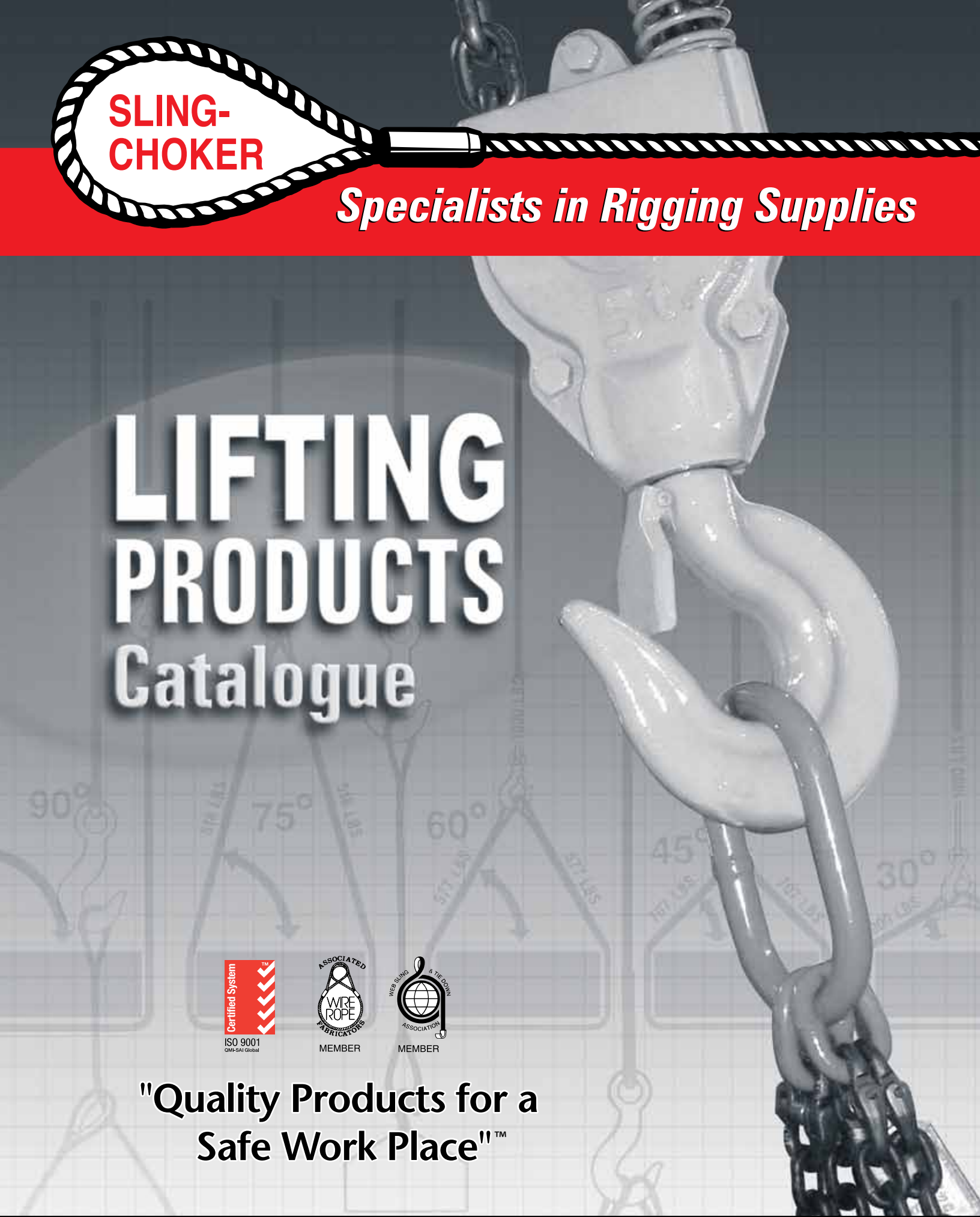
SLING-CHOKER

Specialists in Rigging Supplies

LIFTING PRODUCTS Catalogue



Certified System ISO 9001 QMI-SAI Global

ASSOCIATED WIRE ROPE FABRICATORS MEMBER

WEB SLING & TIE DOWN ASSOCIATION MEMBER

"Quality Products for a Safe Work Place"™

SLING-
CHOKER

Specialists in Rigging Supplies

VISION STATEMENT

"Sling-Choker Manufacturing Limited shall be the preferred supplier of competitively priced quality products that are supported by a high level of integrity and service both before and after the sale"

Table Of Contents

For further information,
please see www.slingchoker.com

A Note to Our Customers

This catalogue is designed to help you with basic information about products of Wire Rope, Synthetic Webbing, Chain, and general information about Fittings, Material Handling Equipment, Hoists and Jacks.

If you are in doubt about which sling or attachment to use, or would like more information about any item in this catalogue, please contact your nearest Sling-Choker Manufacturing Limited representative. They have the knowledge and experience to advise you.

For detailed technical information on other manufactured products as shown in this catalogue, please refer to the links in the Sling-Choker web site at www.slingchoker.com

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SLING-CHOKER
Specialists in Rigging Supplies

General Information

Definitions Of Terms

Abrasion:
The mechanical wearing of a surface resulting from frictional contact with materials or objects.

Becket Loop:
A loop of small wire rope or strand fastened to the end of a larger wire rope to facilitate installation.

Breaking Strength:
The ultimate load at which a tensile failure occurs in the sample being tested.

Bridle Sling:
A multiple part sling attached to a single master ring or similar hardware. The legs of the sling are spread to divide and equalize the load.

Cabling:
The definition of cabling is the point at which the block spins to entangle the hoist line. This point has been defined to be when the travelling block has turned 90 degrees from its neutral position.

Competent Person:
A person qualified because of knowledge, training and experience to organize the work and its performance.

Design Factor:
An industry term denoting theoretical reserve capability. Usually computed dividing the catalogue stated ultimate load by the catalogue stated working load limit, and generally expressed as a ratio, for example 5 to 1.

EIPS:
Extra improved plow steel.

Elongation:
The measurement of stretch, expressed as a percentage of the finished length, at its WLL.

Fitting:
A load bearing metal component which is fitted to the sling. Can be of steel, aluminum or other material that will sustain the rated capacity of the sling.

Hitch/Vertical:
A method of attachment whereby the sling extends from the crane hook to the load in a straight connection.

Hitch/Choker:
The sling is passed around the load and back through itself and is connected to the crane hook. The sling then tightens around the load when it is tensioned.

Hitch/Basket:
The sling is passed from the crane hook around the load and attached to the crane hook.

IWRC:
Independent wire rope core.

Length:
The distance between bearing points of the sling. (PULL TO PULL)

Proof Load Test:
A non-destructive load test usually to twice the rated capacity of the assembly.

Shall:
Expresses obligation, command or required.

Should:
Expresses a strong recommendation.

Synthetic Fibre:
Man-made fibres.

Thread:
A group of synthetic filaments twisted together, commonly used in sewing of synthetic slings.

Working Load Limit (WLL):
The maximum load that shall be exerted on the item. All rated load values, unless noted otherwise, are for in-line pull with respect to the centerline of the item.

Shock Load:
A resulting load from the rapid change of movement, such as impacting or jerking, of a static load. A Shock Load is generally significantly greater than the static load.

Warning:
As used throughout this catalogue, serves to alert users to potentially hazardous situations which frequently occur in the use of these products. Failure to read, understand and follow the accompanying instructions on how to avoid these situations could result in death or serious injury.

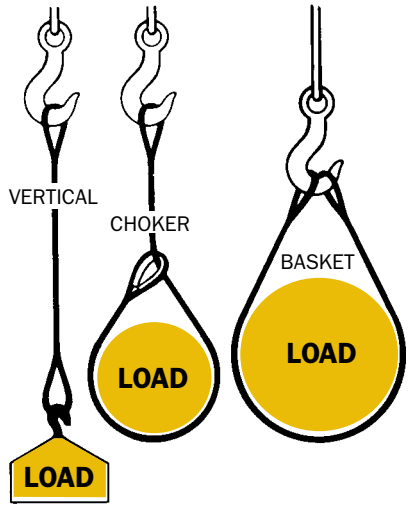
Rigging Fundamentals

Every Lift Uses 1 of 3 Basic Hitches

VERTICAL, or straight, attachment is simply using a sling to connect a lifting hook to a load. Full rated lifting capacity of the sling may be utilized, but must never be exceeded. A tagline should be used to prevent load rotation which may damage a sling.

When two or more slings are attached to the same lifting hook, the total hitch becomes, in effect, a lifting bridle.

CHOKER hitches reduce the lifting capability of a sling, since this method of rigging affects the ability of the wire rope components to adjust during the lift. A choker is used when the load will not be seriously damaged by the sling body - or the sling damaged by the load - and when the lift requires the sling to snug up against the load.



The angle of the bend where the sling contacts the load should keep the point of choke against the sling BODY – never against a splice or the base of the eye. When a choke is used at an angle of less than 120 degrees (see page 5) the sling rated capacity must be adjusted downward.

A choker hitch should be pulled tight before a lift is made – NOT PULLED DOWN DURING THE LIFT. It is also dangerous to use only one choker hitch to lift a load which might shift or slide out of the choke.

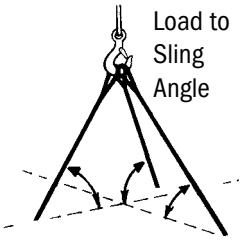
BASKET hitches distribute a load equally between the two vertical legs of a sling.

Calculating the Load on Each Leg of a Sling

As the included angle between the legs of a sling increases, the load on each increases. The effect is the same whether a single sling is used as a basket, or two slings are used with each in a straight pull, as with a 2-legged bridle.

Anytime pull is exerted at an angle on a leg – or legs – of a sling, the load per leg can be determined by using the data in the table at right. Proceed as follows to calculate this load – and determine the rated capacity required of the sling, or slings, needed for a lift.

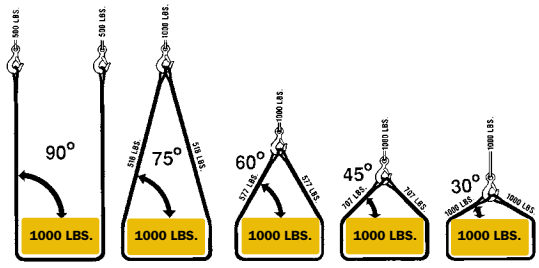
LEG ANGLE (Degrees)	LOAD FACTOR
90	1.000
85	1.003
80	1.015
75	1.035
70	1.064
65	1.103
60	1.154
55	1.220
50	1.305
45	1.414
40	1.555
35	1.743
30	2.000



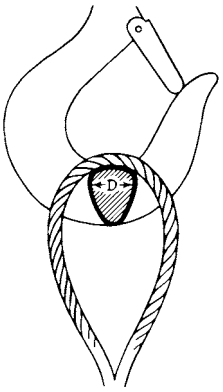
1. First, divide the total load to be lifted by the number of legs to be used. This provides the load per leg if the lift were being made with all legs lifting vertically.
2. Determine the angle between the legs of the sling and the horizontal.
3. Then MULTIPLY the load per leg (as computed in No. 1 above) by the Load Factor for the leg angle being used (from the table at right) – to compute the ACTUAL LOAD on each leg for this lift and angle. THE ACTUAL LOAD MUST NOT EXCEED THE SLING WORKING LOAD LIMIT (WLL).

Angles of Bridles

The horizontal angle of bridles with 3 or more legs is measured the same as the horizontal sling angle of 2-legged hitches. Where a bridle is designed with different leg lengths, the leg with the smallest horizontal angle will carry the greatest load. Therefore, the smallest horizontal angle is used in calculating actual leg load and evaluating the rated capacity of the sling proposed.

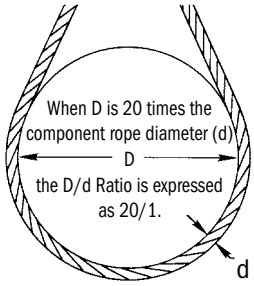


Sling Eye Design



Sling eyes are designed to provide what amount to "small inverted slings" at the ends of the sling body. Therefore, the width of the eye opening will be affected by the same general forces which apply to legs of a sling rigged as a basket. A sling eye should never be used over a hook or pin with a body diameter larger than the natural width of the eye. Never force an eye onto a hook. On the other hand, the eye should always be used on a hook or pin with at least the nominal diameter of the rope, since applying the D/d Ratio shows an efficiency loss of approximately 50% when the relationship is less than 1/1.

D/d Ratios Apply to Slings



When rigged as a basket or choke, the diameter of the bend where a sling contacts the load can be a limiting factor on a sling's capacity. Standard D/d ratios - where "D" is the diameter of bend and "d" the diameter of the rope – are used to select the appropriate sling construction.

Examples are:

Mechanically spliced, single part slings	25 times rope diameter
Hand spliced, single part slings	15 times rope diameter
Braided multi-part slings of 6 parts	25 times component rope diameter
Braided multi-part slings of 8 parts	25 times component rope diameter
Helically laid multi-parts slings	25 times component rope diameter
Cable laid slings	10 times sling body diameter
Hand tucked grommets and mechanically joined grommets	5 times sling body diameter

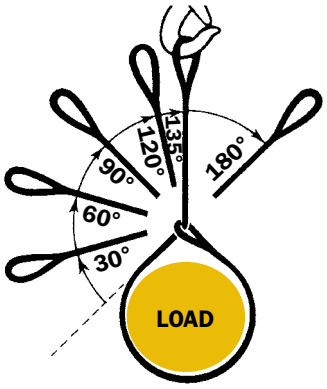
Minimum Sling Body Length

This is the 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.

Sling Usage Dictates Sling Body Construction

Whether to use a single-part sling (one made of a single wire rope in the sling body) or a multi-part sling (several ropes in the body) is usually the first decision to make after determining the sling length and capacity for lift. The starting point for this decision involves the handling characteristics of the sling more than any other factor. Based on capacity alone, multi-part slings will be more flexible – more easily handled – than single-part slings. The larger the capacity of a sling, the more important this becomes... to the point it becomes unrealistic to build big capacity slings from single, very large wire ropes. Multi-part slings provide the only practical means for obtaining extremely heavy lift capacity... in hundreds to tons. Various approaches to building multi-part slings have been developed. The most common are Braided and Cable Laid. Braided, or plaited, slings are frequently selected because this construction provides a gripping effect which reduces load slippage and rotation. In the design of the sling, rope engineers must seek a balance between strength handling characteristics, and number of parts... since there is a tendency to lose strength as more parts are added to increase flexibility.

For wire rope slings in choker hitch when angle of choke is less than 120°



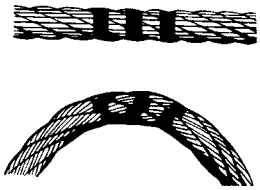
Angle of Choke in Degrees	Rate Capacity Percent*
OVER - 120˚	100
90˚ - 120˚	87
60˚ - 89˚	74
30˚ - 59˚	62
0˚ - 29˚	49

*Percent of sling rated capacity in a choker hitch.

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. 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. In controlled tests, where the angle was less than 120 degrees, the sling body always failed at the point of choke when pulled to destruction. Allowance for this phenomenon must be made anytime a choker hitch is used to shift, turn or control a load, or when the pull is against the choke in a multi-leg lift.

Wire Ropes

A Wire Rope Is a "Machine" With Many Moving Parts



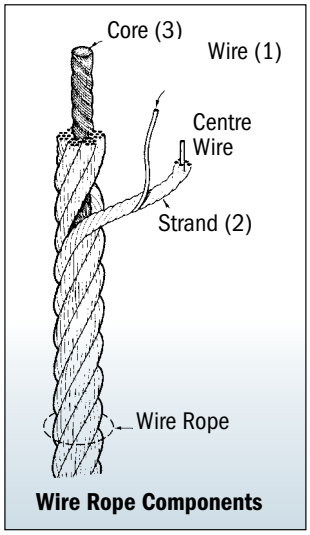
The greatest differences in wire ropes are found in the strands, which may vary widely in the pattern and number of wires which are laid together.

The wires of the rope may be made of various metals, including steel, iron, stainless steel, monel, and bronze. The material of which the wires are made is the primary determinant of rope strength. By far the most widely used metal is high-carbon steel.

Carbon steel wire ropes come in various Grades. The term "Grade" is used to designate the Nominal Strength of the wire rope. The most common rope Grades are Traction Steel (TS), Plow Steel (PS), Improved Plow Steel (IPS), Extra Improved Plow Steel (EIPS), and Extra Extra Improved Plow Steel (EEIPS).

One cannot determine the Grade of a wire rope by its feel or appearance. To properly evaluate a rope system you must obtain the Grade from your employer or wire rope supplier.

A wire rope is a machine, by dictionary definition: "An assemblage of parts that transmit forces, motion and energy one to another in some predetermined manner and to some desired end."



Wire Rope Components

A typical wire rope may contain dozens – even hundreds – of individual wires which are formed and fabricated to operate at close bearing tolerances one to another. When a wire rope bends, each of its many wires slides and adjusts in the bend to accommodate the difference in length between the inside and the outside of the bend. The sharper the bend, the greater the movement.

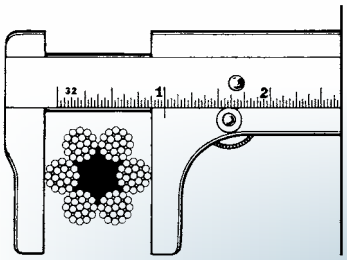
Every wire rope has three basic components: (1) The wires which form the strands and collectively provide rope strength; (2) The strands, which are laid helically around the core; and, (3) The core, which forms a foundation for the strands. The core may be either a Fibre Core (FC), an Independent Wire Rope Core (IWRC), which is actually a smaller wire rope, or a strand similar to the outer strands of the rope; only an IWRC or strand core contributes strength to the rope; and an IWRC normally provides only 7 1/2 % of the wire rope Breaking Strength.

Diameter of Wire Ropes

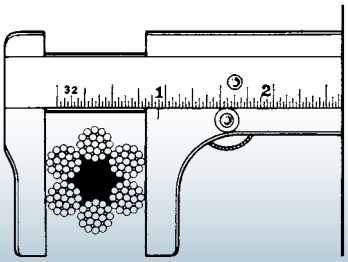
Diameter Tolerances of Wire Ropes

Nominal Rope Dia.		Tolerances		
Inches	MM	Undersize	Oversize	
			Inches	MM
up to 3/4	up to 19	0	1/32	0.79
13/16 to 1 1/8	20.6 to 28.6	0	3/64	1.19
1 3/16 to 1 1/2	30.0 to 38.1	0	1/16	1.59
1 9/16 to 2 1/4	39.7 to 57.1	0	3/32	2.38
2 5/16 and up	58.7 and up	0	1/8	3.18

The diameter of a wire rope is the diameter of the circle which encloses all of the wires. When measuring wire rope it is important to take the greatest distance of the outer limits of the crowns of two opposite strands. A measurement across the valleys will result in incorrect lower readings.



Correct



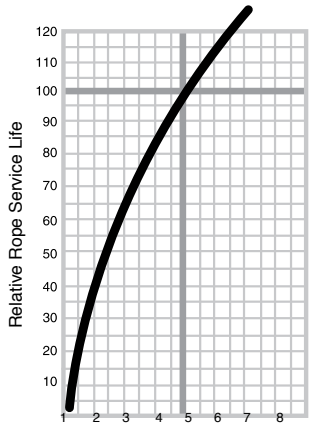
Incorrect

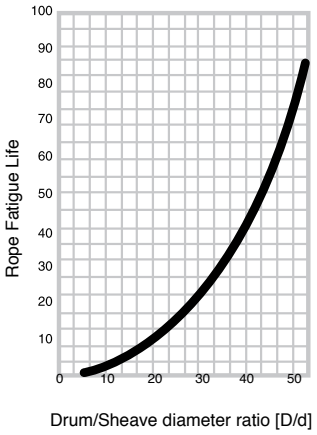
Rope Strength Design Factors

The rope strength design factor is the ratio of the rated strength of the rope to its operating stress. If a particular rope has a rated strength of 100,000 lbs. and is working under an operating stress of 20,000 lbs., it has a rope strength design factor of 5. It is operating at one-fifth or 20% of its rated strength.

Many codes refer to this factor as the "Safety Factor" which is a misleading term, since this ratio obviously does not include the many facets of an operation which must be considered in determining safety.

Wire rope is an expendable item – a replacement part of a machine or installation.





For economic and other reasons, some installations require ropes to operate at high stresses (low rope strength design factors). On some installations where high risk is involved, high rope strength design factors must be maintained. However, operating and safety codes exist for most applications and the codes give specific factors for usage. When a hoist is working and large dynamic loadings (shock load) are imparted to the rope, the rope strength design factor will be reduced which could result in overstressing of the rope. Reduced rope strength design factors frequently result in reduced service life of wire rope.

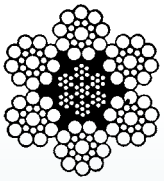
When to Replace Wire Rope, Based on Number of Broken Wires

STANDARDS ASME/ANSI	Equipment	Number broken wires in running ropes		Number broken wires in standing ropes	
		in one rope lay	in one strand	in one rope lay	at end connection
B30.2	Overhead & Gantry Cranes	12	4	Not specified	Not specified
B30.4	Portal, Tower & Pillar Cranes	6	3	3	2
B30.5	Crawler, Locomotive & Truck Cranes	6	3	3	2
B30.6	Derricks	6	3	3	2
B30.7	Base Mounted Drum Hoists	6	3	3	2
B30.8	Floating Cranes & Derricks	6	3	3	2
B30.16	Overhead Hoists	12*	4	Not specified	Not specified
A10.4	Personnel Hoists	6*	3	2*	2
A10.5	Material Hoists	6*	Not specified	Not specified	Not specified

*Also remove for 1 valley break. OHSA requires record keeping of wire rope condition.

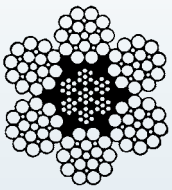
Note: Current industry recommendations and standards are based upon the use of steel sheaves. The manufacturer of plastic or synthetic sheaves or liners should be consulted for their recommendations on the safe application of their product, and possible revision in rope inspection criteria when used with their product.

Wire Rope Constructions/Classification



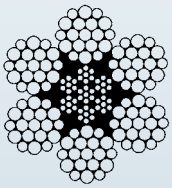
SEALE CONSTRUCTION

Two layers of wires are formed around a centre wire, with each layer having an equal number of wires. The large outer wires, specifically designed for increased abrasion resistance, are resting in the valleys between the small inner wires.



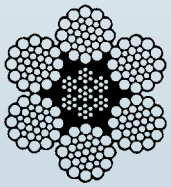
FILLER CONSTRUCTION

Small filler wires, equal in number to the main inner wires, are used to prevent the outer wires from being pressed into the valley between the inner wires. Due to good abrasion and fatigue resistance characteristics, this construction has become most popular for general purpose wire ropes under the 6 x 19 classification.



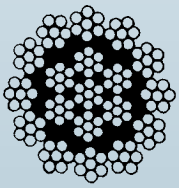
WARRINGTON CONSTRUCTION

The outer layer of wires are composed of alternating large and small wires, formed around a layer of uniform-sized wires. The smaller outer wires rest on the crowns, and the larger ones in the valleys of the inner wires.



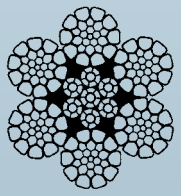
WARRINGTON SEALE CONSTRUCTION

A combination of Seale and Warrington Constructions, it features large outer wires with the main inner layer being composed of alternating large and small wires.



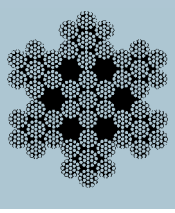
ROTATION RESISTANT

Rotation resistant ropes are a special category (class) of wire rope designed to resist the tendency to spin or rotate under load. In general these ropes are used as single part lines, or in situations where operating conditions require a rope that will resist cabling in a multipart system. The essential nature of rotation resistant rope designs impose certain limitations on their application and necessitate special handling requirements not encountered with other rope constructions. Rotation resistant ropes are available in two general classifications: 1) Single Layer, 2) Multilayer strands.



COMPACTED STRAND WIRE ROPE

Manufactured from strands which have been compacted or reduced in diameter prior to laying strands around the core into a finished wire rope. The compacting process flattens the surface of the outer wires and reforms internal wires of the strand to increase the metallic area of the strand producing a smoother outer surface and increased strength over round strand rope of the same diameter and classification.



CABLE LAID ROPE

The rope is machine formed by laying six wire ropes in a helical pattern around a core rope. Ideal for use as basket or choker hitches, where flexibility and ease of handling are essential and cutting or abrasion is not a critical factor.

Wire Rope Lays

This term is used to describe the direction of rotation of wires and strands in the rope:
RIGHT LAY – Clockwise;
LEFT LAY – Counter-Clockwise

REGULAR LAY:
Wires in strands are laid in the opposite direction of the strands and are parallel to the rope axis. Ropes with regular lay are easy to handle and have greater resistance to crushing than those with lang lay.

LANG LAY:
Wires are laid in the same direction as the strands of the rope, and at an angle to the rope axis. Longer lengths of the individual wires are exposed, creating greater resistance to wear and improved flexibility. Lang Lay ropes should only be used where both rope ends are "fixed" and, therefore, should not be used with a swivel type termination.

LAY LENGTH:
The length of lay of the strands in wire ropes (the complete revolution of one strand around the rope axis) will have considerable impact on the rope's performance and characteristics. While an increase in lay length will reduce the amount of stretch in a rope, a shorter lay length should be chosen for flexibility and where shock-loading could be the primary cause of wire rope failure.

Right Lay
REGULAR LAY

Left Lay
REGULAR LAY

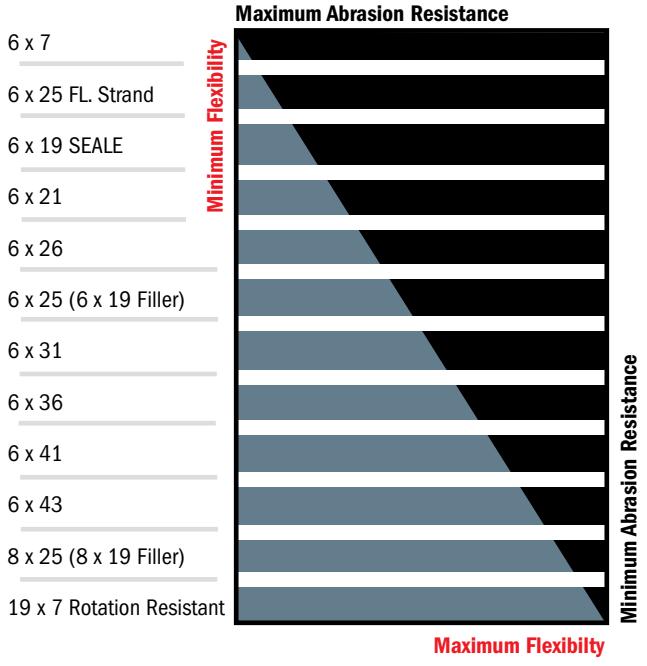
Right Lay
LANG LAY

Left Lay
LANG LAY

Comparison Chart

ABRASION RESISTANCE / FLEXIBILITY

The following chart clearly shows that as one quality increases the other decreases. No one rope is ideal under both abrasion resistance and flexibility requirements. The user must decide on the major problem to be overcome, and choose the rope that best meets their demands, while at the same time keeping as many as possible of its other desirable characteristics.



Wire Rope Selection

FEATURE	EXPLANATION
Strength: The wire rope must have sufficient strength to support the load plus the necessary design factor.	The strength of a wire rope depends on its size, grade of wire and type of core.
Flexibility or Resistance to Bending Fatigue: The wire rope must have the ability to bend over small sheaves or wind onto relatively small drums without the wires breaking due to bending fatigue.	Strands containing a large number of small wires have greater resistance to bending fatigue than strands containing a few large wires. Lang Lay has greater fatigue resistance than Regular Lay.
Resistance to Abrasion: The wire rope is subjected to wear or abrasion as it passes through operating sheaves under high pressure or comes in contact with stationary objects.	Large outer wires are better able to withstand abrasive wear. Lang Lay provides greater resistance to wear than Regular Lay (but should not be used if one end is free).
Resistance to Crushing: Some wire ropes distort or flatten when they are forced to operate under heavy pressures in grooves that do not provide ample support or on drums where multiple layer winding occurs.	An Independent Wire Rope Core (IWRC) provides greater support for strands under heavy bearing pressures. The coarser wire rope constructions provide greater resistance to flattening on drums.
Resistance to Rotation: The wire rope may rotate as the load is applied. This could be undesirable for load control and might lead to rapid deterioration of the wire rope.	Special rotation resistant constructions are available for specific applications. Regular Lay provides greater stability than Lang Lay, and wire ropes with an IWRC twist less than those with fibre cores.
Resistance to Corrosion: Wire rope may corrode if in contact with corrosive elements, or it may rust when exposed to atmospheric conditions over a long period of time.	Galvanized or stainless steel wire offers excellent protection against corrosion. Special lubricants can also inhibit the development of rust.

How to Order

TERMINOLOGY

A typical description of wire rope would be: 1000 feet, 1/2" diameter, 6 x 25 Filler, IWRC, preformed, EIPS (extra improved plow steel), RRL (right regular lay).

a) **1000 feet** – wire rope is ordered or recorded in feet

b) **1/2" Diameter** – the nominal diameter for the rope

c) **6 x 25 Filler** – the first numeral is the number of strands in the rope (6). The second numeral is the number of wires in each strand (25). The word Filler indicates the pattern of the wires in the strand.

d) **Preformed** – a manufacturing process assuring that each strand of the rope is preformed to the helical shape it will assume in the finished rope.

e) **EIPS (Extra Improved Plow Steel)** – signifies the grade of steel used in the wires.

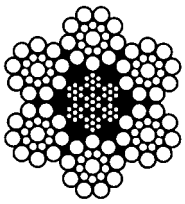
f) **IWRC (Independent Wire Rope Core)** – indicates the type of core.

g) **Right Regular Lay** – indicates the direction of the strands and the wires in the strands.

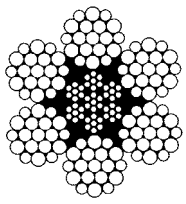
Wire Rope Classifications

6 x 19
(Includes 6 x 19 Seale, 6 x 21, 6 x 25, 6 x 26 types)

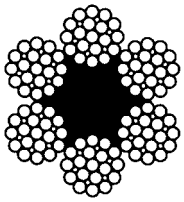
SIZE	E.I.P.S. FIBRE CORE		E.I.P.S. I.W.R.C.	
	WEIGHT	NOMINAL STRENGTH	WEIGHT	NOMINAL STRENGTH
Diameter Inches	lbs. per Ft.	Tons 2000 lbs.	lbs. per Ft.	Tons 2000 lbs
1/4	.10	3.02	.11	3.4
5/16	.16	4.69	.18	5.3
3/8	.23	6.71	.25	7.6
7/16	.31	9.09	.34	10.2
1/2	.40	11.8	.44	13.0
9/16	.51	14.9	.56	16.5
5/8	.63	18.3	.69	20.5
3/4	.90	26.2	.99	29.5
7/8	1.23	35.4	1.35	39.8
1	1.60	46.0	1.76	51.8
1 1/8	2.03	57.9	2.23	65.9
1 1/4	2.50	71.0	2.75	81.5
1 3/8	3.03	85.4	3.33	96.0
1 1/2	3.60	101.0	3.96	114.0
1 5/8	4.23	113.0	4.65	132.0
1 3/4	4.90	130.0	5.39	153.0
1 7/8	5.63	152.0	6.19	174.0
2	6.40	169.0	7.04	198.0
2 1/8	7.23	188.5	7.95	221.0
2 1/4	8.10	210.0	8.91	247.0



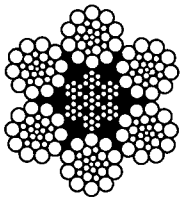
6 x 19 Seale IWRC



6 x 19 Warrington IWRC



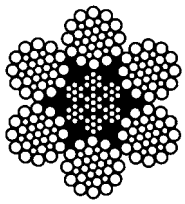
6 x 26 Filler Fibre Core



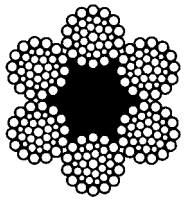
6 x 26 Warr. Seale IWRC

6 x 37
(includes 6 x 31, 6 x 36, 6 x 41, 6 x 43 types)

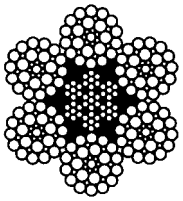
SIZE	E.I.P.S. FIBRE CORE		E.I.P.S. I.W.R.C.	
	WEIGHT	NOMINAL STRENGTH	WEIGHT	NOMINAL STRENGTH
Diameter Inches	lbs. per Ft.	Tons 2000 lbs.	lbs. per Ft.	Tons 2000 lbs
1/4	.10	2.8	.11	3.4
5/16	.16	4.4	.18	5.3
3/8	.22	6.4	.24	7.5
7/16	.30	8.6	.33	10.2
1/2	.39	11.8	.43	13.3
9/16	.49	14.9	.54	16.8
5/8	.61	18.3	.67	20.6
3/4	.87	26.2	.96	29.4
7/8	1.19	35.4	1.31	39.8
1	1.55	46.0	1.70	51.7
1 1/8	1.96	57.9	2.16	65.0
1 1/4	2.42	71.0	2.66	79.9
1 3/8	2.93	85.4	3.22	96.0
1 1/2	3.49	101.0	3.84	114.0
1 5/8	4.09	105.5	4.50	132.0
1 3/4	4.75	121.0	5.23	153.0
1 7/8	5.45	142.0	6.00	174.0
2	6.20	155.0	6.82	198.0
2 1/8	7.00	178.0	7.73	221.0
2 1/4	7.85	201.0	8.64	247.0



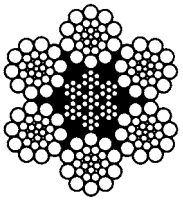
6 x 31 Seale Fibre Core



6 x 36 Fibre Core



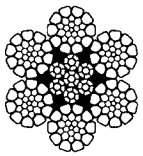
6 x 41 Filler IWRC



6 x 43 Filler IWRC

High Performance Ropes

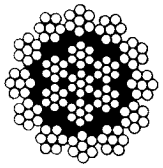
Weights and Breaking Loads



Diameter inches	Rope Construction	Approx. Weight lbs/ft	Nominal Strength, tons of 2000 lbs
3/8	6x19 RRL	0.30	8.5
7/16	6x25 RRL	0.39	11.5
1/2	6x25 RRL	0.51	15.0
9/16	6x25 RRL	0.64	19.0
5/8	6x25 RRL	0.79	23.3
3/4	6x31 RRL	1.14	33.2
7/8	6x31 RRL	1.54	44.9
1	6x31 RRL	2.01	58.4
1 1/8	6x31 RRL	2.54	73.3
1 1/4	6x31 RRL	3.14	90.2
1 3/8	6x31 RRL	3.80	108.7
1 1/2	6x31 RRL	4.55	128.8

Rotation Resistant

19 x 7 Construction

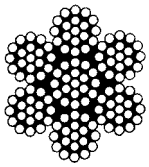


Diameter inches	E.I.P.S.	I.W.R.C.
	Approx. Weight lbs/ft	Nominal Strength, tons of 2000 lbs.
1/4	0.11	2.7
5/16	0.18	4.2
3/8	0.25	6.15
7/16	0.35	8.33
1/2	0.45	10.8
9/16	0.58	13.6
5/8	0.71	16.8
3/4	1.02	24.0
7/8	1.39	32.5
1	1.82	42.2
1 1/8	2.30	53.1
1 1/4	2.83	65.1
1 3/8	3.43	78.4
1 1/2	4.08	92.8

Aircraft Cable

Galvanized or Stainless Steel

7 X 19 Construction

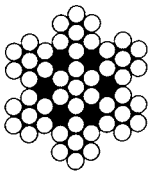


Diameter inches	Approx. weight per 100 feet in pounds	Nominal Strength in pounds	
		Galvanized	Stainless
3/32	1.7	1,000	920
1/8	2.9	2,000	1,760
5/32	4.5	2,800	2,400
3/16	6.5	4,200	3,700
7/32	8.6	5,600	5,000
1/4	11.0	7,000	6,400
9/32	13.9	8,000	7,800
5/16	17.3	9,800	9,000
3/8	24.3	14,400	12,000

Aircraft Cable

Galvanized or Stainless Steel

7 X 7 Construction



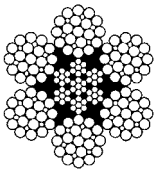
Diameter inches	Approx. weight per 100 feet in pounds	Nominal Strength in pounds	
		Galvanized	Stainless
†1/32	.17	110	110
3/64	.42	270	270
1/16	.75	480	480
5/64	1.1	650	650
3/32	1.6	920	920
7/64	2.2	1,260	1,260
1/8	2.8	1,700	1,700
5/32	4.3	2,600	2,400
3/16	6.2	3,700	3,700
7/32	8.3	4,800	4,800
1/4	10.6	6,100	6,100
9/32	13.4	7,600	7,600
5/16	16.7	9,200	9,000
3/8	23.6	13,100	12,000

†1/32 is made in 3x7 construction

Disclaimer - NOT FOR AIRCRAFT USE.

Metric Wire Rope

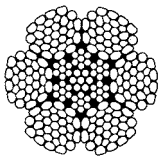
8 X 36 IWRC, EIPS
RRL & LRL Available
Extra Improved Plow Steel



Diameter Millimetres	Approx Weight, per foot, in pounds	Nominal Strength, tons of 2000 lbs.
9 mm	.22	7.2
10 mm	.30	8.4
11 mm	.35	9.6
13 mm	.48	14.1
14 mm	.55	16.9
16 mm	.72	21.4
20 mm	1.13	30.4
25 mm	1.80	47.4

Swaged Wire Rope

6 X 19 Class And 6 X 37 Class



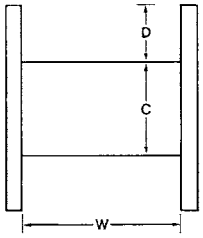
Finished Diameter in inches	Approx. Weight, per foot, in pounds	Nominal Strength, tons of 2000 lbs
3/8	.31	9.1
7/16	.42	12.1
1/2	.55	16.0
9/16	.71	20.2
5/8	.86	24.7
3/4	1.25	35.3
7/8	1.70	47.8
1	2.22	62.0
1 1/8	2.66	78.0

Handling of Wire Rope

Capacities Of Drums And Reels

To calculate the maximum length in feet of steel wire rope which a specific drum or reel will hold under normal tension and uniform winding conditions, the following formula applies:
(C + D) x D x W x Factor

W – Inside width of drum
C – Core of drum
D – Depth of flange

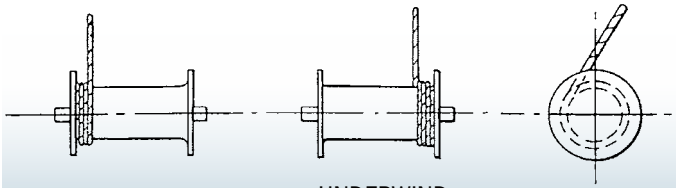


Nom. Rope Dia. Inches	Factor	Nom. Rope Dia. Inches	Factor	Nom. Rope Dia. Inches	Factor
1/4	4.18	5/8	.671	1 3/8	.138
5/16	2.67	3/4	.465	1 1/2	.116
3/8	1.86	7/8	.342	1 5/8	.099
7/16	1.37	1	.262	1 3/4	.085
1/2	1.05	1 1/8	.207	1 7/8	.074
9/16	.828	1 1/4	.167	2	.066

Winding Of Rope On A Drum

FACING THE DRUM

Right Hand Lay

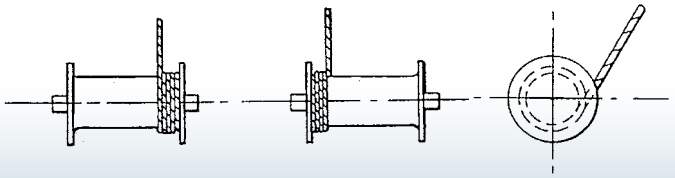


OVERWIND
Spooled left to right

UNDERWIND
Spooled right to left

OVERWIND

Left Hand Lay



OVERWIND
Spooled right to left

UNDERWIND
Spooled left to right

UNDERWIND

User's Guide

EQUIPMENT	ROPE DIAMETER (INCHES)	RECOMMENDATION
Cranes Overhead Travelling Hoist Lines	3/8 – 1 1/2	6 x 37, Preformed, IPS, FC, Regular Lay (Except in hot areas, where IWRC is recommended)
Crawler Cranes Tag Lines	1/4 - 3/8	6 x 37, Preformed, IPS, FC, Regular Lay
Boom Lines	1/2 - 1	6 x 25 Filler, Preformed, IPS, IWRC, Regular Lay
Hoist Lines	5/8 – 1	6 x 25 Filler, Preformed, IPS, IWRC, Regular Lay
Clamshell, Holding and Closing Lines	5/8 – 1	6 x 25 Filler, Preformed, IPS, IWRC, Regular Lay
Derrick Hoist and Boom Lines	5/8 – 1	6 x 25 Filler, Preformed, IPS, IWRC, Regular Lay
Swing Lines	5/8 – 1 1/8	6 x 25 Filler, Preformed, IPS, IWRC, Regular Lay
Drag Scraper and Slacklines Drag Ropes and Inhaul Lines	5/8 – 1 1/8	6 x 25 Filler, Preformed, IPS, IWRC, Lang Lay
Track Cables	1 – 1 3/4	6 x 25 Filler, Preformed, IPS, IWRC, Regular Lay or Lang Lay if track is restricted from twisting
Slack Lines and Tension Cables	1/2 - 1	6 x 25 Filler, Preformed, IPS, IWRC, Lang Lay
Dragline Excavators Drag Lines	Up to 2 1/4 1 3/4 and up	6 x 25 Filler, Preformed, IPS, IWRC, Lang Lay 6 x 49, Preformed, IPS, IWRC, Lang Lay
Hoist and Boom Lines	1/2 - 1 1/4 1 5/8 and up	6 x 25 Filler, Preformed, IPS, IWRC, Lang Lay 6 x 49, Preformed, IPS, IWRC, Lang Lay
Dredges Hoist, Swing, Backing, Thrust and Ladder Lines	5/8 – 1 1/2	6 x 25 Filler, Preformed, IPS, IWRC, Lang Lay
	1 5/8 and up	6 x 49, Preformed, IPS, IWRC, Lang Lay
Holding and Closing Lines	5/8 – 1 1/4	6 x 25 Filler, Preformed, IPS, IWRC, Regular Lay
Guy Ropes	3/8 – 1	6 x 7, Preformed, Galvanized, FC, Regular Lay
	1/2 – 1	1 x 19 Galvanized Bridge Strand
	1 1/8 and up	1 x 37 Galvanized Bridge Strand
Logging Ropes Choker Ropes	7/16 – 1 1/4	6 x 26, Preformed, IPS or EIPS, IWRC, Regular Lay
Mainlines	1/2 – 1 3/8	6 x 26, Preformed, IPS, IWRC, Regular Lay
	1/2 – 3/4	6 x 26, Swaged or Super Swaged IPS, IWRC, Regular Lay
Skylines	1 1/2 – 2	6 x 19 Seale, Preformed, IPS, IWRC, Regular Lay
Straw Lines	3/8 – 1/2	6 x 19 Seale, Preformed, IPS, IWRC, Regular Lay
Mining Mine Hoist Ropes	3/4 – 2 1/4	6 x 27, Flattened Strand, Preformed IPS or Special IPS, FC, Lang Lay – to CSA G18
Slusher Ropes	3/8 – 1	6 x 15, Preformed, IPS or EIPS, IWRC, Regular Lay or 6 x 19, Preformed, IPS or EIPS, IWRC, Regular Lay
Rub and Grade Ropes	1 – 1 3/4	1 x 37 Galvanized Bridge Strand
Haulage Ropes	5/8 – 1 1/2	6 x 7 Preformed, IPS, FC, Lang Lay
		6 x 8 Flattened Strand, IPS, FC, Lang Lay
		6 x 19 Seale, Preformed, IPS, FC, Lang Lay
Sinking Ropes	3/4 and up	19 x 7 Rotation Resistant, Preformed, IPS, FC
		6 x 16 or 6 x 10 Rotation Resistant Flattened Strand, Preformed, IPS, FC

EQUIPMENT	ROPE DIAMETER (INCHES)	RECOMMENDATION
Mobile Crane Hoist Lines	1/2 – 1	19 x 7, Rotation Resistant, Preformed, IPS, FC for Single Part Lines
Boom Lines	1/2 – 7/8	6 x 25, Filler, Preformed, IPS, IWRC, Regular Lay for Multiple Part Lines
Oil Field Rotary Drilling Lines	1 – 1 3/4	6 x 25, Filler, Preformed, IPS, IWRC, Regular Lay 6 x 19, Seale, Pref., IPS or VHS, IWRC, R/L
Sucker Road and Tubing Lines	3/8 – 1	6 x 37, Preformed, IPS, IWRC, Regular Lay
Sand Lines	3/8 – 5/8	6 x 7, Pref., IPS, Polypropylene Core, R/L or 3 x 19, Seale, IPS, Swaged Rope
Riser and Guide Tensioners	3/4 – 2 1/4	6 x 37, Preformed, IPS, IWRC, Lang Lay
Ore and Coal Handling Ropes Blast Furnace, Skip Hoist and Bell Ropes	5/8 – 1 3/4	6 x 25, Filler, Pref., IPS, IWRC, Reg. or L/L
Car Dumper Ropes	5/8 – 1 3/4	6 x 25, Filler, Pref., IPS, IWRC, Reg. or L/L
Ore and Coal Bridge Ropes	5/8 – 1 1/4	6 x 25, Filler, Preformed, IPS, IWRC, Regular Lay
Pile Drive Hammer Lines, Pile Lines, Boom Lines, Boom Suspensions, Boom Guys and Boom Hoists	1/2 – 1 1/8	6 x 25, Filler, Preformed, IPS, IWRC, Regular Lay
Scraper Ropes	7/16 x 5/8	6 x 19, Preformed, IPS, IWRC, Lang Lay
Shipping Ropes Running Ropes	5/16 – 1/2	6 x 12, Pref., Galvanized Plow, FC, Regular Lay
Mooring Lines and Hawsers	1/2 – 2	6 x 24, Pref., Galvanized Plow, FC, Regular Lay
Heavy Duty Mooring Lines	7/8 – 1 1/4	6 x 37, Pref., Galvanized Plow, IPS, FC, R/L
Shovels Hoist Lines,	1/2 – 1 1/4	6 x 25, Filler, Preformed, IPS, IWRC, Lang Lay
Boom Lines,	7/8 – 1 3/4	6 x 36, Preformed, IPS, IWRC, Lang Lay
Crowd and Retract Lines	1 5/8 and up	6 x 49, Preformed, IPS, IWRC, Lang Lay
Trip Lines	1/4 – 1/2	6 x 37, Preformed, IPS, FC, Regular Lay
Ski Lift Ropes T-Bars,	1/2 – 9/16	6 x 7, Preformed, IPS, FC, Lang Lay
Chair Lifts	5/8 – 1 1 1/8 – 1 1/2	6 x 19, Seale, Preformed, IPS, FC, Lang Lay 6 x 25, Filler, Preformed, IPS, FC, Lang Lay
Tower and Climber Crane Ropes Hoist Lines	3/8 – 1 1/8	19 x 7, Rotation Resistant, Pref., IPS, FC or 18 x 19, Spin Resistant, Preformed, IPS, IWRC
Boom Lines	1/2 – 1 1/2	6 x 25, Filler, Preformed, IPS, IWRC, Lang Lay or 6 x 37, Preformed, IPS, IWRC, Regular Lay
Winch Lines	1/2 – 1	6 x 19, Seale, Pref., IPS, IWRC, Regular Lay
	1/2 –1 1/4	6 x 25, Filler, Preformed, IPS, IWRC, Regular Lay
	1/2 – 3/4	6 x 31, Preformed, IPS, IWRC, Regular Lay
	7/8 – 1 1/4	6 x 37, Preformed, IPS, IWRC, Regular Lay

Trouble Shooting Chart

FAULT	POSSIBLE REASON	CURE
Burning	Sheaves too heavy	Replace with lighter sheaves
Burning and abrasion	Rollers Stuck	Lubricate or replace rollers
	Sheaves frozen	Free sheave, lubricate & regroove
Burning or crushing	Rope dragging over obstacles	Keep rope path clear
Core of rope chars and breaks	Excessive heat	Use IWRC
Corrosion	Acid, sulphur or salt fumes	Lubricate frequently
Corrosion and rust	Rope not lubricated	Lubricate more frequently
Corrugation with excessive wear	Rollers too soft	Fit harder rollers
	Sheave and drum material too soft	Fit larger sheaves and drums
Crushing	Crosswinding on drum	Spool right and use correct rope
	Drum too full	Use less rope or smaller rope or larger drum
Crushing and nicking Distortion	Rope damaged by impact Rope cut badly	Handle with greater care Seize rope properly before cutting
	Sheave grooves too big	Replace sheaves or use large rope
Fatigue	Sheaves wobble	Replace damaged journals
		Straighten or replace bent shafts
Fatigue – premature	Reverse bends	Increase distance between sheaves, use larger sheaves
Fatigue – wires break	Sheaves and drums too small	Get larger sheaves and drums
Overloading	False starts, false stops or jerking out slack	Control speed
Overloading and crushing	Loose bearing on drum	Replace bearing
	Sticky, grabby clutches	Maintain clutches in good working order
Pinching, crushing and burning	Sheave grooves too small	Replace or regroove sheaves
Rope breaks	Overloads	Use proper working load
Rope chatters	Roller too small	Fit larger rollers
Rope jumps off or breaks	Broken flange on sheave	Replace sheave – immediately
Rope pulls out – high strands	Fittings improperly attached	Attach fittings properly
Rope - short life	Rope wrong size, construction or grade	Fit correct rope
Rope unlays	Swivel fittings on Lang Lay	Change attachment or use Pref. rope
Rope unlays or Lay tightens	Rope dragging against stationary objects	Keep rope path clear
Rope wear excessive	Grit and sand	Use a light lubricant frequently
Rope wear and sheave wear excessive	Sheaves not aligned	Re-align sheaves
Side wear on rope and sheaves	Excessive fleet angle	Reset main sheaves further out
Spot wear on high strands	Kinks If excessive, check for objects embedded in rope	Handle rope carefully Inspect rope frequently

Wire Rope Slings and Attachments

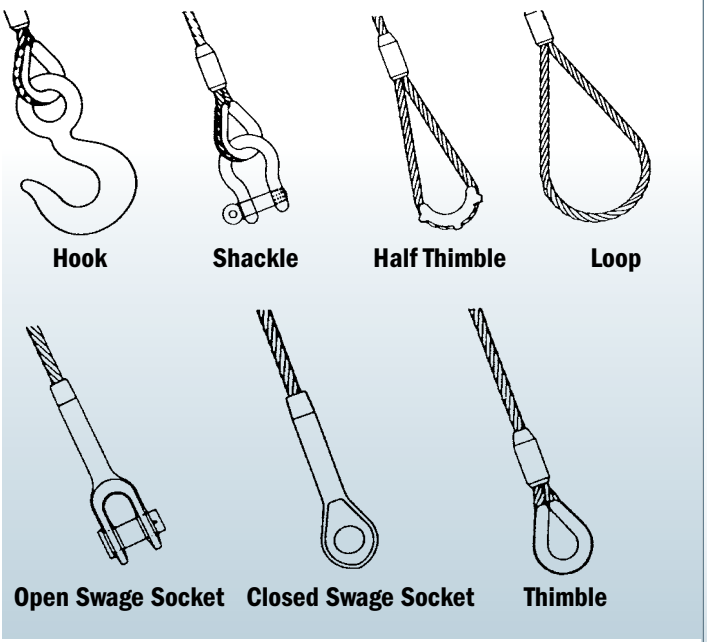
Wire rope slings require special attention because they are almost always subjected to severe wear, abrasion, impact loading, crushing, kinking and overloading. They also merit special attention because seemingly insignificant changes in sling angle drastically affects the loading. When using slings, exercise extreme caution because you are going to be developing unknown loads, under less than ideal circumstances, in less than perfect conditions.

Failure to provide blocking or protective pads will permit sharp corners to cut slings. Pulling slings from under loads will result in abrasion and kinking. Dropping loads on slings or running equipment over them will cause crushing. Sudden starts and stops when lifting loads will increase the stresses in them (shock loading). Also, improper storage will result in deterioration.

Because of the severe service expected of slings, possible errors in determining load weight, and the effect of sling angle on the loading, it is recommended that all working load limits (WLL) be based on a design factor of at least 5:1.

SLING CONFIGURATIONS:

The term "sling" includes a wide variety of configurations. The more common arrangements in rigging are described herein.



Certified Slings

On request all slings can be proof tested on our calibrated pull-test machine & supplied with test certificate.

Measuring the Length of a Sling

INTEGRAL FITTINGS

(a) Slings with swaged sockets (closed or open), or with solid thimbles, are measured to the centre of the pin.
(b) Slings with integral hooks are measured from pull of eye to pull of hook or other hardware.
(c) Turnbuckles are not considered integral fittings since they have a variable take-up.

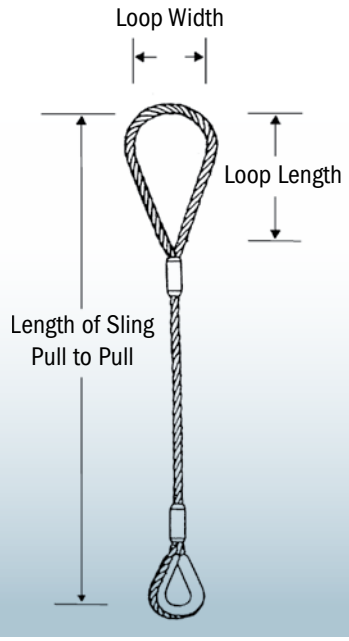
BRIDLES:

A bridle sling length is measured from pull of eye at upper ring to pull of eye at bottom. If integral fittings are included see above.

HOW TO ORDER SLINGS:

Standard slings can best be ordered by referring to the specification in this catalogue. Whenever special slings are required be sure to give the following details:

1. Max. Load to be lifted – Tons of 2000 lbs.
2. Type and dimensions of load: Width – Length – Height
3. Available headroom – floor to crane hook.
4. Type of lift: 1-, 2-, 3-, or 4-leg · Vertical – Choker – Basket
5. Type of eye required ie. standard loop or thimble eye.
6. Size of eye if other than standard
7. Sketch of sling – this will avoid any possibility of error.
8. Ambient conditions



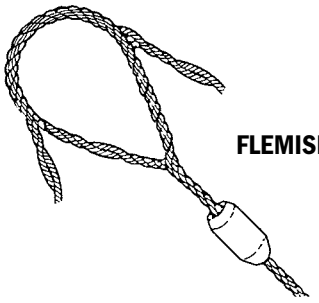
Working Load Limits

Sling-Choker fabricates Wire Rope Slings and Bridles with a Flemish Eye Splice secured by a swaged low carbon steel sleeve or by a fold back eye secured with a Talurit sleeve.

Working Load Limits (WLL) incorporate EIPS Wire Rope at a 5:1 Design Factor.

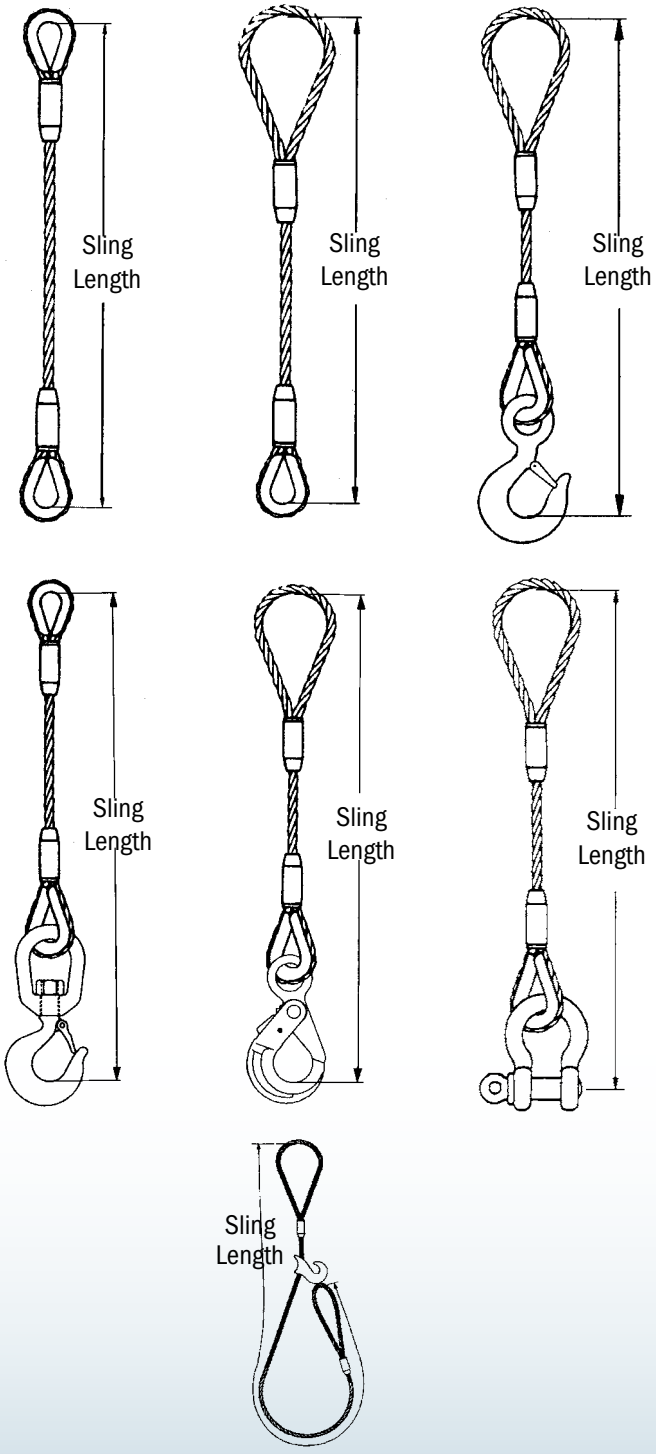
For specific applications, alternate Working Load Limit Ratings are available on request.

Working Load Limit Tags are supplied on all wire rope slings.



FLEMISH EYE SPLICE

Rope Diameter (inches)	Vertical Lift	Choker Hitch	Basket Hitch/ Vertical
	WLL lbs.	WLL lbs.	WLL lbs.
1/4	1,300	960	2,600
3/8	2,800	2,200	5,600
1/2	5,000	3,800	10,000
5/8	7,800	5,800	15,600
3/4	11,200	8,200	22,400
7/8	15,200	11,200	30,400
1	19,600	14,400	39,200
1 1/8	24,000	18,200	48,000
1 1/4	30,000	22,000	60,000
1 3/8	36,000	26,000	72,000
1 1/2	42,000	32,000	84,000
1 5/8	48,000	36,000	96,000
1 3/4	56,000	42,000	112,000
2	74,000	56,000	148,000
2 1/2	108,000	84,000	216,000



For the correct fittings and attachments for your needs contact your Sling-Choker Representative

Pro-Flex™

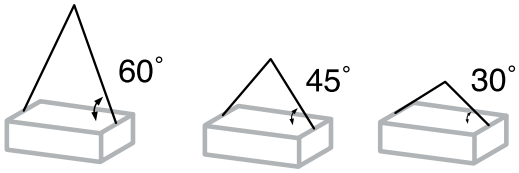
Our most flexible wire rope sling. Extremely flexible, easy to store, kink resistant, easy to rig and easy to inspect.

Sling Diameter (inches)	Vertical Pounds	Choker Pounds	Basket Pounds	Std. Loop Length x Width	Shortest Sling Length (ft)
1/2	2,600	2,000	5,200	4x8	2'
5/8	4,000	2,800	8,000	5x10	2'4"
3/4	6,000	4,200	12,000	6x12	2'10"
7/8	8,000	5,600	16,000	7x14	3'3"
1	10,000	7,000	20,000	8x16	3'8"
1 1/4	14,000	9,800	28,000	10x20	4'7"
1 1/2	20,000	14,000	40,000	12x24	5'6"
1 3/4	32,000	22,400	64,000	14x28	6'2"
2	40,000	28,000	80,000	16x32	7'6"

Working load limit based on 5:1 design factor

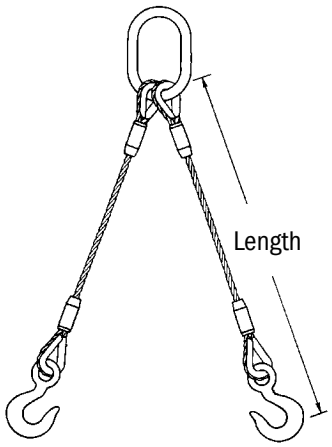
Wire Rope Bridle Slings –2 Part

THIMBLE TYPE FLEMISH EYES WITH SWAGED STEEL SLEEVES



Rope Dia. Inches	60° WLL/2 Legs Pounds	45° WLL/2 Legs Pounds	30° WLL/2 Legs Pounds
1/4	2,252	1,838	1,300
5/16	3,464	2,828	2,000
3/8	4,850	3,960	2,800
7/16	6,582	5,374	3,800
1/2	8,660	7,071	5,000
9/16	11,085	9,051	6,400
5/8	13,510	11,031	7,800
3/4	19,399	15,839	11,200
7/8	26,327	21,496	15,200
1	33,948	27,719	19,600
1-1/8	41,569	33,941	24,000
1-1/4	51,962	42,426	30,000
1-3/8	62,354	50,912	36,000
1-1/2	72,746	59,397	42,000
1-3/4	96,995	79,196	56,000
2	128,172	104,652	74,000

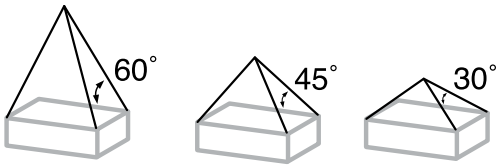
Working load limit based on 5:1 design factor



WARNING: DO NOT EXCEED RATED CAPACITIES

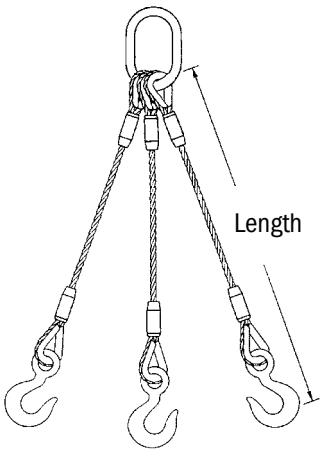
Wire Rope Bridle Slings – 3 Part

THIMBLE TYPE FLEMISH EYES
WITH SWAGED STEEL SLEEVES



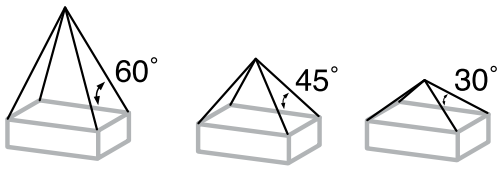
Rope Dia. Inches	60° WLL/3 Legs Pounds	45° WLL/3 Legs Pounds	30° WLL/3 Legs Pounds
1/4	3,400	2,800	1,940
5/16	5,200	4,200	3,000
3/8	7,400	6,000	4,400
7/16	10,000	8,200	5,800
1/2	13,200	10,800	7,600
9/16	16,600	13,600	9,600
5/8	20,000	16,600	11,800
3/4	30,000	24,000	16,800
7/8	40,000	32,000	22,000
1	52,000	42,000	30,000
1-1/8	62,000	52,000	36,000
1-1/4	76,000	62,000	44,000
1-3/8	92,000	76,000	54,000
1-1/2	110,000	90,000	64,000

Working load limit based on 5:1 design factor



Wire Rope Bridle Slings – 4 Part

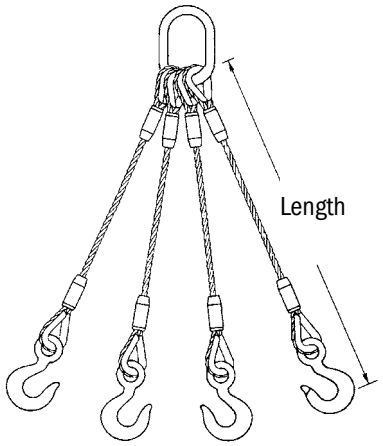
THIMBLE TYPE FLEMISH EYES
WITH SWAGED STEEL SLEEVES



Rope Dia. Inches	60° WLL/4 Legs Pounds	45° WLL/4 Legs Pounds	30° WLL/4 Legs Pounds
1/4	4,400	3,600	2,600
5/16	7,000	5,600	4,000
3/8	10,000	8,200	5,800
7/16	13,400	11,000	7,800
1/2	17,600	14,200	10,200
9/16	22,000	18,000	12,800
5/8	28,000	22,000	15,600
3/4	38,000	32,000	22,000
7/8	52,000	42,000	30,000
1	68,000	56,000	40,000
1-1/8	84,000	68,000	48,000
1-1/4	102,000	84,000	60,000
1-3/8	124,000	100,000	72,000
1-1/2	146,000	120,000	84,000

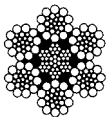
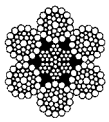
Working load limit based on 5:1 design factor

CAUTION: It is wrong to assume that a three or four leg bridle will have a capacity directly based on the number of legs unless each leg is exactly equal in length, equally sharing the load and equally spaced around the centre of gravity. The above values are based on these criteria.



WARNING: DO NOT EXCEED RATED CAPACITIES

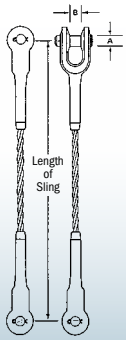
Wire Rope Bridle Components

								
Wire Rope	**Diameter**	**Minimum Length**	**Sliding Hook**	**Eye Hook tons**		**Oblong Ring Diameter**	**Oblong Ring**	**Oblong Sub-Assembly**
	in. mm	**ft.**	**In.**	**Carbon**	**Alloy**	**in.**	**Diameter in.**	**Diameter in.**
	1/4 (6)	1.25	3/8	3/4	1	1/2	1/2	3/4
	5/16 (8)	1.50	3/8	1	1	1/2	3/4	3/4
	3/8 (10)	1.67	3/8	1-1/2	1-1/2	3/4	3/4	1
	7/16 (11)	1.83	1/2	2	2	3/4	3/4	1
	1/2 (13)	2.00	1/2	3	3	3/4	1	1
	9/16 (14)	2.17	5/8	5	4-1/2	1	1	1
	5/8 (16)	2.67	5/8	5	4-1/2	1	1	1-1/4
	3/4 (19)	2.75	3/4	7-1/2	7	1	1-1/4	1-1/4
6 x 26 E.I.P.S. IWRC	7/8 (22)	3.25	–	10	11	1-1/4	1-1/2	2
	1 (25)	3.50	–	10	11	1-1/2	1-3/4	2
	1-1/8 (29)	4.50	–	15	15	1-1/2	1-3/4	2
	1-1/4 (32)	4.50	–	15	15	1-3/4	2	2-1/4
	1-3/8 (35)	5.00	–	20	22	1-3/4	2	2-1/2
	1-1/2 (38)	5.50	–	25	22	2	2-1/4	2-1/2
6 x 36 E.I.P.S. IWRC	1-3/4 (44)	6.50	–	30	30	2	-	-
	2 (51)	8.00	–	40	37	2-1/2	-	-

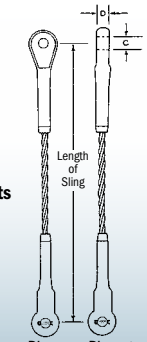



Swaged Boom Pendants

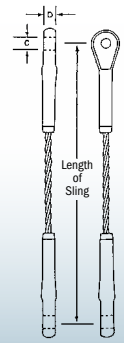
Open Swaged Sockets



Open and Closed Swaged Sockets



Closed Swaged Sockets



Spelter Socket Assemblies also available

Synthetic Web Slings - Nylon & Polyester

Construction and Features

WEBBING

The webbing shall be certifiable to tensile strength, have uniform thickness and width, and have selvedges.

Webbing shall be woven from a synthetic yarn that is heat and light resistant.

All webbing ends shall be sealed by heat or other suitable means to prevent ravelling.

The webbing can be manufactured on either a shuttle loom or shuttle-less loom. When shuttle-less loom construction is utilized the filling yarn shall traverse the full width of the webbing and shall be held at the knitted edge by a catch cord interlacing with filing yarn.

Class 5 webbing, either loom state or treated, shall have a minimum breaking strength of 6,800 pounds per inch of width / 121.43 kilograms per millimetre of width. Class 7 webbing, either loom state or treated, shall have a minimum breaking strength of 9,800 pounds per inch of width / 175 kilograms per millimetre of width.

DESIGN FACTOR

The design factor for new synthetic web slings with or without fittings shall be a minimum of five (5:1)

IDENTIFICATION/MARKING REQUIREMENTS

The manufacturer shall attach web sling identification tag(s) to the sling. The identification tag shall show the following information:

a. Name or trademark of manufacturer
b. Manufacturer's product code
c. Rated capacities for types of hitches, and the angle upon which it is based
d. Type of synthetic web yarn

WORKING LOAD LIMIT (WLL)

The maximum load that shall be exerted on the item. A web sling shall not be used at a load greater than that shown in the appropriate table or on its sling identification. Web slings not included in this catalogue shall be used in accordance with the manufacturer's recommendations.

Each manufacturer shall retain test data to verify the sling's working load limit. Destructive tests shall be conducted in accordance with the Web Sling & Tie Down Association Standard WSTDA-WS- 1 latest revision.

The formula for determining the rated capacity of a new web sling is as follows:

$$WLL = \frac{CTS \times FE}{5}$$

Where:	WLL	=	Working Load Limit
	CTS	=	Certified Tensile Strength of Webbing
	FE	=	Fabrication Efficiency
	5	=	Design Factor 5

The choker hitch capacity shall be rated at a maximum of 80% of the vertical capacity.

The vertical basket hitch capacity shall be rated at a maximum of two (2) times the vertical capacity.

EDGE PROTECTION

PRO-EDGE™ nylon webbing available up to 4" width.

Product Code No.	Width Inches	Vertical Lift	Choker Hitch	Vertical Basket
Type 1 – TRIANGLE & CHOKER FITTINGS				
Single Ply		**WLL lbs.**	**WLL lbs.**	**WLL lbs.**
TC1-902	2	3,200	2,400	6,400
TC1-903	3	4,800	3,600	9,600
TC1-904	4	6,400	4,800	12,800
TC1-905	5	8,000	6,000	16,000
TC1-906	6	9,600	7,200	19,200
TC1-908	8	12,800	9,600	25,600
TC1-910	10	16,000	12,000	32,000
TC1-912	12	19,200	14,400	38,400
Double Ply		**WLL lbs.**	**WLL lbs.**	**WLL lbs.**
TC2-902	2	5,600	4,200	11,200
TC2-903	3	8,400	6,300	16,800
TC2-904	4	11,200	8,400	22,400
TC2-905	5	14,000	10,500	28,000
TC2-906	6	16,800	12,600	33,600
TC2-908	8	22,400	17,900	44,800
TC2-910	10	28,000	21,000	56,000
TC2-912	12	33,600	25,200	67,200
Type 2 – TRIANGLE FITTINGS				
Single Ply		**WLL lbs.**		**WLL lbs.**
TT1-902	2	3,200		6,400
TT1-903	3	4,800		9,600
TT1-904	4	6,400		12,800
TT1-905	5	8,000		16,000
TT1-906	6	9,600		19,200
TT1-908	8	12,800		25,600
TT1-910	10	16,000		32,000
TT1-912	12	19,200		38,400
Double Ply		**WLL lbs.**		**WLL lbs.**
TT2-902	2	5,600		11,200
TT2-903	3	8,400		16,800
TT2-904	4	11,200		22,400
TT2-905	5	14,000		28,000
TT2-906	6	16,800		33,600
TT2-908	8	22,400		44,800
TT2-910	10	28,000		56,000
TT2-912	12	33,600		67,200
Type 3 – Type 4 FLAT EYE & TWISTED EYE SLINGS				
Single Ply		**WLL lbs.**	**WLL lbs.**	**WLL lbs.**
EE1-901	1	1,600	1,200	3,200
EE1-902	2	3,200	2,400	6,400
EE1-903	3	4,800	3,600	9,600
EE1-904	4	6,400	4,800	12,800
EE1-905	5	8,000	6,000	16,000
EE1-906	6	9,600	7,200	19,200
EE1-908	8	12,800	9,600	25,600
EE1-910	10	16,000	12,000	32,000
EE1-912	12	19,200	14,400	38,400
Double Ply		**WLL lbs.**	**WLL lbs.**	**WLL lbs.**
EE2-901	1	3,200	2,400	6,400
EE2-902	2	6,400	4,800	12,800
EE2-903	3	8,600	6,500	17,200
EE2-904	4	11,500	8,600	23,000
EE2-905	5	13,600	10,200	27,200
EE2-906	6	16,300	12,200	32,600
EE2-908	8	21,800	16,300	43,600
EE2-910	10	27,200	20,400	54,400
EE2-912	12	32,600	24,400	65,200

Working load limit based on 5:1 design factor.

How to Order

EE 2 - 904 x 6 - T3

- Sling Type (Eye & Eye)
- No. of Body Plys (2)
- Webbing Class (9,800 lbs/inch)
- Width of Sling (4")
- Length Pull to Pull
- Type of Eye T3= Flat T4= Twisted

Type 1 – TRIANGLE & CHOKER FITTINGS

Type 1: Made with a triangle fitting on one end and slotted triangle choker fitting on the other end. It can be used in a vertical, choker, or basket hitch.

Type 2 – TRIANGLE FITTINGS

Type 2: Made with a triangle fitting on both ends. It can be used in a vertical or basket hitch only. This style of sling cannot be used in a choker hitch.

Type 3 & Type 4 – FLAT EYE & TWISTED EYE SLINGS

Type 3: Made with a flat eye on each end with eye opening on same plane as sling body. This type of sling is sometimes called a flat eye and eye, eye and eye, or double eye sling.

Type 4: Sling made with both eyes formed as in type 3, except that the eyes are turned to form a loop eye which is at a right angle to the plane of the sling body. This type of sling is commonly referred to as a twisted eye sling.

Product Code No	Width Inches	Vertical	Choker	Vertical Basket
Type 5 – ENDLESS OR GROMMET SLING				
Single Ply		**WLL lbs.**	**WLL lbs**	**WLL lbs.**
EN1-901	1	3,200	2,500	6,400
EN1-902	2	6,400	5,000	12,800
EN1-903	3	8,600	6,900	17,200
EN1-904	4	11,500	9,200	23,000
EN1-905	5	13,600	10,900	27,200
EN1-906	6	16,300	13,000	32,600
EN1-908	8	21,800	16,300	43,600
EN1-910	10	27,200	20,400	54,400
EN1-912	12	32,600	24,400	65,200
Double Ply		**WLL lbs.**	**WLL lbs.**	**WLL lbs.**
EN2-901	1	6,100	4,900	12,200
EN2-902	2	12,200	9,800	24,400
EN2-903	3	16,300	13,000	32,600
EN2-904	4	20,700	16,500	41,400
EN2-905	5	24,500	19,600	49,000
EN2-906	6	28,600	23,000	57,200
EN2-908	8	38,200	28,600	76,400
EN2-910	10	47,700	35,800	95,400
EN2-912	12	57,200	42,900	114,400
Type 6 – RETURN EYE SLING				
Single Ply		**WLL lbs.**	**WLL lbs.**	**WLL lbs.**
RE1-902	2	3,200	2,500	6,400
RE1-904	4	6,400	5,000	12,800
RE1-906	6	8,600	6,900	17,200
Double Ply		**WLL lbs.**	**WLL lbs.**	**WLL lbs.**
RE2-902	2	6,100	4,900	12,200
RE2-904	4	12,200	9,800	24,400
RE2-906	6	16,300	13,000	32,600

Working load limit based on 5:1 design factor

TYPE 5 - ENDLESS SLING

Type 5: Sometimes referred to as a grommet. It is a continuous loop formed by joining the ends of the webbing together with a splice.

TYPE 6 – RETURN EYE SLING

Type 6: Formed by using multiple widths of webbing held edge to edge. A wear pad is attached on one or both sides of the sling body, to form a loop eye at each end which is at a right angle to the plane of the sling body.

Wear Protection

Wear pads, sleeves and wrapped eyes provide added protection for your web slings.

Available in nylon, polyester, cordura, leather, ballistic nylon (most cut resistant) and rubber.

Formed eye wear pads are available in two styles for added wear protection in the eyes. Available in light polyester and cordura, ballistic nylon, heavy nylon, heavy polyester and leather.

Sewn–on wear pad is sewn directly in place to give fixed protection.

Sliding sleeve wear pad can be positioned anywhere on the sling. Ideal for handling sharp loads.

Edge wrap wear pad is sewn along both edges of the sling to protect from edge wear and cutting.

Easy to apply Velcro removable sleeves

Sewn–in wear pads are sewn directly inside the eyes.

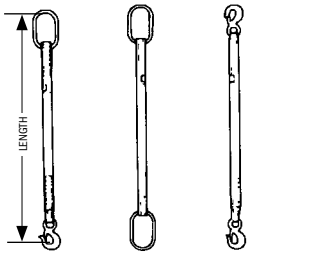
Full–wrapped wear pads provide total eye protection for rough attachment points.

Custom Synthetic Web Slings

Special purpose slings with various combinations of hardware and loops. Available in Single Leg and Multiple Leg combinations. Available in nylon and polyester.

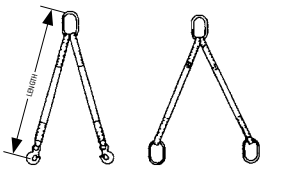
Product Code No.	Leg Width	Ply	Vertical	Rated Capacity lbs.		
				60˚	45˚	30˚
SINGLE LEG			**WLL lbs.**	**WLL lbs.**	**WLL lbs.**	**WLL lbs.**
EE1-901 SOH	1"	1	1,600			
EE2-901 SOH	1"	2	3,200			
EE1-902 SOH	2"	1	3,200			
EE2-902 SOH	2"	2	6,000			
TWO LEGGED			**WLL lbs**	**WLL lbs**	**WLL lbs**	**WLL lbs.**
EE1-901 DOH	1"	1		2,720	2,240	1,600
EE2-901 DOH	1"	2		5,440	4,480	3,200
EE1-902 DOH	2"	1		5,440	4,480	3,200
EE2-902 DOH	2"	2		10,400	8,490	6,000
THREE LEGGED			**WLL lbs**	**WLL lbs**	**WLL lbs**	**WLL lbs.**
EE1-901 TOH	1"	1		4,160	3,360	2,400
EE2-901 TOH	1"	2		8,320	6,720	4,800
EE1-902 TOH	2"	1		8,320	6,720	4,800
EE2-902 TOH	2"	2		15,600	12,700	9,000
FOUR LEGGED			**WLL lbs**	**WLL lbs**	**WLL lbs**	**WLL lbs.**
EE1-901 QOH	1"	1		4,160	3,360	2,400
EE2-901 QOH	1"	2		8,320	6,720	4,800
EE1-902 QOH	2"	1		8,320	6,720	4,800
EE2-902 QOH	2"	2		15,600	12,700	9,000
Working load limit based on a 5:1 design factor.						

SINGLE LEG



SOH SOO SHH

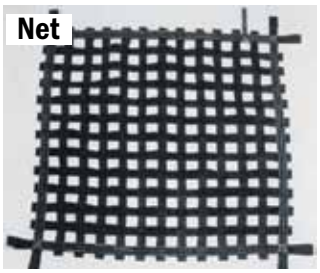
MULTI LEG



DOH DOO

DOE

Special Applications



Polyester Roundslings

Construction

Roundslings are constructed from a multiple of high tenacity polyester yarns in an endless or continuous loop. These load bearing yarns are protected by two woven polyester jackets. The polyester jackets act as a buffer between the load and the polyester yarn.

Each sling has a tag permanently attached. This tag contains load capacities and basic practices for safe lifting.

Protective sleeves are to be used when lifting sharp-edged loads for even better resistance to cutting. The sleeve is sewn around the cover of the roundsling so that it can be positioned to the area where it is required.

Features

- The most flexible sling available. This sling conforms to the load extremely well, and provides the best choker hold.
- Hook and load contact points can be continually rotated to extend the service life of the sling.
- The load bearing fibre never comes into contact with the load. There is no wear to the inner fibres, provided the protective cover remains intact.
- Protection for the load from sling damage.
- Seamless cover, no edges to wear out.
- Wide variety of sling lengths and load capacities.
- Adapts to all types, sizes and load configurations.
- Lightweight, easy to rig, store and clean.
- Excellent resistance to ultra-violet light, rot and mildew.
- No loss of strength in water.
- Only 3% elongation.
- Maximum temperature exposure 90˚C (194˚F).
- Minimum temperature exposure -40˚C (-40˚F).
- No metal parts to rust.

SLING-CHOKER EYE & EYE ROUNDSLINGS

Roundslings can be supplied with an outer sleeve of polyester, ballistic nylon or other fabric to create an Eye & Eye Sling.

STRENGTH	POLYESTER
Wet strength compared to dry strength	100%
Shock absorption ability	Good
CHARACTERISTICS	**POLYESTER**
Elongation at maximum working load	3%
Extension under sustained load	Moderately low
Water absorption	Moderate
Resistance to rot, mildew	Excellent
CHEMICAL RESISTANCE	**POLYESTER**
Effect of Acids	Resistant to most acids
Effect of Alkalis	Little effect in cold Disintegration by strong alkalis at boiling point
Effect of Organic Solvents	Generally unaffected Soluable in some phenolics
DEGRADATION	**POLYESTER**
Resistance to Ultra-Violet Rays Resistance to aging	Excellent Excellent
Ability to ease out smoothly over metal while under load	Good

Roundsling Applications

- Air Conditioning Units
- Electrical Equipment
- Nuclear Equipment
- Automobiles
- Finished Parts
- Oil Drilling Parts
- Signs
- Automobile Parts
- Harbour-Loading and Unloading
- Paperboard Products
- Telephone Pole Handling
- Bales
- Heating Units
- Paper Rolls
- Transformers
- Bearings
- Instruments
- Prefab Units
- Vaults
- Boilers
- Jet Engines
- Ventilation Units
- Boat Handling
- Lighting Fixtures
- Radioactive Materials
- Waste Disposal
- Concrete Pipe
- Salvage Operations
- X-Ray Equipment
- Sculptures
- Drums Machinery and Machined Parts
- Yard Lifting-Rail and Lumber

Polyester Roundslings

Product Code	Cover Colour	Vertical WLL lbs.	Choker WLL lbs.	Basket WLL lbs.	Approx. Dia. Inches	Approx. Weight/Ft. in pounds
SC2-3	Purple	3,000	2,400	6,000	.75	.25
SC2-4	Black	4,000	3,200	8,000	.80	.35
SC2-6	Green	6,000	4,800	12,000	.90	.40
SC2-9	Yellow	9,000	7,200	18,000	1.00	.50
SC2-12	Tan	12,000	9,600	24,000	1.25	.75
SC2-14	Red	14,000	11,200	28,000	1.30	.85
SC2-17	Orange	17,000	13,600	34,000	1.60	.95
SC2-23	Blue	23,000	18,400	46,000	1.65	1.25
SC2-26	Orange	26,000	20,800	52,000	1.75	1.45
SC2-32	Grey	32,000	25,600	64,000	2.15	1.75
SC2-40	Orange	40,000	32,000	80,000	2.45	2.25
SC2-54	Orange	54,000	43,200	108,000	3.00	2.75
SC2-70	Orange	70,000	56,000	140,000	3.25	3.60
SC2-90	Orange	90,000	72,000	180,000	3.75	4.10

Two Legged Bridle Slings

CODE	60 Degrees WLL lbs.	45 Degrees WLL lbs.	30 Degrees WLL lbs.
SC2-3 DOH	5,100	4,200	3,000
SC2-4 DOH	6,800	5,600	4,000
SC2-6 DOH	10,200	8,400	6,000
SC2-9 DOH	15,300	12,600	9,000
SC2-12 DOH	20,400	16,800	12,000
SC2-14 DOH	23,800	19,600	14,000
SC2-17 DOH	28,900	23,800	17,000
SC2-23 DOH	39,100	32,200	23,000
SC2-26 DOH	44,200	36,400	26,000
SC2-32 DOH	54,400	44,800	32,000

Four Legged Bridle Slings

CODE	60 Degrees WLL lbs.	45 Degrees WLL lbs	30 Degrees WLL lbs.
SC2-3 QOH	7,800	6,300	4,500
SC2-4 QOH	10,400	8,400	6,000
SC2-6 QOH	15,600	12,600	9,000
SC2-9 QOH	23,400	18,900	13,500
SC2-12 QOH	31,200	25,200	18,000
SC2-14 QOH	36,400	29,400	21,000
SC2-17 QOH	44,200	35,700	25,500
SC2-23 QOH	59,800	48,300	34,500
SC2-26 QOH	67,600	54,600	39,000
SC2-32 QOH	83,200	67,200	48,000

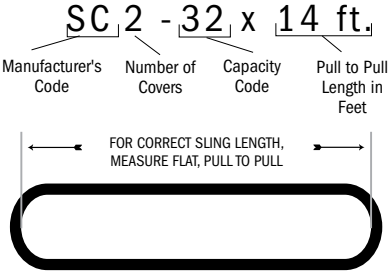
Three Legged Bridle Slings

CODE	60 Degrees WLL lbs.	45 Degrees WLL lbs.	30 Degrees WLL lbs.
SC2-3 TOH	7,800	6,300	4,500
SC2-4 TOH	10,400	8,400	6,000
SC2-6 TOH	15,600	12,600	9,000
SC2-9 TOH	23,400	18,900	13,500
SC2-12 TOH	31,200	25,200	18,000
SC2-14 TOH	36,400	29,400	21,000
SC2-17 TOH	44,200	35,700	25,500
SC2-23 TOH	59,800	48,300	34,500
SC2-26 TOH	67,600	54,600	39,000
SC2-32 TOH	83,200	67,200	48,000

H = Hook, other lower fittings available

How to Order

Order by product code number plus length of sling.



WARNING: DO NOT EXCEED RATED CAPACITIES.

Consult the factory for lengths and capacities not depicted.
Minimum Design Factor 5:1

Load Securement

Applications

Applications include rail, ship, truck, trailer and other freight, paper roll, steel, lumber, plywood, palletized loads.

Moving and storage vans, etc. can save loading and unloading time. Wide range of fittings for different loads.

Tie Down Straps

All heavy duty, wear and weather resistant load control straps are specially designed and manufactured for the demanding conditions of flatbed operations.

These straps consist of the highest quality, strength-tested webbing, hardware, and sewing patterns. Strap lengths are made to suit customer needs.

Wire Hook Assembly (WH)

Flat Hook Assembly (FH)

Chain & Grab Hook Assembly (CT)

“D” Ring Assembly (DR)

Truck Winches

Standard 1820

WELD-ON WEBBING WINCHES

Weld-on winches are designed to be permanently mounted in a fixed position.

Standard 3820

SLIDING WEBBING WINCHES

Sliding winches move easily in both directions for positioning in the track, but lock firmly in place when tension is applied to the webbing.

Accessories

WINCH BARS

All winch bars feature a knurled, non-slip handle and a tapered, carbon-steel nose piece for strength and easy operation. Combination bars have modified handles for use in tightening chain binders.

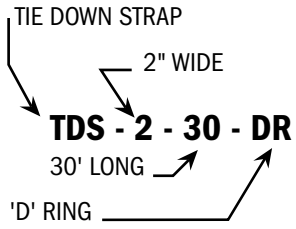
Standard Bar (Chrome Plated)

Strap Cap
2"- 4" Webbing

STEEL CORNER PROTECTORS

Corner protectors are designed to protect both strap and cargo. Steel protectors feature a corner recess to protect cargo edges.

How to Order



WORKING LOAD LIMIT (WLL)

Based on 3:1 Design Factor

1" = 835 lbs.	-	380 kg WLL
2" = 3,335 lbs.	-	1,515 kg WLL
3" = 5,000 lbs.	-	2,268 kg WLL
4" = 5,000 lbs.	-	2,268 kg WLL

Contact your Sling-Choker Representative for a wide range of fittings for different loads & lengths

Ratchet Tie Downs

Include a mechanical ratchet for hand tightening strap over load to be secured.

1" RATCHET TIE DOWN
Available with 'D' Ring
2,800 lbs. Breaking Strength; WLL 835 lbs./380 kg

2" RATCHET STRAP
10,000 lbs. Breaking Strength
WLL 3,335 lbs./1,515 kg

3" RATCHET STRAP
15,000 lbs. Breaking Strength
WLL 5,000 lbs/2,268 kg

4" RATCHET STRAP
16,200 lbs. Breaking Strength
WLL 5,000 lbs./2,268 kg

TYPICAL END FITTINGS

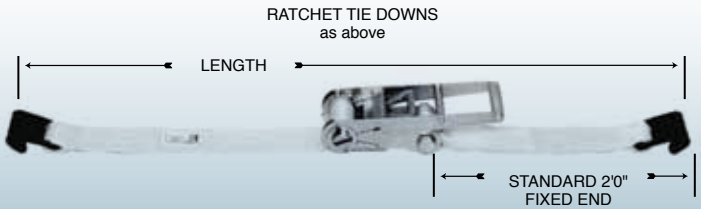
(WH) Wire Hook

(DR) 'D' Ring

(FH) Flat Hook

(CT) Chain & Grab Hook

How to Order



RATCHET TIE DOWN
3" WIDE
RTD - 3 - 20 - FH
20' LONG
FLAT HOOK

Contact your Sling-Choker Representative for a wide range of fittings for different loads & lengths

Chain

Grade 30 Regular Link

A durable, economical utility chain. Also known as proof coil, Grade 30 chain is manufactured from carbon steel.

Dimensions of Wire		Link Dimensions		Working Load Limit (lbs.)
Inches	Dec.	Inside Length	Inside Width	
3/16	.197	1.065	.455	620
1/4	.248	1.015	.400	1,100
5/16	.315	1.025	.490	1,900
3/8	.375	1.451	.630	2,400
1/2	.492	2.050	.875	4,150
5/8	.625	2.600	.890	6,900

Grade 40 High Test

A selected analysis carbon steel chain with higher tensile strength and better resistance to wear and abrasion than Grade 30 chain.

Dimensions of Wire		Link Dimensions		Working Load Limit (lbs.)
Inches	Dec.	Inside Length	Inside Width	
1/4	.280	.915	.465	2,600
5/16	.335	1.140	.525	3,900
3/8	.394	1.200	.550	5,400
7/16	.472	1.460	.700	7,200
1/2	.531	1.700	.800	9,200

Grade 70 Transport Chain (Plated)

A higher strength, hardened and tempered chain made from special analysis steel. Developed to meet transport load binding regulations where applicable.

Dimensions of Wire		Link Dimensions		Working Load Limit (lbs.)
Inches	Dec.	Inside Length	Inside Width	
1/4	.280	.900	.475	3,150
5/16	.335	1.125	.515	4,700
3/8	.394	1.200	.575	6,600
1/2	.531	1.700	.850	11,300

Above dimensions are representative only and may vary between chain manufacturers.

Grade 80 Alloy Chain

This chain is manufactured from special analysis, hardened and tempered alloy steel. Specifically engineered to combine strength and durability. Grade 80 is recommended for overhead lifting.

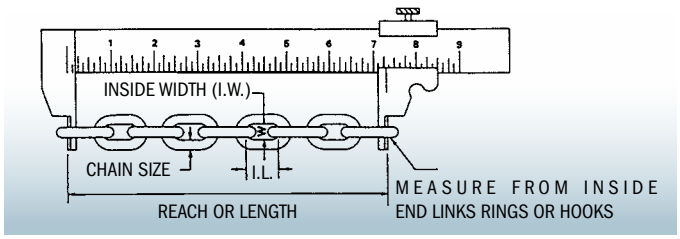
Dimensions of Wire		Link Dimensions		Working Load Limit (lbs.)
Inches	Dec.	Inside Length	Inside Width	
9/32	.281	.868	.395	3,500
3/8	.394	1.222	.572	7,100
1/2	.512	1.404	.786	12,000
5/8	.630	1.734	.854	18,100
3/4	.787	2.000	1.052	28,300
7/8	.875	2.250	1.136	34,200
1	1.024	2.663	1.349	47,700
1 1/4	1.260	3.250	1.656	72,300

Grade 100 Alloy Chain

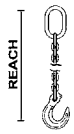
This chain is manufactured from special analysis, hardened and tempered alloy steel. Specifically engineered to combine strength and durability. Grade 100 is recommended for overhead lifting.

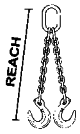
Dimensions of Wire		Link Dimensions		Working Load Limit (lbs.)
Inches	Dec.	Inside Length	Inside Width	
9/32	.290	.870	.410	4,300
3/8	.400	1.220	.570	8,800
1/2	.520	1.580	.750	15,000
5/8	.640	1.930	.870	22,600
3/4	.800	2.420	1.090	35,300
7/8	.880	2.700	1.280	42,700

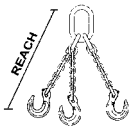
How To Measure Chain: To accurately measure inside length (I.L.) or pitch, measure a length of chain to determine its reach, then divide by the number of links. Inside width (I.W.) can be measured directly or by subtracting twice the chain size from the outside width.

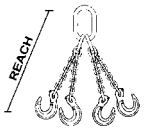


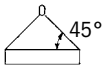
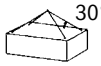
Alloy Chain Slings – Grade 80 & 100





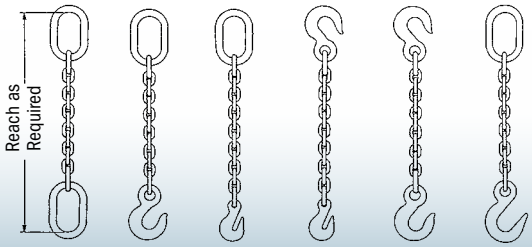




	Chain Size, Inches	Single	Double			Triple and Quad		
								
GRADE 80		Working Load Limit in Pounds				Working Load Limit in Pounds		
	9/32	3,500	6,100	4,900	3,500	9,100	7,400	5,200
	3/8	7,100	12,300	10,000	7,100	18,400	15,100	10,600
	1/2	12,000	20,800	17,000	12,000	31,200	25,500	18,000
	5/8	18,100	31,300	25,600	18,100	47,000	38,400	27,100
	3/4	28,300	49,000	40,000	28,300	73,500	60,000	42,400
	7/8	34,200	59,200	48,400	34,200	88,900	72,500	51,300
	1	47,700	82,600	67,400	47,700	123,900	101,200	71,500
	1 1/4	72,300	125,200	102,200	72,300	187,800	153,400	108,400
GRADE 100	9/32	4,300	7,400	6,100	4,300	11,200	9,100	6,400
	3/8	8,800	15,200	12,400	8,800	22,900	18,700	13,200
	1/2	15,000	26,000	21,200	15,000	39,000	31,800	22,500
	5/8	22,600	39,100	32,000	22,600	58,700	47,900	33,900
	3/4	35,300	61,100	49,900	35,300	91,700	74,900	53,000
	7/8	42,700	74,000	60,400	42,700	110,900	90,600	64,000

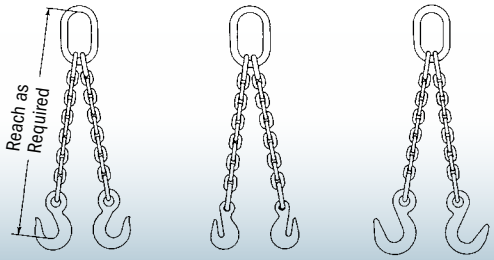
Chain slings, Working Load Limit with 4:1 Design Factor. All Chain Sling Capacities in Pounds.

Single Leg



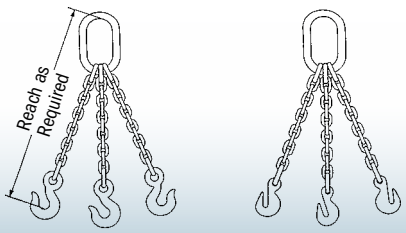
Type CO Type SOS Type SOG Type SSG Type SSS Type SOF

Double Leg



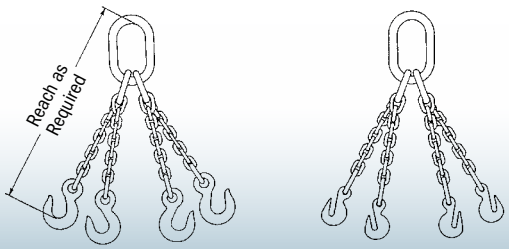
Type DOS Type DOG Type DOF

Triple Leg



Type TOS Type TOG

Quadruple Leg



Type QOS Type QOG

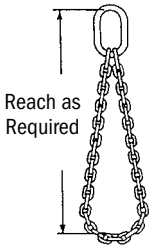
WARNING: Do Not Exceed Working Load Limit

Note: Sling angles are measured from horizontal.

Chain Slings

Chain Slings, Grade 80 and 100, Working Load Limit with 4:1 Design Factor. All Chain Sling Capacities in Pounds.

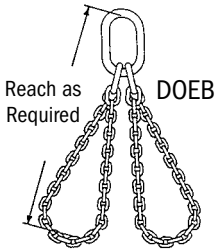
SINGLE BASKET



SOEB

Chain Size	9/32	3/8	1/2	5/8	3/4	7/8	1	1 1/4
Grade 80 at 60°	6,100	12,300	20,800	31,300	49,000	59,200	82,600	125,200
Grade 100 at 60°	7,400	15,200	26,000	39,100	61,100	74,000		
Master Link	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4

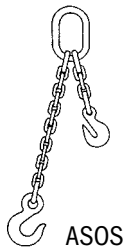
DOUBLE BASKET



DOEB

Chain Size	9/32	3/8	1/2	5/8	3/4	7/8	1	1 1/4
Grade 80 at 60°	9,100	18,400	31,200	47,000	73,500	88,900	123,900	187,800
Grade 100 at 60°	11,200	22,800	39,000	58,700	91,700	110,900		
Master Link	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 3/4

SINGLE ADJUSTABLE

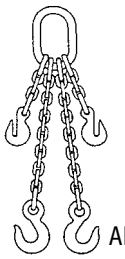


ASOS

Chain Size	9/32	3/8	1/2	5/8	3/4	7/8	1	1 1/4
Grade 80 at 90°	3,500	7,100	12,000	18,100	28,300	34,200	47,700	72,300
Grade 100 at 90°	4,300	8,800	15,000	22,600	35,300	42,700		
Master Link	1/2	3/4	1	1	1 1/4	1 1/2	1 3/4	2

Standard with 1 foot of chain in short leg.

DOUBLE ADJUSTABLE



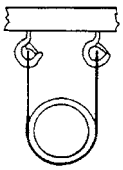
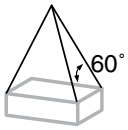
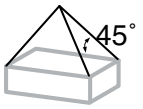
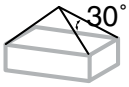
ADOS

Chain Size	9/32	3/8	1/2	5/8	3/4	7/8	1	1 1/4
Grade 80 at 90°	6,100	12,300	20,800	31,300	49,000	59,200	82,600	125,200
Grade 100 at 90°	7,400	15,200	26,000	39,100	61,100	74,000		
Master Link	1/2	3/4	1	1 1/4	1 1/2	1 3/4	2	2 1/4

Standard with 1 foot of chain in short leg.

Sling angles are measured from horizontal.

Wire Mesh Slings

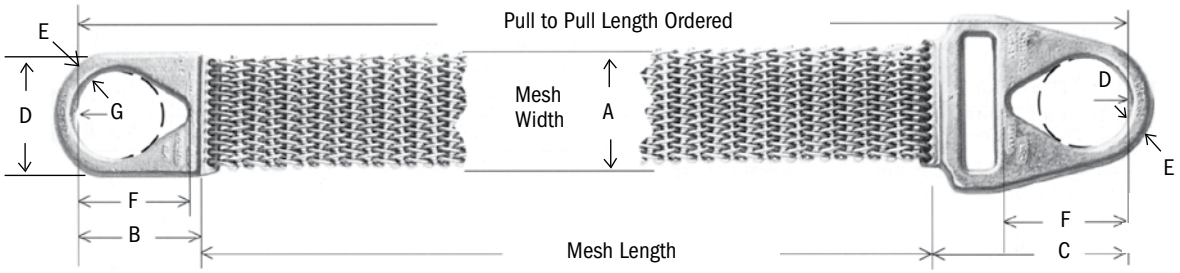
HEAVY DUTY Nominal Width of Sling (Inches)			Effect of angle on rated capacities in basket hitch 		
	Choker lbs.	Basket lbs.	60° Horiz. lbs.	45° Horiz. lbs.	30° Horiz. lbs.
2	1,600	3,200	2,700	2,000	1,600
3	3,000	6,000	5,100	3,800	2,800
4	4,400	8,800	7,480	5,600	4,400
6	6,600	13,200	11,225	8,400	6,600
8	8,800	17,600	15,000	11,250	8,800
10	11,000	22,000	18,700	14,000	11,000
12	13,200	26,400	22,440	16,800	13,200
14	15,400	30,800	26,180	19,600	15,400
16	17,600	35,200	29,920	22,400	17,600
18	19,800	39,600	33,660	25,200	19,800
20	22,000	44,000	37,400	28,000	22,000

Design Factor 5:1

A	B	C	D	E	F	G	H	DD	Hook Size	Approx. wt. 36" sling (lbs.)	Mesh Lbs./Ft. of length		
											10 ga.	12 ga.	14 ga.
2	4	6	2	1/2	2-3/4	1-3/4	4	3-3/4	5 Ton	5	1-1/4	1-1/8	3/4
3	5-1/4	7-1/2	3	3/4	3-1/2	2-1/2	5-1/4	5	10 Ton	8	1-7/8	1-3/4	1-1/8
4	5-1/2	7-3/4	4	3/4	3-1/2	2-1/2	6-1/4	5	10 Ton	10	2-1/2	2-1/4	1-1/2
6	6-1/2	9	6	1	4	2-3/4	8-1/2	6	15 Ton	15	3-7/8	3-3/8	2-1/4
8	8-3/4	12	8	1-1/4	5-1/2	4	11-1/4	8-1/2	25 Ton	20	5-1/8	4-1/2	3
10	7-3/4	10-3/4	10-1/4	1	5	3-1/2	12-3/4	7-1/2	25 Ton	26	6-3/8	5-5/8	3-3/4
12	8	11-1/4	12-1/4	1	5	3-1/2	14-3/4	7-1/2	30 Ton	33	7-5/8	6-3/4	4-1/2
14	8-1/4	12	14-1/4	1-1/4	5	3-1/2	17	7-3/4	30 Ton	37	8-7/8	7/8	5-1/4
16	8-1/4	12-1/2	16-1/4	1-1/4	5	3-1/2	19	7-3/4	30 Ton	44	10-1/8	9	6
18	8-1/2	13-1/4	18	2	5	4	21-1/4	11	30 Ton	51	11-3/8	10-1/8	6-3/4
20	8-1/2	14	20	2	5	4	23-1/4	11-1/4	30 Ton	58	12-3/4	11-1/4	7-1/2

Accommodates most Hooks to Listed Size

Dimensions in inches



Synthetic Ropes

NYLON

Will absorb greater shock load than any other and outlast all natural fibre ropes by a wide margin. Nylon is flexible, has high abrasion resistance, can be stored wet, resists most alkalis and organic solvents. It will not rot.

Nylon rope is ideal for anchor lines, couplers, hawsers, tie-up lines, safety and mountaineering ropes. It is also widely used in commercial fishing.

POLYESTER (TERYLENE)

Not quite as strong as Nylon. Has twice the strength of Manila. Stretches far less than Nylon but slightly more than Manila. Has excellent resistance to abrasion, chemicals and weathering.

Polyester ropes are recommended wherever minimum stretch, high strength and durability are needed.

POLYPROPYLENE

Monofilament polypropyene is the lightest, most widely used, most economical rope on the market. Strength is far greater than Manila. Other characteristics are long life, ease of handling, flexibility in cold temperatures, excellent resistance to most acids and alkalis, very good impact loading, and it floats.

Polypropylene is suitable for a wide variety of marine, farm and general purpose applications including commercial fishing lines, towing and mooring lines, electrical line stringing, utility, and scaffolding rope.

MANILA

Made from the finest Philippine natural fibres, lubricated to increase resistance to abrasion and wear, and to retard water absorption which is a major cause of rot and mildew. Manila has less stretch than synthetic ropes.

Manila rope enjoys wide acceptance in industrial and marine applications where low stretch is a plus and the handling qualities of natural fibre are preferred. Applications include oil field spinning lines, transmission rope and car puller rope.

SISAL

An excellent low cost, general purpose rope.
Commonly used for truck tarp tie-downs, tarpaulins, tent ropes, and general farm, home and industrial requirements.

Sling Choker also handles the following specialities:

- Manila High Rigger Rope
- Safety Lanyard Ropes
- Manila 4 Strand Transmission Rope
- Ski Tow Rope

Rigging Hardware

How to Attach U-Bolt Clips

U-Bolt clips are an inexpensive, fast and simple method of attaching fittings to form a loop; or of attaching the rope itself to another object. Attached properly (Fig. A), they have an efficiency rating from 75% to 85%. Clips are unsafe if they are attached improperly.

In Fig. A, you will note that the base of all the clips bears on the "live" part of the rope; the U-Bolt bears on the "dead" part. When the U-Bolt bears on the "live" end of the rope, there is a possibility of the rope being kinked or deformed with early failure as a result.

The following table shows the correct number of clips to be used for each size of rope with the proper spacing between them.

Fig. A
THE RIGHT WAY

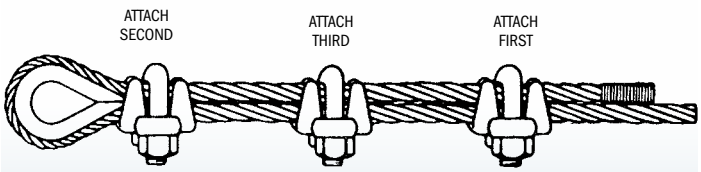


Fig. B
THE WRONG WAY

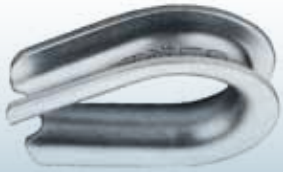
Diameter Inches	Number of Clips	Torque in ft. lbs.	Spacing Centre to Centre
1/4	2	15	2-1/2
5/16	2	30	2-3/4
3/8	2	45	3
7/16	2	65	3-1/2
1/2	3	65	3-1/2
9/16	3	95	4
5/8	3	95	4
3/4	4	130	4-1/2
7/8	4	225	5-1/2
1	5	225	6
1-1/8	6	225	7
1-1/4	7	360	7-1/2
1-3/8	7	360	8
1-1/2	8	360	9
1-5/8	8	430	9-1/2
1-3/4	8	590	10-1/2
2	8	750	12

After the load is applied to the rope, lessen the tension and retorque the clips. This will compensate for the natural diameter reduction of the rope under load.

Wire Rope Thimbles

G-408 (Open Pattern)

G-411



G-414 (Heavy Duty)

S-412 (Solid)

Forged Wire Rope Clips

G-450

Wedge Sockets

S-421

Rigging Hardware

Shackles

SCREW PIN G-209 S-209
Screw pin anchor shackles meet the requirements of Federal Specification RR-C-271D Type IVA, Grade A, Class 2.

SCREW PIN G-210 S-210
Screw pin chain shackles meet the requirements of Federal Specification RR-C-271D Type IVA, Grade A, Class 2.

BOLT TYPE G-2130 S-2130
Bolt type anchor shackles with thin head bolt-nut with cotter pin meet the requirements of Federal Specification RR-C-271D Type IVA, Grade A, Class 3.

ROUND PIN G-213 S-213
Round pin anchor shackles meet the requirements of Federal Specification RR-C-271D Type IVA, Grade A, Class 1.

ROUND PIN G-215 S-215
Round pin chain shackles meet the requirements of Federal Specification RR-C-271D Type IVA, Grade A, Class 1.

BOLT TYPE G-2150 S-2150
Bolt type chain shackles. Thin hex head bolt-nut with cotter pin, meets requirements of Federal Specification RR-C-271D Type IVA, Grade A, Class 3.

Load Rated® "QT" QUENCHED & TEMPERED QUIC-CHECK™

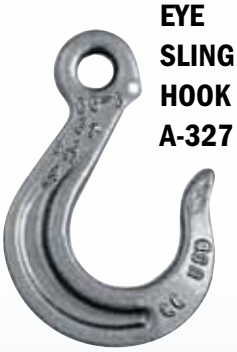
- Working Load Limit permanently shown on every shackle.
- Forged -Quenched and tempered, with alloy pins.
- Capacities 1/3 thru 55 tons.
- Look for the red pin... the mark of genuine Crosby quality.
- Hot Dip galvanized or self Coloured.
- Fatigue rated.
- Shackles can be furnished proof tested with certificates to designated standards, such as ABS, DNV, Lloyds or other certification. Charges for proof testing and certification available when requested at the time of order.

Grade 80 Alloy Fittings

- Alloy Steel – Quenched and Tempered
- Individually Proof Tested at 2 1/2 times Working Load Limit with certification

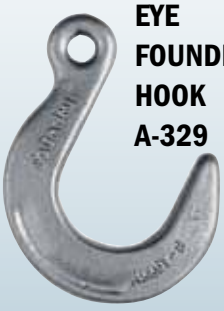
CONNECTING LINK A-337

CLEVIS GRAB HOOK A-338



EYE SLING HOOK A-327

EYE GRAB HOOK A-328



EYE FOUNDRY HOOK A-329

CLEVIS SLING HOOK A-339

Rigging Hardware

Hoist Hooks

SHANK HOOKS
S-319

EYE HOOKS
S-320

SWIVEL HOOKS
S-322

POSITIVE LOCKING
FLAPPER LATCH
PL LATCH

LATCH KIT SS-4055

LATCH KIT S-4320

QUIC-CHECK™ Hoist hooks incorporate markings forged into the product which address two (2) QUIC-CHECK® features:

Deformation Indicators – Two strategically placed marks, one just below the shank or eye and the other on the hook tip, which allows for a QUICK-CHECK® measurement to determine if the throat opening has changed, thus indicating abuse or overload.

To check, use a measuring device (i.e., tape measure) to measure the distance between the marks. The marks should align to either an inch or half-inch increments on the measuring device. If the measurement does not meet this criteria, the hook should be inspected further for possible damage.

Angle Indicators – Indicates the maximum included angle which is allowed between two (2) sling legs in the hook. These indicators also provide the opportunity to approximate other included angles between two sling legs.

Turnbuckles

HG-223
Hook & Hook
Meets the requirements of Federal Specifications FF-T791b, Type 1, Form 1 – Class 5

HG-225
Hook & Eye
Meets the requirements of Federal Specifications FF-T791b, Type 1, Form 1 – Class 6

HG-226
Eye & Eye
Meets the requirements of Federal Specifications FF-T791b, Type 1, Form 1 – Class 4

HG-227
Jaw & Eye
Meets the requirements of Federal Specifications FF-T791b, Type 1, Form 1 – Class 8

HG-228
Jaw & Jaw
Meets the requirements of Federal Specifications FF-T791b, Type 1, Form 1 – Class 7

Eye Bolts & Hoist Rings

SHOULDER MACHINERY S-279

SHOULDER NUT G-277

REGULAR G-291

SWIVEL HOIST RING

Chain Hooks

(NOT FOR OVERHEAD LIFTING)

CLEVIS SLIP HOOKS

CLEVIS GRAB HOOKS

EYE SLIP HOOKS

EYE GRAB HOOKS

Snatch Blocks

WITH HOOK

WITH SHACKLE

TAIL BOARD

Crane Accessories

Other Options upon request.

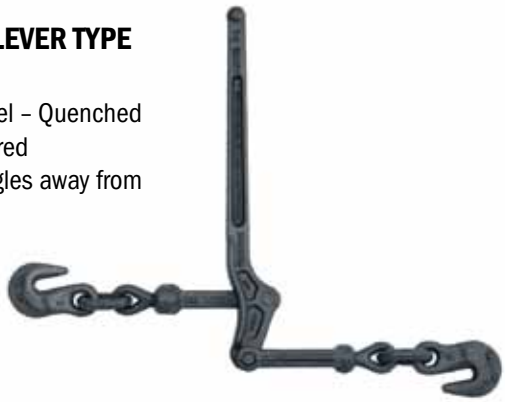
OVERHAUL BALLS

CRANE BLOCKS

Load Binders

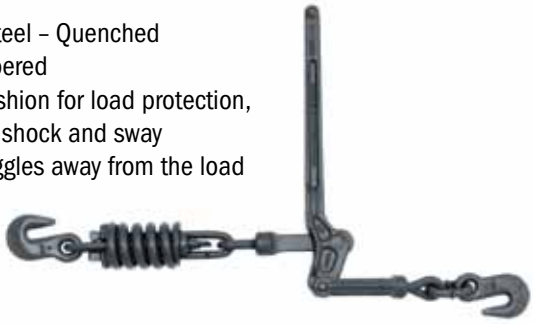
MIDGET
L-130
- Forged handle, hooks and swivel link
- Steel swivels and clevis

STANDARD LEVER TYPE
L-150
- Forged Steel – Quenched and Tempered
- Binder toggles away from the load

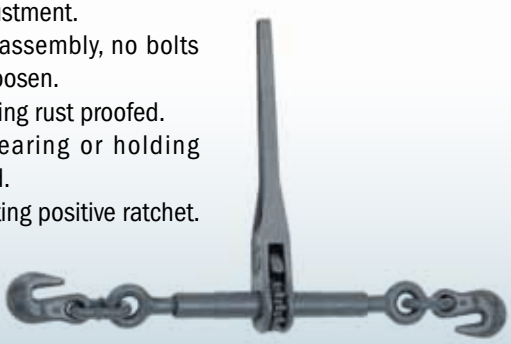


WITH LINKS ONLY
7-10
- Forged Steel – Quenched and Tempered

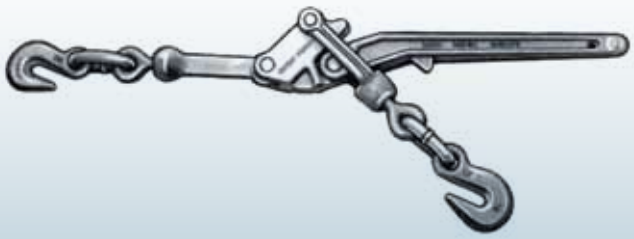
SNUBBING
L-150
- Forged Steel – Quenched and Tempered
- Spring cushion for load protection, cushions shock and sway
- Binder toggles away from the load



STANDARD RATCHET TYPE
L-140
- Continuous take-up feature, infinite adjustment.
- One piece assembly, no bolts or nuts to loosen.
- Ratchet spring rust proofed.
- All load bearing or holding parts forged.
- Easy operating positive ratchet.



RECOILLESS
Recoilless release design lets chain tension off easy without the use of a cheater pipe. The centre body absorbs the shock of load release while the handle remains in virtually the same position, eliminating hazardous handle fly-back.



Material Handling Equipment

Sling-Choker Manufacturing Limited supplies Jib Cranes, Portable Floor Cranes, and numerous below-the-hook lifting devices.

Portable Gantries

Sheet Lifters

Jib Cranes

Pallet Lifters

Coil Lifters

Electric Hoists

Hand Chain Hoists

Lever Tools

Trolleys

Winches

· Rugged · Precision-built · Engineered Solutions · Fast Deliveries

Heavy Duty Power Winches For Those Demanding Applications

Capstan
Eight Models
2,000 lbs. to 20,000 lbs
Working Load Limit

Electric
Thirteen Models
400 lbs. to 32,000 lb
Working Load Limit

Hauling
Three Models
500 lbs. to 1,800 lbs.
Working Load Limit

Air
Five Models
800 lbs. to 4,000 lbs.
Working Load Limit

Heavy Duty Hand Winches

- Six Series
- Completely automatic braking, non-recoil
- 150 lbs. to 11,000 lbs. line-pull capacity
- Conformance to D.I.N. 15020
- One just right for your special application

WMA Series

WSG Series

GHWG Series

Quality Sheaves & Blocks with Bearings

- Wide selection
- Superior strength steel sheaves
- Lifetime lubricated bearings
- Work-hardened rope grooves
- Long life
- Light weight
- High sheave/rope diameters

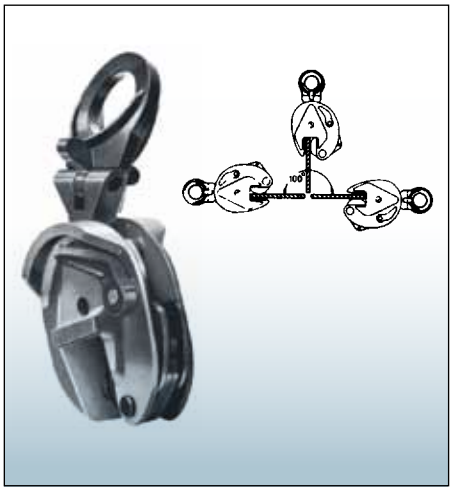
Sheave

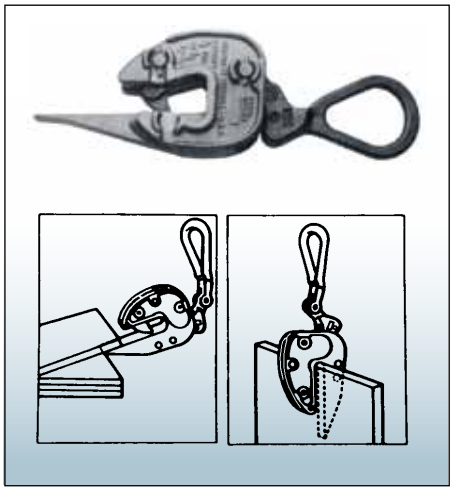
Snatch Block

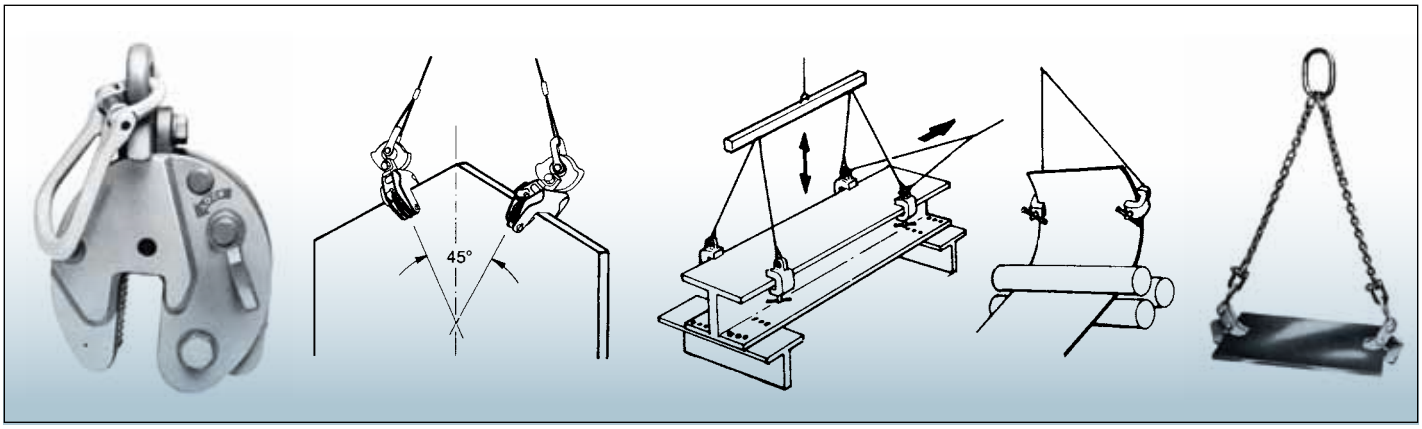
Vertical Directional Block

Horizontal Directional Block

Plate Clamps, Beam Clamps & Spreader Beams

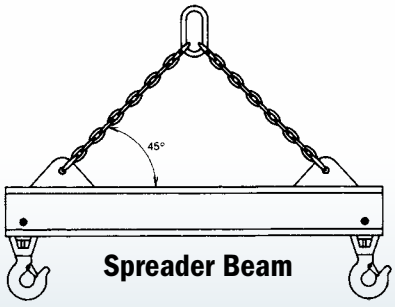






For Pulling in Three Directions

These screw clamps are designed for pulling in three dimensions and also have a pivoted convex shaped pressure plate. The suspension lug forged of high-grade steel allows for simultaneous loading in two directions. Screw clamps are a valuable asset in sheet rolling and on production machines.



Spreader Beam

Low Headroom Lifting Beam

Beam Clamps

Custom Engineering

SLING-CHOKER
Specialists in Rigging Supplies

CERTIFICATE OF WORKING LOAD LIMIT

Plate Style Sill Hook

Serial Numbers 2069-1
2069-2

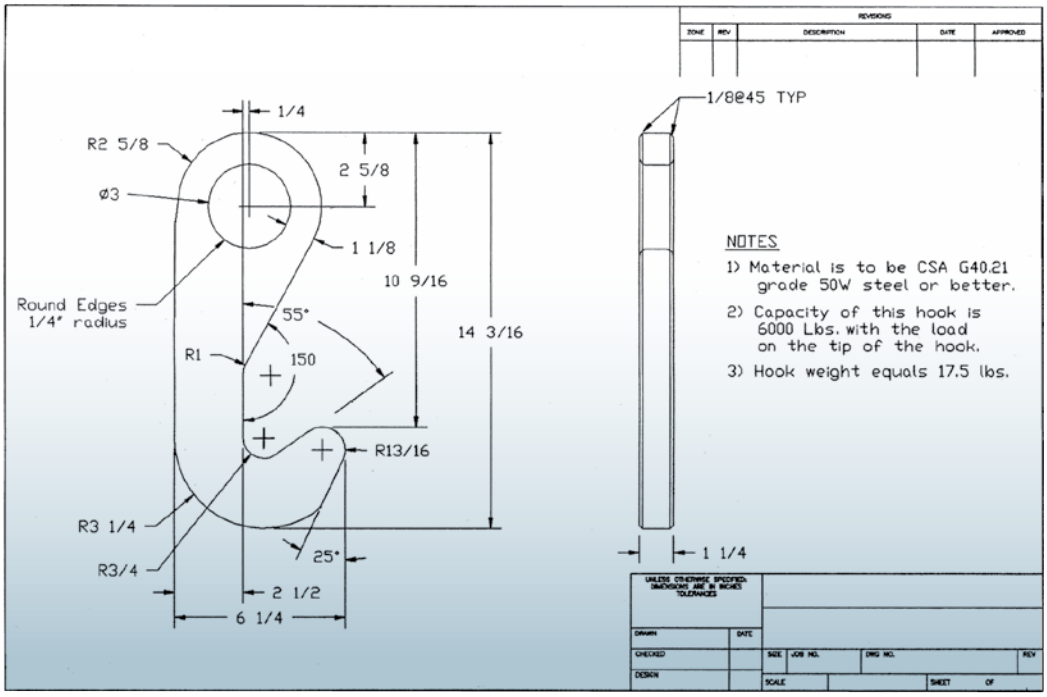
Based on the engineering design, our knowledge of the manufacturing process, and subsequent non-destructive inspection, the sill hooks whose serial numbers are listed above are considered to have a working load limit of:

6,000 lbs.

The foregoing includes a design factor of five (5) in conformance with the Ontario Occupational Health and Safety Act.

These hooks may be used together in a two legged bridle to lift 10,400 lbs. for a 60˚ sling angle or to lift 8,450 lbs. for a 45˚ sling angle. Side loading of these hooks is not allowed.

Custom Engineered Hook



Inspection Criteria: Wire Rope Slings

A good inspection program will not only provide safer lifting conditions, but will also extend the life of slings, thereby reducing lifting costs.

The goal of a wire rope sling inspection is to evaluate the condition of a new or previously used sling to decide if it is suitable for continued use. Since wire rope is a complex machine, no precise rules can be given to determine exactly when a wire rope sling should be replaced. All variables must be considered.

Removal From Service

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

1. **Broken Wires:**
   For single part slings, ten 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 detect on slings and experience should be gained by the inspector by taking apart old slings and measuring wire diameters.

3. **Distortion:**
   Kinking, crushing, birdcaging or other damage that distorts the rope structure. The main thing to look for is wires or strands pushed out of their original positions in the rope. Slight bends in a rope where wires or strands are basically in their original positions would not be considered serious damage. Nevertheless, conservative judgment is suggested.

4. **Heat Damage:**
   Any metallic discolouration or loss of internal lubricant resulting from exposure to heat.

5. **Bad Fittings:**
   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 of more than 10 degrees is permissible.

7. **Metal Corrosion:**
   Severe corrosion of the rope or end attachment that has caused pitting or binding of wires should be cause for retiring the sling. Light rusting usually does not affect the strength of a sling.

8. **Pulled Eye Splices:**
   Evidence that eye splices have slipped, tucked strands have moved, or pressed sleeves show serious damage may be sufficient cause to retire a sling.

9. **Unbalance:**
   A common sign of damage is the kink that results from pulling through a loop while using a sling, causing wires and strands to be deformed and pushed out of their original position. This unbalances the sling, reducing its strength.

Frequency Of Inspection

Daily visual inspections are intended to detect serious damage or deterioration that would weaken the sling. The person using the sling in a day-to-day job usually does this inspection. They should look for obvious things, such as broken wires, kinks, crushing, broken attachments, severe corrosion, etc.

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

A designated person with good knowledge of wire rope should carry out additional inspections. An accurate WRITTEN and dated record of all conditions observed should be kept. Any deterioration of the sling that results in appreciable loss of original strength should be carefully noted, and determination made on whether further use is a safety hazard.

Inspection Criteria: Wire Rope Slings cont'd

How To Inspect

It is in the HOW of inspection where the difference between a good inspection and something less becomes apparent. Inspection should follow a systematic procedure:

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 a wire brush or rags.

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

4. Special attention should be paid to fittings and end attachments, and areas of the sling next to them.

5. When the worst section of a sling has been found, this area should then be carefully checked against the inspection criteria.

6. Label or otherwise identify inspected slings.

7. Keep records of slings retired.

Visual inspection of a wire rope sling

Example of heat damage

Example of broken wires

Disposal Of Retired Wire Rope Slings

The best inspection program available is of no value if retired slings are not disposed of properly. When it is determined by the inspector that a sling is worn out or damaged beyond use, it shall be immediately tagged DO NOT USE. This sling shall be destroyed as soon as possible by cutting the eyes and fittings from the rope. This will ensure that an employee will not use a sling retired from service.

Cutting eye of a retired wire rope sling

Inspection Criteria: Synthetic Web Slings

A good inspection program will not only provide safer lifting conditions, but will also extend the life of slings, thereby reducing lifting costs.

The goal of a synthetic web sling inspection is to evaluate the condition of a new or previously used sling to decide if it is suitable for continued use. Note: Polyester web slings are distinguishable by a coloured (blue) yarn woven into one side of the fabric.

Written inspection records, utilizing the identification for each sling as established by the user, should be kept for all slings. These records show a description of the new sling and its condition at each periodic inspection.

Removal From Service

A synthetic web sling shall be removed from service if ANY of the following conditions are present:

1. Sling rated capacity tag or sling material identification is missing or not readable.
2. Acid or caustic burns.
3. Melting or charring in any part of the sling.
4. Holes, tears, cuts, snags or embedded particles.
5. Broken or worn stitching in load bearing splices.
6. Excessive abrasive wear.
7. Knots in any part of the sling.
8. Excessive pitting or corrosion, or cracked, distorted or broken fittings.
9. Other visible damage that causes doubt as to the strength of the sling.

Frequency Of Inspection

Daily visual inspections are intended to detect serious damage or deterioration that would weaken the sling. This inspection is usually done by the person using the sling in a day-to-day job. They should look for obvious things, such as cuts and tears of the webbing, burns, severe wear, broken attachments, etc.

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

Additional inspections should be carried out by a designated person with good knowledge of synthetic web slings. An accurate WRITTEN and dated record of all conditions observed should be kept. Any deterioration of the sling that results in appreciable loss of original strength should be carefully noted, and determination made on whether further use is a safety hazard.

How To Inspect

It is in the HOW of inspection where the difference between a good inspection and something less becomes apparent. Inspection should follow a systematic procedure:

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 so all parts are visible.
3. The sling should be given a thorough hand over hand, systematic examination throughout its length, paying particular attention to sections showing the most wear.
4. Special attention should be paid to fittings and end attachments, and areas of the sling next to them.
5. When the worst section of a sling has been found, this area should then be carefully checked against the inspection criteria.
6. Label or otherwise identify inspected slings.
7. Keep records of slings retired.

Disposal Of Retired Synthetic Web Slings

The best inspection program available is of no value if retired slings are not disposed of properly. When it is determined by the inspector that a sling is worn out or damaged beyond use, it shall be immediately tagged DO NOT USE. This sling shall be destroyed as soon as possible by cutting the eyes and removing any fittings. This will ensure that an employee will not use a sling retired from service.

Inspection Criteria: Roundslings

A good inspection program will not only provide safer lifting conditions, but will also extend the life of slings, thereby reducing lifting costs.

The goal of a roundsling inspection is to evaluate the condition of a new or previously used sling to decide if it is suitable for continued use. Note: roundslings are distinguishable by their colour but evaluated by the identification tag.

Written inspection records, utilizing the identification for each sling as established by the user, should be kept for all slings. These records show a description of the new sling and its condition at each periodic inspection.

Removal From Service

A polyester roundsling shall be removed from service if ANY of the following conditions are present:

1. Identification tag is missing or not readable.
2. Melting, charring or weld spatter of any part.
3. Holes, tears, cuts, embedded particles, excessive abrasive wear, or snags that expose the core fibres.
4. Broken or worn stitching in the cover which exposes the core fibres.
5. Fittings that are damaged, stretched, corroded, cracked or distorted in any way.
6. Polyester roundslings that are knotted.
7. Acid or alkali burns of the polyester roundsling.
8. Other visible damage that cause doubt as to the strength of the polyester roundsling.

Frequency Of Inspection

Daily visual inspections are intended to detect serious damage or deterioration that would weaken the sling. This inspection is usually done by the person using the sling in a day-to-day job. They should look for obvious things, such as cuts and tears of the protective cover, burns, severe wear, broken attachments, etc.

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

Additional inspections should be carried out by a designated person with good knowledge of roundslings. An accurate WRITTEN and dated record of all conditions observed should be kept. Any deterioration of the sling that results in appreciable loss of original strength should be carefully noted, and determination made on whether further use is a safety hazard.

How To Inspect

It is in the HOW of inspection where the difference between a good inspection and something less becomes apparent. Inspection should follow a systematic procedure:

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 so all parts are visible.
3. The sling should be given a thorough hand over hand systematic examination throughout its length, paying particular attention to sections showing the most wear.
4. Special attention should be paid to fittings and end attachments, and areas of the sling next to them.
5. When the worst section of a sling has been found, this area should then be carefully checked against the inspection criteria.
6. Label or otherwise identify inspected slings.
7. Keep records of slings retired.

Disposal Of Retired Roundslings

The best inspection program available is of no value if retired slings are not disposed of properly. When it is determined by the inspector that a sling is worn out or damaged beyond use, it shall be immediately tagged DO NOT USE. This sling shall be destroyed as soon as possible by cutting completely through the body of the sling and removing any fittings. This will ensure that an employee will not use a sling retired from service.

Inspection Criteria: Alloy Chain Slings

A good inspection program will not only provide safer lifting conditions, but will also extend the life of slings, thereby reducing lifting costs.

The goal of a chain sling inspection is to evaluate the condition of a new or previously used sling to decide if it is suitable for continued use.

Written inspection records, utilizing the identification for each sling as established by the user, should be kept for all slings. These records show a description of the new sling and its condition at each periodic inspection.

Removal From Service

A chain sling shall be removed from service if ANY of the following conditions are present:

1. Excessive wear and corrosion at chain and attachment bearing points.
2. Nicks or gouges.
3. Stretching.
4. Bends or twists.
5. Distorted or damaged master links, coupling links and attachments, especially a spread in throat opening of hooks.
6. Weld splatter, discolouration from excessive temperature.
7. Cracks in welds.
8. Missing or illegible sling identification tag.

Inspection procedure for chain slings in regular service is divided into two general classifications based upon the interval at which inspection should be performed. The intervals in turn are dependent upon the degree of exposure of the sling components to wear and deterioration. The two general classifications are:

Frequent Inspection

Visual examinations by the user or other designated personnel with records not required.

1. Normal service - monthly
2. Severe service - daily to weekly
3. Special or infrequent service - as recommended by a qualified person before and after each occurrence

Periodic Inspection

Visual inspection by a designated person making a record of the inspection, or of apparent conditions to provide the basis for continuing evaluation.

1. Normal service - yearly
2. Severe service - monthly to quarterly
3. Special or infrequent service - as recommended by a qualified person before the first such occurrence and as directed by the qualified person for any subsequent occurrences.

How To Inspect

1. Before inspection, clean the chain sling. (A non-acidic, non-caustic solvent is recommended.)
2. Hang the chain vertically, if practical. In any event, measure the reach accurately. Reach is measured from the bearing surface of the master link to the bearing surface of the hook or component on the end of the chain leg. If measured length is greater than length recorded on tag, there is a possibility that sling has been subjected to overloading or excessive wear.
3. Examine each sling component for the conditions noted above. In addition, discard any hook, link or ring that is worn more than 10% of its original diameter. Discard any hook that has an increase in throat or slot opening more than 15% of original opening, or in excess of that recommended by the manufacturer. Discard hooks that are bent or twisted more than 10 degrees from the plane of an unbent hook.
4. Keep a dated record of each sling inspected. Repairs to alloy chain slings should be made only by the manufacturer or qualified persons. After the repair of a chain sling, existing tag is to be replaced with a new tag c/w date

Disposal Of Retired Chain Slings

The best inspection program available is of no value if retired slings are not disposed of properly. When it is determined by the inspector that a sling is worn out or damaged beyond use, it shall be immediately tagged DO NOT USE, and remove load tag. This will ensure that an employee will not use a sling retired from service.

Inspection Criteria: Rigging Hardware

Removal From Service

Each fitting (hook, link, shackle, eyebolt, etc.) should be inspected for:

1. **Wear:** No more than 10% wear of any sectional dimension. Measured by comparing to a section of a fitting that has no wear, or to the catalogue dimensions. OHSA and ANSI allow a 15% increase in the throat opening of hooks. However, follow the recommendations of the manufacturer.
2. **Deformation:** Any significant permanent deformation or change in shape that would indicate overloading.
3. **Cracks or sharp nicks**
4. **Modification:** Heating or welding, bending, substitution of parts not recommended by manufacturer.

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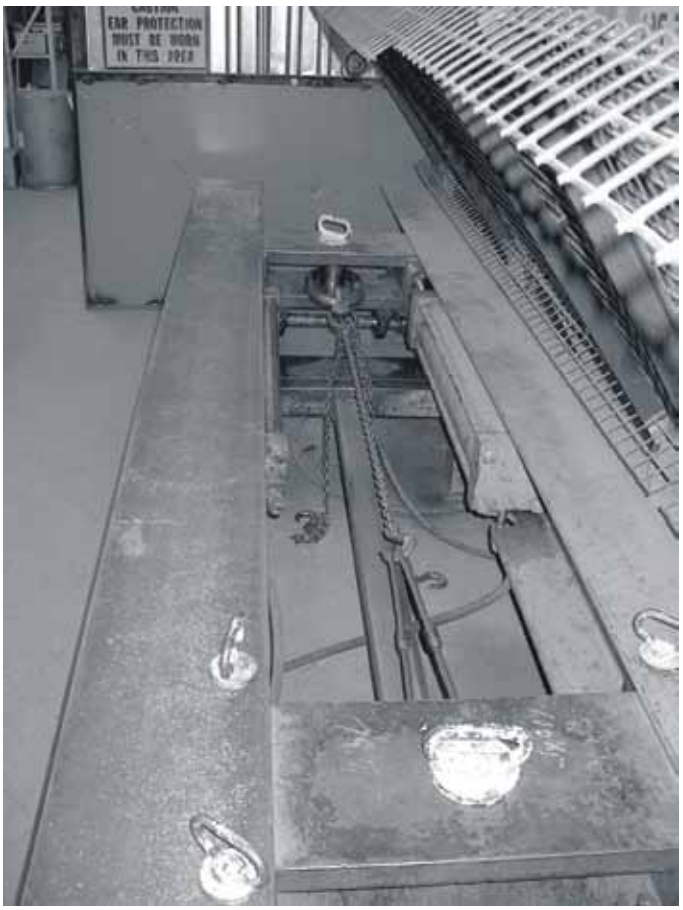

Certificate Of Test

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MANUFACTURING LIMITED
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Certificate No: **Date:**

CERTIFICATE OF TEST

CUSTOMER: _____

CUSTOMER PO #: _____

DESCRIPTION
Item:
Serial #(s): **Quantity:**
Working Load Limit: **Lbs @** **Degrees from Horizontal**
Proof Load applied: **Lbs**
Note: Proof load value is based on two times the WLL of a single leg sling @ 90 degrees from horizontal.

We certify that the above described assembly/item has been tested in our factory on our proof test machine, which is certified annually to ASTM E4 standard. Testing has been done in a straight line tension and this test has been applied to all legs/components forming this assembly/item. After proof testing the assembly/item has been visually inspected to confirm all legs/components have satisfactorily survived testing.

Sling-Choker Manufacturing Ltd.

_____
Authorized Signature

Services

On Site Safety Seminars

Provided by your Sling-Choker Technical Representative

Six essential steps for selecting a sling:

1. Determine the weight of the load.
2. Consider the type of environment in which the sling will be used
3. Determine the condition of the sling
4. Select the hitch according to the load
5. Determine the proper sling to load angle
6. Follow the basic rules of hitching

Inspection Of:

1) Synthetic Web Slings:
- (a) - Tag
- (b) - Melting or charing
- (c) - Holes or tears
- (d) - Any condition which causes doubt as to the strength of the web sling.

2) Polyester Roundslings:
- (a) - Tag
- (b) - Melting or charing
- (c) - Holes or tears
- (d) - Any condition which causes doubt as to the strength of the polyester roundslings.

3) Wire Rope:
- (a) - Broken wires
- (b) - Distortion-kinks, crushing, etc.
- (c) - Heat damage - weld splatter
- (d) - Bad fittings
- (e) - Corrosion

4) Chain:
- (a) - Tag
- (b) - Excessive wear
- (c) - Nicks or gouges
- (d) - Stretch
- (e) - Weld splatter

5) Hardware:
- (a) - Wear
- (b) - Cracks or sharp nicks
- (c) - Missing parts (latch kits, pins)
- (d) - Modifications

On Site Visual Inspection & Recording

- Sling inspections by qualified inspectors
- Detailed report of each sling
- RFID inspection systems
- Removal of defective slings for immediate repair
- Inspection and repair of plate clamps by factory trained personnel

On Site Technical Assistance for Custom Rigging.

- Sling design for special applications
- Problem solving on lifting equipment
- Advice on difficult lifts
- Advice on the use of rigging hardware

Recertification

Cleaning the chain for inspection.

Measuring the chain for wear.

Notes

Notes

Conversion Factors

To convert	Multiply by	To obtain/to convert	multiply by	to obtain
miles (statute)	1.609	kilometres	.6214	miles (statute)
yards	.9144	metres	1.094	yards
feet	.3048	metres	3.281	feet
inches	24.5	millimetres	.03937	inches
short tons	.9072	metric tonnes	1.102	short tons
long tons	1.016	metric tonnes	.9842	long tons
pounds	.4536	kilograms	2.205	pounds
pounds	.00444822	kilo newtons	224.809	pounds
pounds per foot	1.488	kilos per metre	.6720	pounds per foot
pounds per sq.ft.	4.8824	kilos per sq.m.	.20482	pounds per sq.ft.
pounds per sq.in.	.07031	kilos per sq.cm.	14.2227	pounds per sq.in.
square inches	645.2	sq. millimetres	.00155	square inches
cubic inches	16.387	cubic centimetres	.06102	cubic inches
cubic feet	.02832	cubic metres	35.31	cubic feet
cubic yards	.7646	cubic metres	1.308	cubic yards
U.S. gallons	3.785	litres	.2642	U.S. gallons
Imperial gallons	4.536	litres	.22	Imperial gallons
cubic feet	28.32	litres	.03531	cubic feet
diameter	3.1416	circumference	.31831	diameter

Distance Conversion:

1 statute mile	1,760 yards	5,280 feet	1.60934 kilometres
1 nautical mile	2,026.6 yards	6,080 feet	1.85318 kilometres
1 fathom	2 yards	6 feet	1.82880 metres
1 rod (perch, pole)	5.5 yards	16.5 feet	5.02919 metres

Temperature Conversion:

Degrees Fahrenheit	.5556 x (F˚ - 32)	Degrees Celsius
Degrees Celsius	(1.8 x C˚) + 32	Degrees Fahrenheit

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