabric or for use with hardware. Allows a single sling to adjust to different overall lengths.



SLIDING CHINE & RUB RAIL SLEEVES
Prevents damage to both sling and boat at the chine and rub rails.



END FITTINGS

FARIC EYES - LOOP/TWIST

Eye is formed by folding and turning the fabric 180° before sewing to the body.



LOOP/TWIST

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



SLING WIDTH (in.)	STOCK NUMBER	RATED CAPACITY BASKET (lbs.)	SLING WEIGHTS (lbs.)	
			BASE 8'	ADDER FT.
3	MBS1-903	9600	2.29	0.180
3	MBS2-903	17600	3.24	0.350
4	MBS1-904	12800	2.86	0.220
4	MBS2-904	22400	3.96	0.440
6	MBS1-906	19200	4.21	0.324
6	MBS2-906	33000	5.83	0.650
8	MBS1-908	25600	6.27	0.448
8	MBS2-908	44000	8.51	0.900
10	MBS1-910	32000	8.20	0.586
10	MBS2-910	48000	11.13	1.170
12	MBS1-912	38400	10.08	0.720
12	MBS2-912	58000	13.68	1.440

LOOSE PIN HARDWARE

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

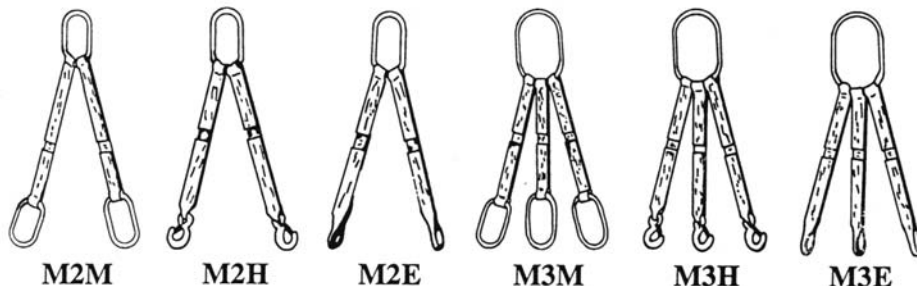
STEEL TRIANGLE

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

NYLON SLINGS

BRIDLE LEG SLINGS

NEVER EXCEED WORKING LOAD LIMITS.



Single leg slings listed below. Quadruple leg slings available on request.

The preferred sling to maximize load control whenever product to be lifted has fixed pick points. Designed using a combination of fabric eyes, steel hooks and steel oblong links. All hooks come with safety latches installed.

STOCK NUMBER	LEG WIDTH	LEG PLY	RATED CAPACITIES (lbs.)				HARDWARE (in.)	
			VERTICAL	30	45	60	TOP	BOTTOM
SINGLE LEG								
SLB1-901-MM	1	1	1600	-	-	-	5/8	1/2
SLB2-901-MM	1	2	3000	-	-	-	3/4	5/8
SLB2-902-MM	2	2	5800	-	-	-	1	3/4
SLB1-901-MH	1	1	1600	-	-	-	5/8	1T
SLB2-901-MH	1	2	3000	-	-	-	3/4	2T
SLB2-902-MH	2	2	5800	-	-	-	1	3T
SLB1-901-HH	1	1	1600	-	-	-	1T	1T
SLB2-901-HH	1	2	3000	-	-	-	2T	2T
SLB2-902-HH	2	2	5800	-	-	-	3T	3T
DOUBLE LEG								
DLB1-901-M2M	1	1	-	2600	2150	1550	5/8	1/2
DLB2-901-M2M	1	2	-	5000	4100	2950	3/4	5/8
DLB2-902-M2M	2	2	-	9800	8000	5800	1	3/4
DLB1-901-M2H	1	1	-	2600	2150	1550	5/8	1T
DLB2-901-M2H	1	2	-	5000	4100	2950	3/4	2T
DLB2-902-M2H	2	2	-	9800	8000	5800	1	3T
DLB1-901-M2E	1	1	-	2600	2150	1550	5/8	9" EYE
DLB2-901-M2E	1	2	-	5000	4100	2950	3/4	9" EYE
DLB2-902-M2E	2	2	-	9800	8000	5800	1	9" EYE
TRIPLE LEG								
TLB1-901-M3M	1	1	-	3500	2900	2000	5/8	1/2
TLB2-901-M3M	1	2	-	7100	5900	4200	3/4	5/8
TLB2-902-M3M	2	2	-	14000	11500	8200	1	3/4
TLB1-901-M3H	1	1	-	3500	2900	2000	5/8	1T
TLB2-901-M3H	1	2	-	7100	5900	4200	3/4	2T
TLB2-902-M3H	2	2	-	14000	11500	8200	1	3T
TLB1-901-M3E	1	1	-	3500	2900	2000	5/8	9" EYE
TLB2-901-M3E	1	2	-	7100	5900	4200	3/4	9" EYE
TLB2-902-M3E	2	2	-	14000	11500	8200	1	9" EYE

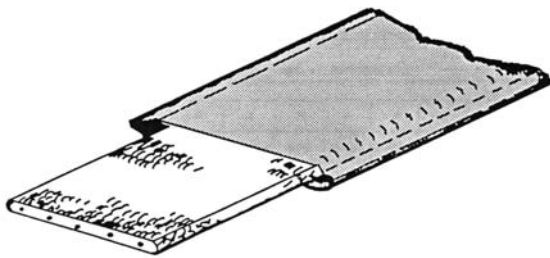
8

NYLON SLINGS

WEAR PADS AND SLIDING SLEEVES

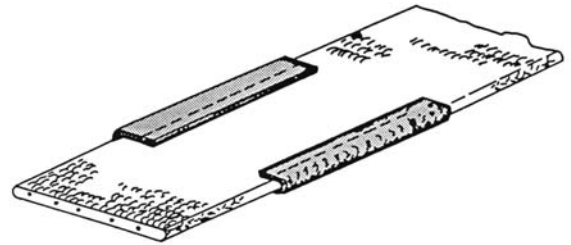
No. 1 SLIDING SLEEVE

This style allows you to slide the protective sleeve to the abrasive area that may do damage to the sling.



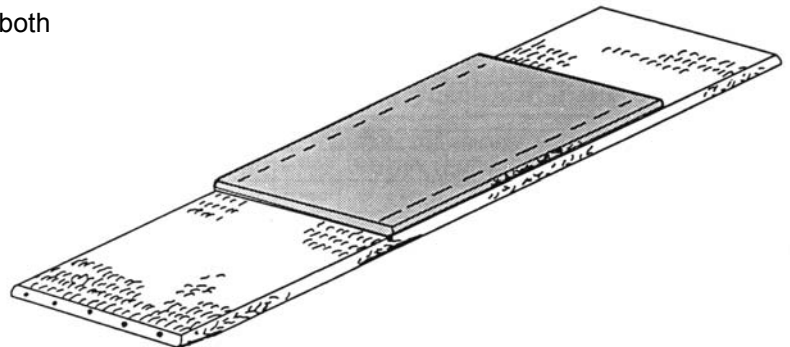
No. 2 EDGE GUARD

This style protects the edges only.



No. 3 FIXED WEAR PAD

This style gives fixed protection on one or both sides of sling.

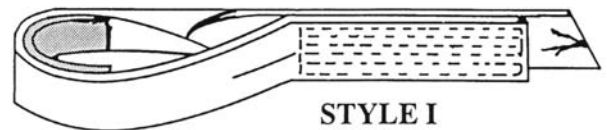


FORMED EYE WEAR PADS

Available in two styles for added wear protection in the eyes. Available in Cordura.

STYLE 1:

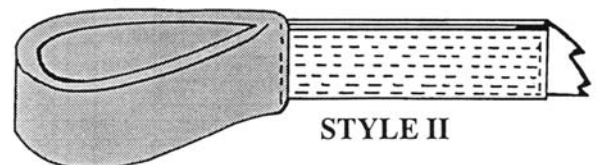
Sewn on wear pad. A wear pad sewn directly inside the eye at the bearing point. (Included in the base price of type 3 & 4 slings)



STYLE I

STYLE 2:

Full wrapped wear pad. Provides total eye protection for rough attachment points.



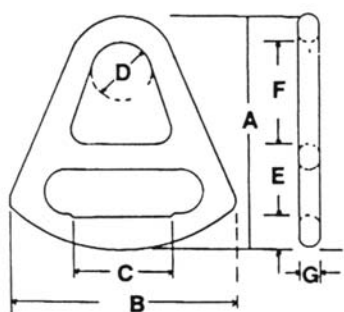
STYLE II

NYLON SLINGS

SLING HARDWARE

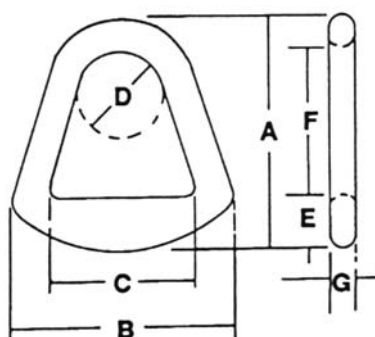
All dimensions are approximate.

CHOKERS



SIZE	ALUMINUM							WEIGHT EACH (lbs.)
	A	B	C	D	E	F	G	
2	6.13	5.25	2.13	1.75	0.94	2.38	0.56	0.75
3	7.50	7.13	3.13	2.00	1.13	3.31	0.63	1.20
4	8.75	8.75	4.13	2.38	1.44	4.00	0.69	1.80
5	10.00	10.38	5.13	2.75	1.69	4.75	0.75	2.90
6	11.31	11.75	6.13	3.13	1.75	5.50	0.94	5.10
STEEL								
2	6.19	5.25	2.06	2.00	0.81	2.38	0.50	1.80
3	7.75	7.00	3.06	2.00	1.13	3.38	0.50	2.90
4	8.94	8.88	4.13	2.50	1.44	4.13	0.50	4.40
5	10.13	10.44	5.13	2.75	1.63	4.69	0.50	6.00
6	11.50	11.94	6.13	2.88	1.75	5.44	0.50	7.60
8	14.13	15.75	8.13	5.00	2.38	7.25	0.50	15.00
10	17.00	17.75	10.13	5.13	3.50	8.38	0.75	27.80
12	19.38	22.81	12.13	5.50	4.25	9.94	0.75	39.00

TRIANGLES



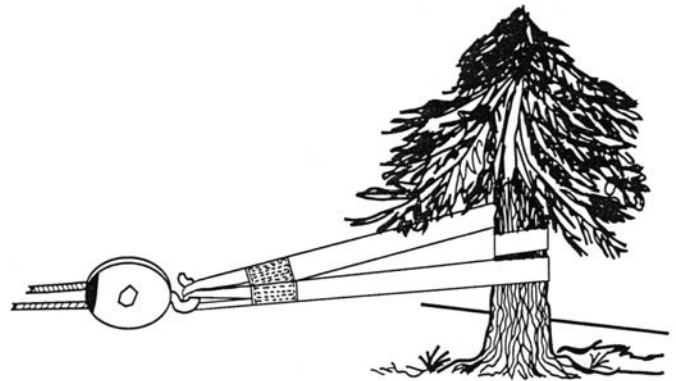
SIZE	ALUMINUM							WEIGHT EACH (lbs.)
	A	B	C	D	E	F	G	
2	4.00	3.63	2.25	1.75	0.94	2.38	0.56	0.32
3	5.25	5.00	3.25	2.00	1.19	3.31	0.63	0.75
4	6.25	6.63	4.38	2.38	1.44	4.00	0.69	1.20
5	7.25	7.75	5.38	2.75	1.63	4.75	0.75	1.60
6	8.31	8.88	6.38	3.13	1.75	5.50	0.94	2.50
STEEL								
2	4.13	4.13	2.25	1.75	0.94	2.44	0.50	1.00
3	5.31	5.13	3.03	2.00	1.19	3.38	0.50	1.60
4	6.50	6.75	4.50	2.00	1.63	4.06	0.50	2.40
5	7.44	8.06	5.56	2.50	1.47	5.03	0.50	3.20
6	8.56	8.63	6.25	2.75	1.69	5.75	0.50	4.20
8	10.88	11.00	8.13	3.63	1.81	7.50	0.50	6.40
10	12.88	13.38	10.25	4.88	2.81	8.69	0.75	13.90
12	13.75	16.00	12.25	5.13	3.63	8.38	0.75	18.20

NYLON SLINGS

SPECIAL APPLICATIONS

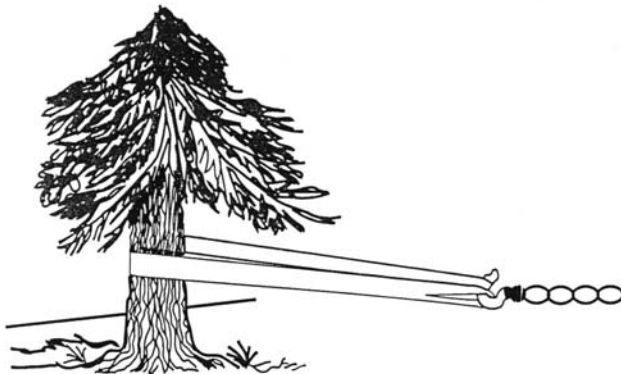
TAIL HOLD TREE SLINGS

WIDTH (in.)	STOCK NO.	ULTIMATE TENSIL - VERTICAL PULL (lbs.)
6	TH2-906	108000
8	TH2-908	144000
10	TH2-910	180000



THINK SMART ENVIRONMENTALLY
Don't bridle a tree with your winch line. Prolongs winch life and protects trees.

TREE TRUNK PROTECTOR



STRAP DIMENSIONS WIDTH X LENGTH (in.)	STOCK NUMBER
2 X 8	TTP1-902
3 X 8	TTP1-903

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VEHICLE RECOVERY & TOWING STRAPS

CAUTION: Not intended for heavy duty commercial applications, these products must be used with extreme care. Do not affix these products to vehicle bumpers, tow balls or parts of vehicle body. Most vehicles come with factory installed tow hooks. Consult the vehicle handbook prior to using either of these products.

VEHICLE RECOVERY STRAP

2" wide nylon strap with loop on each end. Used to recover vehicles stuck in mud, snow, etc.

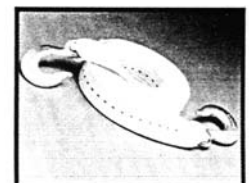
- #T203 (20')
- #T303 (30')



TOWING STRAP

1-3/4" wide nylon strap with a 1 ton hook on each end.

- #TS201 (20')



NYLON SLINGS

RATCHET STRAPS

RATCHET STRAP ASSEMBLIES

Meets or exceeds California State and Federal regulations.
 Polyester - Latex treated for less stretch and abrasion resistance.
 Printed with ultimate strength - 5000# per inch and California ratings.

HOW TO ORDER RATCHET STRAP ASSEMBLIES

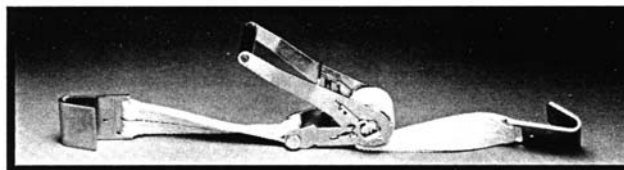
#1

Type of Strap

- #2 - 2" wide tie down
- #3 - 3" wide tie down
- #4 - 4" wide tie down
- #5 - Ratchet Strap Assembly
 (Add (H) after 4 digit part # for heavy duty 24,000# web)

#2 #3 Overall Length

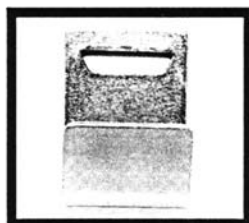
#4 End Fitting



Most Popular Ratchet Strap Assembly Design



DELTA RING
End Digit Code: #1



FLAT HOOK
End Digit Code: #2



WIRE HOOK
End Digit Code: #3



CHAIN EXTENSION
End Digit Code: #4



SNAP HOOK
End Digit Code: #5

Ratchet strap assembly end digit codes

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**SECTION 9
TABLE OF CONTENTS****SERVICES
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SERVICES

INSPECTION & CERTIFICATION IN FACILITY & ONSITE

WEST COAST WIRE ROPE Provides the following services:

- > In plant **sling** inspections - wire rope, chain, and nylon.
- > In plant **crane** and **hoist rope** inspections.
- > **Training seminars** on lifting products, applications, and correct usage.
- > Slings designed for any application.

INSPECTION AND REPAIR TO MEET OSHA REQUIREMENTS:

- > Alloy Chain slings.
- > Wire rope slings.
- > Wire mesh slings.
- > Nylon web slings.
- > Special chain slings.
- > Polyester roundslings.
- > Lifting clamps.
- > Crane blocks.

PROOF TESTING AND CERTIFICATION OF:

- > Wire rope slings.
- > Wire mesh slings.
- > Nylon web slings.
- > Alloy Chain slings.
- > All types of special assemblies and fittings.

PRE-STRESSING OF:

- > Wire rope.
- > Wire Rope assemblies.
- > Boom pendants.
- > Special assemblies.
- > All testing and pre-stressing is performed in either of our 200,000 lbs. pull test facility in Portland, Oregon or our 1,200,000 lbs. pull test facility in Seattle, Washington.
- > ABS and Lloyds approved certification.

ADDITIONAL SERVICES OFFERED ARE:

- > On site rigging of mooring lines, crane lines, etc.
- > On site lubrication of wire rope.
- > On site splicing and pouring sockets.

METRIC CONVERSION CHART

WEIGHT

1 KG = 2.2046 LB 1 LB = 0.4536
 1 KG/M = 0.6720 LB/FT 1 LB/FT = 1.4881 KG/M
 1 TONNE(t) = 0.9842 UK TON 1 UK TON = 1.01605 TONNES(t)
 1 KG = 1000 G 1 KIP (US) = 1000 LB
 1 METRIC TON = 2204.62 LB 1 US TON = .9072 METRIC TON = 907.2 KG

ROPE LENGTHS . . . ROPE AND WIRE DIAMETERS

1 M = 3.2808 FT 1 FT = 0.3048 M
 1 KM = 0.6124 MILE 1 MILE = 1.6093 KM
 1 MM = 0.0394 IN 1 IN = 25.3999 MM
 1 M = 39.3701 IN 1 IN = 0.0254 M

WIRE TENSILE GRADES, ROPE MODULUS AND SHEAVE PRESSURES

1 N/MM² = 0.102 KGF/MM²
 1 KG/MM² = 9.8066 N/MM²
 1 N/MM² = 1 MPA
 1 KGF/MM² = 1422.33 LBF/IN² 1 LBF/IN² = 7.030 X 10⁻⁴KGF.MM²
 1 KGF-M = 7.233 FT-LBF 1 FT-LBF = 0.1383 KGF-M
 1 MPA = 145.038 LBF/IN² 1 LBF/IN² = 0.0069 MPA

NOMINAL STRENGTHS AND BREAKING STRENGTHS

1 KN = 0.102 MPA
 1 N = 0.2248 LBF 1 LBF = 4.4482 N
 1 KN = 224.8 LBF 1 LBF = 0.00445 KN
 1 N = 0.1020 KGF 1 (2000 LB) TON F = 9.8964 KN
 1 KGF = 9.8066 N 1 (2240 LB) TON F = 9.9640 KN
 1 KN = 101.972 KGF
 1 KGF = 2.2046 LBF 1 LBF = 0.4536 KGF

ZINC COATING WEIGHTS

1 G/M² = 0.00328 OZ/FT² 1 OZ/FT² = 304.88 G/M²

Diameter	
in.	mm.
5/32	3.97
3/16	4.76
7/32	5.56
1/4	6.35
5/16	7.94
3/8	9.53
7/16	11.1
1/2	12.7
9/16	14.3
5/8	15.9
11/16	17.5
3/4	19.0
13/16	20.6
7/8	22.2
15/16	23.8
1	25.4
1 1/16	27.0
1 1/8	28.6
1 3/16	30.2
1 1/4	31.8
1 3/8	34.9
1 1/2	38.1
1 5/8	41.3
1 3/4	44.5
1 7/8	47.6
2	50.8
2 1/8	54.0
2 1/4	57.2
2 1/2	63.5
2 3/4	69.9
3	76.2
3 1/4	82.6
3 1/2	88.9
3 3/4	95.3
4	101.6
4 1/4	108.0
4 1/2	114.3
4 3/4	120.7
5	127.0

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West Coast *Wire Rope*

