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Wire Rope Sling

HANDBOOK



 **Union**[®]
A WireCo[®] WorldGroup Brand

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INSIDE THIS WIRE ROPE SLING HANDBOOK,
YOU'LL FIND INFORMATION YOU NEED TO KNOW

Choosing the right sling for your lift. Understanding the basics of selecting a sling for your lifting operations is vital for your efficiency and productivity.

The wire rope sling products you need. We offer a full line of proven wire rope slings, including single-part body, multi-part body, SuperFlex® braided slings, grommets and socket assemblies.

Proper wire rope sling use and care. Do you want to extend the service life of your wire rope sling? We tell you how, plus how to correctly inspect your slings.



Tested, tough and true.

So...what's the the need for a handbook on wire rope slings from **WireCo WorldGroup**? After all, a wire rope sling is a wire rope sling, right? What you can get from one company is what you'll get from the next company...and the next.

Well, to anyone who thinks so, we can only say, "Bunk."

We haven't put a lifetime of brain and brawn, heart and soul, and sweat and tears into our products just to be average. No way. No how.

WireCo WorldGroup is a company that reflects the people who run it and work it. People of character, full of grit and determination. Tough-minded individuals who never cut corners or take shortcuts.

Around the world, the men and women of **WireCo WorldGroup** bring unmatched expertise to the task of delivering the best products whenever and wherever they are needed. They take pride in their work – and it is reflected in the quality of our products.

SMALL TOWN ROOTS, GLOBAL LEADERSHIP

From simple beginnings, **WireCo WorldGroup** has grown – and endured – to become the largest producer of wire ropes, synthetic ropes and electromechanical cables in the world, offering the broadest product line, and we deliver the right products for your industry and your application.

All the more reason to call for our **Union** slings and assemblies.

ABOVE AND BEYOND

Engineering wire rope slings for your application is a highly specialized field – with exacting standards – that we gladly live by.

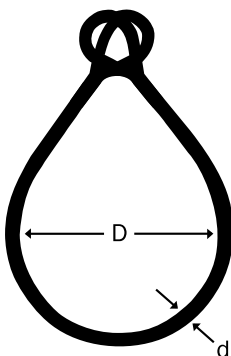
A **Union** sling can meet or exceed the most exacting specifications. We apply thorough design and production controls – including an extensive ISO-controlled process. And our traceability process tracks every component through completion of the assembly and into the field. That's why we're the only major wire rope manufacturer in the world to be API certified, QPL qualified and ISO-9001:2000 registered, the industry's highest quality standards. To help you get the most service life, we support our products with comprehensive technical assistance and a fully stocked national service center network. With **WireCo WorldGroup**, you always know who to call – and you'll always know you are getting the quality you expect.

So, buy from the best...a company, and products, that are tested, tough and true.

The rated capacity of a sling and what it means to you

D/d RATIOS

When a sling is rigged as a basket, the diameter of the bend where the sling contacts the load can affect the sling's lifting capacity.



How much the lifting capacity is affected can be calculated by dividing the diameter of the bend where the rope contacts the load (represented by "D") by the diameter of the rope or the component rope diameter in a multi-part sling (represented by "d"). For example, if the diameter of the bend ("D") is 10 and the component rope diameter ("d") is 1/2, the D/d Ratio is $10 \div 1/2$ or 20.

The rated capacity of a sling varies depending upon the type of sling, the size of the sling, and the type of hitch. The American Society of Mechanical Engineers



(ASME) requires that all wire rope slings be tagged with the name or trademark of the manufacturer, the rated capacity for specific configurations and the diameter or size of the sling. Under no circumstances shall a sling's rated capacity be exceeded. The user should maintain this identification so that it is legible during the life of the sling. All persons using the sling should read the tag and understand the information on it.

The rated capacity of a wire rope sling is based upon the Minimum Breaking Force (MBF) of the wire rope used in the sling and other factors that affect the overall strength of the sling, including:

- > Splicing efficiency.
- > Design factor (5 is standard).
- > Number of parts of rope in the sling.
- > Type of hitch (straight pull, choker hitch or basket hitch).
- > Diameter around which the body of the sling is bent (D/d ratio).
- > Number of legs.
- > Diameter of the pin (or hook) over which the eye of the sling is rigged.
- > Angle at which the sling is used.
- > Hook or other end attachment rated capacity.

DESIGN FACTOR

The rated capacities for wire rope slings are based on a design factor of 5 per ASME B30.9. The design factor and other factors are used to calculate the rated capacities.

Design factors have been established that allow the sling to give efficient service to the user.

APPLY STANDARD D/d RATIOS TO DETERMINE EFFICIENCY OF VARIOUS SLING CONSTRUCTIONS

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-part slings	25 times component rope diameter
Hand-tucked grommets and mechanically joined grommets	5 times sling body diameter

When D/d ratios smaller than those shown above (or those shown in the footnotes below Rated Capacity Tables) are used, the rated capacity of the sling must be decreased.

How wire rope slings are used

HITCHES

How wire rope slings are configured to lift a load is called a hitch. Most lifts use one of three basic hitches.

VERTICAL EYE AND EYE HITCH

If one eye of the sling is attached to the lifting hook and the other eye is attached to the load, this is called a vertical eye and eye, or straight, hitch. A tagline should be used to prevent load rotation that may damage the sling.

When two or more slings are attached to the same lifting hook, the total hitch becomes, in effect, a lifting bridle and the load is distributed equally among the individual slings.

Slings used at an angle have a lower rated capacity than one used vertically.

CHOKER HITCH

In the choker hitch, one eye of the sling is attached to the lifting hook, while the sling itself is drawn through the other eye. The load is placed inside the "choke" that is created while the sling is drawn tight over the load through the eye.

Choker hitches reduce the lifting capability of a sling since the wire rope component's ability to adjust during the lift is affected. You should only use a choker hitch 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 hug the load. Never choke a load so that any part of one eye or splice is in the part of the sling that passes through the other eye to form the choke.

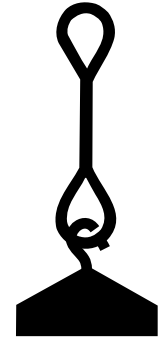
Two notes of caution: Always pull a choker hitch tight before the lift is made. It should never be pulled down during the lift. Also, never use only one choker hitch to lift a load that could shift or slide out of the choke.

BASKET HITCH

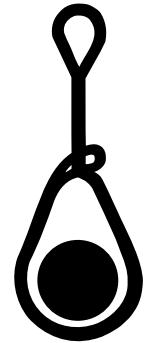
A basket hitch is formed when both eyes of the sling are placed on the lifting hook, thereby forming a circular basket of the sling. This type of hitch distributes the load equally between the two legs of the sling, within limitations.

LIFTING BRIDLES

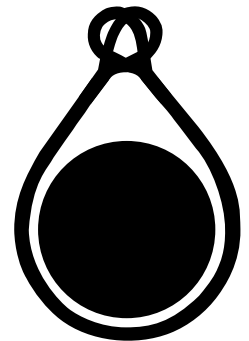
When you attach two or more slings to the same lifting hook, or are connected to a link rigged onto the hook, the total hitch becomes a lifting bridle, distributing the load among the individual slings. When using two or more slings as a lifting bridle, remember that the sling angle affects the slings' rated capacities. Also, the location of the lift's center of gravity will affect the load on each sling leg.



VERTICAL HITCH

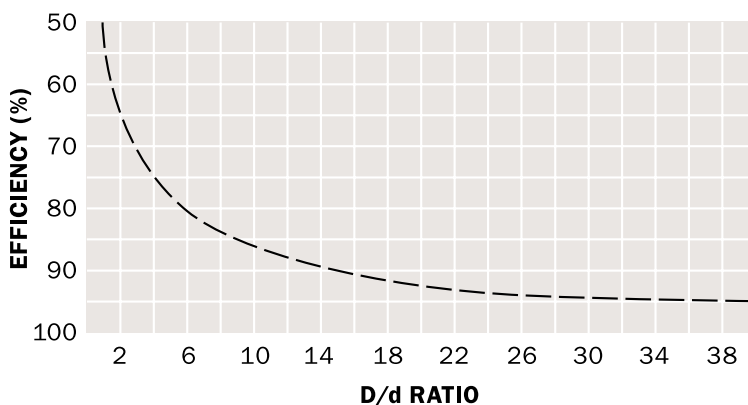


CHOKER HITCH



BASKET HITCH

REDUCTION IN EFFICIENCY OF WIRE ROPE WHEN BENT OVER PINS OF VARIOUS SIZES



Sound lifting practices

There are four primary factors to take into consideration when lifting a load.

They are: (1) the physical parameters of the load; (2) the number of legs and the angle they make with the horizontal; (3) the rated capacity of the sling; and (4) the condition of the sling.

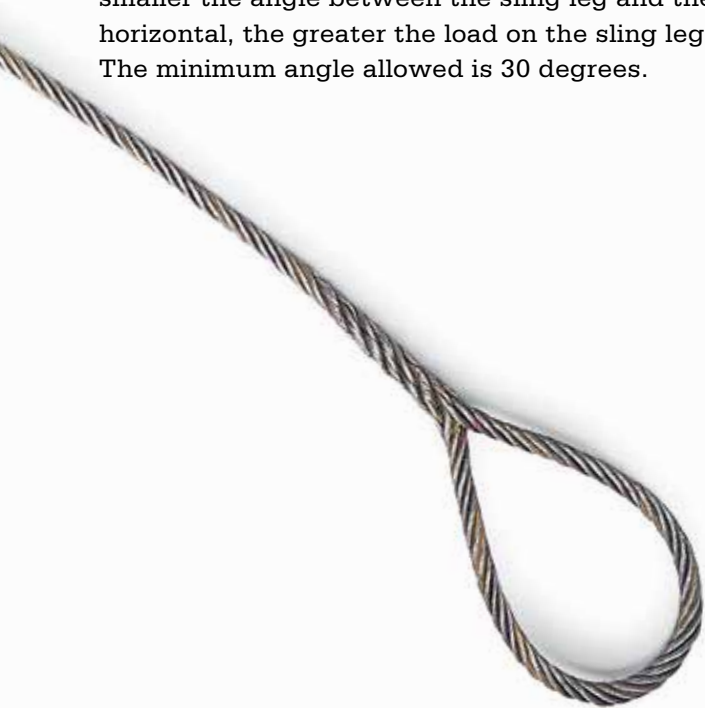
PHYSICAL PARAMETERS OF THE LOAD

The size of the object to be lifted, and particularly the location of lifting points, will affect sling selection. The weight of the lift, while a critical component, is only a part of the information. The location of the center of gravity is also necessary to determine sling loadings.

If the load has small diameter corners, protective blocking or “softeners” must be used so that sling capacity isn’t reduced. Also, if lifting a painted object or an object with a finished surface, padding or softeners may be needed between the sling and the load to protect the load.

NUMBER OF LEGS AND ANGLE WITH THE HORIZONTAL

As the angle formed by the sling leg and the horizontal decreases, the rated capacity of the sling also decreases. In other words, the smaller the angle between the sling leg and the horizontal, the greater the load on the sling leg. The minimum angle allowed is 30 degrees.



RATED CAPACITY

The rated capacity of a sling must never be exceeded. The rated capacity is based both on sling fabrication components (minimum breaking force of rope used, splicing efficiency, number of parts of rope in sling and number of sling legs) and sling application components (angle of legs, type of hitch, D/d ratios, etc.).

If you are using one wire rope sling in a vertical hitch, you can utilize the full rated lifting capacity of the sling, but you must not exceed that lifting capacity.

If you are using two wire rope slings in a vertical hitch (called a 2-legged bridle hitch) in a straight lift, the load on each leg increases as the angle between the leg and the horizontal plane decreases.

Whenever you lift a load with the legs of a sling at an angle, you can calculate the actual load per leg by using the following three-step formula.

CONDITION OF SLING

Each sling must be inspected daily. If the sling does not pass inspection (See Page 9), do not use.

LOAD FACTOR GUIDELINES

Leg angle	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

CAPACITY DECREASES WITH ANGLE

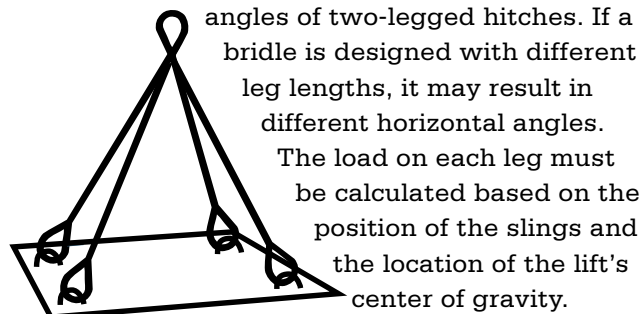
Angle of choke in degrees	Rated Capacity Percent*
Over 120	100%
90-120	87%
60-89	74%
30-59	62%
0-29	49%

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

Calculating the load of basket hitches and bridles

When you're calculating the load of basket hitches and bridles, remember that as the horizontal angle of a sling decreases, the resultant load on each leg increases.

The horizontal angle of bridles with three or more legs is measured the same way as horizontal sling angles of two-legged hitches. If a



bridle is designed with different leg lengths, it may result in different horizontal angles. The load on each leg must be calculated based on the position of the slings and the location of the lift's center of gravity.

ADJUSTING THE RATED CAPACITY OF A CHOKER HITCH

Due to the body of the sling being used in the choke, there is a reduction in rated capacity. This is reflected in the choker rated capacity tables. Another reduction that must be considered is due to the "angle" of the choke (not the angle of the leg of the sling).

THREE-STEP FORMULA FOR CALCULATING LOAD PER SLING LEG

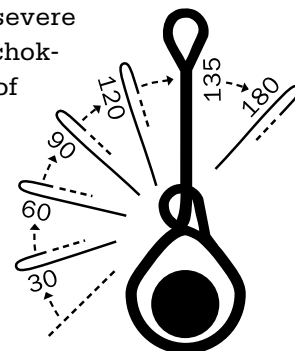
These calculations assume that the center of gravity is equal distance from all of the lifting points, and the sling angles are the same. If not, more complicated engineering calculations are needed.

1. Divide the weight of your total load by the number of legs you are using. This gives you the load per leg if the lift were being made with all legs lifting vertically.
2. Measure the angle between the legs of the sling and the horizontal plane.
3. Multiply the load per leg that you calculated in step 1 by the load factor for the leg angle you are using. Use the Load factor guidelines table on the previous page to determine the load factor.

The result is the actual load on each leg of the sling for this lift and angle. The actual load must never exceed the sling's vertical rated capacity.

Warning: Slings shall not be used with horizontal angles less than 30°.

If the load is hanging free, the normal choke angle is approximately 135 degrees. When lifting and turning a load using a choker hitch, it is not uncommon to have a severe bend at the choke. When a choker hitch is used at an angle of less than 120 degrees, you must reduce the hitch's rated capacity as shown in the chart at right. You always must adjust the rated capacity of the wire rope sling whenever you use a choker hitch to shift, turn or control a load, or when the pull is against the choke in a multi-leg lift.



As always, if more than one sling is used and the legs are not vertical, a further reduction in rated capacity must be made for the sling angle.

Warning: 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.

EXAMPLES OF HOW TO CALCULATE SLING LEG LOADS

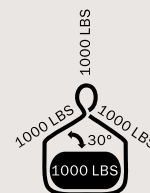
1. Total load is 1,000 lbs. divided by two legs – 500 lbs. load per leg if vertical lift.
2. Horizontal sling angle is 60 degrees.
3. Multiply 500 lbs. by 1.154 load factor (from table) = 577 lbs. actual load per leg.



1. Total load is 1,000 lbs. divided by two legs – 500 lbs. load per leg if vertical lift.
2. Horizontal sling angle is 45 degrees.
3. Multiply 500 lbs. by 1.414 load factor (from table) = 707 lbs. actual load per leg.



1. Total load is 1,000 lbs. divided by two legs – 500 lbs. load per leg if vertical lift.
2. Horizontal sling angle is 30 degrees.
3. Multiply 500 lbs. by 2 load factor (from table) = 1000 lbs. actual load per leg.



Rigger's 10-step checklist



INSPECT YOUR EQUIPMENT, WIRE ROPE, WIRE ROPE SLINGS AND ASSEMBLIES REGULARLY

> Inspection should be performed by a qualified person with special training or practical experience.



NEED MORE INFORMATION?

> When it comes to using wire rope slings and assemblies, knowledge is your most important tool. We know this guide can't answer every question you have about wire rope slings and assemblies.

If you have more informational needs, contact your **Union** distributor or district sales manager.

1. WEIGH AND MEASURE

Before you lift, be sure you know exactly how much weight you're moving, how far you have to move it and how high you must lift it. Make sure the load's weight is within the rated capacity of the sling, including consideration of sling leg angles and load's physical parameters.

2. USE THE RIGHT HITCH

Decide how to connect your load to the lifting hook and how to attach the sling to the load.

3. CHOOSE THE RIGHT SLING

Each load is different. Be sure to calculate the proper rated capacity for the angles and hitch involved as well as the right type and style for the job.

If D/d ratios are smaller than those indicated, the sling's rated capacity must be reduced. Choose a sling with the proper end attachments or eye protection as well as attaching hardware. Pad all corners in contact with the sling to minimize damage to the sling.

4. INSPECT THE SLING

Check the sling closely to be sure it is in good condition and able to make the lift. Follow all the appropriate OSHA guidelines and ASME regulations. You cannot change the length of a sling. If a different length is needed, get a sling of the required length.

5. RIG UP, NOT DOWN

Always attach the sling to the load first, then attach it to the hook.

6. BALANCE THE LOAD

Always place the eye or link in the base (bowl) of the hook to prevent point loading on the hook. In a basket hitch, always balance the load to prevent slippage.

The sling's legs should contain or support the load from the sides above the center of gravity when using a basket hitch. Be certain that the slings are long enough so that the rated capacity is adequate when you consider the angle of the legs.

7. TEST THE RIGGING

Before you make the lift, tug lightly on the rigging to be certain that blocking, sling and load protection are in place, then lift slightly off the ground and re-check the lift.

8. STAND CLEAR AND LIFT

To prevent injury, move away from the areas between the sling and load and between the sling and the crane hook or hoist hook. Let the lifting device and rigging work for you.

Avoid the temptation to use your muscles to prevent swinging or movement. Use a tagline or tether. Be sure to keep clear of the suspended load.

9. AVOID SHOCK LOADING

Lift slowly with a steady application or power. Don't make sudden starts or stops, either in lifting or swinging the load.

10. RETURN TO STORAGE

After you're done with your lift, inspect the sling for possible damage. If damaged and not usable, destroy the sling immediately. Otherwise, return it to your sling storage rack until your next lift.

Inspection and removal criteria for wire rope slings

Before using slings, inspect them to be sure they meet the requirements for that application.

HOW OFTEN TO INSPECT

Both AMSE Standard B30.9 and OSHA require that wire ropes receive two types of inspections:

- 1. A DAILY VISUAL INSPECTION** The person handling the sling must do this each day and should check for major damage or deterioration that would weaken the sling and for obvious signs such as broken wires, kinks, crushing, broken attachments and severe corrosion.
- 2. ADDITIONAL INSPECTIONS AT REGULAR INTERVALS** These are based on frequency of sling use, severity of service conditions, the nature of the lifts and prior experience based on service life of slings used in similar circumstances. A designated person who has a working knowledge of wire rope must conduct these inspections.

Inspection shall be made at least annually and shall include a record of the inspection or of apparent conditions to provide the basis for a continuing evaluation. Inspection shall be conducted on the entire length of the sling, including splices, end attachments and fittings.

HOW TO INSPECT

The following procedures are offered as a guide for conducting inspections:

- 1.** Place the sling in a position that enables the inspector to access and see every part of the sling.
- 2.** Clean off all dirt and grease with a wire brush or rags to reveal wires and fittings.
- 3.** Examine the entire length of the sling thoroughly, especially the parts showing the most wear.
- 4.** Pay special attention to fittings and end attachments and areas of the sling next to these fittings.
- 5.** Find the most worn or damaged section of the sling and carefully check it against removal criteria.
- 6.** Label or identify all slings you've inspected.
- 7.** Keep records of all inspections, including dates and conditions of slings.
- 8.** Immediately destroy all slings you've rejected.
- 9.** Store slings you want to reuse in a safe place away from damaging weather, heat and dirt.

WHEN TO REPLACE YOUR WIRE ROPE SLING

According to ASME B30.9, you must remove a wire rope sling from service immediately if any of the following conditions are present:

- 1. RATED CAPACITY TAG** Missing or illegible sling identification tag.
- 2. BROKEN WIRES** For single part body slings and strand laid grommets: 5 broken wires in one strand in one rope lay or 10 broken wires in all strands in one rope lay. For cable-laid, cable-laid grommets and multi-part slings, use the following guidelines.

ALLOWABLE BROKEN WIRES

Cable-laid grommet	20 per lay
Less than 8-part braid	20 per braid
8-part braid or more	40 per braid

- 3. METAL LOSS** Wear or scraping of one-third the original diameter of the outside individual wires.
- 4. DISTORTION** Such as kinking, crushing or bird-caging. Look closely for wires or strands that may have been pushed out of their original positions in the rope.
- 5. HEAT DAMAGE** Any metallic discoloration or loss of internal lubricant caused by heat exposure.
- 6. DAMAGED END ATTACHMENTS** Cracked, bent or broken fittings. Also, any evidence that eye splices have slipped, or tucked strands have moved.
- 7. BENT HOOKS** No more than 15 percent over the normal throat openings (measured at the narrowest point) or twisting exceeding 10 degrees is permitted.
- 8. METAL CORROSION** Severe corrosion of the rope or end attachments that has caused pitting or binding of wires. Light rusting doesn't normally affect a sling's strength.

HOW TO DISPOSE OF A REJECTED WIRE ROPE SLING

Once the qualified person has determined a sling is no longer usable, he should tag it immediately, "Do Not Use." The sling should then be destroyed as soon as possible by cutting the eye and fittings from the rope. This will prevent accidental reuse of the sling.

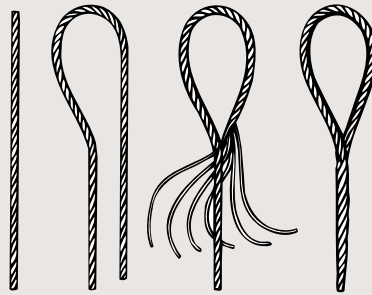
Single part body, hand-spliced wire rope slings

The end of a single wire rope is bent back along the wire rope to form the eye. Strands are hand-tucked into the body of the rope in what is called a tapered and concealed splice. The splice makes a sling that can be easily pulled through narrow spaces because there are no rough ends to snag on loads.

Slings with wire rope bodies larger than 1-1/2" diameter are made only with burnt end splices in which the ends of strands are left exposed and then cut off with a torch. These ends may also be cut shorter and served for smoothness. Either method has the same rated capacity, size for size.

Warning: Hand-spliced slings should not be used in lifts where the sling may rotate and cause the wire rope to unlay.

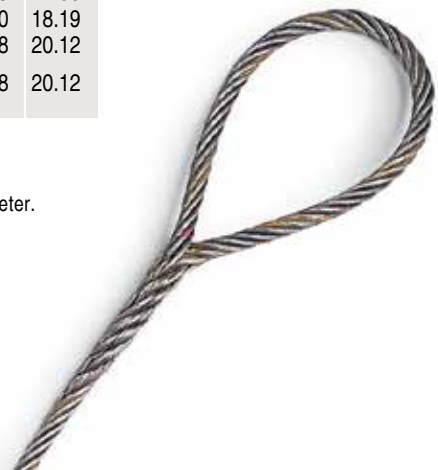
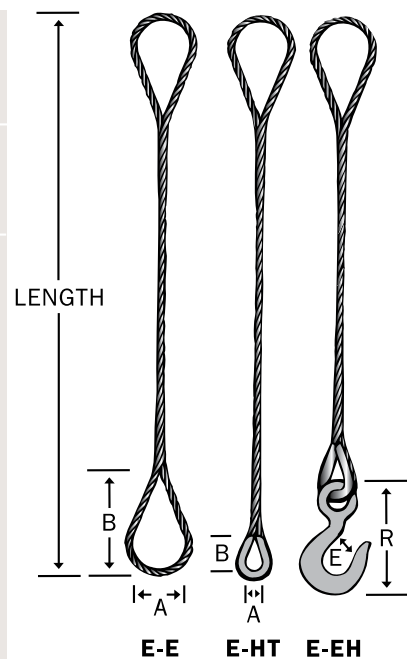
HAND-SPLICED EYE



The tapered and concealed splice utilizes tension in the rope body to secure strands where they are tucked back into the rope. It doesn't require a metal sleeve to assure firm anchoring. When "tapered and concealed," the ends of strands are tucked inward and then concealed inside the rope.

110 FC & IWRC

	Rope Dia. (in.)	RATED CAPACITY – Tons*						E-E Eye Dimensions		E-HT Thimble		E-EH Hook		
			Choker Hitch ***	Basket Hitch										
														
							60°	45°	30°					
	Vert.							A	B	A	B	WLL** Tons	E	R
6 X 19 XIP®	1/4	0.54	0.42	1.1	0.94	0.77	0.54	2.0	4	0.88	1.63	3/4	0.89	3.34
	5/16	0.83	0.66	1.7	1.4	1.2	0.83	2.5	5	1.06	1.88	1	0.91	3.81
	3/8	1.2	0.94	2.4	2.0	1.7	1.2	3	6	1.13	2.13	1-1/2	1.00	4.14
	7/16	1.6	1.3	3.2	2.7	2.2	1.6	3.5	7	1.25	2.38	2	1.09	4.69
	1/2	2.0	1.6	4.0	3.5	2.9	2.0	4	8	1.50	2.75	2	1.09	4.69
	9/16	2.5	2.1	5.0	4.4	3.6	2.5	4.5	9	1.50	2.75	3	1.36	5.77
	5/8	3.1	2.6	6.2	5.3	4.4	3.1	5	10	1.75	3.25	5	1.61	7.37
	3/4	4.3	3.7	8.6	7.4	6.1	4.3	6	12	2.00	3.75	5	1.61	7.37
	7/8	5.7	5.0	11	9.8	8.0	5.7	7	14	2.25	4.25	7-1/2	2.08	9.07
	1	7.4	6.4	15	13	10	7.4	8	16	2.50	4.50	7-1/2	2.08	9.07
6 X 36 XIP®	1-1/8	9.3	8.1	19	16	13	9.3	9	18	2.88	5.13	10	2.27	10.08
	1-1/4	11	9.9	23	20	16	11	10	20	2.88	5.13	15	3.02	12.53
	1-3/8	14	12	27	24	19	14	11	22	3.50	6.25	15	3.02	12.53
	1-1/2	16	14	32	28	23	16	12	24	3.50	6.25	15	3.02	12.53
	1-5/8	19	16	38	33	27	19	13	26	4.00	8.00	AH-22	3.02	12.53
	1-3/4	22	19	44	38	31	22	14	28	4.50	9.00	AH-30	3.25	14.06
	2	28	25	56	49	40	28	16	32	6.00	12.00	AH-37	3.00	18.19
	2-1/4	35	31	70	61	50	35	18	36	7.00	14.00	AH-45	3.38	20.12
	2-1/2	43	38	86	74	61	43	20	40			AH-45	3.38	20.12



All capacities in tons of 2,000 lbs. All eye and fitting dimensions in inches.

* Rated Capacities Basket Hitch based on D/d Ratio of 15.

Rated Capacities based on pin diameter no larger than natural eye width or less than the nominal sling diameter.

Rated Capacities based on design factor of 5.

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

** Working Load Limit, based on standard carbon fittings unless noted otherwise.

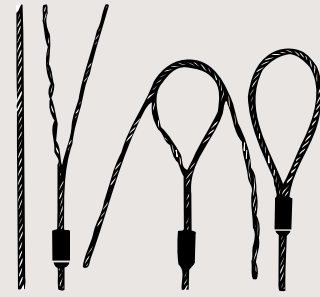
*** See Choker Hitch Rated Capacity Adjustment on page 7.

Single part body, mechanically-spliced wire rope slings

Eyes are typically formed using a flemish eye splice. The ends are secured by pressing a metal sleeve over the ends of the strands of the splice. Pull follows a direct line along the center of the rope and eye. Single part body mechanical splice slings have a higher rated capacity than hand-spliced slings.



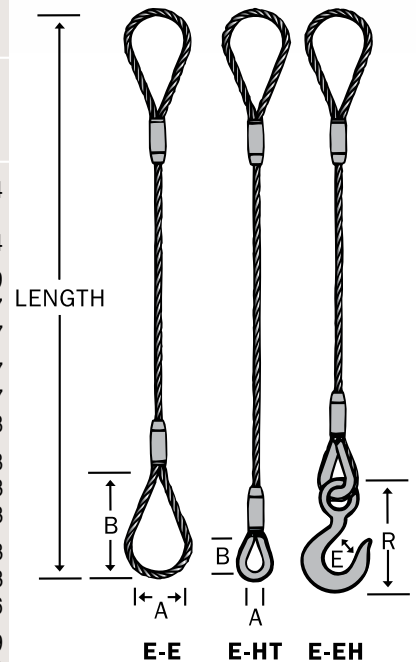
FLEMISH EYE SPLICE



In the standard flemish eye mechanical splice, wire rope is separated into two parts: three adjacent strands to one part and three adjacent strands along with the core to the other part. The two parts are then re-laid back in opposite directions to form an eye and ends are secured with a pressed metal sleeve.

115 IWRC

	Rope Dia. (in.)	RATED CAPACITY - Tons*						E-E Eye Dimensions		E-HT Thimble		E-EH Hook		
		 Vert.	 Choker Hitch ***	Basket Hitch			WLL ** Tons					E	R	
				 60°	 45°	 30°								
6 X 19 XIP®	1/4	0.65	0.48	1.3	1.1	0.91	0.65	2.0	4	0.88	1.63	3/4	0.89	3.34
	5/16	1.0	0.74	2.0	1.7	1.4	1.0	2.5	5	1.06	1.88	1	0.91	3.81
	3/8	1.4	1.1	2.9	2.5	2.0	1.4	3.0	6	1.13	2.13	1-1/2	1.00	4.14
	7/16	1.9	1.4	3.9	3.4	2.7	1.9	3.5	7	1.25	2.38	2	1.09	4.69
	1/2	2.5	1.9	5.1	4.4	3.6	2.5	4.0	8	1.50	2.75	3	1.36	5.77
	9/16	3.2	2.4	6.4	5.5	4.5	3.2	4.5	9	1.50	2.75	5	1.61	7.37
	5/8	3.9	2.9	7.8	6.8	5.5	3.9	5.0	10	1.75	3.25	5	1.61	7.37
	3/4	5.6	4.1	11	9.7	7.9	5.6	6.0	12	2.00	3.75	7-1/2	2.08	9.07
	7/8	7.6	5.6	15	13	11	7.6	7.0	14	2.25	4.25	10	2.27	10.08
	1	9.8	7.2	20	17	14	9.8	8.0	16	2.50	4.50	10	2.27	10.08
6 X 36 XIP®	1-1/8	12	9.1	24	21	17	12	9.0	18	2.88	5.13	15	3.02	12.53
	1-1/4	15	11	30	26	21	15	10.0	20	2.88	5.13	15	3.02	12.53
	1-3/8	18	13	36	31	25	18	11	22	3.50	6.25	AH-22	3.02	12.53
	1-1/2	21	16	42	37	30	21	12	24	3.50	6.25	AH-22	3.02	12.53
	1-5/8	24	18	49	42	35	24	13	26	4.00	8.00	AH-30	3.25	14.06
	1-3/4	28	21	57	49	40	28	14	28	4.50	9.00	AH-37	3.00	18.19
	2	37	28	73	63	52	37	16	32	6.00	12.00	AH-45	3.38	20.12
	2-1/4	44	35	89	77	63	44	18	36	7.00	14.00	AH-60	4.12	23.72
	2-1/2	54	42	109	94	77	54	20	40					
	2-3/4	65	51	130	113	92	65	22	44					
	3	77	60	153	133	108	77	24	48					
	3-1/2	102	79	203	176	144	102	28	56					
	4	130	101	260	224	183	130	32	64					



All capacities in tons of 2,000 lbs. All eye and fitting dimensions in inches.

* Rated Capacities Basket Hitch based on D/d Ratio of 25.

Rated Capacities based on pin diameter no larger than natural eye width or less than the nominal sling diameter.

Rated Capacities based on design factor of 5. Horizontal sling angles less than 30° shall not be used.

** Working Load Limit, based on standard carbon fittings unless noted otherwise.

*** See Choker Hitch Rated Capacity Adjustment on page 7.

Single part body, mechanically-spliced wire rope slings

TWO- AND MULTI-LEGGED BRIDLES

TWO-LEGGED BRIDLES Whether used as chokers or with hooks or other end attachments, they are affected by rigging angles. Note the reduction in rated capacity as leg angles are reduced.

MULTI-LEGGED BRIDLES With two, three or four straight legs, they are offered with plain eyes, thimble eyes, open sockets, closed sockets, shackles or turnbuckles.

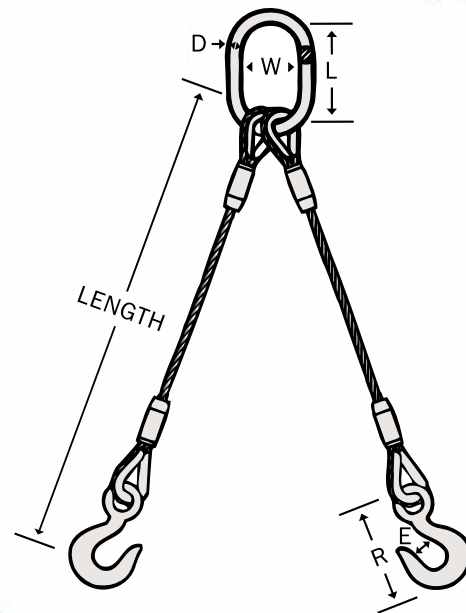
Rated capacities shown for multi-leg slings are for slings that have all legs the same length and all legs are equally sharing the load being lifted.

For other conditions, contact WireCo WorldGroup.



125-HT-EH IWRC

	Rope Dia. (in.)	RATED CAPACITY - Tons*			Alloy Oblong Link			Hook		
		60°	45°	30°	D	L	W	WLL** Tons	E	R
6 X 19 XIP®	1/4	1.1	0.91	0.65	1/2 W	5.00	2.80	3/4	0.89	3.34
	5/16	1.7	1.4	1.0	1/2 W	5.00	2.80	1	0.91	3.81
	3/8	2.5	2.0	1.4	1/2 W	5.00	2.80	1-1/2	1.00	4.14
	7/16	3.4	2.7	1.9	3/4 W	6.00	3.20	2	1.09	4.69
	1/2	4.4	3.6	2.5	3/4 W	6.00	3.20	3	1.36	5.77
	9/16	5.5	4.5	3.2	1 W	7.50	4.30	5	1.61	7.37
	5/8	6.8	5.5	3.9	1 W	7.50	4.30	5	1.61	7.37
	3/4	9.7	7.9	5.6	1 W	7.50	4.30	7-1/2	2.08	9.07
	7/8	13	11	7.6	1-1/4 W	9.50	5.50	10	2.27	10.08
	1	17	14	9.8	1-1/2 W	10.50	5.90	10	2.27	10.08
6 X 36 XIP®	1-1/8	21	17	12	1-1/2 W	10.50	5.90	15	3.02	12.53
	1-1/4	26	21	15	1.75	12.00	6.00	15	3.02	12.53
	1-3/8	31	25	18	1.75	12.00	6.00	AH-22	3.02	12.53
	1-1/2	37	30	21	2.00	14.00	7.00	AH-22	3.02	12.53
	1-5/8	42	35	24	2.00	14.00	7.00	AH-30	3.25	14.06
	1-3/4	49	40	28	2.25	16.00	8.00	AH-37	3.00	18.19
	2	63	52	37	2.50	16.00	8.00	AH-45	3.38	20.12



All capacities in tons of 2000 lbs. All eye and fitting dimensions in inches.

* Rated Capacities Basket Hitch based on D/d ratio of 25.

Rated Capacities based on pin diameter no larger than natural eye width or less than the nominal sling diameter.

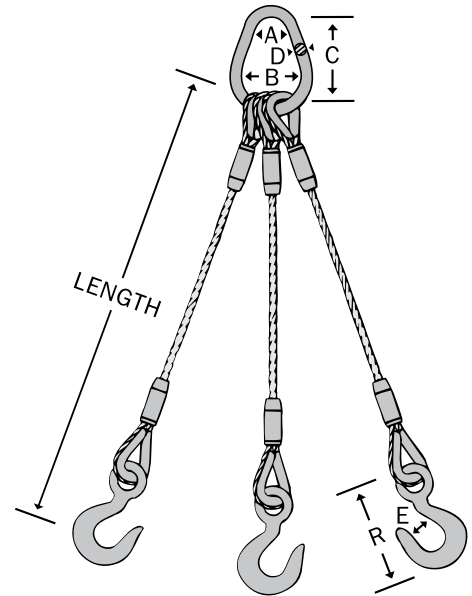
Rated Capacities based on design factor of 5.

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

** Working Load Limit, based on standard carbon fittings unless noted otherwise.

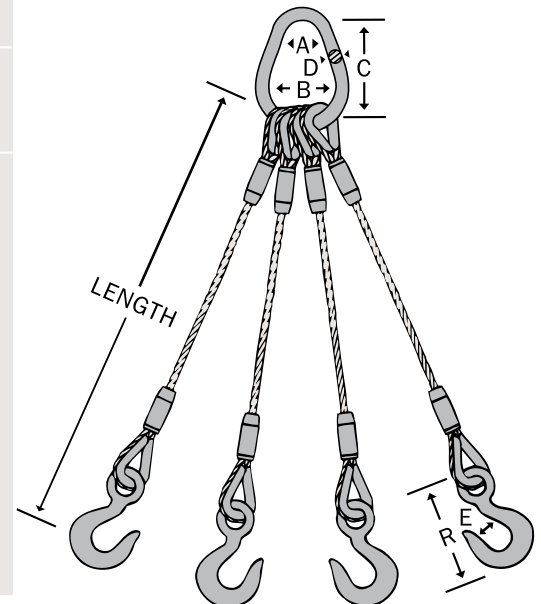
135-HT-EH

	Rope Dia. (in.)	RATED CAPACITY - Tons*			Alloy Pear Link			Hook			
		60°	45°	30°	A	B	C	D	WLL** Tons	E	R
6 X 19 XIP®	1/4	1.7	1.4	0.97	1.50	3.00	4.50	3/4	3/4	0.89	3.34
	5/16	2.6	2.1	1.5	1.50	3.00	4.50	3/4	1	0.91	3.81
	3/8	3.7	3.0	2.2	1.75	3.50	5.25	7/8	1-1/2	1.00	4.14
	7/16	5.0	4.1	2.9	2.00	4.00	6.00	1	2	1.09	4.69
	1/2	6.6	5.4	3.8	2.00	4.00	6.00	1	3	1.36	5.77
	9/16	8.3	6.8	4.8	2.25	4.50	6.50	1-1/8	5	1.61	7.37
	5/8	10	8.3	5.9	2.50	5.00	7.50	1-1/4	5	1.61	7.37
	3/4	15	12	8.4	3.25	6.50	9.75	1-5/8	7-1/2	2.08	9.07
	7/8	20	16	11	3.50	7.00	10.50	1-3/4	10	2.27	10.08
	1	26	21	15	3.50	7.00	10.50	1-3/4	10	2.27	10.08
6 X 36 XIP®	1-1/8	31	26	18	4.00	8.00	12.00	2	15	3.02	12.53
	1-1/4	38	31	22	4.50	9.00	13.50	2-1/4	15	3.02	12.53
	1-3/8	46	38	27	5.00	10.00	15.00	2-1/2	AH-22	3.02	12.53
	1-1/2	55	45	32	5.00	10.00	15.00	2-1/2	AH-22	3.02	12.53
	1-5/8	63	52	37	5.50	11.00	16.50	2-3/4	AH-30	3.25	14.06
	1-3/4	74	60	42	5.50	11.00	16.50	2-3/4	AH-37	3.00	18.19



145-HT-EH

	Rope Dia. (in.)	RATED CAPACITY - Tons*			Alloy Pear Link			Hook			
		60°	45°	30°	A	B	C	D	WLL** Tons	E	R
6 X 19 XIP®	1/4	2.2	1.8	1.3	1.50	3.00	4.50	3/4	3/4	0.89	3.34
	5/16	3.5	2.8	2.0	1.50	3.00	4.50	3/4	1	0.91	3.81
	3/8	5.0	4.1	2.9	1.75	3.50	5.25	7/8	1-1/2	1.00	4.14
	7/16	6.7	5.5	3.9	2.00	4.00	6.00	1	2	1.09	4.69
	1/2	8.8	7.1	5.1	2.50	5.00	7.50	1-1/4	3	1.36	5.77
	9/16	11	9.0	6.4	2.75	5.50	8.25	1-3/8	5	1.61	7.37
	5/8	14	11	7.8	3.00	6.00	9.00	1-1/2	5	1.61	7.37
	3/4	19	16	11	3.50	7.00	10.50	1-3/4	7-1/2	2.08	9.07
	7/8	26	21	15	3.50	7.00	10.50	1-3/4	10	2.27	10.08
	1	34	28	20	4.00	8.00	12.00	2	10	2.27	10.08
6 X 36 XIP®	1-1/8	42	34	24	4.50	9.00	13.50	2-1/4	15	3.02	12.53
	1-1/4	51	42	30	5.00	10.00	15.00	2-1/2	15	3.02	12.53
	1-3/8	62	50	36	6.00	12.00	18.00	3	AH-22	3.02	12.53
	1-1/2	73	60	42	6.00	12.00	18.00	3	AH-22	3.02	12.53



All capacities in tons of 2,000 lbs. All eye and fitting dimensions in inches.

*Rated Capacities Basket Hitch based on D/d ratio of 25.

Rated Capacities based on pin diameter no larger than natural eye width or less than the nominal sling diameter.

Rated Capacities based on design factor of 5.

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

** Working Load Limit, based on standard carbon fittings unless noted otherwise.

Super-Flex® slings

THE ADVANTAGES OF SUPER-FLEX SLINGS

- > Flexible enough to snug up around the load, Super-Flex slings also handle the load well, particularly in the larger-rated capacities.

SUPER-FLEX® SLINGS are flexible and can snug up tightly around the load in choker hitches. Super-Flex slings also offer outstanding handling characteristics, particularly in the larger rated capacities. When loaded, stress distributes to all rope parts in the sling body due to the helical manner in which ropes are laid together.

Braided slings are formed by continuously plaiting, or braiding, several ropes together to form the sling body and both eyes in a single fabrication operation. Ends of the individual ropes are usually hand-tucked or mechanically spliced into the component ropes of the body. The eyes are wrapped and given a rubberized coating.

Braided slings are often selected when loads must either be turned or maneuvered since the sling design creates friction to grip loads.

MULTI-PART BODY BRAIDED CONSTRUCTION

High flexibility is achieved by braiding, or plaiting, one or more wire ropes to form a fabric for the sling body. Component ropes run continuously through the body and eyes with ends hand-tucked into sling body or secured with pressed sleeves. The six-part sling is flat; the eight-part is round.



SUPER-FLEX HAND SPLICE

Each sling is hand-fabricated by laying together one or more ropes in a helical manner so component ropes run continuously through the eyes and sling body. The ends are then secured into the component rope with hand-tucked splices.



SUPER-FLEX MECHANICAL SPLICE

Three wire ropes are helically laid to form a three-part fabric, from which sling bodies of three or nine parts may be made by helically laying one or three parts of fabric together.

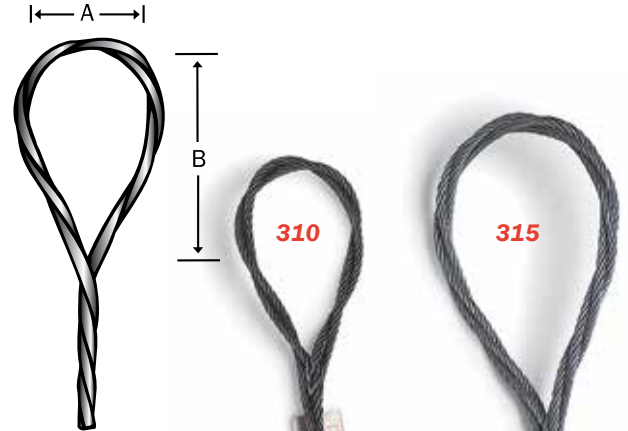
Mechanical splices form the eyes that provide centerline pull along the sling body. There are the same number of rope parts in the sling eyes as in the body.



Super-Flex® multi-part body, single leg slings

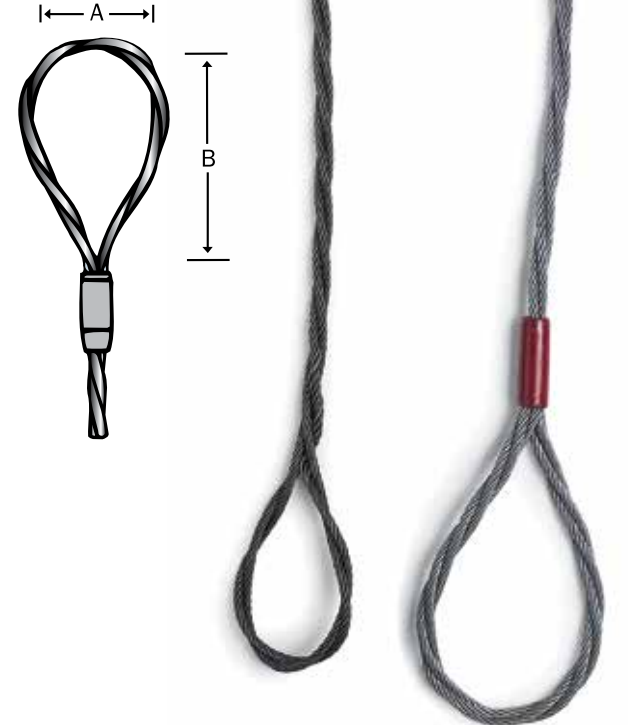
310-315* FC

	Rope Dia. (in.)	Sling Dia.	RATED CAPACITY-Tons**			Eye Dimensions		Slip Thru Thimble ST	Heavy Thimble HT
			Vert.	Choker Hitch***	Basket Hitch	A	B		
									
XIP® FC	#1/8	1/4	0.42	0.37	0.84	3	6	W-2	5/16
	3/16	3/8	0.72	0.63	1.4	3	6	W-2	7/16
	1/4	1/2	1.3	1.1	2.5	4	8	W-3	9/16
	5/16	5/8	2.0	1.7	3.9	4	8	W-4	3/4
	3/8	3/4	2.8	2.5	5.6	5	10	W-4	7/8
	7/16	7/8	3.8	3.3	7.6	6	12	W-5	7/8
	1/2	1	4.9	4.3	9.9	6	12	W-5	1
	9/16	1-1/8	6.2	5.5	12	7-1/2	15	W-6	1-1/8
	5/8	1-1/4	7.7	6.8	15	9	18	W-6	1-1/4
	3/4	1-1/2	11	9.6	22	10	20	W-7	1-3/8
	7/8	1-3/4	15	13	30	12	24	W-9	1-7/8
	1	2	19	17	39	15	30	W-9	2



310-315* IWRC

	Rope Dia. (in.)	Sling Dia.	RATED CAPACITY-Tons**			Eye Dimensions		Slip Thru Thimble ST	Heavy Thimble HT
			Vert.	Choker Hitch***	Basket Hitch	A	B		
									
XIP® IWRC	#1/8	1/4	0.42	0.37	0.84	3	6	W-2	5/16
	3/16	3/8	0.8	0.71	1.6	3	6	W-2	7/16
	1/4	1/2	1.4	1.2	2.9	4	8	W-3	9/16
	5/16	5/8	2.2	1.9	4.4	4	8	W-4	3/4
	3/8	3/4	3.2	2.8	6.3	5	10	W-4	7/8
	7/16	7/8	4.3	3.7	8.6	6	12	W-5	7/8
	1/2	1	5.6	4.9	11	6	12	W-5	1
	9/16	1-1/8	7.1	6.2	14	7-1/2	15	W-6	1-1/8
	5/8	1-1/4	8.7	7.6	17	9	18	W-6	1-1/4
	3/4	1-1/2	12	11	25	10	20	W-7	1-3/8
	7/8	1-3/4	17	15	33	12	24	W-9	1-7/8
	1	2	22	19	43	15	30	W-9	2
	1-1/8	2-1/4	27	24	55	16	32		
	1-1/4	2-1/2	34	29	67	16	32		
	1-3/8	2-3/4	40	35	81	20	40		
	1-1/2	3	48	42	96	22	44		
	1-5/8	3-1/4	55	49	111	22	44		
	1-3/4	3-1/2	64	56	129	24	48		
	1-7/8	3-5/8	73	64	146	24	48		
	2	4	83	73	166	28	56		



* 315 assemblies 1" and larger have single sleeve on component rope.

** Rated Capacities Basket Hitch based on D/d ratio of 25 times the component rope diameter.

Made with 7x19 GAC component rope.

Rated Capacities based on pin diameter no larger than natural eye width or less than the nominal sling diameter.

Rated Capacities based on design factor of 5.

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

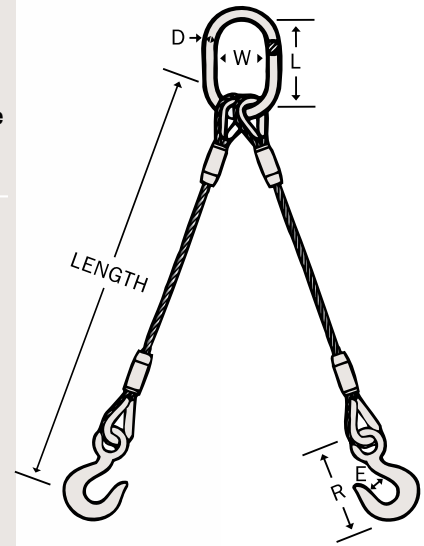
All capacities in tons of 2,000 lbs. All eye and fitting dimensions in inches.

*** See Choker Hitch Rated Capacity Adjustment on page 7.

Super-Flex® multi-part body, double leg slings

320-325* FC

	Rope Dia. (in.)	Sling Dia.	RATED CAPACITY – Tons**				Alloy Oblong Links			Slip Thru Thimble	Heavy Thimble
							D	L	W		
			Vert.	60°	45°	30°				ST	HT
XIP® FC	#3/32	3/16	0.42	0.36	0.30	0.21	1/2 W	5.00	2.80	-	-
	#1/8	1/4	0.84	0.73	0.59	0.42	1/2 W	5.00	2.80	W-2	5/16
	#3/16	3/8	1.8	1.5	1.2	0.88	1/2 W	5.00	2.80	W-2	7/16
	1/4	1/2	2.5	2.2	1.8	1.3	1/2 W	5.00	2.80	W-3	9/16
	5/16	5/8	3.9	3.4	2.8	2.0	5/8	6.00	3.00	W-4	3/4
	3/8	3/4	5.6	4.9	4.0	2.8	3/4 W	6.00	3.20	W-4	7/8
	7/16	7/8	7.6	6.6	5.4	3.8	1 W	7.00	4.30	W-5	7/8
	1/2	1	9.9	8.6	7.0	4.9	1 W	7.00	4.30	W-5	1
	9/16	1-1/8	12	11	8.8	6.2	1-1/4 W	9.50	5.50	W-6	1-1/8
	5/8	1-1/4	15	13	11	7.7	1-1/4 W	9.50	5.50	W-6	1-1/4
	3/4	1-1/2	22	19	16	11	1-1/2 W	10.50	5.90	W-7	1-3/8
	7/8	1-3/4	30	26	21	15	1-3/4	12.00	6.00	W-9	1-7/8
	1	2	39	33	27	19	1-3/4	12.00	6.00	W-9	2



320-325* IWRC

	Rope Dia. (in.)	Sling Dia.	RATED CAPACITY – Tons**				Alloy Oblong Links			Slip Thru Thimble	Heavy Thimble
							D	L	W		
			Vert.	60°	45°	30°				D	L
XIP® IWRC	#3/32	3/16	0.42	0.36	0.30	0.21	1/2 W	5.00	2.80	-	-
	#1/8	1/4	0.84	0.73	0.59	0.42	1/2 W	5.00	2.80	W-2	5/16
	#3/16	3/8	1.8	1.5	1.2	0.88	1/2 W	5.00	2.80	W-2	7/16
	1/4	1/2	2.9	2.5	2.0	1.4	1/2 W	5.00	2.80	W-3	9/16
	5/16	5/8	4.4	3.8	3.1	2.2	5/8	6.00	3.00	W-4	3/4
	3/8	3/4	6.3	5.5	4.5	3.2	7/8 W	6.38	3.75	W-4	7/8
	7/16	7/8	8.6	7.4	6.1	4.3	1 W	7.50	4.30	W-5	7/8
	1/2	1	11	9.7	7.9	5.6	1 W	7.50	4.30	W-5	1
	9/16	1-1/8	14	12	10	7.1	1-1/4 W	9.50	5.50	W-6	1-1/8
	5/8	1-1/4	17	15	12	8.7	1-1/4 W	9.50	5.50	W-6	1-1/4
	3/4	1-1/2	25	21	17	12	1-1/2 W	10.50	5.90	W-7	1-3/8
	7/8	1-3/4	33	29	24	17	1-3/4	12.00	6.00	W-9	1-7/8
	1	2	43	38	31	22	2	14.00	7.00	W-9	2

* 325 assemblies 1" and larger have single sleeve on component rope.

Made with 7x19 GAC component rope.

Rated Capacities based on pin diameter no larger than natural eye width or less than the nominal sling diameter.

Rated Capacities based on design factor of 5.

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

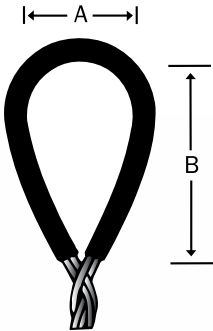
All capacities in tons of 2,000 lbs. All eye and fitting dimensions in inches.

** Rated Capacities Basket Hitch based on D/d ratio of 25 times the component rope diameter.

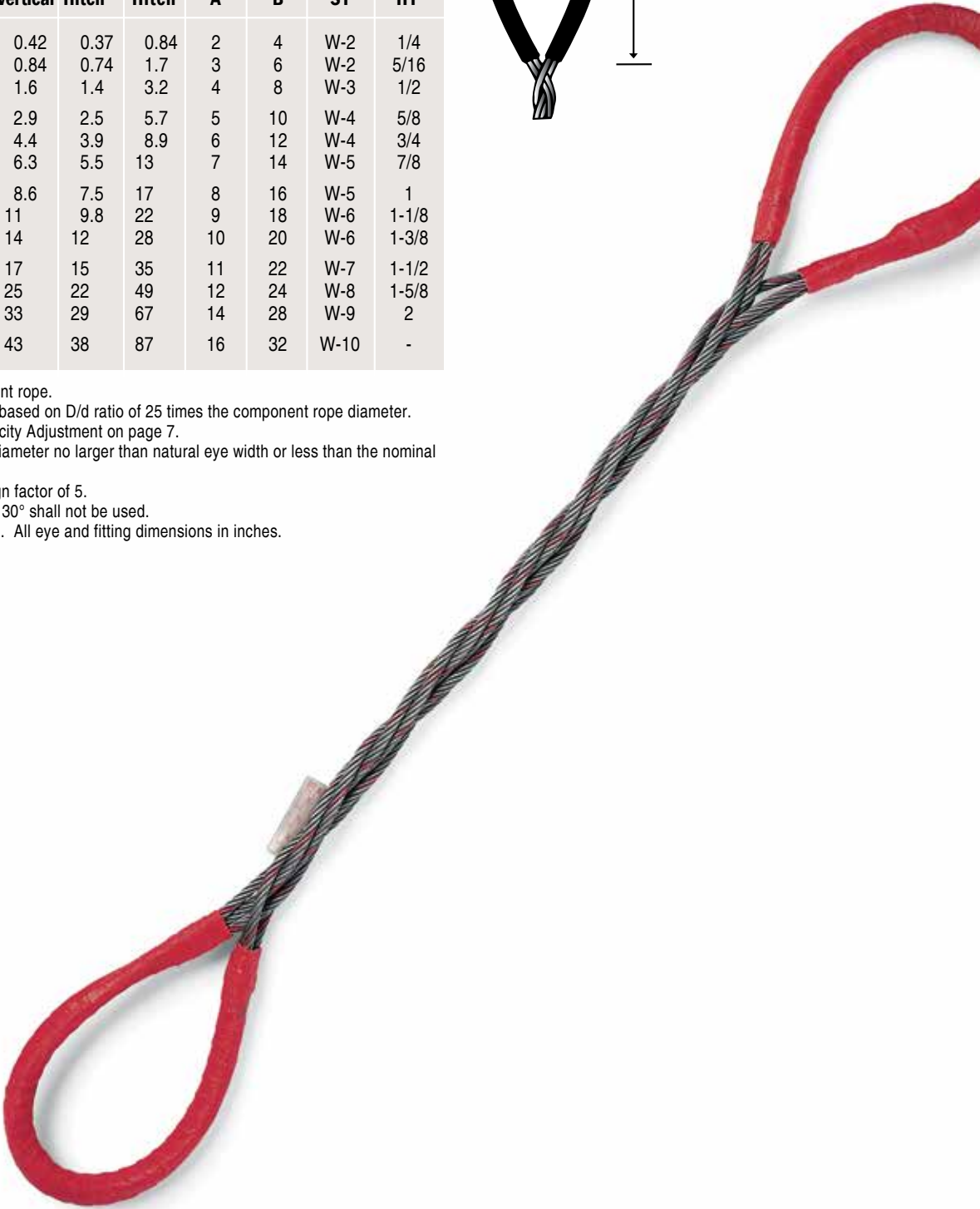
Super-Flex® 6-part body, round braided slings

615 SIX-PART FLAT BRAIDED SLING

	Rope Dia. (in.)	Width of Body	RATED CAPACITY – Tons*				Eye Dimensions		Slip Thru Thimble	Heavy Thimble
			Thickness of Body							
				Vertical	Hitch**	Basket Hitch				
XIP® IWRC	#3/32	7/16	1/4	0.42	0.37	0.84	2	4	W-2	1/4
	#1/8	9/16	3/8	0.84	0.74	1.7	3	6	W-2	5/16
	3/16	13/16	1/2	1.6	1.4	3.2	4	8	W-3	1/2
	1/4	1-1/8	11/16	2.9	2.5	5.7	5	10	W-4	5/8
	5/16	1-3/8	7/8	4.4	3.9	8.9	6	12	W-4	3/4
	3/8	1-11/16	1	6.3	5.5	13	7	14	W-5	7/8
	7/16	2	1-3/16	8.6	7.5	17	8	16	W-5	1
	1/2	2-1/4	1-5/16	11	9.8	22	9	18	W-6	1-1/8
	9/16	2-1/2	1-1/2	14	12	28	10	20	W-6	1-3/8
	5/8	2-13/16	1-11/16	17	15	35	11	22	W-7	1-1/2
	3/4	3-3/8	2	25	22	49	12	24	W-8	1-5/8
	7/8	4	2-5/16	33	29	67	14	28	W-9	2
	1	4-1/2	2-11/16	43	38	87	16	32	W-10	-



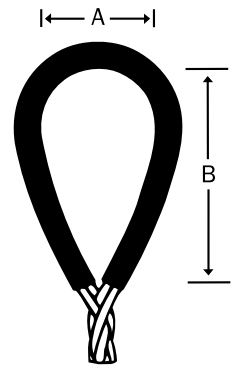
Made with 7x19 GAC component rope.
* Rated Capacities Basket Hitch based on D/d ratio of 25 times the component rope diameter.
** See Choker Hitch Rated Capacity Adjustment on page 7.
Rated Capacities based on pin diameter no larger than natural eye width or less than the nominal sling diameter.
Rated Capacities based on design factor of 5.
Horizontal sling angles less than 30° shall not be used.
All capacities in tons of 2,000 lbs. All eye and fitting dimensions in inches.



Super-Flex® 8-part body, round braided slings

815 EIGHT-PART ROUND BRAIDED SLING

	Rope Dia. (in.)	Sling Diameter	RATED CAPACITY – Tons*			Eye Dimensions		Slip Thru Thimble	Heavy Thimble
									
			Vertical	Choker Hitch**	Basket Hitch				
			A	B			ST	HT	
XIP® IWRC	#3/32	7/16	0.56	0.49	1.1	2	4	W-2	5/16
	#1/8	9/16	1.1	0.98	2.2	3	6	W-2	3/8
	3/16	13/16	2.2	1.9	4.3	4	8	W-3	1/2
	1/4	1-1/8	3.8	3.3	7.6	5	10	W-4	3/4
	5/16	1-3/8	5.9	5.2	12	6	12	W-5	1
	3/8	1-11/16	8.5	7.4	17	7	14	W-5	1-1/8
	7/16	2	11	10	23	8	16	W-6	1-1/4
	1/2	2-1/4	15	13	30	9	18	W-7	1-3/8
	9/16	2-1/2	19	16	38	10	20	W-7	1-1/2
	5/8	2-13/16	23	20	46	11	22	W-8	1-3/4
	3/4	3-3/8	33	29	66	12	24	W-9	2
	7/8	4	45	39	89	14	28	W-10	-
	1	4-1/2	58	51	116	16	32	W-10	-



Made with 7x19 GAC component rope.

* Rated Capacities Basket Hitch based on D/d ratio of 25 times the component rope diameter.

** See Choker Hitch Rated Capacity Adjustment on page 7.

Rated Capacities based on pin diameter no larger than natural eye width or less than the nominal sling diameter.

Rated Capacities based on design factor of 5.

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

All capacities in tons of 2,000 lbs. All eye and fitting dimensions in inches.

Super-Flex® 9-part body, round braided slings

LARGE CAPACITY 9-PART XIP® WIRE ROPE SLINGS

Flexibility and handling ease for rigging large lifts are the main benefits of the **9-PART SLINGS**. The 9-part sling is made by laying wire rope continuously through both eyes and the sling body. This results in a body formed with nine parts.

The improved efficiency of the 9-Part Super-Flex slings is backed with a proven design that provides internal adjustment to distribute the load among all nine parts of the sling body. The 9-part sling is made by laying wire rope components continuously through both eyes and the sling body. This results in a body with improved flexibility and handling

ease for rigging large lifts. Only two splices occur in the entire sling – where the component rope ends are spliced at the eyes. The sling construction makes it possible to easily inspect all parts of the sling before and after each lift, which is important to remember if the sling is to be used many times.

When a sling body must conform to a tight choke hitch or must bend in a tight radius, such as around a pin or post, a 9-part construction may be the most suitable since it can develop greater lifting capacity from a smaller component rope.

S91 NINE-PART WIRE ROPE SLING

XIP® IWRC Comp. Rope Dia. (in.)	Sling Body Dia. (in.)	RATED CAPACITY – Tons*								
		 Vert.	 Vert. Choker**	Basket Hitch & 2-Leg Bridles			Eye Dimensions		Weight	
				 Vert.	 60°	 45°	 30°	Eye Width (in.)	Eye Length (in.)	Pounds per foot (approx.)
1/4	1	4.9	4.3	10	8.5	6.9	4.9	6	12	1
5/16	1-1/4	7.6	6.6	15	13	11	8	6	12	2
3/8	1-1/2	11	10	22	19	15	11	7-1/2	13	3
7/16	1-3/4	15	13	29	25	21	15	9	18	4
1/2	2	19	17	38	33	27	19	10	20	5
9/16	2-1/4	24	21	48	42	34	24	12	24	6
5/8	2-1/2	30	26	59	51	42	30	12	24	8
3/4	3	42	37	85	73	60	42	15	30	11
7/8	3-1/2	57	50	115	99	81	57	17	34	15
1	4	74	65	149	129	105	74	20	40	20
1-1/8	4-1/2	94	82	187	162	132	94	22	44	25
1-1/4	5	115	101	230	199	163	115	25	50	31
1-3/8	5-1/2	138	121	276	239	195	138	27	54	38
1-1/2	6	164	144	328	284	232	164	30	60	45
1-5/8	6-1/2	190	166	380	329	269	190	32	64	53
1-3/4	7	220	193	441	382	312	220	35	70	61
1-7/8	7-1/2	251	219	501	434	354	251	37	74	70
2	8	285	249	570	494	403	285	40	80	80
2-1/4	9	356	311	711	616	503	356	45	90	101
2-1/2	10	435	381	870	753	615	435	50	100	125
2-3/4	11	455	398	910	788	643	455	55	110	151
3	12	536	469	1071	928	757	536	60	120	179
3-1/2	14	711	622	1421	1231	1005	711	70	140	244

* Rated Capacities Basket Hitch based on D/d ratio of 25 times the component rope diameter.

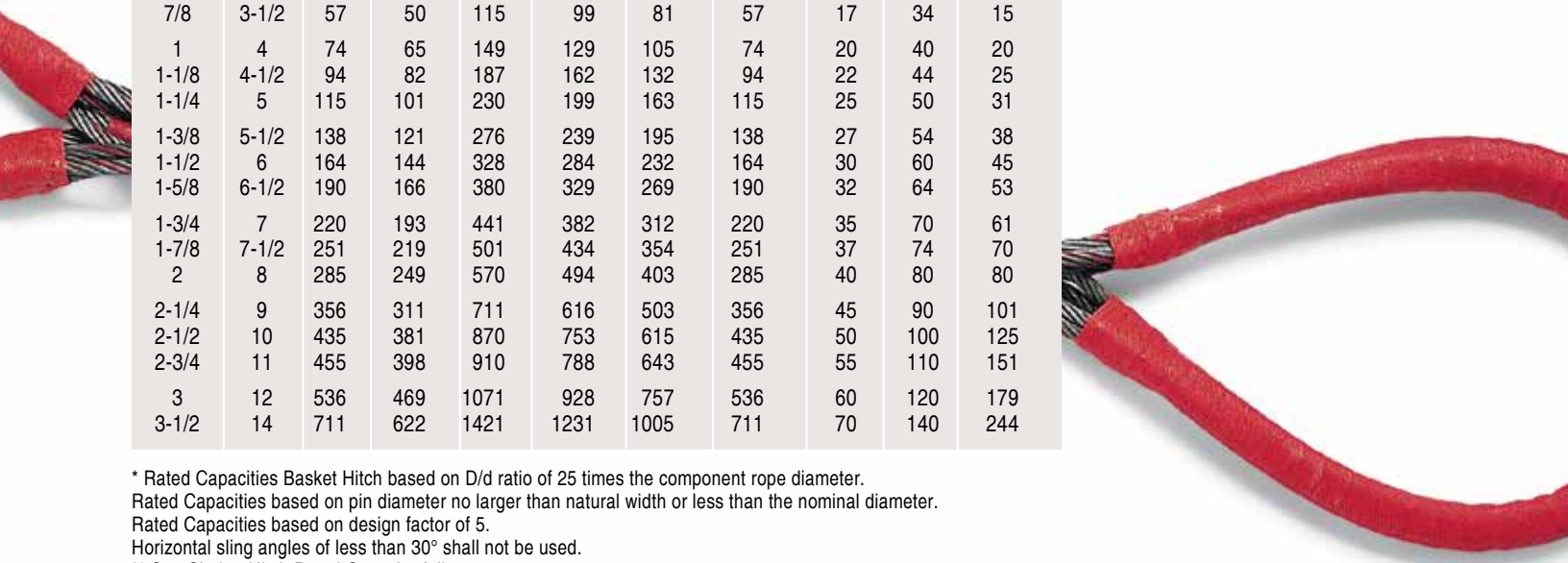
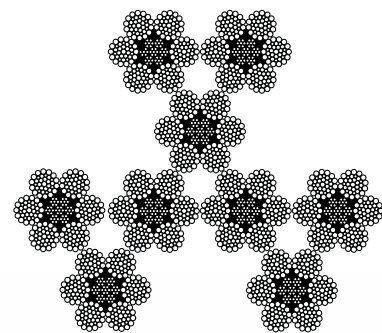
Rated Capacities based on pin diameter no larger than natural width or less than the nominal diameter.

Rated Capacities based on design factor of 5.

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

** See Choker Hitch Rated Capacity Adjustment on page 7.

All capacities in tons of 2,000 lbs. All eye and fitting dimensions in inches.



Grommet wire rope slings

HAND-SPLICE OR MECHANICAL SPLICE GROMMETS

Grommets either have a wire rope body or a body made up of six strands which are laid helically around a strand core. Either a hand-splice or a mechanical splice then forms an endless sling body.

The minimum circumference of the sling is 96 times the grommet's body diameter.

Rope-laid grommets are also available.

210 STRAND LAID HAND SPLICE

RATED CAPACITY – Tons*							
XIP® Sling Body Dia.	 Vertical	 Choker**	Basket Hitch and 2-Leg Bridle				
			 Vertical	 60°	 45°	 30°	
6X36 XIP® & 6X19 XIP®	1/4	0.94	0.66	1.9	1.6	1.3	0.94
	5/16	1.5	1.0	2.9	2.5	2.1	1.5
	3/8	2.1	1.5	4.2	3.6	3.0	2.1
	7/16	2.8	2.0	5.7	4.9	4.0	2.8
	1/2	3.7	2.6	7.3	6.4	5.2	3.7
	9/16	4.6	3.2	9.3	8.0	6.6	4.6
	5/8	5.7	4.0	11	9.9	8.1	5.7
	3/4	8.2	5.7	16	14	12	8.2
	7/8	11	7.7	22	19	16	11
	1	14	10	29	25	20	14
	1-1/8	18	12	35	31	25	18
	1-1/4	21	15	43	37	30	21
	1-3/8	25	18	51	44	36	25
	1-1/2	30	21	60	52	42	30
	1-5/8	34	24	69	60	49	34
	1-3/4	40	28	79	69	56	40
	1-7/8	45	31	89	77	63	45
	2	50	35	101	87	71	50
	2-1/8	56	39	112	97	79	56
	2-1/4	62	43	124	107	88	62
	2-3/8	68	48	137	118	97	68
	2-1/2	75	52	149	129	106	75
	2-3/4	89	62	177	154	125	89
	3	104	73	207	180	147	104

* Rated Capacities Basket Hitch and vertical lift based on D/d ratio of 5 when "d" = body diameter of the finished grommet.

Rated Capacities based on pin diameter no smaller than 5 times the body diameter.

Rated Capacities based on design factor of 5.

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

**See Choker Hitch Rated Capacity Adjustment on page 7.

All capacities in tons of 2000 lbs.

All diameter dimensions in inches.

215/715 MECHANICAL GROMMET

RATED CAPACITY – Tons*							
XIP® Sling Body Dia.	Vert.	Choker**	Basket Hitch and 2-Leg Bridle				
			Vert.	60°	45°	30°	
6 X 19 XIP® & 6 X 36 XIP® IWRC	1/4	1.1	0.74	2.1	1.8	1.5	1.1
	5/16	1.6	1.2	3.3	2.8	2.3	1.6
	3/8	2.4	1.6	4.7	4.1	3.3	2.4
	7/16	3.2	2.2	6.4	5.5	4.5	3.2
	1/2	4.1	2.9	8.3	7.2	5.9	4.1
	9/16	5.2	3.7	10	9.1	7.4	5.2
	5/8	6.4	4.5	13	11	9.1	6.4
	3/4	9.2	6.4	18	16	13	9.2
	7/8	12	8.7	25	22	18	12
	1	16	11	32	28	23	16
	1-1/8	20	14	41	35	29	20
	1-1/4	25	17	50	43	35	25
	1-3/8	30	21	60	52	42	30
	1-1/2	36	25	71	62	50	36
	1-5/8	41	29	82	71	58	41
	1-3/4	48	33	95	83	68	48
	1-7/8	54	38	109	94	77	54
	2	62	43	124	107	87	62
	2-1/8	69	48	138	119	98	69
	2-1/4	77	54	154	133	109	77
	2-3/8	85	60	171	148	121	85
	2-1/2	94	66	188	163	133	94
	2-3/4	113	79	225	195	159	113
	3	133	93	265	230	188	133

* Rated Capacities Basket Hitch and vertical lift based on D/d ratio of 5 when "d" = body diameter of the finished grommet.
 Rated Capacities based on pin diameter no smaller than 5 times the body diameter.
 Rated Capacities based on design factor of 5.
 Sling angles of less than 30° shall not be used.
 **See Choker Hitch Rated Capacity Adjustment on page 7.
 All capacities in tons of 2000 lbs.
 All diameter dimensions in inches.

270 CABLE LAID HAND SPLICE CONTINUOUS CONSTRUCTION

RATED CAPACITY – Tons*								
Sling Body Dia.	XIP® Comp. Rope Dia.			Basket Hitch and 2-Leg Bridle				
								
		Vert.	Choker**	Vert.	60°	45°	30°	
6 X 19 XIP® & 6 X 36 XIP®	7 X 7 X 7 GALVANIZED AIRCRAFT CABLE							
	3/8	1/8	1.6	1.1	3.2	2.8	2.3	1.6
	9/16	3/16	3.5	2.4	6.9	6.0	4.9	3.5
	5/8	7/32	4.5	3.1	9.0	7.8	6.4	4.5
	7 X 6 X 19 & 7 X 6 X 36 XIP®							
	3/4	1/4	5.6	3.6	11	9.7	7.9	5.6
	15/16	5/16	8.7	5.6	17	15	12	8.7
	1-1/8	3/8	12	8.0	25	21	17	12
	1-5/16	7/16	17	11	33	29	23	17
	1-1/2	1/2	21	14	43	37	30	21
	1-11/16	9/16	27	17	53	46	38	27
	1-7/8	5/8	33	21	66	57	46	33
	2-1/4	3/4	46	30	92	80	65	46
	2-5/8	7/8	62	40	123	107	87	62
	3	1	79	51	158	137	112	79
3-3/8	1-1/8	98	64	196	170	138	98	
3-3/4	1-1/4	119	77	237	205	168	119	

* Rated Capacities Basket Hitch and vertical lift based on D/d ratio of 5 when "d" = body diameter of the finished grommet.
 Rated Capacities based on pin diameter no smaller than 5 times the body diameter.
 Rated Capacities based on design factor of 5.
 Sling angles of less than 30° shall not be used.
 **See Choker Hitch Rated Capacity Adjustment on page 7.
 All capacities in tons of 2000 lbs.
 All diameter dimensions in inches.

Socket assemblies - custom fabricated

WIRE ROPE ASSEMBLIES WITH SWAGED AND SPELTER SOCKETS

Boom pendants, guylines, raising lines, backstays, lifting bridles and more. Those are the uses of our wire rope assemblies, offered in both poured (spelter) sockets and mechanically swaged sockets. A Design Factor of five has been used to establish the rated capacities seen in the charts.

When ordering your assemblies, please indicate your choice of end fittings on your purchase order by using the suffixes “OS” or “CS” after the model number. “OS” indicates your preference for an open socket fitting, while “CS” designates a closed fitting.

Pins and cotters are supplied as standard on open fittings only. Assemblies may be specified without pins. All fittings will be assembled with the pin holes in the same plane unless your order specifies otherwise.

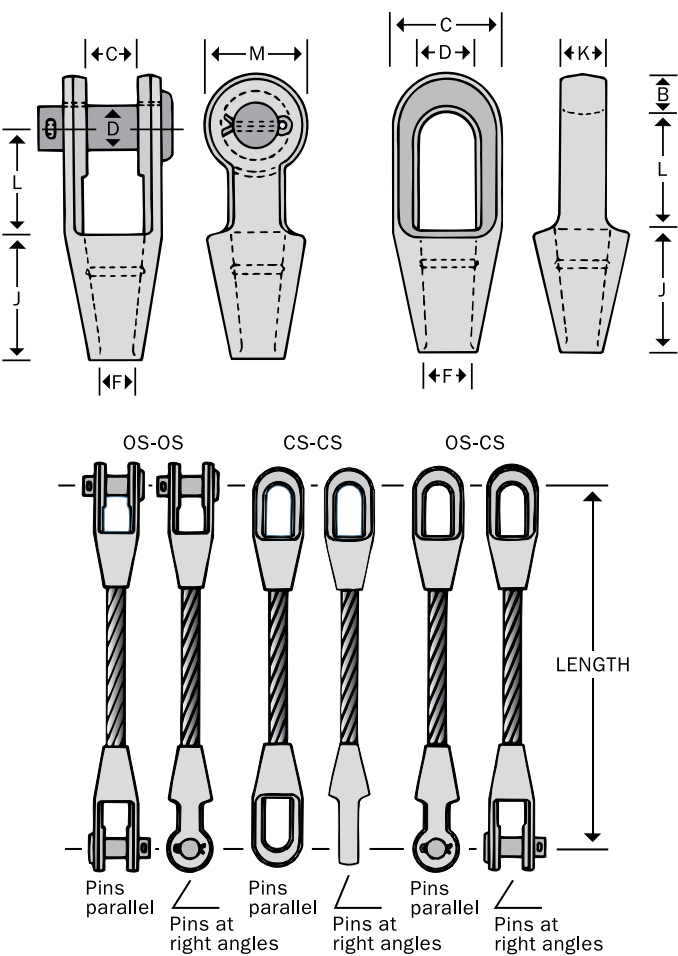
Both types of attachments develop 100% of the rope's minimum breaking force.

SPELTER SOCKET

Molten zinc is the standard socketing material, however, an epoxy socketing material can be specified. Both have the same Rated Capacity. Steel forgings are used on rope sizes 1/2” through 1-1/2” and cast steel fittings are used for larger sizes. Rope sizes larger than 4” are available on special order.

The assembly lengths are measured from the centerline point of the pin for open sockets and the bearing point for closed sockets.

110 SPELTER SOCKET



IWRC Rope Dia.	RATED CAPACITY In Tons of 2000 lbs.	
	XIP®	XXIP®
#1/2	2.7	2.9
9/16	3.4	3.7
5/8	4.1	4.5
3/4	5.9	6.5
7/8	8.0	8.8
1	10	11
1-1/8	13	14
1-1/4	16	18
1-3/8	19	21
1-1/2	23	25
1-5/8	26	29
1-3/4	31	34
1-7/8	35	38
2	40	43
2-1/8	44	49
2-1/4	49	54
2-3/8	55	60
2-1/2	60	66
2-5/8	66	73
2-3/4	72	79
2-7/8	78	86
3	85	94
3-1/8	92	101
3-1/4	98	108
3-3/8	106	116
3-1/2	113	124
3-5/8	120	132
3-3/4	128	141
4	144	159

110 OPEN SPELTER SOCKET

	Rope Diameter	C	D	F	J	L	M
FORGED STEEL	7/16-1/2	1.00	1.00	0.56	2.50	2.00	1.88
	9/16-5/8	1.25	1.19	0.69	3.00	2.50	2.25
	3/4	1.50	1.38	0.81	3.50	3.00	2.62
	7/8	1.75	1.63	0.94	4.00	3.50	3.13
	1	2.00	2.00	1.13	4.50	4.00	3.75
	1-1/8	2.25	2.25	1.25	5.00	4.62	4.12
	1-1/4-1-3/8	2.50	2.50	1.50	5.50	5.00	4.75
	1-1/2	3.00	2.75	1.63	6.00	6.00	5.38
CAST STEEL	1-5/8	3.00	3.00	1.75	6.50	6.50	5.75
	1-3/4-1-7/8	3.50	3.50	2.00	7.50	7.00	6.50
	2-2-1/8	4.00	3.75	2.25	8.50	9.00	7.00
	2-1/4-2-3/8	4.50	4.25	2.50	9.00	10.00	7.75
	2-1/2-2-5/8	5.00	4.75	2.88	9.75	10.75	8.50
	2-3/4-2-7/8	5.25	5.00	3.12	11.00	11.00	9.00
	3-3-1/8	5.75	5.25	3.38	12.00	11.25	9.50
	3-1/4-3-3/8	6.25	5.50	3.62	13.00	11.75	10.00
	3-1/2-3-5/8	6.75	6.00	3.88	14.00	12.50	10.75
	3-3/4-4	7.50	7.00	4.25	15.00	13.50	12.50

All dimensions in inches.

110 CLOSED SPELTER SOCKET

	Rope Diameter	B	C	D	F	J	K	L
FORGED STEEL	7/16-1/2	0.69	2.00	1.16	0.56	2.50	0.88	2.25
	9/16-5/8	0.81	2.63	1.41	0.69	3.00	1.00	2.50
	3/4	1.06	3.00	1.66	0.81	3.56	1.25	3.00
	7/8	1.25	3.63	1.88	0.94	4.00	1.50	3.50
	1	1.38	4.13	2.30	1.13	4.44	1.75	4.00
	1-1/8	1.50	4.50	2.56	1.25	5.00	2.00	4.50
	1-1/4-1-3/8	1.63	5.30	2.81	1.50	5.50	2.25	5.00
	1-1/2	1.94	5.33	3.19	1.63	6.00	2.50	6.00
CAST STEEL	1-5/8	2.13	5.75	3.25	1.75	6.50	2.75	6.50
	1-3/4-1-7/8	2.19	6.75	3.75	2.00	7.50	3.00	7.56
	2-2-1/8	2.44	7.63	4.38	2.25	8.50	3.25	8.56
	2-1/4-2-3/8	2.63	8.50	5.00	2.50	9.00	3.63	9.50
	2-1/2-2-5/8	3.12	9.50	5.50	2.88	9.75	4.00	10.62
	2-3/4-2-7/8	3.12	10.75	6.25	3.12	11.00	4.88	11.25
	3-3-1/8	3.25	11.50	6.75	3.38	12.00	5.25	11.75
	3-1/4-3-3/8	4.00	12.25	7.25	3.62	13.00	5.75	12.25
	3-1/2-3-5/8	4.00	13.00	7.75	3.88	14.00	6.25	13.00
	3-3/4-4	4.25	14.25	8.50	4.25	15.00	7.00	14.00

All dimensions in inches.



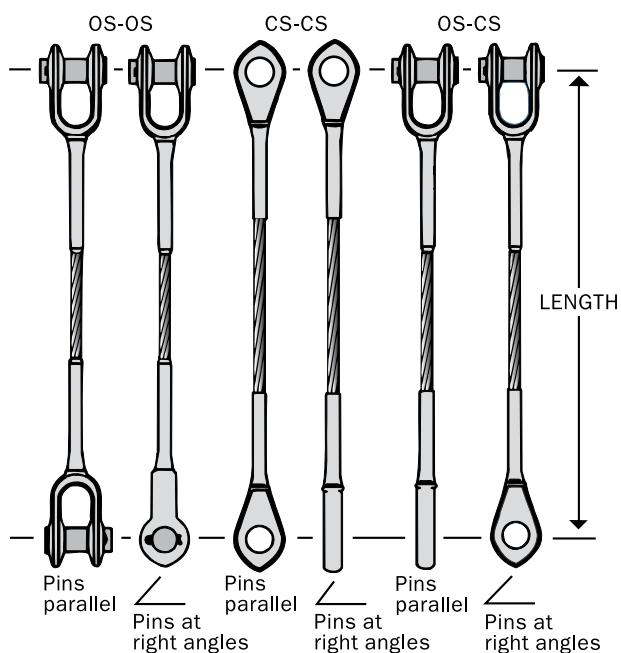
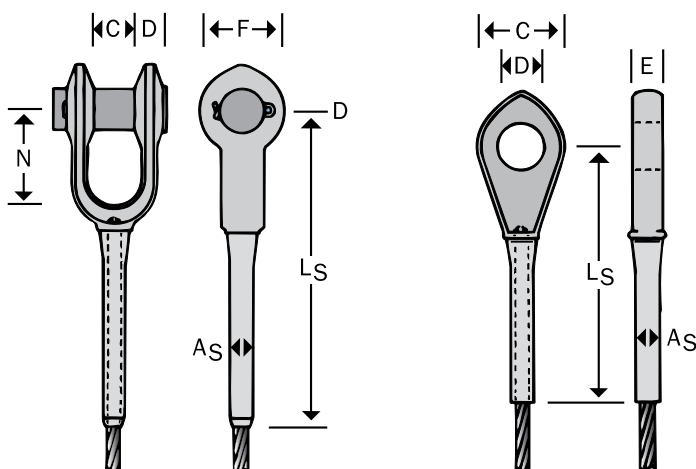
Socket assemblies - custom fabricated

SWAGED SOCKET

In mechanically swaged fittings, high pressure presses and precision dies cause the metal of the socket to flow around the wires and strands to result in the ultimate compactness and strength with minimum weight.

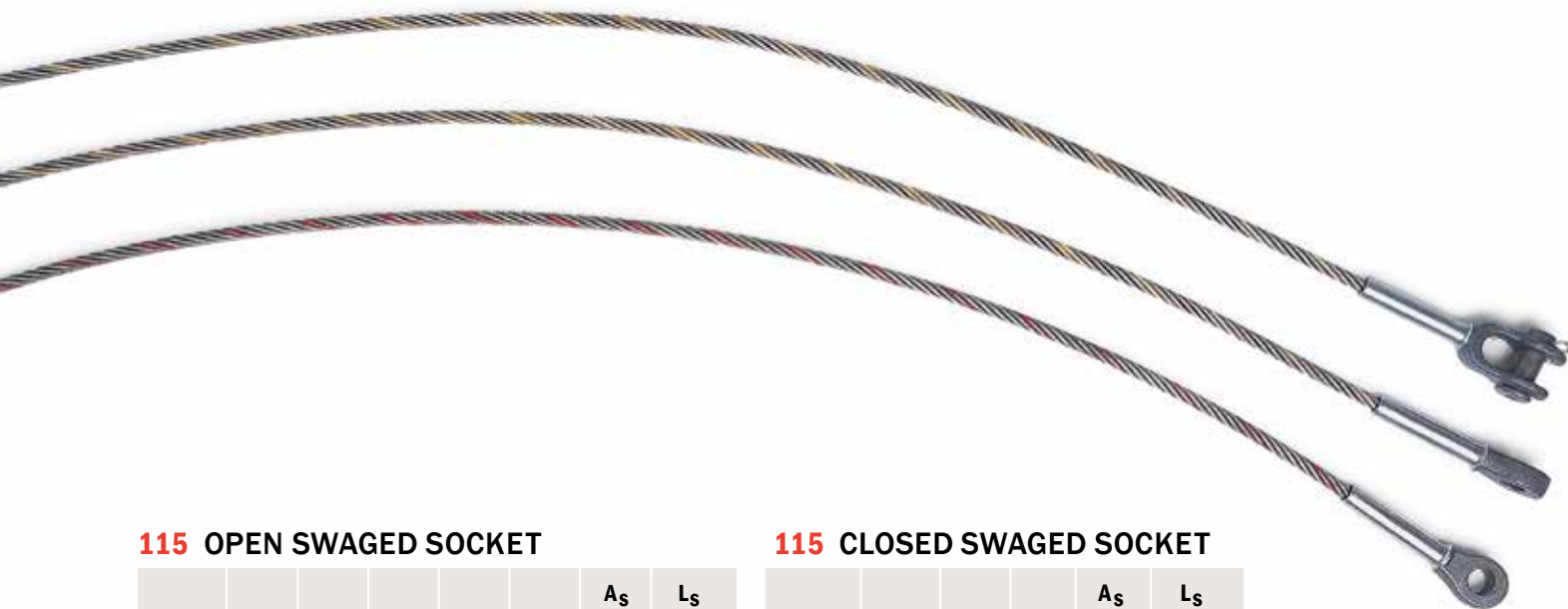
The material is weldless, drop-forged steel.

Normally, only regular lay rope is used in the swaged sockets. The swaged assemblies are interchangeable with poured sockets up through 2" rope diameters. Assembly length is measured from the centerline of pins for both open and closed swaged sockets.



115 SWAGED SOCKET

Rope Dia. (in.)	RATED CAPACITY In Tons of 2000 lbs.	
	XIP®	XXIP®
#1/2	0.68	0.74
5/16	1.1	1.2
3/8	1.5	1.7
7/16	2.0	2.2
1/2	2.7	2.9
9/16	3.4	3.7
5/8	4.1	4.5
3/4	5.9	6.5
7/8	8.0	8.8
1	10	11
1-1/8	13	14
1-1/4	16	18
1-3/8	19	21
1-1/2	23	25
1-3/4	31	34
2	40	43
2-1/4	49	54
2-1/2	60	66



115 OPEN SWAGED SOCKET

Rope Dia.	C	D	F	N	Pin	A _s Max. After Swage Dia.	L _s Approx. After Swage Length
1/4	0.69	0.38	1.38	1.47	0.69	0.46	4.25
5/16	0.81	0.47	1.62	1.67	0.81	0.71	5.50
3/8	0.81	0.47	1.62	1.67	0.81	0.71	5.50
7/16	1.00	0.56	2.00	1.96	1.00	0.91	7.00
1/2	1.00	0.56	2.00	1.96	1.00	0.91	7.00
9/16	1.25	0.68	2.38	2.21	1.19	1.16	8.50
5/8	1.25	0.68	2.38	2.21	1.19	1.16	8.50
3/4	1.50	0.78	2.75	2.69	1.38	1.42	10.50
7/8	1.75	0.94	3.13	3.20	1.62	1.55	12.25
1	2.00	1.06	3.69	3.68	2.00	1.80	14.00
1-1/8	2.25	1.19	4.06	4.18	2.25	2.05	15.75
1-1/4	2.50	1.22	4.50	4.64	2.50	2.30	17.25
1-3/8	2.50	1.38	5.00	5.25	2.50	2.56	19.00
1-1/2	3.00	1.69	5.50	5.70	2.75	2.81	20.75
1-3/4	3.50	2.11	6.69	6.67	3.50	3.06	24.25
2	4.00	2.37	8.00	8.19	3.75	3.56	28.25

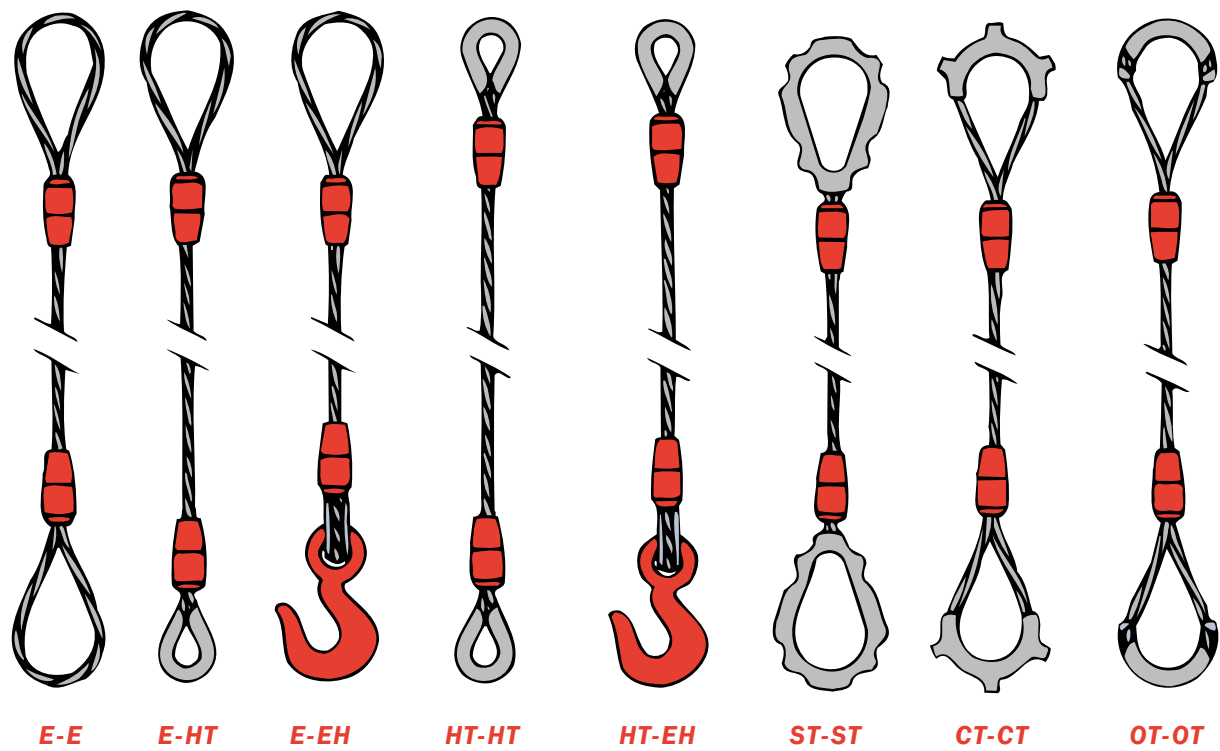
All dimensions in inches.

115 CLOSED SWAGED SOCKET

Rope Dia.	C	D	E	A _s Max. After Swage Dia.	L _s Approx. After Swage Length
1/4	1.38	0.75	0.50	0.46	3.75
5/16	1.62	0.88	0.67	0.71	4.75
3/8	1.62	0.88	0.67	0.71	4.75
7/16	2.00	1.06	0.86	0.91	6.00
1/2	2.00	1.06	0.86	0.91	6.00
9/16	2.38	1.25	1.13	1.16	7.75
5/8	2.38	1.25	1.13	1.16	7.75
3/4	2.88	1.44	1.31	1.42	9.25
7/8	3.12	1.69	1.50	1.55	10.75
1	3.63	2.06	1.75	1.80	12.25
1-1/8	4.00	2.31	2.00	2.05	13.50
1-1/4	4.50	2.56	2.25	2.30	15.25
1-3/8	5.00	2.56	2.25	2.56	16.75
1-1/2	5.50	2.81	2.50	2.81	18.00
1-3/4	6.25	3.56	3.00	3.06	21.25
2	7.25	3.81	3.25	3.56	24.25

All dimensions in inches.

Eyes, thimbles and hooks



- E-E**

Eye and eye
- E-HT**

Eye and heavy duty thimble
- E-EH**

Eye and hook
- HT-HT**

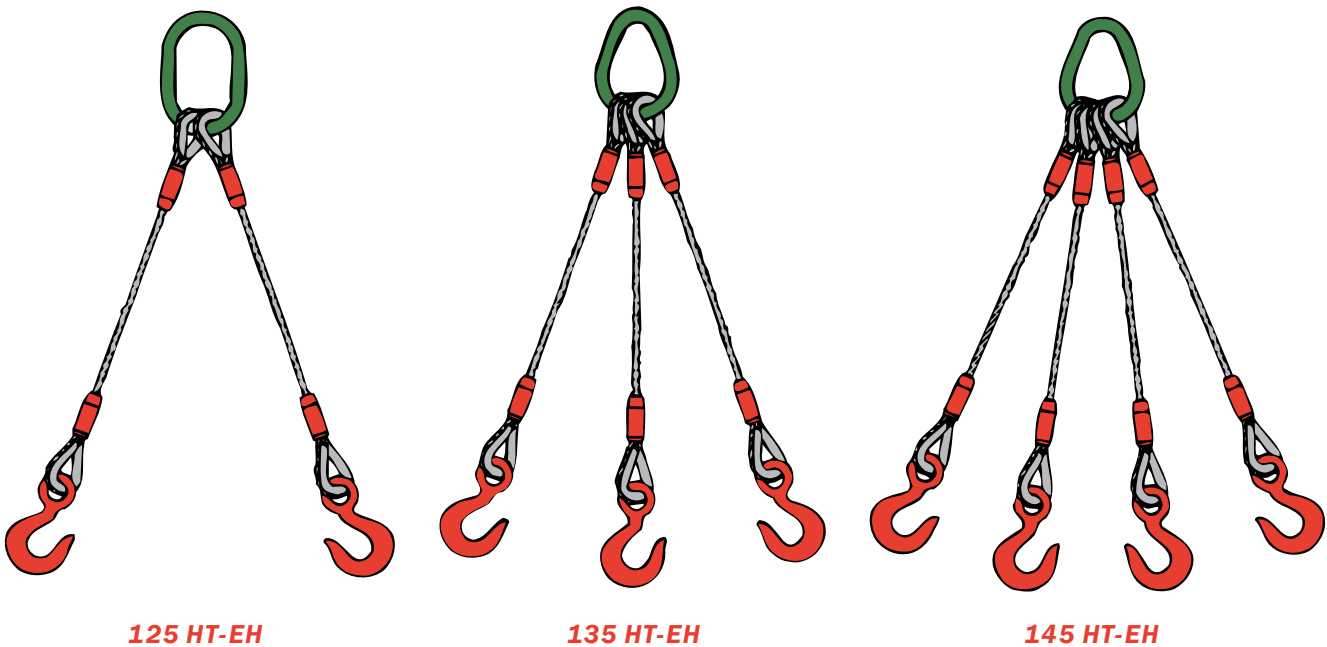
Heavy duty thimble – both ends
- HT-EH**

Heavy duty thimble and standard hook
- ST-ST**

Slip-thru thimble – both ends
- CT-CT**

Crescent thimbles installed in
standard eyes – both ends
- OT-OT**

Slip-on thimbles – both ends



Ordering information

HOW TO ORDER

All slings are fabricated to customer specifications. Therefore, your purchase order should contain the following specific details.

- > Sling model number
- > Sling length as indicated on schematics alongside tables
- > Component rope diameter
- > Eye treatments
- > Any special fittings, such as sliding choker hooks
- > Any other special requirements

Bridles will be fabricated with oblong alloy steel links unless otherwise specified

To minimize the chance for error in transmitting orders, use the model numbers given for each sling type, followed by the letter codes in the illustrations for indicating eye or end treatments.

For example, a type 110-ST-TH-HT choker would be a single-part, hand-spliced sling with a slip-through thimble (ST) in one eye, a sliding hook (TH) and a heavy-duty thimble (HT) in the other eye.

Standard sling eye designations are as indicated on the drawings at left for both mechanically and hand-spliced slings. Other combinations or other types of hooks or fittings can be specified.

The sling body length is the length of wire rope between splices, sleeves, or fittings.

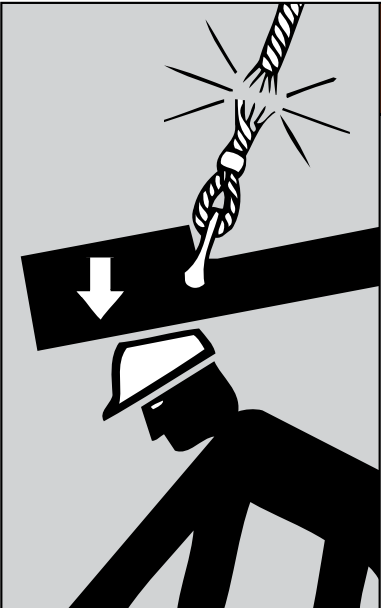
The standard minimum body length is ten times the sling body diameter. The standard minimum body length for multi-part slings between splices is equal to forty times the component rope diameter.

Metal tags are available upon request.

Protect yourself

Safety first: take special precautions. Before installing wire rope, wire rope slings or

assemblies in your applications, always read and follow the warning label attached to each product.





WARNING

Wire rope **WILL FAIL** if worn-out, overloaded, misused, damaged, improperly maintained or abused.

Wire rope failure may cause serious injury or death!

Protect yourself and others:

- ALWAYS INSPECT wire rope for WEAR, DAMAGE or ABUSE BEFORE USE.
- NEVER USE wire rope that is WORN-OUT, DAMAGED or ABUSED.
- NEVER OVERLOAD a wire rope.
- INFORM YOURSELF: Read and understand manufacturer's literature or "Wire Rope and Wire Rope Sling Safety Bulletin".*
- REFER TO APPLICABLE CODES, STANDARDS and REGULATIONS for INSPECTION REQUIREMENTS and REMOVAL CRITERIA.*

* For additional information or the *BULLETIN*, ask your employer or wire rope supplier.

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WARRANTY

Any warranty, expressed or implied as to quality, performance or fitness for use of WireCo WorldGroup products is always premised on the condition that the published strengths apply only to new, unused products, that the mechanical equipment on which such products are used is properly designed and maintained, that such products are properly stored, handled, used and maintained, and properly inspected on a regular basis during the period of use.

Seller shall not be liable under any circumstances for consequential or incidental damages or secondary charges including but not limited to personal injury, labor costs, a loss of profits resulting from the use of said products or from said products being incorporated in or becoming a component of any other product.

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