



SLINGMAKERS

Issue No. 114

Fall / Winter, 2007

Message from the President Fall 2007



J.C. Renfro & Sons, Inc.
Jacksonville, Florida
Toll Free 800.874.8454
Fa: 904.354.7865
www.jcrenfroe.com



What a remarkable fall meeting we enjoyed in Quebec! All the careful plans and attention to detail, for which our Executive Director, Jeff Gilbert, is so well-known, certainly were obvious. The hotel, the setting and the weather all blended to give us a memorable event!

Our speakers were a big draw and the committee, headed by Mike Parham, is to be commended. As the quality of our meetings continues to attract increased member attendance, we can consider ourselves fortunate and look for even more ways to encourage participation.

All of us in our daily lives search for and expect the best value for our investments. This year it's my goal and the commitment of your Board of Directors to do our best to provide additional value to your AWRP Membership in several ways:

- 1) We want to be more responsive. Look at the centerfold of the Slingmaker you are holding. You will find your board's pictures with all their contact information. Contact any of us. Tell us your ideas and let us know if you disagree with a plan or program. We want to serve you effectively.
- 2) To open the lines of communication even more, each committee will have at least one person from the general membership to act as a liaison. Talk to them!

- 3) We believe you will be better served by a trained and efficient board. Steps have been taken to establish a procedure whereby committee chairs will be given both training and experience to make the work more rewarding.

These plans will work only, if the membership participates. Each of you is needed. You have an important role to play in AWRP.

All our committees are at work preparing for the coming year. They are taking a hard look at their responsibilities and making needed changes in the organization of their work. Budgets will be renewed at the Winter Board Meeting in Charleston, South Carolina, the 25th and 26th of January, 2008. We are looking forward to this time working together.

February 15th, 16th, and 17th, 2008 will see the Technical Committee meeting in Savannah, Georgia. The full committee meetings are open to AWRP members as observers. If you have never been to one, this may be a good year for that. Please participate! Give Don Pellow a call and express your desire to attend.

March 14th, 2008 is the Government Affairs briefing in Washington, DC. Here is another opportunity to take part in an AWRP program, which can be a real benefit to your business. Give Jeff Gilbert or Barry Epperson a call for details. It is also a great time to make appointments to

Continued on pg 41

Table of contents located on page 3

ASSOCIATED WIRE ROPE FABRICATORS

"An association serving the
lifting, rigging, and load securement industry"



P.O. BOX 748 ■ WALLED LAKE, MI 48390

1-800-444-2973

PHONE: 1-248-994-7753 ■ FAX: 1-800-666-2973

e-mail: awrf@att.net ■ website: www.awrf.org

WE'VE TAUGHT AN OLD "DAWG" NEW TRICKS

In addition to the innovation, high quality and broad product offering associated with the IP line of plate clamps, **Crosby IP** LIFTING CLAMPS provide several key benefits only available from Crosby.



IPU10
Universal
Vertical



IPNM
Non Marring



IP10
Vertical

- **One Stop Shopping** – Clamps are now a part of the most complete product line available in the industry.
- **Industry Leading Training** – IP's Quality training materials have been upgraded to Crosby's standards, *the industry standard.*
- **Industry Leading Support** – The industry's leading customer service department, field sales staff and technical support.

Table of Contents

Presidents Letter **Cover**

Quebec **4**

**The Government Affairs
Committee** **7**

Guidance on Safe Sling Use **9**

Profit Improvement Report **15**

Your Safety Committee at Work **19**

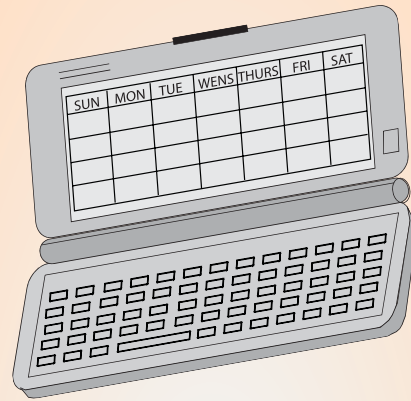
AWRF Scholarship Winners **27**

Board Of Directors **30**

Arthur Lakes Library **33**

News About Members **35**

A.W.R.F CALENDAR



2008

January 20-23	ASME B30 Meeting New Orleans, LA
January 25-26	AWRF BOD Meeting Charleston, NC
February 12-13	AWRF Tech Committee Meeting Savannah, GA
April 13-16	AWRF General Meeting Fairmont Hotel San Francisco, CA
May 19-20	ASME B30 Seattle, WA
June	Wire Rope Technical Board
July 13-19	AWRF BOD Meeting Asheville, NC
September	ASME B30 Louisville, KY
September 14-17	General Meeting PIE Chicago, IL Sheraton Chicago Hotel and Towers





AVAILABLE FROM STOCK

A moving story from RenfroeToo



Move mountains using the load moving system that's as solid as a rock. Depend on it. It's Renfroe. Our SG iron load movers can handle 5 – 100 tons. Each comes with a load of benefits assured to move you to RenfroeToo. Our load moving system features the same quality and dependability of all of our Renfroe products. Follow the leaders. Ask for RenfroeToo.

- Includes steerable front section
- Independent rear trolleys
- Load ranges from 5 to 100 tons
- Industrial floor-friendly composite wheels
- Easy to assemble and store

 **RENFROETOO's new**
LOAD-MOVING SYSTEMS
IT'LL TAKE A LOAD OFF YOUR MIND

J.C. Renfroe & Sons, Inc. Jacksonville, Florida • Toll Free 800.874.8454 • Fax 904.354.7865 • www.jcrenfroe.com

THE GOVERNMENT AFFAIRS COMMITTEE

By: J. Barry Epperson,
General Counsel and
Chairman of Government
Affairs Committee



TWO LIFTS – FIFTY YEARS

The year 2007 marks Oklahoma's one hundredth year of statehood. Fifty years ago in commemoration of the State's fiftieth anniversary, a brand new 1957 gold and white Plymouth Belvedere automobile was buried in a time capsule with other historical artifacts on the lawn of the Tulsa County Courthouse. On June 15, 2007, this author in the company of hundreds of other celebrants, witnessed the unearthing of that same vehicle in centennial reverence. Notwithstanding some disconcerting preemptive news that water leakage had badly corroded and rusted the Belvedere, there was considerable anticipation among the rather eclectic assembly of viewers.

Earlier, in preparation for the technicalities of the event, it was discovered that the company which had performed the 1957 craning and rigging job was out of business. After bids, the 2007 lifting work was awarded to Taylor Crane & Rigging (TCR) of Tulsa, which had volunteered to donate its time and skills. During the planning stages it became apparent from old photographs that the technology and equipment employed in 1957 would be considered unsafe and obsolete by today's standards. Without the benefit of drawings and because of the probability of decay, the decision was made to custom design, engineer and fabricate new and unique gear to insure a safe, professional lift.

Following the preparation of a modern engineering analysis and structural design plan, (gratuitously supplied by Payne-Huber Engineering) TCR fabricated custom designed spreader-lifter beams and staged a test lift on an identical 1957 Belvedere with a comparable center of gravity.

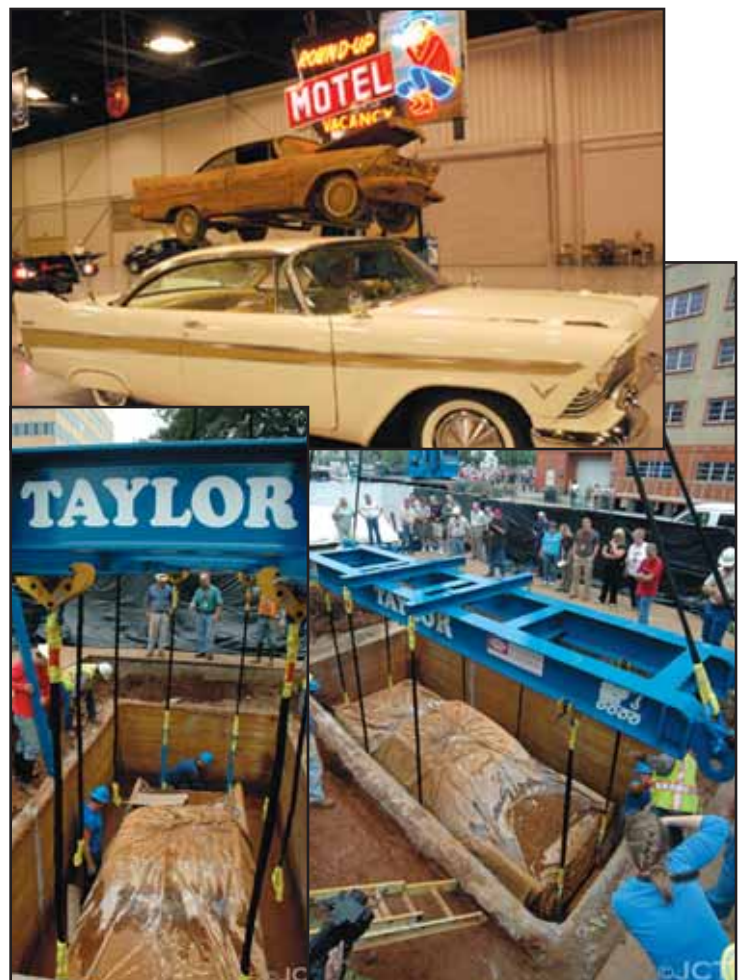
After several days of excavation, Couch Construction Company was able to dig to the vault and remove the lids. The day before "lift off", the site was prepped and the crane boomed. Two lifting beams were lowered under the car frame, and slings were rigged to the spreader-lifting beam and then to the original frame and the new beams. In secrecy, a preliminary and partial test went smoothly and the vehicle was tucked back in the vault for the main event the next day.

On June 15, 2007, before an anxious crowd, the city officials, centennial dignitaries and media personnel gathered. My partners and I looked on from our office balcony across the street. The mayor ordered "Start your engines" and the middle-aged Belvedere inched her way upward in a textbook resurrection. A hearty applause resonated as the vehicle was loaded onto a trailer and

paraded away to the Tulsa Convention Center where she was bathed and showcased.

Although the car was rusted and corroded, the items of memorabilia in the time capsule were in perfect condition. Included was a list of the 812 entries in a contest in which the participants tendered predictions of the future population of Tulsa in 2007. The winner of the contest (and thus the car) was declared to be career Marine NCO Raymond Humbertson, who happened to be passing through Tulsa in the summer of 1957 en route to visit his grandfather. His closest living relatives today, 83-year-old Catherine Johnson and LaVada Humphrey, age 93, of Bowling Green, are the proud, if somewhat befuddled, owners of the rusty celebratory, Miss Belvedere of 1957. She is for sale to the highest bidder.

See video highlights of the lift at www.tulsaworld.com/buriedcar and www.taylorcrane.com. Any AWRP member who furnished components for the lift is invited to inform the author by email to jbarrye@sbcglobal.net.



*Leave Your Heart (or not) But Don't Miss
the AWRF Spring General Meeting
April 13-16, 2008*



*The Fairmont
San Francisco, California*



Registration begins February 15, 2008

Guidance On Safe Sling Use

All tables and figures are on pages 45-48.

1) Alloy Steel Chain Slings:

Alloy steel chains are often used because of their strength, durability, abrasion resistance and ability to conform to the shape of the loads on which they are used. In addition, these slings are able to lift hot materials.

Alloy steel chain slings are made from various grades of alloy, but the most common grades in use are grades 80 and 100. These chains are manufactured and tested in accordance with ASTM (American Society for Testing and Maintenance) guidelines. If other grades of chain are used, use them in accordance with the manufacturer's recommendations and guidance.

Identification:

New slings are marked by the manufacture to show:

- Size,
- Grade,
- The rated load, and
- Length (reach).

In addition, slings may be marked to show:

- Number of legs,
- Individual sling identification (i.e., serial number), and
- The name or trademark of the manufacturer.

Rated Loads:

Rated loads (capacities) for single-, double-, triple- and quadruple-leg slings and single- and double-basket slings used in vertical, bridle, or basket hitches are given in Tables 1 and 2 for the horizontal angles listed.

For angles not shown, use the next lower angle or have a qualified person calculate the rated load for the new angle. Rated loads are based on:

- Material strength,
- Design factor,
- Type of hitch,
- Angle of loading,
- Diameter of curvature over which the sling is used (D/d) (see Fig. 4), and
- Fabrication efficiency.

Do not use horizontal angles less than 30 degrees except as recommended by the sling manufacturer or a qualified person.

Rated loads for single-, double-, triple-, and quadruple-leg slings used in a choker hitch are given in Tables 3 and 4 for the horizontal angles listed provided that the angle of choke is greater than 120 degrees (see Fig. 1). For angles of choke less than 120 degrees, use the rated loads provided by the sling manufacturer or a qualified person.

For other materials and for configurations not shown, use the rated loads according to the sling manufacturer or a qualified person.

Attachments:

Only use attachments, such as hooks, rings, oblong links, pear-shaped links, or welded or mechanical coupling links that have a rated capacity at least equal to that of the alloy steel chain with which they are used. If attachments with rated capacities lower than the chain are used, ensure that the sling is rated to the weakest component used on the sling.

Inspections:

Designate a qualified person¹ to inspect slings and all fastenings and attachments each day before use for damage or defects.

This qualified person also performs additional periodic inspections where service conditions warrant, as determined on the basis of:

- Frequency of sling use,
- Severity of service conditions,
- Nature of the lifts being made, and
- Experience gained during the service life of slings used in similar circumstances.

Make periodic inspections of alloy steel chains slings at intervals no greater than 12 months. A good guide to follow includes:

- Yearly for normal service use,
- Monthly to quarterly for severe service use, and
- As recommended by a qualified person for special and infrequent service use.

Develop a system to make sure that these inspections are conducted. To do this, you can use a recordkeeping system, such as logs or marking the inspection date on a tag attached to the sling.^[2]

Make a thorough inspection of slings and attachments. Items to look for include:

- Wear;
- Defective welds,
- Nicks, cracks, breaks, gouges, stretch, bends, discoloration due to excessive heat,
- Excessive pitting or corrosion,
- Throat opening of hooks,
- Missing or illegible sling identifications, and
- Other conditions that cause doubt as to continued safe use of the sling.

Where any such defect or deterioration is present, remove the sling or attachment from service immediately.

Repairing/Reconditioning:

Do not use worn or damaged alloy steel chain slings or attachments. Discard or repair them. Use damaged slings only after they are repaired, reconditioned, and proof tested by the sling manufacturer or a qualified person using the following criteria:

- Ensure that slings and attachments conform to the original strength requirements,
- Mark those slings or attachments to identify who made the repairs,
- Replace rather than repair cracked, broken, or bent links, and
- Do not use mechanical coupling links or carbon steel repair links to repair broken lengths of alloy chain.

Operating practices:

Do not use alloy steel slings with loads exceeding the rated loads (capacities) described in Tables 1 and 3 for grade 80 or Tables 2 and 4 for grade 100. Ensure that alloy steel chain slings not included in these tables are used only in accordance with the manufacturer's recommendations. Follow other safe operating practices, including:

Sling Selection

- For multiple-leg slings used with nonsymmetrical loads, ensure that an analysis by a qualified person is performed to prevent overloading of any leg,
- Ensure that multiple-leg slings are selected according to Table 1 or 2 when used at the specific angles given in the tables. Ensure that operations at other angles are limited to the rated load of the next lower angle given in the tables or calculated by a qualified person, and

- Do not use a component unless it is the proper shape and size to ensure that it is properly seated in the hook or lifting device.

Cautions to Personnel

- Ensure that all portions of the human body are kept away from the areas between the sling and the load and between the sling and the crane or hoist hook,
- Ensure that personnel never stand in line with or next to the legs of a sling that is under tension,
- Ensure that personnel do not stand or pass under a suspended load, and
- Ensure that personnel do not ride the sling or the load, unless the load is specifically designed and tested for carrying personnel.

Effects of Environment

- Store slings in an area where they will not be subjected to mechanical damage, corrosive action, moisture, extreme temperatures, or to kinking, and
- When slings are exposed to extreme temperatures, follow the guidance provided by the sling manufacturer or qualified person.

Rigging Practices

- Ensure that slings are hitched in a manner providing control of the load,
- Ensure that sharp edges in contact with slings are padded with material of sufficient strength to protect the sling,
- Ensure that slings are shortened or adjusted only by methods approved by the sling manufacturer or a qualified person,
- Ensure that, during lifting with or without a load, personnel are alert for possible snagging,
- Ensure that, in a basket hitch, the load is balanced to prevent slippage,
- When using a basket hitch, ensure that the legs of the sling contain or support the load from the sides, above the center of gravity, so that the load remains under control,
- Ensure that, in a choker hitch, the choke point is only on the sling body, never on a fitting,
- Ensure that, in a choker hitch, an angle of choke less than 120 degrees is not used without reducing the rated load,
- Ensure that slings are not constricted, bunched, or pinched by the load, hook, or any fitting,
- Ensure that the load applied to the hook is centered in the base (bowl) of the hook to prevent point loading on the hook, unless the hook is designed for point loading,
- Do not shorten or lengthen a sling by knotting or twisting,
- Do not rest loads on the sling,
- Do not pull a sling from under a load when the load is resting on the sling,
- Do not drag slings on the floor or over abrasive surfaces,
- Do not allow shock loading, and
- Avoid twisting and kinking.

Proof testing:

Before initial use of a sling, ensure that every component of a new, repaired, or reconditioned alloy steel chain sling has been proof tested by the sling manufacturer or a qualified person and meets the requirements of the American Society of Testing and Materials Specification A391-65.

Retain the certificates of proof test and make them available for examination.^[2]

Environmental Effects:

Do not use alloy steel chains that have been heated above 1,000 degrees F (538 degrees C). Remove them from service.

Alloy chain slings exposed to temperatures above 400 degrees F (205 degrees C) have reduced load ratings. Reductions in rated load for Grade 80 and Grade 100 chain slings used at and after exposure to elevated temperatures are given in Table 5.

If chain slings are to be used at temperatures below minus 40 degrees F (minus 40 degrees C), consult the chain manufacturer.

The strength of alloy steel chain slings can be affected by chemically active environments. Consult the manufacturer before the sling is to be used in chemically active environments.

Effects of wear:

Do not use chains if the size at any point of a link is less than that stated in Table 6. Remove the sling from service.

2) Wire Rope Slings:

Wire rope is often used in slings because of its strength, durability, abrasion resistance and ability to conform to the shape of the loads on which it is used. In addition, wire rope slings are able to lift hot materials.

Wire rope used in slings can be made of ropes with either Independent Wire Rope Core (IWRC) or a fiber-core. It should be noted that a sling manufactured with a fiber-core is usually more flexible but is less resistant to environmental damage. Conversely, a core that is made of a wire rope strand tends to have greater strength and is more resistant to heat damage.

Wire rope may be manufactured using different rope lays. The lay of a wire rope describes the direction the wires and strands are twisted during the construction of the rope. Most wire rope is right lay, regular lay. This type of rope has the widest range of applications. Wire rope slings may be made of other wire rope lays at the recommendation of the sling manufacturer or a qualified person.

Wire rope slings are made from various grades of wire rope, but the most common grades in use are Extra Improved Plow Steel (EIPS) and Extra Extra Improved Plow Steel (EEIPS). These wire ropes are manufactured and tested in accordance with ASTM guidelines. If other grades of wire rope are used, use them in accordance with the manufacturer's recommendations and guidance.

When selecting a wire rope sling to give the best service, consider four characteristics: strength, ability to bend without distortion, ability to withstand abrasive wear, and ability to withstand abuse.

Identification:

New slings are marked by the manufacture to show:

- The rated load for the types of hitches, and the angle upon which they are based,
- The diameter or size, and
- The name or trademark of the manufacturer.

Rated loads:

Rated loads (capacities) for single-leg vertical, choker, basket hitches, and two-, three-, and four-leg bridle slings for specific grades of wire rope slings are as shown in Tables 7 through 15.

For angles not shown, use the next lower angle or a qualified person to calculate the rated load. Rated loads are based on:

- Material strength,
- Design factor,
- Type of hitch,
- Angle of loading,
- Diameter of curvature over which the sling is used (D/d) (see Fig. 4), and
- Fabrication efficiency.

Do not use horizontal angles less than 30 degrees except as recommended by the sling manufacturer or a qualified person.

Rated loads for a sling in a choker hitch are the values shown in Table 7, 9, 11, 13, 14, or 15, provided that the angle of the choke is 120 degrees or more (Fig. 2). Use the values in Fig. 2 or those from the sling manufacturer or a qualified person for angles of choke less than 120 degrees.

For other materials and for configurations not shown, use the rated loads provided by the sling manufacturer or a qualified person.

Configurations:

- Ensure that slings made of rope with 6x19 and 6x37 classifications and cable slings have a minimum clear length of rope 10 times the component rope diameter between splices, sleeves, or end fittings unless approved by a qualified person,
- Ensure that braided slings have a minimum clear length of rope 40 times the component rope diameter between the loops or end fittings unless approved by a qualified person,
- Ensure that grommets and endless slings have a minimum circumferential length of 96 times the body diameter of the grommet or endless sling unless approved by a qualified person, and
- You may use other configurations if specific data is supplied by the manufacturer or a qualified person.

End attachments:

Perform welding of handles or other accessories to end attachments, except covers to thimbles, before assembly of the sling. Ensure that welded end attachments are proof tested by the manufacturer or a qualified person. Retain the certificates of proof test and make them available for examination.² Use components such as sleeves and sockets in accordance with the manufacturer's recommendation.

Wire rope clips and hooks:

- Do not use knots to fabricate your own slings,
- Do not use wire rope clips to fabricate wire rope slings, except where the application precludes the use of prefabricated slings and where the sling is designed for the specific application by a qualified person,
- Install wire rope clips according to the recommendations of the manufacturer or a qualified person,
- Do not use slings made with wire rope clips in a choker hitch,
- Use only wire rope clips made from drop-forged steel of the single-saddle (U-bolt) or double-saddle type clip,
- Do not use malleable cast iron clips to fabricate slings,
- Refer to the clip manufacturer for spacing, number of clips, and torque values,
- Attach U-bolts to wire rope clips with the U-bolt over the dead end of the rope and the live rope resting in the clip saddle,
- Tighten clips evenly to the recommended torque before and after the initial load is applied,
- Regularly inspect clips to ensure that the recommended torque remains, and
- Inspect clips periodically for wear, abuse, or damage.

Inspections:

Designate a qualified person¹ to inspect slings and all fastenings and attachments each day before use for damage or defects.

The qualified person also performs additional periodic inspections where service conditions warrant, as determined on the basis of:

- Frequency of sling use,
- Severity of service conditions,
- Nature of the lifts being made, and
- Experience gained during the service life of slings used in similar circumstances.

Make periodic inspections of wire rope slings at intervals no greater than 12 months. A good guide to follow includes:

- Yearly for normal service use,
- Monthly to quarterly for severe service use, and
- As recommended by a qualified person for special and infrequent service use.

Although OSHA's sling standard does not require you to make and maintain records of inspections, the ASME standard contains provisions on inspection records.^[3]

Make a thorough inspection of slings and attachments. Items to look for include:

- Broken wires,^[4]
- Severe localized abrasion or scraping,
- Kinking, crushing, bird caging, or any other damage to the rope structure,
- Evidence of heat damage,
- Crushed, deformed, or worn end attachments,
- Severe corrosion of the rope, end attachments or fittings,
- Missing or illegible sling identifications, and
- Other conditions that cause doubt as to continual safe use of the sling.

Where any such defect or deterioration is present, remove the sling or attachment from service immediately.

Repairing/Reconditioning:

Do not use worn or damaged slings or attachments. Discard or repair them.

Use damaged slings only after they are repaired, reconditioned, and proof tested by the sling manufacturer or a qualified person using the following criteria:

- Do not repair wire rope used in the sling,
- Restrict all repairs to end attachments and fittings, and
- Mark repaired slings to identify who made the repairs.

Modifications or alterations to end attachments or fittings are considered a repair.

Operating practices:

Ensure that wire rope slings have suitable characteristics for the type of load, hitch, and environment in which they will be used and that they are not used with loads in excess of the rated load capacities described in the appropriate tables. When D/d ratios (Fig. 4) are smaller than those listed in the tables, consult the sling manufacturer. Follow other safe operating practices, including:

Sling Selection

- For multiple-leg slings used with nonsymmetrical loads, ensure that an analysis by a qualified person is performed to prevent overloading of any leg,

- Ensure that multiple-leg slings are selected according to Tables 7 through 15 when used at the specific angles given in the tables. Ensure that operations at other angles are limited to the rated load of the next lower angle given in the tables or calculated by a qualified person,
- When using a multiple-leg sling, ensure that the rating shown for the single-leg sling is not exceeded in any leg of the multiple-leg sling,
- When D/d ratios (see Fig. 6) smaller than those cited in the tables are necessary, ensure that the rated load of the sling is decreased. Consult the sling manufacturer for specific data or refer to the WRTB (Wire Rope Technical Board) Wire Rope Sling Users Manual, and
- Do not use a fitting unless it is of the proper shape and size to ensure that it seats properly in the hook or lifting device.

Cautions to Personnel

- Ensure that all portions of the human body are kept away from the areas between the sling and the load and between the sling and the crane or hoist hook,
- Ensure that personnel never stand in line with or next to the legs of a sling that is under tension,
- Ensure that personnel do not stand or pass under a suspended load,
- Ensure that personnel do not ride the sling or the load, unless the load is specifically designed and tested for carrying personnel, and
- Do not inspect a sling by passing bare hands over the wire rope body. Broken wires, if present, may puncture the hands.

Effects of Environment

- Store slings in an area where they will not be subjected to mechanical damage, corrosive action, moisture, extreme temperatures, or to kinking,
- When slings are exposed to extreme temperatures, follow the guidance provided by the sling manufacturer or a qualified person,
- Do not subject fiber-core wire rope slings to degreasing or to a solvent because of possible damage to the core, and
- Follow the manufacturer's lubrication requirements.

Rigging Practices

- Ensure that slings are hitched in a manner providing control of the load,
- Ensure that sharp edges in contact with slings are padded with material of sufficient strength to protect the sling,
- Ensure that slings are shortened or adjusted only by methods approved by the sling manufacturer or a qualified person,
- Ensure that, during lifting with or without a load, personnel are alert for possible snagging,
- Ensure that, in a basket hitch, the load is balanced to prevent slippage,
- When using a basket hitch, ensure that the legs of the sling contain or support the load from the sides, above the center of gravity, so that the load remains under control,
- Ensure that, in a choker hitch, the choke point is only on the sling body, never on a fitting,
- Ensure that, in a choker hitch, an angle of choke less than 120 degrees is not used without reducing the rated load,
- Ensure that slings are not constricted, bunched, or pinched by the load, hook, or any fitting,
- Ensure that the load applied to the hook is centered in the base (bowl) of the hook to prevent point loading on the hook, unless the hook is designed for point loading,
- Ensure that an object in the eye of a sling is not wider than one half the length of the eye,
- Ensure that the sling is allowed to rotate when hand-tucked slings are used in a single leg vertical lift application. Minimize sling rotation,

- Do not shorten or lengthen a sling by knotting or twisting,
- Do not rest loads on the sling,
- Do not pull a sling from under a load when the load is resting on the sling,
- Do not drag slings on the floor or over abrasive surfaces,
- Do not use slings made with wire rope clips as a choker hitch, and
- Do not allow shock loading.

Proof testing:

Before initial use, ensure that all new swaged-socket, poured-socket, turnback-eye, mechanical joint grommets, and endless wire rope slings are proof tested by the sling manufacturer or a qualified person.

Other new wire rope slings need not be proof tested, although the employer may require proof testing in purchasing specifications.

Ensure that all welded end attachments are tested by the manufacturer or equivalent entity at twice their rated capacity before initial use.

Environmental Effects:

Permanently remove from service fiber-core wire rope slings of any grade if they are exposed to temperatures in excess of 180 degrees F (82 degrees C).

Follow the recommendations of the sling manufacturer when you use metallic-core wire rope slings of any grade at temperatures above 400 degrees F (204 degrees C) or below minus 40 degrees F (minus 40 degrees C).

Chemically active environments can affect the strength of wire rope slings. Consult the manufacturer before using a sling in such environments.

3) Metal Mesh Slings:

Metal mesh slings are widely used in metalworking and in other industries where loads are abrasive, hot, or will tend to cut web slings. Unlike nylon and wire rope slings, metal mesh slings resist abrasion and cutting. Metal mesh slings grip the load firmly without extensive stretching, easily maintaining balanced loads. Uncoated metal mesh slings withstand temperatures up to 550 degrees F (288 degrees C).

Metal mesh slings combine alloy steel fittings joined to the steel mesh. Fittings are sometimes plated for protection and better visibility. Metal mesh slings have the following properties:

- Smooth, flat bearing surfaces,
- Carbon steel mesh that resists corrosion and abrasion, and
- Flexible mesh that conforms to irregular shapes.

Materials other than carbon steel are available for metal mesh slings, such as alloy steel for higher rated loads and stainless steel for corrosive environments.

Identification:

New slings are marked by the manufacture to show:

- The rated load for vertical basket hitch and choker hitch loadings.

In addition, slings may be marked to show:

- The rated load for the types of hitches, and the angle upon which they are based,
- The width and gauge, and
- The name or trademark of the manufacturer.

Rated loads:

Rated loads (capacities) for single-leg vertical, choker, and basket hitches are as shown in Table 17.

For angles not shown, use the next lower angle or a qualified person to calculate the rated load. Rated loads are based on:

- Material strength,
- Design factor,
- Type of hitch, and
- Angle of loading.

Do not use horizontal angles less than 30 degrees except as recommended by the sling manufacturer or a qualified person.

The rated load for a sling in a choker hitch is the value shown in Table 17, provided that the angle of the choke is 120 degrees or more. For angles of choke less than 120 degrees, use the rated loads provided by the sling manufacturer or a qualified person.

For other materials and for configurations not shown, use the rated loads provided by the sling manufacturer or a qualified person.

Attachments and components:

Use end fittings with a rated load that is at least the same as the metal mesh sling.

Ensure that end fittings have sufficient strength to sustain twice the rated load of the sling without visible permanent deformation.

Ensure that all surfaces of end fittings are cleanly finished and that sharp edges are removed.

Do not apply coatings that diminish the rated capacity of the sling.

Inspections:

Designate a qualified person[1] to inspect slings and all fastenings and attachments each day before use for damage or defects.

This qualified person also performs additional periodic inspections where service conditions warrant, as determined on the basis of:

- Frequency of sling use,
- Severity of service conditions,
- Nature of lifts being made, and
- Experience gained during the service life of slings used in similar circumstances.

Make periodic inspections of metal mesh slings at intervals no greater than 12 months. A good guide to follow includes:

- Yearly for normal service use,
- Monthly to quarterly for severe service use, and
- As recommended by a qualified person for special and infrequent service use.

Although OSHA's sling standard does not require you to make and maintain records of inspections, the ASME standard contains provisions on inspection records.[3]

Make a thorough inspection of slings and attachments. Items to look for include:

- Broken wires in any part of the mesh,
- Broken weld or broken brazed joint along the sling edge,
- Reduction in wire diameter of 25 percent or more due to abrasion or 15 percent or more due to corrosion,
- Lack of flexibility due to distortion of the mesh,
- Distortion of the choker fitting so that the depth of the slot is increased by more than 10 percent,

- Distortion of either end fitting so that the width of the eye opening is decreased by more than 10 percent,
- A 15 percent or more reduction of the original cross-sectional area of any point around the hook opening of the end fitting,
- Visible distortion of either end fitting out of its plane,
- Cracked end fitting,
- Sling in which the spirals are locked or without free articulation,
- Fittings that are pitted, corroded, cracked, bent, twisted, gouged, or broken,
- Missing or illegible sling identifications, and
- Other conditions that cause doubt as to continued use of the sling.

Where any such defect or deterioration is present, remove the sling or attachment from service immediately.

Repairing/Reconditioning:

Do not use worn or damaged slings or attachments. Discard or repair them. Use damaged slings only after they are repaired, reconditioned, and proof tested by the sling manufacturer or a qualified entity using the following criteria:

- Do not repair metal mesh used in the sling,
- Mark repaired slings to indicate the date and nature of the repairs, and
- Mark repaired slings to identify who made the repairs.

Retain the certificates of proof test and make them available for examination.[2]

Modifications or alterations to end attachments or fittings are considered as a repair.

Operating practices:

Ensure that metal mesh slings have suitable characteristics for the type of load, hitch, and environment in which they will be used and that they are not used with loads in excess of the rated load capacities described in the appropriate tables. Follow other safe operating practices including:

Sling Selection

- Do not use slings that appear to be damaged unless inspected and accepted by a qualified person, and
- Do not use a fitting unless it is the proper shape and size to seat properly in the hook or lifting device.

Cautions to Personnel

- Ensure that all portions of the human body are kept away from the areas between the sling and the load and between the sling and the crane hook or hoist hook,
- Ensure that personnel never stand in line with or next to the legs of a sling that is under tension,
- Ensure that personnel do not stand or pass under a suspended load,
- Ensure that personnel do not ride the sling or the load, unless the load is specifically designed and tested for carrying personnel, and
- Do not use metal mesh slings as bridles on suspended personnel platforms.

Effects of Environment

- Store slings in an area where they will not be subjected to mechanical damage, corrosive action, moisture, extreme temperatures, or to kinking, and
- When slings are exposed to extreme temperatures, follow the guidance provided by the sling manufacturer or a qualified person.

Continued on pg 45

**QUALITY PRODUCTS.
QUICK DELIVERY. GOOD PRICES.
PICK ANY THREE.**



When you need 1¼" wire rope and you need it now, call Loos & Company. It's in stock. Ready to be shipped. And priced right. We make and stock a wide range of wire rope in sizes up to and including 1¼". Specializing in stainless steel, other materials are available upon request. And we make it all right here in the USA. When you need the right size wire rope right away, call us at (800) 533-5667. Or visit www.loosco.com.



Actual size 1¼" stainless wire rope

AVAILABLE MATERIALS: STAINLESS 302/4, 305, 316; PHOSPHOR BRONZE, MONEL, INCONEL, CARBON STEEL; BRIGHT, GALVANIZED



Wire Rope Division
1 Cable Road, Pomfret, CT 06258
fax: (860) 928-6167
email: sales@loosco.com

LOOS & CO. INC.
When it matters.

Profit Improvement Report

All Sales Volume Is Not Created Equal

By Dr. Albert D. Bates
President, Profit Planning Group



In trying to establish a sound compensation system, managers are continually looking for benchmarks. That is, they want to know how much other companies are paying for certain positions. They also want to know what fringe benefit packages are being offered. Such benchmarking is essential for the two key types of employees and requires two different types of analysis.

- **Executive Compensation** — For top management positions, such benchmarking is often national in scope. In attempting to attract a top CFO, for example, the firm may compete with a large number of distribution firms across the entire United States.
- **Employee Compensation** — In terms of operating employees, the relevant market is always local. Comparisons for truck drivers, warehouse employees and sales representatives in a particular geographic area are much more useful than are national averages.

Even though compensation benchmarks are critical, developing such benchmarks has always been a very difficult undertaking in distribution. Typical compensation surveys almost always focus on one particular line of trade. As a result, they tend to have very small sample sizes. The resulting information is fragmentary, at best.

The 2008 Employee Compensation Study eliminates these problems. AWRP has joined together with more than 35 other distribution organizations in sponsoring the largest cross-industry compensation survey ever conducted. It is anticipated that approximately 2,500 firms will take part. With such a large-scale study, AWRP distributors will receive a wealth of information.

The Power of a Cross-Industry Study Volume I of the final report will focus on the data collected for AWRP distributors as a group. That is, firms can compare their compensation levels and benefit programs to other AWRP distributors. This ability to compare to similar firms in your industry is of significant value. With the combination of over 35 distribution groups, though, a much more powerful analysis is possible. Volume II aggregates the results of the entire sample which enables an in-depth examination of the data by both geographic area and firm sales size.

- **Geographic Area** — The competition for the majority of employee talent is local. The survey will allow precise analysis down to specific regions, states and even local metro areas, such as Atlanta or Denver. It will be possible to know what distributors of all kinds are paying for various employee positions at a local level.
- **Firm Sales Size** — With the comprehensive sample, 22 or more sales size breaks are possible, from under \$1 million to over \$1 billion. This allows firms to look at the compensation practices of variously sized firms to determine at what point specific benefit programs become affordable.

The availability of such a large sample size broken out

Dear AWRP Distributor:

Hiring and keeping good employees is essential to the profitability of your business, especially in today's economy. To achieve that goal, you must consider your overall employee compensation plan—not just your pay scales, but your benefits program as well—in comparison to other firms in distribution.

How does your firm's employee compensation package stack up in the industry? To help you evaluate your situation, AWRP is co-sponsoring the 2008 Employee Compensation Study conducted by Profit Planning Group. Approximately 2,500 firms in over 35 distribution lines of trade will be participating.

The value of this survey is threefold:

- The results help you determine where your compensation plan stands not only within the industry but also compared to other companies in distribution.
- The data helps AWRP respond to legislative proposals regarding government-mandated health and leave benefits for employees.
- The information helps companies that must prove their compensation is "reasonable" within the constraints of the Internal Revenue Code.

To guarantee complete confidentiality of your company's data, all responses will be sent directly to and compiled by Profit Planning Group, an outside organization that specializes in survey research. Only the aggregate results of the survey will be released.

To ensure a comprehensive report we need your participation. Attached is the 2008 Employee Compensation questionnaire. Be sure to send in your completed survey by January 15, 2008.

Thank you for your participation in this important study. It will provide you with valuable information that could result in increasing your company's profitability.

Winning the Compensation and Benefits Battle

2008 Employee Compensation Study Co-sponsored by AWRP

One of the major challenges facing business owners is in providing a fair and adequate compensation and benefits package for employees. If the package is insufficient, the company cannot attract and keep qualified personnel. If the package is too generous, profit tends to suffer.

into so many specific sub-categories provides managers with an enormous amount of data for decision making. For example, firms thinking about opening an additional branch in a new geographic region will have precise payroll information at hand for the target geographic area.

Likewise, firms of any given sales size will have an idea of the extent to which specific fringe benefits are provided by similarly sized firms. They will also have information on what sales volume level must be attained before certain fringe benefits become realistic additions to the company's compensation package.

Types of Information Provided

Both Volume I and Volume II of the report will include two types of data—compensation levels by position and fringe benefits. Each section contains a wide range of information for the typical AWRP distributor.

- **Compensation** — The compensation data will be broken out into three components by position—base salary, bonus and total compensation. In addition, the range of common experience for total compensation will also be provided. The positions to be covered include:
 - Executives—those with titles such as chief executive officer, chief financial officer, chief marketing officer and the like.
 - Operating Employees—includes such positions as office manager, purchasing agent, warehouse employee and warehouse supervisor.
 - Sales Employees—including both inside and outside sales reps.
 - Branch Managers
- **Fringe Benefit Programs** — This section will review the benefit programs provided by distributors. Topics of interest will include:
 - Health Care Plans
 - Retirement Income Plans
 - Paid Time Off & Vacation Policies

As mentioned earlier, all of this information will be available at the national level as well as by geographic location and sales size of firm. The 2008 report provides an unprecedented opportunity to fully understand labor markets and is available only through the combined efforts of more than 35 different distribution organizations.

Schedule

Employee Compensation questionnaires will be mailed to AWRP distributors in early November. Since all firms in the United States are required to report employee financial information to the federal government by the end of January, almost all of the information required for the survey should be readily at hand.

The completed surveys are due by the middle of January. This should give every firm ample time to respond to the questionnaire. All information collected in the survey is

absolutely confidential. No member of the AWRP staff will have access to any firm's survey data. All questionnaires are returned directly to Profit Planning Group, the research company conducting the study.

The final report, including Volumes I and II, should be in the hands of AWRP by April 2008. Since it will cover the 2007 calendar year, the information will be extremely current as well as timely.

2008 Employee Compensation Study

How does your compensation package stack up against other distributors?

- Are you overpaying or underpaying your employees?
- How about the management team?
- What benefits do other firms provide?

Get answers to these questions and more by participating in the AWRP-sponsored 2008 Employee Compensation Study.

If you're like most distribution firms, you're running lean these days with just enough personnel to get by. Hiring and keeping good employees is essential to the profitability of your business, especially in today's economy.

When it comes to hiring employees, you must consider your overall employee compensation plan—not just your wage scales, but your benefits package as well—in comparison to others in distribution. Furthermore, you're not just competing for the best employees with other AWRP distributors, you're also up against all the distributors in your immediate locale.

The **2008 Employee Compensation Study** will provide a detailed review of compensation and benefit programs for approximately 2,500 distributors from over 35 distribution organizations. Due to the extensive sample in this study, there will be a wide range of information available on compensation, not only for your industry, but also for 22 sales volume categories and over 100 geographic areas (including 50 metro markets). Participating firms will receive a wealth of information on topics such as:

- Executive Compensation
- Employee Compensation
- Sales Commission Plans
- Inside/Counter Sales Policies
- Benefit Programs:
 - Health Care
 - Retirement Income
 - Paid Time Off & Vacation

Schedule

Questionnaires will be mailed to all AWRP distributors in early November. They are due back by January 15th. Survey results will be available in April.

Don't miss this opportunity to receive the most comprehensive compensation data available in distribution!



Quality & Performance

'The Difference is BRIDON' is a statement relating to a broad spectrum of "Value Added" features, which together aim to ensure Quality, Reliability and Customer Satisfaction. The following section has been designed to help you identify what precisely it is that differentiates BRIDON products from the competition.

Shared Knowledge

BRIDON believes it is important that our users are knowledgeable about the properties, installation, use, inspection and maintenance of our products. This belief has led BRIDON to offer both formal product-training seminars supported by relevant product safety and product data literature as well as specialist courses tailor-made to suit customer requirements.



Customer Service

The 'Difference' at BRIDON is service, which is second to none.

Such excellence is achieved not only by having the product available when you want it, but by also providing a knowledgeable team of field sales representatives, a fully trained and capable Customer Services team dealing specifically with inquiries and orders supported by expert rope engineers. BRIDON products are available across the USA, Canada and around the world via a network of Distributors. For more information about any of these value added features, please contact your local BRIDON Distributor or BRIDON American Corporation direct.

The *Difference* is **BRIDON** **AMERICAN**

A Commitment to Quality

The 'Difference' is that Bridon's products are tested to destruction. This "Powercheck" enables us to satisfy ourselves that the minimum breaking strength has indeed been achieved or exceeded. Not all competitors carry out this test. Failure to meet the required minimum breaking force may mean that the design factor of safety for the equipment or machinery has been compromised.

Setting the Standard

BRIDON strives to 'set the standard' on both its domestic market and overseas. The achievement of such goals becomes apparent when many OEM's specify and recommend BRIDON products, because 'The Difference is BRIDON.'

Engineering Excellence

The majority of Bridon's products are manufactured with wires produced by BRIDON, using state of the art machinery. These wires are subsequently spun into strands and then closed into ropes specially designed to meet the strength and performance requirements demanded by you, our valued customer.



Endurance and Reliability

BRIDON products are time tested and better able to withstand severe field applications as a result of the superior fatigue, crush resistance and rotational characteristics associated with all products within our high performance range.

www.bridonamerican.com

CHANT

Chant Engineering Co. Inc.

7 Britain Drive

New Britain, PA 18901-5186

215.230.4260 • 888.567.0983

Fax: 230.4261

www.chantengineering.com

TESTING MACHINES

- Low cost testing machines for the rigging industry
- Standard sizes or custom machines
- Quality products since 1970



Horizontal: 10,000 to 5,000,000 lbs.



Aircraft Cable Production



Vertical: Static or Dynamic



Outdoor Towers: Any Size



Hydraulic Grip: 450K



Wire Rope Grips



200K Lucker Upgrade



Single Beam: Low Cost



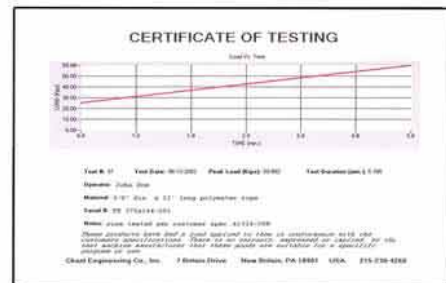
Custom: 450K x 80 Ft.



HPU and Computer



Computer Control



Test Certificate Software Program

© 2005 Chant Engineering Co. Inc.



Your Safety Committee At Work

Well, 2007 is rapidly coming to a close. I wanted to make sure that all members had a chance to review the statistics that were collected. These are the same statistics that were given during the fall general meeting in Quebec City.

Regular Members

Location	Total	Received	Hours	TRIR	LTIR
U.S.A.	136	40	2,978,069	4.53	2.16
Canada	22	6	820,508	6.12	1.41
Outside North America	14	0			
Totals and Averages	172	46			

Manufacturing Members

Location	Total	Received	Hours	TRIR	LTIR
North America	75	22	3,869,966	12.07	3.63
Outside North America	10	0			
Totals and Averages	85	22			

Sponsor Members

Location	Total	Received	Hours	TRIR	LTIR
North America	38	5	139,551	0.00	0.00
Outside North America	2	0			
Totals and Averages	40	5			

Incidents

Hand/Finger Laceration	8	Grinders, Wire Rope, Machinery, Trip Hazard
Head/Face Laceration	6	Wire Rope, Unmarked Obstacle, Machinery, Trip Hazard
Hand/Finger/Wrist Sprain-Brake	9	Machinery, Lifting, Continuous Motion
Neck/Back/Chest/Shoulder Sprain-Brake	14	Lifting, Crane, Trip Hazard, Machinery
Eye/Skin Contamination	3	Chemical Splash
Arm/Elbow Sprain-Brake	1	Trip Hazard
Groin/Leg Sprain-Brake	2	Trip Hazard, Lifting
Knee/Ankle Sprain-Brake	3	Trip Hazard, Machinery

everyone of us has a duty not only to ourselves, but to our co-workers to maintain a safety lifestyle and to support, encourage and enforce our safety practices.

I could have saved a life that day, but I chose to look the other way. It wasn't that I didn't care, I had the time, and I was there. But I didn't want to seem a fool, or argue over a safety rule.

I knew he'd done the job before, if I called it wrong, he might get sore. The chances didn't seem that bad, I had done the same, he knew I had. So

I would like to thank each member that participated in our statistics gathering program. It is not about the plaque, but the stats. Even though the returns were higher than the past, we are still a long way from full participation. We are updating the form to show 2007 and which reports are needed to gather good stats. Most members only returned the OSHA 300 summary log, not the incident report. We will send the 2007 form in January, giving each member ample time to respond. It also gives the committee more time to follow-up with members that have forgotten to return the form. We hope to see full participation for 2007.

Upon reviewing the incidents, we determined that the HSE DVD's match the incidents that were reported to the HSE Committee. If anyone wants to utilize these videos for an HSE meeting, please get with Jeff Gilbert. We ask that the DVD's be returned to the AWRP office within two weeks of shipment.

The following poem is a reminder that each and

McKISSICK
Your Total Block Company.



Sheaves
Snatch Blocks
Crane Blocks
Overhaul Balls
Construction Blocks



1-800-772-1500

theCrosbygroup inc.

1-800-772-1500



"When buying Crosby you're buying more than product, you're buying Quality."

theCrosbygroup inc.

"Fittings for Synthetic Slings"

Sling Saver®



"Lifting the World into the future".

theCrosbygroup inc.

1-800-772-1500

The *Inspectable* Roundsling

 **WARNING** Inspect Sling for Damage Before Each Use

This
Sling...

Looked
Like This

You
couldn't
see it...
Now
you can!



Full Inspection Round Sling Technology™

U.S. and International Patent Pending

*Available through Licensed Slingmakers
and their Distributors*

*"Clear Cover™" manufactured by
Murdock Webbing Company, Inc.*

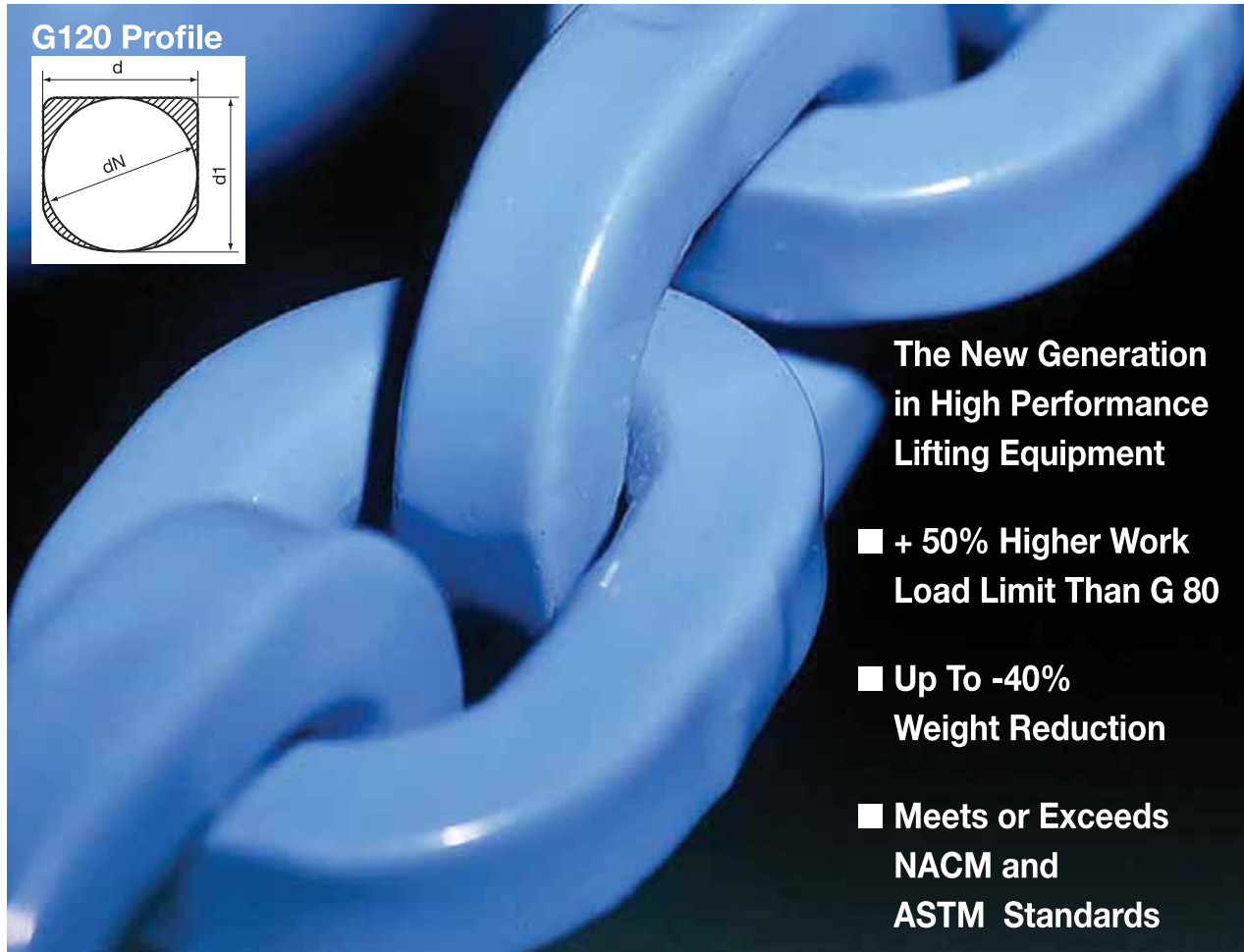
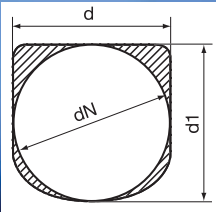
*For supplier information contact:
FIRST™ Sling Technology
or contact us at
www.firstsling.com*

*Toll-free in US: 877-45FIRST (3-4778)
Phone: 405-324-1777
Fax: 405-324-1778*

STRENGTH & ENDURANCE

Grade 120

G120 Profile



The New Generation
in High Performance
Lifting Equipment

- + 50% Higher Work Load Limit Than G 80
- Up To -40% Weight Reduction
- Meets or Exceeds NACM and ASTM Standards

pewag
WORLD'S STRONGEST CHAIN

281 Shore Drive, Unit A & B
Burr Ridge, Illinois 60527

For lifting equipment questions:

1.800.526.3924

Pewag G100 'Winner'
Largest Selection of G100 Chains
and Components on the Market

Over 30 Years In America!



Your high performance sling company



For more than 20 years, our slings have been the premier rigging solutions for heavy lifts.

With overload tell-tails, fiber optics, and Check-Fast™ inspection systems, we offer our rigging customers the most advanced means of checking their Twin-Path® slings at the job site. Our durable K-Spec™ fiber is available in all our synthetic products. And we offer engineered protection for our synthetic slings with CornerMax™ Pads and Synthetic Armor Pads.

In addition to our synthetic products, we have three multi-part wire rope sling designs that achieve over 90% efficiency making them truly high performance wire rope slings. They are flexible and can be made to precise lengths.

All of this is backed up by the most extensive sling testing in our industry, a worldwide network of 40 sling fabrication locations, and a commitment to provide the highest quality rigging solutions for our customers.

Contact us for more information or to find your local Slingmax® Rigging Solutions dealer.



Ask about Check-Fast™
measured overload protection—
for TPXC and our other
synthetic slings



P.O. Box 2423 • Aston, PA 19014-2423 USA
800-874-3539 • 610-485-8500 • Fax 610-494-5835

www.slingmax.com



The 'VANGUARD' of Rigging Hardware



Available from Distributors throughout North America
For the location of a Distributor in your area contact
sales@vanguardsteel.com

VANGUARD STEEL LTD.



Jergens Hoist Rings

Center Pull style, 800 to 50,000 lbs. capacities.

Competitors' Hoist Rings

**Claims
Are Nice,
BUT ASK FOR PROOF!**

- Each Hoist Ring pull-tested and certified to 200% of rated load capacity
- Individual certificate of proof-test accompanies each Hoist Ring
- Clearly identified
- Date code stamped
- Individually boxed
- Inch/metric color coding
- Multi-lingual instructions included with each unit

SP2000™

Side Pull Hoist Ring has full swivel and pivot action. Compact, low profile design simplifies use. Ideal for flipping molds & dies. 650 to 29,000 lb. capacities. U.S. Patent 409,895.



Although they may look the same, when it comes to hoist rings, you truly get what you pay for. Insist on Jergens Hoist Rings: all are designed for a 5:1 strength factor; all material is *domestically* manufactured certified alloy steel. Forged or cast components are magnetic particle inspected to ASTM E709-80 with zero defects permissible.

ALL COMPONENTS MADE IN USA

Swivel Eyebolt™

style has full swivel and pivot action. Patented *tamper-resistant* design is great for permanent mounting applications. 500 to 4,000 lb. capacities. Available in inch, metric and stainless steel. U.S. Patent 5,743,576.



Side Swivel™ Economical design for OEM applications. Full swivel and pivot action. 650 to 4,100 lb. capacities. U.S. Patent 6,443,514.



Forged Center Pull

Full swivel and pivot action allows you to flip and turn parts without unhooking. Integral solid center brace lift bail. Bail design reduces possibility of spreading the lift bail in misapplications. 800 to 30,000 lb. capacities. U.S. patent #6,652,012.



Side Pull (Traditional) Hoist Ring makes flipping of lifted items easy. Features oversized round ring and heavy duty cast body. 650 to 29,000 lb. capacities. U.S. Patent 6,443,514.

ISO9001:2000
QUALITY SYSTEM CERTIFIED

Jergens

www.jergensinc.com

Jergens Way 15700 S. Waterloo Rd. Cleveland, OH 44110 • Tel.: (800) 537-4367 • Fax: (216) 481-6193 • e-mail: info@jergensinc.com

©2006 Jergens Inc.

Member Of:



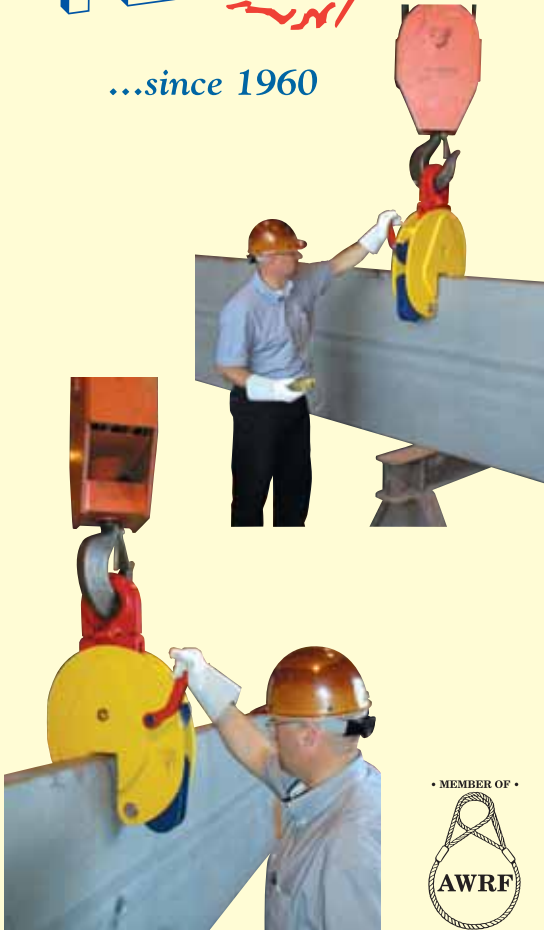
Made in America

CE
Certified

The Original...



...since 1960



• MEMBER OF •



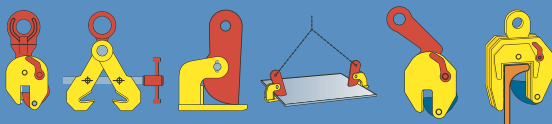
Available exclusively in
North America from

CANWAY
EQUIPMENT MFG. INC.
Material Handling Products

Tel: 905-578-2929

Fax: 905-578-5820

sales@canwayequipment.com



www.canwayequipment.com

LIFTING CLAMPS

JOIN THE REVOLUTION



Introducing Harrington's
new web site
www.harringtonhoists.com

You don't have to wait for business hours to get the information you need from Harrington. Our new, revolutionary web site is available 24/7 and contains searchable product information, downloadable technical documents, answers to frequently asked questions and much, much more. Learn about our people, our products and our commitment to our customers. As the new revolution in the hoist business, we built the most innovative web site in the industry for you – so check it out. We're only a click away.

- Navigation is extremely user-friendly
- No clutter and easy to read
- Competitive comparisons
- Safety information with links to related sites
- Get a quote or literature quickly
- Find your sales representative

Join the Revolution and visit us at
www.harringtonhoists.com

HARRINGTON
HOISTS AND CRANES

Manheim, PA/800-233-3010
Corona, CA/800-317-7111

QC21

Quality Control For the 21st Century

The Clear Choice!



SYNTHETIC WEB SLING TAG

- Transparent
- UV Light Resistant
- Permanently Attached
- Available in English and Spanish (with Metric Conversions)
- Abrasion Resistant
- Fade Resistant
- Permanent Identification
- Permanently Traceable (no ink marker for serial number or length)

The ONLY Synthetic Sling Tag Permitting Visual Inspection

(Patent Pending)

“ISO 9001:2000 REGISTERED QUALITY MANAGEMENT SYSTEM”

For more information contact: **Barney Dugan**

Phone: 913-669-1060

Email: bdugan@QC21Slings.com

QC21 SLING MANUFACTURING

3600 South Council Road, Oklahoma City, OK 73179

Phone: (866) 883-QC21 (7221) - Fax: (405) 745-4912 - Web: www.QC21Slings.com

• MEMBER OF •



AWRF SCHOLARSHIP WINNERS – 2007

Larry Boeckel Memorial Scholarship Winner

Nathan Smith
Sponsor: Ken Forging Inc.



Melody Hall
Sponsor: F & M Mafco



Samantha Hess
Sponsor: Harrington Hoists, Inc..



Toni Fontana
Sponsor: Peerless Chain



Martin Cardinal
Sponsor: Wire Rope Industries Ltd.

Chicago Hardware & Fixture Co.

DROP FORGED PRODUCTS

Turnbuckles
Shackles
Wire Rope Clips
(also malleable)
Machinery Eye Bolts
Eye Bolts
regular & shoulder
Eye Nuts
Rod Ends: blank & machined
Ring Bolts
Hooks
Swivels
Pad Eyes
Yoke Ends

WIRE PRODUCTS

"S" Hooks
Turned Eye Bolts (threaded)
lag, mach. or welded
U-Bolts (galv. & zinc)
rd., sq. & long tangent
Threaded Rod

SPECIAL PRODUCTS

Manufactured to Specifications



OTHER PRODUCTS

Alloy Steel Hoist Rings
Wire Rope Thimbles
Bevel Washers
Clevis Pins
Coupling Nuts
Plated Steel Shapes
Brass - rounds, flats & angles

STAINLESS & METRIC

(check availability)

Eye Bolts & Eye Nuts
U-Bolts
"S" Hooks
Wire Rope Clips
Blank Rod Ends
Threaded Rods

HEADQUARTERS:

Franklin Park, Illinois
(847) 455-6609

WAREHOUSE

LOCATIONS:

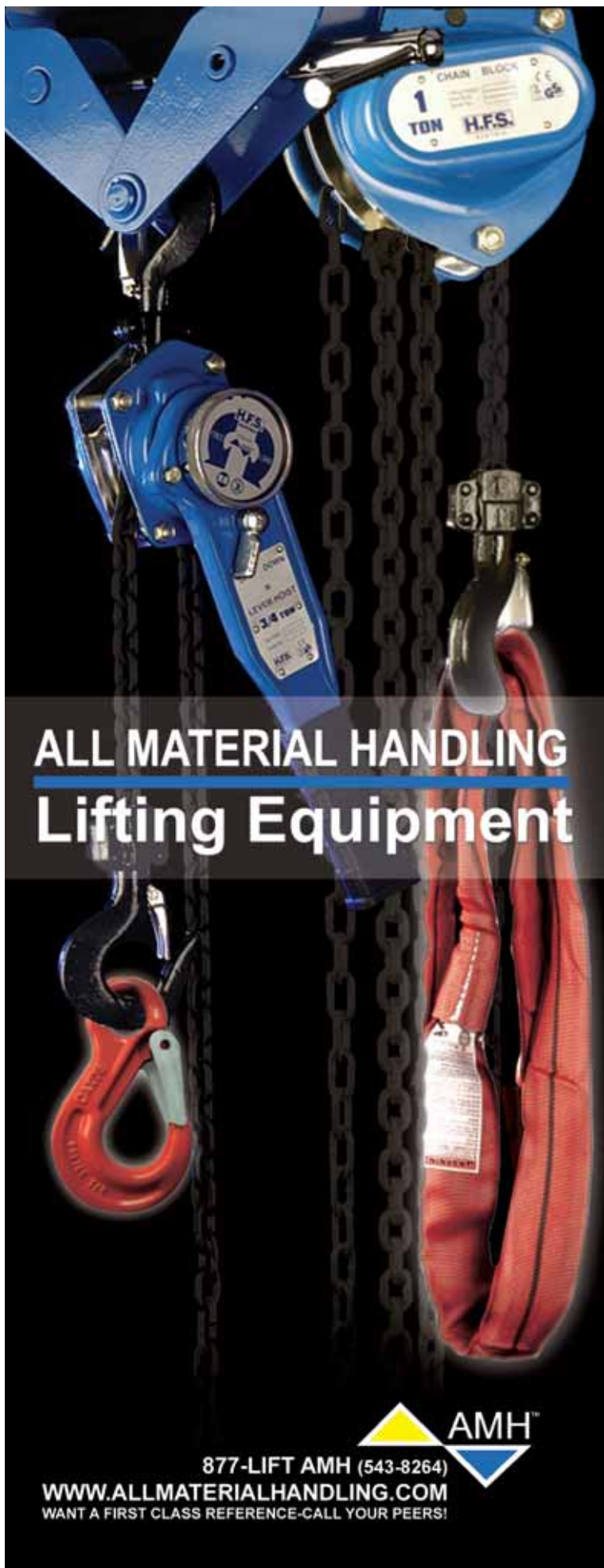
Chino, CA (909) 591-1099
Monroe, GA (770) 266-5600
Houston, TX (713) 664-7722

**American
Made**

**American
Owned**

**American
Quality**

Website: www.chicagohardware.com Email: info@chicagohardware.com



ALL MATERIAL HANDLING
Lifting Equipment

 **AMH™**

877-LIFT AMH (543-8264)
WWW.ALLMATERIALHANDLING.COM
 WANT A FIRST CLASS REFERENCE-CALL YOUR PEERS!



New & Innovative Products
 for the Lifting & Rigging Industry

Worldwide _____
ONE PRESS® SWAGING SYSTEM
 Canada _____

PIAB™ ROPE TENSION METERS
AND CRANE OVERLOAD GUARDS
TWIN-PATH® RIGGING PRODUCTS
WIRELOCK® SOCKETING RESIN

In Stock for Immediate Delivery

Toll Free: 1-800-267-LIFT p: 905-778-1960
 e: service@strider-resource.com f: 905-775-1424

www.strider-resource.com

**Untangle Your Inventory &
 Release your Profit \$**

*Software Solutions Tailored
 Specifically for the Lifting and
 Load Securement Industry .*

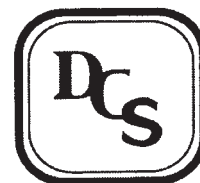
SUCCESS 2000+

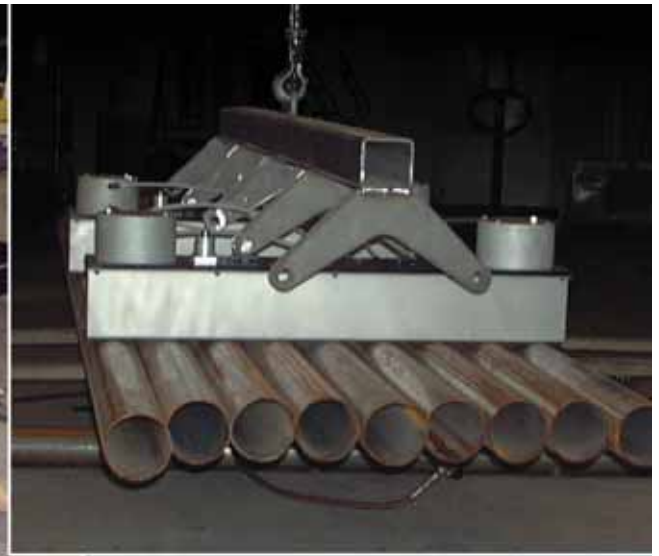
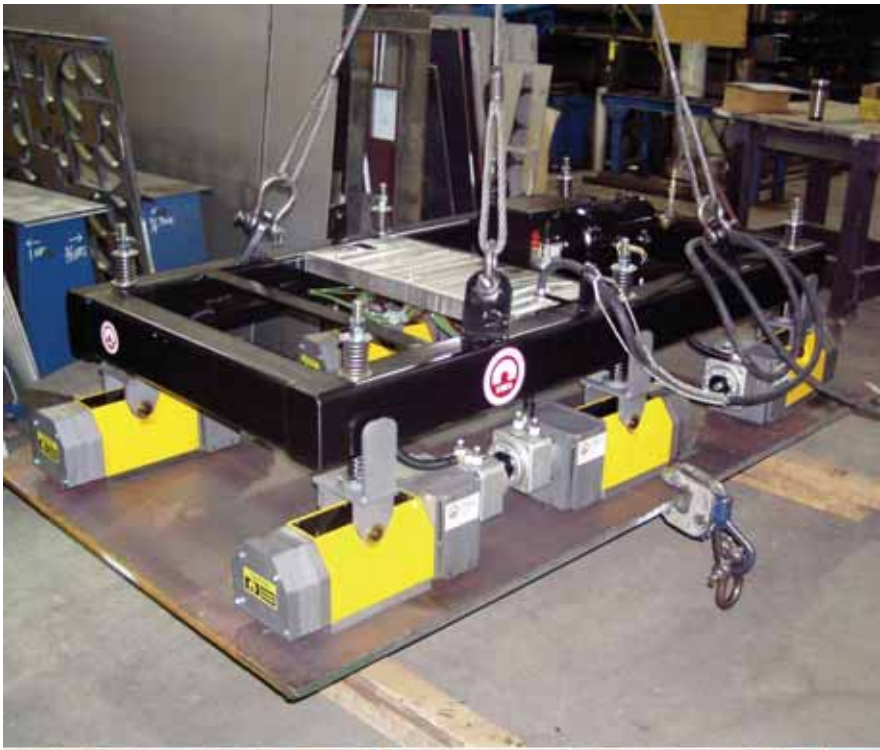
**Get to know Us as well as we
 have gotten to Know your
 Industry!**

**Distributor Computer
 Systems, Inc.**

**Phone: 856-813-1750
 Fax: 856-813-1762**

Email: sales@dcS-success.com
 Call or Email for your copy of
 "9 Ways to Increase Your Profit"





A Full-Service Standard and Engineered Solutions Provider

From standard, "off-the-shelf" lifts magnets to engineered solutions, Industrial Magnetics, Inc. can solve most material handling applications.

BOYNE CITY, MI USA
 PHONE 231.582.3100
 FAX 231.582.0622
 WEB WWW.MAGNETICS.COM

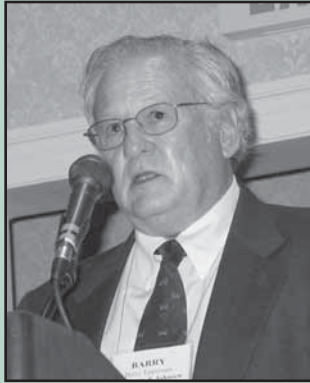
MAG-MATE™

BOARD OF



Executive Director

Jeff Gilbert
Walled Lake, MI
800-444-AWRF
jeff@awrf.org



General Counsel

Barry Epperson
Tulsa, OK
918-585-5641
jbarrye@aol.com



President

Anne Renfroe
Term Ending 2008
J.C. Renfroe & Sons
Jacksonville, FL
904-356-4181
arenfroe@jcrenfroe.com



David Johnston

Term Ending 2010
Columbus McKinnon Corp.
Chattanooga, TN
770-617-6145
david.johnston@cmworks.com



Clarence Muzechka

Term Ending 2008
Titan Supply Inc.
Edmonton, Alberta, Canada
780-481-1122
cmuzechka@titansupply.ca



Tom Miller

Term Ending 2008
Marcal Rope & Rigging Inc.
Springfield, MO
618-407-4956
tom.miller@marcalrigging.com



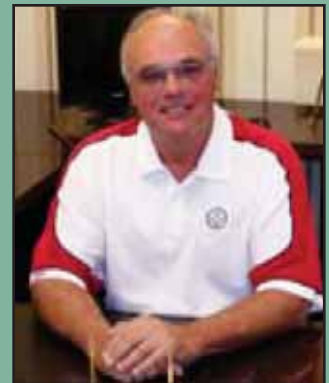
Mike Parham

Term Ending 2008
Industrial Splicing & Sling LLC
Tulsa, OK
918-835-4452
mparham@industrialsplicing.com



Jack Gibbons

Term Ending 2008
Metro Wire Rope Corp.
Union, NJ
908-964-3690
metrowiresales@aol.com



Duane Kaminski

Term Ending 2010
Alloy Sling Chanins, Ltd.
East Hazelcrest, IL
708-647-4900
dak@ascindustries.com

DIRECTORS



Vice President

Alex Edwards

Term Ending 2008

Paducah Rigging, Inc.

Paducah, KY

270-443-3863

edwards@paducahrigging.com



Secretary

Bruce Yoder

Term Ending 2008

American Rigging

San Diego, CA

619-233-5625

bruce@americanriggingsd.com



Treasurer

Teresa McGee

Term Ending 2008

Newell Davis Company, Inc.

Wilmington, NC.

910-762-3500

teresa@newelldavis.com



Jeff Bishop

Term Ending 2008

Bishop Lifting Products

Houston, TX

713-674-2266

jeff.bishop@lifting.com



Paul Boeckman

Term Ending 2008

The Crosby Group

Tulsa, OK

918-832-5347

paulboeckman@thecrosbygroup.com



Brad Fowler

Term Ending 2009

D&M Wire Rope

Grand Junction, CO

970-242-1144

bfowler@dmwire.com



Michael Rothermund

Term Ending 2009

Kulkoni, Inc.

Houston, Texas

713-691-1234

mrothermund@kulkoni.com



Mark Reeves

Term Ending 2010

Wirerope Works Inc.

Williamsport, PA

570-286-0115

mreeves@wireropeworks.com



John Rauh

Term Ending 2010

Cableworks, Inc.

Putnam, CT

860-928-0475

cworks@hotmail.com

Wire Rope Slings

Winches

Shackles

Hydraulics

Lifting and Spreader Beams

Hand Chain Hoists

Lever Hoists

Clamps

Man Cages

Material Lifts

Twin-path Slings

Call 708-647-4900

RENTAL

ASC INDUSTRIES, LTD.

WE LIFT AMERICA

DIVISION

www.ascindustries.com

PYTHON AMERICA
HIGH PERFORMANCE WIRE ROPE

SLINGMAX
RIGGING SOLUTIONS

SCRA

e-mail: info@ascindustries.com

Fax: 708-647-4993

McKISSICK BLOCKS® QUALITY BUILT

Time tested and work proven.....

McKissick® blocks, overhaul balls and sheaves have been leading the way for more than 65 years, and have been utilized in the most demanding applications in every corner of the world. Only McKissick® offers world class products with unequalled service and customer support behind each one. Whether the items you require are standard off-the-shelf, or specially engineered, demand McKissick®.....the original.



380 Series
Crane
Blocks

680 Series
Construction
Blocks

Roll
Forged™
Sheaves

UB-500
Overhaul
Balls

380 Series
Easy Reeve®
Crane Blocks

McKISSICK®
Your Total Block Company

theCrosbygroup, inc.

The Crosby Group Inc.
P.O. Box 3128 • Tulsa, OK 74101
(918) 834-4611 • Fax: (918) 832-0940
www.thecrosbygroup.com
crosbygroup@thecrosbygroup.com

Arthur Lakes Library

COLORADO SCHOOL OF MINES



Joni Lerud-Heck

Individuals and members of the Associated of Wire Rope Fabricators (AWRF) have given generously to establish the AWRF Endowment for the Colorado School of Mines, Arthur Lakes Library's Information Center for Ropeway Studies. The endowment will annually provide for conservation and preservation of the collection, particularly the materials donated by AWRF and its members. AWRF Executive Director Jeff Gilbert has begun the process of sending collected archival material to the Ropeway Center. These materials include manufacturers' catalogs, marketing brochures, displays, and memorabilia such as cigarette lighters, belt buckles, and rope gauges among other treasures.



in designing, building, testing, and regulating ropeway systems. From its beginning, the Ropeway Center has

been guided by an Advisory Board to ensure its applicability and serviceability to those interested in this subject. The Center is one of two in the world devoted to the study of ropeway systems, the



second, housed in the Library at Eidgenössische Technische Hochschule (ETH), often called the Swiss Federal Institute of Technology, in Zürich, Switzerland.

Prior to the addition of materials from AWRF, the Ropeway Center has over 500 monographs, 10 journal and newsletter titles, a manufacturers' catalog file, reprint file, videos, 35 mm slides, lantern slides, and photographs. The ROPEWAY Database is a bibliographic database of journal articles, symposia, books, reports, handbooks, manufacturers' catalogs, and other information pertaining to this subject area and was developed and is maintained by staff of the Arthur Lakes Library. It can be accessed electronically at: ropeway.coalliance.org/. The Information Center for Ropeway Studies Website contains direct links to the ROPEWAY Database, the Image Database, and more information about the Center as well as links to other web sites and can be accessed at: www.mines.edu/library/ropeway.

On behalf of AWRF, Michael Wallace, Vice President of Sales and Marketing of Loos & Company Inc. and a past president of AWRF, spearheaded the fund-raising effort. AWRF is commended for their forward thinking regarding conservation and preservation of the history of their profession and for their support of this effort into the future.



<http://www.yoke.net>

Quality, Reliability, Innovation.

An ISO 9001 Certified Company



Quality Type Approval :



ABS



YOKE, INC.

12850 E. Florence Ave.
Santa Fe Springs,
CA 90670
USA
TEL: (562)903-1409
FAX: (562)903-1468
E-mail: info@yoke-usa.com

YOKE INDUSTRIAL CORP

39, 33rd Road, Taichung Industrial Park,
TAICHUNG 407,
TAIWAN
TEL: +886-4-2350-8088
FAX: +886-4-2350-1001
E-mail: yoke777@ms74.hinet.net

News About Members

News Release



PO Box 288
St. Joseph, Mo 64502
816.233.0287
wirerope@wrca.com

For Release: October 16, 2007

Wire Rope Corporation of America, Inc. Changes Name to WireCo WorldGroup

Wire Rope Corporation of America, Inc. (WRCA) announced today that the company will change its name to WireCo WorldGroup effective on October 29, 2007.

CEO Ira Glazer stated, "As our manufacturing flexibility, geographic scope and market reach have expanded over the past few years, we determined that our corporate name needed to better reflect the essence of our business. WireCo WorldGroup represents our heritage while highlighting our corporate strength – global availability."

Over the past four years, the company has evolved from a U.S. based company into the largest global manufacturer of wire rope, the world leader in electromechanical cable and a major player in highly engineered cable structures. We have expanded our manufacturing and distribution facilities from the U.S. into Mexico, Canada, China and Germany.

Earlier this year, the company employed CoreBrand, a highly regarded brand consultant, to lead the project. They completed in depth market research around the world to identify the key drivers for the business and then provided a brand strategy and architecture that would serve the company well. The results of this work included a redesign of our corporate name from WRCA to WireCo WorldGroup as well as a realignment of our product brand families to better reflect the specific applications they serve worldwide.

About WireCo WorldGroup

WireCo WorldGroup's products are recognized throughout the world and used in a wide range of market applications including oil and gas exploration; surface and deep mining; construction; and specialty lifting and suspension applications. The company employs approximately 1,800 people worldwide. WireCo WorldGroup headquarters is moving to Kansas City, Missouri on October 29, 2007. The company operates manufacturing plants, distribution facilities and research and development centers in the U.S., Canada, Germany and Mexico with a new plant nearing completion in China. WireCo WorldGroup is the only major wire rope manufacturer in the world to be API certified QPL Qualified, and ISO-9001:2000 registered.

P.O. Box 57, 3360 AB Slidrecht
Industrieweg 6, 3361 HJ Slidrecht
The Netherlands
Tel. +31 184 413300
Fax +31 184 414959
e-mail: sales@vanbeest.nl
www.vanbeest.nl



Take-over Of Forges De L'éminée S.a.s. By Van Beest International B.v.

Slidrecht, September 25th, 2007

The managements of Van Beest International BV and Forges de l'Éminée S.A.S. announce that Van Beest has acquired 100% of the shares of her trade companion Forges de l'Éminée.

Van Beest is a producer of steel wire rope accessories based in Slidrecht (the Netherlands). The products are sold worldwide under the brand name Green Pin®. The well-known Green Pin® shackles are a leading product in the world market. They are used in many different lifting applications in various sectors like the offshore, industry, mining, shipping and fishing. Van Beest has branches in Germany and the USA, and exports to more than 70 countries worldwide.

Forges de l'Éminée is based in Celles sur Durolle (France). They manufacture an extensive program of chain accessories, like grade 80 and grade 100 hooks, and a vast range of other products. These products are sold under the brand name "Excel". The Excel range has a leading position in the French market, and apart from that Forges de l'Éminée is a significant exporter to several other countries. The Excel products are used in the same markets as the Green Pin® products.

The Green Pin® and Excel products complement each other perfectly, and together they offer a full range of quality products to anyone working in the steel wire rope- and chain business. Van Beest will use its expertise and extensive international distribution network to increase their international market share with the Excel products. By working together, we can further increase our service levels, and the customers will have the benefit of having a wide range of products available from one source. The current manufacturing plants in Slidrecht and Celles sur Durolle will continue to produce our products, and we do not foresee any substantial changes to the staff levels.

Should you require any further information please contact undersigned.

Van Beest International BV

C. Boer
Managing Director

News About Members

News Release

Pellow Engineering Services & Publications (10/22/07)

KANSAS CITY, MO: Don Pellow, President of Pellow Engineering Services, announces that several of his technical publications are also now offered in Spanish. This includes his top selling **Bob's Rigging and Crane Handbook**, available in easy to read desk size or handy pocket size. This book has already been widely distributed within the crane and rigging industry in its English format; and has been long recognized by many in the field as the on-site educational material of choice. Information is included in the book that will ensure that top quality rigging and crane procedures are established, and also that the safety of your crew and the quality workmanship of your job are maintained as standards for your company. Don also offers two laminated pocket-sized reference cards now in a Spanish format: Bob's Rigging Reference Card and Bob's Crane Reference Card. These useful tools are currently used widely for quick assistance in the field for everyone from owners to operators, and have been available in English for many years. Now, because the marketplace is necessitating the availability of quality safety educational materials for our Hispanic field associates, you may also order the cards in Spanish. To learn more about these publications and to place your order, please log on to www.donpellow.com or call 877.473.5569 (4PELLOW) to speak in English, or 913.549.8894 to speak in Spanish. Please call Don directly at 816.931.4113 to learn more about Pellow Engineering Services.



15700 S. Waterloo Road,
Cleveland, OH, 44110.
Telephone: (216) 486-5540.
FAX: (216) 481-6193
E-mail: info@jergensinc.com

Jergens Announces DFARS-compliant Products

Lifting Rings, Locking Pins and Spring Plungers Can Meet

U.S. Department of Defense Domestic Specialty Metals Requirements

CLEVELAND, OH — November 19, 2007 — Jergens, Inc. has announced that three of its major product lines can be compliant with Defense Federal Acquisition Regulation Supplement (DFARS) 252.225-7014 Alternate 1 Preference for Domestic Specialty Metals. The requirements stipulate that certain specialty metals used in parts supplied to the Department of Defense by a United States company be melted in the U.S. or certain qualifying countries.

"We are pleased to offer domestically-sourced specialty metal products to the DoD and other customers," said Jack Schron, Jr., Jergens' President. "Although any item Jergens sells has the potential to be purchased as a DFARS item, we expect the most commonly requested items to be our Kwik-Lok™ Locking Pins, lifting rings and spring plungers."

Jergens is certified to ISO:9001:2000 and can manufacture locking pins, hoist rings, inserts and spring plungers to Mil-Spec/NAS standard.

Jergens is located at
15700 S. Waterloo Road, Cleveland, OH, 44110.
Telephone: (216) 486-5540. FAX: (216) 481-6193
E-mail: info@jergensinc.com

Web: www.jergensinc.com Please send inquiries to Tim Golling, National Sales Manager.



WireCo WorldGroup Acquires U.S. Reel Corporation

Kansas City, MO – November 20, 2007 – WireCo WorldGroup (WireCo), the world's leading producer and marketer of wire rope and electromechanical cable, announced today that it has completed the acquisition of US Reel Corporation (US Reel) based in Carrollton, MO.

US Reel was a closely held entity under the management of Mr. Roger Moore. The company produces high quality wood reels serving key customers in the Midwestern U. S. The firm has been the primary supplier of wood reels to WireCo for many years and has an outstanding reputation for excellent service and superior quality for nailed wood and plywood reels with its customers. WireCo plans to grow the business while assuring itself of a long term cost competitive source for its primary packaging method.

Ira Glazer, WireCo WorldGroup CEO, said, "US Reel has been a valued supplier to us for many years and we wanted to facilitate an orderly transition for the company. Roger Moore has been a good friend and this acquisition met his personal needs as well as our corporate objectives."

No personnel changes are anticipated at this time. Mr. Moore plans to phase out of his role next year, but will be available to consult with WireCo as needed.

"I am pleased to have the opportunity to turn over US Reel to such a dynamic, growing company. With this change, US Reel will have access to additional capital which can spur more growth and provide security for my valued employees," stated Moore.

WireCo WorldGroup is owned by investment funds managed by Fox Paine Management III, LLC (Fox Paine III), the San Francisco and New York-based private equity firm.



Reliable Connections

ESCO® Swagers

- Mark 87
- Mark 100
- Mark 150
- Mark 250

Nationalsales & service
1-800-227-3726

Problem solved.
www.escocorp.com
www.riggerschoice.com

Tuffy

High Performance Lifting

TuffyHP Round Slings



- Durable Abrasive Resistant Jacket
- High Strength
- Superior Stretch and Fatigue Resistance
- Light Weight
- High Heat Resistance

Tuffyweb
products

Tuffy Tri-Braid Slings



- Complete Knot and Kink Resistance
- Quicker and Easier Loading
- Abrasion Resistance
- Longer Service Life

Tuffywire
products

To locate a local distributor, call toll free: **877-889-TUFF**

© 2006 Tuffy Products.

Ultra Pillow-Flex

**Most Comfortable Harness
Ever Worn**



Stretch Torso



**Quick Release
Buckles**



Padded Legs

1-800-850-5914
www.ultrasafeusa.com



CM[®] HERC-ALLOY[®] 1000

Move UP to First Class



Industrial Chain & Attachments

- Grade 100
- Designed for overhead lifting
- 100% proof tested
- Superior strength with less weight per foot

www.cmforge.com • www.cmchain.com

Phone 1-800-888-0985 • Fax 716-689-5644

CM
RIGGING
Products

Flat or Round, Big or Small... SafeHold[®] can Lift them ALL!

Eriez' offers the widest selection of compact permanent lift magnets.

SafeHold[®] is available in four different styles to meet any price or performance requirement. Safely lift up to 10,000 lbs with a 2:1 safety factor.



SafeHold RPL Series
4 models to 3,500 lbs



SafeHold XPL Series
4 models to 2,400 lbs



SafeHold EPL Series
8 models to 10,000 lbs



SafeHold APL Series
4 models to 5,800 lbs

**Get Your
FREE**



**"How To Choose & Use"
Lifting Magnets**
18 page guide

888-300-3743
www.eriez.com



ARE YOUR TAGS AS **TOUGH** AS YOUR SLINGS?

FIRSTTM
Sling Technology
Products For Slingmakers From Slingmakers

Out of Service - SLING FAILURE



FIRSTTM ID Tag



Common Tagging

Out of Service - **TAG FAILURE**

An Illegible Tag IS An Unusable Sling!

Synthetic Sling Identification System

FIRSTTM Sling Technology offers the ONLY Synthetic Sling Tag available today that COMPLETELY protects ID information from abrasion and that STAYS ATTACHED to the sling.

MOST DURABLE
TAG AVAILABLE
**Remains
Legible,
Remains
Attached!**

System Benefits

Operations

- Quick and Clean Set Up and Production
- Secure Attachments
- Ease of Serialization and Barcode
- No Outdated ID Stock - Enhanced Availability
- No Cutting Needed - Efficient and Consistent Results

Sales and Marketing

- Product Perception - Professional Graphics and Custom Colors
- Special ID and Private Label Abilities
- Exceptional Traceability Standards
- Increased Useful Life - Cost Reduction
- Safety Support - Permanent Warnings, Metric Conversion, Bilingual
- UV Resistant

FIRSTTM
Sling Technology
Products For Slingmakers From Slingmakers

For information and Samples Contact Us at www.firstsling.com or call
Toll-Free in US: 877-45FIRST (3-4778)
Phone: 405-324-1777
Fax: 405-324-1778

Randers

Cable Laid Wire Rope



**Superior
PreFormed**

3/8" to 1½"
top quality
steel wire rope

inventory from:
Houston • Chicago
New York • Seattle

EURO PRODUCTS, INC.
800-577-3877 • 206-789-6468
FAX: 206-784-9848
sales@europroductsinc.com
www.europroductsinc.com

Message from the President Fall / Winter 2007

Continued from pg 1

see your legislators for a little arm-twisting, if that appeals to you. Most of the board is planning to attend. We have a couple of meals together as a group, "so it is not all work and no play".

As you can see, there are many opportunities for participation and we haven't even gotten to the April 13th through 16th Spring General Meeting in exciting San Francisco! These early months are important. Let us hear from you. Your ideas and suggestions matter.

It is a pleasure serving as president of AWRP. I look forward to a busy, successful and rewarding year. Craig Hayward did a fine job leading our organization last year. I feel particularly fortunate to be following him.

A handwritten signature in black ink that reads "Anne Lutten Renfro".

Sincerely,
Anne Lutten Renfro
President, AWRP

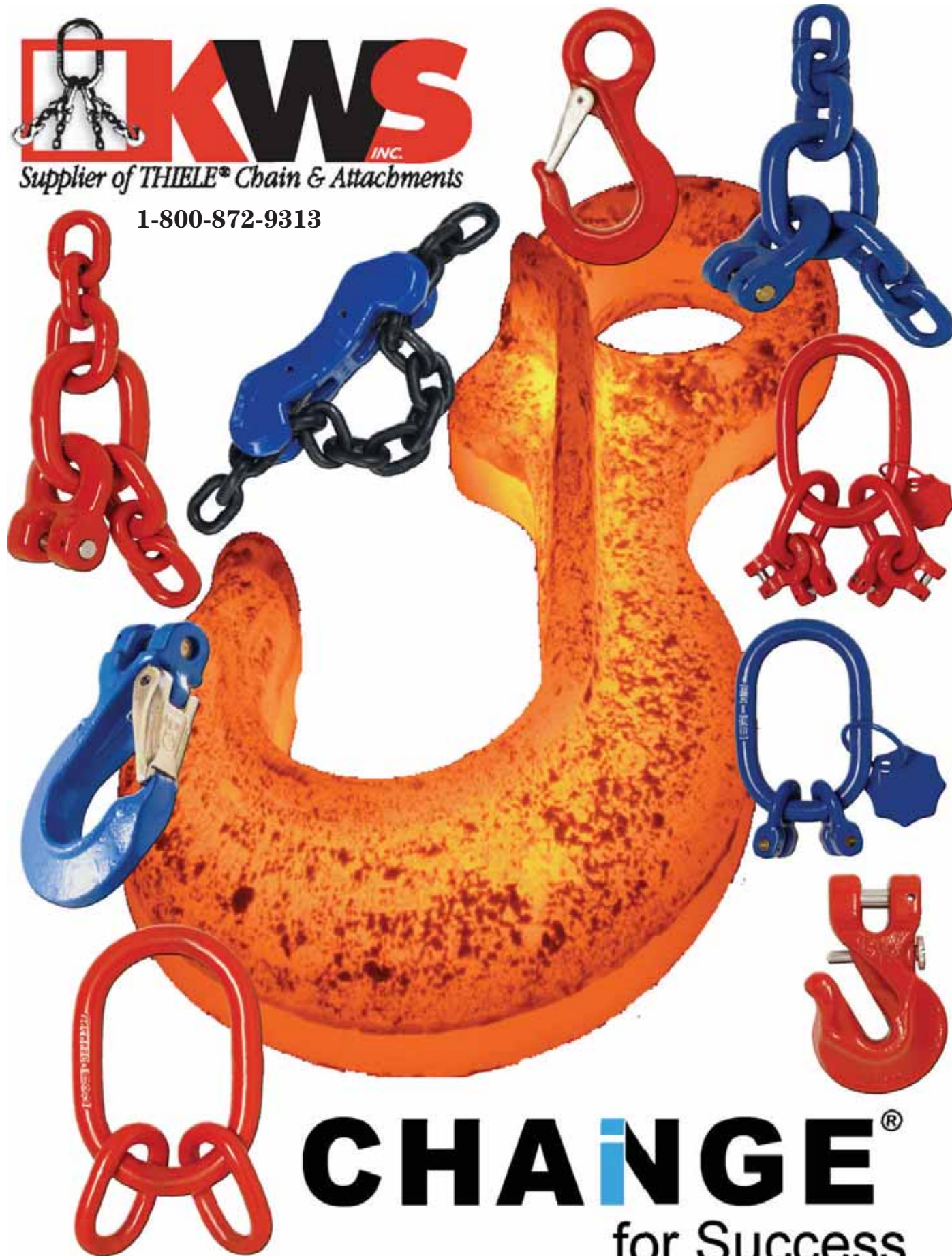


**Two AWRP GAC gold and diamond
diggers doing field research at The
OIPEEC Conference in South Africa.
A very uplifting experience!**



Supplier of THIELE® Chain & Attachments

1-800-872-9313



CHANGE[®]
for Success

We've GOT Your Snake!

Lewis Wire Rope Snake Grips

Model LSG Snake

The Lewis Snake Grip expands or contracts to grip different or identical cable and/or rope sizes as per the customer's needs.

Save time stringing up, changing and unstringing because the snake requires no special tools. The swivel and swing link go smoothly through blocks and prevent line twisting.

Install new cable by using old existing cable as pulling line. Always seize the ends of the grips by banding or taping.

Model LSG-X Snake

The LSG-X series performs the same function as the standard LSG series. The LSG-X cannot be taken apart in the middle, it is permanently attached via our new "Swivel Tube" Assembly.

This swivel tube assembly is a low profile heavy-duty friction swivel. This snake is for the customer who does not need to separate the two pulling grip elements and who prefers a very low profile swivel. The swivel is permanently greased and has the size range and working load clearly stenciled on the swivel tube assembly.

Lewis
Manufacturing Co.
OILFIELD AND
INDUSTRIAL SUPPLIES

3601 S. Byers (73129) • Oklahoma City, OK • 405-634-5401

Fax: 405-632-8608 • E-mail: lewiswmg@aol.com • www.lewismanufacturingco.com

IN NEED? IN STOCK! INDUSCO!

One of the world's largest inventories of Wire Rope, Chain and Fittings!

Looking for a supplier that can turn your order quick?

No matter what it is, or how many you need? Indusco has 200,000 square feet of inventory. That's about four football fields, sports fans. And our shelves are full. Need an item that no one else stocks? We do. We have over 6 million dollars in stocked items. The best part? Its all ready to ship. Today.

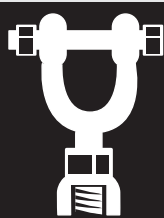
INDUSCO
WIRE ROPE & FITTINGS

800-727-0665

FAX: 800-666-0757

www.induscowirerope.com

IT'S READY TO SHIP



WIRE ROPE

Please contact us by phone or email to receive this brand new and comprehensive catalogue. You will find wire ropes for all your lifting applications.

- The Proper Wire Rope for your Equipment
- Metric Sizes for Tower Cranes
- Metric Sizes for Overhead Travelling Cranes
- Metric Sizes for Mobile Cranes
- Contact UNIROPE Ltd. for that "hard-to-find" rope type
- UNIROPE – for Wire Rope that fits! From Stock



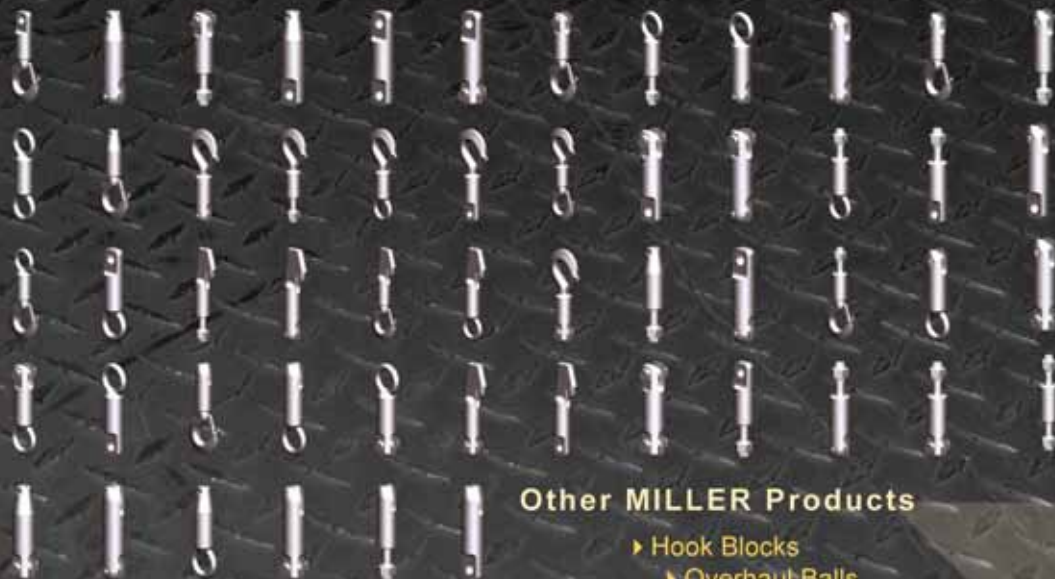
UNIROPE LIMITED, 3070 UNIVERSAL DRIVE, MISSISSAUGA, ON L4X 2C8 CANADA
P: 905 624 5131 : 1 800 457 9997 : INFO@UNIROPE.COM : WWW.UNIROPE.COM

UNIROPE®

MILLER

54 termination combinations to suit your requirements so far. Don't see the one you need? No problem. Miller has the largest range of swivels worldwide and customization is our specialty. We've been at it since 1935 and have more than a few ideas.

54 Varieties... & COUNTING



- ▶ Angular Contact Y-Link
- ▶ Thrust Bearing Econo-Link
- ▶ Stainless
- ▶ Undersea Hydro-Link/Chain
- ▶ Line Pulling
- ▶ Foundation Drilling
- ▶ Insulated
- ▶ Custom Designs
- ▶ Working Loads To 600 Tons +

Other MILLER Products

- ▶ Hook Blocks
- ▶ Overhaul Balls
- ▶ Sheaves
- ▶ Forged Hooks
- ▶ Insulated Links

www.millerproducts.net

Miller Products
100A Sturbridge Rd.
Charlton, MA 01507 USA
T. 1-508-248-3941
1-800-733-7071
F. 1-508-248-0639
E-mail: info@millerproducts.net

Guidance On Safe Sling Use

Continued from pg 13

Rigging Practices

- Ensure that the load is evenly distributed across the width of the metal mesh,
- Ensure that slings are hitched in a manner providing control of the load,
- Ensure that sharp edges in contact with slings are padded with material of sufficient strength to protect the sling,
- Ensure that slings are shortened or adjusted only by methods approved by the sling manufacturer or a qualified person,
- Ensure that, during lifting with or without a load, personnel are alert for possible snagging,
- Ensure that, in a basket hitch, the load is balanced to prevent slippage,
- When using a basket hitch, ensure that the legs of the sling contain or support the load from the sides, above the center of gravity, so that the load remains under control,
- Ensure that, in a choker hitch, the choke point is only on the sling body, never on a fitting,
- Ensure that, in a choker hitch, an angle of choke less than 120 degrees is not used without reducing the rated load,
- Ensure that slings are not constricted, bunched, or pinched by the load, hook, or any fitting,
- Ensure that, in a choker hitch, the load is balanced to prevent edge overload,
- Do not rest loads on the sling,
- Do not pull a sling from under a load when the load is resting on the sling,
- Do not drag slings on the floor or over abrasive surfaces,
- Do not straighten a spiral or cross rod or force a spiral into position,
- Ensure that slings used in pairs are attached to a spreader beam,
- Do not allow shock loading, and
- Avoid twisting and kinking.

Proof testing:

Before initial use, ensure that each new, repaired, or reconditioned metal mesh sling, including all welded components in the sling assembly, is proof tested by the sling manufacturer or a qualified person.

Ensure that coated slings are proof tested before the coating is applied.

Environmental effects:

You may use metal mesh slings without a rated load reduction in temperatures ranging from minus 20 degrees F (minus 29 degrees C) to 550 degrees F (288 degrees C) except elastomer-coated slings.

You may only use elastomer-coated slings in temperature ranges of 0 deg F (minus 18 degrees C) to 200 degrees F (93 degrees C).

Consult the sling manufacturer for temperatures outside of these ranges.

Chemically active environments can affect the strength of metal mesh slings. Consult the manufacturer before using a sling in such environments

Sections 4-6 will continue in the next issue of Slingmakers.

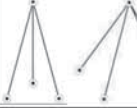
**TABLE 1
RATED LOAD FOR GRADE 80 ALLOY STEEL CHAIN SLINGS
VERTICAL AND BRIDLE HITCHES**

Nominal Chain Size	SINGLE LEG SLINGS										DOUBLE LEG BRIDLE SLINGS SINGLE BASKET SLINGS										TRIPLE AND QUADRUPLE LEG BRIDLE SLINGS										DOUBLE BASKET SLINGS									
	Horizontal Angle (Note 1)																																							
			90°		60°		45°		30°				60°		45°		30°						45°		30°															
in	mm	lb		lb		lb		lb		lb		lb		lb		lb		lb		lb		lb		lb																
7/32	5.5	2,100		3,600		3,000		2,100		5,500		4,400		3,200																										
9/32	7	3,500		6,100		4,900		3,500		9,100		7,400		5,200																										
5/16	8	4,500		7,800		6,400		4,500		11,700		9,500		6,800																										
3/8	10	7,100		12,300		10,000		7,100		18,400		15,100		10,600																										
1/2	13	12,000		20,800		17,000		12,000		31,200		25,500		18,000																										
5/8	16	18,100		31,300		25,600		18,100		47,000		38,400		27,100																										
3/4	20	28,300		49,000		40,000		28,300		73,500		60,000		42,400																										
7/8	22	34,200		59,200		48,400		34,200		88,900		72,500		51,300																										
1	26	47,700		82,600		67,400		47,700		123,900		101,200		71,500																										
1-1/4	32	72,300		125,200		102,200		72,300		187,800		153,400		108,400																										

NOTES:

(1) The horizontal angle is the angle formed between the inclined leg and the horizontal plane [see figure 1(d)].

**TABLE 2
RATED LOAD FOR GRADE 100 ALLOY STEEL CHAIN SLINGS
VERTICAL AND BRIDLE HITCHES**

VERTICAL AND BRIDLE SLINGS									
Nominal Chain Size	Single Leg Slings		Double Leg Bridle Slings Single Basket Slings				Triple and Quadruple Leg Bridle Slings Double Basket Slings		
									
	Horizontal Angle [Note 1]								
	90°		60°		45°		30°		
in	mm	lb	lb	lb	lb	lb	lb	lb	lb
7/32	5.5	2,700	4,700	3,800	2,700	7,000	5,700	4,000	
9/32	7	4,300	7,400	6,100	4,300	11,200	9,100	6,400	
5/16	8	5,700	9,900	8,100	5,700	14,800	12,100	8,500	
3/8	10	8,800	15,200	12,400	8,800	22,900	18,700	13,200	
1/2	13	15,000	26,000	21,200	15,000	39,000	31,800	22,500	
5/8	16	22,600	39,100	32,000	22,600	58,700	47,900	33,900	
3/4	20	35,300	61,100	49,900	35,300	91,700	74,900	53,000	
7/8	22	42,700	74,000	60,400	42,700	110,900	90,600	64,000	

NOTES:

(1) The horizontal angle is the angle formed between the inclined leg and the horizontal plane [see figure 1(d)].

**TABLE 3
RATED LOAD FOR GRADE 80 ALLOY STEEL CHAIN SLINGS
CHOKER HITCHES [Note 2]**

CHOKER HITCHES [Note 2]								
Nominal Chain Size	Single Leg Slings		Double Leg Bridle Slings		Single Basket Slings		Triple and Quadruple Leg Bridle Slings Double Basket Slings	
								
	Horizontal Angle [Note 1]							
	90°		60°		45°		30°	
in	mm	lb	lb	lb	lb	lb	lb	
7/32	5.5	1,700	2,900	2,400	1,700	4,400	3,500	
9/32	7	2,800	5,000	3,900	2,800	7,300	5,900	
5/16	8	3,600	6,200	5,100	3,600	9,300	7,600	
3/8	10	5,700	9,800	8,000	5,700	14,700	12,100	
1/2	13	9,600	16,600	13,600	9,600	25,000	20,400	
5/8	16	14,500	25,000	20,500	14,500	37,600	30,700	
3/4	20	22,600	39,200	32,000	22,600	58,800	48,000	
7/8	22	27,400	47,400	38,700	27,400	71,100	58,000	
1	26	38,200	66,100	53,900	38,200	99,100	81,000	
1-1/4	32	57,800	100,200	81,800	57,800	150,200	122,700	
							86,700	

NOTES:

(1) The horizontal angle is the angle formed between the inclined leg and the horizontal plane [see figure 1(d)].

(2) Rated loads are for angles of choke greater than 120 degrees.

TABLE 4
RATED LOAD FOR GRADE 100 ALLOY STEEL CHAIN SLINGS
CHOKER HITCHES [Note2]

Nominal Chain Size	Single Leg Slings	Double Leg Bridle Slings Single Basket Slings	Triple and Quadruple Leg Bridle Slings Double Basket Slings	Horizontal Angle [Note 1]							
				90°		60°		45°		30°	
				lb	lb	lb	lb	lb	lb	lb	lb
				in	mm	in	mm	in	mm	in	mm
7/32	5.5	2,100	3,600	3,000	2,100	5,500	4,400	3,200			
9/32	7	3,500	6,100	4,900	3,500	9,100	7,400	5,200			
5/16	8	4,500	7,800	6,400	4,500	11,700	9,500	6,800			
3/8	10	7,100	12,300	10,000	7,100	18,400	15,100	10,600			
1/2	13	12,000	20,800	17,000	12,000	31,200	25,500	18,000			
5/8	16	18,100	31,300	25,600	18,100	47,000	38,400	27,100			
3/4	20	28,300	49,000	40,000	28,300	73,500	60,000	42,400			
7/8	22	34,200	59,200	48,400	34,200	88,900	72,500	51,300			

NOTES:
(1) The horizontal angle is the angle formed between the inclined leg and the horizontal plane [see figure 1(d)].
(2) Rated loads are for angles of choke greater than 120 degrees.

Table 5
Effect of Elevated Temperature on Rated Load of Alloy Steel Chain

Temperature		Grade 80		Grade 100	
(°F)	(°C)	Temporary Reduction of Rated Load WHILE AT Temperature	Permanent Reduction of Rated Load AFTER EXPOSURE TO Temperature	Temporary Reduction of Rated Load WHILE AT Temperature	Permanent Reduction of Rated Load AFTER EXPOSURE TO Temperature
Below 400	Below 204	NONE	NONE	NONE	NONE
400	204	10%	None	15%	None
500	260	15%	None	25%	5%
600	316	20%	5%	30%	15%
700	371	30%	10%	40%	20%
800	427	40%	15%	50%	25%
900	482	50%	20%	60%	30%
1000	538	60%	25%	70%	35%
Over 1000	Over 538	REMOVE FROM SERVICE			

Table 6
Minimum Allowable Thickness at Any Point on a Link

Nominal Chain or Coupling Link Size		Minimum Allowable Thickness at Any Point on The Link	
In *	Mm	In	mm
7/32	5.5	0.189	4.80
9/32	7	0.239	6.07
5/16	8	0.273	6.93
3/8	10	0.342	8.69
1/2	13	0.443	11.26
5/8	16	0.546	13.87
3/4	20	0.687	17.45
7/8	22	0.750	19.05
1	26	0.887	22.53
1 1/4	32	1.091	27.71

Table 7
Rated Load for Single- and Two-Leg Slings 6x19 or 6x36 Classification Extra Improved Plow Steel (EIPS) Grade Fiber Core (FC) Wire Rope Based on Design Factor = 5 and Rated Loads Expressed in Tons (2,000 lb)

Hitch Type	Single-Leg				Two-Leg Bridle								Choker	
	Vertical		Choker		Vertical Basket		Horizontal Angle		Horizontal Angle		Horizontal Angle		Horizontal Angle	
	60°		45°		30°		60°		45°		30°		60°	
	HT	MS	S	HT&MS	HT	MS	S	HT&MS	HT	MS	S	HT&MS	HT	MS
Rope Diameter, in.	1/4	0.54	0.56	0.60	0.42	1.1	1.1	1.1	1.1	1.1	0.94	0.97	0.77	0.79
5/16	0.83	0.87	0.94	0.66	1.71	1.71	1.71	1.71	1.71	1.71	1.4	1.5	1.2	1.2
3/8	1.2	1.2	1.3	0.94	2.42	2.42	2.42	2.42	2.42	2.42	2.0	2.2	1.7	1.8
7/16	1.6	1.7	1.8	1.3	3.23	3.23	3.23	3.23	3.23	3.23	2.7	2.9	2.2	2.4
1/2	2.0	2.2	2.4	1.6	4.04	4.04	4.04	4.04	4.04	4.04	3.5	3.8	2.9	3.1
5/8	2.5	2.7	3.0	2.1	5.05	5.05	5.05	5.05	5.05	5.05	4.4	4.8	3.6	3.9
3/4	3.1	3.4	3.7	2.6	6.26	6.26	6.26	6.26	6.26	6.26	5.3	5.9	4.4	4.8
7/8	4.3	4.8	5.2	3.7	8.62	8.62	8.62	8.62	8.62	8.62	7.4	8.4	6.1	6.8
1	5.7	6.6	7.1	5.0	11	11	11	11	11	11	9.8	11	8.0	9.3
1 1/8	7.4	8.3	9.2	6.4	15	17	17	15	17	17	13	14	10	12
1 1/4	9.3	10	12	8.1	19	21	21	19	21	21	16	18	13	15
1 1/2	11	13	14	9.9	23	26	26	23	26	26	20	22	16	18

GENERAL NOTES:
HT = hand-tucked splice.
MS = mechanical splice.
S = swaged or poured socket.
Rated loads based on minimum D/d ratio of 25/1.
(e) Rated load based on pin diameter no larger than natural eye width or less than the nominal sling diameter.
(f) For choker hitch, the angle of choke is 120 deg or greater.

Table 8
Rated Load for Three- and Four-Leg Slings 6x19 or 6x36 Classification Extra Improved Plow Steel (EIPS) Grade Fiber Core (FC) Wire Rope Based on Design Factor = 5 and Rated Loads Expressed in Tons (2,000 lb)

Hitch Type	Three-Leg								Four-Leg							
	Vertical				Horizontal Angle				Vertical				Horizontal Angle			
	60 deg				45 deg				60 deg				45 deg			
	HT	MS	HT	MS	HT	MS	HT	MS	HT	MS	HT	MS	HT	MS	HT	MS
Rope Diameter, in.	1/4	1.6	1.7	1.4	1.4	1.2	1.2	0.81	0.84	2.2	2.2	1.9	1.9	1.5	1.6	1.1
5/16	2.5	2.6	2.2	2.3	1.8	1.8	1.3	1.3	3.3	3.5	2.9	3.0	2.4	2.5	1.7	1.7
3/8	3.5	3.7	3.1	3.2	2.5	2.6	1.8	1.9	4.7	5.0	4.1	4.3	3.3	3.5	2.4	2.5
7/16	4.7	5.0	4.1	4.4	3.4	3.6	2.4	2.5	6.3	6.7	5.5	5.8	4.5	4.8	3.2	3.4
1/2	6.1	6.5	5.3	5.7	4.3	4.6	3.0	3.3	8.1	8.7	7.0	7.5	5.7	6.2	4.0	4.4
5/8	7.6	8.2	6.6	7.1	5.4	5.8	3.8	4.1	10	11	8.7	9.5	7.1	7.8	5.0	5.5
3/4	9.8	10	8.0	8.8	6.5	7.2	4.6	5.1	12	14	11	12	8.7	9.6	6.2	6.8
7/8	13	15	11	13	9.1	10	6.4	7.3	17	19	15	17	12	14	8.5	9.7
1	17	20	15	17	12	14	8.5	9.8	23	26	20	23	16	19	11	13
1 1/8	22	25	19	22	16	18	11	12	29	33	25	29	21	23	15	17
1 1/4	28	31	24	27	20	22	14	16	37	42	32	36	26	29	19	21
1 1/2	34	38	30	33	24	27	17	19	45	51	39	44	32	36	23	26

GENERAL NOTES:
HT = hand-tucked splice.
MS = mechanical splice.
Rated loads based on minimum D/d ratio of 25/1.
Rated load based on pin diameter no larger than natural eye width or less than the nominal sling diameter.

Table 9
Rated Load for Single- and Two-Leg Slings 6x19 or 6x36 Classification Extra Improved Plow Steel (EIPS) Grade Independent Wire Rope Core (IWRC) Wire Rope Based on Design Factor = 5 and Rated Loads Expressed in Tons (2,000 lb)

Hitch Type	Single-Leg				Two-Leg Bridle or Basket								Choker	
	Vertical		Choker		Vertical Basket		Horizontal Angle		Horizontal Angle		Horizontal Angle		Horizontal Angle	
	60°		45°		30°		60°		45°		30°		60°	
	HT	MS	S	HT	MS	S	HT	MS	HT	MS	S	HT	MS	S
Rope Diameter, in.	1/4	0.54	0.60	0.68	0.42	0.48	1.1	1.1	1.1	1.1	0.94	1.1	0.77	0.91
5/16	0.83	1.0	1.1	0.66	0.74	1.72	0.91	1.72	0.91	1.72	0.91	1.4	1.7	1.4
3/8	1.2	1.4	1.5	0.94	1.1	2.42	1.2	2.42	1.2	2.42	1.2	2.0	2.5	2.0
7/16	1.6	1.9	2.0	1.3	1.4	3.23	1.3	3.23	1.3	3.23	1.3	2.7	3.4	2.7
1/2	2.0	2.5	2.7	1.6	1.9	4.05	1.4	4.05	1.4	4.05	1.4	3.5	4.4	3.5
5/8	2.5	3.2	3.4	2.1	2.4	5.06	1.6	5.06	1.6	5.06	1.6	4.4	5.5	4.4
3/4	3.1	3.9	4.1	2.6	2.9	6.27	1.8	6.27	1.8	6.27	1.8	5.3	6.8	5.3
7/8	4.3	5.6	5.9	3.7	4.1	8.61	2.4	8.61	2.4	8.61	2.4	7.1	9.1	7.1
1	5.7	7.6	8.0	5.0	5.6	11	3.1	11	3.1	11	3.1	9.8	13	9.8
1 1/8	7.4	9.8	10	6.4	7.2	15	4.0	15	4.0	15	4.0	13	17	13
1 1/4	9.3	12	13	8.1	9.1	19	5.1	19	5.1	19	5.1	16	21	16
1 1/2	11	15	16	9.9	11	23	6.0	23	6.0	23	6.0	19	25	19
1 3/4	14	18	19	12	13	27	7.0	27	7.0	27	7.0	23	30	23
1 1/2	16	21	23	14	16	32	8.0	32	8.0	32	8.0	28	37	28
1 3/4	19	24	26	16	18	38	9.0	38	9.0	38	9.0	33	43	33
1 1/2	22	28	31	19	21	44	10	44	10	44	10	38	49	38
1 3/4	25	32	35	22	24	50	11	50	11	50	11	43	56	43
2	28	37	40	25	28	56	12	56	12	56	12	49	63	49

GENERAL NOTES:
HT = hand-tucked splice.
MS = mechanical splice.
S = swaged or poured socket.
Rated loads based on minimum D/d ratio of 25/1.
(e) Rated load based on pin diameter no larger than natural eye width or less than the nominal sling diameter.
(f) For choker hitch, the angle of choke is 120 deg or greater.

Table 10
Rated Load for Three- and Four-Leg Slings 6x19 or 6x36 Classification Extra Improved Plow Steel (EIPS) Grade Independent Wire Rope Core (IWRC) Wire Rope Based on Design Factor = 5 and Rated Loads Expressed in Tons (2,000 lb)

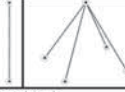
Based on Design Factor of 5 and Rated Loads Expressed in Tons (1000 Lbs.)																	
Rope Diameter, in.	Three-Leg									Four-Leg							
																	
	Horizontal Angle									Horizontal Angle							
	60 deg			45 deg			30 deg			60 deg			45 deg			30 deg	
HT	MS	HT	MS	HT	MS	HT	MS	HT	MS	HT	MS	HT	MS	HT	MS	HT	MS
1/4	1.6	1.9	1.4	1.7	1.2	1.4	0.81	0.97	2.2	2.6	1.9	2.2	1.5	1.8	1.1	1.3	
5/16	2.5	3.0	2.2	2.6	1.8	2.1	1.3	1.5	3.3	4.0	2.9	3.5	2.4	2.8	1.7	2.0	
3/8	3.5	4.3	3.1	3.7	2.5	3.0	1.8	2.2	4.7	5.7	4.1	5.0	3.3	4.1	2.4	2.9	
7/16	4.7	5.8	4.1	5.0	3.4	4.1	2.4	2.9	6.3	7.8	5.5	6.7	4.5	5.5	3.2	3.9	
1/2	6.1	7.6	5.3	6.6	4.3	5.4	3.0	3.8	8.1	10	7.0	8.8	5.7	7.1	4.0	5.1	
9/16	7.6	9.6	6.6	8.3	5.4	6.8	3.8	4.8	10	13	8.7	11	7.1	9.0	5.0	6.4	
5/8	9.3	12	8.0	10	6.5	8.3	4.6	5.9	12	16	11	14	8.7	11	6.2	7.8	
3/4	13	17	11	15	9.1	12	6.4	8.4	17	22	15	19	12	16	8.6	11	
7/8	17	23	15	20	12	16	8.5	11	23	30	20	26	16	21	11	15	
1	22	29	19	26	16	21	11	15	29	39	25	34	21	28	15	20	
1 1/8	28	36	24	31	20	26	14	18	37	48	32	42	26	34	19	24	
1 1/4	34	44	30	38	24	31	17	22	45	59	39	51	32	42	23	30	
1 3/8	41	53	36	46	29	38	21	27	55	71	47	62	39	50	27	36	
1 1/2	49	63	42	55	34	45	24	32	65	84	56	73	46	60	32	42	
1 5/8	56	73	49	63	40	52	28	37	75	98	65	85	53	69	38	49	
1 3/4	65	85	57	74	46	60	33	42	87	113	76	98	62	80	44	57	
1 7/8	74	97	64	84	53	68	37	48	103	129	86	112	70	91	50	64	
2	84	110	73	95	60	78	42	55	113	147	98	127	80	104	56	73	

Table 11
Rated Load for Single- and Two-Leg Slings 6x19 or 6x36 Classification
Extra Extra Improved Plow Steel (EEIPS) Grade Independent Wire Rope Core (IWRC) Wire Rope
Based on Design Factor = 5 and Rated Loads Expressed in Tons (2,000 lb)

Hitch Type	Single-Leg								Two-Leg Bridle								Choker															
																																
	Vertical		Choker		Vertical Basket		Vertical		60°		45°		30°		30°		60°		30°													
Rope Dia- meter, in.	HT	MS	S	HT	MS	HT	MS	HT	MS	HT	MS	HT	MS	HT	MS	HT	MS	HT	MS	HT	MS											
1/4	0.60	0.71	0.74	0.46	0.52	1.2	1.4	1.4	1.2	1.4	1.0	1.2	0.84	1.0	0.60	0.71	0.80	0.90	0.46	0.5												
5/16	0.92	1.1	1.2	0.72	0.81	1.8	2.2	2.1	1.8	2.2	1.6	1.9	1.3	1.6	0.92	1.1	1.2	1.4	0.72	0.8												
3/8	1.3	1.6	1.7	1.0	1.2	2.6	3.2	3.1	2.6	3.2	2.3	2.7	1.8	2.2	1.3	1.6	1.8	2.0	1.0	1.2												
7/16	1.7	2.1	2.2	1.4	1.6	3.5	4.3	4.1	3.5	4.3	3.0	3.7	2.5	3.0	1.7	2.1	2.4	2.7	1.4	1.6												
1/2	2.2	2.8	2.9	1.8	2.0	4.5	5.5	5.4	4.5	5.5	3.9	4.8	3.1	3.9	2.2	2.8	3.1	3.5	1.8	2.0												
9/16	2.8	3.5	3.7	2.3	2.6	5.6	7.0	6.8	5.6	7.0	4.8	6.1	3.9	5.0	2.8	3.5	4.0	4.5	2.3	2.6												
5/8	3.4	4.3	4.5	2.8	3.2	6.8	8.6	8.4	6.8	8.6	5.9	7.5	4.8	6.1	3.4	4.3	4.9	5.5	2.8	3.2												
3/4	4.7	6.2	6.5	4.0	4.5	9.4	12	12	9.4	12	8.2	11	6.7	8.7	4.7	6.2	7.0	7.9	4.0	4.5												
7/8	6.2	8.3	8.8	5.5	6.1	12	17	16	12	17	11	14	8.8	12	6.2	8.3	9.4	11	5.5	6.1												
1	8.1	11	11	7.1	8.0	16	22	21	16	22	14	19	11	15	8.1	11	12	14	7.1	8.0												
1 1/8	10	14	15	8.9	10	20	26	26	20	26	18	24	14	18	10	14	15	18	8.9	10												
1 1/4	13	18	19	11	12	25	33	33	25	33	22	28	18	24	13	18	19	24	11	12												
1 1/2	15	21	22	13	14	30	39	39	30	39	26	33	21	28	15	21	23	28	13	14												
1 3/8	18	24	25	16	18	36	46	46	36	46	31	39	25	33	18	24	27	33	16	18												
1 7/8	21	29	29	18	20	44	57	57	44	57	36	45	29	38	21	29	31	38	18	20												
1 3/4	24	33	34	21	24	48	63	63	48	63	42	52	34	44	24	33	36	44	21	24												
1 7/8	27	37	38	24	28	55	71	71	55	71	47	58	39	50	27	37	41	50	24	28												
2	31	43	43	27	32	62	80	80	62	80	54	67	44	57	31	43	47	57	27	32												

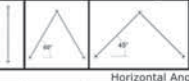
GENERAL NOTES:
 HT = hand-tucked splice.
 MS = mechanical splice.
 S = swaged or poured socket.
 Rated loads based on minimum D/d ratio of 25/1.
 (e) Rated load based on pin diameter no larger than natural eye width or less than the nominal sling diameter.
 (f) For choker hitch, the angle of choke is 120 deg or greater.

Table 12
Rated Load for Three- and Four-Leg Slings 6x19 or 6x36 Classification
Extra Extra Improved Plow Steel (EEIPS) Grade Independent Wire Rope Core (IWRC) Wire Rope
Based on Design Factor = 5 and Rated Loads Expressed in Tons (2,000 lb)

Rope Diameter, in.	Three-Leg												Four-Leg												
																									
	Horizontal Angle												Horizontal Angle												
	Vertical			60 deg			45 deg			30 deg				Vertical			60 deg			45 deg			30 deg		
	HT	MS	S	HT	MS	S	HT	MS	S	HT	MS	S	HT	MS	S	HT	MS	S	HT	MS	S	HT	MS	S	
$\frac{1}{4}$	1.8	2.1	1.6	1.8	1.3	1.5	0.90	1.1	2.4	2.8	2.1	2.4	1.7	2.0	1.2	1.4	1.7	2.0	1.2	1.4	1.7	2.0	1.2	1.4	
$\frac{5}{16}$	2.8	3.3	2.4	2.9	1.9	2.3	1.4	1.7	3.7	4.4	3.2	3.8	2.6	3.1	1.8	2.2	2.6	3.1	2.2	2.7	3.2	3.8	2.6	3.1	
$\frac{3}{8}$	3.9	4.7	3.4	4.1	2.8	3.3	1.9	2.4	5.2	6.3	4.5	5.5	3.7	4.5	2.6	3.2	3.9	4.7	3.4	4.1	2.8	3.3	1.9	2.4	
$\frac{7}{16}$	5.2	6.4	4.5	5.5	3.7	4.5	2.6	3.2	7.0	8.5	6.0	7.4	4.9	6.0	3.5	4.3	5.2	6.3	4.5	5.5	3.7	4.5	2.6	3.2	
$\frac{1}{2}$	6.7	8.3	5.8	7.2	4.7	5.9	3.3	4.2	8.9	11	7.7	9.6	6.3	7.8	4.5	5.5	6.7	8.3	5.8	7.2	4.7	5.9	3.3	4.2	
$\frac{5}{16}$	8.3	11	7.2	9.1	5.9	7.5	4.2	5.3	11	14	9.6	12	7.9	9.9	5.6	7.0	8.3	11	7.2	9.1	5.9	7.5	4.2	5.3	
$\frac{3}{8}$	10	13	8.8	11	7.2	9.1	5.1	6.5	14	17	12	15	9.6	12	6.8	8.6	10	13	8.8	11	7.2	9.1	5.1	6.5	
$\frac{1}{2}$	14	18	12	16	10	13	7.1	9.2	19	25	16	21	13	17	9.4	12	18	23	15	19	12	16	10	13	
$\frac{7}{16}$	19	25	16	22	13	18	9.4	12	25	33	22	29	18	24	12	17	25	33	22	29	18	24	12	17	
1	24	32	21	28	17	23	12	16	32	43	28	37	23	31	16	22	32	43	28	37	23	31	16	22	
$1\frac{1}{16}$	31	...	26	...	22	...	15	...	41	...	35	...	29	...	20	...	31	...	26	...	22	...	15	...	
$1\frac{1}{8}$	38	...	32	...	27	...	19	...	50	...	43	...	35	...	25	...	38	...	32	...	27	...	19	...	
$1\frac{3}{8}$	45	...	39	...	32	...	23	...	60	...	52	...	43	...	30	...	45	...	39	...	32	...	23	...	
$1\frac{1}{2}$	53	...	46	...	38	...	27	...	71	...	62	...	50	...	36	...	53	...	46	...	38	...	27	...	
$1\frac{5}{8}$	62	...	54	...	44	...	31	...	83	...	72	...	59	...	41	...	62	...	54	...	44	...	31	...	
$1\frac{3}{4}$	72	...	62	...	51	...	36	...	96	...	83	...	68	...	48	...	72	...	62	...	51	...	36	...	
$1\frac{7}{8}$	82	...	71	...	58	...	41	...	109	...	95	...	77	...	55	...	82	...	71	...	58	...	41	...	
2	93	...	80	...	66	...	46	...	124	...	107	...	88	...	62	...	93	...	80	...	66	...	46	...	

GENERAL NOTES:
 HT = hand-tucked splice.
 MS = mechanical splice.
 S = swaged or poured socket.
 Rated loads based on minimum D/d ratio of 25/1.
 Rated load based on pin diameter no larger than natural eye width or less than the nominal sling diameter.

Table 13
Rated Load for Cable-Laid Wire Rope Single- and Two-Leg Slings
Based on Design Factor = 5 and Rated Loads Expressed in Tons (2,000 lb)

Rope Diameter, in.	Single-Leg						Two-Leg Bridle						Two-Leg Choker	
														
	Hitch Type			Vertical Basket			Horizontal Angle						Horizontal Angle	
	Vertical	Choker	Vertical Basket	Vertical	60°	45°	30°	60°	30°					
7X7X7 Construction														
1/4	0.50	0.35	1.0	1.0	0.87	0.71	0.50	0.61	0.35					
3/8	1.1	0.8	2.2	2.2	1.9	1.5	1.1	1.3	0.76					
1/2	1.9	1.3	3.7	3.7	3.2	2.6	1.9	2.2	1.3					
5/8	2.8	1.9	5.5	5.5	4.8	3.9	2.8	3.4	1.9					
3/4	3.8	2.7	7.6	7.6	6.6	5.4	3.8	4.6	2.7					
7/8	5.0	3.5	10	10	8.7	7.1	5.0	6.1	3.5					
1	6.4	4.5	13	13	11	9.1	6.4	7.8	4.5					
7X7X19 Construction														
1/2	1.9	1.3	3.8	3.8	3.3	2.7	1.9	2.3	1.3					
5/8	2.9	2.0	5.8	5.8	5.0	4.1	2.9	3.5	2.0					
3/4	4.1	2.8	8.1	8.1	7.0	5.8	4.1	4.9	2.8					
7/8	5.4	3.8	11	11	9.3	7.6	5.4	6.5	3.8					
1	6.0	4.8	14	14	12	9.7	6.9	8.3	4.8					
1 1/8	8.3	5.8	17	17	14	12	8.3	10	5.8					
1 1/4	9.9	6.9	20	20	17	14	9.9	12	6.9					
7X6X19 or 7X6X36 IWRC Classification														
3/4	3.8	2.7	7.6	7.6	6.6	5.4	3.8	4.6	2.7					
7/8	5.0	3.5	10	10	8.7	7.1	5.0	6.1	3.5					
1	6.4	4.5	13	13	11	9.1	6.4	7.8	4.5					
1 1/8	7.7	5.4	15	15	13	11	7.7	9.3	5.4					
1 1/4	9.3	6.5	19	19	16	13	9.3	11	6.5					
1 3/8	11	7.6	22	22	19	15	11	13	7.6					
1 1/2	13	9.0	26	26	22	18	13	16	9.0					
1 5/8	15	10	30	30	26	21	15	18	10					

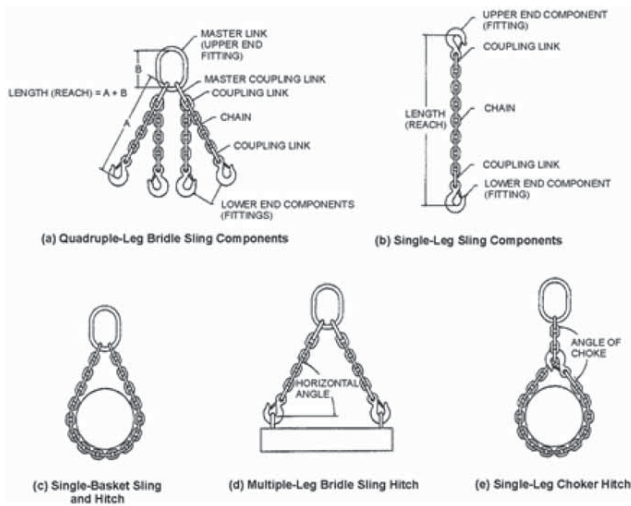
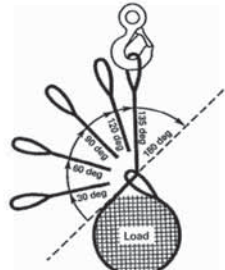


Fig. 1 Alloy Steel Chain Slings: Configurations, Components, and Hitches



Angle of choke, deg	Rated Capacity, % [Note (1)]
Over 120	100
90-120	87
60-89	74
30-59	62
0-29	49

NOTE:
(1) Percent of sling rated capacity in a choker hitch.

Fig. 2 Angle of Choke

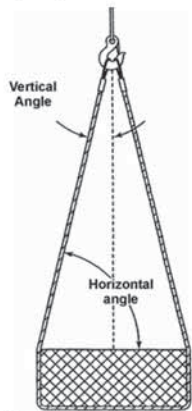
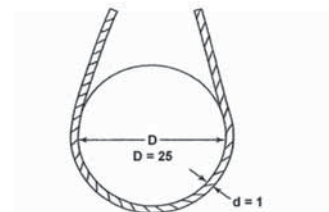
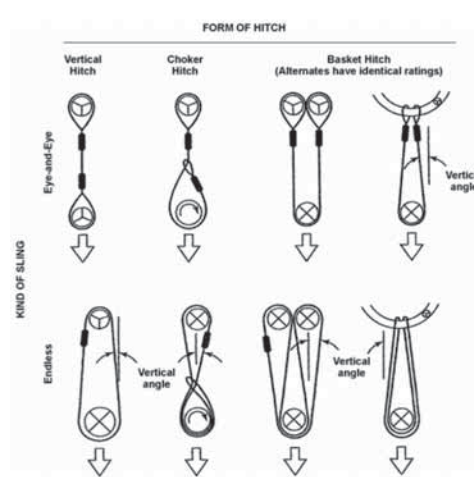


Fig. 3 Angle of Loading



GENERAL NOTE: When D is 25 times the component rope diameter (d), the D/d ratio is expressed as 25/1.

Fig. 4 D/d Ratio

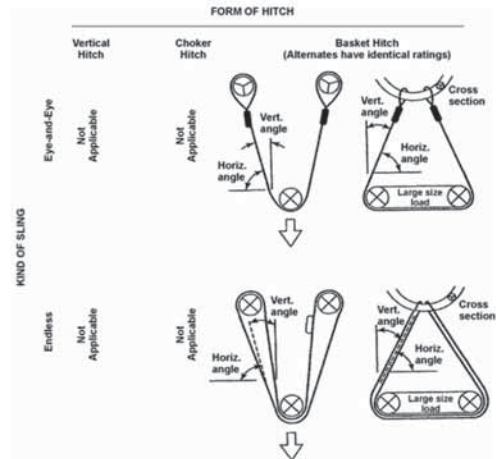


The symbols below represent load or support surfaces in contact with the rope sling. The contact surface diameter divided by the rope diameter is designated D/d ratio as described in Fig. 6. Tables 18, 19, and 20 are based on the D/d ratios indicated below.

- Represents a contact surface which has a diameter of curvature at least double the diameter of the rope from which the sling is made.
- Represents a contact surface which has a diameter of curvature at least 8 times the diameter of the rope.
- Represents a load in choker hitch and illustrates the rotary force on the load and/or the slippage of the rope in contact with the load. Diameter of curvature of load surface is at least double the diameter of the rope.

General Note: Legs 5 deg or less from vertical may be considered vertical. For slings more than 5 deg vertical, the actual angle shall be used.

Fig. 5 Hitch Types for Synthetic Rope Slings



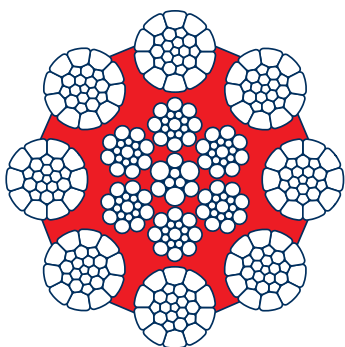
GENERAL NOTE: Legs 5 deg or less from vertical may be considered vertical. Slings with horizontal angles less than 30 deg should not be used.

Fig. 5 Hitch Types for Synthetic Rope Slings (cont'd)

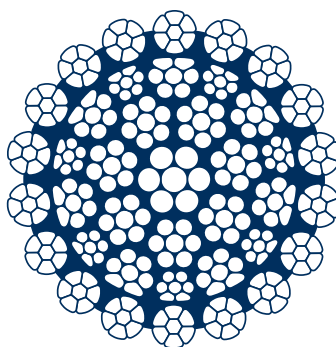
Bought a *cheap* product again?



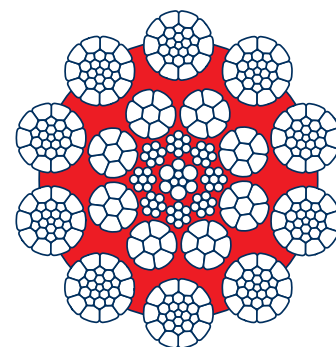
With glasses, and especially with steel wire ropes, this may lead to rather unpleasant results.



**CASAR
Turboplast**



**CASAR
Eurolift**



**CASAR
Superplast 8**

Casar America Inc. Ph# 678 363 6939 email: salescasar@casaramerica.com

BLOCKS

8 to 1,000 tons

- Crane Blocks - Snatch Blocks
- Travelling Blocks - Fast Reeve and Standard
- Single and Multiple Sheaves
- Overhaul Balls - Spreaders



FORGED HOOKS SHEAVES

All sizes and types

SOCKETS

From 3/8" up to 6 1/2" dia.

- Wedge and Spelter Type
- For Cranes, Offshore, Dredging and Moorings

All material factory certified, blocks
proof-tested ISO 9001 certified factory

For more
information,
contact:

Waterman Supply Co., Inc.

910 Mahar St., Wilmington, CA 90748
Ph: 800-322-3131, 310-522-9698 Fax: 310-522-1043
Email: waterman@bigplanet.com

Associated Wire Rope & Rigging, Inc.

8125 Saran Avenue, Playa Del Rey, CA 90293
Ph: 310-448-5444 Fax: 310-448-5446
Email: awrrinc@earthlink.net



SOUTHERN WEAVING

Innovative leadership
in High-Performance
Webbing for the Sling
and Loadbinder
Industries.

Southern Weaving has distinguished itself as a leader
in narrow-fabrics technology since 1924.
Today we produce and stock many high-performance
webbings, including load-bearing webbing
for the sling and loadbinding industries at our plants
in the United States and Canada.

We specialize in fast, dependable service and delivery.

Premier Suppliers of High Performance Webbing

sales@southernweaving.com

PO Box 487 • Greenville, SC 29602

PHONE • 864/233/1635 FAX • 864/240/9302

Plants At: Greenville, SC • Anderson, SC • Easley, SC • Collingwood, Canada • Tarboro, NC



• Nylon and Polyester Sling Webbing 1"-12"
Strength to 9,800 lbs./in.

• Loadbinder Webbing 2"-4"
Strengths to 6,000 lbs./in.

Specialty products including:

- Tube in Tube Round Sling
- Stone Handling and Buffer Webbing
- Plus our patented Scuff Edge Webbing

Holland 1916 Offers:

Metal RFID Enabled Tags



Contact: Zack Barron
zbarron@holland1916.com
 800-633-3046 ext. 20
 1340 Burlington
 North Kansas City, Mo. 64116

Products:

Wire Rope Tags Chain Tags
 Tyvac Tags Printed vinyl tags
 Holland Sling Tag Printer

NOTE: All of the above products can be RFID enabled

RFID is here!



Vinyl RFID Enabled Tags



AMERICAN

Webbing and Fittings Inc.

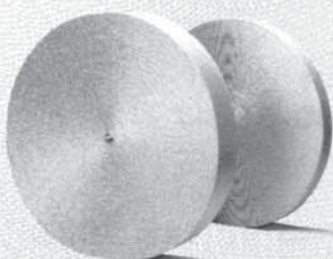
Webbing Specialist

- Manufacture highest quality nylon and polyester lifting and tie down webbings
- Available in 1" through 6" widths; strengths up to 13000 lbs./inch
- Available in 1" through 12" widths; strengths up to 9800 lbs./inch
- Competitively priced
- Standard webbing shipped from stock
- Excellent field support system throughout North America

Call toll free or write for sample book

888-990-9390

4961A Home Road • Winston Salem, NC 27106
 Fax: (336) 767-9529 • Email: webbing@americanwebbing.com



Does your Products Liability Insurance
have your business hanging by a thread?



Most other insurance companies are
raising rates or non-renewing coverage...
SIGNAL is the stable choice.



SELECT INSURANCE GROUP OF NORTH AMERICA, LTD.

Hamilton, Bermuda

Managed by:

Meadowbrook Risk Management,
Hamilton, Bermuda, (441) 292-7569

For more information, contact:

Bernie Martin (415) 285-1954 or Mary Jo Renaud (248) 204-8137

In 1987, wire rope fabricators and distributors found it difficult to obtain adequate products liability insurance at consistent, affordable rates. That crisis prompted a group of wire rope fabricators and distributors to form their own insurance company—Select Insurance Group of North America, Ltd. (S.I.G.N.A.L.).

Facing similar conditions today, S.I.G.N.A.L. provides a stable insurance alternative to the traditional insurance market, and also offers stabilization. S.I.G.N.A.L. is the source for a competitive products liability insurance program with added value.

SIGNAL Advantages:

- Coverage Stability
- Competitive Premiums
- Focused Loss Prevention Service
- Responsive Claims Service
- Policyholder Owned
- Long Term Commitment

The Dynamic Duo of the Lifting Industry

**GENUINE
JOHNSON**



AVAILABILITY • VALUE • DURABILITY • ADAPTABILITY

GUNNEBO JOHNSON
CORPORATION

Second To None.

Corporate Office: 1240 North Harvard • Tulsa, OK USA
Toll Free Telephone: 800-331-5460 • Fax: 918-834-0984
www.gunnebojohnson.com



Your Safety Committee At Work

Continued from pg 19

I shook my head and walked on by, he knew the risk as well as I. He took the chance, I closed an eye, and with that act, I let him die.

I could have saved a life that day, but I chose to look the other way. Now every time I see his wife, I'll know I should have saved his life. That guilt is something I must bear, but it is not something you need to share. If you see a risk that others take, that puts their health or life at stake. The questions asked, or the thing you say, could help him live another day.

If you see a risk and walk away, then hope you never have to say, I could have saved a life that day, but I chose to look the other way.

Taken from Safety 24/7, 2006 by George M. Anderson and Robert L. Lorber

I hope each of you have a wonderful Holiday Season and a prosperous New Year.

If anyone has questions or concerns, please contact Jeff Bishop, Bishop Lifting Products at (713) 674-2266 or Jack Gibbons, Metro Wire Rope Corporation at (908) 964-3690.

2007 Safety Award Winners

Acme Rigging & Supply Co.
Alabama Sling Center
American Drill Bushing
American Webbing & Fittings
Atlantic Wire Rope & Rigging
Baydar & Associates
Bishop Lifting Products
Brugg Wire Rope
Cascade Rigging
Century Tool & Machinery
Chant Engineering Co.
Consolidated Rigging & Marine
D&M Wire Rope
Elko Wire Rope & Mining
First Sling Technology
Grignard Company
Hercules Wire Rope & Sling
Holloway Wire Rope Services
Howard Supply Co.
Industrial Magnetics
Industrial Splicing & Sling
JD Neuhaus
Kennedy Wire Rope & Sling
Kulkoni
Landmann Wire Rope Products
Lift-It Manufacturing
Memphis Chain & Cables
Morgan City Rentals
Newell Davis Co.

QC21
Roberts Testing
Rouster Wire Rope & Rigging
Russel Metals
Safety Sling Co.
Sharrow Cable & Lifting
Southeast Rigging
Southwest Wire Rope
Suncor Stainless
Superior Rigging & Testing
US Rigging Supply
Voto Manufacturing
West Equipment
Wire Rope & Rigging Consultants
Wire Rope Industries (BC Distribution)
Wisconsin Lifting Specialists





Proudly Manufacturing

L-10 LacledeAlloy® Chain in Grey Armour



AND



L-8 LacledeAlloy® Chain in Black Armour

in addition to Transport L-7,
High Test L-4, and Proof Coil L-3



ISO 9001-2000
CERTIFIED

SERVING THE INDUSTRY
SINCE 1854

PH (800) 325-2699
www.lacledechain.com



Horizontal Test Bed with Computer system.
150,000 - 3,000,000 lbs.



Vertical Test Stand. 50,000 lb. Dynamic testing (hoist moving) or static testing (hoist not moving).



Wire Rope Grip. Capacity: 1 1/2", 2", 2 1/2", 3", 4"



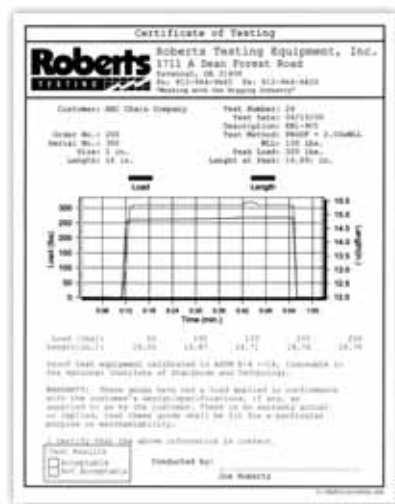
Web Grip. Capacity: 6" and 12" webbing



3,000,000 lb. Test Bed at Lowery Brothers in New Orleans, LA



Horizontal Production Machine



Load cell and Digital Indicator. Load Cell manufactured with 5:1 design factor. Digital Indicator displays pounds of force in a single, clearly visible window.



Portable Test Bed with Grip. Capacity: 100,000 lb. - 150,000 lb.; 20, 30 or 40 foot length.



Vertical Break Test Machine. Capacity: 350,000 lbs. with 12" Web Grip.



PYTHON

HIGH PERFORMANCE WIRE ROPE

> FOR:

- Overhead Cranes, metric and imperial
- Crawler-, Mobile-, Tower Cranes
- Steel Mill Cranes
- Container- Port and Heavy Lift Cranes
- Aluminum- and Paper Mill Cranes
- Special High Strength
- Superior Rotation Resistance

- **Wire Rope Made by WDI**
- **www.pythonrope.com**



Please contact us by phone or email to receive our brand new and comprehensive catalogue. You will find rope solutions for all your lifting needs.

PYTHON®
HIGH PERFORMANCE WIRE ROPE

Available from:

ASC Industries
Python® America
1404 West 175th Street
East Hazelcrest, IL 60429-1820
Phone: 800.255.8973
info@ascindustries.com
www.ascindustries.com

The Carpenter Group
222 Napoleon St.
San Francisco, CA 94124
Phone: 415.285.1954
info@carpenterrigging.com
www.thecarpentergroup.com

Hercules SLR
520 Windmill Road
Dartmouth, Nova Scotia B3B 1B3
Phone: 902.482.3125
dfader@herculeslr.com
www.herculeslr.com

Hercules SLR
3800, route Transcanadienne
Point-Claire, Quebec, H9R 1B1
Phone: 800.361.2247
spallotta@herculeslr.com
www.herculeslr.com

Unirop Limited
3070 Universal Drive
Mississauga, Ontario L4X 2C8
Phone: 800.457.9997
info@unirope.com
www.unirop.com

Unirop Limited
9414 - 39th Avenue
Edmonton, Alberta T6E 5T3
Phone: 780.644.9000
jpavlis@unirope.com
www.unirop.com

Wesco Industries Ltd.
Unit 1, 9663-199A Street
Langley, British Columbia V1M 2X7
Phone: 604.292.1220
tcooper@wescovan.com
www.wescovan.com



NOW IN SPANISH!

BOB'S RIGGING & CRANE HANDBOOKS & CARDS

- ASME STANDARDS - OSHA REGULATIONS
- RIGGING & WIRE ROPE
- MULTIPLE SLING TYPES & FITTINGS
- RIGGING MATH & WEIGHT TABLES
- INSPECTION CRITERIA & CHECKLISTS
- CRANES - SETUP & OPERATION
 - SIGNALING
 - CRITICAL LIFTS
 - LOAD CHARTS



PELLOW
ENGINEERING SERVICES, INC.
PUBLICATIONS
877 • 473 • 5569 (4PELLOW)
JILLELLENA@EVERESTKC.NET
WWW.DONPELLOW.COM



THANK YOU FOR VISITING OUR DEMONSTRATION

at AWRF P.I.E. in PALM SPRINGS!



"The fastest & most reliable method of swaging Flemish eye wire rope slings in the World!"



...Because SEEING IS BELIEVING.

STRIDER
RESOURCE

Lifting and Rigging Products for the 21st Century™

IN STOCK
FOR IMMEDIATE DELIVERY
(with optional swager guarding)

www.strider-resource.com



THE ONE. THE ONLY. THE BEST.

THE ONE PRESS® SWAGING SYSTEM

*The **Fastest** and **Most Reliable**
Method of Swaging Flemish Eye
Wire Rope Slings **in the World.***

In Stock for Immediate Delivery
— **Worldwide** —

Toll Free: 1-877-ONE-PRESS p: 905-778-1960
e-mail: fast@onepress.com f: 905-775-1424

www.onepress.com



Lewis D. "Bill" Anderson
Lloyd "Eric" Anderson
Calibration Technicians

Mobile: (901) 508-7314
Phone: (912) 964-1118
Fax: (912) 964-9420

P.O. Box 935 • Savannah, GA 31498
www.RobertsCalibration.com

The original mechanical splicing systems.



www.talurit.com



Since 1948.

When you've reached the end of your rope...

Shown is Reel-O-Matic's model WTCD 50 Walk-Through Spooling Machine. The unit shown is capable of handling reels up to 12' O.D. x 90" wide x 50,000lbs capacity. Additional models in pay-out and take-up formats are available. Customization is our specialty.



Call Reel-O-Matic (800) 221-7335 or www.reelomatic.com
6408 S Eastern Ave; Oklahoma City, OK 73149



"The Heart Behind the Steel"

INSPECTIONS



Losing Track.



Keeping Track.

MAKE SURE YOU'RE ON THE RIGHT SIDE.

Automate your sling inspections using the power of RFID. Field ID is easy to use, durable and offers a complete inspection system both in the field and in the shop. Developed specifically for distributors and inspectors of lifting and rigging products, Field ID can greatly improve your sling inspection process.

- Improve Safety
- ASME B30.9 Based
- One-Click Inspections
- End User Web Access To Reports
- Easy Identification
- No More Messy Paperwork!

ARE YOU READY FOR **RFID?**



1.800.99.N4SYS
N4SYSTEMS.COM
CONTACT@N4SYSTEMS.COM



Synthetic Sling End Fittings

**NEW For
Type 1 & 2 Slings**



**Web-Trap™
Triangles &
Chokers**



**Or Use The
Unilink™
For Both Ends**



**Web Quick Disconnects
For Pipe Slings**



**Barrel Hooks
For Drum Slings**



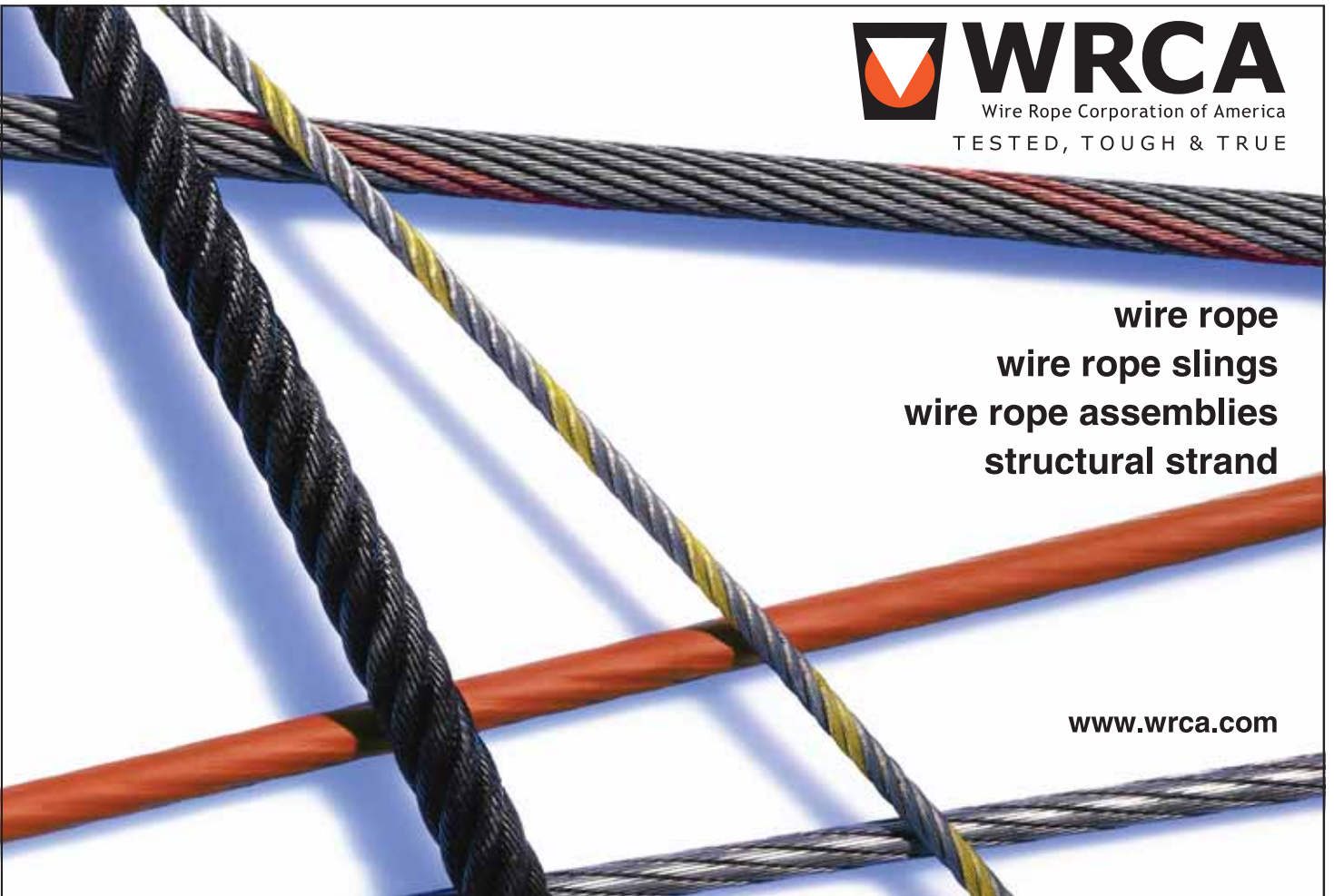
**G-Links™ To Connect
Slings To Hardware Or
Make Quick-Choke™ Slings**



**THE
CALDWELL GROUP**

5055 26th Avenue • Rockford, IL 61109
Phone 815/229-5667 • Fax 815/229-5686

1-800-628-4263 or www.caldwellinc.com



WRCA
Wire Rope Corporation of America

TESTED, TOUGH & TRUE

**wire rope
wire rope slings
wire rope assemblies
structural strand**

www.wrca.com



HEAVY DUTY[®] HOIST RINGS

SAFETY IS OUR ^{only} BUSINESS

BETTER VALUE! UP TO 30% LOWER COST!

IN STOCK FOR IMMEDIATE DELIVERY



- Stronger than Machined
- Forged Alloy Steel
- **MINIMUM** 5:1 Rated Load
- Interchangeable with Machined Hoist Rings
- 40% Fewer Parts
- **100%** Mag Inspected
- World's Largest Inventory

THE ORIGINAL AND ONLY
HEAVY DUTY[®]

PATENT NO 4570987*,
4641986*, 5405210

American DRILL BUSHING CO.
CBC INDUSTRIES, INC.

www.americandrillbushing.com

Email: ADB@americandrillbushing.com

SALES:

7141 Paramount Blvd
Pico Rivera, CA 90660
Toll Free: 800-423-4425
Fax: 323-725-8740

FACTORY & HEADQUARTERS:

5740 Hunt Road
Valdosta, GA 31606
Phone: 229-253-8928
Fax: 229-253-8929

* Patent expired

