









the Crosby group®

PRODUCT CATALOG

with application & warning information

Imperial





Crosby® Gunnebo Industries® Crosby Straightpoint® McKissick®
Crosby BlokCam® CrosbyIP® Crosby Feubo® Speedbinders®

GLOBAL HEADQUARTERS

RICHARDSON
2600 North Central Expwy
Richardson, TX 75080 USA

NORTH AMERICA FACILITIES

LONGVIEW
2414 Crosby Way
Longview, TX 75602 USA

TULSA
2801 Dawson Rd
Tulsa, OK 74110 USA

LITTLE ROCK
2511 West Main St
Jacksonville, AR 72076 USA

ARLINGTON
2101 Exchange Dr
Arlington, TX 76011 USA

MISSISSAUGA
3660 Odyssey Dr, #4
Mississauga, Ontario, Canada
L5M 7N4

LATIN AMERICA FACILITIES

SAO PAULO
Rua Guarani, 485, Vila Conceicão
CEP 09991-060 Diadema, Sao Paulo

EUROPE FACILITIES

HEIST
Industriepark 26/B, 2220
Heist-op-den-Berg, Belgium

PUTTE
Leuvensebaan 51
2580, Putte, Belgium

EDE
Celsiusstraat 51, 6716 BZ
Ede, The Netherlands

GUNNEBO
Trädgatan 5
593 75, Gunnebo, Sweden

VÄXJÖ
Stinavägen 1
352 46, Växjö, Sweden

GOTHENBURG
Marieholmsgatan 44
415 02 Gothenburg, Sweden

LONEVÅG
Osterøyvegen 1328
N-5282, Lonevåg, Norway

ORNETA
Przemysłowa 43, 11-130
Orneta, Poland

HAMPSHIRE
123 Proxima Park, Houghton Ave
Waterlooville, Hants, PO7 3DU, UK

CRADLEY HEATH
Station St
Cradley Heath B64 6AJ, UK

DÜSSELDORF
Heerdter Lohweg 93
40549, Germany

JOIGNY
47, rue de la gare
08700, Joigny-sur-Meuse, France

ASIA PACIFIC FACILITIES

BRISBANE
Unit 1, 24 Gassman Dr
Yatala Qld 4207
Brisbane, Australia

PERTH
46 Goodwood Parade
Burswood WA 6100
Perth, Australia

CUSTOMER SERVICE

UNITED STATES
800-772-1500
crosbycustomerservice@thecrosbygroup.com

CANADA
877-462-7672
sales@crosby.ca

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NORWAY
+47 561 933 00
sales.norway@thecrosbygroup.com

GERMANY
+49 2324 950 754
cs.germany@thecrosbygroup.com

SALES

Visit thecrosbygroup.com/saleslocator to find the local area sales manager for your region.

ENGINEERED SOLUTIONS

To learn more about our global Engineered Solutions group and submit a request for a custom project, visit thecrosbygroup.com/engineeredsolutions.

AUTHORIZED DISTRIBUTORS

Products manufactured by The Crosby Group are available globally through authorized distributors.

Contact your local authorized Crosby Group distributor for product availability, service and support.

LIMITED WARRANTY & LIMITATIONS OF LIABILITY

"Crosby" as used in these terms related to Crosby's Limited Warranty and Limitation of Liability means: the applicable product- or service-selling entity listed in the Order Acknowledgment issued to the Purchaser. For example, the product- or service-selling entity may be THE CROSBY GROUP LLC or a different product- or service-selling entity that is an affiliate of THE CROSBY GROUP LLC, including, without limitation, Gunnebo Industries; Speedbinders; The Crosby Group UK Limited; and Straightpoint UK Ltd. If there is any question as to the identity of "Crosby" or no Order Acknowledgment is issued, then THE CROSBY GROUP LLC (upon request) will specify the identity of "Crosby" as it relates to these terms.

Purchaser and Crosby expressly agree that Crosby's warranty with respect to sale of its products is LIMITED solely to Crosby's choice of repair, replacement or refund of the purchase price of any product or part thereof determined by Crosby to be defective within the first 12 months following the transfer of title of the product from Crosby to the purchaser. Installation or operation of the product in any manner other than as recommended by Crosby, shall void the warranty. No warranty is made for components and accessories made by others when such items are warranted by their respective manufacturer. Purchaser and Crosby expressly agree that upon termination of the aforementioned 12-month period, the purchased product carries no warranty whatsoever. Purchaser and Crosby expressly agree that the remedies provided in this section are the purchaser's exclusive remedies in connection with the purchase or use of the product.

Neither Purchaser, user nor any third party shall be entitled to recover from Crosby (1) any consequential, incidental, punitive, special or indirect damages of any nature, including but not limited to, the cost of any labor expended by others in connection with the goods sold by reason of any alleged non-conformity or breach of warranty on the part of Crosby or costs of material on account thereof, (2) damages of any kind for loss of profits, revenue, data or data use, or (3) damages of any kind for business interruption whether determinable or speculative, loss of business information, goodwill, reputation or privacy, (4), for costs of procuring substitute goods, software or services, incurred by Purchaser, user or any third party, however, arising, whether in an action in contract, tort, under statute or otherwise, and whether or not the possibility or likelihood of such damages were reasonably foreseeable.

ALL OTHER WARRANTIES, INCLUDING EXPRESS WARRANTIES AND THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. ADDITIONALLY, CROSBY HEREBY DISCLAIMS ANY OF ITS OBLIGATIONS OR LIABILITIES ARISING FROM STATUTE, WARRANTY, CONTRACT, TORT OR NEGLIGENCE.

Complete Agreement: This Warranty between purchaser and Crosby is complete. All prior or contemporaneous discussions, representations and/or understandings are merged into this Warranty. All prior or contemporaneous agreements between the parties are superseded by this Warranty.

Choice of Law and Venue: If the applicable Crosby entity's principal place of business is not in Europe, then Purchaser and Crosby expressly agree that any dispute arising out of these terms and all disputes concerning or relating to the purchase, use or operation of the goods shall be governed by the laws of the State of Oklahoma, USA, excluding any conflicts-of-law rules, and any lawsuit shall be filed in Tulsa, Oklahoma, USA. If the applicable Crosby entity's principal place of business is in Europe, then Purchaser and Crosby expressly agree that any dispute arising out of these terms and all disputes concerning or relating to the purchase, use or operation of the goods shall be governed by the laws of England, excluding any conflicts-of-law rules, and any lawsuit shall be filed in London, England. If there is any question as to the location of Crosby's principal place of business, then (upon request) Crosby shall provide specify the location of Crosby's principal place of business.

DIGITAL CATALOG

Download the digital version of this catalog or order print copies at **thecrosbygroup.com/catalog**

SUPPLEMENTAL CATALOGS

Brand-specific catalogs for Gunnebo Industries and Crosby Straightpoint are available. For more information, visit **thecrosbygroup.com/catalog**

DEFINITIONS

STATIC LOAD
The load resulting from a constant applied force or load.

WORKING LOAD LIMIT
The maximum mass or force that the product is authorized to support in general service when the pull is applied in-line, unless noted otherwise, with respect to the centerline of the product. This term is used interchangeably with the following terms: WLL, Rated Load Value, Resultant Working Load.

WORKING LOAD
The maximum mass or force that the product is authorized to support in a particular service.

PROOF LOAD
The average force applied in the performance of a proof test; the average force to which a product may be subjected before deformation occurs.

PROOF TEST
A test applied to a product solely to determine injurious material or manufacturing defects.

ULTIMATE LOAD
The average load or force at which the product fails or no longer supports the load. Interchangeable with Ultimate Strength.

SHOCK LOAD
A force that results from the rapid application of a force (such as impacting or jerking) or rapid movement of a static load. A shock load significantly adds to the static load.

DESIGN FACTOR
An industry term denoting a product's theoretical reserve capacity; usually computed by dividing the ultimate load by the Working Load Limit. Generally expressed as a ratio (for example, 5:1).

COMMERCIAL SURFACE QUALITY
The surface condition of the products shown in this catalog. The surface condition associated with the normal methods of production of raw material and machined surfaces. More refined surface qualities are considered as special.

FATIGUE RATED
Tested to a minimum standard of 20,000 cycles at 1.5 times the Working Load Limit. Will meet the requirements of the Euronorm standards for fatigue.

ADJUSTED WORKING LOAD LIMIT
The reduced maximum mass or force which the product is authorized to support for specific non-standard loading applications.

SHORT TON (T)
North American unit of measure that equals 2,000 lb. Abbreviated by capital T.

METRIC TON (t)
Metric unit of measure that equals 1,000 kg. Abbreviated by lower case t.

GENERAL CAUTIONS & WARNINGS

All products manufactured by Crosby are sold with the express understanding that the purchaser is thoroughly familiar with the safe and proper use and application of the product.

Responsibility for the use and application of the products rests with the user. Crosby disseminates products warnings and end user application information through various channels. In addition, Crosby provides formal product training seminars and our engineering personnel are readily available to answer your technical questions. For more information read the Crosby General Catalog, refer to Crosby's website at thecrosbygroup.com, or contact your Crosby distributor or Crosby direct at 918-834-4611.

Failure of the product can occur due to misapplication, abuse, or improper maintenance. Product failure could allow the load to become out of control, resulting in possible property damage, personal injury or death.
There are numerous government and industry standards that cover products made by Crosby. This catalog makes no attempt to reference all of them. We do reference the standards that are most frequently asked about.
Ratings shown in Crosby literature are applicable only to new or in "as-new" condition products.

Load Limit ratings indicate the greatest force or load a product can carry under usual environmental conditions. Shock loading and extraordinary conditions must be taken into account when selecting products for use in a system.

In general, the products displayed in Crosby literature are used as parts of a system being employed to accomplish a task. Therefore, we can only recommend within the Working Load Limit ("WLL"), or other stated limitations, the use of products for this purpose.

The WLL, or Design Factor, or Efficiency Rating of each Crosby product may be affected by wear, misuse, overloading, corrosion, deformation, intentional alteration, and other use conditions. Regular inspection must be conducted to determine whether use can be continued at the catalog assigned WLL, a reduced WLL, or whether the product must be withdrawn from service.

Crosby products are generally intended for tension or pull. Side-loading must be avoided because it exerts additional force or loading which the product is not designed to accommodate.

Welding Crosby load support parts or products can be hazardous. Knowledge of materials, heat treatment, and welding procedures are necessary for proper welding. Crosby should be consulted for information. The assigned Ultimate Load Rating of Crosby products for the reeving of wire, manila, or synthetic rope is based upon design; the catalog ultimate strength for the rope parts, when totaled, may exceed the assigned Ultimate Load Rating.

The WLL of a sling must not exceed the lowest WLL of the components in the system. The recommended Proof Load on all items in this catalog is 2 times the WLL unless otherwise shown. Products that Crosby intends for swaging are identified in this catalog. For proper swaging machine training, operations and die selection, refer to specific product section in this manual. To develop other product for swaging requires knowledge of materials, heat treatment, product design, die design and performance of the final product. Use only new genuine Crosby parts as replacements when servicing or repairing Crosby products. Crosby products are to be considered as sparking, unless otherwise noted.

Two decimal and fractional dimensions shown in catalog are intended as nominal dimensions only. If three decimal dimensions are shown, contact Crosby for tolerance information.

Product Label Replacement: In accordance with ANSI Z535.4, Product Safety Labels should be periodically inspected and cleaned. Product Safety Labels should be replaced when they are no longer legible. Current Crosby warning and application labels, for applicable products, are available from Crosby.

Warning and application instructions for specific products are included in Section 17 of this catalog. The graphic below will appear on product pages for which this information can be found:

ABBREVIATIONS

Below are common symbols that appear on product pages within The Crosby Group catalog:

C = Carbon
A = Alloy
B = Bronze
L = Hook supplied with latch kit

SS = Stainless steel
S or SC = Self colored, painted, or oiled
G = Coated for corrosion protection; may include hot dip galvanizing, electrolytic depositing, dimetcoted, impact galvanizing, spraying, etc.

All ratings given in tons refer to short tons of 2,000 lbs. Ratings given in metric tons equal 2,204 lbs, and are mentioned as "tonnes" (t) or "metric tons." Hot-dip galvanized Crosby products meet or exceed ASTM A 153 requirements.

SYMBOLS & EXPLANATIONS

Below are common symbols that appear on product pages within The Crosby Group catalog:

QUIC-CHECK® is a patented concept developed by The Crosby Group's research and development department that represents Crosby's ongoing commitment to quality. QUIC-CHECK incorporates the strategic placement of marking indicators on traditional rigging hardware to indicate reference points designed to enhance the safe and proper use of Crosby products.

Load Rated® is a registered Crosby trademark that identifies products that have the Working Load Limit indicated or affixed to them.

Fatigue Rated® is a registered Crosby trademark that identifies products that have proven to provide improved fatigue life (fatigue resistance) in actual use.

Quenched & Tempered® is a registered Crosby trademark that identifies products that are heat treated utilizing Crosby's perfected quench and tempering methods.

MAXTOUGH® is a registered Crosby trademark identifying products that are statistically verified to meet or exceed impact values of 42 Joules at -20° C (31 ft•lbf at -4° F) based on a high level of confidence. The confidence level is an index of certainty.

The CE marking is an administrative marking with which the manufacturer or importer affirms its conformity with European health, safety, and environmental protection standards for products sold within the European Economic Area (EEA).

The IECEx symbol indicates a product is approved by the International Electrotechnical Commission and meets certification to standards relating to equipment for use in explosive atmospheres.

This symbol indicates The Crosby Group's Engineered Solutions department provides custom-designed variations of the product to meet your specific project requirements. Engineered Solutions designs simple variations of off-the-shelf products, as well as fully custom solutions for challenging applications.

Type Approved is a symbol that identifies products that have been type approved by a third party organization. Meeting a standard can be declared as a result of Type Approval by a third party organization. Type Approval requires:

1. A **Type Approval certificate** that verifies that the product design complies with the referenced standard(s) and,
2. A **manufacturing survey (MSA)** that verifies that the manufacturing location has been verified as capable of making the product.
3. A **product certificate** must be made available that verifies that the product shipped meets the requirements of the Type Approval and MSA. This product certificate must reference a serial number or PIC and is issued for each product produced.

Low Temperature Service

Crosby forged and cast steel products can be used in general service conditions down to temperatures of -40° F (-40° C). McKissick blocks can be used in general service conditions down to temperatures of -4° F (-20° C). At temperatures from 0° F to -40° F (-18° C to -40° C), good rigging practice requires special attention in the following areas.

1. Lifting should be performed at a steady rate. Shock loading should be avoided.
2. Equipment containing bearings should have increased inspection and maintenance schedule, and may require special lubrication.
3. All lifting equipment should be given a thorough visual inspection before each lift.
4. Remove nicks, gouges, or cracks by grinding (5% maximum material removal).
5. Do not use fittings that have been welded or modified after leaving the factory.
6. If determined to be necessary by the user, lifting equipment should undergo periodic inspection by dye penetrant or magnetic particle
7. surface inspection.

For operation at temperatures below -40° F (-40° C), consider "Cold Tuff" products or contact Crosby Engineering.

Elevated Temperature Service

Crosby forged and cast steel products can be used in general service conditions up to temperatures of 400° F (204° C). The following should be considered when operating up to temperatures of 400 ° F (204° C).

1. Products that contain non-ferrous materials, and lubricants, plastics, etc. may be adversely affected by high temperatures, and typically should not exceed 200° F (93° C).
2. Galvanized, plated or painted fittings may suffer some or total degradation of the surface finish.
3. Extended exposure to elevated temperatures can cause severe surface scaling and significant permanent reduction of properties.
4. Repeated heating and cooling to room temperatures can result in temper embrittlement.

For other operating temperatures or products, contact Crosby Engineering.

THERE IS NO EQUAL

When you choose The Crosby Group, you choose quality. No other rigging, lifting, and securement hardware manufacturer delivers more trusted product solutions, education, and service as close to the point of use. If the contract reads, 'Crosby or equal,' remember... there is no equal.

The Crosby Group is built upon:

- **Engineering & manufacturing excellence**
- **Unmatched quality & dependability**
- **World-class training programs**
- **Exceptional service & technical support**
- **Risk management tools & resources**
- **The broadest product portfolio in the industry**
- **Global distribution network with local support**


CARL
Crosby

COMPLETE WIND PROJECTS ON TIME & WITHIN BUDGET

Partner with the leading rigging provider with the most comprehensive product portfolio, training opportunities & local support

Keep your project on track through improved job site efficiency and safety with lifting and rigging hardware from The Crosby Group.

- Get the product you need, when you need it through a global network of 3,000+ authorized distributors with stock ready to ship.
- Ensure a well-trained workforce with access to extensive training curriculum and industry experience.
- Reduce time between lifts with quick-release shackle bolt securement and an adjustable, lightweight chain sling system.
- Prevent incidents through the use of top-quality hardware from a highly vertically integrated manufacturer.
- Create smarter lift plans with center of gravity calculations using wireless load cells.
- Obtain product authenticity certificates online at any time.

VISIT OUR NEW WIND WEBSITE

- On-demand wind webinars
- Wind training course details
- Product information

thecrosbygroup.com/wind

the Crosby group

No other manufacturer in the industry can deliver the added value that you receive when you choose The Crosby Group

ENGINEERING & MANUFACTURING EXCELLENCE

The Crosby Group boasts a global team of leading engineering experts, modern facilities, and state-of-the-art processes that deliver unique and extensive capabilities to provide the highest quality products on the market. Our Product Identification Code (PIC) traceability system helps ensure proper controls are maintained throughout the entire manufacturing process, from raw material to finished goods.

UNMATCHED QUALITY & DEPENDABILITY

Our products provide consistent performance and enhanced material strength, ductility, and resilience because of careful selection of raw material and the most scientifically sophisticated heat treatment and quality control processes.

WORLD-CLASS TRAINING PROGRAMS

The Crosby Group is known for its world-class training program. Since 1991, we have trained more than 500,000 people through our in-person seminars, on-site safe rigging clinics, and self-paced online courses.

EXCEPTIONAL SERVICE & TECHNICAL SUPPORT

Customer service begins with product availability, a seamless order-placing process, and support after the sale. At The Crosby Group, delivering exceptional service is a company-wide initiative driven by all of our teams, including customer service, technical support, sales, distributor support, engineered solutions, marketing, product management, and training departments.

RISK MANAGEMENT TOOLS & RESOURCES

We provide the most comprehensive product literature, in-person and online training in the industry. Many Crosby Group products are individually bagged or tagged with warning and proper application information to help users control and manage factors of uncertain hazards.

THE BROADEST PRODUCT PORTFOLIO IN THE INDUSTRY

With leading brands, including Crosby, Gunnebo Industries, Crosby Straightpoint, McKissick, Crosby IP, Crosby Feubo, and Speedbinders, The Crosby Group is the leading source of rigging, lifting, and securement hardware. Our Engineered Solutions group is also available to work with you on custom product designs to meet your specific requirements.

GLOBAL DISTRIBUTION NETWORK WITH LOCAL SUPPORT

Our global network of more than 3,000 authorized distributors means you have access to local stock, ready to ship, and local service worldwide. No one else can provide more support closer to the point of use than The Crosby Group.

THIRD PARTY CERTIFICATION

ISO 9001 certification provides you:

- **Third party certification** that The Crosby Group meets the rigorous requirements of ISO 9001.
- **Third party proof** that Crosby's quality assurance system is ongoing through a comprehensive audit program.
- **Third party proof** that Crosby meets the high standards of design, manufacture, and service now demanded by global markets.
- **Manufacturing accountability** at all of Crosby's facilities. This, in addition to Crosby's comprehensive traceability system (PIC) and our material verification program, provides total accountability.
- **Audit savings**. Sourcing from Crosby saves you time and costs associated with your audits or third party audits because, by being ISO 9001 certified, Crosby is regularly audited by a third party.
- **Global competitiveness**. Sourcing from Crosby positions you to be competitive in more markets throughout the world. Many major end users who operate internationally require their suppliers be ISO 9000 certified or offer products that are produced by an ISO 9001-certified source.
- **A long-term partner**. Crosby's ability to meet ISO 9001 standards and to maintain third party certification makes it clear that The Crosby Group is a long-term partner you can depend on to provide the needed product at required performance levels.
- **Support**. The Crosby Group will support committed distributors in their efforts to define and accomplish what is needed for them to attain ISO 9002 certification.


DNV

MANAGEMENT SYSTEM CERTIFICATE

Crosby Group LLC - Crosby Tulsa

ISO 9001:2015

Third party certification by product provides one or more of the following services:

- Inspection
- Certification Service
- Testing Service

This certification can be confirmed to their standards, the customer's standards, or the manufacturer's own standards, if requested at time of order. The Crosby Group will work with you to certify any of our products to any third party organization.

TYPE APPROVED PRODUCTS

Several Crosby products have been Type Approved by various third party organizations.

Type Approval requires:

1. A **Type Approval certificate** that verifies that the product design complies with the referenced standard(s) and,
2. A **manufacturing survey (MSA)** that verifies that the manufacturing location has been verified as capable of making the product.
3. A **product certificate** must be made available that verifies that the product shipped meets the requirements of the Type Approval and MSA. This product certificate must reference a serial number or PIC and is issued for each product produced.

Order our popular training resources online

- Rigging seminar workbooks
- Users Guide for Lifting pocket cards
- Wall charts
- Catalogs

Shop now at:
thecrosbygroup.com/training

Ensure only genuine Crosby Group products are being used on your job site

Access and verify the authenticity of certificates for your Crosby Group products – all online

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV GL

Crosby
2801 Dawson Rd
Tulsa, OK 74110

Certificate of Conformance

Certificate Number: CC1-20210712192O4
Location of Issue: ABC Rigging & Lifting
100 W. 3rd St.
Houston, TX 77001 USA
Phone: 713-555-0022

Stock No: 1019515
Description of Gear: G2130 4-3/4t Bolt Type Anchor Shackle 3/4" Maxtough®
Working Load Limit: 4-3/4t | Max. Allowed Proof Load: 9-1/2t
t indicates metric tons
Comments: 6:1 Design Factor
Note: Meets the performance requirements of Federal Specification RR-C-271G Type IVA, Grade A, Class 3, except for those provisions required of the contractor.
Meets or exceeds all requirements of ASME B30.26.
Crosby forged shackles can be used in general service with good rigging practice down to temperatures of -40 °F (-40 °C).
Has not been contaminated by Mercury or Asbestos in the manufacturing process.
Number of Pieces: 16 Bow: 6VC Distributor Note: 2R-4541 to 2R-4556
PICs are based on visual observation
Certificate based on item being the Crosby product described above.

Mentioned products are in conformity to the Crosby literature available at the time of the manufacturer. We hereby certify that the above described material was manufactured and processed in a manner compatible to meeting the specified load ratings when used under normal and proper applications. This product at the time of manufacture does not contain any ozone-depleting substances.

This product at the time of manufacture does not exceed the threshold for any of the hazardous listed chemicals in Appendix 1 of MEPC.269(68) 2015 Guidelines.

Lead Tested Fatigue Rated MAXTOUGH CE

For Product Delivered To: LIFTING PLUS
TULSA, OK 74110
USA

Supplier (Distributor) Order Number: 2021-0475
Customer (User) Order Number: 8300 055360

Date: September 15, 2021 (Date of Issuance)
Signature: Michael Gill, Crosby Director of Quality

3 key questions about the authenticity of your product:

1. **Did you buy from an authorized Crosby Group distributor?** It's important to only purchase product through authorized distributors. Our global network of authorized distributors are poised to provide you local support and the many value added services available from The Crosby Group.

2. **Did you receive a Certificate of Conformance?** Always require a Certificate of Conformance to provide assurance you are purchasing authentic Crosby products. These certificates include the item's Product Identification Code (PIC) and additional important information.

   Your authorized distributor can generate Certificates of Conformance online through Crosby CertPro® at thecrosbygroup.com/certpro.

   Other certificates are also available through Crosby CertPro, including Material Certificates and Type Approval Certificates.

3. **Did you validate the Crosby CertPro certificate?** If you have any questions about the authenticity of a Crosby CertPro certificate, you can verify it online yourself through Crosby VerificationPro® at thecrosbygroup.com/verificationpro.

CERT PRO®

For authorized distributors to access and generate customer certificates.
thecrosbygroup.com/certpro

VERIFICATION PRO®

For anyone looking to verify the authenticity of a Crosby certificate.
thecrosbygroup.com/verificationpro

Gunnebo Industries certificates are now available on CertPro and VerificationPro.

WORLD STANDARDS

ISO 9001

The International Standardization Organization (ISO) brought standardization to the international level in 1987 by defining three levels of quality assurance. These are ISO 9001, ISO 9002, and ISO 9003.

ISO 9001 is the most comprehensive level. This level involves design, development, production, and shipping. A total of 20 quality system elements apply to ISO 9001. ISO 9001 requires that all procedures, work instructions, processes and related activities be documented. Certification to ISO 9001 requires a third party audit of all facilities prior to attainment and ongoing auditing every six months.

Certification to ISO 9001 is a solid foundation for transparency. Attainment of ISO 9001 forms the basis for meeting other world standards and provides customers with documented proof of the organization's ability to consistently provide product quality and performance. Adherence to ISO 9001 is a major element of purchasing contracts throughout the world.

Questions to ask your rigging provider

Do they meet ISO 9001 standards?

Are they an ISO 9001 certified company or have an implementation schedule?

If not, how willthey support the future needs of international companies and the Department of Defense?

What other world standards of performance to they meet?

Why choose Crosby

The Crosby Group makes the commitment and investment needed to attain ISO 9001 certification to support the needs of our distributors and end users.

Crosby facilities worldwide have been awarded certification for our Quality Assurance Program according to ISO 9001 by DET NORSKE VERITAS (DNV).

The criteria outlined by ISO 9001 have been adopted by the company through our ongoing quality programs. Quality has been built into our products and corporate philosophy from the beginning.

AMERICAN PETROLEUM INSTITUTE

The American Petroleum Institute (API) provides third party certification for products used in the oil field and other petroleum related activities. It provides quality assurance certification under the API-Q1 program. Manufacturers who meet the criteria qualify to manufacture under the API-Q1 program and utilize the API monogram. The API also provides design and manufacturing criteria for API-8C. All oil field blocks should meet API-8C criteria.

Questions to ask your rigging provider

Are they certified to API-Q1?

Do they have the capability to meet API-8C when required?

Why choose Crosby

McKissick is certified under API-Q1 to manufacture blocks and sheaves for use in the oil field. All oil field blocks are designed and manufactured to API-8C requirements.

OTHER WORLD STANDARDS

American Bureau of Shipping (ABS)
Lloyds Register of Shipping (Lloyd's)
DET NORSKE VERITAS (DNV)
Association of Belgian Industry for Safety and Health (AIB-VINÇOTTE) (AV) (VGS)
Control Organization of German Industry for Safety and Health (DIN)
Netherland Labor Inspection (AI)
Nuclear Regulatory Commission (NRC)
Defense Contract Administration Services Management Area (DCAS)
Registro Italiano Navale (RINA)

Questions to ask your rigging provider

What world standards are they familiar with?

Can they demonstrate the ability to meet these standards when needed?

Do they have the quality systems and product peformance needed to document adherence to these standards?

Why choose Crosby

Crosby has demonstrated capability in various countries and with many products. Crosby actively participates in standards-setting committees in both the United States and Europe and has frequently certified shackles, sheaves, blocks, and hooks to various world standards when required.

MATERIAL PROPERTIES

PROCESS

The material used in a forged fitting, such as carbon or alloy steel, determines the potential properties. The manufacturing processes determine what the properties will actually be. The material must be special bar forging quality steel and fine grained. The heating of steel to forging temperature must be properly controlled to ensure that the steel is not 'injured' by overheating. Proper forging equipment and techniques must be employed to assure proper material flow in the dies and tooling. The heat treatment process must be well defined and precisely controlled.

Questions to ask your rigging provider

What processes do they consider important, and how do they select their material?

Is the steel fine grained?

Are standards established to ensure sufficient cleanliness of the steel?

Why choose Crosby

The Crosby Group's attention to material selection, forging techniques, machining, and heat treatment processes assures the properties required will be attained, thus providing superior performance of the product. Crosby has specific and demanding cleanliness requirements.

TENSILE STRENGTH & DUCTILITY

The mechanical properties that are important when lifting a load under normal conditions are tensile strength and ductility. The ability to carry a load increases with the tensile (pulling) strength of the steel. The ability of steel to deform in an overload condition is known as its ductility.

Both of these factors enter greatly into determining the working load limit of a forging. Ductility is measured by standard engineering tests of elongation and reduction of area. It is also measured by how much deformation the fitting incurs when overloaded. The tensile strength determines the actual working load, while ductility allows the product to deform significantly when overloaded, thus giving warning before ultimate failure.

Questions to ask your rigging provider

Do they have an active program to determine tensile and ductility properties?

Are testing audits performed continuously on all products?

Is the actual deformation of a fitting when overloaded a major consideration for their shackles?

Why choose Crosby

The Crosby Group has an active program to determine tensile and ductility properties, and testing audits are continuously performed on all products. Crosby's design philosophy considers the deformation of a fitting when loading is a key requirement.

FATIGUE PROPERTIES

The mechanical properties of steel when a load is repeatedly applied is known as its fatigue strength. Fatigue testing determines the ability of a material to withstand repeated applications of a load. The load by itself may be too small to produce a failure. There are three factors involved when considering fatigue strength: the number of cycles at which a crack initiates, the number of cycles at which the crack starts to grow, and the number of cycles at which the fitting fails. One accepted method of fatigue rating fittings is to test them to 1-1/2 times the working load limit for 20,000 cycles, without failure. This standard test is accepted as indicating indefinite life when used within the working load limit under normal circumstances.

Questions to ask your rigging provider

Does the material selection process recognize fatigue properties?

Do they have an active program to design and test fatigue properties?

Is there a program in place to fatigue rate all load-bearing products that are used in critical applications?

Why choose Crosby

Crosby has an active program to determine fatigue properties. Included in this program is the use of finite element design methods to predict possible weak areas, which in turn allows us to design in superior fatigue properties.

Crosby specifies material of specific cleanliness and guaranteed hardenability which enhances fatigue. We design and manufacture products with fatigue in mind and ensure all load-bearing products used in critical applications being fatigue rated.

IMPACT PROPERTIES

The mechanical properties of steel when a load is rapidly applied is known as its impact strength. Impact tests are made by applying a sudden load to a test piece and measuring the energy absorbed when the specimen breaks. The tougher the material, the greater the energy required to break the piece. A brittle piece can absorb virtually no energy upon breaking. The Charpy V Notched Impact test is one common method of performing the testing and measurement. Fittings must be able to have impact strengths that match the requirements of their application at all temperatures, even low temperatures commonly found in winter conditions. The difficulty of crack initiation and crack growth under impact is an important consideration.

Questions to ask your rigging provider

Does the material selection process recognize impact properties?

Do they have an active program to perform actual testing of impact properties?

Do they recognize the need for good impact properties?

Why choose Crosby

Crosby recognizes the importance of impact properties and has an active program to determine impact properties at various temperatures of each material used in the various heat treat conditions.

Our products are designed to be used in a wide range of temperatures. Crosby specifies material of specific cleanliness and guaranteed hardenability which enhances fatigue and impact properties.

PERFORMANCE

Performance of a fitting requires a tensile strength that meets working load limits, ductility that allows deformation when overloaded, fatigue properties that support repeated use, and impact properties that provide toughness. All of these properties are essential if the product is to perform time after time in adverse conditions. They are also important to assure that the inspection criteria set forth by ANSI will effectively monitor the ability of the fitting to continue in service.

Questions to ask your rigging provider

Does the fitting have required tensile strength, ductility, fatigue, and impact properties?

Are all material properties met?

Why choose Crosby

Crosby designs its fittings to include required working load limits and design factors. Equally important are the ductility, fatigue, and impact properties. We provide you with material properties that minimize the risk of failure. No shortcuts in processing are made to save cost while sacrificing any of these performance elements.

Material properties by product group (value added qualities)

Tensile Strength – Hooks, Shackles, Turnbuckles, Chain Fittings **(***Crosby can provide typical hardness, tensile, and typical yield strength values.)*

Ductility – Hooks, Shackles, Turnbuckles, Chain Fittings **(***Crosby can provide typical reduction of area and elongation values upon special request.)*

Impact Properties – Hooks, Shackles, Turnbuckles, Chain Fittings (*Crosby's quenched and tempered products have enhanced impact properties for greater toughness at all temperatures. Charpy impact properties are available if requested at time of order.)*

Fatigue Properties – Hoist Hooks, Shackles, Eye Bolts, Turnbuckles, Swivel Hoist Rings, Chain Fittings, Snatch Blocks are fatigue rated to 20,000 cycles at 1-1/2 times the WLL. (*Crosby products are designed to meet specific fatigue performance levels. If requested at time of order, these fatigue properties can be provided.)*

Proof Testing – All products *(Proof testing and certification are furnished standard with some products. If requested at time of order, proof testing certification is available for most of Crosby's remaining product line, with the exception of swage sockets and sleeves, spelter sockets, thimbles, etc.)*

QC 1400 Audits – Hoist Hooks only [*Crosby's QC 1400 program provides reduction of are and elongation values, as well as hardness, tensile, and yield strength values for each production lot of hoist hooks. These factors are traceable by the Product Identification Code (PIC).]*

MAG Certification, Ultrasonic, X-Ray & Dye Penetrant Testing – All products *(If requested at time of order, different non-destructive testing and certification is available.)*

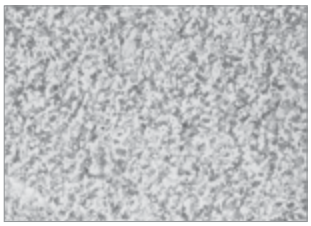
Chemistry Analysis – All products (*Each heat of steel is individually verified to confirm chemical analysis prior to manufacturing.)*

HEAT TREATMENT

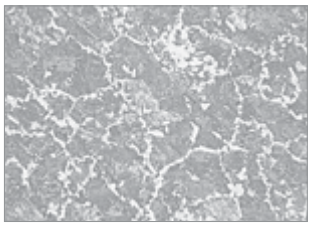
The heat treatment of steel is an ancient art and science that dates back to the Iron Age. Today, it has been refined to a sophisticated science. It is now possible to greatly enhance the strength, ductility, and resilience of steel through a properly controlled heat treatment process. The 'as forged' fitting results in variability that is detrimental in applications that require toughness. Normalizing, spheroidized annealing, and quench and tempering are heat treat processes. Proper heat treatment eliminates the risk of cooling variation at the forging process. This is true of all steels regardless of material grades.

Crosby heat treats all fittings that are load bearing components and minimizes risk by the effective heat treatment of fittings. We do not take shortcuts for the sake of cutting cost. A non-heat treated product compromises the performance ability of that product.

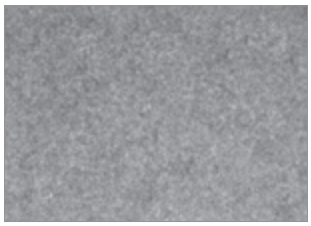
Microstructures for various heat treatment processes



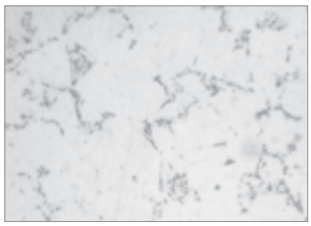
AS FORGED



NORMALIZED



QUENCHED & TEMPERED



COLD TUFF®

QUENCHED & TEMPERED

uenching and tempering of steel has been found to be the heat treatment best suited to fully develop the strength and enhance the grain flow of carbon and alloy forgings.

The quenched and tempered product will deform before ultimate failure, thus giving warning.

The quenching process is rapid cooling in water or oil, after heating, to form a strong but brittle structure. The tempering process is the reheating of the steel to obtain the desired strength while increasing the ductility and toughness.

Quench and tempering provides the consistency of performance needed by all critical applications, especially overhead lifting.

Questions to ask your rigging provider

Are load-bearing fittings heat treated, and what type of heat treatment is used?

What products do they quench and temper, and are their products exposed to high-stress quenched and temper?

If not, why are they willing to accept inferior impact toughness properties of non-quenched and tempered products?

Some supply critical fittings in 'as forged' or 'as cast' condition, and many normalize their forgings but do not quench and temper.

Why choose Crosby

Crosby fittings are exposed to high stress applications, designed as load-bearing elements, and are quenched and tempered.

The Crosby Quenched & Tempered process is the most consistent method of assuring that every fitting performs as needed, especially in overhead lifting.

Q&T
QUENCHED & TEMPERED

MATERIAL CONTROL

The proper heat treatment of forged fittings depends on the appropriate selection of materials and use of heat treat procedures. Fine grained, special bar forging quality steel of specific cleanliness requirements and guaranteed hardenability in the appropriate grades must be used.

Proper selection of steel is not enough, however. The control and management of these steels, from purchase through the entire manufacturing process, is essential to assure that the proper results are attained in the designated product. This control should utilize a production traceability program.

Questions to ask your rigging provider

Do they have an identification code forged into the product that traces material back to verified certification?

Are all heat records maintained by the traceability code?

Most do not provide traceability of material.

Why choose Crosby

Crosby uses the Product Identification Code (PIC) for material control, from receipt and verification of steel throughout the entire manufacturing process.

Crosby can provide certified material analysis for each production lot.

ULTIMATE STRENGTH, DUCTILITY, IMPACT & FATIGUE PROPERTIES

The mechanical properties of steel when a load is very rapidly applied is known as its *impact strength*. Forged fittings must be able to have impact strengths that match the requirements of their application, especially in cold temperatures. The ability of a steel to withstand repeated applications of a load is measured by fatigue testing. The proper heat treatment of forgings, which includes quenching and tempering, can develop these properties to their desired level in a consistent and reliable manner. The ability to perform when overloaded is known as *ductility*.

Question to ask your rigging provider

Are the products designed and manufactured with considerations for strength, fatigue, impact, and ductility?

Some do not utilize materials that have good impact and fatigue properties.

Why choose Crosby

Crosby's product line benefits from the selection of steel and the heat treatment process that allows for superior strength, ductility, impact, and fatigue performance. The product deforms if overloaded, giving warning before ultimate failure. All of these properties are essential if the product is to perform time after time. They are also important to assure that the inspection criteria set forth by ANSI will effectively monitor the ability of the fitting to continue in service.

Heat treatment process by product group

Shackles – Pins and bows are Quenched and Tempered
Eye Hooks – Quenched and Tempered
Shank Hooks – Quenched and Tempered
Master Links – Quenched and Tempered
Hoist Rings – Quenched and Tempered
Swivels – Quenched and Tempered
Turnbuckles – All ends are Q&T or Normalized bodies Normalized

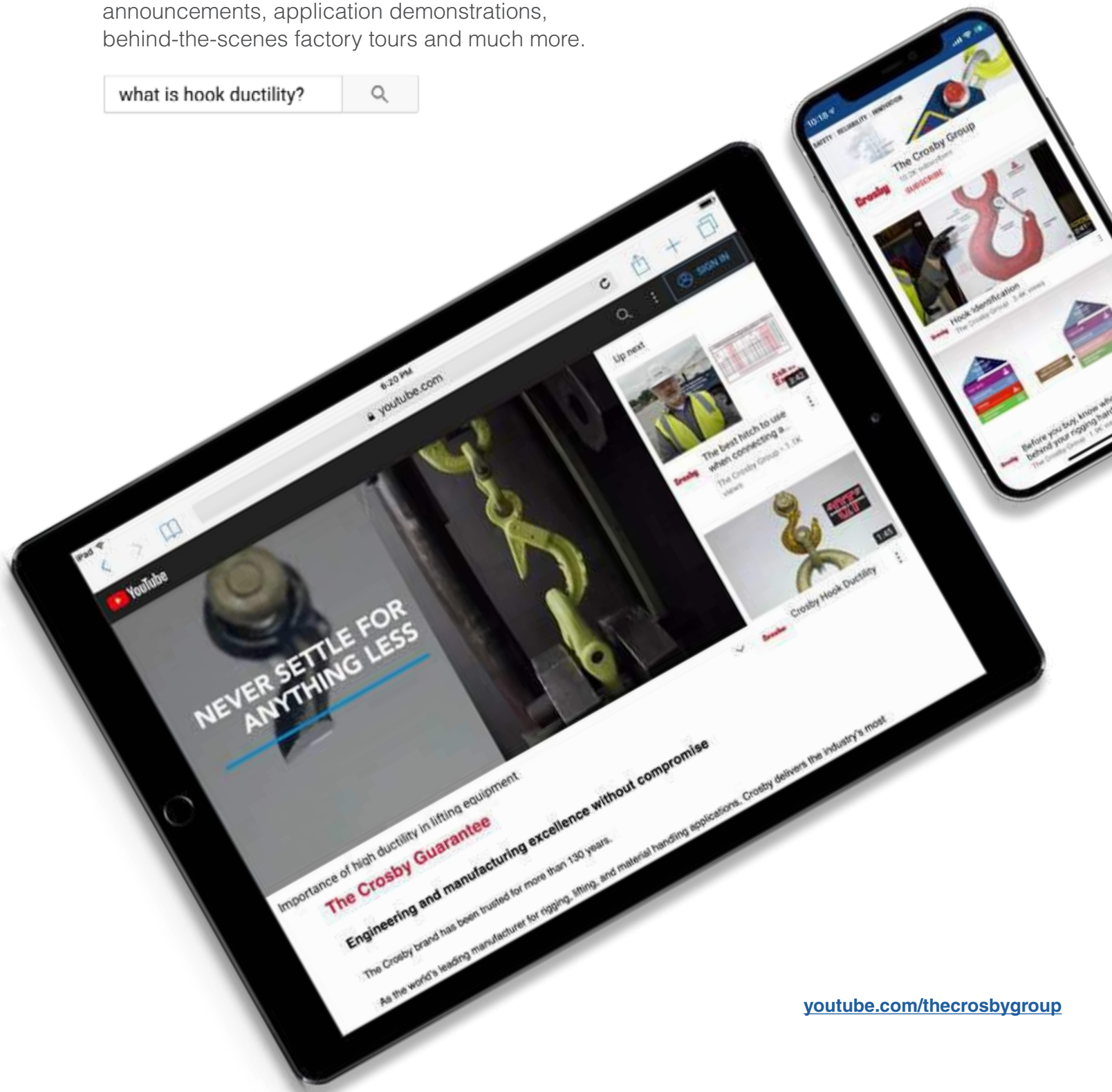
Pad Eyes – Quenched and Tempered
Eye Bolts – Quenched and Tempered
Load Binders – Quenched and Tempered
Swage Sockets – Spheroidized Annealed
Swage Sleeves – Cold Tuff®
Spelter Sockets – Normalized

QUALITY SYSTEM CERTIFICATION
DNV·GL
ISO 9001:2015

YouTube

Subscribe & watch

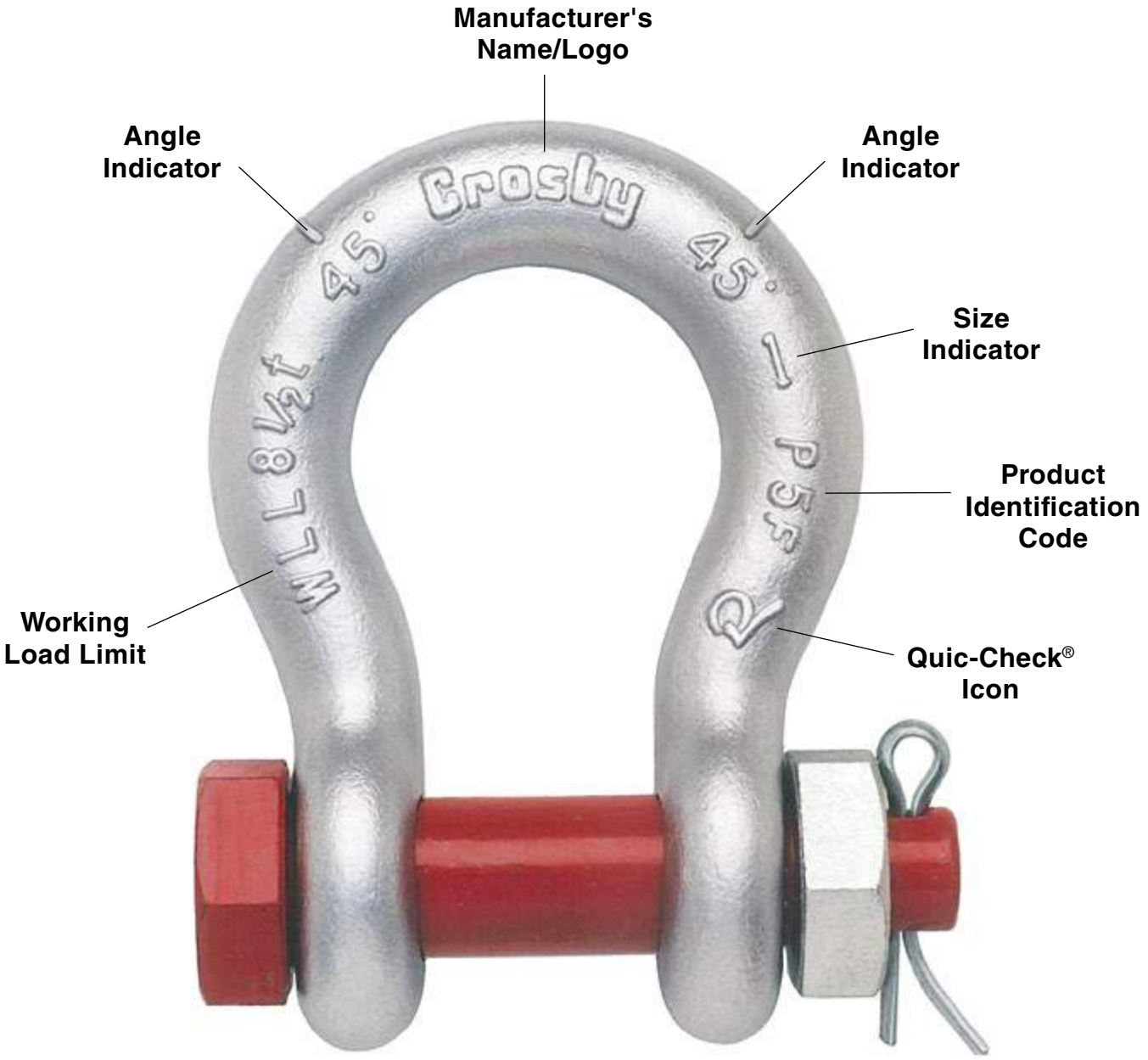
Training and insights, new product announcements, application demonstrations, behind-the-scenes factory tours and much more.



youtube.com/thecrosbygroup

VALUE LONG AFTER THE SALE

Crosby Group products are well known for quality, design, and safety features. It's important to know how to identify, interpret, and utilize the forged-in markings on your hardware to help ensure proper rigging for the life of the shackle, hook, or clip.



Watch our latest video training series on product identification


Shackle identification


Hook identification


Clip identification

thecrosbygroup.com/identification

IDENTIFICATION

PRODUCT IDENTIFICATION

The most effective way of knowing the product you are purchasing is as reliable as possible is to only buy from a reputable company that maintains consistent and adequate quality. The company should clearly mark its components and finished products with the company name or logo, the component size or working load limit, and a traceability code that is actively used by the manufacturer to control material and processes.

Questions to ask your rigging provider

Do they have a traceability system?

If yes, is their traceability system also utilized for cast fittings, swage fittings, and all load-bearing components?

Why choose Crosby

Crosby forges the Product Identification Code (PIC), each item's size or Working Load Limit (or a cross-reference code to working load limit) and 'Crosby' into each product.

MATERIAL TRACEABILITY

A forged-in identification code should be used to record the material grade and origin. This record should trace the material to the heat lot of material of steel as rolled at the supplying mill. Verification checks of all materials purchased for forging must be done to ensure the steel supplied meets the specifications required. This verification should be traceable by a forged-in product identification code. The source and verification of material actually used in each forging must be able to be determined through appropriate documentation.

Questions to ask your rigging provider

Do they have a permanently marked code in each product that traces material back to a verified certification?

Do they test each heat of steel with their own testing facilities?

Why choose Crosby

Crosby uses the Product Identification Code (PIC) to maintain material control from the steel mill, to receipt at our plant, to verification, and throughout the manufacturing process. We can provide certified material analysis for each production lot, traceable by the PIC. Through our own laboratory, we verify the analysis of each heat of steel and only purchase special bar forging quality steel with specific cleanliness requirements and guaranteed hardenability.

MANUFACTURING CONTROL

The permanent identification code should be used to maintain a record of which manufacturing facility produced the product and production dates. All quality records and product performance testing for audit and engineering purposes should also reference the code so that a history can be maintained.

Question to ask your rigging provider

Do their products have a permanent code that is used to maintain control throughout the manufacturing process?

Why choose Crosby

Crosby uses the Product Identification Code (PIC) to maintain control of its products as they are manufactured.

PERFORMANCE & APPLICATION DATA

Detailed performance, application, and warning information will assist you in the proper use of products. This information is most effective when provided in supporting brochures and engineering documents. An identification marking must be used to reference this information by use of a cross reference between the product code and the literature. Proper performance data should include each item's working load limit, proof load and design factor. It should also include the item's manufacturing processes, such as heat treatment and galvanizing, and list any specification the product meets or exceeds.

Questions to ask your rigging provider

What warning and application information do they provide?

Are there markings in products to aid in the proper use of the fitting?

Do they provide training support?

Why choose Crosby

Crosby provides a comprehensive catalog that describes each product's performance, along with detailed application and warning information on selected products. Selected products incorporate markings forged into the product to aid in the proper use of the fitting.

In addition, we provide product and application training in both in-person and digital formats.

Identification & labeling on product by product group	Name/Logo	Size	WLL	Rated in Metric Tons (t)	Product Identification Code	Serial Number	QUIC-CHECK® Markings
Shackles	■	■	■	■	■		■
Shank Hooks	■	*See note below		■	■		
Eye Hooks	■	■	■	■	■		
Other Forged Hooks	■	■			■		S-322
Snatch Blocks	■	■	■	■	Forged components		
Clips	■	■			Forged components		
Fist Grip Clips	■	■			■		
Turnbuckles	■	■			■		
Load Binders	■	■	■		■		
Eye Bolts	■	■			■		
Master Links	■	■			■		■
Tapered Swivel Bearings	■	■		■	■		
Chain Components	■	■			■		
Swage Sockets	■	■			■		■
Sleeves & Buttons	■	■			■		
380 Blocks	■	■	■		■	■	
680 Blocks	■	■	■		■	■	
Oil Field Blocks	■	■	■		■	■	
750 Bridge Crane Blocks	■	■	■	■		■	
Shackles CT & 2160	■	■	■	■	■	■	CT only
Swivel Hoist Rings	■	■	■	Select sizes	■		
Eliminator® Chain	■	■			■		■
Lifting Clamps	■	■	■	■		■	
Angular Contact Swivel Bearings	■	■	■		■		

*Both size and WLL are identified with a frame size that can be referenced back to our literature.

30+ years of making industries safer through world-class training

TRAINING

The Crosby Group launched its official training program in 1991 with the mission of delivering unparalleled support through product and application education and demonstrations. Since then, we are proud to have trained more than **500,000 people** through in-person courses and seminars, live safe rigging clinics, online courses, webinars, and other digital content. Register for a training session today, or contact your area sales manager if you are interested in organizing an in-person or digital Crosby Group training event with your company.

Training opportunities available from The Crosby Group

ONLINE COURSES

User's Guide for Lifting – Learn the fundamentals of rigging through this self-paced course that covers topics featured in the popular Crosby User's Guide for Lifting rigging card. This course is designed for anyone who uses Crosby products. Certificate available upon successful completion.

Crosby Knowledge Center – This course is designed to assist authorized Crosby Group distributors and their sales and marketing teams. The self-paced course covers, in detail, the value added features of the Crosby product line and other topics covered in this catalog.

WEBINARS & OTHER DIGITAL CONTENT

Webinars – We host numerous free topical training webinars throughout the year (public and private). Follow The Crosby Group on social media to be the first to know when a new public event is announced.

Podcast – Watch our popular *Ask the Expert* video podcast series on our YouTube channel, in which Crosby experts answer safe rigging, lifting, and securement questions from viewers.

Video Training – We offer on-demand toolbox-style training videos, available for select companies upon request.

IN-PERSON COURSES

ASME/OSHA* – For individuals who work in manufacturing facilities, construction sites, utilities, etc., and anyone who must comply with the OSHA regulations. These courses also draw heavily from the ASME standards. Similar courses are offered in Europe, Latin America, Asia, and Middle East, except the OSHA emphasis is reduced and other applicable standards that apply such as EN standards may be inserted. The Rigging Trainer Development course is available in select cities.

Land Based Energy (Oil & Gas)* – For individuals who work in land based oil and gas industry. These courses provide an extra emphasis on ASME (American Society of Mechanical Engineers) and API (American Petroleum Institute) information coupled with well servicing, gin pole truck, and energy industry specifics. The Rigging Trainer Development course is available in select cities.

Offshore Energy (Oil & Gas)* – For individuals who work in offshore energy environments. These courses draw heavily from the API RP 2D recommended practices, coupled with ASME and Crosby recommendations. Rigging Trainer Development course is available in select cities.

Fundamentals of Rigging for Wind Turbine Installation & Maintenance* – Offers in-depth discussions that address the standards and regulations pertaining to rigging equipment, such as OSHA, ASME and API, as well as Crosby recommendations that can assist onshore and offshore wind energy personnel in their endeavors for safe material handling activities. Interactive workshops and classroom exercises are designed to enhance the learning experience and cover information that is not always found in most rigging courses or readily available in industry literature.

**certificate available upon successful completion*

ON-SITE SAFE RIGGING CLINICS

Rig Safe, Rig Smart Truck (North America)

Rig Safe, Rig Smart Trailer (Europe)

The Crosby Group hosts on-site safe rigging clinics across North America and the United Kingdom. The custom-designed Rig Safe, Rig Smart Truck (North America) and Trailer (Europe) delivers valuable, practical hands-on rigging training at your job site. Clinics provide insights into key safe, effective, and efficient rigging best practices through a 30-45 minute toolbox talk, along with live demonstrations of a product proof test and live load application.

To learn more about any of these opportunities,
visit **thecrosbygroup.com/training**.

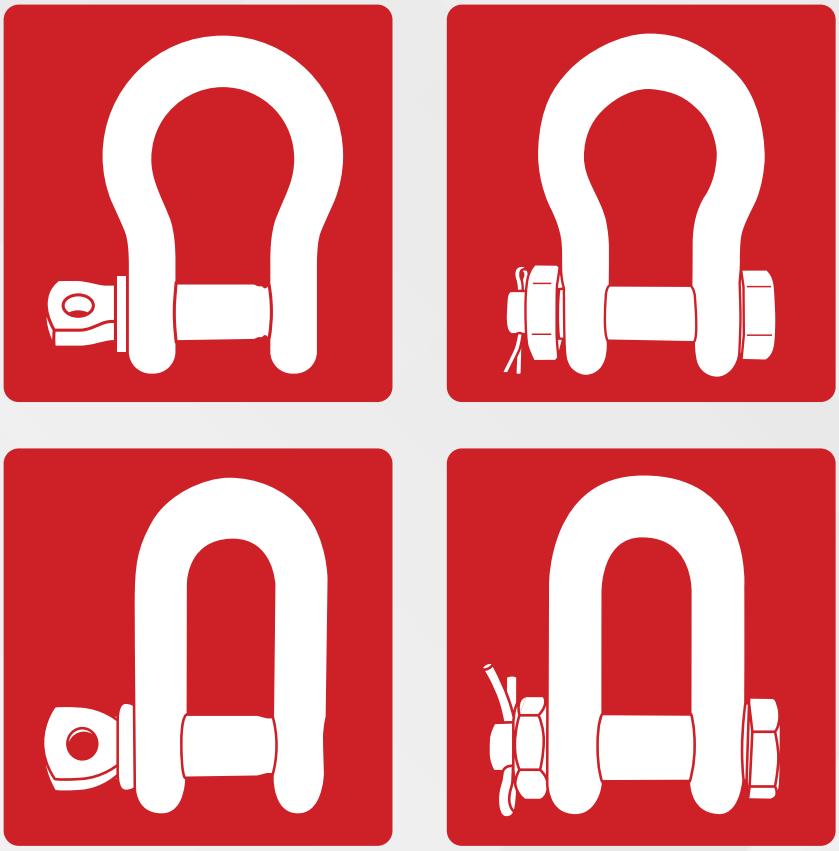
Crosby Group hardware used on the SpaceX Starship lift

The latest news, events, insights (and some pretty interesting project photos).
Follow and connect with us at **linkedin.com/company/thecrosbygroup**.

LinkedIn

SHACKLES

Forged, heat treated, and tested for unmatched strength and performance.



the Crosby group

thecrosbygroup.com

SHACKLES

DESIGN

The theoretical reserve capability of carbon shackles should be at a minimum 5 to 1, and alloy shackles a minimum of 4 to 1. Known as the Design Factor, it is usually computed by dividing the catalog Ultimate Load by the Working Load Limit.

The Ultimate Load is the average load or force at which the product fails or no longer supports the load.

The Working Load Limit is the maximum mass or force which the product is authorized to support in general service. The Design Factor is generally expressed as a ratio such as 5 to 1, or 5:1.

Also important to the design of shackles is the selection of proper steel to support fatigue, ductility, and impact properties.

Questions to ask your rigging provider

What is the Working Load Limit and Design Factor for shackles?

Is deformation upon overloading a critical consideration in their design?

Do they jeopardize other properties by having high hardness in order to increase Working Load Limit or Design Factor?

Why choose Crosby

Crosby carbon shackles have the highest design factor (6 to 1) in the industry. All of Crosby's Design Factors are documented.

Crosby purchases only special bar forging quality steel with cleanliness and guaranteed harden ability. All material chemistry is independently verified prior to manufacturing.

The design of Crosby shackles assures that strength, ductility, and fatigue properties are met.

CLOSED DIE FORGING

The proper performance of premium shackles depends on good manufacturing techniques that include proper forging and accurate machining. Closed-die forging of shackles assures clear lettering, superior grain flow, and consistent dimensional accuracy.

A closed-die forged bow allows for an increased cross section that, when coupled with quench and tempering, enhances strength and ductility.

Closed-die bow forgings combined with close tolerance pin holes assures good fatigue life. Close pin-to-hole tolerance has been proven to be critical for good fatigue life, particularly with screw pin shackles.

Questions to ask your rigging provider

Are their shackles closed-die forged with close tolerance pin holes?

Do their shackles have good fatigue life?

Do their shackles have a fatigue life that meets the new world standards?

Many forge bows utilize an open die forging process which allows for inconsistent dimensional accuracy and increased pin hole clearance, thus jeopardizing the fatigue life of the shackle in actual use.

Why choose Crosby

Each shackle is closed-die forged. Closed-die forging produces consistent dimensions. A closed-die forged bow allows for an increased cross section that, when coupled with quench and tempering, enhances strength and ductility.

Close tolerance holes and concentric pins with good surface finishes are provided by Crosby and are proven to provide improved fatigue life in actual use.

Crosby shackles are fatigue rated as well as load rated. Close pin to hole tolerance has been proven to be critical for good fatigue life, particularly with screw pin shackles.

FATIGUE PROPERTIES

The mechanical properties of steel when a load is repeatedly applied is known as its fatigue strength. Fatigue testing determines the ability of a material to withstand repeated applications of a load. The load by itself may be too small to produce a failure. There are three factors involved when considering fatigue strength: the number of cycles at which a crack initiates, the number of cycles at which the crack starts to grow, and the number of cycles at which the fitting fails. One accepted method of fatigue rating fittings is to test them to 1-1/2 times the working load limit for 20,000 cycles, without failure. This standard test is accepted as indicating indefinite life when used within the working load limit under normal circumstances.

Questions to ask your rigging provider

Does the material selection process recognize fatigue properties?

Do they have an active program to design and test fatigue properties?

Is there a program in place to fatigue rate all load-bearing products that are used in critical applications?

Why choose Crosby

Crosby has an active program to determine fatigue properties. Included in this program is the use of finite element design methods to predict possible weak areas, which in turn allows us to design in superior fatigue properties.

Crosby specifies material of specific cleanliness and guaranteed hardenability which enhances fatigue. We design and manufacture products with fatigue in mind and ensure all load-bearing products used in critical applications being fatigue rated.

QUENCHED & TEMPERED

Quench and tempering assures the uniformity of performance and maximizes the properties of the steel. This means that each shackle meets its rated strength and has required ductility, toughness, impact, and fatigue properties.

The requirements of your job demand this reliability and consistency. This process develops a tough material that reduces the risk of brittle, catastrophic failure.

The shackle bow will deform if overloading occurs, giving warning before ultimate failure.

Questions to ask your rigging provider

Are their bows and pins quenched and tempered?

If not, are they willing to accept inferior impact toughness, product deformation, and the increased risk of inconsistency?

Why do many manufacturers not recommend non-heat-treated shackles for overhead lifting?

Why do some recommend quench and tempering for alloy but not carbon grades?

Many normalize the shackle bows. As a result, desired properties are not achieved. A few even provide bows in an 'as-forged' condition, resulting in the possibility of brittle failure.

Why choose Crosby

All Crosby shackle bows and pins are quenched and tempered, which enhances their performance under cold temperatures and adverse field conditions. Crosby's carbon shackles are recommended for all critical applications including overhead lifting. Alloy shackles are recommended when specific dimensional requirements dictate a size that requires higher working load limits. Crosby shackles provide the tensile strength, ductility, impact, and fatigue properties that are essential if they are to perform time after time in adverse conditions.

These properties assure that the inspection criteria set forth by ANSI will effectively monitor the ability of the shackles to continue in service.

Watch our video on the Quench & Tempered process at **thecrosbygroup.com/QT**.

IDENTIFICATION & APPLICATION INFO

The proper application of shackles requires that the correct type and size of shackle be used. The shackle's Working Load Limit, its size, a traceability code, and the manufacturer's name should be clearly marked in the bow.

Traceability of the material chemistry and properties is essential for total confidence in the product. Material chemistry should be independently verified prior to manufacturing.

Questions to ask your rigging provider

Do they have an active traceability system used in manufacturing?

Is the material chemistry independently verified?

What training support is provided?

Why choose Crosby

We forge the Crosby name or "CG," the Working Load Limit, and the Product Identification Code (PIC) into each bow, and the Crosby name or "CG," and the PIC into each pin of its full line of screw pin, round pin, and bolt type anchor and chain shackles. Crosby also provides training on the proper use of shackles.

Watch our training video on shackle identification at **thecrosbygroup.com/identification**.

CROSBY VALUE ADDED

- **Charpy impact properties:** Crosby shackles are quenched and tempered and have enhanced impact properties for greater toughness at all temperatures. If requested at the time of order, Crosby can provide Charpy impact properties.
- **Fatigue properties:** Fatigue properties are available for 1/3 to 55 metric ton shackles. These Crosby shackles are fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
- **Ductility properties:** Typical ductility properties are available for all sizes upon special request.
- **Hardness levels and material tensile strengths:** Typical values are available for all sizes of shackles, and actual values can be furnished if requested at the time of order.
- **Proof Testing:** If requested at the time of order, shackles can be proof tested with certificates.
- **Mag Certification:** If requested at the time of order, shackles can be magnetic particle inspected with certificates.
- **Certification:** Certification to world class standards is available upon special request at the time of order; American Bureau of Shipping, Lloyds Register of Shipping, Det Norske Veritas, American Petroleum Institute, RINA, Nuclear Regulatory Commission, and several other worldwide standards.
- **Applications:** ***Round pin shackles*** can be used in tie down, towing, suspension or lifting applications where the load is strictly applied in-line. ***Screw pin shackles*** can be used in any application where a round pin shackle is used. In addition, screw pin shackles can be used for applications involving side-loading circumstances. Reduced working load limits are required for side-loading applications. ***Bolt type shackles*** can be used in any application where round pin or screw pin shackles are used. In addition, they are recommended for permanent or long-term installations and where the load may slide on the shackle pin causing the pin to rotate.
- **Material analysis:** Crosby can provide certified material (mill) analysis for each production lot, traceable by the Product Identification Code (PIC). Crosby, through its own laboratory, verifies the analysis of each heat of steel. Crosby purchases only ***special bar*** forging quality steel with specific cleanliness requirements and guaranteed hardenability.
- **Field inspection:** Written instructions for visual, magnaflux, and dye penetrant inspection of shackles are available from Crosby. In addition, acceptance criteria and repair procedures for shackles are available.
- **QUIC-CHECK®**: Shackles incorporate two marking indicators forged into the shackle bow at 45° angles from vertical. These are utilized to quickly check the approximate angle of a two-legged hitch or check the angle of a single leg hitch. If the load is off vertical or side loaded a reduction in the Working Load Limit of the shackle is required.

G-213

Round pin anchor shackles meet the performance requirements of Federal Specification RR-C-271G, Type IVA, Grade A, Class 1, except for those provisions required of the contractor.

G-209

Screw pin anchor shackles meet the performance requirements of Federal Specification RR-C-271G, Type IVA, Grade A, Class 2, except for those provisions required of the contractor.

G-2130

Bolt type anchor shackles meet the performance requirements of Federal Specification RR-C-271G, Type IVA, Grade A, Class 3, except for those provisions required of the contractor.

G-210

Screw pin chain shackles meet the performance requirements of Federal Specification RR-C-271G, Type IVB, Grade A, Class 2, except for those provisions required of the contractor.

G-215

Round pin chain shackles meet the performance requirements of Federal Specification RR-C-271G, Type IVB, Grade A, Class 1, except for those provisions required of the contractor.

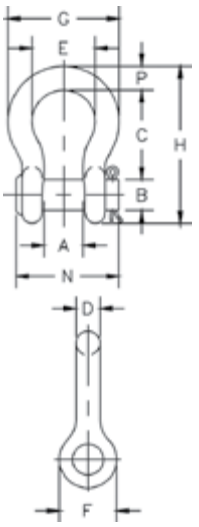
G-2150

Bolt type chain shackles meet the performance requirements of Federal Specification RR-C-271G, Type IVB, Grade A, Class 3, except for those provisions required of the contractor.

Crosby

G-213/S-213

- Forged, Quenched & Tempered, with alloy pins.
- Working Load Limit permanently shown on every shackle.
- Hot-dip galvanized (G) or self colored (S).
- Sizes 3/8 inch and below are mechanically galvanized.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
- Shackles can be furnished proof tested with certificates to designated standards, such as ABS, DNV, Lloyds, or other certification. Charges for proof testing and certification available when requested at the time of order.
- Shackles are Quenched & Tempered and can meet DNV impact requirements of 42 Joules (31 ft-lb) at -20° C (-4° F).
- G-213 Round pin anchor shackles meet the performance requirements of Federal Specification RR-C-271H, Type IVA, Grade A, Class 1, except for those provisions required of the contractor.
- DO NOT SIDE LOAD ROUND PIN SHACKLES.
- Look for the Red Pin®... the mark of genuine Crosby quality.



G-213 / S-213 Round Pin Anchor Shackles

Nominal Size (in)	Working Load Limit (t)	Stock No.		Weight Each (lb)	Dimensions (in)										Tolerance (+ / - in)	
		G-213	S-213		A	B	C	D	E	F	G	H	N	P	C	A
1/4	0.5	1018017	1018026	.13	.47	.31	1.13	.25	.78	.61	1.28	1.84	1.34	.25	.06	.06
5/16	0.75	1018035	1018044	.18	.53	.38	1.22	.31	.84	.75	1.47	2.09	1.59	.31	.06	.06
3/8	1	1018053	1018062	.29	.66	.44	1.44	.38	1.03	.91	1.78	2.49	1.86	.38	.13	.06
7/16	1.5	1018071	1018080	.38	.75	.50	1.69	.44	1.16	1.06	2.03	2.91	2.13	.44	.13	.06
1/2	2	1018099	1018106	.71	.81	.63	1.88	.50	1.31	1.19	2.31	3.28	2.38	.50	.13	.06
5/8	3.25	1018115	1018124	1.50	1.06	.75	2.38	.63	1.69	1.50	2.94	4.19	2.91	.69	.13	.06
3/4	4.75	1018133	1018142	2.32	1.25	.88	2.81	.75	2.00	1.81	3.50	4.97	3.44	.81	.25	.06
7/8	6.5	1018151	1018160	3.49	1.44	1.00	3.31	.88	2.28	2.09	4.03	5.83	3.81	.97	.25	.06
1	8.5	1018179	1018188	5.00	1.69	1.13	3.75	1.00	2.69	2.38	4.69	6.56	4.53	1.06	.25	.06
1-1/8	9.5	1018197	1018204	6.97	1.81	1.25	4.25	1.13	2.91	2.69	5.16	7.47	5.13	1.25	.25	.06
1-1/4	12	1018213	1018222	9.75	2.03	1.38	4.69	1.29	3.25	3.00	5.75	8.25	5.50	1.38	.25	.06
1-3/8	13.5	1018231	1018240	13.25	2.25	1.50	5.25	1.42	3.63	3.31	6.38	9.16	6.13	1.50	.25	.13
1-1/2	17	1018259	1018268	17.25	2.38	1.63	5.75	1.54	3.88	3.63	6.88	10.00	6.50	1.62	.25	.13
1-3/4	25	1018277	1018286	29.46	2.88	2.00	7.00	1.84	5.00	4.19	8.86	12.34	7.75	2.25	.25	.13
2	35	1018295	1018302	45.75	3.25	2.25	7.75	2.08	5.75	4.81	9.97	13.68	8.75	2.40	.25	.13

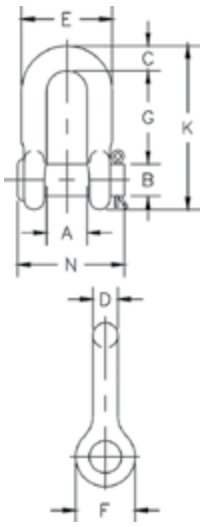
6:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit.

Lead Rated · Fatigue Rated · QUIC-CHECK · Q&T · MAXTOUGH · CE

APPLICATION AND WARNING INFORMATION
SECTION 17

G-215/S-215

- Forged, Quenched & Tempered, with alloy pins.
- Working Load Limit permanently shown on every shackle.
- Hot-dip galvanized (G) or self colored (S).
- Sizes 3/8 inch and below are mechanically galvanized.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
- Shackles can be furnished proof tested with certificates to designated standards, such as ABS, DNV, Lloyds, or other certification. Charges for proof testing and certification available when requested at the time of order.
- Shackles are Quenched and Tempered and can meet DNV impact requirements of 42 Joules (31 ft-lb) at -20° C (-4° F).
- G-215 Round pin chain shackles meet the performance requirements of Federal Specification RR-C-271H, Type IVB, Grade A, Class 1, except for those provisions required of the contractor.
- DO NOT SIDE LOAD ROUND PIN SHACKLES.
- Look for the Red Pin®... the mark of genuine Crosby quality.



G-215 / S-215 Round Pin Chain Shackles

Nominal Size (in)	Working Load Limit (t)	Stock No.		Weight Each (lb)	Dimensions (in)									Tolerance (+ / - in)	
		G-215	S-215		A	B	C	D	E	F	G	K	N	G	A
1/4	0.5	1018810	1018829	.10	.47	.31	.25	.25	.97	.62	.91	1.59	1.34	.06	.06
5/16	0.75	1018838	1018847	.18	.53	.38	.31	.31	1.15	.75	1.07	1.91	1.63	.06	.06
3/8	1	1018856	1018865	.25	.66	.44	.38	.38	1.42	.92	1.28	2.31	1.86	.13	.06
7/16	1.5	1018874	1018883	.40	.75	.50	.44	.44	1.63	1.06	1.48	2.67	2.13	.13	.06
1/2	2	1018892	1018909	.50	.81	.63	.50	.50	1.81	1.18	1.66	3.03	2.38	.13	.06
5/8	3.25	1018918	1018927	1.21	1.06	.75	.63	.63	2.32	1.50	2.04	3.76	2.91	.13	.06
3/4	4.75	1018936	1018945	2.00	1.25	.88	.81	.75	2.75	1.81	2.40	4.53	3.44	.25	.06
7/8	6.5	1018954	1018963	3.28	1.44	1.00	.97	.88	3.20	2.10	2.86	5.33	3.81	.25	.06
1	8.5	1018972	1018981	4.75	1.69	1.13	1.00	1.00	3.69	2.38	3.24	5.94	4.53	.25	.06
1-1/8	9.5	1018990	1019007	6.30	1.81	1.25	1.25	1.13	4.07	2.68	3.61	6.78	5.13	.25	.06
1-1/4	12	1019016	1019025	9.00	2.03	1.38	1.38	1.25	4.53	3.00	3.97	7.50	5.50	.25	.13
1-3/8	13.5	1019034	1019043	12.00	2.25	1.50	1.50	1.38	5.01	3.31	4.43	8.28	6.13	.25	.13
1-1/2	17	1019052	1019061	16.15	2.38	1.63	1.62	1.50	5.38	3.62	4.87	9.05	6.50	.25	.13
1-3/4	25	1019070	1019089	29.96	2.88	2.00	2.12	1.75	6.38	4.19	5.82	10.97	7.75	.25	.13
2	35	1019098	1019105	43.25	3.25	2.25	2.36	2.10	7.25	5.00	6.82	12.74	8.75	.25	.13

6:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit.

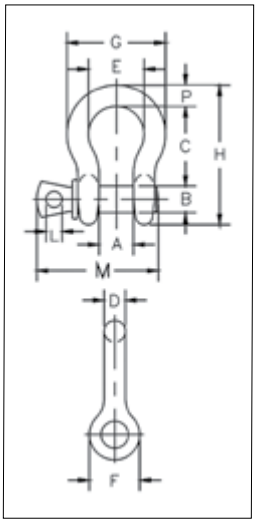
Load Rated Fatigue Rated QUIC-CHECK® Q&T MAXTOUGH® CE

APPLICATION AND WARNING INFORMATION SECTION 17

Crosby

G-209/S-209

- Meets performance requirements of Grade 6 shackles.
- Forged, Quenched & Tempered, with alloy pins.
- Working Load Limit and Grade 6 permanently shown on every shackle.
- Hot-dip galvanized (G) or self colored (S).
- Sizes 3/8 inch and below are mechanically galvanized.
- Fatigue rated at 1-1/2 times the Working Load Limit at 20,000 cycles.
- Shackles can be furnished proof tested with certificates to designated standards, such as ABS, DNV, Lloyds, or other certifications. Proof testing and certification available when requested at the time of order, charges will apply.
- Approved for use at -40° F (-40° C) to 400° F (204° C).
- All 209 and 210 shackles can meet charpy requirements of 31 ft-lb (42 Joules) avg. at -4° F (-20° C) upon special request.
- Meets or exceeds all requirements of ASME B30.26.
- Type Approval certification in accordance with ABS 2016 Steel Vessel Rules and ABS Guide for Certification of Lifting Appliances available. Certificates available when requested at time of order and may include additional charges.
- G-209 Screw pin anchor shackles meet the performance requirements of Federal Specification RR-C-271H, Type IVA, Grade A, Class 2, except for those provisions required of the contractor.
- Look for the Red Pin®... the mark of genuine Crosby quality.



G-209 / S-209 Screw Pin Anchor Shackles

Nominal Size (in)	Working Load Limit (t)	Stock No.		Weight Each (lb)	Dimensions (in)											Tolerance (+ / - in)	
		G-209	S-209		A	B	C	D	E	F	G	H	L	M	P	C	A
3/16	0.33	1018357	–	.06	.38	.25	.88	.19	.60	.56	.98	1.47	.16	1.14	.19	.06	.06
1/4	0.5	1018375	1018384	.10	.47	.31	1.13	.25	.78	.62	1.28	1.84	.19	1.43	.25	.06	.06
5/16	0.75	1018393	1018400	.18	.53	.38	1.21	.31	.84	.75	1.46	2.09	.22	1.71	.31	.06	.06
3/8	1	1018419	1018428	.31	.66	.44	1.45	.38	1.03	.92	1.79	2.50	.25	2.06	.38	.13	.06
7/16	1.5	1018437	1018446	.38	.75	.50	1.69	.44	1.16	1.06	2.04	2.91	.31	2.37	.44	.13	.06
1/2	2	1018455	1018464	.72	.81	.62	1.88	.50	1.31	1.18	2.31	3.28	.38	2.69	.50	.13	.06
5/8	3.25	1018473	1018482	1.37	1.06	.75	2.38	.62	1.69	1.50	2.93	4.19	.44	3.34	.69	.13	.06
3/4	4.75	1018491	1018507	2.35	1.25	.88	2.81	.75	2.00	1.81	3.50	4.97	.50	3.97	.81	.25	.06
7/8	6.5	1018516	1018525	3.62	1.44	1.00	3.31	.88	2.28	2.10	4.04	5.83	.50	4.50	.97	.25	.06
1	8.5	1018534	1018543	5.03	1.69	1.12	3.76	1.00	2.69	2.38	4.69	6.56	.56	5.13	1.06	.25	.06
1-1/8	9.5	1018552	1018561	7.41	1.81	1.25	4.27	1.16	2.91	2.68	5.15	7.47	.63	5.97	1.25	.25	.06
1-1/4	12	1018570	1018589	9.50	2.03	1.38	4.69	1.29	3.26	3.00	5.76	8.26	.69	6.50	1.38	.25	.06
1-3/8	13.5	1018598	1018605	13.53	2.25	1.53	5.22	1.42	3.62	3.31	6.38	9.16	.75	6.93	1.50	.25	.13
1-1/2	17	1018614	1018623	17.20	2.38	1.63	5.76	1.53	3.88	3.62	6.94	10.00	.81	7.43	1.62	.25	.13
1-3/4	25	1018632	1018641	27.78	2.88	2.00	7.00	1.84	5.00	4.19	8.80	12.34	1.00	9.19	2.25	.25	.13
2	35	1018650	1018669	45.00	3.25	2.25	7.75	2.08	5.75	4.81	10.15	13.68	1.13	10.36	2.40	.25	.13
2-1/2	55	1018678	1018687	85.75	4.12	2.75	10.51	2.72	7.25	5.81	12.75	17.92	1.38	13.17	3.13	.25	.25

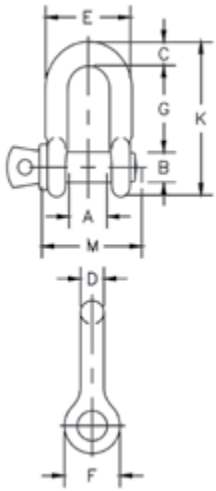
6:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit. For Working Load Limit reduction due to side loading applications, see Warnings & Applications.

Load Rated Fatigue Rated TA TYPE APPROVED QUIC-CHECK® QT QUENCHED & TEMPERED MAXTOUGH® CE

APPLICATION AND WARNING INFORMATION SECTION 17

G-210 / S-210

- Forged, Quenched & Tempered, with alloy pins.
- Working Load Limit and Grade 6 permanently shown on every shackle.
- Hot-dip galvanized (G) or self colored (S).
- Sizes 3/8 inch and below are mechanically galvanized.
- Fatigue rated at 1-1/2 times the Working Load Limit at 20,000 cycles.
- Shackles can be furnished proof tested with certificates to designated standards, such as ABS, DNV, Lloyds, or other certifications. Proof testing and certification available when requested at the time of order, charges will apply.
- Approved for use at -40° F (-40° C) to 400° F (204° C).
- All 209 and 210 shackles can meet charpy requirements of 31 ft-lb (42 Joules) avg. at -4° F (-20° C) upon special request.
- Meets or exceeds all requirements of ASME B30.26.
- Type Approval certification in accordance with ABS 2016 Steel Vessel Rules and ABS Guide for Certification of Lifting Appliances available. Certificates available when requested at time of order and may include additional charges.
- G-210 Screw pin anchor shackles meet the performance requirements of Federal Specification RR-C-271H, Type IVB, Grade A, Class 2, except for those provisions required of the contractor.
- Look for the Red Pin®... the mark of genuine Crosby quality.



G-210 / S-210 Screw Pin Chain Shackles

Nominal Size (in)	Working Load Limit (t)	Stock No.		Weight Each (lb)	Dimensions (in)										Tolerance (+ / - in)	
		G-210	S-210		A	B	C	D	E	F	G	K	L	M	G	A
1/4	0.5	1019150	1019169	.11	.47	.31	.25	.25	.97	.62	.97	1.59	.19	1.43	.06	.06
5/16	0.75	1019178	1019187	.17	.53	.38	.31	.31	1.15	.75	1.07	1.91	.22	1.71	.06	.06
3/8	1	1019196	1019203	.28	.66	.44	.38	.38	1.42	.92	1.28	2.31	.25	2.02	.13	.06
7/16	1.5	1019212	1019221	.43	.75	.50	.44	.44	1.63	1.06	1.48	2.67	.31	2.37	.13	.06
1/2	2	1019230	1019249	.59	.81	.63	.50	.50	1.81	1.18	1.66	3.03	.38	2.69	.13	.06
5/8	3.25	1019258	1019267	1.25	1.06	.75	.63	.63	2.32	1.50	2.04	3.76	.44	3.34	.13	.06
3/4	4.75	1019276	1019285	2.63	1.25	.88	.81	.75	2.75	1.81	2.40	4.53	.50	3.97	.25	.06
7/8	6.5	1019294	1019301	3.16	1.44	1.00	.97	.88	3.20	2.10	2.86	5.33	.50	4.50	.25	.06
1	8.5	1019310	1019329	4.75	1.69	1.13	1.00	1.00	3.69	2.38	3.24	5.94	.56	5.13	.25	.06
1-1/8	9.5	1019338	1019347	6.75	1.81	1.25	1.25	1.13	4.07	2.69	3.61	6.78	.63	5.71	.25	.06
1-1/4	12	1019356	1019365	9.06	2.03	1.38	1.38	1.25	4.53	3.00	3.97	7.50	.69	6.25	.25	.13
1-3/8	13.5	1019374	1019383	11.63	2.25	1.50	1.50	1.38	5.01	3.31	4.43	8.28	.75	6.53	.25	.13
1-1/2	17	1019392	1019409	15.95	2.38	1.63	1.62	1.50	5.38	3.62	4.87	9.05	.81	7.33	.25	.13
1-3/4	25	1019418	1019427	26.75	2.88	2.00	2.12	1.75	6.38	4.19	5.78	10.97	1.00	9.06	.25	.13
2	35	1019436	1019445	42.31	3.25	2.25	2.36	2.10	7.25	5.00	6.77	12.74	1.13	10.35	.25	.13
2-1/2	55	1019454	1019463	71.75	4.12	2.75	2.63	2.63	9.38	5.68	8.07	14.85	1.38	13.00	.25	.25

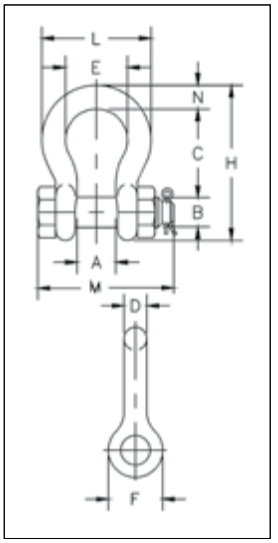
6:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit. For Working Load Limit reduction due to side loading applications, see Warnings & Applications.

Lead Rated Fatigue Rated TA TYPE APPROVED QUIC-CHECK® Q&T MAXTOUGH® CE

APPLICATION AND WARNING INFORMATION SECTION 17

Crosby

G-2130 / S-2130



- Working Load Limit and Grade 6 permanently shown on every shackle.
- Forged, Quenched & Tempered, with alloy bolts.
- Hot-dip galvanized (G) or self colored (S). 85, 120, and 150-metric ton shackles are all hot-dip galvanized bows and the bolts are Dimetcoted® and painted red.
- Sizes 3/8 and below are mechanically galvanized.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit (1/3t - 55t).
- Approved for use at -40° F (-40° C) to 400° F (204° C).
- Meets or exceeds all requirements of ASME B30.26.
- Shackles 85 metric tons and larger are individually proof tested to 2.0 times the working load limit.
- Type Approval certification in accordance with ABS 2016 Steel Vessel Rules ABS Guide for Certification of Lifting Appliances available. Certificates available when requested at time of order and may include additional charges.
- 3.1 Certification as standard available for charpy and statistical proof test from 3.25t up to 25 tons to DNV 2.7-1 and EN13889.
- Crosby 3.25t through 25t G-2130OC anchor shackles are type approved to DNV Certification Notes 2.7-1-Offshore Containers. These Crosby shackles are statistical proof and impact tested to 31 ft-lb (42 Joules) min. avg. at -4° F (-20° C). The tests are conducted by Crosby and 3.1 test certification is available upon request.
- All other 2130 shackles can meet charpy requirements of 31 ft-lb (42 Joules) avg at -4° F (-20° C) when requested at time of order.
- Meets the performance requirements of Federal Specification RR-C-271H, Type IVA, Grade A, Class 3, except for those provisions required of the contractor.
- Look for the Red Pin®... the mark of genuine Crosby quality.

G-2130 / S-2130 Bolt Type Anchor Shackles

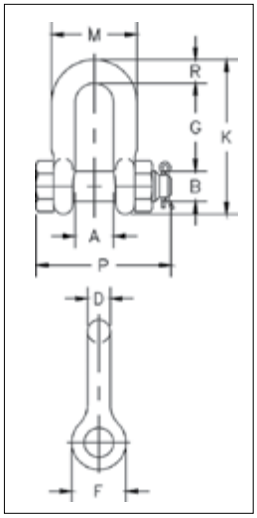
Nominal Size (in)	Working Load Limit (t)	Stock No.			Weight Each (lb)	Dimensions (in)										Tolerance (+ / - in)	
		G-2130	S-2130	G-2130OC		A	B	C	D	E	F	H	L	M	N	C	A
3/16	0.33 ‡	1019464	-	-	.06	.38	.25	.88	.19	.60	.56	1.47	.98	1.29	.19	.06	.06
1/4	0.5	1019466	-	-	.11	.47	.31	1.13	.25	.78	.61	1.84	1.28	1.56	.25	.06	.06
5/16	0.75	1019468	-	-	.22	.53	.38	1.22	.31	.84	.75	2.09	1.47	1.82	.31	.06	.06
3/8	1	1019470	-	-	.33	.66	.44	1.44	.38	1.03	.91	2.49	1.78	2.17	.38	.13	.06
7/16	1.5	1019471	-	-	.49	.75	.50	1.69	.44	1.16	1.06	2.91	2.03	2.51	.44	.13	.06
1/2	2	1019472	1019481	-	.79	.81	.64	1.88	.50	1.31	1.19	3.28	2.31	2.80	.50	.13	.06
5/8	3.25	1019490	1019506	1262013	1.68	1.06	.77	2.38	.63	1.69	1.50	4.19	2.94	3.56	.69	.13	.06
3/4	4.75	1019515	1019524	1262022	2.72	1.25	.89	2.81	.75	2.00	1.81	4.97	3.50	4.15	.81	.25	.06
7/8	6.5	1019533	1019542	1262031	3.95	1.44	1.02	3.31	.88	2.28	2.09	5.83	4.03	4.82	.97	.25	.06
1	8.5	1019551	1019560	1262040	5.66	1.69	1.15	3.75	1.00	2.69	2.38	6.56	4.69	5.39	1.06	.25	.06
1-1/8	9.5	1019579	1019588	1262059	8.27	1.81	1.25	4.25	1.13	2.91	2.69	7.47	5.16	5.90	1.25	.25	.06
1-1/4	12	1019597	1019604	1262068	11.71	2.03	1.40	4.69	1.29	3.25	3.00	8.25	5.75	6.69	1.38	.25	.06
1-3/8	13.5	1019613	1019622	1262077	15.83	2.25	1.53	5.25	1.42	3.63	3.31	9.16	6.38	7.21	1.50	.25	.13
1-1/2	17	1019631	1019640	1262086	19.00	2.38	1.66	5.75	1.53	3.88	3.63	10.00	6.88	7.73	1.62	.25	.13
1-3/4	25	1019659	1019668	1262095	33.91	2.88	2.04	7.00	1.84	5.00	4.19	12.34	8.80	9.68	2.25	.25	.13
2	35	1019677	1019686	-	52.25	3.25	2.30	7.75	2.08	5.75	4.81	13.68	10.15	10.81	2.40	.25	.13
2-1/2	55	1019695	1019702	-	98.25	4.13	2.80	10.50	2.71	7.25	5.69	17.90	12.75	13.58	3.13	.25	.25
3	† 85	1019711	-	-	154	5.00	3.30	13.00	3.12	7.88	6.50	21.50	14.62	15.13	3.62	.25	.25
3-1/2	† 120 ‡	1019739	-	-	265	5.25	3.76	14.63	3.62	9.00	8.00	24.88	17.02	17.00	4.38	.25	.25
4	† 150 ‡	1019757	-	-	338	5.50	4.26	14.50	4.00	10.00	9.00	25.68	18.00	17.75	4.56	.25	.25

6:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit. For Working Load Limit reduction due to side loading applications, see Warnings & Applications..
† Individually Proof Tested with certification. ‡ Furnished with eye bolts for handling.

Load Rated | Fatigue Rated | TA TYPE APPROVED | QUIC-CHECK® | Q&T QUENCHED & TEMPERED | MAXTOUGH® | CE

APPLICATION AND WARNING INFORMATION SECTION 17

G-2150 / S-2150



- Working Load Limit and Grade 6 permanently shown on every shackle.
- Forged, Quenched & Tempered, with alloy pins.
- Hot-dip galvanized (G) or self-colored (S). 85 ton shackles have hot-dip galvanized bows and the bolts are Dimetcoted® and painted red.
- Sizes 3/8 inch and below are mechanically galvanized.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit. (1/2t - 55t).
- Approved for use at -40° F (-40° C) to 400° F (204° C).
- Meets or exceeds all requirements of ASME B30.26.
- Sizes 1/2 - 25t meet the performance requirements of EN13889:2003.
- Shackles 55 metric tons and smaller can be furnished proof tested with certificates to designated standards, such as ABS, DNV, Lloyds, or other certification when requested at time of order.
- Type Approval certification in accordance with ABS 2016 Steel Vessel Rules and 2016 ABS Guide for Certification of Lifting Appliance. Certificates available when requested at time of order and may include additional charges.
- Meets the performance requirements of Federal Specification RR-C-271H, Type IVB, Grade A, Class 3, except for those provisions required of the contractor.
- All 2150 shackles can meet charpy requirements of 31 ft-lb (42 Joules) avg at -4° F (-20° C) upon special request.
- Look for the Red Pin®... the mark of genuine Crosby quality.

G-2150 / S-2150 Bolt Type Chain Shackles

Nominal Size (in)	Working Load Limit (t)*	Stock No.		Weight Each (lb)	Dimensions (in)									Tolerance (+ / - in)	
		G-2150	S-2150		A	B	D	F	G	K	M	P	R	G	A
1/4	0.5	1019768	-	.13	.47	.31	.25	.62	.91	1.59	.97	1.56	.25	.06	.06
5/16	0.75	1019770	-	.23	.53	.38	.31	.75	1.07	1.91	1.15	1.82	.31	.06	.06
3/8	1	1019772	-	.33	.66	.44	.38	.92	1.28	2.31	1.42	2.17	.38	.13	.06
7/16	1.5	1019774	-	.49	.75	.50	.44	1.06	1.48	2.67	1.63	2.51	.44	.13	.06
1/2	2	1019775	1019784	.75	.81	.64	.50	1.18	1.66	3.03	1.81	2.80	.50	.13	.06
5/8	3.25	1019793	1019800	1.47	1.06	.77	.63	1.50	2.04	3.76	2.32	3.56	.63	.13	.06
3/4	4.75	1019819	1019828	2.52	1.25	.89	.75	1.81	2.40	4.53	2.75	4.15	.81	.25	.06
7/8	6.5	1019837	1019846	3.85	1.44	1.02	.88	2.10	2.86	5.33	3.20	4.82	.97	.25	.06
1	8.5	1019855	1019864	5.55	1.69	1.15	1.00	2.38	3.24	5.94	3.69	5.39	1.00	.25	.06
1-1/8	9.5	1019873	1019882	7.60	1.81	1.25	1.13	2.68	3.61	6.78	4.07	5.90	1.25	.25	.06
1-1/4	12	1019891	1019908	10.81	2.03	1.40	1.25	3.00	3.97	7.50	4.53	6.69	1.38	.25	.06
1-3/8	13.5	1019917	1019926	13.75	2.25	1.53	1.38	3.31	4.43	8.28	5.01	7.21	1.50	.25	.13
1-1/2	17	1019935	1019944	17.01	2.38	1.66	1.50	3.62	4.87	9.05	5.38	7.73	1.62	.25	.13
1-3/4	25	1019953	1019962	31.40	2.88	2.04	1.75	4.19	5.82	10.97	6.38	9.33	2.12	.25	.13
2	35	1019971	1019980	46.75	3.25	2.30	2.10	5.00	6.82	12.74	7.25	10.41	2.36	.25	.13
2-1/2	55	1019999	1020004	85.00	4.12	2.80	2.63	5.68	8.07	14.85	9.38	13.58	2.63	.25	.25
3	† 85	1020013	-	124.25	5.00	3.25	3.00	6.50	8.56	16.87	11.00	15.13	3.50	.25	.25

6:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit. For Working Load Limit reduction due to side loading applications, see Warnings & Applications.
† Individually Proof Tested with certification.

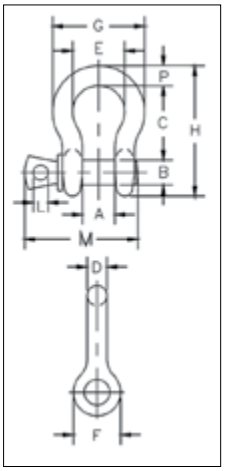
Load Rated Fatigue Rated TA TYPE APPROVED QUIC-CHECK® Q&T MAXTOUGH® CE

APPLICATION AND WARNING INFORMATION SECTION 17

Crosby

G-209A
Grade 8

- Forged alloy steel, Quenched & Tempered, with alloy pins.
- Meets performance requirements of Grade 8 shackles.
- Working Load Limit permanently shown on every shackle.
- Hot-dip galvanized.
- Size 3/8 inch is mechanically galvanized.
- Shackles can be furnished proof tested with certificates to designated standards, such as ABS, DNV, Lloyds, or other certification. Charges for proof testing and certification available when requested at the time of order.
- Approved for use at -40° C (-40° F) to 204° C (400° F).
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these shackles meet other critical performance requirements including impact properties and material traceability, not addressed by ASME B30.26.
- G-209A Screw pin anchor shackles meet the performance requirements of Federal Specification RR-C-271H, Type IVA, Grade B, Class 2, except for those provisions required of the contractor.



G-209A Alloy Screw Anchor Pin Shackles

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APPLICATION AND WARNING INFORMATION
SECTION 17

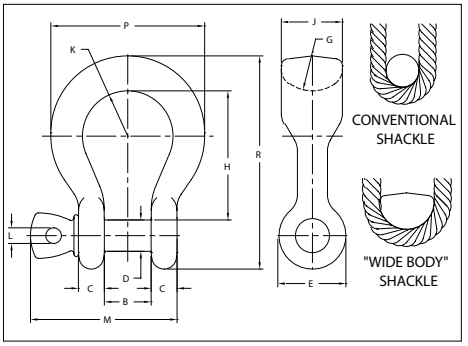
Nominal Size (in)	Working Load Limit (t)	Stock No.	Weight Each (lb)	Dimensions (in)											Tolerance (+ / - in)	
				A	B	C	D	E	F	G	H	L	M	P	C	A
3/8	2	1017450	.31	.66	.44	1.44	.38	1.03	.91	1.78	2.49	.25	2.03	.38	.13	.06
7/16	2.67	1017472	.38	.75	.50	1.69	.44	1.16	1.06	2.03	2.91	.31	2.38	.44	.13	.06
1/2	3.33	1017494	.63	.81	.63	1.88	.50	1.31	1.19	2.31	3.28	.38	2.69	.50	.13	.06
5/8	5	1017516	1.38	1.06	.75	2.38	.63	1.69	1.50	2.94	4.19	.44	3.34	.69	.13	.06
3/4	7	1017538	2.35	1.25	.88	2.81	.75	2.00	1.81	3.50	4.97	.50	3.97	.81	.25	.06
7/8	9.5	1017560	3.61	1.44	1.00	3.31	.88	2.28	2.09	4.03	5.83	.50	4.50	.97	.25	.06
1	12.5	1017582	5.32	1.69	1.13	3.75	1.00	2.69	2.38	4.69	6.56	.56	5.07	1.06	.25	.06
1-1/8	15	1017604	7.25	1.81	1.25	4.25	1.16	2.91	2.69	5.16	7.47	.63	5.59	1.25	.25	.06
1-1/4	18	1017626	9.88	2.03	1.38	4.69	1.29	3.25	3.00	5.75	8.25	.69	6.16	1.38	.25	.06
1-3/8	21	1017648	13.25	2.25	1.50	5.25	1.42	3.63	3.31	6.38	9.16	.75	6.84	1.50	.25	.13

4.5:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit (metric tons) and 2.2 times the Working Load Limit (short tons).
For Working Load Limit reduction due to side loading applications, see Warnings & Applications.

G-2169

S-2169

- Quenched & Tempered for maximum strength.
- Forged alloy steel.
- Available in galvanized (G) and self colored (S) finish.
- Can be individually proof tested and magnetic particle inspected upon request. Crosby certification available at time of order.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these shackles meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.
- Look for the Red Pin®... the mark of genuine Crosby quality.



G-2169 / S-2169 Alloy Screw Pin Wide Body Shackles

Load Rated · Q&T

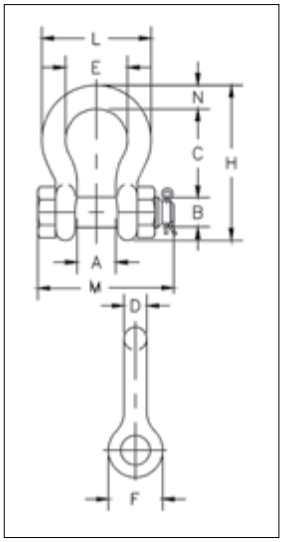
APPLICATION AND WARNING INFORMATION
SECTION 17

Working Load Limit (t)	G-2169 Stock No.	S-2169 Stock No.	Weight Each (lb)	Dimensions (in)												
				B +/- .25	C	D +/- .02	E	G	H	J	K	L	M	P	R	
7	1021655	1021664	3.5	1.25	.69	.88	1.82	1.25	3.56	1.60	1.25	.50	3.97	4.10	5.87	
12.5	1021673	1021682	8.8	1.69	.92	1.13	2.38	1.37	4.63	2.13	1.63	.56	5.13	5.51	7.63	
18	1021691	1021699	13	2.03	1.16	1.38	2.69	1.50	5.81	2.50	2.00	.69	6.25	6.76	9.38	

5:1 Design Factor. Proof Load is 2 times the Working Load Limit.

G-2130A
Grade 8

- Forged alloy steel, Quenched & Tempered, with bow and bolt.
- Meets or exceeds all requirements of Grade 8 shackles.
- Working Load Limit permanently shown on every shackle.
- Hot-dip galvanized.
- Meets or exceeds all requirements of ASME B30.26, including identification, ductility, design factor, proof load, and temperature requirements. Importantly, G-2130A meet other critical performance requirements, including impact properties, and material traceability not addressed by ASME B30.26.
- Shackles can be furnished proof tested with certificates to designated standards, such as ABS, DNV, Lloyds, or other certification when requested at time of order.
- Type Approval and certification in accordance with DNV 2.7-1 offshore containers.
- Shackles are Quenched & Tempered and meet DNV impact requirements of 42 Joules (31 ft-lb) at -40° C (-40° F).
- G-2130A Bolt Type Anchor shackles with thin head bolt – nut with cotter pin. Meets the performance requirements of Federal Specification RR-C-271H, Type IVA, Grade B, Class 3, except for those provisions required of the contractor.



G-2130A Alloy Bolt Type Anchor Shackles Grade 8

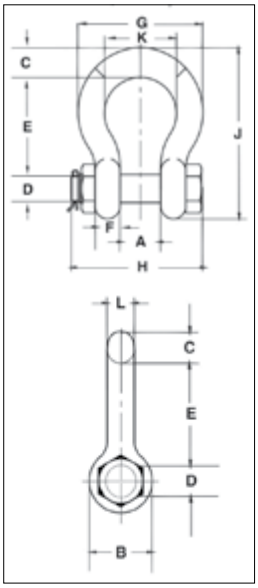
Nominal Size (in)	Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)										Tolerance (+ / - in)	
				A	B	C	D	E	F	H	L	M	N	C	A
1/2	2	1219472	.79	.81	.63	1.88	0.50	1.31	1.19	3.29	2.30	2.80	0.50	0.13	0.06
5/8	3.25	1219491	1.37	1.06	.75	2.38	0.63	1.69	1.50	4.18	2.94	3.56	0.69	0.25	0.06
3/4	4.75	1219516	2.71	1.25	.88	2.82	0.75	2.01	1.81	4.96	3.51	4.15	0.81	0.25	0.06
7/8	6.5	1219534	3.95	1.44	1.00	3.31	0.88	2.29	2.09	5.83	4.02	4.82	0.97	0.25	0.06
1	8.5	1219552	5.03	1.69	1.10	3.76	1.00	2.70	2.38	6.58	4.69	5.39	1.06	0.25	0.06
1-1/8	9.5	1219578	8.27	1.81	1.25	4.26	1.13	2.92	2.70	7.49	5.16	5.90	1.25	0.25	0.06
1-1/4	12	1219598	11.7	2.03	1.38	4.69	1.25	3.25	2.99	8.27	5.75	6.69	1.38	0.25	0.06
1-3/8	13.5	1219614	15.8	2.25	1.50	5.24	1.38	3.62	3.31	9.18	6.38	7.21	1.50	0.25	0.13
1-1/2	17	1219632	19.0	2.38	1.63	5.75	1.50	3.88	3.62	10.0	6.90	7.73	1.62	0.25	0.13

8:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit. For Working Load Limit reduction due to side loading applications, see Warnings & Applications..

APPLICATION AND WARNING INFORMATION
SECTION 17

G-2140 / S-2140

- Quenched & Tempered.
- Alloy bows, alloy bolts.
- Forged alloy steel 2 through 250 metric tons. Cast alloy steel 400 metric tons.
- Meets performance requirements of Grade 8 shackles.
- Working Load Limit is permanently shown on every shackle.
- 30, 40, 55, and 85 metric ton shackle bows are available galvanized (G) or self colored (S) with bolts that are galvanized and painted red.
- Size 3/8 inch is mechanically galvanized.
- 120, 150, 175 metric ton shackle bows are hot-dip galvanized; bolts are Dimetcoted and painted red.
- 200, 250, 300, 400 metric ton shackle bows are Dimetcoted; bolts are Dimetcoted and painted red.
- Approved for use at -40° C (-40° F) to 204° C (400° F).
- Shackles are Quenched & Tempered and can meet DNV impact requirements of 42 Joules (31 ft-lb) at -20° C (-4° F).



- Crosby COLD TUFF® shackles that meet the additional requirements of DNV rules for certification of lifting applications - loose gear are available.
- Shackles 200 metric tons and larger are provided as follows:
  - Serialized bolt and bow
  - Material certification (chemical)
  - Magnetic particle inspected.
  - Certification must be requested at time of order.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. 2140 shackles meet other critical performance requirements including impact properties and material traceability, not addressed by ASME B30.26.
- Type Approval certification in accordance with ABS 2016 Steel Vessel Rules and 2016 ABS Guide for Certification of Lifting Appliances. Certificates are available when requested at time of order and may include additional charges.
- G-2140 meets the performance requirements of Federal Specification RR-C-271H, Type IVA, Grade B, Class 3, except for those provisions required of the contractor. For additional information, see Warnings & Applications.
- Look for the Red Pin®... the mark of genuine Crosby quality.

G-2140 / S-2140 Alloy Bolt Type Anchor Shackles

Nominal Shackle Size (in)	Working Load Limit (t)	Stock No.			Weight Each (lb)	Dimensions (in)													Tolerance (+ / - in)		
		G-2140	S-2140	G-2140 OC		A	B	C	D	E	F	G	H	J	K	L	M	N	A	D	E
3/8	2	1021015	-	-	0.33	0.66	0.91	0.38	0.44	1.44	0.38	1.78	2.17	2.49	1.03	0.38	-	-	0.06	0.01	0.13
7/16	2.67	1021020	-	-	0.49	0.75	1.06	0.44	0.50	1.69	0.41	2.03	2.51	2.91	1.16	0.44	-	-	0.06	0.01	0.13
1/2	3.33	1021029	-	-	0.79	0.81	1.19	0.50	0.64	1.88	0.46	2.31	2.80	3.28	1.31	0.50	-	-	0.06	0.02	0.13
5/8	5	1021038	-	-	1.68	1.06	1.50	0.69	0.77	2.38	0.58	2.94	3.56	4.19	1.69	0.63	-	-	0.06	0.02	0.13
3/4	7	1021047	-	-	2.72	1.25	1.81	0.81	0.89	2.81	0.69	3.50	4.15	4.97	2.00	0.75	-	-	0.06	0.02	0.25
7/8	9.5	1021056	-	-	3.95	1.44	2.09	0.97	1.02	3.31	0.81	4.03	4.82	5.83	2.28	0.88	-	-	0.06	0.02	0.25
1	12.5	1021065	-	-	5.66	1.69	2.38	1.06	1.15	3.75	0.92	4.69	5.39	6.56	2.69	1.00	-	-	0.06	0.02	0.25
1-1/8	15	1021074	-	-	8.27	1.81	2.69	1.25	1.25	4.25	1.04	5.16	5.90	7.47	2.91	1.13	-	-	0.06	0.02	0.25
1-1/4	18	1021083	-	-	11.7	2.03	3.00	1.38	1.40	4.69	1.16	5.75	6.69	8.25	3.25	1.29	-	-	0.06	0.03	0.25
1-3/8	21	1021092	-	-	15.8	2.25	3.31	1.50	1.53	5.25	1.28	6.38	7.21	9.16	3.63	1.42	-	-	0.13	0.03	0.25
1-1/2	30	1021110	1021129	1262407	18.8	2.38	3.62	1.62	1.63	5.75	1.39	6.88	7.73	10.00	3.88	1.53	-	-	0.13	0.03	0.25
1-3/4	40	1021138	1021147	1262416	33.8	2.88	4.19	2.25	2.00	7.00	1.75	8.81	9.33	12.34	5.00	1.84	-	-	0.13	0.03	0.25
2	55	1021156	1021165	1262425	49.9	3.25	4.81	2.40	2.25	7.75	2.00	10.16	10.41	13.68	5.75	2.08	-	-	0.13	0.03	0.25
2-1/2	85	1021174	1021183	1262434	103	4.12	5.81	3.12	2.75	10.50	2.62	12.75	13.58	17.90	7.25	2.71	-	-	0.25	0.03	0.25
3	120	1021192	-	1262443	162	5.00	6.50	3.63	3.25	13.00	3.00	14.62	15.13	21.50	7.88	3.12	-	-	0.25	0.04	0.25
3-1/2	† 150	1021218	-	1262452	268	5.25	8.00	4.38	3.75	14.63	3.75	17.02	20.33	24.88	9.00	3.62	4.00	1.80	0.25	0.01	0.25
4	† 175	1021236	-	1262461	318	5.50	9.00	4.56	4.25	14.50	4.00	18.00	21.20	25.68	10.00	4.00	4.00	1.80	0.25	0.01	0.25
4-3/4	† 200	1021234	-	-	461	7.25	10.50	5.00	4.75	15.19	4.58	20.84	24.04	27.81	11.00	4.75	4.00	1.80	0.25	0.01	0.25
5	† 250	1021243	-	-	608	8.50	12.00	5.62	5.00	18.50	4.85	23.62	24.87	32.61	13.00	5.00	4.00	1.80	0.25	0.01	0.25
6	† 300	1021252	-	-	797	8.38	13.00	6.06	6.00	18.72	4.89	24.76	26.22	34.28	13.00	5.88	4.00	1.80	0.25	0.01	0.25
7*	† 400	1021478	-	-	1289	8.25	14.00	7.25	7.00	22.50	6.50	26.00	29.66	40.25	13.00	6.00	4.00	1.80	0.25	0.01	0.25

4.5:1 Design Factor for sizes 2 through 21 metric tons, 5.4:1 Design Factor for sizes 30 through 175 metric tons. 4:1 Design Factor for 200 through 400 metric tons. Maximum Proof Load is 2 times the Working Load Limit. *Cast alloy steel.†Furnished with round head bolts with a handle. For Working Load Limit reduction due to side loading applications, see Warnings & Applications.

APPLICATION AND WARNING INFORMATION
SECTION 17

G-2140E

- Quenched & Tempered.
- Alloy bows, alloy bolts.
- Meets performance requirements of Grade 8 shackles.
- Working Load Limit is permanently shown on every shackle.
- 200, 250, and 300 metric ton shackle bows are Dimetcoted®; Pins are Dimetcoted and painted red.
- Approved for use at -40° F (-40° C) to 400° F (204° C).
- Shackles are Quenched & Tempered and can meet DNV impact requirements of 31 ft-lb (42 Joules) at -4° F (-20° C).
- All sizes are individually proof tested to 2.0 times the Working Load Limit.
- Shackles are provided as follows:
  - Serialized bolt and bow
  - Material certification (chemical)
  - Magnetic particle inspected
  - Certification must be requested at time of order
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these shackles meet other critical performance requirements including impact properties and material traceability, not addressed by ASME B30.26.
- Type Approval certification in accordance with ABS 2016 Steel Vessel Rules and 2016 ABS Guide for Certification of Lifting Appliances. Certificates available when requested at time of order and may include additional charges.
- G-2140E meets the performance requirements of Federal Specification RR-C-271H, Type IVA, Grade B, Class 3, except for those provisions required of the contractor.
- Look for the Red Pin®... the mark of genuine Crosby quality.

G-2140E Alloy Easy-Loc Shackles

Nominal Shackle Size (in)	Working Load Limit (t)	Stock No.	Weight Each (lb)	Dimensions (in)													Tolerance (+ / - in)	
				A	B	C	D +/- .02	E	F	G	H	J	K	L	M	N	A	E
4-3/4	200	1021475	458	7.25	10.50	5.00	4.75	15.19	4.58	20.84	23.01	27.81	11.00	4.75	4.00	1.80	0.25	0.25
5	250	1021484	597	8.50	12.00	5.63	5.00	18.50	4.48	23.63	23.84	32.63	13.00	5.00	4.00	1.80	0.25	0.25
6	300	1021493	791	8.38	13.00	6.06	6.00	18.72	4.89	24.76	25.01	34.28	13.00	5.88	4.00	1.80	0.25	0.25

4:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit.For Working Load Limit reduction due to side loading applications, see Warnings & Applications.

APPLICATION AND WARNING INFORMATION
SECTION 17

Shackle Bolt Securement

MADE EASY

The patented Easy-Loc V2™ shackle bolt securement system will change the way you make your critical lifts.

1 Open collar

2 Push collar onto bolt

3 Close collar

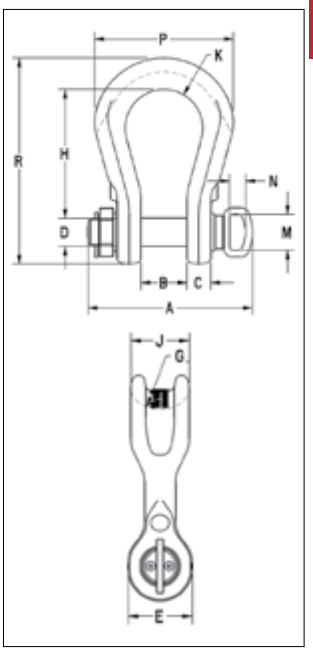
- No cotter pins or tools required, reducing install/release time up to 90%.
- Meets all industry standards.
- Up to 60% lighter than conventional nut and cotter pin design.

Crosby®

Watch video: **thecrosbygroup.com/easy-loc**

G-2160 / S-2160

- Increase in shackle bow radius provides minimum 58% gain in sling bearing surface and eliminates need for a thimble.
- Increases usable sling strength a minimum of 15% and greatly improves life of wire rope slings.
- Can be used to connect synthetic web slings, synthetic round slings or wire rope slings.
- All sizes Quenched & Tempered for maximum strength.
- Forged alloy steel from 7 through 300 metric tons.
- Cast alloy steel from 400 through 1550 metric tons.
- Proof tested as follows:
  - 7 through 75 metric tons and 200 through 300 metric tons: 2 x WLL
  - 125 metric tons: 1.6 x WLL
  - 400 metric tons and higher: 1.33 x WLL
- All ratings are in metric tons, embossed on side of bow.
- G-2160, (7 through 55t), are hot-dip galvanized and pins are painted red.
- G-2160 (75t and larger), bows are furnished Dimetcoted; Pins are Dimetcoted, then painted red.
- S-2160 bows and pins are painted red.
- Approved for use at -40° C (-40° F) to 204° C (400° F).
- Bow and bolt are certified to meet Charpy impact testing of 42 Joules (31 ft-lb) min. avg. at -20° C (-4° F).
- All 2160 shackles are individually proof tested and magnetic particle inspected. Crosby certification available at time of order.
- Shackles requiring ABS, Lloyds and other certifications are available upon special request and must be specified at time of order.
- Type approved and certification to DNV Rules for Certification of Lifting Appliances, and are produced in accordance with DNV MSA requirements. Databook is provided that includes required documents.
  - Serialization / Identification
  - Material Testing (physical / chemical / Charpy)
  - Proof Testing
- Look for the Red Pin®... the mark of genuine Crosby quality.



G-2160 / S-2160 Wide Body Shackles

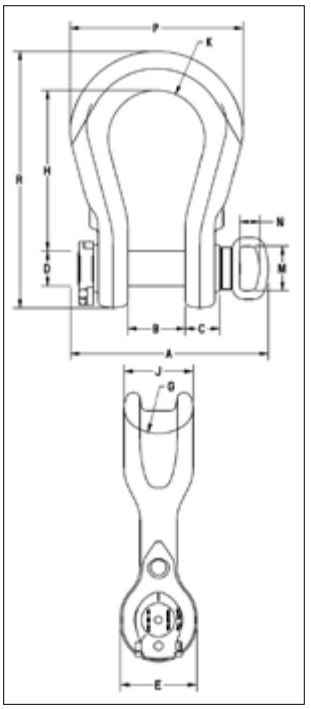
Working Load Limit (t)*	Stock No.		Weight Each (lb)	Dimensions (in)														Effective Body Diameter
	G-2160	S-2160		A	B	C	D	E	G	H	J	K	M	N	P	R	
7	1021256	1021548	4.0	4.14	1.25	.69	.88	1.82	1.25	3.56	1.60	1.25	-	-	4.10	5.87	2.1
12.5	1021265	1021557	8.8	5.38	1.69	.92	1.13	2.38	1.37	4.63	2.13	1.63	-	-	5.51	7.63	2.4
18	1021274	1021566	14.9	6.69	2.03	1.16	1.38	2.69	1.50	5.81	2.50	2.00	-	-	6.76	9.38	2.8
30	1021283	1021575	26.5	7.69	2.37	1.38	1.63	3.50	2.50	6.94	3.13	2.50	-	-	8.50	11.38	4.1
40	1021285	1021584	46.0	9.28	2.88	1.69	2.00	4.00	1.75	8.06	3.75	3.00	-	-	10.62	13.62	3.6
55	1021287	1021593	68.0	10.36	3.25	2.00	2.25	4.63	2.00	9.36	4.50	3.50	-	-	12.26	15.63	4.3
75	1022101	-	112	15.04	4.13	2.39	2.75	5.34	3.75	11.53	5.00	3.64	4.00	1.80	12.64	18.66	6.3
125	1022110	-	193	18.32	5.12	3.10	3.15	6.50	3.75	14.37	5.91	4.33	4.00	1.80	15.47	23.00	6.8
200	1022118	-	420	19.35	5.91	3.39	4.12	8.41	5.25	18.91	8.56	5.42	4.00	1.80	20.27	30.44	9.5
300	1022127	-	805	22.61	7.38	4.30	5.25	10.50	6.13	23.63	10.38	6.31	4.00	1.80	23.93	37.66	11.4
400	1021334	-	1143	30.27	8.66	5.16	6.30	12.56	7.99	22.64	12.60	7.28	4.00	1.80	27.17	38.78	14.3
500	1021343	-	1439	33.35	9.84	5.73	7.09	13.39	8.09	24.81	13.39	8.86	4.00	1.80	31.10	42.72	14.8
600	1021352	-	2132	36.02	10.83	6.23	7.87	15.50	13.00	27.56	14.57	9.74	5.75	2.25	34.05	47.24	20.3
700	1021361	-	2579	38.91	11.81	6.59	8.46	17.03	8.87	28.94	15.75	10.63	5.75	2.25	37.01	50.18	16.6
800	1021254	-	3025	41.66	12.80	7.30	9.06	17.69	9.76	29.53	16.54	10.92	5.75	2.25	38.39	52.09	18.0
900	1021389	-	3678	43.73	13.78	7.78	9.84	18.81	13.00	29.82	18.81	11.52	5.75	2.25	40.35	54.59	22.4
1000	1021370	-	4079	45.98	14.96	8.33	10.63	20.00	10.26	29.92	18.11	12.11	5.75	2.25	42.32	55.31	19.3
1250	1021272	-	5320	49.86	16.99	9.16	11.81	22.56	13.92	36.61	20.87	12.70	-	-	46.26	65.35	24.4
1550	1021281	-	8302	54.89	18.31	11.10	12.60	24.25	12.52	42.32	22.82	13.29	-	-	51.81	74.63	23.9

5:1 Design Factor on 75 through 300 metric tons. Maximum Proof Load is 2 times the Working Load Limit on 75 through 300 metric tons (except for 125 metric tons which is proof tested to 1.6 times the Working Load Limit). 4.5:1 Design Factor on 400 through 1550 metric tons. Maximum Proof Load is 1.33 times the Working Load Limit on 400 through 1550 metric tons.

APPLICATION AND WARNING INFORMATION
SECTION 17

G-2160E

- Increase in shackle bow radius provides minimum 58% gain in sling bearing surface and eliminates need for a thimble.
- Increases usable sling strength a minimum of 15% and greatly improves life of wire rope slings.
- Can be used to connect synthetic web slings, synthetic round slings or wire rope slings.
- All sizes Quenched & Tempered for maximum strength.
- Forged alloy steel from 75 through 300 metric tons.
- Proof tested as follows:
  - 75 metric tons and 200-300 metric tons: 2 x WLL.
  - 125 metric tons: 1.6 x WLL.
- All ratings are in metric tons, embossed on side of bow.
- G-2160E, (75t and larger), bows are furnished Dimetcoted, and pins are Dimetcoted, then painted red.
- Approved for use at -40° C (-40° F) to 204 degrees C (400° F).
- Bow and bolt are certified to meet Charpy impact testing of 42 Joules (31 ft-lb) min. avg. at -20° C (-4 degrees F).
- All 2160E shackles are individually proof tested and magnetic particle inspected. Crosby certification available at time of order.
- Shackles requiring ABS, Lloyds and other certifications are available upon special request and must be specified at time of order.



- Shackles have DNV Type Approval to Rules for Certification of Lifting Appliances, and are produced in accordance with DNV MSA requirements. Databook is provided that includes required documents.
  - Serialization / Identification
  - Material Testing (physical / chemical / Charpy)
  - Proof Testing
- Look for the Red Pin®... the mark of genuine Crosby quality.

G-2160E Easy-Loc Wide Body Shackles

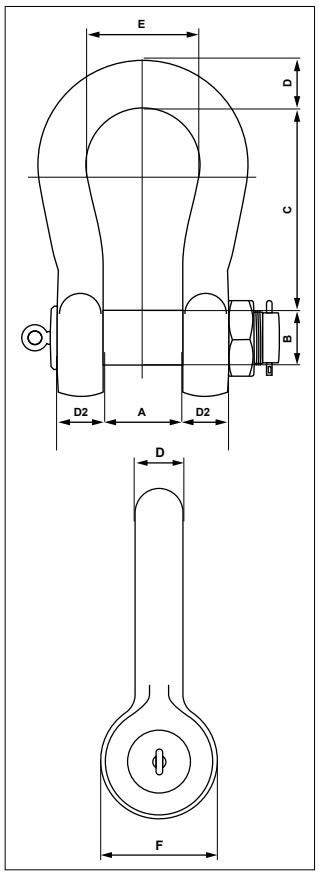
Working Load Limit (t)	Stock No.	Weight Each (lb)	Dimensions (in)													
			A	B	C	D	E	G	H	J	K	M	N	P	R	Effective Body Diameter
75	1021500	110	15.04	4.13	2.39	2.75	5.34	3.75	11.54	5.00	3.64	4.00	1.80	12.64	18.66	6.3
125	1021509	190	17.70	5.12	3.10	3.15	6.50	3.75	14.37	5.91	4.33	4.00	1.80	15.47	23.00	6.8
200	1021518	408	19.35	5.91	3.39	4.12	8.41	5.25	18.91	8.56	5.42	4.00	1.80	20.27	30.44	9.5
300	1021527	787	22.61	7.38	4.30	5.25	10.50	6.13	23.63	10.38	6.31	4.00	1.80	23.93	37.51	11.4

5:1 Design Factor on 75 through 300 metric tons. Maximum Proof Load is 2 times the Working Load Limit on 75 through 300 metric tons (except for 125 metric tons which is proof tested to 1.6 times the Working Load Limit).

APPLICATION AND WARNING INFORMATION
SECTION 17

S-2135 / S-2145

- Trusted Crosby quality.
- Embossed Angle Indicators included.
- Meets performance requirements of Grade 8 shackles.
- 5:1 Design Factor.
- Individually proof loaded to 2 times the Working Load Limit.
- S-2135 and S-2145 shackles are available with aluminum paint and are not galvanized.
- Operating temperature range -20° C (-4° F) to 200° C (392° F) for S-2135 and S-2145.
- Material inspection certificate Type 3.1 according to EN 10204.
- DNV type approved: DNVGL-ST-0377 and DNVGL-ST-0378.
- Meets performance requirements of federal specification RR-C-271H, except for those provisions required of the contractor.
- Meets or exceeds all requirements of ASME B30.26.
- S-2135CT COLD TUFF® available from 85t to 400t with an operating temperature range of -60°C (-76°F) up to +200°C (392°F).
- DNV witness proof testing available on request for all sizes and models.
- Magnetic Particle Inspection available on request for all sizes and models.
- Look for the Red Pin®... the mark of genuine Crosby quality.



S-2135 / S-2145 Bolt Type Anchor Shackles

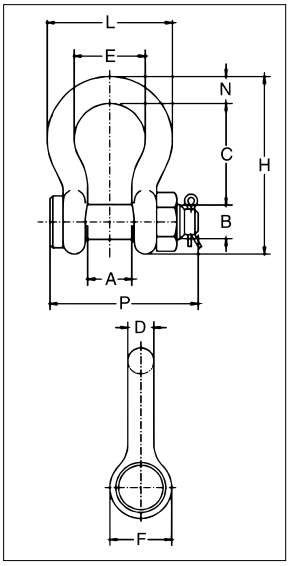
Frame Size (in)	Working Load Limit (t)	Stock No	Weight (lb)	Dimensions (in)							
				A	+/- 0	B	C	D	D2	E	F
S-2135											
3	85	1205009	172	5.00	+0.25 / -0	3.3	13.0	3.3	3.1	7.5	6.4
3 1/2	120	1205018	254	5.67	+0.25 / -0	3.7	15.0	3.7	3.5	9.4	7.9
4	150	1205027	357	6.50	+0.33 / -0	4.3	15.2	4.1	3.9	10.8	9.1
4 3/4	200	1205036	529	7.09	+0.33 / -0	4.9	17.7	4.7	4.3	11.0	10.6
5	250	1205045	675	8.07	+0.40 / -0	5.5	20.5	5.1	4.5	12.0	11.4
6	300	1205054	811	8.07	+0.40 / -0	5.9	20.9	5.5	4.7	12.0	12.4
7	400	1205063	1327	9.06	+0.40 / -0	6.9	22.6	6.3	6.3	12.8	14.4
7 1/4	500	1205234	1620	9.84	+0.47 / -0	7.3	25.6	7.1	6.3	13.8	15.2
8	600	1205243	2136	10.83	+0.50 / -0	8.1	25.6	7.9	7.3	14.8	16.9
8 1/4	700	1205252	2405	11.81	+0.60 / -0	8.5	25.6	8.3	7.9	15.7	17.3
8 1/2	800	1205261	2438	11.81	+0.60 / -0	8.7	25.6	8.3	7.9	15.7	17.7
9 1/2	1000	1205270	3254	13.39	+0.66 / -0	9.4	27.6	9.4	9.4	16.5	19.7
10	1250	1205279	4310	14.17	+0.75 / -0	10.6	29.5	10.2	8.9	17.7	22.4
11	1500	1205288	5130	14.17	+0.75 / -0	11.4	31.5	11.0	8.9	17.7	24.0
S-2145											
3	120	1205072	172	5.00	+0.25 / -0	3.3	13.0	3.3	3.1	7.5	6.4
3 1/2	150	1205081	254	5.67	+0.25 / -0	3.7	15.0	3.7	3.5	9.4	7.9
4	175	1205090	357	6.50	+0.33 / -0	4.3	15.2	4.1	3.9	10.8	9.1

Maximum Proof Load is 2.0 times the Working Load Limit.

APPLICATION AND WARNING INFORMATION
SECTION 17

G-2130CT / G-2140CT

- Forged, Quenched & Tempered, with alloy bolt.
  - G-2130CT - carbon steel
  - G-2140CT - alloy steel
- Working Load Limit permanently shown on every shackle.
- Individually serialized with certification.
- Fatigue Rated (G-2130CT only).
- All sizes are individually proof tested to 2.0 times the Working Load Limit.
- Finish is inorganic zinc primer.
- Bow and bolt are certified to meet Charpy impact testing of 42 Joules (31 ft-lb) min. avg. at -20° C (-4° F).
- Individually magnetic particle inspected with certification.
- Type Approval and certification in accordance with DNV 2.7-1 Offshore Containers, and Rules for Certification of Lifting Appliances, DNV-OS-E101 and are produced in accordance with DNV MSA requirements, including required documents.
- DNV certified minimum design temperature -4° F. May be used at -50° F (-45° C) in non DNV applications.
- Meets the performance requirements of Federal Specification RR-C-271H Type IVA:
  - G-2130CT - Grade A, Class 3, except for those provisions required of the contractor.
  - G-2140CT - Grade B, Class 3, except for those provisions required of the contractor.



G-2130CT COLD TUFF® Bolt Type Anchor Shackles

Nominal Shackle Size (in)	Working Load Limit (t)	Stock No.	Weight Each (lb)	Dimensions (in)										Tolerance (+ / - in)	
				A	B	C	D	E	F	H	L	N	P	A	C
3/4	4.75	1260568	2.72	1.25	.88	2.81	.75	2.00	1.81	4.97	3.50	.81	4.25	.06	.25
7/8	6.5	1260577	3.87	1.44	1.00	3.31	.88	2.28	2.09	5.83	4.03	.97	4.71	.06	.25
1	8.5	1260586	5.66	1.69	1.13	3.75	1.03	2.69	2.38	6.56	4.69	1.06	5.38	.06	.25
1-1/8	9.5	1260595	8.26	1.81	1.25	4.25	1.13	2.91	2.69	7.47	5.16	1.25	5.90	.06	.25
1-1/4	12	1260604	11.71	2.03	1.38	4.69	1.29	3.25	3.00	8.25	5.75	1.38	6.63	.06	.25
1-3/8	13.5	1260613	15.1	2.25	1.50	5.25	1.38	3.63	3.31	9.16	6.38	1.50	7.21	.13	.25
1-1/2	17	1260622	20.8	2.38	1.63	5.75	1.54	3.88	3.63	10.00	6.88	1.62	7.66	.13	.25
1-3/4	25	1260633	33.9	2.88	2.00	7.00	1.84	5.00	4.19	12.34	8.86	2.25	9.19	.13	.25

5.4:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit. For Working Load Limit reduction due to side loading applications, see Warnings & Applications.

G-2140CT COLD TUFF® Alloy Bolt Type Anchor Shackles

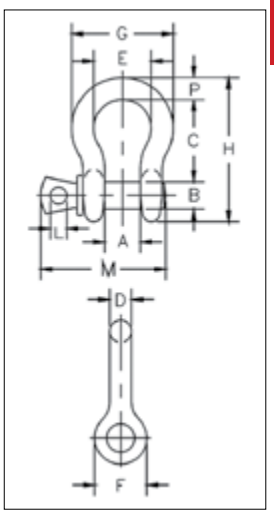
Nominal Shackle Size (in)	Working Load Limit (t)	Stock No.	Weight Each (lb)	Dimensions (in)										Tolerance (+ / - in)	
				A	B	C	D	E	F	H	L	N	P	A	C
1-1/2	30	1260801	20.8	2.38	1.63	5.75	1.54	3.88	3.62	10.00	6.88	1.62	7.73	.13	.25
1-3/4	40	1260812	33.9	2.88	2.00	7.00	1.84	5.00	4.19	12.34	8.81	2.25	9.33	.13	.25
2	55	1260823	52.0	3.25	2.25	7.75	2.08	5.75	4.81	13.68	10.16	2.40	10.41	.13	.25
2-1/2	85	1260834	96.0	4.12	2.75	10.50	2.72	7.25	5.69	17.84	12.87	3.12	13.58	.25	.25
3	120	1260843	178.0	5.00	3.25	13.00	3.11	7.88	6.50	21.50	14.36	3.63	15.13	.25	.25
3-1/2	† 150	1260852	265.0	5.25	3.75	14.63	3.62	9.00	8.00	24.62	16.50	4.12	17.62	.25	.25
4	† 175	1260861	338.0	5.50	4.25	14.5	4.10	10.00	9.00	25.69	18.42	4.56	20.37	.25	.25
4-3/4	† 200	1260870	450.0	7.25	4.75	15.63	4.50	11.00	10.50	29.25	21.00	6.00	21.21	.25	.25
5	† 250	1260889	600.0	8.50	5.00	20.00	4.50	13.00	12.00	35.00	24.50	6.50	22.68	.25	.25

5.4:1 Design Factor on 30t through 175 metric tons. 4:1 Design Factor on 200 metric tons and larger. Maximum Proof Load is 2 times the Working Load Limit for all sizes.

APPLICATION AND WARNING INFORMATION
SECTION 17

S-209T

- Flat black baked on powder coat finish.
- Forged, Quenched & Tempered, with alloy pins.
- Working Load Limit and Grade 6 permanently shown on every shackle.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
- Industry leading 6 to 1 Design Factor.
- Screw pin anchor shackles meet the performance requirement of Federal Specification RR-C-271H, Type IVA, Grade A, Class 2, except for those provisions required of the contractor.
- Meets the performance requirements of EN 13889.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these shackles meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.



S-209T Theatrical Shackles

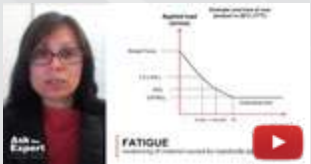
Nominal Size (in)	Working Load Limit (t)	Stock No.	Weight Each (lb)	Dimensions (in)											Tolerance (+ / - in)	
				A	B	C	D	E	F	G	H	L	M	P	C	A
3/8	1	1018706	.31	.66	.44	1.44	.38	1.03	.91	1.78	2.49	.25	2.02	.38	.13	.06
7/16	1.5	1018724	.38	.75	.50	1.69	.40	1.16	1.06	2.03	2.91	.31	2.37	.44	.13	.06
1/2	2	1018742	.72	.81	.63	.188	.50	1.31	1.19	2.31	3.28	.38	2.69	.50	.13	.06
5/8	3.25	1018760	1.37	1.06	.75	2.38	.63	1.69	1.50	2.94	4.19	.44	3.34	.69	.13	.06
3/4	4.75	1018778	2.35	1.25	.88	2.81	.75	2.00	1.81	3.50	4.97	.50	3.97	.81	.25	.06

Maximum Proof Load is 2.0 times the Working Load Limit.

Lead Rated Fatigue Rated QUIC-CHECK® Q&T MAXTOUGH®

APPLICATION AND WARNING INFORMATION
SECTION 17

Ep. 46 Shackles designed for theatrical applications



Ep. 36 Lifting & Mooring Fatigue: What is it and how to avoid it?

Ep. 5 Hooks: Why the tips must point outward on multiple bridles

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QUIC-TAG™

THE NEWEST ADDITION TO CROSBY'S RFID TAG FAMILY

Industry standards require periodic performance inspections to make sure lifting equipment is performing to specified levels.

The Crosby QUIC-TAG™ makes the inspection process more efficient, and its unique design can be retrofitted on numerous products.

- Easy, fast, and secure attachment
- Engineered for extreme durability and strength with a low profile design
- Resistant to harsh environmental conditions including exposure to UV rays, water chemical exposure and temperatures up to 185˚F (85˚C)
- Compatible with the Crosby QUIC-CHECK® Inspection and Identification System
- 13.5 MHz operating frequency
- The most cost effective RFID tag offered by Crosby

QUIC-CHECK®

RFID EQUIPPED Crosby

Shown actual size:

Feel confident in every situation

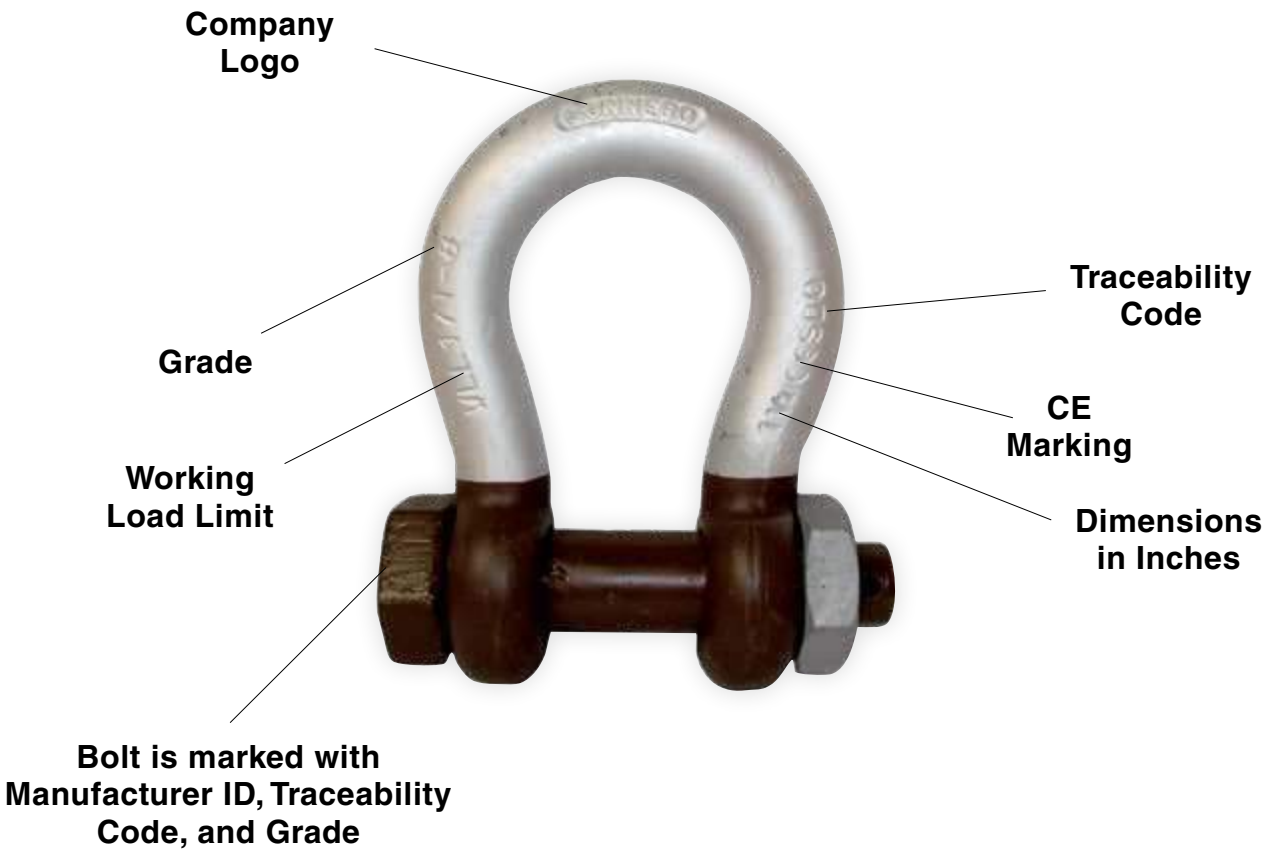
Gunnebo Industries shackles are made from a range of steel qualities, including acid proof stainless steel and high-grade alloy steel to comply with the most stringent specifications. Our factories comprise all facilities and systems for the manufacturing and control of a top-quality product. This includes tool design, an advanced tool shop, forging, heat treatment, machining, hot-dip galvanizing and quality control.

We offer a range of DNV 2.7-1 Type Approved lifting shackles for offshore containers, developed for the tough conditions of the offshore industry, where safety must be of the highest priority at all times. The heat treatment of these products ensures the proper ductility and strength to sustain shock loads which may be imposed when the container is lifted from the deck of a vessel.

Make sure you have the original

- High quality shackles acc. EN 13889 and US Fed. Spec RR-C. 271 (Grade A and Grade B)
- Consistent product quality
- Long experience of shackle production using modern manufacturing methods
- Local availability of expertise

To ensure you have a genuine Gunnebo Industries shackle, it should be marked as below:



GUNNEBO Industries

Dee Shackle No 834 and No 835

Standard: DNV 2.7-1 Type Approved, EN 13889 and US Federal Spec. RR-C-271

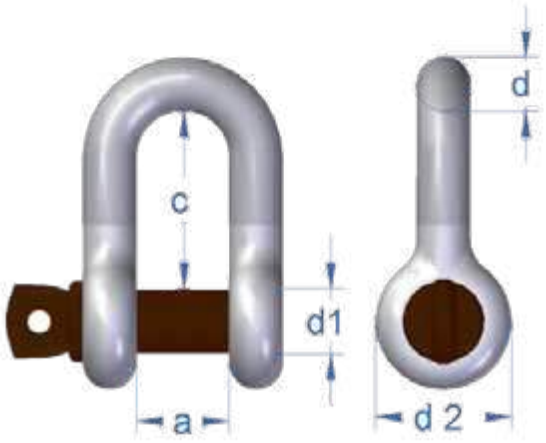
Material: High tensile carbon steel, Quenched & Tempered, Grade 6

Finish: All parts hot-dip galvanized, pin brown painted on top of galvanized.

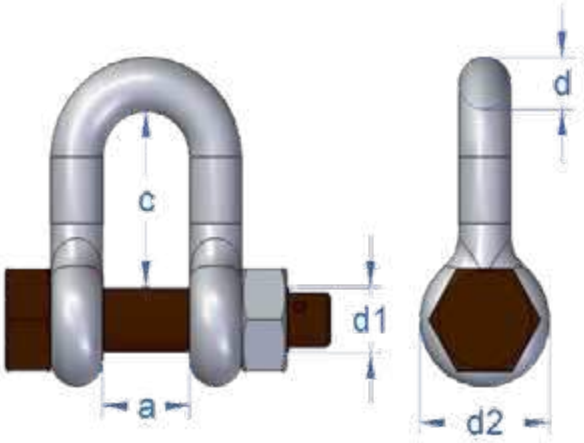
Design Factor: 6:1

Documentation: Test certificate and traceable raw material / inspection certificate acc. EN 10204 - 3.1.
DNVGL-ST-E271-2.7-1 and E273-2.7-3 Type Approval Certification.

Temperature: - 40°C to 200°C



Shackle No 834 with screw pin



Shackle No 835 with safety bolt

CE

834 Screw Pin Stock No.	835 Safety Bolt Stock No.	WLL (t) 6:1	Pin d1 (in)	Nominal Size d		Inner Width a* (in)	Inner Length c* (in)	Eye Outer d2 (in)	834 Screw Pin Weight (lb)	835 Safety Bolt Weight (lb)
				(mm)	(in)					
A083416	A083516	3.25	0.75	16	5/8”	1.06	2.01	1.57	1.21	1.32
A083419	A083519	4.75	0.87	19	3/4”	1.22	2.36	1.89	2.20	2.43
A083422	A083522	6.5	0.98	22	7/8”	1.46	2.80	2.05	2.87	3.31
A083425	A083525	8.5	1.10	25	1”	1.69	3.19	2.36	4.19	4.85
A083428	A083528	9.5	1.26	28	1 1/8”	1.81	3.54	2.52	6.17	6.83
A083432	A083532	12.0	1.38	32	1 1/4”	2.05	3.94	2.83	7.937	9.26
A083435	A083535	13.5	1.50	35	1 3/8”	2.24	4.37	2.99	10.1	12.4
A083438	A083538	17.0	1.65	38	1 1/2”	2.36	4.80	3.31	14.3	16.5
A083445	A083545	25.0	1.97	45	1 3/4”	2.91	5.87	4.13	25.3	28.7

* Forging tolerance: +/- 5% on inside width/length.

Split pin included

Bow Shackle No 854 and No 855

Standard: DNV 2.7-1 Type Approved, EN 13889 and US Federal Spec. RR-C-271

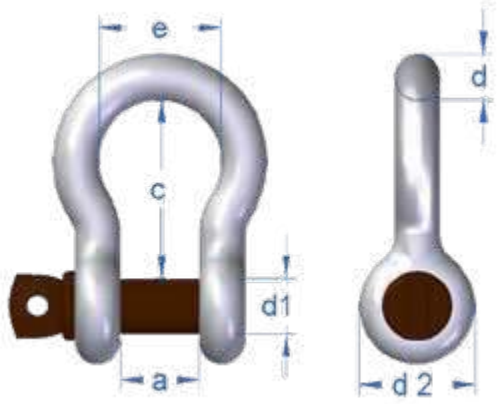
Material: High tensile carbon steel, Quenched & Tempered, Grade 6

Finish: All parts hot-dip galvanized, brown painted bolts on top of galvanized.

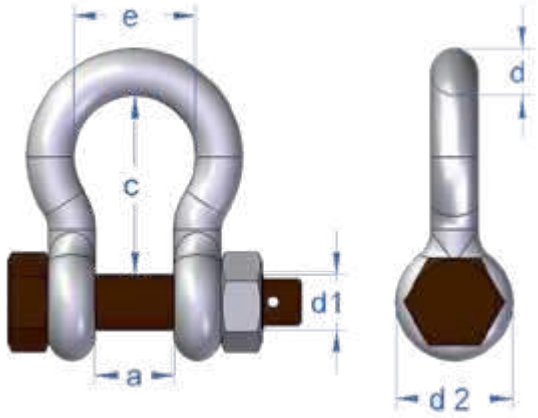
Design Factor: 6:1

Documentation: Test certificate and traceable raw material / inspection certificate acc. EN 10204 - 3.1. DNVGL-ST-E271-2.7-1 and E273-2.7-3 Type Approval Certification.

Temperature: - 40°C to 200°C



Shackle No 854 with screw pin



Shackle No 855 with safety bolt

CE

854 Screw Pin Stock No.	855 Safety Bolt Stock No.	WLL (t) 6:1	Pin d1 (in)	Nominal Size d		Inner Width a* (in)	Inner Length c* (in)	Bow Width e (in)	Eye Outer d2 (in)	854 Screw Pin Weight (lb)	855 Safety Bolt Weight (lb)
				(mm)	(in)						
A085413	A085513	2.0	0.63	13	1/2”	0.83	1.85	1.30	1.30	0.82	0.93
A085416	A085516	3.25	0.75	16	5/8”	1.06	2.36	1.65	1.57	1.43	1.54
A085419	A085519	4.75	0.87	19	3/4”	1.22	2.80	1.93	1.89	2.43	2.65
A085422	A085522	6.5	0.98	22	7/8”	1.46	3.31	2.36	2.05	3.31	3.75
A085425	A085525	8.5	1.10	25	1”	1.69	3.74	2.68	2.36	4.87	5.69
A085428	A085528	9.5	1.26	28	1 1/8”	1.81	4.25	2.91	2.52	6.83	7.50
A085432	A085532	12.0	1.38	32	1 1/4”	2.05	4.69	3.27	2.83	9.26	10.6
A085435	A085535	13.5	1.50	35	1 3/8”	2.24	5.20	3.50	2.99	13.2	15.4
A085438	A085538	17.0	1.65	38	1 1/2”	2.36	5.75	3.86	3.31	17.6	19.8
A085445	A085545	25.0	1.97	45	1 3/4”	2.91	7.01	5.00	4.13	29.7	33.0
A085452	A085552	35.0	2.24	50	2”	3.27	7.76	5.43	4.41	41.8	46.2
A085464	A085564	55.0	2.76	65	2 1/2”	4.13	10.2	7.09	5.71	83.7	85.9

* Forging tolerance: +/- 5% on inside width/length.

Split pin included

GUNNEBO Industries

Arctic Shackle No 856

Bow shackle with safety bolt

Unique benefits with the Arctic Shackle

Adverse weather and rough sea conditions in combination with extremely low temperatures, as often encountered for instance in the North Sea, places tough requirements on the products used. 856 Arctic shackles are specially designed for these conditions. The Arctic Shackle is type approved to DNV 2.7-1 Offshore containers and meets the impact requirements of 42 J at – 40 degrees ºC.

The Arctic Shackle is a grade 8 shackle with all parts hot-dip galvanized, including the safety bolt, and has the characteristic brown color marking.

Standard: DNV 2.7-1, US Federal Spec. RR.C-271 and EN-13889

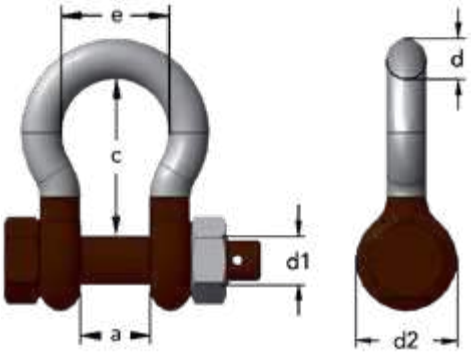
Material: Special alloy steel, Quenched & Tempered, Grade 8

Finish: All parts hot-dip galvanized + brown color marking

Design Factor: As specified in the table below

Documentation: Test certificate and traceable raw material / inspection certificate acc. EN 10204 - 3.1. DNVGL-ST-E271-2.7-1 and E273-2.7-3 Type Approval Certification.

Temperature: - 40°C to 200°C



CE

Stock No.	WLL (t)	Design Factor	Pin d1 (in)	Nominal Size d		Inner Width a (in)	Inner Length c (in)	Eye Outer e (in)	Bow Width d2 (in)	Weight (lb)
				(mm)	(in)					
A085613	2.0	8.00	0.62	13	1/2”	0.82	1.85	1.29	1.29	0.92
A085616	3.25	8.00	0.74	16	5/8”	1.06	2.36	1.65	1.57	1.54
A085619	4.75	8.00	0.86	19	3/4”	1.22	2.79	1.92	1.88	2.64
A085622	6.5	7.85	0.98	22	7/8”	1.45	3.30	2.36	2.04	3.74
A085625	8.5	7.25	1.10	25	1”	1.69	3.74	2.67	2.36	5.51
A085628	9.5	6.94	1.25	28	1 1/8”	1.81	4.25	2.91	2.51	7.49
A085632	12.0	6.40	1.37	32	1 1/4”	2.04	4.68	3.26	2.83	10.5
A085635	13.5	6.10	1.49	35	1 3/8”	2.24	5.19	3.50	2.99	15.4
A085638	17.0	6.00	1.65	38	1 1/2”	2.36	5.74	3.85	3.30	19.8
A085645	25.0	6.00	1.96	45	1 3/4”	2.91	7.00	5.00	4.13	33.0
A085652	35.0	6.00	2.24	50	2”	3.26	7.75	5.43	4.56	46.2
A085664	55.0	6.00	2.75	65	2 1/2”	4.13	10.2	7.08	5.70	85.9

Split pin included

Super Shackle No 858

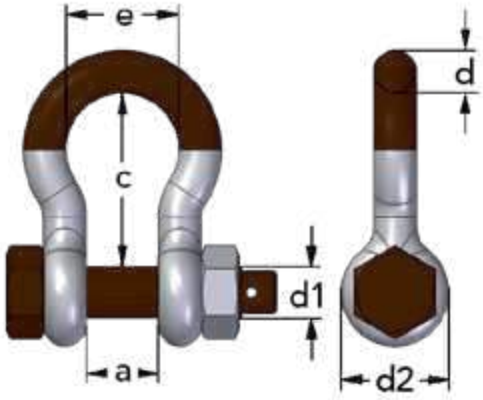
Bow shackle with safety bolt

Unique Benefits with The Super Shackle

In certain situations a demand for extra Working Load Limit occurs in others the lifting environment has limited space for the lifting application. The 858 Super Shackle enables a higher working load limit for the same nominal size.

The Super shackle meets the US Federal Specification RR.C-271. It is a grade 8 shackle and has all parts hot dipped galvanized, including the safety bolt.

Standard:	US Federal Spec. RR.C-271 Type IVA Class 3, Grade B
Material:	High tensile steel. Quenched & Tempered, Grade 8
Finish:	All parts hot-dip galvanized + brown color marking
Design Factor:	5:1
Documentation:	Test certificate and traceable 3.1 certificate
Temperature:	-40°C to 200°C



CE

Stock No.	WLL (t) 5:1	Pin d1 (in)	Nominal Size d		Inner Width a (in)	Inner Length c (in)	Bow Width e (in)	Eye Outer d2 (in)	Weight (lb)
			(mm)	(in)					
A085813	3.3	0.62	13	1/2”	0.82	2.00	1.29	1.29	0.88
A085816	5.0	0.74	16	5/8”	1.06	2.36	1.65	1.57	1.54
A085819	7.0	0.86	19	3/4”	1.22	2.79	1.92	1.88	2.64
A085822	9.5	0.98	22	7/8”	1.45	3.30	2.36	2.04	3.74
A085825	12.5	1.10	25	1”	1.69	3.74	2.67	2.36	5.51
A085828	15.0	1.25	28	1 1/8”	1.81	4.25	2.91	2.51	7.49
A085832	18.0	1.37	32	1 1/4”	2.04	4.68	3.26	2.83	10.5
A085835	21.0	1.49	35	1 3/8”	2.24	5.19	3.50	2.99	15.4
A085838	30.0	1.65	38	1 1/2”	2.36	5.74	3.85	3.30	19.4
A085845	40.0	1.96	45	1 3/4”	2.91	7.00	5.00	4.13	33.0

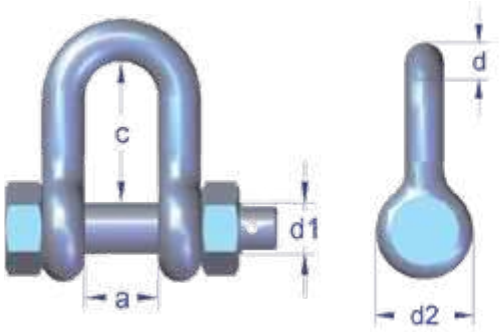
Split pin included

GUNNEBO Industries

Stainless Steel Shackle No 735 Dee shackle with safety bolt

Material: AISI 316
Finish: Highly polished
Design Factor: 6:1
Documentation: Test certificate and traceable 3.1 certificate supplied upon request.

CE



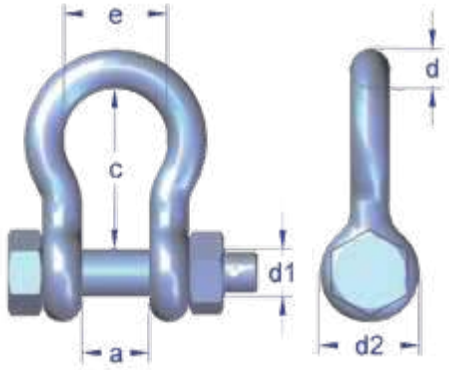
Stock No.	WLL (t) 6:1	Pin d1 (in)	Nominal Size d (in)	Inner Width a (in)	Inner Length c (in)	Eye Outer d2 (in)	Weight (lb)
A073510	0.6	0.39	0.39	0.78	1.57	0.78	0.44
A073512	0.9	0.47	0.47	1.02	1.96	0.94	0.66
A073516	1.5	0.62	0.51	0.94	2.04	1.29	0.88
A073520	2.5	0.74	0.62	1.10	2.55	1.57	1.54
A073522	3.0	0.86	0.74	1.22	2.36	1.88	3.30
A073524	4.5	0.98	0.86	1.45	2.79	2.04	2.86
A073533	7.5	1.25	1.10	1.81	3.54	2.51	6.61
A073536	10.0	1.37	1.25	2.04	3.93	2.83	9.03

Split pin included

Stainless Steel Shackle No 755 Bow shackle with safety bolt

Material: AISI 316
Finish: Highly polished
Design Factor: 6:1
Documentation: Test certificate and traceable 3.1 certificate supplied upon request.

CE

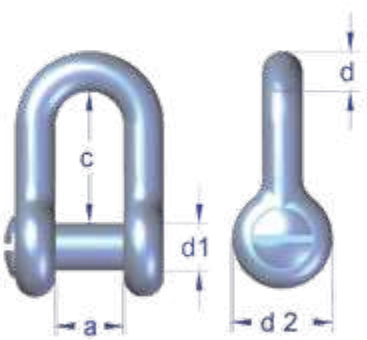


Stock No.	WLL (t) 6:1	Pin d1 (in)	Nominal Size d (in)	Inner Width a (in)	Inner Length c (in)	Bow Width e (in)	Eye Outer d2 (in)	Weight (lb)
A075510	0.6	0.39	0.39	0.78	1.57	1.06	0.78	0.44
A075512	0.9	0.47	0.47	0.98	1.85	1.45	1.02	0.66
A075516	1.5	0.62	0.51	0.98	1.85	1.29	1.33	0.88
A075520	2.5	0.78	0.62	1.10	2.36	1.65	1.57	1.76
A075522	3.0	0.86	0.74	1.22	2.79	2.00	1.88	2.86
A075524	4.5	0.98	0.86	1.45	3.30	2.28	2.04	3.74
A075533	7.5	1.25	1.10	1.81	4.25	2.91	2.51	7.49
A075536	10.0	1.37	1.25	2.04	4.68	3.26	2.83	11.4

Split pin included

Stainless Steel Shackle No 732 Dee shackle with countersunk pin

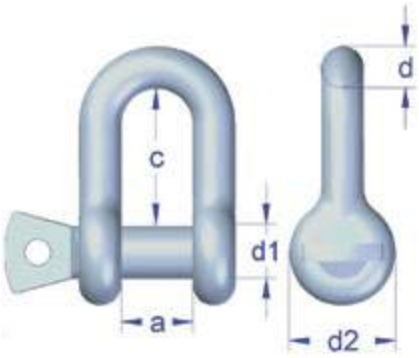
Material: AISI 316
Finish: Highly polished
Design Factor: 6:1
Documentation: Test certificate supplied upon request.



Stock No.	WLL (t) 6:1	Pin d1 (in)	Nominal Size d (in)	Inner Width a (in)	Inner Length c (in)	Eye Outer d2 (in)	Weight (lb)
A073216	2.0	M16	0.51	0.94	2.04	1.33	0.66
A073220	3.0	M20	0.62	1.10	2.55	1.57	1.32
A073222	3.0	M22	0.74	1.22	2.36	1.88	3.08

Stainless Steel Shackle No 730 Dee shackle with screw pin

Material: AISI 316
Finish: Highly polished
Design Factor: 6:1
Documentation: Test certificate supplied upon request.

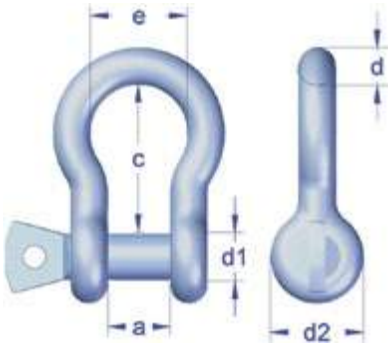


CE

Stock No.	WLL (t) 6:1	Pin d1 (in)	Nominal Size d (in)	Inner Width a (in)	Inner Length c (in)	Eye Outer d2 (in)	Weight (lb)
A073008S	0.4	0.31	0.31	0.62	1.18	0.62	0.13
A073010S	0.6	0.39	0.39	0.78	1.57	0.78	0.22
A073012S	0.9	0.47	0.47	1.02	1.96	0.94	0.44
A073016S	1.5	0.63	0.51	0.94	2.04	1.33	0.66
A073020S	2.5	0.79	0.62	1.10	2.55	1.57	1.32
A073022S	3.0	0.87	0.74	1.18	2.83	1.88	1.98

Stainless Steel Shackle No 750 Bow shackle with screw pin

Material: AISI 316
Finish: Highly polished
Design Factor: 6:1
Documentation: Test certificate supplied upon request.

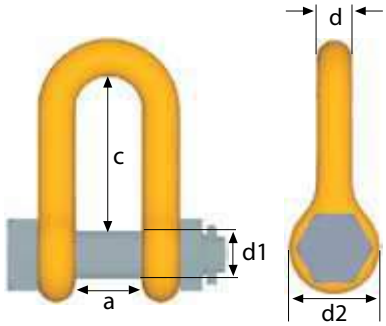


CE

Stock No.	WLL (t) 6:1	Pin d1 (in)	Nominal Size d (in)	Inner Width a (in)	Inner Length c (in)	Bow Width e (in)	Eye Outer d2 (in)	Weight (lb)
A075008S	0.4	0.31	0.31	0.62	1.18	0.90	0.62	0.15
A075010S	0.6	0.39	0.39	0.78	1.57	1.06	0.78	0.24
A075012S	0.9	0.47	0.47	0.98	1.85	1.45	1.02	0.55
A075016S	1.5	0.63	0.51	0.98	1.85	1.33	1.29	0.72
A075020S	2.5	0.79	0.62	1.10	2.36	1.65	1.57	2.11
A075022S	3.0	0.87	0.74	1.22	2.79	2.00	1.88	2.20

Shackle SA Grade 8

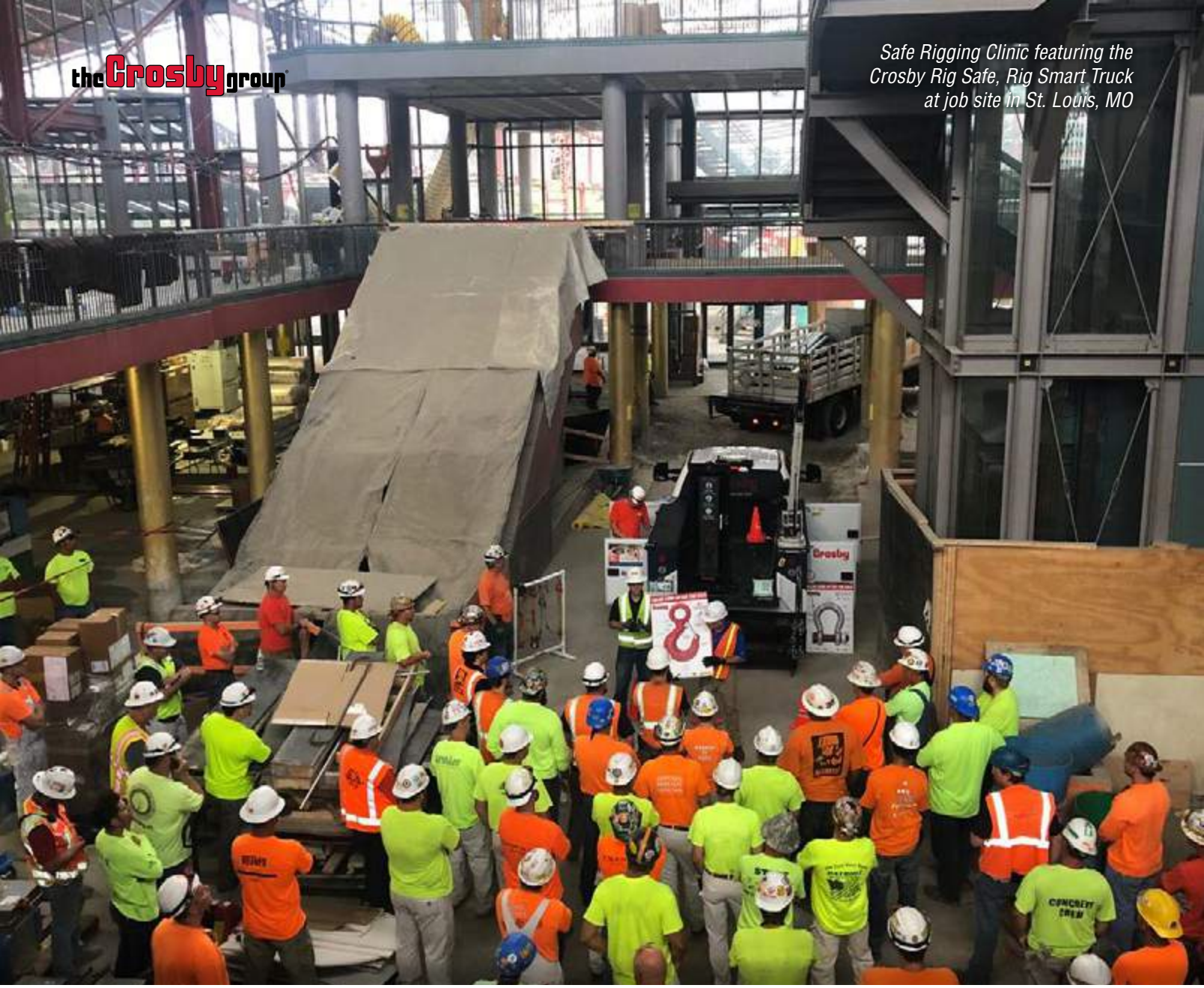
Material: Alloy steel
Finish: Painted yellow
Design Factor: 4:1



CE

Stock No.	Code	WLL (t) 4:1	For Chain Size	Pin d1 (in)	Nominal Size d (in)	Inner Width a (in)	Inner Length c (in)	Eye Outer d2 (in)	Weight (lb)
Z100706	SA-7/8-8	2.0	9/32", 5/16"	0.39	0.31	0.59	1.18	0.78	0.22
Z298728	SA-10-8	3.2	3/8"	0.63	0.51	0.94	2.04	1.33	0.88
Z292528	SA-13-8	5.4	1/2"	0.79	0.62	1.10	2.55	1.57	1.54
Z293024	SA-16-8	8.2	5/8"	0.87	0.70	1.18	2.83	1.81	2.20
Z299622	SA-19-8	11.5	3/4"	1.06	0.86	1.41	3.38	2.04	3.74
Z294122	SA-22-8	15.5	7/8"	1.18	0.98	1.57	3.70	2.36	5.51
Z304328	SA-26-8	21.7	1"	1.54	1.25	1.88	4.56	2.99	11.40

Split pin included



Safe Rigging Clinic featuring the Crosby Rig Safe, Rig Smart Truck at job site in St. Louis, MO

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The Crosby Group offers the most comprehensive on-site and online training on the installation, use, inspection and maintenance of rigging hardware.

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- ASME/OSHA for general industry and construction
- Land Based Energy (Oil & Gas)
- Offshore Energy (Oil & Gas)
- Certificate upon successful completion

ON-SITE SAFE RIGGING CLINICS (TRUCK/TRAILER)

- Insights into key safe, effective and efficient rigging best practices
- 30–45 minute toolbox talk
- Product proof testing
- Product application and live load demonstrations

ONLINE SAFE RIGGING COURSE (SELF-PACED)

- Rigging fundamentals based on topics covered in the *User's Guide for Lifting* rigging card
- Video explanations and quizzes
- Certificate upon successful completion

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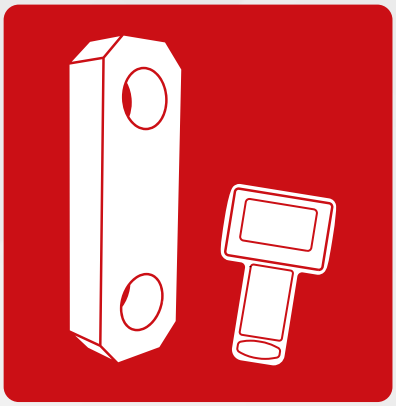
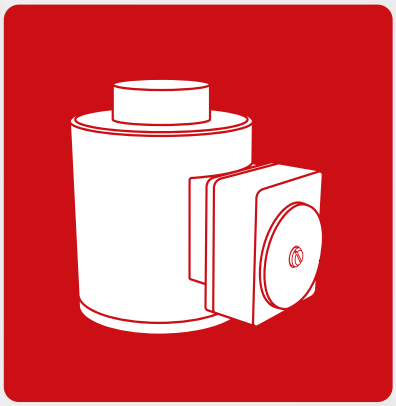
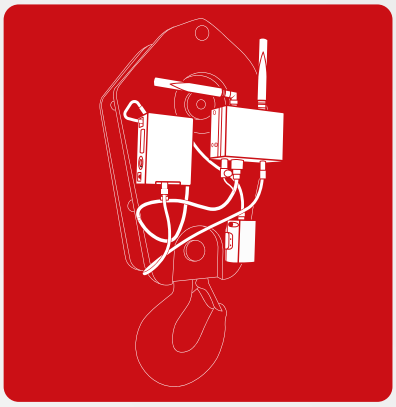
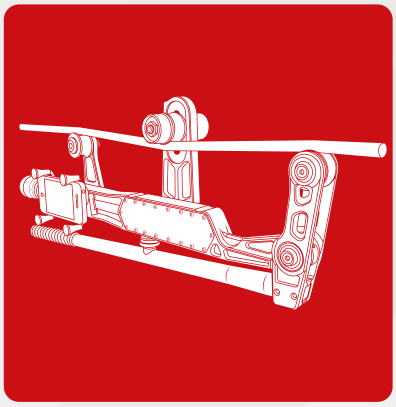
LOAD MONITORING

Advanced technology products and software solutions that improve communication and overall safety awareness.









the Crosby group®

thecrosbygroup.com

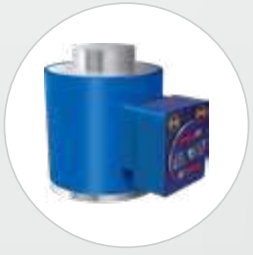
LoadConnect

Crosby | SP

Improve safety and efficiency on your work sites.

Cloud-based solution to monitor projects from anywhere in the world.

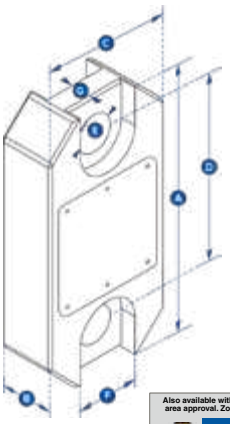
Stay connected on any device with an internet connection.



thecrosbygroup.com/loadconnect

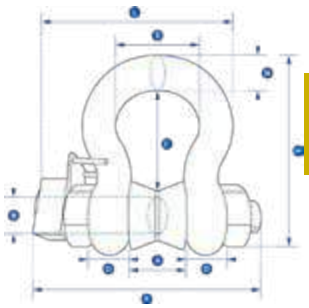
Radiolink Plus

- Capable of weighing and dynamic load monitoring in capacities from 1t to 500t.
- Constructed of lightweight, aerospace grade aluminum.
- Environmentally sealed to IP67 or NEMA6.
- Proprietary 2.4 GHz wireless.
- Update rate of 3Hz and can be easily configured to run at industry-leading speeds of up to 200Hz.
- Remote on/off from handheld display or software.
- ATEX Zones 0, 1 & 2 available.
- Design validated by FEA.
- 2-year warranty.
- DNV-GL Type Approval.
- Complies with ASME B30.26.
- Bluetooth option is available and is supplied with a free HHP app for iOS and Android.



Part Number SP		RLP1T	RLP2T5	RLP6T5	RLP12T	RLP25T	RLP35T	RLP55T	RLP75T	RLP100T	RLP150T	RLP200T	RLP250T	RLP300T	RLP500T
Crosby		2789084	2789089	2789094	2789082	2789088	2789091	2789093	2789095	2789081	2789083	2789085	2789087	2789090	2789092
Capacity	**(te)**	1,000 kg	2.5	6.5	12	25	35	55	75	100	150	200	250	300	500
	(lb)	2,200	5,500	14,300	26,000	55,000	77,000	120,000	165,000	220,000	330,000	440,000	550,000	660,000	1,100,000
Resolution	**(te)**	0.5 kg	0.001	0.001	0.002	0.005	0.005	0.01	0.01	0.05	0.05	0.1	0.1	0.1	0.1
	(lb)	1	2	2	5	10	10	20	20	100	100	200	200	200	200
Units	**(metric)**	kg	metric tons												
	(imperial)		pounds												
Weight	**(kg)**	1.5	1.5	2.4	3.7	5	8.6	13	16	34	46	82	82	118	193
	(lb)	3.3	3.3	5.3	8.2	11	19	28.7	35.3	75	101.4	180.8	180.8	260	425.5
Design Factor		12:1	7:1	7:1	7:1	5:1	5:1	5:1	5:1	5:1	4:1	5:1	4:1	5:1	5:1
Battery Type		Handheld 2 x AA / Loadcell 4 x AA													
Battery Life		Handheld - 40 hours / Loadcell 1200 hours continuous (Loadcell 500 hours if Bluetooth)													
Display Type		240 x 128 pixel Multi-line dot matrix with backlight													
Operating Temp.		-10°C to +50°C / 14°F to 122°F													
Accuracy		±0.1% of full scale													
Frequency		2.4 GHz													
System Range (max)		1000 meters / 3280 feet (100 meters / 328 feet if Bluetooth) (500 meters / 1640 feet if ATEX/IECEx)													
Data Rate		3 Hz - up to 200 Hz can be ordered for dynamic load monitoring applications													
Protection		IP67 / NEMA6													
Dimension A	**(mm)**	204	204	249	305	340	393	424	470	608	670	700	700	806	930
	(in)	8.03	8.03	9.80	12.01	13.39	15.47	16.69	18.50	23.94	26.38	27.56	27.56	31.73	36.61
Dimension B	**(mm)**	43	43	43	47	60	75	75	75	99	99	144	144	150	150
	(in)	1.69	1.69	1.69	1.85	2.36	2.95	2.95	2.95	3.90	3.90	5.67	5.67	5.91	5.91
Dimension C	**(mm)**	104	104	113	113	115	126	180	202	255	303	350	350	426	570
	(in)	4.09	4.09	4.45	4.45	4.53	4.96	7.09	7.95	10.04	11.93	13.78	13.78	16.77	22.44
Dimension D	**(mm)**	146	146	165	193	215	225	230	260	320	360	350	350	350	450
	(in)	5.75	5.75	6.50	7.60	8.46	8.86	9.06	10.24	12.60	14.17	13.78	13.78	13.78	17.72
Dimension ØE	**(mm)**	24.5	24.5	38	47.5	55	60	76	76	109	109	145	145	160	200
	(in)	0.96	0.96	1.50	1.87	2.17	2.36	2.99	2.99	4.29	4.29	5.71	5.71	6.30	7.87
Dimension F	**(mm)**	48	48	65	NOT RELEVANT IN THIS CAPACITY										
	(in)	1.89	1.89	2.60											
Dimension G	**(mm)**	19	19	32											
	(in)	0.75	0.75	1.26											
Crosby Shackle		G2130						G2140							G2160
Loading Pin Ø	**(mm)**	19	19	25	35	51	57	57	70	83	95	121	127	152	180
	(in)	3/4	3/4	1	1 3/8	2	2 1/4	2 1/4	2 3/4	3 1/4	3 3/4	4 3/4	5	6	7 1/8

Wireless Loadshackle

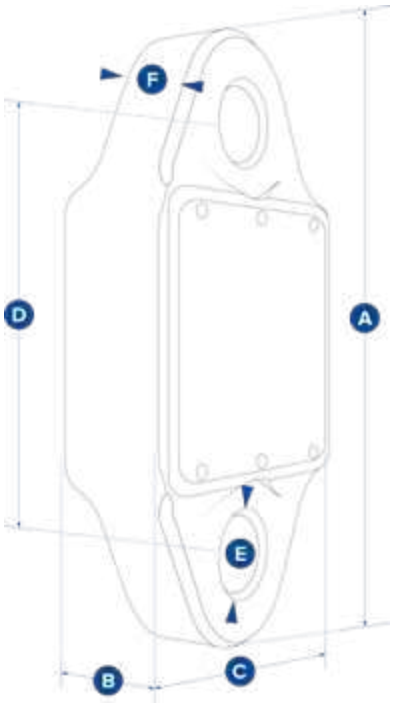


- Capacities of 3.25t to 500t, as well as being obtainable up to 3000t.
- Wireless range of 1000m or 3280ft.
- Every Loadshackle is proof tested.
- Electronics housed in hard anodized enclosure.
- Environmentally sealed to IP67 or NEMA6.
- Battery life of 1200 hrs from 4 x AA batteries.
- Internal antenna.
- Remote on/off from handheld display or software.
- Supplied with a load-centering bobbin.
- 2-year warranty.
- Complies with ASME B30.26.
- Design validated by FEA.
- ATEX Zones 0, 1 & 2 available.
- Bluetooth option is available and is supplied with a free HHP App for iOS and Android.

Part Numbers		WLS3.25T	WLS6.5T	WLS12T	WLS25T	WLS55T	WLS85T	WLS120T	WLS200T	WLS300T	WLS400T
Crosby		2789186	2789200	2789183	2789185	2789199	2789201	2789172	2789184	2789188	2789189
Capacity	(te)	3.25	6.5	12	25	55	85	120	200	300	400
	(lb)	7,150	14,300	26,400	55,000	120,000	185,000	260,000	440,000	660,000	880,000
Resolution	(te)	0.005	0.005	0.01	0.02	0.05	0.05	0.1	0.2	0.5	0.5
	(lb)	10	10	20	50	100	100	200	200	1000	1000
Units	(metric)	metric tons									
	(imperial)	pounds									
Weight	(kg)	2.8	3.2	8	18	25	85	125	260	405	662
	(lb)	6.16	7	17.6	40	55	187	276	573	893	1459
Design Factor		5:1 when used with load bobbin									
Battery Type		Loadcell 4 x AA Alkaline									
Battery Life		Loadcell 1200 hours continuous (500 hours if Bluetooth)									
Operating Temp.		-10°C to +50°C / 14°F to 122°F									
Accuracy		±1% full scale									
Frequency		2.4 GHz									
System Range (max)		1000 meters / 3280 feet (100 meters / 328 feet if Bluetooth) (500 meters / 1640 feet if ATEX/IECEx)									
Data Rate		3 updates per second									
Protection		IP67 / NEMA6									
Dimension A	(mm)	26.9	36.6	51.5	73	82.5	127	144	180	205	230
	(in)	1.06	1.44	2.03	2.87	3.25	5.00	5.66	7.09	8.07	9.06
Dimension ØB	(mm)	19.1	25.4	35.1	51	57	83	95	125	150	175
	(in)	0.75	1.00	1.38	2.01	2.24	3.26	3.74	4.92	5.91	6.89
Dimension C	(mm)	56.9	79.7	113	170	189.5	317	364	432.2	505	547.7
	(in)	2.24	3.14	4.45	6.69	7.46	12.48	14.33	17.02	19.88	21.56
Dimension D	(mm)	14.46	20.6	29.5	44.5	51	80	89	110	120	160
	(in)	0.57	0.81	1.16	1.75	2.01	3.14	3.50	4.33	4.72	6.30
Dimension E	(mm)	42.9	58	82.5	127	146	190	238	280	305	325
	(in)	1.69	2.28	3.25	5.00	5.75	7.48	9.37	11.02	12.01	12.80
Dimension H	(mm)	106	148	210	313	348	539	624	769	904	1006.5
	(in)	4.17	5.83	8.27	12.32	13.70	21.22	24.56	30.28	35.59	39.63
Dimension L	(mm)	135	156.5	201	275	306	393	445	529.7	586.7	667.2
	(in)	5.31	6.16	7.91	10.83	12.05	15.47	17.51	20.85	23.10	26.27
Dimension N	(mm)	17.5	24.6	35.1	57	61	85	95	120	140	160
	(in)	0.69	0.97	1.38	2.24	2.40	3.34	3.74	4.72	5.51	6.30
Dimension P	(mm)	150	173	222	290	317	448	488	600	657	765
	(in)	5.91	6.81	8.74	11.42	12.48	17.63	19.21	23.62	25.87	30.12
Crosby Shackle		G2130				G2140	S2135				

BlueLink

Designed to replace outdated mechanical products still in the field, this 14,300lb (6500kg) dynamometer, the BlueLink, is the latest Crosby Straightpoint product to feature proprietary Bluetooth wireless technology.



The Bluetooth signal effortlessly connects to any iOS or Android smartphone that has our free HHP app installed, providing the operator with a wireless range of up to 328ft or 100m. This allows them to stand in a safe position from the load with no requirement to read a load on the loadcell itself. The app also allows the operator to log data versus time, or on events such as over- or under-load. An adjustable alarm will alert the operator on their smartphone if any overload is occurring.

Rigged using industry standard Crosby G2130 Shackles, the BlueLink has been designed to minimize headroom (6.14 in or 156mm from eye to eye). With a design factor of over 500%, its compact lightweight design does not sacrifice on strength.

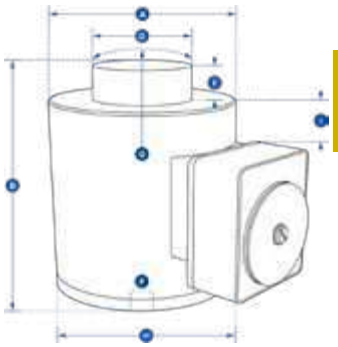
Constructed from high-quality aerospace grade aluminum, which is then hard-anodized, BlueLink features an advanced internal design structure. This design provides the product with an unrivaled strength to weight ratio. The use of a separate internal sealed enclosure administers the loadcell's electronic components with IP67 or NEMA6 environmental protection, even with the battery cover plate missing. All these features makes it an industry-leading compact dynamometer, even more suitable for use in the harshest industrial or leisure environments.

The BlueLink is powered by four standard AA alkaline batteries that provide in excess of 500 hours transmission time. Its internal antenna ensures safe transmissions of loads to an accuracy of ±0.2% FS.

Part Numbers SP	BLD6T5
Crosby	2789218
Capacity	6.5 t
	14,300 lb
Resolution	0.001 t
	2 lb
Weight	1.5 kg
	3.3 lb
Design Factor	5:1
Battery Type	4 x AA alkaline batteries
Battery Life	500 hours
Operating Temperature	-10°C to +50°C / 14°F to 122°F
Accuracy	±0.2% of full scale
Range	100 meters / 328 feet
Data Rate	3 Hz
Protection	IP67 / NEMA6
Dimension A	224 mm
	8.82 in
Dimension B	44 mm
	1.73 in
Dimension C	113.6 mm
	4.47 in
Dimension D	156 mm
	6.14 in
Dimension ØE	27.5 mm
	1.08 in
Dimension F	33 mm
	1.3 in

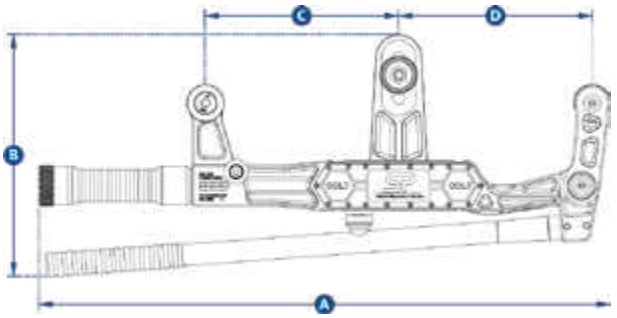
LoadSafe

- Wireless range of 1000m or 3280ft.
- High grade 17-4PH stainless steel, providing excellent strength and corrosion resistance.
- Proprietary 2.4 GHz wireless.
- Accuracy of ±0.1% FS.
- Environmentally sealed to IP67 or NEMA6.
- Stocked capacities up to 1000t.
- Industry leading wireless range up to 1000m or 3280ft.
- Internal antenna.
- ATEX & IECEx version for hazardous area zones 0, 1 & 2 available.
- Battery life of 1200 hrs.
- Compact size.
- Remote on/off from handheld display or software.
- Design validated by FEA.
- Bluetooth option is available and is supplied with a free HHP App for iOS and Android.



Part Numbers SP		WNI5TC	WNI10TC	WNI25TC	WNI50TC	WNI100TC	WNI150TC	WNI300TC	WNI500TC	WNI1000TC
Crosby		2789197	2789191	2789193	2789196	2789190	2789192	2789194	2789195	2789138
Capacity	(te)	5	10	25	50	100	150	300	500	1000
	(lb)	11,000	22,000	55,000	110,000	220,000	330,000	660,000	1,100,000	2,200,000
Resolution	(te)	0.001	0.002	0.005	0.01	0.05	0.05	0.1	0.2	0.5
	(lb)	2	5	10	20	100	100	200	500	1000
Units	(metric)	metric tons								
	(imperial)	pounds								
Weight	(kg)	6.2	6.2	6.2	6.2	15.5	15.5	65	65	172
	(lb)	13.64	13.64	13.64	13.64	34	34	143	143	379
Design Factor		3:1								
Battery Type		Loadcell 4 x AA Alkaline								
Battery Life		Loadcell 1200 hours continuous (500 hours if Bluetooth)								
Operating Temp.		-10°C to +50°C / 14°F to 122°F								
Accuracy		±0.1% of full scale								
Frequency		2.4 GHz								
System Range (max)		1000 meters / 3280 feet (100 meters / 328 feet if Bluetooth) (500 meters / 1640 feet if ATEX/IECEx)								
Data Rate		3 Hz (configurable to 200Hz)								
Protection		IP67 / NEMA6								
Dimension ØA	(mm)	100	100	100	100	152	152	185	185	362
	(in)	3.94	3.94	3.94	3.94	5.98	5.98	7.28	7.28	14.25
Dimension B	(mm)	127	127	127	127	184	184	300	300	310
	(in)	5.00	5.00	5.00	5.00	7.24	7.24	11.81	11.81	12.20
Dimension ØD	(mm)	59	59	59	59	80	80	155	155	270
	(in)	2.32	2.32	2.32	2.32	3.15	3.15	6.10	6.10	10.63
Dimension E	(mm)	16	16	16	16	26	26	27.5	27.5	40
	(in)	0.63	0.63	0.63	0.51	1.02	1.02	1.08	1.08	1.57
Dimension F	(mm)	M18 x 2.5	M18 x 2.5	M18 x 2.5	M20 x 2.5	M20 x 2.5	M20 x 2.5	M20 x 2.5	M20 x 2.5	M30 x 3.5
	(mm)	M18 x 2.5	M18 x 2.5	M18 x 2.5	M20 x 2.5	M20 x 2.5	M20 x 2.5	M20 x 2.5	M20 x 2.5	M30 x 3.5
Dimension G	(mm)	152	152	152	152	432	432	432	432	950
	(in)	5.98	5.98	5.98	5.98	17.01	17.01	17.01	17.01	37.40
Dimension H	(mm)	158	158	158	158	208	208	241	241	422
	(in)	6.22	6.22	6.22	6.22	8.19	8.19	9.49	9.49	16.61
Dimension I	(mm)	6	6	6	6	7	7	21.5	21.5	102
Loadcell top to SA700 top	(in)	0.23	0.23	0.23	0.23	0.27	0.27	0.27	0.54	4.02

Clamp On Line Tensionmeter (COLT)



- Lightweight wire rope tension meter for fast and accurate measurement of tensions up to 11,000lb or 5000 kg and up to 1 in or 25mm diameter.
- Constructed from aerospace grade aluminum.
- Unlimited wire rope calibration database via Android or iOS app.
- Built-in magnetic smart device holder for on board display.
- Main swivel joints fitted with high-quality bearings.
- Lever ratio of 5.3:1 allows effortless, safe, clamping onto pre-tensioned wire ropes.
- Wireless Bluetooth 4.2 enabling operator to stand a safe distance away, up to 100 m or 328 ft.
- Quick intuitive adjustable center sheave makes changing wire rope sizes fast and easy.
- No easily broken external antenna.
- High waterproof resistant design IP67 or NEMA6 for all weather use.
- Long battery life of 1000 hrs operational time.
- As the library of wire rope diameters and constructions is increased each app user will benefit when they update free of charge.

Watch demo at **thecrosbygroup.com/COLT-demo**

Watch CVT demo at **thecrosbygroup.com/COLT-CVT**

Part Numbers SP	COLT5T
Crosby	2789000
Max Load	5,000 kg
	11,000 lb
Resolution	10 kg
	20 lb
Units	kilograms, pounds, metric tons and kilonewtons
Min Wire Rope Ø	Ø5 mm
	Ø3/16”
Max Wire Rope Ø	Ø25 mm
	Ø1”
Max Line Reduction	5 mm with a Ø10 mm wire rope
	7/32“ with a Ø3/8” wire rope
Wire Rope Database	Infinite via Android or iOS app
Weight	3.5 kg
	7.7 lb
Battery Type	2 x ‘C’ cell batteries
Battery Life	1000 hours Bluetooth transmission time
Operating Temp.	-25°C to +70°C / -13°F to +158°F
Protection	IP67 / NEMA6
Accuracy	±3% of full scale if wire rope Ø and construction known
Communication	Bluetooth 4.2
Dimension A	589 mm
	23.2”
Dimension B	254 mm
	10”
Dimension C	200 mm
	7.9”
Dimension D	200 mm
	7.9”

Specifications assume COLT used on a wire rope with a fixed and flexible end.

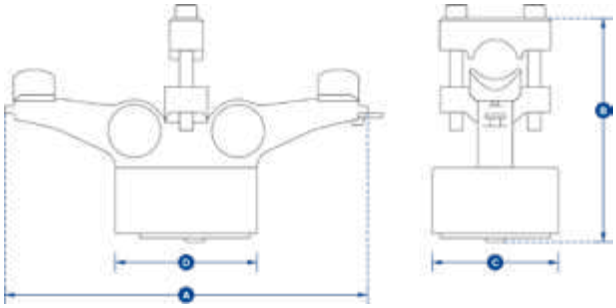
Optional for purchase:

Calibration verification tool (CVT)

SP - SA507 Crosby 2789225

In order to ensure the measurements of the COLT are as accurate as possible, Crosby SP supplies a calibration verification rod.

Bolt On Line Tensionmeter (BOLT)



- Constructed from aerospace-grade aluminum.
- Designed to be mounted in a permanent position on wire rope or cable to accurately monitor measurements of tension up to 20,000lb or 10.000 kg and up to 1.25 in or 32mm diameter.
- Proprietary 2.4 GHz wireless.
- Leading wireless range of 1000m/3280ft when connected to SW-HHP, enabling you to read up to four loadcells simultaneously.
- Unlimited range when connected to BaseStation to monitor remotely.
- Will provide reduced site visits, improve decision making and safely monitor line tensions from any distance from anywhere in the world.
- Unrivaled battery life of 1200 hrs.
- Multiple drop tested from 3 meters or 10 feet.
- Internal antenna.
- Remote on/off from handheld display or software.

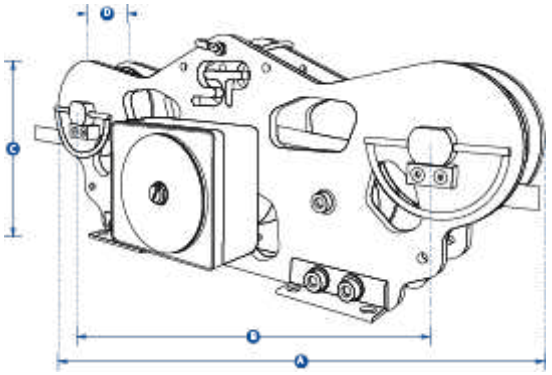
Part Numbers SP	BOLT10T
Crosby	2789573
Max Load	10 t
	22000 lb
Resolution	0.01 t
	20 lb
Units	kilograms, pounds, metric tons and kilonewtons
Min Wire Rope Ø	16 mm
	5/8”
Max Wire Rope Ø	32 mm
	1 1/4”
Weight	2.1 kg
	4.6 lb
Battery Type	4 x ’AA’ cell batteries
Battery Life	1200 hours
Operating Temp.	-10°C to +50°C / 14°F to +122°F
Protection	IP67 / NEMA6
Accuracy	Typically 3-5%
Communication	2.4 GHz
Dimension A	259 mm
	10.20”
Dimension B	159.1 mm
	6.26”
Dimension C	89 mm
	3.50”

CROSBY STRAIGHTPOINT TRAINING VIDEOS

- How to pair a loadcell (and multiple loadcells) to a handheld
- How to know the correct number of compression cells required
- How to use the backlight function on a handheld
- How to get accurate loadcell readings at various distances
- Snatch block & loadcell demonstration
- COLT calibration verification tool installation demo
- Plus many more...

Watch now at **thecrosbygroup.com/SPvideos**

CableSafe



- Simple to use and set up.
- Remote monitoring using smart phone via Bluetooth.
- Rapid tension force measurement - Up to 600m or 1968ft per minute.
- Able to be used in all weather and air quality conditions.
- Providing up to 500 hours battery life.
- Easy to install and replace batteries (4 x AA standard alkaline).
- Fully constructed from aerospace-grade aluminum with anodized finish.
- Five-wheel design, improving accuracy.
- Blue anodized side plates.
- Linchpins are fitted to the top sheave pins, making wire rope installation quick and simple.
- Maintenance free heavy duty bearings.
- Compatible with a wide range of synthetic rope/electrical cable diameters – 4-30mm or 5/32 in – 1 3/16 in.
- IP67 ingress protection or NEMA6 – heavy protection against dust and rain.
- Design validated by FEA.

Part Numbers SP	CableSafe	CableSafe-WD
Crosby	2789219	2789399
Capacity	10 t	10 t
	22000 lb	22000 lb
Resolution	0.01 t	0.01 t
	20 lb	20 lb
Synthetic Rope / Electrical Cable Ø	4-19 mm	9.5-30 mm
	5/32”- 3/4”	3/8”- 1 3/16”
Weight	4.5 kg	8 kg
	10 lb	17.6 lb
Battery Type	4 x AA Alkaline	
Battery Life	500 hours	
Operating Temp.	-10°C to +50°C / 14°F to 122°F	
Accuracy	±2% of full scale	
Range	Bluetooth 100 meters / 328 feet	
Protection	IP67 / NEMA6	
Maximum Speed	600 m per minute	
	1,968 ft per minute	
Dimension A	422 mm	422 mm
	16.61”	16.61”
Dimension B	328 mm	328 mm
	12.91”	12.91”
Dimension C	152 mm	152 mm
	5.98”	5.98”
Dimension D	36.5 mm	50.5 mm
	1.43”	2”

In addition to the TIMH range, the CableSafe® is the continued evolution of Crosby Straightpoint’s running line tensiometers. When used in the field, it will allow the user to monitor tension with exceedingly high levels of accuracy, which ensures rope/cables do not become overstretched or break.

When using a capstan winch to unwind electrical cable from a reel/spool, you will be able to integrate the CableSafe within this set-up to ensure that it is being pulled at a safe tension level. This helps the line maintain its transmissions capability, prevent it becoming a fire hazard risk, and it also stops the need of furthering work in order to remove and replace it. The contractor is gifted with decreased liability, dramatically increasing peace of mind.

Using CableSafe on cable pulls reduces liabilities on cable installations, making it ideal for the following applications:

- Measure tension when pulling electrical cables – protect against fractures or elongation
- Measuring tension on synthetic rope when erecting delicate structures using gin poles and capstan winch

Another example of best use is during the installation of cell phone towers or similar delicate structures. The product helps ensure structure-to-ground ropes which are connected to a gin pole and pulley system. Avoid the unknown through accurate monitoring, especially when risks are high.

Running Line Dynamometer

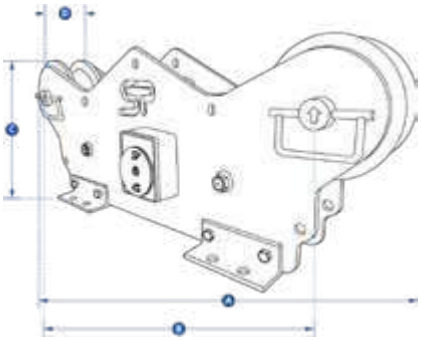
The TIMH range is a wireless running line tensiometer or RLTM built with dockside, marine, offshore, towage, and salvage applications in mind.

Also available with hazardous area approval. Zones 0, 1 & 2

ATEX / IECEx
Ex ia II C T4 Ga

Certification numbers:
TIMH ATEX
IECEx SIR 16.0041X / Sira 16ATEX2108X
SW-HHP ATEX
IECEx SIR 15.0072X / Sira 15ATEX2196X

Add 'ATEX' to the part number when ordering ATEX/IECEx products. For example: TIMH10T-ATEX

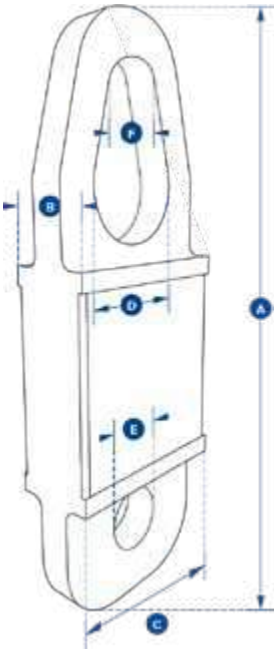


- Fully constructed from corrosion-resistant stainless steel.
- Large range of capacities to 150t and wire rope diameters up to 89mm or 3½ in.
- Measures tension force at speeds up to 20m/min or 65ft/min.
- Five-wheel design, improving accuracy.
- Industry leading battery life of 1200 hrs (wireless).
- Maintenance-free heavy duty bushes.
- Options for lineout and speed available.
- Software available to data log and monitor or analog outputs.
- Cabled system or wireless bluetooth option are available and is supplied with a free HHP app for iOS and Android.
- IP67 or NEMA6 Loadpin.
- Design validated by FEA.

Part Numbers SP		MTIMH10TRD	TIMH10TRD	TIMH25TRD	TIMH56TRD	TIMH80TRD	TIMH150TRD
Crosby		2789054	2789136	2789139	2789144	2789146	2789270
Capacity	(te)	10	10	25	56	80	150
	(lb)	22,000	22,000	55,000	123,200	176,000	330,000
Resolution	(te)	0.01	0.01	0.02	0.05	0.1	0.2
	(lb)	20	20	50	100	200	500
Wire Rope Ø	(mm)	4-19	13-19	16-26	28-38	40-52	52-89
	(in)	5/32" - 3/4"	1/2" - 3/4"	5/8" - 1"	1 1/8" - 1 1/2"	1 5/8" - 2"	2" - 3 1/2"
Weight	(kg)	9	90	86	81	76	230
	(lb)	20	198	190	179	168	506
Battery Type		4 x AA Alkaline					
Battery Life		Wireless version 1200 hours continuous					
Operating Temp.		-10°C to +50°C / 14°F to 122°F					
Accuracy		±2% of full scale					
Frequency		2.4 GHz					
System Range (max)		700 meters / 2,300 feet					
Data Rate		3 updates per second					
Protection		IP67 / NEMA6					
Maximum Speed		50 m per minute	20 m per minute				
		164 ft per minute	65 ft per minute				
Line out and speed		via SW-MWLC software					
Dimension A	(mm)	422	865	865	865	865	1250
	(in)	16.62	34.05	34.05	34.05	34.05	49.21
Dimension B	(mm)	328	674	674	674	674	1050
	(in)	12.9	26.53	26.53	26.53	26.53	41.33
Dimension C	(mm)	152	324	324	324	324	416
	(in)	5.98	12.75	12.75	12.75	12.75	16.37
Dimension D	(mm)	36	111	111	111	111	153
	(in)	1.4	4.37	4.37	4.37	4.37	6.02

Towcell®

- Unique design fits any standard 2 inch tow hitch.
- Unmatched battery life of 500 hrs.
- Waterproof IP67 or NEMA6.
- Internal antenna.
- Compact size and lightweight.
- Proprietary 2.4 GHz wireless communication.
- Design validated by FEA.
- Bluetooth enabled and is supplied with a free HHP app for iOS and Android.



The Crosby Straighpoint Towcell® is a 25kN wireless loadcell, specifically engineered for the emergency services, salvage, and 4x4 industries. The Towcell allows for increased safety and the avoidance of costly overloads by providing real-time monitoring of tensile towing forces during recovery, clearance and salvage efforts.

The Towcell is rugged, lightweight, compact, and can be installed, with ease, onto any tow bar, whether it's a standard 52mm or 2 in ball or pin assembly and is ready to use in seconds.

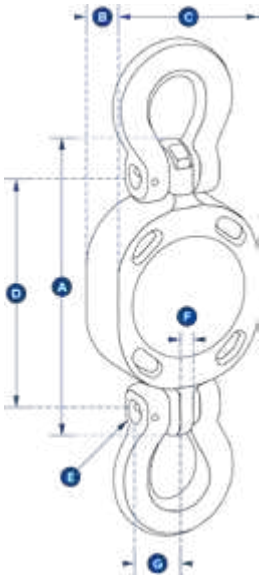
Modeled after Crosby SP's bestselling Radiolink Plus, the Towcell is constructed of high-quality aircraft grade aluminum. It features an advanced internal design structure, providing the product with an unrivaled strength to weight ratio. This optimal balance allows for the use of a separate internally sealed enclosure. This administers the internal electronic components with an IP67 or NEMA6 waterproof environmental protection, even with the battery cover plate missing.

Towcell utilizes an unbreakable internal antenna and boasts an unmatched battery life.

Part Numbers SP	Towcell - Bluetooth
Crosby	2789271
Capacity	25 kN
Resolution	0.01 kN
Weight	1.4 kg
	3 lb
Design Factor	5:1
Battery Type	4 x AA Alkaline
Battery Life	500 hours continuous
Operating Temp.	-10°C to +50°C / 14°F to 122°F
Accuracy	±0.1% of full scale
Frequency	2.4 GHz
System Range (max)	100 meters / 328 feet
Data Rate	50 Hz
Protection	IP67 / NEMA6
Dimension A	300 mm
	11.81"
Dimension B	43 mm
	1.70"
Dimension C	104 mm
	4.09"
Dimension ØD	51 mm
	2.00"
Dimension ØE	27 mm
	1.06"
Dimension ØF	31 mm
	1.22"

Only sold in Europe. Does not meet US towing requirements.

ChainSafe



- Designed to work with 10mm chain.
- Unmatched weight-to-strength ratio.
- Update rate of 1Hz and the Bluetooth signal effortlessly connects to any iOS or Android smartphone that has our free HHP App that will alert the operator on their smartphone if any overload is occurring.
- Bluetooth wireless range of 100m/328ft.
- No battery change required.
- Battery life 5 yrs based on 3 hrs use per day.
- Environmentally sealed to IP67/NEMA6.
- Internal antenna.
- Conforms to EN1677:2008.
- Fatigue tested to 30,000 cycles to 1.5x WLL.

Part Numbers SP	ChainSafe
Crosby	2789536
Capacity	4 t
	88000 lb
Resolution	0.002 t
	4 lb
Weight	2.5 kg
	5.5 lb
Design Factor	4:1
Battery Type	Lithium Thionyl Chloride (non replaceable)
Battery Life	5 years based on 3 hours use per day
Operating Temp.	-10°C to +50°C / 14°F to 122°F
Accuracy	+/- 0.2% of full scale
Range	100 meters / 328 feet
Data Range	1 Hz
Protection	IP67 / NEMA6
Dimension A	164 mm
	6.46”
Dimension B	35 mm
	1.38”
Dimension C	85 mm
	3.35”
Dimension D	132 mm
	5.20”
Dimension E	13.2 mm
	0.52”
Dimension F	11 mm
	0.43”
Dimension G	28 mm
	1.10”
Recommended Fittings	3/8” (10mm) G100 Chain fittings

ChainSafe is designed to be fitted with an array of The Crosby Group’s chain fittings, and is an approved wireless tension loadcell capable of load monitoring of capacities up to 4t.

chain fittings are not included

INSIGHT Software

INSIGHT Visualisation

INSIGHT Center of Gravity

INSIGHT Display

INSIGHT Chart

INSIGHT software, supplied with an SW-D USB wireless dongle, allows connection of up to 126 Crosby Straightpoint wireless loadcells simultaneously onto any Windows tablet or laptop.

Insight has four main features:

- **Multi-channel display and data logging mode**
  View and log load data from connected loadcells plus totals loads live on screen and directly into a .csv file for later analysis at speeds of up to 200Hz.
- **Visualization mode**
  For complicated lifts import a photo of the lift and drag and drop loadcell displays – make the screen look like the lift.
- **Center of gravity mode**
  Connect to Crosby SP's range of wireless compression loadcells and use this feature to weigh and calculate the center of gravity of large items and structures.
- **Proof load testing**
  Real time graphing of load test and auto generated test certificates.

- Logging at timed intervals, manual or on overload/underload.
- Log data at speeds up to 200Hz.
- Visual and audible alarms indicate overload, underload, low battery, and communications error.
- 100% wireless, no easily damaged cables.
- 700m or 2300ft range allows operator to stand at safe distance from test.
- Connects to any Crosby SP wireless loadcell.
- Automatically creates digitally signed pass or fail certificate.
- Real-time load v time graph display.
- Three weighings per C of G report with averages and statistical analysis to ISO19901.
- Plot loadcell positioning using measurements or GPS coordinates.
- Free extra entry fields for operator, client, wind speed, sea states, and temperature available for reporting.

INSIGHT Software

Numerous proof load testing applications worldwide require a loadcell to verify the load applied. From crane testing, using water bags to pad eye testing, using hydraulic tools, the need to document test procedure and results has never been greater, especially as users of lifting equipment call for more traceability and audit trails.

A proof test is a form of stress test to demonstrate the fitness of a load-bearing structure, and is nominally a non-destructive test. Such a structure is often subjected to loads above that expected in normal use, demonstrating safety and design margin.

This demand has increased so much, Crosby Straightpoint offers a software package designed to connect to any of their wireless loadcells – Proof Test plus.

This impressive package allows the test engineer to wirelessly, at a safe distance, monitor a proof load test and automatically create a pass or fail certificate when testing is complete.

The report is formatted as a PDF, which may then be printed, emailed, or uploaded to the cloud, resulting in a traceable document for both test engineer and end customer.

Typical load tests using Crosby SP loadcells include:

- Bollard pull tests
- Tug tests
- Crane test (water bags, block weights)
- Pad eye or fly point testing
- Crash barrier testing
  - Lifting equipment testing
  - Slings, chains, wire rope, hooks
- Construction equipment testing
  - Shoring columns, acrow props, lintels
- Lifting and spreader beam testing
- Hydraulic cylinder load test
- Supplied with SW-D transmitter

Part Numbers SP	INSIGHT med SW-D
Crosby	2769318
IP rating	IP67 / NEMA6
USB Dongle Operating Temp.	-20°C to +70°C / -4°F to 158°F
Licence	Licence free
Frequency	2.4 GHz
Range	700 meters / 2,300 foot
Loadcell Inputs	Up to 126
PC Requirements	Intel i3 processor with 2GB RAM
Operating System	Windows 7 and 10

LoadConnect Software

Crosby Straightpoint LoadConnect, connected to BaseStation, is a cloud-based solution to monitor loads and line tensions from any distance and from anywhere in the world. Stay connected, protect assets, reduce site visits, and improve safety.

- Dashboard overview.
- Live load data.
- Error reporting.
- Productivity and utilization graphs.
- Regular email reporting.
- SMS alerts.
- Connect to BOLT to monitor tension on cables.
- Connect to SP loadcells to monitor loads.

LCBS Base

How it works:

Part Number	LCBS-N	LCBS-W
Crosby	2789574	2789596
Required Power Supply	9 to 28 V DC	9 to 28 V DC
Radio Frequency	2.4 GHz (License Free)	2.4 GHz (License Free)
Maximum Number of Loadcells	16	16
Range	Up to 500 meters / 1,640 feet	Up to 500 meters / 1,640 feet
Operating Temperature Range	-10°C to 50°C / 14°F to 122°F	-10°C to 50°C / 14°F to 122°F
Backup Battery Life	16 hours	16 hours
Input Option	1x 4-20mA (2 wire) OR 1x mV/V & Wireless	1x 4-20mA (2 wire) OR 1x mV/V & Wireless
Weight	2.75 kg / 6.06 lb	2.75 kg / 6.06 lb
Network Supported	4G / 3G	Wifi
Frequency Band	LTE-TDD B34/B38/B39/B40/B41 LTE-FDD B1/B2/B3/B4/B5/B7/B8/B12/B13/ B18/B19/B20/B25/B26/B28/B66 UMTS/HSPA+ B1/B2/B4/B5/B6/B8/B19	N/A
SIM Type	Micro SIM (NOT INCLUDED)	N/A
Alert Functionality	via SMS (up to 3 pre defined numbers) Optional subscription to online dashboard	Subscription to online dashboard only *(No SMS Alerts)
IP Rating	IP67 / NEMA6	IP67 / NEMA6
Dimension	560 x 260 x 90 mm - Antennas included	560 x 260 x 90 mm - Antennas included

*Data option to be enabled on the SIM card used for full functionality
User configuration is required via free software supplied

Data option to be enabled on the SIM card used for full functionality.
User configuration required via free software supplied.

Accessories

Crosby Straightpoint's range of wireless accessories may be used with any Crosby SP wireless loadcells

Wireless Overload Alarm Module

Part Nºs SP SW-OAM Crosby 2789129

This wireless relay module features audio and visual warning indicators. The set point of the unit can be triggered from a single or summed group of up to four Crosby SP wireless loadcells. It contains two relays (NO and NC). NO is for audio and visual indications, while NC is a spare and can be used to control 230V AC / 30VDC 5A systems.

Wireless Scoreboard Display

Part Nºs SP SW-SD Crosby 2789132

This 100mm or 4" scoreboard LED display is wireless and operates between 100-240V AC. The numerals are viewable for up to 45m or 150ft, making it perfect for installation on a crane gantry. The SW-SD displays an individual load in metric tons or summed load of up to four Crosby Straightpoint wireless devices.

Wireless Base Station with Analog Output

Part Nºs SP SW-BS Crosby 2789314

The SW-BS provides a configurable analog output for any single or summed group of up to 4 loadcells Crosby Straightpoint wireless loadcell and is ideal for integration to a PC, PLC and other data acquisition. Housed in a IP65 enclosure, the output can be selected from current 4-20mA, 2 relay outputs, RS485 ASCII (Configurable) plus an optional CANbus 2.0A or 2.0B output.

Loadcell Transmitter

Part Nºs SP SA700C Crosby 2789097

The SA700C transmitter connects to strain gauge transducers such as loadcells, torque sensors and pressure transducers allowing them to form part of a Crosby Straightpoint wireless system. Load data from the SA700C can be received by multiple receivers that include SW-HHP handheld, INSIGHT software or Crosby SP's range of wireless accessories.

Wall or Cab Mount Bracket

Part Nºs SP SU3282 Crosby 2789228

Constructed from stainless steel and fitted with a viewing angle adjusting mechanism, the SU3282 bracket fits either the HHP or SW-HHP handheld displays. Ideal for wall or cab mounting, leaving the operators to work safely and hands-free.

External Amplifier

Part Nºs SP SA-3420 Crosby 2789096

The SA-3420 external amplifier allows the operator to convert the output of any of the SP cabled loadcell products into a three wire 4-20mA analog output. The weatherproof enclosure is fitted with stainless steel glands and is suitable for connection to a PLC, data logger, or other instrumentation.

Handheld Rubber Boot

Part Nºs SP SU4045 Crosby 2789232

Drop tested to one meter at –30°C, this 70SHA rubber boot is purpose molded to fit and protect the HHP and SW-HHP handheld display against impact, especially when it is used in the harshest industrial environments.

HHP 2

Up to four Crosby Straightpoint, Bluetooth load cells can be connected and monitored by up to eight smartphones, with the HHP2 app installed. It will enable more than one lifting professional to monitor the loads progress and safety, spotting potential dangers or issues from different vantage points.

The HHP2 app's simple and easy-to-use interface will enable the operator to use the app with the utmost efficiency. There are five different measurement units to choose from - tonnes, lbs, kN, kg and a custom unit.

The app records total loads, weights and lifts. This feature is useful when a particular measurement(s) is required for later referral. Added to this is the option to set the threshold and measure productivity for each load cell and the device it's rigged to, a crane, for instance, for analysis to see shortfalls and improve performance.

A peak facility can be activated to display the highest force measured alongside the live load reading of four load cells simultaneously plus a total load.

Once measurements are recorded to the app using the load monitoring project record and data log feature, the operator can export the details. The report will include load, time and date, GPS coordinates and project information to either a mobile device or send it to a particular email address in csv format.

- Connect up to four loadcells simultaneously.
- Set lift threshold and measure productivity per shift.
- View in eight different languages.
- Overload screen flash.
- Alarm latching.
- Set and record overload incidents
- Up to 100m or 328ft remote monitoring distance.
- Multiple weight unit measurement options (kN, metric tons, kg, lbs, custom unit).
- Peak hold and display value alongside live readings.
- Data-log report.
- Export data-log report.
- Zero and gross monitoring options.
- User defined resolution setup.

Handheld Plus

- Displays up to 4 loadcells simultaneously.
- Wireless range 1000m or 3280ft (ATEX 500m or 1640ft).
- Low battery warning.
- Signal strength warning.
- Overload counter.
- User settable 90db audible overload alarm.
- Multiple display units (metric tons, lbs, kg, kN).
- 200Hz peak hold.

The Handheld Plus is a rugged and versatile digital handheld display. It has an extensive range of features and is suitable for all Crosby Straightpoint loadcell products.

At the heart of the ergonomically designed Handheld Plus is a powerful PCB, providing industry-leading features such as user selectable units of measure (metric tons, lbs, kg, and kN), programmable audible overload alarm (HHP & SW-HHP), peak hold, pre-set tare, and a user resettable (HHP & SW-HHP) overload counter.

This crucial overload alarm counter is a requirement for many safety and quality control departments because it keeps track of overload events, allowing the loadcell in question to be removed from service immediately, following the calibration voiding overload event. The loadcell in question can then be sent out for proper testing and, if necessary, recalibration before re-entering service.

The HHP is suitable for connection via cable to any Crosby SP cabled loadcell product and easily adapted to any other manufacturers' loadcell product with a mv/v output.

In addition to the standard HHP the SW-HHP is suitable for connection to any Crosby SP wireless loadcell, has a range of up to 1000m/3280ft (ATEX 500m/1640ft) and is supplied as standard with the Radiolink Plus loadcell.

Part Numbers SP	HHP	SW-HHP	SW-HHP ATEX
Crosby	2789030	2789126	2789442
Battery Type	2 x AA	2 x AA	4 x AA Energizer L91
Battery Life	100 hours continuous	40 hours continuous	40 hours continuous
Display Type	240 x 128 pixel Multi-line dot matrix with backlight		
Operating Temp.	-10°C to +50°C / 14°F to 122°F	-10°C to +50°C / 14°F to 122°F	-10°C to +50°C / 14°F to 122°F
Protection	IP65 / NEMA4X		
Excitation	3.3V	N/A	N/A
Max Sensitivity	3mV/V	N/A	N/A
Range	N/A	1000 m / 3,280 ft	500 m / 1,640 ft
Connectivity	6-way female binder 723 socket	Wireless 2.4GHz	Wireless 2.4GHz

Accessories available for the handheld:

Wall or cab mount bracket
Crosby SP part numbers
SU3282 2789228

Rugged rubber boot
Crosby SP part numbers
SU4045 2789232

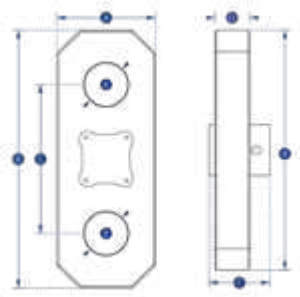
Also available with hazardous area approval

ATEX / IECEx
Ex ia II C T4 Ga
Certification number:
SW-HHP ATEX
IECEx SIR 15.0072X
Sira 15ATEX2196X
When ordering
ATEX/IECEx version of
SW-HHP, order using code:
SW-HHP-ATEX
Please note:
There is no audible alarm with ATEX

Please note:
There is no audible alarm with ATEX

SubseaLink

- Manufactured for use in subsea or submersible projects.
- On board data-logging option.
- Pressure tested to depth of 2000m/6562ft.
- SubConn connector.
- Environmental protection IP68/NEMA6P.
- Output options include mV/V to the Crosby SP Handheld Plus, 4-20mA or 0-10v analog to a PLC, data-logger or The Multi Operation Survey System (MOSS), RS485 or an integral data-logger storing up to one million readings and powered by an internal battery.
- Constructed from 17-4PH stainless steel.
- Designed to fit with The Crosby Group ROV shackles.
- Option for ROV mounting on the SL body itself.



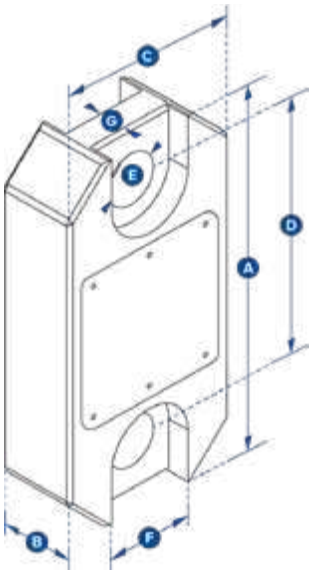
Part Numbers SP		SL6T5	SL12T	SL25T	SL35T	SL55T	SL85T	SL120T
Crosby		2789352	2789353	2789354	2789355	2789356	2789357	2789358
WLL	(te)	6.5	12	25	35	55	85	120
	(lb)	14,300	26,000	55,000	77,000	120,000	185,000	260,000
Weight	(kg)	7	10	16	22	34	46	67
	(lb)	15	23	34	49	75	101	148
Design Factor		5:1						
Output		Options for: mV/V / 4-20mA / 0-10v / RS485 or internal data logger						
Operating Temp.		-10°C to +50°C / 14°F to 122°F						
Accuracy		±0.1% of full scale						
Max depth of use		2,000 meters / 6,562 feet						
Material		17-4 PH Stainless steel						
MTBF to WLL		Typically 50 million cycles						
Elongation		Typically <0.4mm / at WLL						
Dimension A	(mm)	95	100	130	150	168	190	220
	(in)	3.74	3.94	5.12	5.91	6.69	7.48	8.66
Dimension B	(mm)	240	300	350	400	450	490	550
	(in)	9.45	11.81	13.78	15.75	17.72	19.29	21.65
Dimension C	(mm)	180	200	230	250	260	290	335
	(in)	7.09	7.87	9.06	9.84	10.24	11.42	13.19
Dimesnion D	(mm)	25	40	45	50	65	75	86
	(in)	0.98	1.57	1.77	1.97	2.56	2.95	3.39
Dimension ØE	(mm)	30	40	55	60	75	88	100
	(in)	1.18	1.57	2.17	2.36	2.95	3.46	3.94
Dimension F	(mm)	73	88	93	98	113	123	134
	(in)	2.87	3.46	3.66	3.86	4.45	4.84	5.28
Crosby Shackle		G2140 or G2100 or G2110 ROV shackles						

Data-logger Measurement Rate	Days
1 per second	10
1 per 30 seconds	57
1 per minute	729
1 per 2 minutes	1445
1 per 30 minutes	3423
1 per hour	3600
1 per 2 hours	3694
1 per 8 hours	3769

Loadlink Plus

Optional connection to Crosby SP's Handheld Plus
part no. HHP 2789459

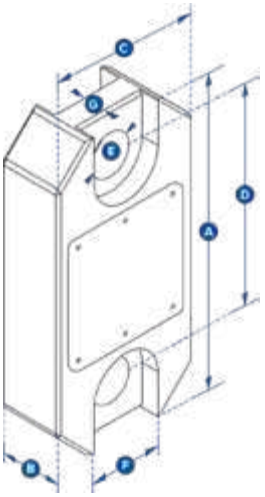
- Capacity from 1t to 300t.
- Unmatched weight-to-strength ratio.
- 30% lighter than competing dynamometers with the same safety rating.
- Large high resolution 25mm or 1 in LCD display.
- Features full function push button controls for tare, choice of units (lbs, kg, kN, and metric tons), peak hold, preset tare, audible set-point alarm, and an overload counter.
- The highest standard resolution of any digital dynamometer on the market today (5000+ divisions).
- 100Hz peak hold.
- RS-485 serial output.
- 2-year warranty.
- DNV-GL Type Approval.
- Design validated by FEA.
- Complies with ASME B30.26.



Part Numbers SP		LLP1T	LLP2T5	LLP6T5	LLP12T	LLP25T	LLP35T	LLP55T	LLP75T	LLP100T	LLP150T	LLP200T	LLP250T	LLP300T
Crosby		2789042	2789046	2789050	2789040	2789045	2789048	2789049	2789051	2789039	2789041	2789043	2789044	2789047
Capacity	(te)	1000 kg	2.5	6.5	12	25	35	55	75	100	150	200	250	300
	(lb)	2,200	5,500	14,300	26,000	55,000	77,000	120,000	165,000	220,000	330,000	440,000	550,000	660,000
Resolution	(te)	0.5kg	0.001	0.001	0.002	0.005	0.005	0.01	0.01	0.05	0.05	0.1	0.1	0.1
	(lb)	1	2	2	5	10	10	20	20	100	100	200	200	200
Units	(metric)	kg	metric tons											
	(imperial)	pounds	pounds											
Weight	(kg)	1.5	1.5	2.4	3.7	5	8.6	13	16	34	46	82	82	118
	(lb)	3.3	3.3	5.3	8.2	11	19	28.7	35.3	75	101.4	180.8	180.8	260
Design Factor		12:1	7:1	7:1	7:1	5:1	5:1	5:1	5:1	5:1	4:1	5:1	4:1	5:1
Battery Type		9v PP3												
Battery Life		80 hours continuous												
Display Type		6 digit 25mm or 1" LCD												
Operating Temp.		-10°C to +50°C / 14°F to 122°F												
Accuracy		±0.1% of full scale												
Protection		IP65 / NEMA4X												
Dimension A	(mm)	204	204	249	305	340	393	424	470	608	670	700	700	806
	(in)	8.03	8.03	9.80	12.01	13.39	15.47	16.69	18.50	23.94	26.38	27.56	27.56	31.73
Dimension B	(mm)	43	43	43	47	60	75	75	75	99	99	144	144	150
	(in)	1.69	1.69	1.69	1.85	2.36	2.95	2.95	2.95	3.90	3.90	5.67	5.67	5.91
Dimension C	(mm)	104	104	113	113	115	126	180	202	255	303	350	350	426
	(in)	4.09	4.09	4.45	4.45	4.53	4.96	7.09	7.95	10.04	11.93	13.78	13.78	16.77
Dimension D	(mm)	146	146	165	193	215	225	230	260	320	360	350	350	350
	(in)	5.75	5.75	6.50	7.60	8.46	8.86	9.06	10.24	12.60	14.17	13.78	13.78	13.78
Dimension ØE	(mm)	24.5	24.5	38	47.5	55	60	76	76	109	109	145	145	160
	(in)	0.96	0.96	1.50	1.87	2.17	2.36	2.99	2.99	4.29	4.29	5.71	5.71	6.30
Dimension F	(mm)	48	48	66	66	66	66	66	66	66	66	66	66	66
	(in)	1.89	1.89	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Dimension G	(mm)	19	19	32	32	32	32	32	32	32	32	32	32	32
	(in)	0.75	0.75	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26
Crosby Shackle		G2130						G2140						
Loading Pin Ø	(mm)	19	19	25	35	51	57	57	70	83	95	121	127	152
	(in)	3/4	3/4	1	1 3/8	2	2 1/4	2 1/4	2 3/4	3 1/4	3 3/4	4 3/4	5	6

Wirelink Plus

- Available in capacities ranging from 1 to 300 metric tons.
- The non-indicating version of Crosby SP's popular Radiolink Plus and Loadlink Plus digital dynamometer tension loadcells.
- Multiple output options to include mV/V, analog out, ASCII, MODBUS RTU, and CAN-BUS.
- Constructed of lightweight, aerospace grade aluminum.
- Available with IP68 environmental protection.
- supplied with a 10-meter cable as standard, however, usable cable length varies greatly with lengths available to 1,500 meters depending on output format.
- Options for subsea use available.
- 2-year warranty.
- DNV-GL Type Approval.
- Complies with ASME B30.26.



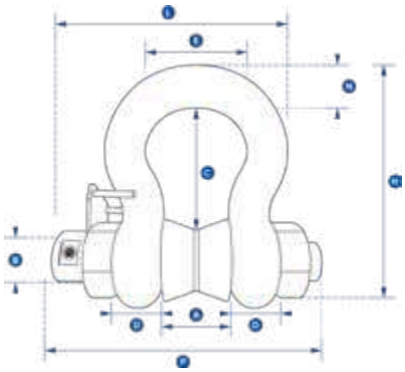
Part Numbers SP		WLP1T	WLP2T5	WLP6T5	WLP12T	WLP25T	WLP35T	WLP55T	WLP75T	WLP100T	WLP150T	WLP200T	WLP250T	WLP300T
Crosby		2789154	2789158	2789273	2789152	2789157	2789160	2789269	2789161	2789151	2789153	2789155	2789156	2789159
Capacity	(te)	1000 kg	2.5	6.5	12	25	35	55	75	100	150	200	250	300
	(lb)	2,200	5,500	14,300	26,000	55,000	77,000	120,000	165,000	220,000	330,000	440,000	550,000	660,000
Resolution	(te)	0.5 kg	0.001	0.001	0.002	0.005	0.005	0.01	0.01	0.05	0.05	0.1	0.1	0.1
	(lb)	1	2	2	5	10	10	20	20	100	100	200	200	200
Units	(metric)	kg	metric tons											
	(imperial)	pounds	pounds											
Weight	(kg)	1.5	1.5	2.4	3.7	5	8.6	13	16	34	46	82	82	118
	(lb)	3.3	3.3	5.3	8.2	11	19	28.7	35.3	75	101.4	180.8	180.8	260
Design Factor		12:1	7:1	7:1	7:1	5:1	5:1	5:1	5:1	5:1	4:1	5:1	4:1	5:1
Operating Temp.		-10°C to +50°C / 14°F to 122°F												
Accuracy		±0.1% of full scale												
Protection		IP67 / NEMA6												
Dimension A	(mm)	204	204	249	305	340	393	424	470	608	670	700	700	806
	(in)	8.03	8.03	9.80	12.01	13.39	15.47	16.69	18.50	23.94	26.38	27.56	27.56	31.73
Dimension B	(mm)	43	43	43	47	60	75	75	75	99	99	144	144	150
	(in)	1.69	1.69	1.69	1.85	2.36	2.95	2.95	2.95	3.90	3.90	5.67	5.67	5.91
Dimension C	(mm)	104	104	113	113	115	126	180	202	255	303	350	350	426
	(in)	4.09	4.09	4.45	4.45	4.53	4.96	7.09	7.95	10.04	11.93	13.78	13.78	16.77
Dimension D	(mm)	146	146	165	193	215	225	230	260	320	360	350	350	350
	(in)	5.75	5.75	6.50	7.60	8.46	8.86	9.06	10.24	12.60	14.17	13.78	13.78	13.78
Dimension ØE	(mm)	24.5	24.5	38	47.5	55	60	76	76	109	109	145	145	160
	(in)	0.96	0.96	1.50	1.87	2.17	2.36	2.99	2.99	4.29	4.29	5.71	5.71	6.30
Dimension F	(mm)	48	48	65	Not relevant in this capacity									
	(in)	1.89	1.89	2.60										
Dimension G	(mm)	19	19	32										
	(in)	0.75	0.75	1.26										
Crosby Shackle		G2130						G2140						
Loading Pin Ø	(mm)	19	19	25	35	51	57	57	70	83	95	121	127	152
	(in)	3/4	3/4	1	1 3/8	2	2 1/4	2 1/4	2 3/4	3 1/4	3 3/4	4 3/4	5	6

Part Number	Description
ICA1	3 wire 0-10v analogue output
ICA2	3 wire 0-5v analogue output
ICA3	4 wire +/- 10v analogue output
ICA4	3 wire 4-20mA analogue output
ICA5	2 wire 4-20mA analogue output

Loadshackle

Requires connection to Crosby Straightpoint's Handheld Plus (HHP) or External Amplifier range (SA-3420) that can be configured to provide 4-20mA output for PLC or data logger integration.

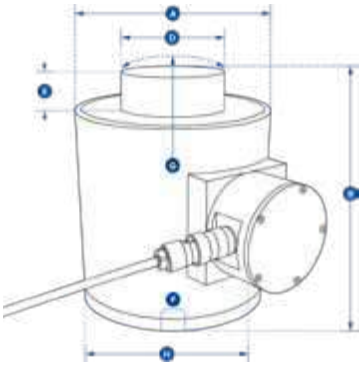
- Capacities of 3.25t to 400t, as well as being obtainable up to 3000t.
- Compact size, low headroom, lightweight.
- Every Loadshackle is proof tested.
- Utilizes the same advanced microprocessor based electronics as Crosby SP products.
- Unrivaled resolution.
- Environmentally sealed to IP67 or NEMA6.
- Advanced options available for subsea applications.
- Manufactured using Crosby 2130 Carbon and 2140 Alloy Bolt Type Anchor industry leading shackles.
- Configured with output formats to include mV/V, RS-422, RS-485, utilizing the ASCII, MODBUS RTU, and CAN-BUS protocols or supplied with integral amplifier allowing analog outputs such as 4-20mA, 0-10v, 0-5v etc.
- mv/v or analog signal options.
- Design validated by FEA.



Part Numbers SP	SLB 3.25T	SLB6.5T	SLB12T	SLB25T	SLB55T	SLB85T	SLB120T	SLB200T	SLB300T	SLB400T
Crosby	2789106	2789111	2789103	2789105	2789110	2789112	2789102	2789104	2789107	2789108
Capacity (te)	3.25	6.5	12	25	55	85	120	200	300	400
(lb)	7,150	14,300	26,400	55,000	120,000	185,000	260,000	440,000	660,000	880,000
Resolution (te)	0.005	0.005	0.01	0.02	0.05	0.05	0.1	0.2	0.5	0.5
(lb)	10	10	20	50	100	100	200	200	1000	1000
Units (metric)	metric tons									
(imperial)	pounds									
Weight (kg)	2.8	3.2	8	18	25	85	125	260	405	662
(lb)	6.16	7	17.6	40	55	187	276	573	893	1459
Design Factor	5:1 when used with load bobbin									
Operating Temp.	-10°C to +50°C / 14°F to 122°F									
Accuracy	±1% of full scale									
Protection	IP67 std [or sub sea as POA option] / NEMA6									
Dimension A (mm)	26.9	36.6	51.5	73	82.5	127	144	180	205	230
(in)	1.06	1.44	2.03	2.87	3.25	5.00	5.66	7.09	8.07	9.06
Dimension ØB (mm)	19.1	25.4	35.1	51	57	83	95	125	150	175
(in)	0.75	1.00	1.38	2.01	2.24	3.26	3.74	4.92	5.91	6.89
Dimension C (mm)	56.9	79.7	113	170	189.5	317	364	432.2	505	547.7
(in)	2.24	3.14	4.45	6.69	7.46	12.48	14.33	17.02	19.88	21.56
Dimension D (mm)	14.46	20.6	29.5	44.5	51	80	89	110	120	160
(in)	0.57	0.81	1.16	1.75	2.01	3.14	3.50	4.33	4.72	6.30
Dimension E (mm)	42.9	58	82.5	127	146	190	238	280	305	325
(in)	1.69	2.28	3.25	5.00	5.75	7.48	9.37	11.02	12.01	12.80
Dimension H (mm)	106	148	210	313	348	539	624	769	904	1006.5
(in)	4.17	5.83	8.27	12.32	13.70	21.22	24.56	30.28	35.59	39.63
Dimension L (mm)	125	146.5	191	265	296	384	434	519.7	576.7	657.2
(in)	4.92	5.77	7.52	10.43	11.65	15.11	17.12	20.46	22.7	25.87
Dimension N (mm)	17.5	24.6	35.1	57	61	85	95	120	140	160
(in)	0.69	0.97	1.38	2.24	2.40	3.34	3.74	4.72	5.51	6.30
Dimension P (mm)	140	163	212	280	307	438	478	590	647	755
(in)	5.51	6.42	8.35	11.02	12.09	17.24	18.81	23.23	25.47	29.72
Crosby Shackle	G2130				G2140	S2135				

Compression Loadcell

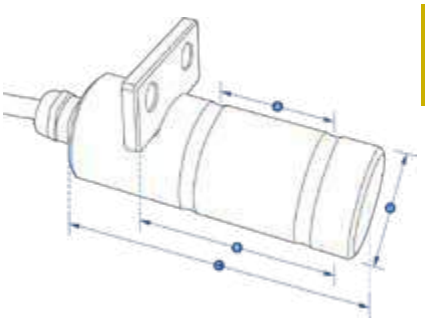
- Ranges from 5te to 1000te.
- High grade stainless steel, offering excellent strength and anti-corrosion properties.
- Can be supplied with optional loadcaps.
- Environmentally sealed to IP67 or NEMA6.
- Optional analog outputs.
- Lightweight, compact size.
- 10m or 30ft cable supplied as standard (other lengths available).
- Custom versions available.
- Design validated by FEA.



Requires connection to Crosby Straightpoint's Handheld Plus (HHP) or External Amplifier range (SA-3420) that can be configured to provide 4-20mA output for PLC or data logger integration.

Part Numbers SP		NI5TC	NI10TC	NI25TC	NI50TC	NI100TC	NI150TC	NI300TC	NI500TC	NI1000TC
Crosby		2789068	2789062	2789065	2789067	2789061	2789063	2789064	2789066	2789275
Capacity	(te)	5	10	25	50	100	150	300	500	1000
	(lb)	11,000	22,000	55,000	110,000	220,000	330,000	660,000	1,100,000	2,200,000
Resolution	(te)	0.001	0.002	0.005	0.01	0.05	0.05	0.1	0.2	0.5
	(lb)	2	5	10	20	100	100	200	500	1000
Units	(metric)	metric tons								
	(imperial)	pounds								
Weight	(kg)	6.2	6.2	6.2	6.2	15.5	15.5	65	65	172
	(lb)	13.64	13.64	13.64	13.64	34	34	143	143	379
Design Factor		3:1								
Operating Temp.		-10°C to +50°C / 14°F to 122°F								
Accuracy		±0.1% of full scale								
Protction		IP67 / NEMA6								
Dimension ØA	(mm)	100	100	100	100	152	152	185	185	362
	(in)	3.94	3.94	3.94	3.94	5.98	5.98	7.28	7.28	14.25
Dimension B	(mm)	127	127	127	127	184	184	300	300	310
	(in)	5.00	5.00	5.00	5.00	7.24	7.24	11.81	11.81	12.20
Dimension ØD	(mm)	59	59	59	59	80	80	155	155	270
	(in)	2.32	2.32	2.32	2.32	3.15	3.15	6.10	6.10	10.63
Dimension E	(mm)	16	16	16	16	26	26	27.5	27.5	40
	(in)	0.63	0.63	0.63	0.51	1.02	1.02	1.08	1.08	1.57
Dimension F	(mm)	M18 x 2.5	M18 x 2.5	M18 x 2.5	M20 x 2.5	M20 x 2.5	M20 x 2.5	M20 x 2.5	M20 x 2.5	M30 x 3.5
	(mm)	M18 x 2.5	M18 x 2.5	M18 x 2.5	M20 x 2.5	M20 x 2.5	M20 x 2.5	M20 x 2.5	M20 x 2.5	M30 x 3.5
Dimension G	(mm)	152	152	152	152	432	432	432	432	950
	(in)	5.98	5.98	5.98	5.98	17.01	17.01	17.01	17.01	37.40
Dimension H	(mm)	158	158	158	158	204	204	237	237	416
	(in)	6.22	6.22	6.22	6.22	8.03	8.03	9.33	9.33	16.38

Loadpin



- Designed for use in applications where an end of line loadcell cannot be used, meaning an integrated solution is required.
- High tensile stainless steel.
- Supplied complete with an anti-rotation plate as a cabled or wireless solution.
- Built to withstand the harshest environments in industries such as marine and offshore oil and gas.
- Suitable for use in exposed situations and can also be supplied to withstand immersion in seawater at extreme depths.
- Supplied with a 10 meter or 32ft cable as standard, however, usable cable length varies greatly with lengths available to 1500 meters or 4900ft, depending on output format.
- Include mV/V, RS-485, utilizing the ASCII, MODBUS RTU and CAN-BUS protocols or an analog output such as 4-20mA for PLC integration.
- Design validated by FEA.

Also available with hazardous area approval. Zones 0, 1 & 2

ATEX / IECEx
Ex ia II C T4 Ga

Certification numbers:
LP ATEX
IECEx SIR 16.0041X/Sira 16ATEX2108X
SW-HHP ATEX
IECEx SIR 15.0072X/Sira 15ATEX2196X

Add 'ATEX' to the part number when ordering ATEX/IECEx products. For example: LP500KG-ATEX

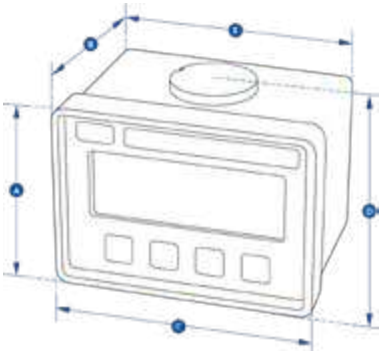
Note: Please advise cable configuration on order – Radial or axial pin exit. If you require a Loadpin to a particular size and design, download Crosby Straightpoint's Loadpin questionnaire and return, POA. thecrosbygroup.com/loadpin

Requires connection to Crosby Straightpoint's Handheld Plus (HHP) or External Amplifier range (SA-3420) that can be configured to provide 4-20mA output for PLC or data logger integration.

Part Numbers SP		LP500kg	LP1T	LP2.5T	LP3.5T	LP6.5T	LP15T	LP25T	LP50T	LP100T	LP250T	LP500T	LP750T	LP1000T	LP1500T
Crosby		2789276	2789277	2789278	2789279	2789280	2789281	2789282	2789283	2789284	2789285	2789286	2789287	2789288	2789289
Capacity	(te)	500 kg	1000 kg	2.5	3.5	6.5	15	25	50	100	250	500	750	1000	1500
	(lb)	1,100	2,200	5,500	7,700	14,000	33,000	55,000	110,000	220,000	550,000	1,100,000	1,650,000	2,200,000	3,300,000
Resolution	(te)	0.2 kg	0.5 kg	0.001	0.001	0.002	0.002	0.005	0.01	0.05	0.1	0.2	0.2	0.5	0.5
	(lb)	0.5	1	2	2	5	5	10	20	100	200	500	500	1000	1000
Units	(metric)	kilograms, metric tons													
	(imperial)	pounds													
Weight	(kg)	0.9	1	1.2	1.4	2	3.1	5.6	8.6	11.8	29.8	79.2	146	275	389
	(lb)	0.4	0.5	0.9	1.3	2.6	5	10.3	18	24	64	172	319	603	854
Design Factor		3:1													
Operating Temp.		-10°C to +50°C / 14°F to 122°F													
Accuracy		±1% of full scale													
Protection		IP67 [IP68 available as an option]													
		NEMA6 [NEMA6P available on application]													
Dim. A	(mm)	24	35	45	50	63	75	89	102	110	130	225	295	360	430
	(in)	0.94	1.38	1.77	1.97	2.48	2.95	3.50	4.02	4.33	5.12	8.86	11.61	14.17	16.93
Dim. B	(mm)	36	49	70	75	95	114	152	178	190	220	370	500	612	731
	(in)	1.42	1.93	2.76	2.95	3.74	4.49	5.98	7.01	7.48	8.66	14.57	19.69	24.09	28.78
Dim. C	(mm)	70	80	100	105	125	150	195	225	230	300	440	590	712	832
	(in)	2.76	3.15	3.94	4.13	4.92	5.91	7.68	8.86	9.06	11.81	17.32	23.23	28.03	32.76
Dim. ØD	(mm)	20	20	25	30	40	50	63	75	88	125	170	200	250	275
	(in)	0.79	0.79	0.98	1.18	1.57	1.97	2.48	2.95	3.46	4.92	6.69	7.87	9.84	10.83

Loadblock Plus

- The highest standard resolution of any self-indicating compression loadcell on the market today (5000+ divisions).
- Low capacity, self-indicating compression loadcell.
- Large 25mm or 1 in LCD display.
- 100Hz peak hold.
- Compact size.
- Push button tare.
- Preset tare.
- Peak hold.
- RS485 port for connection to data-logging system allowing remote viewing.
- Audible set-point alarm and an overload counter.
- Selectable units te, lbs, kN, kg.

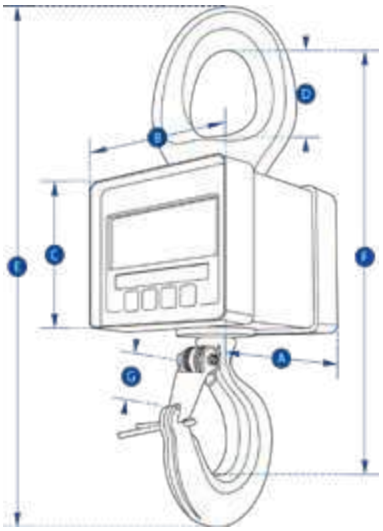


Part Numbers SP	LBP250KG	LBP500KG	LBP1T	LBP2T	LBP5T
Crosby	2789035	2789037	2789034	2789036	2789038
Capacity (te)	250 kg	500 kg	1	2	5
(lb)	550	1100	2200	4400	11000
Resolution (te)	0.1 kg	0.2 kg	0.0005	0.001	0.001
(lb)	0.2	0.5	1	2	2
Units (metric)	metric tons, kilograms, kilonewtons and pounds				
(imperial)	pounds, metric tons, kilonewtons and kilograms				
Weight (kg)	0.9	0.9	0.9	1.5	3.1
(lb)	2	2	2	3.3	6.8
Design Factor	4:1	5:1	5:1	5:1	5:1
Battery Type	9v PP3				
Battery Life	80 hours continuous				
Display Type	6 digit 25mm LCD or 6 digit 1" LCD				
Operating Temp.	-10°C to 50°C / 14°F to 122°F				
Accuracy	±0.1% of full scale				
Protection	IP65 / NEMA4X				
Dimension A (mm)	81	81	81	92	92
(in)	3.19	3.19	3.19	3.62	3.62
Dimension B (mm)	81	81	81	117	136
(in)	3.19	3.19	3.19	4.61	5.35
Dimension C (mm)	113	113	113	112	112
(in)	4.45	4.45	4.45	4.41	4.41
Dimension D (mm)	90	90	90	104	115
(in)	3.54	3.54	3.54	4.09	4.53
Dimension E (mm)	104	104	104	Not available in this capacity	
(in)	4.09	4.09	4.09		

Miniweigher Plus

- Compact size and lightweight.
- Capacities from 100kg to 5t.
- Large 25mm or 1 in LCD display.
- High accuracy.
- Selectable Units te, lbs, kN, kg.
- Highest resolution of any compact digital crane scale on the market.
- Peak hold.
- Preset tare.
- Overload counter.
- 90dB audible set point alarm.
- RS-485 serial output.
- Corrosion-resistant finish.

Optional connection to Crosby SP's Handheld Plus – Crosby SP Part Nos. HHP 2789459.



Part Numbers SP	MWP100KG	MWP250KG	MWP500KG	MWP1T	MWP2T	MWP5T
Crosby	2789055	2789057	2789059	2789056	2789058	2789060
Capacity (kg)	100	250	500	1000	2 t	5 t
(lb)	220	550	1100	2200	4400	11000
Resolution (kg)	0.05	0.1	0.2	0.5	0.001 t	0.001 t
(lb)	0.1	0.2	0.5	1	2	2
Units (metric)	metric tons, kilograms, kilonewtons and pounds					
Weight (kg)	1.5	1.5	1.5	1.5	3.1	8.7
(lb)	3.3	3.3	3.3	3.3	6.8	19.2
Design Factor	10:1	5:1	5:1	5:1	5:1	5:1
Battery Type	9v PP3					
Battery Life	80 hours continuous					
Display Type	6 digit 25mm LCD or 6 digit 1in LCD					
Operating Temp.	-10°C to +50°C / 14°F to 122°F					
Accuracy	±0.1% of full scale					
Protection	IP65 / NEMA4X					
Dimension A (mm)	81	81	81	81	117	136
(in)	3.19	3.19	3.19	3.19	4.61	5.35
Dimension B (mm)	112	112	112	112	112	112
(in)	4.41	4.41	4.41	4.41	4.41	4.41
Dimension C (mm)	81	81	81	81	92	92
(in)	3.19	3.19	3.19	3.19	3.62	3.62
Dimension D (mm)	33	33	33	33	43	62
(in)	1.30	1.30	1.30	1.30	1.69	2.44
Dimension E (mm)	222	222	222	222	283	349
(in)	8.74	8.74	8.74	8.74	11.14	13.74
Dimension F (mm)	183	183	183	183	238	286
(in)	7.20	7.20	7.20	7.20	9.37	11.26
Dimension G (mm)	22	22	22	22	28	42
	0.87	0.87	0.87	0.87	1.10	1.65

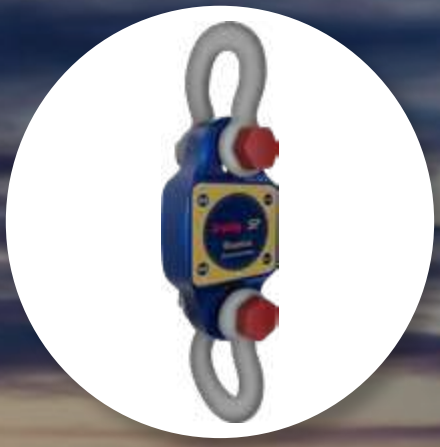

Crosby®

SETTING THE STANDARD IN CELL TOWER SECUREMENT

The Crosby Group offers a wide range of solutions for the cell tower industry. Our products have been put through rigorous testing to ensure optimal functionality and safety ratings.

Blocks & overhaul balls
Turnbuckles
Shackles
Wire rope clips
Tensionmeters
Load monitoring technologies

Clamp On Line Tensionmeter (COLT)



BlueLink

Bolt On Line Tensionmeter (BOLT)

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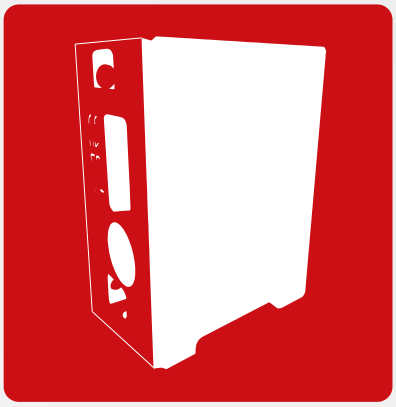
Crosby | BLOKCAM

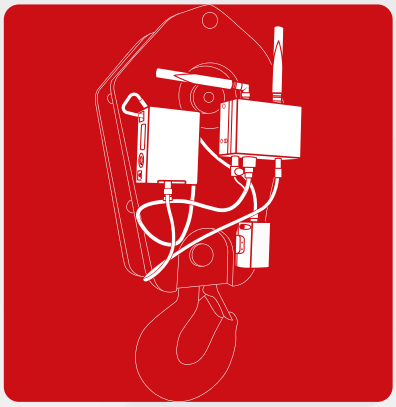
BLOKCAM

Improving safety, communication & productivity

CAMERA SYSTEMS

Advanced monitoring products to improve safety, communication and productivity at the work site.





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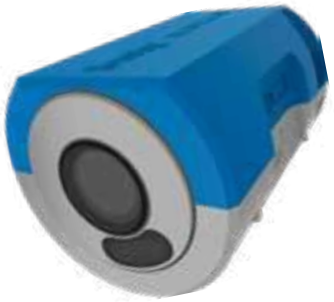
Crosby | BLOKCAM

WHAT IS BLOKCAM?

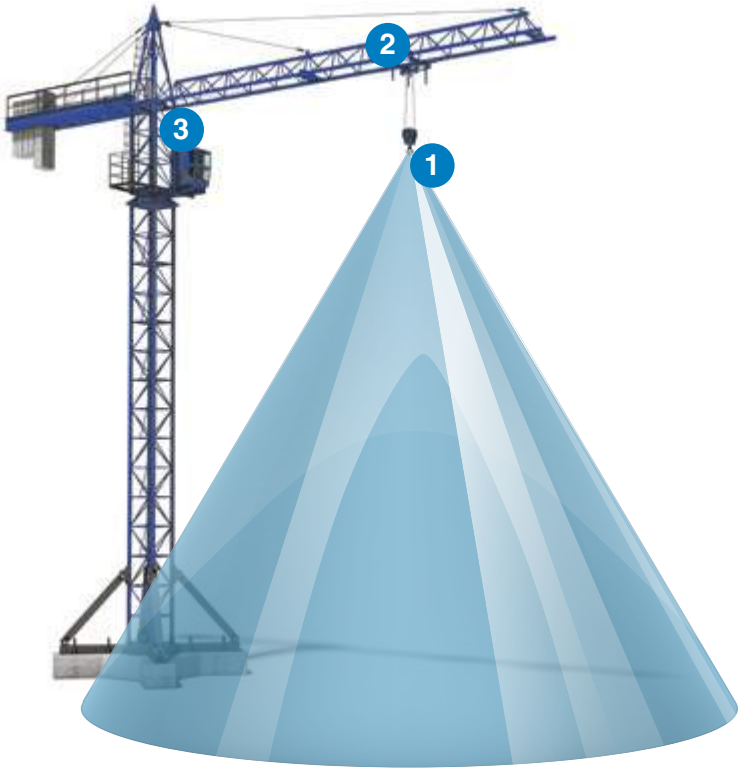


BlokCam is a wireless system that can be quickly and easily deployed to the hook block or boom tip of a crane.

The sound and view from below the camera is then transmitted and received wirelessly via the antenna systems to a screen in the cab.

This allows the operator to see and hear the load and surroundings, giving an unobstructed, live, audio-visual feed of the critical areas that working in the blind would never allow.

HOW BLOKCAM WORKS



1. On the hook block and/or boom tip

The sensor captures the audio-visual feed and sends it to the transmitter. The signal is then transmitted to a repeater on the jib, boom or cab.

The battery powers both the transmitter and the sensor. Each component attaches magnetically and can be mounted on the block, including between the cheek plates and on the boom tip.

2. Repeater on the jib/boom and/or cab

The repeater receives the wireless signal from the transmitter and is relayed back to a monitor in the cab. The repeater position and configuration is dependent on the type of crane, type of jib/boom and length of jib/boom.

3. In the operator's cab

The live audio-visual feed is then processed and displayed on the screen positioned inside the cab, allowing the operator to see and hear live footage of everything below the camera.

TESTIMONIALS

"Baker | DC and our crane operators have been using BlokCam cameras for more than 3 years. Our crane operators now are requesting BlokCams on cranes whenever their new projects start-up. On our Wharf project in Washington DC we had 5 tower cranes, each equipped with a BlokCam and Office Link. While the cameras allow our operators to safely and confidently make picks when in the blind, the Office Link and its ability to record the camera footage has proven to be invaluable at improving job-site efficiency and providing historical information for safety training and job-site documentation."

BAKER CONCRETE CONSTRUCTION

Jason Rhine
Project Executive
Baker | DC

"HTC started working with Crosby BlokCam in 2015 - on first impressions we were very impressed by the level of expertise and professionalism of this company. We are proud to work in partnership with Crosby BlokCam and are delighted with the service which we are able to provide to our customers. It is great to work with such a forward-thinking and proactive company. Crosby BlokCam's experience and knowledge of the crane industry has allowed them to develop and offer the highest quality system on the market. Therefore, we are looking forward to many more years of working together."

HTC WOLFFKRAN
WOLFF Onsite

Elliott Simpson
Accessories Manager
WOLFF Onsite

"BlokCam is one of the best investments London Tower Cranes has made. The quality, ability, and value of their camera system is second to none. We have found the BlokCam to be an invaluable asset for the crane operators, lifting teams and business as a whole."

JRL LTC

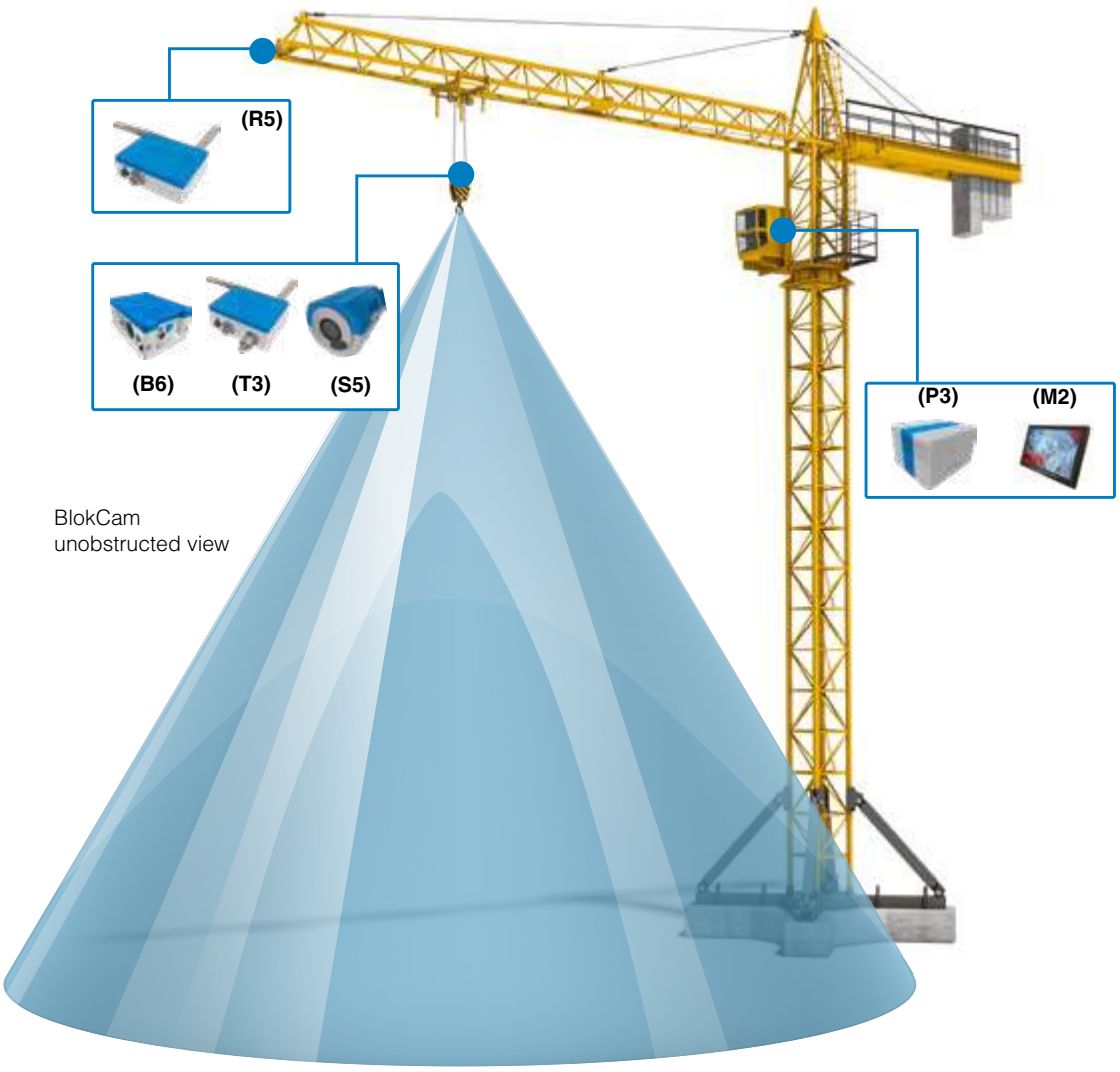
Martin Harvey
Managing Director
London Tower Cranes

X3L CAMERA SYSTEM (PART NO. 7380008)

TOWER CRANES

Design Overview

- Easy and quick to install; can be fitted within an hour
- Uses high powered neodymium magnets
- The lens is auto-focus and always gives clear views of the load and surrounding area below the hook
- HD 1080p resolution
- Audio from sensor to cab
- Optional single and split screen mode with additional cameras
- Long range transmission [5]
- Record on loop for up to 30 days
- Purpose built aluminum housing
- Multiple built in lanyard anchors
- Safety lanyard provides secondary security tethering
- Hands-free operation
- Multi positional sensor for variable views
- LED indicators
- Two batteries per system
- Non hazardous battery
- 12 hour battery life [3]
- Multi-voltage AC and DC inputs
- Durable all-weather design, manufactured to IP67 [4] rating
- -4°F to 131°F (-20°C to 55°C) operating temperature
- Optional mobile app and 4G live streaming [2]
- CE and FCC approved
- High quality industrial connectors
- Color coded connectors



More information, hook mounted safety system and accessories available online at thecrosbygroup.com/blokcam.

Crosby | BLOKCAM

Modular design, compatible across a wide variety of cranes [1]

WHAT'S INCLUDED

Sensor (S5)

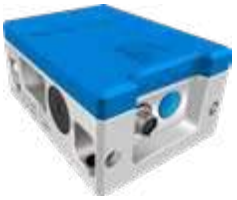
Part No. 7370022

The S5 is a 113° wide angle lens. The low profile design, tool free operation and rotatable lens allows for easy installation on any side of the hook block including in between the cheek plates.

Transmitter (T3)

Part No. 7370023

T3 dramatically improves the most important aspects of the BlokCam. The combination of performance, specification, aesthetics and 71mm low profile design make this a must for all crane operations. Connect up to two sensors.



Battery (B6)

Part No. 7370032

B6 is a non hazardous lithium 14.54v Battery Pack. The clever tool-free design and easy grip finger slots makes it easy to install, remove and charge. IP67.

Charging Station (B6-CH3)

Part No. 7360033

Our Li-Ion Charger is designed to improve the efficiency of your BlokCam Batteries and the performance of the camera system.

Repeater (R5)

Part No. 7370020

Depending on the crane type and required installation the Repeater is mounted on the jib, boom tip or cab.The Repeater has been specifically designed for fast, wireless, telescopic deployment.

Monitor (M2)

Part No. 7360019

Our HD Monitor is a 10.1in 16:9 LCD monitor with built in speakers and a HDMI input. It has a 1280 x 800 pixel panel with automatic brightness control.

Processor (P3)

Part No. 7370029

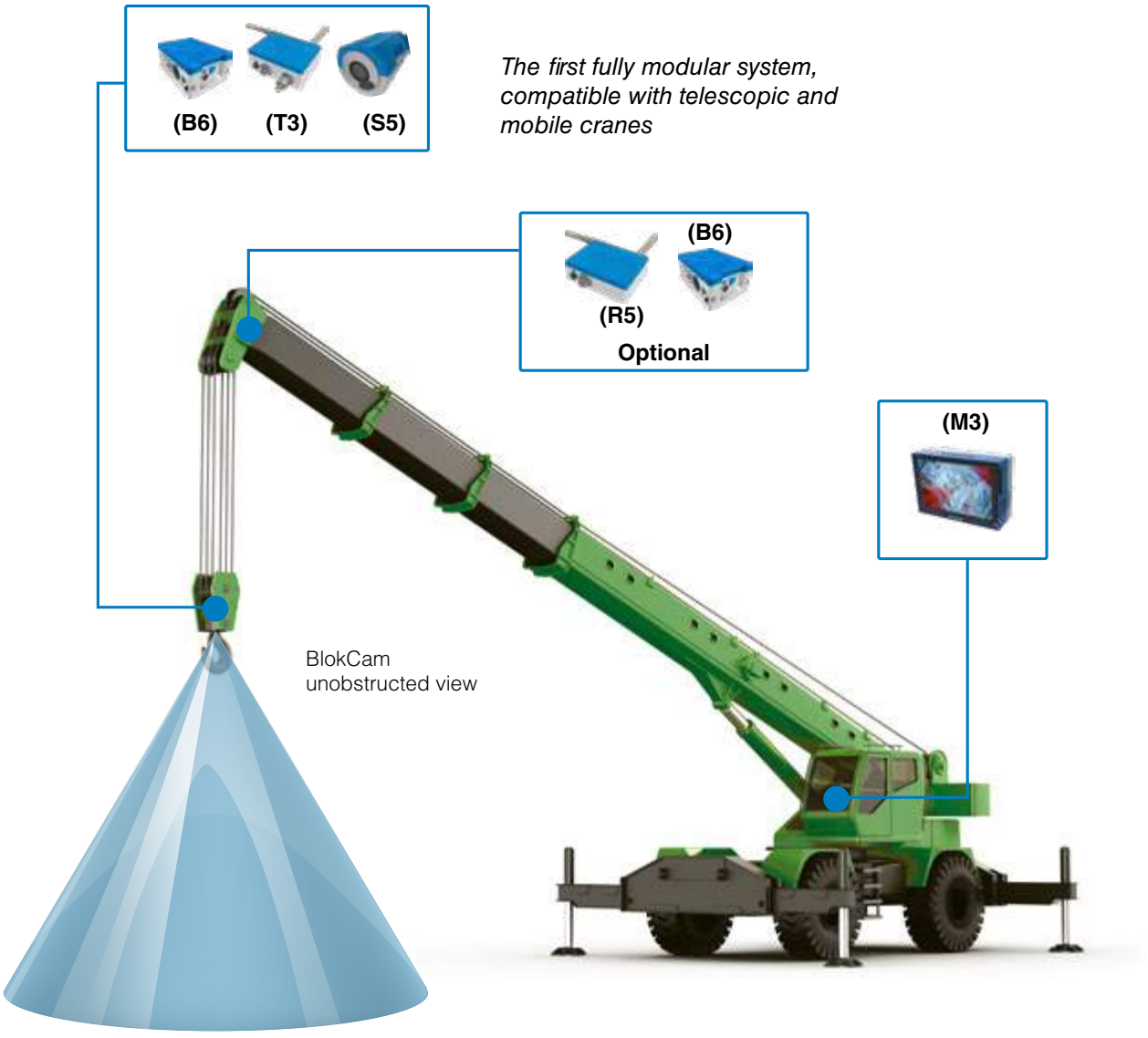
Our purpose built Processor can project multiple high definition images and audio's through a single HDMI lead with less than 0.2 seconds of latency. The design of the Processor accomodates multivoltage AC and DC inputs making your BlokCam system compatible across all types of cranes. The Processor also provides power to the monitor, eliminating the need for a secondary socket or power supply.

M3L CAMERA SYSTEM (PART NO. 7380009)

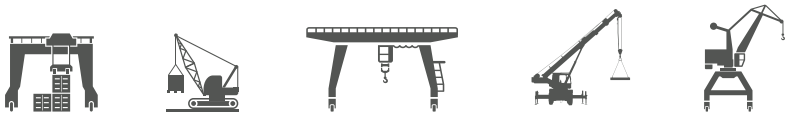
MOBILE & TELESCOPIC CRANES

Design Overview

- Specifically designed for the mobile and crawler market
- Can be installed and removed within 5 minutes
- Uses high powered neodymium magnets
- The lens is auto-focus and always gives clear views of the load and surrounding area below the hook
- HD 1080p resolution
- Audio from sensor to cab
- Long range transmission[5]
- Record on loop for up to 30 days
- Purpose built aluminum housing
- Multiple built in lanyard anchors
- Safety lanyard provides secondary security tethering
- Hands-free operation
- Multi positional sensor for variable views
- LED indicators
- Two batteries per system
- Non hazardous battery
- 12-hr battery life[3]
- Multi-voltage AC and DC inputs
- Durable all-weather design, manufactured to IP67[4] rating
- -4°F to 131°F (-20°C to 55°C) operating temperature
- Optional mobile app and 4G live streaming [2]
- CE and FCC approved
- High quality industrial connectors
- Color coded connectors



Modular design, compatible across a wide variety of cranes [1]

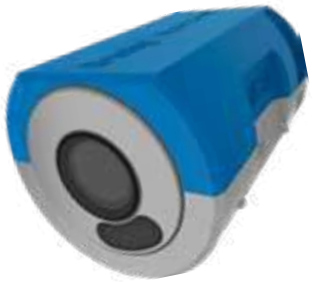


WHAT'S INCLUDED

Monitor (M3)

Part No. 7370014

The M3 is an all in one display that combines a monitor, repeater and processor in to a purpose built fast fit system. The M3 has a HD display with built in speakers, automatic brightness control, less than 0.2 seconds of latency and multi-voltage AC and DC inputs.



Sensor (S5)

Part No. 7370022

The S5 is a 113° wide angle lens. The low profile design, tool free operation and rotatable lens allows for easy installation on any side of the hook block including in between the cheek plates.

Transmitter (T3)

Part No. 7370023

T3 dramatically improves the most important aspects of the BlokCam. The combination of performance, specification, aesthetics and 71mm low profile design make this a must for all crane operations. Connect up to two sensors.

Battery (B6)

Part No. 7370032

B6 is a non hazardous lithium 14.54v Battery Pack. The clever tool-free design and easy grip finger slots makes it easy to install, remove and charge. IP67.

Charging Station (B6-CH3)

Part No. 7360033

Our Li-Ion Charger is designed to improve the efficiency of your BlokCam Batteries and the performance of the camera system.

More information, hook mounted safety system and accessories available online at thecrosbygroup.com/blokcam.

BLOKCAM ACCESSORIES

BlokCam Office Link (OL1)
Part No. 7370015
BlokCam Office Link allows the data from your BlokCam to be captured in a site office for site and crane monitoring and surveillance. Your host computer could monitor and download data from multiple systems.

4G Router (30184)
Part No. 7350026
With a 4G router connected to your BlokCam system you can live stream crane footage and extract recordings from anywhere in the world [2].

V-Cam (VC4)
Part No. 7370025
The Versatile-Cam is our hardwired option, which gives you the ability to expand your BlokCam system to include additional sensors. The build quality of the VC4, coupled with its non-intrusive size and mounting versatility, means it can be deployed in seconds and used in a multitude of scenarios. Ideal for visual monitoring and data logging of the hoist drum, luffing drum, slew ring, tail swing, and the operator's cab.

V-Cam (VC4a)
Part No. 7370026
The VC4a is our hardwired camera with a built in microphone, which is most commonly used for audio-visual monitoring and data logging of the operator's cab.

BlokMag (BM1)
Part No. 7370009
Attach your crane camera system to a hook block with a curved surface. Flat, spherical, cylindrical, narrow, short or tall, our modular BlokMag system allows flat surfaces to magnetically mate with curved surfaces flawlessly.

BlokLink
Part No. 7370031
Complete with hook and bow, attach your crane camera system to a crane where you cannot if the block has a curved surface. Flat, spherical, cylindrical, narrow, short or tall, our BlokLink is the solution to provide a flat surface for your BlokCam or BlokAlert.

More information, hook mounted safety system, and accessories available online at thecrosbygroup.com/blokcam.

REFERENCES

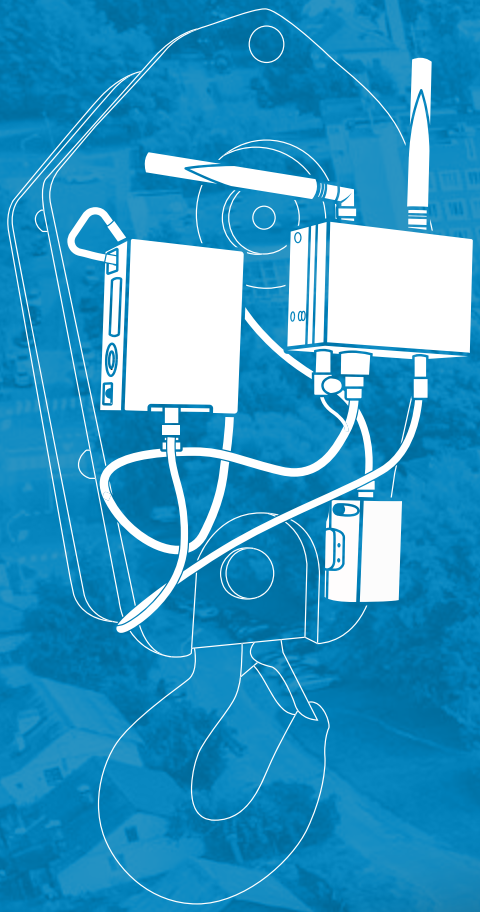
1. Subject to crane make/model
2. Subject to availability of a suitable mobile network (data charges apply)
3. Battery life varies by use and configuration
4. IP67 rating excludes IP65 audio sensor and sounder
5. Transmission distance may vary depending on the environment

*Actual product may differ from rendered image

ON-DEMAND WEBINAR

Get an in-depth look at the latest Crosby BlokCam audio-visual technologies designed to improve safety and efficiency through enhanced crane operation awareness and communication.

Watch now at thecrosbygroup.com/blokcam-webinar



BLOKCAM

IMPROVING SAFETY, COMMUNICATION & PRODUCTIVITY

Systems and upgrades
now available to order!


BLOKCAM

Crosby | BLOKCAM

WHAT IS BLOKALERT?

BlokAlert is a wireless, audio-visual warning system that can be quickly and easily deployed to the hook block of a crane.

When activated by the lifting crew, the BlokAlert receiver gives out a recognisable audio-visual signal that can be seen and heard by site personnel in proximity to the hook block or load.

This forewarns the workforce to the position and movements of the hook block, increases awareness and reduces the risk of being struck by the crane's hook block, lifting accessories or load.

WHY BLOKALERT?

Traditionally, the distance between the horn, often located near the operator's cab, and the load is inconsistent and does not efficiently warn site personnel to the position of the hook block or load.

The same can be said for air horns or whistles when used by riggers. In both scenarios, the attention of the work force is diverted to where the sound is coming from, as opposed to the hazard.

Solution: Fit a warning system to the hook block. When activated, the consistent proximity between the hook block and the load enhances the efficiency of the warning system and draws attention to the hazard, not away from it.

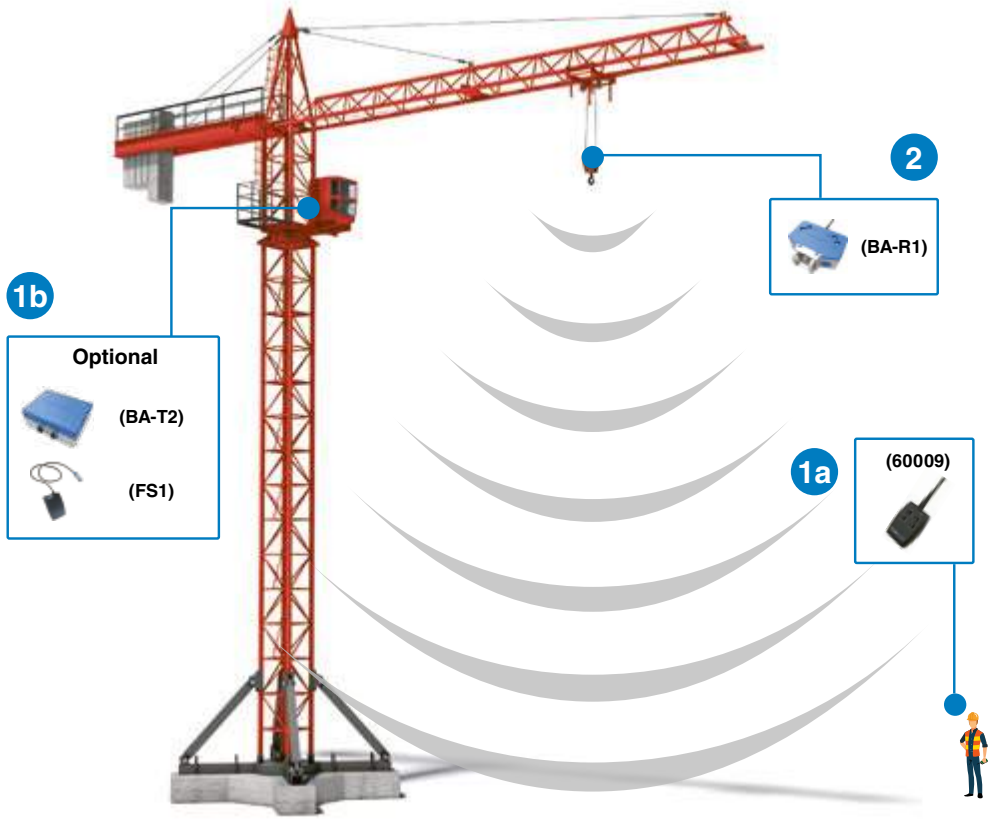
HOW BLOKALERT WORKS

1a The lifting crew/rigger
The handheld fob is activated by the riggers or lifting crew. When operated, the signal is transmitted to the receiver on the hook block of the crane.

and/or

1b In the operator's cab
The transmitter is activated by a footswitch in the crane cab. When operated, the signal is transmitted to the receiver on the hook block of the crane.

2 On the hook block
On receipt of a signal from a transmitter, the Receiver is activated, alerting the workforce to the proximity of the hook block.



BLOKALERT SYSTEM (PART NO. 7380000)

Design Overview

- Uses high powered neodymium magnets
- Easy to install, remove, and charge
- Two handheld transmitters per system
- Easy to use, multifunction operation
- 2 x 78db – 107db electronic sounders
- 180° LED beacon
- Choice of four beacon colors
- Pair transceivers with the push of a button
- Built in Lithium Ion battery with 124-hr battery life[3]
- Built in, fold away carry handles
- Long range transmitter and receiver[5]
- Purpose built aluminum housing
- Built in lanyard anchors
- Safety lanyard provides secondary security tethering
- LED power indicator
- 3.39 inch low profile design
- Durable all-weather design, manufactured to IP67[4] rating
- 14°F to 122°F (-10°C to 50°C) operating temperature
- Easy access fuse
- High quality industrial charge connector
- Optional cab transmitter
- CE and FCC approved

Modular design, compatible across a wide variety of cranes [1]

WHAT'S INCLUDED

BlokAlert Receiver (BA-R1) Part No. 7370003
Along with the LED Beacon, the BlokAlert Receiver is capable of up to 528 different audible warnings. This audio-visual warning system, combined with great functionality, performance and design makes this a must for all lifting operations.

Size & Weight (excluding Antenna)

Height:	6.82 in (173mm)
Width:	8.27 in (210mm)
Depth:	3.39 in (86mm)
Weight:	7.5 lb (3,400g)

BlokAlert Fob – 4-Button (60009) Part No. 7360009
The BlokAlert Fob allows the riggers to operate multiple BlokAlert systems across your site.

- Two four-button fobs per system
- Rugged design complete with neck lanyard
- Eight- and 16-button fobs available on request

BLOKALERT ACCESSORIES

BlokAlert Transmitter (BA-T2) Part No. 7370030
Through the use of a footswitch, the BlokAlert Transmitter gives the crane operator hand-free operation of the BlokAlert system.

BlokAlert Footswitch (FS1) Part No. 7360017
The Footswitch provides the hands-free operation of the BlokAlert Transmitter. It is quick and easy to install.

More information, hook mounted safety system, and accessories available online at thecrosbygroup.com/blokcam.

BLOKALERT

Improving safety, communication & productivity

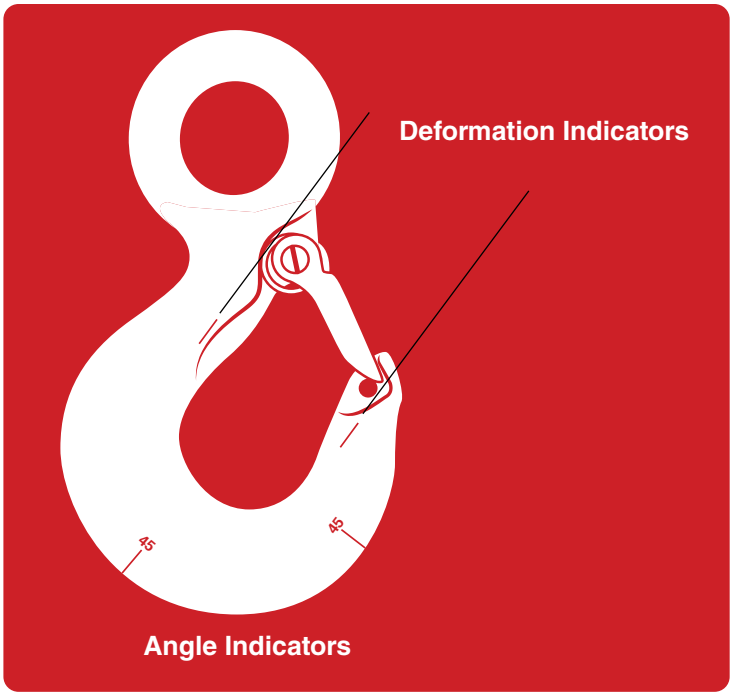
HOOKS & SWIVELS

Setting the standard for hooks with industry-changing innovations. With the most extensive product range in the industry, there's a hook for every lift.

the Crosby group

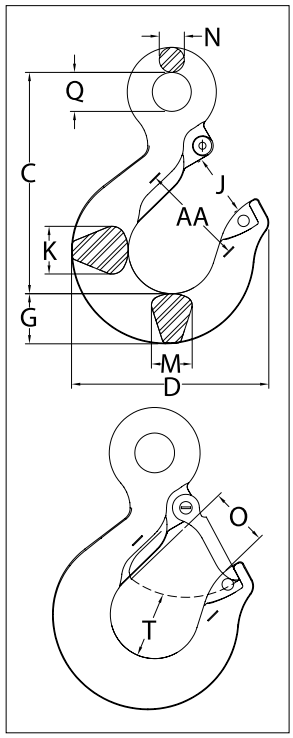
thecrosbygroup.com

- **Application information:** Application and warning information is available for Crosby hooks. The Crosby Warning System is designed to attract the attention of the user, clearly inform the user of the factors involved in the task, and provide the user with proper application procedures. Each Crosby hook is tagged with appropriate application and warning information, thus ensuring that the information is available at the point of application.
- **Charpy impact properties:** Crosby's Quenched & Tempered® hooks have enhanced impact properties for greater toughness at all temperatures. Crosby can provide typical Charpy impact properties on selected sizes upon special request at the time of order.
- **Fatigue properties:** Typical fatigue properties are available for selected sizes. In addition, these properties will be provided upon special request for other sizes.
- **Ductility properties:** Crosby provides results of actual test values for ductility of the material. These results are measured by reduction of area and elongation. This is done for each production lot and is traceable by the Product Identification Code (PIC).
- **Tensile strengths:** Crosby provides hardness, tensile, and yield strength for each production lot of hooks, traceable by the PIC.
- **Material analysis:** Crosby can provide certified material (mill) analysis for each production lot, traceable by the PIC. Crosby, through its own laboratory, verifies the analysis of each heat of steel. Crosby purchases only special bar forging quality steel with specific cleanliness requirements and guaranteed hardenability.
- **Field inspection:** Written instructions for visual, magnaflux, and dye penetrant inspection of hooks are available from Crosby. In addition, acceptance criteria and repair procedures for hooks are available.
- **Proof testing:** If requested at the time of order, hooks can be furnished proof tested with certification. All SHUR-LOC® hooks (clevis and eye styles) are 100% proof tested with certificates.
- **Magnetic particle certification:** If requested at the time of order, hooks can be magnetic particle inspected with certification.
- **World-class certification:** Certification to world standards can be furnished upon request at the time of order. Specific standards include American Bureau of Shipping, Lloyds Register of Shipping, Det Norske Veritas, American Petroleum Institute, RINA, Nuclear Regulatory Commission, and other worldwide standards.
- **Bronze hooks:** Crosby provides bronze shank hooks for non-sparking applications.
- **QUIC-CHECK®:** Hooks incorporate markings forged into the product which address two QUIC-CHECK features:
  Deformation Indicators: Two strategically placed marks, one just below the shank or eye and the other on the hook tip, which allows for a QUIC-CHECK measurement to determine if the throat opening has changed, thus indicating abuse or overload.
  Angle Indicators: Indicates the maximum included angle which is allowed between two sling legs in the hook. These indicators also provide the opportunity to approximate other included angles between two sling legs.
- **McKissick® Split-Nut® Hook Retention System:** Shank hooks on crane blocks must be inspected in accordance with applicable ASME B30, CSA Z150, and other crane standards. These standards mandate the crane hook to be inspected for surface indications, damage and corrosion which could compromise the integrity of the crane block. Because of the type of environment in which these hooks are required to perform, the removal of corroded nuts from the threads can become a problem during inspections. The innovative, patented system is available on Crosby shank hooks. With four easy steps, the hook can be disassembled, inspected and put back into service in a fraction of the time of a conventional threaded nut.



L-1327

- For use with wire rope. Suitable for use with Grade 100 and Grade 80 chain. Working load limit needs to be de-rated to achieve a 5:1 design factor.
- Forged alloy steel, Quenched & Tempered.
- Each hook has a Product Identification Code (PIC) for material traceability, along with the size and the name Crosby.
- 25% stronger than Grade 80.
- Eye Sling Hooks incorporate QUIC-CHECK® deformation and angle indicators. (For detailed information, see the Crosby Value Added page at the beginning of this section.)
- When secured with the proper cotter pin through the hole in the tip of hook, meets the intent of OSHA Rule 1926.1431(g) and 1926.1501(g) for personnel lifting.
- Individually Proof Tested to 2.5 times the Working Load Limit with certification.
- Fatigue rated to 20,000 cycles at 1.5 times the Working Load Limit.



Crosby 8/10™ Fatigue Rated QUIC-CHECK® Q&T

APPLICATION AND WARNING INFORMATION
SECTION 17

L-1327 Eye Sling Hook

Grade 100 Alloy Chain Size		Working Load Limit (lb)*	Hook ID Code	Stock No.	Weight Each (lb)	Dimensions (in)											Replacement Latch Stock No.
(in)	(mm)					C	D	G	J	K	M	N	O	Q	T	AA	
-	6	3200	DA	1025860	.50	3.34	2.86	.73	.90	.63	.63	.36	.89	.75	.87	1.50	1096325
1/4-5/16	7 - 8	5700	HA	1025869	1.3	4.21	3.90	1.03	1.18	.75	.75	.50	1.15	.75	1.16	2.00	1096468
3/8	10	8800	IA	1025878	2.3	4.99	4.34	1.19	1.53	1.19	1.00	.56	1.40	.94	1.23	2.50	1096515
1/2	13	15000	JA	1025887	4.5	6.36	5.67	1.44	1.78	1.37	1.17	.72	1.67	1.12	1.88	3.00	1096562
5/8	16	22600	KA	1025896	8.4	7.43	6.78	1.88	2.38	1.66	1.44	.88	2.08	1.31	2.03	4.00	1096609
3/4	18-20	35300	KA	1025915	15.0	9.07	7.45	2.25	2.38	1.88	1.63	1.11	2.08	2.44	2.47	4.00	1096609
7/8	22-23	44100	LA	1025924	20.7	10.08	8.30	2.59	2.50	2.19	1.94	1.27	2.27	2.84	2.62	4.00	1096657
1	26	59700	NA	1025933	39.5	12.82	10.30	3.00	3.30	2.69	2.38	1.56	3.02	3.50	2.83	5.00	1096704
1 1/4	32	90400	PA	1025942	105.0	18.19	14.06	4.56	4.25	3.75	3.19	2.00	3.00	4.50	3.88	7.00	1093717

4:1 Design Factor. *Deformation indicators.

Hook Ductility: Compare an 'as forged' hook to the superior quality of a Crosby® Quenched & Tempered® hook. Watch video at **thecrosbygroup.com/QT**

S-319/S-319N

- The most complete line of shank marked hooks. Available 3/4 to 300 metric tons.
- Hook Identification code marked into each hook.
- All carbon and alloy hooks are quenched and tempered.
- Quenched & Tempered.
- Available in carbon steel, alloy steel, and bronze.
- Proper design, careful forging, and precision controlled quench and tempering give maximum strength without excessive weight and bulk.
- Every Crosby Shank Hook has a pre-drilled cam which can be equipped with a latch. Simply purchase the Crosby latch assemblies. Even years after the purchase of the original hook, latch assemblies can be added.
- Type Approval Certification in accordance with ABS 2016 Steel Vessels and ABS Guide for Certification on Cranes available. Certificates available when requested at time of order and may include additional charges.

APPLICATION AND WARNING INFORMATION
SECTION 17

S-319 / S-319N Shank Hook

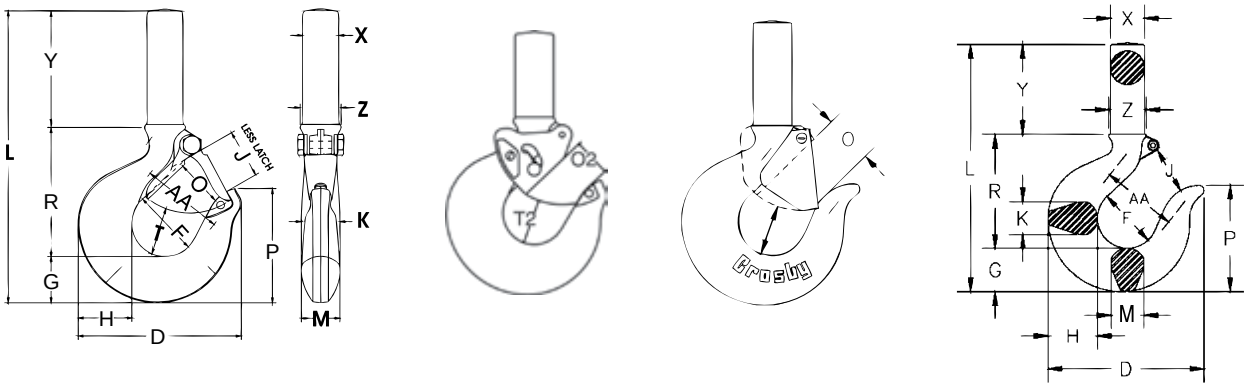
Working Load Limit (t)			Hook ID Code	Shank Hooks Stock No.			Shank Length ‡	Weight Each (lb)	Rep. Latch Kits		
Carbon	Alloy	Bronze		Carbon S-319C S-319CN	Alloy S-319A S-319AN	Bronze S-319BN			S-4320 Stock No.	PL Stock No.	SS-4055 Stock No.
0.75	1	.5	†D	1028505	1028701	1028900	Std.	.50	1096325	-	-
1	1.5	.6	†F	1028514	1028710	1028909	Std.	.75	1096374	-	-
1.5	2	1	†G	1028523	1028723	1028918	Std.	1.00	1096421	-	-
2	3	1.4	†H	1028532	1028732	1028927	Std.	1.82	1096468	-	-
3	5	2	†I	1028541	1028741	1028936	Std.	3.69	1096515	1092000	-
5	7	3.5	†J	1028550	1028750	1028945	Std.	7.25	1096562	1092001	-
7.5	11	5	†K	1028563	1028765	1028954	Std.	13.4	1096609	1092002	-
10	15	6.5	†L	1028590	1028792	1028981	Std.	21.9	1096657	1092003	-
15	22	10	†N	1028599	1028801	1028990	Std.	38.4	1096704	1092004	-
20	30	-	O	1024386	1024803	-	Std.	72	-	1093716	1090161
20	30	-	O	1024402	1024821	-	Long	85	-	1093716	1090161
25	37	-	P	1024420	1024849	-	Std.	134	-	1093717	1090189
25	37	-	P	1024448	1024867	-	Long	172	-	1093717	1090189
30	45	-	S	1024466	1024885	-	Std.	182	-	1093718	1090189
30	45	-	S	1024484	1024901	-	Long	214	-	1093718	1090189
40	60	-	T	1024509	1024929	-	Std.	268	-	1093719	1090205
40	60	-	T	1024545	1024965	-	Long	312	-	1093719	1090205
50	75	-	U	1024563	1024983	-	Std.	390	-	1093720	-
50	75	-	U	1024581	1025009	-	Long	426	-	1093720	-
-	100	-	W	-	1025027	-	Std.	610	-	1093721	-
-	100	-	W	-	1025045	-	Long	675	-	1093721	-
-	150	-	X	-	1025063	-	Std.	735	-	1093721	-
-	200	-	Y	-	1025081	-	Std.	1020	-	1093723	-
-	300	-	Z	-	1025090	-	Std.	1390	-	1093724	

Maximum allowable Proof Load is 2 Times Working Load Limit. All carbon hooks designed with a 5:1 design factor. All alloy hooks 1 through 22t designed with a 4.5:1 design factor. All alloy hooks 30t and larger designed with a 4:1 design factor. All bronze hooks designed with a 4:1 design factor. †New 319N style hook. ‡See column "Y" on following page for actual length.

S-319/S-319N

- Patented McKissick Split-Nut retention system available.
- Hooks incorporate QUIC-CHECK® deformation and angle indicators. (For detailed information, see the Crosby Value Added page at the beginning of this section.)
- Chemical analysis and tensile tests performed on each PIC to verify chemistry and mechanical properties.

APPLICATION AND WARNING INFORMATION
SECTION 17



S-319 / S-319N Shank Hook

Hook ID Code	Dimensions (in)																	
	D	F	G	H	J	K	L	M	O	O2 ††	P	R	T	T2 ††	X	Y	Z	AA*
†D	2.86	1.25	.73	.81	.93	.63	5.14	.63	.93 †	-	1.96	2.35	.97	-	.59	2.06	.69	1.50
†F	3.16	1.38	.84	.94	.97	.71	5.68	.71	.97 †	-	2.22	2.59	.97	-	.76	2.25	.78	2.00
†G	3.59	1.50	1.00	1.16	1.06	.88	6.35	.88	1.06 †	-	2.44	2.76	1.03	-	.88	2.59	.88	2.00
†H	4.00	1.62	1.14	1.31	1.19	.94	7.14	.94	1.16 †	-	2.78	3.16	1.16	-	.88	2.84	1.00	2.00
†I	4.84	2.00	1.44	1.63	1.50	1.31	8.63	1.13	1.36 †	1.00	3.47	3.85	1.53	1.50	1.16	3.44	1.25	2.50
†J	6.28	2.50	1.82	2.06	1.78	1.66	10.43	1.44	1.61 †	1.31	4.59	4.77	1.96	1.88	1.41	3.84	1.56	3.00
†K	7.54	3.00	2.26	2.63	2.41	1.88	12.52	1.63	2.08 †	1.81	5.25	5.88	2.47	2.25	1.81	4.38	1.94	4.00
†L	8.34	3.25	2.60	2.94	2.62	2.19	16.10	1.94	2.27 †	2.00	5.96	6.37	2.62	2.31	2.00	7.00	2.19	4.00
†N	10.34	4.25	3.01	3.50	3.41	2.69	18.15	2.38	3.02 †	2.75	6.88	8.14	2.83	2.56	2.56	7.00	2.63	5.00
O	13.62	5.00	3.62	4.62	4.00	3.00	23.09	3.00	3.25	-	8.78	9.44	3.44	-	3.12	10.00	3.12	6.50
O	13.62	5.00	3.62	4.62	4.00	3.00	31.09	3.00	3.25	-	8.78	9.44	3.44	-	3.12	18.00	3.12	6.50
P	14.06	5.38	4.56	5.00	4.25	3.62	32.12	3.00	3.00	-	11.31	12.50	3.88	-	4.00	15.00	4.00	7.00
P	14.06	5.38	4.56	5.00	4.25	3.62	41.12	3.00	3.00	-	11.31	12.50	3.88	-	4.00	24.00	4.00	7.00
S	15.44	6.00	5.06	5.50	4.75	3.72	34.12	3.25	3.38	-	12.56	14.00	4.75	-	4.19	15.00	4.19	8.00
S	15.44	6.00	5.06	5.50	4.75	3.72	43.12	3.25	3.38	-	12.56	14.00	4.75	-	4.19	24.00	4.19	8.00
T	18.50	7.00	6.00	6.50	5.75	4.44	36.06	3.91	4.12	-	14.75	15.56	5.69	-	4.50	14.50	4.50	10.00
T	18.50	7.00	6.00	6.50	5.75	4.44	47.56	3.91	4.12	-	14.75	15.56	5.69	-	4.50	26.00	4.50	10.00
U	20.62	7.75	6.69	7.25	6.50	5.25	41.16	4.25	4.88	-	16.53	19.38	6.00	-	5.00	15.00	5.00	11.50
U	20.62	7.75	6.69	7.25	6.50	5.25	49.16	4.25	4.88	-	16.53	19.38	6.00	-	5.00	23.00	5.00	11.50
W	23.00	6.81	8.59	9.88	5.88	5.50	42.12	5.50	4.50	-	17.25	18.41	7.00	-	7.00	15.00	7.00	12.00
W	23.00	6.81	8.59	9.88	5.88	5.50	48.12	5.50	4.50	-	17.25	18.41	7.00	-	7.00	21.00	7.00	12.00
X	24.38	6.75	9.12	10.94	6.00	6.00	45.75	6.00	4.50	-	18.00	18.38	7.00	-	7.25	18.00	7.25	13.00
Y	26.69	7.50	9.75	11.81	6.60	7.00	50.50	7.00	5.00	-	19.75	20.50	8.00	-	8.00	20.00	8.00	13.00
Z	30.12	9.50	10.62	12.94	8.00	7.25	54.69	8.00	6.25	-	22.69	23.50	8.25	-	9.50	20.00	9.50	15.00

Rough as-forged dimension. Shank will not machine to this dimension. Please refer to the warnings & applications section for recommended shank diameter when machining.
*Deformation indicators. †3/4t carbon through 22t alloy dimensions shown are for S-4320 Latch Kits. Dimensions for "O" frame size and larger are for PL Latch Kits. ††Dimensions are for PL-N latch kits. For the purpose of calculating D/d ratio, utilize dimension M.

L-320CN
Frame Size D-N

- Available in carbon steel and alloy steel.
- Eye hooks are load rated (marked with the Working Load Limit).
- Fatigue rated to 20,000 cycles at 1.5 times the Working Load Limit.
- Chemical analysis and tensile tests performed on each PIC to verify chemistry and mechanical properties.
- Hooks incorporate QUIC-CHECK® deformation and angle indicators. (For detailed information, see the Crosby Value Added page at the beginning of this section.)

L-320C
Frame Size O-T

APPLICATION AND WARNING INFORMATION
SECTION 17

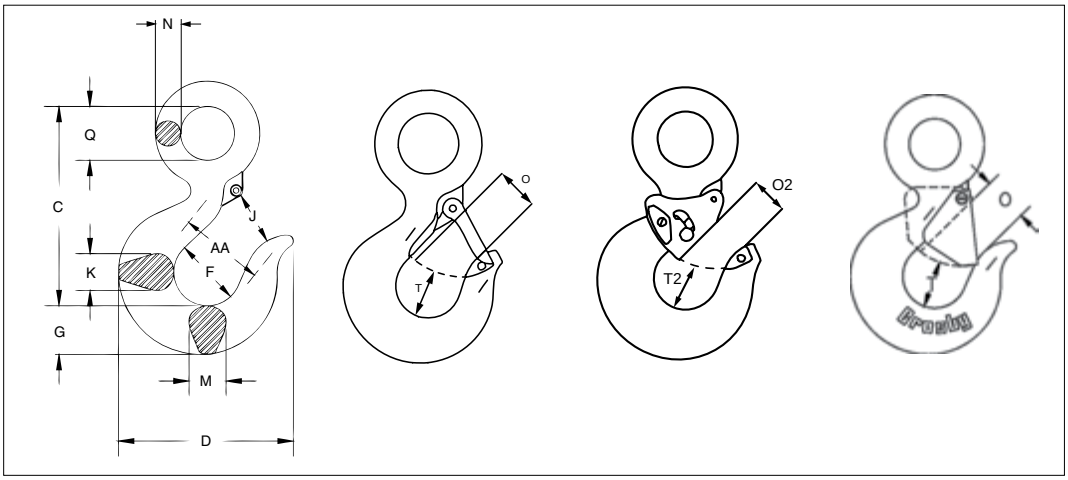
L-320N / L-320 Eye Hooks

Working Load Limit (t)			Eye Hook Stock No.				Replacement Latch Kits		
Carbon	Alloy	Hook ID Code	Carbon L-320C L-320CN S.C.	Carbon GL-320CN Galv.	Alloy L-320A L-320AN S.C.	Weight Each (lb)	S-4320 Stock No.	PL Stock No.	SS-4055 Stock No.
0.75	1	†D	1022205	1022208	1022380	.61	1096325	-	-
1	1.5	†F	1022216	1022219	1022391	.89	1096374	-	-
1.5	2	†G	1022227	1022230	1022402	1.44	1096421	-	-
2	3	†H	1022238	1022241	1022413	2.07	1096468	-	-
3	5	†I	1022246	1022249	1022424	4.30	1096515	1092000	-
5	7	†J	1022260	1022262	1022435	8.30	1096562	1092001	-
7.5	11	†K	1022271	1022274	1022446	15.00	1096609	1092002	-
10	15	†L	1022282	1022285	1022457	20.77	1096657	1092003	-
15	22	†N	1022293	1022296	1022468	39.50	1096704	1092004	-
20	30	O	1022302	-	1022477	60.00	-	1093716	1090161
25	37	P	1023306	-	1023565	105.00	-	1093717	1090189
40	45	S	1023324	-	1023583	148.00	-	1093718	1090189
40	60	T	1023342	-	1023609	228.00	-	1093719	1090205

All carbon hooks have a 5:1 Design Factor. Alloy eye hooks 1t through 22t have a 5:1 Design Factor. Alloy eye hooks 30t through 60t have a 4.5:1 Design Factor. For 3/4t carbon through 22t alloy eye hooks, Proof Load is 2.5 times Working Load Limit. For 20t carbon through 60t alloy eye hooks, Proof Load is 2 times Working Load Limit.

L-320AN
Frame Size D-N

L-320AN
Frame Size O-T



APPLICATION AND WARNING INFORMATION
SECTION 17

L-320N / L-320 Eye Hooks

Hook ID Code*	Dimensions (in)													
	C	D	F	G	J	K	M	N	O †	O2 ††	Q	T †	T2 ††	AA**
†D	3.34	2.83	1.25	.73	.90	.63	.63	.36	.89	-	.75	.87	-	1.50
†F	3.81	3.11	1.38	.84	.93	.71	.71	.42	.91	-	.91	.98	-	2.00
†G	4.14	3.53	1.50	1.00	1.00	.88	.88	.55	1.00	-	1.13	1.03	-	2.00
†H	4.69	3.97	1.63	1.13	1.13	.94	.94	.58	1.09	-	1.25	1.16	-	2.00
†I	5.77	4.81	2.00	1.44	1.47	1.31	1.31	.72	1.36	1.00	1.56	1.53	1.50	2.50
†J	7.37	6.27	2.50	1.81	1.75	1.66	1.66	.90	1.61	1.31	2.00	1.96	1.88	3.00
†K	9.07	7.45	3.00	2.25	2.29	1.88	1.63	1.11	2.08	1.81	2.44	2.47	2.25	4.00
†L	10.08	8.30	3.25	2.59	2.50	2.19	1.94	1.27	2.27	2.00	2.84	2.62	2.31	4.00
†N	12.53	10.30	4.25	3.00	3.30	2.69	2.38	1.56	3.02	2.75	3.50	2.83	2.56	5.00
O	14.06	13.62	5.00	3.62	4.00	3.00	3.00	1.75	3.25	-	3.50	3.44	-	6.50
P	18.19	14.06	5.38	4.56	4.25	3.75	3.19	2.00	3.00	-	4.50	3.88	-	7.00
S	20.12	15.44	6.00	5.06	4.75	4.50	3.25	2.18	3.38	-	4.94	4.75	-	8.00
T	23.72	18.50	7.00	6.00	5.75	5.50	3.91	2.53	4.12	-	5.69	5.69	-	10.00

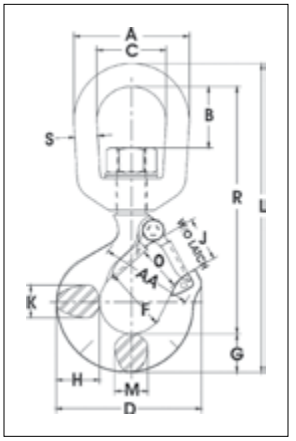
*Deformation indicators. †3/4t carbon though 22t alloy dimensions shown are for S-4320 Latch Kits. Dimensions for "O" frame size and larger are for PL Latch Kits.
††Dimensions are for PL-N latch kits.

Crosby

L-322CN / L-322AN

- Forged, Quenched & Tempered.
- Suitable for positioning of the hook before the load is lifted.
- Swivel hooks are load rated.
- Proper design, careful forging, and precision controlled quench and tempering gives maximum strength without excessive weight and bulk.
- Low profile hook tip designed to utilize Crosby S-4320 or PL-N latch kit.
- Hooks incorporate QUIC-CHECK® deformation and angle indicators. (For detailed information, see the Crosby Value Added page at the beginning of this section.)

Use in corrosive environment requires shank and nut inspection in accordance with ASME B30.10-1.10.4(b)(5)(c).



Load Tested Fatigue Tested TA QUIC-CHECK Q&T

APPLICATION AND WARNING INFORMATION
SECTION 17

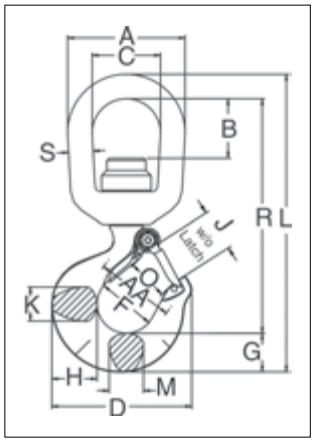
L-322CN / L-322AN Swivel Hooks with Latch

Working Load Limit (t)		Hook ID Code*	L-322CN Stock No.	L-322AN Stock No.	Weight Each (lb)	Dimensions (in)															Rep. Latch Stock No.
Carbon	Alloy					A	B	C	D	F	G	H	J	K	L	M	O †	R	S	AA*	
0.75	1	D	1048603	1048807	.75	2.00	.82	1.25	2.86	1.25	.73	.81	.93	.63	5.66	.63	.89	4.55	.38	1.50	1096325
1	1.5	F	1048612	1048816	1.25	2.50	1.31	1.50	3.15	1.38	.84	.94	.97	.71	6.71	.71	.91	5.37	.50	2.00	1096374
1.5	2	G	1048621	1048825	2.25	3.00	1.50	1.75	3.59	1.50	1.00	1.16	1.06	.88	7.75	.88	1.00	6.12	.63	2.00	1096421
2	3	H	1048630	1048834	2.30	3.00	1.50	1.75	4.00	1.62	1.13	1.31	1.19	.94	8.25	.94	1.09	6.50	.63	2.00	1096468
3	5	I	1048639	1048840	4.96	3.50	1.64	2.00	4.84	2.00	1.44	1.63	1.50	1.31	9.69	1.13	1.36	7.50	.75	2.50	1096515
5	7	J	1048648	1048859	10.29	4.56	2.29	2.50	6.28	2.50	1.81	2.06	1.78	1.66	12.47	1.44	1.61	9.63	1.00	3.00	1096562
7.5	11	K	1048657	1048868	19.40	5.00	2.44	2.75	7.54	3.00	2.25	2.63	2.41	1.88	14.75	1.63	2.08	11.37	1.13	4.00	1096609
10	15	L	1048666	1048880	23.25	5.62	2.48	3.12	8.34	3.25	2.59	2.94	2.62	2.19	16.40	1.94	2.27	12.25	1.25	4.00	1096657
15	22	N	1048675	1048889	47.00	7.10	3.76	4.10	10.34	4.25	3.00	3.50	3.41	2.69	21.34	2.38	3.02	16.71	1.50	5.00	1096704
-	30	O	-	1048898	70.50	7.10	3.76	4.10	13.62	5.00	3.61	4.63	4.00	3.00	23.25	3.00	3.62	18.01	1.50	6.50	1090161

All carbon swivel hooks have a 5:1 Design Factor and Proof Load is 2 times the Working Load Limit. Alloy swivel hooks 1t through 22t have a 4.5:1 Design Factor and Proof Load is 2.5 times the Working Load Limit. Alloy swivel hooks of 30t capacity have a 4:1 Design Factor and Proof Load is 2 times the Working Load Limit. *Deformation indicators †Dimensions for hooks 3/4t carbon through 22t alloy are for S-4320 latch kits. Dimensions for hooks 30t alloy are for 4055 latch kit.

L-3322B

- Bearing design allows hook to rotate freely under load.
- Capacities ranging from 2 through 15 metric tons.
- Forged, Quenched & Tempered.
- Low profile hook tip designed to utilize Crosby S-4320 or PL-N latch kit.
- L-3322 hooks incorporate QUIC-CHECK® deformation and angle indicators. (For detailed information, see the Crosby Value Added page at the beginning of this section.)



APPLICATION AND WARNING INFORMATION
SECTION 17

L-3322B Swivel Hooks with Bearing

Working Load Limit (t)	Hook ID Code*	Stock No.	Weight Each (lb)	Dimensions (in)															Rep. Latch Stock No.
				A	B	C	D	F	G	H	J	K	L	M	O	R	S	AA*	
2	GA	1028609	2.5	3.00	1.50	1.75	3.59	1.50	1.00	1.16	1.06	.88	7.64	.88	1.00	6.01	.63	2.00	1096421
3	HA	1028618	3.8	3.50	1.56	2.00	4.00	1.62	1.13	1.31	1.19	.94	8.60	.94	1.09	6.72	.75	2.00	1096468
5	IA	1028627	7.0	4.00	1.56	2.25	4.84	2.00	1.44	1.63	1.50	1.31	10.32	1.13	1.36	8.00	.88	2.50	1096515
7	JA	1028636	14.0	5.00	1.94	2.75	6.27	2.50	1.81	2.06	1.78	1.66	12.84	1.44	1.61	9.90	1.13	3.00	1096562
11	KA	1028645	22.3	5.62	2.05	3.12	7.54	3.00	2.25	2.63	2.41	1.88	15.24	1.63	2.08	11.74	1.25	4.00	1096609
15	LA	1028654	36.0	7.12	3.62	4.10	8.33	3.25	2.59	2.94	2.62	2.19	18.64	1.94	2.27	14.41	1.50	4.00	1096657

4.5:1 Design Factor. Maximum allowable proof load is 2.5 times Working Load Limit. *Deformation indicators.

Ep. 21 Grinding and wear allowance on rigging hardware

Ep. 31 Crosby Shurloc® Hook inspection requirements

Ep. 5 Hooks: Why the tips must point outward on multiple bridles

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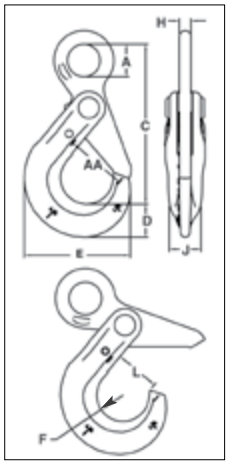
Ask the Expert
VIDEO PODCAST

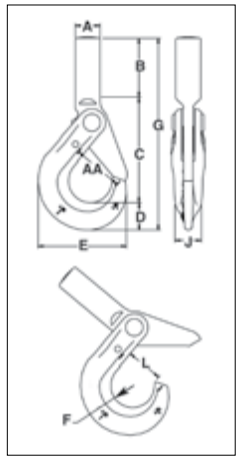
S-1316

S-1318A

- All SHUR-LOC® hooks have the following features:
  - Forged alloy steel, Quenched & Tempered.
  - Recessed trigger design is flush with the hook body, protecting the trigger from potential damage.
  - Easy to operate with enlarged thumb access.
  - Positive lock latch is self-locking when the hook is loaded.
  - The SHUR-LOC® hook, if properly installed and locked, can be used for personnel lifting applications and meets the intent of OSHA Rule 1926.1431(g)(1)(i)(A) and 1926.1501(g)(4)(iv)(B).
  - Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
  - Contact Engineered Solutions for additional threading or Split-Nut options at thecrosbygroup.com/engineeredsolutions.



- Eye Style incorporates these added features:
  - Individually Proof Tested to 2-1/2 times the chain Working Load Limit with certification.
  - S-1316 meets the performance requirements of EN1677-3.
  - Suitable for use with Grade 100 and Grade 80 chain.
  - Designed with 'engineered flat' to connect to S-1325 chain coupler.



Crosby 8/10™ Filligree Fitted Q&T CE

APPLICATION AND WARNING INFORMATION
SECTION 17

S-1316 SHUR-LOC® Eye Hook with Positive Locking Latch

Chain Size (in)	Chain Size (mm)	Stock No.	Frame code	Grade 100 Alloy Chain Working Load Limit (lb) 4:1	Working Load Limit (lb) 5:1	Weight Each (lb)	Dimensions (in) A	C	D	E	F	H	J	L	AA*
-	6	1022896	D	3200	2560	.85	.78	3.95	.79	2.60	.67	.31	.63	1.14	1.50
1/4-5/16	7-8	1022914	G	5700	4560	1.80	1.08	5.31	1.10	3.50	.87	.39	.81	1.48	2.00
3/8	10	1022923	H	8800	7040	3.40	1.30	6.57	1.17	4.39	1.10	.51	.94	1.83	2.50
1/2	13	1022932	I	15000	12000	6.00	1.65	8.23	1.67	5.45	1.26	.67	1.16	2.22	3.00
5/8	16	1022941	J	22600	18000	15.1	2.20	10.06	2.04	6.56	1.50	.87	1.50	2.65	3.50
3/4	18-20	1022952	-	35300	28240	19.0	2.60	10.77	2.22	7.76	2.01	.87	2.03	3.52	5.00
7/8	22	1022943	-	42700	34160	28.0	2.87	12.49	2.45	8.75	2.27	.98	2.20	3.83	6.00
1	26	1022944	-	59700	47760	49.5	3.15	14.60	3.21	9.87	2.46	1.26	2.68	4.09	6.50

*Deformation indicators.

S-1318A SHUR-LOC® Shank Hook

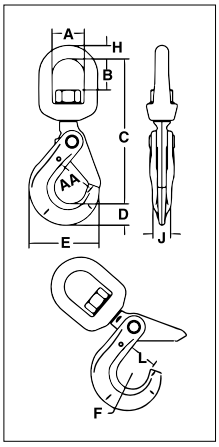
Chain Size (in)	Chain Size (mm)	Stock No.	Frame code	Grade 100 Alloy Chain Working Load Limit (lb)	Dimensions (in) A†	B	C	D	E	F	G	J	L	AA*	Weight Each (lb)
-	6	1098200	D	3200	.79	2.16	3.31	.79	2.60	.67	6.26	.63	1.16	1.50	1.00
1/4-5/16	7-8	1098209	G	5700	1.00	2.40	4.16	1.10	3.51	.87	7.66	.81	1.48	2.00	1.99
3/8	10	1098218	H	8800	1.14	2.95	5.14	1.17	4.39	1.10	9.26	.94	1.83	2.50	3.56
1/2	13	1098227	I	15000	1.34	3.35	6.31	1.67	5.49	1.26	11.33	1.16	2.22	3.00	7.00

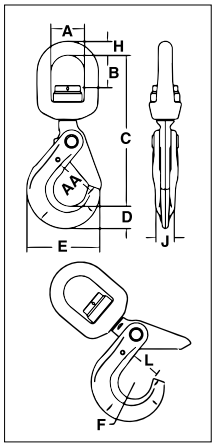
4:1 Design Factor based on Grade 100 chain. *Deformation indicators. †Dimension before machining (as forged).

S-1326

S-13326

- The S-1326 hook is a positioning device and is not intended to rotate under load. For swivel hook designed to rotate under load, use the S-13326.
- S-13326 Swivel Hook utilizes anti-friction bearing design which allows hook to rotate freely under load.
- Rated for both wire rope and for use with Grade 80/100 chain.
- Forged alloy steel, Quenched & Tempered.
- Individually Proof Tested at 2-1/2 times the chain Working Load Limit with certification.
- Recessed trigger design is flush with the hook body, protecting the trigger from potential damage.
- Easy to operate with enlarged thumb access.
- Positive lock latch is self-locking when hook is loaded.
- Trigger repair kit available (S-4316). Consists of spring, roll pin, and trigger.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
- The SHUR-LOC® Hook, if properly installed and locked, can be used for personnel lifting applications and meets the intent of OSHA Rule 1926.1431(g)(1)(i)(A) and 1926.1501(g)(4)(iv)(B).





Crosby 8/10™ Fatigue Rated QT CE

APPLICATION AND WARNING INFORMATION
SECTION 17

S-1326 SHUR-LOC® Swivel Hooks Suitable for positioning before lifting.

Chain Size		Frame code	Grade 100 Alloy Chain Working Load Limit (lb) 4:1 Design Factor	Working Load Limit (lb) 5:1 Design Factor	Stock No.	Weight Each (lb)	Dimensions (in)									
(in)	(mm)						A	B	C	D	E	F	H	J	L	AA*
-	6	D	3200	2560	1004304	1.26	1.50	1.32	6.13	.79	2.60	.67	.50	.63	1.13	1.50
1/4 - 5/16	7-8	G	5700	4560	1004313	2.62	1.75	1.59	7.60	1.10	3.50	.87	.63	.81	1.38	2.00
3/8	10	H	8800	7040	1004322	4.70	2.00	1.73	8.83	1.17	4.39	1.10	.75	.94	1.75	2.50
1/2	13	I	15000	12000	1004331	8.64	2.50	2.38	11.20	1.67	5.45	1.26	1.00	1.16	2.11	3.00
5/8	16	-	22600	18000	1004340	17.00	2.75	2.70	12.90	2.05	6.56	1.50	1.13	1.50	2.49	3.50
3/4	18 - 20	-	35300	28240	1004349	24.00	2.83	2.52	14.10	2.22	7.76	2.01	1.10	2.03	3.52	5.00
7/8	22	-	42700	34160	1004358	29.00	3.44	3.19	16.40	2.45	8.75	2.26	1.30	2.20	3.83	6.00

*Deformation indicators.

S-13326 SHUR-LOC® Swivel Hooks with Bearing Suitable for frequent rotation under load.

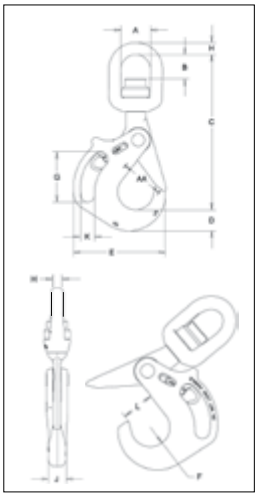
Chain Size		Frame code	Grade 100 Alloy Chain Working Load Limit (lb) 4:1 Design Factor	Working Load Limit (lb) 5:1 Design Factor	Stock No.	Weight Each (lb)	Dimensions (in)									
(in)	(mm)						A	B	C	D	E	F	H	J	L	AA*
-	6	D	3200	2560	1004404	1.50	1.50	1.14	6.17	.79	2.60	.67	.50	.63	1.13	1.50
1/4 - 5/16	7-8	G	5700	4560	1004413	3.10	1.75	1.52	7.54	1.10	3.50	.87	.63	.81	1.44	2.00
3/8	10	H	8800	7040	1004422	5.26	2.00	1.61	8.88	1.16	4.35	1.10	.75	.94	1.83	2.50
1/2	13	I	15000	12000	1004431	11.22	2.50	2.03	11.11	1.66	5.45	1.26	1.00	1.16	2.19	3.00
5/8	16	-	22600	18000	1004440	17.32	2.75	2.25	12.90	2.05	6.56	1.50	1.13	1.50	2.61	3.50

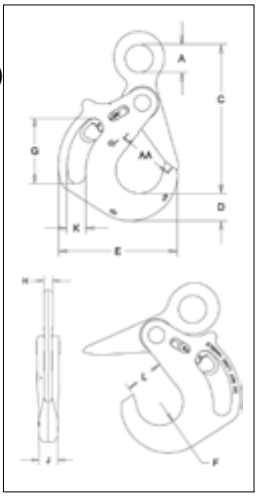
*Deformation indicators.

S-13326H

- The SHUR-LOC® Handle Hook allows the user to get a confident grip on a load with ease and comfort.
- Designed with a handle opening big enough to comfortably fit a gloved hand.
- Positive lock latch is self-locking when hook is loaded.
- Rated for both wire rope and use with Grade 80/100 chain.
- S-13326H Swivel Hook utilizes anti-friction bearing design which allows hook to rotate freely under load.
- Individually Proof Tested at 2-1/2 times the chain Working Load Limit with certification.
- The replaceable pull-trigger allows the user to easily open the SHUR-LOC's positive self-locking latch.
  - Ergonomically designed for easy use and precise control.
  - Secondary side trigger is recessed to avoid inadvertent release.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
- Forged alloy steel, Quenched & Tempered.
- The SHUR-LOC® hook, if properly installed and locked, can be used for personnel lifting applications and meets the intent of OSHA Rule 1926.1431(g)(1)(i)(A) and 1926.1501(g)(4)(iv)(B).

S-1316AH





APPLICATION AND WARNING INFORMATION
SECTION 17

S-13326H SHUR-LOC® Handle Swivel Hooks with Bearings

Chain Size		Grade 100 Alloy Chain Working Load Limit (lb) 4:1*	Working Load Limit (lb) 5:1*	Frame Code	Stock No.	Weight Each (lb)	Dimensions (in)											
(in)	(mm)						A	B	C	D	E	F	G	H	J	K	L	AA*
5/8	16	22,600	18,080	JA	1005014	26	2.75	2.26	14.47	1.97	8.55	1.78	4.69	1.13	1.73	1.32	2.80	4.00
3/4	18/20	35,300	28,240	KA	1005023	37	3.12	2.05	15.49	2.60	9.99	1.99	4.72	1.25	2.05	1.31	3.31	5.00
7/8	22	42,700	34,160	LA	1005041	57	4.09	3.65	19.11	2.72	11.48	2.24	5.35	1.50	2.44	1.57	3.66	6.00
1	26	59,700	47,760	NA	1005050	84	5.00	4.02	21.55	3.11	12.76	2.52	6.46	1.63	2.76	1.57	4.09	6.50

4:1 Design Factor. *Deformation indicators.

S-1316AH SHUR-LOC® Handle Eye Hook

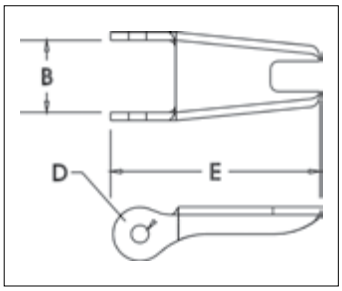
Chain Size		Grade 100 Alloy Chain Working Load Limit (lb) 4:1*	Working Load Limit (lb) 5:1*	Frame Code	Stock No.	Weight Each (lb)	Dimensions (in)											
(in)	(mm)						A	B	C	D	E	F	G	H	J	K	L	AA*
5/8	16	22,600	18,080	JA	1023579	18	2.01	10.69	1.97	8.55	1.78	4.69	0.79	1.73	1.32	4.00	2.79	4.00
3/4	18/20	35,300	28,240	KA	1023599	29	2.76	12.03	2.60	9.99	1.99	4.73	0.87	2.05	1.31	5.00	3.35	5.00
7/8	22	42,700	34,160	LA	1023607	39	3.15	13.50	2.72	11.48	2.24	5.35	0.91	2.44	1.63	6.00	3.70	6.00
1	26	59,700	47,760	NA	1023625	60	3.54	15.59	3.27	12.76	2.52	6.46	1.18	2.76	1.58	6.50	4.09	6.50

4:1 Design Factor. *Deformation indicators.

S-4320
Replacement Latch Kit

- Heavy duty stamped latch interlocks with the hook tip.
- High cycle, long life spring.
- Can be made into a “Positive Locking” Hook when proper cotter pin is utilized.
- Latch kits shipped unassembled and individually packaged with instructions.
- Meets the intent of OSHA Rule 1926.1431(g) and 1926.1501(g)(when secured with the bolt, nut and pin) for lifting personnel.

IMPORTANT: The new S-4320 Latch Kit will not fit the old style 319, 320 and 322 hooks.

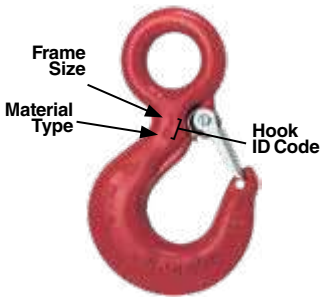


APPLICATION AND WARNING INFORMATION
SECTION 17

S-4320 Replacement Latch Kit for 319N, 320N, 322N, 339N, 1327 and 1339 Hooks

Hook Size (t)			Hook ID Code	Stock No.	Weight Each (lb)	Dimensions (in)		
Carbon	Alloy	Bronze				B	D	E
3/4	1	.5	D	1096325	.03	.50	.15	1.44
1	1-1/2	.6	F	1096374	.04	.54	.17	1.56
1-1/2	2	1	G	1096421	.04	.63	.17	1.66
2	3	1.4	H	1096468	.06	.66	.17	1.91
3	5	2	I	1096515	.10	.83	.20	2.31
5	7	3.5	J	1096562	.15	1.04	.20	2.88
7-1/2	11	5	K	1096609	.28	1.25	.27	3.56
10	15	6.5	L	1096657	.33	1.35	.27	3.81
15	22	10	N	1096704	.84	1.66	.39	5.18

Example of Hook ID Placement Location

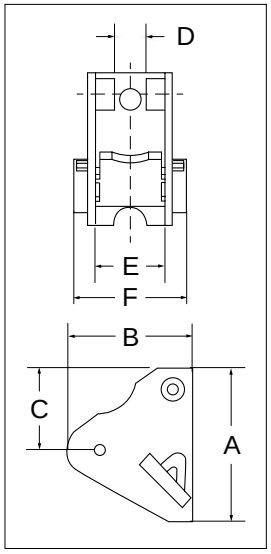


PL
Latch Kits

LATCH ORDERING INSTRUCTIONS

Specify PL, PL-N or PL-O latch kit stock number from charts below.
Specify capacity of hook to which latch will be assembled.
Specify hook material (carbon or alloy).

- Hot-dip galvanized.
- Heavy duty latch with easy operating features.
- Flapper lever indicates locked or unlocked position.
- Assembly instructions included with each latch.
- For additional dimensional data on eye, shank or swivel hooks, see Warnings & Applications.
- Meets the intent of OSHA Rule 1926.1431(g) and 1926.1501(g) (when secured with the bolt, nut and pin) for lifting personnel.



APPLICATION AND WARNING INFORMATION
SECTION 17

PL LATCH KITS

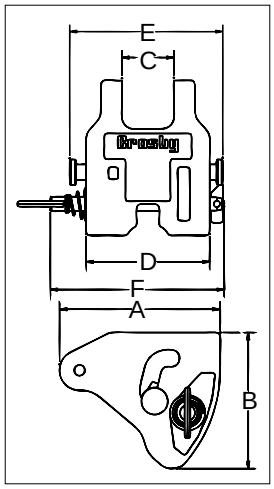
Hook Size (t)		Hook ID Code	Stock No.	Weight Each (lb)	Dimensions (in)					
Carbon	Alloy				A	B	C	D	E	F
3	4-1/2	I	1093711	.54	2.69	2.39	2.07	0.63	1.13	1.95
5	7	J	1093712	.66	3.00	2.49	2.00	.63	1.38	2.20
7-1/2	11	K	1093713	1.00	3.63	2.46	2.38	.63	1.63	2.49
10	15	L	1093714	1.25	4.00	3.27	2.69	.63	1.875	3.25
15	22	N	1093715	2.96	5.31	4.19	2.91	.84	2.38	3.49
20	30	O	1093716	4.05	6.00	4.52	3.28	1.06	3.31	4.67
25	37	P	1093717	8.63	7.00	6.86	4.94	2.24	2.38	6.12
30	45	S	1093718	10.00	6.75	7.19	3.94	2.24	4.75	6.38
40	60	T	1093719	14.30	8.00	7.97	4.25	3.46	5.95	7.70
50	75	U	1093720	27.00	9.88	8.38	5.88	3.38	6.5	8.88
-	100-150	W - X	1093721	33.25	10.88	10.88	6.5	3.38	7.88	10.00
-	200	Y	1093723	45.00	11.88	11.19	6.38	3.38	8.75	11.27
-	300	Z	1093724	55.00	12.50	12.38	7.92	3.38	10	12.25

PL-N/O
Latch Kits

LATCH ORDERING INSTRUCTIONS

Specify PL, PL-N or PL-O latch kit stock number from charts below.
Specify capacity of hook to which latch will be assembled.
Specify hook material (carbon or alloy).

- Heavy duty latch with easy operating features.
- PL-N designed for Crosby 319N & 320N style hooks, PL-O designed for Crosby 319 & 320 old style hooks.
- Flapper lever indicates locked or unlocked position.
- Assembly instructions included with each latch.
- For additional dimensional data on eye, shank or swivel hooks refer to the specific product page in this section.
- Meets the intent of OSHA Rule 1926.1431(g) and 1926.1501(g) (when secured with the supplied toggle pin) for lifting personnel.



APPLICATION AND WARNING INFORMATION
SECTION 17

PL-N/O LATCH KITS

Hook Size (t)		Hook ID Code	PL-N Latch Kit Stock No.	PL-O Latch Kit Stock No.	Weight Each (lb)	Dimensions (in)					
Carbon	Alloy					A	B	C	D	E	F
3	4.5 / 5 *	I	1092000	1091900	.8	2.40	2.01	.83	2.13	2.71	3.44
5	7	J	1092001	1091901	1.3	2.94	2.50	1.00	2.52	3.19	3.83
7-1/2	11	K	1092002	1091902	2.0	3.63	3.02	1.19	2.75	3.44	4.38
10	15	L	1092003	1091903	2.8	4.00	3.39	1.34	3.19	4.00	4.50
15	22	N	1092004	1091904	4.9	5.19	4.32	1.61	3.86	4.81	5.13

*"N" style hooks are rated at 5 metric tons.

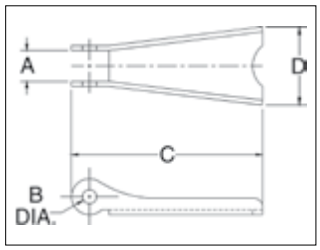
SS-4055
Latch Kits

LATCH ORDERING INSTRUCTIONS

Specify latch kit stock number.
Specify capacity of hook to which latch will be assembled.
Specify hook material (carbon or alloy).

- Stainless steel construction with cadmium plated steel nuts.
- Shipped packaged and unassembled.
- Instructions included for easy field assembly.

SS-4055 LATCH KITS



Hook Size (t)			Hook ID Code	Stock No.	Weight Each (lb)	Dimensions (in)			
Carbon	Alloy	Bronze				A	B	C	D
3/4	1	.5	D	1090027	.02	.38	.16	1.44	.59
1	1-1/2	.6	F	1090045	.02	.38	.16	1.60	.59
1-1/2 - 2	2 - 3	1.0 - 1.4	G / H	1090063	.03	.47	.19	1.84	.82
3	4-1/2	2.0	I	1090081	.06	.56	.17	2.41	1.00
5	7	3.5	J	1090107	.11	.58	.20	2.97	1.21
7-1/2 - 10	11 - 15	5.0 - 6.5	K / L	1090125	.17	.59	.27	3.66	1.50
15	22	10.0	N	1090143	.39	.83	.39	4.94	1.90
20	30	-	O	1090161	.63	.94	.52	5.88	2.56
25 - 30	37 - 45	-	P / S	1090189	1.12	2.19	.39	6.50	3.84
40	60	-	T	1090205	1.77	3.31	.52	7.88	4.12

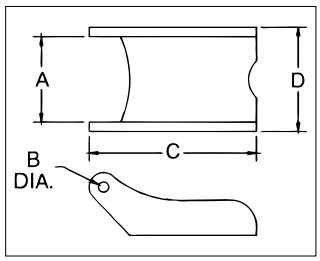
S-4088
Alloy Hook Latch Kits

LATCH ORDERING INSTRUCTIONS

Specify latch kit stock number.
Specify capacity of hook to which latch will be assembled.
Specify hook material (carbon or alloy).

- To be used on A-327 and A-339 Grade 8 sling hooks.
- Latch kits shipped unassembled and individually packaged with instructions.

S-4088 Alloy Hook Latch Kits



Hook Chain (in)	Stock No.	Weight Each (lb)	Dimensions (in)			
			A	B	C	D
9/32 (1/4)	1090250	.06	.78	.16	2.03	.94
3/8	1090251	.14	1.03	.19	2.69	1.25
1/2	1090252	.15	1.03	.19	3.00	1.25
5/8	1090253	.15	1.03	.19	3.25	1.25
3/4	1090254	.15	1.53	.26	4.13	1.88
7/8	1090255	.15	1.53	.26	4.66	2.00

HOOK CONNECTORS

The 5 connector styles shown below make it possible for Crosby to furnish a Golden Gate Hook to fit almost any make or model of hoisting equipment including, American Engineering Lo-Hed, ARO, Coffing, Electro Lift, Ingersoll-Rand, P & H, Robbins and Myers, Shepard Niles, CM, Shaw-Box, Wright, Yale & Towne.

CLOSED SWIVEL BAIL

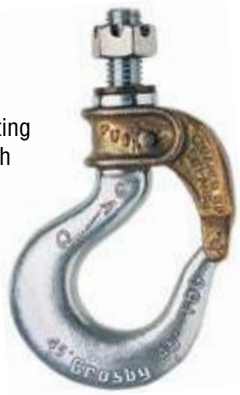
For use where hoisting line or shackle can be inserted into the bail. Suitable for positioning before lifting.
Hook sizes:
1 through 14.

Style C — with self-closing gate.
Style A — with manual-closing gate.

SHANK-TYPE HOOK

(Standard Length)

For use on existing load blocks, with standard shank length.
Hook sizes:
2 through 14.



Style D — with self-closing gate.
Style B — with manual-closing gate.

SHANK-TYPE HOOK

(Long Length)

For use on existing load blocks requiring extra shank length.
Hook sizes:
4 through 17.

Style K — with self-closing gate.
Style I — with manual-closing gate.

UNIVERSAL TYPE

Open swivel bail for attachment to link chain. Suitable for positioning before lifting.
Hook sizes:
3, 4, and 5.

Style E — with self-closing gate.
Style G — with manual-closing gate.

LINK CHAIN NEST

With ball-bearing swivel; attaches to chain by an alloy pin. Suitable for frequent rotation under load.
Hook sizes:
4, 5, and 7.

Style O — with self-closing gate.
Style P — with manual-closing gate.

Letter designations shown beneath each illustration above indicate BOTH connector style and gate type. Each connector is available with either a self-closing or manual-closing gate. (e.g. A size 4 hook with a closed swivel bail connector and self-closing gate is 4-C; with manual-closing gate, it is 4-A.)

GATE TYPES

Brass alloy Golden Gates® are engineered for quality, easy handling and dependability. The heavy duty, corrosion resistant locking mechanism will stay locked until an operator releases it; yet, can easily be shut with one hand. Cost effective, these gates reduce down time, providing the alternative to conventional latches.

LIF-LOK® GATE - SIZE 1

To lock: Close the gate; the built-in spring locks the gate against the hook tip.

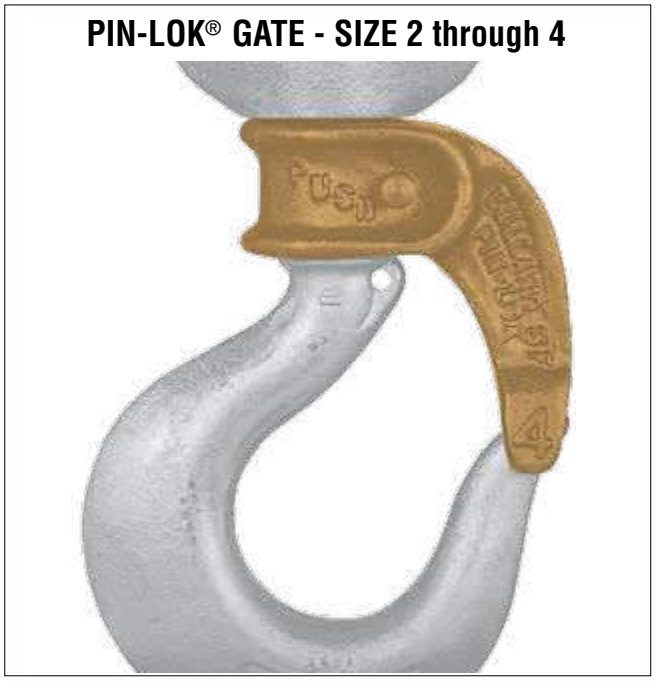
To Unlock: Lift the gate upward on the hook shank and swing open.

ROLLOX® GATE - SIZE 5 through 9

To Lock: Close the gate; a stainless steel pin is mounted in a horizontal bore which passes through the gate and engages a notch milled in the hook shank.

To Unlock: Move the lever downward a quarter-turn or until it stops, the gate can now swing open 160 ° (approx.)

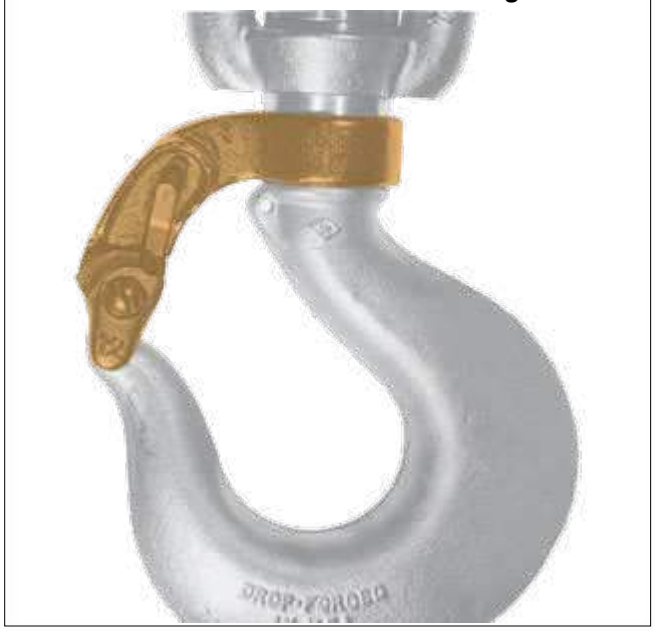
PIN-LOK® GATE - SIZE 2 through 4



To Lock: Close the gate; a stainless steel pin is carried in a horizontal bore and engages a milled slot in the hook shank.

To Unlock: Simply depress the stainless steel pin which causes the pin to disengage from the milled slot.

TIP-LOK® GATE - SIZE 10 through 17



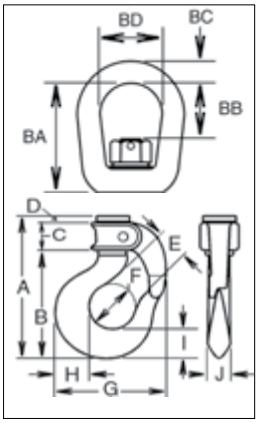
To Lock: Press the arm down until the lock trips; two arms of the gate now enclose the tip of the hook.

To Unlock: Manually depressing the locking trigger automatically raises the movable arm, allowing the gate to be rotated open.

Crosby

Closed Swivel Bail

- For use where hoisting line or shackle can be inserted into the bail.
  - BL-C with self-closing gate
  - BL-A with manual-closing gate
- Suitable for positioning before lifting.
- Crosby Bullard® Hooks incorporate QUIC-CHECK® deformation and angle indicators. (For detailed information, see the Crosby Value Added page at the beginning of this section.)



Load Rated QUIC-CHECK® QT CE

APPLICATION AND WARNING INFORMATION
SECTION 17

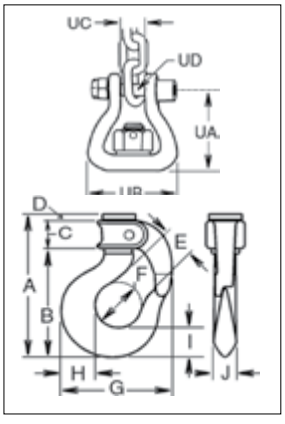
Closed Swivel Bail

Hook Size	BL-C Stock No.	BL-A Stock No.	Gate Type	WLL (short Tons)*	Weight Each (lb)	Dimensions (in)													
						A	B	C	D	E	F	G	H	I	J	BA	BB	BC	BD
1	1050210	1050001	LIF-LOK	.45	0.8	3.23	2.31	.63	.26	.69	.88	2.25	.69	.63	.44	1.75	.63	.31	1.00
2	1050221	1050012	PIN-LOK	.90	1.3	4.12	3.00	.93	.16	.97	1.25	2.88	.81	.75	.56	1.86	.95	.38	1.25
3	1050232	1050023	PIN-LOK	1.3	1.9	4.50	3.31	.94	.22	1.06	1.38	3.19	.94	.84	.63	2.44	1.31	.50	1.50
4	1050243	1050034	PIN-LOK	1.5	2.2	4.88	3.63	1.00	.22	1.13	1.50	3.63	1.16	1.00	.75	2.66	1.35	.50	1.50
5	1050254	1050045	ROLLOX	2.1	3.8	5.63	4.12	1.23	.25	1.25	1.64	4.09	1.31	1.12	.84	2.91	1.60	.63	1.75
6	1050265	1050056	ROLLOX	3.6	4.6	6.23	4.70	1.25	.25	1.39	1.64	4.56	1.57	1.34	.97	3.10	1.41	.63	1.75
7	1050276	1050067	ROLLOX	3.8	6.9	6.61	5.21	1.12	.25	1.50	2.00	4.94	1.63	1.44	1.13	3.48	1.67	.75	2.00
8	1050287	1050078	ROLLOX	5.0	9.6	7.17	5.80	1.06	.28	1.75	2.25	5.84	2.00	1.65	1.23	4.06	2.00	.88	2.25
9	1050298	1050089	ROLLOX	6.5	13.5	7.85	6.45	1.06	.31	1.88	2.50	6.50	2.06	1.81	1.38	4.65	2.21	1.03	2.50
11	1050309	1050100	TIP-LOK	8.3	20.5	9.62	8.00	1.25	.31	2.25	3.00	7.56	2.63	2.25	1.62	4.87	2.18	1.13	2.75
12	1050320	1050111	TIP-LOK	11.1	27.0	10.53	8.84	1.25	.38	2.50	3.25	8.69	2.94	2.59	1.94	5.13	2.25	1.25	3.13
14	1050342	1050133	TIP-LOK	16.7	55.0	12.60	10.75	1.41	.38	3.38	4.25	11.00	3.50	2.97	2.38	8.00	4.25	1.63	4.10

4:1 Design Factor.

Open Swivel Bail

- Open Swivel Bail for attachment to link chain.
  - BL-E with self-closing gate
  - BL-G with manual-closing gate
- Suitable for positioning before lifting.
- Crosby Bullard® Hooks incorporate QUIC-CHECK® deformation and angle indicators. (For detailed information, see the Crosby Value Added page at the beginning of this section.)



Load Rated CE

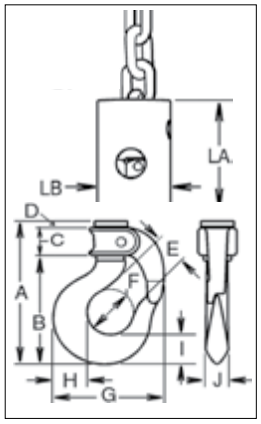
Open Swivel Bail

Hook Size	BL-E Stock No.	BL-G Stock No.	Gate Type	WLL (short Tons)*	Weight Each (lb)	Dimensions (in)													
						A	B	C	D	E	F	G	H	I	J	UA	UB	UC	UD
3	1051607	1051706	PIN-LOK	1.3	1.8	4.50	3.31	.94	.22	1.06	1.38	3.19	.94	.84	.63	2.08	2.31	.52	.38
4	1051618	1051717	PIN-LOK	1.5	2.1	4.88	3.63	1.00	.22	1.13	1.50	3.63	1.16	1.00	.75	2.14	2.31	.52	.38
5	1051629	1051728	ROLLOX	2.1	3.2	5.63	4.12	1.23	.25	1.25	1.64	4.09	1.31	1.12	.84	2.56	2.63	.62	.44

4:1 Design Factor.

Link Chain Nest

- With ball bearing swivel; attaches to chain by an alloy pin.
  - BL-O with self-closing gate
  - BL-P with manual-closing gate
- Suitable for frequent rotation under load.
- Crosby Bullard® Hooks incorporate QUIC-CHECK® deformation and angle indicators. (For detailed information, see the Crosby Value Added page at the beginning of this section.)



4

Load Tested QUIC-CHECK® Q&T CE

APPLICATION AND WARNING INFORMATION
SECTION 17

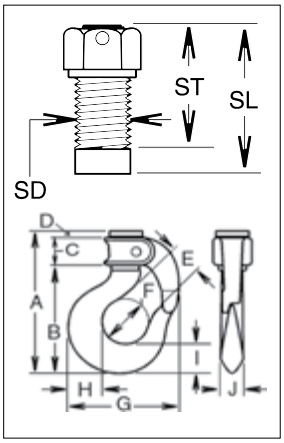
Link Chain Nest

Chain Size	BL-O Stock No.	BL-P Stock No.	Gate Type	WLL (short Tons)*	Weight Each (lb)	Dimensions (in)											
						A	B	C	D	E	F	G	H	I	J	LA	LB
4:1/4-9/32	1051409	1051508	PIN-LOK	1.5	2.5	4.88	3.63	1.00	.22	1.06	1.50	3.63	1.16	1.00	.75	2.65	1.75
5:5/16-3/8	1051442	1051541	ROLLOX	2.1	4.5	5.53	4.12	1.23	.25	1.25	1.64	4.10	1.31	1.12	.84	3.00	2.25
7:3/8-7/16	1051464	1051563	ROLLOX	3.8	11.0	6.61	5.21	1.12	.25	1.50	2.00	4.94	1.63	1.44	1.13	4.38	3.00
7:1/2-9/16	1051486	1051585	ROLLOX	3.8	11.0	6.61	5.21	1.12	.25	1.50	2.00	4.94	1.63	1.44	1.13	4.38	3.00

4:1 Design Factor.

Standard Length

- For use on existing load blocks, with standard shank length.
  - BL-D with self-closing gate
  - BL-B with manual-closing gate
- Numbers 2 through 12 style hooks are threaded approximately 80% of shank length.
- Crosby Bullard® Hooks incorporate QUIC-CHECK® deformation and angle indicators. (For detailed information, see the Crosby Value Added page at the beginning of this section.)



QUIC-CHECK® Q&T CE

APPLICATION AND WARNING INFORMATION
SECTION 17

Standard Length Shank Hooks

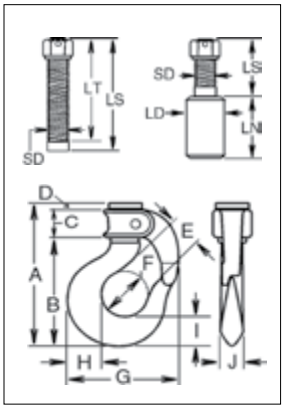
Hook Size	BL-D Stock No.	BL-B Stock No.	Gate Type	WLL (short Tons)*	Weight Each (lb)	Dimensions (in)												
						A	B	C	D	E	F	G	H	I	J	SD	SL	ST
2	1050606	1050408	PIN-LOK	.91	1.1	4.12	3.00	.93	.16	.97	1.25	2.88	.81	.75	.56	.50	.91	.59
3	1050617	1050419	PIN-LOK	1.3	1.3	4.50	3.31	.94	.22	1.06	1.38	3.19	.94	.84	.63	.56	1.25	.75
4	1050628	1050430	PIN-LOK	1.5	1.7	4.88	3.63	1.00	.22	1.13	1.50	3.63	1.16	1.00	.75	.63	1.31	1.19
5	1050639	1050441	ROLLOX	2.1	2.5	5.63	4.12	1.23	.25	1.25	1.64	4.09	1.31	1.12	.84	.75	1.31	1.00
6	1050650	1050452	ROLLOX	3.6	3.5	6.23	4.70	1.25	.25	1.39	1.64	4.56	1.57	1.34	.97	.88	1.69	1.16
7	1050661	1050463	ROLLOX	3.8	5.2	6.61	5.21	1.12	.25	1.50	2.00	4.94	1.63	1.44	1.13	1.00	1.81	1.38
8	1050672	1050474	ROLLOX	5.0	7.1	7.17	5.80	1.06	.28	1.75	2.25	5.84	2.00	1.65	1.23	1.13	2.06	1.50
9	1050683	1050485	ROLLOX	6.5	9.5	7.85	6.45	1.06	.31	1.88	2.50	6.50	2.06	1.81	1.38	1.25	2.44	1.81
11	1050694	1050496	TIP-LOK	8.3	15.6	9.62	8.00	1.25	.31	2.25	3.00	7.56	2.63	2.25	1.62	1.50	2.69	1.88
12	1050705	1050507	TIP-LOK	11.2	21.0	10.53	8.84	1.25	.38	2.50	3.25	8.69	2.94	2.59	1.94	1.63	2.88	2.13
13	1050716	1050518	TIP-LOK	13.6	30.0	11.23	9.54	1.25	.38	3.00	3.75	9.63	3.28	2.75	1.94	1.75	3.50	2.20
14	1050727	1050529	TIP-LOK	16.8	40.0	12.60	10.75	1.41	.38	3.38	4.25	11.00	3.50	2.97	2.38	2.00	3.75	2.38

4:1 Factor de diseño.

Crosby

Long Length

- For use on existing load blocks requiring extra shank length.
  - BL-K with self-closing gate
  - BL-I with manual closing gate
- Numbers 4 through 9 style hooks are threaded approximately 80% of shank length.
- Crosby Bullard® Hooks incorporate QUIC-CHECK® deformation and angle indicators.



APPLICATION AND WARNING INFORMATION
SECTION 17

Long Length Shank Hooks

Hook Size	BL-K Stock No.	BL-I Stock No.	Gate Type	WLL (short Tons)*	Weight Each (lb)	Dimensions (in)													
						A	B	C	D	E	F	G	H	I	J	SD	LN	LS	LT
4 :1/2	1051002	1050804	PIN-LOK	1.45	1.9	4.88	3.63	1.00	.22	1.13	1.50	3.63	1.16	1.00	.75	.50	.44	3.19	3.19
4 :9/16	1051013	1050815	PIN-LOK	1.5	1.9	4.88	3.63	1.00	.22	1.13	1.50	3.63	1.16	1.00	.75	.56	.48	3.19	3.19
4 :5/8	1051024	1050826	PIN-LOK	1.5	1.9	4.88	3.63	1.00	.22	1.13	1.50	3.63	1.16	1.00	.75	.63	.55	3.31	3.19
5	1051035	1050837	ROLLOX	2.1	3.0	5.63	4.12	1.23	.25	1.25	1.64	4.09	1.31	1.12	.84	.75	.63	3.56	3.25
6	1051046	1050848	ROLLOX	3.6	3.8	6.23	4.70	1.25	.25	1.39	1.64	4.56	1.57	1.34	.97	.88	.75	4.06	3.54
7	1051057	1050859	ROLLOX	3.8	5.9	6.61	5.21	1.12	.25	1.50	2.00	4.94	1.63	1.44	1.13	1.00	.88	4.56	4.12
8	1051068	1050870	ROLLOX	5.0	7.8	7.17	5.80	1.06	.28	1.75	2.25	5.84	2.00	1.65	1.23	1.12	.94	5.06	4.50
9	1051079	1050881	ROLLOX	6.5	10.8	7.85	6.45	1.06	.31	1.88	2.50	6.50	2.06	1.81	1.38	1.25	1.06	5.56	4.94
12 ‡	1051101	1050903	TIP-LOK	11.2	28.0	10.53	8.84	1.25	.38	2.50	3.25	8.69	2.94	2.59	1.94	1.63	1.56	5.38	4.63
13 ‡	1051112	1050914	TIP-LOK	13.6	35.0	11.23	9.54	1.25	.38	3.00	3.75	9.63	3.28	2.75	1.94	1.75	1.50	7.37	5.75
14 ‡	1051123	1050925	TIP-LOK	16.8	45.0	12.60	10.75	1.41	.38	3.38	4.25	11.00	3.50	2.97	2.38	2.00	2.00	5.38	4.00
16	1051134	1050936	TIP-LOK	30.0	103.0	15.29	13.10	1.50	.63	4.00	5.00	13.62	4.63	3.63	3.00	2.75	2.75	16.00	7.00
17	1051156	1050958	TIP-LOK	60.0	370.0	24.20	20.57	2.63	.94	5.75	7.00	18.50	6.50	6.00	4.44	4.00	3.94	22.75	14.00

4:1 Design Factor. ‡Hook will have the shank extended by use of a Coupling Nut. Customer is required to complete and approve side 2 of a Crosby Bullard® hook data form.

Crosby® / Bullard Golden Gate Hooks Service Parts

Hook Size	Gate Type	BL-GA Gate Assemblies		BL-RK Gate Repair Kit Stock No.
		Manual Close Stock No.	Self Close Stock No.	
2	PIN-LOK	1100298	1100309	1100101
3	PIN-LOK	1100320	1100331	1100102
4	PIN-LOK	1100342	1100353	1100103
5	ROLLOX	1100364	1100375	1100112
6	ROLLOX	1100386	1100397	1100113
7	ROLLOX	1100408	1100419	1100123
8	ROLLOX	1100430	1100441	1100124
9	ROLLOX	1100452	1100463	1100125
10	TIP-LOK	1100474	1100485	1100133
11	TIP-LOK	1100496	1100507	1100144
12	TIP-LOK	1100518	1100529	1100155
13	TIP-LOK	1100540	1100551	1100166
14	TIP-LOK	1100562	1100573	1100177
15	TIP-LOK	1100584	1100595	1100188
16	TIP-LOK	1100606	1100617	1100199
17	TIP-LOK	1100639	1100628	1100210

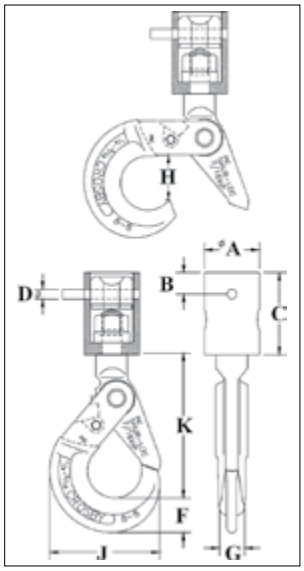
Bullard® QUIC-CHECK® Deformation Indicator Table

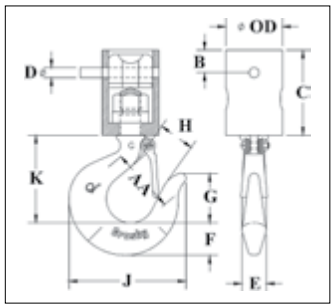
Hook Size	Hook ID Code	AA (in)
1	1	1.50
2	D	1.50
3	F	1.50
4	G	2.00
5	H	2.00
6	6	2.50
7	I	2.50
8	8	3.00
9	J	4.00
11	K	4.00
12	L	4.50
13	13	5.00
14	N	5.00
16	O	6.50
17	T	10.00

O-318

O-319

- With ball bearing swivel; attaches to chain by an alloy pin.
- Suitable for frequent rotation under load.
- HO-318 Hooks utilize Crosby SHUR-LOC® positive locking hooks. Latch is self-locking when hook is loaded.
- O-319 Hooks utilize Crosby® standard 319 Shank Hooks which incorporate QUIC-CHECK® deformation and angle indicators. (For detailed information, see the Crosby Value Added page at the beginning of this section.)
- Entire assembly is zinc plated.
- Repair kit available consisting of bearing and spring pin.





QUIC-CHECK® QT

APPLICATION AND WARNING INFORMATION
SECTION 17

O-318 Chain Nest Hooks

Chain Size (in)	Stock No.	WLL (short Tons)*	Weight Each (lb)	Dimensions (in)									Replacement Trigger Kit Stock No.
				A	B	C	D	F	G	H	J	K	
1/4 - 9/32	1098409	1.5	1.7	1.75	.70	2.62	.31	1.10	.81	1.46	3.50	4.59	6603011
5/16 - 3/8	1098427	2.1	2.3	2.13	.70	3.19	.38	1.15	.94	1.83	4.35	5.65	6603012
3/8 - 7/16	1098445	3.8	4.2	3.00	1.00	4.38	.50	1.66	1.16	2.11	5.45	7.06	6603013
1/2 - 9/16	1098463	3.8	4.2	3.00	1.00	4.38	.63	1.66	1.16	2.11	5.45	7.06	6603013

4:1 Design Factor.

O-319 Chain Nest Hooks

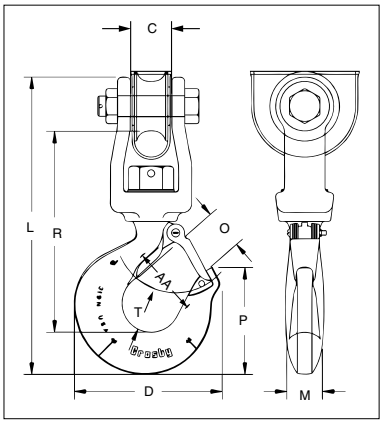
Chain Size (in)	Stock No.	WLL (short Tons)*	Weight Each (lb)	Dimensions (in)											Replacement Trigger Kit Stock No.
				OD	AA	B	C	D	E	F	G	H	J	K	
1/4 - 9/32	1098312	1.5	1.7	1.75	2.00	.70	2.62	.31	.75	1.00	1.53	1.00	3.62	2.69	1096421
5/16 - 3/8	1098334	2.1	2.3	2.13	2.00	.70	3.19	.38	.84	1.12	1.72	1.12	4.09	3.06	1096468
3/8 - 7/16	1098356	3.8	4.2	3.00	2.50	1.00	4.38	.50	1.12	1.44	2.12	1.34	4.84	3.78	1096515
1/2 - 9/16	1098378	3.8	4.2	3.00	2.50	1.00	4.38	.63	1.12	1.44	2.12	1.34	4.84	3.78	1096515

4:1 Design Factor. *Deformation indicators.

Crosby

S-3319

- Designed for utility applications using synthetic rope.
- Suitable for positioning before lifting.
- Hook is forged alloy steel, Quenched & Tempered.
- Design of hook provides needed overhaul weight.
- Utilizes spool & shield designed to protect rope and keep rope positioned correctly on spool.
- Spool provides wider rope bearing surface resulting in an increased area for load distribution and reduces rope abrasion.



CE Q&T QUIC-CHECK®

APPLICATION AND WARNING INFORMATION
SECTION 17

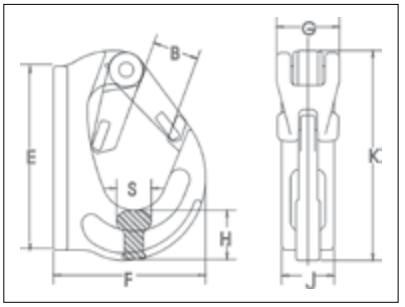
S-3319 Utility Swivel Hook

Working Load Limit (t)*	Stock No.	Weight Each (lb)	Hook ID Code	Synthetic Rope Size (in)	Dimensions (in)									Replacement Latch Kit Stock No.
					C	D	L	M	O	P	R	T	AA*	
1.63	1002054	4.2	HA	9/16 - 5/8	1.09	3.99	8.75	.94	1.16	2.78	5.94	1.16	2.00	1096468
2.50	1002063	8.0	IA	3/4 - 13/16	1.31	4.84	10.56	1.13	1.41	3.47	7.06	1.53	2.50	1096515
4.50	1002072	15.0	JA	7/8 - 1-1/16	1.78	6.29	12.75	1.44	1.78	4.59	8.69	1.94	3.00	1096562

5:1 Design Factor. Maximum allowable proof load is 2 times the Working Load Limit. *Deformation indicators.

BH-313

- Wide range of sizes available: 1-10 metric ton capacity.
- Forged alloy steel.
- Designed for attachment to mobile lifting equipment to provide a pick point for easy sling attachment.
- Large weld pad.
- Heavy duty latch interlocks with the hook tip. Replacement latches are available.
- Detailed installation and application instructions included with each hook.



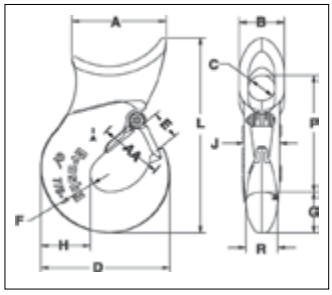
BH-313 Weld-On Hooks

Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)								Replacement Latch Stock No.
			B	E	F	G	H	J	K	S	
1	1029105	1.15	.91	3.82	2.80	1.42	1.06	1.02	4.21	.71	1092104
2	1029114	1.85	.91	3.23	3.58	1.42	.98	1.34	4.53	.83	1092104
3	1029123	2.60	1.14	4.61	4.13	1.42	1.22	1.42	5.16	.94	1092104
4	1029132	4.19	1.34	5.16	4.49	1.81	1.42	1.69	5.79	1.14	1092105
5	1029141	5.62	1.34	6.34	5.24	1.85	1.77	1.73	6.81	1.14	1092105
8	1029150	7.28	1.38	6.54	5.31	1.85	2.05	2.05	7.01	1.54	1092105
10	1029169	11.02	1.93	8.07	6.61	1.85	2.24	2.13	8.74	1.54	1092106

5:1 Design Factor.

A-350L

- New style incorporates throat opening equal to or larger than old style hooks.
- Each product has a Product Identification Code (PIC) for material traceability, along with a Working Load Limit, and the name Crosby or "CG" forged into it.
- All hooks incorporate Crosby's patented QUIC-CHECK® deformation indicators to help in determining if throat opening dimension has changed.
- Each hook is equipped with a Crosby S-4320 heavy duty stamped latch with the high cycle, long life spring.
- Forged alloy steel, Quenched & Tempered.



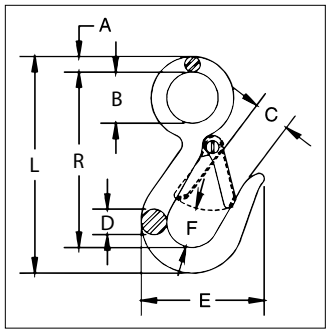
A-350L Sliding Choker Hook

Single Part Rope Size (in)	Eight Part Rope Size (in)	Stock No.	WLL (lb)	Weight Each (lb)	Dimensions (in)												Hook Frame Code	Replacement Latch Kit Stock No.
					A	B	C	D	E	F	G	H	L	P	R	AA*		
3/8	-	1011802	2500	1.0	2.06	1.13	.63	2.41	.63	.38	.84	.91	4.28	2.59	.63	1.50	DA	1096325
1/2	1/8	1011811	3800	1.4	2.25	1.31	.75	2.97	.78	.50	.97	1.06	4.97	3.09	.75	1.50	FA	1096374
† 5/8	-	1011820	5800	3.0	3.06	1.63	.75	3.56	.94	.56	1.13	1.31	6.38	3.88	1.00	2.00	GA	1096421
† 5/8	3/16	1011839	5800	2.7	3.06	1.63	1.00	3.56	.94	.56	1.13	1.31	6.38	4.00	1.13	2.00	GA	1096421
† 3/4	-	1011848	8200	4.4	3.38	2.13	1.00	4.25	1.16	.63	1.44	1.63	7.66	4.58	1.13	2.50	HA	1096468
† 3/4	1/4	1011857	8200	3.8	3.38	2.13	1.44	4.25	1.16	.63	1.44	1.63	7.66	4.78	1.13	2.50	HA	1096468
†† 7/8-1	-	1028177	15000	9.70	4.41	2.12	1.25	6.06	1.41	.88	2.00	2.33	9.55	5.72	1.50	3.00	IA	1096515

*Deformation indicators. †Determine eye diameter "C" before ordering. ††7/8-1" is cast steel.

G-3315

- Forged carbon steel, Quenched & Tempered.
- Pressed steel latches and stainless steel springs, bolts and nuts.
- For replacement latch kit, order Stock No. 9900299.
- Hook body - galvanized.
- Suitable for overhead lifting if provisions are made for meeting applicable standards and the specific lifting requirements.



G-3315 Snap Hook

Hook Size (in)	Stock No.	Working Load Limit (lb)*	Weight Each (lb)	Dimensions (in)							
				A	B	C	D	E	F	L	R
7/16	1023056	750	.23	.25	.75	.75	.44	2.25	.75	3.94	3.25
9/16	1023074	1000	.48	.34	1.12	.81	.56	2.69	.88	4.75	3.84

4:1 Design Factor.

Crosby

S-377

- Forged carbon steel, Quenched & Tempered.
- The resultant load on each hook cannot exceed 1,000 lb.
- Meets the performance requirements of Federal Specification RR-C-271G, Type V, Class 6, except for those provisions required of the contractor.

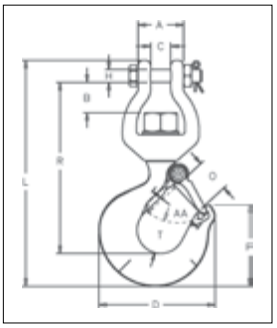
S-377 Barrel Hooks

Working Load Limit Per Pair (t)*	Stock No. Per Pair	Weight Each Per Pair (lb)	Dimensions (in)			
			I.D. of Eye	O.D. of Eye	Overall Length	Width of Lip
1.0	1028248	3.56	1.56	2.81	5.00	2.88

4:1 Design Factor.

S-3316

- Easily attaches to any chain and electric hoist with welded link load chain, roller chain or wire rope with suitable end fitting.
- Swivel jaw is forged.
- Suitable for positioning before lifting.



APPLICATION AND WARNING INFORMATION
SECTION 17

Lead Tested

S-3316 Replacement Hook

Working Load Limit (t)*	Frame Code	Stock No.	Weight Each (lb)	Dimensions (in)										Replacement Latch Kit Stock No.
				A	B	C	D	H	L	O	P	R	T	
.45	F	1023029	1.25	1.32	.70	.56	3.15	.38	6.27	.96	2.22	4.74	.99	1096374
.91	H	1023047	2.61	1.57	1.00	.67	3.99	.44	7.77	1.16	2.78	5.89	1.16	1096468

5:1 Design Factor.

A-378

- Forged alloy steel, Quenched & Tempered.
- Deep straight throat permits efficient handling of flat plates or large cylindrical shapes.

A-378 with Handle

A-378 Sorting Hook

Working Load Limit at tip of Hook (t)*	Working Load Limit at bottom of Hook (t)*	Stock No	Style	Weight Each (lb)	Dimensions (in)			
					I.D. of Eye	Overall Length	Opening at top of Hook	Radius at bottom of Hook
2	7-1/2	1028024	No Handle	6.42	1.38	9.69	2.81	.625
2	7-1/2	1028033	With Handle	6.42	1.38	9.69	2.81	.625

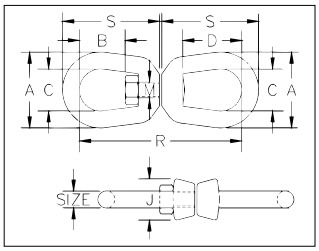
4:1 Design Factor.

Crosby® Forged Swivels

- 402 and 403 forged swivels are positioning devices and are not intended to rotate under load.
- Hot-dip galvanized.
- Quenched & Tempered.
- Crosby products meet or exceed all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, Crosby products meet other critical performance requirements, including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.
- G-402 swivels meet the performance requirements of Federal Specification RR-C-271G, Type VII, Class 2, except for those provisions required of the contractor.
- G-403 swivels meet the performance requirements of Federal Specification RR-C-271G, Type VII, Class 3, except for those provisions required of the contractor.

1/4" - 1 1/4" size

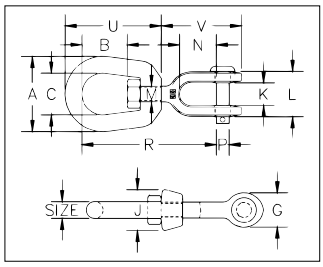
1 1/2" size



G-402 Regular Swivels

Size (in)	Stock No.	Working Load Limit (lb)*	Weight Each (lb)	Dimensions (in)							
				A	B	C	D	J	M	R	S
1/4	1016019	850	.21	1.25	.69	.75	1.06	.69	.31	2.94	1.69
5/16	1016037	1250	.39	1.63	.81	1.00	1.25	.81	.38	3.56	2.06
3/8	1016055	2250	.71	2.00	.94	1.25	1.50	1.00	.50	4.31	2.50
1/2	1016073	3600	1.32	2.50	1.31	1.50	2.00	1.31	.63	5.44	3.19
5/8	1016091	5200	2.49	3.00	1.56	1.75	2.38	1.50	.75	6.56	3.88
3/4	1016117	7200	4.02	3.50	1.75	2.00	2.63	1.88	.88	7.19	4.31
7/8	1016135	10000	6.25	4.00	2.06	2.25	3.06	2.13	1.00	8.38	5.00
1	1016153	12500	8.95	4.50	2.31	2.50	3.50	2.38	1.13	9.63	5.75
1-1/4	1016199	18000	16.37	5.63	2.69	3.13	3.69	3.00	1.50	11.44	6.75
1-1/2+	1016215	45200	45.79	7.09	3.88	4.09	3.88	3.75	2.25	16.69	9.91

5:1 Design Factor.



G-403 Jaw End Swivels

Size (in)	Stock No.	Working Load Limit (lb)*	Weight Each (lb)	Dimensions (in)												
				A	B	C	G	J	K	L	M	N	P	R	U	V
1/4	1016395	850	.21	1.25	.69	.75	.69	.69	.47	1.03	.31	.88	.25	2.63	1.69	1.69
5/16	1016411	1250	.34	1.63	.81	1.00	.81	.81	.50	1.13	.38	.88	.31	2.94	2.06	1.81
3/8	1016439	2250	.66	2.00	.94	1.25	1.00	1.00	.63	1.41	.50	1.06	.38	3.63	2.50	2.25
1/2	1016457	3600	1.34	2.50	1.31	1.50	1.31	1.31	.75	1.75	.63	1.31	.50	4.50	3.19	2.88
5/8	1016475	5200	2.48	3.00	1.56	1.75	1.63	1.50	.94	2.06	.75	1.50	.63	5.31	3.88	3.44
3/4	1016493	7200	3.88	3.50	1.75	2.00	1.88	1.88	1.13	2.53	.88	1.75	.75	6.06	4.31	4.00
7/8	1016518	10000	5.87	4.00	2.06	2.25	2.13	2.13	1.34	2.79	1.00	2.06	.88	7.00	5.00	4.53
1	1016536	12500	9.84	4.50	2.31	2.50	2.63	2.38	1.75	3.72	1.13	2.81	1.13	8.56	5.75	5.94
1-1/4	1016572	18000	15.75	5.69	2.69	3.13	3.13	3.00	2.06	4.31	1.63	2.81	1.38	9.75	7.06	6.38
1-1/2	1016590	45200	54.75	7.00	3.88	4.00	5.63	4.00	2.88	6.00	2.25	4.44	2.25	14.25	10.00	10.84

5:1 Design Factor.

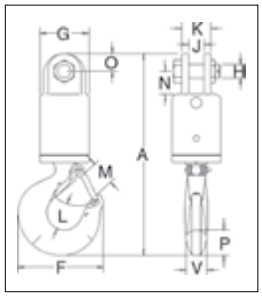
Crosby

Crosby® Tapered Roller Bearing Swivels

- Equipped with tapered roller thrust bearing.
- Suitable for frequent rotation under load.
- All swivels individually proof tested to 2 times the Working Load Limit with labeled documentation.
- All hooks furnished with latches assembled.
- All jaws complete with bolts, nuts, and cotter pins.
- Pressure lube fitting provided.
- NOT TO BE USED ON DEMOLITION (WRECKING) BALLS.
- Other types and capacities up to 1,250t available to meet your requirements. Visit thecrosbygroup.com/engineeredsolutions for more information.
- IMPORTANT - Crosby swivels should only be used with the recommended wire rope. Contact the wire rope manufacturer for the proper wire rope to be used with Crosby swivels.

Load Rated QUIC-CHECK CE

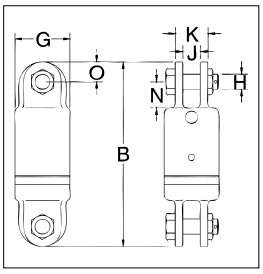
S-1 Jaw & Hook



Swivel No.	Stock No.	Working Load Limit (t)*	Wire Rope Size (in)	Weight Each (lb)	Dimensions (in)											
					A	F	G	H	J	K	L	M	N	O	P	V
3-S-1	297011	3	1/2	9.81	11.44	4.84	2.75	.75	.88	1.62	1.53	1.41	1.31	1.00	1.44	1.12
5-S-1	297217	5	5/8	15.51	13.34	6.28	3.00	.88	1.00	2.25	1.94	1.69	1.62	1.12	1.81	1.44
8-S-1	297413	8.5	3/4	29.42	16.45	7.54	4.00	1.00	1.56	2.81	2.46	2.22	2.12	1.38	2.25	1.62
10-S-1	297618	10	7/8	46.75	19.75	8.34	4.50	1.50	1.75	3.38	2.59	2.41	3.50	1.75	2.59	1.94
15-S-1	297814	15	1	73.75	22.24	10.34	5.00	1.50	1.75	3.38	2.81	3.19	3.50	1.75	3.00	2.38
25-S-1	298118	25	-	140.00	26.78	13.62	6.00	2.00	2.00	4.62	3.44	3.62	3.69	2.38	3.66	3.00
35-S-1	298216	35	-	220.00	29.94	14.06	6.50	2.00	2.00	4.62	3.88	3.75	3.69	2.38	4.56	3.19
45-S-1	298314	45	-	251.00	35.06	15.44	7.00	2.25	2.50	5.00	4.75	4.25	4.00	3.00	5.06	3.25

5:1 Design Factor. Individually Proof Tested to 2 times the Working Load Limit.

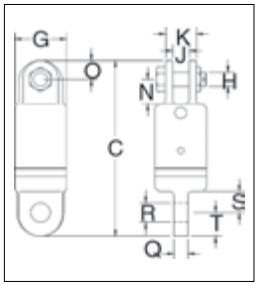
S-2 Jaw & Jaw



Swivel No.	Stock No.	Working Load Limit (t)*	Wire Rope Size (in)	Weight Each (lb)	Dimensions (in)						
					B	G	H	J	K	N	O
3-S-2	297020	3	1/2	9.63	9.28	2.75	.75	.88	1.62	1.31	1.00
5-S-2	297226	5	5/8	13.69	10.31	3.00	.88	1.00	2.25	1.62	1.12
8-S-2	297422	8.5	3/4	26.16	12.62	4.00	1.00	1.56	2.81	2.12	1.38
10-S-2	297627	10	7/8	45.75	16.75	4.50	1.50	1.75	3.38	3.50	1.75
15-S-2	297823	15	1	62.75	17.12	5.00	1.50	1.75	3.38	3.50	1.75
25-S-2	298127	25	-	140.00	20.75	6.00	2.00	2.00	4.62	3.69	2.38
35-S-2	298225	35	-	155.00	20.75	6.50	2.00	2.00	4.62	3.69	2.38
45-S-2	298323	45	-	235.00	25.25	7.00	2.25	2.50	5.00	4.00	3.00

5:1 Design Factor. Individually Proof Tested to 2 times the Working Load Limit.

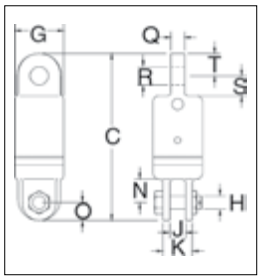
S-3 Jaw & Eye



Swivel No.	Stock No.	Working Load Limit (t)*	Wire Rope Size (in)	Weight Each (lb)	Dimensions (in)										
					C	G	H	J	K	N	O	Q	R	S	T
3-S-3	297039	3	1/2	9.12	9.34	2.75	.75	.88	1.62	1.31	1.00	.75	1.03	1.12	1.25
5-S-3	297235	5	5/8	13.50	10.06	3.00	.88	1.00	2.25	1.62	1.12	1.00	1.28	1.25	1.25
8-S-3	297431	8.5	3/4	24.90	12.25	4.00	1.00	1.56	2.81	2.12	1.38	1.25	1.41	1.62	1.50
10-S-3	297636	10	7/8	43.50	16.12	4.50	1.50	1.75	3.38	3.50	1.75	1.69	1.69	2.75	1.88
15-S-3	297832	15	1	61.00	16.75	5.00	1.50	1.75	3.38	3.50	1.75	1.94	2.03	2.75	2.12
25-S-3	298136	25	-	135.00	21.50	6.00	2.00	2.00	4.62	3.69	2.38	2.25	2.31	3.88	2.38
35-S-3	298234	35	-	150.00	21.50	6.50	2.00	2.00	4.62	3.69	2.38	2.25	2.31	3.88	2.38
45-S-3	298332	45	-	225.00	25.88	7.00	2.25	2.50	5.00	4.00	3.00	2.50	2.53	4.00	3.00

5:1 Design Factor. Individually Proof Tested to 2 times the Working Load Limit.

S-4 Eye & Jaw

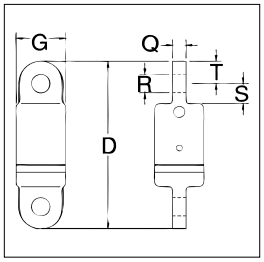


Swivel No.	Stock No.	Working Load Limit (t)*	Wire Rope Size (in)	Weight Each (lb)	Dimensions (in)										
					C	G	H	J	K	N	O	Q	R	S	T
3-S-4	297048	3	1/2	9.00	9.34	2.75	.75	.88	1.62	1.31	1.00	.75	1.03	1.12	1.25
5-S-4	297244	5	5/8	12.33	10.06	3.00	.88	1.00	2.25	1.62	1.12	1.00	1.28	1.25	1.25
8-S-4	297440	8.5	3/4	29.00	12.25	4.00	1.00	1.56	2.81	2.12	1.38	1.25	1.41	1.62	1.50
10-S-4	297645	10	7/8	44.00	16.12	4.50	1.50	1.75	3.38	3.50	1.75	1.69	1.69	2.75	1.88
15-S-4	297841	15	1	61.00	16.75	5.00	1.50	1.75	3.38	3.50	1.75	1.94	2.03	2.75	2.12
25-S-4	298145	25	-	135.00	21.50	6.00	2.00	2.00	4.62	3.69	2.38	2.25	2.31	3.88	2.38
35-S-4	298243	35	-	150.00	21.50	6.50	2.00	2.00	4.62	3.69	2.38	2.25	2.31	3.88	2.38
45-S-4	298341	45	-	225.00	25.88	7.00	2.25	2.50	5.00	4.00	3.00	2.50	2.53	4.00	3.00

5:1 Design Factor. Individually Proof Tested to 2 times the Working Load Limit.

4

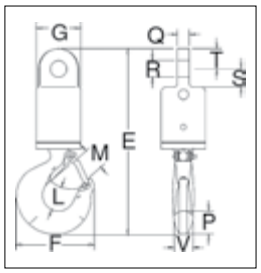
S-5 Eye & Eye



Swivel No.	Stock No.	Working Load Limit (t)*	Wire Rope Size (in)	Weight Each (lb)	Dimensions (in)					
					D	G	Q	R	S	T
3-S-5	297057	3	1/2	8.50	9.41	2.75	.75	1.03	1.12	1.25
5-S-5	297253	5	5/8	11.30	9.81	3.00	1.00	1.28	1.25	1.25
8-S-5	297459	8.5	3/4	29.25	11.88	4.00	1.25	1.41	1.62	1.50
10-S-5	297654	10	7/8	42.00	15.50	4.50	1.69	1.69	2.75	1.88
15-S-5	297850	15	1	49.00	16.38	5.00	1.94	2.03	2.75	2.12
25-S-5	298154	25	-	130.00	22.25	6.00	2.25	2.31	3.88	2.38
35-S-5	298252	35	-	145.00	22.25	6.50	2.25	2.31	3.88	2.38
45-S-5	298350	45	-	215.00	26.50	7.00	2.50	2.53	4.00	3.00

5:1 Design Factor. Individually Proof Tested to 2 times the Working Load Limit.

S-6 Eye & Hook



Swivel No.	Stock No.	Working Load Limit (t)*	Wire Rope Size (in)	Weight Each (lb)	Dimensions (in)										
					E	F	G	L	M	P	Q	R	S	T	V
3-S-6	297066	3	1/2	9.32	11.50	4.84	2.75	1.53	1.41	1.44	.75	1.03	1.12	1.25	1.12
5-S-6	297262	5	5/8	14.24	13.09	6.28	3.00	1.94	1.69	1.81	1.00	1.28	1.25	1.25	1.44
8-S-6	297468	8.5	3/4	32.00	16.07	7.54	4.00	2.46	2.22	2.25	1.25	1.41	1.62	1.50	1.62
10-S-6	297663	10	7/8	45.50	19.12	8.34	4.50	2.59	2.41	2.59	1.69	1.69	2.75	1.88	1.94
15-S-6	297869	15	1	63.00	21.24	10.34	5.00	2.81	3.19	3.00	1.94	2.03	2.75	2.12	2.38
25-S-6	298163	25	-	135.00	27.53	13.62	6.00	3.44	3.62	3.66	2.25	2.31	3.88	2.38	3.00
35-S-6	298261	35	-	215.00	30.69	14.06	6.50	3.88	3.75	4.56	2.25	2.31	3.88	2.38	3.19
45-S-6	298369	45	-	270.00	35.69	15.44	7.00	4.75	4.25	5.06	2.50	2.53	4.00	3.00	3.25

5:1 Design Factor. Individually Proof Tested to 2 times the Working Load Limit.

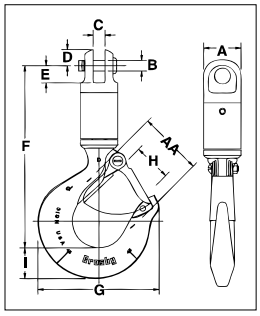
Crosby

Crosby® Angular Contact Bearing Swivels

- Designed for high rotation speed, lower torque required to initiate rotation.
- Angular contact bearings maximize efficiency, reliability, and service life of swivel and extend the life of the wire rope.
- Entire swivel is zinc plated to resist corrosion.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Hook models utilize genuine Crosby hooks which are forged alloy steel, quenched and tempered, and contain patented QUIC-CHECK® markings.
- Each swivel 8.5 short Tons and larger is furnished with a pressure lubrication fitting.
- For swivels larger than those listed, visit thecrosbygroup.com/engineeredsolutions for more information.

Load Tested QUIC-CHECK CE

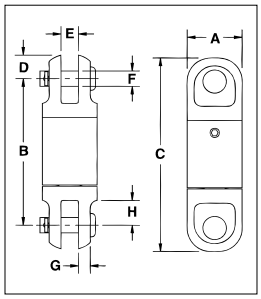
AS-1 Jaw & Hook



AS-1 JAW & HOOK				Dimensions (in)									Deformation Indicator AA	Replacement Latch Kit Stock No.
Working Load Limit (t)*	Wire Rope Size (in)	Stock No.	Weight Each (lb)	A	B	C	D	E	F	G	H	I		
.40	1/8	1016001	.7	.88	.25	.25	.38	.41	4.32	2.86	.93	.73	1.50	1096325
.68	1/4	1016010	1.5	1.31	.38	.31	.44	.56	5.44	3.16	.97	.84	1.50	1096374
1.35	3/8	1016025	2.3	1.63	.50	.53	.69	.78	6.35	4.00	1.16	1.14	1.50	1096374
2.70	1/2	1016026	6.5	2.00	.75	.75	.94	1.19	8.69	4.84	1.41	1.44	2.50	1096374
4.50	5/8	1016040	12.9	2.50	.88	1.00	1.13	1.53	10.71	6.28	1.69	1.82	3.00	1096562
7.65	3/4	1016045	26.4	3.00	1.19	1.56	1.34	2.09	13.65	8.34	2.41	2.60	4.00	1096657
9.00	7/8	1016056	53.0	4.00	1.50	1.75	1.75	3.50	17.95	10.34	3.19	3.00	5.00	1096704
13.5	1	1016064	53.0	4.00	1.50	1.75	1.75	3.50	17.95	10.34	3.19	3.00	5.00	1096704
22.5	1-1/4	1016075	97.0	5.00	2.00	2.00	2.38	3.69	20.88	13.62	3.25	3.62	6.50	1090161
31.5	1-1/2	1016082	140.0	5.00	2.00	2.00	2.38	3.69	24.00	14.06	3.00	4.56	7.00	1090189

5:1 Design Factor. Individually Proof Tested to 2 times the Working Load Limit.

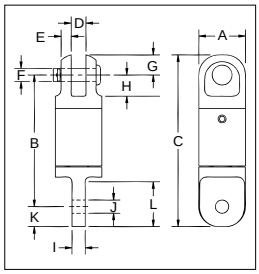
AS-2 Jaw & Jaw



AS-2 JAW & JAW				Dimensions (in)							
Working Load Limit (t)*	Wire Rope Size (in)	Stock No.	Weight Each (lb)	A	B	C	D	E	F	G	H
.40	1/8	1016103	.4	.88	2.38	3.13	.38	.25	.25	.19	.41
.68	1/4	1016114	.9	1.31	3.56	4.44	.44	.31	.38	.22	.56
1.35	3/8	1016122	2.0	1.63	4.06	5.44	.69	.50	.50	.28	.78
2.70	1/2	1016131	4.9	2.00	6.25	8.13	.94	.75	.75	.38	1.19
4.50	5/8	1016139	9.6	2.50	7.75	10.63	1.13	1.00	.88	.53	1.53
7.65	3/4	1016148	15.8	3.00	9.63	12.31	1.34	1.56	1.19	.56	2.09
9.00	7/8	1016157	40.0	4.00	14.00	17.50	1.75	1.75	1.50	.81	3.50
13.5	1	1016166	40.0	4.00	14.00	17.50	1.75	1.75	1.50	.81	3.50
22.5	1-1/4	1016175	78.0	5.00	15.94	20.69	2.38	2.00	2.00	1.13	3.69
31.5	1-1/2	1016184	78.0	5.00	15.94	20.69	2.38	2.00	2.00	1.13	3.69

5:1 Design Factor. Individually Proof Tested to 2 times the Working Load Limit.

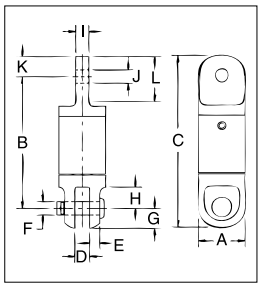
AS-3 Jaw & Eye



AS-3 JAW & EYE				Dimensions (in)											
Working Load Limit (t)*	Wire Rope Size (in)	Stock No.	Weight Each (lb)	A	B	C	D	E	F	G	H	I	J	K	L
.40	1/8	1016205	.3	.88	2.50	3.25	.25	.19	.25	.38	.41	.25	.25	.38	.84
.68	1/4	1016216	.9	1.31	3.69	4.56	.31	.22	.38	.44	.56	.31	.38	.44	.88
1.35	3/8	1016224	1.9	1.63	4.19	5.44	.50	.28	.50	.69	.78	.50	.66	.63	1.38
2.70	1/2	1016232	4.6	2.00	6.19	8.13	.75	.38	.75	.94	1.19	.75	.91	1.00	2.00
4.50	5/8	1016243	9.1	2.50	7.88	10.19	1.00	.53	.88	1.13	1.50	1.00	1.25	1.19	2.63
7.65	3/4	1016250	15.6	3.00	9.50	12.25	1.56	.56	1.25	1.34	2.09	1.25	1.41	1.50	3.13
9.00	7/8	1016259	39.0	4.00	13.75	17.31	1.75	.81	1.50	1.75	3.50	1.72	1.63	1.81	4.69
13.5	1	1016268	40.0	4.00	13.44	17.31	1.75	.81	1.50	1.75	3.50	2.00	2.00	2.13	4.69
22.5	1-1/4	1016277	78.0	5.00	16.00	20.75	2.00	1.13	2.00	2.38	3.69	2.25	2.31	2.38	5.25
31.5	1-1/2	1016286	78.0	5.00	16.00	20.75	2.00	1.13	2.00	2.38	3.69	2.25	2.31	2.38	5.2

5:1 Design Factor. Individually Proof Tested to 2 times the Working Load Limit.

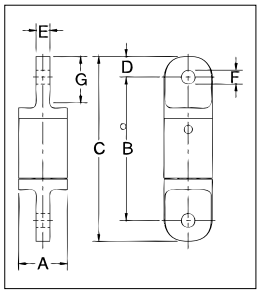
AS-4 Eye & Jaw



AS-4 EYE & JAW				Dimensions (in)											
Working Load Limit (t)*	Wire Rope Size (in)	Stock No.	Weight Each (lb)	A	B	C	D	E	F	G	H	I	J	K	L
.40	1/8	1016306	.3	.88	2.50	3.25	.25	.19	.25	.38	.41	.25	.25	.38	.81
.68	1/4	1016314	.9	1.31	3.63	4.56	.31	.22	.38	.44	.56	.31	.38	.44	.88
1.35	3/8	1016325	1.9	1.63	4.19	5.50	.50	.28	.50	.69	.78	.50	.66	.63	1.34
2.70	1/2	1016332	4.6	2.00	6.19	8.13	.75	.38	.75	.94	1.19	.75	.91	1.00	2.00
4.50	5/8	1016343	9.1	2.50	7.88	10.19	1.00	.53	.88	1.13	1.44	1.00	1.25	1.19	2.63
7.65	3/4	1016352	15.7	3.00	9.44	12.25	1.56	.56	1.19	1.34	2.09	1.25	1.41	1.50	3.13
9.00	7/8	1016361	39.0	4.00	14.13	17.75	1.75	.81	1.50	1.75	3.50	1.72	1.66	1.81	4.69
13.5	1	1016370	40.0	4.00	13.81	17.75	1.75	.81	1.50	1.75	3.50	2.00	2.03	2.13	4.69
22.5	1-1/4	1016375	75.0	5.00	15.94	20.75	2.00	1.13	2.00	2.38	3.69	2.25	2.31	2.38	5.25
31.5	1-1/2	1016379	75.0	5.00	15.94	20.75	2.00	1.13	2.00	2.38	3.69	2.25	2.31	2.38	5.25

5:1 Design Factor. Individually Proof Tested to 2 times the Working Load Limit.

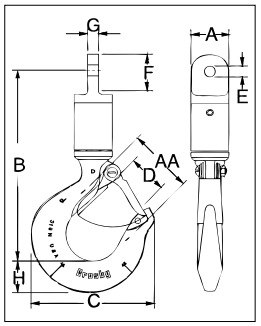
AS-5 Eye & Eye



AS-5 EYE & EYE				Dimensions (in)						
Working Load Limit (t)*	Wire Rope Size (in)	Stock No.	Weight Each (lb)	A	B	C	D	E	F	G
.40	1/8	1016409	.3	.88	2.63	3.38	.38	.25	.25	.81
.68	1/4	1016418	.9	1.31	3.75	4.63	.44	.31	.38	.88
1.35	3/8	1016427	1.8	1.63	4.31	5.56	.63	.50	.66	1.34
2.70	1/2	1016436	4.3	2.00	6.13	8.13	1.00	.75	.91	2.00
4.50	5/8	1016445	8.6	2.50	7.75	10.63	1.19	1.00	1.25	2.63
7.65	3/4	1016454	15.4	3.00	9.31	12.31	1.50	1.25	1.41	3.13
9.00	7/8	1016463	37.0	4.00	13.88	17.50	1.81	1.72	1.63	4.69
13.5	1	1016472	39.0	4.00	13.25	17.50	2.13	2.00	2.13	4.69
22.5	1-1/4	1016481	72.0	5.00	16.00	20.75	2.38	2.25	2.31	5.25
31.5	1-1/2	1016490	72.0	5.00	16.00	20.75	2.38	2.25	2.31	5.25

5:1 Design Factor. Individually Proof Tested to 2 times the Working Load Limit.

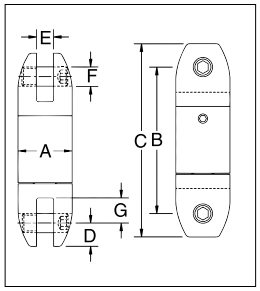
AS-6 Eye & Hook



AS-6 EYE & HOOK				Dimensions (in)								Deformation Indicator AA	Replacement Latch Kit Stock No.
Working Load Limit (t)*	Wire Rope Size (in)	Stock No.	Weight Each (lb)	A	B	C	D	E	F	G	H		
.40	1/8	1016502	.7	.88	4.38	2.86	.93	.25	.81	.25	.73	1.50	1096325
.68	1/4	1016513	1.5	1.31	5.56	3.16	.97	.38	.88	.31	.84	1.50	1096374
1.35	3/8	1016520	2.9	1.63	6.22	4.00	1.16	.66	1.34	.50	1.14	1.50	1096374
2.70	1/2	1016529	6.2	2.00	8.63	4.84	1.41	.91	2.00	.75	1.44	2.50	1096374
4.50	5/8	1016538	12.4	2.50	10.77	6.28	1.69	1.25	2.63	1.00	1.82	3.00	1096562
7.65	3/4	1016547	23.5	3.00	13.52	8.34	2.41	1.40	3.13	1.25	2.60	4.00	1096657
9.00	7/8	1016556	52.0	4.00	18.08	10.34	3.19	1.66	4.69	1.72	3.00	5.00	1096704
13.5	1	1016565	53.0	4.00	17.64	10.34	3.19	2.03	4.69	2.00	3.00	5.00	1096704
22.5	1-1/4	1016574	94.0	5.00	20.88	13.62	3.25	2.34	5.25	2.25	3.62	6.50	1090161
31.5	1-1/2	1016583	138.0	5.00	24.00	14.06	3.00	2.34	5.25	2.25	4.56	7.00	1090189

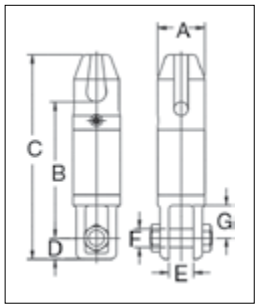
5:1 Design Factor. Individually Proof Tested to 2 times the Working Load Limit.

AS-7 Bullet Style Jaw & Jaw



AS-7 BULLET STYLE JAW & JAW				Dimensions (in)						
Working Load Limit (t)*	Wire Rope Size (in)	Stock No.	Weight Each (lb)	A	B	C	D	E	F	G
.40	1/8	1016604	.4	.88	2.38	3.13	.38	.25	.31	.40
.68	1/4	1016611	1.1	1.31	3.56	4.44	.44	.31	.38	.56
1.35	3/8	1016622	1.8	1.63	4.06	5.19	.56	.50	.44	.81
2.70	1/2	1016631	3.8	2.00	5.44	7.06	.81	.75	.63	.94
4.50	5/8	1016640	8.0	2.50	7.75	10.06	1.13	1.00	.88	1.56
7.65	3/4	1016649	14.5	3.00	9.88	12.38	1.25	1.31	1.00	2.13
9.00	7/8	1016652	40.0	4.00	13.13	16.75	1.75	1.75	1.50	3.25
13.5	1	1016658	40.0	4.00	13.13	16.75	1.75	1.75	1.50	3.25
22.5	1-1/4	1016662	84.0	5.00	15.94	20.75	2.38	2.00	2.00	3.69
31.5	1-1/2	1016667	84.0	5.00	15.94	20.75	2.38	2.00	2.00	3.69

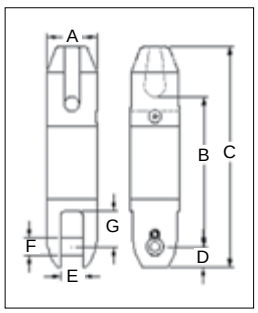
5:1 Design Factor. Individually Proof Tested to 2 times the Working Load Limit.



AS-11 Thimble & Jaw

AS-11 THIMBLE & JAW				Dimensions (in)						
Working Load Limit (t)*	Wire Rope Size (in)	Stock No.	Weight Each (lb)	A	B	C	D	E	F	G
7.65	3/4	1017020	18.0	3.00	8.66	13.00	1.34	1.56	1.19	2.09
13.5	1	1017029	42.0	4.00	11.66	17.53	1.75	1.78	1.50	3.50

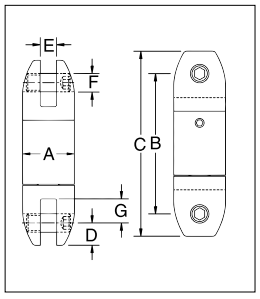
5:1 Design Factor. Individually Proof Tested to 2 times the Working Load Limit.



AS-14 Thimble & Bullet

AS-14 THIMBLE & BULLET				Dimensions (in)						
Working Load Limit (t)*	Wire Rope Size (in)	Stock No.	Weight Each (lb)	A	B	C	D	E	F	G
7.7	3/4	1017255	20.0	3.00	9.00	13.25	1.25	1.31	1.00	2.13
13.6	1	1017258	40.0	4.00	11.50	17.38	1.75	1.75	1.50	3.25
22.7	1-1/4	1017261	81.0	5.00	14.31	21.19	2.38	2.00	2.00	3.69

5:1 Design Factor. Individually Proof Tested to 2 times the Working Load Limit.



AS-17 Bullet Style Jaw & Jaw Slurry Swivel

AS-17 BULLET JAW & SLURRY SWIVEL				Dimensions (in)						
Working Load Limit (t)*	Wire Rope Size (in)	Stock No.	Weight Each (lb)	A	B	C	D	E	F	G
7.65	3/4	8013342	14.5	3.00	10.13	12.63	1.25	1.31	1.00	2.13
13.5	1	8013343	40.0	4.00	13.50	17.00	1.75	1.75	1.50	3.25
22.5	1-1/4	8013376	84.0	5.00	16.16	20.92	2.38	2.00	2.00	3.69
31.5	1-1/2	8013344	84.0	5.00	16.16	20.92	2.38	2.00	2.00	3.69
40.5	-	2016585	150.0	6.00	20.25	26.25	3.00	2.53	2.25	2.75

5:1 Design Factor. Individually Proof Tested to 2 times the Working Load Limit.

BK Safety Hook

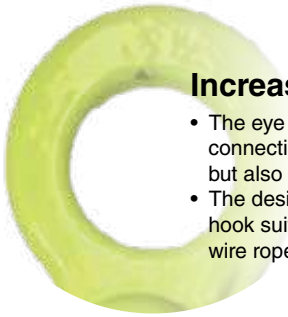
The Original

In 1965, the innovative Gunnebo Industries BK Safety Hook increased job site safety in the construction industry. Today the BK Safety Hook is the foundation of the renowned BK product family.

Watch a BK Safety Hook with Double Latch BKD demo at **thecrosbygroup.com/BKBKDdemo**

Clear markings

- Country of origin.
- Traceability codes.
- Model, size, and grade.



Increased flexibility

- The eye design enables connection to not only G-links, but also C-links and Berglok.
- The design makes the BK hook suitable for steel wire ropes.

Flat section

- For attachment to other GrabiQ or wire components.

Heavy duty rivet

- Recessed rivet for a slim design.
- Decreases the risk of snagging.
- Ideal in narrow spaces.

Latch rotation stop

- Protects the trigger mechanism from damage.

Quality is top priority

- Fatigue tested.
- Forged alloy steel.
- Hardened and tempered.
- Every hook is individually proof-loaded at 2.5 x WLL.
- Full traceability back to the raw material.

Replaceable trigger set

- Quick and easy assembly.
- Available as a complete spare part kit.

Precision manufacturing

- Perfect fit between the parts.
- Increases safety during operation.

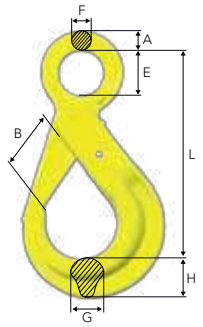
Recessed trigger

- To avoid the trigger from snagging or being damaged, it has been recessed into the body of the hook.
- Helps to prevent the latch from accidentally opening.

Fluorescent color

- For high visibility in the field.

Safety Hook BK

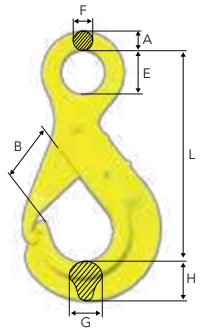


The "original" safety hook with eye connector.

Stock No.	Code	WLL (lb)*	A	L	B	E	F	G	H	Weight (lb)
Z101108	BK-6-10	3306	0.47	4.29	1.14	0.87	0.39	0.59	0.83	1.10
Z101097	BK-7/8-10	5700	0.55	5.43	1.46	1.10	0.43	0.67	1.02	1.98
Z101024	BK-10-10	8800	0.63	6.61	1.77	1.34	0.51	0.83	1.22	3.31
Z101032	BK-13-10	15000	0.79	8.15	2.17	1.73	0.63	1.18	1.57	6.61
Z101040	BK-16-10	22600	1.02	10.00	2.44	2.20	0.79	1.46	1.97	12.13
Z101089	BK-18/20-10	35300	1.18	11.38	2.68	2.36	0.87	1.73	2.52	19.84
Z101325	BK-22-10	44080	1.26	12.60	3.15	2.76	0.94	1.97	2.52	24.91
Z101326	BK-26-10	60169	1.38	13.46	3.94	3.15	0.98	2.13	2.68	36.38

Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M.
For larger sizes, see Classic Grade 8.
4:1 Design Factor

Safety Hook OBK

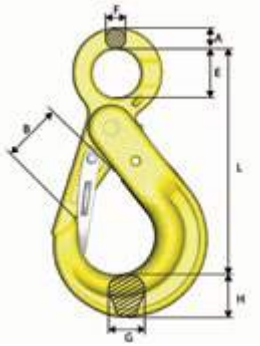


Safety hook with eye connector and grip latch.

Stock No.	Code	WLL (lb)*	A	L	B	E	F	G	H	Weight (lb)
Z101048	OBK-6-10	3306	0.47	4.06	1.02	0.87	0.35	0.59	0.67	0.88
Z101143	OBK-7/8-10	5700	0.55	5.47	1.46	1.10	0.39	0.79	0.87	1.76
Z101145	OBK-10-10	8800	0.63	6.69	1.85	1.34	0.51	0.87	1.14	2.87
Z101147	OBK-13-10	15000	0.83	8.11	2.09	1.73	0.59	1.14	1.50	5.73
Z101141	OBK-16-10	22600	1.02	9.88	2.68	2.20	0.75	1.14	1.77	9.70
Z101240	OBK-18/20-10	35300	1.10	11.54	2.91	2.36	0.87	1.73	2.20	16.09

For larger sizes see Classic Grade 8(OBK-22-8). Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M.
4:1 Design Factor.

Safety Hook BKD

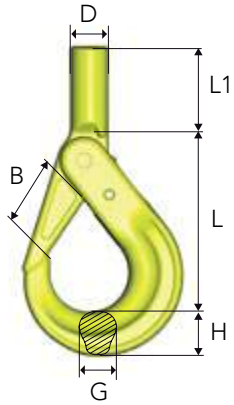


Double latch BK-hook with recessed trigger. Should the first hook latch accidentally open, either through direct impact or excessive wear on the trigger, the extra latch is there to retain the load safely. The secondary latch is designed to be easily operated and will not cause inconvenience for the operator.

Stock No.	Code	WLL (lb)*	A	L	B	E	F	G	H	Weight (lb)
Z101154	BKD-13-10	15000	0.79	8.15	1.73	1.73	0.63	1.18	1.57	7.05
Z101155	BKD-16-10	22600	1.02	10.00	1.89	2.20	0.79	1.46	1.97	12.79
Z101156	BKD-18/20-10	35300	1.18	11.38	2.24	2.36	0.87	1.73	2.44	20.06
Z101373	BKD-26-10 OS	60169	1.38	13.46	2.83	3.15	0.98	2.13	2.68	37.04

Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M.
4:1 Design Factor

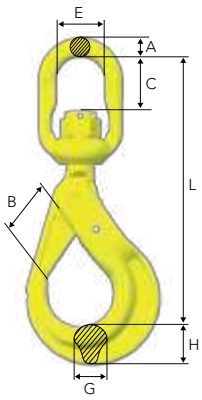
Shank Safety Hook BKT



Safety hook with shank ready for customized machines.

Stock No.	Code	WLL (lb)*	L	B	L1	D	d min	G	H	Weight (lb)
Z1011120	BKT-6-10	3306	3.54	1.14	1.42	0.79	0.43	0.59	0.83	1.10
Z1011020	BKT-7/8-10	5700	4.37	1.46	1.85	0.94	0.51	0.67	1.02	1.98
Z1010690	BKT-10-10	8800	5.24	1.77	2.01	1.14	0.63	0.83	1.22	3.53
Z1010710	BKT-13-10	15000	6.30	2.17	3.03	1.34	0.79	1.18	1.54	6.61

Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M.
d min = the smallest permitted shank dimension after machining.
Note! After machining of the shank, proof loading must be carried out.
4:1 Design Factor

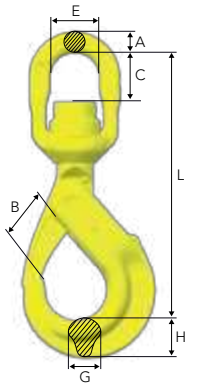


Swivel Safety Hook BKL

Safety hook with swivel for improved positioning of the hook before the load is lifted (360º rotation).

Stock No.	Code	WLL (lb)*	L	B	C	E	A	G	H	Weight (lb)
Z101114	BKL-6-10	3306	5.87	1.14	0.91	1.30	0.43	0.59	0.83	1.54
Z101104	BKL-7/8-10	5700	7.20	1.46	1.06	1.50	0.47	0.67	1.02	2.65
Z101028	BKL-10-10	8800	8.58	1.77	1.46	1.73	0.59	0.83	1.22	4.41
Z101036	BKL-13-10	15000	11.10	2.17	1.93	1.89	0.75	1.18	1.57	8.82
Z101044	BKL-16-10	22600	13.43	2.44	2.56	2.40	0.98	1.46	1.97	15.87
Z101093	BKL-18/20-10	35300	14.49	2.68	2.76	2.83	1.22	1.73	2.44	25.13

Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M.
4:1 Design Factor



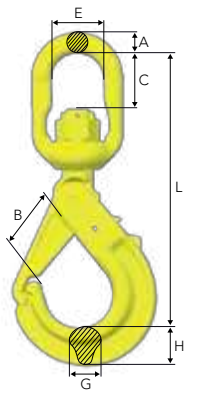
Swivel Safety Hook BKLK

Safety hook with ball-bearing for 360º rotation under full WLL.

Stock No.	Code	WLL (lb)*	L	B	C	E	A	G	H	Weight (lb)
Z101116	BKLK-6-10	3306	5.87	1.14	0.94	1.30	0.43	0.59	0.83	1.54
Z101106	BKLK-7/8-10	5700	7.20	1.46	1.06	1.50	0.47	0.67	1.02	2.65
Z101030	BKLK-10-10	8800	8.58	1.77	1.38	1.73	0.59	0.83	1.22	4.41
Z101038	BKLK-13-10	15000	11.02	2.17	1.77	1.89	0.75	1.18	1.57	8.82
Z101046	BKLK-16-10	22600	13.35	2.44	2.44	2.40	0.98	1.46	1.97	16.09
Z101095	BKLK-18/20-10	35300	14.49	2.68	2.36	2.83	1.22	1.73	2.44	25.35
Z101294	BKLK-22-10 OS	44080	17.17	3.11	3.15	3.15	1.38	1.97	2.44	37.04
Z101295	BKLK-26-10 OS	60169	19.13	3.94	4.33	4.02	1.77	2.13	2.68	57.32

Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M.
For larger sizes, see Classic Grade 8.

4:1 Design Factor

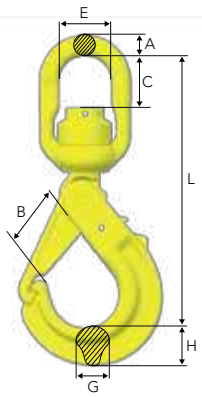


Swivel Safety Hook with Griplatch LBK

Safety hook with griplatch and swivel for improved positioning of the hook before the load is lifted (360º rotation).

Stock No.	Code	WLL (lb)*	L	B	C	E	A	G	H	Weight (lb)
Z100978	LBK-7/8-10	5700	6.97	1.46	1.06	1.50	0.47	0.79	0.87	2.43
Z100960	LBK-10-10	8800	8.43	1.85	1.46	1.73	0.59	0.87	1.14	3.97
Z100993	LBK-13-10	15000	10.31	2.09	1.77	1.89	0.75	1.14	1.50	7.72
Z100995	LBK-16-10	22600	12.76	2.68	2.60	2.40	0.98	1.18	1.77	13.01

Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M.
4:1 Design Factor



Swivel Safety Hook with Griplatch LKBK

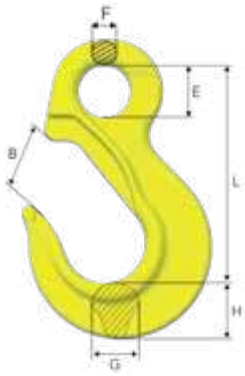
Safety hook with griplatch and ball-bearing for 360º rotation under full WLL.

Stock No.	Code	WLL (lb)*	L	B	C	E	A	G	H	Weight (lb)
Z100980	LKBK-7/8-10	5700	6.93	1.46	1.06	1.50	0.47	0.79	0.87	2.43
Z100962	LKBK-10-10	8800	8.39	1.85	1.38	1.73	0.59	0.87	1.14	4.19
Z100997	LKBK-13-10	15000	10.28	2.09	1.69	1.89	0.75	1.14	1.50	7.94
Z100999	LKBK-16-10	22600	12.72	2.68	2.40	2.40	0.98	1.18	1.77	13.67

Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M.
4:1 Design Factor

Sling Hook EK

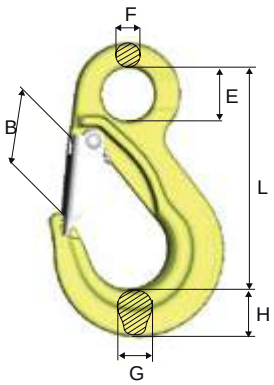
Sling hook with eye connector.



Stock No.	Code	WLL (lb)*	L	B	E	F	G	H	Weight (lb)
Z101162	EK- 6-10	3306	3.66	1.14	0.91	0.39	0.67	0.79	0.88
Z101164	EK- 7/8-10	5700	4.25	1.26	1.10	0.47	0.67	0.91	1.10
Z101166	EK-10-10	8800	5.28	1.61	1.34	0.55	0.91	1.18	1.98
Z101168	EK-13-10	15000	6.54	1.93	1.73	0.71	1.10	1.50	4.41
Z101170	EK-16-10	22600	7.99	2.40	2.20	0.87	1.42	1.85	7.28
Z101306	EK-20-10	35300	9.02	2.80	2.40	1.02	1.65	2.36	13.67
Z101307	EK-22-10	44080	10.51	3.23	2.52	1.22	1.69	2.64	18.74
Z101308	EK-26-10	60169	11.85	3.74	2.60	1.26	2.01	2.95	26.68
Z101309	EK-32-10	88160	13.90	4.13	3.54	1.50	2.40	3.86	54.23

4:1 Design Factor. Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M-02.

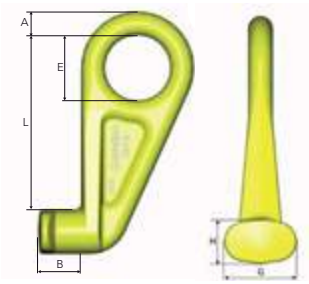
Sling Hook EKN (with latch)



Stock No.	Code	WLL (lb)*	L	B	E	F	G	H	Weight (lb)
Z101128	EKN- 6-10	3306	3.66	0.98	0.91	0.39	0.67	0.79	0.88
Z101130	EKN- 7/8-10	5700	4.25	1.02	1.10	0.47	0.67	0.91	1.32
Z101132	EKN-10-10	8800	5.28	1.38	1.34	0.55	0.91	1.18	2.20
Z101134	EKN-13-10	15000	6.54	1.65	1.73	0.71	1.10	1.50	4.63
Z101136	EKN-16-10	22600	7.99	2.09	2.20	0.87	1.42	1.85	8.82
Z101327	EKN-20-10	35300	9.02	2.56	2.40	1.02	1.65	2.36	14.11
Z101328	EKN-22-10	44080	10.51	2.87	2.52	1.22	1.69	2.64	19.62
Z101329	EKN-26-10	60169	11.85	3.23	2.60	1.26	2.01	2.95	28.66
Z101330	EKN-32-10	88160	13.90	3.78	3.54	1.50	2.40	3.86	55.12

Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M.
4:1 Design Factor

Container Hook CH

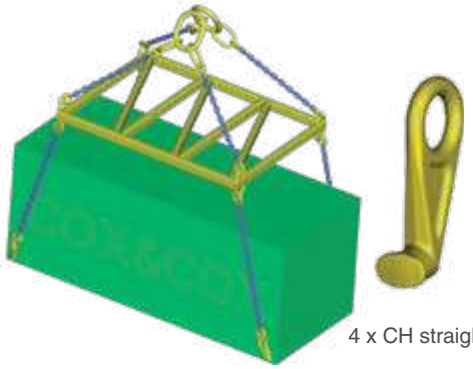


Made for lifting containers in their lower fittings.

Stock No.	Code	WLL (lb)*	A	L	E	B	H	G	Weight (lb)
Z101220	CH-3	27550	0.98	7.36	2.76	1.81	1.85	2.95	8.378
Z101221	CH-3. 45° left	27550	0.98	7.36	2.76	1.81	1.85	2.95	8.378
Z101219	CH-3. 45° right	27550	0.98	7.36	2.76	1.81	1.85	2.95	8.378

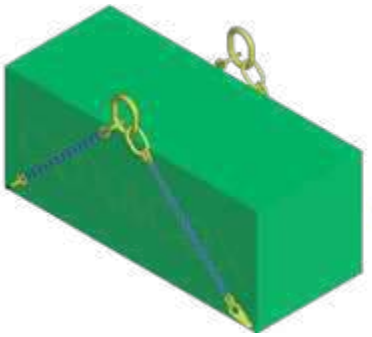
4:1 Design Factor

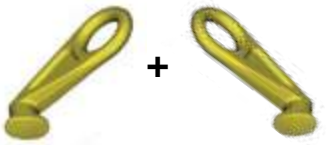
Alt. 1 - Straight lift



4 x CH straight

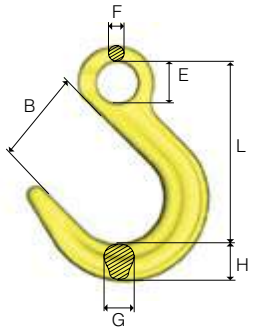
Alt. 2 - Angular lift





2 x CH turned 45° right

2 x CH turned 45° left



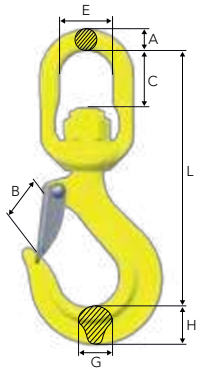
Foundry Hook OKE

Stock No.	Code	WLL (lb)*	L	B	E	F	G	H	Weight (lb)
Z100853	OKE-7/8-10	5700	4.88	2.48	1.10	0.47	0.83	1.02	1.76
Z100854	OKE-10-10	8800	5.94	2.99	1.34	0.59	1.02	1.18	3.09
Z100855	OKE-13-10	15000	7.24	3.54	1.73	0.75	1.30	1.54	6.17
Z100898	OKE-16-10	22600	8.58	4.02	2.20	0.91	1.57	1.81	10.80
Z101340	OKE-20-10	35300	9.72	4.49	2.36	1.06	1.81	2.36	15.87
Z101341	OKE-22-10	44080	10.83	4.72	2.52	1.22	2.36	2.76	24.91
Z101342	OKE-26-10	60169	11.81	4.45	2.76	1.38	2.52	3.03	35.27

Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M.

For larger sizes, see Classic Grade 8.

4:1 Design Factor



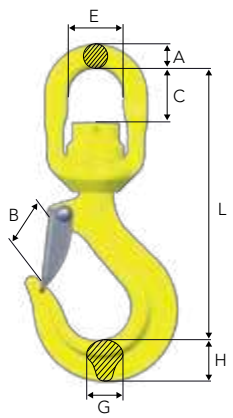
Swivel Latch Hook LKN

Sling hook with swivel for improved positioning of the hook before the load is lifted (360º rotation).

Stock No.	Code	WLL (lb)*	Dimensions (in)							Weight (lb)
			L	B	C	E	A	G	H	
Z101345	LKN-7/8-10	5700	6.10	1.10	1.10	1.50	0.47	0.71	0.94	1.76
Z101346	LKN-10-10	8800	7.56	1.38	1.46	1.73	0.59	0.91	1.22	3.31
Z101347	LKN-13-10	15000	9.37	1.57	1.85	1.89	0.75	1.10	1.50	6.83
Z101348	LKN-16-10	22600	11.61	2.09	2.56	2.40	0.98	1.34	1.69	11.7

Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M.

4:1 Design Factor



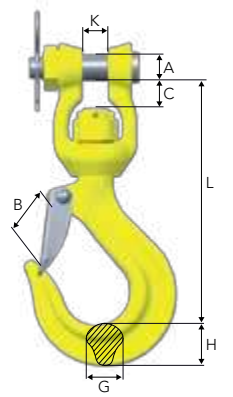
Swivel Latch Hook LKNK

Swivel latch hook with ball bearing for 360º rotation under full WLL.

Stock No.	Code	WLL (lb)*	Dimensions (in)							Weight (lb)
			L	B	C	E	A	G	H	
Z101349	LKNK-7/8-10	5700	6.06	1.10	1.10	1.50	0.47	0.71	0.94	1.98
Z101350	LKNK-10-10	8800	7.52	1.38	1.38	1.73	0.59	0.91	1.22	3.53
Z101351	LKNK-13-10	15000	9.29	1.57	1.77	1.89	0.75	1.10	1.50	7.28
Z101352	LKNK-16-10	22600	11.54	2.09	2.44	2.40	0.98	1.34	1.69	12.3
Z101354	LKNK-22-10	44080	15.75	2.91	3.15	3.15	1.38	1.69	2.64	31.5

Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M.

4:1 Design Factor



Clevis Swivel Hook LKNG

For direct connection to small cranes or similar applications that require positioning of hook.

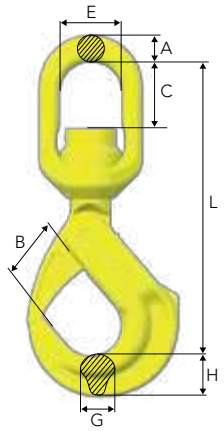
Swivel for improved positioning (360°).

Stock No.	Code	WLL (lb)*	L	B	C	A	G	H	K	Weight (lb)
Z101353	LKNG-16-10	22600	10.16	2.09	1.18	1.10	1.34	1.69	1.06	12.5

Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M.

4:1 Design Factor

Swivel Safety Hook BKLK Offshore HDG

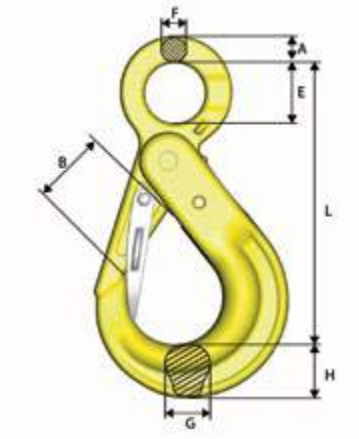


Stock No.	Code	WLL (lb) 4:1	WLL (lb) 5:1	L	B	C	E	A	G	H	Weight (lb)
ZG101370	BKLK-13-8 OS W HDG	14800	12000	12.09	2.17	2.83	2.40	0.98	1.18	1.57	10.80
ZG101371	BKLK-16-8 OS W HDG	22600	18000	14.45	2.44	3.46	3.23	1.02	1.46	1.97	18.52
ZG1013561	BKLK-18/20-8 OS W HDG	35300	28300	15.55	2.68	3.46	3.15	1.38	1.81	2.52	29.76
ZG101294	BKLK-22-8 OS HDG	44080	35300	17.17	3.11	3.15	3.15	1.38	1.97	2.44	37.04
ZG101295	BKLK-26-8 OS HDG	60169	47700	19.13	3.94	4.33	4.02	1.77	2.13	2.68	58.42
ZG101344	BKLK-32-8 OS HDG	72300	57745	20.98	4.72	4.33	4.02	1.77	2.44	3.39	71.21
	With double latch										
ZGS1167	BKLKD-13-8 OS W HDG	14800	12000	12.09	1.73	2.83	2.40	0.98	1.18	1.57	11.02
ZGS1168	BKLKD-16-8 OS W HDG	22600	18000	14.45	1.89	3.46	3.23	1.02	1.46	1.97	19.40
ZGS1169	BKLKD-18/20-8 OS W HDG	35300	28300	14.49	2.05	2.36	2.83	1.22	1.73	2.56	27.34
GS1170	BKLKD-26-10 OS	60 169	48 048	486	72	110	102	45	54	68	59.52

Manufactured according to requirements in: DNV 2.7-1:2013, DNVGL-ST-0377:2016, DNVGL-ST-0388:2016 and NORSOK R-002:2017.

Safety Hook BK & BKLK Offshore with Double Latch

With recessed trigger

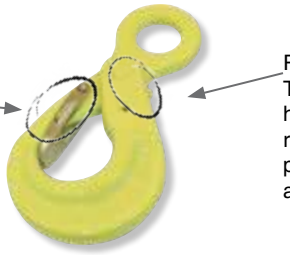


Due to the motion of the sea when loading and unloading offshore, direct impact on the hook could cause the latch to unintentionally open when not being under load, risking the load to unhitch. The double latch safety hook has an extra latch retaining the load in this case.

Stock No.	Code	WLL (lb)*	A	L	B	E	F	G	H	Weight (lb)
Z101154	BKD-13-10	15000	0.79	8.15	1.73	1.77	0.63	1.18	1.57	7.05
Z101155	BKD-16-10	22600	1.02	10.00	1.89	2.20	0.79	1.46	1.97	12.79
Z101156	BKD-18/20-10	35300	1.18	11.42	2.05	2.36	0.87	1.73	2.44	20.06
Z101373	BKD-26-10 OS	60169	1.38	13.58	2.83	3.15	0.98	2.13	2.68	37.04

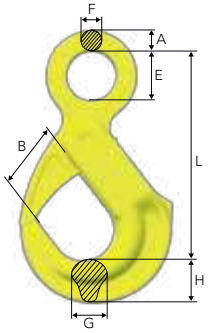
4:1 Design Factor

Double Latch
Should the hook latch accidentally open, either through direct impact or excessive wear on the trigger, the extra latch is there to retain the load safely. The extra latch is designed to be easily operatad.



Recessed Trigger
To avoid the trigger from being hit or damaged it has been recessed into the hook. This prevents the latch further from accidentally opening.

Safety Hook BK Offshore



Stock No.	Code	WLL (lb) 4:1	WLL (lb) 5:1	L	B	E	F	G	H	Weight (lb)
Z101355	BK-26-10 OS	60169	48 048	13.46	3.94	3.15	0.98	2.13	2.68	36.38
Z101364	BK-32-8 OS	72300	57 745	15.75	4.72	3.54	1.18	2.44	3.39	52.03

Offshore material, impact toughness > 20 ft-lb (27 J) at -4ºF.

Manufactured according to requirements in: DNV 2.7-1:2013, DNVGL-ST-0377:2016, DNVGL-ST-0388:2016 and NORSOK R-002:2017

Increased safety in heavy lifting operations

The WRIN STR Handle provides additional safety to the Gunnebo Industries BK Safety Hook family.

Improved workplace safety

- With the WRIN STR Handle, the operator opens and closes the safety hook without placing their hands inside the hook, resulting in a reduced risk of personal injury on job sites. The handle is easily mounted to the safety hook, without compromising the integrity of design and capabilities of the hook.

Suitable to any safety hook within the BK family

- The WRIN STR Handle is easily mounted to any safety hook within the BK family.
- For sling shops the WRIN STR Handle is the perfect complement to the BK safety hooks, reducing the need for stocking a large assortment of different safety hooks.
- If the handle is fully operable, it can be mounted and reused on a new hook if the existing hook is worn out.

Unique design

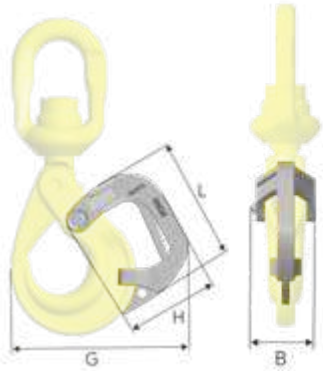
- The handle will keep the integrity of the hook's design and capabilities uncompromised.
- The handle is clamped to the hook and fixed by the hook's trigger pin.
- Hole for attaching a lead line for easy retrieval.
- Made of stainless steel according to AISI 316.

WRIN STR Handle

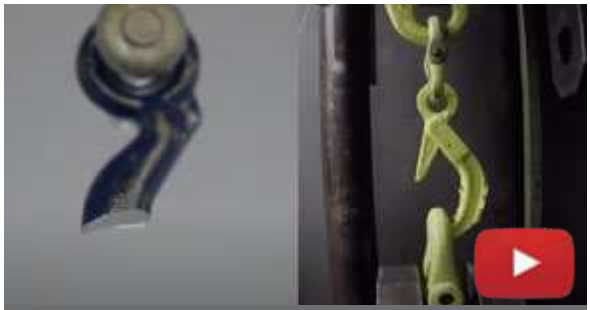
Suitable to any safety hook within the Gunnebo Industries BK family.

Stock No.	Code	Hook size	Dimensions				Suits the following safety hooks:	Weight (lb)
			L	H	B	G		
Z101413	STRG13	1/2"	5.71	4.06	2.36	7.24	BK, BKG, BKL, BKLK	1.76
Z101414	STRG16	5/8"	7.17	5.51	3.15	10.04	BK, BKG, BKL, BKLK	4.08
Z101415	STRG20	3/4"	7.64	6.10	3.54	11.02	BK, BKG, BKL, BKLK	5.51
Z101416	STRG22	7/8"	7.99	6.46	3.54	11.81	BK, BKLK	5.62
Z101417	STRG26	1"	8.46	7.56	4.06	13.70	BK, BKLK	7.50
Z101418	STRG32	1 1/4"	10.35	7.05	4.06	14.96	BK, BKLK	8.71

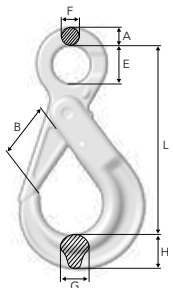
Material: Stainless steel according to AISI 316.



Hot-dip galvanized (HDG) hooks for offshore harsh environments. Watch video at **thecrosbygroup.com/HDGhooks**



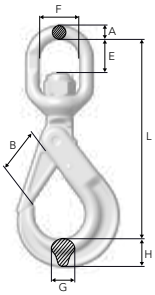
Understanding the importance of high ductility in lifting equipment. Watch video at **thecrosbygroup.com/ductility**



Safety Hook BK HDG

Stock No.	Code	WLL (lb)*	A	L	B	E	F	G	H	Weight (lb)
ZG101108	BK-6-8 HDG	2500	0.47	4.29	1.14	0.87	0.39	0.59	0.83	1.10
ZG101097	BK-7/8-8 HDG	4500	0.55	5.43	1.46	1.10	0.43	0.67	1.02	1.98
ZG101024	BK-10-8 HDG	7100	0.63	6.61	1.77	1.34	0.51	0.83	1.22	3.31
ZG101032	BK-13-8 HDG	12000	0.79	8.15	2.17	1.73	0.63	1.18	1.57	6.61

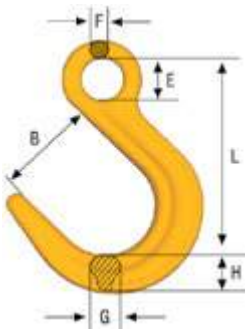
4:1 Design Factor



Swivel Safety Hook BKL HDG

Stock No.	Code	WLL (lb)*	L	B	C	E	A	G	H	Weight (lb)
ZG101028	BKL-10-8 HDG	7100	8.58	1.77	1.46	1.73	0.59	0.83	1.22	4.41
ZG101036	BKL-13-8 HDG	12000	11.10	2.17	1.93	1.89	0.75	1.18	1.57	8.82
ZG101044	BKL-16-8 HDG	18000	13.54	2.44	2.68	2.40	0.98	1.46	1.97	16.24

4:1 Design Factor



Foundry Hook OKE

Stock No.	Code	WLL (lb)*	L	B	E	F	G	H	Weight (lb)
Z645564	OKE-32-8	72300	15.12	5.71	3.54	1.65	3.03	3.70	66.14

Fulfills requirements in: EN 1677:2008, ISO 8539:2009, ASTM A952/A952M and AS 3776:2015.
4:1 Design Factor

Surface Treatment Production I Växjö, Sweden

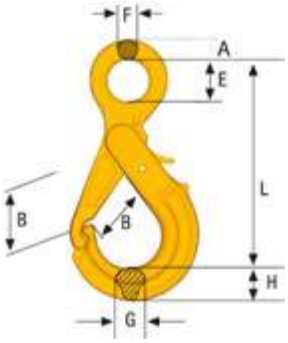
Collaborative Robot I Växjö, Sweden

Testing & Inspection I Växjö, Sweden

BEHIND THE SCENES

Get a behind-the-scenes look at the innovative processes to manufacture the world's leading rigging, lifting, and load securement hardware.

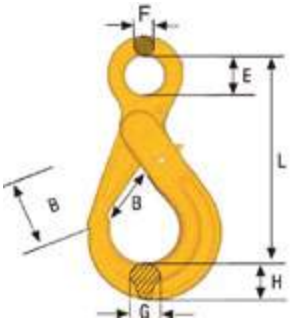
Watch all videos at thecrosbygroup.com/facilities



Safety Hook with Griplatch OBK

Stock No.	Code	WLL (lb)*	A	L	B	E	F	G	H	Weight (lb)
Z100218	OBK-22-8	34200	1.18	13.19	3.43	2.76	0.94	1.57	2.24	22.49

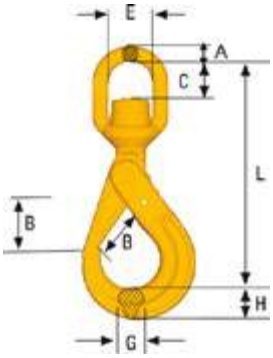
Fulfills requirements in: EN 1677:2008, ISO 8539:2009, ASTM A952/A952M and AS 3776:2015.
4:1 Design Factor



Safety Hook BK

Stock No.	Code	WLL (lb)*	L	B	E	F	G	H	Weight (lb)
Z101357	BK-32-8	72300	15.75	4.72	3.54	1.18	2.44	3.39	23.8

Fulfills requirements in: EN 1677:2008, ISO 8539:2009, ASTM A952/A952M and AS 3776:2015.
4:1 Design Factor

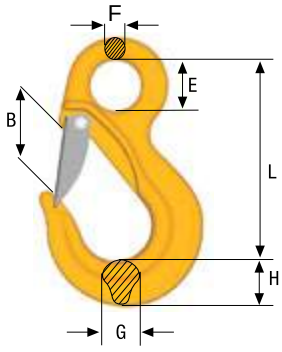


Swivel Safety Hook BKLK

Safety hook with ball-bearing for 360° rotation under full load.

Stock No.	Code	WLL (lb)*	L	B	C	E	A	G	H	Weight (lb)
Z101344	BKLK-32-8 OS	72300	20.98	4.72	4.33	4.02	1.77	2.44	3.39	71.21

Fulfills requirements in: EN 1677:2008, ISO 8539:2009, ASTM A952/A952M and AS 3776:2015.
4:1 Design Factor



Sling Hook EK (without latch) and EKN (with latch)

Stock No.	Code	WLL (lb)*	L	B	E	F	G	H	Weight (lb)
Z100720	EK-32-8	72300	13.11	4.13	2.99	1.50	2.40	3.15	39.02
Z100725	EKN-32-8	72300	13.11	3.66	2.99	1.50	2.40	3.15	39.46

Fulfills requirements in: EN 1677:2008, ISO 8539:2009, ASTM A952/A952M and AS 3776:2015.
4:1 Design Factor

Universal weld-on hook, UKN

The original excavator hook

Excavators are often used for material handling and lifting because they are available on most construction sites. However, rigging gear is often incorrectly attached, either to the teeth of the bucket or directly on the excavator arm, which is a dangerous practice that can lead to accidents.

The Gunnebo Industries UKN Hook was developed in 1975 – a solution that transformed the excavator into a lifting crane. The UKN Hook has been fitted to excavators and other applications for almost 50 years, either as an aftermarket product or directly by the manufacturer.

Today the UKN is the hook of choice for leading international excavator manufacturers.

Quality

- Forged alloy steel.
- Hardened and tempered.

100% proof-loaded

- Every hook is individually proof-loaded at 3 x WLL.

High durability

- Forged.
- Rated with a 5:1 safety factor.

Clear markings

- Country of origin.
- Traceability code.
- Model and size.

Heavy duty latch

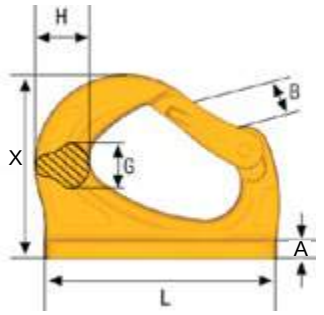
- Latch with handles for easy opening.
- Hardened and tempered.

Prepared for welding

- Base plate prepared for welding.

Pin & spring

- Spring protection.
- Hardened and tempered hinge pin.
- Stainless steel spring.



Universal Weld-On Hook - UKN

Stock No.	Code	WLL (lb)	Dimension (in)							Weight (lb)
			B	G	H	K	L	A	X	
Z1002560	UKN-0.75*	1 653	0.79	0.51	0.79	0.75	3.21	0.20	2.20	0.44
Z6511810	UKN-1*	2 204	1.06	0.67	0.98	0.98	3.74	0.24	2.83	1.32
Z7009060	UKN-2*	4 500	1.30	0.79	1.18	1.18	4.49	0.31	3.39	1.98
Z6455730	UKN-3	6 612	1.18	0.91	1.26	1.38	5.20	0.39	4.13	2.87
Z6521160	UKN-4	8 800	1.18	1.14	1.50	1.65	5.51	0.43	4.49	4.41
Z6455800	UKN-5	11 020	1.34	1.18	1.85	1.77	6.50	0.47	5.16	7.05
Z6515390	UKN-8	17 632	1.34	1.57	2.01	1.97	6.77	0.51	5.24	7.94
Z6456030	UKN-10	22 040	1.85	1.69	2.28	2.17	8.66	0.55	6.69	18.08
Z1007850	UKN-15	33 060	2.17	1.97	2.64	2.36	9.45	0.59	7.40	21.61
Z1007851	UKN-20	44080	2.56	2.36	3.35	2.36	10.83	0.59	8.15	27.34

* Welding plate slightly curved
** Safety factor 5:1

Fulfills requirements in: EN 474-1.

Spare Part RD BK

(with assembly kit)

Set for BK/BKG Safety hooks consisting of trigger, stainless steel spring, retaining pin and assembly kit.

Recessed trigger

Stock No.	Code	Weight (lb)
Z100282	RDBK-6	0.04
Z100283	RDBK-8	0.07
Z100284	RDBK-10	0.07
Z100285	RDBK-13	0.11
Z100286	RDBK-16	0.22
Z100297	RDBK-18/20	0.46
Z100287	RDBK-22	0.44
Z100280	RDBK-26	1.10
Z100294	RDBK-32	1.54

Standard trigger (long trigger)

Stock No.	Code	Weight (lb)
Z1002820	RDBK-6	0.02
Z1002830	RDBK-8	0.07
Z1002840	RDBK-10	0.07
Z1002850	RDBK-13	0.11
Z1002860	RDBK-16	0.26

Spare Part RD OBK/GBK

(with assembly kit)

Set for OBK/GBK Safety hooks consisting of trigger, stainless steel spring, retaining pin and assembly kit.

Stock No.	Code	Weight (lb)
Z100281	RDOBK-6	0.02
Z100288	RDOBK-7/8	0.04
Z100289	RDOBK-10	0.07
Z100290	RDOBK-13	0.11
Z100291	RDOBK-16	0.18
Z100297	RDBK-18/20	0.46
Z100323	RDBK-22-8	0.77

Spare Part RD BKD/BKLKD

(with assembly kit)

Set for BKD/BKLD Safety hooks consisting of trigger, stainless steel spring, retaining pin and assembly kit.

Stock No.	Code	Weight (lb)
Z101157	RDBKD-13 double latch	0.49
Z101158	RDBKD-16 double latch	0.93
Z101159	RDBKD-18/20 double latch	1.04

Spare Part RD GKN/OKN

Set for GKN/OKN Safety hooks consisting of trigger, stainless steel spring, retaining pin and assembly kit.

Stock No.	Code	Weight (lb)
Z622175	RDGKN/OKN-7/8-8	0.11
Z622183	RDGKN/OKN-10-8	0.20
Z622206	RDGKN/OKN-13-8	0.29
Z622214	RDGKN-16-8	0.49

Spare Part RD LKNG

Stock No.	Code	Weight (lb)
Z700495	RDLKNG-16 Bolt and Nut	1.54
B60122	RDLKNG-16 Bronze Washer and Retaining pin	0.07

Spare Part LKN / LKNK / EKN / OKN / EGKN / RH / ESKN

Set consisting of latch, stainless steel spring, and rivet.

Stock No.	Code	Weight (lb)
Z100445	RDEKN- 6 / OKN / RH 1	0.07
Z100447	RDEKN- 7/8 /LKN / RH 2	0.11
Z100450	RDEKN-10 / LKN / RH 3	0.13
Z100449	RDEKN-13 / LKN / RH 5	0.29
Z100217	RDEKN-16 / LKN	0.44
Z100453	RDEKN-18/20	0.57
Z100452	RDEKN-22	0.93
Z100742	RDEKN-26	1.17
Z100743	RDEKN-32	1.32

Spare Part Set SKN, OKN and LKN (old version)

Set consisting of latch, stainless steel spring, and rivet.

Stock No.	Code	Weight (lb)
Z420581	RDSKN/LKN-7/8-8	0.11
Z420688	RDSKN/LKN-10-8	0.22
Z420785	RDSKN/LKN-13-8	0.31
Z420989	RDSKN/OKN-16-8	0.49
Z421087	RDSKN/OKN-18/20-8	0.60
Z700698	RDOKN-22-8	1.06

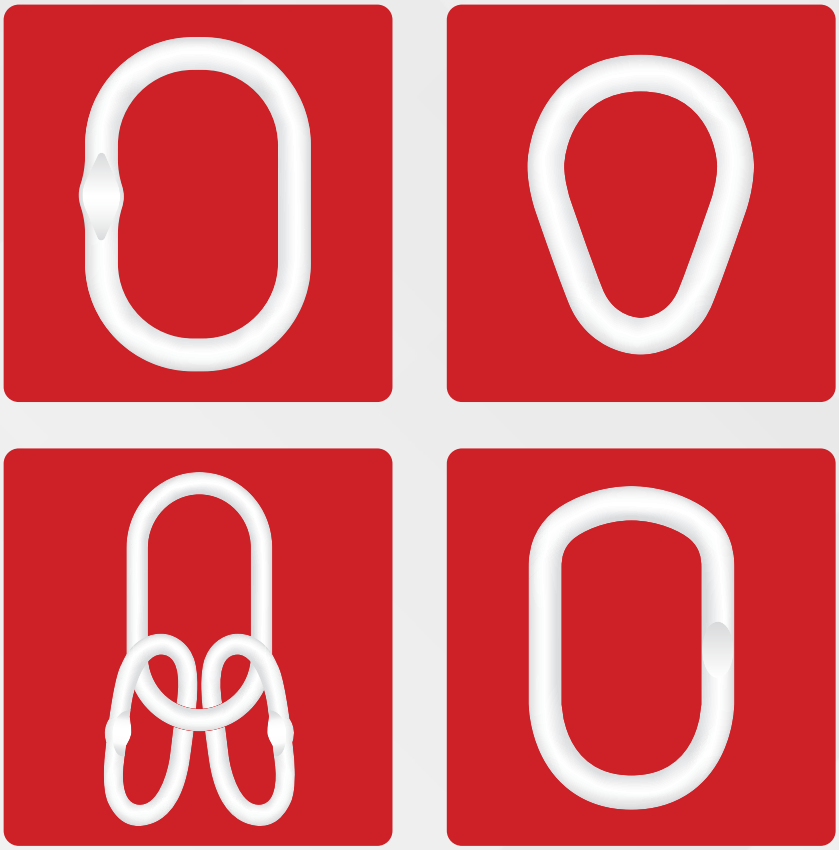
Spare Part UKN

Spare part set RDUKN (msp) consisting of forged latch, pin, stainless steel spring, and retaining pin.

Stock No.	Code	Weight (lb)	UKN Part Number	UKN Code
Z100258	RDUKN-0.75	0.13	Z1002560	UKN- 0,75
Z700264	RDUKN-1	0.26	Z6511810	UKN- 1
Z700958	RDUKN-2	0.44	Z7009060	UKN- 2
Z700266	RDUKN-3/4	0.44	Z6455730, Z6521160	UKN- 3, UKN- 4
Z700268	RDUKN-5/8	0.79	Z6455800, Z6515390	UKN- 5, UKN- 8
Z700269	RDUKN-10	1.94	Z6456030	UKN-10
Z700984	RDUKN-15/20	2.65	Z1007850, Z1007851	UKN-15, UKN-20

MASTER LINKS

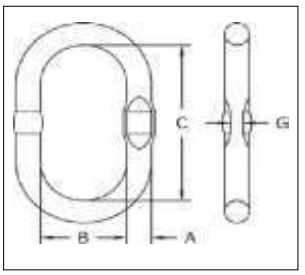
The Crosby Group offers a wide range of links, from small 1,800 lb capacities all the way up to 395,000 lbs, as well as application-specific links, such as the hot-dip galvanized master links for use in highly corrosive environments.



thecrosbygroup.com

A-1343

- Alloy steel — Quenched & Tempered.
- Individually Proof Tested to values shown, with certification.
- Design Factor of 5 to 1.
- Proof Tested with 70% inside width special fixtures sized to prevent localized point loading per EN 1677-4, reference applications & warnings.
- Each main link is marked with Product Identification Code (PIC) for material traceability, Grade, CE, chain size and the “CG” (Crosby Group).
- A-1343 master links are type approved to DNV Certification. Notes 2.7-1- Offshore Containers. These Crosby master links are 100% proof tested. Every batch is impact tested. The tests are conducted by Crosby and 3.1 test certification is available upon request.
- Engineered Flat for use with S-1325A coupler link.
- Fatigue rated to 20,000 cycles at 1.5 times the Working Load Limit.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these links meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.



Grade 100 A-1343 Welded Master Link

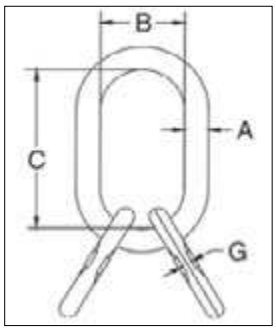
Stock No.	Weight Each (lb)	Grade 100 Chain Sling		Grade 80 Chain Sling		WLL (lb)	Proof Load (lb)	Dimensions (in)				Engineered Flat Size for S-1325A (in)
		Single Leg Chain Size (in)	Double Leg Chain Size (in)	Single Leg Chain Size (in)	Double Leg Chain Size (in)			A	B	C	G	
1247051	0.8	6mm, 9/32	6mm	6mm, 9/32	6mm, 9/32, 5/16	7000	17632	0.51	2.36	4.72	0.26	6mm, 9/32, 5/16
1247087	1.9	5/16, 3/8	9/32	5/16, 3/8	5/16	9000	22701	0.67	3.54	6.30	0.33	3/8
1247096	2.3	3/8, 1/2	5/16	3/8, 1/2	3/8	14700	37027	0.75	3.54	6.30	0.33	3/8, 1/2
1247122	5.2	3/8, 1/2	3/8	3/8, 1/2	3/8	15400	38570	0.87	5.71	10.83	0.41	1/2
1247120	3.6	3/8, 1/2	3/8	5/8	3/8	19400	48488	0.87	3.94	7.09	0.41	1/2
1247126	6.7	1/2	-	1/2, 5/8	3/8	19600	48929	0.98	5.71	10.83	0.53	5/8
1247124	5.3	5/8, 1/2	3/8	5/8	1/2	25300	63475	0.98	4.53	8.27	0.53	5/8
1247133	8.5	5/8, 1/2	1/2	5/8	1/2	28600	71630	1.10	5.71	10.83	0.53	5/8
1247142	10.6	5/8, 3/4	1/2	3/4	5/8	37400	93670	1.26	5.71	10.83	0.66	-
1247151	15.2	3/4	5/8	3/4, 7/8	3/4	52900	132240	1.42	6.10	11.22	-	-
1247163	16.1	7/8	3/4	7/8	7/8	69400	173675	1.57	5.51	10.63	-	-
1247164	28.4	1	7/8	1	1	84400	210923	1.77	7.09	13.39	-	-
1247166	42.1	1, 1-1/4	7/8	1	1	99200	247950	2.01	8.46	15.35	-	-
1247175	55.3	1-1/4	1	1-1/4	1-1/4	147600	369170	2.17	7.99	15.98	-	-

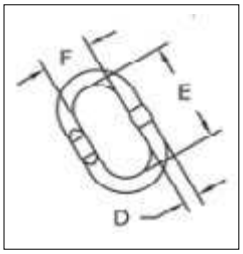
5:1 Design Factor. Applications with wire rope and synthetic sling generally require a Design Factor of 5. Based on single leg sling (in-line load), or resultant load on multiple legs with an included angle less than or equal to 120 degrees. Proof Test Load equals or exceeds the requirement of ASTM A952(8.1) and ASME B30.9. Chain slings require that the Design Factor be 4:1. Refer to Applications & Warnings to determine product's actual Ultimate Load. There are no manufactured flats on links over 1 1/4" (32mm).

APPLICATION AND WARNING INFORMATION
SECTION 17

A-1346

- Alloy steel — Quenched & Tempered.
- Individually Proof Tested to values shown, with certification.
- Design Factor of 5 to 1.
- Proof Tested with 70% inside width special fixtures sized to prevent localized point loading per EN 1677-4, reference Applications & Warnings.
- Each main link is marked with Product Identification Code (PIC) for material traceability, Grade, CE, chain size and the "CG" (Crosby Group). Each sublink is marked with traceability code.
- A-1346 master links are type approved to DNV Certification. Notes 2.7-1-Offshore Containers. These Crosby master links are 100% proof tested. Every batch is impacted tested. The tests are conducted by Crosby and 3.1 test certification is available upon request.
- Engineered Flat for use with S-1325A coupler link.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these links meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.





5

Grade 100 A-1346 Welded Master Link Assembly

Stock No.	Weight Each (lb)	Grade 100 Chain Sling Three / Four Legs Chain Size (in)	Grade 80 Chain Sling Three / Four Legs Chain Size (in)	WLL (lb)	Proof Load (lb)	Dimensions (in)							Engineered Flat Size for S-1325A Chain Size (in)
						A	B	C	D	E	F	G	
1256865	2.4	-	6mm	7000	17632	0.51	2.36	4.72	0.51	4.72	2.36	0.26	6mm
1256868	3.5	6mm	6mm	9000	22701	0.67	3.54	6.30	0.51	4.72	2.36	0.26	6mm, 9/32
1256874	3.9	6mm	9/32	9200	23362	0.75	3.54	6.30	0.51	4.72	2.36	0.26	9/32, 5/16
1256878	7.3	5/16, 9/32	5/16	15400	38570	0.87	3.94	7.09	0.67	6.30	3.54	0.33	3/8
1256880	8.9	5/16, 9/32	5/16	15400	38570	0.87	5.71	10.83	0.67	6.30	3.54	0.33	3/8
1256876	8.4	5/16	3/8	18700	46725	0.87	3.94	7.09	0.75	6.30	3.54	0.33	3/8
1256882	10.1	5/16	3/8	19600	49149	0.98	4.53	8.27	0.75	6.30	3.54	0.33	3/8
1256892	11.4	5/16	3/8	19600	49149	0.98	5.71	10.83	0.75	6.30	3.54	0.33	3/8
1256917	15.6	3/8	1/2	31900	80005	1.10	5.71	10.83	0.87	7.09	3.94	0.41	1/2
1256926	21.2	3/8	1/2	37400	93670	1.26	5.71	10.83	0.98	8.27	4.53	0.53	5/8
1256929	28	1/2	5/8	52000	130036	1.42	6.10	11.22	1.10	7.48	4.33	0.53	5/8
1256930	40.6	5/8	5/8	61900	154941	1.57	5.51	10.63	1.26	10.83	5.71	0.66	-
1256953	58.6	5/8	3/4	84400	211143	1.77	7.09	13.39	1.42	11.22	6.10	-	-
1256958	78.2	3/4	7/8	99200	247950	2.01	8.46	15.35	1.57	10.63	5.51	-	-
1256973	134.6	7/8	1	147600	369170	2.17	7.99	15.98	2.01	15.35	8.46	-	-

5:1 Design Factor. Applications with wire rope and synthetic sling generally require a Design Factor of 5. Based on single leg sling (in-line load), or resultant load on multiple legs with an included angle less than or equal to 120 degrees. Proof Test Load equals or exceeds the requirement of ASTM A952(8.1) and ASME B30.9. Chain slings require that the Design Factor be 4:1. Refer to applications & warnings to determine product's actual Ultimate Load. There are no manufactured flats on links over 1 1/4" (32mm).

Fatigue Rated Crosby 8/10 CE Q&T

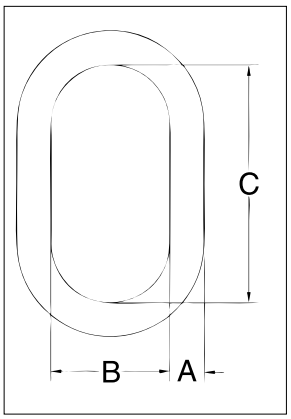
APPLICATION AND WARNING INFORMATION
SECTION 17

Crosby

A-342

Ratings below are for use with chain slings fabricated in accordance with ASME B30.9. For other applications, see Applications & Warnings.

- Alloy steel — Quenched & Tempered.
- Individually Proof Tested to values shown, with certification.
- Proof Tested with special fixtures sized to prevent localized point loading.
- Forgings have a Product Identification Code (PIC) for material traceability, along with the size, the name Crosby and USA in raised lettering.
- Selected sizes designated with "W" in the size column have enlarged inside dimensions to allow additional room for sling hardware and crane hook.
- Crosby 7/8" to 2" A-342 master links are type approved to DNV-ST-E271-2.7-1 Offshore Containers. These Crosby master links are 100% proof tested, MPI and impact tested. The tests are conducted by Crosby and 3.1 test certification is available upon request. Refer to the Crosby COLD TUFF® master links that meet the additional requirements of DNV rules for certification of lifting appliances - Loose Gear.
- Incorporates patented QUIC-CHECK® deformation indicators.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these links meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.



A-342 Alloy Master Links

Size							Grade 100 Chain Sling		Grade 80 Chain Sling		Dimensions (in)			
(in)	(mm)	OC	Stock No.	Weight Each (lb)	Working Load Limit (lb)	Proof Load (lb)	Single Leg Chain Size (in)	Double Leg Chain Size (in)	Single Leg Chain Size (in)	Double Leg Chain Size (in)	A	B	C	Deformation Indicator
1/2W	13W	No	1014266	1.3	7400	17,200	6mm, 9/32, 5/16	6mm	6mm, 9/32, 5/16, 3/8	6mm, 9/32	0.62	2.80	5.00	3.50
5/8	16	No	1014280	1.5	9000	18,000	5/16, 3/8	9/32	3/8	5/16	0.62	3.00	6.00	3.50
3/4W	19W	No	1014285	2.0	12300	28,400	5/16, 3/8	5/16	1/2	3/8	0.73	3.20	6.00	4.00
7/8W	22W	Yes	3522213	3.3	15200	†38,000	3/8, 1/2	3/8	1/2	3/8	0.88	3.75	6.38	4.50
1W	26W	Yes	3522214	6.1	26000	†65,000	1/2, 5/8	1/2	5/8	1/2	1.10	4.30	7.50	5.50
1-1/4W	32W	Yes	3522215	12.0	39100	†97,750	5/8, 3/4	5/8	3/4, 7/8	5/8	1.33	5.50	9.50	7.00
1-1/2W	38W	Yes	3522216	18.6	61100	†15,2750	7/8, 1	3/4	1	3/4, 7/8	1.61	5.90	10.50	6.50
1-3/4	44	Yes	3522217	25.2	84900	†21,2250	1	7/8	1-1/4	1	1.75	6.00	12.00	7.50
2	51	Yes	3522218	37.0	102600	†25,6500	1-1/4	7/8	1-1/4	1	2.00	7.00	14.00	9.00
2-1/4	57	No	1014422	54.1	143100	289,200	1-1/4	1	1-1/4	1-1/4	2.25	8.00	16.00	10.00
2-1/2	63	No	1014468	68.5	160000	320,000	1-1/4	1-1/4	-	-	2.50	8.38	16.00	11.00
2-3/4	70	No	1014440	94.0	216900	433,800	-	-	-	-	2.75	9.88	18.00	12.50
3	76	No	1014486	115	228000	456,000	-	-	-	-	3.00	9.88	18.00	13.00
3-1/4	83	No	1014501	145	262200	524,400	-	-	-	-	3.25	10.00	20.00	13.50
3-1/2	89	No	1014529	200	279000	558,000	-	-	-	-	3.50	12.00	24.00	15.50
3-3/4	95	No	1015051	198	336000	672,000	-	-	-	-	3.75	10.00	20.00	13.50
4	102	No	1015060	264	373000	746,000	-	-	-	-	4.00	12.00	24.00	16.00
†† 4-1/4	†† 108	No	1015067	302	354000	708,000	-	-	-	-	4.25	12.00	24.00	-
†† 4-1/2	†† 114	No	1015079	345	360000	720,000	-	-	-	-	4.50	14.00	28.00	-
†† 4-3/4	†† 121	No	1015088	436	389000	778,000	-	-	-	-	4.75	14.00	28.00	-
†† 5	†† 127	No	1015094	516	395000	790,000	-	-	-	-	5.00	15.00	30.00	-

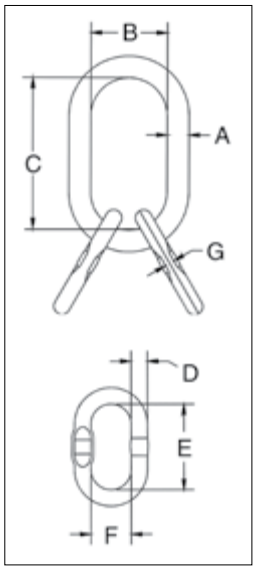
5:1 Design Factor. Based on single leg sling (in-line load), or resultant load on multiple legs with an included angle less than or equal to 120 degrees. Applications with wire rope and synthetic sling generally require a design factor of 5. Proof Test Load equals or exceeds the requirement of ASTM A952(8.1) and ASME B30.9. †Offshore Container Master Links Proof Tested to 2.5 times the Working Load Limit with 70 percent fixtures. ††Welded Master Link. Chain slings require that the Minimum Ultimate Load be 4 times the Working Load Limit. Refer to applications & warnings to determine products actual Ultimate Load. Proof Test Load equals or exceeds the requirement of ASTM A952(8.1) and ASME B30.9-1.4 for the chain size and number of legs.

Fatigue Rated® Crosby 8/10™ QUIC-CHECK®

APPLICATION AND WARNING INFORMATION
SECTION 17

A-345

- Alloy steel — Quenched & Tempered.
- Individually Proof Tested to values shown, with certification.
- Design Factor of 5 to 1.
- Proof Tested with 60% inside width special fixtures sized to prevent localized point loading per ASME A-952.
- Each main link is marked with Product Identification Code (PIC) for material traceability, Grade, CE, chain size and the "CG" (Crosby Group). Each sublink is marked with traceability code.
- 7/8" through 2" A-345 master links are type approved to DNV Certification Notes 2.7-1- Offshore Containers. These Crosby master links are 100% proof tested, MPI and impact tested. The tests are conducted by Crosby and 3.1 test certification is available upon request.
- Engineered Flat for use with S-1325A coupler link.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these links meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.



5

A-345 Master Link Assembly with Engineered Flat

Size									Dimensions (in)								
(in)	(mm)	OC	Stock No.	Weight Each (lb)	Working Load Limit (lb)	For Grade 100 Chain Size (in) (According to ASME/NACM)	For Grade 80 Chain Size (in) (According to ASME/NACM)	Proof Load (lb)	A	B	C	D	E	F	G	Deformation Indicator	Engineered Flat for S-1325
3/4W	19W	No	3685119	3.6	12,342	6mm, 9/32	6mm, 9/32, 5/16	†30,875	0.73	3.20	6.00	0.51	4.72	2.36	0.24	4.0	9/32 - 5/16
7/8W	22W	Yes	3014742	7.1	15,428	5/16	5/16	†38,594	0.88	3.75	6.38	0.66	6.69	3.15	0.33	4.5	9/32 - 5/16
1W	26W	Yes	3014766	12.7	26,007	3/8	3/8	†65,058	1.10	4.30	7.50	0.87	6.30	3.74	0.42	5.5	3/8
1-1/4W	32W	Yes	3014779	26.7	39,010	1/2	1/2	†97,588	1.33	5.50	9.50	1.10	9.45	5.12	-	7.0	-
1-1/2W	38W	Yes	3014807	40.3	61,050	5/8	5/8	†152,722	1.61	5.90	10.50	1.26	10.63	5.12	-	7.5	-
1-3/4W	44	Yes	3014814	51.9	84,854	5/8	3/4	†212,268	1.75	6.00	12.00	1.42	10.63	4.92	-	7.5	-
2	51	Yes	3014832	73.9	102,486	3/4	7/8	†256,376	2.00	7.00	14.00	1.57	10.63	5.51	-	9.0	-
2-1/2	64	No	3014855	137	160,010	7/8, 1	1	†400,277	2.50	8.38	16.00	1.97	12.13	7.48	-	11.0	-
2-3/4	70	No	3014864	186	216,873	1	1-1/4	†542,524	2.75	9.88	18.00	2.17	13.98	7.87	-	12.5	-
3-1/4	83	No	1014986	255	234,900	1-1/4	-	469,800	3.25	10.00	20.00	2.50	11.25	8.00	-	13.5	-
4	102	No	1014999	667	373,000	-	-	746,000	4.00	12.00	24.00	3.50	24.00	12.00	-	16	-

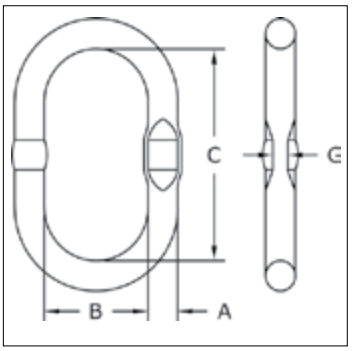
5:1 Design Factor. The maximum individual sublink working load limit is 75% of the assembly working load limit. Sublink for 3.25" and 4" is 61% of the assembly working load limit. Applications with wire rope and synthetic sling generally require a design factor of 5. Proof Test Load equals or exceeds the requirement of ASTM A952(8.1) and ASME B30.9. Chain slings require that the Minimum Ultimate Load be 4 times the Working Load Limit. Refer to applications & warnings to determine products actual Ultimate Load. Proof Test Load equals or exceeds the requirement of ASTM A952(8.1) and ASME B30.9-1.4 for the chain size and number of legs. †Proof Tested to 2.5 times the Working Load Limit with 70 percent fixtures.

Fatigue Rated® Crosby 8/10™ QUIC-CHECK® Q&T

APPLICATION AND WARNING INFORMATION SECTION 17

A-344

- Alloy steel — Quenched & Tempered.
- Individually Proof Tested to values shown, with certification.
- Design Factor of 5 to 1.
- Proof Tested with 70% inside width special fixtures sized to prevent localized point loading per EN1677.
- Each main link is marked with Product Identification Code (PIC) for material traceability, Grade, CE, chain size and the "CG" (Crosby Group).
- A-344 master links are type approved to DNV Certification Notes 2.7-1- Offshore Containers. These Crosby master links are 100% proof tested. Every batch is impact tested. The tests are conducted by Crosby and 3.1 test certification is available upon request.
- Engineered Flat for use with S-1325A coupler link.
- Fatigue rated to 20,000 cycles at 1.5 times the Working Load Limit.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these links meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.
- Available only in EMEA.



7/16" through 1-7/32" have Engineered Flat.

Grade 80 A-344 Welded Master Links available with Engineered Flat

Stock No.	Weight Each (lb)	Grade 100 Chain Sling		Grade 80 Chain Sling		WLL (lb)	Proof Load (lb)	Dimensions (in)				Engineered Flat Size for S-1325A (in)
		Single Leg Chain Size (in)	Double Leg Chain Size (in)	Single Leg Chain Size (in)	Double Leg Chain Size (in)			A	B	C	G	
1256988	0.8	6mm, 9/32	6mm	6mm, 9/32	6mm, 9/32, 5/16	7,000	17,632	0.51	2.36	4.72	0.26	6mm, 9/32, 5/16
1257002	1.9	5/16, 3/8	9/32	5/16, 3/8	5/16	9,000	22,701	0.67	3.54	6.30	0.33	3/8
1257072	2.3	3/8, 1/2	5/16	3/8, 1/2	3/8	14,700	37,027	0.75	3.54	6.30	0.33	3/8, 1/2
1257268	5.2	3/8, 1/2	3/8	3/8, 1/2	3/8	15,400	38,570	0.87	5.71	10.83	0.41	1/2
1257212	3.6	3/8, 1/2	3/8	5/8	3/8	19,400	48,488	0.87	3.94	7.09	0.41	1/2
1257332	6.7	1/2	-	1/2, 5/8	3/8	19,600	48,929	0.98	5.71	10.83	0.53	5/8
1257282	5.3	5/8, 1/2	3/8	5/8	1/2	25,300	63,475	0.98	4.53	8.27	0.53	5/8
1257382	8.5	5/8, 1/2	1/2	5/8	1/2	28,600	71,630	1.10	5.71	10.83	0.53	5/8
1257422	10.6	5/8, 3/4	1/2	3/4	5/8	37,400	93,670	1.26	5.71	10.83	0.66	-
1257492	15.2	3/4	5/8	3/4, 7/8	3/4	52,900	132,240	1.42	6.10	11.22	-	-
1257502	16.1	7/8	3/4	7/8	7/8	69,400	173,675	1.57	5.51	10.63	-	-
1257562	28.4	1	7/8	1	1	84,400	210,923	1.77	7.09	13.39	-	-
1257632	42.1	1, 1-1/4	7/8	1	1	99,200	247,950	2.01	8.46	15.35	-	-
1257573	55.3	1-1/4	1	1-1/4	1-1/4	147,600	369,170	2.17	7.99	15.98	-	-
1257591	94.36	-	-	-	-	198,416	496,153	2.75	9.84	17.72	-	-
1257600	125.66	-	-	-	-	275,577	689,264	3.14	10.24	17.72	-	-

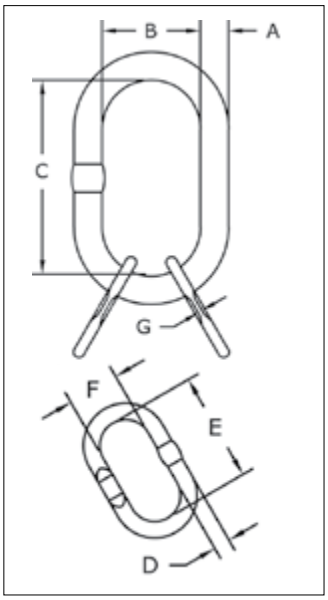
5:1 Design Factor. Applications with wire rope and synthetic sling generally require a Design Factor of 5. Based on single leg sling (in-line load), or resultant load on multiple legs with an included angle less than or equal to 120 degrees. Proof Test Load equals or exceeds the requirement of ASTM A952(8.1) and ASME B30.9. Chain slings require that the Design Factor be 4:1. Refer to applications & warnings to determine product's actual Ultimate Load. There are no manufactured flats on links over 1 1/4" (32mm). Two largest sizes are available globally.

Fatigue Rated Q&T

APPLICATION AND WARNING INFORMATION
SECTION 17

A-347

- Alloy steel — Quenched & Tempered.
- Individually Proof Tested to values shown, with certification.
- Design Factor of 5 to 1.
- Proof Tested with 70% inside width special fixtures sized to prevent localized point loading per EN1677.
- Each main link is marked with Product Identification Code (PIC) for material traceability, Grade, CE, chain size and the "CG" (Crosby Group). Each sublink is marked with traceability code.
- A-347 master links are type approved to DNV Certification Notes 2.7-1- Offshore Containers. These Crosby master links are 100% proof tested. Every batch is impact tested. The tests are conducted by Crosby and 3.1 test certification is available upon request.
- Engineered Flat for use with S-1325A coupler link.
- Fatigue rated to 20,000 cycles at 1.5 times the Working Load Limit.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these links meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.
- Available only in EMEA.



Grade 80 A-347 Welded Master Link Assembly with Engineered Flat

Stock No.	Weight Each (lb)	Grade 100 Chain Sling Three / Four Legs Chain Size (in)	Grade 80 Chain Sling Three / Four Legs Chain Size (in)	WLL (lb)	Proof Load (lb)	Dimensions (in)							Engineered Flat Size for S1325A Chain Size (in)
						A	B	C	D	E	F	G	
1257755	2.4	-	6mm	7,000	17,632	0.51	2.36	4.72	0.51	4.72	2.36	0.26	6mm
1257762	3.5	6mm	6mm, 9/32	9,000	22,701	0.67	3.54	6.30	0.51	4.72	2.36	0.26	6mm
1257832	3.9	6mm	9/32	9,200	23,362	0.75	3.54	6.30	0.51	4.72	2.36	0.26	9/32
1258058	7.3	5/16, 9/32	5/16	15,400	38,570	0.87	3.94	7.09	0.67	6.30	3.54	0.33	3/8
1258067	8.9	5/16, 9/32	5/16	15,400	38,570	0.87	5.71	10.83	0.67	6.30	3.54	0.33	3/8
1258049	8.4	5/16	3/8	18,700	46,725	0.87	3.94	7.09	0.75	6.30	3.54	0.33	3/8
1258076	10.1	5/16	3/8	19,600	49,149	0.98	4.53	8.27	0.75	6.30	3.54	0.33	3/8
1258102	11.4	5/16	3/8	19,600	49,149	0.98	5.71	10.83	0.75	6.30	3.54	0.33	3/8
1258142	15.6	3/8	1/2	31,900	80,005	1.10	5.71	10.83	0.87	7.09	3.94	0.41	1/2
1258182	21.2	3/8	1/2	37,400	93,670	1.26	5.71	10.83	0.98	8.27	4.53	0.53	5/8
1258185	28	1/2	5/8	52,000	130,036	1.42	6.10	11.22	1.10	7.48	4.33	0.53	5/8
1258187	40.6	5/8	5/8	61,900	154,941	1.57	5.51	10.63	1.26	10.83	5.71	0.66	-
1258402	58.6	5/8	3/4	84,400	211,143	1.77	7.09	13.39	1.42	11.22	6.10	-	-
1258471	78.2	3/4	7/8	99,200	247,950	2.01	8.46	15.35	1.57	10.63	5.51	-	-
1258491	134.6	7/8	1	147,600	369,170	2.17	7.99	15.98	2.01	15.35	8.46	-	-

5:1 Design Factor. Applications with wire rope and synthetic sling generally require a Design Factor of 5. Based on single leg sling (in-line load), or resultant load on multiple legs with an included angle less than or equal to 120 degrees. Proof Test Load equals or exceeds the requirement of ASTM A952(8.1) and ASME B30.9. Chain slings require that the Design Factor be 4:1. Refer to applications & warnings to determine product's actual Ultimate Load. There are no manufactured flats on links over 1 1/4" (32mm).

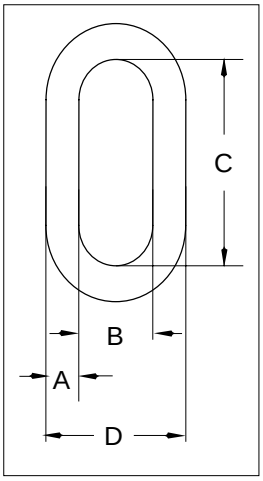
Fatigue Rated Q&T

APPLICATION AND WARNING INFORMATION
SECTION 17

Crosby

G-340 / S-340

- Forged carbon steel - Quenched & Tempered
- Self colored (S) or hot-dip galvanized (G).



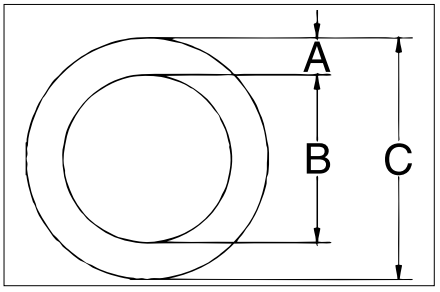
G-340/S-340 Weldless End Links

Size (A) (in)	Stock No.		Working Load Limit (lb)	Weight Each (lb)	Dimensions (in)			
	G-340 Galv.	S-340 S.C.			A	B	C	D
5/16	1014057	1014066	2500	.15	.31	.50	1.75	1.18
3/8	1014075	1014084	3800	.22	.38	.56	1.88	1.38
1/2	1014093	1014100	6500	.49	.50	.75	2.38	1.81
5/8	1014119	1014128	9300	.97	.63	1.00	3.25	2.32
3/4	1014137	1014146	14000	1.51	.75	1.13	3.50	2.68
7/8	1014155	1014164	12000	2.59	.88	2.00	5.13	3.75
1	1014173	1014182	15200	3.95	1	2.25	5.75	4.25
1-1/4	1014191	1014208	26400	7.30	1.25	2.50	7.00	5.00
1-3/8	1014217	1014226	30000	10.38	1.38	2.75	7.75	5.50

5:1 Design Factor. Based on single leg sling (in-line load), or resultant load on multiple legs with an included angle less than or equal to 120°.

S-643

- Forged carbon steel - Quenched & Tempered.



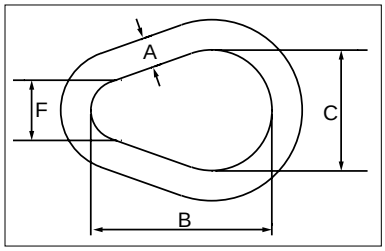
S-643 Weldless Rings

Size (in)	Stock No	Working Load Limit Single Pull (lb)	Weight Each (lb)	Dimensions (in)		
				A	B	C
7/8 x 4	1013780	7200	2.72	.88	4.00	5.75
7/8 x 5-1/2	1013806	5600	3.47	.88	5.50	7.25
1 x 4	1013824	10800	3.69	1.00	4.00	6.00
1-1/8 x 6	1013842	10400	6.60	1.13	6.00	8.25
1-1/4 x 5	1013860	17000	6.82	1.25	5.00	7.50
1-3/8 x 6	1013888	19000	10.12	1.38	6.00	8.75

6:1 Design Factor.

A-341

- Alloy steel — Quenched & Tempered.
- Individually Proof Tested at 2 times Working Load Limit with certification.
- Sizes up to 2" are forged.



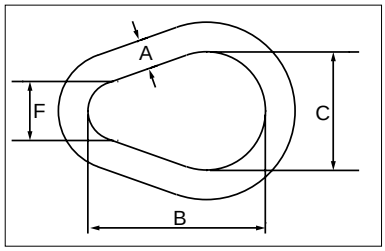
A-341 Alloy Pear Shaped Links

Size (A) (in)	Stock No	Working Load Limit (lb)	Working Load Limit (t)	Weight Each (lb)	Dimensions (in) B	C	F
1/2	1013575	7000	3.15	.55	3.00	2.00	1.00
5/8	1013584	9000	4.09	1.10	3.75	2.50	1.25
3/4	1013595	12300	5.59	1.76	4.50	3.00	1.50
7/8	1013604	15000	6.81	2.82	5.25	3.50	1.75
1	1013613	24360	11.0	4.22	6.00	4.00	2.00
1 1/8	1013622	30600	13.9	6.25	6.50	4.50	2.25
1 1/4	1013631	36000	16.4	8.25	7.75	5.00	2.50
1 3/8	1013640	43000	19.5	11.25	8.25	5.50	2.75
1 1/2	1013654	54300	24.7	14.25	9.00	6.00	3.00
1 3/4	1013672	84900	38.6	22.50	10.50	7.00	3.50
2	1013690	102600	46.6	34.00	12.00	8.00	4.00
†† 2 1/2	1013703	147300	66.9	66.00	15.00	10.00	5.00
†† 2 3/4	1013712	216900	98.6	88.00	16.50	11.00	5.50
†† 3	1013721	228000	103	114.00	18.00	12.00	6.00
†† 4	1013748	373000	169	271.00	24.00	16.00	8.00

5:1 Design Factor. Based on single leg sling (in-line load), or resultant load on multiple legs with an included angle less than or equal to 120°. †† Welded Link.

G-341 / S-341

- Forged carbon steel - Quenched & Tempered.
- Self colored (S) or hot-dip galvanized (G).



G-341 / S-341 Weldless Sling Links

Size (A) (in)	Stock No. G-341 Galv.	Stock No. S-341 S.C.	Working Load Limit Single Pull (lb)	Weight Each (lb)	Dimensions (in) B	C	F
3/8	1013897	1013904	1800	.23	2.25	1.50	.75
1/2	1013913	1013922	2900	.55	3.00	2.00	1.00
5/8	1013931	1013940	4200	1.06	3.75	2.50	1.25
3/4	1013959	1013968	6000	1.88	4.50	3.00	1.50
7/8	1013977	1013986	8300	2.75	5.25	3.50	1.75
1	1013995	1014002	10800	4.35	6.00	4.00	2.00
1 1/4	1014011	1014020	16750	7.60	7.75	5.00	2.50
1 3/8	1014039	1014048	20500	11.30	8.25	5.50	2.75

6:1 Design Factor. Based on single leg sling (in-line load), or resultant load on multiple legs with an included angle less than or equal to 120°.

Identification of our Master Links

To provide good readability and traceability our master links have the following marking:

Product type

- M - represents single type master link.
- MT - represents master link assembly.
- OS - is an abbreviation for offshore. All Arctic offshore master links are marked with OS and complies with DNV 2.7-1.

Size designation

- The size is linked to the WLL as well as to compatible products, like attachment couplers and other components.
- Trade size.
- The size expressed in inch.

Approved by BG/DGUV

- H32 – represents Gunnebo Industries' manufacturing ID. The ID also represents a 3rd part audit by BG in Germany.

Traceability code

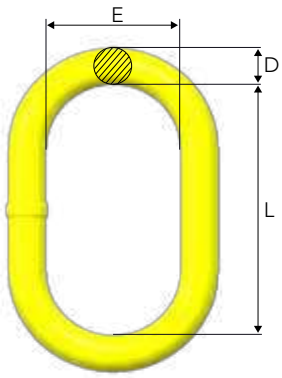
- The traceability code is unique for the production batch and normally consists of a letter and a number; for example A2. The traceability code makes it possible to trace and track the product through the whole production process back to the raw material used for the actual product.

Gunnebo Sweden

- To clearly highlight the Gunnebo Industries brand, our master links are marked with Gunnebo, Sweden.

Meets the standards

- The markings fulfills the requirements of EN 1677-4, ASTM A952, AS 3775.2 and DNV 2.7-1.

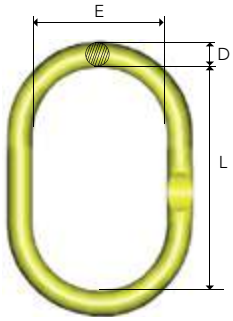


Master Link M

Stock No.	Code	WLL (lb) 5:1		L	E	D	Weight (lb)
		EN 1677-4	A-952/A952M AS 3775.2-2014				
Z101271	M-6-10	3,306	3,306	3.94	2.36	3/8”	0.44
Z100818	M-86-10	5510	7100	4.72	2.36	1/2”	0.88
Z101273	M-108-10	8,800	11,460	5.51	3.15	5/8”	1.76
Z101274	M-13-10	15,000	15,000	5.91	3.54	3/4”	2.20
Z101267	M-1310-10	16,530	17,632	6.30	3.74	7/8”	3.31
Z101268	M-1613-10	22,040	29,974	7.48	4.33	11/8”	6.17
Z101247	M-19-10	26,448	35,300	7.87	4.72	13/16”	7.72
Z101269	M-2016-10	37,468	45,402	9.45	5.51	13/8”	11.46
Z101270	M-2220-10	55,100	68,103	9.84	5.91	19/16”	16.09
Z101275	M-2622-10	61,712	70,528	9.84	5.91	15/8”	19.18
Z101284	M-32-10	72,732	85,074	11.81	7.09	13/4”	25.79
Z101276	M-3226-10	94,772	102,706	11.81	7.87	2”	32.63
Z101277	M-3632-10	123,424	143,260	13.78	7.87	21/8”	45.64
Z101278	M-4536-10	154,280	160,231	14.76	8.27	23/8”	58.20
Z101279	M-90T-10	198,360	220,400	17.72	9.84	23/4”	94.36
Z101280	M-125T-10**	275,500	275,500	17.72	10.24	31/8”	125.66

** Dimension L and E not acc. to EN 1677-4.
Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M, AS 3775:2014 and AS 3776:2015.
5:1 Design Factor

Master Link MF with engineered flat



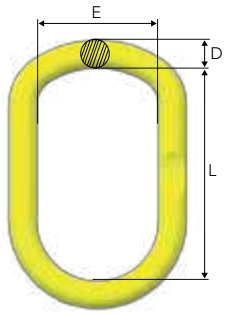
For 1-, 2-, 3- and 4-leg slings. Designed for use with CL, CLD, CG and CGD. 3- and 4-leg chain slings require CLD / CGD.

Stock No.	Code	WLL (lb) 5:1		For chain size			L	E	D	Weight (lb)
		EN 1677-4	A-952/A952M AS 3775.2-2014	1 leg	2 leg	3-4leg				
B14487	MF-6-10	3,306	3,306	(6mm)			3.94	2.36	3/8”	0.44
B14489	MF-86-10	5510	7100	5/16”	(6mm)	-	4.72	2.36	1/2”	0.88
B14482	MF-108-10	8,800	11,460	3/8”	5/16”	(6mm)	5.51	3.15	5/8”	1.76
B14483	MF-1310-10	16,530	17,632	1/2”	3/8”	5/16”	6.30	3.74	7/8”	3.31
B14484	MF-1613-10	22,040	29,974	5/8”	1/2”	3/8”	7.48	4.33	11/8”	6.17
B14485	MF-2016-10	37,468	45,402	3/4”	5/8”	1/2”	9.45	5.51	13/8”	11.46
B14486	MF-2220-10	55,100	68,103	7/8”	3/4”	5/8”	9.84	5.91	19/16”	16.09

Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M, AS 3775:2014 and AS 3776:2015.
5:1 Design Factor

5

Master Link MFH with engineered flat

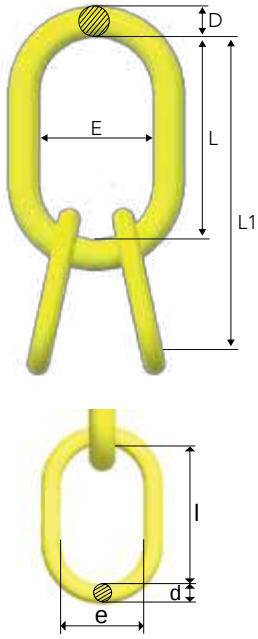


Designed for crane hooks, DIN 15401 and 15402. Designed for use with CL, CLD, CG and CGD.
3- and 4-leg chain slings require CLD / CGD.

Stock No.	Code	WLL (lb) 5:1		For chain size			L	E	D	DIN15401	DIN15402	Weight (lb)
		EN 1677-4	A-952/A952M AS 3775.2-2014	1leg	2leg	3-4leg						
Z101262	MFH-1310-10	16530	17632	1/2”	3/8”	5/16”	9.06	4.92	7/8”	≤12mm	≤16mm	4.19
Z101263	MFH-1613-10	22040	29974	5/8”	1/2”	3/8”	9.84	5.31	11/8”	≤12mm	≤16mm	7.05
Z101264	MFH-2016-10	37468	45402	3/4”	5/8”	1/2”	11.02	5.31	11/4”	≤16mm	≤20mm	10.14
Z101265	MFH-2220-10	61712	68104	7/8”	3/4”	5/8”	12.60	6.89	19/16”	≤25mm	≤32mm	18.96
Z101266	MFHW-2220-10	61712	61712	7/8”	3/4”	5/8”	13.98	8.86	19/16”	≤50mm	≤63mm	21.83

Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M-02, AS 3775:2014 and AS 3776:2015.
5:1 Design Factor

Master Link with Sublinks MT



Designed for use with chain or wire rope. For 3- and 4-leg slings

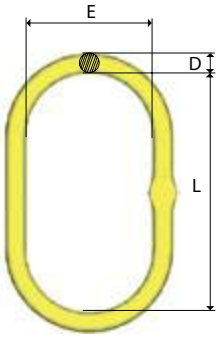
Stock No.	Code	WLL (lb) 5:1		L1	L	E	D	l	e	d	Weight (lb)
		EN 1677-4	A-952/A952M AS 3775,2-2014								
Z100091	MT-6-10	7714	11020	11.2	6.3	3.54	3/4”	4.72	2.36	1/2”	3.96
Z100903	MT-8-10	11461	17632	11.8	6.3	3.74	7/8”	5.51	3.15	5/8”	6.61
Z101359	MT-9-10	15208	21378	13.3	7.48	4.33	1-1/8”	6.30	3.54	3/4”	10.8
Z100904	MT-10-10	25346	35300	14.1	7.87	4.72	1-3/16”	6.30	3.74	7/8”	14.1
Z100905	MT-13-10	37468	57304	17.3	9.84	5.91	1-9/16”	7.48	4.33	1-1/8”	31.3
Z100906	MT-16-10	61712	77140	19.6	11.81	7.87	2”	7.87	4.72	1-1/4”	50.7
Z101074	MT-20-10	77140	110200	21.6	11.81	7.87	2-1/8”	9.84	5.91	1-9/16”	69.4
Z101281	MT-22-10	116812	165300	24.0	13.78	7.87	2-3/8”	10.24	5.51	1-3/4”	101
Z101282	MT-26-10	154280	220400	28.7	17.72	9.84	2-3/4”	11.02	6.3	2	156
Z101283	MT-32-10	198360	275500	28.7	17.72	10.2	3-1/8”	11.02	6.3	2-1/8”	200

Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M, AS 3775:2014 and AS 3776:2015.

Engineered flat on the sublinks for sizes up to MT-16-10 except MT-9-10.

5:1 Design Factor

Master Link MFX with engineered flat

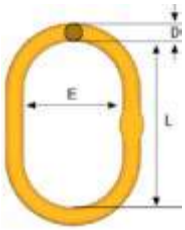


Oversized, for 1- and 2-leg slings. Designed for use with CL, CLD, CG and CGD.

Stock No.	Code	WLL (lb) 5:1		For chain 1-leg	For chain 2-leg	L	E	D	Weight (lb)
		EN 1677-4	A-952/A952M AS 3775.2-2014						
Z100550	MFX-108-10	9367	11461	5/16",3/8"	5/16"	13.39	7.09	1"	8.16
Z100551	MFX-1310-10	16530	17632	1/2"	3/8"	13.39	7.09	11/8"	10.36
Z100552	MFX-1613-10	24685	29974	5/8"	1/2"	13.39	7.09	13/8"	15.65
Z101125	MFX-2016-10	35300	45402	3/4"	5/8"	13.39	7.09	19/16"	21.16

Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M-02, AS 3775:2014 and AS 3776:2015.
5:1 Design Factor

Master Link MF with engineered flat

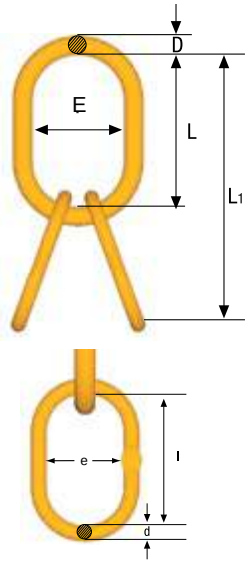


Classic yellow paint.

Stock No.	Code	WLL (lb)		L	E	D	Weight (lb)
		EN1677-4	A-952/A952M				
Z100817	MF-86-10	5510	7100	4.72	2.36	0.51	0.88
Z100861	MF-108-10	8800	11460	5.51	3.15	0.67	1.76
Z100862	MF-1310-10	16530	17632	6.30	3.74	0.87	3.31
Z100863	MF-1613-10	22040	29974	7.48	4.33	1.10	5.51
Z100864	MF-2016-10	37468	45402	9.45	5.51	1.34	11.46
Z100865	MF-2220-10	55100	68103	9.84	5.91	1.57	16.09

5:1 Design Factor. Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M.

Master Link with Sub Links MT

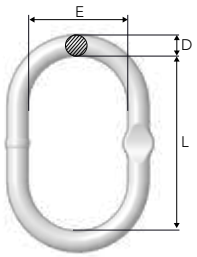


Engineered flat on the sublinks. Classic yellow paint.

Stock No.	Code	WLL (lb)		For chain 3-4-leg	L1	L	E	D	l	e	d	Weight (lb)
		EN1677-4	A-952/A952M									
Z100819	MT-6-10	7 714	11 020	(6mm)	10.63	5.91	3.54	0.75	4.72	2.36	0.51	3.97
Z100889	MT-8-10	11 461	17 632	9/32", 5/16"	11.81	6.30	3.74	0.87	5.51	3.15	0.67	6.61
Z100890	MT-10-10	25 346	35 300	3/8"	14.17	7.87	4.72	1.18	6.30	3.74	0.87	14.11
Z100891	MT-13-10	37 468	57 304	1/2"	17.72	9.84	5.91	1.57	7.87	4.72	1.18	31.31
Z100892	MT-16-10	61 712	77 140	5/8"	19.69	11.81	7.87	1.97	7.87	4.72	1.26	50.71

5:1 Design Factor. Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M.

Master Link MF HDG with engineered flat

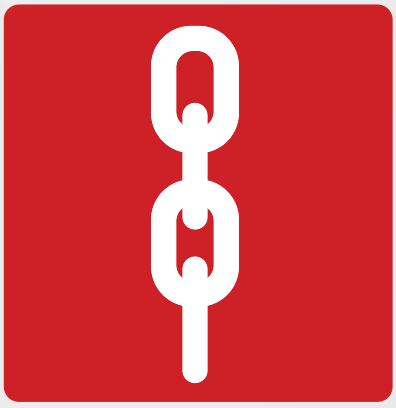


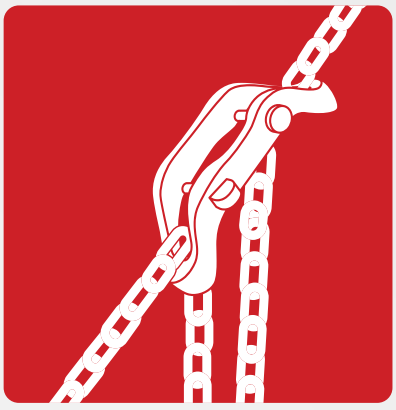
Stock No.	Code	WLL (lb)		L	E	D	Weight (lb)
		EN1677-4	A-952/A952M				
BG14481	MF-86-8 HDG	4500	5510	4.72	2.36	0.51	1.10
BG14482	MF-108-8 HDG	7100	8800	5.51	3.15	0.67	1.76
BG14483	MF-1310-8 HDG	12000	15000	6.30	3.74	0.87	3.31
BG14484	MF-1613-8 HDG	18000	22600	7.48	4.33	1.1	6.17

5:1 Design Factor.

CHAIN & ACCESSORIES

Innovative solutions for quicker, safer and easier lifting operations.





the Crosby group®

thecrosbygroup.com

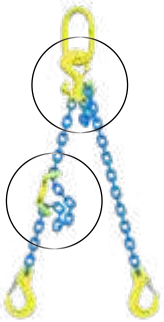
GUNNEBO Industries

GrabiQ: Components with multiple functions

Innovative designs that combine several clever functions in one component

Midgrab, MIG

Instant mounting, positioning, shortening on any part of the chain.



C-grab Duo, CGD

Built in shortening function.

Master Grab, MG

- All-in-one compact top link.
- Every chain leg can instantly be altered.
- Using the built in shortening function, you can alter between a straight lift to a looped sling in a matter of seconds.

Fewer components & lighter assembly

GrabiQ™ 4-leg sling with shortening function

(1) Master link
(2) C-grab Duos

Total: 3 components
with GrabiQ system

(1) Master link
(2) Sub links
(8) Berglok chain couplers
(4) Grab hooks

Total: 15 components
with traditional system

GrabiQ™ 2-leg sling with shortening function

(1) Master Grab Duo

Total: 1 component
with GrabiQ

(1) Master link
(4) Berglok chain couplers
(2) Grab hooks

Total: 7 components
with traditional system

Less is more with FlexiLeg

Thanks to the unique features of our GrabiQ product range, we offer solutions that increase the flexibility in lifting operations even further. Our FlexiLeg solution allows you to have an instant leg change on site.

With one single master link in combination with five Flexi-legs, we offer a solution that replaces four complete traditional slings, a total of ten legs. In addition, FlexiLeg also gives you the opportunity to modify the chain sling to different lifting operations, whenever and wherever it is needed.

The benefits of instant leg-change

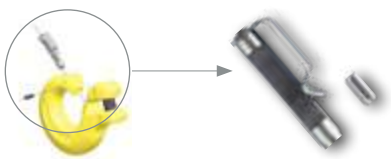
- Enables the user to change slings, leg by leg.
- Makes the sling lighter and easier to work with.
- Sling legs that are not being used can easily be removed, thereby increasing safety at the work site.
- The quantity of sling material is greatly reduced, providing cost savings.
- The chain sling can be reconfigured on site, thus increasing efficiency.

GrabiQ FlexiLeg – a total of 5 legs replaces the total of 10 legs with the old traditional system.

Related Products

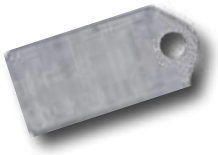
QuickPin – For safe exchange of sling legs

- Fits all C-components (CL, CLD, CG, CGD)
- Instant close/open function, no tools needed
- Easy to retrofit
- Made of stainless steel for long product life span



FlexiTag – For every GrabiQ sling

- Specially designed for FlexiLeg
- Fits all other GrabiQ slings
- WLL and chain size pre-stamped for 1 – 4 legs
- Leg angle 30/45 degree shown in contour
- Made of stainless steel for use in all weather conditions



GrabiQ – solutions for every need

1-leg chain slings

MG1-GBK
Consist of: Master Link MG,
Chain KLA, Safety Hook GBK

Chain Size		WLL (lb)	Total Components Length (in)
(mm)	(in)		
6	-	3300	6.73
8	5/16”	5700	11.65
10	3/8”	8800	14.21
13	1/2”	15000	17.83
16	5/8”	22600	20.75

4:1 Design Factor

MG1-EGKN
Type: Master Link MG, Chain KLA,
Hook with Latch EGKN

Chain Size		WLL (lb)	Total Components Length (in)
(mm)	(in)		
6	-	3300	9.09
8	5/16”	5700	10.28
10	3/8”	8800	13.03
13	1/2”	15000	16.06
16	5/8”	22600	18.94

4:1 Design Factor

TG1-GBK
Master Link MF, C-grab CG,
Chain KLA, Safety Hook GBK

Chain Size		WLL (lb)	Total Components Length (in)
(mm)	(in)		
6	-	3300	7.87
8	5/16”	5700	13.62
10	3/8”	8800	16.69
13	1/2”	15000	19.84
16	5/8”	22600	24.45

4:1 Design Factor

2-leg chain slings

TG1-EGKN
Consists of: Master Link MF, C-grab CG,
Chain KLA, Hook with Latch EGKN

Chain Size		WLL (lb)	Total Components Length (in)
(mm)	(in)		
6	-	3300	11.26
8	5/16”	5700	13.46
10	3/8”	8800	16.34
13	1/2”	15000	19.96
16	5/8”	22600	24.57

4:1 Design Factor

MGD2-EGKN
Consists of: Master Link MGD,
Chain KLA, Latch Hook EGKN

Chain Size		WLL (lb)			Total Components Length (in)
(mm)	(in)	β 60°	β 45°	β 30°	
6	-	5500	4625	3300	9.06
8	5/16”	9900	8100	5700	10.28
10	3/8”	15200	12400	8800	13.03
13	1/2”	26000	21200	15000	16.06
16	5/8”	39100	32000	22600	18.94

4:1 Design Factor

MGD2-GBK
Consists of: Master Link MGD,
Chain KLA, Safety Hook GBK

Chain Size		WLL (lb)			Total Components Length (in)
(mm)	(in)	β 60°	β 45°	β 30°	
6	-	5500	4625	3300	9.25
8	5/16”	9900	8100	5700	11.65
10	3/8”	15200	12400	8800	14.21
13	1/2”	26000	21200	15000	17.83
16	5/8”	39100	32000	22600	20.75

4:1 Design Factor

TG2-GBK
Consists of: Master Link MF, C-grab Duo CGD,
Chain KLA, Safety Hook GBK

Chain Size		WLL (lb)			Total Components Length (in)
(mm)	(in)	β 60°	β 45°	β 30°	
6	-	5500	4625	3300	11.46
8	5/16”	9900	8100	5700	14.41
10	3/8”	15200	12400	8800	17.48
13	1/2”	26000	21200	15000	21.02
16	5/8”	39100	32000	22600	26.42

4:1 Design Factor

TG2-EGKN
Consists of: Master Link MF, C-grab Duo CGD,
Chain KLA, Latch Hook EGKN

Chain Size		WLL (lb)			Total Components Length (in)
(mm)	(in)	β 60°	β 45°	β 30°	
6	-	5500	4625	3300	11.26
8	5/16”	9900	8100	5700	13.46
10	3/8”	15200	12400	8800	16.34
13	1/2”	26000	21200	15000	19.96
16	5/8”	39100	32000	22600	24.61

4:1 Design Factor

MGD2-CL
Consists of: Master Link MGD,
Chain KLA, C-lok CL

Chain Size		WLL (lb)			Total Components Length (in)
(mm)	(in)	β 60°	β 45°	β 30°	
6	-	5500	4625	3300	7.36
8	5/16”	9900	8100	5700	9.06
10	3/8”	15200	12400	8800	11.22
13	1/2”	26000	21200	15000	14.13
16	5/8”	39100	32000	22600	16.89

4:1 Design Factor

3-leg chain sling

TG3-GBK
Consists of: Master Link MF, C-grab CG, C-grab Duo CGD, Chain KLA, Safety Hook GBK

Chain Size		WLL (lb)			Total Component Length (in)
(mm)	(in)	β 60°	β 45°	β 30°	
6	-	8400	6800	4850	12.24
8	5/16"	14800	12100	8500	15.43
10	3/8"	22900	18700	13200	18.66
13	1/2"	39000	31800	22500	23.78
16	5/8"	58700	47900	33900	26.77

4:1 Design Factor

TG3-EGKN
Consists of: Master link MF, C-grab CG, C-grab Duo CGD, Chain KLA, Latch Hook EGKN

Chain Size		WLL (lb)			Total Component Length (in)
(mm)	(in)	β 60°	β 45°	β 30°	
6	-	8400	6800	4850	12.05
8	5/16"	14800	12100	8500	14.06
10	3/8"	22900	18700	13200	17.48
13	1/2"	39000	31800	22500	22.01
16	5/8"	58700	47900	33900	24.96

4:1 Design Factor

4-leg chain sling

TG4-GBK
Consists of: Master Link MF, C-grab Duo CGD, Chain KLA, Safety Hook GBK

Chain Size		WLL (lb)			Total Component Length (in)
(mm)	(in)	β 60°	β 45°	β 30°	
6	-	8400	6800	4850	12.24
8	5/16"	14800	12100	8500	15.43
10	3/8"	22900	18700	13200	18.66
13	1/2"	39000	31800	22500	23.78
16	5/8"	58700	47900	33900	26.77

4:1 Design Factor

TG4-EGKN
Consists of: Master link MF, C-grab Duo CGD, Chain KLA, Latch Hook EGKN

Chain Size		WLL (lb)			Total Component Length (in)
(mm)	(in)	β 60°	β 45°	β 30°	
6	-	8400	6800	4850	12.05
8	5/16"	14800	12100	8500	14.06
10	3/8"	22900	18700	13200	17.48
13	1/2"	39000	31800	22500	22.01
16	5/8"	58700	47900	33900	24.96

4:1 Design Factor

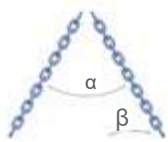
Grade 10 chain slings

Working Load Limits in tonnes for chain slings grade 10

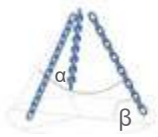
Based on EN 818-4:2008 WLL +25%

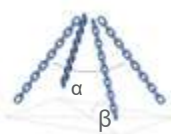
1-leg

2-leg



3- and 4-leg





			β 60°	β 45°	β 30°	β 60°	β 45°	β 30°
Chain Size (mm)	Chain Size (in)	WLL (lb)	α 60°	α 90°	α 120°	α 60°	α 90°	α 120°
6	-	3300	5500	4625	3300	8400	6800	4850
7	9/32"	4300	7400	6100	4300	11200	9100	6400
8	5/16"	5700	9900	8100	5700	14800	12100	8500
10	3/8"	8800	15200	12400	8800	22900	18700	13200
13	1/2"	15000	26000	21200	15000	39000	31800	22500
16	5/8"	22600	39100	32000	22600	58700	47900	33900
20	3/4"	35300	61100	49900	35300	91700	74900	52950
22	7/8"	42700	74000	60400	42700	110900	90600	64000
26	1"	59700	103100	84100	59500	155600	126600	89250
32	1-1/4"	88160	152700	124600	88160	229000	186950	132200

4:1 Design Factor. Working Load Limits are based on equally loaded and disposed sling legs.

APPLICATION AND WARNING INFORMATION
SECTION 17

Chain Tensioner GT – for lifting

One of the main benefits of using chain slings instead of other types of slings is the ability to shorten the chain to balance the load in asymmetrical lifts.

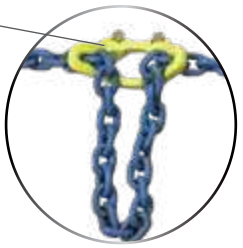
Gunnebo Industries offers a wide range of fittings for shortening, but most of these options only shorten in increments of one chain link. Certain applications require more precision when shortening, and for those the GT chain tensioner, approved for lifting purposes, is an excellent choice.

The Chain Tensioner GT is integral in one set. It is made of high-strength Grade 10 material, and the ratchet handle contributes to fast and ergonomic shortening. Our chain tensioner is designed to be compatible with the GrabiQ product range, enabling a wide range of fittings to be used for any type of application.

Precise positioning

The GT tensioner offers stepless adjustment, allowing for precise positioning of the load.

Midgrab Shorterner MIG



Precision shortening

The GT tensioner offers 7.8 in of precision shortening. For shortening of longer increments, our unique Midgrab Shortener MIG is the ideal choice.

Full capacity

As with all Gunnebo Industries' shorteners, there is no reduction in the capacity of the system when shortening.

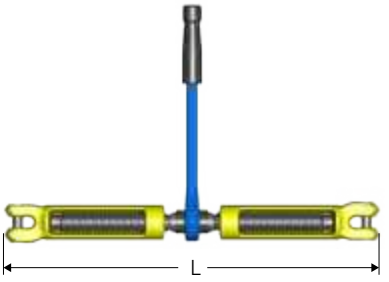
100% proof loaded

Every unit is individually proof loaded to 2.5 x WLL.

Chain Tensioner GT

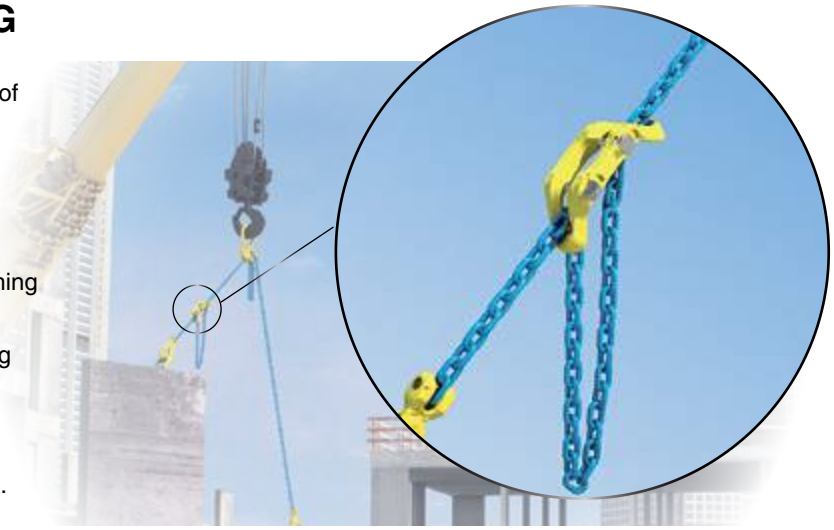
Stock No.	Model	WLL (lb)*	L = Min. Length	L = Max. Length	Weight (lb)
Z101367	GT-8-10	5700	15.75	23.62	7.275
Z101368	GT-10-10	8800	15.75	23.62	7.275

4:1 Design Factor



Midgrab Chain Shortener, MIG

- Instant mounting and positioning on any part of the chain.
- Shortening in either chain direction; up-down.
- Designed to prevent inadvertent chain disengagement.
- Can be set idle on the chain leg when shortening is not required.
- LC version offers secure mounting with locking set on any desired part of the chain with one chain direction open for shortening.
- CC version offers close-open function in both chain directions for safe retention of the chain.



Locking devices for Midgrab MIG

Note: The MIG should be used with at least one locking devices.

L - fixed locking set

For fixed mounting

Code:
L-8: B14905
L-10: B14915
L-13: B14917

C - close/open locking set

Spring operated locking device. Can be placed either in open or closed position.

Code:
C-8: B14904
C-10: B14914
C-13: B14916

Product code guide – locking options

MIG with C pins

For use with Grade 100 or Grade 80 chain.

Stock No.	Code	WLL (lb)	L	X	Y	Weight (lb)
B14303	MIG CC-8-10	5700	3.74	1.97	2.36	1.54
B14313	MIG CC-10-10	8800	4.92	2.76	3.03	2.42
B14323	MIG CC-13-10	15000	5.91	3.54	3.15	5.73

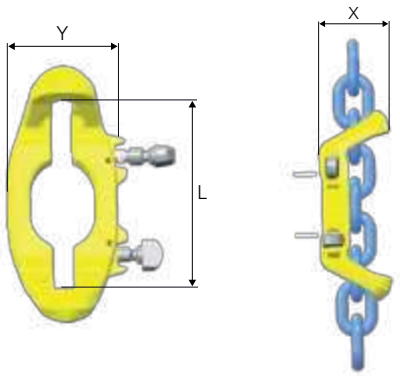
4:1 Design Factor

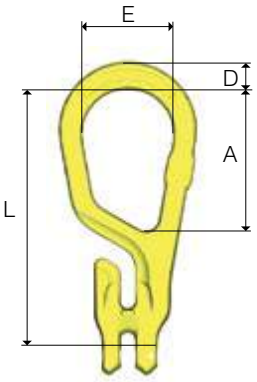
MIG without pins

For use with Grade 100 or Grade 80 chain.

Stock No.	Code	WLL (lb)	L	X	Y	Weight (lb)
B14300	MIG-8-10	5700	3.74	1.97	2.36	1.32
B14310	MIG-10-10	8800	4.92	2.76	3.03	2.20
B14320	MIG-13-10	15000	5.91	3.54	3.15	5.51

4:1 Design Factor



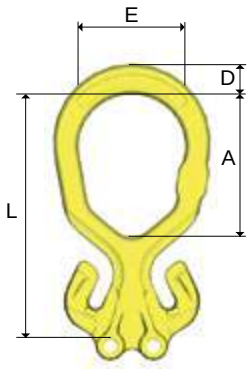


Master Grab MG

For use with Grade 100 or Grade 80 chain. ”All-in-one” compact top link.

Stock No.	Code	WLL (lb)	L	A	E	D	Weight (lb)
B14710	MG-6-10	3306	5.71	3.46	2.36	0.59	1.10
B14711	MG-8-10	5700	6.73	3.62	2.36	0.71	1.98
B14712	MG-10-10	8800	8.31	4.45	2.95	0.87	3.97
B14713	MG-13-10	15000	10.28	5.43	3.54	1.02	7.72
B14714	MG-16-10	22600	12.24	6.18	4.13	1.22	13.45

4:1 Design Factor. Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M and AS 3776:2015.

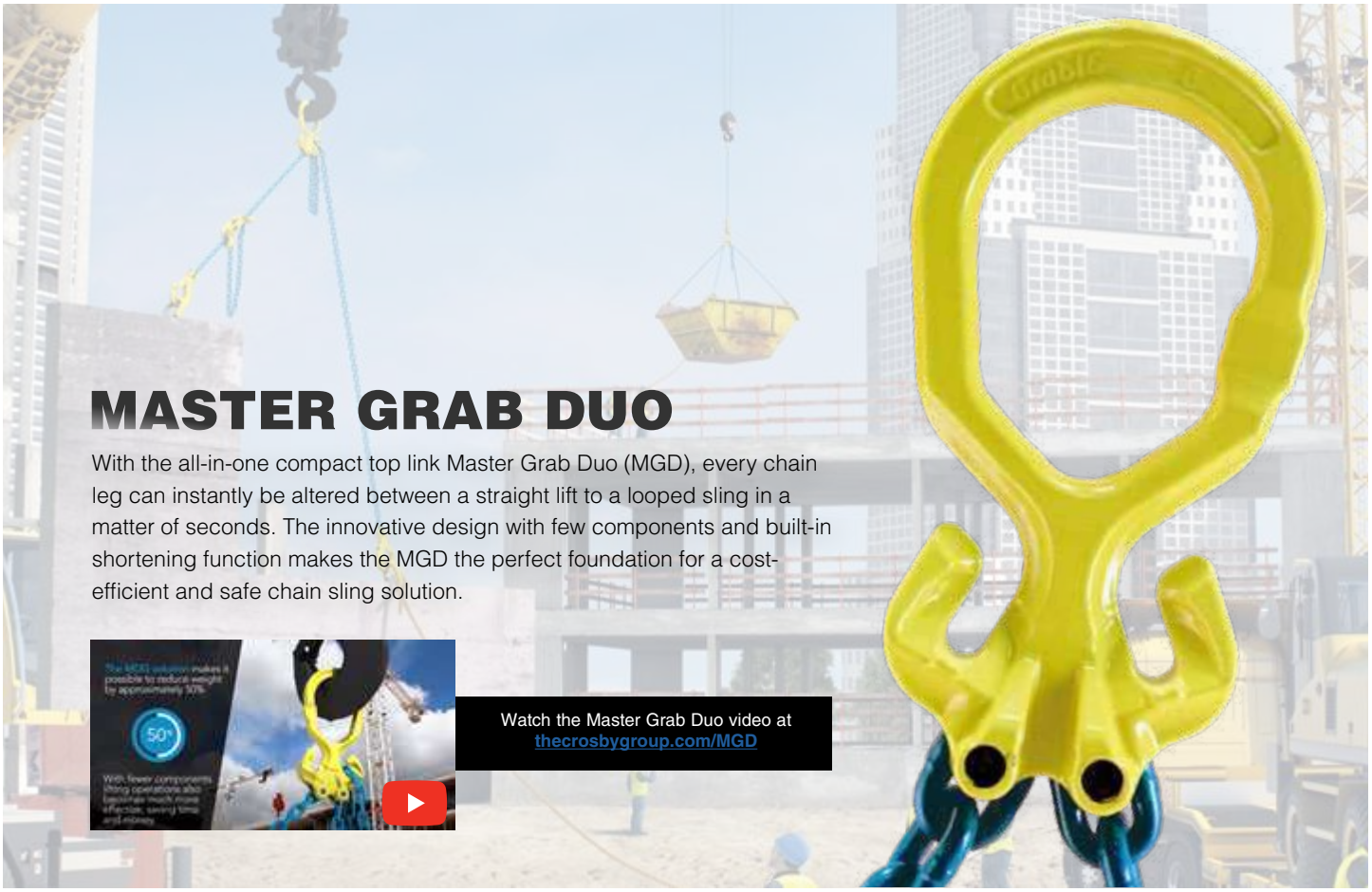


Master Grab Duo MGD

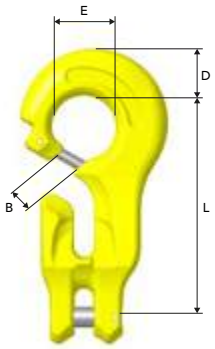
For use with Grade 100 or Grade 80 chain. ”All-in-one” compact top link for 2-leg slings.

Stock No.	Code	WLL (lb)	L	A	E	D	Weight (lb)
B14700	MGD-6-10	4700	5.7	3.5	2.4	0.67	1.5
B14701U	MGD-8-10	9900	6.7	3.9	3.0	0.83	2.9
B14702U	MGD-10-10	15200	8.3	4.9	3.5	0.94	5.1
B14703U	MGD-13-10	26000	10.3	5.9	4.1	1.2	11.5
B14704U	MGD-16-10	39100	12.2	6.9	4.7	1.4	17.4

4:1 Design Factor. Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M and AS 3776:2015.
Note: The maximum in service temperature is 392°F.



C-Grab CG

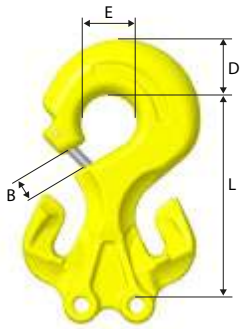


For use with Grade 100 or Grade 80 chain. For use with MF master and BK type hooks.

Stock No.	Code	WLL (lb)	L	B	E	D	Weight (lb)
B14730	CG-6-10	3306	3.15	0.43	0.94	0.75	0.66
B14731	CG-8-10	5700	4.21	0.47	1.26	0.94	1.54
B14732	CG-10-10	8800	5.28	0.59	1.57	1.14	3.31
B14733	CG-13-10	15000	6.77	0.71	2.05	1.50	7.05
B14734	CG-16-10	22600	8.46	0.87	2.52	1.85	13.45

4:1 Design Factor. Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M and AS 3776:2015.

C-Grab Duo CGD



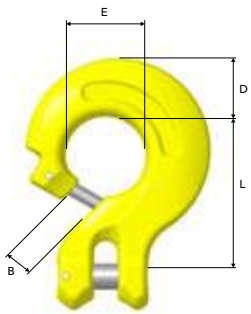
For use with Grade 100 or Grade 80 chain. For use with master links.

Stock No.	Code	WLL (lb)	L	B	E	D	Weight (lb)
B14720	CGD-6-10	4700	3.1	0.43	0.94	0.87	1.1
B14721U	CGD-8-10	9900	4.2	0.47	1.3	1.1	2.4
B14722U	CGD-10-10	15200	5.3	0.59	1.6	1.5	4.8
B14723	CGD-13-10	26000	6.8	0.75	1.9	1.9	11.9
B14724U	CGD-16-10	39100	8.5	0.87	2.5	2.2	20.1

4:1 Design Factor. Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M and AS 3776:2015.

Note: The maximum in service temperature is 392°F.

C-Lok CL

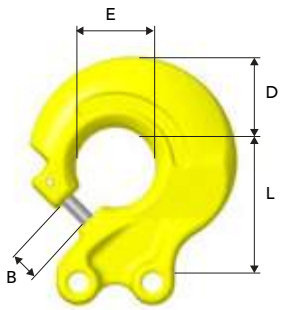


For use with Grade 100 or Grade 80 chain. For use with master links, eye hooks and choke.

Stock No.	Code	WLL (lb)	L	B	E	D	Weight (lb)
B14750	CL-6-10	3306	1.69	0.43	0.94	0.71	0.44
B14751	CL-8-10	5700	2.28	0.47	1.26	0.94	1.10
B14752	CL-10-10	8800	2.91	0.59	1.57	1.14	2.20
B14753	CL-13-10	15000	3.70	0.71	2.05	1.50	4.41
B14754	CL-16-10	22600	4.69	0.87	2.52	1.89	8.38

4:1 Design Factor. Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M and AS 3776:2015.

C-Lok Duo CLD

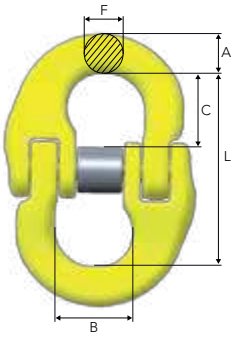


For use with Grade 100 or Grade 80 chain. For use with master links.

Stock No.	Code	WLL (lb)	L	B	E	D	Weight (lb)
B14740	CLD-6-10	5 700	1.69	0.43	0.94	0.87	0.88
B14741U	CLD-8-10	9 918	2.28	0.47	1.26	1.14	1.32
B14742U	CLD-10-10	15 317	2.91	0.59	1.57	1.46	2.65
B14743U	CLD-13-10	26 007	3.70	0.71	2.05	1.81	6.83
B14744U	CLD-16-10	39 231	4.69	0.98	2.52	2.24	12.13

4:1 Design Factor. Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M and AS 3776:2015.
Note: The maximum in service temperature is 392°F.

Coupling Link G

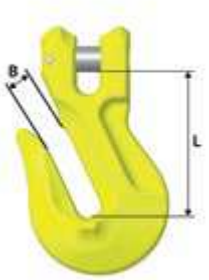


For use with Grade 100 or Grade 80 chain. For use with master link and eye hook.

Stock No.	Code	WLL (lb)	L	B	F	A	C	Weight (lb)
Z100821	G-6-10	3306	1.77	0.59	0.28	0.31	0.63	0.22
Z101358	G-7-10	4500	2.20	0.71	0.35	0.43	0.87	0.44
Z100822	G-8-10	5700	2.20	0.71	0.35	0.43	0.87	0.44
Z100823	G-10-10	8800	2.68	0.98	0.47	0.51	1.02	0.66
Z100824	G-13-10	15000	3.50	1.14	0.59	0.67	1.30	1.54
Z100825	G-16-10	22600	4.17	1.42	0.75	0.79	1.57	3.09
Z101119	G-20-10	35300	4.92	1.69	0.91	1.02	1.73	4.85
Z101339	G-22-10	44080	5.98	1.97	1.02	1.10	2.32	7.72
Z101365	G-26-10	60169	6.34	2.28	1.26	1.34	2.40	12.57
Z101666	G-32-10	88160	7.87	2.76	1.50	1.57	3.03	20.94

4:1 Design Factor. Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M-02 and AS 3776:2015.

Grab Hook GG

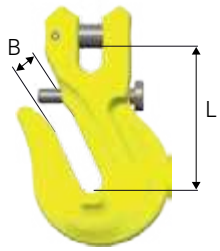


Clevis shortening hook. For use with Grade 100 or Grade 80 chain. No reduction of working load limit, thanks to supporting cradle lugs on either side of hook to prevent chain link deformation.

Stock No.	Code	WLL (lb)	L	B	Weight (lb)
Z101844	GG-6-10	3306	2.13	0.31	0.44
Z100845	GG-7-10	4500	2.24	0.39	0.66
B14771	GG-8-10	5700	2.24	0.39	0.88
B14772	GG-10-10	8800	2.99	0.47	1.98
B14773	GG-13-10	15000	3.82	0.63	3.97
B14774	GG-16-10	22600	4.49	0.79	6.83
Z101152	GG-20-10	35300	5.79	1.02	15.43

4:1 Design Factor. Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M and AS 3776:2015.

Grab Hook GG with Locking Pin

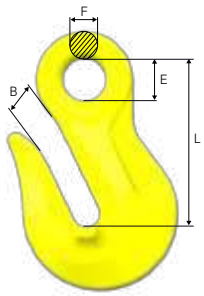


Clevis shortening hook with locking pin for extra safety. For use with Grade 100 or Grade 80 chain. No reduction of working load limit, thanks to supporting cradle lugs on either side of hook to prevent chain link deformation.

Stock No.	Code	WLL (lb)	L	B	Weight (lb)
B14971	GG-8-10 LP	5700	2.24	0.39	0.88
B14972	GG-10-10 LP	8800	3.03	0.47	1.98
B14973	GG-13-10 LP	15000	3.82	0.63	4.19
B14974	GG-16-10 LP	22600	4.49	0.79	7.05

4:1 Design Factor. Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M and AS 3776:2015.

Grab Hook OG

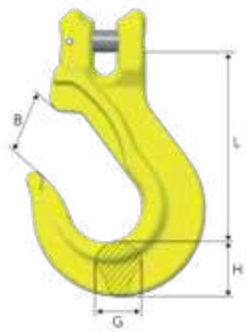


Eye shortening hook. For use with Grade 100 or Grade 80 chain. No reduction of working load limit, thanks to supporting lugs on either side of hook to prevent chain link deformation.

Stock No.	Code	WLL (lb)	L	B	E	F	Weight (lb)
Z101296	OG-7/8-10	5700	2.56	0.39	0.67	0.39	0.66
Z101297	OG-10-10	8800	3.35	0.47	0.79	0.47	1.54
Z101298	OG-13-10	15000	4.09	0.63	1.02	0.63	3.53
Z101299	OG-16-10	22600	5.16	0.79	1.26	0.75	6.17
Z101300	OG-20-10	35300	6.57	1.02	1.61	0.91	13.45
Z101301	OG-22-10	44094	7.36	1.02	1.81	1.26	18.96
Z101302	OG-26-10	60169	8.98	1.26	2.17	1.50	30.86
Z101303	OG-32-10	88160	9.02	1.57	1.97	1.06	45.64

4:1 Design Factor. Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M and AS 3776:2015.

Sling Hook EGK



For use with Grade 100 or Grade 80 chain. Sling hook with clevis connector.

Stock No.	Code	WLL (lb)*	L	B	G	H	Weight (lb)
Z100915	EGK-6-10	3306	3.39	1.14	0.67	0.79	0.88
Z100918	EGK-7-10	4500	3.74	1.26	0.67	0.87	1.10
Z100938	EGK-8-10	5700	3.74	1.26	0.67	0.91	1.10
Z100942	EGK-10-10	8800	4.76	1.61	0.91	1.22	2.20
Z100946	EGK-13-10	15000	5.71	1.93	1.10	1.50	4.41
Z100950	EGK-16-10	22600	6.69	2.40	1.42	1.81	8.38
Z101138	EGK-20-10	35300	8.23	2.80	1.65	2.36	16.09

4:1 Design Factor. Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M and AS 3776:2015.

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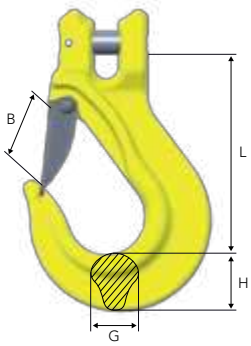
Sling Hook EGKN

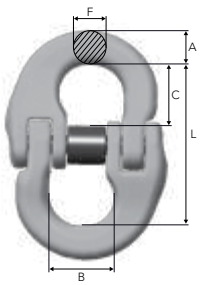


For use with Grade 100 or Grade 80 chain. Sling hook with latch.

Stock No.	Code	WLL (lb)*	L	B	G	H	Weight (lb)
B14460	EGKN-6-10	3306	3.39	0.98	0.67	0.79	0.88
Z100843	EGKN-7-10	4500	3.74	1.06	0.67	0.91	1.10
B14461	EGKN-8-10	5700	3.74	1.10	0.67	0.91	1.10
B14462	EGKN-10-10	8800	4.76	1.38	0.91	1.22	2.43
B14463	EGKN-13-10	15000	5.71	1.65	1.10	1.50	4.85
B14464	EGKN-16-10	22600	6.69	2.09	1.42	1.81	8.82
Z101127	EGKN-20-10	35300	8.23	2.56	1.65	2.36	16.76

4:1 Design Factor. Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M and AS 3776:2015.

Coupling Link GF – stain proof

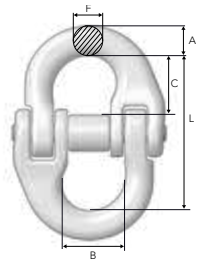


High strength stainless steel.

Stock No.	Code	WLL (lb)	For chain dim.	L	B	F	A	C	Weight (lb)
B80202	GF-10-8 SP	7100	3/8”	2.68	0.98	0.43	0.51	1.02	0.66
B80203	GF-13-8 SP	12000	1/2”	3.50	1.18	0.59	0.63	1.30	1.54
B80204	GF-16-8 SP	18000	5/8”	4.13	1.42	0.75	0.79	1.57	2.65

4:1 Design Factor

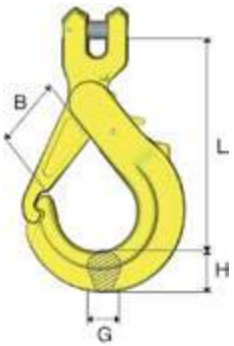
Coupling Link G HDG



Hot-dip galvanized for marine environments.

Stock No.	Code	WLL (lb)	L	B	F	A	C	Weight (lb)
ZG100821	G-6-8 HDG	2500	1.77	0.59	0.28	0.31	0.67	0.22
ZG100822	G-8-8 HDG	4500	2.20	0.71	0.35	0.43	0.87	0.44
ZG100823	G-10-8 HDG	7100	2.68	0.98	0.43	0.51	1.02	0.66
ZG100824	G-13-8 HDG	12000	3.50	1.18	0.59	0.63	1.30	1.54
ZG100825	G-16-8 HDG	18000	4	1.42	0.75	0.79	1.57	2.65

4:1 Design Factor

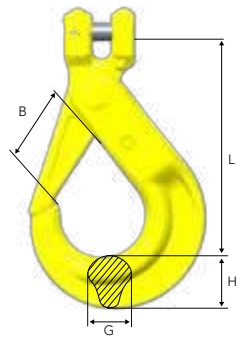


Safety Hook GBK

For use with Grade 100 or Grade 80 chain. Safety hook with clevis connector and grab latch.

Stock No.	Code	WLL (lb)	L	B	G	H	Weight (lb)
Z100758	GBK-6-10	3306	3.43	1.02	0.59	0.67	0.88
Z100849	GBK-7-10	4500	4.49	1.42	0.79	0.87	1.10
Z100759	GBK-8-10	5700	4.69	1.42	0.79	0.87	1.76
Z100760	GBK-10-10	8800	5.91	1.85	0.87	1.14	3.09
Z100761	GBK-13-10	15000	6.77	2.09	1.14	1.50	5.95
Z100762	GBK-16-10	22600	8.19	2.68	1.18	1.77	9.70

4:1 Design Factor. Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M and AS 3776:2015.

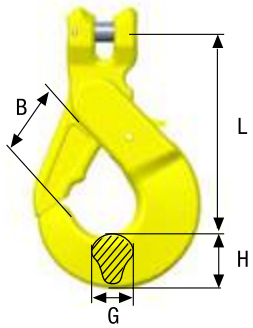


Safety Hook BKG

For use with Grade 100 or Grade 80 chain. Safety hook with clevis connector and standard latch.

Stock No.	Code	WLL (lb)	L	B	G	H	Weight (lb)
Z101110	BKG-6-10	3306	3.58	1.14	0.59	0.83	1.10
Z101098	BKG-7-10	4500	4.72	1.46	0.67	0.87	1.10
Z101100	BKG-8-10	5700	4.76	1.46	0.67	1.02	1.98
Z101026	BKG-10-10	8800	5.67	1.77	0.83	1.22	3.31
Z101034	BKG-13-10	15000	7.09	2.17	1.18	1.57	6.61
Z101042	BKG-16-10	22600	8.62	2.44	1.46	1.97	12.13
Z101091	BKG-20-10	35300	9.45	2.68	1.73	2.44	21.16

4:1 Design Factor. Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M and AS 3776:2015.

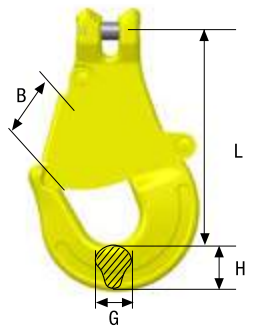


Safety Hook BKGC

For use with Grade 100 or Grade 80 chain. Safety hook with clevis connector for skip loaders.

Stock No.	Code	WLL (lb)	L	B	G	H	Weight (lb)
Z1002401	BKGC-13-10	15000	6.46	2.17	1.06	1.69	7.05

4:1 Design Factor. Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M and AS 3776:2015.



Sling Hook GKC

For use with Grade 100 or Grade 80 chain. Sling hook with clevis connector for skip loaders.

Stock No.	Code	WLL (lb)	L	B	G	H	Weight (lb)
Z7006461	GKC-13-10	15000	7.40	2.36	1.06	1.69	5.51

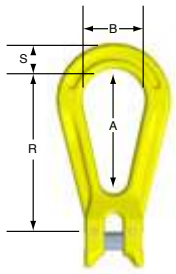
4:1 Design Factor. Fulfills requirements in: EN 1677:2008 (WLL +25%), ASTM A952/A952M and AS 3776:2015.

Clevis Egglink CEL

Stock No.	Code	WLL (lb)	C	E	G	H	L	Weight (lb)
Z701968	CEL-8-10	5733	3.15	1.57	0.55	0.59	3.94	0.88
Z701969	CEL-10-10	8820	3.94	1.97	0.71	0.75	4.96	1.54
Z701970	CEL-13-10	14994	5.12	2.56	0.91	0.98	6.38	3.31

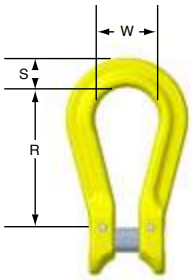
4:1 Deisgn Factor. Fulfills requirements in: EN 1677:2008, ISO 8539:2009, ASTM A952/A952M and AS 3776:2015.

Egg Link KSS



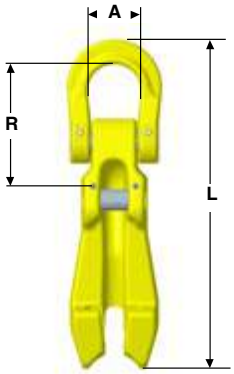
Stock No.	Model	Chain Diameter (in)	WLL (lb)	Dimensions (in)				Weight (lb)
				A	B	R	S	
Z2780422	KSS7N	0.28	4400	2.76	1.38	3.62	0.51	0.60
Z2780431	KSS10N	0.39	8800	4.02	2.01	5.20	0.73	1.63
Z2780440	KSS13N	0.51	14700	5.39	2.64	6.97	1.02	4.23
Z2780459	KSS16N	0.63	22000	6.77	3.27	8.66	1.22	6.99
Z2780468	KSS19N	0.75	30800	7.99	3.86	10.28	1.46	12.30
Z2780477	KSS23N	0.91	46200	9.37	4.49	12.01	1.57	18.57
Z2780486	KSS26N	1.02	59500	10.75	5.24	13.82	1.81	31.99

Kupler K



Stock No.	Model	Chain Diameter (in)	WLL (lb)	Dimensions (in)			Weight (lb)
				R	W	S	
Z2780495	K7N	0.28	4400	2.36	1.02	0.49	0.33
Z2780501	K10N	0.39	8800	2.87	1.38	0.75	1.04
Z2780510	K13N	0.51	14700	3.74	1.77	0.98	2.23
Z2780529	K16N	0.63	22000	4.65	2.13	1.14	3.66
Z2780538	K19N	0.75	30800	5.28	2.52	1.34	6.13
Z2780547	K23N	0.91	46200	4.76	2.52	1.77	9.39
Z2780556	K26N	1.02	59500	5.51	3.23	1.89	13.89
Z2780574	K32N	1.26	88100	7.01	3.78	2.52	25.31

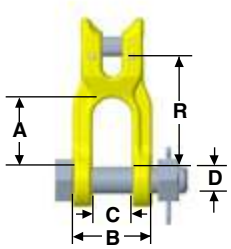
Shortening Clutch KSC N



Unique component for leg length adjustment. It accommodates loads of irregular shape or with a general lack of headroom and allows safe leg length adjustment of any number of legs with the load remaining fully in line.

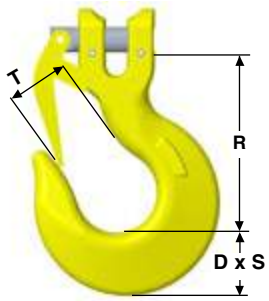
Stock No.	Model	WLL (lb)	Dimensions (in)			Weight (lb)
			L	R	A	
Z2780716	KSC7N	4400	6.34	2.36	1.02	1.17
Z2780725	KSC10N	8800	8.31	2.87	1.42	2.82
Z2780734	KSC13N	14700	10.71	3.74	1.81	5.95
Z2780743	KSC16N	22000	14.17	4.65	2.20	11.60
Z2780752	KSC19N	30800	16.81	5.28	2.68	21.76

Narrow Jaw Shackle KDN



Narrow jaw shackle for connection from pad eye or similar directly to chain.

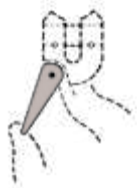
Stock No.	Model	WLL (lb)	Dimensions (in)					Weight (lb)
			A	B	C	R	D	
Z2781369	KDN7N	4400	1.42	1.65	0.79	2.24	0.55	0.57
Z2781378	KDN10N	8800	2.09	2.28	1.10	3.27	0.79	1.87
Z2781387	KDN13N	14700	2.83	2.91	1.38	4.17	0.94	3.70
Z2781396	KDN16N	22000	3.27	3.54	1.73	5.00	1.18	6.92



Sling Hook KHN L

This hook is most widely used in general purpose slinging.

Stock No.	Reference	WLL (lb)		Dimensions (in)					Weight (lb)	
							T			
		8	8+10	R	D	S	No Latch	With Latch	No Latch	With Latch
Z2780887	*KH23	35280	46305	8.74	3.11	2.01	2.99	2.36	25.11	28.97
Z2780896	*KH26	46746	59535	9.88	3.50	2.36	3.35	2.83	35.41	41.76
Z2780903	KHN32L	69457	88200	13.15	4.65	3.35	4.45	4.17	72.02	76.32



Safety Latch KHL N

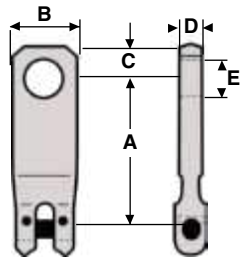
A robust latch to prevent accidental detachment of the load.

Stock No.	Reference	Part Number	Hook Reference
2780967	KHL32N	2781939	KHN32

Hook Latch Assembly KHL

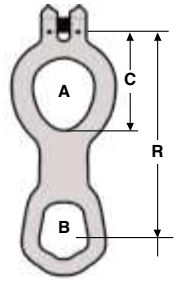
This assembly is for use with KH23 and KH26 and comprises a load pin to which the latch is attached.

Stock No.	Reference	Part Number	Hook Reference
2780976	KHL23	2780887	KH23
2780985	KHL26	2780896	KH26



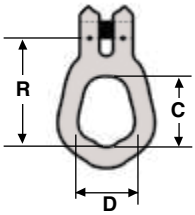
Top Suspension Plates

Stock No.	Type Size/ Reference	WLL (lb)		Dimensions (in)					Weight (lb)
		8	8+10	A	B	C	D	E	
Z2781555	C151401	11686	14773	6.02	2.44	1.26	0.79	1.42	3.51
Z2781564	C151402	11686	14773	5.51	2.44	1.26	0.79	1.42	3.35



Keep Plate C2247

Stock No.	Type Size/ Reference	WLL (lb)		Dimensions (in)				Weight (lb)
		8	8+10	A	B	C	R	
Z2781617	C2247	11686	14773	3.72 x 2.99	2.91 x 2.28	5.24	11.85	3.48



Single Trunnion Plate C1513

Stock No.	Type Size/ Reference	WLL (lb)			Dimensions (in)		Weight (lb)
		8	8+10	R	C	D	
Z2781626	C1513	11686	14773	4.41	2.91	2.28	3.31

Roller-Bearing Swivel, SKLI/SKLU

Electrically insulated, lubricated, sealed roller bearing swivel. Fully rotational even at maximum load. Tested to resist 1000 V. Suitable for protection of overhead cranes during welding operations on suspended loads.

The Gunnebo Industries SKLI is equipped with a heavy duty roller bearing, enabling high durability and safe use also under severe load. It also has heavy duty nylon insulation inside to decrease friction when in use. The SKLI is compatible with the entire Gunnebo Industries SK-range for versatile use.

Roller-bearing Swivel SKLI/SKLU

For use with Grade 80 chain.

Stock No.	Code	WLL (lb)	L	D	Weight (lb)
Z100316	SKLI-7/8-8	4500	2.95	1.89	1.54
Z100414	SKLI-10-8	7100	3.82	2.32	2.87
Z100415	SKLI-13-8	12000	4.72	2.95	6.17
Z100416	SKLI-16-8	18000	5.39	3.54	10.14
Z100417	SKLI-18/20-8	28300	159	104	16.09
RS16520	SKLU-22-8*	34200	160	109	20.28
RS16530	SKLU-26-8*	47700	207	135	40.34

4:1 Design Factor. Fulfills requirements in: EN 1677:2008, ISO 8539:2009, ASTM A952/A952M and AS 3776:2015.

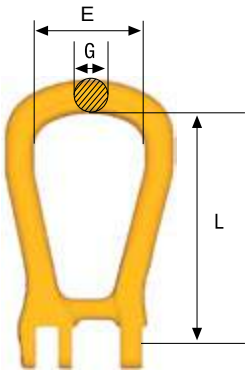
* Uninsulated

Load Pin and Locking Collar – SKA

For use with Grade 80 chain.

Stock No.	Code	Weight (lb)
Z700674	SKA-6-8	0.02
Z323624	SKA-7/8-8	0.04
Z318024	SKA-10-8	0.09
Z303822	SKA-13-8	0.18
Z303725	SKA-16-8	0.31
Z145048	SKA-18/20-8	0.57
Z133530	SKA-22-8	0.77
Z605407	SKA-26-8	1.39
Z650554	SKA-32-8	2.31

4:1 Design Factor.

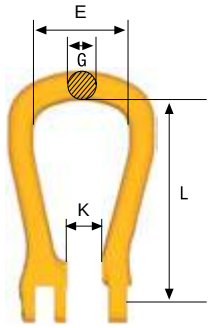


Master Link SKG (closed)

For use with Grade 80 chain. F or use with SK system.

Stock No.	Code	WLL (lb)	L	E	G	Weight (lb)
Z419684	SKG-7/8-8	4500	3.90	1.97	0.55	0.66
Z419781	SKG-10-8	7100	5.00	2.60	0.71	1.32
Z419888	SKG-13-8	12000	5.71	2.83	0.87	2.43
Z419985	SKG-16-8	18000	6.89	3.23	0.98	3.31
Z420086	SKG-18/20-8	28300	8.03	4.13	1.18	6.61

4:1 Design Factor. Fulfills requirements in: EN 1677:2008, ISO 8539:2009, ASTM A952/A952M and AS 3776:2015.



Master Link SKO (open)

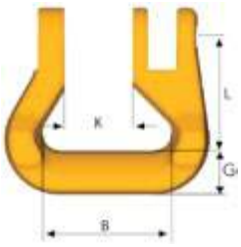
For use with Grade 80 chain. For use with SK system.

Stock No.	Code	WLL (lb)	L	E	G	K	Weight (lb)
Z418683	SKO-7/8-8	4500	3.90	1.97	0.55	0.59	0.66
Z418780	SKO-10-8	7100	5.00	2.60	0.71	0.79	1.32
Z419383	SKO-13-8	12000	5.71	2.83	0.87	0.98	2.20
Z419480	SKO-16-8	18000	6.89	3.23	0.98	1.18	3.31
Z419587	SKO-18/20-8	28300	8.03	4.13	1.18	1.42	6.39

4:1 Design Factor. Fulfills requirements in: EN 1677:2008, ISO 8539:2009, ASTM A952/A952M and AS 3776:2015.

Roundsling Coupling SKR

Special shape for full WLL of the roundsling. For use with SK system.

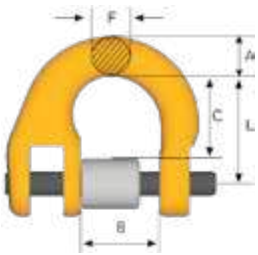


Stock No.	Code	WLL (lb)*	L	B	G	K	Weight (lb)
Z127840	SKR-7/8-8	4500	1.38	1.57	0.51	0.71	1.30
Z143143	SKR-10-8	7100	1.65	1.85	0.63	0.94	1.74
Z302538	SKR-13-8	12000	1.97	2.09	0.75	1.14	2.16
Z143240	SKR-16-8	18000	2.44	2.64	0.91	1.38	2.60
Z143347	SKR-18/20-8	28300	2.80	3.15	1.10	1.69	3.13
Z100057	SKR-22-8	34200	111	125	40	50	11.68
Z100055	SKR-26-8	47700	129	150	48	58	19.62

Fulfills requirements in: EN 1677:2008, ISO 8539:2009, ASTM A952/A952M and AS 3776:2015.

Half-link SKT (includes locking set)

For use with SK system.

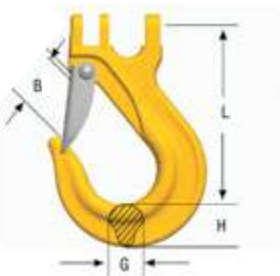


Stock No.	Code	WLL (lb)*	L	B	F	A	C	Weight (lb)
Z426286	SKT-7/8-8	4500	1.10	0.71	0.35	0.43	0.87	0.22
Z426383	SKT-10-8	7100	1.34	0.98	0.43	0.51	1.02	0.44
Z426480	SKT-13-8	12000	1.73	1.18	0.59	0.63	1.30	0.88
Z426587	SKT-16-8	18000	2.05	1.42	0.75	0.79	1.57	1.32
Z426684	SKT-18/20-8	28300	2.48	1.69	0.87	0.91	1.85	2.43
Z100225	SKT-22-8	34200	2.99	1.97	0.94	1.02	2.32	3.75
Z100226	SKT-26-8	47700	3.15	2.28	1.18	1.30	2.40	5.73
Z100227	SKT-32-8	72300	3.94	2.76	1.50	1.57	3.07	10.80

Fulfills requirements in: EN 1677:2008, ISO 8539:2009, ASTM A952/A952M and AS 3776:2015.

Sling Hook ESKN/SKN with Latch

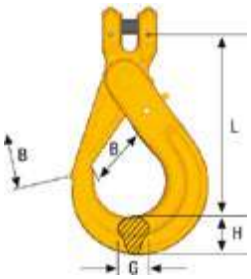
For use with SK system.



Stock No.	Code	WLL (lb)*	L	B	G	H	Weight (lb)
Z424682	SKN-7/8-8	4500	3.54	1.06	0.71	0.83	0.88
Z424789	SKN-10-8	7100	4.53	1.34	0.91	1.14	1.76
Z101214	ESKN-13-8	12000	5.71	1.65	1.10	1.42	3.97
Z100786	ESKN-16-8	18000	7.01	2.13	1.50	1.69	7.50
Z100781	ESKN-18/20-8	28300	7.76	2.32	1.93	2.01	11.24

Fulfills requirements in: EN 1677:2008, ISO 8539:2009, ASTM A952/A952M and AS 3776:2015.

Safety Hook BKG

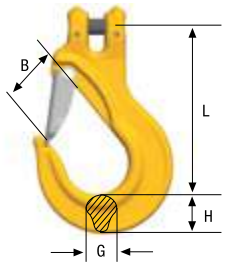


For use with Grade 80 chain.

Stock No.	Code	WLL (lb)	L	B	G	H	Weight (lb)
Z297222	BKG-7/8-8	4500	4.72	1.46	0.67	1.02	1.98
Z295929	BKG-10-8	7100	5.63	1.77	0.83	1.18	3.31
Z291527	BKG-13-8	12000	7.05	2.17	1.18	1.54	6.17
Z291624	BKG-16-8	18000	8.54	2.44	1.46	1.89	11.24

4:1 Design Factor. Fulfills requirements in: EN 1677:2008, ISO 8539:2009, ASTM A952/A952M and AS 3776:2015.

Sling Hook EGKN with Latch

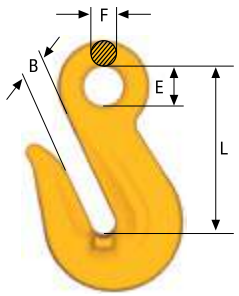


For use with Grade 80 chain.

Stock No.	Code	WLL (lb)	L	B	G	H	Weight (lb)
Z100744	EGKN-7/8-8	4500	3.74	1.14	0.67	0.87	1.10
Z100772	EGKN-10-8	7100	4.76	1.46	0.75	1.14	1.98
Z100773	EGKN-13-8	12000	5.79	1.65	1.06	1.42	4.41
Z100774	EGKN-16-8	18000	6.69	1.93	1.34	1.73	7.94

4:1 Design Factor. Fulfills requirements in: EN 1677:2008, ISO 8539:2009, ASTM A952/A952M and AS 3776:2015.

Grab Hook OG

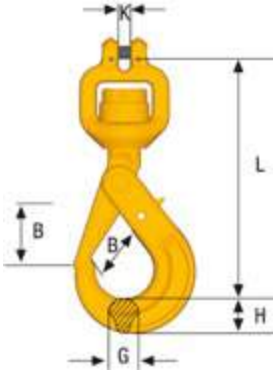


For use with Grade 80 chain. Not for use with Berglok. No reduction of working load limit, thanks to supporting lugs on either side of hook to prevent chain link deformation.

Stock No.	Code	WLL (lb)	L	B	E	F	Weight (lb)
Z100811	OG-7/8-8	4500	2.56	0.39	0.63	0.39	0.66
Z291022	OG-10-8	7100	3.35	0.47	0.79	0.47	1.32
Z295220	OG-13-8	12000	4.09	0.59	0.98	0.63	2.65
Z296221	OG-16-8	18000	5.12	0.75	1.18	0.75	5.29

4:1 Design Factor. Fulfills requirements in: EN 1677:2008, ISO 8539:2009, ASTM A952/A952M and AS 3776:2015.

Clevis Swivel Safety Hook BKH

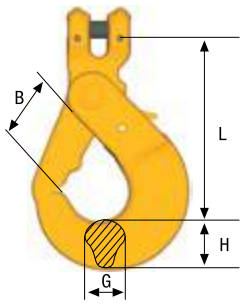


For use with Grade 80 chain. Safety hook with swivel for improved positioning of the hook before the load is lifted (360° rotation).

Stock No.	Code	WLL (lb)	L	B	K	G	H	Weight (lb)
Z336222	BKH-6-8	2500	5.71	1.14	0.27	0.59	0.83	1.54
Z700809	BKH-7/8-8	4500	7.13	1.46	0.35	0.67	1.02	2.65

4:1 Design Factor. Fulfills requirements in: EN 1677:2008, ISO 8539:2009, ASTM A952/A952M and AS 3776:2015.

Container Hook BKGC



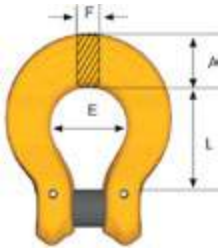
For use with Grade 80 chain.

Stock No.	Code	WLL (lb)*	L	B	G	H	Weight (lb)
Z100242	BKGC-16-8	18000	6.30	2.17	1.06	1.69	7.50

4:1 Design Factor. Fulfills requirements in: EN 1677:2008, ISO 8539:2009, ASTM A952/A952M and AS 3776:2015.

Spare part: RDOBK

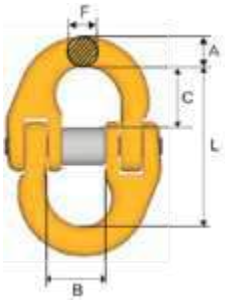
Berglok Chain Coupler BL



Stock No.	Code	WLL (lb)	L	E	F	A	Weight (lb)
Z622036	BL-6-8	2500	1.06	0.79	0.35	0.55	0.22
Z195823	BL-7/8-8	4500	1.38	0.98	0.43	0.71	0.44
Z208022	BL-10-8	7100	1.77	1.26	0.55	0.87	0.88
Z217820	BL-13-8	12000	2.20	1.57	0.67	1.10	1.76
Z208226	BL-16-8	18000	2.68	1.97	0.87	1.38	3.09

Fulfills requirements in: EN 1677:2008, ISO 8539:2009, ASTM A952/A952M and AS 3776:2015.

Coupling Link G



Stock No.	Code	WLL (lb)	L	B	F	A	C	Weight. (lb)
Z622882	G-6-8	2500	1.77	0.59	0.28	0.31	0.67	0.22
Z279333	G-7/8-8	4500	2.20	0.71	0.35	0.43	0.87	0.44
Z279430	G-10-8	7100	2.68	0.98	0.43	0.51	1.02	0.66
Z279537	G-13-8	12000	3.50	1.18	0.59	0.63	1.30	1.54
Z279634	G-16-8	18000	4.13	1.42	0.75	0.79	1.57	2.65
Z279731	G-18/20-8	28300	4.92	1.69	0.87	0.91	1.85	4.19
Z279838	G-22-8	34200	5.98	1.97	0.94	1.02	2.32	6.61
Z349171	G-26-8	47700	6.34	2.28	1.18	1.30	2.40	11.46
Z349189	G-32-8	72300	7.87	2.76	1.50	1.57	3.03	20.94

Fulfills requirements in: EN 1677:2008, ISO 8539:2009, ASTM A952/A952M and AS 3776:2015.

Chain production plant in Gunnebo, Sweden

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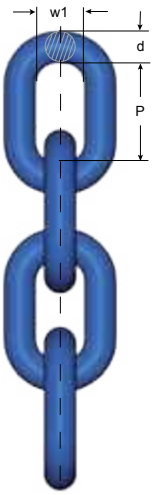


Chain, GrabiQ Grade 10 (200) Short link, KL

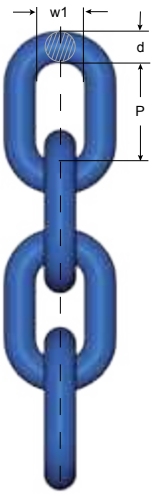
Heat treatment:
Quenched & Tempered
Note: For chain Grade 10 (200) the maximum in service temperature is 200°C.

Surface treatment:
Painted blue

Fulfills the requirements in:
ASTM A973/A973M-07(2012)
EN 818+2:2008 (WLL +25%, reduced temperature range)

Stock No. Box	Code	WLL (lb)	d nom.	P	w1	Weight lb / foot	MPF kN	Breaking Force (lb)
Z802300 - 1 x 656 ft	KLA 6-10 (200)	3306	(6mm)	0.71	0.33	0.54	8272	13240
Z802337 - 1 x 656 ft	KLA 7-10 (200)	4300	9/32"	0.83	0.39	0.74	10790	17309
Z802301 - 1 x 656 ft	KLA 8-10 (200)	5700	5/16"	0.94	0.43	0.94	14162	22929
Z802302 - 1 x 328 ft	KLA 10-10 (200)	8800	3/8"	1.18	0.55	1.55	22030	35518
Z802303 - 1 x 328 ft	KLA 13-10 (200)	15000	1/2"	1.54	0.70	2.55	37316	60246
Z802304 - 1 x 328 ft	KLA 16-10 (200)	22600	5/8"	1.89	0.86	3.77	56424	90369
Z802305 - 1 x 164 ft	KLA 20-10 (200)	35300	3/4"	2.36	1.06	6.32	88346	141624
Z802246 - 1 x 164 ft	KLA 22-10 (200)	44080	7/8"	2.60	1.14	7.93	110376	176468
Z802248 - 1 x 164 ft	KLA 26-10 (200)	59500	1"	3.07	1.38	9.81	149267	238737
Z802440 - 1 x 82 ft	KLA 32-10 (200)	88160	1-1/4"	3.78	1.64	16.40	220528	361928

4:1 Design Factor



Chain, GrabiQ Grade 10 (400) Short link, KL

Heat treatment:
Quenched & Tempered
Note: For chain Grade 10 (400) the maximum in service temperature is 400°C.

Surface treatment:
Painted blue

Fulfills the requirements in:
EN 818-2:2008 (WLL+25%, material dimension Ø +10%)

Note: This chain is marked with ”8+” in addition to the marking required by the machine directive.

Stock No. Box	Code	WLL (lb)	d nom.	P	w1	Weight lb / foot	MPF kN	Breaking Force (lb)
Z802306 - 1 x 656 ft	KLA 6-10 (400)	3306	0.26	0.71	0.35	0.67	8272	13218
Z802307 - 1 x 656 ft	KLA 8-10 (400)	5500	0.35	0.94	0.44	1.14	14162	22929
Z802308 - 1 x 328 ft	KLA 10-10 (400)	8800	0.43	1.18	0.57	1.75	22030	35518
Z802309 - 1 x 328 ft	KLA 13-10 (400)	14800	0.56	1.54	0.76	3.02	37316	60246
Z802310 - 1 x 328 ft	KLA 16-10 (400)	22040	0.68	1.89	0.91	4.50	56424	90369

4:1 Design Factor

Chain, Classic Grade 8 Short link, KL

Heat treatment:
Quenched & Tempered

Surface treatment:
Painted black (KLB)
Painted yellow (KLU)

Fulfills the requirements in:
EN 818-2:2008, AS 2321:2014, ASTM A391/A 391M-07 (2012)

Stock No. Box	Code	WLL (lb)	d nom.	P	w1	Weight lb / foot	Manufacturing Proof Force (lb)	Breaking Force (lb)
Z802174 - 1 x 656 ft	KLB 6-8E	2500	(6mm)	0.71	0.33	0.54	6362	10161
Z802175 - 1 x 656 ft	KLB 7-8E	3500	9/32"	0.83	0.39	0.74	8655	13938
Z802176 - 1 x 656 ft	KLB 8-8E	4500	5/16"	0.94	0.43	0.94	11308	18120
Z802156 - 1 x 328 ft	KLB 10-8E	7100	3/8"	1.18	0.55	1.55	17760	29225
Z802157 - 1 x 328 ft	KLB 13-8E	12000	1/2"	1.54	0.70	2.55	29900	48109
Z802177 - 1 x 328 ft	KLB 16-8E	18000	5/8"	1.89	0.86	3.77	45187	72389
Z801203 - 1 x 328 ft	KLB 19-8E	25600	3/4”	2.24	1.06	5.24	63846	102738
Z801228 - 1 x 164 ft	KLB 22-8E	34200	7/8"	2.60	1.16	7.13	85428	137134
Z801231 - 1 x 164 ft	KLB 26-8E	47700	1"	3.07	1.38	9.95	119374	191089
Z801232 - 1 x 82 ft	KLB 32-8E	72300	1-1/4"	3.78	1.64	14.52	180747	292253

4:1 Design Factor

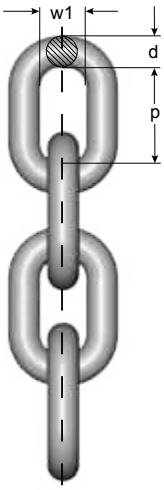
Chain KLZ HDG

Heat treatment:
Quenched & Tempered

Surface treatment:
Hot-dip galvanized

Fulfills the requirements in:
EN 818-2:2008 (material dim. Ø +10%)
ISO 1461:2009
ASTM A391/A391M-07 2012 (material dim. Ø +10%)

Stock No.	Code	Link Dimensions			Weight lb / foot	Min. Breaking Load (lb)	Delivery Length
		d	P	w1			
ZG802306	KLZ-6-8 HDG	0.25	0.70	0.35	2.20	10160	3.28 x 328 ft
ZG802307	KLZ-8-8 HDG	0.34	0.94	0.44	3.74	18000	3.28 x 328 ft
ZG802308	KLZ-10-8 HDG	0.43	1.18	0.56	5.73	28400	3.28 x 328 ft
ZG802309	KLZ-13-8 HDG	0.56	1.53	0.75	9.92	48000	3.28 x 328 ft
ZG802310	KLZ-16-8 HDG	0.68	1.88	0.90	14.7	72400	3.28 x 328 ft



Short Link Chain KLFZ, Grade 7

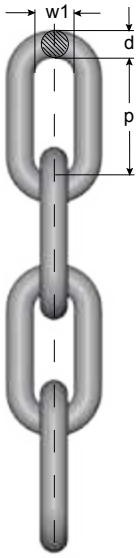
Heat treatment:
Quenched & Tempered

Surface treatment:
Hot-dip galvanized

Not for lifting purposes

Stock No.	Code	Link Dimensions			Min. Breaking Load (lb)	Weight lb / foot	Delivery Length
		d nom.	P	w1			
Z800666	KLFZ-10-7	0.39	1.18	0.55	24250	1.48	1 x 328 ft
Z800667	KLFZ-11-7	0.43	1.30	0.61	26455	1.80	1 x 328 ft
Z802329	KLFZ-13-7	0.51	1.53	0.67	39683	2.49	1 x 328 ft
Z803329	KLFZ-14-7	0.55	1.61	0.83	42345	3.00	1 x 328 ft
Z802901	KLFZ-16-7	0.63	1.89	0.85	58863	3.90	1 x 328 ft
Z801409	KLFZ-17-7	0.66	1.88	0.91	66138	4.30	1 x 328 ft
Z801407	KLFZ-19-7	0.74	2.24	1.06	88184	5.38	1 x 328 ft

Fulfills requirements in: EN 1461:2009 (Average surface thickness 85 µm)



Mid-Link Chain MLFZ, Grade 7

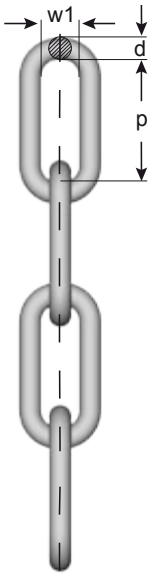
Heat treatment:
Quenched & Tempered

Surface treatment:
Hot-dip galvanized

Not for lifting purposes

Stock No.	Code	Link Dimensions			Min. Breaking Load (lb)	Weight lb / foot	Delivery Length
		d nom.	P	w1			
Z802455	MLFZ 10-6*	3/8"	1.57	0.57	22040	1.34	1 x 328 ft
Z802335	MLFZ-13-7	1/2"	2.17	0.80	39672	2.22	1 x 328 ft
Z801645	MLFZ-16-7	5/8"	2.56	0.81	61712	3.36	1 x 328 ft
Z801477	MLFZ-19-7	3/4”	2.95	1.14	88160	4.77	1 x 328 ft

Fulfills requirements in: EN 1461:2009 (Average surface thickness 3.35 mils)
* Average surface thickness 2.75 mils



Long Link Chain LLZ, Grade 6

Heat treatment:
Quenched & Tempered

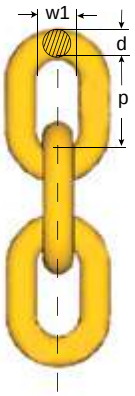
Surface treatment:
Hot-dip galvanized

Not for lifting purposes

Stock No.	Code	Link Dimensions			Min. Breaking Load (lb)	Weight lb / foot	Delivery Length
		d nom.	P	w1 min			
Z802453	LLZ-9-6*	6/16”	2.09	0.56	17191	0.94	1 x 328 ft
Z802454	LLZ-11-6*	7/16”	2.52	0.73	25566	1.41	4 x 328 ft
Z800682	LLZ-13-6	1/2”	3.15	0.83	35925	1.95	3 x 328 ft
Z802207	LLZ-13-6	1/2”	3.15	0.83	35925	1.95	1 x 750 ft
Z801567	LLZ-16-6	5/8”	3.94	1.06	54439	3.09	1 x 328 ft
GS1073	LLZ-16-6	5/8”	3.94	1.06	54439	3.09	1 x 656 ft
Z801458	LLZ-19-6	3/4”	3.94	1.12	76699	4.37	1 x 390 ft
Z801887	LLZ-22-6	7/8”	4.72	1.38	102706	5.85	1 x 164 ft
Z802447	LLZ-25-6	1”	5.51	1.46	132240	8.07	1 x 164 ft
Z802449	LLZ-28-6	1 1/8"	5.9	1.46	166008	14.9	1 x 164 ft
Z802451	LLZ-32-6	1 1/4"	6.69	1.73	216714	19.0	1 x 164 ft

Fulfills requirements in: EN 1461:2009 (Average surface thickness 3.35 mils)
* Average surface thickness 2.75 mils

Short Link Chain KLFU, Grade 8



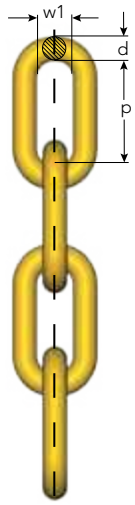
Heat treatment:
Quenched & Tempered,
Stress relieved

Surface treatment:
Painted yellow

Not for lifting purposes

Stock No.	Code	Link Dimensions			Weight lb / foot	Min. Breaking Load (lb)	Delivery Length
		d nom.	P	w1			
Z802330	KLFU-10-8	3/8"	1.18	0.55	1.48	27770	1 x 328 ft
Z802331	KLFU-13-8	1/2"	1.54	0.69	2.49	47166	1 x 328 ft
Z801146	KLFU-16-8	5/8"	1.89	0.85	3.90	70969	1 x 328 ft
Z327377	KLFU-19-8	3/4”	2.24	1.06	5.38	100062	1 x 328 ft
Z327385	KLFU-22-8	7/8"	2.60	1.18	7.39	134444	1 x 164 ft
Z801505	KLFU-26-8	1"	3.07	1.38	9.95	189544	1 x 164 ft

Mid-Link Chain MLFU, Grade 8



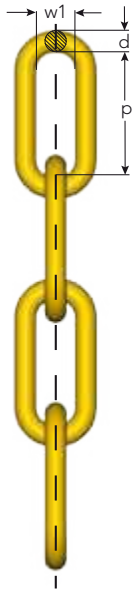
Heat treatment:
Quenched & Tempered,
Stress relieved

Surface treatment:
Painted yellow

Not for lifting purposes

Stock No.	Code	Link Dimensions			Weight lb / foot	Min. Breaking Load (lb)	Delivery Length
		d nom.	P	w1			
Z802332	MLFU-10-8	3/8"	1.57	0.57	1.34	27770	1 x 328 ft
Z802333	MLFU-13-8	1/2"	2.17	0.80	2.22	47166	1 x 328 ft
Z800564	MLFU-16-8	5/8"	2.56	0.81	3.36	70969	1 x 328 ft
Z800476	MLFU-19-8	3/4”	2.95	1.14	4.77	100062	1 x 328 ft
Z800661	MLFU-22-8	7/8"	3.46	1.18	6.32	134444	1 x 164 ft
Z801770	MFLU-26-8	1"	3.58	1.34	9.34	189544	1 x 164 ft

Long-Link Chain LLU, Grade 8



Heat treatment:
Quenched & Tempered,
Stress relieved

Surface treatment:
Painted yellow

Not for lifting purposes

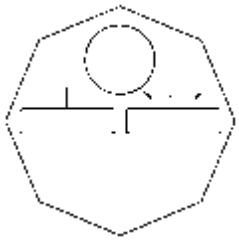
Stock No.	Code	Link Dimensions			Weight lb / foot	Min. Breaking Load (lb)	Delivery Length
		d	P	w1 min			
Z801934	LLU-9-8	6/16"	2.09	0.56	0.02	22481	4 x 328 ft
Z801935	LLU-11-8	7/16”	2.52	0.73	0.02	33942	4 x 328 ft
Z801936	LLU-13-8	1/2”	3.15	0.83	0.03	47166	3 x 328 ft
Z802160	LLU-16-8	5/8”	3.94	1.06	0.05	70969	1 x 328 ft
Z601983	LLU-19-8	3/4”	3.94	1.06	0.08	100062	1 x 328 ft
Z700526	LLU-22-8	7/8”	4.72	142	0.10	134444	1 x 164 ft

Spare Part RDGG

Spare part set consisting of pin, spring, and locking ring.

Stock No.	Code	Weight (lb)
B17930	RDGG-8-10 locking pin	0.07
B17931	RDGG-10-10 locking pin	0.09
B17932	RDGG-13-10 locking pin	0.11
B17933	RDGG-16-10 locking pin	0.13

Id-tag Grade 8



Stainless steel.

Stock No.	Code
Z100004	Id-tag

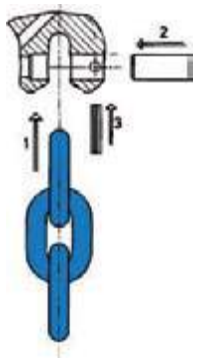
Sling Id-tag Grade 10

Stainless steel. Sling Id-tag Grade 10 according to EN 818.

Stock No.	Code
B14841	Flexitag 6 mm with ferrule and wire
B14842	Flexitag 8 mm with ferrule and wire
B14843	Flexitag 10 mm with ferrule and wire
B14844	Flexitag 13 mm with ferrule and wire
B14845	Flexitag 16 mm with ferrule and wire
Z100971	Flexitag 6 mm
Z100972	Flexitag 8 mm
Z100973	Flexitag 10 mm
Z100974	Flexitag 13 mm
Z100975	Flexitag 16 mm
Z101077	Flexitag 20 mm
Z100899	Flexitag Neutral

Stainless steel. Sling Id-tag Grade 10 acc. to ASME.

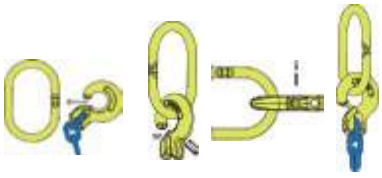
Stock No.	Code
697053	US/CANADA FLEXI LEG TAG KIT (6MM)
697054	US/CANADA FLEXI LEG TAG KIT 5/16”
697055	US/CANADA FLEXI LEG TAG KIT 3/8”
697056	US/CANADA FLEXI LEG TAG KIT 1/2”
697057	US/CANADA FLEXI LEG TAG KIT 5/8”



Load Pin Set CLS

Clevis connection set consisting of one load pin and one spring retaining pin.

Stock No.	Code	Weight (lb)
B14930	CLS- 6	0.02
B14931	CLS- 8	0.04
B14932	CLS-10	0.09
B14933	CLS-13	0.20
B14934	CLS-16	0.35
B14935	CLS-20	0.57



Assembly: C-coupling - C-grab/C-lok with MF

Spare Part CS

C-connection set for CG, CGD, CL, CLD, and RH hook, consisting of one blocking pin and one spring retaining pin, for locking.

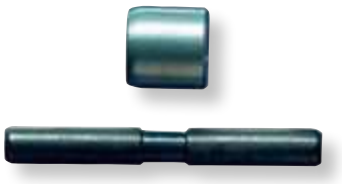
Stock No.	Code	Weight (lb)
B14920	CS- 6-10	0.02
B14921	CS- 8-10 / RH-1& -2	0.02
B14922	CS-10-10 / RH-3	0.02
B14923	CS-13-10	0.07
B14924	CS-16-10 / RH-5	0.11

Close/Open Locking Set FlexiLeg Quick Pin

Stock No.	Code	Weight (lb)
Z101010	QP-6-10	0.02
Z101011	QP-8-10	0.02
Z101012	QP-10-10	0.02
Z101013	QP-13-10	0.07
Z101014	QP-16-10	0.13

Locking Set SKA

SKA locking set for G-link, consists of a load pin and locking collar.



Stock No.	Code	Weight (lb)
Z100989	SKA- 6-10	0.02
Z100933	SKA- 7/8-10	0.04
Z100934	SKA-10-10	0.09
Z100990	SKA-13-10	0.18
Z100991	SKA-16-10	0.31
Z101176	SKA-20-10	0.57
Z650555	SKA-22-10	0.77
Z650556	SKA-26-10	1.39
Z650557	SKA-32-10	2.40

Stock No.	Code	Weight (lb)
Z700674	SKA-6-8	0.02
Z323624	SKA-7/8-8	0.04
Z318024	SKA-10-8	0.09
Z303822	SKA-13-8	0.18
Z303725	SKA-16-8	0.31
Z145048	SKA-18/20-8	0.57
Z133530	SKA-22-8	0.77
Z605407	SKA-26-8	1.39
Z650554	SKA-32-8	2.31

Load Pin Set Berglok BLA

Set for Berglok and clevis type connections. Consists of one load pin and two retaining pins.

Stock No.	Code	Weight (lb)
Z275649	BLA-6-8*	0.02
Z275347	BLA-7/8-8*	0.04
Z275444	BLA-10-8	0.09
Z275648	BLA-13-8	0.18
Z276047	BLA-16-8	0.33
Z276241	BLA-19-8	0.57

* Also for Safety hook BKH

Locking Set Midgrab MIG

C - Close/open function

L - Permanent locking function

Stock No.	Code	Weight (lb)
B14904	C-8	0.04
B14905	L-8	0.04
B14914	C-10	0.04
B14915	L-10	0.04
B14916	C-13	0.18
B14917	L-13	0.11

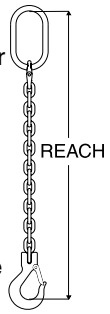
TO MAKE YOUR CROSBY® GRADE 100 ALLOY CHAIN SLING

Follow these simple steps in making a sling assembly:

1. Determine the maximum load to be lifted by the sling assembly.
2. Choose the type of sling assembly suited for the shape of the load and the size of the sling assembly for the load to be lifted. The decision must take into account the angle of the sling legs in multileg slings.
3. Determine the overall reach from bearing point of master link to bearing point on hook (see Fig. 1).
4. Select components, assemble chain and components.
5. Affix sling identification tag to sling. The tag is available from your authorized Crosby distributor.

Each sling shall be marked to show: name or trademark of manufacturer, grade, nominal chainsize, number of legs, rated load for the type(s) of hitch(es) used and angle upon which it is based (reach).

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



When using chain slings in choker applications, the Working Load Limit must be reduced by 20%. Crosby recommends a minimum angle of choke of 120 degrees. Consult Crosby when planning to use an angle of choke of less than 120 degrees. If Crosby A-1338 cradle grab hooks are used at a minimum angle of choke of 120 degrees, the full sling rated WLL can be utilized.

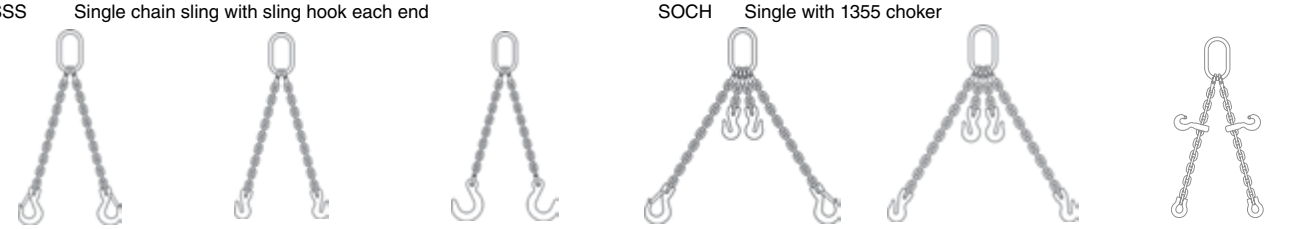
In shortening applications, a 20% reduction of the Working Load Limit is required except when using the Crosby A-1338 Cradle Grab Hooks, S-1311 Chain Shortener Link, the A-1355 Chain Choker Hook in conjunction with the S-1325 Chain Coupler Link, or the Crosby Eliminator® shortener link. They can be used without any reduction to the Working Load Limit.

The Slings shown below are standard assemblies that can be made from proof tested Crosby components and alloy chain supplied by your authorized Crosby distributor. Assemblies must include a chain sling identification tag.

APPLICATION AND WARNING INFORMATION
SECTION 17

TYPE CO | TYPE SOS | TYPE SOG | TYPE SOF | TYPE SSS | TYPE SGS | TYPE ASOS | TYPE ASOF | TYPE ASOG | TYPE SOCH

Type	Description	Type	Description
CO	Single chain sling with master link each end	SGS	Single chain sling with grab hook and sling hook
SOS	Single chain sling with master link and sling hook	ASOS	Adjustable single chain with master link and sling hook
SOG	Single chain sling with master link and grab hook	ASOF	Adjustable single chain sling with master link and foundry hook
SOF	Single chain sling with master link and foundry hook	ASOG	Adjustable single chain sling with master link and grab hook
SSS	Single chain sling with sling hook each end	SOCH	Single with 1355 choker



TYPE DOS | TYPE DOG | TYPE DOF | TYPE ADOS | TYPE ADOG | TYPE DOCH

Type	Description	Type	Description
DOS	Double chain sling with master link and sling hook	ADOS	Adjustable double chain sling with master link and sling hook
DOG	Double chain sling with master link and grab hook	ADOG	Adjustable double chain sling with master link and grab hook
DOF	Double chain sling with master link and foundry hook	DOCH	Double with 1355 choker

TYPE TOS | TYPE TOG | TYPE TOF | TYPE TOCH | TYPE QOS | TYPE QOG | TYPE QOF

Type	Description	Type	Description
TOS	Triple chain sling with master link and sling hook	QOS	Quadruple chain sling with master link and sling hook
TOG	Triple chain sling with master link and grab hook	QOG	Quadruple chain sling with master link and grab hook
TOF	Triple chain sling with master link and foundry hook	QOF	Quadruple chain sling with master link and foundry hook
TOCH	Triple with 1355 choker		

TO ORDER YOUR CROSBY ELIMINATOR® GRADE 100 ALLOY CHAIN SLING

Follow these simple steps to order a sling assembly:

1. Determine the maximum load to be lifted by the sling assembly.
2. Choose the type of sling assembly suited for the shape of the load and the size of the sling assembly for the load to be lifted. The decision must take into account the angle of the sling legs in multileg slings.
3. Determine the overall reach from bearing point of Eliminator Bail to bearing point on hook (see Fig. 1).
4. Select components, assemble chain and components.
5. Affix sling identification tag to sling. The tag is available from your authorized Crosby distributor.

Each sling shall be marked to show: name or trademark of manufacturer, grade, nominal chain size, number of legs, rated load for the type(s) of hitch(es) used and angle upon which it is based (reach).

Fig. 1

When using chain slings in choker applications, the Working Load Limit must be reduced by 20%. Crosby recommends a minimum angle of choke of 120 degrees. Consult Crosby when planning to use an angle of choke of less than 120 degrees. If Crosby A-1338 cradle grab hooks are used at a minimum angle of choke of 120 degrees, the full sling rated WLL can be utilized.

In shortening applications, a 20% reduction of the Working Load Limit is required except when using the Crosby A-1338 Cradle Grab Hooks, S-1311 Chain Shortener Link, the A-1355 Chain Choker Hook in conjunction with the S-1325 Chain Coupler Link, or the Crosby Eliminator® shortener link. They can be used without any reduction to the Working Load Limit.

APPLICATION AND WARNING INFORMATION
SECTION 17


TYPE ESO


TYPE ESOS


TYPE ESOG


TYPE ESOL


TYPE ESOF

Type	Description	Type	Description
ESOS	Crosby Eliminator® single chain sling with sling hook	ESOL	Crosby Eliminator® single chain with SHUR-LOC® hook
ESOG	Crosby Eliminator® single chain sling with grab hook	ESOF	Crosby Eliminator® single chain with foundry hook


TYPE EDO


TYPE EDOS


TYPE EDOG


TYPE EDOL


TYPE EDOF

Type	Description	Type	Description
EDOS	Crosby Eliminator® double chain sling with sling hooks	EDOL	Crosby Eliminator® double chain with SHUR-LOC® hooks
EDOG	Crosby Eliminator® double chain sling with grab hooks	EDOF	Crosby Eliminator® double chain with foundry hooks


TYPE ETOS


TYPE ETOG


TYPE ETOL


TYPE ETOF


TYPE EQOS


TYPE EQOG


TYPE EQOL

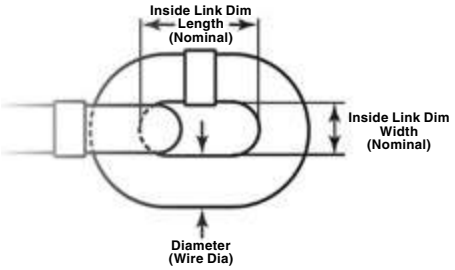

TYPE EQOF

Type	Description	Type	Description
ETOS	Crosby Eliminator® triple chain sling with master link and sling hooks	EQOS	Crosby Eliminator® quad chain sling with master link and sling hooks
ETOG	Crosby Eliminator® triple chain sling with master link and grrab hooks	EQOG	Crosby Eliminator® quad chain sling with master link and grab hooks
ETOL	Crosby Eliminator® triple chain sling with master link and SHUR-LOC® hooks	EQOL	Crosby Eliminator® quad chain sling with master link and SHUR-LOC® hooks
ETOF	Crosby Eliminator® triple chain sling with master link and foundry hooks	EQOF	Crosby Eliminator® quad chain sling with master link and foundry hooks

Crosby

Peerless 10
Alloy Chain

- 25% stronger than Grade 80 alloy chain.
- Permanently embossed with P (Peerless) and 10 (Grade).
- Finish - black paint.
- Meets the latest guidelines of the National Association of Chain Manufacturers (NACM) and ASTM A952/ A952M and ASTM A973/A973M for Grade 10 chain.
- Proof Tested at minimum 2 times the Working Load Limit with certification.



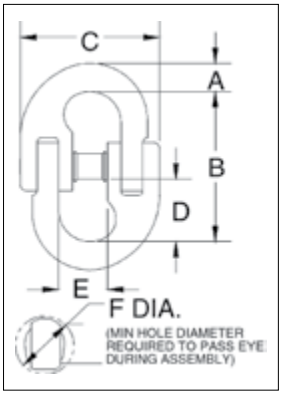
Grade 100 Alloy Chain Recommended for overhead lifting applications

Chain Size (in)	Chain Size (mm)	Stock No.	Feet Per Drum / Crate	Material Size (in)	Working Load Limit (lb)	Nominal Inside Length (in)	Nominal Inside Width (in)	Weight Per Foot (lb)
9/32 (1/4)	7	5510226	800	.286	4300	.87	.42	0.77
5/16	8	5510326	500	.332	5700	1.01	.49	1.12
3/8	10	5510426	500	.394	8800	1.23	.58	1.52
1/2	13	5510626	300	.529	15000	1.57	.75	2.71
5/8	16	5510826	200	.641	22600	1.96	.90	3.74
3/4	20	5510926	100	.812	35300	2.42	1.14	6.29
7/8	22	5511026	100	.906	42700	2.66	1.26	7.94
1	26	5511126	50	1.06	59700	3.09	1.42	10.10
1-1/4	32	*1210075	82	1.34	90400	3.89	1.73	16.40

4:1 Design Factor.
*Size 1-1/4" (32mm) is embossed "CG" instead of "P".

A-1337

- Suitable for use with both Grade 80 and Grade 100 chain.
- Individually Proof Tested at 2-1/2 times Working Load Limit with certification.
- Locking system that provides for simple assembly and disassembly - no special tools needed.
- Meets ASTM A-952 standards for Grade 100 chain fittings.
- Forged alloy steel — Quenched & Tempered.
- Sizes 9/32 through 1 inch are fatigue rated.



Crosby 8/10™ Fatigue Rated QT

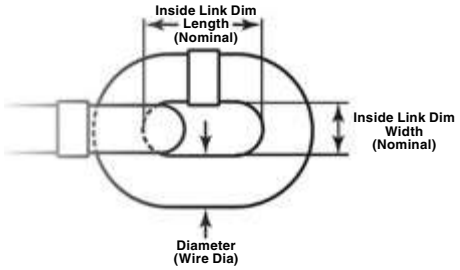
A-1337 LOK-A-LOY® 10 Alloy Connecting Link

Chain Size (in)	Chain Size (mm)	Stock No.	Pkg. Qty.	Weight Each (lb)	Working Load Limit (lb)	Dimensions (in) A	B	C	D	E	F
9/32 (1/4)	7	1015104	60	0.29	4300	0.38	1.94	2.00	0.80	0.68	0.53
5/16	8	1015113	50	0.42	5700	0.37	2.36	2.13	0.99	0.72	0.59
3/8	10	1015122	40	0.77	8800	0.51	2.65	2.55	1.09	0.91	0.73
1/2	13	1015136	12	1.60	15000	0.68	3.46	3.39	1.45	1.13	0.89
5/8	16	1015145	10	3.10	22600	0.78	4.25	4.00	1.77	1.34	1.20
3/4	20	1015154	1	6.39	35300	1.01	5.14	5.30	2.15	1.64	1.56
7/8	22	1015163	1	7.85	42700	1.09	5.46	5.78	2.27	1.97	1.55
1	26	1015172	1	11.05	59700	1.24	5.94	6.50	2.41	2.21	1.88
1-1/4	32	1015181	1	21.00	90400	1.56	7.43	7.60	3.07	2.57	2.22

4:1 Design Factor.

Peerless 8
Alloy Chain

- Finish – black paint.
- Permanently embossed with P (Peerless) and 8 (Grade).
- Proof Tested at minimum 2 times the Working Load Limit with certification.
- Meets the latest guidelines of the National Association of Chain Manufacturers (NACM) and ASTM A391/A391M for Grade 8 chain.



Grade 80 Alloy Chain Recommended for overhead lifting applications

Chain Size (in)	Chain Size (mm)	Stock No.	Feet Per Drum / Crate	Material Size (in)	Working Load Limit (lb)	Nominal Inside Length (in)	Nominal Inside Width (in)	Weight Per Foot (lb)
9/32 (1/4)	7	5050226	800	.279	3500	.87	.42	0.76
5/16	8	5050326	500	.311	4500	1.01	.49	0.98
3/8	10	5050426	500	.394	7100	1.23	.58	1.47
1/2	13	5050626	300	.516	12000	1.57	.75	2.55
5/8	16	5050826	200	.625	18100	1.96	.90	3.63
3/4	19/20	5050926	100	.781	28300	2.42	1.14	5.75
7/8	22	5051026	100	.906	34200	2.66	1.26	7.88
1	26	5051126	50	1.03	47700	2.89	1.42	10.98
1-1/4	32	5051226	66	1.26	72300	3.78	1.64	16.36

4:1 Design Factor.

Crosby provides two methods of attaching Spectrum 8® chain to Crosby fittings:

CONNECTING AND COUPLER CHAIN LINKS

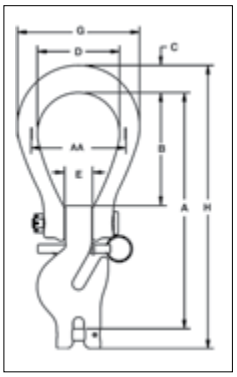
A-1337
LOK-A- LOY®
Connecting Link

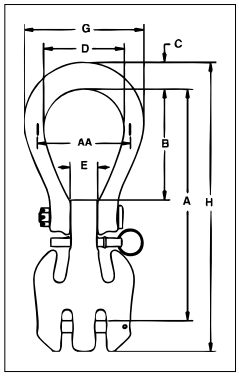
S-1325
Grade 100
Coupler Link

A-1361
Single Hook

A-1362
Double Hook

- The Crosby Eliminator® combines selected features and functionality of a master link, connecting link, grab hook and adjuster legs to provide you with one fitting that is suitable for applications that require an adjustable length chain sling.
- Forged alloy steel — Quenched & Tempered.
- Innovative two piece design allows for maximum flexibility.
- Individually Proof Tested with certification.
- The Crosby Eliminator, with a properly installed and locked latch pin, can be used for personnel lifting applications and meets the intent of OSHA Rule 1926.1431(g)(1)(i)(A) and 1926.1501(g)(4)(iv)(B).
- Suitable for use with Grade 100 and Grade 80 chain.
- Engineered to accommodate optional locking pins that can be inserted to lock the shortened chain legs into place.
- Fatigue rated at 1-1/2 times the Working Load Limit at 20,000 cycles.
- Use the A-1361 and A-1362 in combination to make 3 leg chain slings.
- Load pin assembly instructions available.





APPLICATION AND WARNING INFORMATION
SECTION 17

A-1361 Crosby Eliminator® Single Hook

Chain Size (in)	Chain Size (mm)	Frame Size	Working Load Limit (lb)	A-1361 Stock No.	L-1361 Stock No.	Weight Each (lb)	Dimensions (in) A	B	C	D	E	G	H	AA	S-4104N Replacement Latch Pin Stock No.
1/4	7	2	4300	1049797	1049802	3.9	8.20	3.88	.90	3.00	.94	4.40	9.78	3.50	1092983
5/16	8	2	5700	1049804	1049809	3.9	8.18	3.88	.90	3.00	.94	4.40	9.78	3.50	1092983
3/8	10	3	8800	1049813	1049818	6.5	10.05	4.81	1.16	3.50	1.13	5.20	12.06	4.00	1092992
1/2	13	4	15000	1049822	1049827	13.5	12.88	6.00	1.63	4.13	1.31	6.39	15.57	5.00	1093001
5/8	16	5	22600	1049831	1049836	24.1	15.26	6.88	1.96	4.75	1.63	7.41	18.58	6.00	1093010

4:1 Design Factor. Proof tested at 2.5 times the Working Load Limit.

A-1362 Crosby Eliminator® Double Hook

Chain Size (in)	Chain Size (mm)	Frame Size	Working Load Limit (lb)	A-1362 Stock No.	L-1362 Stock No.	Weight Each (lb)	Dimensions (in) A	B	C	D	E	G	H	AA	S-4104N Replacement Latch Pin Stock No.
1/4	7	2	8600	1049859	1049913	4.7	8.20	3.88	.90	3.00	.94	4.40	10.10	3.50	1092983
5/16	8	2	11400	1049868	1049922	4.7	8.18	3.88	.90	3.00	.94	4.40	10.10	3.50	1092983
3/8	10	3	17600	1049877	1049931	8.1	10.05	4.81	1.16	3.50	1.13	5.20	12.56	4.00	1092992
1/2	13	4	30000	1049886	1049940	17.3	12.88	6.00	1.63	4.13	1.31	6.39	16.25	5.00	1093001
5/8	16	5	45200	1049895	1049949	31.5	15.26	6.88	1.96	4.75	1.63	7.41	19.33	6.00	1093010

4:1 Design Factor. Proof tested at 2.5 times the Working Load Limit.

Using Crosby ELIMINATOR® in 3 and 4 Leg Slings

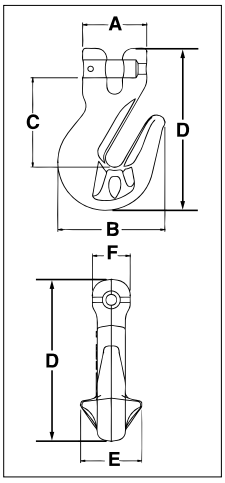
Spectrum 10 Chain Size (in)	Spectrum 10 Chain Size (mm)	Master Link A-342 Stock No.	Master Link A-1343 Stock No.	Crosby ELIMINATOR® Single A-1361 Stock No.	Crosby ELIMINATOR® Double A-1362 Stock No.
1/4	7	1014285	1247096	1049797	1049859
5/16	8	1014319	1247122	1049804	1049868
3/8	10	1014331	1247124	1049813	1049877
1/2	13	1014348	1247151	1049822	1049886
5/8	16	1014365	1247163	1049831	1049895

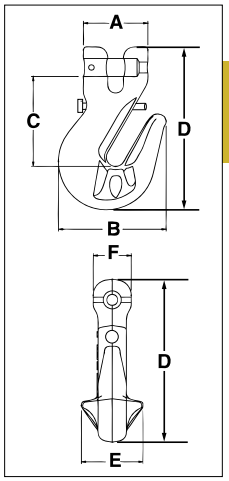
Use one of either A-342 or A-1343 master link.
Use one of each when making 3-leg sling.
Use two A-1362 fittings when making quad leg sling.

A -1338

L-1338

- Forged alloy steel — Quenched & Tempered.
- Innovative cradle design allows for 100% efficiency of Grade 100 chain.
- Individually Proof Tested to 2-1/2 times the Working Load Limit with certification.
- Each hook has a Product Identification Code (PIC) for material traceability, along with the size and the name Crosby.
- Suitable for use with Grade 100 and Grade 80 chain.
- The use of A-1338 Cradle Grab Hook will allow 100 percent of the chain sling capacity. When used to hook back to chain leg to form a choker, the angle of the choke must be 120 degrees or greater. When used as a chain shortener, minimize twist of chain and ensure chain is fully engaged in hook.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.





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A/L-1338 Cradle Grab Hook

Chain Size (in)	Chain Size (mm)	Working Load Limit (lb)	A-1338 Stock No.	L-1338 Stock No.	Weight Each (lb)	Dimensions (in) A	B	C	D	E	F	S-4338 Replacement Latch Kit Stock No.
1/4	7	4300	1049417	1049480	1.00	1.72	2.54	2.20	3.88	1.50	.88	1048426
5/16	8	5700	1049426	1049489	.99	1.72	2.54	2.18	3.88	1.50	.88	1048426
3/8	10	8800	1049435	1049498	1.80	1.85	3.09	2.58	4.69	1.83	1.09	1048435
1/2	13	15000	1049444	1049507	3.92	2.39	3.83	3.28	5.88	2.25	1.42	1048444
5/8	16	22600	1049453	1049516	7.00	2.67	4.52	3.85	7.03	2.94	1.75	1048453

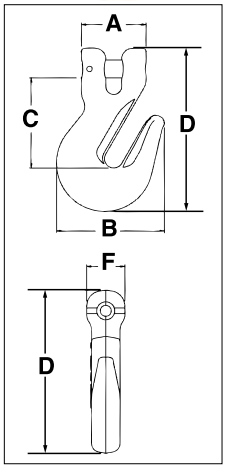
4:1 Design Factor.

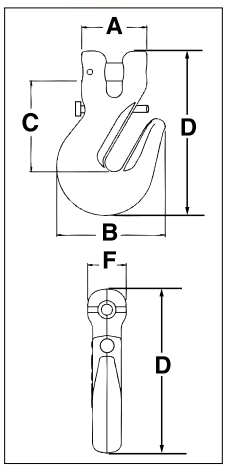
A -1358

APPLICATION AND WARNING INFORMATION
SECTION 17

L -1358

- Forged alloy steel — Quenched & Tempered.
- Individually Proof Tested to 2-1/2 times the Working Load Limit with certification.
- Each hook has a Product Identification Code (PIC) for material traceability, along with the size and the name Crosby.
- Suitable for use with Grade 100 and Grade 80 chain.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.





A/L-1358 Grab Hook

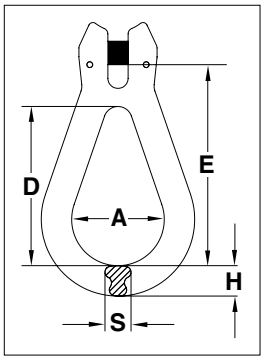
Chain Size (in)	Chain Size (mm)	Working Load Limit (lb)	A-1358 Stock No.	L-1358 Stock No.	Weight Each (lb)	Dimensions (in) A	B	C	D	F	S-4338 Replacement Latch Kit Stock No.
1/4	7	4300	1049610	1049605	1.00	1.72	2.54	2.20	3.88	.88	1048426
5/16	8	5700	1049629	1049614	.99	1.72	2.54	2.18	3.88	.88	1048426
3/8	10	8800	1049638	1049623	1.80	1.85	3.09	2.58	4.69	1.09	1048435
1/2	13	15000	1049647	1049634	3.92	2.39	3.83	3.28	5.88	1.42	1048444
5/8	16	22600	1049656	1049643	7.00	2.67	4.52	3.85	7.03	1.75	1048453

4:1 Design Factor.

Crosby

A-1370

- Forged alloy steel — Quenched & Tempered.
- Individually proof tested to 2.5 times the Working Load Limit.
- Proof test certification shipped with each link.
- Each link has a Product Identification Code (PIC) for material traceability, along with the size and the name Crosby in raised letters.
- Suitable for use with Grade 100 and Grade 80 chain.



Crosby 8/10™ Q&T

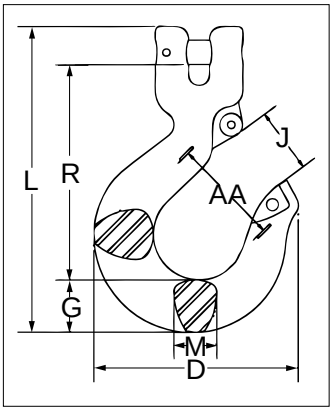
A-1370 Reeving Link

Chain Size		Working Load Limit		Weight Each	Dimensions (in)				
(in)	(mm)	(lb)	Stock No.	(lb)	A	D	E	H	S
1/4-5/16	7-8	5700	1012000	0.57	1.54	2.66	3.54	0.63	0.39
3/8	10	8800	1012009	1.10	1.93	3.37	4.25	0.67	0.55
1/2	13	15000	1012018	2.43	2.46	4.25	5.43	0.83	0.71
5/8	16	22600	1012027	5.62	3.11	5.47	7.09	1.20	1.00

4:1 Design Factor.

L-1339

- Forged alloy steel — Quenched & Tempered.
- Individually Proof Tested to 2-1/2 times the Working Load Limit with certification.
- Each hook has a Product Identification Code (PIC) for material traceability, along with the size and the name Crosby.
- Hoist hooks incorporate QUIC-CHECK® deformation and angle indicators.
- Low profile hook tip.
- New integrated latch (S-4320/S-4339) meets the world standard for lifting.
  - Heavy duty stamped latch interlocks with the hook tip.
  - High cycle, long life spring.
  - When secured with the proper cotter pin through the hole in the tip of hook, meets the intent of OSHA Rule 1926.1431(g) and 1926.1501(g) for personnel lifting.
- Suitable for use with Grade 100 and Grade 80 chain.
- Fatigue rated at 1-1/2 times the Working Load Limit at 20,000 cycles.



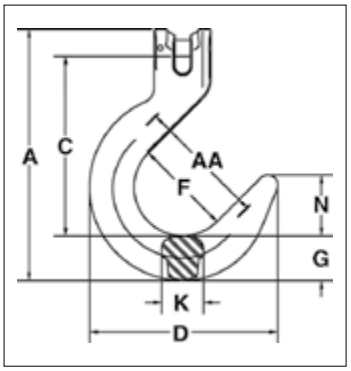
L-1339 Clevis Sling Hook

Chain Size		Working Load Limit	Hook ID Code	Stock No.	Weight Each	Dimensions (in)							S-4320 Repl. Latch Stock No.	S-4339 Repl. Latch Stock No.
(in)	(mm)	(lb)			(lb)	D	G	J	L	M	R	AA		
-	6	3200	DA	1049103	0.64	2.86	0.73	0.93	4.21	0.63	2.95	1.50	1096325	-
1/4	7	4300	HA	1049112	1.58	3.86	1.04	1.19	5.67	0.75	3.97	2.00	1096468	-
5/16	8	5700	HA	1049121	1.57	3.86	1.04	1.19	5.67	0.75	3.95	2.00	1096468	-
3/8	10	8800	IA	1049130	2.58	4.38	1.19	1.53	6.75	1.00	4.71	2.50	1096515	-
1/2	13	15000	JA	1049149	5.28	5.60	1.44	1.78	8.38	1.17	5.89	3.00	1096562	-
5/8	16	22600	KA	1049158	9.81	6.76	1.89	2.41	10.21	1.44	6.97	4.00	1096609	-
3/4	18-20	35300	-	1049167	18.3	8.31	2.83	2.69	13.07	1.97	8.00	4.50	-	1048714
7/8*	22-23*	44100	-	1049176	24.6	9.17	3.07	3.05	13.98	1.97	8.76	5.00	-	1048732

4:1 Design Factor.
*7/8 in (22-23 mm) size does not have cam, latch attaches to unique pin.

A-1359

- Forged alloy steel — Quenched & Tempered.
- Individually Proof Tested to 2-1/2 times the Working Load Limit with certification.
- Each hook has a Product Identification Code (PIC) for material traceability, along with the size and the name Crosby.
- Suitable for use with Grade 100 and Grade 80 chain.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
- Hook can be tip loaded at the reduced Working Load Limit, see below.
- Operator must ensure the load is retained properly in the hook.



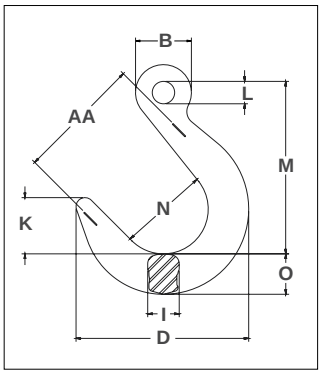
A-1359 Clevis Foundry Hook

Chain Size		Stock No.	Working Load Limit at Saddle of Hook (lb)	Working Load Limit at Tip of Hook (lb)	Weight Each (lb)	Dimensions (in)							
(in)	(mm)					A	C	D	F	G	K	N	Deformation Indicators AA
1/4	7	1049907	4300	2150	2.15	6.26	4.38	4.82	2.50	1.13	0.88	1.57	3.50
5/16	8	1049911	5700	2850	2.06	6.26	4.37	4.82	2.50	1.13	0.88	1.57	3.50
3/8	10	1049916	8800	4400	4.29	7.76	5.54	5.82	3.00	1.38	1.30	1.88	4.00
1/2	13	1049925	15000	7500	7.97	9.38	6.67	7.04	3.50	1.63	1.50	2.25	4.50
5/8	16	1049934	22600	11300	14.2	11.25	7.68	8.17	4.00	2.19	1.75	2.53	5.00
3/4	18-20	1049943	35300	17650	24.7	14.43	9.79	9.65	5.00	2.40	2.20	3.39	6.00
7/8	22-23	1049952	44100	22050	43.8	16.25	11.02	11.03	5.50	3.07	2.72	3.74	6.50

4:1 Design Factor.

A-1329

- Forged alloy steel — Quenched & Tempered.
- Individually Proof Tested to 2-1/2 times the Working Load Limit with certification.
- Each hook has a Product Identification Code (PIC) for material traceability, along with the size and the name Crosby.
- Suitable for use with Grade 100 and Grade 80 chain.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
- Hook can be tip loaded at the reduced Working Load Limit, see below.
- Operator must ensure the load is retained properly in the hook.



A-1329 Eye Foundry Hook

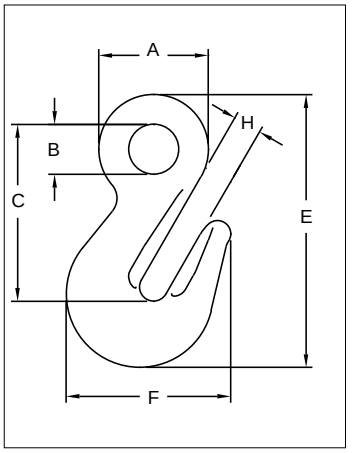
Chain Size		Stock No.	Working Load Limit at Saddle of Hook (lb)	Working Load Limit at Tip of Hook (lb)	Weight Each (lb)	Dimensions (in)								
(in)	(mm)					B	D	I	K	L	M	N	O	Deformation Indicators AA
1/4 - 5/16	7-8	1026280	5700	2850	2.00	1.56	4.82	.88	1.57	.63	4.81	2.50	1.13	3.50
3/8	10	1026289	8800	4400	3.80	2.07	5.82	1.30	1.88	.81	5.50	3.00	1.38	4.00
1/2	13	1026297	15000	7500	7.20	2.53	7.04	1.50	2.25	1.03	7.11	3.50	1.63	4.50
5/8	16	1026306	22600	11300	12.3	3.00	8.17	1.75	2.53	1.25	7.96	4.00	2.19	5.00
3/4	18-20	1026315	35300	17650	23.0	4.13	9.65	2.20	3.39	1.97	10.75	5.00	2.40	6.50
7/8	22-23	1026324	44100	22050	40.6	4.77	11.03	2.72	3.74	2.28	12.25	5.50	3.07	7.00
1	26	1026333	59700	29850	51.7	5.33	11.90	2.83	3.93	2.56	13.37	6.00	3.31	7.50
1 1/4	32	1026342	90400	45200	84.4	6.61	13.25	3.50	4.33	3.15	15.25	6.50	3.84	8.00

4:1 Design Factor.

Crosby

A-1328

- Forged alloy steel — Quenched & Tempered.
- Individually Proof Tested to 2-1/2 times the Working Load Limit with certification.
- Each hook has a Product Identification Code (PIC) for material traceability, along with the size and the name Crosby.
- Suitable for use with Grade 100 and Grade 80 chain.
- Fatigue rated at 1-1/2 times the Working Load Limit at 20,000 cycles.



Crosby 8/10™ Fatigue Rated QUIC-CHECK® QT

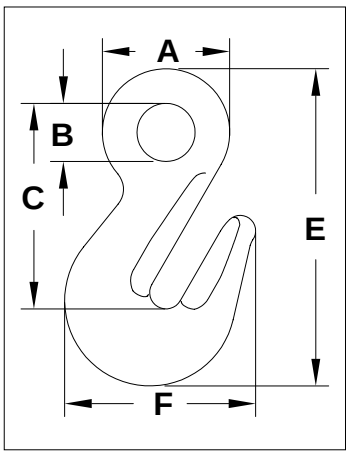
A-1328 Eye Grab Hook

Chain Size		Working Load Limit		Weight Each	Dimensions (in)					
(in)	(mm)	(lb)	Stock No.	(lb)	A	B	C	E	F	H
1/4 - 5/16	7 - 8	5700	1026169	.98	1.75	.75	2.79	4.29	2.57	.44
3/8	10	8800	1026187	1.6	2.06	.94	3.33	5.13	3.09	.53
1/2	13	15000	1026196	3.3	2.56	1.12	4.11	6.38	3.83	.66
5/8	16	22600	1026205	6.0	3.07	1.31	4.91	7.62	4.53	.79
3/4	19-20	35300	1026214	10.0	3.25	1.50	5.41	8.76	6.00	.94
7/8	22-23	44100	1026223	13.1	3.94	1.81	6.48	10.10	6.53	1.09
1	26	59700	1026232	18.9	4.44	2.00	7.22	11.45	7.75	1.19
1 1/4	32	90400	1026241	39.4	5.64	2.38	9.08	14.59	9.50	1.50

4:1 Design Factor.

A-1348

- Forged alloy steel — Quenched & Tempered.
- The use of A-1348 Cradle Grab Hook will allow 100% percent of the chain sling capacity. When used to hook back to chain leg to form a choker, the angle of the choke must be 120 degrees or greater. When used as a chain shortener, minimize twist of chain and ensure chain is fully engaged in hook.
- Innovative cradle design allows for 100% efficiency of Grade 100 chain.
- Individually Proof Tested to 2-1/2 times the Working Load Limit with certification.
- Each hook has a Product Identification Code (PIC) for material traceability, along with the size and the name Crosby in raised letters.
- Suitable for use with Grade 100 and Grade 80 chain.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.



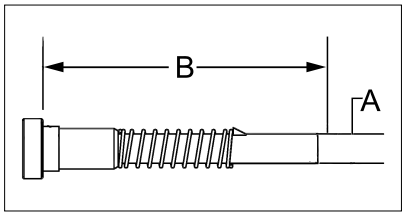
Crosby 8/10™ QT

A-1348 Eye Cradle Grab Hook

Chain Size		Working Load Limit		Weight Each	Dimensions (in)				
(in)	(mm)	(lb)	Stock No.	(lb)	A	B	C	E	F
1/4-5/16	7-8	5700	1026200	0.77	1.43	0.65	2.52	3.87	2.29
3/8	10	8800	1026209	1.41	1.95	1.02	3.07	4.72	2.71
1/2	13	15000	1026218	1.92	2.44	1.14	3.82	5.75	3.24
5/8	16	22600	1026227	6.24	3.11	1.42	4.98	7.72	4.40

4:1 Design Factor.

- Latch Kits shipped unassembled and individually packaged with instructions.
- For use only with Crosby L-1338 and L-1358 Grab Hooks.



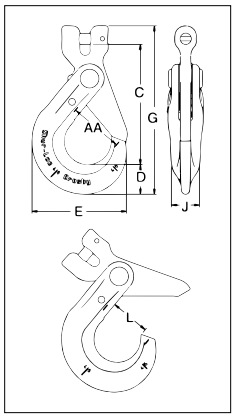
S-4338 Grab Hook Latch Kits

Hook Size (in)	Hook Size (mm)	Stock No.	Weight Each (lb)	Dimensions (in) A	Dimensions (in) B
1/4 5/16	7 8	1048426	.02	.18	1.59
3/8	10	1048435	.02	.18	1.78
1/2	13	1048444	.04	.25	2.25
5/8	16	1048453	.07	.31	2.59

APPLICATION AND WARNING INFORMATION
SECTION 17

S-1317

- Forged alloy steel — Quenched & Tempered.
- Individually Proof Tested to 2-1/2 times the Working Load Limit with certification.
- Recessed trigger design is flush with the hook body, protecting the trigger from potential damage.
  - Easy to operate with enlarged thumb access.
- Positive Lock Latch is self-locking when hook is loaded.
- Eye style is designed with engineered flat to connect to S-1325 chain coupler.
- Suitable for use with Grade 100 and Grade 80 chain.
- The SHUR-LOC® hook, if properly installed and locked, can be used for personnel lifting applications and meets the intent of OSHA Rule 1926.1431(g)(1)(i)(A) and 1926.1501(g)(4)(iv)(B).
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.



Crosby 8/10™ Fatigue Rated QUIC-CHECK® QT

APPLICATION AND WARNING INFORMATION
SECTION 17

S-1317 Clevis Hook

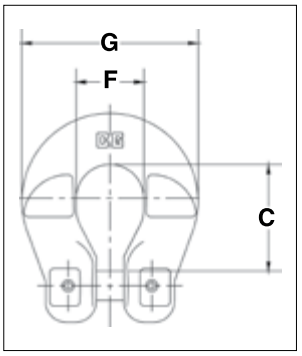
Chain Size (in)	Chain Size (mm)	Working Load Limit (lb)	Stock No.	Weight Each (lb)	Dimensions (in) C	D	E	G	J	L	AA
-	6	3200	1028991	.77	3.44	.79	2.60	4.75	.63	1.16	1.50
1/4	7	4300	1029000	1.80	4.48	1.10	3.51	6.25	.81	1.48	2.00
5/16	8	5700	1029009	1.80	4.47	1.10	3.51	6.25	.81	1.48	2.00
3/8	10	8800	1029018	3.66	5.53	1.17	4.39	7.54	.94	1.83	2.50
1/2	13	15000	1029027	6.80	6.81	1.67	5.49	9.52	1.16	2.22	3.00
5/8	16	22600	1029036	11.9	8.22	2.04	6.55	11.61	1.50	2.65	3.50
3/4	18-20	35300	1029071	15.0	9.42	2.22	7.76	13.21	2.03	3.52	5.00
7/8	22	42700	1029080	28.0	11.14	2.45	8.75	15.45	2.20	3.83	6.00
1	26	59700	1029089	49.5	12.56	3.21	9.87	18.44	2.68	4.09	6.50

4:1 Design Factor.

Crosby

S-1325A

- Forged alloy steel — Quenched & Tempered.
- Designed to connect Grade 100 chain fittings produced with engineered flat to Grade 100 chain.
- Suitable for use with Grade 100 and Grade 80 chain.
- Individually Proof Tested to 2-1/2 times the Working Load Limit with certification.
- Locking system that provides for simple assembly and disassembly – no special tools required.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.



Crosby 8/10™ Fatigue Rated Q&T

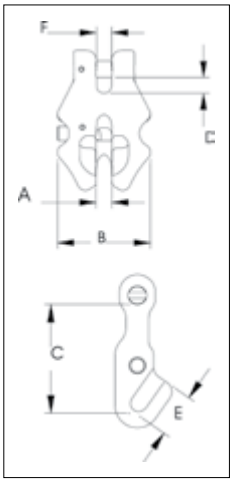
S-1325A Grade 100 Chain Coupler

Chain Size (in)	Chain Size (mm)	Stock No.	Working Load Limit (lb)	Weight Each (lb)	Dimensions (in) C	F	G
-	6	1098496	3200	.25	1.03	.74	1.74
1/4	7	1098500	4300	.50	1.41	.88	2.32
5/16	8	1098504	5700	.50	1.40	.88	2.32
3/8	10	1098508	8800	.80	1.84	1.18	2.72
1/2	13	1098512	15000	1.70	2.12	1.50	3.62
5/8	16	1098516	22600	1.90	2.84	1.96	4.40

4:1 Design Factor.

S-1311N

- Forged alloy steel - Quenched & Tempered.
- Individually Proof Tested to 2-1/2 times the Working Load Limit with certification.
- Suitable for use with Grade 100 and Grade 80 chain.
- Spring loaded chain locking system keeps chain in place under slack conditions.
- The use of S-1311N Chain Shortener will allow 100 percent of the chain sling capacity.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.



Crosby 8/10™ Fatigue Rated Q&T

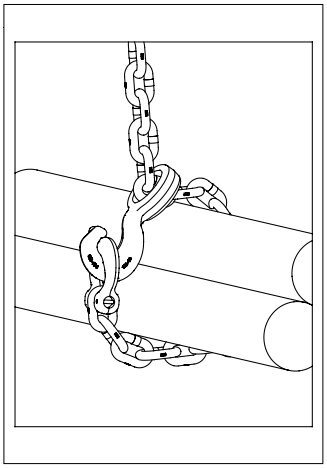
S-1311N Grade 100 Chain Shortener Link

Chain Size (in)	Chain Size (mm)	Stock No.	Working Load Limit (lb)	Weight Each (lb)	Dimensions (in) A	B	C	D	E	F
-	6	1017860	3200	.49	.30	1.76	1.83	.29	.76	.29
1/4	7	1017869	4300	.84	.34	2.04	2.17	.34	.88	.33
5/16	8	1017878	5700	1.22	.40	2.36	2.53	.39	1.01	.38
3/8	10	1017897	8800	2.03	.48	2.84	3.07	.48	1.23	.46
1/2	13	1017906	15000	4.31	.62	3.56	3.77	.61	1.57	.59
5/8	16	1017915	22600	7.20	.73	4.24	4.64	.73	1.91	.70

4:1 Design Factor.

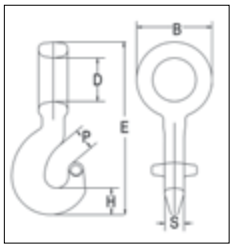
A-1355

- Forged alloy steel - Quenched & Tempered.
- Individually Proof Tested with certification.
- Rated for Grade 100 chain in choker applications.
- Each hook has a Product Identification Code (PIC) for material traceability, along with the size and the name Crosby.
- Fatigue rated at 1-1/2 times the Working Load Limit at 20,000 cycles.
- For use with S-1325 Chain Coupler Link.



Crosby 8/10™ Fatigue Rated Q&T

A-1355 Chain Choker Hook

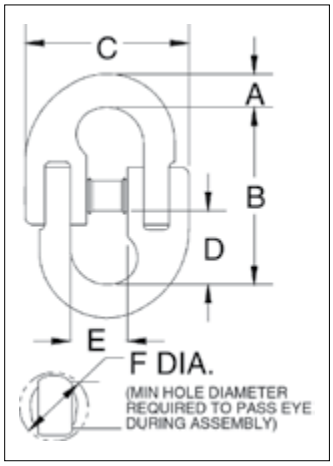


Grade 100 Alloy Chain Size		Working Load Limit		Weight Each	Dimensions (in)					
(in)	(mm)	(lb)	Stock No.	(lb)	B	D	E	H	P	S
1/4-5/16	7-8	5700	1015204	.77	2.05	1.18	4.83	.79	.69	.65
3/8	10	8800	1015213	1.65	2.66	1.57	6.07	.93	.93	.69
1/2	13	15000	1015222	3.14	3.35	2.03	7.61	1.18	1.26	.94
5/8	16	22600	1015231	6.97	4.21	2.52	9.68	1.54	1.12	1.18

4:1 Design Factor.

A-336

- Forged alloy steel - Quenched & Tempered.
- Individually Proof Tested at 2-1/2 times the Working Load Limit with certification.
- The Working Load Limit of the A-336 is less than Grade 80 chain ratings. When using in Grade 80 chain slings, ASME B30.9c requires that the Working Load Limit of a sling must not exceed the lowest Working Load Limit of the components in the system.



Q&T

APPLICATION AND WARNING INFORMATION
SECTION 17

A-336 LOK-A-LOY® 6 Connecting Link

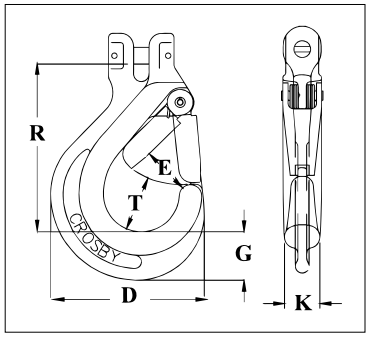
Chain Size (in)	Stock No.	Working Load Limit (lb)	Weight Each (lb)	Dimensions (in)					Diameter of Hole to Accept Link (in)
				A	B	C	D	E	
1/4	1014397	3250	.24	.31	2.06	1.69	.78	.78	.50
3/8	1014413	6600	.58	.45	2.72	2.31	1.06	1.09	.66
1/2	1014431	11300	1.20	.58	3.34	3.16	1.28	1.41	.88
5/8	1014459	16500	2.42	.78	3.91	3.94	1.56	1.69	1.06
3/4	1014477	23000	3.89	.89	4.84	4.44	1.97	2.00	1.19
7/8	1014495	28750	6.08	1.00	5.81	5.31	2.38	2.12	1.38
1	1014510	38750	7.03	1.08	6.48	6.07	2.84	2.55	1.47
1-1/4	1014538	57500	13.20	1.38	8.48	7.65	3.77	3.77	1.73

4:1 Design Factor.

Crosby

S-314A

- Forged alloy steel - Quenched & Tempered.
- Individually Proof Tested at 2-1/2 times the Working Load Limit with certification.
- Integrated heavy duty latch.
- Meets ASTM A-952 for Grade 80 chain fittings.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.



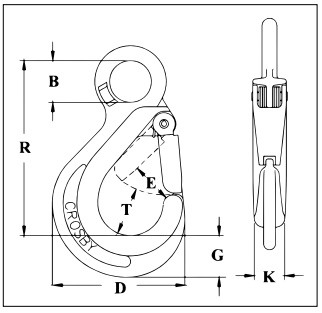
S-314A Clevis Chain Hook with Integrated Latch

Chain Size (in)	Chain Size (mm)	Stock No.	Grade 8 Alloy Chain Working Load Limit (lb)	Weight Each (lb)	Dimensions (in) D	E	G	K	R	T	Replacement Latch Stock No.
–	6	1225020	2500	.69	2.60	.81	.79	.63	2.84	1.02	1291332
1/4 - 5/16	7 - 8	1225021	4500	1.53	3.50	1.08	1.10	.81	3.83	1.28	1291402
3/8	10	1225091	7100	2.84	4.35	1.42	1.16	.94	4.92	1.66	1291472
1/2	13	1225161	12000	5.17	5.45	1.52	1.67	1.16	5.64	1.94	1291542
5/8	16	1225162	18100	9.00	6.56	1.91	2.05	1.50	6.79	2.32	1291612

4:1 Design Factor.

S-315A

- Forged alloy steel - Quenched & Tempered.
- Individually Proof Tested at 2-1/2 times the Working Load Limit with certification.
- Crosby recommends grinding the WLL (which is 5:1 Design Factor) off the hook when using with Grade 80 chain.
- Integrated heavy duty latch.
- Engineered flat for use with S-1325A Coupler Link.
- Meets ASTM A-952 for Grade 80 chain fittings.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.



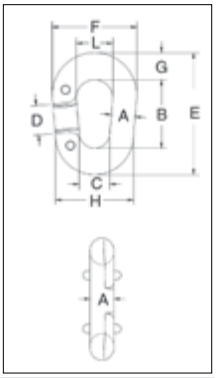
S-315A Eye Chain Hook with Integrated Latch

Chain Size (in)	Chain Size (mm)	Stock No.	Grade 80 Alloy Chain Working Load Limit (lb)	Working Load Limit for Wire Rope (short Tons)	Weight Each (lb)	Dimensions (in) B	D	E	G	K	R	T	Replacement Latch Stock No.
-	6	1029820	2500	1	.56	.79	2.60	.81	.79	.63	3.33	1.02	1291332
1/4 - 5/16	7 - 8	1029825	4500	2	1.31	1.10	3.50	1.08	1.10	.81	4.62	1.28	1291402
3/8	10	1029830	7100	3	2.60	1.42	4.35	1.42	1.16	.94	6.20	1.66	1291472
1/2	13	1029835	12000	5	4.70	1.81	5.45	1.52	1.67	1.16	7.33	1.94	1291542
5/8	16	1029840	18100	7	8.55	2.20	6.56	1.91	2.05	1.50	8.94	2.32	1291612

4:1 Design Factor for Grade 80 Alloy Chain, 5:1 Design Factor for wire rope.

G-334

- Forged steel - Quenched & Tempered.
- Has larger inside dimensions making it easier to attach hooks or other fittings to the chain.
- An exclusive Crosby product.
- After making connections, rivets must be peened.
- Not suitable for use with Grade 80 or Grade 100 chain and chain slings used in overhead lifting.



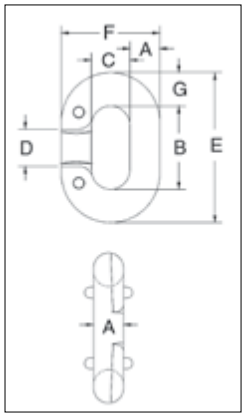
G-334 Pear Shape "Missing Link"® Replacement Links

Chain Size (in)	Stock No.	Working Load Limit (lb)	Weight Per 100 (lb)	Dimensions (in) A	B	C	D	E	F	G	H	L
3/8	1013432	1850	25.00	.41	2.00	.56	.81	2.94	1.63	.47	1.38	.81
1/2	1013450	3300	50.00	.50	2.50	.69	1.00	3.63	2.00	.56	1.69	1.00
5/8	1013478	5000	75.00	.63	2.75	.81	1.06	4.00	2.38	.63	2.06	1.13
3/4	1013496	7100	125.00	.75	3.13	1.00	1.13	4.75	2.75	.81	2.50	1.25
7/8	1013511	9600	200.00	.88	3.69	1.25	1.38	5.56	3.25	.94	3.00	1.50

4:1 Design Factor.

G-335

- Forged steel - Quenched & Tempered.
- Integral rivets join the two halves.
- After making connections, rivets must be peened.
- All sizes have countersunk rivet holes.
- Meets or exceeds the performance requirements of Federal Specifications RR-C-27IG, Type II, except for those provisions required of the contractor.
- Not suitable for use with Grade 80 or Grade 100 chain and chain slings used in overhead lifting.



Q&T

G-335 "Missing Link"® Replacement Links

Chain Size (in)	Stock No.	Working Load Limit (lb)	Links Per Box	Weight Per 100 (lb)	Dimensions (in)						
					A	B	C	D	E	F	G
*1/4	1013110	1325	10	6.25	.28	.88	.44	.44	1.50	1.00	.31
3/8	1013156	2750	10	20.00	.41	1.13	.56	.56	2.06	1.38	.47
7/16	1013174	3625	10	27.50	.47	1.28	.59	.59	2.34	1.53	.53
1/2	1013192	4750	10	37.50	.53	1.47	.66	.66	2.66	1.72	.59
5/8	1013236	7250	10	72.50	.66	1.81	.78	.81	3.31	2.09	.75
3/4	1013254	10250	10	122.50	.78	2.13	.94	1.06	3.88	2.50	.88
7/8	1013272	12000	Bulk	175.00	.91	2.50	1.13	1.13	4.50	2.94	1.00
† 1	1013290	15500	Bulk	250.00	1.03	2.75	1.25	1.25	5.00	3.31	1.13

4:1 Design Factor. *Rivets Only - No interlocking lugs. †Has reinforced rivet holes.

6

SLING IDENTIFICATION TAG KITS

Stamped ID Tag

RFID Equipped Tags

Forged ID Tags

Stamped RFID Tag

Wire Rope

RFID QUIC Tag

Stamped ID Tags

- Heavy duty, pre-stamped, zinc-plated metal tag.
- 4-1/8" x 1-7/16" tag dimensions.
- 2-1/2" diameter metal attaching ring.
- Tag pre-stamped for simple inclusion of sling type, Working Load Limit, reach, serial number, chain size and grade.

ID Tag Stock No.	Carton Qty.	Weight Per Carton (lb)
115244	50	10.55

ID Tags

- Heavy Duty tags.
- 1-5/16" diameter ring opening (will fit 1/4" - 5/8" A-1337).
- Chain tags meet requirements of ASME B30.9 for Sling Identification.
- Raised edge and recessed pads to protect lettering.
- Raised lettering for quick reference.

Operating Frequency: 13.5MHz

Stock No.	Style	Material Type	RFID Equipped	Tag Size (in)	Weight Each (lb)
115369	Chain	Cast Stainless Steel	Yes	6-5/16 x 1-5/8	.46
115350	Wire Rope	Cast Stainless Steel	Yes	1-11/16 x 1-5/16	.07
115217	Chain	Forged Steel	No	5-3/4 x 1-7/8	.40
115353	Chain	Stamped Zinc Plated Steel	Yes	5-3/4 x 1-5/8	.29
115355	Wire Rope	Stamped Zinc Plated Steel	Yes	1-11/16 x 1-5/16	.04
1224692	Zip Tie	High Crystalline Polyamide	Yes	7.625	.05

ALL RIGGING HARDWARE IS NOT EQUAL

The Crosby Group sets the standard for quality, training, and technical expertise in the field.

Crosby®

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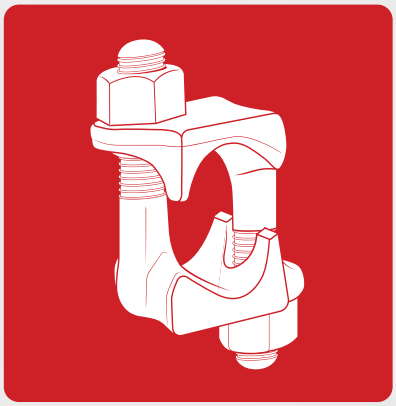
#rigcrosby

WIRE ROPE END FITTINGS

A full line of forged fittings and accessories for wire rope applications.



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WIRE ROPE END FITTINGS

FORGED FOR CRITICAL APPLICATIONS

The proper performance of forged clips depends on proper manufacturing practices that include good forging techniques and accurate machining. Forged clips provide a greater rope bearing surface and more consistent strength than malleable cast iron clips. Fist Grip clips provide a saddle for both the “live” and the “dead” end. Fewer forged clips are required for each termination than with malleable cast iron clips. Forged clips reduce the possibility of hidden defects that are sometimes present in malleable cast iron clips. Malleable cast iron clips should only be used in non-critical applications. ASME, OSHA, and ASTM recommend only forged clips for critical applications.

Questions to ask your rigging provider

Is the clip forged?

Is an adequate cradle provided in the clip base for the wire rope?

Malleable cast iron clips are sometimes improperly used as replacements for forged clips.

Why choose Crosby

Crosby provides forged “Red” U-Bolt® Clips and forged Fist Grip clips which meet or exceed Federal Specification Number FF-C-450E and are considered the industry standard.

FULL LINE

The proper application of forged clips requires that the correct type, size, number, and installation instructions be used (See APPLICATION INFORMATION below for more information). Availability of a full range of sizes of forged U-bolt clips and forged Fist Grip clips are essential for design flexibility.

Questions to ask your rigging provider

Do they have both Fist Grip and U-bolt clips available?

Do they have a full range of forged wire rope clip sizes?

Malleable No competitor has the full line of forged U-Bolt clips and Fist Grip clips that Crosby has.

Why choose Crosby

Only Crosby provides forged “Red” U-Bolt® Clips from 1-1/8" to 3-1/2" and forged Fist Grip clips from 3/16" to 1-1/2".

* The 3-1/2" base is a steel casting.

IDENTIFICATION

The clip’s size, manufacturer’s logo, and a traceability code should be clearly embossed in the forging of the clip. These three elements are essential in developing total confidence in the product.

Questions to ask your rigging provider

Is the manufacturer’s name and size of clip clearly marked?

Do Do they have a traceability system that is actively used in the manufacturing process?

Most do not have a traceability system.

Why choose Crosby

Crosby clearly embosses its logo, the size, and the Product Identification Code (PIC) into all Crosby “Red” U-bolt® Clip bases and Fist Grip clips. Crosby’s traceability system is actively used throughout the manufacturing of forged clips. The material analysis for each heat of steel is verified within our own laboratory.

APPLICATION INFORMATION

Detailed application information will assist you in the proper installation of wire rope clips. This information is most effective when provided at the point of application, as well as in supporting brochures and engineering information. The manufacturer must provide this specific information. Generic information will not provide all the needed application instructions. A formal application and warning system that attracts the attention of the user, clearly informs the user of the factors involved in the task, and informs the user with the proper application procedures as needed.

Questions to ask your rigging provider

Does each clip have the application and warning information?

Most competitors do not have application and warnings information with each clip.

Why choose Crosby

Crosby provides detailed application and warning information for all forged clips. Each clip is individually bagged or tagged with the application and warning information. Testing and evaluation of special applications can be performed upon special request.

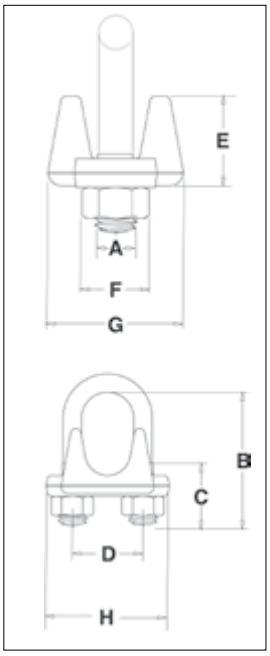
CROSBY VALUE ADDED

- **Full line:** Crosby provides both forged Red U-Bolt Clips and forged Fist Grip Clips.
- **Forged:** Crosby Red U-Bolt Clips have forged bases on all sizes, except 2-3/4" and 3-1/2" base is a steel casting. The entire clip is galvanized to resist corrosive and rusting action. Clip sizes 1/8" through 1-1/2" have U-Bolts with rolled threads which enhance the strength of the material and fatigue properties.
- **Forged:** Fist Grip Clips are forged, and the entire clip is galvanized. The double saddle design eliminates the possibility of incorrect installation. Designed as an integral part of the clip, the bolts are opposite one another (see G-429 example below). As result, the nuts can be installed in such a way as to enable the operator to swing the wrench in a full arc for ease of installation.
- **Application information:** Application and warning information is available for both Crosby Red U-Bolt Clips and Fist Grip Clips. The Crosby Warning System is designed to attract the attention of the user, clearly inform the user of the factors involved in the task, and provide the user with proper application procedures. Each Crosby Red U-Bolt Clip and Fist Grip Clip is either bagged or tagged with appropriate application and warning information, thus ensuring that the information is available at the point of application for each and every clip during installation.
- **Material analysis:** Crosby can provide certified material (mill) analysis for each production lot, traceable by the Product Identification Code (PIC). Crosby, through its own laboratory, verifies the analysis of each heat of steel.
- **Testing:** Crosby periodically audits the termination efficiencies of the Red U-Bolt Clips and Fist Grip Clips. Upon special request, Crosby will determine the efficiencies of clip assemblies when applied to special rope constructions and special applications.

G-450
Red U-Bolt® Clip

- Each base has a Product Identification Code (PIC) for material traceability, the name Crosby or "CG," and a size forged into it.
- Based on the catalog breaking strength of wire rope, Crosby wire rope clips have an efficiency rating of 80% for 1/8" through 7/8" sizes, and 90% for sizes 1" through 3-1/2".
- Entire clip is galvanized to resist corrosive and rusting action.
- Sizes 1/8" through 2-1/2" and 3" have forged bases.
- All clips are individually bagged or tagged with proper application instructions and warning information.
- Clip sizes up through 1-1/2" have rolled threads.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these wire rope clips meet other critical performance requirements, including fatigue life, impact properties, and material traceability not addressed by ASME B30.26.
- Look for the Red U-Bolt®, your assurance of genuine Crosby Clips.

APPLICATION AND WARNING INFORMATION
SECTION 17



G-450 Crosby Clips

Rope Size (in)	Rope Size (mm)	Stock No.	Std. Package Qty.	Weight Per 100 (lb)	Dimensions (in) A	B	C	D	E	F	G	H
1/8	3-4*	1010015	100	6	.22	.72	.44	.47	.37	.38	.81	.99
3/16*	5*	1010033	100	10	.25	.97	.56	.59	.50	.44	.94	1.18
1/4	6-7	1010051	100	19	.31	1.03	.50	.75	.66	.56	1.19	1.43
5/16	8	1010079	100	28	.38	1.38	.75	.88	.73	.69	1.31	1.66
3/8	9-10	1010097	100	48	.44	1.50	.75	1.00	.91	.75	1.63	1.94
7/16 - 1/2	11-13	1010131	50	80	.50	1.88	1.00	1.19	1.13	.88	1.91	2.28
9/16 - 5/8	14-16	1010177	50	110	.56	2.25	1.25	1.31	1.34	.94	2.06	2.50
3/4	18-20	1010195	25	142	.62	2.75	1.44	1.50	1.39	1.06	2.25	2.84
7/8	22	1010211	25	212	.75	3.12	1.62	1.75	1.58	1.25	2.44	3.16
1	24-26	1010239	10	252	.75	3.50	1.81	1.88	1.77	1.25	2.63	3.47
1-1/8	28-30	1010257	10	283	.75	3.88	2.00	2.00	1.91	1.25	2.81	3.59
1-1/4	32-34	1010275	10	438	.88	4.44	2.22	2.34	2.17	1.44	3.13	4.13
1-3/8	36	1010293	10	442	.88	4.44	2.22	2.34	2.31	1.44	3.13	4.19
1-1/2	38	1010319	10	544	.88	4.94	2.38	2.59	2.44	1.44	3.41	4.44
1-5/8	41-42	1010337	Bulk	704	1.00	5.31	2.62	2.75	2.66	1.63	3.63	4.75
1-3/4	44-46	1010355	Bulk	934	1.13	5.75	2.75	3.06	2.92	1.81	3.81	5.24
2	48-52	1010373	Bulk	1300	1.25	6.44	3.00	3.38	3.03	2.00	4.44	5.88
2-1/4	56-58	1010391	Bulk	1600	1.25	7.13	3.19	3.88	3.19	2.00	4.56	6.38
2-1/2	62-65	1010417	Bulk	1900	1.25	7.69	3.44	4.13	3.69	2.00	4.69	6.63
** 2-3/4	** 68-72	1010435	Bulk	2300	1.25	8.31	3.56	4.38	4.88	2.00	5.00	6.88
3	75-78	1010453	Bulk	3100	1.50	9.19	3.88	4.75	4.44	2.38	5.31	7.61
** 3-1/2	** 85-90	1010426	Bulk	4000	1.50	10.75	4.50	5.50	6.00	2.38	6.19	8.38

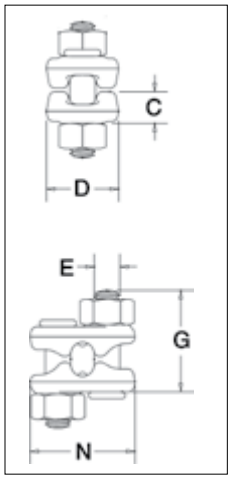
*Electro-plated U-Bolt and Nuts. ** 2-3/4" and 3-1/2" base is made of cast steel.

G-429
Fist Grip®,Clip
3/16" - 5/8"

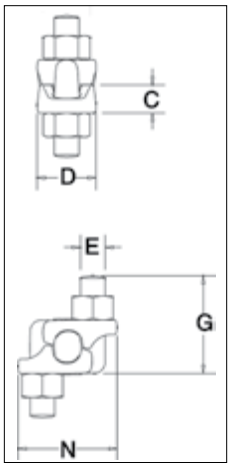
- Entire clip is galvanized to resist corrosive and rusting action.
- Based on the catalog breaking strength of wire rope, Crosby wire rope clips have an efficiency rating of 80% for 3/16" through 7/8" sizes, and 90% for sizes 1" through 1-1/2".
- Bolts are an integral part of the saddle. Nuts can be installed in such a way as to enable the operator to swing the wrench in a full arc for fast installation.
- All sizes have forged steel saddles.
- All Clips are individually bagged or tagged with proper application instructions and warning information.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these wire rope clips meet other critical performance requirements, including fatigue life, impact properties, and material traceability not addressed by ASME B30.26.
- Assembled with standard heavy hex nuts.

G-429
Fist Grip®,Clip
3/4" - 1-1/2"

3/16" - 5/8"



3/4" - 1-1/2"



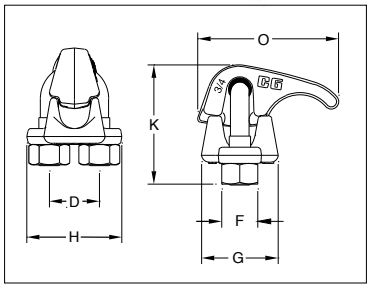
G-429 Fist Grip® Clips

Rope Size (in)*	Rope Size (mm)	Stock No.	Std. Package Qty.	Weight Per 100 (lb)	Dimensions (in) C	D	E	G	N
3/16 - 1/4	5-7	1010471	100	23	.40	.94	.38	1.41	1.44
5/16	8	1010499	100	28	.47	1.06	.38	1.50	1.54
3/8	10	1010514	50	40	.51	1.06	.44	1.84	1.78
7/16 - 1/2	11-13	1010532	50	62	.59	1.25	.50	2.21	2.15
9/16 - 5/8	14-16	1010550	50	103	.72	1.50	.63	2.72	2.57
3/4	18-20	1010578	25	175	.86	1.81	.75	2.94	2.67
7/8	22	1010596	25	225	.97	2.12	.75	3.31	2.86
1	24-26	1010612	10	300	1.13	2.25	.75	3.72	3.06
1-1/8	28-30	1010630	10	400	1.28	2.38	.88	4.22	3.44
1-1/4	32-34	1010658	10	400	1.34	2.50	.88	4.25	3.56
1-3/8 - 1-1/2	36-40	1010676	Bulk	700	1.56	3.00	1.00	5.56	4.12

* Sizes through 5/8" incorporate new style design.

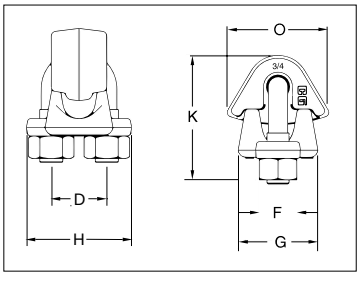
APPLICATION AND WARNING INFORMATION
SECTION 17

G-460
Soft Eye
Bundle Clip
(For use without Thimble)



- Forged bases and bundle clip adapters.
- All bundle clips are individually bagged or tagged with proper application instructions and warning information.
- Bundle Clip Adapter for Soft Eye (G4460) and for Thimble Eye (G4461) kits available.
- Meets or exceeds all requirements of ASME B30.26 including manufacturing ID and size requirements. Importantly, these wire rope bundle clips meet material traceability not addressed by ASME B30.26.

G-461
Thimble
Eye Bundle Clip

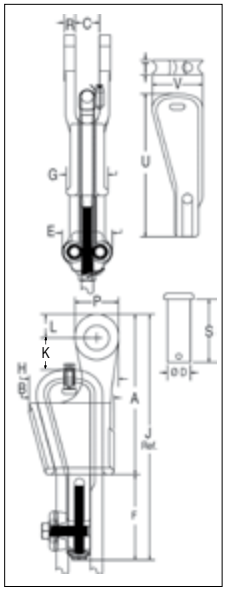


G-460 Soft Eye / G-461 Thimble Eye Bundle Clip

Rope Size (in)	Rope Size (mm)	Bundle Clip Style	Stock No.	Dimensions (in) D	F	G	H	K	O	Weight each (lb)
3/4	18-20	G460	1010509	1.50	1.06	2.25	2.84	3.50	4.13	2.5
3/4	18-20	G461	1010619	1.50	1.06	2.25	2.84	3.50	2.85	2.5

Crosby

S-421T



TA

QUIC-CHECK®

- Wedge socket terminations have an efficiency rating of 80% based on the catalog strength of XXIP wire rope.
- Meets or exceeds all requirements of ASME B30.26, including identification, ductility, design factor, proof load, and temperature requirements. Importantly, these sockets meet other critical performance requirements, including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.
- Type Approval certification in accordance with ABS rules for conditions of classification, Part 1 2017 Steel Vessels and ABS guide for certification of lifting appliances 2017 available. Certificates available when requested at time of order and may include additional charges.
- Basket is cast steel and individually magnetic particle inspected.
- Pin diameter and jaw opening allows wedge and socket to be used in conjunction with closed swage and spelter sockets.
- Secures the tail or dead end of the wire rope to the wedge, thus eliminates loss or punch out of the wedge.
- Eliminates the need for an extra piece of rope and is easily installed.
- The Terminator wedge eliminates the potential breaking off of the tail due to fatigue.
- The tail, which is secured by the base of the clip and the wedge, is left undeformed.
- Incorporates Crosby's patented QUIC-CHECK® 'Go' and 'No-Go' feature cast into the wedge. The proper size rope is determined when the following criteria are met:
  - 1) The wire rope should pass through the 'Go' hole in the wedge.
  - 2) The wire rope should NOT pass through the 'No-Go' hole in the wedge.
- Utilizes standard Crosby Red U-Bolt® wire rope clip.
- The 3/8 through 1-1/8 standard S-421 wedge socket can be retrofitted with the new style Terminator wedge.
- Available with bolt, nut, and cotter pin: S-421TB.
- US patent 5,553,360, Canada patent 2,217,004, and foreign equivalents.
- Meets the performance requirements of EN 13411-6.
- Available with API-2C certification upon request.
- Wedge sockets meet the performance requirements of Federal specification RR-S-550F, Type C, except those provisions required of the contractor.
- The S-423T Super Terminator wedge is designed to be assembled only into the Crosby S-421T Terminator socket body. Important: The S-423TW for sizes 5/8" through 1-1/8" (14mm through 28mm) will fit respective size standard Crosby S-421T basket. The 1-1/4" (30-32mm) S-423TW will only fit the Crosby S-421T 1-1/4" basket marked with Terminator.

APPLICATION AND WARNING INFORMATION
SECTION 17

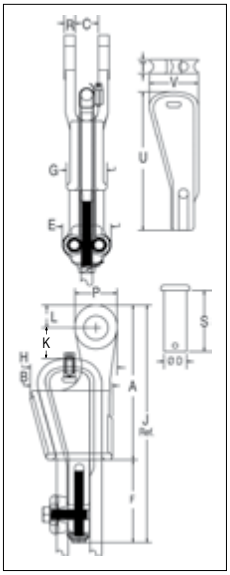
S-421T WEDGE SOCKETS (Assembly includes socket, wedge, pin and wire rope clip)

Wire Rope Dia.		Stock No.	Weight Each (lb)	Wedge Only	Weight Each (lb)	Standard Bolt, Nut & Cotter Assy	Weight Each (lb)
(in)	(mm)						
3/8	9-10	1035000	3.30	1035555	.50	2038971	.38
1/2	11-13	1035009	6.10	1035564	1.05	2038972	.69
5/8	14-16	1035018	10.5	1035573	1.79	2038974	1.15
3/4	18-19	1035027	16.4	1035582	2.60	2038976	1.91
7/8	20-22	1035036	24.8	1035591	4.00	2038978	3.23
1	24-26	1035045	35.5	1035600	5.37	2038980	5.40
1-1/8	28	1035054	48.8	1035609	7.30	2038982	7.50
1-1/4	30-32	1035063	71.5	1035618	10.60	2038984	10.34

Wire Rope Dia.				Dimensions (in)														
(in)	(mm)	S-421T Stock No.	S-421TB Stock No.	A	B	C +/- .09	D	G	H	J*	K*	L	P	R	S	T	U	V
3/8	9-10	1035000	1035203	5.69	2.72	.81	.81	1.38	3.06	7.80	1.88	.88	1.56	.44	2.13	.44	1.25	1.38
1/2	11-13	1035009	1035212	6.88	3.47	1.00	1.00	1.62	3.76	8.91	1.26	1.06	1.94	.50	2.56	.53	1.75	1.88
5/8	14-16	1035018	1035221	8.25	4.30	1.25	1.19	2.12	4.47	10.75	1.99	1.22	2.25	.56	3.25	.69	2.00	2.19
3/4	18-19	1035027	1035230	9.88	5.12	1.50	1.38	2.44	5.28	12.36	2.41	1.40	2.63	.66	3.63	.78	2.34	2.56
7/8	20-22	1035036	1035249	11.25	5.85	1.75	1.63	2.69	6.16	14.37	2.48	1.67	3.13	.75	4.31	.88	2.69	2.94
1	24-26	1035045	1035258	12.81	6.32	2.00	2.00	2.94	6.96	16.29	3.04	2.00	3.75	.88	4.70	1.03	2.88	3.28
1-1/8	28	1035054	1035267	14.38	6.92	2.25	2.25	3.31	7.62	18.34	2.56	2.25	4.25	1.00	5.44	1.10	3.25	3.56
1-1/4	30-32	1035063	1035276	16.34	8.73	2.62	2.50	3.56	9.39	20.48	2.94	2.34	4.50	1.06	6.13	1.19	4.62	4.94

* Nominal **note:** For intermediate wire rope sizes, use next larger size socket.

US-422T



- Wedge socket terminations have an efficiency rating of 80% based on the catalog strength of XXIP wire rope.
- Meets or exceeds all requirements of ASME B30.26, including identification, ductility, design factor, proof load, and temperature requirements. Importantly, these sockets meet other critical performance requirements, including fatigue life, impact properties, and material traceability not addressed by ASME B30.26.
- Basket is cast steel and individually magnetic particle inspected.
- Wedges are color coded for easy identification.
  - Blue - largest wire line size for socket.
  - Black - mid size wire line for socket.
  - 7/16" on US4
  - 9/16" on US5
  - Orange - smallest wire line size for socket.
- By simply changing out the wedge, each socket can be utilized for various wire line sizes (ensure correct wedge is used for wire rope size).
- Cast into each wedge is the model number of the socket and the wire line size for which the wedge is to be used.
- Load pin is forged and headed on one end.
- US-422T wedge sockets contain a hammer pad (lip) to assist in proper securement of termination.
- Incorporates Crosby's patented QUIC-CHECK® 'Go' and 'No-Go' feature cast into the wedge. The proper size rope is determined when the following criteria are met:
- 1) The wire rope should pass through the 'Go' hole in the wedge.
- 2) The wire rope should NOT pass through the 'No-Go' hole in the wedge.
- Available with API-2C certification upon request.
- UWO-422T Wedges are to be used only with the US-422T Wedge Socket Assemblies.

QUIC-CHECK®

APPLICATION AND WARNING INFORMATION
SECTION 17

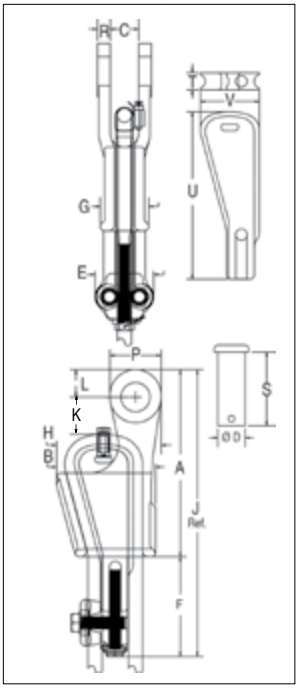
US-422T Utility Wedge Sockets

Model No.	Wire Rope Size (in)	Wire Rope Size (mm)	Stock No.	Weight Each (lb)	Wedge Only Stock No.	Wedge Only Weight Each (lb)	Dimensions (in) A	B	C +/- .09	D	G	H	J	K	L	P	R	S	T	U	V
US4T	3/8	10	1044300	4.6	1047310	0.7	6.81	3.55	1.00	1.00	1.63	2.81	8.43	1.38	1.06	1.94	.50	2.53	.44	1.91	2.14
US4T	7/16	11	1044309	4.6	1047301	1.0	6.81	3.55	1.00	1.00	1.63	2.81	8.73	1.08	1.06	1.94	.50	2.53	.53	1.76	1.88
US4T	1/2	13	1044318	4.6	1047329	1.0	6.81	3.55	1.00	1.00	1.63	2.81	8.73	1.02	1.06	1.94	.50	2.53	.53	1.76	1.88
US5T	1/2	13	1044327	8.5	1047338	2.0	9.19	4.23	1.41	1.25	2.13	3.31	11.19	1.84	1.50	3.00	.63	3.25	.75	1.92	2.16
US5T	9/16	14	1044336	8.5	1047347	1.8	9.19	4.23	1.41	1.25	2.13	3.31	11.47	2.40	1.50	3.00	.63	3.25	.69	2.00	2.18
US5T	5/8	16	1044345	8.5	1047356	1.8	9.19	4.23	1.41	1.25	2.13	3.31	11.47	2.34	1.50	3.00	.63	3.25	.69	2.00	2.18
US6T	5/8	16	1044354	9.4	1047365	3.0	9.45	4.70	1.50	1.25	2.24	3.63	11.91	2.48	1.50	3.00	.56	3.25	.88	2.38	2.75
US6T	3/4	19	1044363	9.4	1047374	2.5	9.45	4.70	1.50	1.25	2.24	3.63	11.81	2.03	1.50	3.00	.56	3.25	.88	2.13	2.63
US8AT	5/8	16	1044372	17.5	1047383	3.2	10.59	5.68	1.81	1.63	2.38	5.53	13.19	1.91	1.53	2.88	.75	4.13	.69	3.26	3.50
US8AT	3/4	19	1044381	17.5	1047392	3.4	10.59	5.68	1.81	1.63	2.38	5.84	13.54	2.38	1.53	2.88	.75	4.13	.78	3.12	3.38
US7*	7/8	22	1038580	16.5	1046674	2.6	11.26	5.11	1.31	1.25	2.69	—	—	2.56	1.63	3.26	.66	3.25	1.06	2.12	2.56
US7*	1	25	1038589	16.5	1046683	2.6	11.26	5.11	1.31	1.25	2.69	—	—	2.56	1.63	3.26	.66	3.25	1.06	1.88	2.38
US8T	7/8	22	1044404	20.8	1047425	5.5	12.77	6.96	1.81	1.63	3.06	7.20	16.02	2.87	1.65	3.12	.75	4.13	.88	3.88	4.18
US8T	1	25	1044417	20.8	1047431	6.1	12.77	6.96	1.81	1.63	3.06	7.31	16.41	2.32	1.65	3.12	.75	4.13	1.03	3.76	4.06
US10T	1-1/8	28	1044426	46.5	1047440	9.7	15.94	8.62	1.81	1.63	3.57	9.15	19.72	3.26	2.19	4.38	.75	4.13	1.09	4.76	5.06
US10T	1-1/4	32	1044435	46.5	1047459	10.4	15.94	8.62	1.81	1.63	3.57	9.39	20.22	2.83	2.19	4.38	.75	4.13	1.19	4.62	4.94
US11T	1-1/8	28	1044444	60.6	1047468	12.5	16.34	8.73	2.62	2.50	3.56	9.15	19.97	3.37	2.34	4.50	1.06	6.13	1.09	4.76	5.06
US11T	1-1/4	32	1044453	64.9	1047477	15.0	16.34	8.73	2.62	2.50	3.56	9.39	20.48	2.94	2.34	4.50	1.06	6.13	1.19	4.62	4.94

* Non-Terminator Style.

Crosby

S-423T



- The 423T wedge socket terminations have a minimum efficiency rating on most high-performance, high-strength, compacted-strand, rotation-resistant wire ropes of 80% based on the catalog breaking strength of the various ropes.
- Design eliminates the difficulty of properly seating the wedge with high performance wire rope into a wedge socket termination.
- Proper application of the Super Terminator eliminates the 'first load' requirement of conventional wedge socket terminations.
- S-423TW Wedge Kit can be retrofitted onto existing Crosby S-421T Terminator Wedge Sockets.
- Wedge and accessories provided with a zinc finish.
- Meets the performance requirements of EN13411-6.
- Meets or exceeds all requirements of ASME B30.26, including identification, ductility, design factor, proof load, and temperature requirements. Importantly, these sockets meet other critical performance requirements, including fatigue life, impact properties, and material traceability not addressed by ASME B30.26.
- Basket is cast steel and individually magnetic particle inspected.
- Pin diameter and jaw opening allows wedge and socket to be used in conjunction with closed swage and spelter sockets.
- Secures the tail or dead end of the wire rope to the wedge, thus eliminates loss or punch out of the wedge.
- Eliminates the need for an extra piece of rope, and is easily installed.
- The Terminator wedge eliminates the potential breaking off of the tail due to fatigue.
- The tail, which is secured by the base of the clip and the tension device, is left undeformed.
- Available with bolt, nut, and cotter pin: S-423TB.
- Available with API-2C certification upon request.
- Wedge sockets meet the performance requirements of Federal Specification RR-S-550F, Type C, except those provisions required of the contractor.
- The S-423T Super Terminator wedge is designed to be assembled only into the Crosby S-421T Terminator socket body. Important: The S-423TW for sizes 5/8" through 1-1/8" will fit respective size standard Crosby S-421T basket. The 1-1/4" S-423TW will only fit the Crosby S-421T 1-1/4" basket marked with Terminator.

Assembly includes socket, wedge, pin, wire rope clip, tensioner, bolts and secondary retention wire.

APPLICATION AND WARNING INFORMATION
SECTION 17

S-423T WEDGE SOCKETS

Wire Rope Dia.		S-423T Assembly with Round Pin and Cotter Pin			S-423TB Assembly with Bolt, Nut and Cotter Pin			S-423TW** Wedge Kit		
			S-423T Weight Each			S-423TB Weight Each			S-423TW Weight Each	
(in)	(mm)	S-423T Stock No.	(lb)	(kg)	S-423TB Stock No.	(lb)	(kg)	S-423TW Stock No.	(lb)	(kg)
5/8	14- 16	1035123	12.7	5.8	1035218	13.1	5.9	1034018	5.2	2.4
3/4	18-19	1035132	19.4	8.8	1035227	19.1	8.7	1034027	7.2	3.3
7/8	20-22	1035141	28.8	13.1	1035236	27.8	12.6	1034036	10.3	4.7
1	24-26	1035150	39.2	17.8	1035245	37.3	16.9	1034045	11.9	5.4
1-1/8	28	1035169	57.1	25.9	1035254	57.9	25.9	1034054	19.9	9.0
1-1/4	30-32	1035178	88.6	40.2	1035272	88.1	39.9	1034063	33.8	15.3

**Kit contains wedge, wire rope clip and bolts, tensioner bolt, and secondary retention wire.

Wire Rope Dia.		S-423T Stock No.	Dimensions (in)																
(in)	(mm)		A	B	C	D	E	F	G	H	J*	K	L	P	R	S	T	U	V
5/8	14- 16	1035123	8.25	4.50	1.25	1.19	3.00	4.06	2.13	4.61	12.31	1.09	1.22	2.25	.56	3.25	.75	6.88	2.60
3/4	18-19	1035132	9.88	5.20	1.50	1.38	3.25	4.81	2.44	5.37	14.69	1.50	1.40	2.62	.66	3.63	.88	7.65	3.02
7/8	20-22	1035141	11.25	5.88	1.75	1.63	3.81	5.73	2.69	6.16	16.98	1.59	1.67	3.13	.75	4.31	1.00	9.47	3.47
1	24-26	1035150	12.81	6.56	2.00	2.00	3.81	5.73	2.94	7.05	18.54	1.44	2.01	3.75	.88	4.70	1.13	10.41	3.82
1-1/8	28	1035169	14.38	6.94	2.25	2.25	4.00	6.85	3.38	7.81	21.23	1.12	2.26	4.25	1.00	5.44	1.25	11.83	4.22
1-1/4	30-32	1035178	16.34	8.63	2.62	2.50	4.50	7.76	3.57	9.38	24.10	1.50	2.34	4.50	1.06	6.62	1.38	13.87	5.82

* Nominal note: For intermediate wire rope sizes, use next larger size socket.

Wire Rope Lubricant

Vitalife® products are the preferred wire rope lubricants in the industry because of their ability to penetrate into wire rope and displace water and contaminants, thus reducing wear and corrosion throughout the rope.

- Available in a variety of container sizes.
- Provides inner strand preservation and lubricity.
- Allows for easy visual inspection of the ropes.
- Reduces the friction between the strands of the wire rope, thus extending rope life.
- Adheres to surface of strands, forming an outer film which provides excellent corrosive protection.
- Non-tacky (will not attract dust)
- Vitalife® in aerosol form is a regulated dangerous good. See MSDS sheet for shipping instructions.
- Vitalife® Bio-Lube has been developed especially for environmentally friendly applications.
- Vitalife® 500 has been developed exclusively for ski lifts and tramways.

VITALIFE® 400
12 OZ.

VITALIFE® 410
BIO-LUBE
12 OZ.

VITALIFE® 400
5 GALLON

VITALIFE® 400
55 GALLON

Vitalife® Type	Container Size	Stock No.	Weight Each (kg)
Vitalife® 400 (Standard)	12 Ounce	1038946	1.00
	5 Gallon	1038955	41.0
	55 Gallon	1038964	420
Vitalife® 410 BIO-LUBE (Environmentally Friendly)	12 Ounce	1039004	1.00
	5 Gallon	1039013	41.0
	55 Gallon	1039022	420
Vitalife® 500 (Ski Lifts and Tramways)	5 Gallon	1038973	41.0
	55 Gallon	1038982	420

SPRAY APPLICATORS BACKPACK SPRAYER
4 GALLON

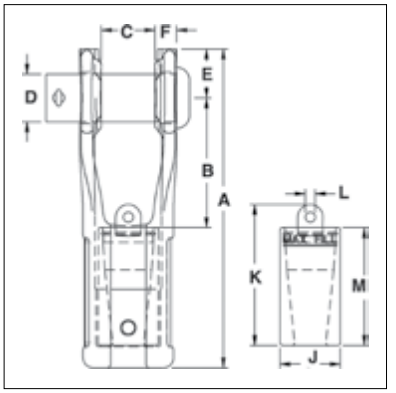
VSP Vitalife® Spray Applicators

- Designed and manufactured to work in the rugged field conditions of the construction industry.
- All applicator seals are specially designed to work with Vitalife® 400 and BIO-LUBE products.

Description	VSP Stock No.	Weight Each (lb)
4 Gallon Backpack Sprayer	1039092	11.8

SB-427

- Available in six sizes from 1/2” to 1-1/2” (13mm - 38mm).
- Button Spelter terminations have a 100% efficiency rating, based on the catalog strength of the wire rope.
- Designed for use with mobile cranes. Can be used to terminate high performance, rotation resistant ropes, and standard 6 strand ropes.
- Easy to install assembly utilizes Crosby WIRELOCK® socketing compound.
- Sockets and buttons are re-usable.
- Replacement buttons and sockets are available.
- Locking feature available to prevent rotation of rope.
- Button contains cap with eye that can be attached to, and used to pull, rope during reeving process.
- Manufactured to the requirements of API-2C.



APPLICATION AND WARNING INFORMATION
SECTION 17

SB-427 Button Spelter Sockets

Wire Rope Size		Stock No.	Ultimate Load (t)	Weight Each (lb)	Button Only Stock No.	Dimensions (in)										Tolerance +/-
(in)	(mm)					A	B	C	D	E	F	J	K	L	M	C
1/2 - 5/8	13-16	1052005	27	6.1	1052309	7.94	3.23	1.28	1.19	1.22	.57	1.50	3.50	.25	2.93	.06
5/8 - 3/4	16-19	1052014	45	10.3	1052318	9.44	3.88	1.53	1.38	1.44	.66	1.75	4.28	.38	3.43	.06
3/4 - 7/8	19-22	1052023	57	17.1	1052327	10.81	4.41	1.78	1.62	1.69	.75	2.06	4.78	.38	3.96	.06
7/8 - 1	22-26	1052032	82	29.2	1052336	12.88	5.48	2.03	2.00	2.00	.89	2.44	5.62	.62	4.52	.09
1-1/8 - 1-1/4	28-32	1052041	136	46.0	1052345	14.90	5.68	2.53	2.25	2.50	1.11	2.94	7.08	.75	5.72	.09
1-3/8 - 1-1/2	35-38	1052050	161	78.0	1052354	18.06	7.17	3.03	2.75	2.75	1.24	3.62	8.08	.75	6.76	.09

SB-427TB (Bolt, Nut and Cotter Pin)

Wire Rope Size		Stock No.	Ultimate Load (t)	Weight Each (lb)	Button Only Stock No.	Dimensions (in)										Tolerance +/-
(in)	(mm)					A	B	C	D	E	F	J	K	L	M	C
1/2 - 5/8	13-16	1052406	27	6.1	1052309	7.94	3.23	1.28	1.19	1.22	.57	1.50	3.50	.25	2.93	.06
5/8 - 3/4	16-19	1052415	45	10.3	1052318	9.44	3.88	1.53	1.38	1.44	.66	1.75	4.28	.38	3.43	.06
3/4 - 7/8	19-22	1052424	57	17.1	1052327	10.81	4.41	1.78	1.62	1.69	.75	2.06	4.78	.38	3.96	.06
7/8 - 1	22-26	1052433	82	29.2	1052336	12.88	5.48	2.03	2.00	2.00	.89	2.44	5.62	.62	4.52	.09
1-1/8 - 1-1/4	28-32	1052442	136	46.0	1052345	14.90	5.68	2.53	2.25	2.50	1.11	2.94	7.08	.75	5.72	.09
1-3/8 - 1-1/2	35-38	1052451	161	78.0	1052354	18.06	7.17	3.03	2.75	2.75	1.24	3.62	8.08	.75	6.76	.09

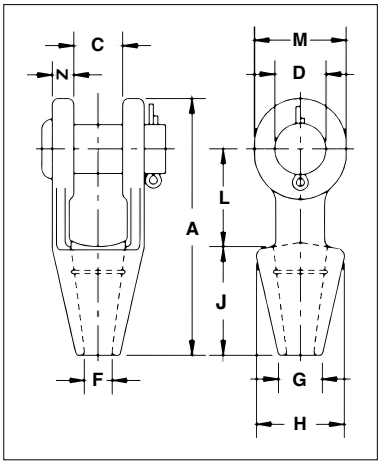
Wirelock® Requirements

Wire Rope Size		WIRELOCK Required (cc)	WIRELOCK Stock No.	WIRELOCK Kit Size (cc)
(in)	(mm)			
1/2 - 5/8	13-16	35	1039602	100
5/8 - 3/4	16-19	60	1039602	100
3/4 - 7/8	19-22	100	1039602	100
7/8 - 1	22-26	140	1039602*	100
1-1/8 - 1-1/4	28-32	250	1039604	250
1-3/8 - 1-1/2	35-38	420	1039606	500

* 2 kits required.

G-416 / S-416

- Forged steel sockets through 1-1/2", cast alloy steel 1-5/8" through 4".
- Spelter socket terminations have an efficiency rating of 100%, based on the catalog strength of wire rope.
- Ratings are based on recommended use with 6 x 7, 6 x 19 or 6 x 37, IPS or XIP (EIP), XXIP (EEIP), RRL, FC or IWRC wire rope.
- Strand constructed with minimal number of wires (e.g. 1 x 7) requires special consideration that socket basket length be five (5) times the strand diameter or fifty (50) times the wire diameter, whichever is the greater.
- All cast steel sockets 1-5/8" and larger are magnetic particle inspected and ultrasonic inspected. Proof testing available on special order.
- Available with bolt nut and cotter: G-416B.
- Open Grooved Sockets meet the performance requirements of Federal Specification RR-S-550F, Type A, except for those provisions required of the contractor.



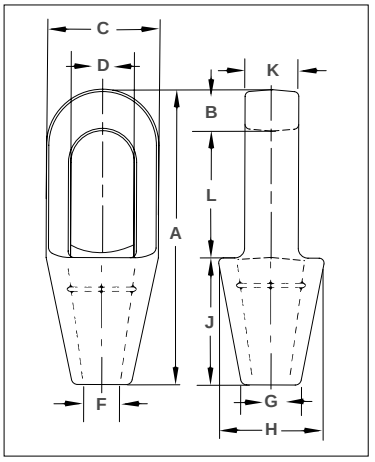
G-416 / S-416 Open Spelter Sockets

Rope Dia.		Structural Strand Dia.	Ultimate Load	Stock No.		Weight Each	Dimensions (in)										Tolerance +/-
(in)	(mm)	(in)	(t)	G-416 Galv.	S-416 S.C.	(lb)	A	C	D	F	G	H	J	L	M	N	C
5/16-3/8	8-10	—	12	1039637	1039646	1.30	4.84	.81	.81	.50	.81	1.69	2.25	1.75	1.50	.44	.06
7/16-1/2	11-13	—	20	1039655	1039664	2.25	5.56	1.00	1.00	.56	.94	1.88	2.50	2.00	1.88	.50	.06
9/16-5/8	14-16	1/2	27	1039673	1039682	3.60	6.75	1.25	1.19	.69	1.13	2.25	3.00	2.50	2.25	.64	.06
3/4	18	9/16-5/8	43	1039691	1039708	5.83	7.94	1.50	1.38	.81	1.25	2.62	3.50	3.00	2.62	.62	.06
7/8	20-22	11/16-3/4	55	1039717	1039726	9.65	9.25	1.75	1.63	.94	1.50	3.25	4.00	3.50	3.13	.80	.06
1	24-26	13/16-7/8	78	1039735	1039744	15.50	10.56	2.00	2.00	1.13	1.75	3.75	4.50	4.00	3.75	.88	.06
1-1/8	28-30	15/16-1	92	1039753	1039762	21.50	11.81	2.25	2.25	1.25	2.00	4.12	5.00	4.62	4.12	1.00	.12
1-1/4 - 1-3/8	32-35	1-1/16 - 1-1/8	136	1039771	1039780	31.00	13.19	2.50	2.50	1.50	2.25	4.75	5.50	5.00	4.75	1.13	.12
1-1/2	38	1-3/16 - 1-1/4	170	1039799	1039806	47.25	15.12	3.00	2.75	1.63	2.75	5.25	6.00	6.00	5.38	1.19	.12
* 1-5/8	* 40-42	1-5/16 - 1-3/8	188	1039815	1039824	55.00	16.25	3.00	3.00	1.75	3.00	5.50	6.50	6.50	5.75	1.31	.12
* 1-3/4 - 1-7/8	* 44-48	1-7/16 - 1-5/8	268	1039833	1039842	82.00	18.25	3.50	3.50	2.00	3.13	6.38	7.50	7.00	6.50	1.56	.12
* 2 - 2-1/8	* 50-54	1-11/16 - 1-3/4	291	1039851	1039860	129.00	21.50	4.00	3.75	2.25	3.75	7.38	8.50	9.00	7.00	1.81	.12
* 2-1/4 - 2-3/8	* 56-60	1-13/16 - 1-7/8	360	1039879	1039888	167.00	23.50	4.50	4.25	2.50	4.00	8.25	9.00	10.00	7.75	2.13	.12
* 2-1/2 - 2-5/8	* 64-67	1-15/16 - 2-1/8	424	1041633	1041642	252.00	25.50	5.00	4.75	2.88	4.50	9.25	9.75	10.75	8.50	2.38	.12
* 2-3/4 - 2-7/8	* 70-73	2-3/16 - 2-7/16	511	1041651	1041660	315.00	27.25	5.25	5.00	3.12	4.88	10.50	11.00	11.00	9.00	2.88	.25
* 3 - 3-1/8	* 75-80	2-1/2 - 2-5/8	563	1041679	1041688	380.00	29.00	5.75	5.25	3.38	5.25	11.12	12.00	11.25	9.50	3.00	.25
* 3-1/4 - 3-3/8	* 82-86	2-3/4 - 2-7/8	722	1041697	1041704	434.00	30.88	6.25	5.50	3.62	5.75	11.88	13.00	11.75	10.00	3.12	.25
* 3-1/2 - 3-5/8	* 88-92	3 - 3-1/8	779	1041713	1041722	563.00	33.25	6.75	6.00	3.88	6.50	12.38	14.00	12.50	10.75	3.25	.25
* 3-3/4 - 4	* 94-102	—	875	1041731	1041740	783.00	36.25	7.50	7.00	4.25	7.25	13.62	15.00	13.50	12.50	3.50	.25

* Cast alloy steel.

G-417 / S-417

- Forged steel sockets through 1-1/2", cast alloy steel 1-5/8" through 4".
- Spelter socket terminations have an efficiency rating of 100%, based on the catalog strength of wire rope.
- Ratings are based on recommended use with 6 x 7, 6 x 19, or 6 x 37, IPS or XIP (EIP), XXIP (EEIP), RRL, FC, or IWRC wire rope.
- Strand constructed with minimal number of wires (e.g. 1 x 7) requires special consideration that socket basket length be five (5) times the strand diameter or fifty (50) times the wire diameter, whichever is the greater.
- All cast steel sockets 1-5/8" and larger are magnetic particle inspected and ultrasonic inspected. Proof testing available on special order.
- Closed Grooved Sockets meet the performance requirements of Federal Specification RR-S-550F, Type B, except for those provisions required of the contractor.



G-417 / S-417 Closed Spelter Sockets

Rope Dia.		Structural Strand Dia.	Ultimate Load	Stock No.		Weight Each	Dimensions (in)									
(in)	(mm)	(in)	(t)	G-417 Galv.	S-417 S.C.	(lb)	A	B	C	D*	F	G	H	J	K	L
5/16 - 3/8	8-10	—	12.0	1039913	1039922	.75	4.94	.62	1.69	.97	.50	.81	1.69	2.25	.69	2.06
7/16 - 1/2	11-13	—	20.0	1039931	1039940	1.50	5.50	.69	2.00	1.16	.56	.94	2.00	2.50	.88	2.31
9/16 - 5/8	14-16	1/2	30.8	1039959	1039968	2.50	6.31	.81	2.63	1.41	.69	1.12	2.38	3.00	1.00	2.50
3/4	18	9/16 - 5/8	43.5	1039977	1039986	4.25	7.62	1.06	3.00	1.66	.88	1.25	2.75	3.50	1.25	3.06
7/8	20-22	11/16 - 3/4	65.3	1039995	1040000	7.25	8.75	1.25	3.63	1.94	1.00	1.50	3.25	4.00	1.50	3.50
1	24-26	13/16 - 7/8	81.6	1040019	1040028	10.50	9.91	1.41	4.13	2.30	1.13	1.75	3.75	4.50	1.75	4.00
1-1/8	28-30	15/16 -1	100	1040037	1040046	14.25	11.00	1.50	4.50	2.56	1.25	2.00	4.13	5.00	2.00	4.50
1-1/4 -1-3/8	32-35	1-1/16 -1-1/8	136	1040055	1040064	19.75	12.12	1.63	5.00	2.81	1.50	2.25	4.75	5.50	2.25	5.00
1-1/2	38	1-3/16 - 1-1/4	170	1040073	1040082	29.20	13.94	1.94	5.38	3.19	1.63	2.75	5.25	6.00	2.50	6.00
† 1-5/8	† 40-42	1-5/16 - 1-3/8	188	1040091	1040108	36.00	15.13	2.13	5.75	3.25	1.75	3.00	5.50	6.50	2.75	6.50
† 1-3/4 - 1-7/8	† 44-48	1-7/16 - 1-5/8	268	1040117	1040126	57.25	17.25	2.19	6.75	3.75	2.00	3.13	6.38	7.50	3.00	7.56
† 2 - 2-1/8	† 50-54	1-11/16 - 1-3/4	309	1040135	1040144	79.00	19.87	2.44	7.63	4.38	2.25	3.75	7.38	8.50	3.25	8.81
† 2-1/4 - 2-3/8	† 56-60	1-13/16 - 1-7/8	360	1040153	1040162	105.00	21.50	2.75	8.50	5.00	2.63	4.13	8.25	9.00	3.63	9.75
† 2-1/2 - 2-5/8	† 64-67	1-15/16 - 2-1/8	424	1041759	1041768	140.00	23.50	3.12	9.50	5.50	2.88	4.50	9.25	9.75	4.00	10.62
† 2-3/4 - 2-7/8	† 70-73	2-3/16 - 2-7/16	549	1041777	1041786	220.00	25.38	3.12	10.75	6.25	3.12	4.88	10.19	11.00	4.88	11.25
† 3 - 3-1/8	† 75-80	2-1/2 - 2-5/8	656	1041795	1041802	276.00	27.12	3.37	11.50	6.75	3.38	5.25	11.50	12.00	5.25	11.75
† 3-1/4 - 3-3/8	† 82-86	2-3/4 - 2-7/8	750	1041811	1041820	313.00	29.25	4.00	12.25	7.25	3.62	5.75	12.25	13.00	5.75	12.25
† 3-1/2 - 3-5/8	† 88-92	3 - 3-1/8	820	1041839	1041848	400.00	31.00	4.00	13.00	7.75	3.88	6.31	13.00	14.00	6.25	13.00
† 3-3/4 - 4	† 94 - 102	—	1005	1041857	1041866	542.00	33.25	4.25	14.25	8.50	4.25	7.25	14.25	15.00	7.00	14.00

* Diameter of pin must not exceed pin used on companion 416 socket. Reference adjacent page "D" dimension. † Cast alloy steel.

RESIN FOR SPELTER SOCKETS

Note: For use on 416, 417, 427 and 517 spelter sockets only.

WIRELOCK®
Socketing Compound

- 100% termination efficiency.
- Temperature operating range is -65° F to +240° F (-54°C to +116°C).
- Ideal for on-site applications.
- No hazardous molten metal.
- Improved fatigue life.
- Pouring temperature without booster pack is 48° F to 110° F (6.67°C to 43.3°C).
- One booster pack if pouring temperature is 35° F to 48° F (1.67°C to 8.89°C).
- Two booster packs if pouring temperature is 27° F to 35° F (-2.78°C to +1.67°C).
- Refer to Crosby® Wire Rope End Terminations Manual for more information.
- Storage temperature is 68° F (20°C) max. Store in well ventilated area away from sunlight and sources of ignition.

7

APPROVALS:

Lloyds Register of Shipping

Det Norske Veritas (DNV)

United States Coast Guard

Registro Italiano Navale

Germanischer Lloyd

United States Navy

American Bureau of Shipping

ISO 17.558

DNV-OS-E304

NATO Numbers:

100cc	8030-21-902-1823
250cc	8030-21-902-1824
500cc	8030-21-902-1825
1000cc	8030-21-902-1826

Witnessed and tested by American Bureau of Shipping. (ABS)

Approximate U.S. Measurements:
250cc's Kit 1 Cup

WIRELOCK® W416-7 Socket Compound

W416-7 Kits				Booster Pak
Kit Size	Kit Per Case	Stock No.	Weight Each (lb)	Stock No.
100	20	1039602	.62	1039603
250	12	1039604	1.25	1039605
500	12	1039606	2.54	1039607
1000	12	1039608	4.59	1039609
2000	6	1039610	9.00	1039611

Guide to amount WIRELOCK® Required

Wire Rope Size		WIRELOCK Required	Wire Rope Size		WIRELOCK Required
(in)	(mm)	(cc)	(in)	(mm)	(cc)
1/4	6-7	9	1-3/4	44	700
5/16	8	17	1-7/8	48	700
3/8	9-10	17	2	51	1265
7/16	11	35	2-1/8	54	1265
1/2	13	35	2-1/4	56	1410
9/16	14	52	2-3/8	60	1410
5/8	16	52	2-1/2	64	1830
3/4	20	86	2-5/8	67	1830
7/8	22	125	2-3/4	70	2250
1	26	160	3	76	3160
1-1/8	28	210	3-1/4	82	3795
1-1/4	32	350	3-1/2	88	4920
1-3/8	36	350	3-3/4	94	5980
1-1/2	40	420	4	102	7730
1-5/8	42	495	—	—	—

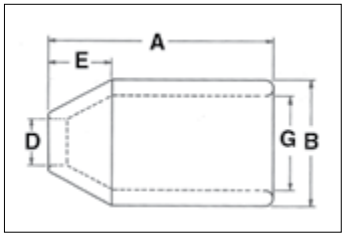
Wirelock is a hazardous material regulated by US DOT, ICAO/IATA and IMO for transportation.

APPLICATION AND WARNING INFORMATION
SECTION 17

S-505
Swaging Sleeve

Cross Section of Swaged Sleeve

- For flemish eye wire rope splicing.
- Designed for low temperature toughness.
- Resists cracking when swaged (equals or exceeds stainless steel sleeves).
- Special processed low carbon steel.
- COLD TUFF® for better swageability.
- Can be stamped for identification after swaging without concern for fractures when following these directions:
  - Use round corner stamps to a maximum depth of 0.015 in. (1/64).
  - The area for stamping should be on the side of the sleeve in the plane of the sling eye, and no less than 0.250 in. (1/4) from either end of the sleeve.
- Standard steel sleeve terminations have efficiency ratings as follows based on the catalog strength of wire rope.
- Do not use on wire rope size other than size shown.



S-505 Termination Efficiency		
Size (in)	Type of Wire Rope *	
	IWRC	FC
1/4 - 1	96%	93%
1-1/8 - 2	92%	89%
2-1/4 and Larger	90%	87%

Intermediate Metric Die Chart

Sleeve and Swaging Die Requirements for Intermediate Sizes of Metric Wire Rope							
S-505 Stock No.	S-505 Sleeve Size	Metric Wire Rope Size (mm)	Standard Round Dies				Maximum After Swage Dimension (in)
			1st Stage Die		2nd Stage Die		
1041143	1/2	12	1190881	5 x 7 Double Cavity	—		.990
1041223	7/8	20	1190901	5 x 7 Double Cavity	—		1.620
1041241	1	24	1190921	5 x 7 Double Cavity	—		1.880
1041321	1-1/2	36	1192649	5 x 7	1190941	5 x 7	2.630
1041349	1-3/4	40	1192685	5 x 7	1190961	5 x 7	2.950
1041367	2	48	1192729	5 x 7	1190971	5 x 7	3.460
1041401	2-1/2	60	1192809	5 x 7	1190981	5 x 7	4.370
1041401	2-1/2	60	1191061	6 x 12	1190991	6 x 12	4.370
1041447	3	72	1193201	6 x 12	1191001	6 x 12	4.810
1041483	3-1/2	80	1193247	6 x 12	1191101	6 x 12	5.450
1041483	3-1/2	84	1193247	6 x 12	1191121	6 x 12	5.550

QUIC-PASS® system not available for these metric rope sizes. Note: Fittings designed only to be used on exact sizes listed.

** NOTE: S-505 Standard Sleeves are recommended for use with 6 x 19 or 6 x 37, IPS or XIP (EIP), XXIP (EEIP), RRL, FC or IWRC wire rope. Before using any National Swage fitting with any other type lay, construction or grade of wire rope, it is recommended that the termination be destructive and documented to prove the adequacy of the assembly to be manufactured.

S-505 COLD TUFF® Standard Steel Sleeves

S-505 Standard Steel Sleeve Specifications												Swager / Die Data		
	Rope Size				Before Swage Dimensions (in)					Maximum After Swage Dimensions (in)		Standard Round Dies		QUIC-PASS® Dies
S-505 Stock No.	(in)	(mm)	Weight Per 100 (lb)	Pkg. Qty.	A	B	D	E	G	Standard Die	QUIC-PASS Die	Die Description	Standard Die Stock No.	QUIC-PASS Die Stock No.
1041063	1/4	6-7	5	250	1	.66	.31	.28	.47	.57	.565	1/4 Taper	1197528	1923530
1041090	5/16	8	14	200	1.5	.91	.44	.44	.62	.75	.769	3/8 Taper	1192364	1923551
1041107	3/8	9-10	14	100	1.5	.91	.47	.39	.66	.75	.769	3/8 Taper	1192364	1923551
1041125	7/16	11	33	50	2	1.22	.55	.65	.85	1.01	1.016	1/2 Taper	1192408	1923572
1041143	1/2	13	29	50	2	1.22	.63	.56	.91	1.01	1.016	1/2 Taper	1192408	1923572
1041161	9/16	14	64	25	2.75	1.47	.69	.63	1.03	1.24	1.247	5/8 Taper	1192444	1923593
1041189	5/8	16	56	25	2.75	1.47	.75	.63	1.09	1.24	1.247	5/8 Taper	1192444	1923593
1041205	3/4	18-19	88	20	3.19	1.72	.91	.84	1.28	1.46	1.475	3/4 Taper	1192462	1923614
1041223	7/8	22	131	10	3.56	2.03	1.03	1.00	1.53	1.68	1.738	7/8 Taper	1192480	1923635
1041241	1	25-26	195	10	4	2.28	1.16	1.13	1.72	1.93	1.955	1 Taper	1192505	1923656
1041269	1-1/8	28-29	260	Bulk	4.81	2.50	1.28	1.25	1.94	2.13	2.170	1-1/8 Open 1st Stage 2nd Stage	1192523 1192541	1923677
1041287	1-1/4	31-32	355	Bulk	5.19	2.78	1.44	1.41	2.16	2.32	2.405	1-1/4 Open 1st Stage 2nd Stage	1192621 1192587	1923698
1041303	1-3/8	34-35	423	Bulk	5.81	3.00	1.56	1.56	2.38	2.52	2.610	1-3/8 Open 1st Stage 2nd Stage	1192667 1192621	1923717
1041321	1-1/2	37-38	499	Bulk	6.25	3.25	1.69	1.69	2.63	2.71	2.835	1-1/2 Open 1st Stage 2nd Stage	1192649 1192667	1923736

Note: Fittings designed only to be used on exact sizes listed.

S-505 COLD TUFF® Standard Steel Sleeves

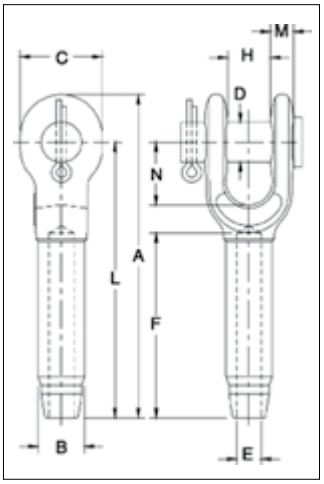
S-505 Standard Steel Sleeve Specifications											Swager / Die Data					
	Rope Size				Before Swage Dimensions (in)					Maximum After Swage Dimensions (in)		Stock No.				
												500 Tons 1000 Tons 1500 Tons 5x7	Front Load		Side Load	
S-505 Stock No.	(in)	(mm)	Weight Per 100 (lb)	Pkg. Qty.	A	B	D	E	G		Die Description		1500 Ton 6x12	3000 Ton 6x12	1500 Ton 6x12	3000 Ton 6x12
1041349	1-3/4	44-45	805	Bulk	7.25	3.84	1.94	1.97	3.13	3.10	1-3/4 Open 1st Stage 2nd Stage	1192685 1192701	—	—	—	—
1041367	2	50-52	1132	Bulk	8.5	4.38	2.25	2.25	3.63	3.56	2 Open 1st Stage 2nd Stage	1192729 1192747	—	—	—	—
1041385	2-1/4	56-57	1936	Bulk	9.56	5.03	2.50	2.53	4.03	4.12	2-1/4 Open 1st Stage 2nd Stage	1192765 1192783	1191089 1191043	1191089 1191043	—	1195085 1195067
1041401	2-1/2	62-64	2352	Bulk	10.5	5.50	2.75	2.81	4.50	4.50	2-1/2 Open 1st Stage 2nd Stage	—	1191061 1191089	1191061 1191089	1195370 1195469	1195076 1195085
1041429	2-3/4	68-70	2800	Bulk	11.5	5.75	3.00	3.09	4.75	4.70	2-3/4 Open 1st Stage 2nd Stage	—	1191034 1191052	1191034 1191052	1195389 1195478	1195094 1195101
1041447	3	75-76	2940	Bulk	12	6.00	3.25	3.38	5.00	4.96	3 Open 1st Stage 2nd Stage	—	1193201 1193229	1193201 1193229	1195398 1195487	1195110 1195129
1041483	3-1/2	87-89	4640	Bulk	14	7.00	3.88	3.94	5.84	5.77	3-1/2 Open 1st Stage 2nd Stage	—	1193247 1193265	1193247 1193265	—	1195138 1195147
1041492	3-3/4	93-95	5500	Bulk	15	7.50	4.06	4.25	6.31	6.23	3-3/4 Open 1st Stage 2nd Stage	—	—	1191114 1191132	—	1195263 1195272
1041508	4	100-105	6800	Bulk	16	8.13	4.38	4.50	6.81	6.69	4 Open 1st Stage 2nd Stage	—	—	1191150 1191178	—	1195156 1195165
1041526	4-1/2	112-114	10000	Bulk	18	9.13	4.88	5.06	7.66	7.45	4-1/2 Open 1st Stage 2nd Stage	—	—	1191187 1191203	—	1195174 1195183

Note: Fittings designed only to be used on exact sizes listed.

Crosby

S-501

- Forged from special bar quality carbon steel, suitable for cold forming.
- Swage socket terminations have an efficiency rating of 100% based on the catalog strength of wire rope.
- Hardness controlled by spheroidize annealing.
- Stamp for identification after swaging without concern for fractures (as per directions in Wire Rope End Terminations User's Manual).
- Swage sockets incorporate a reduced machined area of the shank which is equivalent to the proper 'after swage' dimension. Before swaging, this provides for an obvious visual difference in the shank diameter. After swaging, a uniform shank diameter is created allowing for a QUIC-CHECK® and permanent visual inspection opportunity.
- S-501 Swage Sockets are recommended for use with 6 x 19 or 6 x 37, IPS or XIP (EIP), XXIP (EEIP), RRL, FC or IWRC wire rope.
- In accordance with ASME B30.9, all slings terminated with swage sockets shall be proof loaded.*



QUIC-CHECK®

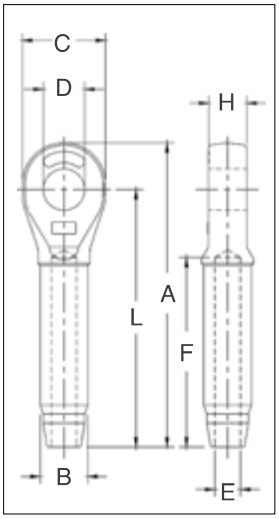
S-501 Open Swage Sockets

S-501 and S-501B Open Socket Specifications																		Swager / Die Data				
		Rope Size				Before Swage Dimensions (in)										Tolerance +/-	Max. After Swage Dim. (in)		Stock No.		Side Load	
S-501 Stock No.	S-501B Stock No. †	(in)	(mm)	Wt. Each (lb)	Ultimate Load** (t)	A	B	C	D	E	F	H	L	M	N	H		Die Description	500 1000 1500 Ton 5 x 7	1500 3000 Ton 6 x 12	1500 Ton 6 x 12	3000 Ton 6 x 12
1039021	1054001	1/4	6	.52	5.4	4.78	.50	1.38	.69	.27	2.19	.69	4.00	.38	1.47	.06	.46	1/4 Socket	1192845	-	-	-
1039049	1054010	5/16	8	1.12	11.8	6.3	.78	1.62	.81	.34	3.25	.80	5.34	.48	1.67	.06	.71	5/16-3/8 Socket	1192863	-	-	-
1039067	1054029	3/8	9-10	1.30	13.6	6.3	.78	1.62	.81	.41	3.25	.80	5.34	.48	1.67	.06	.71	5/16-3/8 Socket	1192863	-	-	-
1039085	1054038	7/16	11-12	2.08	18.1	7.82	1.01	2.00	1.00	.49	4.31	1.00	6.69	.56	1.96	.06	.91	7/16-1/2 Socket	1192881	-	-	-
1039101	1054047	1/2	13	2.08	21.3	7.82	1.01	2.00	1.00	.55	4.31	1.00	6.69	.56	1.96	.06	.91	7/16-1/2 Socket	1192881	-	-	-
1039129	1054056	9/16	14	4.67	31.8	9.54	1.27	2.38	1.19	.61	5.38	1.25	8.13	.68	2.21	.06	1.16	9/16-5/8 Socket	1192907	-	-	-
1039147	1054065	5/8	16	4.51	34.9	9.54	1.27	2.38	1.19	.68	5.38	1.25	8.13	.68	2.21	.06	1.16	9/16-5/8 Socket	1192907	-	-	-
1039165	1054074	3/4	18-20	7.97	43.5	11.61	1.56	2.75	1.38	.80	6.44	1.50	10.00	.80	2.69	.06	1.42	3/4 Socket	1192925	-	-	-
1039183	1054083	7/8	22	11.52	51.5	13.37	1.72	3.13	1.63	.94	7.50	1.75	11.63	.94	3.20	.07	1.55	7/8 Socket	1192943	-	-	-
1039209	1054092	1	24-26	17.80	71.4	15.47	2.00	3.69	2.00	1.07	8.63	2.00	13.38	1.07	3.68	.08	1.80	1 Socket	1192961	-	-	-
1039227	1054104	1-1/8	28	25.25	83.3	17.35	2.25	4.12	2.25	1.19	9.63	2.25	15.00	1.19	4.18	.10	2.05	1-1/8 Socket	1192989	-	-	-
1039245	1054113	1-1/4	32	35.56	109	19.2	2.53	4.59	2.50	1.34	10.69	2.50	16.50	1.27	4.68	.10	2.30	1-1/4 Socket	1193005	-	-	-
1039263	1054122	1-3/8	34-36	43.75	136	21.1	2.81	5.25	2.50	1.46	11.88	2.41	18.13	1.46	5.25	.10	2.56	1-3/8 Socket	1193023	-	-	-
1039281	1054131	1-1/2	38-40	58.50	181	23.17	3.08	5.50	2.75	1.59	12.81	3.00	19.75	1.70	5.70	.10	2.81	1-1/2 Socket	1193041	1191267	1195355	1195192
1039307	1054140	1-3/4	44	88.75	228	26.7	3.40	6.25	3.50	1.87	15.06	3.50	23.00	2.11	6.67	.10	3.06	1-3/4 Socket	1193069	1191276	1195367	1195209
1042767	1054159	2	48-52	146.2	272	31.15	3.94	7.80	3.75	2.12	17.06	4.00	26.75	1.81	8.19	.10	3.56	2 Socket	1193087	1191294	1195379	1195218

*Maximum Proof Load shall not exceed 50% of XXIP rope catalog breaking strength.** The Ultimate Loads of 3/4" through 1 1/4" sizes have been increased to meet the requirements for 8 strand 2160 Grade pendants.**† Assembly with bolt, nut and cotter pin. Note: Fittings designed only to be used on exact sizes listed.**
NOTE: Before using any Crosby fitting with any other type lay, construction or grade of wire rope, it is recommended that the termination be destructive tested and documented to prove the adequacy of the assembly to be manufactured.

S-502

- Forged from special bar quality carbon steel, suitable for cold forming.
- Swage socket terminations have an efficiency rating of 100% based on the catalog strength of wire rope.
- Hardness controlled by spheroidize annealing.
- Stamp for identification after swaging without concern for fractures (as per directions in Wire Rope End Terminations User's Manual).
- Swage sockets incorporate a reduced machined area of the shank which is equivalent to the proper 'after swage' dimension. Before swaging, this provides for an obvious visual difference in the shank diameter. After swaging, a uniform shank diameter is created allowing for a QUIC-CHECK® and permanent visual inspection opportunity.
- S-502 Swage Sockets are recommended for use with 6 x 19 or 6 x 37, IPS or XIP (EIP), XXIP (EEIP), RRL, FC or IWRC wire rope.
- In accordance with ASME B30.9, all slings terminated with swage sockets shall be proof loaded.*



QUIC-CHECK®

7

S-502 Closed Swage Sockets

S-502 Closed Socket Specifications													Max. After Swage Dim. (in)	Swager / Die Data			
	Rope Size				Before Swage Dimensions (in)										Stock No.		Side Load	
S-502 Stock No.	(in)	(mm)	Wt. Each (lb)	Ultimate Load** (t)	A	B	C	D	E	F	H	L		Die Description	500 1000 1500 Ton 5 x 7	1500 3000 Ton 6 x 12	1500 Ton 6 x 12	3000 Ton 6 x 12
1039325	1/4	6	.33	5.4	4.28	.50	1.38	.76	.27	2.19	.50	3.50	.46	1/4 Socket	1192845	-	-	-
1039343	5/16	8	.75	11.8	5.42	.77	1.62	.88	.34	3.25	.68	4.50	.71	5/16-3/8 Socket	1192863	-	-	-
1039361	3/8	9-10	.72	13.6	5.42	.78	1.62	.88	.41	3.25	.68	4.50	.71	5/16-3/8 Socket	1192863	-	-	-
1039389	7/16	11-12	1.42	18.1	6.88	1.01	2.00	1.07	.49	4.31	.87	5.75	.91	7/16-1/2 Socket	1192881	-	-	-
1039405	1/2	13	1.42	21.3	6.88	1.01	2.00	1.07	.55	4.31	.87	5.75	.91	7/16-1/2 Socket	1192881	-	-	-
1039423	9/16	14	2.92	31.8	8.59	1.27	2.38	1.28	.61	5.38	1.14	7.25	1.16	9/16-5/8 Socket	1192907	-	-	-
1039441	5/8	16	2.85	34.9	8.59	1.27	2.38	1.28	.68	5.38	1.14	7.25	1.16	9/16-5/8 Socket	1192907	-	-	-
1039469	3/4	18-20	5.00	43.5	10.25	1.56	2.88	1.49	.80	6.44	1.33	8.63	1.42	3/4 Socket	1192925	-	-	-
1039487	7/8	22	6.80	51.5	11.87	1.72	3.12	1.73	.94	7.50	1.53	10.09	1.55	7/8 Socket	1192943	-	-	-
1039502	1	24-26	10.40	71.4	13.56	2.00	3.62	2.11	1.07	8.63	1.78	11.50	1.80	1 Socket	1192961	-	-	-
1039520	1-1/8	28	14.82	83.3	15.03	2.25	4.00	2.37	1.19	9.75	2.03	12.75	2.05	1-1/8 Socket	1192989	-	-	-
1039548	1-1/4	32	21.57	109	16.94	2.53	4.50	2.62	1.34	10.81	2.25	14.38	2.30	1-1/4 Socket	1193005	-	-	-
1039566	1-3/8	34-36	28.54	136	18.59	2.81	5.00	2.62	1.46	11.88	2.29	15.75	2.56	1-3/8 Socket	1193023	-	-	-
1039584	1-1/2	38-40	38.06	181	20.13	3.08	5.38	2.87	1.59	12.81	2.56	17.00	2.81	1-1/2 Socket	1193041	1191267	1195355	1195192
1039600	1-3/4	44	51.00	228	23.56	3.40	6.25	3.63	1.87	15.06	3.08	20.00	3.06	1-3/4 Socket	1193069	1191276	1195367	1195209
1042589	2	48-52	89.25	272	27.13	3.94	7.25	3.88	2.12	17.06	3.31	23.00	3.56	2 Socket	1193087	1191294	1195379	1195218

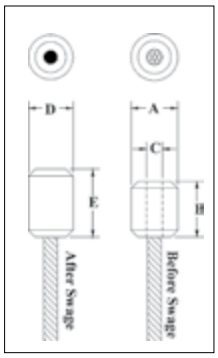
Maximum Proof Load shall not exceed 50% of XXIP rope catalog breaking strength. *The Ultimate Loads of 3/4" through 1 1/4" sizes have been increased to meet the requirements for 8 strand 2160 Grade pendants. Note: Fittings designed only to be used on exact sizes listed.

NOTE: Before using any Crosby fitting with any other type lay, construction or grade of wire rope, it is recommended that the termination be destructive tested and documented to prove the adequacy of the assembly to be manufactured.

Crosby

S-409

- Swage button terminations have an efficiency rating of 98% based on the catalog strength of wire rope.
- Special processed, low carbon steel.
- COLD TUFF® for better swageability.
- Stamp for identification after swaging without concern for fractures (as per directions in the Wire Rope End Terminations User's Manual).
- S-409 Buttons are recommended for use with 6 x 19 or 6 x 37, IPS or XIP (EIP), RRL, FC or IWRC wire rope. Before using any National Swage fitting with any other type lay, construction or grade of wire rope, it is recommended that the termination be destructive tested and documented to prove the adequacy of the assembly to be manufactured.



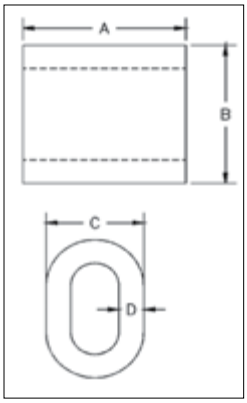
S-409 COLD TUFF® Buttons

S-409 Steel Swage Button Specifications										Swager / Die Data	
		Rope Size			Before Swage Dimensions (in)			After Swage Dimensions (in)			
S-409 Stock No.	Size No.	(in)	(mm)	Weight Per 100 (lb)	A	B	C	D Maximum After Swage Dimensions	E Length*	Die Description	Stock No. 500 Tons 1000 Tons 1500 Tons 5 x 7
1040171	1 SB	1/8	3	2	.42	.50	.14	.40	.61	1/8 - 1/4 Button	1191621
1040215	3 SB	3/16	5	4	.56	.70	.20	.52	.84	1/4 1st Stage	1197528
1040251	5 SB	1/4	6-7	8	.68	1.06	.31	.58	1.41	1/8 - 1/4 Button	1191621
1040297	7 SB	5/16	8	16	.88	1.13	.36	.77	1.33	3/8 1st Stage	1192364
1040313	8 SB	3/8	9-10	15	.88	1.48	.42	.77	1.69	3/8 1st stage	1192364
1040331	9 SB	7/16	11	30	1.13	1.63	.48	1.03	1.94	1/2 1st Stage	1192408
1040359	10 SB	1/2	13	50	1.31	1.89	.55	1.16	2.17	5/8 Socket	1192907
1040377	11 SB	9/16	14	70	1.44	2.02	.61	1.29	2.41	9/16 -5/8 Button	1191665
1040395	12 SB	5/8	16	100	1.56	2.42	.67	1.42	2.89	3/4 Socket	1192925
1040411	13 SB	3/4	18-20	131	1.68	2.74	.80	1.55	3.25	3/4 1st Stage	1192462
1040439	14 SB	7/8	22	220	2	3.27	.94	1.80	3.86	7/8 1st Stage	1192480
1040457	15 SB	1	25-26	310	2.25	3.67	1.06	2.05	4.36	1 1st Stage	1192505
1040475	16 SB	1-1/8	28-29	450	2.56	4.05	1.19	2.30	4.81	1-1/8 1st Stage	1192523
1040493	17 SB	1-1/4	31-32	650	2.81	4.57	1.33	2.56	5.42	1-3/8 Socket	1193023

* NOTE: Length is measured from outside end of termination. Fittings designed only to be used on exact sizes listed.

S-506

- For turnback wire rope splicing.
- Special processed low carbon steel.
- Turnback terminations have efficiency ratings of 94% based on the catalog strength of wire rope.
- COLD TUFF® for better swageability and low temperature toughness.
- S-506 Sleeves are recommended for use with 6 x 19 or 6 x 37, IPS or XIP (EIP), RRL, FC or IWRC wire rope. Before using any National Swage fitting with any other type lay, construction or grade of wire rope, it is recommended that the termination be destructive tested and documented to prove the adequacy of the assembly to be manufactured.
- Resists cracking when swaged (equals or exceeds stainless steel sleeves).
- Stamp for identification after swaging without concern for fractures (as per directions in the Wire Rope End Termination User's Manual).



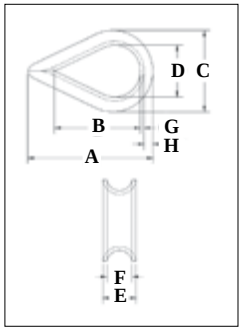
S-506 COLD TUFF® Duplex Non-Tapered Sleeves

S-506 Steel Duplex Non-Tapered Sleeve Specifications										Swager / Die Data	
	Rope Size				Before Swage Dimensions (in)						
S-506 Stock No.	(in)	(mm)	Weight Per 100 (lb)	Pkg. Qty.	A	B	C	D	Max. After Swage Dimensions (in)	Die Description	Stock No. 500 Tons 1000 Tons 1500 Tons 5 x 7
1039334	5/16	8	17	200	1.25	1.06	.81	.19	.77	3/8 1st Stage	1192364
1039352	3/8	9-10	13	100	1.25	1.12	.81	.14	.77	3/8 1st Stage	1192364
1039370	7/16	11	31	50	1.63	1.41	1.02	.19	1.03	1/2 1st Stage	1192408
1039398	1/2	13	27	50	1.63	1.44	1.02	.16	1.03	1/2 1st Stage	1192408
1039414	9/16	14	63	25	2.25	1.72	1.23	.23	1.29	5/8 1st Stage	1192444
1039432	5/8	16	54	25	2.25	1.84	1.28	.20	1.29	5/8 1st Stage	1192444
1039450	3/4	18-20	91	10	2.63	2.16	1.52	.23	1.55	3/4 1st Stage	1192462
1039478	7/8	22	126	10	2.88	2.50	1.75	.27	1.80	7/8 1st Stage	1192480
1039496	1	25-26	187	10	3.06	2.84	2.00	.33	2.05	1 1st Stage	1192505
1039539	1-1/4	30-32	384	Bulk	4.06	3.50	2.50	.38	2.56	1-3/8 Socket	1193023

Note: Fittings designed only to be used on exact sizes listed.

G-411

- Hot-dip galvanized steel.
- The standard choice for light duty loading conditions and applications.
- Meets the performance requirements of Federal Specification FF-T-276b Type II, except for those provisions required of the contractor.

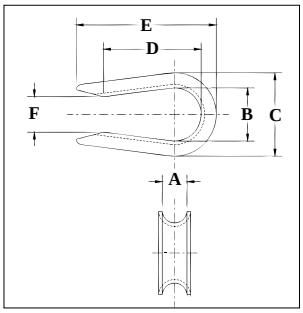


Standard Wire Rope Thimbles

Rope Diameter				Dimensions (in)							
(in)	(mm)	Stock No	Weight Per 100 (lb)	A	B	C	D	E	F	G	H
1/8	3-4	1037256	3.50	1.94	1.31	1.06	.69	.25	.16	.05	.13
3/16	5	1037274	3.50	1.94	1.31	1.06	.69	.31	.22	.05	.13
1/4	6-7	1037292	3.50	1.94	1.31	1.06	.69	.38	.28	.05	.13
5/16	8	1037318	4.00	2.13	1.50	1.25	.81	.44	.34	.05	.13
3/8	9-10	1037336	6.70	2.38	1.63	1.47	.94	.53	.41	.06	.16
1/2	11-13	1037354	12.50	2.75	1.88	1.75	1.13	.69	.53	.08	.19
5/8	16	1037372	34.50	3.50	2.25	2.38	1.38	.91	.66	.13	.34
3/4	18-20	1037390	47.10	3.75	2.50	2.69	1.63	1.08	.78	.14	.34
7/8	22	1037416	84.60	5.00	3.50	3.19	1.88	1.27	.94	.16	.44
1	24-26	1037434	97.50	5.69	4.25	3.75	2.50	1.39	1.06	.16	.41
1-1/8 - 1-1/4	28-32	1037452	175.00	6.25	4.50	4.31	2.75	1.75	1.31	.22	.50

G-408

- Hot-dip galvanized steel.
- Recommended for light duty applications where assembly into another fitting (i.e., shackle or master link) is required.

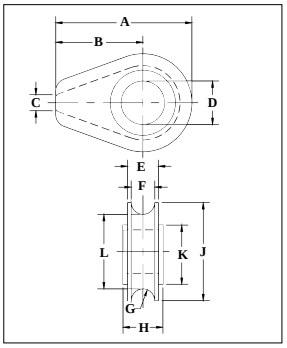


Open Pattern Thimbles

Rope Diameter				Dimensions (in)					
(in)	(mm)	Stock No	Weight Per 100 (lb)	A	B	C	D	E	F
1/4	6-7	1037531	3.00	.28	.69	1.06	1.41	2.03	.38
5/16	8	1037559	3.80	.34	.81	1.25	1.53	2.16	.50
3/8	9-10	1037577	7.00	.44	.94	1.47	1.72	2.47	.62
1/2	11-13	1037595	12.50	.53	1.12	1.75	1.97	2.84	.75
5/8	16	1037611	25.00	.66	1.38	2.38	2.34	3.59	1.00

S-412

- Cast ductile iron.
- Fits pin for open wire rope socket, boom pendant clevis, and wedge socket.

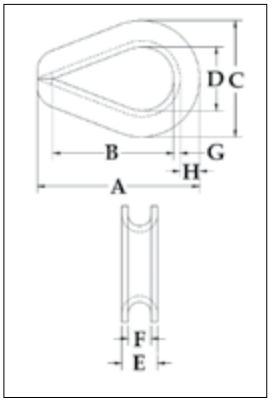


Solid Wire Rope Thimbles

Rope Diameter				Dimensions (in)										
(in)	(mm)	Stock No	Weight Per 100 (lb)	A	B	C	D	E	F	G	H	J	K	L
1/2	13	1037121	.61	2.81	1.75	.25	1.06	.75	.56	.28	.88	2.13	1.63	1.56
5/8	16	1037149	2.21	4.69	3.00	.38	1.31	1.06	.81	.41	1.13	3.38	2.25	2.56
3/4	18-20	1037167	2.32	4.69	3.00	.38	1.50	1.06	.81	.41	1.38	3.38	2.25	2.56
7/8	22	1037185	5.45	6.06	3.81	.50	1.75	1.38	1.06	.53	1.63	4.50	3.25	3.44
1	24-26	1037201	5.25	6.06	3.81	.50	2.13	1.38	1.06	.53	1.81	4.50	3.25	3.44
1-1/8	28-30	1037229	9.29	7.25	4.56	.63	2.38	1.75	1.31	.66	2.06	5.38	3.88	4.06
1-1/4 - 1-3/8	32-35	1037247	9.81	7.25	4.56	.63	2.63	1.94	1.53	.78	2.31	5.38	3.88	4.13

G-414

- Available in hot-dip galvanized or stainless steel (Type 304).
- Stainless steel recommended for more corrosive environments where greater protection is required.
- Greater protection against wear and deformation of the wire rope eye.
- Longer service life.
- Meets the performance requirements of Federal Specification FF-T-276b Type III, except for those provisions required of the contractor.

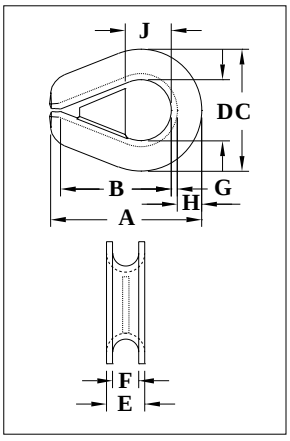


Extra Heavy Wire Rope Thimbles

Rope Diameter		Stock No.			Dimensions (in)							
(in)	(mm)	G-414 Stock No	SS-414 Stainless	Weight Per 100 (lb)	A	B	C	D	E	F	G	H
1/4	6-7	1037639	1037960	7	2.19	1.62	1.50	.88	.41	.28	.06	.25
5/16	8	1037657	1037988	14	2.50	1.88	1.81	1.06	.50	.34	.08	.30
3/8	9-10	1037675	1038004	23	2.88	2.12	2.12	1.12	.63	.41	.11	.39
7/16	11-12	1037693	-	37	3.25	2.38	2.38	1.25	.72	.47	.12	.45
1/2 - 9/16	13-15	1037719	1038022	50	3.62	2.75	2.75	1.50	.89	.59	.15	.48
5/8	16	1037755	1038040	82	4.25	3.25	3.12	1.75	1.00	.66	.16	.53
3/4	18-20	1037773	1038068	157	5.00	3.75	3.81	2.00	1.22	.78	.22	.69
7/8	22	1037791	-	190	5.50	4.25	4.25	2.25	1.38	.94	.22	.78
1	24-26	1037817	-	280	6.12	4.50	4.75	2.50	1.56	1.06	.25	.88
1-1/8 - 1-1/4	28-32	1037835	-	-	7.00	5.12	5.88	2.88	1.88	1.31	.25	1.25
1-1/4 - 1-3/8	32-35	1037853	-	830	9.08	6.50	6.81	3.50	2.25	1.44	.37	1.29
1-3/8 - 1-1/2	35-38	1037871	-	1250	9.00	6.25	7.12	3.50	2.62	1.56	.50	1.31
1-5/8	40	1037899	-	-	11.25	8.00	8.12	4.00	3.00	1.72	.50	1.38
1-3/4	44	1037915	-	1860	12.19	9.00	8.50	4.50	3.06	1.84	.50	1.50
1-7/8 - 2	48-52	1037933	-	2780	15.12	12.00	10.38	6.00	3.38	2.09	.50	1.69
2-1/4	56	1037951	-	-	17.50	14.00	11.88	7.00	3.88	2.38	.62	1.82

G-414 SL

- Prevents the shackle from being removed and replaced in the field, which could compromise the certified integrity of the sling assembly.
- Available in hot-dip galvanized. Crosby's shackle locking thimbles are galvanized after the welding of the wedge has been completed.
- Greater protection against wear and deformation of the wire rope eye.
- Longer service life.
- Meets the performance requirements of Federal Specification FF-T-276b Type III, except for those provisions required of the contractor.

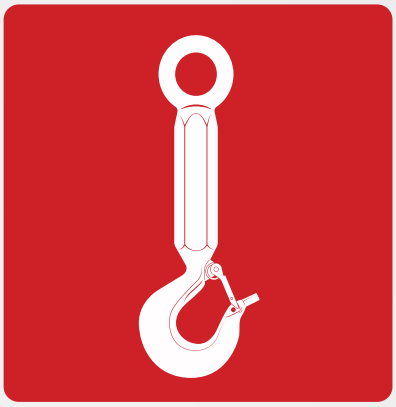


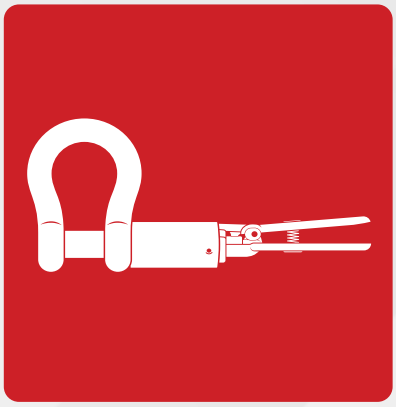
Extra Heavy Wire Rope Thimbles (Shackle-Loc)

Rope Diameter		Stock No	Weight Per 100 (lb)	Dimensions (in)								
(in)	(mm)			A	B	C	D	E	F	G	H	J
3/8	9-10	1036800	24	2.88	2.12	2.12	1.12	.63	.41	.11	.39	.81
1/2 - 9/16	13-15	1036808	55	3.62	2.75	2.75	1.50	.89	.59	.15	.48	1.12
5/8	16	1036817	82	4.25	3.25	3.12	1.75	1.00	.66	.16	.53	1.25
3/4	18-20	1036826	161	5.00	3.75	3.81	2.00	1.22	.78	.22	.69	1.50
7/8	22	1036835	206	5.50	4.25	4.25	2.25	1.38	.94	.22	.78	1.63
1	24-26	1036844	300	6.12	4.50	4.75	2.50	1.56	1.06	.25	.88	1.88
1-1/8 - 1-1/4	28-32	1036853	425	7.00	5.12	5.88	2.88	1.88	1.31	.25	1.25	2.13
1-3/8 - 1-1/2	35-38	1036862	1317	9.00	6.25	7.12	3.50	2.62	1.56	.50	1.31	2.50

ROV

Manufactured to withstand the toughest environments on earth.



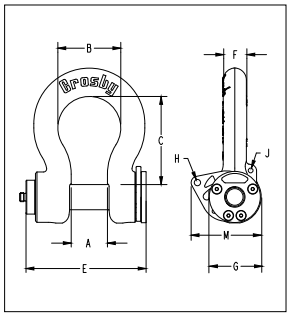


the Crosby group®

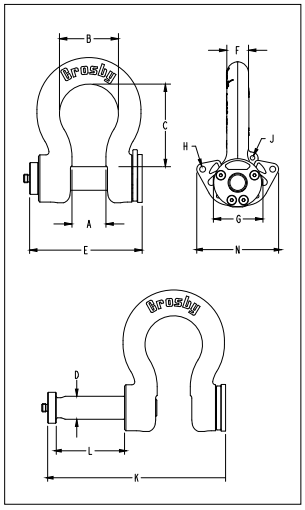
thecrosbygroup.com

G-2100
Release & Retrieve
ROV Shackle with
QUIC-Thread Bolt

G-2110
Release & Retrieve
ROV Shackle with
Non - Thread Bolt



- Forged alloy bow with an industry best 6 to 1 performance design factor.
- Patented captured bolt can withstand over 2,000 lb (907 kg) of pull-out force.
- Galvanized bow with an API RP 17H color compliant coating.
- Galvanized alloy bolt (non-threaded) (G-2110).
- On average, QUIC-Thread bolt requires only 3.5 rotations for full engagement (G-2100).
- Raised pad for serialization.
- API RP 17H compliant 316 stainless steel handles available in T, D, F, and Eye models (sold separately).
- Built in eyelets for optional tether points.
- Monkey fist(s) included.
- Capacities from 9.5t through 85t.
- Forged steel, Quenched & Tempered, with alloy pins.
- Working Load Limit permanently shown on every shackle.
- QUIC-CHECK® deformation and angle indicators forged on the bow.



G-2100 ROV Release & Retrieve Shackle — QUIC-Threaded

Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)											
			A	B	C	D	E	F	G	H	J	K	L	N
9.5	2038739	11.4	1.81	2.91	4.25	1.25	7.33	1.16	2.68	0.38	0.31	11.54	4.21	4.97
12	2038762	13.8	2.03	3.25	4.69	1.38	7.75	1.29	3.00	0.38	0.31	12.25	4.50	4.97
17	2038785	23.7	2.38	3.88	5.75	1.63	8.54	1.53	3.62	0.50	0.31	13.74	5.20	6.28
25	2038614	38.6	2.88	5.00	7.00	2.00	9.54	1.84	4.20	0.50	0.38	15.48	5.94	6.94
35	2038808	51.2	3.25	5.75	7.74	2.28	10.41	2.08	4.82	0.50	0.38	16.97	6.56	6.94
55	2038831	108	4.12	7.25	10.49	2.78	12.61	2.72	5.81	0.50	0.38	20.74	8.13	8.53
85	2038877	157	5.00	7.88	12.98	3.28	14.23	3.12	6.50	0.50	0.50	23.61	9.38	8.53

6:1 Design Factor. *Note: Maximum Proof Loads are 2xWLL in metric tons.

G-2110 ROV Release & Retrieve Shackle — Non-Threaded

Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)											
			A	B	C	D	E	F	G	H	J	K	L	N
9.5	2038740	11.4	1.81	2.91	4.25	1.25	7.33	1.16	2.68	0.38	0.31	11.54	4.21	4.97
12	2038763	13.8	2.03	3.25	4.69	1.38	7.75	1.29	3.00	0.38	0.31	12.25	4.50	4.97
17	2038786	23.7	2.38	3.88	5.75	1.63	8.54	1.53	3.62	0.50	0.31	13.74	5.20	6.28
25	2038621	38.6	2.88	5.00	7.00	2.00	9.54	1.84	4.20	0.50	0.38	15.48	5.94	6.94
35	2038809	51.2	3.25	5.75	7.74	2.28	10.41	2.08	4.82	0.50	0.38	16.97	6.56	6.94
55	2038832	108	4.12	7.25	10.49	2.78	12.61	2.72	5.81	0.50	0.38	20.74	8.13	8.53
85	2038878	157	5.00	7.88	12.98	3.28	14.23	3.12	6.50	0.50	0.50	23.61	9.38	8.53

6:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit.

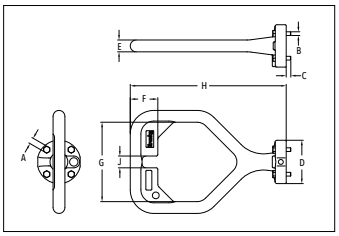
APPLICATION AND WARNING INFORMATION
SECTION 17

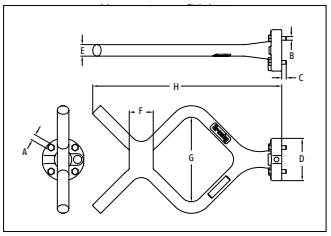
"D" Handle

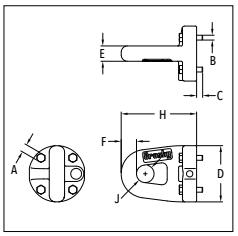
"F" Handle

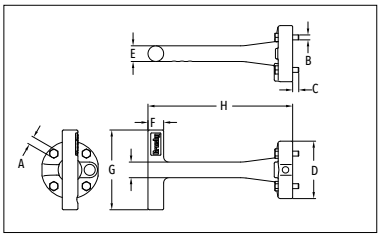
"Eye" Handle

"T" Handle









- New Interchangeable handles for ROV shackle bolts.
- For use with G-2100 and G-2110 ROV shackles only.
- Handles are stainless steel and painted fluorescent orange.
- "D" and "F" handle kits available containing handle, retaining bolts, and individual packet of Loctite for easy installation.

G-42100H ROV Handles

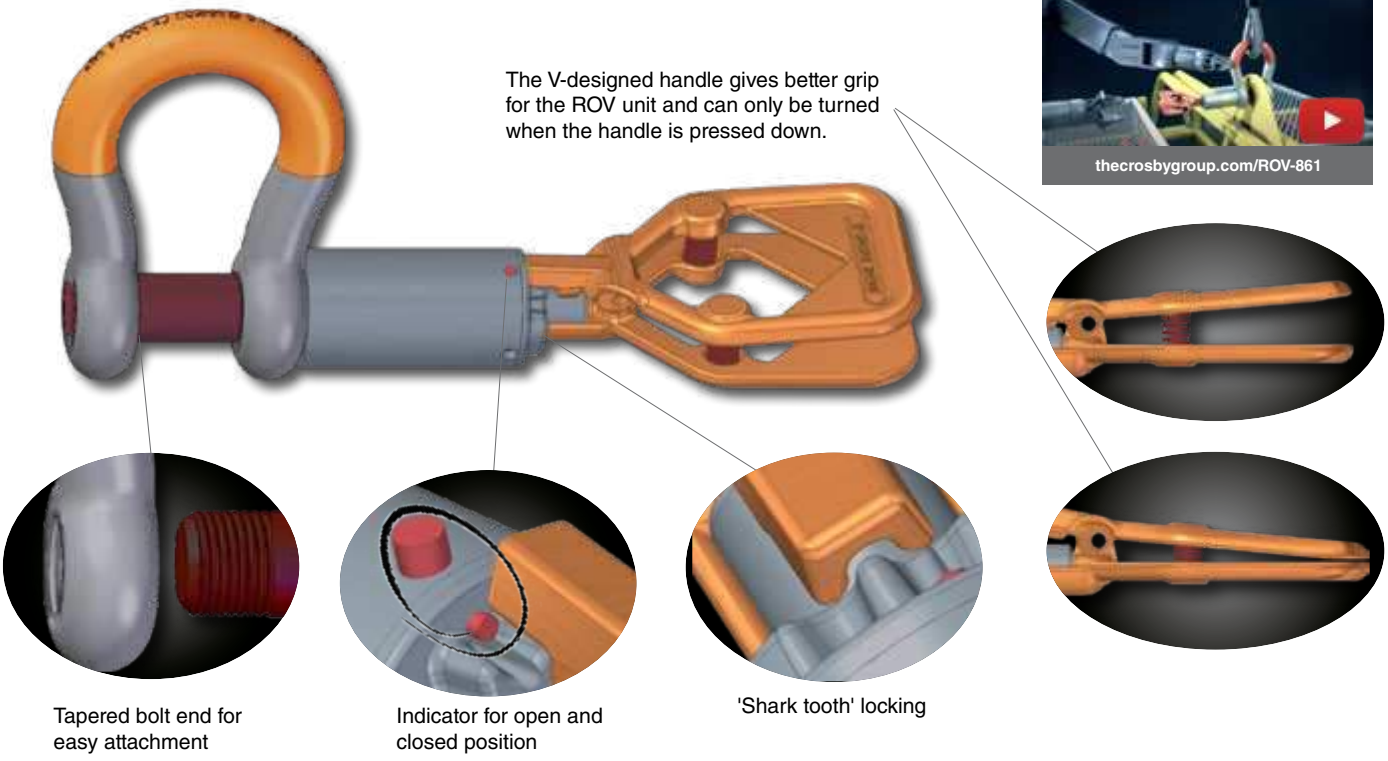
Handle Style	Stock No.	Weight Each (lb)	Dimensions (in)									
			A	B	C	D	E	F	G	H	J	K
D	1021324	4.5	0.28	0.24	0.29	2.75	0.75	1.75	5.04	9.9	0.75	–
F	1021315	5	0.28	0.24	0.29	2.75	0.75	1.75	5.5	12.29	–	–
T	1021306	2.4	0.28	0.24	0.29	2.75	0.75	0.75	3.82	6.18	–	0.75
Eye	1021333	2.1	0.28	0.24	0.29	2.75	0.75	0.75	–	3.69	0.86	–

Crosby G-2100 Release & Retrieve ROV Shackle with QUIC-Threaded Bolt
thecrosbygroup.com/ROV-threaded

Crosby G-2110 Release & Retrieve ROV Shackle with Non-Threaded Bolt
thecrosbygroup.com/ROV-non-threaded

ROV Shackles

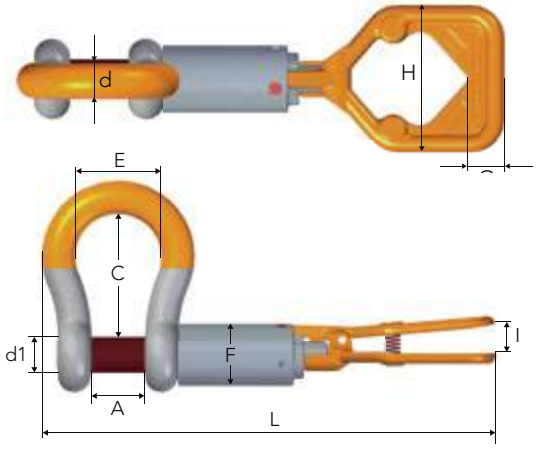
The ROV Retrieve Shackle is designed for smooth and easy use in retrieving and releasing subsea lifting and rigging operations. It has no loose parts in closed or opened position. Therefore there is no need for wires or monkey fists. The high visibility handles are close-die forged and has double safety functions. The shark tooth locking with indicator that will show if the shackle is in open or locked position as well as the spring loaded handle. The handle is the same size, regardless of size of shackle. The ROV Retrieve Shackle No. 861 is an easy to operate shackle, saving valuable time and money.



ROV Retrieve Shackle No 861

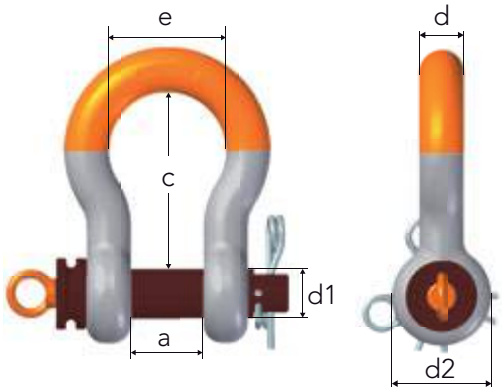
All shackles have unique markings.

- Dim. according to EN 13889
- High tensile steel, Quenched & Tempered
- All load bearing parts hot-dip galvanized
- 6:1 Design Factor
- Test certificate and traceable 3.1 certificate supplied upon request.
- Temperature: -40 ºF to 392 ºF



Stock No.	WLL metric tonnes	d1	d	A	C	E	F	L	I	H	G	Weight (lb)
A086128	9.5	1.26	1.10	1.81	4.25	2.91	2.36	17.32	1.22	5.20	1.30	14.3
A086132	12.0	1.38	1.26	2.05	4.69	3.27	2.36	18.11	1.22	5.20	1.30	17.6
A086138	17.0	1.65	1.50	2.36	5.75	3.86	2.50	19.72	1.22	5.20	1.30	23.1
A086145	25.0	1.97	1.77	2.91	7.01	5.00	2.76	22.24	1.22	5.20	1.30	36.3
A086152	35.0	2.24	1.97	3.27	7.76	5.43	2.99	23.78	1.22	5.20	1.30	45.1
A086164	55.0	2.76	2.56	4.13	10.24	7.09	3.46	28.03	1.22	5.20	1.30	92.5
A086176	85.0	3.27	3.31	5.24	12.99	7.48	4.25	29.33	1.22	5.20	1.30	170.25

ROV Release Shackle No 863



- Equipped with bolt and two locking pins
- Dim. according to EN 13889
- High tensile steel, Quenched & Tempered
- All load bearing parts hot-dip galvanized
- 5:1 Design Factor
- Test certificate and traceable 3.1 certificate supplied on request.
- Temperature: -40 ºF to 392 ºF

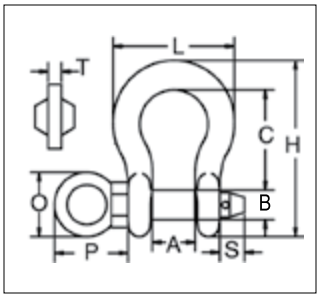
CE

Stock No.	WLL metric tonnes	d1	d	a	c	d2	e	Weight (lb)
A086322	6.5	0.98	0.87	1.46	3.31	2.05	2.28	3.52
A086328	9.5	1.26	1.10	1.81	4.25	2.52	2.91	7.49
A086332	12.0	1.38	1.26	2.05	4.69	2.83	3.27	11.0
A086338	17.0	1.65	1.50	2.36	5.75	3.31	3.86	17.1
A086345	25.0	1.97	1.77	2.91	7.01	4.13	5.00	30.6
A086352	35.0	2.24	1.97	3.27	7.76	5.00	5.43	37.4
A086364	55.0	2.76	2.56	4.13	10.24	5.98	7.09	81.5

8

G-209R

- Capacities from 6-1/2t through 55t.
- Forged steel, Quenched & Tempered, with alloy pins.
- Working Load Limit permanently shown on every shackle.
- Fatigue rated.
- QUIC-CHECK® deformation and angle indicators forged on the bow.
- All ROV shackle bows are galvanized, then painted fluorescent yellow.
- Look for the Red Pin®... the mark of genuine Crosby quality.



G-209R Subsea Shackles

Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)								
			A +/- .25	B	C	H	L	O	P	S	T
6.5	1020872	3.62	1.44	1.00	3.31	5.83	4.03	1.18	2.28	.65	.39
8.5	1020902	5.03	1.69	1.13	3.75	6.56	4.69	1.18	2.40	.73	.39
9.5	1020932	7.41	1.81	1.25	4.25	7.47	5.16	2.28	3.27	.75	.47
12	1020952	9.50	2.03	1.38	4.69	8.25	5.75	2.28	3.31	.89	.47
13.5	1020972	13.53	2.25	1.50	5.25	9.16	6.38	2.36	3.58	.91	.59
17	1020992	17.20	2.38	1.63	5.75	10.00	6.88	2.36	3.66	1.18	.59
25	1021102	27.78	2.88	2.00	7.00	12.34	8.86	2.16	4.49	1.14	.69
35	1021125	45.00	3.25	2.25	7.75	13.68	9.97	2.60	5.12	1.18	.79
55	1021158	85.75	4.13	2.75	10.50	17.84	12.87	2.76	5.63	1.50	.98

5:1 Design Factor. Maximum Proof Load is 2.0 times the Working Load Limit.

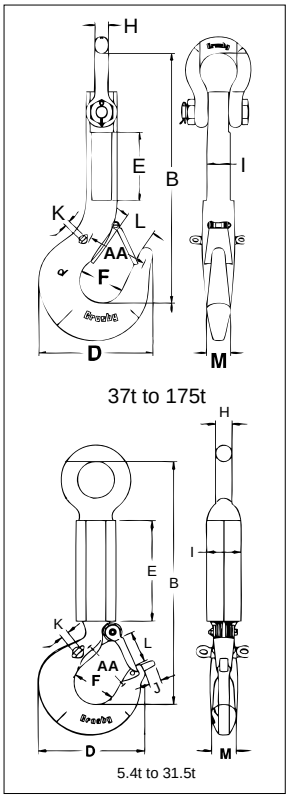
Load Rated Fatigue Rated QUIC-CHECK QT CE

APPLICATION AND WARNING INFORMATION SECTION 17

L-562A

- Hook identification code stamped on each hook.
- Quenched & Tempered.
- QUIC-CHECK® angle indicators forged into the top eye; and deformation and angle indicators forged on the hook.
- Fluorescent yellow finish for high subsea visibility.
- Tip extension allows for easy handling.
- Sizes 5.4t through 31.5t utilize a new integrated latch (S-4320) that meets the world-class standard for lifting.
  - Heavy duty stamped latch interlocks with the hook tip.
  - High cycle, long life spring.
- Pad eyes are provided on either side of hook as cable guides. The cable is passed through a hole drilled in the latch that assists in allowing the remotely operated cable to open latch.
- Crosby supplies latches with drilled holes for sizes 5.4t through 31.5t. Other sizes can be fitted by your local Authorized Crosby Dealer. Cables are not provided by Crosby.

APPLICATION AND WARNING INFORMATION
SECTION 17



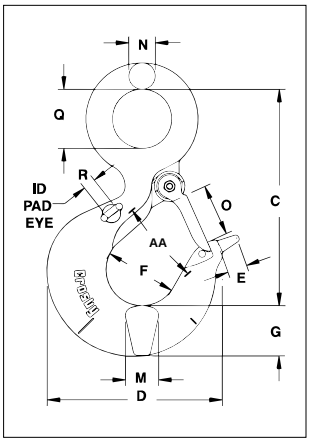
L-562A ROV Eye Shank Hooks

Working Load Limit (t)	Hook ID Code	L-562A Stock No.	Weight Each (lb)	Dimensions (in)											Replacement Latch Stock No.
				I	E	B	D	J	F	M	H	L	K	AA**	
†5.4	IA	1297722	21	2.56	9.84	16.57	4.84	.39	2.00	1.13	.88	1.36	.25	2.50	1096515
†11.5	KA	1297792	33	2.56	9.84	20.39	7.54	1.18	3.00	1.63	1.25	2.08	.38	4.00	1096611
†16	LA	1297806	42	2.56	9.84	21.65	8.34	1.18	3.25	1.94	1.38	2.27	.38	4.00	1096657
†22	NA	1297862	68	3.35	9.84	23.94	10.34	1.77	4.25	2.38	1.59	3.02	.75	5.00	1096704
31.5	OA	1298042	97	3.35	9.84	26.00	13.62	-	5.00	3.00	1.89	3.62	.75	6.50	1090161
‡37	PA	1298049	97	3.15	9.25	32.58	14.06	-	5.38	3.00	1.84	3.75	.75	7.00	1090189
‡45	SA	1298057	198	3.15	9.25	34.07	15.44	-	6.00	3.25	1.84	4.25	.75	8.00	1090189
‡60	TA	1298087	289	3.54	8.46	37.06	18.50	-	7.00	3.91	2.08	5.12	.75	10.00	1090205
‡100	WA	1298103	668	5.51	11.81	46.67	23.00	-	6.81	5.50	2.71	4.88	.75	12.00	1090241
‡150	XA	1298117	871	5.91	9.06	48.53	24.38	-	6.75	6.00	3.62	5.38	.75	13.00	1090241
**175	YA	1298130	1135	6.69	10.04	52.24	26.69	-	7.50	7.00	4.00	-	.75	13.00	143062

4:1 Design Factor. ** Deformation Indicators. † Utilizes Crosby S319N style hook. Maximum proof load is 2 times the Working Load Limit. ‡ Utilizes Crosby G-2140 shackle as eye.

L-320R

- Hook identification code stamped on each hook.
- Quenched & Tempered.
- QUIC-CHECK® deformation and angle indicators forged on the hook.
- Fluorescent yellow finish for high subsea visibility.
- Tip extension allows for easy handling.
- Sizes 3.2t through 31.5t utilize new integrated latch (S-4320) that meets the world-class standard for lifting.
  - Heavy duty stamped latch interlocks with the hook tip.
  - High cycle, long life spring.
- Pad eyes are provided on either side of hook as cable guides. The cable is passed through a hole drilled in the latch that assists in allowing the remotely operated cable to open latch.
- Crosby supplies latches with drilled holes for sizes 5.4t through 31.5t. Other sizes can be fitted by your local authorized distributor. Cables are not provided by Crosby.



APPLICATION AND WARNING INFORMATION
SECTION 17

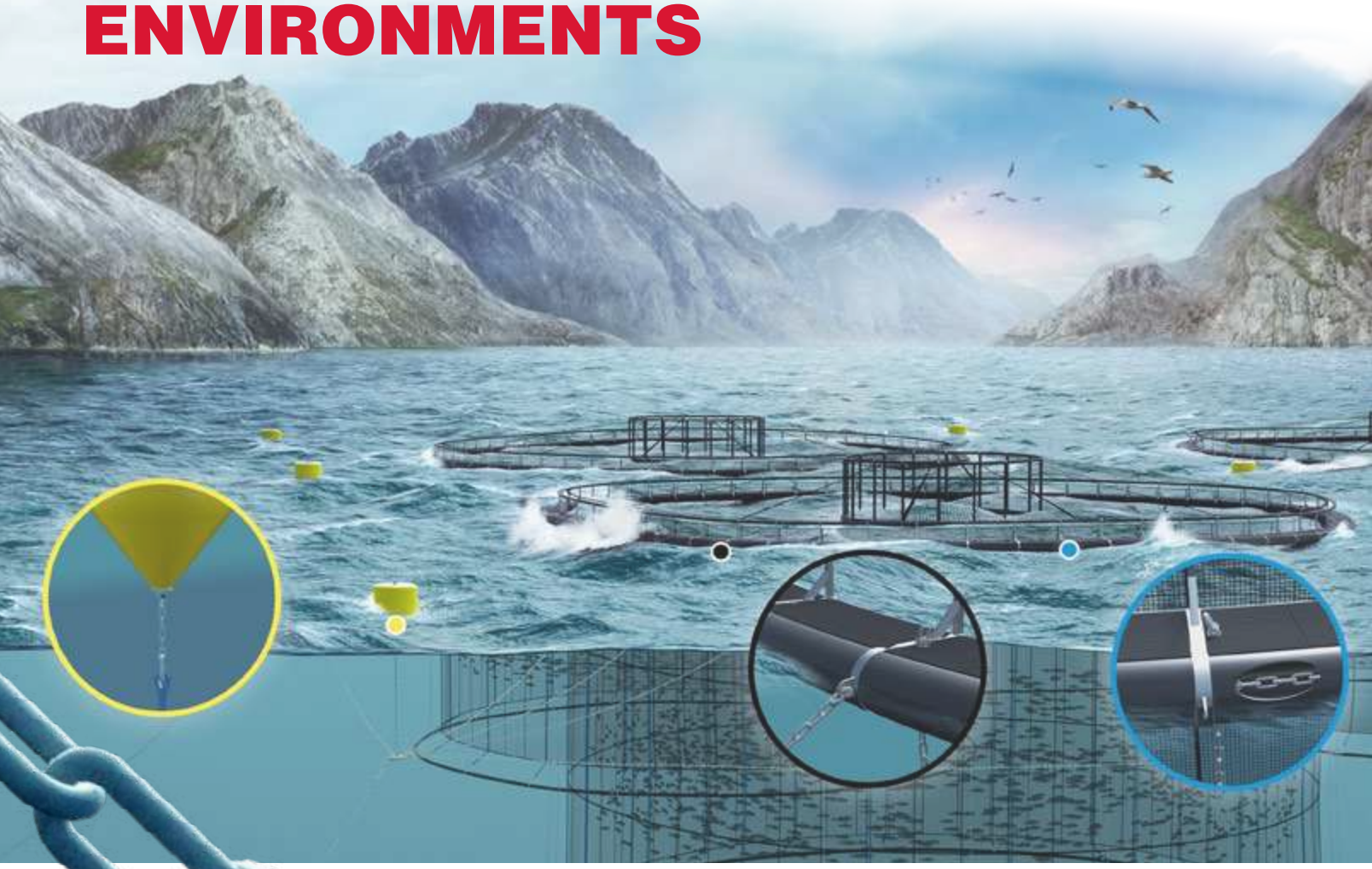
L-320R ROV Hooks

Working Load Limit (t)*	Hook ID Code	L-320R Stock No.	Weight Each (lb)	Dimensions (in)											Replacement Latch Stock No.
				C	D	E	F	G	M	N	O	Q	R	AA**	
†3.2	HA	1298427	2.0	4.69	3.97	.39	1.63	1.13	.94	.58	1.09	1.25	.25	2.00	1096468
†5.4	IA	1298497	4.0	5.77	4.81	.39	2.00	1.44	1.31	.72	1.36	1.56	.25	2.50	1096515
†8	JA	1298567	8.2	7.37	6.27	.79	2.50	1.81	1.66	.90	1.61	2.00	.38	3.00	1096562
†11.5	KA	1298637	15	9.07	7.45	1.18	3.00	2.25	1.63	1.11	2.08	2.44	.38	4.00	1096611
†16	LA	1298707	21	10.19	8.39	1.18	3.25	2.59	1.94	1.27	2.33	2.84	.38	4.00	1096657
†22	NA	1298777	38	12.53	10.30	1.77	4.25	3.00	2.38	1.56	3.02	3.50	.75	5.00	1096704
†31.5	OA	1298847	60	14.07	13.63	-	5.00	3.62	3.00	1.75	3.67	3.50	.75	6.50	1090161
37	PA	1298857	107	18.19	14.06	-	5.38	4.56	3.19	2.00	3.75	4.50	.75	7.00	1090189
45	SA	1298867	137	20.12	15.45	-	6.00	5.06	3.24	2.18	4.25	4.94	.75	8.00	1090189
60	TA	1298877	224	23.72	18.50	-	7.00	6.00	3.91	2.53	5.12	5.69	.75	10.00	1090205

4:1 Design Factor. *Deformation Indicators. †Utilizes Crosby S320N style hook. Maximum proof load is 2 times the Working Load Limit.

Crosby

SAFER SOLUTIONS THAT WITHSTAND THE TOUGHEST ENVIRONMENTS



Increased safety & efficiency in aquaculture operations

Tackle the toughest environments with our wide range of products, including hot-dip galvanized welded chain slings and shackles.

Our products offer reduced corrosion and fatigue, are easier to handle, and are faster to assemble, resulting in longer product life and time and cost savings.

Gunnebo Industries Mooring Bolt, Countersunk Dee Shackle, and Long Link Chain LLZ

GUNNEBO Industries

Read more about our full aquaculture line, watch videos, and download the brochure at **thecrosbygroup.com/aquaculture**

SYNTHETIC SLING FITTINGS

Steel end fittings designed to be used on synthetic web slings to increase usability & durability.

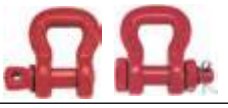
the Crosby group

thecrosbygroup.com

APPLICATION INFORMATION

Crosby's Sling Saver® line is the first broad line of fittings developed exclusively for use with synthetic slings. Combined with additional Crosby products, a complete system is now available.

RECOMMENDED APPLICATION CHART

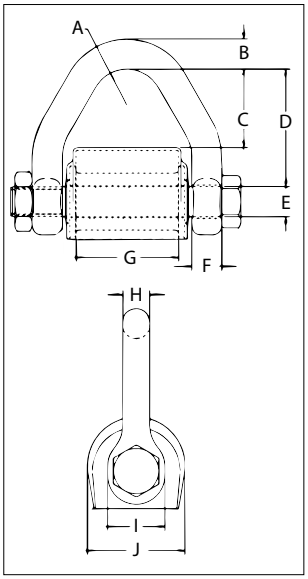
APPLICATION	USE
Web slings, connect to pad eye, eye bolt, or lifting lug.	S-281 Sling Saver Web Sling Shackle 
Web slings or roundslings, connecting to pad eye, eye bolt, or lifting lug.	S-253 or S-252 Sling Saver Shackle 
Connect two S-252 or S-253 Sling Saver shackles together.	S-256 Link Plate 
To keep the load centered on the pin, thus keeping the sling positioned correctly in the shackle bow.	S-255 Spool 
Web slings or roundslings connecting to master links, rings, or Crosby 320N Eye Hooks.	S-280 Sling Saver Web Connector with spool 
High strength, high capacity web or roundslings.	WSL-320A Synthetic Sling Hook 
Choking with web slings or roundslings.	S-287 Sliding Choker Hook 
Master links or master link assembly to be sewn into eye of web sling or attached utilizing web connector.	Welded Master Link A-1343 and Master Link Assembly A-1346 
Master links or master link assembly to be sewn into eye of web sling or attached utilizing web connector.	Welded Master Link A-342 and Master Link Assembly A-345 
Connecting high performance slings to master links or eye hooks and to other high performance slings.	S-237 or S-238 High Performance Connectors 
Wide body shackles greatly improve wearability of wire rope slings.	S/G-2160 Wide Body Bolt Type Shackles S/G-2169 Wide Body Screw Pin Shackles 

Always ensure rated Working Load Limits are greater than the load placed on the fitting. Designed for use with Type III (eye & eye), Class 7, 2-ply webbing, and synthetic round slings. Also accommodates single ply and endless slings.

Crosby Sling Saver hardware meets the requirements for minimum stock diameter or thickness and effective contact width shown in the recommended standard specification for synthetic polyester round slings by the Web Sling and Tie Down Association. WSTDA-RS1 (revised 2010).

S-280

- Connects synthetic web and synthetic round slings to conventional Crosby hardware.
- All alloy construction.
- Durable vinyl cover that:
  - Protects sling at eye
  - Keeps sling positioned correctly on spool.
- Makes a field assembled bridle quick and easy.
- No retaining pin to snag sling material.
- Increased radius of spool gives wider sling bearing surface resulting in an increased area for load distribution, allowing better load distribution on internal fibers.
- Increases synthetic sling efficiency as compared to standard anchor and chain shackle bows and conventional eye hooks. This allows 100% of the slings rated Working Load Limit to be achieved.
- Crosby Sling Saver hardware meets the requirements for minimum stock diameter or thickness, and effective contact width shown in the Recommended Standards Specification for Synthetic Polyester Round Slings by the Web Sling & Tie Down Association (WSTDA-RS1).
- Replacement kit for spool and web cover available.
- Designed for use with Type III (eye & eye), Class 7, 2-ply webbing and synthetic round slings. Also accommodates single ply and endless slings.



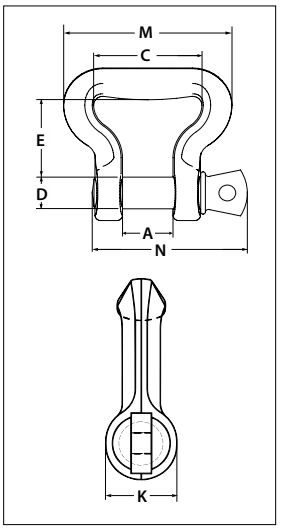
S-280 Web Connector

Round Sling Size (No.)	Web Slings*			Working Load Limit (Tons)†	S-280 Stock No.	Weight Each (lb)	Dimensions (in)									
	Webbing Width (in)	Eye Width (in)	Ply				A	B	C	D	E	F	G	H	I	J
1 & 2	2	2	2	3-1/4	1021681	1.5	.75	.62	1.63	2.44	.63	.62	2.13	.56	1.19	2.02
3	3	1.5	2	4-1/2	1021690	1.9	.75	.69	1.10	2.01	.75	.69	1.63	.60	1.38	2.34
4	4	2	2	6-1/4	1021700	2.9	.75	.81	1.66	2.56	.88	.75	2.13	.69	1.62	2.46
5 & 6	6	3	2	8-1/2	1021709	5.1	1.00	.94	2.47	3.50	1.00	.88	3.13	.88	1.88	2.84

Design Factor of 5:1.
* Designed for use with Type III, (eye & eye), Class 7, 2-ply web slings. For 3" and larger webbing width, tapered eye is required.
† Maximum Proof Load is 2 times the Working Load Limit.

S-281

- Web Sling Shackle is designed to connect synthetic web slings and synthetic round slings to eyebolts, pad eyes, and lifting lugs.
- All alloy construction.
- Each shackle has a Product Identification Code (PIC) for material traceability along with a Working Load Limit and the name Crosby forged into it.
- Incorporates the same ear spread and pin dimensions as conventional Crosby shackles. Allows easy connection to pad eyes, eye bolts, and lifting lugs.
- Meets or exceeds all requirements of ASME B30.26, including identification, ductility, design factor, proof load, and temperature requirements. Importantly, these shackles meet other critical performance requirements, including fatigue life, impact properties, and material traceability not addressed by ASME B30.26.
- Crosby Sling Saver hardware meets the requirements for minimum stock diameter or thickness, and effective contact width shown in the Recommended Standards Specification for Synthetic Polyester Round Slings by the Web Sling & Tie Down Association (WSTDA-RS1).
- Look for the Red Pin®... The mark of genuine Crosby quality.

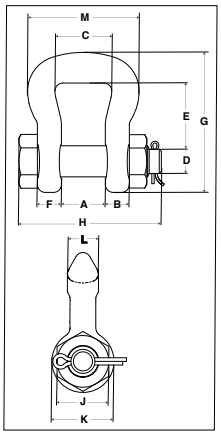


S-281 Web Sling Shackle

Round Sling Size (No.)	Web Slings*			Working Load Limit (Tons)†	S-281 Stock No.	Weight Each (lb)	Dimensions (in)						
	Webbing Width (in)	Eye Width (in)	Ply				A	C	D	E	K	M	N
1 & 2	2	2	2	3-1/4	1021048	1.2	1.06	2.50	.75	1.62	1.22	3.84	3.34
3	3	1.5	2	4-1/2	1021057	1.5	1.25	2.00	.88	1.50	1.41	3.38	3.97
4	4	2	2	6-1/4	1021066	2.5	1.44	2.50	1.00	2.00	1.62	4.22	4.50
5 & 6	6	3	2	8-1/2	1021075	4.3	1.69	3.62	1.13	2.75	1.84	5.64	5.13

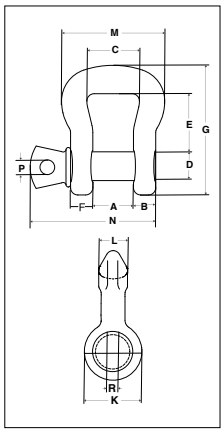
Design Factor of 5:1.
*Designed for use with Type III, (eye & eye), Class 7, 2-ply web slings. For 3" and larger webbing width, tapered eye is required.
† Maximum Proof Load is 2 times the Working Load Limit.

S-252



- All alloy construction.
- Each shackle has a Product Identification Code (PIC) for material traceability along with a Working Load Limit and the name Crosby forged into it.
- Increased radius of bow gives wider sling bearing surface resulting in an increased area for load distribution, allows better load distribution on internal fibers.
  - Increasing Synthetic Sling efficiency as compared to standard anchor and chain shackle bows and conventional hooks. This allows 100% of the sling's rated Working Load Limit to be achieved.
- Meets or exceeds all requirements of ASME B30.26, including identification, ductility, design factor, proof load, and temperature requirements. Importantly, these shackles meet other critical performance requirements, including fatigue life, impact properties, and material traceability not addressed by ASME B30.26.
- Crosby Sling Saver hardware meets the requirements for minimum stock diameter or thickness, and effective contact width shown in the Recommended Standards Specification for Synthetic Polyester Round Slings by the Web Sling & Tie Down Association (WSTDA-RS1).
- Bolt (pin) has a larger diameter that provides better load distribution.
- Look for the Red Pin®... the mark of genuine Crosby quality.

S-253



CE Sling Saver Fatigue Rated Load Rated QT

S-252 Bolt Type Sling Shackle

Web Sling Eye Width (in)	Round Sling Size (No.)	Working Load Limit (t)*	S-252 Stock No.	Weight Each (lb)	Dimensions (in)											
					A	B	C	D	E	F	G	H	J	K	L	M
1	1 & 2	3.25	1020485	1.4	1.06	.58	1.38	.75	1.50	.44	3.38	3.68	1.12	1.50	.75	2.69
1.5	3 & 4	6.5	1020496	2.4	1.25	.75	1.75	.88	1.88	.50	4.15	4.25	1.31	1.81	1.00	3.38
2	5 & 6	8.75	1020507	4.1	1.38	.88	2.25	1.00	2.81	.56	5.50	4.72	1.50	2.09	1.12	4.19
3	7 & 8	12.5	1020518	8.0	1.62	1.12	3.25	1.25	3.06	.75	6.34	5.88	1.88	2.62	1.38	5.62
4	9 & 10	20.5	1020529	16.9	2.12	1.38	4.50	1.50	5.25	.88	9.45	7.19	2.25	3.12	1.75	7.50
5	11 & 12	35	1020540	35.0	2.50	1.75	5.50	2.00	6.34	1.12	11.50	9.31	3.00	4.19	2.25	9.19
6	13	50	1020551	57.5	3.00	2.12	6.50	2.25	7.70	1.25	13.75	10.38	3.38	4.75	2.75	11.00

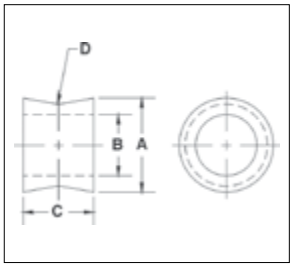
Design factor of 5:1.
* Maximum Proof Load is 2.5 times the Working Load Limit.

S-253 Screw Pin Sling Shackle

Web Sling Eye Width (in)	Round Sling Size (No.)	Working Load Limit (t)*	S-253 Stock No.	Weight Each (lb)	Dimensions (in)											
					A	B	C	D	E	G	K	L	M	N	P	R
1	1 & 2	3.25	1020575	1.4	.88	.62	1.38	.75	1.50	3.38	1.50	.75	2.69	3.22	.44	1.00
1.5	3 & 4	6.5	1020584	2.2	1.25	.75	1.75	.88	1.88	4.15	1.81	1.00	3.38	4.03	.50	1.19
2	5 & 6	8.75	1020593	3.8	1.38	.88	2.25	1.00	2.81	5.50	2.09	1.12	4.19	4.50	.50	1.44
3	7 & 8	12.5	1020602	7.3	1.62	1.12	3.25	1.25	3.06	6.34	2.62	1.38	5.62	5.59	.62	1.81
4	9 & 10	20.5	1020611	15.2	2.12	1.38	4.50	1.50	5.25	9.45	3.12	1.75	7.50	6.88	.75	2.13
5	11 & 12	35	1020620	30.8	2.50	1.75	5.50	2.00	6.34	11.50	4.19	2.25	9.19	8.66	1.00	2.88
6	13	50	1020629	52.0	3.00	2.12	6.50	2.25	7.70	13.75	4.75	2.75	11.00	10.22	1.22	3.19

* Maximum Proof Load is 2.5 times the Working Load Limit.

S-255



S-255 Spool

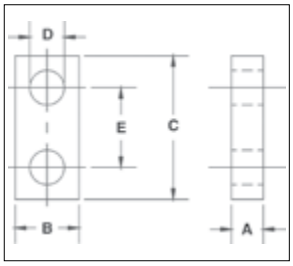
- Designed to keep the load centered on the pin, which keeps the sling positioned correctly in the shackle bow.

Working Load Limit (t)	S-255 Stock No.	Weight Each (lb)	Dimensions (in)			
			A	B	C	D
3.25	1020903	.33	1.25	.81	.75	.19
6.5	1020912	.57	1.50	.94	1.00	.25
8.75	1020921	.89	1.75	1.05	1.19	.31
12.5	1020930	1.45	2.00	1.31	1.50	.38
20.5	1020939	2.79	2.50	1.63	1.88	.44
35	1020948	2.40	3.25	2.13	2.25	.50
50	1020957	4.06	3.75	2.38	2.75	.62

* 5:1 Design Factor

CE

S-256



S-256 Link Plate

- Designed to connect two (2) S-252 or S-253 Sling Saver Shackles together.

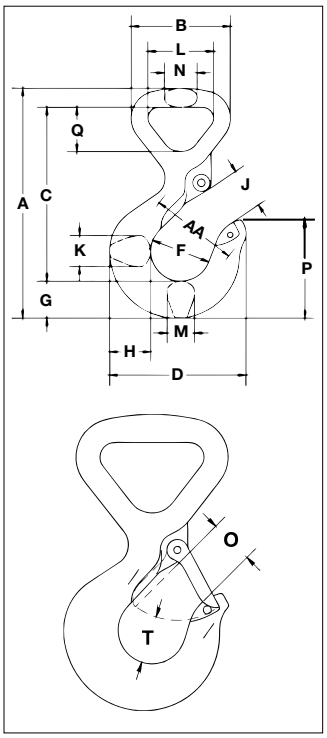
Working Load Limit (t)	S-256 Stock No.	Weight Each (lb)	Dimensions (in)				
			A	B	C	D	E
3.25	1020785	.83	.75	1.50	3.38	.81	1.88
6.5	1020796	1.62	1.00	1.75	4.12	.94	2.25
8.75	1020807	2.71	1.25	2.00	4.75	1.06	2.62
12.5	1020818	5.18	1.50	2.50	6.00	1.31	3.37
20.5	1020829	8.19	1.75	3.00	7.00	1.62	3.75
35	1020840	17.19	2.00	4.00	9.25	2.12	5.00
50	1020851	37.40	2.88	5.00	10.50	2.38	5.75

* 5:1 Design Factor

Sling Saver CE

WSL-320A

- Suitable for use with 2-Ply Web Slings and Round Slings.
  - Eye is designed with a wide beam surface, which eliminates bunching effects, reduces sling tendency to slide, and allows a better load distribution on internal fibers.
- All alloy construction.
- Each hook has a Product Identification Code (PIC) for material traceability along with a working load limit and the name Crosby forged into it.
- All hooks feature Crosby's patented QUIC-CHECK® indicators.
- Fatigue rated to 20,000 cycles at 1.5 times the Working Load Limit.
- Includes S-4320 latch.
- Crosby Sling Saver hardware meets the requirements for minimum stock diameter or thickness, and effective contact width shown in the Recommended Standards Specification for Synthetic Polyester Round Slings by the Web Sling & Tie Down Association (WSTDA-RS1).



APPLICATION AND WARNING INFORMATION
SECTION 17

9

WSL-320A Synthetic Sling Hook

Web Sling Eye Width (in)	Round Sling Size (No.)	Working Load Limit (t)	WSL-320A with Latch	Weight Each (lb)	Hook I.D. Code	S-4320 Rep. Latch
1”	1	1.5	1022706	1.10	FA	1096374
2”	2	3	1022717	2.86	HA	1096468
3”	3	5	1022728	6.60	IA	1096515

WSL-320A Synthetic Sling Hook

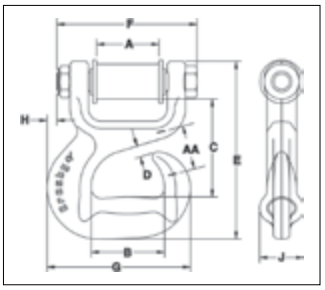
Hook ID Code	Working Load Limit (t)	Dimensions (in)																
		A	B	C	D	F	G	H	J	K	L	M	N	O	P	Q	T	AA
FA	1.5	5.25	2.26	3.98	3.11	1.38	.84	.94	.93	.71	1.50	.63	.75	.91	2.24	1.01	.98	2.00
HA	3	7.11	3.66	5.31	3.97	1.63	1.13	1.32	1.13	.94	2.50	.85	1.13	1.09	2.82	1.69	1.16	2.00
IA	5	9.33	5.13	7.06	4.81	2.00	1.44	1.63	1.47	1.31	3.75	1.13	1.63	1.36	3.51	2.59	1.53	2.50

Design factor of 5:1.
Maximum Proof Load is 2.5 times the Working Load Limit.

Crosby

S-287

- Special design of hook protects the synthetic sling when dropped or dragged.
- Uses same spool and cover as S-280 Web Connector.
  - Replacement Kit for Spool and Web Cover available.
  - No retaining pin to snag sling material.
- Forged alloy steel, Quenched & Tempered.
- Each Connector has a Product Identification Code (PIC) for material traceability along with a Working Load Limit and the name Crosby forged into it.
- Designed to reduce friction, abrasion, and fraying in choker area.
- Designed for use with Type III, (eye & eye).
- Crosby Sling Saver hardware meets the requirements for minimum stock diameter or thickness, and effective contact width shown in the Recommended Standards Specification for Synthetic Polyester Round Slings by the Web Sling & Tie Down Association (WSTDA-RS1).

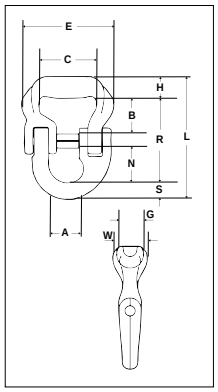


S-287 Sliding Choker Hook

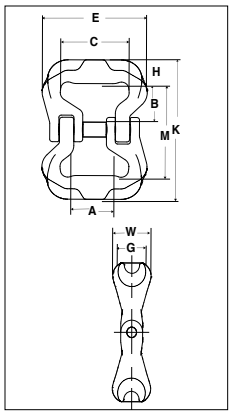
Round Sling Size (No.)	Web Slings			Working Load Limit (Tons)	S-287 Stock No.	Weight Each (lb)	Dimensions (in)									
	Webbing Width (in)	Eye Width (in)	Ply				A	B	C	D	E	F	G	H	J	AA
1 & 2	2	2	2	3-1/4	1021909	3.7	2.13	2.50	3.32	.38	6.03	4.77	4.88	.34	1.50	1.50
3	3	1.5	2	4-1/2	1021918	6.1	1.63	3.50	3.67	.38	7.06	4.53	6.51	1.36	1.88	–

Design factor of 5:1.
Maximum Proof Load is 2 times the Working Load Limit.

S-237



S-238



- High Performance Sling Connector is designed to connect to slings of all materials.
- Allows easy connection to master links or eye hooks and is ideal for bridles.
- Increased radius of bow gives wider sling bearing surface resulting in an increased area for load distribution, allows better load distribution on internal fibers.
  - Increases synthetic sling efficiency as compared to master links, shackle bows and conventional eye hooks. This allows 100% of the sling's rated Working Load Limit to be achieved.
- All alloy construction
- Each connector has a Product Identification Code (PIC) for material traceability, along with a frame size and the name Crosby forged into it.
- Crosby Sling Saver hardware meets the requirements for minimum stock diameter or thickness, and effective contact width shown in the Recommended Standards Specification for Synthetic Polyester Round Slings by the Web Sling & Tie Down Association (WSTDA-RS1).

S-237 High Performance Sling Connector

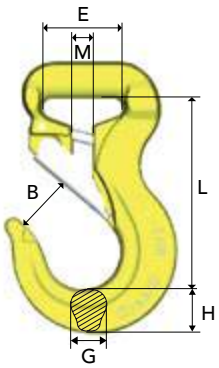
Working Load Limit		Stock No.	Frame No.	Nominal Sling Body Width (in)	Lok-A-Loy Size (in)	Weight Each (lb)	Dimensions (in)										
4:1 (lb)*	5:1 (lb)						A	B	C	E	G	H	L	N	R	S	W
6250	5000	1020695	5	2	3/8	1.14	.88	1.42	2.00	3.18	1.00	.80	4.20	1.04	2.92	.48	1.38
12500	10000	1020704	10	3	5/8	2.96	1.42	1.52	2.75	4.13	1.25	.98	5.68	1.71	3.94	.75	1.75
18750	15000	1020713	15	3	3/4	4.75	1.63	1.58	2.75	4.37	1.38	1.10	6.49	2.04	4.46	.93	1.88
31250	25000	1020722	25	4	7/8	8.59	2.00	2.33	3.75	6.00	1.75	1.41	7.97	2.27	5.51	1.06	2.25
37500	30000	1020731	30	4	7/8	9.24	2.00	2.20	3.75	6.19	1.75	1.41	7.84	2.27	5.38	1.06	2.38
50000	40000	1020740	40	5	1	15.7	2.25	2.91	4.75	7.25	2.25	1.78	9.45	2.44	6.45	1.22	3.09
75000	60000	1020759	60	6	1-1/4	26.0	2.56	3.36	5.75	9.13	2.31	1.86	11.08	3.07	7.72	1.50	3.16

Design Factor of 5:1.
Maximum allowable Proof Load is 2 times the Working Load Limit when used at 4:1 design factor.

S-238 High Performance Sling Connector

Working Load Limit (lb)	Stock No.	Frame No.	Nominal Sling Body Width (in)	Weight Each (lb)	Dimensions (in)								
					A	B	C	E	G	H	K	M	W
5000	1020415	5	2	1.6	.88	1.42	2.00	3.18	1.00	.80	4.90	3.30	1.38
10000	1020423	10	3	3.3	1.42	1.52	2.75	4.13	1.25	.98	5.72	3.76	1.75
15000	1020432	15	3	4.9	1.63	1.58	2.75	4.37	1.38	1.10	6.16	3.96	1.88
25000	1020441	25	4	10.1	2.00	2.33	3.75	6.00	1.75	1.41	8.40	5.58	2.25
30000	1020450	30	4	11.4	2.00	2.20	3.75	6.19	1.75	1.41	8.14	5.32	2.38
40000	1020469	40	5	20.7	2.25	2.91	4.75	7.25	2.25	1.78	10.48	6.92	3.09
60000	1020478	60	6	32.0	2.56	3.36	5.75	9.13	2.31	1.86	11.72	8.00	3.16

5:1 Design Factor



Roundsling Hook RH

The RH-hook is the perfect load connection solution, combining the advantages of both soft lifting slings and grade 100 components. It can be inserted into a softsling and is quicker and safer to use than the commonly used shackle. The RH-hook is a connector as well as a hook, which gives the user increased flexibility, safer use and increased durability of the soft slings.

The RH-hook comes with a blocking pin, but thanks to the narrow opening it may be used without blocking pin.

CE

Stock No.	Code	WLL (lb)	B	E	G	L	H	M	Weight (lb)
B14490	RH-1-10	2204	0.94	1.37	0.65	3.30	0.74	0.31	1.10
B14491	RH-2-10	4500	1.10	1.57	0.66	3.77	0.86	0.39	1.54
B14492	RH-3-10	6612	1.29	1.85	0.94	4.60	1.18	0.47	2.86
B14493	RH-5-10	11020	1.69	2.87	1.06	6.10	1.41	0.64	7.05

4:1 Design Factor. Tested according to EN 1677-2.

The roundsling hooks are color coded in order to match the corresponding sizes of roundslings marked according to EN 1492: Red=5T, Yellow=3T, Green=2T and Violet=1T.

The SK-System

A range of specialized components for safe and easy assembly to chain, steel wire rope, webbing and roundsling, designed to solve your below-the-hook problems.

The Polyester Sling System provides:

- Universal coupling of components to chain, wire and synthetic slings.
- Quick and simple assembly (only a hammer needed).
- Easy assembly - standardized dimensions within each size range effectively eliminates the incorrect assembly of components with different safe working loads.
- Heavy hoisting with strong yet lightweight equipment.
- All components are manufactured from alloy steel for use with Grade 8 chain.

SKA – pin & collar

The SKA set, containing pin and collar, can be used to connect all products in the SK-range. This creates a multitude of available combinations, each adaptable to the unique lifting situation.

The SKA set gives you flexibility.
It can be disassembled and put in new combinations, providing solutions for a versatile lifting environment.

SKLI/SKLU

Electrically insulated, lubricated, sealed roller bearing swivel. Fully rotational even at maximum load. Tested to resist 1000 V. Suitable for protection of overhead cranes during welding operations on suspended loads.

By using the SKLI/SKLU with the SK-system you get a versatile solution that will fit almost any situation.

9

Rapid Rescue Chain Kit

Rapid rescue chain kits for a quick and patient-friendly rescue.

Rapid Rescue Chain Kits

A few seconds can make a significant impact in a serious accident rescue operation. The vehicle construction and extreme deformations common in accidents make the work of emergency workers increasingly more difficult. The use of Gunnebo Industries' chain rescue kit is simple and effective for a patient-friendly rescue. The methodology and equipment is standardized in many parts of Europe including Germany and Scandinavia. The pulling moves the fire brigade's working space to the outside and allows parallel work of medical care and technical rescue.

Chain rescue can be used successfully in various accident scenarios such as frontal impact, side and rear impact.

Recommended kit

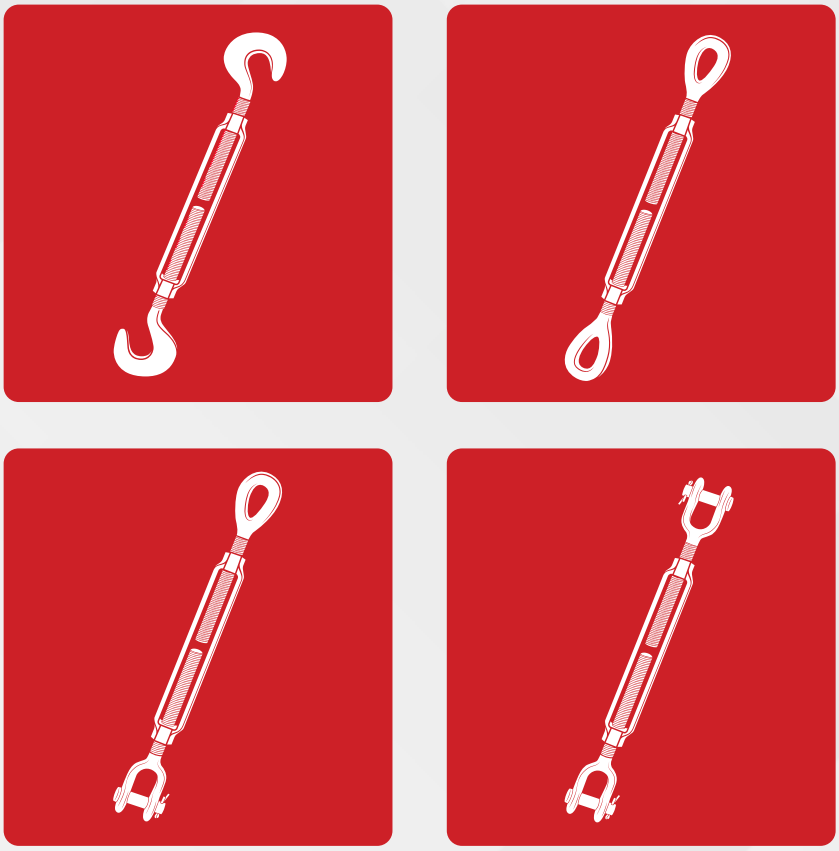
- 4 x 2,7m (9ft) chain sling MG1-CL
- 2 x 6m (20ft) synthetic sling*
- 4 x RH synthetic sling hooks
- 4 x G209 or 854 bow screw pin shackles
- 2 x metal or plastic hardcase for easy storage*

*not manufactured by The Crosby Group

The kits are available in sizes from 6mm (7/32 inch) up to 16mm (5/8 inch) and working load limits up to 10 t (22 600 lb). Most commonly 8mm (5/16 inch) or 10mm (3/8 inch) are used, along with appropriately sized synthetic slings and synthetic sling hooks.

TURNBUCKLES

Drop-forged and hot-dip galvanized turnbuckles for in-line pull.



the Crosby group

thecrosbygroup.com

HG-223

HOOK & HOOK
Meets the performance requirements of Federal Specifications FF-T-791b, Type 1, Form 1, Class 5, and ASTM F-1145, except for those provisions required of the contractor.

HG-226

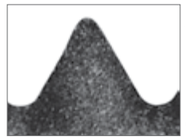
EYE & EYE
Meets the performance requirements of Federal Specifications FF-T-791b, Type 1, Form 1, Class 4, and ASTM F-1145, except for those provisions required of the contractor.

HG-227

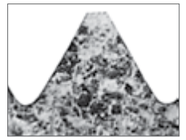
JAW & EYE
Meets the performance requirements of Federal Specifications FF-T-791b, Type 1, Form 1, Class 8, and ASTM F-1145, except for those provisions required of the contractor.

HG-228

JAW & JAW
Meets the performance requirements of Federal Specifications FF-T-791b, Type 1, Form 1, Class 7, and ASTM F-1145, except for those provisions required of the contractor.



Modified Thread: Note stress relieving radii in this unretouched photo enlargement of the supabuckle.



Standard Thread: Note stress building sharp "V" in this untouched photo enlargement.

Turnbuckle Information

- Turnbuckle assembly combinations include: eye & eye, hook & hook, jaw & jaw, and jaw & eye.
- End fittings are Quenched & Tempered or normalized, bodies heat treated by normalizing.
- Crosby's Quenched & Tempered end fittings and normalized bodies have enhanced impact properties for greater toughness at all temperatures.
- Hot-dip galvanized.
- Hooks are forged with a greater cross sectional area that results in a stronger hook with better fatigue properties.
- Modified UNJ thread on end fittings for improved fatigue properties. Body has UNC threads.
- Turnbuckle eyes are forged elongated, by design, to maximize easy attachment in system and minimize stress in the eye. For turnbuckle sizes 1/4" through 2-1/2", a shackle one size smaller can be reeved through eye.
- Forged jaw ends are fitted with bolts and nuts on size 1/4" - 5/8", and pins and cotter on sizes 3/4" through 2-3/4".
- Can be used in general service conditions down to temperatures of -40° F (-40° C) and up to 400° F (204° C). See page 3 for more details.
- **TURNBUCKLES RECOMMENDED FOR STRAIGHT OR IN-LINE PULL ONLY.**
- Lock nuts available for all sizes.
- Typical hardness levels, tensile strengths and ductility properties are available for all sizes.
- Meets or exceeds all the requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these turnbuckles meet other critical performance requirements, including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.

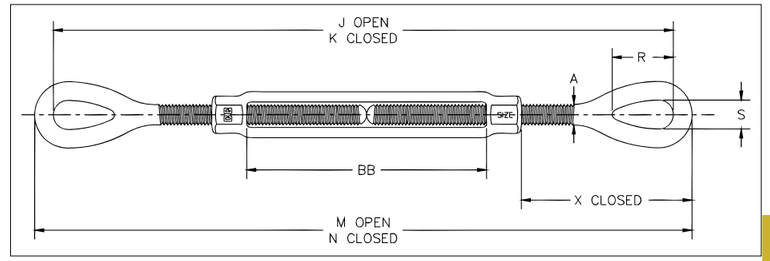
HG-226

- End fittings are Quenched & Tempered or normalized, bodies heat-treated by normalizing.
- Hot-dip galvanized steel.
- Turnbuckle eyes are forged elongated, by design, to maximize easy attachment in system and minimize stress in the eye. For turnbuckle sizes 1/4" through 2-1/2", a shackle one size smaller can be reeved through eye.
- Modified UNJ thread on end fittings for improved fatigue properties. Body has UNC threads.
- TURNBUCKLES RECOMMENDED FOR STRAIGHT OR IN-LINE PULL ONLY.
- Lock nuts available for all sizes.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load, and temperature requirements. Importantly, these turnbuckles meet other critical performance requirements including fatigue life, impact properties, and material traceability, not addressed by ASME B30.26.
- Meets the performance requirements of Federal Specifications FF-T-791b, Type 1 Form 1 - CLASS 4, and ASTM F-1145, except for those provisions required of the contractor. For additional information, see the warnings and applications section.

Q&T

Fatigue Rated

APPLICATION AND WARNING INFORMATION
SECTION 17



HG-226 Eye & Eye

Thread Dia. & Take Up (in)	Stock No.	Working Load Limit (lb)	Weight Each (lb)	Dimensions (in)								
				A	J Open	K Closed	M Open	N Closed	R	S	X Closed	BB
* 5/16 x 4-1/2	1031270	800	.48	.31	13.92	9.42	14.48	9.98	.95	.44	2.20	4.58
* 3/8 x 6	1031298	1200	.75	.38	17.56	11.56	18.24	12.24	1.13	.53	2.48	6.10
1/2 x 6	1031314	2200	1.72	.50	19.94	13.94	20.82	14.82	1.41	.71	3.56	6.03
1/2 x 12	1031350	2200	2.63	.50	32.23	20.23	33.11	21.11	1.41	.71	3.54	12.36
5/8 x 6	1031378	3500	2.75	.63	21.72	15.72	22.72	16.72	1.80	.88	4.35	6.03
5/8 x 12	1031412	3500	4.12	.63	34.06	22.06	35.06	23.06	1.80	.88	4.34	12.39
3/4 x 6	1031430	5200	4.22	.75	23.24	17.24	24.50	18.50	2.09	1.00	5.12	6.13
3/4 x 12	1031476	5200	6.12	.75	35.64	23.64	36.90	24.90	2.09	1.00	5.09	12.59
3/4 x 18	1031494	5200	7.83	.75	47.64	29.64	48.90	30.90	2.09	1.00	5.12	18.53
7/8 x 12	1031519	7200	8.83	.88	36.70	24.70	38.20	26.20	2.38	1.25	5.79	12.16
7/8 x 18	1031537	7200	11.5	.88	49.17	31.17	50.67	32.67	2.38	1.25	5.79	18.63
1 x 6	1031555	10000	9.62	1.00	26.24	20.24	28.00	22.00	3.00	1.43	6.50	6.18
1 x 12	1031573	10000	13.0	1.00	38.24	26.24	40.00	28.00	3.00	1.43	6.50	12.18
1 x 18	1031591	10000	16.3	1.00	50.24	32.24	52.00	34.00	3.00	1.43	6.50	18.18
1 x 24	1031617	10000	20.2	1.00	62.84	38.84	64.60	40.60	3.00	1.43	6.47	24.84
1-1/4 x 12	1031635	15200	19.9	1.25	42.14	30.14	44.38	32.38	3.59	1.82	8.49	12.06
1-1/4 x 18	1031653	15200	23.8	1.25	54.14	36.14	56.38	38.38	3.59	1.82	8.49	18.06
1-1/4 x 24	1031671	15200	27.8	1.25	66.70	42.70	68.94	44.94	3.59	1.82	8.49	24.62
1-1/2 x 12	1031699	21400	28.7	1.50	44.24	32.24	46.74	34.74	4.09	2.12	9.46	12.32
1-1/2 x 18	1031715	21400	34.1	1.50	56.24	38.24	58.74	40.74	4.09	2.12	9.46	18.32
1-1/2 x 24	1031733	21400	39.6	1.50	68.86	44.86	71.36	47.36	4.09	2.12	9.46	24.94
1-3/4 x 18	1031779	28000	50.7	1.75	57.38	39.38	60.38	42.38	4.65	2.38	9.97	18.37
1-3/4 x 24	1031797	28000	58.2	1.75	69.38	45.38	72.38	48.38	4.65	2.38	9.97	24.37
2 x 24	1031813	37000	83.5	2.00	75.68	51.68	79.18	55.18	5.81	2.69	13.03	24.48
2-1/2 x 24	1031831	60000	149	2.50	79.18	55.18	83.18	59.18	6.49	3.12	13.76	24.60
2-3/4 x 24	1031859	75000	174	2.75	81.34	57.34	85.84	61.84	7.00	3.25	15.09	24.65

5:1 Design Factor. Proof Load is 2.5 times the Working Load Limit. *Mechanical galvanized

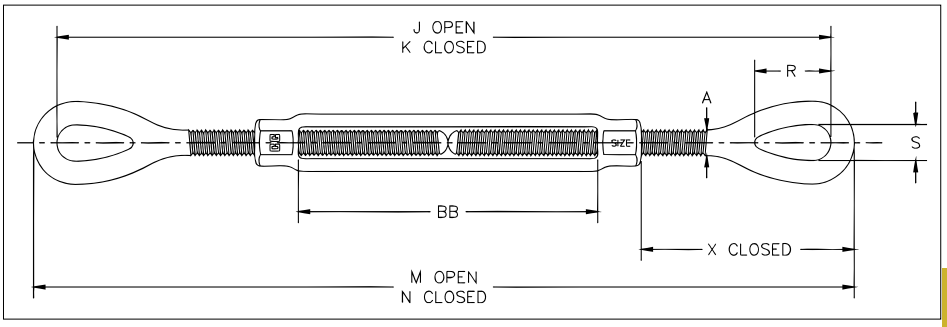
HG-226

- End fittings are Quenched & Tempered or normalized, bodies heat-treated by normalizing.
- Hot-dip galvanized steel.
- Turnbuckle eyes are forged elongated, by design, to maximize easy attachment in system and minimize stress in the eye. For turnbuckle sizes 1/4" through 2-1/2", a shackle one size smaller can be reeved through eye.
- Modified UNJ thread on end fittings for improved fatigue properties. Body has UNC threads.
- TURNBUCKLES RECOMMENDED FOR STRAIGHT OR IN-LINE PULL ONLY.
- Lock nuts available for all sizes.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load, and temperature requirements. Importantly, these turnbuckles meet other critical performance requirements including fatigue life, impact properties, and material traceability, not addressed by ASME B30.26.
- Meets the performance requirements of Federal Specifications FF-T-791b, Type 1 Form 1 - CLASS 4, and ASTM F-1145, except for those provisions required of the contractor. For additional information, see the warnings and applications section.

Q&T

Fatigue Rated

APPLICATION AND WARNING INFORMATION
SECTION 17



HG-226 Eye & Eye

Thread Dia. & Take Up (in)	Stock No.	Working Load Limit (lb)	Weight Each (lb)	Dimensions (in)								
				A	J Open	K Closed	M Open	N Closed	R	S	X Closed	BB
* 5/16 x 4-1/2	1031270	800	.48	.31	13.92	9.42	14.48	9.98	.95	.44	2.20	4.58
* 3/8 x 6	1031298	1200	.75	.38	17.56	11.56	18.24	12.24	1.13	.53	2.48	6.10
1/2 x 6	1031314	2200	1.72	.50	19.94	13.94	20.82	14.82	1.41	.71	3.56	6.03
1/2 x 12	1031350	2200	2.63	.50	32.23	20.23	33.11	21.11	1.41	.71	3.54	12.36
5/8 x 6	1031378	3500	2.75	.63	21.72	15.72	22.72	16.72	1.80	.88	4.35	6.03
5/8 x 12	1031412	3500	4.12	.63	34.06	22.06	35.06	23.06	1.80	.88	4.34	12.39
3/4 x 6	1031430	5200	4.22	.75	23.24	17.24	24.50	18.50	2.09	1.00	5.12	6.13
3/4 x 12	1031476	5200	6.12	.75	35.64	23.64	36.90	24.90	2.09	1.00	5.09	12.59
3/4 x 18	1031494	5200	7.83	.75	47.64	29.64	48.90	30.90	2.09	1.00	5.12	18.53
7/8 x 12	1031519	7200	8.83	.88	36.70	24.70	38.20	26.20	2.38	1.25	5.79	12.16
7/8 x 18	1031537	7200	11.5	.88	49.17	31.17	50.67	32.67	2.38	1.25	5.79	18.63
1 x 6	1031555	10000	9.62	1.00	26.24	20.24	28.00	22.00	3.00	1.43	6.50	6.18
1 x 12	1031573	10000	13.0	1.00	38.24	26.24	40.00	28.00	3.00	1.43	6.50	12.18
1 x 18	1031591	10000	16.3	1.00	50.24	32.24	52.00	34.00	3.00	1.43	6.50	18.18
1 x 24	1031617	10000	20.2	1.00	62.84	38.84	64.60	40.60	3.00	1.43	6.47	24.84
1-1/4 x 12	1031635	15200	19.9	1.25	42.14	30.14	44.38	32.38	3.59	1.82	8.49	12.06
1-1/4 x 18	1031653	15200	23.8	1.25	54.14	36.14	56.38	38.38	3.59	1.82	8.49	18.06
1-1/4 x 24	1031671	15200	27.8	1.25	66.70	42.70	68.94	44.94	3.59	1.82	8.49	24.62
1-1/2 x 12	1031699	21400	28.7	1.50	44.24	32.24	46.74	34.74	4.09	2.12	9.46	12.32
1-1/2 x 18	1031715	21400	34.1	1.50	56.24	38.24	58.74	40.74	4.09	2.12	9.46	18.32
1-1/2 x 24	1031733	21400	39.6	1.50	68.86	44.86	71.36	47.36	4.09	2.12	9.46	24.94
1-3/4 x 18	1031779	28000	50.7	1.75	57.38	39.38	60.38	42.38	4.65	2.38	9.97	18.37
1-3/4 x 24	1031797	28000	58.2	1.75	69.38	45.38	72.38	48.38	4.65	2.38	9.97	24.37
2 x 24	1031813	37000	83.5	2.00	75.68	51.68	79.18	55.18	5.81	2.69	13.03	24.48
2-1/2 x 24	1031831	60000	149	2.50	79.18	55.18	83.18	59.18	6.49	3.12	13.76	24.60
2-3/4 x 24	1031859	75000	174	2.75	81.34	57.34	85.84	61.84	7.00	3.25	15.09	24.65

5:1 Design Factor. Proof Load is 2.5 times the Working Load Limit. *Mechanical galvanized

Crosby

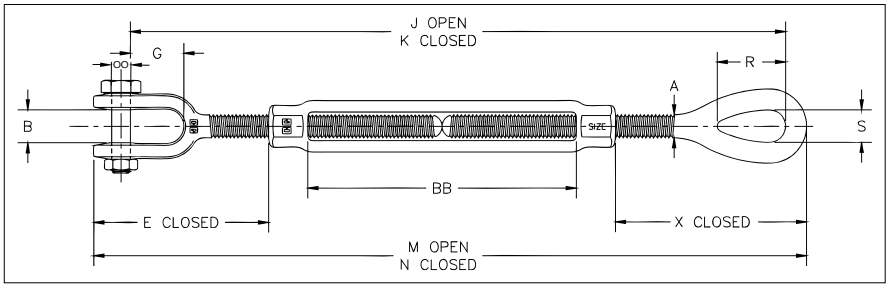
HG-227

- End fittings are Quenched & Tempered or normalized, bodies heat-treated by normalizing.
- Hot-dip galvanized steel.
- Turnbuckles eyes are forged and elongated, by design, to maximize easy attachment in system and minimize stress in the eye. For turnbuckles size 1/4" through 2-1/2", a shackle one size smaller can be reeved through eye.
- Forged jaw ends are fitted with bolts and nuts for 1/4" through 5/8", and pins and cotters on 3/4" through 2-3/4" sizes.
- Modified UNJ thread on end fittings for improved fatigue properties.
- Body has UNC threads.
- TURNBUCKLES RECOMMENDED FOR STRAIGHT OR IN-LINE PULL ONLY.
- Lock nuts available for all sizes.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load, and temperature requirements. Importantly, these turnbuckles meet other critical performance requirements including fatigue life, impact properties, and material traceability, not addressed by ASME B30.26.
- Meets the performance requirements of Federal Specifications FF-T-791b, Type 1 Form 1 - CLASS 8, and ASTM F-1145, except for those provisions required of the contractor. For additional information, see warnings and applications section.

QT

Fatigue Rated

APPLICATION AND WARNING INFORMATION
SECTION 17



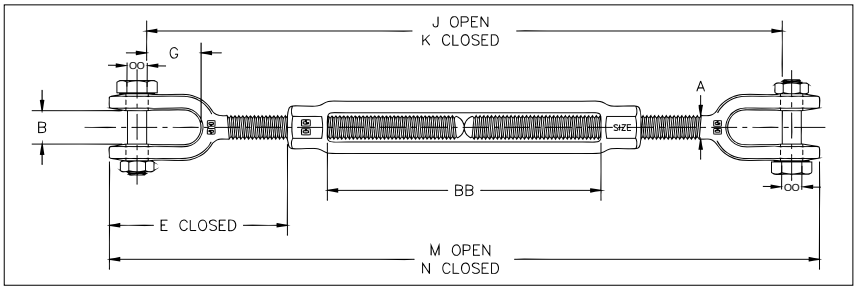
HG-227 Jaw & Eye

Thread Dia. & Take Up (in)	Stock No.	Working Load Limit (lb)	Weight Each (lb)	Dimensions (in)											
				A	B	E Closed	G	J Open	K Closed	M Open	N Closed	R	S	X Closed	BB
* 5/16 x 4-1/2	1031895	800	.52	.31	.50	2.02	.87	13.50	9.00	14.30	9.80	.95	.44	2.20	4.58
* 3/8 x 6	1031911	1200	.80	.38	.53	2.11	.85	16.91	10.91	17.87	11.87	1.13	.53	2.48	6.10
1/2 x 6	1031939	2200	1.77	.50	.64	3.22	1.07	19.30	13.30	20.48	14.48	1.41	.71	3.56	6.03
1/2 x 9	1031957	2200	2.25	.50	.64	3.20	1.07	25.59	16.59	26.77	17.77	1.41	.71	3.54	9.36
1/2 x 12	1031975	2200	2.67	.50	.64	3.20	1.07	31.59	19.59	32.77	20.77	1.41	.71	3.54	12.36
5/8 x 6	1031993	3500	2.98	.63	.79	3.90	1.32	20.73	14.73	22.27	16.27	1.80	.88	4.35	6.03
5/8 x 9	1032019	3500	3.72	.63	.79	3.89	1.32	27.07	18.07	28.61	19.61	1.80	.88	4.34	9.39
5/8 x 12	1032037	3500	4.35	.63	.79	3.89	1.32	33.07	21.07	34.61	22.61	1.80	.88	4.34	12.39
3/4 x 6	1032055	5200	4.51	.75	.97	4.71	1.52	22.17	16.17	24.09	18.09	2.09	1.00	5.12	6.13
3/4 x 9	1032073	5200	5.56	.75	.97	4.68	1.52	28.57	19.57	30.49	21.49	2.09	1.00	5.09	9.59
3/4 x 12	1032091	5200	6.42	.75	.97	4.68	1.52	34.57	22.57	36.49	24.49	2.09	1.00	5.09	12.59
3/4 x 18	1032117	5200	8.14	.75	.97	4.71	1.52	46.57	28.57	48.49	30.49	2.09	1.00	5.12	18.53
7/8 x 12	1032135	7200	9.10	.88	1.16	5.50	1.77	35.68	23.68	37.91	25.91	2.38	1.25	5.79	12.16
7/8 x 18	1032153	7200	11.6	.88	1.16	5.50	1.77	48.15	30.15	50.38	32.38	2.38	1.25	5.79	18.63
1 x 6	1032171	10000	10.0	1.00	1.34	6.09	2.05	25.03	19.03	27.59	21.59	3.00	1.43	6.50	6.18
1 x 12	1032199	10000	13.4	1.00	1.34	6.09	2.05	37.03	25.03	39.59	27.59	3.00	1.43	6.50	12.18
1 x 18	1032215	10000	16.7	1.00	1.34	6.09	2.05	49.03	31.03	51.59	33.59	3.00	1.43	6.50	18.18
1 x 24	1032233	10000	20.6	1.00	1.34	6.06	2.05	61.63	37.63	64.19	40.19	3.00	1.43	6.47	24.84
1-1/4 x 12	1032251	15200	20.9	1.25	1.84	8.09	2.82	40.76	28.76	43.98	31.98	3.59	1.82	8.49	12.06
1-1/4 x 18	1032279	15200	24.8	1.25	1.84	8.09	2.82	52.76	34.76	55.98	37.98	3.59	1.82	8.49	18.06
1-1/4 x 24	1032297	15200	28.8	1.25	1.84	8.09	2.82	65.32	41.32	68.54	44.54	3.59	1.82	8.49	24.62
1-1/2 x 12	1032313	21400	30.6	1.50	2.06	8.93	2.81	42.50	30.50	46.21	34.21	4.09	2.12	9.46	12.32
1-1/2 x 18	1032331	21400	36.0	1.50	2.06	8.93	2.81	54.50	36.50	58.21	40.21	4.09	2.12	9.46	18.32
1-1/2 x 24	1032359	21400	41.5	1.50	2.06	8.93	2.81	67.12	43.12	70.83	46.83	4.09	2.12	9.46	24.94
1-3/4 x 18	1032395	28000	52.1	1.75	2.60	9.36	3.35	55.37	37.37	59.77	41.77	4.65	2.38	9.97	18.37
1-3/4 x 24	1032411	28000	59.7	1.75	2.60	9.36	3.35	67.37	43.37	71.77	47.77	4.65	2.38	9.97	24.37
2 x 24	1032439	37000	89.9	2.00	2.62	11.80	3.74	72.66	48.66	77.95	53.95	5.81	2.69	13.03	24.48
2-1/2 x 24	1032457	60000	158	2.50	3.06	13.26	4.44	76.08	52.08	82.68	58.68	6.49	3.12	13.76	24.60
2-3/4 x 24	1032475	75000	187	2.75	3.69	14.92	4.19	78.05	54.05	85.67	61.67	7.00	3.25	15.09	24.65

5:1 Design Factor. Proof Load is 2.5 times the Working Load Limit. *Mechanically galvanized

HG-228

- End fittings are Quenched & Tempered or normalized, bodies heat-treated by normalizing.
- Hot-dip galvanized steel.
- TURNBUCKLES RECOMMENDED FOR STRAIGHT OR IN-LINE PULL ONLY.
- Forged jaw ends are fitted with bolts and nuts for 1/4" through 5/8", and pins and cotters on 3/4" through 2-3/4" sizes.
- Modified UNJ thread on end fittings for improved fatigue properties.
- Body has UNC threads.
- Lock nuts available for all sizes.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these turnbuckles meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.
- Meets the performance requirements of Federal Specifications FF-T-791b, Type 1 Form 1 - CLASS 7, and ASTM F-1145, except for those provisions required of the contractor. For additional information, see Warnings & Applications.



APPLICATION AND WARNING INFORMATION
SECTION 17

10

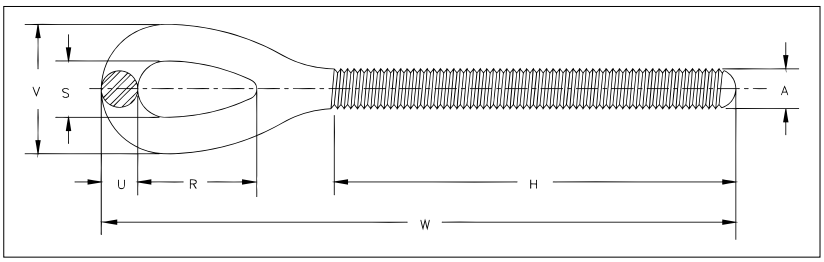
HG-228 Jaw & Jaw

Thread Dia. & Take Up (in)	Stock No.	Working Load Limit (lb)	Weight Each (lb)	Dimensions (in)								
				A	B	E Closed	G	J Open	K Closed	M Open	N Closed	BB
* 5/16 x 4-1/2	1032518	800	.56	.31	.50	2.02	.87	13.07	8.57	14.12	9.62	4.58
* 3/8 x 6	1032536	1200	.85	.38	.53	2.11	.85	16.25	10.25	17.50	11.50	6.10
1/2 x 6	1032554	2200	1.82	.50	.64	3.22	1.07	18.65	12.65	20.14	14.14	6.03
1/2 x 9	1032572	2200	2.29	.50	.64	3.20	1.07	24.94	15.94	26.43	17.43	9.36
1/2 x 12	1032590	2200	2.71	.50	.64	3.20	1.07	30.94	18.94	32.43	20.43	12.36
5/8 x 6	1032616	3500	3.21	.63	.79	3.90	1.32	19.74	13.74	21.82	15.82	6.03
5/8 x 9	1032634	3500	3.95	.63	.79	3.89	1.32	26.08	17.08	28.16	19.16	9.39
5/8 x 12	1032652	3500	4.58	.63	.79	3.89	1.32	32.08	20.08	34.16	22.16	12.39
3/4 x 6	1032670	5200	4.80	.75	.97	4.71	1.52	21.09	15.09	23.68	17.68	6.13
3/4 x 9	1032698	5200	5.85	.75	.97	4.68	1.52	27.49	18.49	30.08	21.08	9.59
3/4 x 12	1032714	5200	6.72	.75	.97	4.68	1.52	33.49	21.49	36.08	24.08	12.59
3/4 x 18	1032732	5200	8.45	.75	.97	4.71	1.52	45.49	27.49	48.08	30.08	18.53
7/8 x 12	1032750	7200	9.37	.88	1.16	5.50	1.77	34.65	22.65	37.62	25.62	12.16
7/8 x 18	1032778	7200	11.8	.88	1.16	5.50	1.77	47.12	29.12	50.09	32.09	18.63
1 x 6	1032796	10000	10.4	1.00	1.34	6.09	2.05	23.82	17.82	27.18	21.18	6.18
1 x 12	1032812	10000	13.8	1.00	1.34	6.09	2.05	35.82	23.82	39.18	27.18	12.18
1 x 18	1032830	10000	17.1	1.00	1.34	6.09	2.05	47.82	29.82	51.18	33.18	18.18
1 x 24	1032858	10000	21.0	1.00	1.34	6.06	2.05	60.42	36.42	63.78	39.78	24.84
1-1/4 x 12	1032876	15200	21.9	1.25	1.84	8.09	2.82	39.37	27.37	43.58	31.58	12.06
1-1/4 x 18	1032894	15200	25.9	1.25	1.84	8.09	2.82	51.37	33.37	55.58	37.58	18.06
1-1/4 x 24	1032910	15200	29.8	1.25	1.84	8.09	2.82	63.93	39.93	68.14	44.14	24.62
1-1/2 x 12	1032938	21400	32.6	1.50	2.06	8.93	2.81	40.76	28.76	45.68	33.68	12.32
1-1/2 x 18	1032956	21400	38.0	1.50	2.06	8.93	2.81	52.76	34.76	57.68	39.68	18.32
1-1/2 x 24	1032974	21400	43.5	1.50	2.06	8.93	2.81	65.38	41.38	70.30	46.30	24.94
1-3/4 x 18	1033018	28000	53.5	1.75	2.60	9.36	3.35	53.35	35.35	59.16	41.16	18.37
1-3/4 x 24	1033036	28000	61.1	1.75	2.60	9.36	3.35	65.35	41.35	71.16	47.16	24.37
2 x 24	1033054	37000	96.3	2.00	2.62	11.80	3.74	69.64	45.64	76.72	52.72	24.48
2-1/2 x 24	1033072	60000	167	2.50	3.06	13.26	4.44	72.97	48.97	82.18	58.18	24.60
2-3/4 x 24	1033090	75000	199	2.75	3.69	14.92	4.19	74.75	50.75	85.50	61.50	24.65

5:1 Design Factor. Proof Load is 2.5 times the Working Load Limit. *Mechanical galvanized

HG-4037

- Quenched & Tempered or normalized.
- Hot-dip galvanized steel.
- Turnbuckle eyes are forged elongated, by design, to maximize easy attachment in system and minimize stress in the eye. For turnbuckle sizes 1/4" through 2-1/2", a shackle one size smaller can be reeved through eye.
- Modified UNJ thread for improved fatigue properties.
- Fatigue rated.



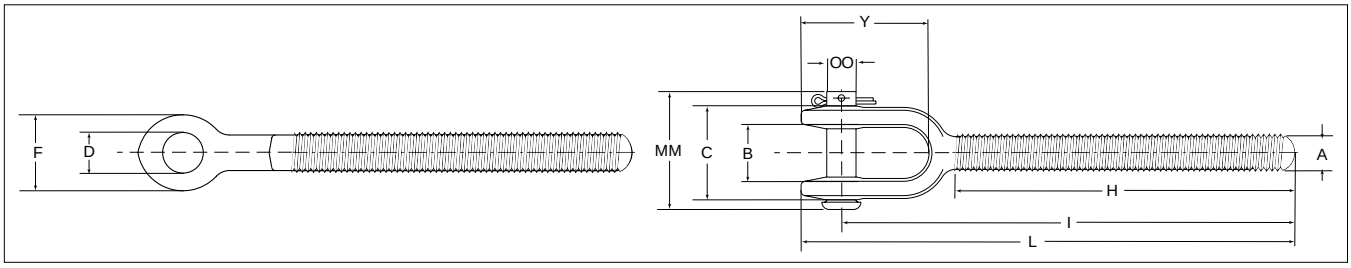
HG-4037 Eye End Fittings

Shank Dia. & Take Up (in)	RH Eye Stock No.	LH Eye Stock No.	Working Load Limit (lb)	Weight Each (lb)	Dimensions (in)						
					A	H	R	S	U	V	W
* 1/4 x 4	1071057	1071672	500	.07	.25	2.59	.81	.34	.22	.78	4.19
* 5/16 x 4 1/2	1071075	1071690	800	.13	.31	3.00	.95	.44	.28	1.00	4.99
* 3/8 x 6	1071093	1071716	1200	.23	.38	3.88	1.13	.53	.34	1.21	6.12
1/2 x 6	1071119	1071734	2200	.51	.50	4.19	1.41	.71	.44	1.59	7.41
1/2 x 9	1071137	1071752	2200	.59	.50	5.69	1.41	.71	.44	1.59	8.91
1/2 x 12	1071155	1071770	2200	.68	.50	7.19	1.41	.71	.44	1.59	10.41
5/8 x 6	1071173	1071798	3500	.82	.63	4.44	1.80	.88	.50	1.88	8.36
5/8 x 9	1071191	1071814	3500	.95	.63	5.94	1.80	.88	.50	1.88	9.86
5/8 x 12	1071217	1071832	3500	1.08	.63	7.44	1.80	.88	.50	1.88	11.36
3/4 x 6	1071235	1071850	5200	1.36	.75	4.56	2.09	1.00	.63	2.26	9.25
3/4 x 9	1071253	1071878	5200	1.55	.75	6.06	2.09	1.00	.63	2.26	10.75
3/4 x 12	1071271	1071896	5200	1.73	.75	7.56	2.09	1.00	.63	2.26	12.25
3/4 x 18	1071299	1071912	5200	2.10	.75	10.56	2.09	1.00	.63	2.26	15.25
7/8 x 12	1071315	1071930	7200	2.61	.88	7.81	2.38	1.25	.75	2.75	13.10
7/8 x 18	1071333	1071958	7200	3.12	.88	10.81	2.38	1.25	.75	2.75	16.10
1 x 6	1071351	1071976	10000	3.15	1.00	5.06	3.00	1.43	.88	3.19	11.00
1 x 12	1071379	1071994	10000	3.81	1.00	8.06	3.00	1.43	.88	3.19	14.00
1 x 18	1071397	1072010	10000	4.48	1.00	11.06	3.00	1.43	.88	3.19	17.00
1 x 24	1071413	1072038	10000	5.15	1.00	14.06	3.00	1.43	.88	3.19	20.00
1-1/4 x 12	1071431	1072056	15200	7.07	1.25	8.38	3.59	1.82	1.12	4.06	16.19
1-1/4 x 18	1071459	1072074	15200	8.12	1.25	11.38	3.59	1.82	1.12	4.06	19.19
1-1/4 x 24	1071477	1072092	15200	9.16	1.25	14.38	3.59	1.82	1.12	4.06	22.19.
1-1/2 x 12	1071495	1072118	21400	10.3	1.50	8.75	4.09	2.12	1.25	4.62	17.37
1-1/2 x 18	1071510	1072136	21400	11.8	1.50	11.75	4.09	2.12	1.25	4.62	20.37
1-1/2 x 24	1071538	1072154	21400	13.3	1.50	14.75	4.09	2.12	1.25	4.62	23.37
1-3/4 x 18	1071574	1072190	28000	17.5	1.75	12.16	4.65	2.38	1.50	5.38	21.19
1-3/4 x 24	1071592	1072216	28000	19.5	1.75	15.16	4.65	2.38	1.50	5.38	24.19
2 x 24	1071618	1072234	37000	28.9	2.00	15.59	5.81	2.69	1.75	6.19	27.59
2-1/2 x 24	1071636	1072252	60000	46.4	2.50	17.56	6.50	3.12	2.00	7.12	29.59
2-3/4 x 24	1071654	1072270	75000	60.2	2.75	17.69	7.00	3.25	2.25	7.75	30.92

*Mechanically galvanized

HG-4037 Jaw End Fittings

- Quenched & Tempered or normalized.
- Hot-dip galvanized steel.
- Forged jaw ends are fitted with bolts and nuts on sizes 1/4” through 5/8”, and pins and cotters on sizes 3/4” through 2-3/4”.
- Modified UNJ thread for improved fatigue properties.
- Fatigue Rated.



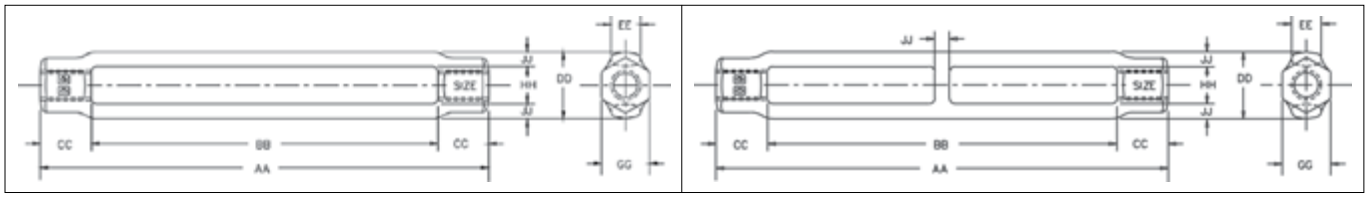
HG-4037 Jaw End Fittings

Shank Dia. & Take Up (in)	RH Jaw Stock No.	LH Jaw Stock No.	Working Load Limit (lb)	Weight Each (lb)	Dimensions (in)										
					A	B	C	D	F	H	I Nom. Min.	L Nom. Min.	Y	MM	OO Bolt Pin
* 1/4 x 4	1072298	1072911	500	.11	.25	.45	.91	.30	.63	2.59	3.72	4.09	1.13	1.41	.25
* 5/16 x 4 1/2	1072314	1072939	800	.17	.31	.50	1.02	.30	.69	3.00	4.41	4.81	1.39	1.41	.25
* 3/8 x 6	1072332	1072957	1200	.28	.38	.53	1.15	.36	.81	3.88	5.28	5.75	1.47	1.58	.31
1/2 x 6	1072350	1072975	2200	.56	.50	.64	1.36	.42	1.00	4.19	6.51	7.07	1.81	1.87	.37
1/2 x 9	1072378	1072993	2200	.63	.50	.64	1.36	.42	1.00	5.69	8.01	8.57	1.81	1.87	.37
1/2 x 12	1072396	1073019	2200	.72	.50	.64	1.36	.42	1.00	7.19	9.51	10.07	1.81	1.87	.37
5/8 x 6	1072412	1073037	3500	1.05	.63	.79	1.75	.55	1.31	4.31	7.12	7.91	2.36	2.44	.50
5/8 x 9	1072430	1073055	3500	1.18	.63	.79	1.75	.55	1.31	5.81	8.62	9.41	2.36	2.44	.50
5/8 x 12	1072458	1073073	3500	1.31	.63	.79	1.75	.55	1.31	7.31	10.12	10.91	2.36	2.44	.50
3/4 x 6	1072476	1073091	5200	1.65	.75	.97	2.09	.69	1.63	4.56	7.86	8.84	2.81	2.56	.63
3/4 x 9	1072494	1073117	5200	1.84	.75	.97	2.09	.69	1.63	6.06	9.36	10.34	2.81	2.56	.63
3/4 x 12	1072519	1073135	5200	2.03	.75	.97	2.09	.69	1.63	7.56	10.86	11.84	2.81	2.56	.63
3/4 x 18	1072537	1073153	5200	2.41	.75	.97	2.09	.69	1.63	10.56	13.86	14.84	2.81	2.56	.63
7/8 x 12	1072555	1073171	7200	2.88	.88	1.16	2.56	.81	1.88	7.81	11.70	12.81	3.25	3.09	.75
7/8 x 18	1072573	1073199	7200	3.25	.88	1.16	2.56	.81	1.88	10.81	14.70	15.81	3.25	3.09	.75
1 x 6	1072591	1073215	10000	3.56	1.00	1.34	2.76	.94	2.12	5.06	9.35	10.59	3.73	3.44	.88
1 x 12	1072617	1073233	10000	4.22	1.00	1.34	2.76	.94	2.12	8.06	12.35	13.59	3.73	3.44	.88
1 x 18	1072635	1073251	10000	4.89	1.00	1.34	2.76	.94	2.12	11.06	15.35	16.59	3.73	3.44	.88
1 x 24	1072653	1073279	10000	5.56	1.00	1.34	2.76	.94	2.12	14.06	18.35	19.59	3.73	3.44	.88
1-1/4 x 12	1072671	1073297	15200	8.10	1.25	1.84	3.72	1.19	2.63	8.38	14.25	15.79	4.92	4.53	1.13
1-1/4 x 18	1072699	1073313	15200	9.14	1.25	1.84	3.72	1.19	2.63	11.38	17.25	18.79	4.92	4.53	1.13
1-1/4 x 24	1072715	1073331	15200	10.2	1.25	1.84	3.72	1.19	2.63	14.38	20.25	21.79	4.92	4.53	1.13
1-1/2 x 12	1072733	1073359	21400	12.3	1.50	2.06	4.16	1.47	3.12	8.75	15.07	16.84	5.27	5.13	1.38
1-1/2 x 18	1072751	1073377	21400	13.8	1.50	2.06	4.16	1.47	3.12	11.75	18.07	19.84	5.27	5.13	1.38
1-1/2 x 24	1072779	1073395	21400	15.3	1.50	2.06	4.16	1.47	3.12	14.75	21.07	22.84	5.27	5.13	1.38
1-3/4 x 18	1072813	1073439	28000	18.9	1.75	2.60	4.66	1.72	3.50	12.16	18.49	20.58	6.25	6.00	1.63
1-3/4 x 24	1072831	1073457	28000	21.0	1.75	2.60	4.66	1.72	3.50	15.16	21.49	23.58	6.25	6.00	1.63
2 x 24	1072859	1073475	37000	35.3	2.00	2.62	5.61	2.09	4.19	15.59	23.82	26.36	7.28	6.88	2.00
2-1/2 x 24	1072877	1073493	60000	55.8	2.50	3.06	5.84	2.38	5.62	17.20	25.61	29.09	9.04	7.50	2.25
2-3/4 x 24	1072895	1073518	75000	72.4	2.75	3.69	6.57	2.88	6.12	17.35	26.75	30.75	9.56	8.38	2.75

*Mechanical galvanized

HG-2510 Body

- Heat treat by normalizing.
- Hot-dip galvanized
- UNC threads.
- Fatigue rated.
- Meets the performance requirements of Federal Specifications FF-T-791b,Type 1, Form 1 - Class 2, except for those provisions required by the contractor.



HG-2510 Body

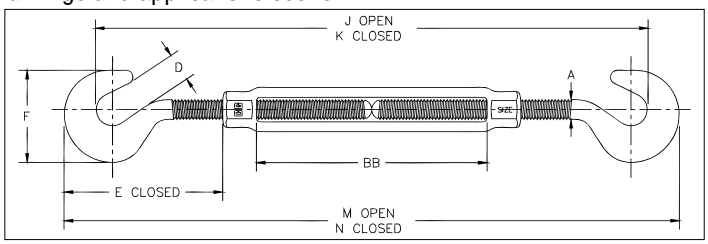
Shank Dia. & Take Up (in)	Stock No.	Working Load Limit (lb)	Weight Each (lb)	Dimensions (in)							
				AA	BB	CC	DD	EE	GG	HH	JJ
* 5/16 x 4-1/2	1033919	800	.22	5.59	4.58	.51	.82	.38	.56	.44	.19
* 3/8 x 6	1033937	1200	.29	7.29	6.10	.60	.88	.38	.63	.50	.19
1/2 x 6	1033955	2200	.70	7.70	6.03	.84	1.19	.68	.81	.63	.28
† 1/2 x 9	1033973	2200	1.03	11.03	9.36	.84	1.19	.68	.81	.63	.28
† 1/2 x 12	1033991	2200	1.27	14.03	12.36	.84	1.19	.68	.81	.63	.28
5/8 x 6	1034017	3500	1.11	8.02	6.03	1.00	1.43	.83	1.00	.75	.34
† 5/8 x 9	1034035	3500	1.59	11.38	9.39	1.00	1.43	.83	1.00	.75	.34
† 5/8 x 12	1034053	3500	1.96	14.38	12.39	1.00	1.43	.83	1.00	.75	.34
3/4 x 6	1034071	5200	1.50	8.26	6.13	1.07	1.74	.94	1.13	.94	.40
† 3/4 x 9	1034099	5200	2.17	11.72	9.59	1.07	1.74	.94	1.13	.94	.40
† 3/4 x 12	1034115	5200	2.66	14.72	12.59	1.07	1.74	.94	1.13	.94	.40
† 3/4 x 18	1034133	5200	3.63	20.66	18.53	1.07	1.74	.94	1.13	.94	.40
7/8 x 12	1034179	7200	3.61	14.62	12.16	1.23	2.00	1.13	1.31	1.06	.47
† 7/8 x 18	1034197	7200	5.27	21.09	18.63	1.23	2.00	1.13	1.31	1.06	.47
1 x 6	1034213	10000	3.32	9.00	6.18	1.41	2.45	1.25	1.50	1.25	.60
1 x 12	1034231	10000	5.34	15.00	12.18	1.41	2.45	1.25	1.50	1.25	.60
† 1 x 18	1034259	10000	7.35	21.00	18.18	1.41	2.45	1.25	1.50	1.25	.60
† 1 x 24	1034277	10000	9.85	27.66	24.84	1.41	2.45	1.25	1.50	1.25	.60
1-1/4 x 12	1034339	15200	5.72	15.40	12.06	1.67	2.62	1.25	1.88	1.50	.56
1-1/4 x 18	1034357	15200	7.58	21.40	18.06	1.67	2.62	1.25	1.88	1.50	.56
† 1-1/4 x 24	1034375	15200	9.45	27.96	24.62	1.67	2.62	1.25	1.88	1.50	.56
1-1/2 x 12	1034437	21400	8.01	15.82	12.32	1.75	2.99	1.50	2.25	1.75	.62
1-1/2 x 18	1034455	21400	10.4	21.82	18.32	1.75	2.99	1.50	2.25	1.75	.62
† 1-1/2 x 24	1034473	21400	12.9	28.45	24.94	1.75	2.99	1.50	2.25	1.75	.62
1-3/4 x 18	1034552	28000	15.7	22.44	18.37	2.04	3.62	1.75	2.62	2.12	.75
1-3/4 x 24	1034570	28000	19.2	28.44	24.37	2.04	3.62	1.75	2.62	2.12	.75
2 x 24	1034632	37000	25.8	29.13	24.48	2.33	4.14	2.00	3.00	2.38	.88
2-1/2 x 24	1034678	60000	55.9	31.66	24.60	3.53	5.62	2.75	3.88	3.12	1.25
2-3/4 x 24	1034696	75000	54.0	31.66	24.65	3.51	5.62	2.75	3.88	4.48	1.25

*Mechanically galvanized
†Contains Center Rib for additional body support

HG-223

- End fittings are Quenched & Tempered or normalized, bodies heat-treated by normalizing.
- Hot-dip galvanized steel.
- Hooks are forged with a greater cross sectional area that results in a stronger hook with better fatigue properties.
- TURNBUCKLES RECOMMENDED FOR STRAIGHT OR IN-LINE PULL ONLY.
- Modified UNJ thread on end fittings for improved fatigue properties.
- Body has UNC threads.
- Lock nuts available for all sizes.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these turnbuckles meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.
- Meets the performance requirements of Federal Specifications FF-T-791b, Type 1 Form 1 - CLASS 5, and ASTM F-1145, except for those provisions required of the contractor. For additional information, see warnings and applications section.

Q&T Fatigue Rated



HG-223 Hook & Hook

Thread Dia. & Take Up (in)	Stock No.	Working Load Limit (lb)*	Weight Each (lb)	Dimensions (in)								
				A	D	E Closed	F	J Open	K Closed	M Open	N Closed	BB
1 x 12	1030333	5000	14.8	1.00	1.25	6.56	4.25	36.59	25.06	40.12	28.12	12.18

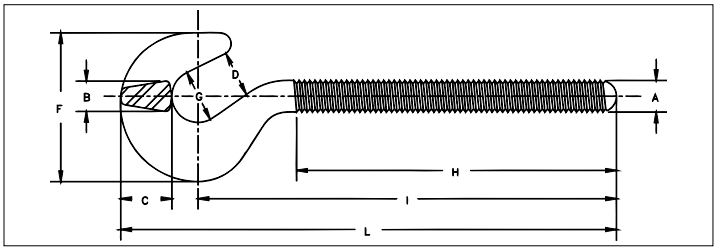
5:1 Design Factor. Proof Load is 2.5 times the Working Load Limit.

10

HG-4037

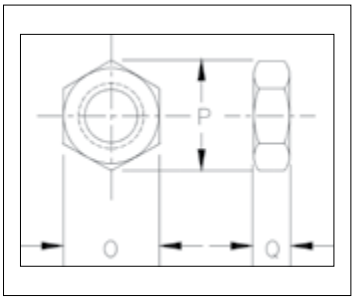
- Quenched & Tempered or normalized.
- Hot-dip galvanized steel.
- Hooks are forged with a greater cross sectional area that results in a stronger hook with better fatigue properties.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.

Q&T Fatigue Rated



HG-4037 Hook End Fittings

Shank Dia. & Take Up (in)	RH Hook Stock No.	LH Hook Stock No.	Working Load Limit (lb)	Weight Each (lb)	Dimensions (in)								
					A	B	C	D	F	G	H	I	L
1 x 12	1070334	1070851	5000	4.72	1.00	1.00	1.53	1.25	4.25	1.38	8.06	11.84	14.06



HG-4060 / HG-4061

- Secures the turnbuckle into position at final adjustment.

HG-4060 / HG-4061 Lock Nuts

Shank Dia. & Take Up (in)	RIght Hand HG-4060 Stock No.	Left Hand HG-4061 Stock No.	Weight Per 100 (lb)	Dimensions (in)		
				O	P	Q
1/4	1075115	1075491	.80	.44	.50	.16
5/16	1075133	1075516	1.30	.50	.56	.19
3/8	1075151	1075534	2.00	.56	.64	.22
1/2	1075197	1075570	4.00	.75	.86	.31
5/8	1075213	1075598	7.00	.94	1.06	.38
3/4	1075231	1075614	11.00	1.13	1.26	.42
7/8	1075259	1075632	16.30	1.31	1.50	.48
1	1075277	1075650	23.80	1.50	1.69	.55
1-1/8	1075295	1075678	32.00	1.50	1.69	.55
1-1/4	1075311	1075696	62.50	1.88	2.13	.72
1-1/2	1075357	1075730	72.00	2.25	2.53	.84
1-3/4	1075393	1075776	112.00	2.75	3.18	1.00
2	1075419	1075794	150.00	3.12	3.61	1.12
2-1/2	1075455	1075838	330.00	3.88	4.47	1.50
2-3/4	1075473	1075856	425.00	4.25	4.91	1.62

Alloy Steel Rigging Screw No 801 / 802 / 804 Grade 6

Standard Working load acc. to US Federal spec. FF-T-791.b.
Supplied with closed body from 5,510 - 37,468 lb, larger dimensions open body.

Material: Quenched & Tempered alloy steel.

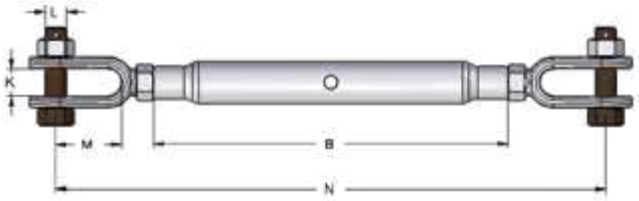
Surface treatment Hot-dip galvanized.

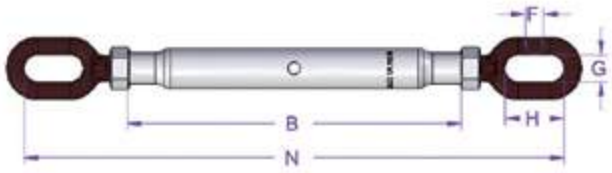
Design Factor 5:1

Certificate: Test certificate and traceable 3.1 certificate supplied on request.

Tolerances: +/- 5%

Temperature: -4°F to 392°F





Stock no. Jaw/Jaw 801	Stock no. Jaw/Eye 802	Stock no. Eye/Eye 804	Thread M/UNC	WLL metric tonnes	Take up range	Dimensions (in)								Weight each (lb)
						B	N	K	L	M	F	G	H	
A801420	A802420	A804420	M 20	2.5	8.27	10.63	17.91	0.79	0.63	1.97	0.51	0.83	1.77	5.07
A801424	A802424	A804424	M 24	5.0	9.84	13.39	22.44	1.10	0.87	2.56	0.75	1.10	2.20	10.14
A801432	A802432	A804432	1.1/4”	7.0	10.63	14.57	26.77	1.50	1.10	3.35	0.87	1.38	2.76	17.64
A801438	A802438	A804438	1.1/2”	10.0	11.81	15.75	31.10	1.77	1.26	3.94	0.98	1.57	3.07	30.86
A801445	A802445	A804445	1.3/4”	13.0	14.17	19.69	34.25	1.97	1.54	4.13	1.18	1.77	3.54	52.91
A801450	A802450	A804450	2”	17.0	17.72	23.62	40.55	2.28	1.77	4.72	1.38	1.77	3.94	83.78
A801464			*2.1/2”	27.2	21.02	30.71	51.65	2.95	2.24	5.59	-	-		194.01
A801470			*2.3/4”	34.0	22.68	30.71	55.83	3.54	2.76	5.71				216.05

* Open turnbuckle body without nut and split pin

Rigging Screw No 401 / 402 / 404 - Hot-Dip Galvanized

Design: Jaw-Jaw (jaw-eye and eye-eye on request)

Standard According to B.S. 4429, closed body - with locking nut.

Material: St. 42/St. 52, normalized

Surface treatment Hot-dip galvanized (M6 & M8 zinc plated).

Design Factor 5:1

Note: The items marked with * below are not for lifting.

Tolerances: +/- 5%

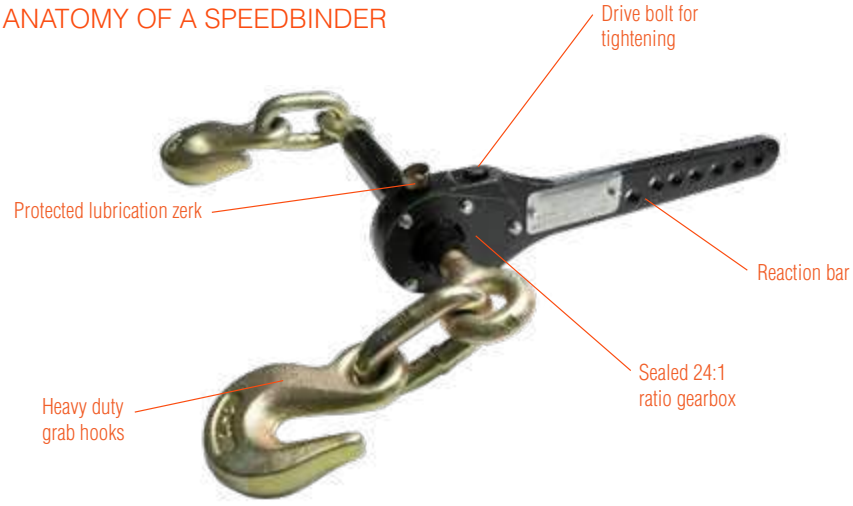
Stock no. Jaw/ Jaw 401	Stock no. Jaw/ Eye 402	Stock no. Eye/Eye 404	Thread M/UNC	WLL metric tonnes	Take up range	Dimensions (in)								Weight each (lb)
						B	N	L	M	K	F	G	H	
A401510	*A402410	*A404410	M 10	0.5	3.54	5.71	8.86	0.31	0.79	0.37	0.28	0.51	0.51	0.66
A401512	*A402412	*A404412	M 12	0.7	6.10	7.68	12.40	0.39	1.18	0.51	0.39	0.55	1.10	1.43
A401516	*A402416	*A404416	M 16	1.2	7.28	9.06	14.96	0.47	1.73	0.71	0.47	0.71	1.77	2.76
A401520	A402420	A404520	M 20	1.5	8.27	10.63	17.72	0.63	1.97	0.79	0.51	0.83	1.77	4.85
A401422	A402422	A404422	M 22	2.2	9.06	11.61	19.69	0.79	2.36	0.98	0.63	0.94	1.97	7.28
A401424	A402424	A404424	M 24	3.2	9.84	12.80	21.85	0.87	2.56	1.10	0.75	1.10	2.20	10.14
A401432	A402432	A404432	1.1/4”	4.8	11.42	14.57	26.77	1.10	3.35	1.50	0.87	1.38	2.76	18.74
A401438	A402438	A404438	1.1/2”	6.0	11.81	15.75	29.92	1.26	3.94	1.77	0.98	1.57	3.54	31.97
A401445	A402445	A404445	1.3/4”	8.5	11.42	15.75	29.92	1.50	4.13	1.97	1.18	1.77	3.54	46.08
A401452	A402452	A404452	2”	11.0	11.42	15.75	32.28	1.77	4.72	2.28	1.38	1.77	3.94	52.91

* Will not be delivered with lifting certificate.

EFFICIENT & ERGONOMIC LOAD SECUREMENT TECHNOLOGY

Speedbinders is changing the load binder industry with patented **Torque Drive** technology. Our line of products provide considerable time savings and enhanced safety benefits for drivers by eliminating repetitive, straining operations. Torque Drive binders are revolutionizing load securement. By adopting the practice of using portable power drill to secure loads and pull the chain tight, you can alleviate shoulder strain, reduce injuries, and allow for easier operation and reduced operation time.

ANATOMY OF A SPEEDBINDER



- ENHANCED SAFETY FEATURES
- MORE ERGONOMIC
- QUICKER TIE-DOWN & RELEASE TIMES
- LONGER LASTING
- HIGHEST TENSION
- EASY TO OPERATE IN TIGHT SPOTS
- UNMATCHED TENSION RETENTION
- TAMPER-RESISTANT

PRODUCT RANGE

TD66BL

Color marking: Blue
WLL: 6,600 lb
Chain size: 5/16"-3/8"
Proof tested to: 9,900 lb
Design factor: 3:1
Common applications: Light equipment transport, Logging

TD92RL

Color marking: Red
WLL: 9,200 lb
Chain size: 3/8"-1/2"
Proof tested to: 13,800 lb
Design factor: 3:1
Common applications: Equipment transport, Heavy towing, Steel coil transport

TD13GLHH

Color marking: Green
WLL: 13,000 lb
Chain size: 1/2"-5/8"
Proof tested to: 19,500 lb
Design factor: 3:1
Common applications: Equipment transport, Heavy hauling, Steel coil transport

LIFTING POINTS

A wide range of high-quality lifting points for every application.

the Crosby group®

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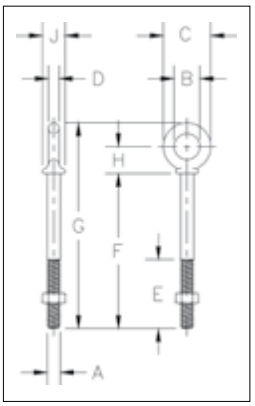
Crosby

G-277

- Forged steel, Quenched & Tempered.
- Fatigue rated at 1-1/2 times the Working Load Limit at 20,000 cycles.
- Working Load Limits shown are for in-line pull. For angle loading, see applications and warning section.
- Meets or exceeds all requirements of ASME B30.26, including identification, ductility, design factor, proof load, and temperature requirements. Importantly, these bolts meet other critical performance requirements, including fatigue life, impact properties, and material traceability not addressed by ASME B30.26.
- All bolts hot-dip galvanized after threading (UNC).
- Furnished with standard hot-dip galvanized, heavy hex nuts.



G-277 Shoulder Nut Eye Bolts

Shank Diameter & Length (in)	Stock No.	Working Load Limit (lb)	Weight Each (lb)	Dimensions (in)								
				A	B	C	D	E	F	G	H	J
5/16 x 2-1/4	1045050	1200	0.13	.31	.62	1.12	.25	1.50	2.25	3.50	.69	.56
5/16 x 4-1/4	1045078	1200	0.19	.31	.62	1.12	.25	2.50	4.25	5.50	.69	.56
3/8 x 2-1/2	1045096	1550	0.21	.38	.75	1.38	.31	1.50	2.50	3.97	.78	.66
3/8 x 4-1/2	1045112	1550	0.25	.38	.75	1.38	.31	2.50	4.50	5.97	.78	.66
1/2 x 3-1/4	1045130	2600	0.43	.50	1.00	1.75	.38	1.50	3.25	5.12	1.00	.91
1/2 x 6	1045158	2600	0.57	.50	1.00	1.75	.38	3.00	6.00	7.88	1.00	.91
5/8 x 4	1045176	5200	0.69	.62	1.25	2.25	.50	2.00	4.00	6.44	1.31	1.12
5/8 x 6	1045194	5200	1.02	.62	1.25	2.25	.50	3.00	6.00	8.44	1.31	1.12
3/4 x 4-1/2	1045210	7200	1.45	.75	1.50	2.75	.62	2.00	4.50	7.44	1.56	1.38
3/4 x 6	1045238	7200	1.68	.75	1.50	2.75	.62	3.00	6.00	8.94	1.56	1.38
7/8 x 5	1045256	10600	2.25	.88	1.75	3.25	.75	2.50	5.00	8.46	1.84	1.56
1 x 6	1045292	13300	3.66	1.00	2.00	3.75	.88	3.00	6.00	9.97	2.09	1.81
1 x 9	1045318	13300	4.23	1.00	2.00	3.75	.88	4.00	9.00	12.97	2.09	1.81
1-1/4 x 8	1045336	21000	6.50	1.25	2.50	4.50	1.00	4.00	8.00	12.72	2.47	2.28
1-1/4 x 12	1045354	21000	7.95	1.25	2.50	4.50	1.00	4.00	12.00	16.72	2.47	2.28
1-1/2 x 15	1045372	24000	14.25	1.50	3.00	5.50	1.25	6.00	15.00	20.75	3.00	2.75

5:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit.

Fatigue Rated Q&T CE

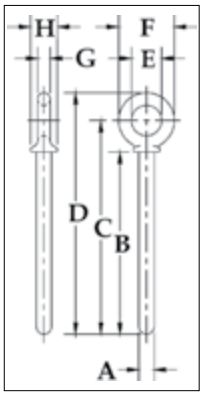
APPLICATION AND WARNING INFORMATION
SECTION 17

S-276 Shoulder Rivet Eye Bolts

- Forged steel - Quenched & Tempered.

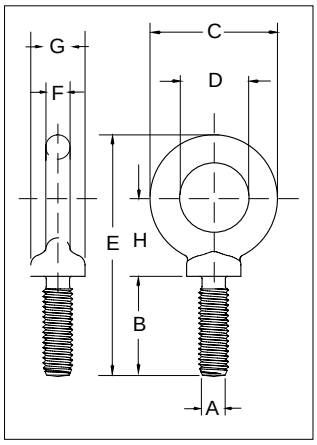
Shank Dia. & Length (in)	Stock No.	Weight Per 100 (lb)	Dimensions (in)							
			A	B	C	D	E	F	G	H
1/2 x 3-1/4	1045862	33.00	.50	3.25	4.25	5.12	1.00	1.75	.38	.91
3/4 x 4-1/2	1045942	125.00	.75	4.50	6.06	7.44	1.50	2.75	.62	1.38
3/4 x 6	1045960	150.00	.75	6.00	7.56	8.94	1.50	2.75	.62	1.38
7/8 x 5	1045988	200.00	.88	5.00	6.84	8.46	1.75	3.25	.75	1.56
1 x 6	1046022	298.00	1.00	6.00	8.09	9.97	2.00	3.75	.88	1.81
1 x 9	1046040	425.00	1.00	9.00	11.09	12.97	2.00	3.75	.88	1.81
1-1/4 x 8	1046068	654.00	1.25	8.00	10.47	12.72	2.50	4.50	1.00	2.28
1-1/4 x 12	1046086	712.00	1.25	12.00	14.47	16.72	2.50	4.50	1.00	2.28
1-1/2 x 15	1046102	1425.00	1.50	15.00	18.00	20.75	3.00	5.50	1.25	2.75

QUIC-CHECK® Q&T



S-279 / M-279

- Forged steel - Quenched & Tempered.
- Working Load Limits shown are for in-line pull. For angle loading, see Warnings & Applications.
- Fatigue rated at 1-1/2 times the Working Load Limit at 20,000 cycles.
- Recommended for in-line pull.
- S-279 threaded UNC.
- M-279 metric threaded.
- Meets or exceeds all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these bolts meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.



S-279 UNC Shoulder Type Machinery Eye Bolts

Size (in)	Stock No.	Working Load Limit (lb)	Weight Per 100 (lb)	Dimensions (in)							
				A* Thread	B	C	D	E	F	G	H
3/8 x 1-1/4	9900208	1550	15.00	3/8 - 16	1.27	1.62	1.00	3.07	.31	.69	1.05
1/2 x 1-1/2	9900217	2600	28.00	1/2 - 13	1.53	1.95	1.19	3.70	.38	.91	1.27
5/8 x 1-3/4	9900226	5200	55.00	5/8 - 11	1.79	2.38	1.38	4.45	.50	1.13	1.53
3/4 x 2	9900235	7200	96.00	3/4 - 10	2.05	2.76	1.50	5.07	.63	1.38	1.71
7/8 x 2-1/4	9900244	10600	154.00	7/8 - 9	2.31	3.25	1.75	5.87	.75	1.56	2.00
1 x 2-1/2	9900253	13300	238.00	1 - 8	2.57	3.76	2.00	6.66	.88	1.81	2.30
1-1/8 x 2-3/4	9900257	15000	320.00	1-1/8 - 7	2.75	4.19	2.25	7.20	.97	2.06	2.35
1-1/4 x 3	9900262	21000	399.00	1-1/4 - 7	3.09	4.50	2.50	7.95	1.00	2.28	2.73
1-1/2 x 3-1/2	9900271	24000	720.00	1-1/2 - 6	3.60	5.50	3.00	9.49	1.25	2.75	3.28
1-3/4 x 3-3/4	9900280	34000	1040.00	1-3/4 - 5	3.75	6.26	3.50	10.48	1.38	3.00	3.60
2 x 4	9900289	42000	1880.00	2 - 4-1/2	4.00	7.62	4.00	12.31	1.81	3.38	4.50
2-1/2 x 5	9900298	65000	3250.00	2-1/2 - 4	5.00	8.76	4.50	14.88	2.12	4.25	5.50

5:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit. *All bolts threaded UNC.

M-279 Metric Shoulder Type Machinery Eye Bolts

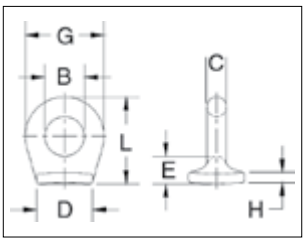
Size (mm)	Stock No.	Working Load Limit (kg)	Weight Each (kg)	Dimensions (mm)							
				A* Thread	B	C	D	E	F	G	H
M6 x 13	1045753	200	.03	M6 x 1.0	13.0	28.7	19.1	47.0	4.9	13.5	19.6
M8 x 13	1045789	400	.05	M8 x 1.25	13.0	35.1	22.4	54.6	6.4	15.0	24.1
M10 x 17	1045833	640	.07	M10 x 1.5	17.0	41.1	25.4	64.3	7.9	17.5	26.5
M12 x 20.5	1045869	1000	.11	M12 x 1.75	20.5	49.5	30.2	77.7	9.7	23.1	32.8
M16 x 27	1045913	1800	.25	M16 x 2.0	27.0	60.5	35.1	96.0	12.7	28.7	38.9
M20 x 30	1045995	2500	.42	M20 x 2.5	30.0	70.0	38.1	108	16.0	35.1	43.4
M24 x 36	1046029	4000	1.05	M24 x 3.0	36.0	95.5	51.0	142	22.4	46.0	58.4
M27 x 69.8	1046038	5000	1.42	M27 x 3.0	69.8	107	57.1	183	24.6	52.3	59.7
M30 x 45	1046075	6000	1.77	M30 x 3.5	45.0	114	63.5	171	25.4	58.0	69.3
M36 x 54	1046109	8500	3.12	M36 x 4.0	54.0	140	76.0	207	31.8	70.0	83.3
M42 x 95.2	1046118	14000	4.58	M42 x 4.5	95.2	159	88.9	266	35.0	76.2	91.4
M48 x 102	1046127	17300	8.71	M48 x 5.0	102	194	101	313	46.0	85.9	114
M64 x 127	1046136	29500	14.74	M64 x 6.0	127	223	114	378	53.8	108	140

5:1 Design Factor. Maximum Proof Load is 2 times the Working Load Limit.

Crosby

S-264

- Forged steel - Quenched & Tempered.
- Forged from 1035 carbon steel.
- Excellent welding qualities.
- Widely used on farm machinery, trucks, steel hulled marine vessels and material handling equipment.
- Reference American Welding Society specifications for proper welding procedures.



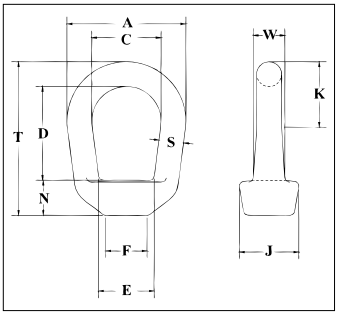
S-264 Pad Eyes

Size No.	Stock No.	Weight Per 100 (lb)	Dimensions (in)						
			B	C	D	E	G	H	L
* 0	1090722	2.80	.25	.19	.63	.31	.63	.09	.75
* 1	1090740	6.50	.38	.25	.88	.41	.88	.13	1.03
* 1-1/2	1090768	10.40	.63	.25	1.00	.44	1.13	.16	1.31
2	1090786	21.10	.75	.38	1.06	.50	1.50	.19	1.63
4	1090802	52.20	1.00	.56	1.44	.78	2.13	.22	2.34
5	1090820	82.50	1.25	.69	1.75	.81	2.63	.25	2.75

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

G-400

- Forged steel - Quenched & Tempered.
- Hot-dip galvanized
- Tapped with standard UNC class 2 threads after galvanizing.
- Also available in blank (as forged) item (S-4028).
- Meets or exceeds all requirements of ASME B30.26.



G-400 Eye Nuts

Size No.	"S" Stock Size (in)	Stock No	Std. Tap Size (in)	Working Load Limit (lb)	Weight Each (lb)	Dimensions (in)									
						A	C	D	E	F	J	K	N	T	W
1	.25	1090438	1/4	520	.09	1.25	.75	1.00	.75	.50	.69	.63	.38	1.72	.31
2	.31	1090474	3/8	1250	.17	1.62	1.00	1.20	.83	.56	.81	.89	.50	2.09	.41
3A	.38	1090517	1/2	2250	.28	2.00	1.25	1.44	1.08	.81	1.00	1.09	.62	2.55	.50
4	.50	1090535	5/8	3600	.60	2.50	1.50	1.92	1.35	1.00	1.31	1.31	.69	3.25	.69
5	.63	1090553	3/4	5200	1.00	3.00	1.75	2.38	1.59	1.12	1.50	1.57	.88	3.89	.84
6	.75	1090571	7/8	7200	1.65	3.50	2.00	2.63	1.96	1.38	1.88	1.77	.94	4.32	1.00
7	.88	1090599	1	10000	2.69	4.00	2.25	3.06	2.21	1.56	2.13	2.02	1.07	5.01	1.19
8	1.00	1090633	1-1/4	15500	4.38	4.50	2.50	3.50	2.46	1.88	2.38	2.27	1.25	5.78	1.38
9	1.13	1090651	1-3/8	18500	5.00	5.00	2.75	4.00	2.69	2.00	2.56	2.53	1.38	6.51	1.50
10	1.25	1090679	1-1/2	22500	6.78	5.62	3.12	4.31	3.09	2.25	3.00	2.82	1.50	7.06	1.66
11	1.50	1090697	2	40000	14.60	7.12	4.10	6.20	4.09	3.13	3.75	3.68	2.06	9.91	1.94

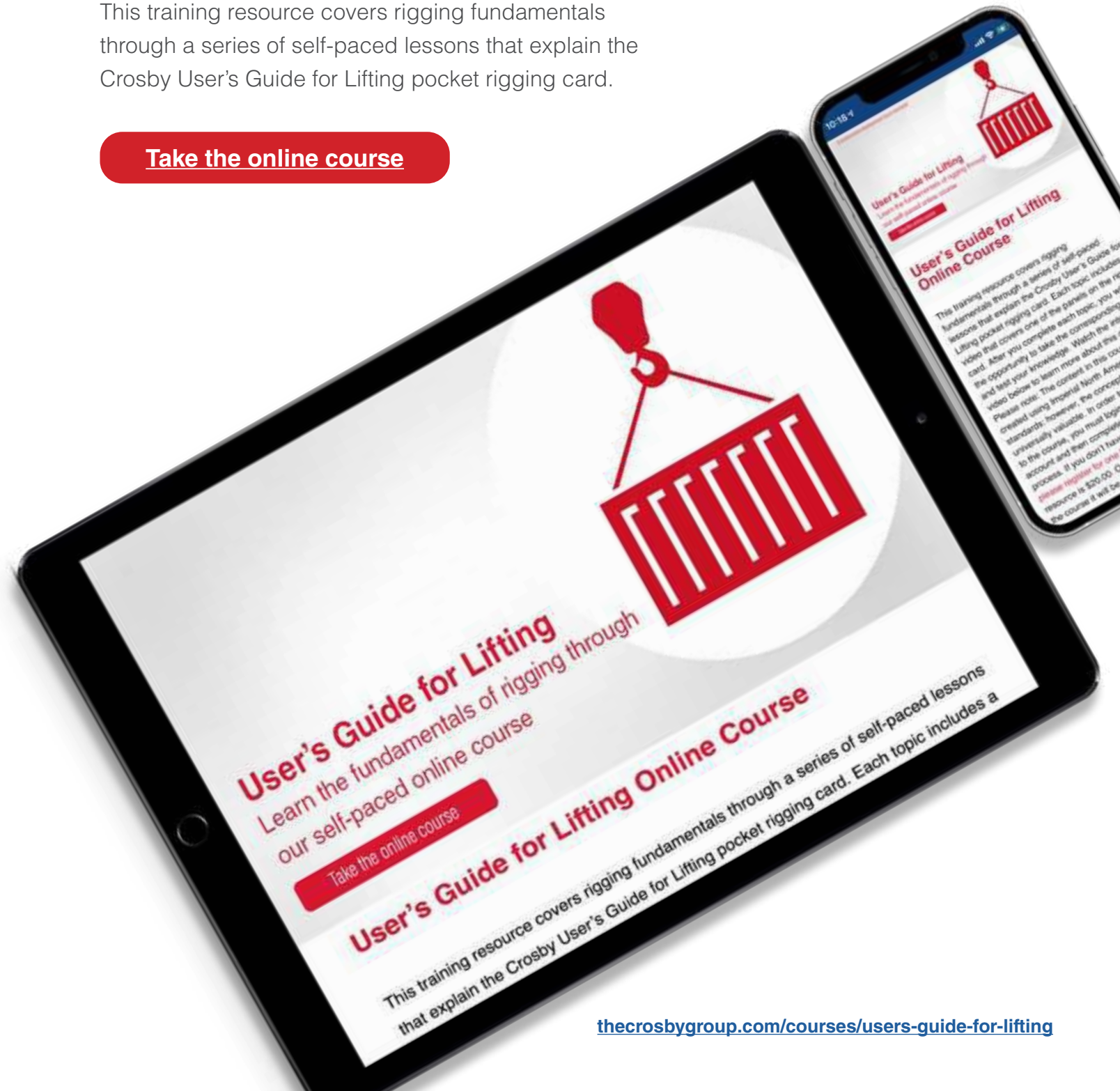
5:1 Design Factor. Working Load Limit shown is for In-Line pull. Rating based on standard tap size.

Crosby

User's Guide for Lifting Online Course

This training resource covers rigging fundamentals through a series of self-paced lessons that explain the Crosby User's Guide for Lifting pocket rigging card.

Take the online course



thecrosbygroup.com/courses/users-guide-for-lifting

Swivel Hoist Ring

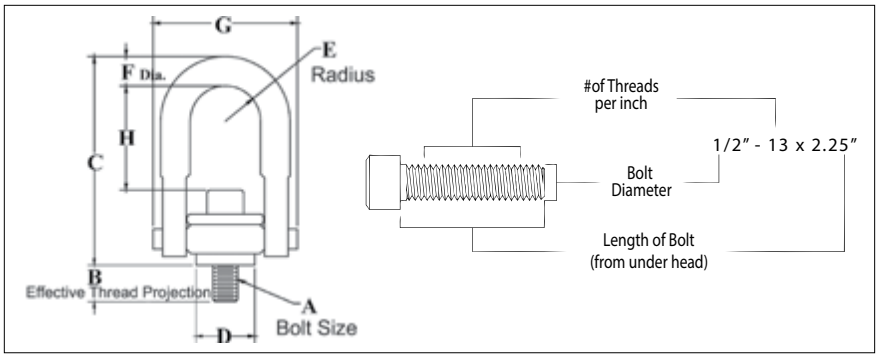
HR-125M
Swivel Hoist Ring

Color coded to distinguish between UNC (Red) and Metric (Silver) thread types.

HR-125
Swivel Hoist Ring

- Available in UNC and Metric thread sizes.
- UNC threads available in sizes from 800 pounds to 100,000 pounds Working Load Limit, with a design factor of 5 to 1.
- Metric threads available in sizes from 400kg to 16,900kg and dual rated in both a 4 to 1 and 5 to 1 design factor.
- All components are alloy steel - Quenched & Tempered.
- Designed to be used at full WLL within angular loading range.
- 100% individually proof tested to 2-1/2 times the Working Load Limit with certification and Statistically Magnetic Particle inspected. (Can be furnished 100% Magnetic Particle inspected when requested at time of order.)
- Each product has a Product Identification Code (PIC) for material traceability along with a Working Load Limit and the name Crosby or "CG" stamped into it.
- 360° swivel and 180° pivot action.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
- Individually packaged along with proper application instructions and warning information.
- Bolt is secured with E-clip, threads are grooved. This method allows for easy disassembly and assembly of hoist ring for thorough examination of all components. Replacement kits are available.
- Bolts are individually Proof Tested.
- Multiple bolt length available to meet specific application requirements.
- Zinc plated (yellow chromate) finish for increased corrosion protection.
- Meets or exceeds all the requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements. Importantly, these hoist rings meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.

HR-125



- Top washer has the following features:
  - The Working Load Limit and recommended torque value are permanently stamped into each washer.
  - Washer is color-coded for easy identification: Red - UNC thread.
- Individually Proof Tested to 2-1/2 times Working Load Limit.
- Bolt specification is an alloy socket head cap screw to ASTM A 574.
- All threads listed are UNC.
- BOLT SIZE IDENTIFICATION: The size of the bolt will be stated as in the drawing above. Illustration shows meaning of each dimension given.

HR-125 UNC Threads

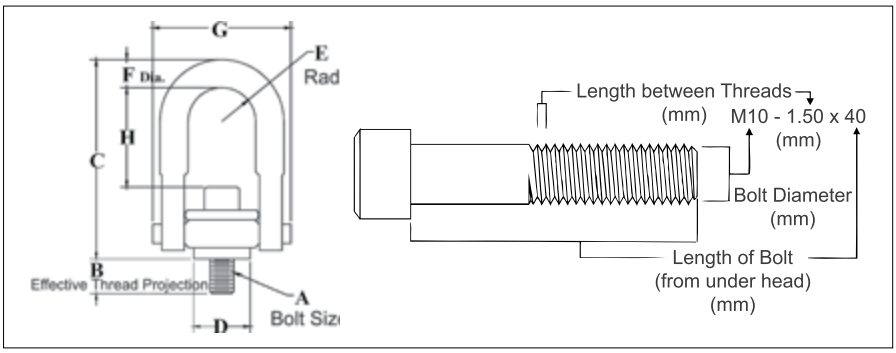
Frame Size No.	Stock No.	Working Load Limit (lb)	Torque in ft-lb	Dimensions (in)								Weight Each (lb)
				Bolt Size A	Effective Thread Projection Length B	C	D	Radius E	Diameter F	G	H	
1 †	1016887	800	7	5/16 - 18 x 1.50	.58	2.72	.97	.46	.34	1.87	1.12	.37
1 †	1016898	1000	12	3/8 - 16 x 1.50	.58	2.72	.97	.46	.34	1.87	1.05	.39
2	1016909	2500	28	1/2 - 13 x 2.00	.70	4.85	1.96	.87	.75	3.35	2.29	2.33
2 †	1016912	2500	28	1/2 - 13 x 2.50	1.20	4.85	1.96	.87	.75	3.35	2.29	2.36
2	1016920	4000	60	5/8 - 11 x 2.00	.70	4.85	1.96	.87	.75	3.35	2.16	2.41
2 †	1016924	4000	60	5/8 - 11 x 2.75	1.45	4.85	1.96	.87	.75	3.35	2.16	2.47
2	1016931	5000	100	3/4 - 10 x 2.25	.95	4.85	1.96	.87	.75	3.35	2.04	2.52
2 †	1016935	5000	100	3/4 - 10 x 2.75	1.45	4.85	1.96	.87	.75	3.35	2.04	2.59
3	1016942	7000*	100	3/4 - 10 x 2.75	.89	6.57	2.96	1.36	.94	4.87	2.97	6.72
3 †	1016946	7000*	100	3/4 - 10 x 3.50	1.64	6.57	2.96	1.36	.94	4.87	2.97	6.81
3	1016953	8000	160	7/8 - 9 x 2.75	.89	6.57	2.96	1.36	.94	4.87	2.84	6.84
3 †	1016957	8000	160	7/8 - 9 x 3.50	1.64	6.57	2.96	1.36	.94	4.87	2.84	6.96
3	1016964	10000	230	1 - 8 x 3.00	1.14	6.57	2.96	1.36	.94	4.87	2.72	7.09
3 †	1016969	10000	230	1 - 8 x 4.00	2.14	6.57	2.96	1.36	.94	4.87	2.72	7.31
4	1016975	15000	470	1-1/4 - 7 x 4.50	2.21	8.72	3.71	1.75	1.19	6.18	3.93	14.51
5	1016986	24000	800	1-1/2 - 6 x 6.75	3.00	12.55	4.71	2.39	1.75	8.48	5.52	37.73
5	1016997	30000	1100	2 - 4-1/2 x 6.75	3.00	12.55	4.71	2.39	1.75	8.48	5.02	40.69
6	1017001	50000	2100	2-1/2 - 4 x 8.0	4.00	16.88	5.75	3.00	2.25	11.00	8.03	88.00
7	1017005	75000	4300	3 - 4 x 10.5	5.00	19.50	6.45	3.75	2.75	14.16	8.50	166.00
8	1017009	100000	5100	3-1/2 - 4 x 13.0 #	7.00	22.09	7.75	4.00	3.25	15.91	9.28	265.00

5:1 Design Factor. *4:1 Design Factor when tested in 90 degree orientation. †Long Bolts are designed to be used with soft metal (i.e., aluminum) workpiece. While the long bolts may also be used with ferrous metal (i.e.,steel & iron) workpiece, short bolts are designed for ferrous workpieces only. Hex head bolt used on Frame 8 (100,000 lb) Hoist Ring.

Load Tested Fatigue Tested
APPLICATION AND WARNING INFORMATION SECTION 17

Crosby

HR-125M



- Top washer has the following features:
  - The Working Load Limit and recommended torque value are permanently stamped into each washer.
  - Washer is color-coded for easy identification: Silver - Metric thread.
- Individually Proof Tested to 2-1/2 times Working Load Limit.
- Bolt specification is a Grade 12.9 alloy socket head cap screw to DIN 912. All threads listed are metric (ASME B18.3.1m).
- Designed to be used with ferrous workpiece only.
- BOLT SIZE IDENTIFICATION: The size of the bolt will be stated as in the drawing above. Illustration shows meaning of each dimension given.

HR-125M Metric Threads

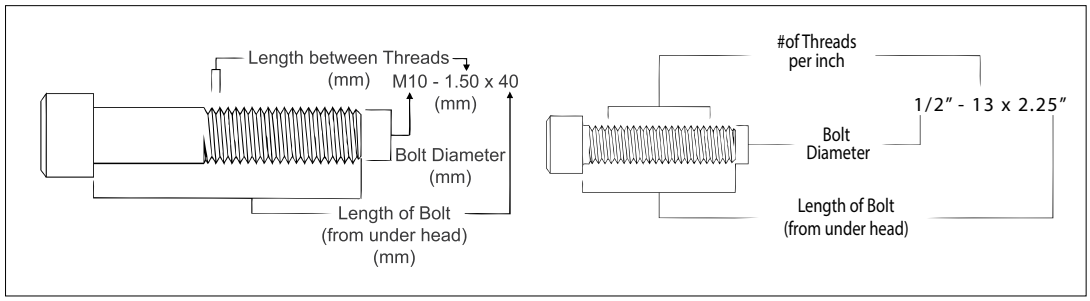
Frame Size No.	Stock No.	Working Load Limit (kg)		Torque in Nm	Dimensions (mm)								Weight Each (kg)
		At a 5:1 Design Factor †	At a 4:1 Design Factor †		Bolt Size A	Effective Thread Projection Length B	C	D	Radius E	Diameter F	G	H	
1	1016602	400	500	10	M8X1.25X40	16.9	69.9	24.6	11.8	8.5	47.5	29.9	.17
1	1016613	450	550	16	M10X1.50X40	16.9	69.9	24.6	11.8	8.5	47.5	28.1	.18
2	1016624	1050	1300	38	M12X1.75X50	16.9	123	49.8	22.3	17.5	85.1	60.4	1.05
2	1016635	1900	2400	81	M16X2.00X60	26.9	123	49.8	22.3	17.5	85.1	56.3	1.11
2	1016644	2150	2700	136	M20X2.50X65	31.9	123	49.8	22.3	17.5	85.1	52.3	1.17
3	1016657	3000	3750	136	M20X2.50X75	27.8	167	75.2	34.7	25.4	124	76.6	3.09
3	1016668	4200	5250	312	M24X3.00X80	32.8	167	75.2	34.7	25.4	124	70.5	3.21
4	1016679	7000	8750	637	M30X3.50X120	61.7	222	94.2	44.5	30.5	157	102	6.53
5	1016690	11000	13750	1005	M36X4.00X150	54.0	318	120	60.7	44.5	215	142	16.8
5	1016701	12500	15600	1005	M42X4.50X160	64.0	318	120	60.7	44.5	215	136	17.4
5	1016712	13500	16900	1350	M48X5.00X160	74.0	318	120	60.7	44.5	215	130	18.0

† Individually proof loaded to 2-1/2 times the Working Load Limit based on the 4:1 design factor.

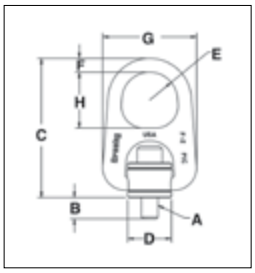
Lead Tested Fatigue Tested CE

APPLICATION AND WARNING INFORMATION
SECTION 17

HR-1000



- Forged bail provides the following:
  - Easily readable raised lettering showing the name Crosby or "CG" and PIC for material traceability.
  - Greater durability providing the increased "Toughness" desired in potentially abusive field conditions.
  - Larger opening than standard hoist ring bail.
- Top washer is color-coded for easy identification (Red for UNC threads and Silver for Metric threads)
- The Working Load Limit and recommended torque value are permanently stamped into each washer.
- Individually Proof Tested to 2-1/2 times Working Load Limit.
- Available in both UNC thread and Metric thread style.
- UNC bolt specification is an alloy socket head cap screw to ASTM A 574. Metric bolt specification is a Grade 12.9 alloy socket head cap screw to DIN 912.
- BOLT SIZE IDENTIFICATION: The size of the bolt will be stated as in the drawing. Illustration shows meaning of each dimension given.



HR-1000 UNC Threads

Frame Size No.	Stock No.	Working Load Limit (lb)	Torque in Ft. Lbs	Dimensions (in)								Weight Each (lb)
				Bolt Size A	Eff. Thread Projection Length B	C	D	Radius E	F	G	H	
1	1068002	800	7	5/16 - 18 x 1.50	.52	3.69	.97	.62	.44	2.27	1.38	.60
1	1068006	1000	12	3/8 - 16 x 1.50	.52	3.69	.97	.62	.44	2.27	1.38	.62
2	1068010	2500	28	1/2 - 13 x 2.25	.69	6.26	1.96	1.25	.75	4.20	2.50	3.05
2 †	1068014	2500	28	1/2 - 13 x 2.75	1.19	6.26	1.96	1.25	.75	4.20	2.50	3.07
2	1068018	4000	60	5/8 - 11 x 2.25	.69	6.26	1.96	1.25	.75	4.20	2.50	3.11
2 †	1068022	4000	60	5/8 - 11 x 3.00	1.44	6.26	1.96	1.25	.75	4.20	2.50	3.18
2	1068026	5000	100	3/4 - 10 x 2.50	.94	6.26	1.96	1.25	.75	4.20	2.50	3.24
2 †	1068030	5000	100	3/4 - 10 x 3.00	1.44	6.26	1.96	1.25	.75	4.20	2.50	3.30
3	1068034	7000*	100	3/4 - 10 x 3.00	.85	8.66	2.96	1.63	1.00	6.25	3.25	10.09
3 †	1068038	7000*	100	3/4 - 10 x 3.50	1.35	8.66	2.96	1.63	1.00	6.25	3.25	10.21
3	1068042	8000	160	7/8 - 9 x 3.00	.85	8.66	2.96	1.63	1.00	6.24	3.25	10.21
3 †	1068046	8000	160	7/8 - 9 x 3.50	1.35	8.66	2.96	1.63	1.00	6.24	3.25	10.40
3	1068050	10000	230	1 - 8 x 3.50	1.35	8.66	2.96	1.63	1.00	6.24	3.25	10.50
3 †	1068054	10000	230	1 - 8 x 4.50	2.35	8.66	2.96	1.63	1.00	6.24	3.25	10.72
4	1068058	15000	470	1-1/4 - 7 x 5.00	2.09	11.21	3.71	2.00	1.25	7.82	4.00	21.90
4	1068062	24000	800	1-1/2 - 6 x 5.50	2.59	11.21	3.71	2.00	1.44	7.82	4.00	23.00

5:1 Design Factor. *4.5:1 Design Factor when tested in 90 degree orientation. †Long Bolts are designed to be used with soft metal (i.e., aluminum) workpiece.

HR-1000M Metric Threads

Frame Size No.	Stock No.	Working Load Limit (kg)		Torque in Nm	Dimensions (mm)								Weight Each (kg)
		At a 5:1 Design Factor*	At a 4:1 Design Factor*		Bolt Size A	Eff. Thread Projection Length B	C	D	Radius E	F	G	H	
1	1068307	400	500	10	M8 x 1.25 x 40	15.2	93.7	24.6	15.7	11.2	57.7	35.1	0.3
1	1068316	450	550	16	M10 x 1.50 x 40	15.2	93.7	24.6	15.7	11.2	57.7	35.1	0.3
2	1068325	1050	1300	38	M12 x 1.75 x 55	15.5	162	49.8	31.8	19.1	107	63.5	1.5
2	1068334	1900	2400	81	M16 x 2.00 x 65	25.5	162	49.8	31.8	19.1	107	63.5	1.5
2	1068343	2150	2700	136	M20 x 2.50 x 70	30.5	162	49.8	31.8	19.1	107	63.5	1.6
3	1068352	3000	3750	136	M20 x 2.50 x 80	25.4	220	75.2	41.4	25.4	159	82.6	4.6
3	1068361	4200	5250	312	M24 x 3.00 x 90	35.4	220	75.2	41.4	25.4	159	82.6	4.8
4	1068370	7000	8750	637	M30 x 3.50 x 140	66.2	285	94.2	50.8	31.8	199	102	9.7
4	1068389	11000	13750	1005	M36 x 4.00 x 130	56.2	285	94.2	50.8	31.8	199	102	10.2

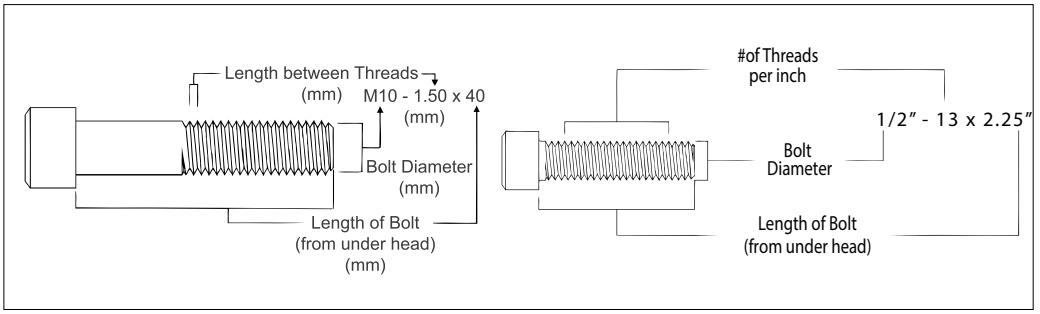
*Individually proof loaded to 2-1/2 times the Working Load Limit based on the 4:1 Design Factor.

11

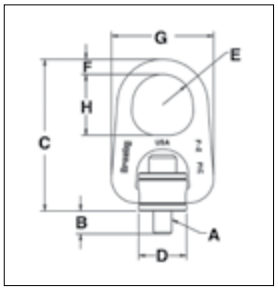
APPLICATION AND WARNING INFORMATION
SECTION 17

Crosby

HR-1000CT



- All load bearing components are heat treated, Quenched & Tempered alloy steel.
- All components, with the exception of the retaining ring, are produced with maximum material hardness of 34 HRc.
- All primary load-bearing components have Charpy impact testing. The body, bushing, washer and bail meet impact requirements of 31 ft-lb min. avg. at -4°F. The bolt meets impact requirements of 20 ft-lb min. avg. at -150°F.
- Individually magnetic particle inspected with certification.
- Forged bail provides the following:
  - Easily readable raised lettering showing the name Crosby or "CG" and PIC for material traceability.
  - Greater durability providing the increased toughness desired in potentially abusive field conditions.
  - Larger opening than standard hoist ring bail.
- Bolt specification is an alloy socket head cap screw to ASTM A320 Grade L7 or L43.
- Top washer is color-coded for easy identification (blue for UN threads and grey for Metric threads).
- The Working Load Limit and recommended torque value are permanently stamped into each washer.
- Individually Proof Tested to 2 times Working Load Limit (90° and in-line).
- BOLT SIZE IDENTIFICATION: The size of the bolt will be stated as in the drawing above. Illustration shows meaning of each dimension given.
- Type approval and certification in accordance with DNV Offshore Standard DNV-OS-E101, Drilling Plant, Standard for Certification DNVGL-ST-0378, Lifting Appliances, and DNVGL-SI-0166.
- Individually serialized.
- 100% MPI all primary load bearing components.
- Coating: Thermo-diffusion galvanized.
- Optional bolt sizes available upon request.



HR-1000CT UNC Threads

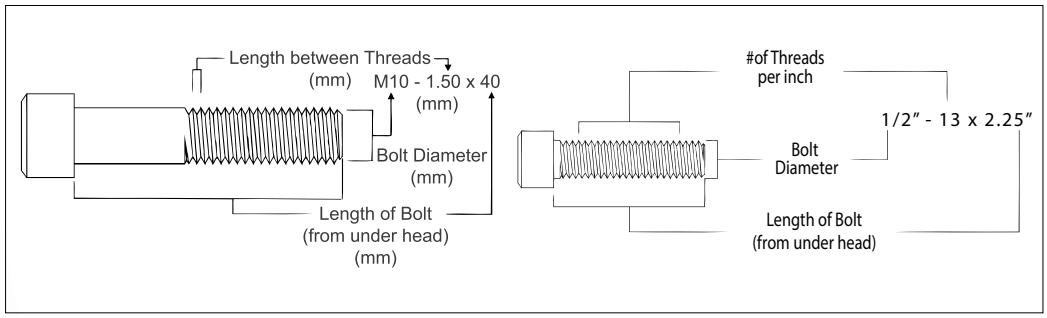
Frame Size No.	Stock No.	Working Load Limit (lb)	Torque (ft-lb)	Dimensions (in)								Mass Each (lb)
				Bolt Size A	Effective Thread Projection Length B	C	D	Radius E	Diameter F	G	H	
2	6608103	1900	28	1/2 - 13 x 2.25	0.70	6.32	1.96	1.25	0.75	4.20	2.50	3
2	6608112	1900	28	1/2 - 13 x 2.75	1.20	6.32	1.96	1.25	0.75	4.20	2.50	3
2	6608121	3000	60	5/8 - 11 x 2.25	0.70	6.32	1.96	1.25	0.75	4.20	2.50	3
3	6608130	4800	100	3/4 - 10 x 3.00	0.85	8.59	2.96	1.63	1.00	6.25	3.25	11
3	6608139	6200	160	7/8 - 9 x 3.00	0.85	8.59	2.96	1.63	1.00	6.25	3.25	11
3	6608148	8300	230	1 - 8 x 3.50	1.35	8.59	2.96	1.63	1.00	6.25	3.25	11
4	6608149	12500	470	1-1/4 - 7 x 5.00	2.10	11.31	3.71	2.00	1.44	8.13	4.00	24
4	6607669	20000	800	1-1/2 - 6 x 5.50	2.60	11.31	3.71	2.00	1.44	8.13	4.00	27
4	6607727	20000	800	1-1/2 - 8 x 5.50	2.60	11.31	3.71	2.00	1.44	8.13	4.00	27
5	6607670	28000	1100	2 - 4.5 x 7.50	3.20	15.15	4.00	2.69	1.75	11.64	5.00	69
6	6607671	45000	2100	2 1/2 - 4 x 9.50	3.73	19.93	5.75	3.00	2.75	14.47	5.62	157

5:1 Design Factor.

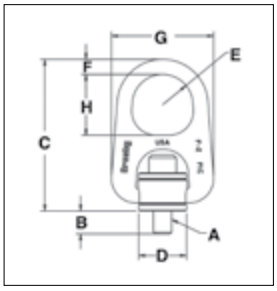
Load Tested Fatigue Tested

APPLICATION AND WARNING INFORMATION
SECTION 17

HR-1000MCT



- All load bearing components are heat treated, Quenched & Tempered alloy steel.
- All components, with the exception of the retaining ring, are produced with maximum material hardness of 34 HRc.
- All primary load-bearing components have Charpy impact testing. The body, bushing, washer and bail meet impact requirements of 31 ft-lb min. avg. at -4°F. The bolt meets impact requirements of 20 ft-lb min. avg. at -150°F.
- Individually magnetic particle inspected with certification.
- Forged bail provides the following:
  - Easily readable raised lettering showing the name Crosby or "CG" and PIC Code for material traceability.
  - Greater durability providing the increased toughness desired in potentially abusive field conditions.
  - Larger opening than standard hoist ring bail.
- Bolt specification is an alloy socket head cap screw to ASTM A320 Grade L7 or L43.
- Top washer is color-coded for easy identification (blue for UN threads and grey for Metric threads).
- The Working Load Limit and recommended torque value are permanently stamped into each washer.
- Individually Proof Tested to 2 times Working Load Limit (90° and in-line).
- BOLT SIZE IDENTIFICATION: The size of the bolt will be stated as in the drawing above. Illustration shows meaning of each dimension given.
- Type approval and certification in accordance with DNV Offshore Standard DNV-OS-E101, Drilling Plant, Standard for Certification DNVGL-ST-0378, Lifting Appliances, and DNVGL-SI-0166.
- Individually serialized.
- 100% MPI all primary load bearing components.
- Coating: Thermo-diffusion galvanized.
- Optional bolt sizes available upon request.



11

HR-1000MCT Metric Threads

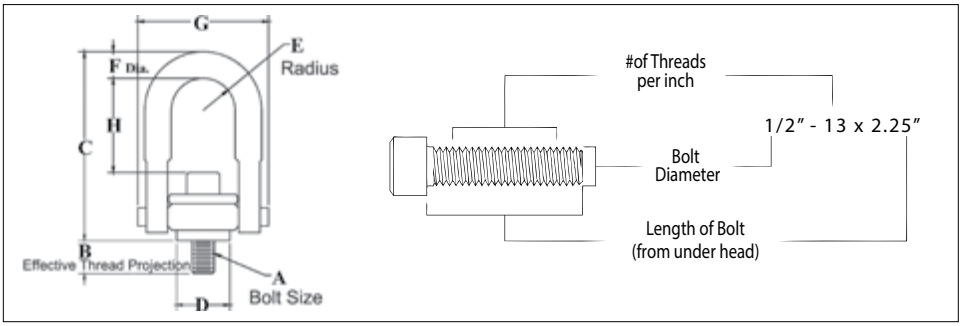
Frame Size No.	Stock No.	Working Load Limit (kg)		Torque (Nm)	Dimensions (mm)								Mass Each (kg)
		Design Factor 5:1	Design Factor 4:1		Bolt Size A	Eff. Thread Projection Length B	C	D	Radius E	Diameter F	G	H	
2	6630058	825	1,030	38	M12 x 1.75 x 55	15.6	160.6	49.7	31.8	19.1	106.7	63.5	1
2	6630059	1,350	1,690	81	M16 x 2.00 x 65	25.5	160.6	49.7	31.8	19.1	106.7	63.5	1
3	6630060	2,250	2,810	136	M20 x 2.50 x 80	25.3	218.2	75.1	41.4	25.4	158.8	82.6	5
3	6630061	3,175	3,970	312	M24 x 3.00 x 90	35.4	218.2	75.1	41.4	25.4	158.8	82.6	5
4	6630062	5,450	6,810	637	M30 x 3.50 x 140	65.9	287.3	94.1	50.8	36.6	206.5	101.6	11
4	6630063	7,450	9,310	1,005	M36 x 4.00 x 130	56.3	287.3	94.1	50.8	36.6	206.5	101.6	12
5	6630064	13,250	16,560	1,350	M48 x 5.00 x 180	70.7	384.9	101.6	68.3	44.5	295.6	127.0	30

5:1 Design Factor.

APPLICATION AND WARNING INFORMATION
SECTION 17

Crosby

SS-125UNC



- All components are 316 stainless steel, except bolt retainers, which are made from 15-7 PH (UNS 15700) magnetic stainless steel.
- Rated at 100 percent at 90 degree angle.
- Each product has a Product Identification Code (PIC) for material traceability, along with the Working Load Limit and the name Crosby or "CG" stamped into it.
- Individually proof tested to 2 times the Working Load Limit with certification.
- Fatigue Rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
- Washer is color-coded for easy identification (Red - UNC thread).
- Bolt specification is 316 stainless steel socket head cap screw to ASTM F837 Group 1 (316).
- BOLT SIZE IDENTIFICATION: The size of the bolt will be stated as in the drawing above. Illustration shows meaning of each dimension given.

SS-125UNC Threads

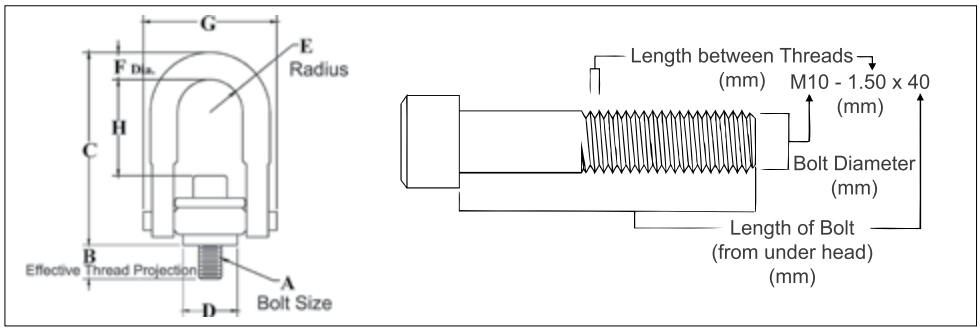
Frame Size No.	Stock No.	Working Load Limit (lb)	Torque (ft-lb)	Dimensions (in)								Weight Each (lb)
				Bolt Size A	Effective Thread Projection Length B	C	D	Radius E	Diameter F	G	H	
1	1065000	400	3.5	5/16 - 18 x 1.0	.29	2.67	.85	.43	.34	1.84	1.27	.30
1	1065004	400	3.5	5/16 - 18 x 1.25	.54	2.67	.85	.43	.34	1.84	1.27	.30
1	1065008	500	6	3/8 - 16 x 1.25	.54	2.67	.85	.43	.34	1.84	1.27	.30
2	1065016	1250	14	1/2 - 13 x 2.0	.78	4.78	1.45	.88	.69	3.52	2.31	2.6
2	1065020	1250	14	1/2 - 13 x 2.25	1.03	4.78	1.45	.88	.69	3.52	2.31	2.6
2	1065024	1250	14	1/2 - 13 x 2.5	1.28	4.78	1.45	.88	.69	3.52	2.31	2.6
2	1065028	2000	30	5/8 - 11 x 2.0	.78	4.78	1.45	.88	.69	3.52	2.18	2.6
2	1065032	2000	30	5/8 - 11 x 2.25	1.03	4.78	1.45	.88	.69	3.52	2.18	2.6
2	1065036	2000	30	5/8 - 11 x 2.5	1.28	4.78	1.45	.88	.69	3.52	2.18	2.6
2	1065040	2500	50	3/4 - 10 x 2.25	1.03	4.78	1.45	.88	.69	3.52	2.06	3.0
2	1065044	2500	50	3/4 - 10 x 2.75	1.53	4.78	1.45	.88	.69	3.52	2.06	3.0
3	1065048	3500	50	3/4 - 10 x 2.75	1.04	6.52	2.20	1.40	.94	5.14	3.06	7.0
3	1065052	3500	50	3/4 - 10 x 3.25	1.54	6.52	2.20	1.40	.94	5.14	3.06	7.0
3	1065056	4000	80	7/8 - 9 x 2.75	1.04	6.52	2.20	1.40	.94	5.14	2.93	7.0
3	1065060	4000	80	7/8 - 9 x 3.0	1.29	6.52	2.20	1.40	.94	5.14	2.93	7.0
3	1065064	5000	115	1 - 8 x 3.0	1.29	6.52	2.20	1.40	.94	5.14	2.81	7.5
3	1065068	5000	115	1 - 8 x 3.25	1.54	6.52	2.20	1.40	.94	5.14	2.81	7.5
3	1065072	5000	115	1 - 8 x 4.0	2.29	6.52	2.20	1.40	.94	5.14	2.81	7.5
4	1065080	7500	235	1-1/4 - 7 x 4.0	1.89	8.73	3.19	1.75	1.25	6.50	4.12	14.0
5	1065084	12000	400	1-1/2 - 6 x 5.5	2.70	12.47	4.87	2.25	1.75	8.55	6.41	34.0
5	1065088	15000	550	2 - 4.5 x 5.75	2.96	12.47	4.87	2.25	1.75	8.55	5.91	36.0
6	1065092	25000	1050	2-1/2 - 4 x 8.0	4.00	16.87	6.52	3.00	2.25	11.67	8.03	88.0
6	1065096	25000	1050	2-1/2 - 8 x 8.0	4.00	16.87	6.52	3.00	2.25	11.67	8.03	88.0
7	1065100	37500	2150	3 - 4 x 10.25	5.00	19.50	8.10	3.75	2.75	14.15	8.48	166.0
8	1065104	50000	2550	3-1/2 - 4 x 13	7.00	22.09	8.60	4.00	3.25	15.90	9.28	265.0

5:1 Design Factor.

Lead Rated Fatigue Rated

APPLICATION AND WARNING INFORMATION
SECTION 17

SS-125M



- All components are 316 stainless steel, except bolt retainers, which are made from 15-7 PH (UNS 15700) magnetic stainless steel.
- Rated at 100 percent at 90 degree angle.
- Each product has a Product Identification Code (PIC) for material traceability, along with the Working Load Limit and the name Crosby or "CG" stamped into it.
- Individually proof tested to 2 times the Working Load Limit with certification.
- Fatigue Rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
- Washer is color-coded for easy identification (Silver - Metric thread)).
- Bolt specification is 316 stainless steel socket head cap screw to ASTM F 837M (316).
- BOLT SIZE IDENTIFICATION: The size of the bolt will be stated as in the drawing above. Illustration shows meaning of each dimension given.

SS-125M Metric Threads

Frame Size No.	Stock No.	Working Load Limit (kg)	Torque in Nm	Dimensions (mm)								Weight Each (kg)
				Bolt Size A	Effective Thread Projection Length B	C	D	Radius E	Diameter F	G	H	
1	1065203	200	4	M8 x 1.25	13	68	21.6	11	8.5	47	32	.17
1	1065207	250	8	M10 x 1.50	18	68	21.6	11	8.5	47	30	.17
2	1065211	525	18	M12 x 1.75	19	121	37	22	17.5	89	60	1.1
2	1065215	950	40	M16 x 2.00	29	121	37	22	17.5	89	56	1.1
2	1065219	1075	68	M20 x 2.50	34	121	37	22	17.5	89	52	1.2
3	1065223	1500	68	M20 x 2.50	32	166	56	36	25	131	78	3.0
3	1065227	2100	108	M24 x 3.00	37	166	56	36	25	131	74	3.1
3	1065231	2100	108	M30 x 3.50	58	206	56	36	25	131	108	3.1
4	1065235	3500	318	M30 x 3.50	42	222	81	45	31	165	106	6.3
4	1065239	3500	318	M30 x 3.50	62	222	81	45	31	165	106	6.4
5	1065243	5500	542	M36 x 4.00	64	317	124	57	43	217	166	15.5
5	1065247	6250	542	M42 x 4.50	82	317	124	57	43	217	160	16.0
5	1065251	6750	542	M48 x 5.00	82	317	124	57	43	217	154	16.8
6	1065255	11150	1423	M64 x 6.00	101	428	165	76	56	296	204	39.0
7	1065259	15750	2915	M72 x 6.00	132	495	206	95	69	359	220	74.0
8	1065263	22300	3459	M90 x 6.00	177	561	216	102	83	404	235	118.0

5:1 Design Factor

11

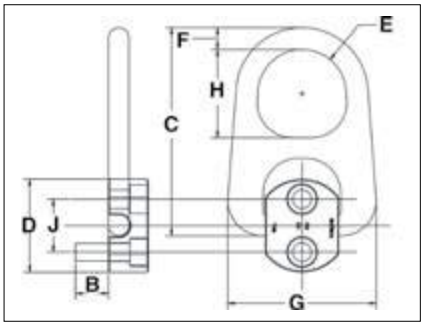
Load Tested Fatigue Tested

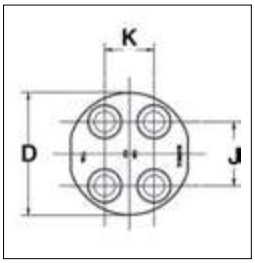
APPLICATION AND WARNING INFORMATION
SECTION 17

Crosby

HR-100UNC

- Forged bail provides the following:
  - Easily readable raised lettering showing the name Crosby or “CG” and PIC for material traceability.
  - More durability provides the increased toughness desired in potentially abusive field conditions.
  - Larger opening than standard hoist ring bails.
- 180 degree pivot action at full capacity.
- Bolts included as part of assembly.
- Individually Proof Tested to 2-1/2 times Working Load Limit.
- UNC Bolt specification is a Grade 8 alloy socket head cap screw to ASTM A574.





HR-100 Pivot Hoist Rings Coil Threads

Frame Size No.	Stock No.	Working Load Limit (lb)	Torque (ft-lb)	No. of Bolts	Weight Each (lb)	Dimensions (in)									
						Bolt Size A	Effective Thread Projection Length B	C	Diameter D	Radius E	F	G	H	J	K
1	1067408	2000	7	2	.6	5/16-18 x 1.25	.82	3.43	2.00	.62	.44	2.27	1.38	1.00	–
2	1067417	2500	12	2	3.1	3/8-16 x 1.25	.65	6.03	2.25	1.25	.75	4.20	2.50	1.13	–
2	1067426	5000	28	2	3.3	1/2-13 x 2.00	1.40	6.03	2.63	1.25	.75	4.20	2.50	1.50	–
3	1067435	12000	28	4	10.5	1/2-13 x 2.75	1.65	8.27	3.13	1.63	1.00	6.25	3.25	1.63	1.25
4	1067444	20000	60	4	22.0	5/8-11 x 3.25	1.65	10.63	4.47	2.00	1.25	7.82	4.00	2.06	1.25

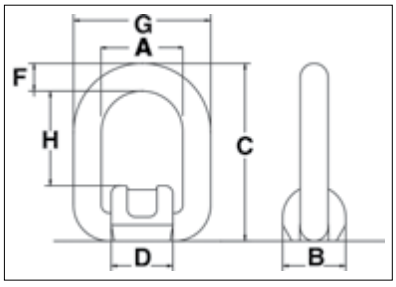
5:1 Design Factor

Lead Rated CE

APPLICATION AND WARNING INFORMATION
SECTION 17

S-265

- Widely used on farm machinery, trucks, steel hulled marine vessels and material handling equipment.
- Forged link and bracket — Quenched & Tempered.
- Excellent welding qualities.
- Reference American Welding Society specifications for proper welding procedures.



Q&T

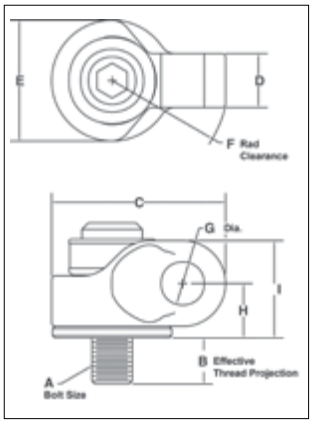
APPLICATION AND WARNING INFORMATION
SECTION 17

S-265 Forged Link

Working Load Limit (lb)		Stock No.	Weight Each (lb)	Dimensions (in)						
Design Factor 5:1	Design Factor 4:1			A	B	C	D	F	G	H
2200	2600	1290839	0.8	1.57	1.42	3.27	1.38	0.51	2.60	1.65
5500	7050	1290848	1.3	1.77	1.73	3.90	1.65	0.71	3.19	1.89
9250	11650	1290857	2.6	2.17	1.97	4.84	1.93	0.87	3.90	2.24
14100	17600	1290866	5.2	2.76	2.52	5.67	2.52	1.02	4.80	2.64
26450	33050	1290875	13.0	3.82	3.54	7.60	3.39	1.34	6.50	3.70

HR-1200

- Body components are alloy steel - Quenched & Tempered.
- Rated at 100% of Working Load Limit for angles up to 90 degrees.
- Each product is stamped with a Product Identification Code (PIC) for material traceability, along with a Working Load Limit, and the name Crosby or "CG."
- Hoist ring body is furnished with a yellow chromate finish for improved corrosion resistance.
- Utilize standard Crosby Red Pin® Shackles to connect to wire rope or synthetic slings (sold separately).
- Multiple bolt lengths available to meet specific application requirements.
- Individually Proof Tested to 2-1/2 times Working Load Limit.



HR-1200 UNC Side Pull Hoist Rings

Weight Each (lb)	Working Load Limit (lb)	Stock No.	Hoist Ring Bolt Torque (ft-lb)	Bolt Size A	Eff. Thread Proj. (in) B	Dimensions (in)							Recommended Shackles			
						C	D	E	F	Dia. G	H	I	Shackles 209, 210, 213, 215, 2130, 2150		Web Shackles S-281	
													Nominal Size (in)	WLL (t)	Web Size (in)	WLL (t)
.35	650	1067700	7	5/16-18x1.50	.59	1.93	.72	1.00	1.56	.80	.85	1.43	1/2, 5/8	2, 3-1/4	2	3-1/4
.36	800	1067704	12	3/8-16x1.50	.59	1.93	.72	1.00	1.56	.80	.85	1.43	1/2, 5/8	2, 3-1/4	2	3-1/4
1.4	2000	1067708	28	1/2-13x2.00	.71	2.97	.97	2.00	2.13	.93	1.07	1.79	5/8, 3/4	3-1/4, 4-3/4	2, 1.5	3-1/4, 4-1/2
1.4	2000	1067712	28	1/2-13x2.50	1.21	2.97	.97	2.00	2.13	.93	1.07	1.79	5/8, 3/4	3-1/4, 4-3/4	2, 1.5	3-1/4, 4-1/2
1.5	3000	1067716	60	5/8-11x2.00	.71	2.97	.97	2.00	2.13	.93	1.07	1.79	5/8, 3/4	3-1/4, 4-3/4	2, 1.5	3-1/4, 4-1/2
1.5	3000	1067720	60	5/8-11x2.75	1.46	2.97	.97	2.00	2.13	.93	1.07	1.79	5/8, 3/4	3-1/4, 4-3/4	2, 1.5	3-1/4, 4-1/2
4.5	5000	1067724	100	3/4-10x2.75	.90	4.32	1.34	3.00	3.00	1.07	1.35	2.42	7/8	6-1/2	2	6-1/4
4.6	5000	1067728	100	3/4-10x3.50	1.65	4.32	1.34	3.00	3.00	1.07	1.35	2.42	7/8	6-1/2	2	6-1/4
4.6	6500	1067732	160	7/8-9x2.75	.90	4.32	1.34	3.00	3.00	1.07	1.35	2.42	7/8	6-1/2	2	6-1/4
4.8	6500	1067736	160	7/8-9x3.50	1.65	4.32	1.34	3.00	3.00	1.07	1.35	2.42	7/8	6-1/2	2	6-1/4
4.8	8000	1067740	230	1 -8x3.00	1.15	4.32	1.34	3.00	3.00	1.07	1.35	2.42	7/8	6-1/2	2	6-1/4
5.0	8000	1067744	230	1 -8x4.00	2.15	4.32	1.34	3.00	3.00	1.07	1.35	2.42	7/8	6-1/2	2	6-1/4
10.2	14000	1067748	470	1-1/4-7x4.5	2.22	5.59	1.57	3.75	3.91	1.47	1.92	3.42	1, 1-1/8, 1-1/4	8-1/2, 9-1/2, 12	3	8-1/2
23.5	17200	1067756	800	1-1/2-6x6.5	2.98	7.31	2.06	4.75	5.19	2.11	2.41	4.29	1-3/8, 1-1/2, 1-3/4	13-1/2, 17, 25	-	-
25.3	29000	1067764	1100	2 -4.5x6.5	2.98	7.31	2.06	4.75	5.19	2.11	2.41	4.29	1-3/8, 1-1/2, 1-3/4	13-1/2, 17, 25	-	-

5:1 Design Factor.

HR-1200M Metric Side Pull Hoist Rings

Weight Each (kg)	Working Load Limit (kg)	Stock No.	Hoist Ring Bolt Torque (Nm)	Bolt Size A	Eff. Thread Proj. (mm) B	Dimensions (mm)							Recommended Shackles			
						C	D	E	F	G	H	I	Shackles 209, 210, 213, 215, 2130, 2150		Web Shackles S-281	
													Nominal Size (in)	WLL (t)	Web Size (in)	WLL (t)
.18	300	1067803	10	M8x1.25x40	16.9	49.0	18.3	25.4	39.6	20.3	21.6	36.3	1/2, 5/8	2, 3-1/4	2	3-1/4
.18	400	1067807	16	M10x1.50x40	16.9	49.0	18.3	25.4	39.6	20.3	21.6	36.3	1/2, 5/8	2, 3-1/4	2	3-1/4
.63	1000	1067811	38	M12x1.75x50	17.2	75.4	24.6	50.8	54.1	23.6	27.2	45.5	5/8, 3/4	3-1/4, 4-3/4	2, 1.5	3-1/4, 4-1/2
.68	1400	1067815	81	M16x2.0x60	27.2	75.4	24.6	50.8	54.1	23.6	27.2	45.5	5/8, 3/4	3-1/4, 4-3/4	2, 1.5	3-1/4, 4-1/2
2.0	2250	1067823	136	M20x2.5x75	28.1	110	34.0	76.2	76.2	27.2	34.4	61.5	7/8	6-1/2	2	6-1/4
2.2	3500	1067827	312	M24x3.0x80	33.1	110	34.0	76.2	76.2	27.2	34.4	61.5	7/8	6-1/2	2	6-1/4
4.5	6250	1067831	637	M30x3.5x120	65.1	142	39.9	95.3	99.3	37.3	48.8	86.9	1, 1-1/8,1-1/4	8-1/2, 9-1/2, 12	3	8-1/2
10.4	7750	1067835	1005	M36x4.0x150	60.6	186	52.3	121	132	53.6	61.2	109	1-3/8, 1-1/2,1-3/4	13-1/2, 17, 25	-	-
10.7	10000	1067839	1005	M42x4.5x160	70.6	186	52.3	121	132	53.6	61.2	109	1-3/8, 1-1/2,1-3/4	13-1/2, 17, 25	-	-
11.0	13000	1067843	1350	M48x5.0x160	70.6	186	52.3	121	132	53.6	61.2	109	1-3/8, 1-1/2,1-3/4	13-1/2, 17, 25	-	-

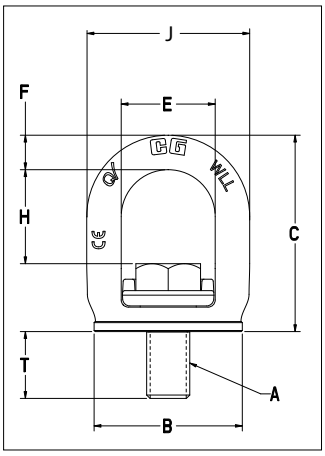
5:1 Design Factor.

Lead Tested CE

APPLICATION AND WARNING INFORMATION SECTION 17

SL-150

- When compared to respective size eye bolts, the Crosby SL-150 Slide-Loc™ has a larger eye opening for easy access.
- Bail is forged alloy steel – Quenched & Tempered.
- Bail swivels 360° degrees to keep the load aligned with the sling leg.
- Rated at 100% for 90 degree angle.
- Fatigue rated to 20,000 cycles at 1-1/2 times the Working Load Limit.
- Meets the Machinery Directive 2006/42/EC guidelines and is marked with CE accordingly.
- Bolt specification for metric bolt is Grade 10.9 alloy cap screw to ISO 898-1.
- Unique locking mechanism makes the lifting point well suited for quick attachment to load surface. No need for tools.
- Features QUIC-CHECK® markings on bail to assist in knowing when device is ready for lifting.



APPLICATION AND WARNING INFORMATION
SECTION 17

SL-150 UNC SLIDE-LOC™ LIFT POINT

Weight Each (lb)	Stock No.	Working Load Limit (t)*	Dimensions (in)							Effective Thread Projection Length
			Bolt Size A	B	C	E	F	H	J	T
0.30	1068407	0.50	3/8 - 16 x 1	1.40	2.09	1.10	0.33	1.11	1.77	0.60
0.53	1068416	0.75	1/2 - 13 x 1 - 1/4	1.67	2.47	1.30	0.41	1.30	2.13	0.79
1.10	1068425	1.50	5/8 - 11 x 1 - 5/8	2.17	2.98	1.46	0.52	1.46	2.50	1.01
2.05	1068434	2.30	3/4 - 10 x 2	2.71	3.59	1.72	0.63	1.72	2.98	1.26
2.16	1068443	2.30	7/8 - 9 x 2	2.71	3.61	1.72	0.63	1.72	2.98	1.23
3.73	1068452	3.20	1 - 8 x 2 - 1/2	3.25	4.33	2.08	0.76	1.93	3.59	1.59

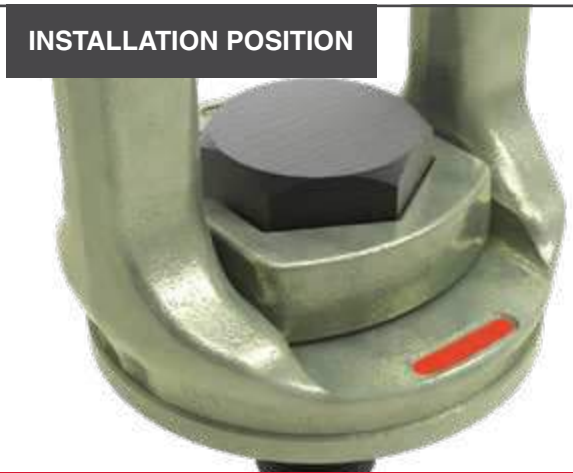
4:1 Design Factor.

SL-150 METRIC SLIDE-LOC™ LIFT POINT

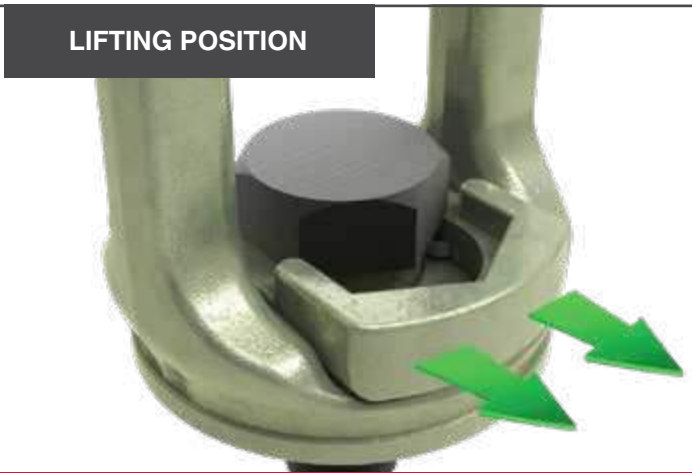
Weight Each (kg)	Stock No.	Working Load Limit (t)*	Dimensions (mm)							Effective Thread Projection Length
			Bolt Size A	B	C	E	F	H	J	T
0.14	1068515	0.50	M10X1.5 X 25	35.5	53.0	28.0	8.5	27.8	45.0	14.6
0.23	1068524	0.75	M12x1.75x30	42.5	62.6	33.0	10.5	32.9	54.0	18.3
0.50	1068533	1.50	M16x2x40	55.0	75.7	37.0	13.2	37.0	63.4	24.5
0.94	1068542	2.30	M20x2.5x50	68.8	91.1	43.9	16.0	43.6	75.6	31.0
1.60	1068551	3.20	M24x3x60	82.5	110.0	52.8	19.2	52.8	91.2	37.0

4:1 Design Factor.

INSTALLATION POSITION



LIFTING POSITION



The visible red QUIC-CHECK® mark indicates that the Crosby Slide-Loc™ is ready for installation but not for lifting.

QUIC-CHECK®

When the red QUIC-CHECK® mark is under the slide, the Crosby Slide-Loc™ is ready for lifting.

The Lifting Point Family

We offer a wide range of lifting points that will fit most lifting and lashing applications. In our lifting point family you will find a full system, from master link to lifting point.

Choosing the right lifting point for your operation can be tricky, most lifting points can be used for a lot of purposes. But in order to give some guidance, and what we consider best practice, we have created a cross-chart (as seen on next page) to be used as indication to which lifting point that might be best suited for your specific purpose.

Rotating Eye Lifting Point - RELP

The RELP is a compact and robust lifting point, ideal for top-mounting and when it is important to have quick and easy on-hooking. The lifting point is easy to assemble/disassemble with a standard allen key. On the bolt itself information such as the working load limit, mounting torque and manufacturing ID is stamped, so it is always available for the operator.

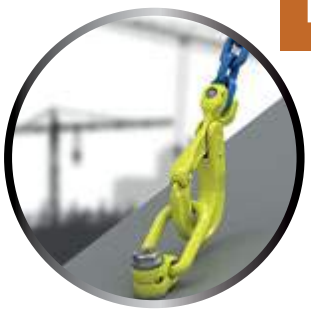
The RELP will automatically adjust to the loading direction which decreases the risk to load it incorrectly and endangering the lifting operation. For sensitive load surfaces the RELP is ideal, as the connecting sling hook will be positioned mainly parallel to the load surface, thus completely avoiding the hook causing damage on impact on the load. CE marked.

Rotating Lifting Point - RLP

The RLP has an easily dismountable D-ring to enable assembly of wiresling, master link or hook directly onto the lifting point.

RLP has a hexagon bolt (RFID prepared) to make it easy to disassemble/assemble with a wrench. The bolt is also clearly marked with information such as working load limit, mounting torque and manufacturer ID so it is always available to the operator. The RLP rotates 360° and pivots 180°, making it strong, flexible and reliable. CE marked.

De-centered Lifting Point - DLP



The design of the DLP allows the link to be folded over the housing when idle, allowing the lifting point to be almost completely stowed away when not in use.

The closed, oblong link is also equipped with a “stay-up”-function for easy on-hooking, (sizes up to M24) especially when there is limited space. This saves both the load from damage due to impacts from the hook, as well as making rigging fast and easy. The DLP is ideal in narrow spaces, such as corners or edge position, as the housing has a compact design.

DLP has a hexagon bolt (RFID prepared) to make it easy to disassemble/assemble with a wrench. The bolt is also clearly marked with information such as working load limit, mounting torque and manufacturer ID so it is always available to the operator. CE marked.

Ball-bearing Lifting Point - BLP

The BLP is a very versatile lifting point and can safely be used for most applications. The ball-bearings in the BLP allow the load to be rotated during the lift, which is especially good when maintenance is needed on heavy tools and other types of equipment.

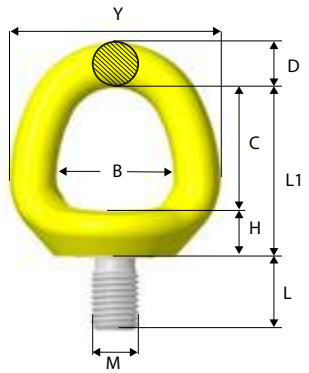
If the load surface is sensitive to impacts or scratches, the BLP is a good choice as it builds out from the load which makes it less likely that the lifting equipment will come in contact with it causing damage. The housing (RFID prepared) of the BLP is in-house drop-forged for increased strength and has a hexagon shape for easy mounting and dismounting. The housing is also clearly marked with information such as working load limit, mounting torque and manufacturer ID so it is always available to the operator. CE marked.




	RELP	RLP	DLP	BLP
Tight space	✓		✓	✓
Limited height (effective length)	✓	✓		
Vertical lift	✓	✓		✓
Angular lift		✓	✓	✓
Vertical rotation under load				✓
Tilting under load		✓	✓	✓
Sensitive load surface				✓
Single part lift	✓	✓		✓
Multiple part lift		✓	✓	✓
Integrated combination (hook or link)		✓		
RFID prepared		✓	✓	✓

This chart is intended to give guidance in choosing the right lifting point for your operation and is not rules for usage.
For more advice contact your closest Gunnebo Industries dealer.

Rotating Eye Lifting Point RELP



Stock No.	Code	B	C	D	E	H	L	L1	M	Y	Z	Weight (lb)
Z102408	RELP-M8 x 1.25	1.10	1.10	0.43	1.57	0.55	0.59	1.65	0.31	1.97	1.14	0.44
Z102410	RELP-M10 x 1.5	1.10	1.10	0.43	1.57	0.55	0.59	1.65	0.39	1.97	1.14	0.44
Z102412	RELP-M12 x 1.75	1.26	1.30	0.51	1.81	0.51	0.79	1.85	0.47	2.28	1.50	0.66
Z102416	RELP-M16 x 2	1.54	1.61	0.59	2.09	0.63	0.94	2.24	0.63	2.76	1.57	1.10
Z102420	RELP-M20 x 2.5	1.65	1.69	0.63	2.36	0.71	1.18	2.36	0.79	3.07	1.81	1.54
Z102424	RELP-M24 x 3	1.97	2.01	0.75	2.68	0.79	1.42	2.80	0.94	3.46	1.73	2.43
Z102430	RELP-M30 x 3.5	2.36	2.44	1.02	3.35	1.10	1.77	3.54	1.18	4.41	2.52	5.29
Z102436	RELP-M36 x 4	2.83	2.83	1.26	3.82	1.26	2.13	4.09	1.42	5.35	2.91	9.04
Z102442	RELP-M42 x 4.5	3.23	3.23	1.50	4.72	1.46	2.48	4.69	1.65	6.22	3.58	14.77
Z102448	RELP-M48 x 5	3.70	3.78	1.69	5.59	1.54	2.83	5.31	1.89	7.09	4.02	21.83

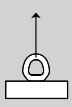
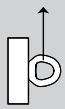
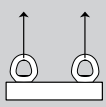
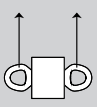
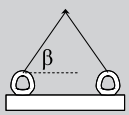
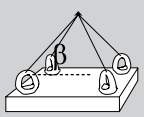
Bolt according to: ISO 898-1 Class 10.9

RELP with UNC thread

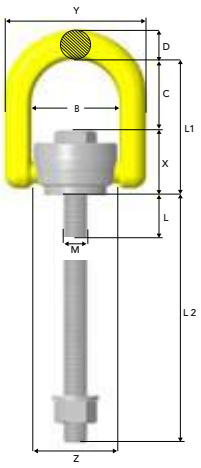
Stock No.	Code	B	C	D	E	H	L	L1	Y	Z	M	Weight (lb)
Z102508	RELP 5/16"-18 UNC	1.10	1.10	0.43	1.57	0.55	0.59	1.65	1.97	1.14	5/16"	0.44
Z102510	RELP 3/8"-16 UNC	1.10	1.10	0.43	1.57	0.55	0.59	1.65	1.97	1.14	3/8"	0.44
Z102512	RELP 1/2"-13 UNC	1.26	1.30	0.51	1.81	0.51	0.79	1.85	2.28	1.50	1/2"	0.66
Z102516	RELP 5/8"-11 UNC	1.54	1.61	0.59	2.09	0.63	0.94	2.24	2.76	1.57	5/8"	1.10
Z102520	RELP 3/4"10 UNC	1.65	1.69	0.63	2.36	0.71	1.18	2.36	3.07	1.81	3/4"	1.54
Z102521	RELP 7/8"-9 UNC	1.65	1.69	0.63	2.36	0.71	1.18	2.36	3.07	1.81	7/8"	1.54
Z102524	RELP 1"-8 UNC	1.97	2.01	0.75	2.68	0.79	1.42	2.80	3.46	1.73	1"	2.43
Z102530	RELP 1 1/4"-7 UNC	2.36	2.44	1.02	3.35	1.10	1.77	3.54	4.41	2.52	1 1/4"	5.29
Z102536	RELP 1 1/2"-6 UNC	2.83	2.83	1.26	3.82	1.26	2.13	4.09	5.35	2.91	1 1/2"	9.04
Z102542	RELP 1 3/4"-5 UNC	3.23	3.23	1.50	4.72	1.46	2.48	4.69	6.22	3.58	1 3/4"	14.99
Z102548	RELP 2"-4.5 UNC	3.70	3.78	1.69	5.59	1.54	2.83	5.31	7.09	4.02	2"	22.05

Bolt according to: ISO 898-1 Class 10.9

Working Load Limits* - RELP

Symmetric Load (lb)										
No. of Legs	1	1	2	2	2 symmetric		3 & 4 symmetric			
Angle ß	0°	90°	0°	90°	45°	30°	45°	30°	Tightening Torque	Allen Key
RELP -M8 x 1.25	1543	661	3086	1322	882	661	1322	882	10 Nm	8 mm
RELP 5/16"-18 UNC	1543	661	3086	1322	882	661	1322	882	7Ft.Lbs	5/16" UNC
RELP-M10x1,5	2645	1102	5290	2204	1543	1102	2204	1543	15 Nm	8 mm
RELP 3/8"-16 UNC	2645	1102	5290	2204	1543	1102	2204	1543	11Ft.Lbs	5/16" UNC
RELP - M12x1,75	4408	1763	8816	3526	2424	1763	3526	2645	27 Nm	8 mm
RELP 1/2"-13 UNC	4408	1763	8816	3526	2424	1763	3526	2645	20Ft.Lbs	5/16" UNC
RELP - M16x2	7714	3306	15428	6612	4628	3306	6832	4849	60 Nm	8 mm
RELP 5/8"-11 UNC	7714	3306	15428	6612	4628	3306	6832	4849	44Ft.Lbs	5/16" UNC
RELP - M20x2,5	13444	5290	26889	10579	7273	5290	11020	7934	90 Nm	19 mm
RELP 3/4"-10 UNC	11020	5069	22040	10138	6832	5069	10579	7494	66Ft.Lbs	3/4" UNC
RELP 7/8"-9 UNC	13444	6392	26889	12783	8948	6392	13422	9477	66Ft.Lbs	3/4" UNC
RELP - M24x3	17852	7273	35705	14546	10138	7273	15208	10800	135 Nm	19 mm
RELP 1"-8 UNC	17852	7273	35705	14546	10138	7273	15208	10800	100Ft.Lbs	3/4" UNC
RELP - M30x3,5	26668	10138	53337	20277	14106	10138	21158	15208	270 Nm	19 mm
RELP 1 1/4"-7 UNC	26668	10138	53337	20277	14106	10138	21158	15208	200Ft.Lbs	3/4" UNC
RELP - M36x4	35484	15648	70969	31297	21820	15648	32840	23362	320 Nm	19 mm
RELP 1 1/2"-6 UNC	35484	15648	70969	31297	21820	15648	32840	23362	236Ft.Lbs	3/4" UNC
RELP - M42x4,5	52896	20056	105792	40113	28079	20056	42118	29974	600 Nm	19 mm
RELP 1 3/4"-5 UNC	52896	20056	105792	40113	28079	20056	42118	29974	440Ft.Lbs	3/4" UNC
RELP - M48x5	70528	26668	141056	53337	37336	26668	56004	39892	800 Nm	19 mm
RELP 2"-4,5 UNC	70528	26668	141056	53337	37336	26668	56004	39892	590Ft.Lbs	3/4" UNC

GUNNEBO Industries



Rotating Lifting Point RLP

CE

Stock No. Standard Bolt Length	L	Stock No. Long Bolt Length**	L2	Code	B	C	D	L1	M	X	Y	Z	Weight (lb)***
Z101708	0.63	Z1017080L	3.98	RLP-M8 x 1.25	1.65	1.38	0.47	2.44	0.31	1.06	2.52	Ø1.57	0.66
Z101710	0.63	Z1017100L	3.98	RLP -M10 x 1.5	1.65	1.38	0.47	2.44	0.39	1.06	2.52	Ø1.57	0.66
Z101712	0.98	Z1017120L	4.72	RLP -M12 x 1.75	2.24	1.81	0.75	3.46	0.47	1.65	3.58	Ø2.13	2.20
Z101716	0.98	Z1017160L	6.30	RLP-M16 x 2	2.24	1.81	0.75	3.46	0.63	1.65	3.58	Ø2.13	2.20
Z101720	1.42	Z1017200L	7.87	RLP-M20 x 2.5	3.27	2.17	1.10	4.33	0.79	2.17	5.24	Ø3.15	6.39
Z101724	1.42	Z1017240L	9.45	RLP-M24 x 3	3.27	2.17	1.10	4.33	0.94	2.17	5.24	Ø3.15	6.39
Z101730	2.28	Z1017300L	11.81	RLP-M30 x 3.5	4.49	2.76	1.34	5.83	1.18	3.07	7.17	Ø4.37	15.65
Z101736	2.28	Z1017360L	11.81	RLP-M36 x 4	4.49	2.76	1.34	5.83	1.42	3.07	7.17	Ø4.37	16.09
Z101742	3.19	Z1017420L	11.85	RLP-M42 x 4.5	5.87	3.58	1.57	7.48	1.65	3.90	9.02	Ø5.59	31.53
Z101748	3.19	Z1017480L	11.85	RLP-M48 x 5	5.87	3.58	1.57	7.48	1.89	3.90	9.02	Ø5.59	31.97

** Long Bolt supplied with nut and washer. *** Weight is calculated with standard bolt length.
Bolt, nut and washer according to: ISO 898-1 Class 10.9

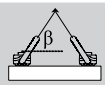
RLP with UNC thread

CE

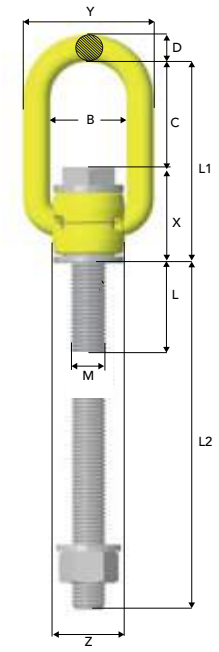
Stock No. Standard Bolt Length	L	Stock No. Long Bolt Length**	L2	Code	B	C	D	L1	X	Y	Z	M	Weight (lb)***
Z101808	0.63	Z1018080L	3.98	RLP-5/16"-18 UNC	1.65	1.38	0.47	2.44	1.06	2.52	Ø1.57	5/16"	0.66
Z101810	0.63	Z1018100L	3.98	RLP-3/8"-16 UNC	1.65	1.38	0.47	2.44	1.06	2.52	Ø1.57	3/8"	0.66
Z101812	0.98	Z1018120L	4.72	RLP-1/2"-13 UNC	2.24	1.81	0.75	3.46	1.65	3.58	Ø2.13	1/2"	2.20
Z101816	0.98	Z1018160L	6.30	RLP-5/8"-11 UNC	2.24	1.81	0.75	3.46	1.65	3.58	Ø2.13	5/8"	2.20
Z101820	1.42	Z1018200L	7.87	RLP-3/4"-10 UNC	3.27	2.17	1.10	4.33	2.17	5.24	Ø3.15	3/4"	6.39
Z101821	1.42	Z1018210L	7.87	RLP-7/8"-9 UNC	3.27	2.17	1.10	4.33	2.17	5.24	Ø3.15	7/8"	6.39
Z101824	1.42	Z1018240L	9.45	RLP 1"-8 UNC	3.27	2.17	1.10	4.33	2.17	5.24	Ø3.15	1"	6.39
Z101830	2.28	Z1018300L	11.81	RLP 1 1/4"-7 UNC	4.49	2.76	1.34	5.83	3.07	7.17	Ø4.37	1 1/4"	15.65
Z101836	2.28	Z1018360L	11.81	RLP 1 1/2"-6 UNC	4.49	2.76	1.34	5.83	3.07	7.17	Ø4.37	1 1/2"	16.09
Z101842	3.19	Z1018420L	11.85	RLP 1 3/4"-5 UNC	5.87	3.58	1.57	7.48	3.90	9.02	Ø5.59	1 3/4"	31.75
Z101848	3.19	Z1018480L	11.85	RLP 2" -4.5 UNC	5.87	3.58	1.57	7.48	3.90	9.02	Ø5.59	2"	32.41

** Long Bolt supplied with nut and washer. *** Weight is calculated with standard bolt length.
Bolt, nut and washer according to: ISO 898-1 Class 10.9

Working Load Limits* - RLP

Symmetric Load (lb)										
No. of Legs	1	1	2	2	2 Symmetric		3 & 4 Symmetric			
Angle ß	0°	90°	0°	90°	45°	30°	45°	30°	Tightening Torque	Spanner Size
RLP - M8 x 1.25	1763	882	3526	1763	1102	882	1763	1322	10 Nm	13 mm
RLP 5/16"-18 UNC	1763	882	3526	1763	1102	882	1763	1322	7 Ft.lb	1/2"
RLP - M10 x 1.5	2645	1543	5290	3086	1984	1543	3086	2204	15 Nm	13 mm
RLP 3/8"-16 UNC	2645	1433	5290	2865	1984	1322	2865	1984	11 Ft.lb	1/2"
RLP - M12 x 1.75	4408	2645	8816	5290	3526	2645	5510	3967	27 Nm	24 mm
RLP 1/2"-13 UNC	4408	2645	8816	5290	3526	2645	5510	3967	20 Ft.lb	15/16"
RLP - M16 x 2	7053	4408	14106	8816	6171	4408	9257	6612	60 Nm	24 mm
RLP 5/8"-11 UNC	7053	4408	14106	8816	6171	4408	9257	6612	44 Ft.lb	15/16"
RLP - M20 x 2.5	12342	6171	24685	12342	8596	6171	12783	9257	90 Nm	32 mm
RLP 3/4"-10 UNC	11020	5510	22040	11020	7714	5510	11461	8155	66 Ft.lb	1 5/16"
RLP 7/8"-9 UNC	12342	6171	24685	12342	8596	6171	12783	9257	66 Ft.lb	1 5/16"
RLP - M24 x 3	17632	10138	35264	20277	14106	10138	21158	15208	135 Nm	32 mm
RLP 1"-8 UNC	17632	10138	35264	20277	14106	10138	21158	15208	100 Ft.lb	1 5/16"
RLP - M30 x 3.5	26448	13224	52896	26448	18514	13224	27770	19836	270 Nm	55 mm
RLP 1 1/4"-7 UNC	26448	13224	52896	26448	18514	13224	27770	19836	200 Ft.lb	2 1/4"
RLP - M36 x 4	30856	17632	61712	35264	24685	17632	37027	26448	320 Nm	55 mm
RLP 1 1/2"-6 UNC	30856	17632	61712	35264	24685	17632	37027	26448	236 Ft.lb	2 1/4"
RLP - M42 x 4.5	35264	30856	70528	61712	43198	30856	64798	46284	600 Nm	75 mm
RLP 1 3/4"-5 UNC	35264	30856	70528	61712	43198	30856	64798	46284	440 Ft.lb	3"
RLP - M48 x 5	44080	35264	88160	70528	49370	35264	74054	52896	800 Nm	75 mm
RLP 2" -4.5 UNC	44080	35264	88160	70528	49370	35264	74054	52896	590 Ft.lb	3"

Disassembly of the RLP is made easy by just folding the D-ring forward and push down.



De-centered Lifting Point DLP

Stock No. Standard Bolt Length	L	Stock No. Long Bolt Length**	L2	Code	B	C	D	E	F	G	L1	M	X	Y	Z	Weight (lb)***
Z102208	0.51	Z1022080L	3.84	DLP-M8 x 1.25	1.38	1.89	0.39	1.54	0.55	0.39	3.07	0.31	1.18	2.17	1.02	0.66
Z102210	0.51	Z1022100L	3.84	DLP -M10 x 1.5	1.38	1.89	0.39	1.54	0.55	0.39	3.07	0.39	1.18	2.17	1.02	0.66
Z102212	0.91	Z1022120L	4.65	DLP -M12 x 1.75	1.38	1.89	0.47	2.01	0.79	0.55	3.58	0.47	1.73	2.32	1.26	1.10
Z102216	0.91	Z1022160L	6.22	DLP-M16 x 2	1.38	1.89	0.47	2.01	0.79	0.55	3.58	0.63	1.73	2.32	1.26	1.10
Z102220	1.34	Z1022200L	7.80	DLP-M20 x 2.5	2.13	3.46	0.71	2.80	1.10	0.71	5.71	0.79	2.28	3.54	1.89	3.53
Z102224	1.34	Z1022240L	9.37	DLP-M24 x 3	2.13	3.46	0.71	2.80	1.10	0.71	5.71	0.94	2.28	3.54	1.89	3.75
Z102230	2.09	Z1022300L	11.61	DLP-M30 x 3.5	3.23	3.70	1.02	4.09	1.54	1.06	7.17	1.18	3.46	4.80	2.95	11.02
Z102236	2.09	Z1022360L	11.61	DLP-M36 x 4	3.23	3.70	1.02	4.09	1.54	1.06	7.17	1.42	3.46	4.80	2.95	11.46
Z102242	2.87	Z1022420L	11.54	DLP-M42 x 4.5	3.94	4.09	1.42	5.35	2.13	1.34	8.50	1.65	4.45	6.14	4.33	25.57
Z102248	2.87	Z1022480L	11.54	DLP-M48 x 5	3.94	4.06	1.42	5.35	2.13	1.34	8.50	1.89	4.45	6.14	4.33	26.24

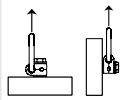
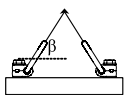
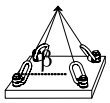
** Long Bolt supplied with nut and washer. *** Weight is calculated with standard bolt length.
Bolt, nut and washer according to: ISO 898-1 Class 10.9

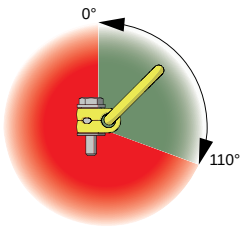
DLP with UNC thread

Stock No. Standard Bolt Length	L	Stock No. Long Bolt Length**	L2	Code	B	C	D	E	F	G	L1	X	Y	Z	M	Weight (lb)***
Z102308	0.51	Z1023080L	3.84	DLP-5/16"-18 UNC	1.38	1.89	0.39	1.54	0.55	0.39	3.07	1.18	2.17	1.02	5/16"	0.66
Z102310	0.51	Z1023100L	3.84	DLP-3/8"-16 UNC	1.38	1.89	0.39	1.54	0.55	0.39	3.07	1.18	2.17	1.02	3/8"	0.66
Z102312	0.91	Z1023120L	4.65	DLP-1/2"-13 UNC	1.38	1.89	0.47	2.01	0.79	0.55	3.58	1.73	2.32	1.26	1/2"	1.10
Z102316	0.91	Z1023160L	6.22	DLP-5/8"-11 UNC	1.38	1.89	0.47	2.01	0.79	0.55	3.58	1.73	2.32	1.26	5/8"	1.10
Z102320	1.34	Z1023200L	7.80	DLP-3/4"-10 UNC	2.13	3.46	0.71	2.80	1.10	0.71	5.71	2.28	3.54	1.89	3/4"	3.53
Z102321	1.34	Z1023210L	7.80	DLP-7/8"-9 UNC	2.13	3.46	0.71	2.80	1.10	0.71	5.71	2.28	3.54	1.89	7/8"	3.53
Z102324	1.34	Z1023240L	9.37	DLP-1"-8 UNC	2.13	3.46	0.71	2.80	1.10	0.71	5.71	2.28	3.54	1.89	1"	3.75
Z102330	2.09	Z1023300L	11.61	DLP- 1 1/4"-7 UNC	3.23	3.70	1.02	4.09	1.54	1.06	7.17	3.46	4.80	2.95	1 1/4"	12.13
Z102336	2.09	Z1023360L	11.61	DLP-1 1/2"-6 UNC	3.23	3.70	1.02	4.09	1.54	1.06	7.17	3.46	4.80	2.95	1 1/2"	12.57
Z102342	2.87	Z1023420L	11.54	DLP-1 3/4"-5 UNC	3.94	4.06	1.42	5.35	2.13	1.34	8.50	4.45	6.14	4.33	1 3/4"	25.79
Z102348	2.87	Z1023480L	11.54	DLP-2"- 4.5 UNC	3.94	4.06	1.42	5.35	2.13	1.34	8.50	4.45	6.14	4.33	2"	26.68

** Long Bolt supplied with nut and washer. *** Weight is calculated with standard bolt length.
Bolt, nut and washer according to: ISO 898-1 Class 10.9

Working Load Limits* - DLP

Symmetric Load (lb)								
No. of Legs	1	2	2 Symmetric		3 & 4 Symmetric			
Angle ß	0°-90°	0°-90°	45°	30°	45°	30°	Tightening Torque	Spanner Size
DLP-M8	771	1543	1102	771	1543	1102	10 Nm	13 mm
DLP-5/16"-18 UNC	771	1543	1102	771	1543	1102	7Ft.lb	1/2"
DLP -M10	1433	2865	1984	1433	3086	2204	15 Nm	13 mm
DLP-3/8"-16 UNC	1322	2645	1763	1322	2865	2204	11Ft.lb	1/2"
DLP -M12	2204	4408	3086	2204	4628	3306	27 Nm	24 mm
DLP-1/2"-13 UNC	2204	4408	3086	2204	4628	3306	20Ft.lb	15/16"
DLP-M16	3967	7934	5510	3967	8155	5951	60 Nm	24 mm
DLP-5/8"-11 UNC	3526	7053	4849	3526	7273	5290	44Ft.lb	15/16"
DLP - M20x2.5	5730	11461	7714	5730	11902	8596	90 Nm	32 mm
DLP 3/4"-10 UNC	4849	9698	6612	4849	10138	7273	66Ft.lb	1 5/16"
DLP 7/8"-9 UNC	5730	11461	7934	5730	11902	8596	66Ft.lb	1 5/16"
DLP - M24x3	9036	18073	12563	9036	18954	13444	135 Nm	32 mm
DLP 1"-8 UNC	9036	18073	12563	9036	18954	13444	100Ft.lb	1 5/16"
DLP - M30x3.5 (Preliminary)	11020	22040	15428	11020	23142	16530	270 Nm	55 mm
DLP 1 1/4"-7 UNC (Preliminary)	11020	22040	15428	11020	23142	16530	200Ft.lb	2 1/4"
DLP - M36x4 (Preliminary)	15428	30856	21599	15428	32399	23142	320 Nm	55 mm
DLP 1 1/2"-6 UNC (Preliminary)	15428	30856	21599	15428	32399	23142	236Ft.lb	2 1/4"
DLP - M42x4.5 (Preliminary)	33060	66120	46284	33060	69426	49590	600 Nm	75 mm
DLP 1 3/4"-5 UNC (Preliminary)	33060	66120	46284	33060	69426	49590	440Ft.lb	3"
DLP - M48x5 (Preliminary)	44080	88160	61712	44080	92568	66120	800 Nm	75 mm
DLP 2"-4.5 UNC (Preliminary)	44080	88160	61712	44080	92568	66120	590Ft.lb	3"



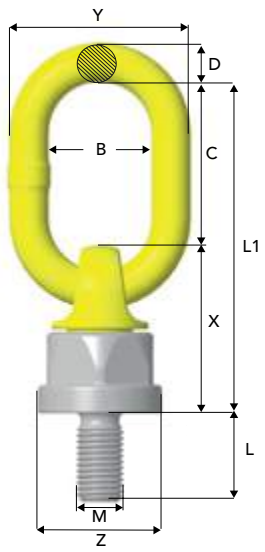
- The DLP can only be loaded from 0° to 110° degrees
- Rotation around screw axis when loaded at 0°-15° is not allowed.

GUNNEBO Industries

Ball-bearing Lifting Point BLP

CE

Stock No.	Code	B	C	D	L	L1	M	X	Y	Z	Weight (lb)
Z102008	BLP-M8 x 1.25	1.38	2.17	0.51	0.63	4.41	0.31	2.24	2.44	Ø1.65	1.32
Z102010	BLP -M10 x 1.5	1.38	2.17	0.51	0.79	4.41	0.39	2.24	2.40	Ø1.65	1.32
Z102012	BLP -M12 x 1.75	1.38	2.17	0.51	0.94	4.41	0.47	2.24	2.40	Ø1.65	1.32
Z102016	BLP-M16 x 2	1.38	2.17	0.51	1.18	4.41	0.63	2.24	2.40	Ø1.65	1.32
Z102020	BLP-M20 x 2.5	1.34	2.24	0.67	1.18	5.20	0.79	2.95	2.64	Ø2.32	2.87
Z102024	BLP-M24 x 3	1.97	2.76	0.67	1.42	5.71	0.94	2.95	3.31	Ø2.32	3.31
Z102030	BLP-M30 x 3.5	2.13	3.78	0.87	1.77	4.02	1.18	4.17	3.90	Ø2.91	7.50
Z102036	BLP-M36 x 4	2.13	3.78	0.87	2.13	4.02	1.42	4.17	3.90	Ø2.91	7.72
Z102042	BLP-M42 x 4.5	2.76	4.72	1.10	2.48	9.53	1.65	4.80	5.00	Ø3.66	14.33
Z102048	BLP-M48 x 5	2.76	4.72	1.10	2.83	9.53	1.89	4.80	5.00	Ø3.66	14.99

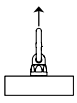
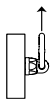
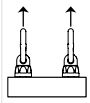
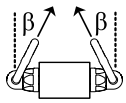
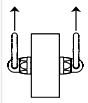
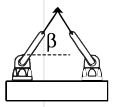


BLP with UNC thread

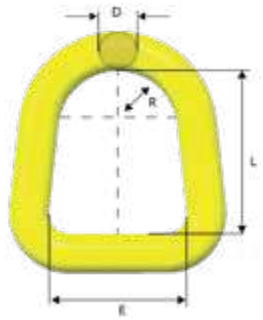
CE

Stock No.	Code	B	C	D	L	L1	X	Y	Z	M	Weight (lb)
Z102108	BLP-5/16”-18 UNC	1.38	2.17	0.51	0.63	4.41	2.24	2.40	Ø1.65	5/16"	1.32
Z102110	BLP-3/8”-16 UNC	1.38	2.17	0.51	0.79	4.41	2.24	2.40	Ø1.65	3/8"	1.32
Z102112	BLP-1/2”-13 UNC	1.38	2.17	0.51	0.94	4.41	2.24	2.40	Ø1.65	1/2"	1.32
Z102116	BLP-5/8”-11 UNC	1.38	2.17	0.51	1.18	4.41	2.24	2.40	Ø1.65	5/8"	1.32
Z102120	BLP-3/4”-10 UNC	1.34	2.24	0.67	1.18	5.20	2.95	2.64	Ø2.32	3/4"	2.87
Z102121	BLP-7/8”-9 UNC	1.34	2.24	0.67	1.18	5.20	2.95	2.64	Ø2.32	7/8"	2.87
Z102124	BLP-1”-8 UNC	1.97	2.76	0.67	1.50	5.71	2.95	3.31	Ø2.32	1”	3.31
Z102130	BLP-1 1/4”-7 UNC	2.13	3.78	0.87	1.89	7.95	4.17	3.90	Ø2.91	1 1/4”	7.50
Z102136	BLP-1 1/2”-6 UNC	2.13	3.78	0.87	2.24	7.95	4.17	3.90	Ø2.91	1 1/2”	7.94
Z102142	BLP-1 3/4”-5 UNC	2.76	4.72	1.10	2.64	9.53	4.80	5.00	Ø3.66	1 3/4”	14.55
Z102148	BLP-2”-4.5 UNC	2.76	4.72	1.10	2.99	9.53	4.80	5.00	Ø3.66	2”	15.43

Working Load Limits* - BLP

Symmetric Load (lb)											
No. of Legs	1	1	2	2	2	2 Symmetric		3 & 4 Symmetric			
Angle ß	0°*	90°	0°	0 - 45°	90°	0 - 45°	45° - 60°	0 - 45°	45° - 60°	Tightening torque	Spanner Size
BLP -M8x1.25	1322	661	2645	1322	882	661	882	882	992	10 Nm	36 mm
BLP 5/16”-18 UNC	1322	661	2645	1322	882	661	882	882	992	7Ft.Lb	1 1/2” UNC
BLP -M10x1.5	2204	1102	4408	2204	1543	1102	1543	1543	1653	15 Nm	36 mm
BLP 3/8”-16 UNC	1763	882	3526	1763	1102	882	1102	1102	1322	11Ft.Lb	1 1/2” UNC
BLP -M12x1.75	3306	1653	6612	3306	2425	1653	2424	2424	2424	27 Nm	36 mm
BLP 1/2”-13 UNC	3306	1653	6612	3306	2425	1653	2424	2424	2424	20Ft.Lb	1 1/2” UNC
BLP -M16x2	6612	3306	13224	6612	4630	3306	4628	4628	4849	60 Nm	36 mm
BLP 5/8”-11 UNC	6612	3306	13224	6612	4630	3306	4628	4628	4849	44Ft.Lb	1 1/2” UNC
BLP -M20x2.5	11020	5510	22040	11020	7716	5510	7714	7714	8155	90 Nm	50 mm
BLP 3/4”-10 UNC	9918	4959	19836	9918	6834	4959	6832	6832	7273	66Ft.Lb	2” UNC
BLP 7/8”-9 UNC	13224	6612	26448	13224	9259	6612	9257	9257	9918	66Ft.Lb	2” UNC
BLP-M24x3	15428	8816	30856	17632	12346	8816	12342	12342	13224	135 Nm	50 mm
BLP-1”-8 UNC	15428	8816	30856	17632	12346	8816	12342	12342	13224	100Ft.Lb	2” UNC
BLP-M30x3.5	26448	13224	52896	26448	18519	13224	18514	18514	19836	270 Nm	65 mm
BLP-1 1/4”-7 UNC	26448	13224	52896	26448	18519	13224	18514	18514	19836	200Ft.Lb	2 5/8" UNC
BLP-M36x4	30856	17632	61712	35264	24692	17632	24685	24685	26448	320 Nm	65 mm
BLP-1 1/2”-6 UNC	30856	17632	61712	35264	24692	17632	24685	24685	26448	236Ft.Lb	2 5/8" UNC
BLP-M42x4.5	35264	22040	70528	44080	30864	22040	30856	30856	33060	600 Nm	85 mm
BLP-1 3/4”-5 UNC	35264	22040	70528	44080	30864	22040	30856	30856	33060	440Ft.Lb	3 1/8" UNC
BLP-M48x5	39672	28652	79344	57304	40124	28652	40113	40113	42978	800 Nm	85 mm
BLP-2”-4.5 UNC	39672	28652	79344	57304	40124	28652	40113	40113	42978	590Ft.Lb	3 1/8" UNC

* provided only axial loading takes place, ie no bending force applied in the direction of the thread.

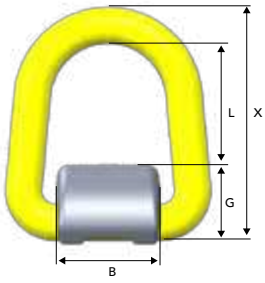


Master Link D

CE

Stock No.	Code	WLL (lb)*	E	D	L	R	Weight (lb)
Z7008771	D-14-10	5510	2.17	0.55	2.56	0.94	0.88
Z7008781	D-17-10	8800	2.52	0.67	2.44	1.14	1.10
Z7008801	D-22-10	15428	2.99	0.87	3.54	1.30	2.20
Z7008791	D-27-10	22040	3.35	1.06	3.86	1.50	4.19
Z7008792	D-32-10	35300	4.49	1.26	5.47	1.97	7.72

The load bearing width must be at least 0.5 x E.

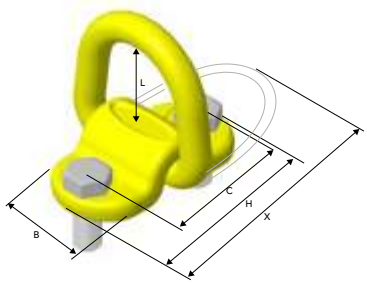


Weldable Lifting Point WLP

CE

Stock No.	Code	WLL (lb)*	B	G	L	X	Weight (lb)
Z7009001	WLP-2.5T	5510	1.97	1.06	2.09	3.74	1.10
Z7009011	WLP-4T	8800	2.28	1.34	1.89	3.82	1.76
Z7009021	WLP-7T	15428	2.52	1.61	2.87	5.31	3.97
Z7009031	WLP-10T	22040	2.56	2.05	2.87	5.98	7.50
Z7009041	WLP-16T	35300	3.54	2.60	4.13	7.99	14.77

Supplied with spring for stay up function.
Master Link measurements , see Master Link D above.

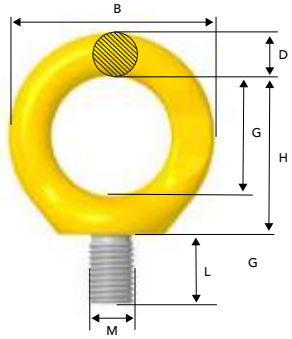


Screw-on Lifting Point SLP

CE

Stock No.	Code	WLL (lb)*	B	C	H	L	M (metric thread)	X	Bolt Protrusion	Weight (lb)
Z7009881	SLP-1T	2204	1.97	2.83	3.86	2.13	M14	5.47	25	1.76
Z7009871	SLP-3T	6612	2.28	3.31	4.49	1.93	M16	5.67	28	2.87
Z7009861	SLP-5T	11020	2.52	4.57	6.30	2.80	M20	7.99	34	5.73

Supplied with bolt and spring for stay up function.
Bolt according to: ISO 898-1 Class 10.9.
Master Link measurements, see Master Link D above.



Eye Lifting Point ELP

CE

Stock No.	Code	WLL		B	D	G	H	L	M	Weight (lb)
		metric tonnes*	(lb)							
Z100434	ELP-16-8	1.0**	2204	2.83	0.63	1.65	2.17	0.94	M16	0.88
Z100435	ELP-20-8	1.5**	3306	2.83	0.63	1.65	2.28	1.18	M20	0.88
Z100436	ELP-24-8	2.0**	4500	3.46	0.75	1.89	2.72	1.42	M24	1.98
Z100437	ELP-30-8	3.0**	6612	4.17	0.87	2.36	3.31	1.77	M30	3.09

** In case of 1-leg application where loading is limited to straight loading in the direction of thread (no bending force) it is possible to use ELP with four times higher WLL. Note! Threaded depths need to be at least 1xM for steel, 1.25xM for cast iron and 2xM for aluminum alloy.

GUNNEBO Industries

Spare Parts

Standard length bolt and long bolt for RLP and DLP are available as spare parts.

RDRLP - Metric

Standard length bolt including locking ring

Stock No.	Code
Z1017081	RDRLP-M8x1,25
Z1017101	RDRLP-M10x1,5
Z1017121	RDRLP-M12x1,75
Z1017161	RDRLP-M16x2
Z1017201	RDRLP-M20x2,5
Z1017241	RDRLP-M24x3
Z1017301	RDRLP-M30x3,5
Z1017361	RDRLP-M36x4
Z1017421	RDRLP-M42x4,5
Z1017481	RDRLP-M48x5

RDRLP - Metric

Long bolt including nut, locking ring and washer

Stock No.	Code
Z10170801L	RDRLP-M8 LB
Z10171001L	RDRLP-M10 LB
Z10171201L	RDRLP-M12 LB
Z10171601L	RDRLP-M16 LB
Z10172001L	RDRLP-M20 LB
Z10172401L	RDRLP-M24 LB
Z10173001L	RDRLP-M30 LB
Z10173601L	RDRLP-M36 LB
Z10174201L	RDRLP-M42 LB
Z10174801L	RDRLP-M48 LB

RDRLP - UNC

Standard length bolt including locking ring

Stock No.	Code
Z1018081	RDRLP-UNC 5/16"-18
Z1018101	RDRLP-UNC 3/8"-16
Z1018121	RDRLP-UNC 1/2"-13
Z1018161	RDRLP-UNC 5/8"-11
Z1018201	RDRLP-UNC 3/4"-10
Z1018211	RDRLP-UNC 7/8"-9
Z1018241	RDRLP-UNC 1"-8
Z1018301	RDRLP-UNC 1 1/4"
Z1018361	RDRLP-UNC 1 1/2"
Z1018421	RDRLP-UNC 1 3/4"
Z1018481	RDRLP-UNC 2"

RDRLP - UNC

Long bolt including nut, locking ring and washer

Stock No.	Code
Z10180801L	RDRLP-UNC 5/16" LB
Z10181001L	RDRLP-UNC 3/8" LB
Z10181201L	RDRLP-UNC 1/2" LB
Z10181601L	RDRLP-UNC 5/8" LB
Z10182001L	RDRLP-UNC 3/4" LB
Z10182101L	RDRLP-UNC 7/8" LB
Z10182401L	RDRLP-UNC 1" LB
Z10183001L	RDRLP-UNC 1 1/4" LB
Z10183601L	RDRLP-UNC 1 1/2" LB
Z10184201L	RDRLP-UNC 1 3/4" LB
Z10184801L	RDRLP-UNC 2" LB

RDDLP - Metric

Standard length bolt including locking ring

Stock No.	Code
Z1022081	RDDLP-M8x1,25
Z1022101	RDDLP-M10x1,5
Z1022121	RDDLP-M12x1,75
Z1022161	RDDLP-M16x2
Z1022201	RDDLP-M20x2,5
Z1022241	RDDLP-M24x3
Z1022301	RDDLP-M30
Z1022361	RDDLP-M36
Z1022421	RDDLP-M42
Z1022481	RDDLP-M48

RDDLP - Metric

Long bolt including nut, locking ring and washer

Stock No.	Code
Z10220801L	RDDLP M8 LB
Z10221001L	RDDLP M10 LB
Z10221201L	RDDLP M12 LB
Z10221601L	RDDLP M16 LB
Z10222001L	RDDLP M20 LB
Z10222401L	RDDLP M24 LB
Z10223001L	RDDLP M30 LB
Z10223601L	RDDLP M36 LB
Z10224201L	RDDLP M42 LB
Z10224801L	RDDLP M48 LB

RDDLP - UNC

Standard length bolt including locking ring

Stock No.	Code
Z1023081	RDDLP UNC 5/16"
Z1023101	RDDLP UNC 3/8"
Z1023121	RDDLP UNC 1/2"
Z1023161	RDDLP -UNC 5/8"
Z1023201	RDDLP -UNC 3/4"
Z1023211	RDDLP -UNC 7/8"
Z1023241	RDDLP -UNC 1"
Z1023301	RDDLP -UNC 1 1/4"
Z1023361	RDDLP UNC 1 1/2"
Z1023421	RDDLP -UNC 1 3/4"
Z1023481	RDDLP -UNC 2"

RDDLP - UNC

Long bolt including nut, locking ring and washer

Stock No.	Code
Z10230801L	RDDLP UNC 5/16" LB
Z10231001L	RDDLP UNC 3/8" LB
Z10231201L	RDDLP UNC 1/2" LB
Z10231601L	RDDLP UNC 5/8" LB
Z10232001L	RDDLP UNC 3/4" LB
Z10232101L	RDDLP UNC 7/8" LB
Z10232401L	RDDLP UNC 1" LB
Z10233001L	RDDLP UNC 1 1/4" LB
Z10233601L	RDDLP UNC 1 1/2" LB
Z10234201L	RDDLP UNC 1 3/4" LB
Z10234801L	RDDLP UNC 2" LB

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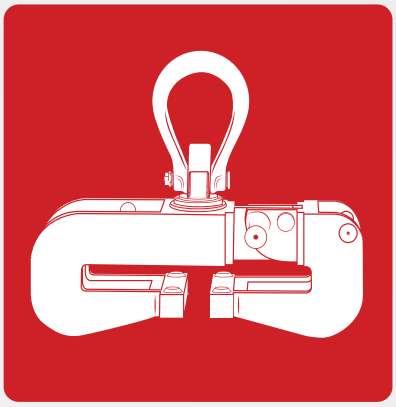

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IPU10

Universal - for lifting in any direction

- Available in capacities of .5 thru 30 metric tons (higher Working Load Limits are available upon request).
- Wide variety of jaw openings available: 0" to 6.13".
- Welded alloy steel body for strength and smaller size. Forged alloy components, where required.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (Crosby IP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof Load test date stamped on body. User manual with test certificate is included with each clamp.
- Available in a variety of styles:
  - IPU10 - Standard clamp for materials with a surface hardness to 363HV10 (345 HB).
  - IPU10J - Larger jaw opening.
  - IPU10S - For use with stainless steel material.
  - IPU10H - For use with materials with a surface hardness to 472HV10 (450 HB).
- Full 180° turning range for material transfer, turning or moving.
- Lock open, lock closed ability with latch for pretension on material and then release of material.
- For use with materials with a surface hardness to 279HV10. Only 5% minimum WLL is needed.
- Maintenance and repair kits are available.
- Minimum WLL is 5% of maximum WLL for .5t IPU10 only.
- Minimum WLL is 10% of maximum WLL for all other IPU10, IPU10J, IPU10S, IPU10H clamps.

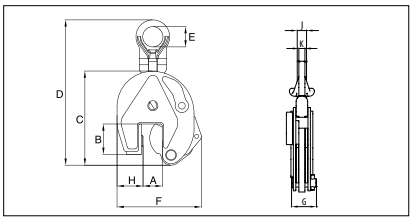
IPU10S

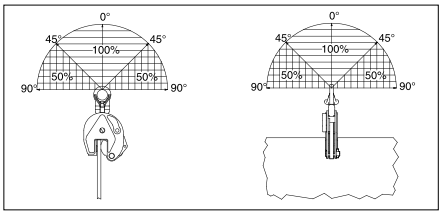
Model IPU10 / IPU10J / IPU10S / IPU10H

Load Rated

Model	Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)									
				Jaw A	B	C	D	E	F	G	H	J	K
IPU10	0.5	2701675	4.19	0 - 0.63	1.73	5.12	8.50	1.57	4.53	1.65	1.10		0.43
IPU10	1	2701663	5.29	0 - 0.75	1.77	5.47	8.86	1.57	5.00	1.65	1.50		0.43
IPU10	2	2701677	18.3	0 - 1.38	3.07	7.91	14.49	2.76	7.40	2.52	2.17		0.63
IPU10	3	2701665	32.6	0 - 1.56	3.94	9.96	17.17	2.95	8.74	3.07	2.36		0.79
IPU10	4.5	2701667	35.3	0 - 1.56	3.94	9.96	17.17	2.95	8.94	3.23	2.56		0.79
IPU10	6	2701669	52.9	0 - 2.00	4.96	11.89	20.67	3.15	11.50	3.31	3.74	1.73	0.79
IPU10	9	2701671	65.0	0 - 2.00	4.96	12.80	21.73	3.15	12.20	3.70	4.09	1.73	0.79
IPU10	12	2701679	126	0 - 2.13	6.30	15.43	24.25	3.15	17.05	4.76	5.39	1.61	0.98
IPU10	16	2701683	174	0.2 - 2.50	7.09	18.23	28.98	3.46	19.37	4.76	6.02	1.77	0.98
IPU10	22.5	2701687	278	0.2 - 3.13	8.74	21.81	33.98	4.33	22.24	5.47	7.32	1.93	0.98
IPU10	30	2701691	311	0.2 - 3.13	8.74	21.81	34.17	4.33	22.83	6.02	7.32	2.13	1.18
With larger jaw opening													
IPU10J	0.5	2701647	4.19	0.63 - 1.19	1.77	5.04	8.19	1.57	5.04	1.65	1.34		0.43
IPU10J	1	2702463	5.51	0.75 - 1.56	2.17	5.94	8.86	1.57	5.55	1.65	1.57		0.43
IPU10J	3	2702465	38.1	1.56 - 3.13	4.53	10.63	17.01	2.95	10.91	3.07	2.64		0.79
IPU10J	4.5	2702467	41.9	1.56 - 3.13	4.53	10.63	17.01	2.95	10.91	3.23	2.83		0.79
IPU10J	6	2702469	58.4	2.00 - 4.00	4.96	11.89	20.28	3.15	13.23	3.31	3.74	1.73	0.79
IPU10J	9	2701673	67.2	2.00 - 4.00	4.96	12.80	21.65	3.15	14.17	3.70	4.13	1.73	0.79
IPU10J	12	2701681	143	2.13 - 4.25	7.01	17.24	26.06	3.15	19.33	4.76	5.35	1.61	0.98
IPU10J	16	2701685	187	2.50 - 5.00	8.19	20.51	30.87	3.46	22.13	4.76	6.30	1.77	0.98
IPU10J	22.5	2701689	328	3.13 - 6.13	10.04	24.72	36.93	4.33	25.98	5.47	7.72	1.93	0.98
IPU10J	30	2701693	364	3.13 - 6.13	10.04	24.72	37.09	4.33	25.98	6.02	7.72	2.13	1.18
For stainless steel - with universal hoisting eye													
IPU10S	0.5	2702275	4.19	0 - 0.63	1.73	5.12	8.50	1.57	4.53	1.65	1.10		0.43
IPU10S	1	2702263	5.29	0 - 0.75	1.77	5.47	8.86	1.57	5.00	1.61	1.50		0.43
IPU10S	2	2702277	18.7	0 - 1 .38	3.07	7.91	14.49	2.76	7.40	2.52	2.17		0.63
IPU10S	3	2702265	32.6	0 - 1.56	3.94	9.96	17.17	2.95	8.74	3.07	2.36		0.79
IPU10S	4.5	2702267	35.3	0 - 1.56	3.94	9.96	17.17	2.95	8.94	3.23	2.56		0.79
IPU10S	6	2702269	52.9	0 - 2.00	4.96	11.89	20.67	3.15	11.50	3.31	3.74	1.73	0.79
IPU10S	9	2702271	65.0	0 - 2.00	4.96	12.80	21.73	3.15	12.20	3.70	4.09	1.73	0.79
IPU10S	12	2702279	126	0 - 2.13	6.30	15.43	24.25	3.15	17.05	4.76	5.39	1.61	0.98
For very hard materials - with universal hoisting eye													
IPU10H	0.5	2702175	4.19	0 - 0.63	1.73	5.12	8.50	1.57	4.53	1.65	1.10		0.43
IPU10H	0.75	2702163	5.29	0 - 0.79	1.77	5.47	8.86	1.57	5.00	1.61	1.50		0.43
IPU10H	1	2702177	18.3	0 - 1.38	3.07	7.91	14.49	2.76	7.40	2.52	2.17		0.63
IPU10H	2	2702165	32.6	0 - 1.56	3.94	9.96	17.17	2.95	8.74	3.07	2.36		0.79
IPU10H	3	2702167	35.3	0 - 1.56	3.94	9.96	17.17	2.95	8.94	3.23	2.56		0.79
IPU10H	4.5	2702169	52.9	0 - 2.00	4.96	11.89	20.67	3.15	11.50	3.31	3.74	1.73	0.79
IPU10H	6	2702171	65.0	0 - 2.00	4.96	12.80	21.73	2.76	12.20	3.70	4.09	1.73	0.79

Design Factor based on EN 13155 and ASME B30.20. Model IPU10R (remote control opening and closing via a cable) on request. Model IPU10W (wedge) available on request.





IP10

For vertical lifting, turning and transfer

- Available in capacities of .5 through 30 metric tons (higher Working Load Limits are available upon request).
- Wide variety of jaw openings available: 0 to 6.13".
- Welded alloy steel body for strength and smaller size. Forged alloy components, where required.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (Crosby IP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof Load test date stamped on body. User manual and test certificate included with each clamp.
- Available in a variety of styles:
  - IP10 - Standard clamp for materials with a surface hardness to 363HV10 (345 HB).
  - IP10J - Larger jaw opening.
  - IP10S - For use with stainless steel material.
  - IP10H - For use with materials with a surface hardness to 472HV10 (450 HB).
- Full 180° turning range for material transfer, turning or moving.
- Lock open, lock closed ability with latch for pretension on material and then release of material.
- For plate surface hardness till 279HV10, only 5% min. WLL is needed.
- Maintenance and repair kits are available.
- Minimum WLL is 5% of maximum WLL for .5t IP10 only.
- Minimum WLL is 10% of maximum WLL for all other IP10, IP10J, IP10S, IP10H clamps.

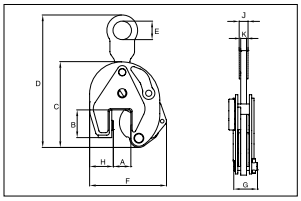
IP10H

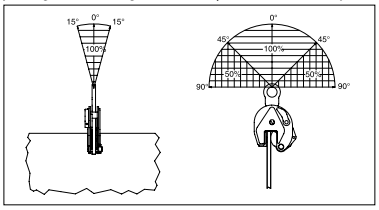
Model IP10 / IP10J / IP10S / IP10H

Load Rated

Model	Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)									
				Jaw A	B	C	D	E	F	G	H	J	K
IP10	0.5	2701674	3.97	0 - 0.63	1.73	5.12	7.99	1.57	4.53	1.65	1.10		0.43
IP10	1	2701662	4.85	0 - 0.75	1.77	5.47	8.35	1.57	5.00	1.65	1.50		0.43
IP10	2	2701676	16.8	0 - 1.38	3.07	7.91	12.99	2.76	7.40	2.52	2.17		0.63
IP10	3	2701664	30.4	0 - 1.56	3.94	9.96	17.09	2.95	8.74	3.07	2.36		0.79
IP10	4.5	2701666	33.1	0 - 1.56	3.94	9.96	17.09	2.95	8.94	3.23	2.56		0.79
IP10	6	2701668	51.8	0 - 2.00	4.96	11.89	20.35	3.15	11.50	3.31	3.74	1.57	0.79
IP10	9	2701670	60.6	0 - 2.00	4.96	12.80	17.52	3.15	12.20	3.70	4.09	1.73	0.98
IP10	12	2701678	108	0 - 2.13	6.30	15.43	22.60	3.15	17.05	4.76	5.39	1.61	0.98
IP10	16	2701682	150	0.25 - 2.50	7.09	18.23	27.01	3.46	19.37	4.76	6.02	1.93	0.98
IP10	22.5	2701686	243	0.25 - 3.13	8.74	21.81	31.81	4.33	22.24	5.47	7.32	1.93	0.98
IP10	30	2701690	273	0.25 - 3.13	8.74	21.81	31.61	4.33	22.24	6.02	7.32	2.13	1.18
With larger jaw opening													
IP10J	0.5	2701646	3.97	0.59 - 1.18	1.77	5.04	8.23	1.57	5.04	1.61	1.26		0.43
IP10J	1	2702462	5.07	0.75 - 1.56	2.17	5.94	8.35	1.57	5.55	1.65	1.57		0.43
IP10J	3	2702458	36.4	1.56 - 3.13	4.53	10.63	16.93	2.95	10.91	3.07	2.64		0.79
IP10J	4.5	2702460	39.7	1.56 - 3.13	4.53	10.63	16.93	2.95	10.91	3.23	2.83		0.79
IP10J	6	2701705	54.0	2.00 - 4.00	4.96	11.89	19.92	3.15	13.23	3.31	3.74	1.57	0.79
IP10J	9	2701672	62.8	2.00 - 4.00	4.96	12.80	21.34	3.15	14.17	3.70	4.13	1.73	0.98
IP10J	12	2701680	128	2.13 - 4.25	7.01	17.24	24.41	3.15	19.33	4.76	5.35	1.61	0.98
IP10J	16	2701684	176	2.50 - 5.00	8.19	20.51	28.90	3.46	22.13	4.76	6.30	1.77	0.98
IP10J	22.5	2701688	289	3.13 - 6.13	10.04	24.72	34.76	4.33	25.98	5.47	7.72	1.93	0.98
IP10J	30	2701692	324	3.13 - 6.13	10.04	24.72	34.92	4.33	25.98	6.02	7.72	2.13	1.18
For stainless steel - with fixed hoisting eye													
IP10S	0.5	2702274	3.97	0 - 1.38	1.73	5.12	7.99	1.57	4.53	1.65	1.10		0.43
IP10S	1	2702262	16.8	0 - 1.56	1.77	5.47	8.35	1.57	5.00	1.65	1.50		0.43
IP10S	2	2702276	30.4	0 - 1.56	3.07	7.91	12.99	2.76	7.40	2.52	2.17		0.63
IP10S	3	2702264	33.1	0 - 2.00	3.94	9.96	17.09	2.95	8.74	3.07	2.36		0.79
IP10S	4.5	2702266	51.8	0 - 2.00	3.94	9.96	17.09	2.95	8.94	3.23	2.56		0.79
IP10S	6	2702268	60.6	0 - 2.00	4.96	11.89	20.35	3.15	11.50	3.31	3.74	1.57	0.79
IP10S	9	2702270	60.6	0 - 2.13	4.96	12.80	21.42	3.15	12.20	3.70	4.09	1.73	0.98
IP10S	12	2702278	108	0 - 0.63	6.30	15.43	22.60	3.15	17.05	4.76	5.39	1.61	0.98
For very hard materials - with fixed hoisting eye													
IP10H	0.5	2702174	3.97	0 - 1.38	1.73	5.12	8.15	1.57	4.53	1.65	1.10		0.43
IP10H	0.75	2702162	4.85	0 - 1.56	1.77	5.47	8.62	1.57	5.12	1.10	1.50		0.43
IP10H	1.0	2702176	16.8	0 - 1.56	3.07	7.91	12.99	2.76	7.40	2.52	2.17		0.63
IP10H	2.0	2702164	30.4	0 - 2.00	3.94	9.96	17.09	2.95	8.74	3.07	2.36		0.79
IP10H	3.0	2702166	33.1	0 - 2.00	3.94	9.96	17.09	2.95	8.94	3.23	2.56		0.79
IP10H	4.5	2702168	51.8	0 - 2.36	4.96	11.89	20.35	3.15	11.50	3.31	3.74	1.57	0.79
IP10H	6.0	2702170	60.6	0 - 2.00	4.96	12.80	21.42	3.15	12.20	3.62	4.13	1.73	0.98

Design Factor based on EN 13155 and ASME B30.20. Model IP10 available in 40t, 55t and 100t on request.Model IP10R (remote control opening and closing via a cable) available on request.





IPNM10N

For use in almost all sectors of industry where, during the lift or transfer, no damage to the material is permitted.

- Available in capacities of .5 , 1 and 2 metric tons (higher Working Load Limits are available upon request).
- Wide variety of jaw openings available: 0” to 1.56”
- Welded alloy steel body for strength and smaller size. Forged alloy components, where required.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (Crosby IP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof Load test date stamped on body. User manual with test certificate is included with each clamp.
- Full 180° turning range for material transfer, turning or moving.
- Lock open, lock closed ability with latch for pretension on material and then release of material.
- Material must be clean and dry.
- There is no minimum WLL required.
- Maintenance replacement kits are available.
- Temperature range -20° C to 70° C
- Optional with brake pad lining for temperature range -40° C to +200° C
- Special jaw openings or curved jaws upon request.

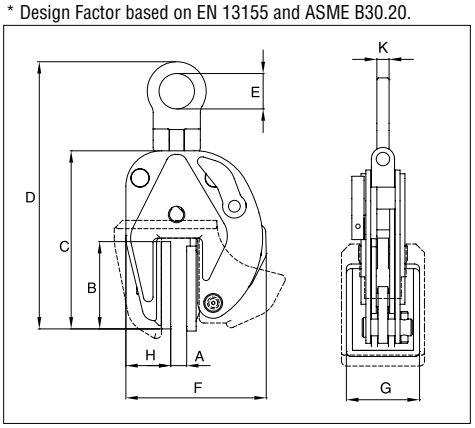
IPNM10P

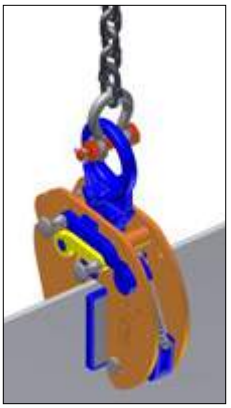
Load Rated

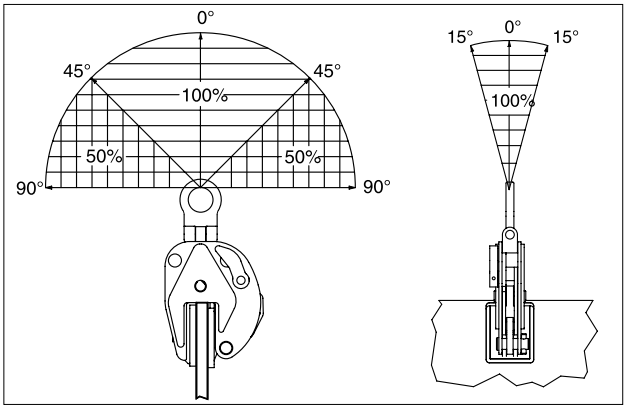
Model IPNM10

Model	Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)								
				Jaw A	B	C	D	E	F	G	H	K
IPNM10N	0.5	2703811	5.95	0 - 0.38	3.31	6.26	9.25	1.57	5.04	2.36	1.61	0.43
IPNM10N	1	2703738	9.70	0 - 0.81	3.82	8.23	10.94	1.57	7.24	3.15	2.20	0.43
IPNM10	2	2703442	32.0	0 - 1.56	6.02	10.16	15.59	2.76	11.65	3.94	6.34	0.63
With protection cap												
IPNM10P	0.5	2703278	6.17	0 - 0.38	3.23	6.18	8.70	1.57	5.71	2.68	1.89	0.43
IPNM10P	1	2703279	9.92	0 - 0.81	3.82	7.68	10.87	1.57	8.07	3.23	2.60	0.43
With larger jaw opening												
IPNM10NJ	1	2703814	10.4	0.81 - 1.44	3.82	8.66	12.64	1.57	7.87	3.15	2.20	0.43
IPNM10NJ1	1	2703819	12.1	0 - 1.00	3.82	9.37	13.82	1.57	8.39	3.15	2.48	0.43

* Design Factor based on EN 13155 and ASME B30.20.



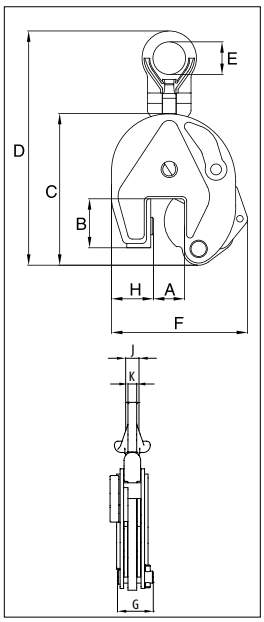




IPU10A

For vertical transport of plates

- Available in capacities of 1, 2 and 6 metric tons (higher Working Load Limits are available upon request).
- Jaw openings available: 0" to 2".
- Welded alloy steel body for strength and smaller size. Forged alloy components where required.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (Crosby IP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof Load test date stamped on body. User manual with test certificate is included with each clamp.
- Full 180° turning range for material transfer, turning or moving.
- Lock open, lock closed ability with latch for pretension on material and then release of material.
- Minimum WLL of 10% of Maximum WLL.
- Maintenance and repair kits are available.
- For use with materials with a plate surface hardness to 279HV10, only 5% of minimum WLL is needed.

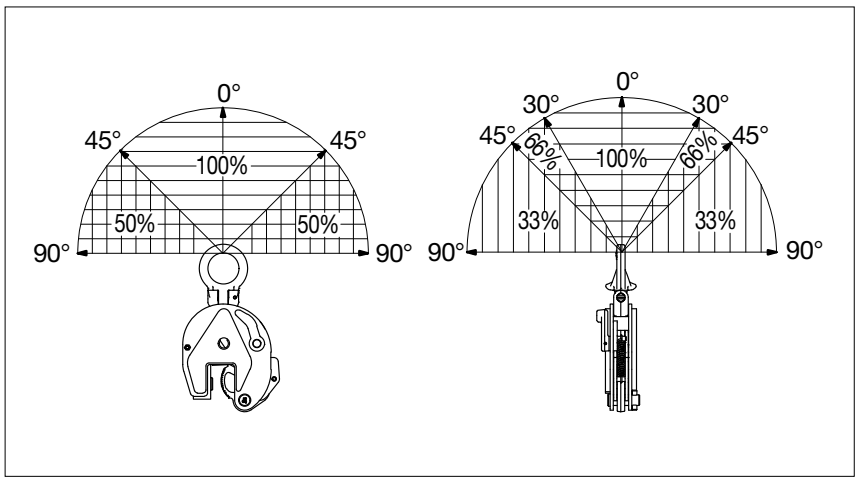


Load Tested

Model IPU10A

Model	Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)									
				Jaw A	B	C	D	E	F	G	H	J	K
IPU10A	1	2701628	5.07	0 - 0.81	1.77	5.47	8.86	1.57	5.00	1.65	1.50	-	0.43
IPU10A	2	2701629	18.5	0 - 1.38	3.07	7.91	14.49	2.76	7.40	2.52	2.17	-	0.63
IPU10A	6	2701638	56.0	0 - 2.00	4.96	11.89	20.67	3.15	11.50	3.31	3.74	1.73	0.79

* Design Factor based on EN 13155 and ASME B30.20.



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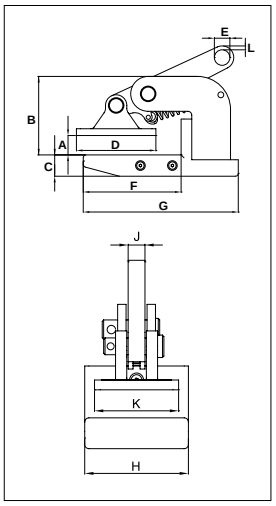
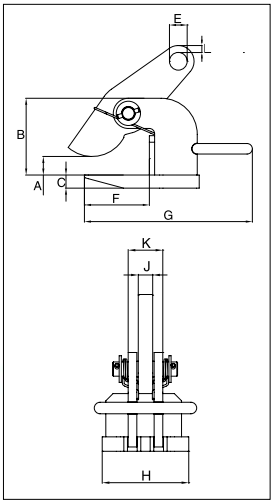
IPHNM10



IPH10



For Horizontal Lift and Transfer with Pretension System

- Available in capacities of .5 thru 12 metric tons.
- Jaw openings available: 0" to 4.75".
- Welded alloy steel body for strength and smaller size. Forged alloy components, where required.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (Crosby IP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof
- Load test date stamped on body. User manual with test certificate is included with each clamp.
- Maintenance and repair kits are available

Load Rated

Model IPHNM10

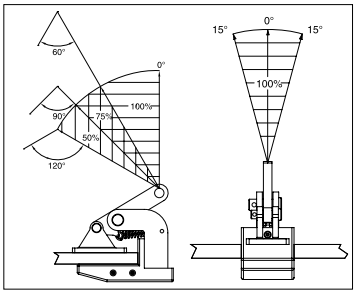
Model	Working Load Limit (Per Pair) (t)*	Stock No.	Weight Each (lb)	Dimensions (in)										
				Jaw A	B	C	D	E	F	G	H	J	K	L
IPHNM10	0.5	2703287	4.0	0 - 0.81	3.19	0.87	3.23	0.63	3.98	6.30	2.91	0.47	2.36	0.16
IPHNM10	1	2703288	7.0	0 - 1.38	3.66	1.18	3.62	0.63	4.06	6.46	2.91	0.47	2.36	0.28
IPHNM10	2	2703290	16.0	0 - 1.18	5.47	1.18	5.16	0.87	6.54	9.65	3.94	0.79	2.91	0.35
IPHNM10J	2	2703291	17.0	1.19 - 2.38	6.65	1.18	5.16	0.87	6.54	9.65	3.94	0.79	2.91	0.35

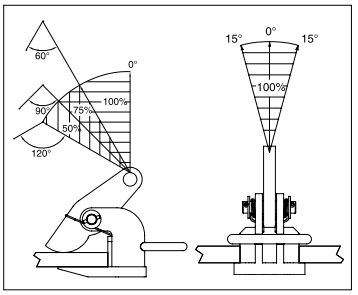
* Design Factor based on EN 13155 and ASME B30.20.

Model IPH10 / IPH10J: With Spring Loaded Tension, Magnets and Handle

Model	Working Load Limit (Per Pair) (t)*	Stock No.	Weight Each (lb)	Dimensions (in)									
				Jaw A	B	C	E	F	G	H	J	K	L
IPH10	0.5+	2703297	3.97	0 - 0.81	3.39	0.47	0.63	4.06	5.91	2.36	0.47	1.06	0.16
IPH10	1+	2703298	5.50	0 - 1.38	3.94	0.63	0.63	4.06	5.91	2.36	0.47	1.22	0.28
IPH10	2	2703522	12.1	0 - 2.38	4.61	0.63	0.87	4.29	10.08	4.33	0.79	1.57	0.35
IPH10	3	2703523	16.6	0 - 2.38	4.61	0.79	1.02	4.29	10.47	4.72	0.79	1.89	0.43
IPH10	4.5	2703524	23.2	0 - 2.38	5.20	0.98	1.18	4.09	11.02	5.12	0.79	1.89	0.47
IPH10	6	2703525	28.7	0 - 2.38	5.63	0.98	1.42	4.84	12.60	5.12	0.79	1.89	0.55
IPH10	9	2703526	40.8	0 - 2.38	6.18	1.18	1.69	5.24	12.99	5.51	0.98	2.44	0.63
IPH10	12	2703527	47.5	0 - 2.38	6.77	1.18	1.85	5.55	13.90	5.91	0.98	2.44	0.67
With larger jaw opening #													
IPH10J	3	2703533	19.0	2.38 - 4.75	6.97	0.79	1.02	4.29	10.47	4.72	0.79	1.89	0.35
IPH10J	4.5	2703534	26.0	2.38 - 4.75	7.56	0.98	1.18	4.09	11.02	5.12	0.79	1.89	0.43
IPH10J	6	2703535	33.0	2.38 - 4.75	7.99	0.98	1.42	4.84	12.60	5.12	0.79	1.89	0.47
IPH10J	9	2703536	45.0	2.38 - 4.75	8.54	1.18	1.69	5.24	12.99	5.51	0.98	2.44	0.55
IPH10J	12	2703537	53.0	2.38 - 4.75	9.13	1.18	1.85	5.55	13.90	5.91	0.98	2.44	0.63

* Design Factor based on EN 13155 and ASME B30.20.+ No handle or magnets. # Larger Working Load Limits available.

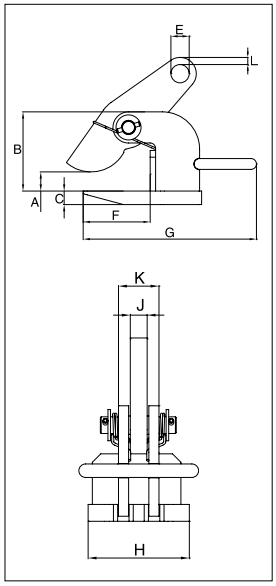




IPH10E

For horizontal lifting and transfer

- Available in capacities of 2.0 thru 25 metric tons.
- Wide variety of jaw openings available: 0 to 4.75".
- Welded alloy steel body for strength and smaller size. Forged alloy, components where required.
- Equipped with handle for easy placement.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (CrosbyIP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof Load test date stamped on body. User manual with test certificate is included with each clamp.
- Maintenance and repair spare kits are available.



Load Tested

Model IPH10E

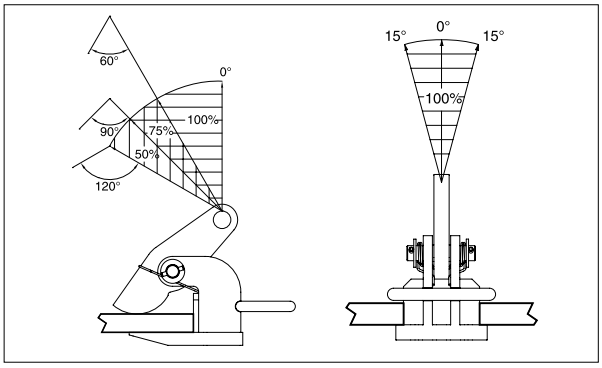
Model	Working Load Limit (Per Pair) (t)*	Stock No.	Weight Each (lb)	Dimensions (in)									
				Jaw A	B	C	E	F	G	H	J	K	L
IPH10E	2	2703542	24.0	0 - 2.38	4.61	0.63	0.87	4.29	10.08	4.33	0.79	1.57	0.35
IPH10E	3	2703543	32.0	0 - 2.38	4.61	0.79	1.02	4.29	10.47	4.72	0.79	1.89	0.43
IPH10E	4.5	2703544	46.0	0 - 2.38	5.20	0.98	1.18	4.09	11.02	5.12	0.79	1.89	0.47
IPH10E	6	2703545	56.0	0 - 2.38	5.63	0.98	1.42	4.84	12.60	5.12	0.79	1.89	0.55
IPH10E	9	2703546	80.0	0 - 2.38	6.18	1.18	1.69	5.24	12.99	5.51	0.98	2.44	0.63
IPH10E	12	2703547	94.0	0 - 2.38	6.77	1.18	1.85	5.55	13.90	5.91	0.98	2.44	0.67

*Design Factor based on EN 13155 and ASME B30.20.

Model IPH10JE

Model	Working Load Limit (Per Pair) (t)*	Stock No.	Weight Each (lb)	Dimensions (in)									
				Jaw A	B	C	E	F	G	H	J	K	L
IPH10JE	3	2703553	19.0	2.38 - 4.75	6.97	0.79	1.02	4.29	10.47	4.72	0.79	1.89	0.43
IPH10JE	4.5	2703554	26.0	2.38 - 4.75	7.56	0.98	1.18	4.09	11.02	5.12	0.79	1.89	0.47
IPH10JE	6	2703555	33.0	2.38 - 4.75	7.99	0.98	1.42	4.84	12.60	5.12	0.79	1.89	0.55
IPH10JE	9	2703556	45.0	2.38 - 4.75	8.54	1.18	1.18	5.24	12.99	5.51	0.98	2.44	0.63
IPH10JE	12	2703557	53.0	2.38 - 4.75	9.13	1.18	1.85	5.55	13.90	5.91	0.98	2.44	0.67

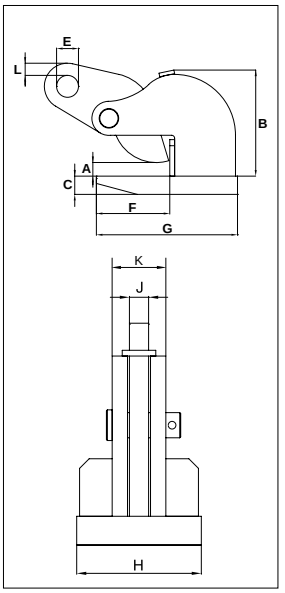
* Design Factor based on EN 13155 and ASME B30.20.



IPHOZ

For Horizontal Lifting and Transfer

- Available in capacities of .75 through 15 metric tons (higher Working Load Limits are available upon request).
- Wide variety of jaw openings available: 0” to 2.38”.
- Welded alloy steel body for strength and smaller size. Forged alloy, components where required.
- Equipped with handle for easy placement.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (Crosby IP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof Load test date stamped on body. User manual with test certificate is included with each clamp.
- Maintenance and repair kits are available.

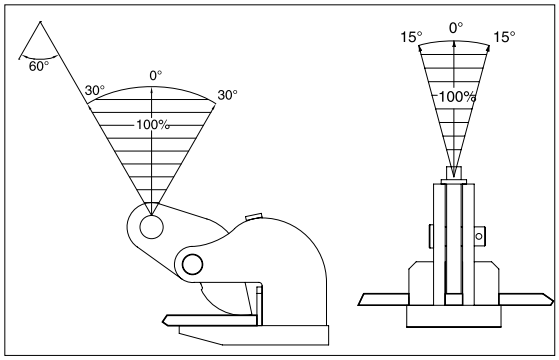


Load Rated

Model IPHOZ

Model	Working Load Limit (Per Pair) (t)*	Stock No.	Weight Each (lb)	Dimensions (in)									
				Jaw A	B	C	E	F	G	H	J	K	L
IPHOZ	0.75	2705401	6.0	0 - 1.19	3.70	0.63	0.63	2.76	4.65	3.19	0.47	1.22	0.47
IPHOZ	1.5	2705402	12.0	0 - 1.75	5.24	0.63	0.87	4.92	7.56	3.94	0.63	1.42	0.47
IPHOZ	3	2705403	17.0	0 - 1.75	5.39	0.79	1.02	4.92	7.87	4.72	0.79	1.89	0.39
IPHOZ	4.5	2705404	21.0	0 - 1.75	5.43	0.98	1.18	4.96	8.66	4.72	0.79	1.97	0.39
IPHOZ	6	2705405	34.0	0 - 2.38	6.73	1.18	1.42	5.31	9.25	5.12	0.79	2.20	0.79
IPHOZ	9	2705406	55.0	0 - 2.38	8.31	1.18	1.69	6.54	10.87	6.30	0.98	2.44	0.79
IPHOZ	12	2705407	64.0	0 - 2.38	8.54	1.57	1.85	6.61	11.57	7.48	0.98	2.44	0.75
IPHOZ	15	2705408	80.0	0 - 2.38	8.66	1.57	1.85	7.20	12.48	9.84	0.98	2.44	0.87

*Design Factor based on EN 13155 and ASME B30.20.



IPPE10B(E)

IPPE10BNM

For lifting and transporting non-bendable sheet metal in a horizontal position.

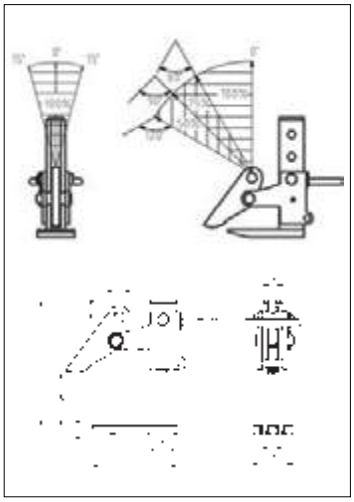
- Available in capacities of 3 through 12 metric tons (higher Working Load Limits are available upon request).
- Wide variety of jaw openings available: 0 to 7.13”.
- Welded alloy steel body for strength and smaller size. Forged alloy components, where required.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (Crosby IP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof Load test date stamped on body. User manual with test certificate is included with each clamp.
- Maintenance and repair kits are available.
- IPPE10B: Magnets in foot plate (also applies for D and H Type).
- IPPE10BE: Economic version (also applies for D and H-Type).
- IPPE10BNM: Non-marring (also applies for D and H-Type).

Load Tested

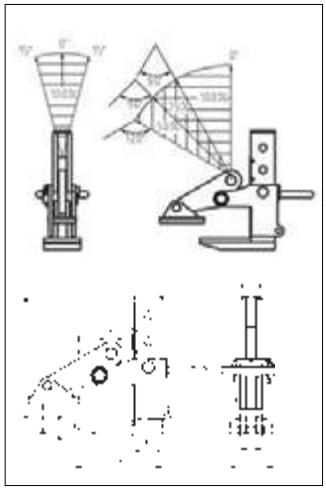
Model IPPE10B / IPPE10BE / IPPE10BNM

Model	Working Load Limit (Per Pair) (t)*	Stock No.	Weight Each (lb)	Dimensions (in)									
				Jaw A	B	C	D	E	F	G	H	J	L
IPPE10B	3	2703862	25.0	0 - 7.13	8.03	12.68	0.79	1.02	2.60	0.79	3.94	1.97	0.59
IPPE10B	6	2703871	35.0	0 - 7.13	8.66	13.39	0.98	1.18	2.91	0.79	5.51	2.36	0.51
IPPE10B	9	2703888	54	0 - 7.13	9.76	14.37	0.98	1.34	3.54	0.79	7.48	2.76	0.51
IPPE10B	12	2703921	72	0 - 7.13	9.92	14.80	1.18	1.57	3.54	0.98	7.87	2.76	0.71
IPPE10BE	3	2703863	25	0 - 7.13	8.03	12.68	0.79	1.02	2.60	0.79	3.94	1.97	0.59
IPPE10BE	6	2703870	36	0 - 7.13	8.66	13.39	0.98	1.18	2.91	0.79	5.51	2.36	0.51
IPPE10BE	9	2703891	55	0 - 7.13	9.76	14.37	0.98	1.34	3.54	0.79	7.48	2.76	0.51
IPPE10BE	12	2703924	72	0 - 7.13	10.31	14.80	1.18	1.57	3.54	0.98	7.87	2.76	0.71
IPPE10BNM	3	2703864	27	0 - 7.13	8.03	12.68	1.18	1.02	2.68	0.79	3.94	1.97	0.59
IPPE10BNM	6	2703872	38	0 - 7.13	8.66	13.39	1.38	1.18	2.99	0.79	5.51	2.36	0.51
IPPE10BNM	9	2703894	61.0	0 - 7.13	9.76	14.37	1.38	1.34	3.62	0.79	7.48	2.76	0.51
IPPE10BNM	12	2703927	77.0	0 - 7.13	10.31	14.80	1.57	1.57	3.62	0.98	7.87	2.76	0.59

* Design Factor based on EN 13155 and ASME B30.20. Also available in D-Type (maximum jaw opening of 11.75”) and H-Type (maximum jaw opening of 16.50”).



IPPE10(E)



IPPE10NM

IPBC

For Horizontal Transfer - with Pretension System

- Available in capacities of 1 through 4.5 metric tons (Higher Working Load Limits are available upon request).
- Jaw openings available: 0” to 1.56”.
- Welded alloy steel body for strength and smaller size. Forged alloy, components where required.
- Equipped with handle for easy placement.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (CrosbyIP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof Load test date stamped on body. User manual with test certificate is included with each clamp.
- Maintenance and repair kits are available.

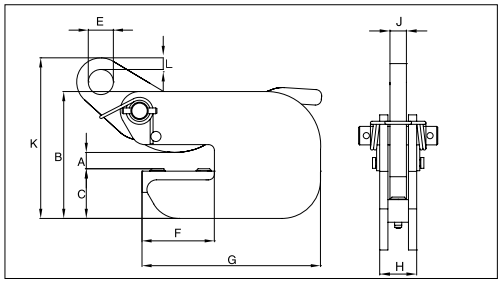
IPHGUZ

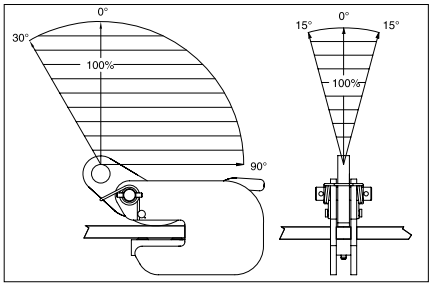
Load Rated

Model IPBC

Model	Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)									
				Jaw A	B	C	E	F	G	H	J	K	L
IPBC	1	2700410	7.72	0 - 0.81	5.20	2.05	1.02	2.95	7.28	1.42	0.63	7.17	0.47
IPBC	2	2700411	14.3	0 - 1.00	5.98	2.44	1.18	3.23	8.27	1.93	0.79	8.58	0.59
IPBC	3	2700412	18.8	0 - 1.00	6.18	2.60	1.18	3.23	8.27	2.24	0.79	8.86	0.59

* Design Factor based on EN 13155 and ASME B30.20.

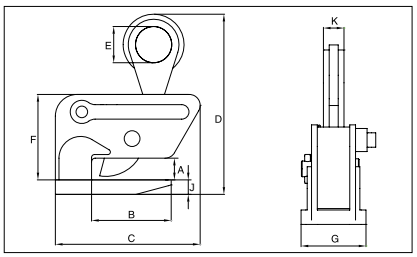


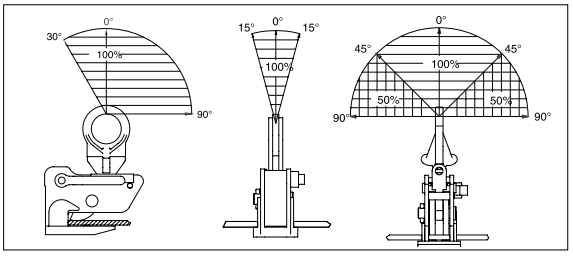


Model IPHGUZ: Universal Lifting Eye / Model IPHGZ: Fixed Hoisting Eye

Model	Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)								
				Jaw A	B	C	D	E	F	G	J	K
IPHGUZ	1.5	2705455	19.8	0 - 1.00	4.33	9.13	11.30	2.76	5.47	3.54	0.79	0.63
IPHGUZ	3	2705456	43.9	0 - 1.56	4.69	9.96	13.70	2.95	6.89	4.72	0.98	0.79
IPHGUZ	4.5	2705457	66.1	0 - 1.56	4.69	11.85	14.57	3.15	6.89	6.10	1.18	1.73
Fixed Hoisting Eye												
IPHGZ	0.75	2705451	8.82	0 - 1.00	3.23	5.83	8.11	1.97	3.90	3.86	0.47	0.87
IPHGZ	1.5	2705452	4.41	0 - 1.00	4.33	7.87	9.84	1.97	4.65	3.54	0.79	1.10
IPHGZ	3	2705453	27.1	0 - 1.56	4.72	8.94	12.01	2.76	5.83	4.72	0.98	1.26
IPHGZ	4.5	2705454	55.1	0 - 1.56	4.72	11.18	15.00	2.76	7.13	6.10	1.18	1.57

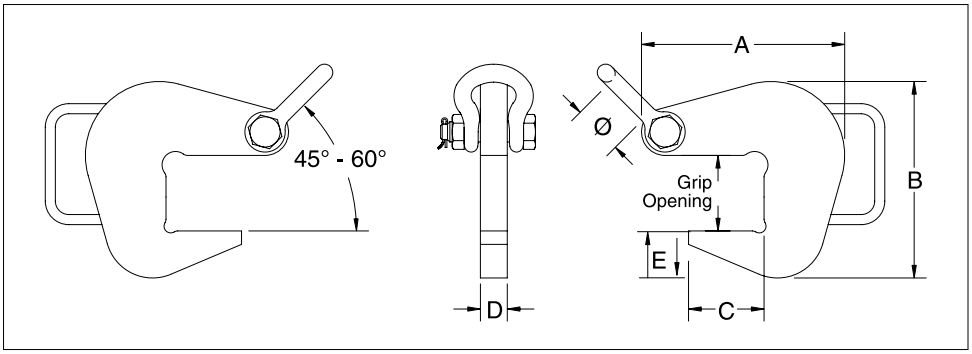
* Design Factor based on EN 13155 and ASME B30.20.





IPPH

- Crosby IP Pipe Hooks provide a fast and efficient method for lifting pipe, tube or any similarly shaped fabrications.
- Alloy steel plate construction.
- Equipped with a convenient handle.
- Equipped with a Bolt Type Shackle.
- Optional non marring inserts available.
- Used in pairs with 45° - 60° horizontal angle or 60° - 90° included angle.



Pipe Hook

Model	Working Load Limit Per Pair (t)**	Stock No.	Weight Each (lb)	Grip Opening (in)	Dimensions (in)						Shackle Size (in)	Nylon (PA6) Inserts*
					A	B	C	D	E	Ø		
IPPH-2	2	2734500	5.94	2.06	5.81	5.06	2.06	1.00	1.25	1.69	5/8	2734900 2734909
IPPH-4	4	2734509	10.03	2.81	7.56	7.31	2.81	1.00	1.75	1.69	5/8	2734918
IPPH-6	6	2734518	17.74	4.06	10.18	10.06	4.06	1.00	2.25	2.00	3/4	2734927
IPPH-10	10	2734527	38.67	6.06	14.81	15.06	6.06	1.00	3.50	2.69	1.0	2734936

**Design factor based on EN13155 and ASME B30.20.

NOTE: To determine grip opening when equipped with an insert, add the insert thickness shown in the Pipe Hook Insert table below.

12

IPPHI

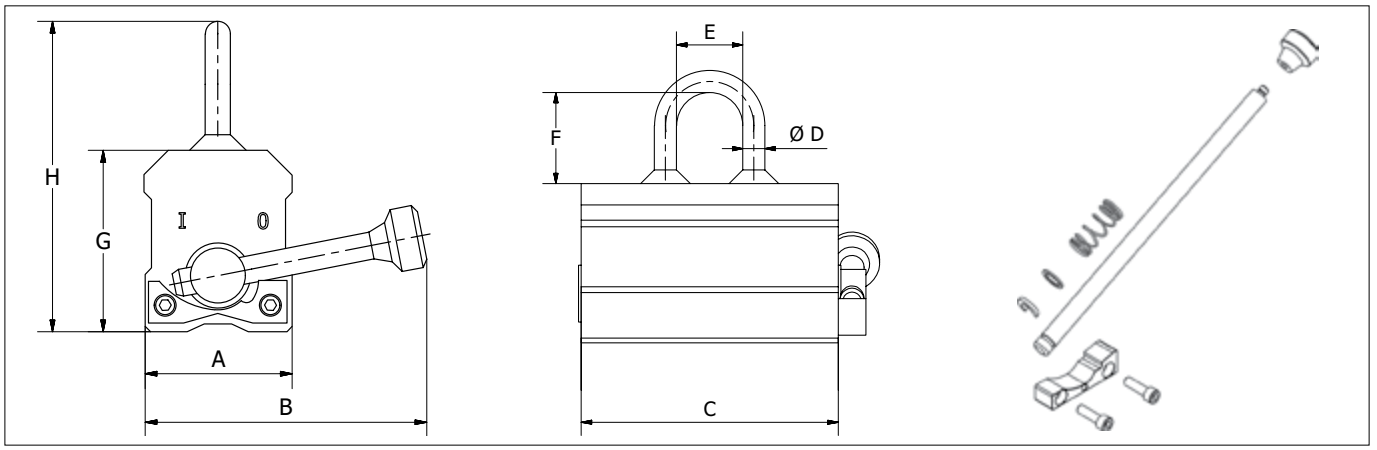
- Replaceable nylon (PA6) inserts for use with the CCPH Pipe Hook that minimizes thread and pipe damage.

Pipe Hook Inserts

Model	Stock No.	ID of Pipe (in)	Grip Opening (in)
IPPHI	2734900	3-12	1.61
	2734909	12-18	1.73
	2734918	18-30	2.48
	2734927	30-42	3.74
	2734936	42-72	5.71

MAGNEX™

- Solid steel construction with recessed area, reducing risk of damage to tags for identification and technical user information.
- Fully welded construction, minimizing maintenance costs.
- Innovative and patented easy switch stop block, equipped with ball bearing and ergonomic handle for increased safety and ease of use.
- Individually proof tested to 3 times the working load limit with certification.
- Each product is individually serialized, with the serial number and proof load test date stamped on body.
- User manual with test certificate included with each magnet
- 5-year warranty on magnetic system.
- CE certified including test certificate in accordance with EN 13155.
- Maintenance replacement kits are available.
- Can be used on both flat and round steel surfaces.



Crosby MAGNEX™ Lifting Magnet

Model	WLL (lb)*	Stock No.	Weight each (lb)	Dimensions (in)							
				A	B	C	D	E	F	G	H
MAGNEX150	331	2708023	6.8	2.4	4.5	4.0	0.4	1.2	1.6	2.7	4.7
MAGNEX300	661	2708024	24	3.9	8.3	6.0	0.6	2.0	2.6	3.9	7.0
MAGNEX600	1323	2708025	47.8	4.7	9.6	9.7	0.8	2.5	2.6	3.9	7.2
MAGNEX1000	2205	2708026	90.2	5.7	13.0	12.0	0.8	2.5	3.6	4.9	9.3
MAGNEX1500	3307	2708027	158.1	6.5	15.4	14.7	0.8	2.5	3.6	6.3	10.7
MAGNEX2000	4409	2708028	201.5	6.5	18.7	18.8	0.8	2.5	3.6	6.3	10.7

Model	Flat Material			Round Material		
	WLL (lb)*	min. thickness for max. WLL (in)*	min. load thickness (in)	WLL (lb)*	min. Ø (in)	max. Ø (in)
MAGNEX150	331	0.98	0.08	166	2.0	3.9
MAGNEX300	661	1.18	0.16	331	2.4	7.9
MAGNEX600	1323	1.57	0.24	662	2.6	10.6
MAGNEX1000	2205	2.36	0.39	1103	3.9	11.8
MAGNEX1500	3307	3.15	0.59	1654	5.9	13.8
MAGNEX2000	4409	3.15	0.59	2205	5.9	13.8

*WLL based on low carbon, mild steel and a working temperature 68°F

IPBK10

For the transfer and stacking of steel beams

- IPVUZ / IPVZ: Available in capacities of 0.75 through 1.5 metric tons.
- IPVUZ / IPVZ: Jaw openings available: 0 to 0.81”.
- IPBK10: Available in capacities of 0.5 through 4 metric tons.
- IPBK10: Jaw openings available: 0.2 to 1.13”.
- Welded alloy steel body for strength and smaller size. Forged alloy components, where required.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (Crosby IP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof Load test date stamped on body. User manual with test certificate is included with each clamp.
- Minimum WLL of 10% of Maximum WLL.
- Maintenance and repair kits are available.
- For use with materials with a plate surface hardness to 279HV10, only 5% min WLL is needed.

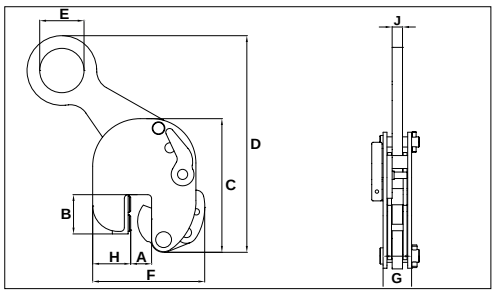
IPVZ

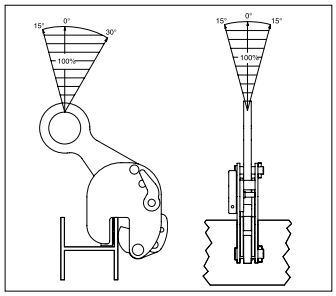
Load Tested

Model IPBK10

Model	Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)								
				Jaw A	B	C	D	E	F	G	H	J
IPBK10	0.5	2703931	5.29	0.19 - 0.63	1.69	5.28	8.50	1.77	4.72	1.89	1.77	0.39
IPBK10	1	2703837	5.73	0.19 - 0.63	1.69	5.98	9.06	1.77	4.84	1.85	1.77	0.39
IPBK10	2	2703838	16.1	0.19 - 1.00	2.44	8.78	13.43	2.76	7.80	2.40	2.76	0.63
IPBK10	4	2703839	37.3	0.19 - 1.13	2.95	11.10	16.97	3.94	9.13	3.07	2.83	0.79

Design Factor based on EN 13155 and ASME B30.20.



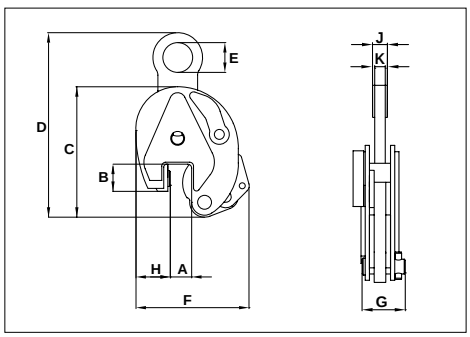


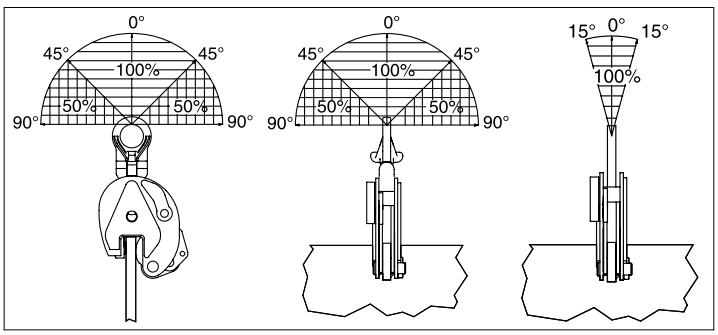
12

Model IPVUZ: Universal Hoisting Eye / Model IPVZ: Fixed Hoisting Eye

Model	Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)								
				Jaw A	B	C	D	E	F	G	H	K
IPVUZ	0.75	2705146	5.07	0 - 0.63	1.02	5.12	8.50	1.57	4.53	1.65	1.18	0.43
IPVUZ	1.5	2705147	15.21	0 - 0.81	2.17	7.87	14.88	2.76	7.87	2.40	2.52	0.63
Fixed Hoisting Eye												
IPVZ	0.75	2705096	3.75	0 - 0.63	1.02	5.12	7.99	1.57	4.53	1.65	1.18	0.43
IPVZ	1.5	2705097	13.01	0 - 0.81	2.17	7.87	13.35	2.76	7.09	2.40	2.52	0.63

* Design Factor based on EN 13155 and ASME B30.20.





IPBHZ

For the lifting and transfer of steel beams

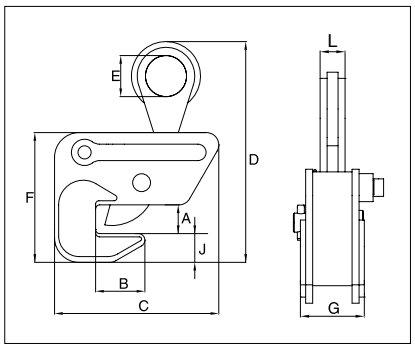
- IPBHZ: Available in capacities of .75 through 12 metric tons (higher Working Load Limits are available upon request).
- IPBHZ: Wide variety of jaw openings available: 0 to 1.56”.
- IPBSNZ: Available in capacities of 1.5 through 4.5 metric tons (higher Working Load Limits are available upon request).
- IPBSNZ: Wide variety of jaw openings available: 0 to 2.00”.
- Welded alloy steel body for strength and smaller size. Forged alloy components, where required.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (Crosby IP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof Load test date stamped on body. User manual with test certificate is included with each clamp.
- Minimum WLL of 10% of Maximum WLL.
- Maintenance and repair kits are available.

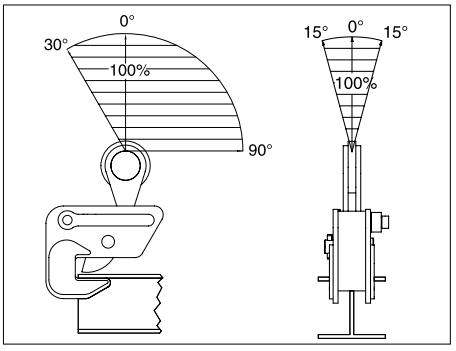
IPBSNZ

Model IPBHZ

Model	Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)								
				Jaw A	B	C	D	E	F	G	J	L
IPBHZ	0.75	2705461	6.61	0 - 1.00	1.57	5.83	8.66	1.97	5.12	2.72	1.30	0.87
IPBHZ	1.5	2705462	13.2	0 - 1.00	2.36	7.99	10.04	1.97	6.22	2.87	1.38	1.10
IPBHZ	3	2705463	23.2	0 - 1.56	3.15	8.94	12.80	2.76	7.40	4.41	1.50	1.26
IPBHZ	4.5	2705464	55.1	0 - 1.56	4.41	11.18	16.26	2.76	9.88	4.57	3.15	1.57
IPBHZ	12	2705467	93.3	0 - 1.56	4.92	18.35	19.29	3.54	12.48	3.54	3.54	1.85

* Design Factor based on EN 13155 and ASME B30.20.

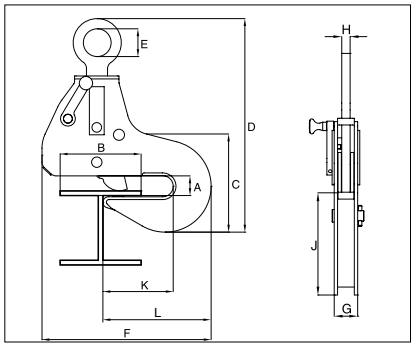


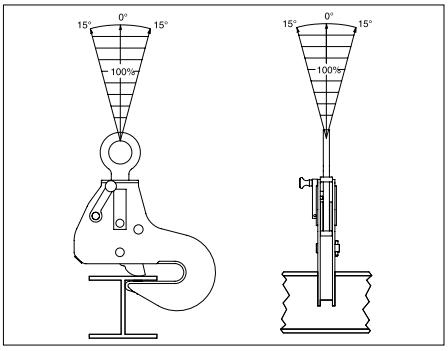


Model IPBSNZ

Model	Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)										
				Jaw A	B	C	D	E	F	G	H	J	K	L
IPBSNZ	1.5	2705925	30.9	0 - 1.25	3.94-10.63	11.97	18.90	2.76	12.56	1.85	0.63	6.50	5.83	9.45
IPBSNZ	3	2705926	48.5	0 - 1.56	3.94-12.99	13.86	19.45	2.95	16.06	2.20	0.79	8.15	7.17	10.24
IPBSNZ	4.5	2705927	67.2	0 - 2.00	3.94-14.17	16.54	24.80	2.95	17.99	2.20	0.79	9.84	7.40	11.54

* Design Factor based on EN 13155 and ASME B30.20.





IPTK

For transferring steel beams and attaching tackle eye

- Available in capacities of 2 through 25 metric tons (higher Working Load Limits are available upon request).
- Wide variety of jaw openings available: 2.95” to 40.16”.
- Welded alloy steel body for strength and smaller size. Forged alloy components, where required.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (Crosby IP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof Load test date stamped on body. User manual with test certificate is included with each clamp.
- Maintenance and repair kits are available.

IPTKU

IPTKW

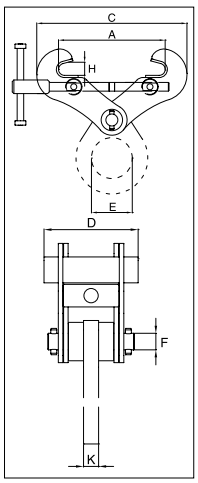
IPTKUM

IPTK: with hoisting eye / **IPTKW**: without hoisting eye
IPTKU: with hinged hoisting eye / **IPTKUD**: with double locking device
IPTKUM: Suitable as anchor device for personnel fall arrest equipment

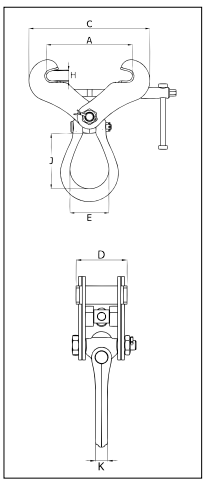
Load Rated

Model	Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)							
				Jaw A	C	D	E	F	H	J	K
IPTK	2	2700996	13.2	2.95 - 7.48	A + 3.13	4.92	2.95	-	0.98	-	0.79
IPTK	3	2700997	14.3	2.95 - 7.48	A + 3.13	4.92	2.95	-	0.98	-	0.79
IPTK	4	2700998	18.7	5.91 - 11.02	A + 4.00	4.92	2.95	-	1.38	-	0.79
IPTK	5	2700994	24.3	4.72 - 13.78	A + 7.67	4.92	2.95	-	1.57	-	0.79
IPTK	25	2702999	496.0	17.72 - 40.16	A + 8.66	19.69	4.92	-	2.99	-	1.77
Without Hoisting Eye											
IPTKW	2	2700966	8.82	3.00 - 7.50	A + 3.13	4.92	-	1.10	0.98	-	-
IPTKW	3	2700967	9.92	3.00 - 7.50	A + 3.13	4.92	-	1.10	0.98	-	-
IPTKW	4	2700968	13.9	5.88 - 11.25	A + 4.00	4.92	-	1.30	1.38	-	-
IPTKW	5	2700969	19.4	4.75 - 13.75	A + 7.67	4.92	-	1.30	1.57	-	-
With Improved Hinged Hoisting Eye											
IPTKU	2	2707996	12.6	3.00 - 7.50	A + 3.94	6.50	2.99	0.87	0.87	3.90	0.75
IPTKU	3	2707997	14.1	3.00 - 7.50	A + 3.94	6.50	3.50	0.87	0.87	4.80	0.87
IPTKU	4	2707998	26.7	4.75 - 11.25	A + 5.91	7.28	3.50	1.57	1.57	4.80	0.87
IPTKU	5	2707994	32.0	4.75 - 13.75	A + 6.89	7.28	3.50	1.57	1.57	4.80	0.87
IPTKU	10	2707970	90.4	7.88 - 18.00	A + 11.81	8.46	4.13	2.36	2.36	5.98	1.02
Suitable as anchor device for personnel fall arrest equipment - standard according to EN 795											
IPTKUM	1 person	2709991	13.2	3.00 - 7.50	A + 3.94	6.50	2.99	-	0.87	3.90	0.75
With Optional Double Locking Device											
IPTKUD	2	2709996	13.2	3.00 - 7.50	A + 3.94	6.50	2.99	0.87	0.87	3.90	0.75
IPTKUD	3	2709993	14.6	3.00 - 7.50	A + 3.94	6.50	3.50	0.87	0.87	4.80	0.87
IPTKUD	4	2709995	27.1	4.75 - 11.25	A + 5.91	7.28	3.50	1.57	1.57	4.80	0.87
IPTKUD	5	2709994	33.7	4.75 - 13.75	A + 6.89	7.28	3.50	1.57	1.57	4.80	0.87
IPTKUD	10	2709970	94.8	7.88 - 18.00	A + 11.81	8.46	4.13	2.36	2.36	5.98	1.02

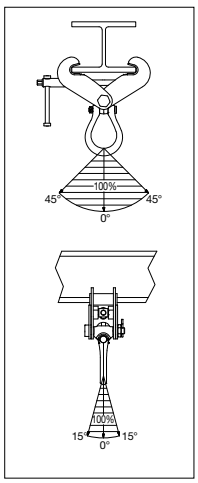
* Design Factor based on EN 13155 and ASME B30.20.



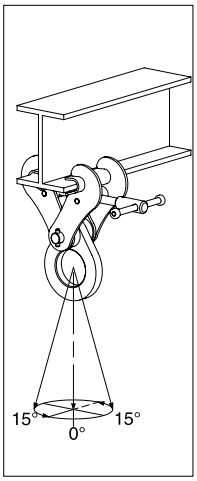
IPTK/IPTKW



IPTKU(D)(M)



IPTKU(D)



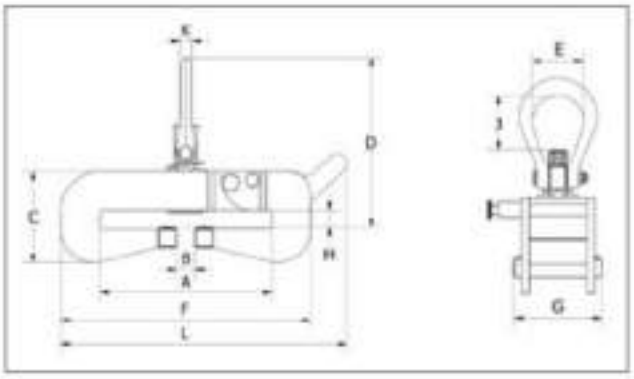
IPTK(W)

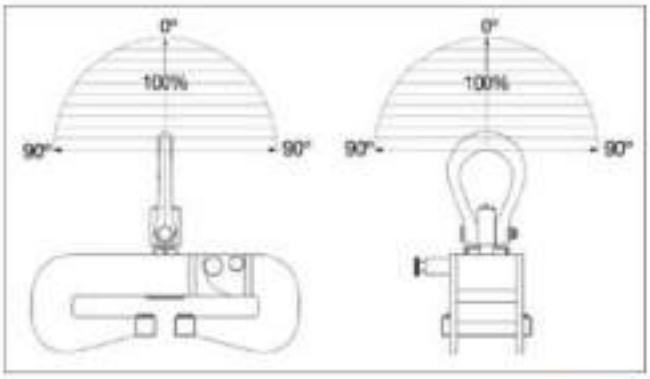
12

Crosby iP

IPTKA

- Maintains full WLL at angles up to 90°.
- Bail swivels 360° and pivots 180°.
- Easy to close and open with a hinged body with self-locking device.
- Easy to handle with handgrips.
- No interference or space limitations when tightening the clamp.
- Multi-purpose hoisting eye to be used for tightening as well as for hoisting.
- Light weight design.
- All parts are replaceable.
- Maintenance and repair kits are available.
- Can be used for a wide range of profile sizes.





IPTKA Universal Beam Clamp

Load Rated

Model	WLL (t)	Stock No.	Weight (lb)	Dimensions (in)										
				A	B	C	D	E	F	G	H	J	K	L
IPTKA	3	2707111	35	3.9 - 8.1	1.34	5.87	12.09	3.5	12.2	5.12	0.24 - 1	3.7	0.87	14.53
IPTKAJ1	3	2707116	31.3	2.8 - 4.9	0.94	5.28	11.69	3.5	10.12	5.12	0.24 - 1	3.7	0.87	12.4
IPTKAJ2	3	2707117	35.3	3.9 - 8.1	2.13	6.48	12.68	3.5	12.2	5.12	0.8 - 1.57	3.7	0.87	14.53
IPTKA	5	2707065	51.4	3.9 - 12	1.34	6.46	12.05	3.5	17.72	5.91	0.24 - 1	3.7	0.87	-
IPTKAJ1	5	2707114	37.3	2.8 - 4.9	0.94	5.47	11.65	3.5	10.51	5.91	0.24 - 1	3.7	0.87	13.23
IPTKAJ2	5	2707115	51.2	5.1 - 12	2.91	7.05	12.64	3.5	17.72	5.91	0.8 - 1.57	3.7	0.87	-
IPTKA	10	2707118	137	5.5 - 16	2.91	9.21	17.72	4.76	23.6	8.66	0.47 - 1.65	6.0	1.18	-
IPTKA	15	2707124	157	5.5 - 16	2.91	9.61	17.72	4.76	24.8	8.66	0.47 - 1.65	6.0	1.18	-

IPBCF / IPBCNS

For the lifting and transfer of wide flange beam sections and plate girders

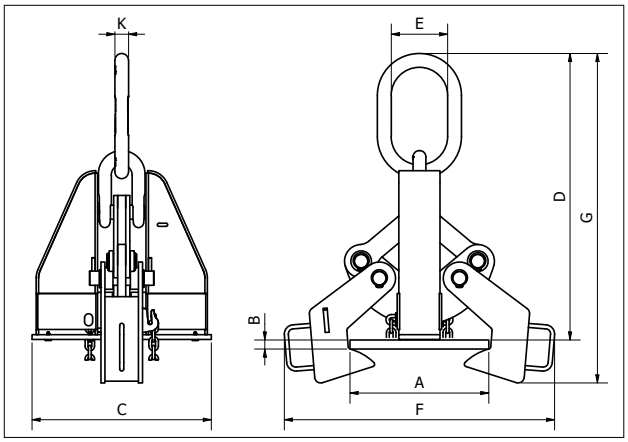
- When lifting, these beam clamps grip the beam at three points, and when properly balanced and safely guided, the beam can be handled even if the clamp is slightly off center lengthwise.
- Capacities: 4.5 through 32 metric tons. (higher Working Load Limits are available upon request).
- Eliminates the need for slings, chokers, and spreader bars.
- When applied to load, the tongs automatically open and slide under the flange of the beam.
- Center plate and gripping tongs work together - the heavier the beam, the greater the clamping pressure.
- Model IPBCNS clamps have a recessed base to accept studs welded to the beam surface.
- Welded alloy steel body for strength and smaller size. Forged alloy components, where required.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (Crosby IP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof Load test date stamped on body. User manual with test certificate is included with each clamp.
- Maintenance and repair kits are available.
- Manufactured by an ISO 9001 facility.
- All sizes are RFID equipped.

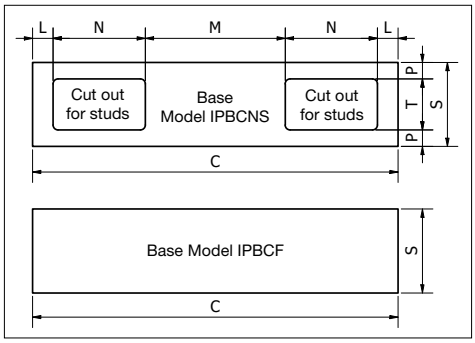
Beam Clamps

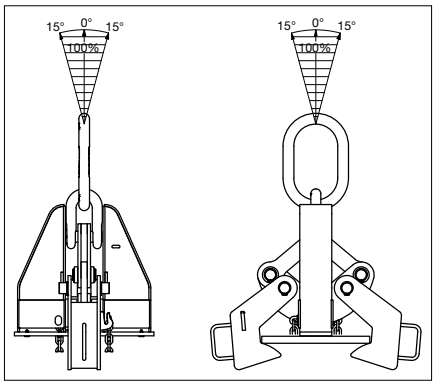
Model No.	WLL (t)	Stock No.	Weight Each (lb)	Flange Grip Range (in)		Dimensions (in)					
				Width (A)	Thickness (B)	C	D	E	F	G	K
IPBCF	4.5	2702000	64.9	4 - 10	0.5 - 1	13.7	21.1 - 17.8	3.75	13.3 - 18.7	23.7 - 20.9	0.84
IPBCNS	13.5	2702018	137	7 - 17	0.5 - 2	17.5	30.5 - 23.3	5.5	19.9 - 29.5	35.2 - 28.3	1.33
IPBCNS	22.5	2702036	291	16 - 24	1 - 3	23.5	39.8 - 32.0	6	30.5 - 38.1	44.9 - 38.7	1.75
IPBCNS	32	2702054	529	16 - 36	1.63 - 4	28.7	46.8 - 40.3	7	31.2 - 53.1	57.4 - 49.5	2.00

Design factor based on EN 13155 and ASME B30.20.

NOTE: Control the beam at all times. Beams should be gripped as near the center as possible. Snubbing lines at each end must be used to control excessive twisting or swinging, and to guide the beam to its proper place. Each lifting situation may have a specific demand which should be addressed before lifting.





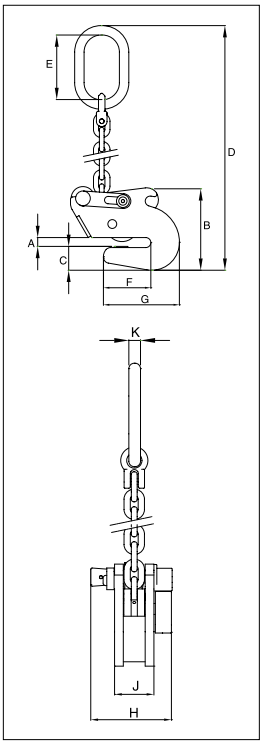


Base Stock No.	Base Dimensions (in)						
	C	L	M	N	P	S	T
IPBCNS	13.7	-	-	-	-	3.00	-
IPBCNS	17.5	1.00	6.70	4.40	0.78	4.00	2.44
IPBCNS	23.5	1.30	7.48	6.70	1.19	6.00	3.62
	28.7	1.90	8.90	8.00	1.19	6.00	3.62

IPSTARTEC11

For Lifting, Transferring and Controlled Tilting of Steel Beams

- Available in capacities of 1.5 and 2.5 metric tons (higher Working Load Limits are available upon request).
- Jaw openings available: .25” to .75”.
- Welded alloy steel body for strength and smaller size. Forged alloy, components where required.
- Equipped with handle for easy placement.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (Crosby IP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof Load test date stamped on body. User manual with test certificate is included with each clamp.
- Maintenance replacement parts are available.
- Manufactured by an ISO 9001 facility.
- All sizes are RFID equipped.

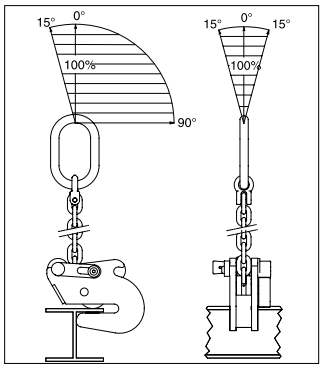


Load Rated

Model IPSTARTEC11

Model	Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)									
				Jaw A	B	C	D	E	F	G	H	J	K
IPSTARTEC11	1.5	2701812	14.6	0.25 - 0.50	5.51	1.54	22.64	4.33	3.19	5.08	4.96	2.13	0.63
IPSTARTEC11	2.5	2701822	32.0	0.25 - 0.75	8.27	2.17	28.54	5.31	4.53	7.17	5.51	2.91	0.71

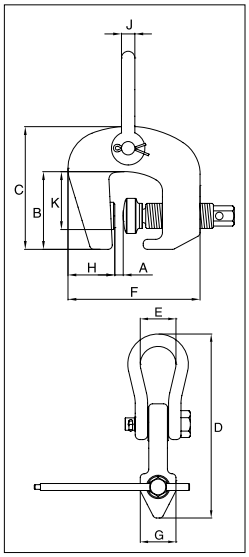
* Design Factor based on EN 13155 and ASME B30.20.



IPSC10

Suitable for use in positioning & turning steel plates and sections. Not to be used as a lifting clamp.

- Available in capacities of 1.5 and 3 metric tons (higher Working Load Limits are available upon request).
- Jaw openings available: 0” to 2.38”.
- Suitable for steel with a surface hardness up to 30 Rc.
- Forged alloy steel body for strength and smaller size. Forged alloy components, where required.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (Crosby IP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof Load test date stamped on body. User manual with test certificate is included with each clamp.
- Maintenance and repair kits are available.

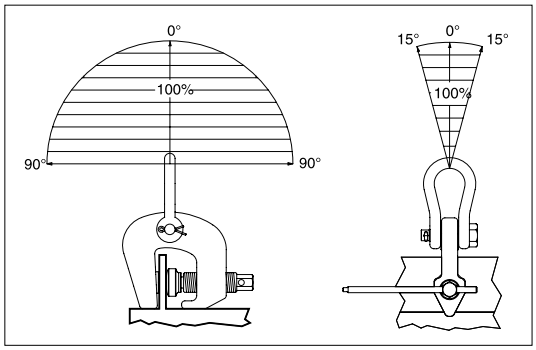


Model IPSC10

Load Rated

Model	Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)									
				Jaw A	B	C	D	E	F	G	H	J	K
IPSC10	1.5	2703857	10.1	0 - 1.57	3.58	5.63	9.88	1.73	6.14	1.97	1.77	0.63	2.56
IPSC10	3	2703858	18.5	0 - 2.38	4.29	6.89	12.20	2.01	7.87	2.44	2.17	0.75	3.27

* Design Factor based on EN 13155 and ASME B30.20.

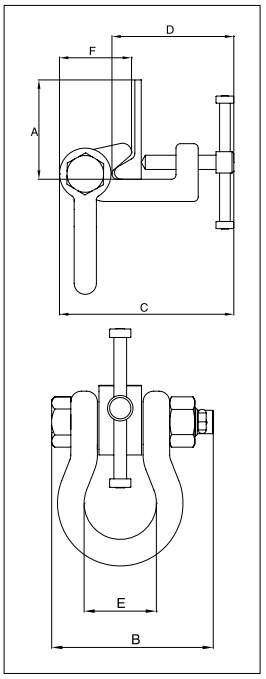


12

IPBTO10

For use as a temporary tackle eye in spaces that have been reinforced with HP (bulb) profiles such as engine rooms and shipsections.

- Available in capacities of 1.5 through 6 metric tons (higher Working Load Limits are available upon request).
- Wide variety of jaw openings available: HP 6.5” to HP 17”.
- Alloy steel body for strength and smaller size. Forged alloy components, where required.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (Crosby IP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof Load test date stamped on body. User manual with test certificate is included with each clamp.
- Maintenance and repair kits are available.
- Manufactured by an ISO 9001 facility.

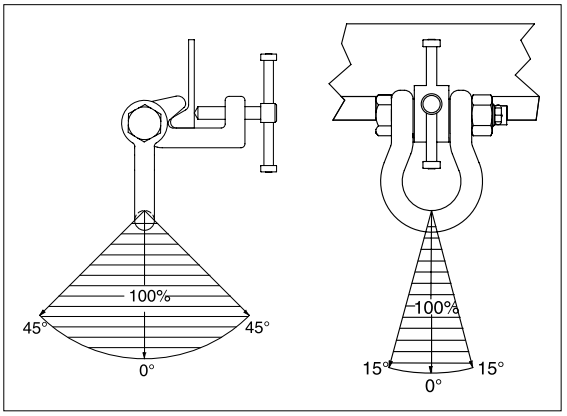


Model IPBTO10

Load Rated

Model	Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)					
				Profile A †	B	C	D	E	F
IPBTO10	1.5	2700980	11.0	HP 6.5 - 9.44	5.39	7.40-8.23	5.08-5.91	2.68	3.19
IPBTO10	3	2700986	13.0	HP 9.44 - 12.56	5.39	7.40-8.54	5.71-6.85	2.68	3.07
IPBTO10	6	2700991	28.7	HP 11.75 - 17.00	7.28	10.03-11.69	7.68-9.29	3.23	4.02

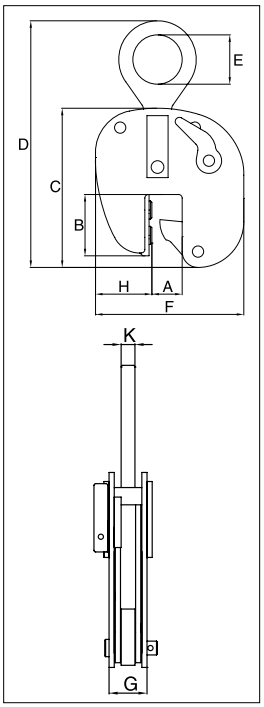
* Design Factor based on EN 13155 and ASME B30.20. **† Profile A is the type of Holland Bulb (HP) style and size material.**



IPBUZ

For Lifting, Transferring and Placing Bulb Profiles onto Ship's Hulls Perpendicularly

- Available in capacities of .75 through 3.75 metric tons (higher Working Load Limits are available upon request).
- Jaw openings available: HP 4.75" to HP 17".
- Welded alloy steel body for strength and smaller size. Forged alloy components, where required.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (Crosby IP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof Load test date stamped on body. User manual with test certificate is included with each clamp.
- Maintenance and repair kits are available.



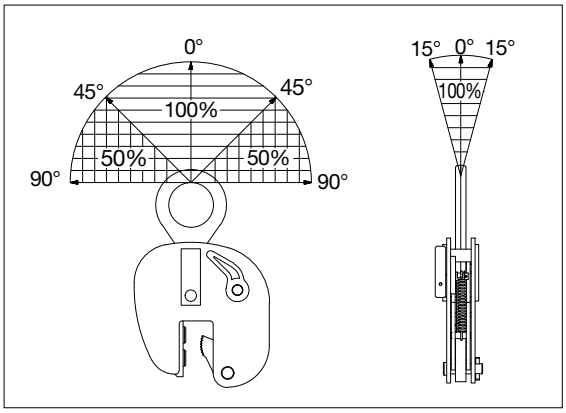
Model IPBUUZ: with Universal Hoisting Eye
Model IPBUZ: with Fixed Hoisting Eye

Load Rated

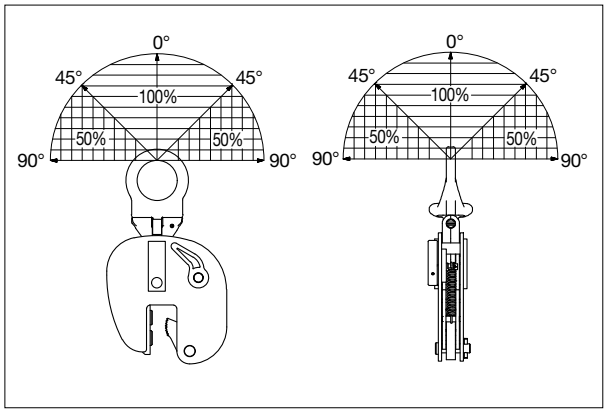
Model	Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)								
				Profile A †	B	C	D	E	F	G	H	K
IPBUUZ	0.75	2705601	18.7	HP 4.75 - 7.88	3.35	8.90	15.35	2.76	8.27	2.40	2.76	0.63
With fixed hoisting eye												
IPBUZ	0.75	2705600	15.4	HP 4.75 - 7.88	3.35	8.90	15.35	2.76	8.27	2.40	2.76	0.63
IPBUZ	1.5	2705701	33.1	HP 8.63 - 17.00	7.72	15.63	22.36	2.76	10.08	2.72	1.89	0.63
IPBUZ	3.75	2705702	64.4	HP 8.63 - 17.00	9.37	17.24	22.24	3.15	13.98	2.52	3.94	0.79

* Design Factor based on EN 13155 and ASME B30.20. **† Profile A is the type of Holland Bulb (HP) style and size material.**

IPBUZ



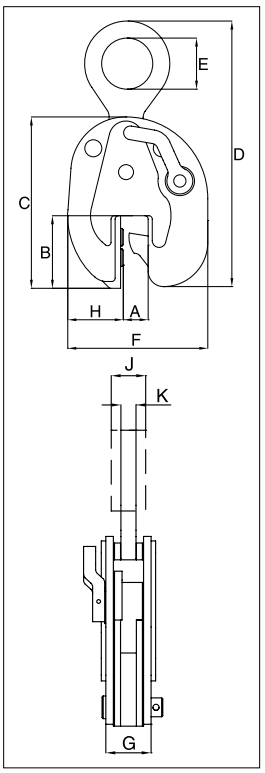
IPBUUZ



IPSBUUZ

For Lifting, Transferring and Placing Complete Shipsections

- Available in capacities of 4.5 through 22.50 metric tons (higher Working Load Limits are available upon request).
- Wide variety of jaw openings available: HP 4" to HP 17".
- Welded alloy steel body for strength and smaller size. Forged alloy components, where required.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (Crosby IP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof Load test date stamped on body. User manual with test certificate is included with each clamp.
- Maintenance and repair kits are available.



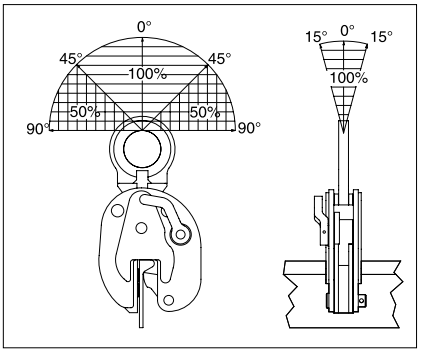
Model IPSBUUZ / IPSBUSUZ: With Universal Hoisting Eye
Model IPSBUZ / IPSBUSZ: With Fixed Hoisting Eye

Load Tested

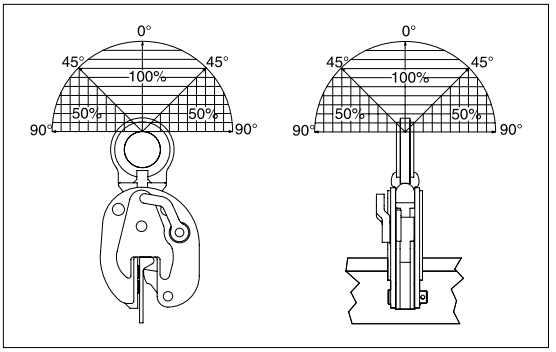
Model	Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)									
				Profile A†	B	C	D	E	F	G	H	J	K
IPSBUUZ	4.5	2705771	34.2	HP 4.00 - 6.25	4.21	9.92	17.72	2.95	8.11	3.78	3.23	1.42	0.79
IPSBUUZ	9	2705773	94.8	HP 4.00 - 6.25	4.13	10.79	19.33	3.15	9.76	4.84	4.09	1.73	0.79
IPSBUSUZ	4.5	2705772	83.8	HP 7.13 - 17.00	8.94	16.85	25.00	2.95	14.84	3.74	5.04	-	0.79
IPSBUSUZ	9	2705774	152	HP 7.13 - 17.00	8.94	18.82	28.27	3.15	16.73	4.65	6.10	1.73	0.98

Design Factor based on EN 13155 and ASME B30.20. **† Profile A is the type of Holland Bulb (HP) style and size material.**

IPSBUZ



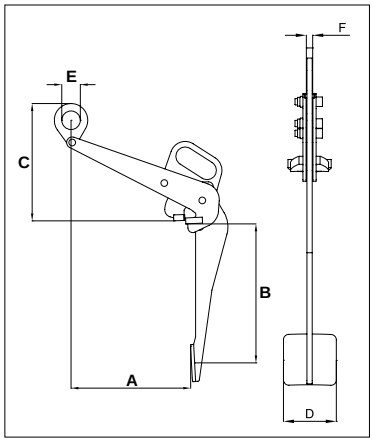
IPSBUUZ

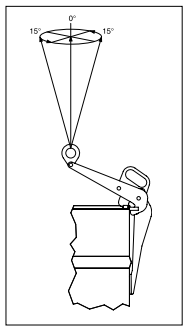


IPDV

Designed to lift, move and transfer 50-55 gallon drums with steel tops

- Available in capacity of .5 metric tons (higher Working Load Limits are available upon request).
- Jaw openings available: IPDV - 11.75” and IPVK - .63”.
- Welded alloy steel body for strength and smaller size. Forged alloy components, where required.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (Crosby IP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof Load test date stamped on body. User manual with test certificate is included with each clamp
- Maintenance and repair kits are available.





Model IPDV

Load Rated

Model	Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)					
				Jaw A	B	C	D	E	F
IPDV	0.5	2700118	15.7	11.75	14.76	11.42	3.94	1.97	0.47

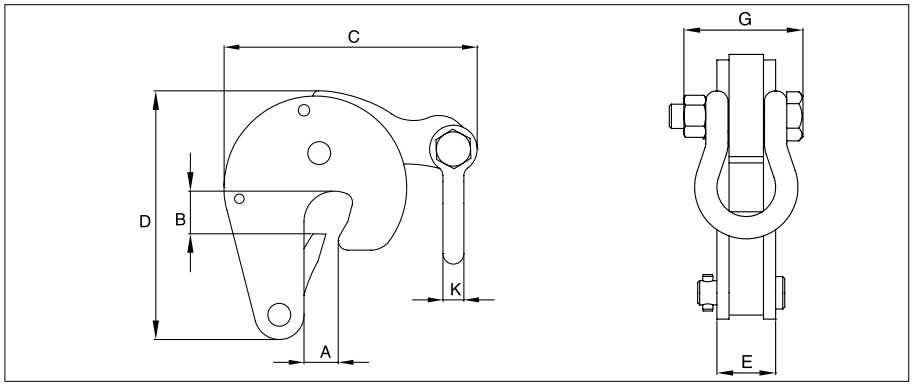
*Design Factor based on EN 13155 and ASME B30.20.

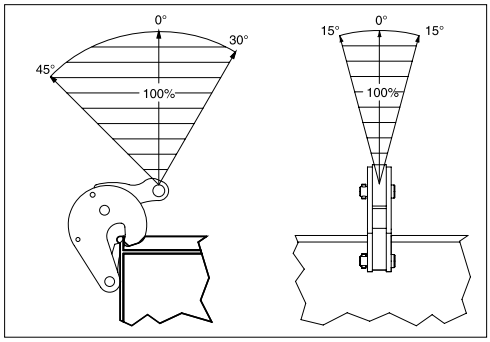
IPVK

Model IPVK

Model	Working Load Limit (t)*	Stock No.	Weight Each (lb)	Dimensions (in)						
				Jaw A	B	C	D	E	G	K
IPVK	0.5	2700116	3.53	0 - 0.63	1.02	5.31	5.20	1.14	2.01	0.43

* Design Factor based on EN 13155 and ASME B30.20.



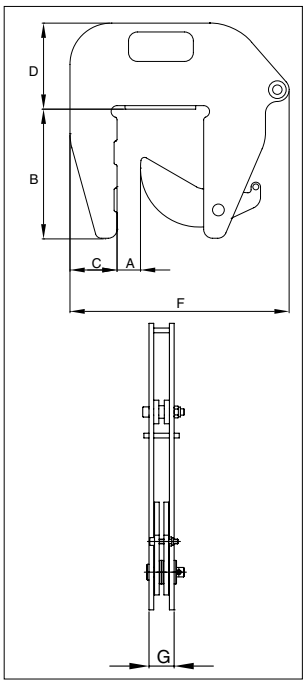


12

IPCC

For Lifting and Transferring Concrete Pipe Sections and Wells

- Available in capacity of 1 metric tons (higher Working Load Limits are available upon request).
- Jaw opening available: 1.56” - 5.50”.
- Welded alloy steel body for strength and smaller size. Forged alloy, components where required.
- Equipped with handle for easy placement.
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (Crosby IP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof Load test date stamped on body. User manual with test certificate is included with each clamp.
- Maintenance replacement parts are available.

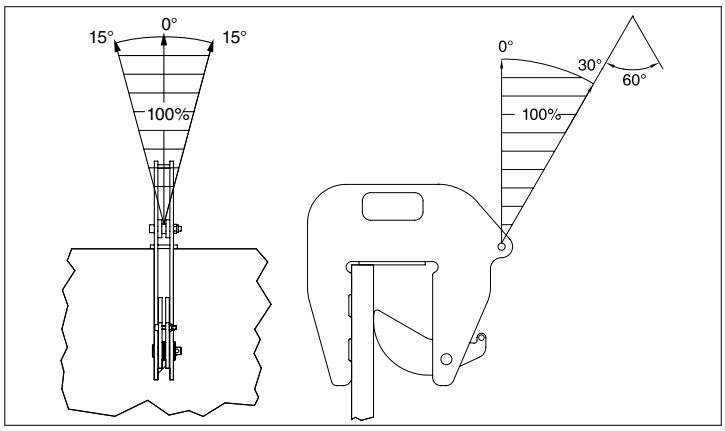


Load Tested

Model IPCC

Model	Working Load Limit Per Pair (t)*	Stock No.	Weight Each (lb)	Dimensions (in)									
				Jaw A	B	C	D	E	F	G	H	J	K
IPCC	1	2700037	20.3	1.56 - 5.50	8.86	3.15	5.75	-	14.65	1.46	-	-	-

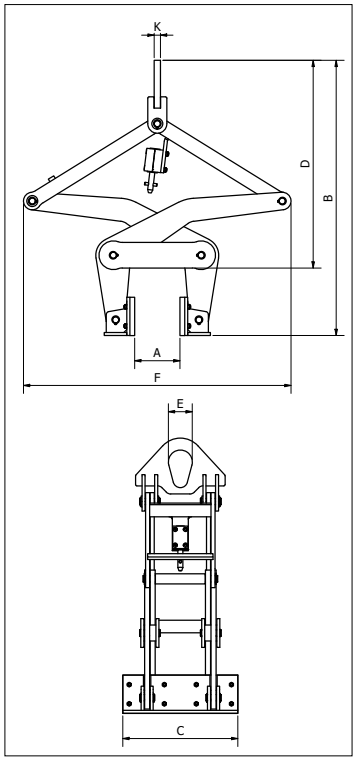
* Design Factor based on EN 13155 and ASME B30.20.



IPBG

The CrosbyIP Barrier Grab provides a fast and efficient method for handling road barriers.

- Hands-free operation.
- Welded alloy steel construction for strength and smaller size.
- Comes equipped with polyurethane pads. (Replacement kits are available.)
- Individually Proof Tested to 2 times the Working Load Limit with certification.
- Company name (Crosby IP), logo, Working Load Limit and jaw opening permanently stamped on body.
- Each product is individually serialized, with the serial number and Proof Load test date stamped on body. User manual with test certificate is included with each clamp.



Load Tested

Barrier Grab

Model	WLL (t)*	Stock No.	Weight Each (lb)	Dimensions (in)						
				Jaw A	B	C	D	E	F	K
IPBG	4	2704018	345	6 (min.)	45.3	18.0	34.7	3.74	40.9	1.00
				12 (max.)	33.9	18.0	23.5	3.74	44.4	1.00

* Design factor based on EN13155 and ASME B30.20.

12

The IPU10 vertical lifting clamp is used for lifting, turning, moving or vertical transfer of sheet, plates, or fabrications from horizontal to vertical and down to horizontal (180°) as needed. The hinged hoisting eye allows for the clamp to place and lift the load from any direction, or with a multiple leg sling without side-loading the clamp.

The IPNM10N vertical lifting clamp is used for lifting, turning, moving or vertical transfer of sheet, plates, or fabrications from horizontal to vertical and down to horizontal (180°) as needed without marring the surface of the material. Materials such as aluminum, stainless steel, painted materials, aircraft skins, composite material, glass, plastic, etc., can be lifted without marring. Will not mar, or scratch the material surface.

The IPNM10P vertical lifting clamp is used for lifting, turning, moving or vertical transfer of sheet, plates, or fabrications from horizontal to vertical and down to horizontal (180°) as needed without marring the surface of the material. Materials such as aluminum, stainless steel, painted materials, aircraft skins, composite material, glass, plastic, etc., can be lifted without marring. The protective cover reduces the risk of damage to surrounding plates. Will not mar, or scratch the material surface.

The IPU10A automatically clicks onto the material as soon as the clamp is placed on the plate. The fact that the safety lock remains in position as the clamp closes precludes hazardous situations. Fastening the IPU10A clamp in places that are difficult to reach is no problem.

The IPHNM10 horizontal lifting clamps have a pretension feature that allows the user to attach the clamps to the material for horizontal lifting and transfer of non-sagging material. To be used where material surface must not be damaged. These clamps must be used in pairs or more.

The IPH10 horizontal lifting clamps with spring loaded tension have a pretension feature that allows the user to attach the clamps to the material for horizontal lifting and transfer of non-sagging material. These clamps must be used in pairs or more.

The IPH10E / IPH10JE horizontal lifting clamps are for use in the lifting and transfer in horizontal position of non-sagging materials or of bundles of non-sagging material. These clamps must be used in pairs or more.

The IPHOZ horizontal lifting clamp is to be used for lifting and transferring, in the horizontal position, of thin sheet and other materials that will sag or bend when lifted. These clamps must be used in pairs or more.

The IPPE10 type clamp is suitable for lifting and transferring bundles of non-bendable sheets of metal in a horizontal position. The jaw opening can be easily adjusted for the height of the bundle or plate. The IPPE10 has magnets in the footplate. This allows one person to operate multiple clamps at the same time when lifting loads. These clamps must be used in pairs or more.

The IPPE10BNM lifting clamps may be used for virtually all applications, where the objects that are to be lifted or transported require optimal protection against surface damage. This also applies to materials with a very smooth surface, composites, plates with a protective cover or hard surface plates. These clamps have to be used in pairs.

The IPBC horizontal lifting clamps have a pretension feature that allows the user to attach the clamps to the material for horizontal lifting and transfer of sagging and non-sagging material. These clamps may also be used to handle material that will be used in shears, bending and rolling machines or other fabrication equipment. May also be used for turning beams from the “H” into the “I” position.

The IPHGZ, IPHGUZ horizontal lifting clamps have a pretension locking feature that allows the user to attach the clamps to the material for horizontal lifting and transfer of sagging and non-sagging material. These clamps may also be used to handle material that will be used in shears, bending and rolling machines or other fabrication equipment. May also be used to move and lift structural shapes such as I-Beams, H-beams etc.

The IPBK10 beam clamp is used for lifting, transferring and stacking H-Beams. A ring-center hoist eye allows for the beam flange to remain vertical. This series of clamps can be used in vertical and horizontal moving, transferring and stacking of different types of structural designs, such as H-Beams, angles, etc, depending on the application desired.

The IPVZ / IPVUZ beam clamp is used for vertical lift and transfer of angle iron and other loads that have only a small gripping area for the clamp (“U” has universal hoisting eye). This series of clamps can be used in vertical and horizontal moving, transferring and stacking of different types of structural designs, such as H-beams, angles, etc, depending on the application desired.

The IPBHZ beam clamp is used for lifting, transferring and stacking I-Beams & H-Beams. An ring-center hoist eye allows for the beam flange to remain vertical. This series of clamps can be used in vertical and horizontal moving, transferring and stacking of different types of structural designs, such as H-Beams, angles, etc, depending on the application desired.

The IPBSNZ beam clamp is used for lifting, transferring and stacking I-Beams. An ring-center hoist eye allows for the beam flange to remain vertical. This series of clamps can be used in vertical and horizontal moving, transferring and stacking of different types of structural designs, such as H-Beams, angles, etc, depending on the application desired.

The IPTK & IPTKW series beam clamp is suitable for use as a temporary tackle eye for a beam.

The IPTKU series beam clamp has an improved hinged hoisting eye that increases the loading angles and an optional new double locking device.

This anchor clamp is suitable as an anchor device for one person, with a personal fall arrest (sheradised and with double locking) system.

The IPSTARTEC11 beam clamp has been specially developed for lifting with the body in vertical position, controlled tilting, transportation and stacking of steel “H” and “I” profiles. By placing the chain guide in the appropriate position, it is easy to switch from lifting to tilting and back again, which shifts the center of gravity.

The IPSC10 screw style clamp is for positioning, pulling and turning plates or fabrications.

The IPBTO10 shipbuilding clamp is used as a temporary tackle eye in spaces which have been reinforced with HP (bulb) profiles such as engine rooms and shipsections. This clamp is fitted with a screwed spindle for easy attachment of the clamp. The moment a load is applied, the clamp is automatically fixed.

The IPBUZ shipbuilding clamps are used for lifting, transferring and placing bulb profiles onto ship's hulls perpendicularly. These clamps are fitted with a locking device for both open and closed positions, which ensures complete reliability. They are to be used exclusively for bulb profiles (not for plates).

The IPSBU(U)Z shipbuilding clamps are used for the lifting, transfer and placing of complete shipsections. These clamps are fitted with a locking device for both open and closed positions, which ensures complete reliability. They are to be used exclusively for bulb profiles (not for plates).

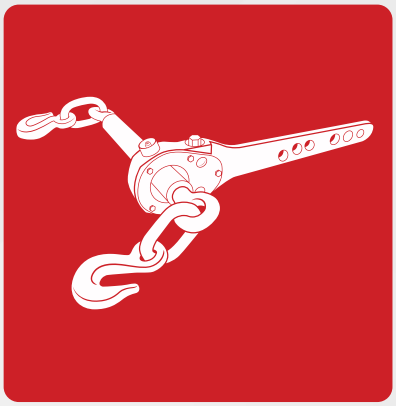
The IPDV drum clamp is for vertical lift and transfer. Allows drum to remain in an upright position during the lift and transfer using one clamp.

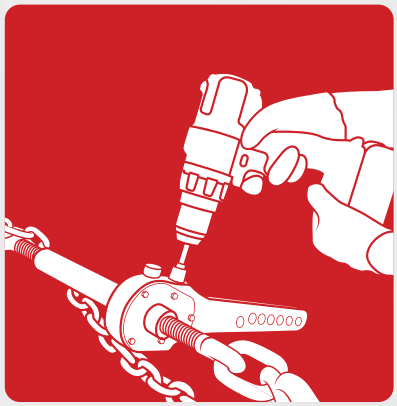
The IPVK drum clamp is for vertical lift and transfer. Automatically locks on drum, and can be used alone or in pairs.

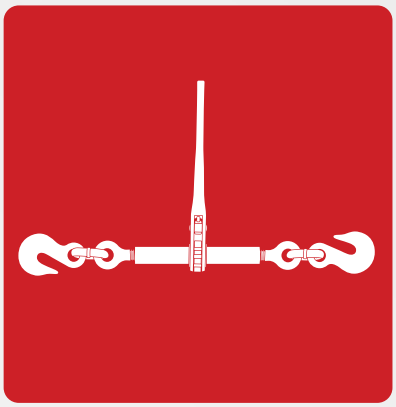
The IPCC is suitable for the vertical lifting and transfer of concrete pipe sections and wells. Very easy application and removal of the clamp thanks to the built-in carrying-grips. Normally used in combination with 7mm chain (not supplied). These clamps must be used in pairs or more.

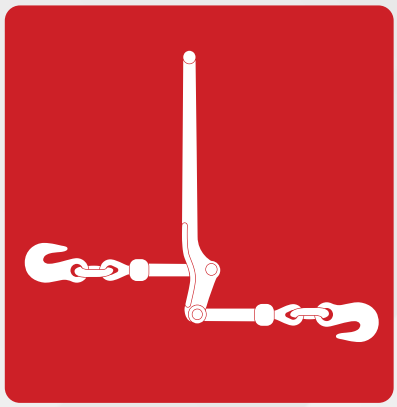
LOAD SECUREMENT

The safest and strongest in load securement with renowned premier brands.









the Crosby group®

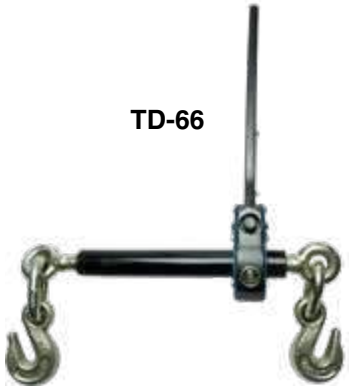
thecrosbygroup.com

Speedbinders™

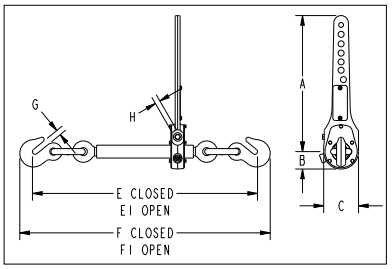
EFFICIENT & ERGONOMIC LOAD SECUREMENT TECHNOLOGY

Speedbinders is changing the load binder industry with its patented Torque Drive technology. Our line of products provide considerable time saving benefits for drivers as well as enhanced benefits by eliminating repetitive, straining operations.

TD-66

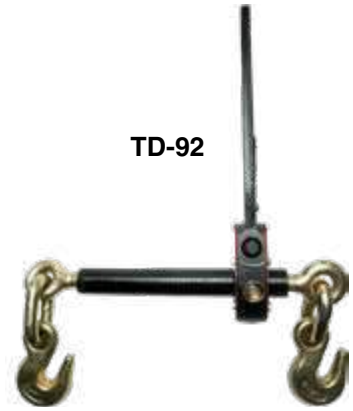


- Blue marking
- Common applications: Light equipment transport & logging
- 3:1 design factor

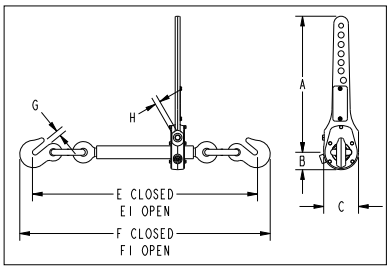


Model	Stock No.	Min-Max Chain Size (in)	Working Load Limit (lb)	Proof Load (lb)	Weight Each (lb)	Dimensions (in)								
						A	B	C	E	E1	F	F1	G	H
TD-66	3674481	5/16-3/8	6,600	9,900	14.3	14.06	1.80	3.60	23.02	32.02	25.26	34.26	0.51	0.53

TD-92

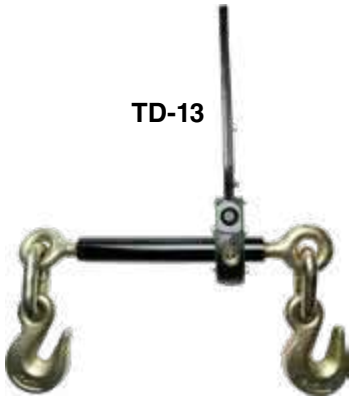


- Red marking
- Common applications: Equipment transport, heavy towing & steel coil transport
- 3:1 design factor

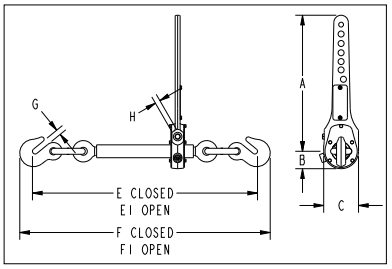


Model	Stock No.	Min-Max Chain Size (in)	Working Load Limit (lb)	Proof Load (lb)	Weight Each (lb)	Dimensions (in)								
						A	B	C	E	E1	F	F1	G	H
TD-92	3674490	3/8-1/2	9,200	13,800	16.0	14.06	1.80	3.60	23.26	32.26	25.88	34.88	0.56	0.53

TD-13



- Green marking
- Common applications: Equipment transport, heavy hauling & steel coil transport
- 3:1 design factor

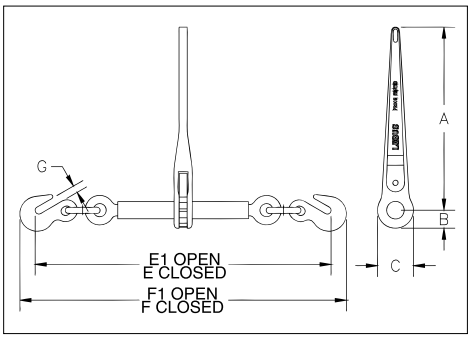


Model	Stock No.	Min-Max Chain Size (in)	Working Load Limit (lb)	Proof Load (lb)	Weight Each (lb)	Dimensions (in)								
						A	B	C	E	E1	F	F1	G	H
TD-13	3674499	1/2-5/8	13,000	19,500	19.9	14.06	1.80	3.60	26.41	35.41	29.53	38.53	0.72	0.53

Spare drive bolts and grease zerks available

APPLICATION AND WARNING INFORMATION
SECTION 17

Crosby LEBUS L-140



Load Rated

APPLICATION AND WARNING INFORMATION
SECTION 17

- Upgraded for use with Grades 70, 80 and 100 Chain.
- Utilizes standard Crosby A-323 Alloy Eye Grab Hooks.
- New design one piece forged handle.
- Continuous take-up feature provides finite adjustment to tie down load.
- One piece assembly, no bolts or nuts to loosen.
- Ratchet spring is rust proofed.
- All load bearing or holding parts forged.
- Easy operating positive ratchet.
- Binders shown with Proof Loads have been individually proof tested to values shown, prior to shipment.
- Meets or exceeds requirements of US DOT FMCSA Part 393 Subpart I.
- Matches the Working Load Limit of Grade 100 chain except for 5/8" size.

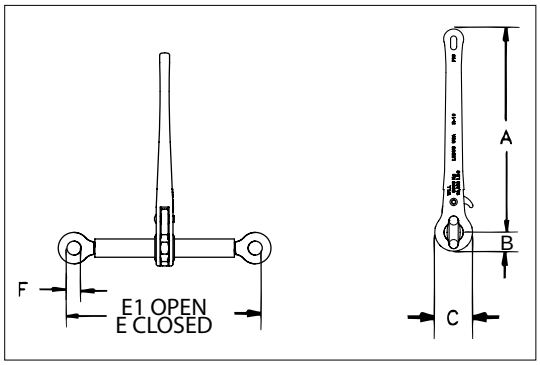
Crosby LEBUS L-140 Standard Ratchet Type Load Binders

Model	Stock No.	Min-Max Chain Size (in)	Working Load Limit (lb)	Proof Load (lb)	Weight Each (lb)	Handle Length (in)	Barrel Length (in)	Take Up (in)	Dimensions (in)							
									A	B	C	E	E1	F	F1	G
R-7	1048404	5/16-3/8	8800	17600	12.11	14	10	8.0	14.00	1.38	2.75	22.94	30.94	25.13	33.13	.50
R-A	1048422	3/8-1/2	15000	30000	14.70	14	10	8.0	14.00	1.38	2.75	25.25	33.25	27.63	35.63	.63
R-C	1048440	1/2-5/8	16000	32000	14.55	14	10	8.0	14.00	1.38	2.75	26.38	34.38	29.44	37.44	.72

3:1 Design Factor.

Crosby LEBUS R-10

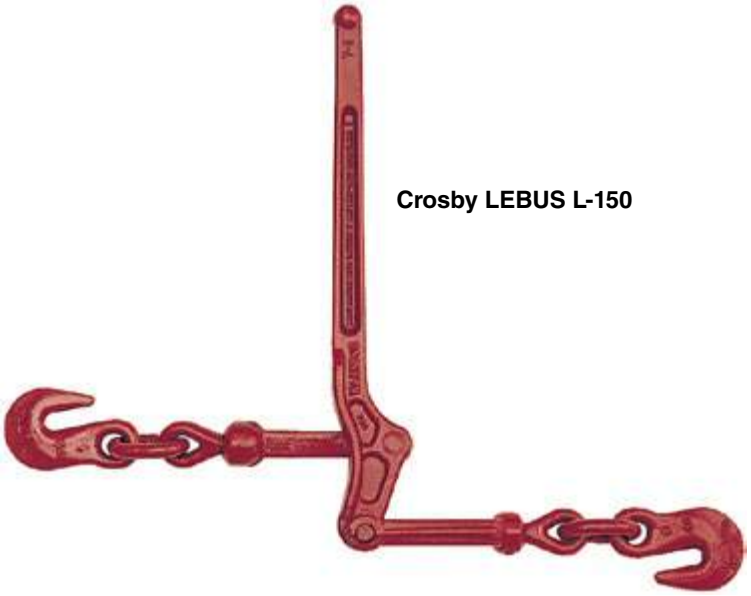
- Meets or exceeds requirements of US DOT FMCSA Part 393 Subpart I.



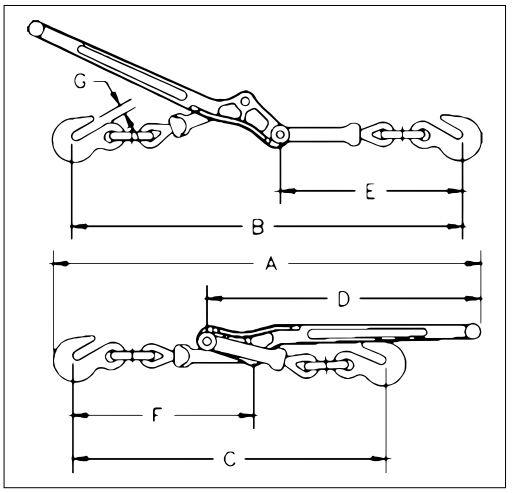
Crosby LEBUS R-10 Binder without Links and Hooks

Model	Stock No.	Working Load Limit (lb)	Weight Each (lb)	Handle Length (in)	Barrel Length (in)	Take Up (in)	Dimensions (in)					
							A	B	C	E	E1	F
R-10	1048468	16000	8.04	14	10	8.0	14	1.38	2.75	14	22	1.00

3:1 Design Factor.



Crosby LEBUS L-150

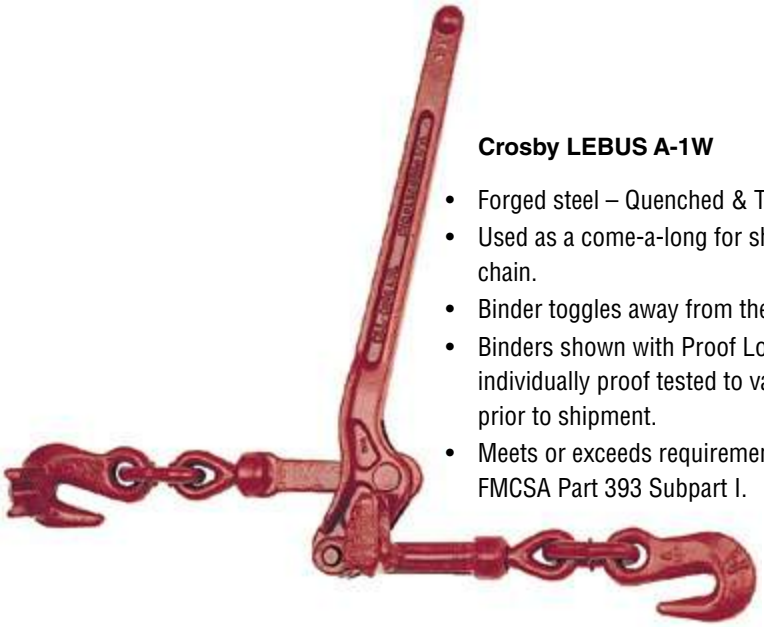


APPLICATION AND WARNING INFORMATION
SECTION 17

- Extra heavy construction at leverage point to prevent spreading. Heel of binder toggles away from load, permitting easy release.
- Ball and socket swivel joints at hook assemblies permit a straight line pull.
- Binders shown with Proof Loads have been individually proof tested to values shown, prior to shipment.
- Forged steel – Quenched & Tempered.
- Meets or exceeds requirements of US DOT FMCSA Part 393 Subpart I.

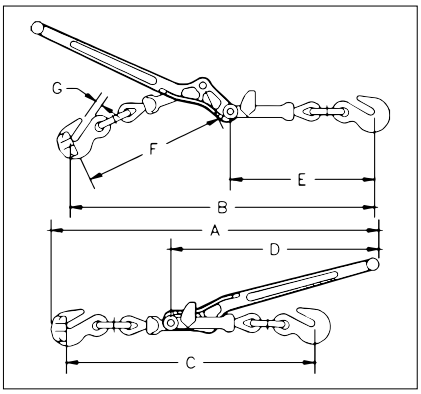
Crosby LEBUS L-150 Standard Lever Type Load Binders

Model	Stock No.	Std. Pkg.	Min-Max Chain Size (in)	Working Load Limit (lb)	Proof Load (lb)	Ultimate Load (lb)	Weight Each (lb)	Handle Length (in)	Take Up (in)	Dimensions (in)						
										A	B	C	D	E	F	G
7-1	1048128	4	5/16-3/8	5400	10800	19000	7.02	16.00	4.50	24.13	22.13	17.88	16.00	10.38	10.38	.50
A-1	1048146	4	3/8-1/2	9200	18400	33000	12.47	18.69	4.50	28.75	25.75	21.25	18.69	12.31	12.38	.63
C-1	1048164	4	1/2-5/8	13000	26000	46000	19.68	21.00	4.75	31.25	29.75	25.00	21.00	14.63	13.75	.72



Crosby LEBUS A-1W

- Forged steel – Quenched & Tempered.
- Used as a come-a-long for short take-up on chain.
- Binder toggles away from the load.
- Binders shown with Proof Loads have been individually proof tested to values shown, prior to shipment.
- Meets or exceeds requirements of US DOT FMCSA Part 393 Subpart I.

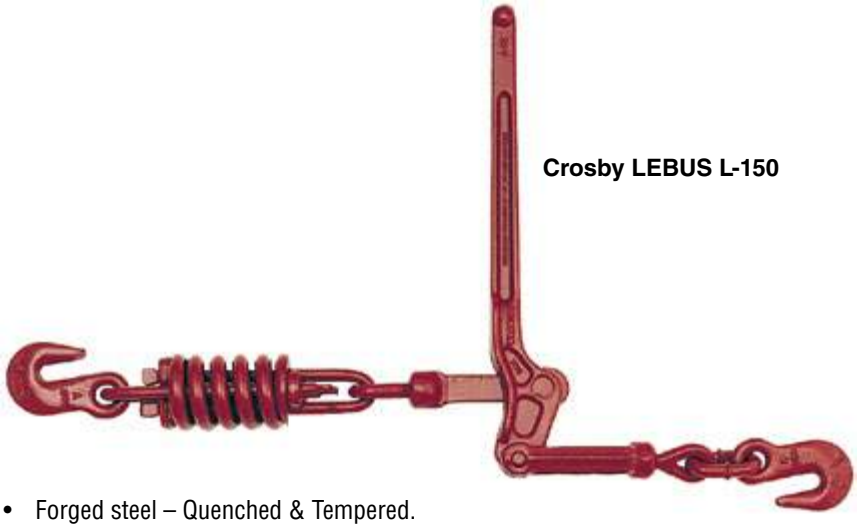


APPLICATION AND WARNING INFORMATION
SECTION 17

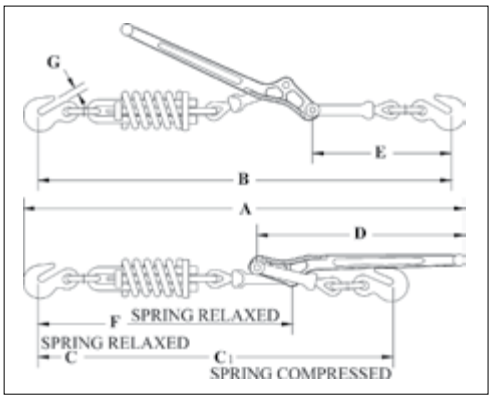
Crosby LEBUS A-1W Walking Load Binders

Model	Stock No.	Chain Size (in)	Working Load Limit (lb)	Proof Load (lb)	Ultimate Load (lb)	Weight Each (lb)	Handle Length (in)	Dimensions (in)						
								A	B	C	D	E	F	G
A-1W	1048388	1/2 only	9200	18400	33000	13.10	18.69	28.75	25.75	21.25	18.69	12.31	12.38	.63

Crosby



Crosby LEBUS L-150



- Forged steel – Quenched & Tempered.
- Spring cushion for load protection, cushions shock and sway.
- Binder toggles away from the load.

Load Rated Q&T

APPLICATION AND WARNING INFORMATION
SECTION 17

Crosby LEBUS L-150 Snubbing Load Binders

Model	Stock No.	Min-Max Chain Size (in)	Working Load Limit (lb)	Ultimate Load (lb)	Weight Each (lb)	Handle Length (in)	Take Up (in)	Compression Strength of Spring (lb)	Dimensions (in)							
									A	B	C	C1	D	E	F	G
7-12	1048280	5/16 - 3/8	5400	16000	11.25	16.00	4.25	2300	32.75	30.75	28.00	26.50	16.00	10.38	19.00	.50
A-12	1048306	3/8 - 1/2	9200	20000	18.69	18.50	4.50	3300	37.19	34.00	29.50	30.44	18.69	12.31	20.88	.63

Crosby LEBUS C-188 Spectrum 8®

- Heat treated alloy steel.
- Ends fitted with Crosby A-330 Quenched & Tempered alloy clevis grab hook.
- Finish – self colored.
- Meets or exceeds requirements of US DOT FMCSA Part 393 Subpart I.

Crosby LEBUS C-188 Spectrum 8® Alloy Boomer Chains

Chain Size (in)	Stock No.	Working Load Limit (lb)	Standard Length (ft)	Weight Each (lb)
3/8	279889	7100	20	30.28
1/2	279898	12000	20	54.04

Crosby LEBUS L-180

- Hooks are Forged – Quenched & Tempered.
- Individually Proof Tested.
- Spectrum 8® alloy steel from 3/4" through 1-1/4" (20 - 32mm).
- Meets or exceeds requirements of US DOT FMCSA Part 393 Subpart I.

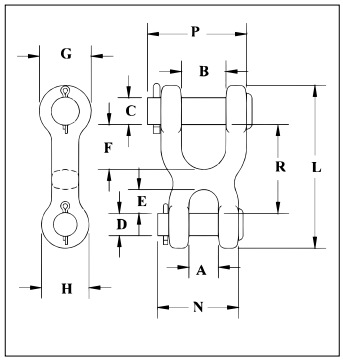
Crosby LEBUS L-180 Winchline Tail Chain

Wire Rope Diameter (in)*	Stock No.	Working Load Limit (lb)†	Length (in)	No. of Links	Weight Each (lb)
5/16 - 3/8	1091473	5400	18	11	3.0
1/2 - 5/8	1091482	13000	18	7	6.2
3/4 - 7/8	1091511	34200	24	8	18.2
1 - 1-1/8	1091516	47700	18	5	21.2
1 - 1-1/8	1091525	47700	24	7	23.3
1-1/4	1091532	72300	24	5	40.0

* Recommended for IPS or XIP (EIP), RRL, FC or IWRC wire rope. † Ultimate Load is 3.5 times the Working Load Limit.

S-247
Double Clevis Link

- All pins alloy steel - Quenched & Tempered.
- Body is forged and heat treated carbon steel.
- Designed for linking all popular sizes of Grade 3 and Grade 4 chain to rings, end links, eye hooks, pad eyes, tractor eye bolts, etc.
- Features quick and easy assembly.



S-247 Double Clevis Link

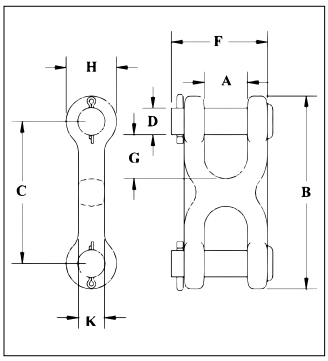
Chain Size (in)	Stock No.	Working Load Limit (lb)	Weight Each (lb)	Dimensions (in)											
				A	B	C	D	E	F	G	H	L	N	P	R
1/4	1013021	2600	.38	.50	.75	.50	.31	.38	.75	1.00	.81	2.81	1.38	1.66	1.50
5/16-3/8	1013049	5400	.81	.56	1.00	.63	.44	.47	1.00	1.19	1.00	3.53	1.75	2.25	1.91
7/16	1013067	7200	1.25	.69	1.13	.69	.56	.59	1.09	1.31	1.19	4.06	2.00	2.50	2.19
1/2	1013085	9200	1.56	.81	1.25	.75	.63	.68	1.25	1.44	1.31	4.53	2.25	2.75	2.47

* Ultimate Load is 4 times the Working Load Limit.

Not Suitable for use with Grade 80 or Grade 100 chain and chain slings used in overhead lifting.

S-249
Twin Clevis Link

- Available in three popular sizes.
- Body is forged and heat treated carbon steel.
- All pins alloy steel - Quenched & Tempered.
- Features quick and easy assembly.
- Twin Clevis design provides a variety of uses and can be used with Grade 3, Grade 4 and Grade 7 chain.



S-249 Twin Clevis Link

Chain Size (in)	Stock No.	Working Load Limit (lb)	Weight Each (lb)	Dimensions (in)							
				A	B	C	D	F	G	H	K
1/4-5/16	1012861	4700	.31	.47	2.50	1.56	.38	1.31	.43	.94	.50
3/8	1012889	6600	.44	.53	2.81	1.81	.44	1.53	.50	1.00	.56
7/16-1/2	1012905	11300	.98	.65	3.62	2.31	.56	1.91	.63	1.31	.81

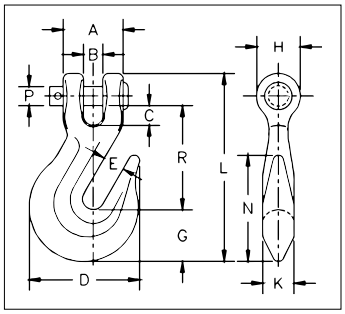
4:1 Design Factor.

Not Suitable for use with Grade 80 or Grade 100 chain and chain slings used in overhead lifting.

Crosby

A-330
Clevis Grab Hook

- Forged steel - Quenched & Tempered.
- Design factor is 4:1.
- Features quick and easy assembly.
- Designed for Grade 8 chain.



Q&T

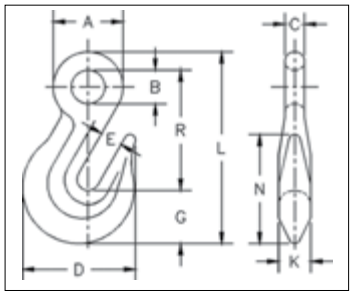
A-330 Clevis Grab Hooks

Chain Size (in)	Stock No.	Working Load Limit (lb)	Weight Each (lb)	Dimensions (in)											
				(lb)	B	C	D	E	G	H	K	L	N	P	R
1/4	1027249*	3500	.36	1.00	.32	.31	1.81	.34	.88	.72	.47	3.05	1.75	.31	1.64
5/16	1027267*	4700	.62	1.22	.43	.36	2.12	.44	.97	.91	.59	3.66	2.06	.38	2.02
3/8	1027285*	7100	1.00	1.42	.48	.49	2.53	.50	1.17	1.00	.72	4.42	2.34	.44	2.41
1/2	1027329*	12000	2.22	1.88	.57	.51	3.56	.66	1.53	1.25	.78	5.72	2.97	.63	3.19
5/8	1027347	18100	4.41	2.31	.71	.67	4.39	.78	1.78	1.56	1.09	6.83	4.31	.75	4.09
3/4	1027365	24700	6.50	2.62	.94	.94	5.22	.94	2.13	1.88	1.31	8.13	5.09	.88	4.63

* These A-330 hooks are forged with an "8" designating Grade 80, and are suitable for use with Grade 8 chain in overhead lifting applications as long as the hook is proof-tested as part of the chain sling assembly or as an individual component per ASME B30.9. We recommend the use of the A-1338 / A-1358 which is proof tested and supplied with a proof test certificate.

A-323
Eye Grab Hook

- Forged steel - Quenched & Tempered.
- Design Factor is 4:1.
- Designed for Grade 8 chain.



Q&T

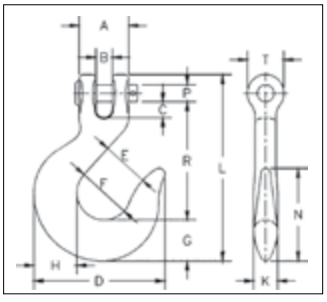
A-323 Eye Grab Hooks

Chain Size (in)	Stock No.	Working Load Limit (lb)	Weight Each (lb)	Dimensions (in)									
				(lb)	B	C	D	E	G	K	L	N	R
1/4	1026384*	3500	.28	1.09	.53	.31	1.81	.34	.88	.47	3.05	1.75	1.88
5/16	1026400*	4700	.45	1.31	.62	.38	2.12	.44	.97	.59	3.59	2.06	2.28
3/8	1026428*	7100	.79	1.56	.75	.44	2.53	.50	1.17	.72	4.28	2.34	2.69
1/2	1026464*	12000	1.75	1.94	.88	.53	3.56	.66	1.53	.78	5.44	2.97	3.38
5/8	1026482*	18100	3.25	2.48	1.16	.66	4.41	.79	1.89	1.16	6.82	4.25	4.25
3/4	1026507	24700	5.94	2.88	1.38	.75	5.22	.94	2.13	1.31	8.06	5.09	5.16

* These A-323 hooks are forged with an "8" designating Grade 80, and are suitable for use with Grade 8 chain in overhead lifting applications as long as the hook is proof-tested as part of the chain sling assembly or as an individual component per ASME B30.9. We recommend the use of the A-1328 which is proof tested and supplied with a proof test certificate.

A-331
Clevis Slip Hook

- Forged alloy steel – Quenched & Tempered.
- All pins are alloy steel – Quenched & Tempered.
- Not suitable for use with Grade 80 chain and chain slings used in overhead lifting. For slings or lifting chains, Grade 80 or 100 alloy components are recommended.



Q&T

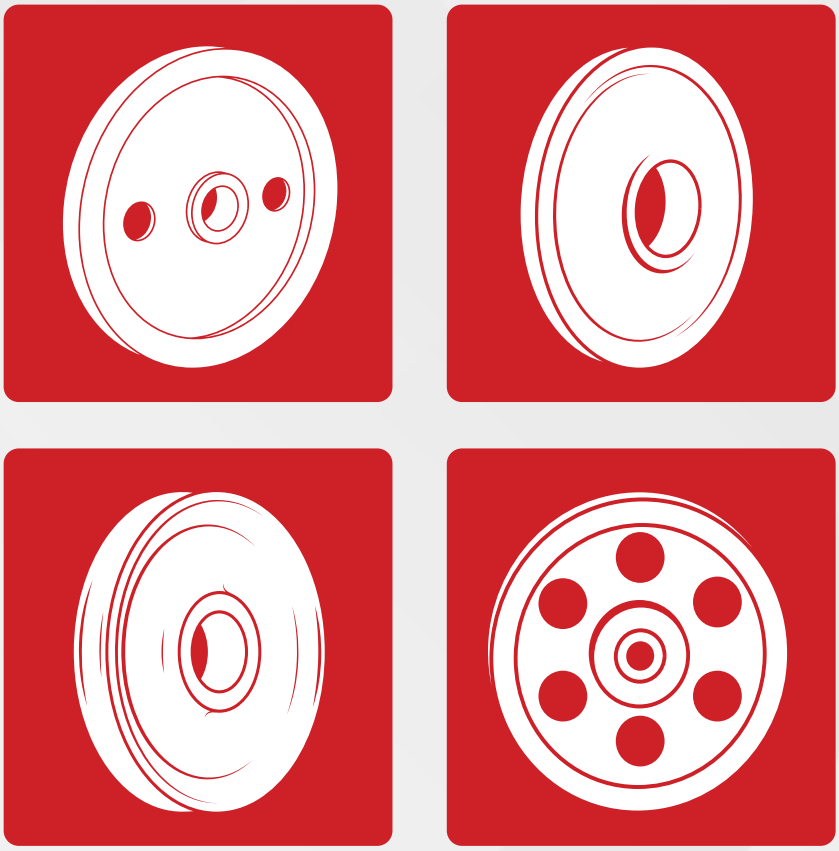
A-331 Clevis Slip Hooks

Chain Size (in)	Stock No.	Working Load Limit (lb)	Weight Each (lb)	Dimensions (in)													
				A	B	C	D	E	F	G	H	K	L	N	P	R	T
1/4	1027524	2750	0.55	1.06	0.32	0.29	2.76	0.94	1.19	0.81	0.88	0.50	3.94	2.13	0.31	2.58	0.72
5/16	1027542	4300	0.79	1.22	0.43	0.34	3.05	1.06	1.25	0.94	1.00	0.56	4.53	2.24	0.38	2.87	0.97
3/8	1027560	5250	1.21	1.38	0.45	0.44	3.62	1.31	1.50	1.13	1.19	0.66	5.16	2.56	0.44	3.25	1.06
7/16	1027588	7000	2.05	1.73	0.59	0.60	4.33	1.56	1.81	1.38	1.44	0.81	5.98	3.05	0.56	3.70	1.19
1/2	1027604	9000	2.76	1.88	0.57	0.53	4.80	1.69	1.94	1.56	1.63	0.91	6.54	3.44	0.63	4.02	1.31
5/8	1027622	13500	4.74	2.30	0.71	0.71	5.63	2.01	2.38	1.81	1.94	1.09	7.87	4.02	0.75	4.92	1.56
3/4	1027640	19250	11.28	3.19	1.18	1.29	7.38	2.50	3.00	2.38	2.50	1.44	10.02	5.06	1.00	6.09	2.09

4:1 Design Factor.

SHEAVES

Roll-forged sheaves that provide an upset metal flow without creating a stress zone at the splitting point.



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CROSBY VALUE ADDED

McKissick® Roll-Forged Heavy Duty Sheaves are made by upsetting and forming the groove and flange walls in multiple steps, eliminating the need to split and weaken the groove. This exclusive forging process adds extra strength to the critical groove section.

McKissick Domed Reinforced Extreme Duty Roll Forged Sheaves are welded in a circular pattern thus eliminating the higher stresses created by welding ribs or other forms of stiffeners.

McKissick Heavy Duty Sheaves are available with machined groove rings or machine forged rings utilized for the rim or hub.

McKissick Heavy Duty Closed-Die Forged Sheaves offer the performance of closed-die forging with the precision machining capabilities of CNC machinery.

McKissick Normal Duty Malleable Cast Sheaves provide economical solutions for normal service applications.

McKissick Sheaves come in a variety of sizes to suit your specific applications. Crosby offers many sheaves as standard and these are shown in the pages that follow. For applications that require unique specifications, Crosby can make minor modifications to many of the sheaves listed at a reasonable charge. We can also custom design and manufacture sheaves to your exact requirements. McKissick roll forged sheaves can be furnished balanced or with lightening holes at a reasonable charge on request.

Crosby's hardening technique is a science. It provides a precise maximum hardness for wear-resistance across the wire rope contact area. The McKissick sheave groove is flame hardened to a minimum 35 Rockwell C for a 140° contact area with the wire rope (upon special request the McKissick sheave groove can be flame hardened to a minimum 50 Rockwell C for a 150° contact area with the wire rope). The solid steel plate provides the ideal surface for flame hardening and a closer tolerance fit to the wire rope to reduce fatigue and wear.

The **McKissick hub** is stepped to eliminate stress failure in the weld, common in traditional hub designs. The hub is pressed into place with complete metal-to-metal contact. This helps ensure an accurate alignment to the hub's axis so there is no wobble or lopping of the rotating sheave. The precision aligned hub / sheave wheel combination adds to the bearing life and keeps the sheave on the job longer.

McKISSICK® STANDARD BEARINGS

(B) Bronze Bushing

(R) Roller Bearings

(W) Roller Bearing with Thrust Washers

(C) Full Complement Cylindrical Roller Bearing

(T) Tapered Roller Bearing

ORDERING INSTRUCTIONS

The following information should be specified when ordering blocks and sheaves:

Blocks

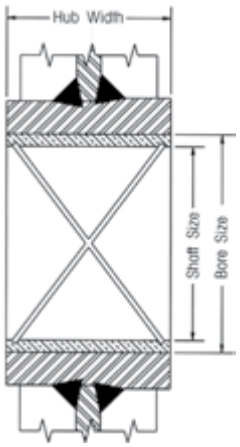
- Wire rope diameter
- Sheave OD
- Shaft or bore size
- Bearing type or plain bore
- Hub width
- Rim width
- Stock number (if known)
- Special machine features
- Special finishes

If hub or rim dimensions necessitate a dimension other than those shown in this catalog, please contact The Crosby Group for minimums and maximums. Tapered roller bearing sheaves show width over bearing cones, which cannot be altered.

Price and delivery for your special needs, if not shown, are available upon request.

McKissick® Sheaves Bearings Application Information

BRONZE BUSHING



Slow line speed, moderate load and moderate use

- Maximum Bearing Pressure (BP): 31N/mm²
- Maximum Velocity at Bearing (BV): 366m/min
- Maximum Pressure Velocity Factor (PV): 114

$$\text{Formula for BP} = \frac{\text{Line Pull x Angle Factor}}{\text{Shaft Size x Hub Width}}$$

For underwater sheave applications, special bronze bushings are available. Consult the bearing manufacturer for applicable load.

Example

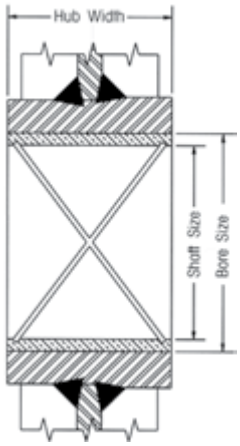
Using a 14in sheave (917191) with a 4,600 lb line pull and an 80 degree angle between lines, determine maximum allowable line speed:

$$BP = \frac{\overset{\text{Line Pull}}{4{,}600 \text{ lbs}} \times \overset{\text{Angle Factor}}{1.53}}{\underset{\text{Shaft Size}}{1.50} \times \underset{\text{Hub Width}}{1.62}} = 2{,}896 \text{ PSI}$$

$$BV = \frac{\overset{\text{PV Factor}}{55{,}000}}{\underset{\text{BP}}{896}} = 19 \text{ FPM}$$

ROLLER BEARINGS

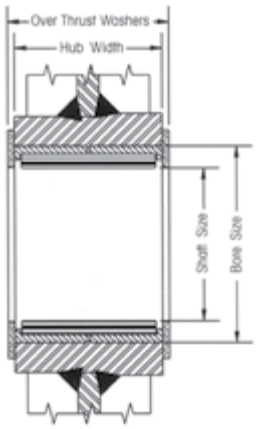
Bronze Bushings with Fig. 8 oil grooves are made from SAE 660 bronze for cold-finished shafts.



Roller Bearings are designed to operate on shafts carborized to 60 Rockwell C and grounded to +/- .0005 of shaft size.

STANDARD STRAIGHT ROLLER BEARINGS

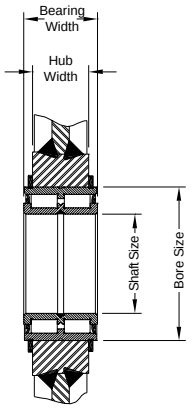
Heavier loads, higher speeds, more frequent use, radial loads only.



Roller Bearings without inner races are designed to operate on shafts carborized to 60 Rockwell C and grounded to +/- .0005 of shaft size.

FULL COMPLEMENT, DOUBLE ROW, ROLLER BEARING

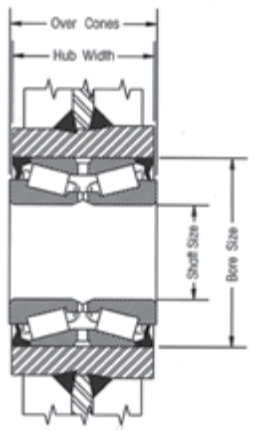
Heavy load, high speeds, continuous operation, axial, and radial loads.



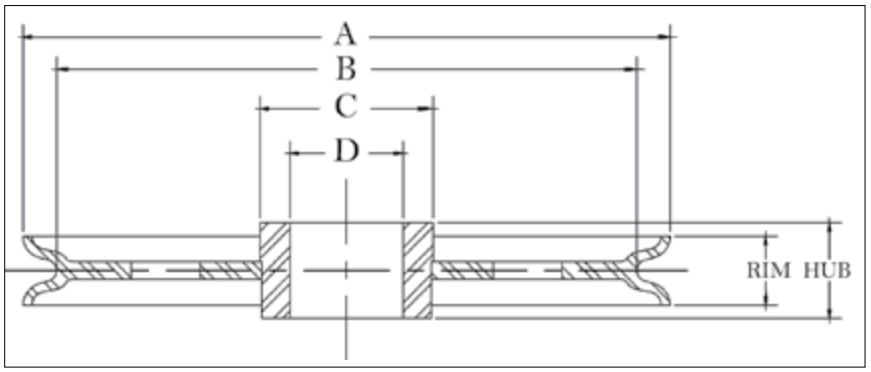
Cylindrical Roller Bearings with snap ring grooves are complete units with outer and inner rings, rib-guided cylindrical rollers, and sealing rings. They can support axial forces in both directions, as well as radial forces. They have high dynamic and static load ratings.

TAPERED ROLLER BEARINGS

Heavy loads, high speeds, continuous operation, axial, and radial loads.



Tapered Bearings are designed to operate on shafts machined to +/- .0005 of shaft size. Applications should provide for tightening separator plates against bearing cones to adjust and insure proper function of bearings.



APPLICATION AND WARNING INFORMATION
SECTION 17

McKissick® Plain Bore Sheaves

- Roll-Forged™ sheaves are available in sizes up to 78" in diameter.
- McKissick® Plain Bore Sheaves can be equipped with bushings or bearings at an optional charge.
- 14" diameter sheaves and larger are Roll-Forged with flame hardened grooves to minimum Rockwell 35C, unless otherwise noted.

"A" Nominal Outside Diameter (in)	Stock Number	Wire Rope Diameter (in)	"D" Bore Size (in)	Hub Width (in)	Rim Width (in)	"C" Nominal Hub Outside Diameter (in)	"B" Nominal Tread Diameter (in)	Material	Approx. Weight (lb)
3.00	51008	1/4	0.752	1.310	1.25	1.12	2.06	B.S.	1.0
3.00	11310	3/8	0.752	1.310	1.25	1.12	2.06	B.S.	1.0
4.00	51044	1/4	1.569	1.000	0.88	2.00	3.12	B.S.	2.0
4.00	1189	3/8	1.569	1.000	0.88	2.00	3.12	B.S.	2.0
4.88	2026409	5/8	1.749	1.250	1.12	2.25	4.06	F.S.	3.6
5.88	2023136	3/4	1.875	1.750	1.62	2.50	4.38	F.S.	6.0
6.00	51124	3/8	1.625	1.125	1.00	2.25	4.94	F.S.	4.0
6.00	13014	1/2	1.625	1.125	1.00	2.25	4.94	F.S.	4.0
7.00	51437	1/4	1.875	1.375	0.75	2.38	6.25	B.S.	6.2
7.00	3203	3/8	1.875	1.375	0.75	2.38	6.25	B.S.	6.2
8.00	61710	1/2	1.848	1.313	1.25	2.44	6.62	F.S.	8.0
8.00	2023144	1/2	1.875	1.750	1.62	2.56	6.31	F.S.	10.0
8.00	51598	5/8	1.875	1.500	1.38	2.44	6.62	F.S.	7.0
8.00	2023146	5/8	1.875	1.750	1.62	2.56	6.31	F.S.	10.0
8.00	5194	3/4	1.875	1.500	1.38	2.44	6.62	F.S.	7.0
8.00	2023152	3/4	1.875	1.750	1.62	2.56	6.31	F.S.	10.0
8.00	2023466	1	2.750	2.500	2.38	4.00	5.25	F.S.	15.0
8.50	61747	3/8	1.848	1.313	1.00	2.75	7.50	D.I.	11.0
9.88	51918	3/8	3.000	1.750	1.12	3.75	8.56	F.S.	14.0
9.88	2023154	1/2	1.875	1.750	1.62	2.56	8.31	F.S.	14.5
9.88	6040	1/2	3.000	1.750	1.12	3.75	8.56	B.S.	14.0
9.88	5675	5/8	1.375	1.500	1.38	3.25	8.50	F.S.	9.5
9.88	2023169	5/8	1.875	1.750	1.62	2.56	8.31	F.S.	14.5
9.88	2023173	3/4	1.875	1.750	1.62	2.56	8.31	F.S.	14.5
9.88	2023419	7/8	2.500	2.313	2.18	3.50	8.12	F.S.	15.0
10.00	2023784	1-1/8	4.000	2.500	2.38	5.75	7.38	F.S.	27.0
12.00	2023247	5/8	1.875	1.750	1.62	3.25	10.12	F.S.	18.0
12.00	2023234	3/4	1.875	1.750	1.62	3.25	9.75	F.S.	18.0
12.00	52285	3/4	3.000	1.750	1.62	4.50	9.75	R.F.	16.0
12.00	2026537	3/4	3.000	2.313	2.18	4.50	9.75	R.F.	24.0
12.00	62283	7/8	3.000	2.188	2.18	4.50	10.25	R.F.	24.0
12.00	2030845	1	2.500	2.313	2.31	4.00	9.38	R.F.	24.0
13.00	33653	3/8	2.500	1.500	1.12	3.50	11.62	R.F.	14.0
13.00	50704	1/2	2.500	1.500	1.12	3.50	11.62	R.F.	14.0
14.00	*52720	1/2	4.250	2.500	1.38	5.06	12.62	D.I.	15.0
14.00	2023249	5/8	1.875	1.750	1.62	3.25	12.12	R.F.	20.0
14.00	4013098	5/8	2.500	1.750	1.62	4.50	12.12	R.F.	31.0
14.00	4013187	5/8	2.375	1.750	1.62	4.50	12.12	R.F.	30.0
14.00	4013105	3/4	2.500	1.750	1.62	4.50	11.75	R.F.	31.0
14.00	4016503	3/4	3.250	2.313	2.18	5.50	11.75	R.F.	34.0
14.00	2023564	1-1/8	2.750	2.500	2.38	4.50	11.38	R.F.	28.0
16.00	4010046	3/4	4.250	2.750	2.50	5.75	13.38	R.F.	45.0
16.00	4010126	1	4.250	2.750	2.50	5.75	13.38	R.F.	42.0
18.00	4010493	7/8	3.500	2.313	2.38	5.50	14.94	R.F.	64.0
20.00	*4014024	5/16	4.250	2.750	1.38	5.75	18.88	R.F.	45.0
20.00	4010616	3/4	3.500	2.313	2.18	5.50	18.00	R.F.	66.0
20.00	4010885	3/4	4.250	2.750	2.12	6.50	18.00	R.F.	80.0
20.00	4013613	1	3.750	2.313	2.18	5.50	16.50	R.F.	76.0
20.00	4010625	7/8	3.500	2.313	2.18	5.50	16.94	R.F.	74.0

Custom sheaves are available.

McKissick® Plain Bore Sheaves

"A" Nominal Outside Diameter (in)	Stock Number	Wire Rope Diameter (in)	"D" Bore Size (in)	Hub Width (in)	Rim Width (in)	"C" Nominal Hub Outside Diameter (in)	"B" Nominal Tread Diameter (in)	Material	Approx. Weight (lb)
20.00	4010901	1	4.250	2.750	2.12	6.50	16.50	R.F.	80.0
24.00	4012749	9/16	6.500	3.375	3.12	8.00	22.00	R.F.	148
24.00	*4014408	5/8	4.722	2.750	1.50	6.50	21.75	R.F.	120
24.00	4011385	1	3.000	2.500	2.38	4.50	21.12	R.F.	125
24.00	4012785	1	6.100	2.875	2.62	8.00	21.12	R.F.	130
24.00	4011223	1-1/8	4.500	3.000	2.75	6.50	20.06	R.F.	130
24.00	2029333	1-1/8	6.500	3.375	3.12	8.00	20.06	R.F.	132
24.00	4011410	1-1/2	6.500	3.375	3.12	8.25	20.00	R.F.	186
30.00	2026302	7/8	6.500	3.375	3.12	8.00	27.00	R.F.	187
30.00	2029382	1/1/4	7.875	3.500	3.12	9.50	26.38	R.F.	225
36.00	4012160	1-1/8	6.500	3.375	3.12	8.25	32.25	R.F.	341
36.00	4012730	1-1/2	7.875	3.500	3.25	9.50	32.00	R.F.	302
42.00	4015844	1-1/8	8.875	3.625	3.25	11.00	38.50	R.F.	460
42.00	4015853	1-1/4	8.875	3.625	3.25	11.00	38.38	R.F.	460
42.00	4015719	1-1/4	10.875	3.625	3.38	12.50	38.38	R.F.	443
42.00	4015719	1-1/4	10.875	3.625	3.38	12.50	38.38	R.F.	443

*Without flame hardening.

Custom sheaves are available.

VIDEO PODCAST SERIES

Our experts answer some of your most common safe rigging, lifting, and securement questions in our video podcast series, *Ask the Expert*.

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- Bronze bushing vs roller bushing
- Understanding groove hardness
- How to know when it's time to replace sheaves
- How to extend the life of a sheave

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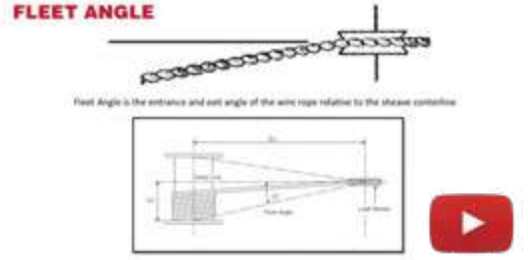
Ep. 27 Sheaves: bronze bushing vs roller bushing

Ep. 32 How to know when it's time to repace sheaves

Ep. 30 Understanding sheave groove hardness



Ep. 34 How to extend the life of a sheave

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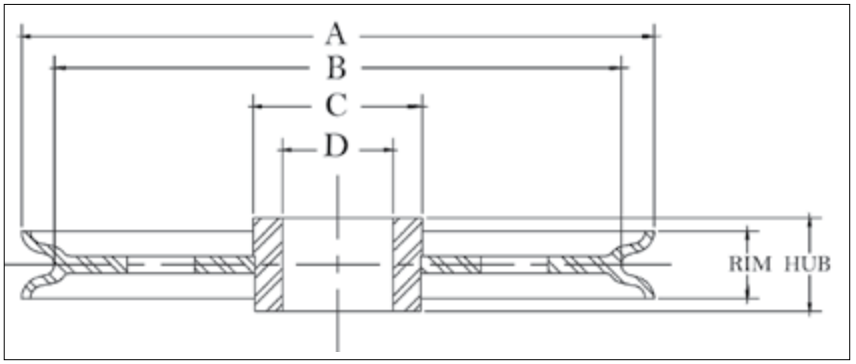


APPLICATION AND WARNING INFORMATION
SECTION 17

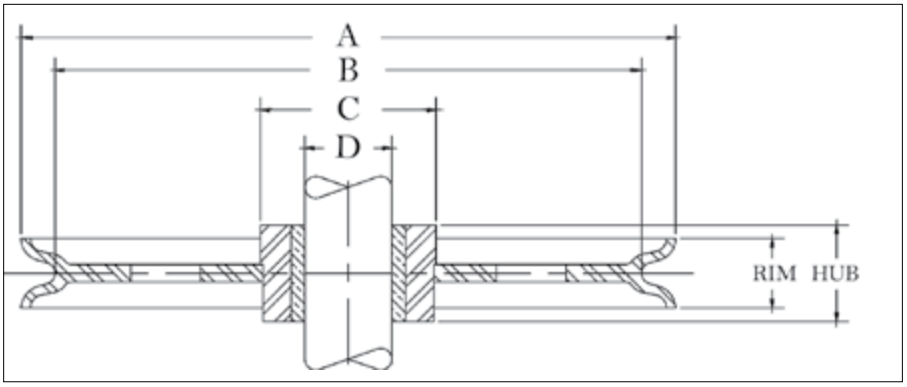
McKissick® Common Bore Sheaves

- Roll-Forged sheaves are available in sizes up to 78" in diameter.
- Common Bore or Plain Bore are terms used when there is merely a hole bored in the center of the sheave.
- Common Bore Sheaves are machined for a running fit for the shaft size listed, and no bearing or bushing is installed.

"A" Nominal Outside Diameter (in)	Stock Number	Wire Rope Diameter (in)	"D" Shaft Size (in)	Hub Width (in)	Rim Width (in)	"C" Nominal Hub Outside Diameter (in)	"B" Nominal Tread Diameter (in)	Material	Approx. Weight (lb)
3	905051	3/16	0.375	0.781	0.75	1.00	2.38	P.M.	1.0
3	905079	3/16	0.500	0.781	0.75	1.00	2.38	P.M.	1.0
3	905097	3/16	0.625	0.781	0.75	1.00	2.38	P.M.	1.0
3	905024	1/4	0.375	0.500	0.50	1.00	2.62	P.M.	0.8
3	905042	1/4	0.500	0.500	0.50	1.00	2.62	P.M.	0.8
4	905122	5/16	0.500	0.750	0.62	1.38	3.50	P.M.	1.0
4	905140	5/16	0.625	0.750	0.62	1.38	3.50	P.M.	1.0
4	905168	3/8	0.500	0.812	0.75	1.50	3.25	P.M.	1.3
4	905202	3/8	0.750	0.812	0.75	1.50	3.25	P.M.	1.3
4	905220	1/2	0.500	1.062	1.00	1.62	3.18	P.M.	1.5
4	905248	1/2	0.625	1.062	1.00	1.62	3.18	P.M.	1.5
5	905293	3/16	0.750	0.938	0.88	2.25	4.25	P.M.	2.3
5	905300	3/8	0.750	0.938	0.88	2.25	4.25	P.M.	2.3
5	905328	1/2	0.625	1.062	1.00	2.25	4.00	P.M.	2.5
6	905426	3/8	0.500	0.812	0.75	1.88	5.00	D.I.	2.5
6	905480	3/8	0.500	1.062	1.00	1.88	5.00	D.I.	2.5
6	905462	3/8	0.750	0.812	0.75	1.88	5.00	P.M.	2.5
6	905523	3/8	0.750	1.062	1.00	18.80	5.00	P.M.	4.2
6.75	905701	3/8	0.750	1.188	1.12	2.00	5.88	D.I.	5.0
8	905747	1/2	0.750	1.125	1.00	2.38	6.88	D.I.	5.0
8	905783	1/2	1.000	1.125	1.00	2.38	6.88	D.I.	8.5
8	905809	5/8	0.750	1.375	1.25	2.00	6.50	D.I.	6.0
8	905845	5/8	1.000	1.375	1.25	2.00	6.50	D.I.	6.8
8	909324	5/8	1.000	1.375	1.25	2.50	6.62	D.I.	8.5
8	909342	5/8	1.125	1.375	1.25	2.50	6.62	D.I.	8.5
8	909360	5/8	1.250	1.375	1.25	2.50	6.62	D.I.	8.5
8	909388	5/8	1.500	1.375	1.25	2.50	6.62	D.I.	8.5
10	905943	1/2	1.000	1.125	1.00	2.88	8.75	D.I.	10.0
10	906005	5/8	1.000	1.375	1.25	3.00	8.50	D.I.	9.3
10	909761	5/8	1.500	1.375	1.25	3.00	8.50	D.I.	13.5
12	906041	1/2	1.000	1.125	1.00	4.00	10.62	D.I.	16.5
12	906087	1/2	1.250	1.125	1.00	4.00	10.62	D.I.	16.5
12	906247	7/8	1.500	2.000	1.75	3.75	10.00	D.I.	20.3
14	*906283	3/4	1.125	1.625	1.50	3.25	12.25	C.I.	26.5
14	*906309	3/4	1.250	1.625	1.50	3.25	12.25	C.I.	26.5
18	910820	1	2.000	2.000	1.88	4.00	14.88	R.F.	62.0

Material: B.S.=Bar Steel, C.I.=Cast Iron, F.S.=Forged Steel, D.I.=Ductile Iron, C.S.=Cast Steel, P.M.=Powdered Metal, R.F.=Roll-Forged.
*Without flame hardening groove.

Custom sheaves are available.



APPLICATION AND WARNING INFORMATION
SECTION 17

McKissick® Bronze Bushed Sheaves

- Roll-Forged sheaves are available in sizes up to 78" in diameter.
- McKissick® Bronze Bushed Sheaves are equipped with S.A.E. 660 Bronze Bushings for cold finished shafts with "Figure 8" oil groove, or self-lubricating Bronze as designated by an asterisk (*) next to the shaft size.
- For sizes not listed, McKissick® Finished Bore Sheaves can be equipped with bronze bushings at an optional charge.
- Bronze Bushed Sheaves are designed to operate on shafts machined to +.000/-.002 in of the indicated shaft size.

"A" Nominal Outside Diameter (in)	Stock Number	Wire Rope Diameter (in)	"D" Shaft Size (in)	Hub Width (in)	Rim Width (in)	"C" Nominal Hub Outside Diameter (in)	"B" Nominal Tread Diameter (in)	Material	Approx. Weight (lb)
2.25	907004	1/4	0.375	0.625	0.56	0.75	1.88	B.S.	0.8
3.00	907077	3/16	0.500	0.781	0.75	1.00	2.38	P.M.	1.0
3.00	907095	3/16	0.625	0.781	0.75	1.00	2.38	P.M.	1.0
3.00	907022	1/4	0.375	0.500	0.50	1.00	2.62	P.M.	0.8
3.00	907040	1/4	0.500	0.500	0.50	1.00	2.62	P.M.	0.8
3.00	907086	3/8	0.500	0.750	0.75	1.00	2.38	P.M.	1.0
3.00	916110	3/8	0.500	0.781	0.75	1.50	2.38	B.S.	1.0
3.00	460156	3/8	0.500	1.313	1.18	1.12	2.06	B.S.	1.0
3.00	907102	3/8	0.625	0.750	0.75	1.00	2.38	P.M.	1.0
3.00	2030895	3/8	0.750	1.000	0.88	1.75	2.25	P.M.	1.5
4.00	460290	1/8	1.000	1.000	0.88	2.00	3.12	B.S.	2.0
4.00	907111	3/16	0.500	0.750	0.62	1.38	3.50	P.M.	1.0
4.00	907139	3/16	0.625	0.750	0.62	1.38	3.50	P.M.	1.0
4.00	916147	1/4	0.500	0.812	0.75	2.00	3.25	B.S.	1.5
4.00	916165	1/4	0.750	0.812	0.75	2.00	3.25	B.S.	1.5
4.00	460307	1/4	1.000	1.000	0.88	2.00	3.12	B.S.	2.0
4.00	907120	5/16	0.500	0.750	0.62	1.38	3.50	P.M.	1.0
4.00	907148	5/16	0.625	0.750	0.62	1.38	3.50	P.M.	1.0
4.00	907166	3/8	0.500	0.812	0.75	1.50	3.25	P.M.	1.3
4.00	916156	3/8	0.500	0.812	0.75	2.00	3.25	B.S.	1.5
4.00	907184	3/8	0.625	0.812	0.75	1.50	3.25	P.M.	1.4
4.00	907200	3/8	0.750	0.812	0.75	1.50	3.25	P.M.	1.3
4.00	460316	3/8	1.000	1.000	0.88	2.00	3.12	B.S.	2.0
4.00	907228	1/2	0.500	1.062	1.00	1.62	3.18	P.M.	1.5
4.00	907246	1/2	0.625	1.062	1.00	1.62	3.18	P.M.	1.5
4.00	907264	1/2	0.750	1.062	1.00	1.62	3.18	P.M.	1.5
4.12	2023186	3/8	1.000	1.500	1.38	2.00	3.00	F.S.	3.5
4.12	2023188	5/8	1.000	1.500	1.38	2.00	3.00	F.S.	3.5
4.25	460441	1/2	0.625	1.188	0.94	2.12	3.38	B.S.	2.4
4.88	460478	3/8	1.250	1.250	1.12	2.25	4.06	F.S.	3.6
4.88	460469	5/8	1.250	1.250	1.12	2.25	4.06	F.S.	3.6
5.00	907273	3/16	0.625	0.938	0.88	2.25	4.25	P.M.	2.3
5.00	460511	5/16	0.750	1.000	0.88	1.50	4.00	F.S.	2.5
5.00	907282	3/8	0.625	0.938	0.88	2.25	4.25	P.M.	2.8
5.00	907308	3/8	0.750	0.938	0.88	2.25	4.25	P.M.	2.8
5.00	460520	3/8	0.750	1.000	0.88	1.50	4.00	F.S.	2.5
5.00	907344	1/2	0.750	1.062	1.00	2.25	4.00	P.M.	2.5
5.25	460637	3/4	1.000	1.500	1.38	2.06	3.88	F.S.	4.0
5.88	2023129	5/8	1.500	1.750	1.62	2.50	4.38	F.S.	6.0
5.88	2023137	3/4	1.500	1.750	1.62	2.50	4.38	F.S.	6.0
6.00	907424	3/8	0.500	0.812	0.75	1.88	5.00	P.M.	2.5
6.00	907488	3/8	0.500	1.062	1.00	1.88	5.00	P.M.	2.5
6.00	907442	3/8	0.625	0.812	0.75	1.88	5.00	P.M.	2.5
6.00	907503	3/8	0.625	1.062	1.00	1.88	5.00	P.M.	2.5
6.00	907460	3/8	0.750	0.812	0.75	1.88	5.00	P.M.	2.5
6.00	907521	3/8	0.750	1.062	1.00	1.88	5.00	P.M.	4.3
6.00	2026483	3/8	0.750	1.062	1.00	2.00	5.12	F.S.	4.0

Custom sheaves are available.

McKissick® Bronze Bushed Sheaves

"A" Nominal Outside Diameter (in)	Stock Number	Wire Rope Diameter (in)	"D" Shaft Size (in)	Hub Width (in)	Rim Width (in)	"C" Nominal Hub Outside Diameter (in)	"B" Nominal Tread Diameter (in)	Material	Approx. Weight (lb)
6.00	916245	3/8	0.875	1.062	1.00	2.00	5.12	F.S.	4.0
6.00	2028641	3/8	1.000	1.062	1.00	2.00	5.12	F.S.	4.0
6.00	460682	3/8	1.250	1.125	1.00	2.25	4.94	F.S.	3.7
6.00	907549	1/2	0.625	1.188	1.12	1.88	4.88	P.M.	5.0
6.00	907567	1/2	0.750	1.188	1.12	1.88	4.88	P.M.	4.7
6.00	913024	1/2	0.875	1.062	1.00	1.88	4.88	P.M.	3.8
6.00	460879	1/2	1.000	1.500	1.25	3.12	4.75	B.S.	7.0
6.00	460673	1/2	1.250	1.125	1.00	2.25	4.94	F.S.	3.6
6.00	2028048	1/2	1.000	1.062	1.00	1.88	4.88	P.M.	3.8
6.00	2026938	5/8	0.750	1.062	1.00	2.00	5.12	F.S.	4.0
6.00	913060	5/8	0.750	1.313	1.25	1.88	4.75	P.M.	3.8
6.00	913088	5/8	0.875	1.313	1.25	1.88	4.75	P.M.	5.0
6.00	2026822	5/8	1.000	1.062	1.00	2.00	5.12	F.S.	4.0
6.00	913104	5/8	1.000	1.313	1.25	1.88	4.75	P.M.	3.8
6.00	2023264	5/8	2.000	2.313	2.19	3.12	4.25	F.S.	9.5
6.00	460897	3/4	1.000	1.500	1.25	3.50	4.75	B.S.	7.0
6.00	913168	3/4	1.000	1.562	1.50	1.88	4.62	P.M.	6.8
6.00	2023260	3/4	2.000	2.313	2.19	3.12	4.25	F.S.	9.5
6.00	2023262	7/8	2.000	2.313	2.19	3.50	4.25	F.S.	9.5
6.75	907692	1/4	0.750	1.188	1.12	2.00	5.88	D.I.	5.0
6.75	907718	1/4	1.000	1.188	1.12	2.00	5.88	D.I.	5.0
6.75	907709	3/8	0.750	1.188	1.12	2.00	5.88	D.I.	5.0
6.75	907727	3/8	1.000	1.188	1.12	2.00	5.88	D.I.	5.0
7.00	461020	1/4	1.500	1.375	0.75	2.38	6.25	B.S.	6.2
7.00	461039	3/8	1.500	1.375	0.75	2.38	6.25	B.S.	6.2
7.00	907629	1/2	0.750	1.062	1.00	2.00	5.62	D.I.	4.3
7.50	460986	5/8	1.000	1.500	1.38	2.06	6.31	F.S.	7.5
7.50	460977	3/4	1.000	1.500	1.38	2.06	6.31	F.S.	7.5
7.62	461262	3/8	1.000	1.500	1.25	2.38	6.18	D.I.	7.0
7.62	461280	1/2	1.000	1.500	1.25	2.38	6.18	D.I.	7.0
7.62	461271	5/8	1.000	1.500	1.25	2.38	6.18	D.I.	7.0
8.00	907745	1/2	0.750	1.125	1.00	2.38	6.88	D.I.	5.0
8.00	916487	1/2	0.750	1.375	1.25	2.00	6.62	F.S.	7.0
8.00	907763	1/2	0.875	1.125	1.00	2.38	6.88	D.I.	5.0
8.00	907781	1/2	1.000	1.125	1.00	2.38	6.88	D.I.	5.6
8.00	916520	1/2	1.000	1.375	1.25	2.00	6.62	F.S.	7.0
8.00	2026841	1/2	1.125	1.375	1.25	2.00	6.62	F.S.	7.0
8.00	2026844	1/2	1.250	1.375	1.25	2.00	6.62	F.S.	7.0
8.00	461235	1/2	1.500	1.500	1.38	2.44	6.62	F.S.	7.0
8.00	2023145	1/2	1.500	1.750	1.62	2.56	6.31	F.S.	10.0
8.00	907807	5/8	0.750	1.375	1.25	2.00	6.50	D.I.	6.8
8.00	913300	5/8	0.875	1.375	1.25	2.50	6.62	D.I.	8.5
8.00	913328	5/8	1.000	1.375	1.25	2.75	6.62	D.I.	7.2
8.00	913364	5/8	1.250	1.375	1.25	2.50	6.62	D.I.	8.5
8.00	913382	5/8	1.500	1.375	1.25	2.50	6.62	D.I.	8.5
8.00	461244	5/8	1.500	1.500	1.38	2.44	6.62	F.S.	7.0
8.00	2023147	5/8	1.500	1.750	1.62	2.56	6.31	F.S.	10.0
8.00	461253	3/4	1.500	1.500	1.38	2.44	6.00	F.S.	7.0
8.00	2023153	3/4	1.500	1.750	1.62	2.56	6.31	F.S.	10.0
8.00	2028227	3/4	2.000	2.313	2.12	3.25	6.12	F.S.	12.5
8.00	461397	3/4	2.750	2.313	2.18	3.75	6.00	B.S.	10.5
8.00	2023386	7/8	2.000	2.313	2.12	3.25	6.12	F.S.	12.5
8.00	2023467	1	2.250	2.500	2.38	4.50	5.38	F.S.	18.0
8.00	2023463	1-1/8	2.250	2.500	2.38	4.50	5.38	F.S.	18.0
9.88	462831	3/8	2.500	1.750	1.12	3.75	8.56	F.S.	14.0
9.88	462154	1/2	1.000	1.500	1.38	3.25	8.50	F.S.	9.5
9.88	2023166	1/2	1.500	1.750	1.62	2.56	8.31	F.S.	14.5
9.88	462840	1/2	2.500	1.750	1.12	3.75	8.56	F.S.	14.0
9.88	2023170	5/8	1.500	1.750	1.62	2.56	8.31	F.S.	14.5
9.88	2023174	3/4	1.500	1.750	1.62	2.56	8.31	F.S.	14.5
9.88	2023420	7/8	2.000	2.313	2.18	3.50	8.12	F.S.	15.0
9.88	2023428	1	2.000	2.313	2.18	3.50	8.12	F.S.	15.0
10.00	907923	1/2	0.875	1.125	1.00	2.88	8.75	D.I.	10.0
10.00	907941	1/2	1.000	1.125	1.00	2.88	8.75	D.I.	11.8
10.00	907969	5/8	0.750	1.375	1.25	2.00	8.50	D.I.	9.3
10.00	908003	5/8	1.000	1.375	1.25	2.00	8.50	D.I.	9.3
10.00	916726	5/8	1.000	1.375	1.25	2.75	8.50	F.S.	14.0
10.00	2027291	5/8	1.250	1.375	1.25	2.75	8.50	F.S.	14.0
10.00	913765	5/8	1.500	1.375	1.25	3.00	8.50	D.I.	12.6
10.00	913863	3/4	1.500	1.625	1.50	3.50	8.25	F.S.	16.0

Custom sheaves are available.

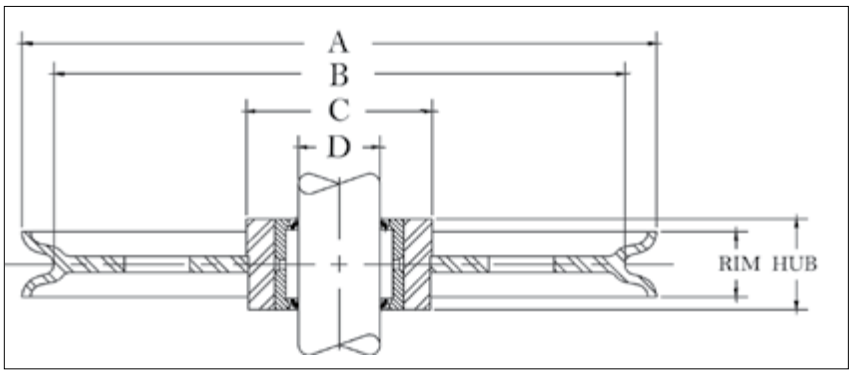
McKissick® Bronze Bushed Sheaves

"A" Nominal Outside Diameter (in)	Stock Number	Wire Rope Diameter (in)	"D" Shaft Size (in)	Hub Width (in)	Rim Width (in)	"C" Nominal Hub Outside Diameter (in)	"B" Nominal Tread Diameter (in)	Material	Approx. Weight (lb)
10.00	913845	3/4	1.250	1.625	1.50	3.50	8.25	F.S.	16.0
10.00	916833	3/4	1.500	1.625	1.50	3.25	7.75	F.S.	17.0
10.00	913807	3/4	1.000	1.625	1.50	3.50	8.25	F.S.	16.0
10.00	2026861	1-1/8	2.250	2.500	2.38	4.50	7.38	F.S.	27.0
10.00	2023785	1-1/8	3.500	2.500	2.38	5.75	7.38	F.S.	28.0
11.88	462323	3/8	2.500	2.313	1.00	3.75	10.75	D.I.	11.2
12.00	908049	1/2	1.000	1.125	1.00	4.00	10.62	D.I.	16.5
12.00	908085	1/2	1.250	1.125	1.00	4.00	10.62	D.I.	16.5
12.00	917011	5/8	1.125	1.625	1.50	3.25	10.12	F.S.	18.0
12.00	2023227	5/8	1.500	1.750	1.62	3.25	10.25	F.S.	22.0
12.00	462387	5/8	2.000	2.313	2.18	4.50	10.12	R.F.	26.0
12.00	462564	5/8	2.500	1.750	1.62	4.50	10.12	R.F.	24.0
12.00	908129	3/4	1.000	1.625	1.50	2.75	10.25	D.I.	18.3
12.00	914149	3/4	1.250	1.625	1.50	5.25	10.25	D.I.	25.5
12.00	914167	3/4	1.500	1.625	1.50	5.25	10.25	D.I.	25.5
12.00	2023235	3/4	1.500	1.750	1.62	3.25	9.38	F.S.	22.0
12.00	462449	3/4	2.000	2.313	2.18	4.50	9.75	R.F.	26.0
12.00	346593	3/4	2.250	2.313	2.18	4.50	9.75	R.F.	26.0
12.00	462573	3/4	2.500	1.750	1.62	4.50	9.38	R.F.	24.0
12.00	4104882	3/4	2.500	1.750	1.62	4.50	9.75	R.F.	25.0
12.00	4104917	3/4	2.500	2.313	2.18	4.50	9.75	R.F.	25.0
12.00	462485	3/4	3.000	3.000	1.88	5.50	9.38	R.F.	21.0
12.00	908245	7/8	1.500	2.000	1.75	3.75	10.00	D.I.	20.3
12.00	462458	7/8	2.000	2.313	2.18	4.50	10.25	R.F.	26.0
12.00	2023554	7/8	2.250	2.500	2.38	4.50	9.38	R.F.	28.0
12.00	4104891	7/8	2.500	1.750	1.62	4.50	10.25	R.F.	25.0
12.00	462467	1	2.000	2.313	2.18	4.00	10.00	R.F.	26.0
13.00	462779	3/8	2.000	1.500	1.12	3.50	11.62	R.F.	14.0
13.00	462788	1/2	2.000	1.500	1.12	3.50	11.62	R.F.	14.0
14.00	**463518	1/2	3.750	2.500	1.38	5.06	12.62	R.F.	15.0
14.00	463625	5/8	1.500	1.750	1.62	3.25	12.12	R.F.	20.0
14.00	4103552	5/8	2.000	1.750	1.62	4.50	12.12	R.F.	29.2
14.00	**908281	3/4	1.125	1.625	1.44	3.25	12.25	C.I.	26.5
14.00	**908307	3/4	1.250	1.625	1.50	3.25	12.25	C.I.	26.5
14.00	917173	3/4	1.250	1.625	1.50	4.00	12.00	R.F.	26.5
14.00	917191	3/4	1.500	1.625	1.50	3.25	11.75	R.F.	26.5
14.00	463634	3/4	1.500	1.750	1.62	3.25	11.38	R.F.	20.0
14.00	4103632	3/4	2.000	1.750	1.62	4.50	11.75	R.F.	30.0
14.00	4104828	3/4	2.750	2.313	2.18	5.50	11.75	R.F.	35.0
14.00	4103641	7/8	2.000	1.750	1.62	4.50	12.25	R.F.	31.0
14.00	463466	1-1/8	2.250	2.500	2.38	4.50	11.38	R.F.	28.0
16.00	4101395	1/2	3.500	2.750	2.50	5.75	14.25	R.F.	54.0
16.00	4100047	3/4	3.500	2.750	2.50	5.75	13.38	R.F.	47.0
16.00	4100109	3/4	3.750	2.750	2.50	5.75	13.38	R.F.	42.0
16.00	4103703	7/8	2.500	2.313	2.18	4.50	12.94	R.F.	35.0
16.00	4105211	7/8	2.750	2.313	2.18	4.50	12.94	R.F.	42.0
16.00	917360	1	2.000	2.000	1.75	4.25	13.25	R.F.	34.0
16.00	4100127	1	3.750	2.750	2.50	5.75	13.25	R.F.	63.0
18.00	4105131	7/8	3.000	2.313	2.18	5.50	14.94	R.F.	52.0
18.00	917486	1	2.000	2.000	1.88	4.50	14.88	R.F.	55.0
18.00	4104052	1	2.750	2.313	2.18	5.50	14.88	R.F.	66.0
18.00	4105140	1	3.000	2.313	2.18	5.50	14.88	R.F.	52.0
20.00	4100341	3/4	3.000	2.313	2.18	5.50	18.00	R.F.	68.0
20.00	4105239	3/4	3.750	2.750	2.12	6.50	18.00	R.F.	68.0
20.00	4100350	7/8	3.000	2.313	2.18	5.50	17.12	R.F.	45.0
20.00	4100369	1	3.000	2.313	2.18	5.50	17.12	R.F.	80.2
20.00	4105257	1	3.750	2.750	2.12	6.50	16.50	R.F.	68.0
20.00	4105275	1	5.500	2.875	2.62	8.00	17.12	R.F.	68.0
24.00	4105355	7/8	5.750	3.380	3.12	8.00	21.00	R.F.	133
24.00	4105382	1	5.500	2.875	2.62	8.00	21.12	R.F.	130
24.00	4100868	1-1/8	4.000	3.000	2.75	6.50	20.06	R.F.	110
24.00	4105391	1-1/8	5.500	2.875	2.62	8.00	20.06	R.F.	134
24.00	4105373	1-1/8	5.750	3.750	3.12	8.00	20.06	R.F.	137
30.00	4105426	7/8	5.750	3.380	3.12	8.00	27.00	R.F.	203
30.00	4105435	1	5.750	3.375	3.12	8.00	27.00	R.F.	203
30.00	4105444	1-1/8	5.750	3.375	3.12	8.00	27.00	R.F.	203
30.00	4105462	1-1/8	7.000	3.500	3.12	9.50	26.38	R.F.	211
30.00	4105471	1-1/4	7.000	3.500	3.12	9.50	26.38	R.F.	211

* * Without Flame Harden groove.

Material: B.S.=Bar Steel, C.I.=Cast Iron, F.S.=Forged Steel, D.I.=Ductile Iron, C.S.=Cast Steel, P.M.=Powdered Metal, R.F.=Roll-Forged.

Custom sheaves are available.



APPLICATION AND WARNING INFORMATION
SECTION 17

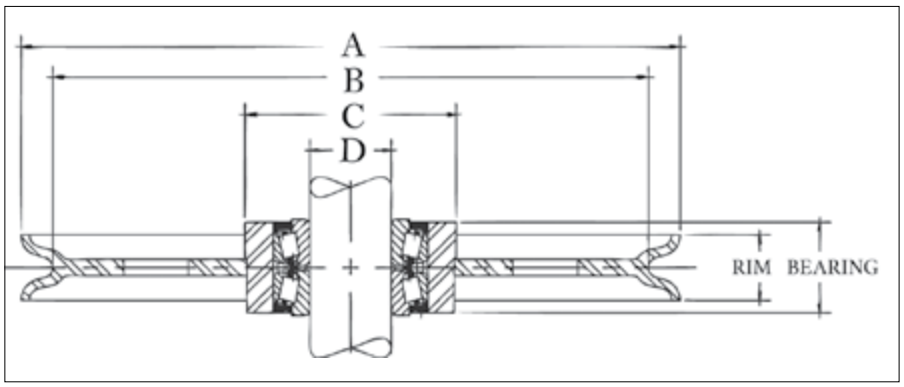
McKissick® Roller Bearing Sheaves

- Roll-Forged sheaves are available in sizes up to 78" in diameter.
- McKissick® Roller Bearing Sheaves are designed to operate on shafts carborized to 60 Rockwell C and grind to -.003/-.004 of the indicated shaft size. Some sizes are available with an optional inner race. Check with Crosby Sales for prices and correct shaft size.
- Application should provide for 1/32" running clearance over the hub width.
- For sizes not listed, McKissick® Finished Bore Sheaves can be equipped with Roller Bearings at an optional charge.

"A" Nominal Outside Diameter (in)	Stock Number	Wire Rope Diameter (in)	"D" Shaft Size (in)	Hub Width (in)	Rim Width (in)	"C" Nominal Hub Outside Diameter (in)	"B" Nominal Tread Diameter (in)	Material	Approx. Weight (lb)
4.00	472508	1/8	1.000	1.000	0.88	2.00	3.12	B.S.	2.0
4.00	472517	1/4	1.000	1.000	0.88	2.00	3.12	B.S.	2.0
4.00	472535	3/8	1.000	1.000	0.88	2.00	3.12	B.S.	2.0
4.00	2028063	1/2	1.000	1.500	1.38	2.00	3.00	F.S.	3.5
4.00	2025891	5/8	1.000	1.500	1.38	2.00	3.00	F.S.	3.5
4.88	472768	3/8	1.250	1.250	1.12	2.25	4.06	F.S.	3.6
4.88	472777	1/2	1.250	1.250	1.12	2.25	4.06	F.S.	3.6
4.88	472786	5/8	1.250	1.250	1.12	2.25	4.06	F.S.	3.6
5.25	2026427	5/8	1.000	1.500	1.38	2.06	3.88	F.S.	4.0
5.25	2026423	3/4	1.000	1.500	1.38	2.06	3.88	F.S.	4.0
5.88	2023141	5/8	1.500	1.750	1.62	2.50	4.38	F.S.	6.0
5.88	2023143	3/4	1.500	1.750	1.62	2.50	4.38	F.S.	6.0
6.00	472875	1/2	2.000	1.750	1.25	3.12	4.75	F.S.	7.0
7.50	2025892	3/4	1.000	1.500	1.38	2.06	6.31	F.S.	7.5
7.62	473311	3/8	1.000	1.500	1.25	2.38	6.18	D.I.	7.0
7.62	473320	1/2	1.000	1.500	1.25	2.38	6.18	D.I.	7.0
7.62	473339	5/8	1.000	1.500	1.25	2.38	6.18	D.I.	7.0
8.00	2023155	1/2	1.500	1.750	1.62	2.56	6.31	F.S.	10.0
8.00	2023159	5/8	1.500	1.750	1.62	2.56	6.31	F.S.	10.0
8.00	2023163	3/4	1.500	1.750	1.62	2.56	6.31	F.S.	10.0
8.00	2023404	3/4	2.000	2.313	2.12	3.25	6.12	F.S.	12.5
9.88	2026433	1/2	1.500	1.750	1.62	2.56	8.31	F.S.	14.5
9.88	2023179	5/8	1.500	1.750	1.62	2.56	8.31	F.S.	14.5
9.88	2023181	3/4	1.500	1.750	1.62	2.56	8.31	F.S.	14.5
9.88	2023436	3/4	2.000	2.313	2.18	3.50	8.12	F.S.	15.0
12.00	2023248	5/8	1.500	1.750	1.62	3.25	10.20	F.S.	18.0
12.00	474365	5/8	2.250	1.750	1.62	4.50	10.12	R.F.	16.0
12.00	2023236	3/4	1.500	1.750	1.62	3.25	9.75	F.S.	18.0
12.00	474374	3/4	2.250	1.750	1.62	4.50	9.75	R.F.	16.0
14.00	2026445	5/8	1.500	1.750	1.62	3.25	12.00	R.F.	20.0
14.00	4200563	5/8	2.000	1.750	1.62	4.50	12.12	R.F.	31.0
14.00	4200572	3/4	2.000	1.750	1.62	4.50	11.75	R.F.	31.0
14.00	474784	7/8	1.500	1.750	1.62	3.25	12.25	R.F.	20.0
16.00	4200705	7/8	2.500	2.313	2.18	4.50	12.94	R.F.	48.0
18.00	4201438	7/8	2.750	2.313	2.18	5.50	14.94	R.F.	42.7
18.00	4200867	1	2.750	2.313	2.18	5.50	14.88	R.F.	66.0

* Without flame harden groove
Material: B.S.=Bar Steel, C.I.=Cast Iron, F.S.=Forged Steel, D.I.=Ductile Iron, C.S.=Cast Steel, P.M.=Powdered Metal, R.F.=Roll-Forged.

Custom sheaves are available.



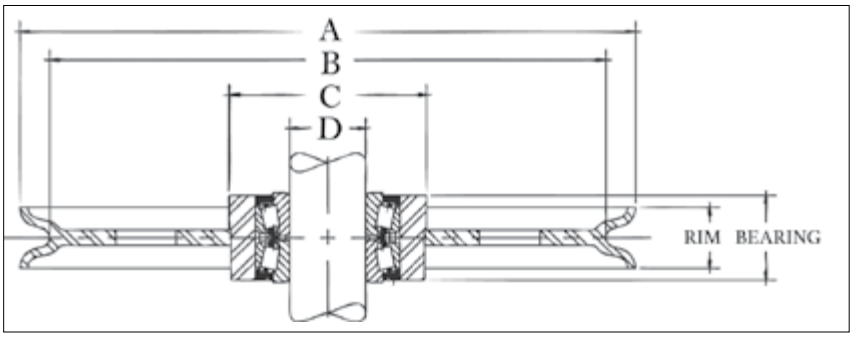
APPLICATION AND WARNING INFORMATION
SECTION 17

McKissick® Tapered Bearing Sheaves

- Roll-Forged sheaves are available in sizes up to 78" in diameter.
- Tapered Bearing Sheaves are designed to operate on shafts machined to, and no bearing or bushing is installed.
- Applications should provide for tightening separator plates against bearing cones to adjust and insure proper function of bearing.

"A" Nominal Outside Diameter (in)	Stock Number	Wire Rope Diameter (in)	"D" Shaft Size (in)	Bearing Width (in)	Rim Width (in)	"C" Nominal Hub Outside Diameter (in)	"B" Nominal Tread Diameter (in)	Material	Approx. Weight (lb)
4.88	480269	3/8	0.750	1.375	1.12	2.25	4.06	F.S.	3.6
7.00	480777	1/4	0.750	1.375	0.75	2.38	6.25	B.S.	9.0
8.00	481017	1/2	0.750	1.375	1.25	2.44	6.62	F.S.	7.0
8.50	481044	3/8	0.750	1.375	1.00	2.75	7.50	D.I.	7.5
12.00	481455	3/4	1.500	2.313	2.18	4.50	9.75	R.F.	24.0
12.00	481446	7/8	1.500	2.313	2.18	4.50	10.25	R.F.	24.0
16.00	4302793	1/2	2.000	2.938	2.50	5.75	14.25	R.F.	50.0
16.00	4300599	3/4	2.000	2.938	2.50	5.75	13.38	R.F.	55.0
16.00	4300018	7/8	1.500	2.313	2.18	4.50	12.94	R.F.	37.0
16.00	4300054	1	2.000	2.938	2.50	5.75	13.38	R.F.	42.0
18.00	4300081	3/4	2.000	2.938	2.18	6.50	16.00	R.F.	40.0
20.00	4300161	3/4	2.000	2.938	2.12	6.50	18.00	R.F.	87.0
20.00	4300189	1	2.000	2.938	2.12	6.50	16.50	R.F.	84.0
24.00	*4302720	5/8	2.755	2.938	1.50	6.50	21.75	R.F.	136
24.00	4300312	7/8	4.250	3.500	3.12	8.00	20.88	R.F.	125
24.00	4300321	1	4.250	3.500	3.12	7.62	21.12	R.F.	125
24.00	4300401	1-1/8	2.755	2.938	2.75	6.50	20.06	R.F.	80.0
24.00	4300330	1-1/8	4.250	3.500	3.12	8.00	20.06	R.F.	125
30.00	4300483	7/8	4.250	3.500	3.12	8.00	27.00	R.F.	140
30.00	4300492	1	4.250	3.500	3.12	7.62	26.50	R.F.	210
30.00	4300526	1	5.625	3.688	3.12	9.50	27.00	R.F.	190
30.00	4300508	1-1/8	4.250	3.500	3.12	8.00	27.00	R.F.	140
30.00	4300704	1-1/4	5.625	3.688	3.12	9.50	26.38	R.F.	140

Custom sheaves are available.



APPLICATION AND WARNING INFORMATION
SECTION 17

McKissick® Plain Bore Oilfield Sheaves for Tapered Bearings

- Roll-Forged sheaves are available in sizes up to 78" in diameter.
- Applications should provide for tightening separator plates against bearing cones to adjust and insure proper function of bearing.
- Each sheave in the table below has a machined bore sized to accept the respective bearing number shown.
- The sheaves are provided from the factory plain bore (the bearings are not included).

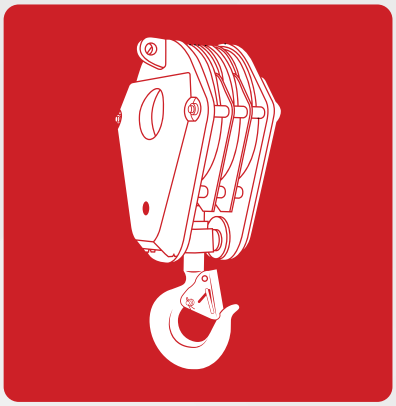
"A" Nominal Outside Diameter (in)	Stock Number	Wire Rope Diameter (in)	Bore Information			Bearing Width (in)	Rim Width (in)	"C" Nominal Hub Outside Diameter (in)	"B" Tread Diameter (in)	Material	Approx. Weight (lb)
			"D" Bore Diameter (in)	Bearing Info. (Bearing not Included)							
				Shaft Diameter (in)	Bearing Description						
20	2030311	9/16	4.722	2.756	NA-483-SW-472-D	2.750	2.75	6.50	17.62	R.F.	80
20	2029285	5/8	4.722	2.756	NA-483-SW-472-D	2.750	2.75	6.50	17.81	R.F.	75
24	2030941	9/16	6.498	4.250	NA56425-SW-56650D	3.375	3.12	8.00	21.62	R.F.	103
24	2030905	5/8	6.498	4.250	NA56425-SW-56650D	3.375	3.00	8.00	22.00	R.F.	117
24	2027885	9/16	6.498	4.250	NA56425-SW-56650D	3.375	3.12	8.00	21.62	R.F.	90
24	2027887	5/8	6.498	4.250	NA56425-SW-56650D	3.375	2.75	8.00	22.00	R.F.	80
24	2027880	7/8	6.498	4.250	NA56425-SW-56650D	3.375	3.12	8.00	20.94	R.F.	125
24	2023993	1	6.498	4.250	NA56425-SW-56650D	3.375	3.12	9.00	21.12	R.F.	110
30	2026299	1	6.498	4.250	NA56425-SW-56650D	3.375	3.12	8.50	26.50	R.F.	190
30	2026036	1-1/8	6.498	4.250	NA56425-SW-56650D	3.375	3.12	9.00	26.06	R.F.	230
30	2026230	1	7.873	5.625	NA48685-SW/48620	3.500	3.12	10.25	26.50	R.F.	255
30	2026003	1-1/8	7.873	5.625	NA48685-SW/48620	3.500	3.12	10.25	26.06	R.F.	255
30	2030906	1	8.873	6.500	NA46790-SW-46720	3.625	3.37	10.25	26.50	R.F.	185
30	2030907	1-1/8	8.873	6.500	NA46790-SW-46720	3.625	3.37	12.00	26.06	R.F.	265
30	2027941	1	6.498	4.250	NA56425-SW-56650D	3.375	3.12	9.00	26.50	R.F.	150
30	2027945	1-1/8	6.498	4.250	NA56425-SW-56650D	3.375	3.12	9.00	26.06	R.F.	200
30	2030274	1	7.873	5.625	NA48685-SW/48620	3.500	3.12	10.25	26.50	R.F.	161
30	2030260	1-1/8	7.873	5.625	NA48685-SW/48620	3.500	3.12	10.25	26.06	R.F.	218
36	2030942	1	7.873	5.625	NA48685-SW/48620	3.500	3.25	10.25	33.12	R.F.	350
36	2030908	1-1/8	7.873	5.625	NA48685-SW/48620	3.500	3.25	10.25	33.62	R.F.	350
36	2030943	1	8.873	6.500	NA46790-SW-46720	3.625	3.12	11.50	33.12	R.F.	353
36	2029390	1-1/8	8.873	6.500	NA46790-SW-46720	3.625	3.25	11.00	32.62	R.F.	300
36	2029392	1-1/4	8.873	6.500	NA46790-SW-46720	3.625	3.25	11.00	32.25	R.F.	300
36	2030944	1	10.873	8.000	LM241149NW/241110-D	3.625	3.12	14.00	33.12	R.F.	370
36	2030909	1-1/8	10.873	8.000	LM241149NW/241110-D	3.625	3.50	14.00	32.06	R.F.	358
36	2030945	1-1/4	10.873	8.000	LM241149NW/241110-D	3.625	3.37	14.00	32.25	R.F.	330
36	2030282	1	7.873	5.625	NA48685-SW/48620	3.500	3.25	10.25	33.12	R.F.	240
36	2030284	1 1/8	7.873	5.625	NA48685-SW/48620	3.500	3.25	10.25	32.62	R.F.	250
42	2030946	1-1/8	8.873	6.500	NA46790-SW-46720	3.625	3.25	12.00	38.62	R.F.	460
42	2030947	1-1/4	8.873	6.500	NA46790-SW-46720	3.625	3.25	11.50	38.25	R.F.	470
42	2030948	1-1/8	10.873	8.000	LM241149NW/241110-D	3.625	3.25	14.00	38.62	R.F.	465
42	2030949	1-1/4	10.873	8.000	LM241149NW/241110-D	3.625	3.25	14.00	38.25	R.F.	460
42	2030950	1-1/8	12.873	9.250	NA8575SW-8520CD	4.500	3.50	16.00	38.62	R.F.	465
42	2030951	1-1/4	12.873	9.250	NA8575SW-8520CD	4.500	3.38	16.00	38.25	R.F.	475
44	2030952	1-1/8	10.873	8.000	LM241149NW/241110-D	3.625	3.38	14.00	40.06	R.F.	615
44	2030953	1-1/4	10.873	8.000	LM241149NW/241110-D	3.625	3.00	14.00	40.25	R.F.	545
48	2030954	1-1/8	10.873	8.000	LM241149NW/241110-D	3.625	3.25	14.00	44.62	R.F.	580
48	2030955	1-1/4	10.873	8.000	LM241149NW/241110-D	3.625	2.75	14.00	44.25	R.F.	512
48	2030956	1-1/4	13.686	10.000	LM249747NWLM249710D	3.875	3.25	17.00	44.25	R.F.	640
50	2030938	1-1/4	10.873	8.000	LM241149NW/241110-D	3.625	3.37	14.00	46.25	R.F.	765
50	2030957	1-1/4	13.686	8.000	LM241149NW/241110-D	3.875	3.25	17.00	46.25	R.F.	765
50	2030958	1-3/8	13.686	10.000	LM249747NW/LM249710D	3.875	3.75	17.00	45.62	R.F.	735
55	2030959	1-1/8	12.873	9.250	NA8575SW-8520CD	4.500	3.50	16.00	51.06	R.F.	890
55	2030960	1-1/4	12.873	9.250	NA8575SW-8520CD	4.500	3.38	16.00	51.25	R.F.	825
55	2030961	1-1/4	13.686	10.000	LM249747NW/LM249710D	3.875	3.50	19.00	51.25	R.F.	588
60	2030879	1-1/4	13.686	10.000	LM249747NW/LM249710D	3.875	3.25	17.00	56.25	R.F.	1095
60	2030880	1-3/8	13.873	10.500	LM251649NW/251610-D	4.125	3.62	19.00	55.88	R.F.	1175
60	2030881	1-3/8	15.498	12.000	L357049NW/L357010D	4.125	3.75	19.00	55.88	R.F.	1175
60	2030875	1-1/2	13.686	10.000	LM249747NW/LM249710D	3.875	3.50	19.00	55.50	R.F.	1175

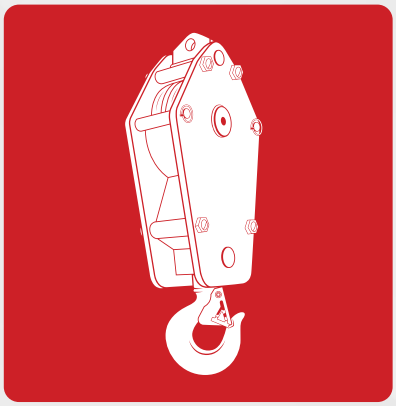
**Crown Sheaves contain lightening holes.

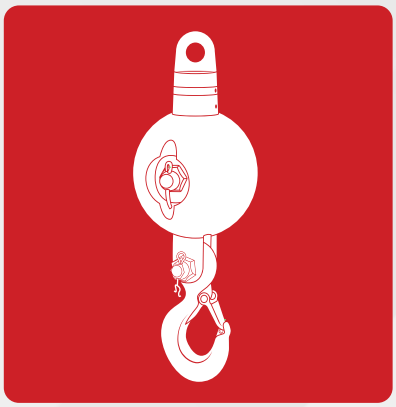
Custom sheaves are available.

BLOCKS

Wide range of blocks and overhaul balls, all made in the USA.







the Crosby group®

thecrosbygroup.com

IMPROVE SAFETY & PRODUCTIVITY ON YOUR NEXT LIFT

Wireless cameras & audio-visual warning systems designed specifically for crane blocks & boom tips

- Reduce hazards
- Avoid impacts & collisions
- Confirm load security
- Optimize lifting times
- Improve job site communication
- Return on the bottom line

Unobstructed view of load and surrounding area below

Now available from The Crosby Group:

BlokCam X2

BlokCam M3

BlokAlert

Crosby® | BLOKCAM

See section 2 of this catalog and visit **thecrosbygroup.com/blokcam** for more information.

IMPORTANT CONSIDERATIONS

Some of the most important considerations in your block requirements are:

Available bearing types

Bronze Bushed
SAE 660 bronze with
figure 8 oil groove

Double Row Sealed
Tapered Roller Bearing

Straight Roller
Bearing

Full Complement
Cylindrical Roller Bearing

The sheave

In the image on the right, note the groove form with proper line support and gently rounded lips to prevent line chafing when fleet angles are present.

The sheave cross-section is machined in the image to the right, and the dense martensitic structure is clearly outlined by the etching.

This flame-hardened surface in the wear area of the sheave always presents a smooth, uncorrugated, proper size groove – face to the line. Sheaves 14" (356 mm) diameter and larger are flame hardened in groove to minimum 35 Rockwell C.

Smaller sheaves can be flame hardened on special order.

Unretouched photograph
of a section cut from a flame-
hardened McKissick sheave
(etched 2-1/2 minutes)

Additional connections

All crane and construction blocks casn be furnished with:

Swivel shackle in selected
capacities with bronze thrust
or roller thrust bearing

Single hook in capacities to
300 metric tons

Duplex swivel hook in standard
capacities up to 1,000 metric tons
(larger sizes available)

Quad swivel hook from 200
Metric tons and larger

ORDERING INSTRUCTIONS

The following information should be specified when ordering blocks and sheaves:

Blocks

- Wire rope diameter
- Working Load Limit
- Number of sheaves
- Minimum overhaul weight
- Sheave diameter
- Hook or shackle fittings
- Type of bearing: bronze bushed (BB), roller (RB), tapered roller (TB)

All crane and some construction blocks are available as shown or with swivel shackle assembly, duplex swivel hook assembly, or quadruple hook assembly. Various combinations of bearing assemblies can be furnished, such as bronze bushed sheaves and swivel hooks, roller or tapered roller bearing sheaves and hook assemblies, or a combination of bronze, roller, or tapered roller bearings.

Sheaves

- Wire rope diameter
- Sheave OD
- Shaft or bore size
- Bearing type or blain bore
- Hub width & rim width
- Stock number (if known)
- Special machine features
- Special finishes

If hub or rim dimensions necessitate a dimension other than those shown in this catalog, please contact The Crosby Group for minimums and maximums. Tapered roller bearing sheaves show width over bearing cones, which cannot be altered. Price and delivery for your special needs, if not shown, are available upon request.

380 Series Hook Blocks

380 Series Hook Blocks

- Wide range of products available:
  - 5 to 300 short Tons capacity
  - 10” to 30” sheave diameter
  - 7/16” to 1-3/8” wire rope diameter
  - Larger capacity blocks available
- All 380 Blocks are furnished standard with roller bearings.
- Reeving Guide Standard – all models.
- Blocks through 25 short Tons use 319N style hooks with S-4320 latches.
- Sheaves lubrication through center pin - separate lube channel to each bearing.
- Sheave fully protected by side plates.
- Dual action hook (swings and rotates).
- Repair parts available through worldwide distribution network.
- Design Factor of 4:1 (unless otherwise noted).
- All 380 blocks 16” and larger are furnished with McKissick® roll-forged sheaves with flame-hardened grooves.
- Marked in short tons unless metric tag requested at time of order.
- Look for the orange hook...the mark of genuine McKissick® quality.

APPLICATION AND WARNING INFORMATION
SECTION 17

OPTIONS AVAILABLE

- Bronze Bushed Sheaves
- Duplex Hooks
- Swivel Tee and Shackle Assemblies
- Sheave Shrouds
- Anti Rotation Hook - Locking Device
- Plate Steel Cheek Weights
- Third party testing with Certification available upon request.

Minimized height, for maximum head-room. Traditional guards/guides facilitate reeving without a fitting.

The patented McKissick® Split-Nut® is the standard retention system for standard crane blocks up to 100 Tons.

For standard & custom block orders contact our Block Hotline at 800-727-1555 or visit thecrosbygroup.com/engineeredsolutions for more information.

McKissick® Utility Crane Blocks

To see the legacy dimensional tables for McKissick® 380 Series Blocks, visit thecrosbygroup.com/tables

	SHV OD (in)	Capacity in short Tons																												
		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	90	100	115	125	130	140	150	165	200	225	250	275	300
1 SHV	10	■	■	■																										
	12	■	■	■	■																									
	14		■	■	■	■																								
	16		■	■	■	■	■																							
	18				■	■	■	■																						
	20					■	■	■	■																					
	24				■	■	■	■	■	■	■	■																		
2 SHV	10	■	■	■	■																									
	12		■	■	■	■																								
	14		■	■	■	■	■																							
	16			■	■	■	■	■																						
	18					■	■	■	■																					
	20								■	■																				
	24										■	■	■	■	■	■	■													
3 SHV	10		■	■	■	■																								
	12			■	■	■	■																							
	14				■	■	■	■																						
	16					■	■	■	■	■																				
	18					■	■	■	■	■	■	■	■	■	■															
	20						■	■	■	■	■	■	■	■	■	■	■													
	24										■	■	■	■	■	■	■	■	■											
4 SHV	10			■	■	■	■																							
	12				■	■	■	■																						
	14					■	■	■	■	■																				
	16						■	■	■	■	■	■	■	■	■	■	■													
	18								■	■	■	■	■	■	■	■	■													
	20										■	■	■	■	■	■	■	■	■											
	24												■	■	■	■	■	■	■	■	■	■	■	■	■					
5 SHV	14							■	■		■	■																		
	16									■	■	■		■	■	■	■													
	18											■		■	■	■	■	■	■											
	20												■	■	■	■	■	■	■											
	24													■	■	■	■	■	■	■	■	■	■	■	■	■	■			
	30																									■	■			
6 SHV	14										■	■	■																	
	16												■	■	■	■	■													
	18												■	■	■	■	■	■	■	■	■	■	■							
	20													■	■	■	■	■	■	■	■	■	■	■	■					
	24													■	■	■	■	■	■	■	■	■	■	■	■	■	■			
	30																									■	■	■	■	■
7 SHV	24																											■	■	■
8 SHV	30																													■

Review the table above to see all standard configurations available. We have also engineered thousands of special crane blocks, so it is very likely that we have the ideal solution to your rigging application. Visit thecrosbygroup.com/engineeredsolutions to learn more.

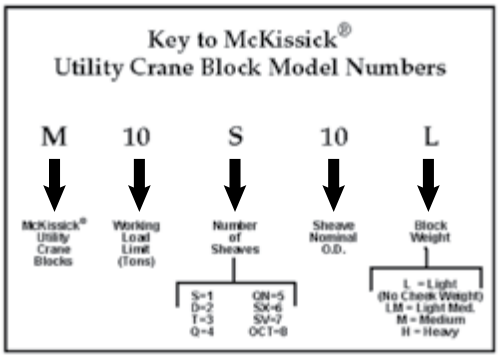


Table 1 - Standard Wireline Sizes For McKissick 380 Utility Crane Blocks

Sheave Diameter (in)	Wireline Size (in)									
	7/16	1/2	9/16	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8
10	■	■	■	■						
12		■	■	■	■					
14		■	■	■	■					
16			■	■	■	■				
18				■	■	■	■			
20					■	■	■	■		
24						■	■	■	■	■
30							■	■	■	■

*For additionnal Wireline sizes, please call Crosby's Special Engineered Poducts Group at 1(800)777-1555.

15

380 Series Easy Reeve® Hook Blocks

380 Series Easy Reeve® Hook Block

- Wide range of products available:
  - 5 to 80 short Tons capacity
  - 10” to 20” sheave diameter
  - 7/16” to 1-1/4” wire rope diameter
  - Larger capacity blocks available
- All single point shank hooks are genuine Crosby®, forged alloy steel, Quenched & Tempered, and have the patented QUIC-CHECK® markings (Duplex hooks are available on most sizes).
- Design factor of 4:1 (unless otherwise noted).
- All Easy Reeve® Blocks are furnished standard with roller bearings.
- Reeving Guides Standard – All Models.
- Blocks through 25 short Tons use 319N hooks with S-4320 latches.
- Heavy duty positive locking (PL) latch – Models: 30 short Tons and larger.
- Sheave lubrication through center pin - separate lube channel to each bearing.
- Sheaves fully protected by side plates.
- Dual action hook (swings and rotates).
- Repair parts available through worldwide distribution network.
- All Easy Reeve® blocks 16” and larger are furnished with McKissick® Roll-Forged sheaves with flame hardened grooves.
- Manufactured by an ISO 9001 and API Q1 certified facility.
- Marked in short tons unless metric tag requested at time of order.
- “Look for the Orange Hook...the mark of genuine McKissick® quality”.

APPLICATION AND WARNING INFORMATION
SECTION 17

Center “Dead End” to promote better block travel under various reeving configurations.

The patented McKissick® Split-Nut® is the standard retention system for standard crane blocks up to 90 tonnes.

Sheave Guards that open to allow block reeving without removing the rope end fitting.

Flat Bottom side plate for self standing during reeving process.

For standard & custom block orders contact our Block Hotline at: (800) 727-1555 or visit thecrosbygroup.com/engineeredsolutions for more information.

McKissick® Easy Reeve® Crane Blocks

To see the legacy dimensional tables for McKissick® 380 Series Easy Reeve® Blocks, visit thecrosbygroup.com/tables

	SHV OD (in)	Capacity in short Tons															
		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
1 SHV	10	■	■	■	■												
	12			■													
	14		■	■	■												
	16		■	■		■											
	18				■	■	■										
	20						■	■									
	28																
	30																
2 SHV	10		■	■													
	12		■	■	■	■											
	14				■	■	■										
	16																
	18						■	■									
3 SHV	10		■	■													
	12		■	■	■	■											
	14				■	■	■	■	■	■							
	16						■	■	■	■							
	18								■	■	■	■					
	20												■	■	■	■	■
	30																
4 SHV	12				■	■											
	14		■	■	■	■	■	■	■	■							
	16								■	■	■	■					
	18												■	■	■	■	■
5 SHV	14																
	16										■	■					
	18												■	■	■	■	■
	20												■	■	■	■	■

Review the table above to see all standard configurations available. We have also engineered thousands of special crane blocks, so it is very likely that we have the ideal solution to your rigging application. Visit thecrosbygroup.com/engineeredsolutions to learn more.

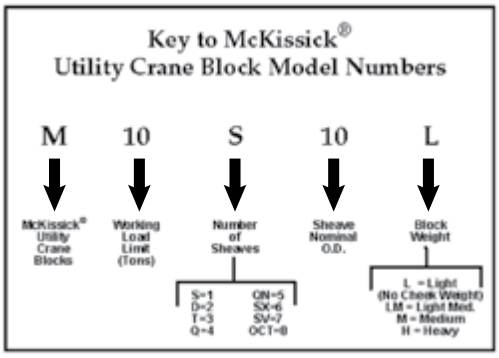


Table 1 - Standard Wireline Sizes For McKissick 380 Utility Crane Blocks

Sheave Diameter (in)	Wireline Size (in)									
	7/16	1/2	9/16	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8
10	■	■	■	■						
12		■	■	■	■					
14		■	■	■	■					
16			■	■	■	■				
18				■	■	■	■			
20					■	■	■	■		
24						■	■	■	■	■
30							■	■	■	■

*For additionnal Wireline sizes, please call Crosby's Special Engineered Poducts Group at 1(800) 777-1555.

15

INNOVATIVE RETENTION SYSTEM MAKES INSPECTION EASIER

Crane block hook inspection in four easy steps:

STEP 1
Remove protective vinyl cover

STEP 2
Remove retaining ring

STEP 3
Slide keeper ring off split nuts

STEP 4
Easily remove split nut halves to inspect shank hook

McKissick® Split-Nut® Retention System

Shank hooks on crane blocks must be inspected in accordance with applicable crane standards. These standards mandate the crane hook to be inspected for surface indications, damage, and corrosion, which could compromise the integrity of the crane block.

Because of the type of environments in which these hooks are required to perform, the removal of corroded nuts from the threads can become a problem during inspections.

The innovative, patented* Split-Nut Retention System featured on McKissick crane blocks makes inspection easier. With four easy steps, the hook can be disassembled, inspected and put back into service in a fraction of the time of a conventional threaded nut.

The Split-Nut is standard equipment on McKissick Easy Reeve® crane blocks up to 90 tonnes.

- Allows for easy inspection, as required by ASME B30, CSA Z150, and other crane standards.
- Eliminates conventional threaded nut and problems associated with the nut removal for inspection.
- Allows repeated installation and removal without risk of damage to hook/nut interface.
- Zinc plated finish for corrosion resistance.
- Replacement hook and trunnion assemblies available for selected McKissick 380, or Easy Reeve & 790 blocks with threaded hooks.

The Split-Nut can be purchased in a variety of configurations that can be used to retrofit the following McKissick blocks in the field or in the shop:

- Over 90 tonnes and larger crane blocks (upon request)
- Bridge crane blocks
- 80 Series tubing blocks

In addition, the Split-Nut can be used to replace existing hooks on existing crane blocks currently in the field most manufacturers' makes and models) and on special designed lifting equipment.

McKISSICK®

* US Patent 7,000,905 & 7,293,763

API 2C SYSTEMS

Block systems for offshore pedestal-mounted cranes certified to API 2C are considered critical components. The Crosby Group provides McKissick blocks, overhaul balls, sheaves, button spelter sockets, and wedge sockets that meet the compound requirements of API 2C.

It is the responsibility of the crane manufacturer to license or certify these components.

MCKISSICK® BLOCKS

Material traceability, chemistry reports, tensile test reports, magnetic particle inspection per ASTM E-709 on the following components:

- Hook
- Hook Nut
- Trunnion
- Center Pin
- Side Plate
- Sheave (no MPI on sheave)
- Dead End

Charpy impact test reports per API 2C latest revision on the following components:

- Hook
- Hook Nut
- Trunnion
- Center Pin
- Side Plate
- Dead End

Sheave diameter based on D/d ratio based on pitch equal to a minimum of 18/1.
Weight plates produced from plate steel. Hook to rotate on thrust bearing with grease fitting.
Sheave bearing to be roller bearings with grease fitting. May be proof tested to 2x the rated Working Load Limit.

McKISSICK® OVERHAUL BALLS

Material traceability, chemistry, tensile test, magnetic particle inspection per ASTM E-709 on the following components:

- Swivel Eye
- Fixed Eye Nut
- Swivel Base Plug
- Case Pin
- Hook Pin
- Hook

Charpy impact test reports per API 2C latest revision on the following components:

- Swivel Eye
- Fixed Eye
- Swivel Eye Nut
- Swivel Base Plug
- Case Pin
- Hook Pin
- Hook

Eye to rotate on thrust bearing with grease fitting.
May be proof tested to 2x the rated Working Load Limit.

McKISSICK® WEDGE SOCKETS

421 & 422 up to 1-1/4 in

Material traceability, chemistry, tensile test, magnetic particle inspection per ASTM E-709 on the following components:

- Socket Body
- Pin

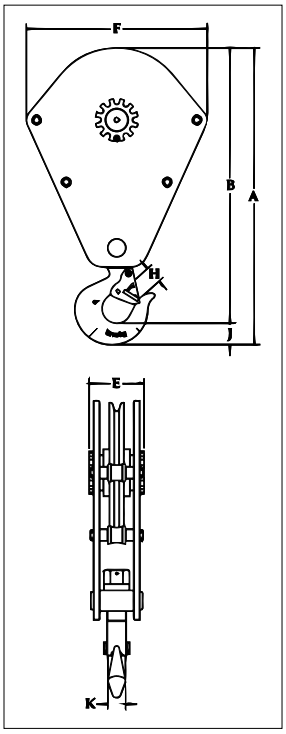
Charpy impact test reports per API 2C latest revision on the following components:

- Socket Body
- Pin

15

381-SY

- All single point shank hooks are genuine Crosby, forged alloy steel, Quenched & Tempered, and have the patented QUIC-CHECK® markings.
- Durable and allows longer continuous duty cycle.
- Can be used with magnet and drop ball.
- Single sheave design.
- Dual action hook that swings and rotates.
- Utilizes McKissick® roll-forged sheaves with flame-hardened grooves.
- Furnished standard with bronze bushed sheaves.
- Optional tapered roller bearings.
- Marked in short tons unless metric tag requested at time of order.



APPLICATION AND WARNING INFORMATION
SECTION 17

381-SY Scrap Handling Blocks

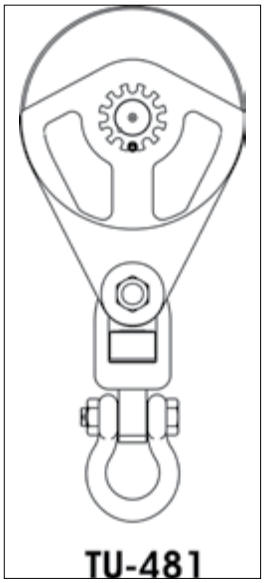
Model No.	Stock No.	Working Load Limit (short tons)	Sheave Diameter (in)	Standard Wire Rope Diameters (in)	Weight Each (lb)	Dimensions (in)						
						A	B	E	F	H	J	K
S15S16L	2014810	15	16	9/16, 5/8, 3/4, 7/8	285	37.16	34.19	6.34	22.75	2.75	2.97	2.38
S20S18L	2014812	20	18	5/8, 3/4, 7/8, 1	395	39.54	36.57	6.84	24.75	2.75	2.97	2.38
S25S20L	2014814	25	20	3/4, 7/8, 1, 1-1/8	460	42.16	39.19	6.84	26.75	2.75	2.97	2.38
S30S24L	2014816	30	24	7/8, 1, 1-1/8, 1-1/4	705	50.44	46.81	7.84	30.75	3.25	3.62	3.00
S40S24L	2014818	40	24	7/8, 1, 1-1/8, 1-1/4	815	55.81	50.75	7.84	30.75	3.38	5.06	3.25

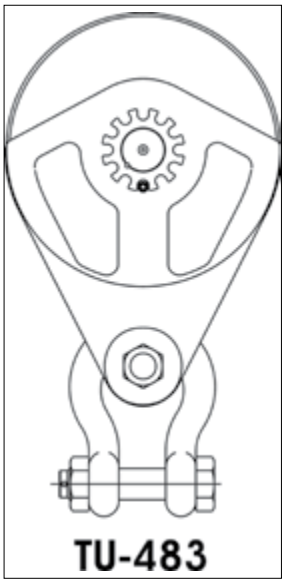
4:1 Design Factor.

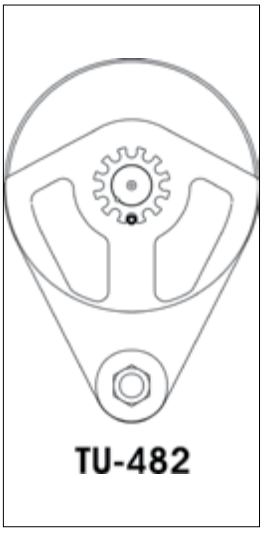
TU-480 Series

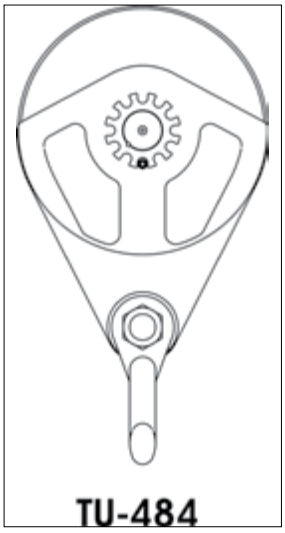
- Wide range of sizes available:
  - 30 and 60 short Tons (27 and 54 metric tons) capacity
  - 1" to 2-1/4" (25mm to 60mm) wire rope diameter
  - 16" to 24" (406mm to 610mm) sheave diameter
  - Larger capacity blocks available
- Meets or exceeds all requirements of ASME B30.26. Importantly, these blocks meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.
- Marked in short tons unless metric tag requested at time of order.

APPLICATION AND WARNING INFORMATION
SECTION 17









TU-481 / TU-482 / TU-483 / TU-484
High Capacity Snatch Blocks for Tilt-Up Wall Construction

Working Load Limit (t)	Sheave Diameter (in)	Wire Rope Diameter (in)	With Swivel Shackle		Tailboard Style		With Upset Shackle		With Fixed Shackle	
			TU-481 Stock No.	TU-481 Weight Each (lb)	TU-482 Stock No.	TU-482 Weight Each (lb)	TU-483 Stock No.	TU-483 Weight Each (lb)	TU-484 Stock No.	TU-484 Weight Each (lb)
30	16	1-1/4	2108327	235	2108330	140	2108333	180	2108651	160
30	16	1-1/2	2108351	235	2108354	140	2108357	180	2108657	160
30	20	1-1/4	2108387	250	2108390	155	2108393	195	2108666	175
30	20	1-1/2	2108411	250	2108414	155	2108417	195	2108672	175
60	18	1-1/4	2108453	390	2108456	230	2108459	340	2108462	290
60	18	1-1/8	2108483	390	2108486	230	2108489	340	2108492	290
60	24	1-1/4	2108528	450	2108531	290	2108534	400	2108537	350
60	24	1-1/2	2108558	450	2108561	290	2108564	400	2108567	350
60	24	1-3/4	2108588	450	2108591	290	2108594	400	2108597	350
60	24	2	2108618	450	2108621	290	2108624	400	2108627	350
60	24	2-1/4	2108633	450	2108636	290	2108639	400	2108642	350

4:1 Design Factor.
Contact our Block Hotline 800-772-1555 or visit thecrosbygroup.com/engineeredsolutions for more information.

680 Series Construction Blocks

680 Construction Block with shackle

680 Construction Block with hanger

680 Construction Block bolt only

APPLICATION AND WARNING INFORMATION
SECTION 17

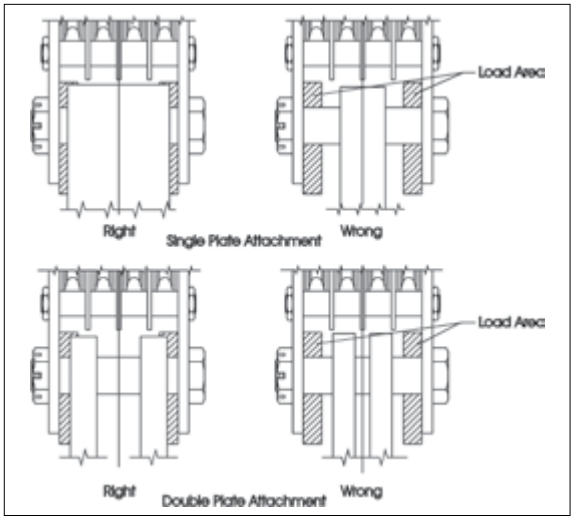
- Wide range of products available:
  - 5 to 100 short Tons capacity
  - 6” to 24” sheave diameter
  - 3/8” to 1-1/4” wire rope diameter
  - Larger capacity blocks available
- Equipped with genuine Crosby® forged steel Quenched & Tempered shackles that contain the patented QUIC-CHECK® markings.
- Design Factor of 4:1.
- All 680 Series Blocks are furnished standard with bronze bushings.
- All 680 Series Blocks 16” and larger, are furnished with McKissick® roll-forged sheaves with flame-hardened grooves.
- Sheaves are lubricated through center pin with a separate lube channel to each bearing.

OPTIONS AVAILABLE

- Roller bearing sheaves
- Hanger and Bolt Only models available
- Third party testing with certification
- Galvanized finish – Most models

- Single sheave blocks have thimble dead end.
- Manufactured by an ISO 9001 and API Q1 Certified facility.
- Marked in short tons unless metric tag requested at time of order.
- Meets or exceeds all requirements of ASME B30.26. Importantly, these blocks meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.

Block Loading Area



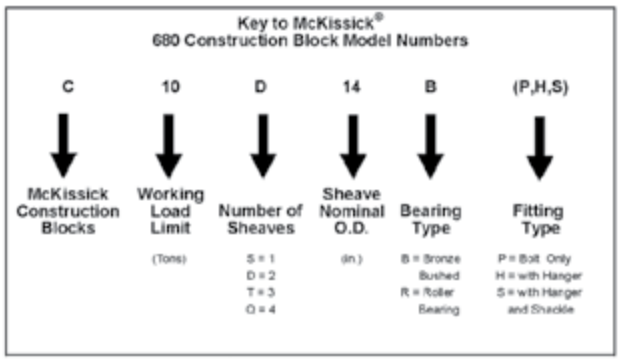
NOTE: The outside of attaching plates must be within the indicated load areas. Means must be provided to keep attaching plates equally spaced from the block side plates. For dimension information, including the load area, visit thecrosbygroup.com/tables.

McKissick® Construction Blocks

To see the legacy dimensional tables for McKissick® 680 Series Construction Blocks, visit thecrosbygroup.com/tables

	OD (mm)	SHV OD (in)	Capacity in short Tons																	
			5	7.5	10	15	20	25	30	35	40	45	50	55	60	65	70	80	90	100
1 SHV	152	6	■	■																
	203	8	■	■	■															
	254	10			■	■														
	305	12			■	■														
	356	14			■	■														
	457	18					■	■												
2 SHV	152	6	■	■	■															
	203	8	■	■	■															
	254	10			■	■														
	305	12			■	■	■	■	■	■										
	356	14			■	■	■	■	■	■										
	406	16					■	■	■	■										
	457	18							■	■	■	■								
	508	20									■	■	■	■						
	610	24									■	■	■	■						
3 SHV	152	6	■	■	■															
	203	8	■	■	■															
	254	10			■	■	■	■	■	■										
	305	12			■	■	■	■	■	■										
	356	14			■	■	■	■	■	■	■	■								
	406	16					■	■	■	■	■	■								
	457	18									■	■	■	■	■	■				
	508	20									■	■	■	■	■	■	■	■		
	610	24											■	■	■	■				
4 SHV	203	8			■		■	■												
	254	10			■	■	■	■	■	■										
	305	12					■	■	■	■	■	■								
	356	14					■	■	■	■	■	■								
	406	16							■	■	■	■	■	■						
	457	18									■	■	■	■	■	■				
	508	20													■	■	■	■	■	
	610	24													■	■	■	■	■	
5 SHV	508	20															■	■	■	■
	610	24															■	■	■	■
6 SHV	508	20																		■
	610	24																		■

Review the table above to see all standard configurations available. We have also engineered thousands of special crane blocks, so it is very likely that we have the ideal solution to your rigging application. Visit thecrosbygroup.com/engineeredsolutions to learn more.



Sheave Diameter (mm)	Wireline Size (mm)									
	10	11	13	14	16	19	22	26	28	32
152	■	■	■							
203	■	■	■							
254		■	■	■	■					
305			■	■	■	■				
356			■	■	■	■				
406				■	■	■	■			
457					■	■	■	■		
508						■	■	■	■	
610							■	■	■	■

15

750 Series Bridge Crane Blocks

- Wide range of products available (see tables below).
- Adjustable sheave spacing in 1/2” increments (1/4” on 6-1/2" size).
- Sheave pitch diameter minimum of 16 times rope diameter on standard sizes.
- All single point shank hooks are genuine Crosby, forged alloy steel, Quenched & Tempered, contain the patented QUIC-CHECK® markings and come with a world class latch that integrates with hook tip.
- Sheave bearings are maintenance free and sealed for life (10,000 hrs).
- Ability to attach optional anti two-block device.
- Available with shackle as lower connection point.
- Design Factor of 5 to 1.

Key to McKissick® Easy-Lift® Overhead Bridge Crane Blocks					
Single and Double Sheave Blocks				Double Sheave Blocks Only	
BC	05	D	08	B	36
McKissick® 750 Series Bridge Crane Blocks	Working Load Limit (t)	Number of Sheaves S = 1 D = 2	Sheave Diameter (in)	Center Pin Designation	Sheave Spacing in 1/8” Increments

APPLICATION AND WARNING INFORMATION
SECTION 17

BC-751
Single Sheave

BC-751 Single Sheave

Model 751 – Single Sheave					
WLL (t)	2	3	5	7.5	10
Sheave O.D.	6.5” 165mm	8” 203mm	10” 254mm	12” 305mm	14” 356mm
Pitch Diameter	5.69” 151mm	7.38” 187mm	9.25” 235mm	11” 279mm	12.5” 318mm
Wire Rope Diameter					
1/4” 6.5mm					
5/16” 8mm					
3/8” 9 - 10mm					
7/16” 11mm					
1/2” 12 - 13mm					
9/16” 14mm					
5/8” 16mm					
3/4” 19mm					
7/8” 22mm					
1” 25 - 26mm					

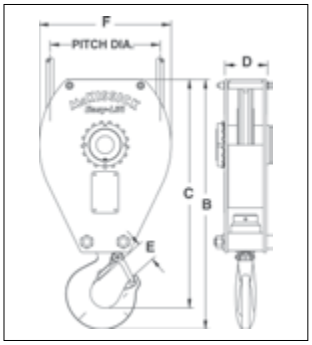
BC-752 Double Sheave

Model 752 – Double Sheave					
WLL (t)	3	5	7.5	10	15
Sheave O.D. (mm)	6.5” 165mm	8” 203mm	10” 254mm	12” 305mm	14” 356mm
Sheave Spacing Centerline (mm)	3.25” - 5” 82.6 - 127mm	4.5” - 6.5” 114 - 165mm	5.25” - 7.75” 133 - 203mm	6.5” - 10” 165 - 254mm	7.5” - 11” 191 - 279mm
Pitch Diameter (mm)	5.95” 150 - 152mm	7.38” 183 - 191mm	9.25” 228 - 236mm	11” 273 - 282mm	11” 273 - 282mm
Wireline*					
1/4” 6.5mm					
5/16” 8mm					
3/8” 9 - 10mm					
7/16” 11mm					
1/2” 12 - 13mm					
9/16” 14mm					
5/8” 16mm					
3/4” 19mm					

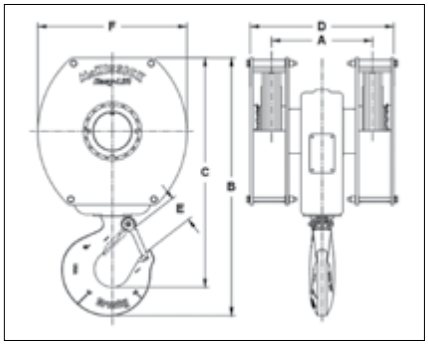
= Primary Wireline Size = Other Wireline Sizes

BC-752
Double Sheave

751 Series



752 Series



751 Series Bridge Crane Blocks

Model No.	Stock No.	Working Load Limit (t)	Sheave Diameter (in)	Dimensions (in)					Standard Wire Rope Diameter (in)	Weight Each (lb)
				B	C	D	E	F		
2 metric tons										
BC02S06	2022539	2	6.5	13.93	12.80	2.12	1.16	7.44	1/4	18
BC02S06	2022540	2	6.5	13.93	12.80	2.12	1.16	7.44	5/16	18
BC02S06	2022541	2	6.5	13.93	12.80	2.12	1.16	7.44	3/8	18
3 metric tons										
BC03S08	2022521	3	8	16.88	15.41	2.75	1.36	8.94	1/4	35
BC03S08	2022522	3	8	16.88	15.41	2.75	1.36	8.94	5/16	35
BC03S08	2022523	3	8	16.88	15.41	2.75	1.36	8.94	3/8	35
BC03S08	2022524	3	8	16.88	15.41	2.75	1.36	8.94	7/16	35
BC03S08	2022525	3	8	16.88	15.41	2.75	1.36	8.94	1/2	35
5 metric tons										
BC05S10	2022526	5	10	21.00	19.19	3.50	1.61	11.12	3/8	60
BC05S10	2022527	5	10	21.00	19.19	3.50	1.61	11.12	7/16	60
BC05S10	2022528	5	10	21.00	19.19	3.50	1.61	11.12	1/2	60
BC05S10	2022529	5	10	21.00	19.19	3.50	1.61	11.12	9/16	60
BC05S10	2022530	5	10	21.00	19.19	3.50	1.61	11.12	5/8	60
7.5 metric tons										
BC07S12	2022531	7.5	12	25.44	23.19	4.25	2.08	13.44	1/2	115
BC07S12	2022532	7.5	12	25.44	23.19	4.25	2.08	13.44	9/16	115
BC07S12	2022533	7.5	12	25.44	23.19	4.25	2.08	13.44	5/8	115
BC07S12	2022534	7.5	12	25.44	23.19	4.25	2.08	13.44	3/4	115
10 metric tons										
BC10S14	2022535	10	14	29.12	26.50	5.00	2.27	15.50	5/8	155
BC10S14	2022536	10	14	29.12	26.50	5.00	2.27	15.50	3/4	155
BC10S14	2022537	10	14	29.12	26.50	5.00	2.27	15.50	7/8	155
BC10S14	2022538	10	14	29.12	26.50	5.00	2.27	15.50	1	155

5:1 Design Factor.

752 Series Bridge Crane Blocks

Model No.	Stock No.	Working Load Limit (t)	Sheave Diameter (in)	Dimensions (in)						Standard Wire Rope Diam. (in)	Weight Each (lb)
				A	B	C	D	E	F		
3 metric tons											
BC03D06M26	2022731	3	6.5	3.25	13.41	11.97	5.75	1.36	7.44	1/4	37
BC03D06M26	2022739	3	6.5	3.25	13.41	11.97	5.75	1.36	7.44	5/16	37
BC03D06M26	2022747	3	6.5	3.25	13.41	11.97	5.75	1.36	7.44	3/8	37
BC03D06M28	2022732	3	6.5	3.50	13.41	11.97	5.75	1.36	7.44	1/4	37
BC03D06M28	2022740	3	6.5	3.50	13.41	11.97	5.75	1.36	7.44	5/16	37
BC03D06M28	2022748	3	6.5	3.50	13.41	11.97	5.75	1.36	7.44	3/8	37
BC03D06M30	2022733	3	6.5	3.75	13.41	11.97	5.75	1.36	7.44	1/4	37
BC03D06M30	2022741	3	6.5	3.75	13.41	11.97	5.75	1.36	7.44	5/16	37
BC03D06M30	2022749	3	6.5	3.75	13.41	11.97	5.75	1.36	7.44	3/8	37
BC03D06M32	2022734	3	6.5	4.00	13.41	11.97	5.75	1.36	7.44	1/4	37
BC03D06M32	2022742	3	6.5	4.00	13.41	11.97	5.75	1.36	7.44	5/16	37
BC03D06M32	2022750	3	6.5	4.00	13.41	11.97	5.75	1.36	7.44	3/8	37
BC03D06N34	2022735	3	6.5	4.25	13.41	11.97	6.75	1.36	7.44	1/4	37
BC03D06N34	2022743	3	6.5	4.25	13.41	11.97	6.75	1.36	7.44	5/16	37
BC03D06N34	2022751	3	6.5	4.25	13.41	11.97	6.75	1.36	7.44	3/8	37
BC03D06N36	2022736	3	6.5	4.50	13.41	11.97	6.75	1.36	7.44	1/4	37
BC03D06N36	2022744	3	6.5	4.50	13.41	11.97	6.75	1.36	7.44	5/16	37
BC03D06N36	2022752	3	6.5	4.50	13.41	11.97	6.75	1.36	7.44	3/8	37
BC03D06N38	2022737	3	6.5	4.75	13.41	11.97	6.75	1.36	7.44	1/4	37
BC03D06N38	2022745	3	6.5	4.75	13.41	11.97	6.75	1.36	7.44	5/16	37
BC03D06N38	2022753	3	6.5	4.75	13.41	11.97	6.75	1.36	7.44	3/8	37
BC03D06N40	2022738	3	6.5	5.00	13.41	11.97	6.75	1.36	7.44	1/4	37
BC03D06N40	2022746	3	6.5	5.00	13.41	11.97	6.75	1.36	7.44	5/16	37
BC03D06N40	2022754	3	6.5	5.00	13.41	11.97	6.75	1.36	7.44	3/8	37

5:1 Design Factor.

752 Series Bridge Crane Blocks

Model No.	Stock No.	Working Load Limit (t)	Sheave Diameter (in)	Dimensions (in)						Standard Wire Rope Diam. (in)	Weight Each (lb)
				A	B	C	D	E	F		
5 metric tons											
BC05D08B36	2022550	5	8	4.50	16.41	14.59	7.69	1.61	8.94	1/4	75
BC05D08B36	2022551	5	8	4.50	16.41	14.59	7.69	1.61	8.94	5/16	75
BC05D08B36	2022552	5	8	4.50	16.41	14.59	7.69	1.61	8.94	3/8	75
BC05D08B36	2022553	5	8	4.50	16.41	14.59	7.69	1.61	8.94	7/16	75
BC05D08B36	2022554	5	8	4.50	16.41	14.59	7.69	1.61	8.94	1/2	75
BC05D08B40	2022555	5	8	5.00	16.41	14.59	7.69	1.61	8.94	1/4	75
BC05D08B40	2022556	5	8	5.00	16.41	14.59	7.69	1.61	8.94	5/16	75
BC05D08B40	2022557	5	8	5.00	16.41	14.59	7.69	1.61	8.94	3/8	75
BC05D08B40	2022558	5	8	5.00	16.41	14.59	7.69	1.61	8.94	7/16	75
BC05D08B40	2022559	5	8	5.00	16.41	14.59	7.69	1.61	8.94	1/2	75
BC05D08B44	2022560	5	8	5.50	16.41	14.59	7.69	1.61	8.94	1/4	75
BC05D08B44	2022561	5	8	5.50	16.41	14.59	7.69	1.61	8.94	5/16	75
BC05D08B44	2022562	5	8	5.50	16.41	14.59	7.69	1.61	8.94	3/8	75
BC05D08B44	2022563	5	8	5.50	16.41	14.59	7.69	1.61	8.94	7/16	75
BC05D08B44	2022564	5	8	5.50	16.41	14.59	7.69	1.61	8.94	1/2	75
BC05D08C44	2022565	5	8	5.50	16.41	14.59	8.69	1.61	8.94	1/4	75
BC05D08C44	2022566	5	8	5.50	16.41	14.59	8.69	1.61	8.94	5/16	75
BC05D08C44	2022567	5	8	5.50	16.41	14.59	8.69	1.61	8.94	3/8	75
BC05D08C44	2022568	5	8	5.50	16.41	14.59	8.69	1.61	8.94	7/16	75
BC05D08C44	2022569	5	8	5.50	16.41	14.59	8.69	1.61	8.94	1/2	75
BC05D08C48	2022570	5	8	6.00	16.41	14.59	8.69	1.61	8.94	1/4	75
BC05D08C48	2022571	5	8	6.00	16.41	14.59	8.69	1.61	8.94	5/16	75
BC05D08C48	2022572	5	8	6.00	16.41	14.59	8.69	1.61	8.94	3/8	75
BC05D08C48	2022573	5	8	6.00	16.41	14.59	8.69	1.61	8.94	7/16	75
BC05D08C48	2022574	5	8	6.00	16.41	14.59	8.69	1.61	8.94	1/2	75
BC05D08C52	2022575	5	8	6.50	16.41	14.59	8.69	1.61	8.94	1/4	75
BC05D08C52	2022576	5	8	6.50	16.41	14.59	8.69	1.61	8.94	5/16	75
BC05D08C52	2022577	5	8	6.50	16.41	14.59	8.69	1.61	8.94	3/8	75
BC05D08C52	2022578	5	8	6.50	16.41	14.59	8.69	1.61	8.94	7/16	75
BC05D08C52	2022579	5	8	6.50	16.41	14.59	8.69	1.61	8.94	1/2	75
7.5 metric tons											
BC07D10D42	2022580	7.5	10	5.25	20.25	18.00	8.69	2.08	11.12	3/8	125
BC07D10D42	2022581	7.5	10	5.25	20.25	18.00	8.69	2.08	11.12	7/16	125
BC07D10D42	2022582	7.5	10	5.25	20.25	18.00	8.69	2.08	11.12	1/2	125
BC07D10D42	2022583	7.5	10	5.25	20.25	18.00	8.69	2.08	11.12	9/16	125
BC07D10D42	2022584	7.5	10	5.25	20.25	18.00	8.69	2.08	11.12	5/8	125
BC07D10D46	2022585	7.5	10	5.75	20.25	18.00	8.69	2.08	11.12	3/8	125
BC07D10D46	2022586	7.5	10	5.75	20.25	18.00	8.69	2.08	11.12	7/16	125
BC07D10D46	2022587	7.5	10	5.75	20.25	18.00	8.69	2.08	11.12	1/2	125
BC07D10D46	2022588	7.5	10	5.75	20.25	18.00	8.69	2.08	11.12	9/16	125
BC07D10D46	2022589	7.5	10	5.75	20.25	18.00	8.69	2.08	11.12	5/8	125
BC07D10D50	2022590	7.5	10	6.25	20.25	18.00	8.69	2.08	11.12	3/8	125
BC07D10D50	2022591	7.5	10	6.25	20.25	18.00	8.69	2.08	11.12	7/16	125
BC07D10D50	2022592	7.5	10	6.25	20.25	18.00	8.69	2.08	11.12	1/2	125
BC07D10D50	2022593	7.5	10	6.25	20.25	18.00	8.69	2.08	11.12	9/16	125
BC07D10D50	2022594	7.5	10	6.25	20.25	18.00	8.69	2.08	11.12	5/8	125
BC07D10E48	2022595	7.5	10	6.00	20.25	18.00	9.44	2.08	11.12	3/8	125
BC07D10E48	2022596	7.5	10	6.00	20.25	18.00	9.44	2.08	11.12	7/16	125
BC07D10E48	2022597	7.5	10	6.00	20.25	18.00	9.44	2.08	11.12	1/2	125
BC07D10E48	2022598	7.5	10	6.00	20.25	18.00	9.44	2.08	11.12	9/16	125
BC07D10E48	2022599	7.5	10	6.00	20.25	18.00	9.44	2.08	11.12	5/8	125
BC07D10E52	2022600	7.5	10	6.50	20.25	18.00	9.44	2.08	11.12	3/8	125
BC07D10E52	2022601	7.5	10	6.50	20.25	18.00	9.44	2.08	11.12	7/16	125
BC07D10E52	2022602	7.5	10	6.50	20.25	18.00	9.44	2.08	11.12	1/2	125
BC07D10E52	2022603	7.5	10	6.50	20.25	18.00	9.44	2.08	11.12	9/16	125
BC07D10E52	2022604	7.5	10	6.50	20.25	18.00	9.44	2.08	11.12	5/8	125
BC07D10E56	2022605	7.5	10	7.00	20.25	18.00	9.44	2.08	11.12	3/8	125
BC07D10E56	2022606	7.5	10	7.00	20.25	18.00	9.44	2.08	11.12	7/16	125
BC07D10E56	2022607	7.5	10	7.00	20.25	18.00	9.44	2.08	11.12	1/2	125
BC07D10E56	2022608	7.5	10	7.00	20.25	18.00	9.44	2.08	11.12	9/16	125
BC07D10E56	2022609	7.5	10	7.00	20.25	18.00	9.44	2.08	11.12	5/8	125
BC07D10F56	2022610	7.5	10	7.00	20.25	18.00	10.44	2.08	11.12	3/8	125
BC07D10F56	2022611	7.5	10	7.00	20.25	18.00	10.44	2.08	11.12	7/16	125
BC07D10F56	2022612	7.5	10	7.00	20.25	18.00	10.44	2.08	11.12	1/2	125
BC07D10F56	2022613	7.5	10	7.00	20.25	18.00	10.44	2.08	11.12	9/16	125
BC07D10F56	2022614	7.5	10	7.00	20.25	18.00	10.44	2.08	11.12	5/8	125
BC07D10F60	2022615	7.5	10	7.50	20.25	18.00	10.44	2.08	11.12	3/8	125
BC07D10F60	2022616	7.5	10	7.50	20.25	18.00	10.44	2.08	11.12	7/16	125
BC07D10F60	2022617	7.5	10	7.50	20.25	18.00	10.44	2.08	11.12	1/2	125
BC07D10F60	2022618	7.5	10	7.50	20.25	18.00	10.44	2.08	11.12	9/16	125
BC07D10F60	2022619	7.5	10	7.50	20.25	18.00	10.44	2.08	11.12	5/8	125

5:1 Design Factor.

752 Series Bridge Crane Blocks

Model No.	Stock No.	Working Load Limit (t)	Sheave Diameter (in)	Dimensions (in)						Standard Wire Rope Diam. (in)	Weight Each (lb)
				A	B	C	D	E	F		
BC07D10F64	2022620	7.5	10	8.00	20.25	18.00	10.44	2.08	11.12	3/8	125
BC07D10F64	2022621	7.5	10	8.00	20.25	18.00	10.44	2.08	11.12	7/16	125
BC07D10F64	2022622	7.5	10	8.00	20.25	18.00	10.44	2.08	11.12	1/2	125
BC07D10F64	2022623	7.5	10	8.00	20.25	18.00	10.44	2.08	11.12	9/16	125
BC07D10F64	2022624	7.5	10	8.00	20.25	18.00	10.44	2.08	11.12	5/8	125
10 metric tons											
BC10D12G52	2022625	10	12	6.50	23.22	20.62	10.94	2.27	13.46	1/2	240
BC10D12G52	2022626	10	12	6.50	23.22	20.62	10.94	2.27	13.46	9/16	240
BC10D12G52	2022627	10	12	6.50	23.22	20.62	10.94	2.27	13.46	5/8	240
BC10D12G52	2022628	10	12	6.50	23.22	20.62	10.94	2.27	13.46	3/4	240
BC10D12G56	2022629	10	12	7.00	23.22	20.62	10.94	2.27	13.46	1/2	240
BC10D12G56	2022630	10	12	7.00	23.22	20.62	10.94	2.27	13.46	9/16	240
BC10D12G56	2022631	10	12	7.00	23.22	20.62	10.94	2.27	13.46	5/8	240
BC10D12G56	2022632	10	12	7.00	23.22	20.62	10.94	2.27	13.46	3/4	240
BC10D12G60	2022633	10	12	7.50	23.22	20.62	10.94	2.27	13.46	1/2	240
BC10D12G60	2022634	10	12	7.50	23.22	20.62	10.94	2.27	13.46	9/16	240
BC10D12G60	2022635	10	12	7.50	23.22	20.62	10.94	2.27	13.46	5/8	240
BC10D12G60	2022636	10	12	7.50	23.22	20.62	10.94	2.27	13.46	3/4	240
BC10D12G64	2022637	10	12	8.00	23.22	20.62	10.94	2.27	13.46	1/2	240
BC10D12G64	2022638	10	12	8.00	23.22	20.62	10.94	2.27	13.46	9/16	240
BC10D12G64	2022639	10	12	8.00	23.22	20.62	10.94	2.27	13.46	5/8	240
BC10D12G64	2022640	10	12	8.00	23.22	20.62	10.94	2.27	13.46	3/4	240
BC10D12I68	2022657	10	12	8.50	23.22	20.62	12.94	2.27	13.46	1/2	240
BC10D12I68	2022658	10	12	8.50	23.22	20.62	12.94	2.27	13.46	9/16	240
BC10D12I68	2022659	10	12	8.50	23.22	20.62	12.94	2.27	13.46	5/8	240
BC10D12I68	2022660	10	12	8.50	23.22	20.62	12.94	2.27	13.46	3/4	240
BC10D12I72	2022661	10	12	9.00	23.22	20.62	12.94	2.27	13.46	1/2	240
BC10D12I72	2022662	10	12	9.00	23.22	20.62	12.94	2.27	13.46	9/16	240
BC10D12I72	2022663	10	12	9.00	23.22	20.62	12.94	2.27	13.46	5/8	240
BC10D12I72	2022664	10	12	9.00	23.22	20.62	12.94	2.27	13.46	3/4	240
BC10D12I76	2022665	10	12	9.50	23.22	20.62	12.94	2.27	13.46	1/2	240
BC10D12I76	2022666	10	12	9.50	23.22	20.62	12.94	2.27	13.46	9/16	240
BC10D12I76	2022667	10	12	9.50	23.22	20.62	12.94	2.27	13.46	5/8	240
BC10D12I76	2022668	10	12	9.50	23.22	20.62	12.94	2.27	13.46	3/4	240
BC10D12I80	2022669	10	12	10.00	23.22	20.62	12.94	2.27	13.46	1/2	240
BC10D12I80	2022670	10	12	10.00	23.22	20.62	12.94	2.27	13.46	9/16	240
BC10D12I80	2022671	10	12	10.00	23.22	20.62	12.94	2.27	13.46	5/8	240
BC10D12I80	2022672	10	12	10.00	23.22	20.62	12.94	2.27	13.46	3/4	240
15 metric tons											
BC15D12J60	2022673	15	12	7.50	25.38	22.38	11.94	3.02	13.46	1/2	270
BC15D12J60	2022674	15	12	7.50	25.38	22.38	11.94	3.02	13.46	9/16	270
BC15D12J60	2022675	15	12	7.50	25.38	22.38	11.94	3.02	13.46	5/8	270
BC15D12J60	2022676	15	12	7.50	25.38	22.38	11.94	3.02	13.46	3/4	270
BC15D12J64	2022677	15	12	8.00	25.38	22.38	11.94	3.02	13.46	1/2	270
BC15D12J64	2022678	15	12	8.00	25.38	22.38	11.94	3.02	13.46	9/16	270
BC15D12J64	2022679	15	12	8.00	25.38	22.38	11.94	3.02	13.46	5/8	270
BC15D12J64	2022680	15	12	8.00	25.38	22.38	11.94	3.02	13.46	3/4	270
BC15D12J68	2022681	15	12	8.50	25.38	22.38	11.94	3.02	13.46	1/2	270
BC15D12J68	2022682	15	12	8.50	25.38	22.38	11.94	3.02	13.46	9/16	270
BC15D12J68	2022683	15	12	8.50	25.38	22.38	11.94	3.02	13.46	5/8	270
BC15D12J68	2022684	15	12	8.50	25.38	22.38	11.94	3.02	13.46	3/4	270
BC15D12J72	2022685	15	12	9.00	25.38	22.38	11.94	3.02	13.46	1/2	270
BC15D12J72	2022686	15	12	9.00	25.38	22.38	11.94	3.02	13.46	9/16	270
BC15D12J72	2022687	15	12	9.00	25.38	22.38	11.94	3.02	13.46	5/8	270
BC15D12J72	2022688	15	12	9.00	25.38	22.38	11.94	3.02	13.46	3/4	270
BC15D12L76	2022705	15	12	9.50	25.38	22.38	13.94	3.02	13.46	1/2	270
BC15D12L76	2022706	15	12	9.50	25.38	22.38	13.94	3.02	13.46	9/16	270
BC15D12L76	2022707	15	12	9.50	25.38	22.38	13.94	3.02	13.46	5/8	270
BC15D12L76	2022708	15	12	9.50	25.38	22.38	13.94	3.02	13.46	3/4	270
BC15D12L80	2022709	15	12	10.00	25.38	22.38	13.94	3.02	13.46	1/2	270
BC15D12L80	2022710	15	12	10.00	25.38	22.38	13.94	3.02	13.46	9/16	270
BC15D12L80	2022711	15	12	10.00	25.38	22.38	13.94	3.02	13.46	5/8	270
BC15D12L80	2022712	15	12	10.00	25.38	22.38	13.94	3.02	13.46	3/4	270
BC15D12L84	2022713	15	12	10.50	25.38	22.38	13.94	3.02	13.46	1/2	270
BC15D12L84	2022714	15	12	10.50	25.38	22.38	13.94	3.02	13.46	9/16	270
BC15D12L84	2022715	15	12	10.50	25.38	22.38	13.94	3.02	13.46	5/8	270
BC15D12L84	2022716	15	12	10.50	25.38	22.38	13.94	3.02	13.46	3/4	270
BC15D12L88	2022717	15	12	11.00	25.38	22.38	13.94	3.02	13.46	1/2	270
BC15D12L88	2022718	15	12	11.00	25.38	22.38	13.94	3.02	13.46	9/16	270
BC15D12L88	2022719	15	12	11.00	25.38	22.38	13.94	3.02	13.46	5/8	270
BC15D12L88	2022720	15	12	11.00	25.38	22.38	13.94	3.02	13.46	3/4	270

5:1 Design Factor.

UB-500 Series Top Swiveling Overhaul Balls

With **S320** Eye Hook

With **S1316 A SHUR-LOC®** Eye Hook

Both styles available with optional **McKissick®** Wedge Socket Assembly or S-422 **TERMINATOR** Wedge Socket

UWO 422T TERMINATOR Wedge Only

- Sizes 4 short Tons through 30 short Tons are available with Crosby's S1316A positive-locking SHUR-LOC® hook, which may be used for lifting personnel. Meets the intent of OSHA Rule 1926.1431(g)(1)(i)(A) and 1926.1501(g)(4)(iv)(B).
- Design Factor 4:1
- The top swivel design on the UB-500 assures the ball remains stationary if the wireline spins.
- The swivel incorporates a sealed roller thrust bearing together with a grease fitting for easy lubrication.
- Each ball can be equipped with the new McKissick® US-422T Wedge Socket which can be easily adjusted to fit various sizes of wireline by changing the wedge (ensure that correct wedge is used for selected wireline size).
- All hooks used on UB-500 Overhaul Balls (S320, S320N & S1316A) are forged from alloy steel. The S320 and S320N hooks come complete with latches.
- The S320 hook (PL latch) and the S320N hook (S4320 latch), with the proper latch attached, may be used for personnel lifting when secured with proper device (bolt, nut and pin for the PL latch; Cotter pin for the S4320 latch). Meets the intent of OSHA Rule 1926.1431(g)(1)(i)(A) and 1926.1501(g)(4)(iv)(B).

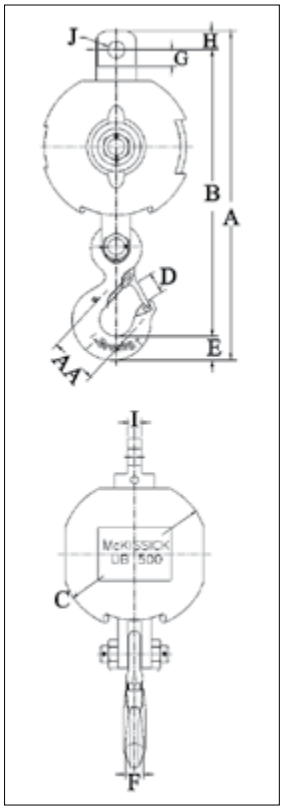
Overhaul Ball Assembly

Optional US-422T Wedge Sockets

McKissick® UB-500 Model No.	UB-500 "E" Eye Hook Stock No.	UB-500 "S" SHUR-LOC® Stock No.	Working Load Limit (short tons)	Weight Each (lb)	Wireline Size (in)	Model No.	Wedge Socket Assy. Stock No.	Weight Each (lb)	Wedge Only Stock No.	Weight Each (lb)
MB4T35E	1036000*	1036005	4	58	3/8	US4T	1044300	4.6	1047310	0.7
MB4T85E	1036009*	1036018	4	102	7/16	US4T	1044309	4.6	1047301	1.0
MB4T150E	1036027*	1036032	4	162	1/2	US4T	1044318	4.6	1047329	1.0
MB4T200E	1036036*	1036041	4	201	1/2	US5T	1044327	8.5	1047338	2.0
MB7T85E	1036045*	1036050	7	109	9/16	US5T	1044336	8.5	1047347	1.8
MB7T150E	1036054*	1036063	7	170	5/8	US5T	1044345	8.5	1047356	1.8
MB7T200E	1036072*	1036077	7	210	5/8	US6T	1044354	9.4	1047365	3.0
MB7T285E	1036081*	1036086	7	321	3/4	US6T	1044363	9.4	1047374	2.5
MB10T150E	1036090*	1036095	10	216						
MB10T200E	1036099*	1036108	10	260						
MB10T285E	1036117*	1036122	10	365						
MB10T350E	1036126*	1036131	10	403	5/8	US6T	1044354	9.4	1047365	3.0
MB10T650E	1036135*	1036140	10	718	3/4	US6T	1044363	9.4	1047374	2.5
MB12T150E	1036144*	1036520	12	216	7/8	US8T	1044404	20.8	1047425	5.5
MB12T200E	1036153*	1036529	12	258	1	US8T	1044417	20.8	1047431	6.1
MB12T285E	1036171*	1036538	12	365	1-1/8	US10T	1044426	46.5	1047440	9.7
MB12T350E	1036180*	1036547	12	403	1-1/4	US10T	1044435	46.5	1047459	10.4
MB12T650E	1036189*	1036556	12	718						
MB15T200E	1036198*	1036565	15	298						
MB15T350E	1036207*	1036574	15	456						
MB15T650E	1036216*	1036583	15	753						
MB15T1150E	1036225*	1036592	15	1311						
MB20T200E	1036234*	1036611	20	298	5/8	US8AT	1044372	17.5	1047383	3.2
MB20T350E	1036243*	1036620	20	456	3/4	US8AT	1044381	17.5	1047392	3.4
MB20T650E	1036252*	1036629	20	753	7/8	US8T	1044404	20.8	1047425	5.5
MB20T1150E	1036261*	1036638	20	1311	1	US8T	1044417	20.8	1047431	6.1
MB25T350E	1036270	1036647	25	533	1-1/8	US10T	1044426	46.5	1047440	9.7
MB25T650E	1036279	1036656	25	865	1-1/4	US10T	1044435	46.5	1047459	10.4
MB25T1150E	1036288	1036665	25	1421						
MB30T650E	1036297	1036674	30	865						
MB30T1150E	1036306	1036683	30	1421						

4:1 Design Factor. * Utilizes Crosby "N" style hooks with integrated latch. Replacement latch kit is S-4320. PL latch and S-4055 latch will not fit. Standard Crosby S-5 Thrust style swivels can not be used with UB-500 Overhaul Balls. For replacement swivels, contact Crosby Customer Service.

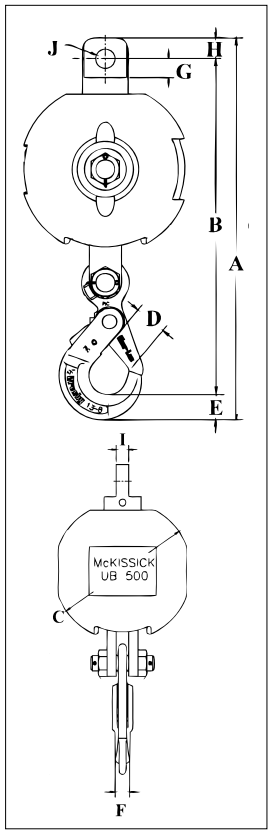
UB-500 TOP SWIVEL OVERHAUL BALLS



UB-500E Top Swivel Overhaul Balls with 320 Eye Hooks

Model No.	UB-500 "E" Stock No.*	Dimensions (in)										
		A	B	C	D	E	F	G	H	I	J	AA
MB4T35E	1036000*	20.09	17.27	7.50	1.36	1.44	1.12	1.88	1.38	.88	1.31	2.5
MB4T85E	1036009*	20.98	18.16	9.25	1.36	1.44	1.12	1.88	1.38	.88	1.31	2.5
MB4T150E	1036027*	21.98	19.16	11.25	1.36	1.44	1.12	1.88	1.38	.88	1.31	2.5
MB4T200E	1036036*	22.35	19.53	12.50	1.36	1.44	1.12	1.88	1.38	.88	1.31	2.5
MB7T85E	1036045*	23.18	20.36	9.25	1.61	1.81	1.38	1.88	1.38	.88	1.31	3.0
MB7T150E	1036054*	24.56	21.36	11.25	1.61	1.81	1.38	1.88	1.38	.88	1.31	3.0
MB7T200E	1036072*	24.89	21.71	12.50	1.61	1.81	1.38	1.88	1.38	.88	1.31	3.0
MB7T285E	1036081*	25.86	22.67	13.88	1.61	1.81	1.38	1.88	1.38	.88	1.31	3.0
MB10T150E	1036090*	31.44	27.19	11.25	2.08	2.25	1.62	2.75	2.00	1.25	1.78	4.0
MB10T200E	1036099*	31.81	27.56	12.50	2.08	2.25	1.62	2.75	2.00	1.25	1.78	4.0
MB10T285E	1036117*	32.75	28.50	13.88	2.08	2.25	1.62	2.75	2.00	1.25	1.78	4.0
MB10T350E	1036126*	33.31	29.06	15.00	2.08	2.25	1.62	2.75	2.00	1.25	1.78	4.0
MB10T650E	1036135*	34.79	30.54	17.94	2.08	2.25	1.62	2.75	2.00	1.25	1.78	4.0
MB12T150E	1036144*	31.44	27.19	11.25	2.08	2.25	1.62	2.75	2.00	1.25	1.78	4.0
MB12T200E	1036153*	31.81	27.56	12.50	2.08	2.25	1.62	2.75	2.00	1.25	1.78	4.0
MB12T285E	1036171*	32.75	28.50	13.88	2.08	2.25	1.62	2.75	2.00	1.25	1.78	4.0
MB12T350E	1036180*	33.31	29.06	15.00	2.08	2.25	1.62	2.75	2.00	1.25	1.78	4.0
MB12T650E	1036189*	35.79	30.54	17.94	2.08	2.25	1.62	2.75	2.00	1.25	1.78	4.0
MB15T200E	1036198*	37.59	32.59	12.50	3.02	3.00	2.38	2.38	2.00	1.25	1.78	5.0
MB15T350E	1036207*	38.81	33.81	15.00	3.02	3.00	2.38	2.38	2.00	1.25	1.78	5.0
MB15T650E	1036216*	40.22	35.22	17.94	3.02	3.00	2.38	2.38	2.00	1.25	1.78	5.0
MB15T1150E	1036225*	42.22	37.22	21.62	3.02	3.00	2.38	2.38	2.00	1.25	1.78	5.0
MB20T200E	1036234*	37.59	32.59	12.50	3.02	3.00	2.38	2.38	2.00	1.25	1.78	5.0
MB20T350E	1036243*	38.81	33.81	15.00	3.02	3.00	2.38	2.38	2.00	1.25	1.78	5.0
MB20T650E	1036252*	40.22	35.22	17.94	3.02	3.00	2.38	2.38	2.00	1.25	1.78	5.0
MB20T1150E	1036261*	42.22	37.22	21.62	3.02	3.00	2.38	2.38	2.00	1.25	1.78	5.0
MB25T350E	1036270	47.18	40.18	15.00	3.00	3.62	3.00	3.31	2.75	1.75	1.78	6.5
MB25T650E	1036279	49.12	42.75	17.94	3.00	3.62	3.00	3.31	2.75	1.75	1.78	6.5
MB25T1150E	1036288	51.06	44.69	21.62	3.00	3.62	3.00	3.31	2.75	1.75	1.78	6.5
MB30T650E	1036297	49.12	42.75	17.94	3.00	3.62	3.00	3.31	2.75	1.75	1.78	6.5
MB30T1150E	1036306	51.06	44.69	21.62	3.00	3.62	3.00	3.31	2.75	1.75	1.78	6.5

4:1 Design Factor. *4 short Ton through 20 short Ton models use Crosby "N" style hooks with integrated latch. All sizes are RFID EQUIPPED.



UB-500S Top Swivel Overhaul Balls with SHUR-LOC® Hooks

Model No.	UB-500 "S" Stock No.	Dimensions (in)									
		A	B	C	D	E	F	G	H	I	J
MB4T35S	1036005	20.66	18.18	7.50	1.83	1.15	.94	1.88	1.38	.88	1.31
MB4T85S	1036018	21.55	19.05	9.25	1.83	1.15	.94	1.88	1.38	.88	1.31
MB4T150S	1036032	22.55	20.05	11.25	1.83	1.15	.94	1.88	1.38	.88	1.31
MB4T200S	1036041	22.92	20.42	12.50	1.83	1.15	.94	1.88	1.38	.88	1.31
MB7T85S	1036050	23.90	21.30	9.25	2.11	1.66	1.16	1.88	1.38	.88	1.31
MB7T150S	1036063	25.28	22.30	11.25	2.11	1.66	1.16	1.88	1.38	.88	1.31
MB7T200S	1036077	25.61	22.65	12.50	2.11	1.66	1.16	1.88	1.38	.88	1.31
MB7T285S	1036086	26.58	23.61	13.88	2.11	1.66	1.16	1.88	1.38	.88	1.31
MB10T150S	1036095	31.24	27.19	11.25	2.49	2.06	1.50	2.75	2.00	1.25	1.78
MB10T200S	1036108	31.61	27.56	12.50	2.49	2.06	1.50	2.75	2.00	1.25	1.78
MB10T285S	1036122	32.55	28.50	13.88	2.49	2.06	1.50	2.75	2.00	1.25	1.78
MB10T350S	1036131	33.11	29.06	15.00	2.49	2.06	1.50	2.75	2.00	1.25	1.78
MB10T650S	1036140	34.59	30.54	17.94	2.49	2.06	1.50	2.75	2.00	1.25	1.78

UB-500 Series Non Swiveling Overhaul Balls

S320
Eye Hook

S1316 A SHUR-LOC®
Eye Hook

Both styles available with optional **McKissick®** Wedge Socket Assembly or S-422 **TERMINATOR** Wedge Socket

UWO 422T
TERMINATOR
Wedge Only

- Sizes 4 short Tons through 15 short Tons are available with Crosby's S1316A "Positive Locking" SHUR-LOC® hook which may be used for lifting personnel. Meets the intent of OSHA Rule 1926.1431(g)(1)(i)(A) and 1926.1501(g)(4)(iv)(B).
- Design Factor 4:1.
- Each ball can be equipped with the new McKissick® US-422T Wedge Socket which can be easily adjusted to fit various sizes of wireline by changing the wedge.

Key to McKissick® UB-500 Utility Overhaul Ball Model Number

MB	4	T	35	E
McKissick® Utility Overhead Ball	Working Load Limit (Tons)	Swivel Style T = Top NS = Non	Ball Only Weight	Hook Style E = 320 or 320N S = SHUR-LOC® Eye Hook

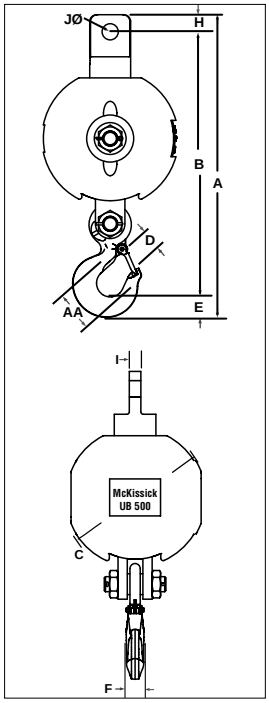
Overhaul Ball Assembly

Optional US-422T Wedge Sockets

McKissick® UB-500 Model No.	UB-500 "E" Eye Hook Stock No.*	UB-500 "S" SHUR-LOC® Stock No.	Working Load Limit (short tons)	Weight Each (lb)	Wire Rope Diameter (in)	Model No.	Wedge Socket Assy. Stock No.	Weight Each (lb)	Wedge Only Stock No.	Weight Each (lb)
MB4NS35E	1036402	1036407	4	54						
MB4NS85E	1036411	1036416	4	98	3/8	US4T	1044300	4.6	1047310	0.7
MB4NS150E	1036420	1036425	4	158	7/16	US4T	1044309	4.6	1047301	1.0
MB4NS200E	1036429	1036434	4	200	1/2	US4T	1044318	4.6	1047329	1.0
MB7NS85E	1036438	1036443	7	104	1/2	US5T	1044327	8.5	1047338	2.0
MB7NS150E	1036447	1036452	7	165	9/16	US5T	1044336	8.5	1047347	1.8
MB7NS200E	1036456	1036461	7	205	5/8	US5T	1044345	8.5	1047356	1.8
MB7NS285E	1036465	1036470	7	316	5/8	US6T	1044354	9.4	1047365	3.0
MB10NS150E	1036474	1036479	10	198	3/4	US6T	1044363	9.4	1047374	2.5
MB10NS200E	1036483	1036488	10	242						
MB10NS285E	1036492	1036497	10	347						
MB10NS350E	1036501	1036506	10	385	5/8	US6T	1044354	9.4	1047365	3.0
MB10NS650E	1036510	1036511	10	700	3/4	US6T	1044363	9.4	1047374	2.5
MB12NS150E	1036519	–	12	198	7/8	US8T	1044404	20.8	1047425	5.5
MB12NS200E	1036528	–	12	240	1	US8T	1044417	20.8	1047431	6.1
MB12NS285E	1036537	–	12	347	1-1/8	US10T	1044426	46.5	1047440	9.7
MB12NS350E	1036546	–	12	385	1-1/4	US10T	1044435	46.5	1047459	10.4
MB12NS650E	1036555	–	12	700						
MB15NS200E	1036564	–	15	267	5/8	US8AT	1044372	17.5	1047383	3.2
MB15NS350E	1036573	–	15	425	3/4	US8AT	1044381	17.5	1047392	3.4
MB15NS650E	1036582	–	15	722	7/8	US8T	1044404	20.8	1047425	5.5
MB15NS1150E	1036591	–	15	1280	1	US8T	1044417	20.8	1047431	6.1
					1-1/8	US10T	1044426	46.5	1047440	9.7
					1-1/4	US10T	1044435	46.5	1047459	10.4

4:1 Design Factor. *Utilizes Crosby "N" style hooks with integrated latch. Replacement latch kit is S-4320. PL latch and S-4055 latch will not fit.

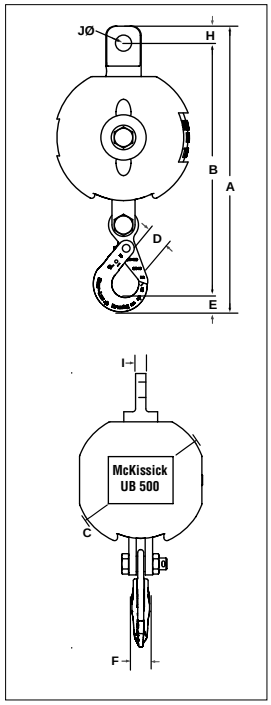
UB-500 NON SWIVEL OVERHAUL BALLS



UB-500NS Non Swivel Overhaul Balls with 320N Eye Hooks

Model No.	UB-500NS "E" Stock No.*	Dimensions (in)									
		A	B	C	D	E	F	H	I	J	AA
MB4NS35E	1036402	20.09	17.27	7.5	1.36	1.44	1.12	1.38	0.75	1.31	2.5
MB4NS85E	1036411	20.98	18.16	9.25	1.36	1.44	1.12	1.38	0.75	1.31	2.5
MB4NS150E	1036420	21.98	19.16	11.25	1.36	1.44	1.12	1.38	0.75	1.31	2.5
MB4NS200E	1036429	22.35	19.53	12.5	1.36	1.44	1.12	1.38	0.75	1.31	2.5
MB7NS85E	1036438	23.18	20.36	9.25	1.61	1.81	1.38	1.38	0.75	1.31	3.0
MB7NS150E	1036447	24.56	21.36	11.25	1.61	1.81	1.38	1.38	0.75	1.31	3.0
MB7NS200E	1036456	24.89	21.71	12.5	1.61	1.81	1.38	1.38	0.75	1.31	3.0
MB7NS285E	1036465	25.86	22.67	13.88	1.61	1.81	1.38	1.38	0.75	1.31	3.0
MB10NS150E	1036474	31.44	27.19	11.25	2.08	2.25	1.62	2.00	1.25	1.78	4.0
MB10NS200E	1036483	31.81	27.56	12.5	2.08	2.25	1.62	2.00	1.25	1.78	4.0
MB10NS285E	1036492	32.75	28.5	13.88	2.08	2.25	1.62	2.00	1.25	1.78	4.0
MB10NS350E	1036501	33.31	29.06	15.00	2.08	2.25	1.62	2.00	1.25	1.78	4.0
MB10NS650E	1036510	34.79	30.54	17.94	2.08	2.25	1.62	2.00	1.25	1.78	4.0
MB12NS150E	1036519	31.44	27.19	11.25	2.08	2.25	1.62	2.00	1.25	1.78	4.0
MB12NS200E	1036528	31.81	27.56	12.5	2.08	2.25	1.62	2.00	1.25	1.78	4.0
MB12NS285E	1036537	32.75	28.5	13.88	2.08	2.25	1.62	2.00	1.25	1.78	4.0
MB12NS350E	1036546	33.31	29.06	15.00	2.08	2.25	1.62	2.00	1.25	1.78	4.0
MB12NS650E	1036555	35.79	30.54	17.94	2.08	2.25	1.62	2.00	1.25	1.78	4.0
MB15NS200E	1036564	37.59	32.59	12.5	3.02	3.00	2.38	2.00	1.25	1.78	5.0
MB15NS350E	1036573	38.81	33.81	15.00	3.02	3.00	2.38	2.00	1.25	1.78	5.0
MB15NS650E	1036582	40.22	35.22	17.94	3.02	3.00	2.38	2.00	1.25	1.78	5.0
MB15NS1150E	1036591	42.22	37.22	21.62	3.02	3.00	2.38	2.00	1.25	1.78	5.0

4:1 Design Factor. *Utilizes Crosby "N" style hooks with integrated latch.
Replacement latch kit is S-4320. PL latch and S-4055 latch will not fit.

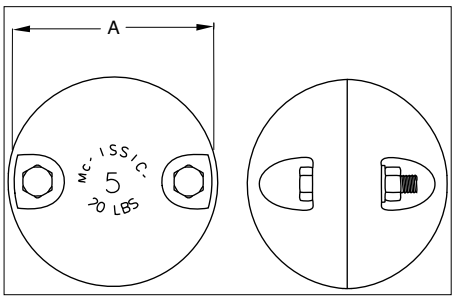


UB-500NS Non Swivel Overhaul Balls with SHUR-LOC® Hooks

Model No.	UB-500NS "S" Stock No.	Dimensions (in)								
		A	B	C	D	E	F	H	I	J
MB4NS35S	1036407	20.66	18.18	7.5	1.83	1.15	0.94	1.38	0.75	1.31
MB4NS85S	1036416	21.55	19.05	9.25	1.83	1.15	0.94	1.38	0.75	1.31
MB4NS150S	1036425	22.55	20.05	11.25	1.83	1.15	0.94	1.38	0.75	1.31
MB4NS200S	1036434	22.92	20.42	12.5	1.83	1.15	0.94	1.38	0.75	1.31
MB7NS85S	1036443	23.9	21.3	9.25	2.11	1.66	1.16	1.38	0.75	1.31
MB7NS150S	1036452	25.28	22.3	11.25	2.11	1.66	1.16	1.38	0.75	1.31
MB7NS200S	1036461	25.61	22.65	12.5	2.11	1.66	1.16	1.38	0.75	1.31
MB7NS285S	1036470	26.58	23.61	13.88	2.11	1.66	1.16	1.38	0.75	1.31
MB10NS150S	1036479	31.24	27.19	11.25	2.49	2.06	1.5	2.00	1.25	1.78
MB10NS200S	1036488	31.61	27.56	12.5	2.49	2.06	1.5	2.00	1.25	1.78
MB10NS285S	1036497	32.55	28.5	13.88	2.49	2.06	1.5	2.00	1.25	1.78
MB10NS350S	1036506	33.11	29.06	15.00	2.49	2.06	1.5	2.00	1.25	1.78
MB10NS650S	1036511	34.59	30.54	17.94	2.49	2.06	1.5	2.00	1.25	1.78

Split
Overhaul
Ball

- Attaches easily to Wireline.

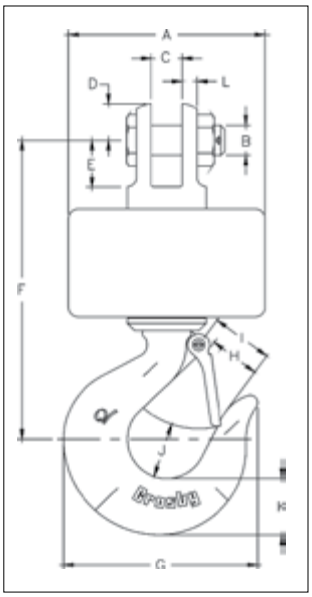


Split Overhaul Ball

Catalog No.	Stock No.	Wire Rope Diameter (in)	Weight Each (lb)	Ball Diameter A (in)
SHB - 15	2003822	1/4-5/16	15	5.06
SHB - 20	2003830	3/8	20	5.38
SHB - 50	2003831	1/2 - 5/8	50	7.12
SHB - 100	2003832	5/8 - 3/4 - 7/8	100	9.19

AS-15

- Utilizes genuine Crosby hooks which are forged alloy steel, Quenched & Tempered, and contain the patented QUIC-CHECK® marking.
- Entire overhaul ball is zinc plated to resist corrosion.
- Designed with angular contact bearings which maximizes efficiency, reliability, and service life of swivel and extend the life of the wireline.
- Available with wide jaw opening that utilizes nylon spools and shields.
- Designed for applications where headroom is critical.
- Other upper fittings available upon request.



Angular Contact Bearing Swivel Overhaul Balls

Stock No.	Working Load Limit (short Tons)	Wire Rope Diameter (in)	Dimensions (in)												Weight Each (lb)
			A	B	C	D	E	F	G	H	I	J	K	L	
2009806	1.5	.38	4.00	.50	.50	.69	.78	6.28	4.09	1.12	1.22	1.19	1.12	.31	9
2009807	3.0	.50	5.00	.75	.75	.94	1.19	8.56	4.94	1.34	1.50	1.38	1.44	.38	19
2003969	5.0	.62	6.88	.88	1.06	1.12	1.56	10.81	6.50	1.69	1.88	1.75	1.81	.56	43
2009808	8.5	.75	7.00	1.19	1.56	1.34	2.09	13.75	8.69	2.25	2.50	2.56	2.59	.53	60

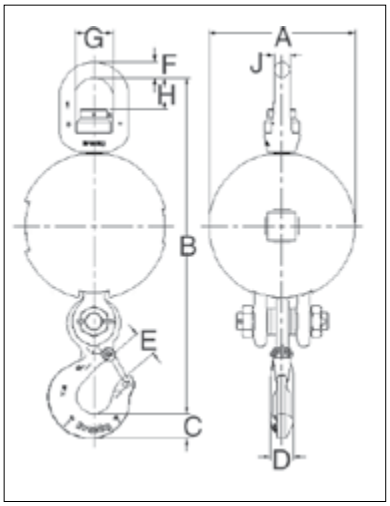
5:1 Design Factor.

UB-550E

UB-550 Top Swivel Overhaul Balls

- Top swivel design assures that the ball remains stationary if the wireline spins.
- Utilizes genuine forged Crosby hooks, bail and connector.
- Quenched and Tempered.
- Both styles of hooks incorporate QUIC-CHECK® Deformation and Angle Indicators.
- Easy disassembly for periodic inspection and maintenance.
- Design factor of 4:1.

UB-550S



UB-550E Top Swivel Overhaul Balls with Crosby Eye Hook

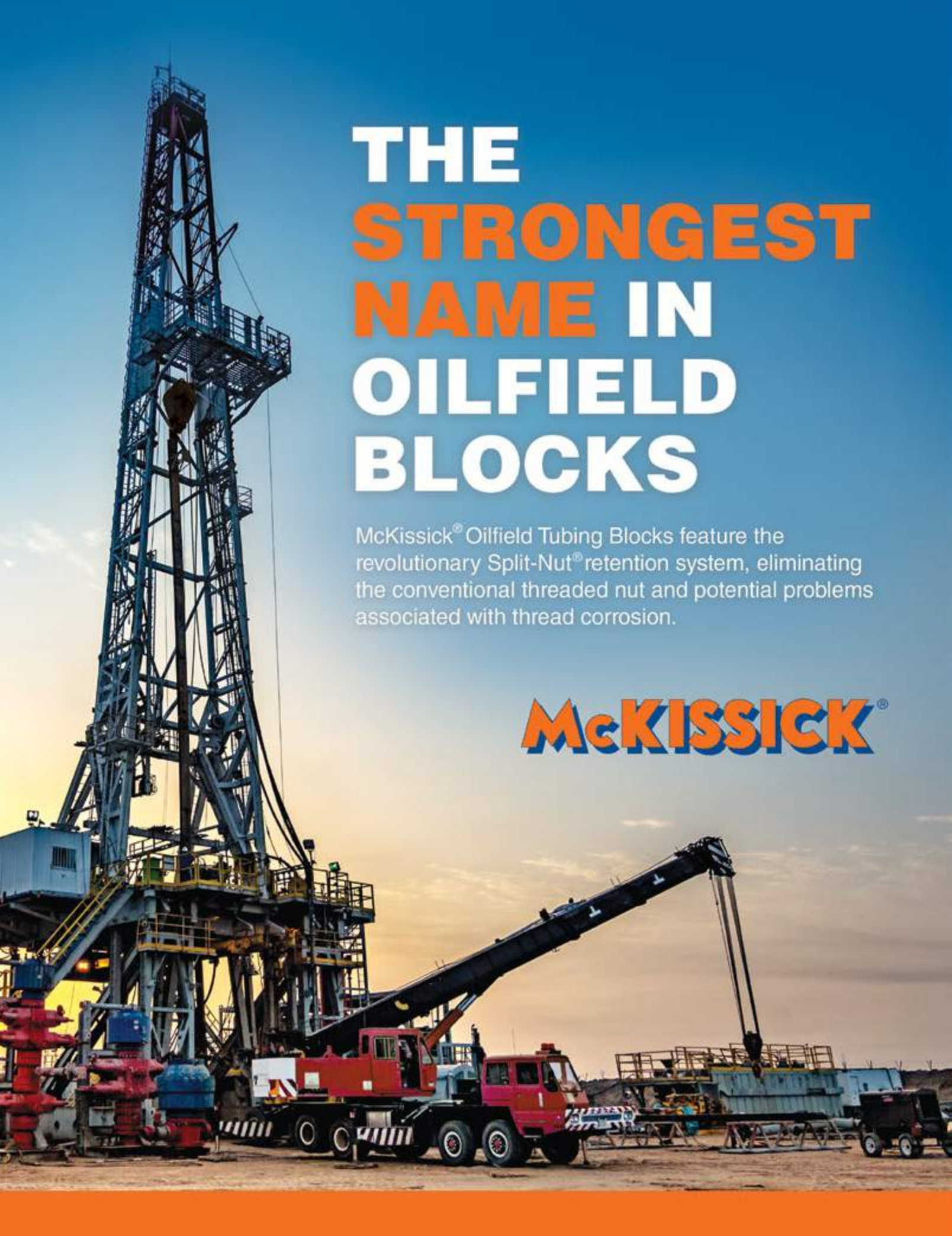
Stock No.	Model No.	Working Load Limit (short Tons)	Weight Each (lb)	Dimensions (in)								
				A	B	C	D	E	F	G	H	J
1036621	MB04BT085E	4	113	8.88	21.00	1.44	1.31	1.36	1.12	2.75	2.28	1.12
1036649	MB04BT150E	4	178	10.56	22.72	1.44	1.31	1.36	1.12	2.75	2.28	1.12
1036667	MB04BT200E	4	232	11.62	23.72	1.44	1.31	1.36	1.12	2.75	2.28	1.12
1036685	MB07BT085E	7	113	8.88	22.48	1.81	1.66	1.61	1.12	2.75	2.28	1.12
1036705	MB07BT150E	7	178	10.56	24.20	1.81	1.66	1.61	1.12	2.75	2.28	1.12
1036723	MB07BT200E	7	232	11.62	25.20	1.81	1.66	1.61	1.12	2.75	2.28	1.12

4:1 Design Factor.

UB-550S Top Swivel Overhaul Balls with SHUR-LOC® Eye Hook

Stock No.	Model No.	Working Load Limit (short Tons)	Weight Each (lb)	Dimensions (in)								
				A	B	C	D	E	F	G	H	J
1036630	MB04BT085S	4	113	8.88	23.32	1.67	1.16	2.11	1.12	2.75	2.28	1.12
1036658	MB04BT150S	4	178	10.56	25.04	1.67	1.16	2.11	1.12	2.75	2.28	1.12
1036676	MB04BT200S	4	232	11.62	26.04	1.67	1.16	2.11	1.12	2.75	2.28	1.12
1036694	MB07BT085S	7	113	8.88	23.32	1.67	1.16	2.11	1.12	2.75	2.28	1.12
1036714	MB07BT150S	7	178	10.56	25.04	1.67	1.16	2.11	1.12	2.75	2.28	1.12
1036732	MB07BT200S	7	232	11.62	26.04	1.67	1.16	2.11	1.12	2.75	2.28	1.12

4:1 Design Factor.


THE
STRONGEST
NAME IN
OILFIELD
BLOCKS
McKissick® Oilfield Tubing Blocks feature the revolutionary Split-Nut® retention system, eliminating the conventional threaded nut and potential problems associated with thread corrosion.
McKISSICK®

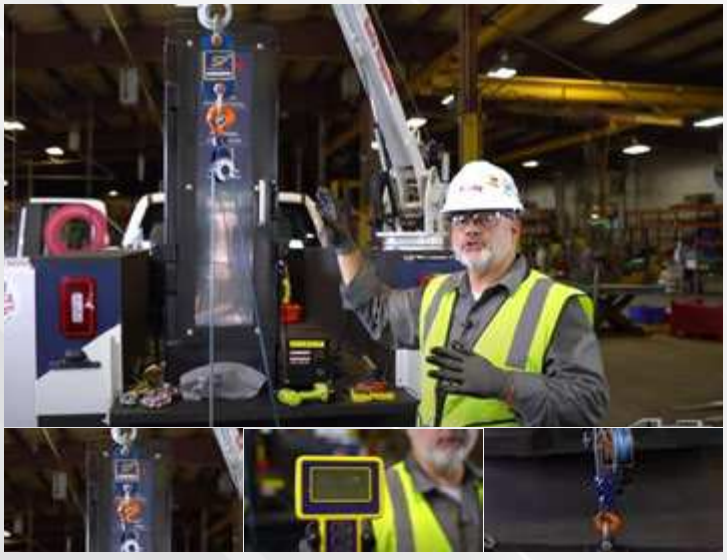
VALUE ADDED

- **Dual Rated:** To meet the requirements of both short tons and metric tons.
- **Metric Rating:** McKissick® snatch blocks are metric rated to a design factor of 4:1. Because they are metric rated with a world-class design, they are applicable to global use without conversion.
- **US Rating:** When compared to other blocks that are rated in short tons, the design factor of McKissick snatch blocks is 4.5 to 1.
- **Fatigue Properties:** McKissick snatch blocks are fatigue rated. The blocks are designed to meet specific fatigue performance levels and the requirements for the new Euronorm Standards: 20,000 cycles at 1-1/2 times the Working Load Limit.
- **Latch Kits:** McKissick snatch blocks that utilize a hook as an end fitting connection are equipped with latches.
- **Application Information:** Application and warning information for tackle block systems is attached directly to each block. In addition, each block has a product warning sticker attached directly to it for the purpose of giving specific warning instructions about the block.
- **Lock Nut:** McKissick snatch blocks have a special high-performance lock nut on the non-moveable side plate for securing the sheave pin.
- **Sheave & Wireline:** Sheaves for McKissick snatch blocks have a machine-formed groove.
- **Secondary Securement Systems:** McKissick snatch blocks are designed to incorporate a secondary securement system that retains the end fitting connection bolt when the block is in the closed position. In addition, a patented system retains the end fitting connection bolt when the block is in the open position, thus eliminating the loss of block parts.

404
TAIL BOARD

418
WITH HOOK

419
WITH SHACKLE



SNATCH BLOCK DEMONSTRATION

- How to determine snatch block capacity
- How to use a snatch block to gain a mechanical advantage
- Importance of using a load cell in conjunction with a snatch block on a lift

WATCH VIDEO
thecrosbygroup.com/snatchblockdemo

15

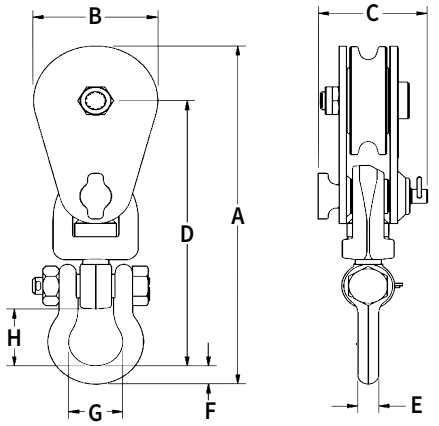
SNATCH BLOCK WITH SHACKLE FITTING, SINGLE SHEAVE, 2-12t

Fatigue Rated CE

L-170

L-160

417



- Opening feature permits easy insertion of rope without reeving, or while the block is suspended.
- Bolt for opening feature is retained, to ensure no lost bolts.
- Forged steel swivel tees, yokes and shackles.
- Can be furnished with bronze bushings or roller bearings.
- Center pin equipped with pressure lube fitting.
- All sizes feature sheave grooves suited for a range of wireline diameters.
- Meets or exceeds all requirements of ASME B30.26. Importantly, these blocks meet other critical performance requirements including fatigue life and material traceability, not addressed by ASME B30.26.
- 417 alloy snatch blocks feature a significant reduction in weight compared to snatch blocks made of non-alloy materials.
- L-170 snatch blocks (with shackle or hook) feature an easy-to-open bolt design. The retaining bolt is released by rotating the fitting assembly, no tools required.
- Crosby's Engineered Solutions Group is ready to discuss your requirements and help select or develop the ideal block for your application.
- Visit thecrosbygroup.com/engineeredsolutions for more information.

APPLICATION AND WARNING INFORMATION
SECTION 17

Working Load Limit (t)	Wire Rope Diameter (in)	Sheave Diameter (in)	Bearing Code	Weight Each (lb)	Catalog No.	Stock No.	Dimensions (in)							
							A	B	C	D	E	F	G	H
2 metric tons														
2	5/16 - 3/8	3	BB	4	419 w/Eye	109037†	8.67	3.00	2.64	6.61	0.56	0.56	1.38	1.38
2	5/16 - 3/8	3	BB	5	419	109091	9.27	3.00	2.64	7.27	0.50	0.50	1.32	1.56
4 metric tons														
4	3/8 - 1/2	4.5	BB	12	419	109064	13.38	4.24	3.13	10.57	0.62	0.69	1.70	2.00
5 metric tons														
5	3/8 - 1/2 ‡	4	BB	11	L-170	599828	13.88	4.50	2.94	10.94	0.62	0.69	1.70	2.00
5	3/8 - 1/2 ‡	4	RB	11	L-170	599837	13.88	4.50	2.94	10.94	0.62	0.69	1.70	2.00
6 metric tons														
6*	3/8 - 1/2	5	BB	13	L-160	599524	13.82	5.12	3.69	10.57	0.62	0.69	1.70	2.00
6*	3/8 - 1/2	5	RB	13	L-160	599533	13.82	5.12	3.69	10.57	0.62	0.69	1.70	2.00
8 metric tons														
8	5/8 - 3/4	6	BB	28	419	109126	18.93	6.00	4.19	14.68	1.25	1.25	3.00	3.47
8	5/8 - 3/4	6	RB	28	419	109153	18.93	6.00	4.19	14.68	1.25	1.25	3.00	3.47
8	5/8 - 3/4	8	BB	33	419	109224	20.99	8.12	4.19	15.68	1.25	1.25	3.00	3.47
8	5/8 - 3/4	8	RB	33	419	109251	20.99	8.12	4.19	15.68	1.25	1.25	3.00	3.47
8	5/8 - 3/4	10	BB	43	419	109322	23.06	10.12	4.19	16.75	1.25	1.25	3.00	3.47
8	5/8 - 3/4	10	RB	43	419	109359	23.06	10.12	4.19	16.75	1.25	1.25	3.00	3.47
8	5/8 - 3/4	12	BB	55	419	109420	25.87	12.12	4.19	18.56	1.25	1.25	3.00	3.47
8	5/8 - 3/4	12	RB	55	419	109457	25.87	12.12	4.19	18.56	1.25	1.25	3.00	3.47
8	5/8 - 3/4	14	BB	67	419	109527	27.37	14.12	4.19	19.06	1.25	1.25	3.00	3.47
8	5/8 - 3/4	14	RB	67	419	109545	27.37	14.12	4.19	19.06	1.25	1.25	3.00	3.47
12 metric tons														
12*	5/8 - 3/4	5.75	BB	29	L-160	599588	19.03	6.00	4.19	14.78	1.25	1.25	3.00	3.47
12*	5/8 - 3/4	5.75	RB	29	L-160	599597	19.03	6.00	4.19	14.78	1.25	1.25	3.00	3.47
12	3/4 - 7/8	6	BB	28	417	168972	18.93	6.00	4.19	14.68	1.25	1.25	3.00	3.47
12	3/4 - 7/8	6	RB	28	417	193757	18.93	6.00	4.19	14.68	1.25	1.25	3.00	3.47
12	3/4 - 7/8	8	BB	34	417	168990	20.99	8.12	4.19	15.68	1.25	1.25	3.00	3.47
12	3/4 - 7/8	8	RB	34	417	193819	20.99	8.12	4.19	15.68	1.25	1.25	3.00	3.47
12	3/4 - 7/8	10	BB	42	417	193882	23.06	10.12	4.19	16.75	1.25	1.25	3.00	3.47
12	3/4 - 7/8	10	RB	42	417	193935	23.06	10.12	4.19	16.75	1.25	1.25	3.00	3.47

4:1 Design Factor. *3.5:1 Design Factor. **† Fitted with 1-1/4" ID Swivel Eye. ‡ Special Dual Groove Sheave also accepts 1-1/4" Manilla Rope.**

SNATCH BLOCK WITH SHACKLE FITTING, SINGLE SHEAVE, 15-60t

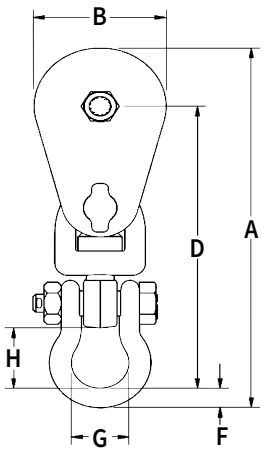
Fatigue Rated CE

421

419

431

435



- Opening feature permits easy insertion of rope without reeving, or while the block is suspended.
- Can be furnished with bronze bushings or roller bearings.
- Center pin equipped with pressure lube fitting.
- All sizes feature sheave grooves suited for a range of wireline diameters.
- Meets or exceeds all requirements of ASME B30.26. Importantly, these blocks meet other critical performance requirements including fatigue life and material traceability, not addressed by ASME B30.26.
- 435 alloy snatch blocks feature a significant reduction in weight compared to snatch blocks made of non-alloy materials.
- Crosby's Engineered Solutions Group is ready to discuss your requirements and help select or develop the ideal block for your application. Visit thecrosbygroup.com/engineeredsolutions for more information.

APPLICATION AND WARNING INFORMATION
SECTION 17

Working Load Limit (t)	Wire Rope Diameter (in)	Sheave Diameter (in)	Bearing Code	Weight Each (lb)	Catalog No.	Stock No.	Dimensions (in)							
							A	B	C	D	E	F	G	H
15 metric tons														
15	3/4 - 7/8	8	BB	59	421	108308	23.00	8.12	5.09	17.19	1.50	1.75	3.12	3.12
15	3/4 - 7/8	8	RB	59	421	108309	23.00	8.12	5.09	17.19	1.50	1.75	3.12	3.12
15	3/4 - 7/8	10	BB	68	421	108390	24.75	10.12	5.09	17.94	1.50	1.75	3.12	3.12
15	3/4 - 7/8	10	RB	68	421	108391	24.75	10.12	5.09	17.94	1.50	1.75	3.12	3.12
15	3/4 - 7/8	16	BB	130	419	109607	31.75	16.12	5.09	22.00	1.50	1.75	3.12	3.12
15	3/4 - 7/8	16	RB	130	419	109625	31.75	16.12	5.09	22.00	1.50	1.75	3.12	3.12
15	7/8 - 1	18	BB	159	419	109643	33.12	18.12	5.09	22.25	1.50	1.75	3.12	3.12
15	7/8 - 1	18	RB	159	419	109661	33.12	18.12	5.09	22.25	1.50	1.75	3.12	3.12
20 metric tons														
20	1 - 1-1/8	8	BB	92	431	121022	26.57	8.12	6.00	19.76	2.00	2.75	3.72	4.00
20	1 - 1-1/8	8	RB	92	431	121040	26.57	8.12	6.00	19.76	2.00	2.75	3.72	4.00
20	1 - 1-1/8	10	BB	112	431	121095	28.64	10.12	6.00	20.72	2.00	2.75	3.72	4.00
20	1 - 1-1/8	10	RB	112	431	121111	28.64	10.12	6.00	20.72	2.00	2.75	3.72	4.00
20	1 - 1-1/8	12	BB	130	431	121175	30.65	12.25	6.00	21.78	2.00	2.75	3.72	4.00
20	1 - 1-1/8	12	RB	130	431	121193	30.65	12.25	6.00	21.78	2.00	2.75	3.72	4.00
20	1 - 1-1/8	14	BB	160	431	121255	33.00	14.00	6.00	23.25	2.00	2.75	3.72	4.00
20	1 - 1-1/8	14	RB	160	431	121273	33.00	14.00	6.00	23.25	2.00	2.75	3.72	4.00
25 metric tons														
25	1 - 1-1/4	8	BB	103	435	208954	27.08	8.25	6.13	20.21	2.00	2.75	3.72	4.00
25	1 - 1-1/4	10	BB	117	435	208965	29.33	10.24	6.13	21.46	2.00	2.75	3.72	4.00
25	1 - 1-1/4	18	BB	270	431	119495	41.36	18.25	7.13	29.12	2.00	3.12	3.50	4.81
25	1 - 1-1/4	18	RB	280	431	119496	41.36	18.25	7.13	29.12	2.00	3.12	3.50	4.81
30 metric tons														
30	1 - 1-1/4	12	BB	208	435	208976	36.61	12.25	7.00	27.37	2.00	3.12	3.50	4.81
30	1 - 1-1/4	14	BB	230	435	208977	38.86	14.25	7.00	28.62	2.00	3.12	3.50	4.81
30	1 - 1-1/4	20	BB	503	431	119589	52.40	20.25	8.31	38.34	2.50	3.94	5.62	7.06
30	1 - 1-1/4	20	RB	485	431	119598	52.40	20.25	8.31	38.34	2.50	3.94	5.62	7.06
30	1 - 1-1/4	24	BB	581	431	119605	56.00	24.25	8.31	40.00	2.50	3.94	5.62	7.06
30	1 - 1-1/4	24	RB	575	431	119614	56.00	24.25	8.31	40.00	2.50	3.94	5.62	7.06
60 metric tons														
60	1 - 1-1/4	12	BB	315	435	8027291	41.65	12.12	8.66	33.19	2.06	2.40	5.75	6.12

4:1 Design Factor.

McKISSICK

SNATCH BLOCK WITH HOOK FITTING, SINGLE SHEAVE, 2-12t

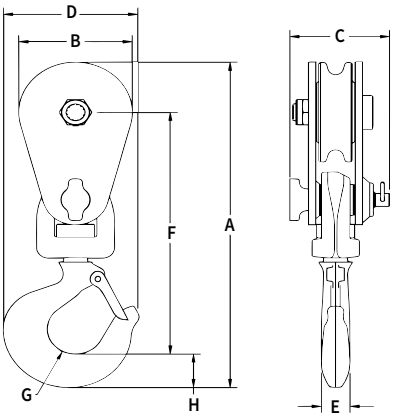
Fatigue Rated CE

416

L-170

L-160

C-720



- Opening feature permits easy insertion of rope without reeving, or while the block is suspended.
- Bolt for opening feature is retained, to ensure no lost bolts.
- Forged steel swivel tees, yokes and hooks.
- Furnished with a latch installed.
- Can be furnished with bronze bushings or roller bearings.
- Center pin equipped with pressure lube fitting.
- All sizes feature sheave grooves suited for a range of wireline diameters.
- Meets or exceeds all requirements of ASME B30.26. Importantly, these blocks meet other critical performance requirements including fatigue life and material traceability, not addressed by ASME B30.26.
- 416 alloy snatch blocks feature a significant reduction in weight compared to snatch blocks made of non-alloy materials.
- L-170 snatch blocks (with shackle or hook) feature an easy-to-open bolt design. The retaining bolt is released by rotating the fitting assembly, no tools required.
- Crosby's Engineered Solutions Group is ready to discuss your requirements and help select or develop the ideal block for your application.
- Visit thecrosbygroup.com/engineeredsolutions for more information.

APPLICATION AND WARNING INFORMATION
SECTION 17

Working Load Limit (t)	Wire Rope Diameter (in)	Sheave Diameter (in)	Bearing Code	Weight Each (lb)	Catalog No.	Stock No.	Dimensions (in)							
							A	B	C	D	E	F	G	H
2 metric tons														
2	5/16 - 3/8	3	BB	5	418	108038	9.74	3.00	2.64	3.59	0.75	7.24	0.75	1.00
4 metric tons														
4	3/8 - 1/2	4.5	BB	12	418	108065	14.12	4.24	3.13	5.24	1.00	10.13	0.94	1.87
5 metric tons														
5	3/8 - 1/2 ‡	4	BB	11	L-170	599800	14.62	4.56	2.94	5.24	1.00	10.50	0.94	1.87
5	3/8 - 1/2 ‡	4	RB	11	L-170	599819	14.62	4.56	2.94	5.24	1.00	10.50	0.94	1.87
6 metric tons														
6*	3/8 - 1/2	5	BB	13	L-160	599506	14.56	5.12	3.69	5.24	1.00	10.13	0.94	1.87
6*	3/8 - 1/2	5	RB	13	L-160	599515	14.56	5.12	3.69	5.24	1.00	10.13	0.94	1.87
7 short Tons														
7T*	3/4 - 7/8	6	BB	28	C-720	280010	16.14	6.00	3.81	6.27	1.44	11.33	1.25	1.61
8 metric tons														
8	5/8 - 3/4	6	BB	27	418	108127	18.95	6.00	4.19	6.81	1.56	13.55	1.31	2.41
8	5/8 - 3/4	6	RB	27	418	108154	18.95	6.00	4.19	6.81	1.56	13.55	1.31	2.41
8	5/8 - 3/4	8	BB	33	418	108225	21.01	8.12	4.19	6.81	1.56	14.54	1.31	2.41
8	5/8 - 3/4	8	RB	33	418	108252	21.01	8.12	4.19	6.81	1.56	14.54	1.31	2.41
8	5/8 - 3/4	10	BB	41	418	108323	23.08	10.12	4.19	6.81	1.56	15.61	1.31	2.41
8	5/8 - 3/4	10	RB	41	418	108350	23.08	10.12	4.19	6.81	1.56	15.61	1.31	2.41
8	5/8 - 3/4	12	BB	48	418	108421	25.89	12.12	4.16	6.81	1.56	17.42	1.31	2.41
8	5/8 - 3/4	12	RB	48	418	108458	25.89	12.12	4.16	6.81	1.56	17.42	1.31	2.41
8	5/8 - 3/4	14	BB	55	418	108528	27.39	14.12	4.19	6.81	1.56	17.92	1.31	2.41
8	5/8 - 3/4	14	RB	55	418	108546	27.39	14.12	4.19	6.81	1.56	17.92	1.31	2.41
12 metric tons														
12*	5/8 - 3/4	5.75	BB	29	L-160	599560	19.99	6.00	4.19	7.88	1.56	14.37	1.44	2.62
12*	5/8 - 3/4	5.75	RB	29	L-160	599579	19.99	6.00	4.19	7.88	1.56	14.37	1.44	2.62
12	3/4 - 7/8	6	BB	26	416	193427	19.89	6.00	4.19	7.88	1.56	14.27	1.44	2.62
12	3/4 - 7/8	6	RB	26	416	193472	19.89	6.00	4.19	7.88	1.56	14.27	1.44	2.62
12	3/4 - 7/8	8	BB	33	416	193490	21.95	8.12	4.19	7.88	1.56	15.27	1.44	2.62
12	3/4 - 7/8	8	RB	33	416	193542	21.95	8.12	4.19	7.88	1.56	15.27	1.44	2.62
12	3/4 - 7/8	10	BB	41	416	193613	24.02	10.12	4.19	7.88	1.56	16.34	1.44	2.62
12	3/4 - 7/8	10	RB	41	416	193677	24.02	10.12	4.19	7.88	1.56	16.34	1.44	2.62

4:1 Design Factor. *3.5:1 Design Factor.. ‡ Special Dual Groove Sheave also accepts 1-1/4" Manilla Rope

SNATCH BLOCK WITH HOOK FITTING, SINGLE SHEAVE, 15-30t

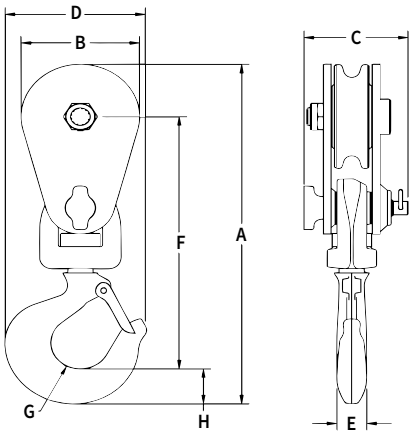
Fatigue Rated CE

420

418

430

434



- Opening feature permits easy insertion of rope without reeving, or while the block is suspended.
- Furnished with a latch installed.
- Can be furnished with bronze bushings or roller bearings.
- Center pin equipped with pressure lube fitting.
- All sizes feature sheave grooves suited for a range of wireline diameters.
- Meets or exceeds all requirements of ASME B30.26. Importantly, these blocks meet other critical performance requirements including fatigue life and material traceability, not addressed by ASME B30.26.
- 434 snatch blocks feature a significant reduction in weight compared to snatch blocks made of non-alloy materials.
- Crosby's Engineered Solutions Group is ready to discuss your requirements and help select or develop the ideal block for your application.
- Visit thecrosbygroup.com/engineeredsolutions for more information.

APPLICATION AND WARNING INFORMATION
SECTION 17

Working Load Limit (t)	Wire Rope Diameter (in)	Sheave Diameter (in)	Bearing Code	Weight Each (lb)	Catalog No.	Stock No.	Dimensions (in)							
							A	B	C	D	E	F	G	H
15 metric tons														
15	3/4 - 7/8	8	BB	51	420	108275	23.50	8.12	5.09	8.34	1.76	16.51	1.50	2.93
15	3/4 - 7/8	8	RB	51	420	108276	23.50	8.12	5.09	8.34	1.76	16.51	1.50	2.93
15	3/4 - 7/8	10	BB	63	420	108371	25.25	10.12	5.09	8.34	1.76	17.26	1.50	2.93
15	3/4 - 7/8	10	RB	63	420	108372	25.25	10.12	5.09	8.34	1.76	17.26	1.50	2.93
15	3/4 - 7/8	16	BB	130	418	108608	32.25	16.12	5.09	8.34	1.76	21.26	1.50	2.93
15	3/4 - 7/8	16	RB	130	418	108626	32.25	16.12	5.09	8.34	1.76	21.26	1.50	2.93
15	7/8 - 1	18	BB	150	418	108644	33.50	18.12	5.09	8.34	1.76	21.51	1.50	2.93
15	7/8 - 1	18	RB	150	418	108662	33.50	18.12	5.09	8.34	1.76	21.51	1.50	2.93
20 metric tons														
20	1 - 1-1/8	8	BB	75	430	120023	25.87	8.12	6.00	9.39	2.00	18.43	1.50	3.38
20	1 - 1-1/8	8	RB	75	430	120041	25.87	8.12	6.00	9.39	2.00	18.43	1.50	3.38
20	1 - 1-1/8	10	BB	89	430	120096	27.94	10.12	6.00	9.39	2.00	19.50	1.50	3.38
20	1 - 1-1/8	10	RB	89	430	120112	27.94	10.12	6.00	9.39	2.00	19.50	1.50	3.38
20	1 - 1-1/8	12	BB	103	430	120176	30.00	12.25	6.00	9.39	2.00	20.50	1.50	3.38
20	1 - 1-1/8	12	RB	103	430	120194	30.00	12.25	6.00	9.39	2.00	20.50	1.50	3.38
20	1 - 1-1/8	14	BB	123	430	120256	32.34	14.00	6.00	9.39	2.00	21.96	1.50	3.38
20	1 - 1-1/8	14	RB	123	430	120274	32.34	14.00	6.00	9.39	2.00	21.96	1.50	3.38
25 metric tons														
25	1 - 1-1/4	8	BB	90	434	208896	26.56	8.25	6.13	9.36	2.00	19.06	1.50	3.38
25	1 - 1-1/4	10	BB	107	434	208910	28.63	10.25	6.13	9.36	2.00	20.13	1.50	3.38
25	1 - 1-1/4	18	BB	240	430	119486	41.41	18.25	7.12	11.76	2.50	27.97	1.94	4.32
25	1 - 1-1/4	18	RB	240	430	119487	41.41	18.25	7.12	11.76	2.50	27.97	1.94	4.32
30 metric tons														
30	1 - 1-1/4	12	BB	165	434	208931	36.32	12.25	7.00	11.76	2.50	25.88	1.94	4.32
30	1 - 1-1/4	14	BB	180	434	208932	38.57	14.25	7.00	11.76	2.50	27.13	1.94	4.32
30	1 - 1-1/4	20	BB	375	430	119507	52.15	20.25	8.31	15.24	3.00	36.12	2.25	5.91
30	1 - 1-1/4	20	RB	375	430	119516	52.15	20.25	8.31	15.24	3.00	36.12	2.25	5.91
30	1 - 1-1/4	24	BB	450	430	119525	55.75	24.25	8.31	15.24	3.00	37.75	2.25	5.91
30	1 - 1-1/4	24	RB	450	430	119534	55.75	24.25	8.31	15.24	3.00	37.75	2.25	5.91

4:1 Design Factor.

McKISSICK

SNATCH BLOCK, TAIL BOARD, SINGLE SHEAVE, 2-12t

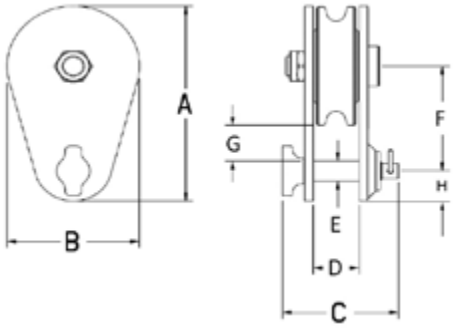
Fatigue Rated CE

404

L-170

L-160

402



- Opening feature permits easy insertion of rope without reeving. Bolt for opening feature is retained, to ensure no lost bolts.
- All sizes feature sheave grooves suited for a range of wireline diameters.
- Meets or exceeds all requirements of ASME B30.26. Importantly, these blocks meet other critical performance requirements including fatigue life and material traceability, not addressed by ASME B30.26.
- 402 snatch blocks feature a significant reduction in weight compared to snatch blocks made of non-alloy materials.
- Crosby's Engineered Solutions Group is ready to discuss your requirements and help select or develop the ideal block for your application. Visit thecrosbygroup.com/engineeredsolutions for more information.

APPLICATION AND WARNING INFORMATION
SECTION 17

Working Load Limit (t)	Wire Rope Diameter (in)	Sheave Diameter (in)	Bearing Code	Weight Each (lb)	Model No.	Stock No.	Dimensions (in)							
							A	B	C	D	E	F	G	H
2 metric tons														
2	5/16 - 3/8	3	BB	3	404	102016	4.87	3.00	2.64	1.04	0.50	2.62	0.87	0.75
4 metric tons														
4	3/8 - 1/2	4.5	BB	7	404	102025	7.75	4.25	3.13	1.56	0.75	4.25	1.63	1.38
5 metric tons														
5	3/8 - 1/2 ‡	4	BB	11	L-170	599846	8.38	4.50	2.94	1.57	0.85	4.69	2.25	1.44
5	3/8 - 1/2 ‡	4	RB	11	L-170	599855	8.38	4.50	2.94	1.57	0.85	4.69	2.25	1.44
6 metric tons														
6*	3/8 - 1/2	5	BB	13	L-160	599542	8.25	5.12	3.69	1.53	0.75	4.25	1.38	1.44
6*	3/8 - 1/2	5	RB	13	L-160	599551	8.25	5.12	3.69	1.53	0.75	4.25	1.38	1.44
8 metric tons														
8	5/8 - 3/4	6	BB	15	404	102098	9.87	6.00	4.19	1.80	1.00	5.12	1.62	1.75
8	5/8 - 3/4	6	RB	15	404	102114	9.87	6.00	4.19	1.80	1.00	5.12	1.62	1.75
8	5/8 - 3/4	8	BB	21	404	102169	11.93	8.12	4.19	1.80	1.00	6.12	1.62	1.75
8	5/8 - 3/4	8	RB	21	404	102187	11.93	8.12	4.19	1.80	1.00	6.12	1.62	1.75
8	5/8 - 3/4	10	BB	29	404	102230	14.00	10.12	4.19	1.80	1.00	7.19	1.69	1.75
8	5/8 - 3/4	10	RB	29	404	102258	14.00	10.12	4.19	1.80	1.00	7.19	1.69	1.75
8	5/8 - 3/4	12	BB	36	404	102301	16.81	12.12	4.19	1.80	1.00	9.00	2.50	1.75
8	5/8 - 3/4	12	RB	36	404	102329	16.81	12.12	4.19	1.80	1.00	9.00	2.50	1.75
12 metric tons														
12*	5/8 - 3/4	5.75	BB	29	L-160	599604	9.97	6.00	4.19	1.72	1.00	5.22	1.85	1.75
12*	5/8 - 3/4	5.75	RB	29	L-160	599613	9.97	6.00	4.19	1.72	1.00	5.22	1.85	1.75
12	3/4 - 7/8	6	BB	15	402	179238	9.87	6.00	4.19	1.80	1.00	5.12	1.62	1.75
12	3/4 - 7/8	6	RB	15	402	179283	9.87	6.00	4.19	1.80	1.00	5.12	1.62	1.75
12	3/4 - 7/8	8	BB	21	402	179318	11.93	8.12	4.19	1.80	1.00	6.12	1.62	1.75
12	3/4 - 7/8	8	RB	21	402	179363	11.93	8.12	4.19	1.80	1.00	6.12	1.62	1.75
12	3/4 - 7/8	10	BB	29	402	179434	14.00	10.12	4.19	1.80	1.00	7.19	1.69	1.75
12	3/4 - 7/8	10	RB	29	402	179498	14.00	10.12	4.19	1.80	1.00	7.19	1.69	1.75

4:1 Design Factor. *3.5:1 Design Factor. **‡ Special Dual Groove Sheave also accepts 1-1/4" Manilla Rope.**

SNATCH BLOCK, TAIL BOARD, SINGLE SHEAVE, 15-60t

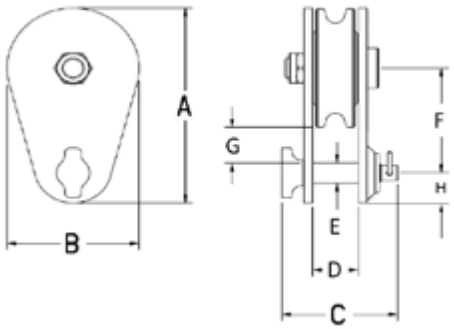
Fatigue Rated

CE

406

407

401



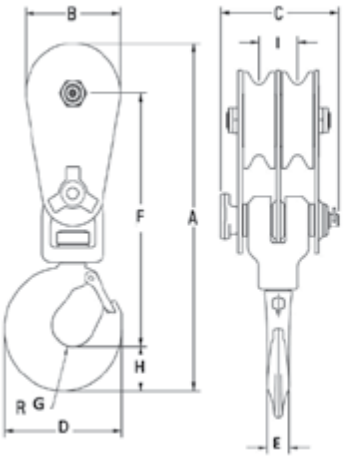
- Opening feature permits easy insertion of rope without reeving. Bolt for opening feature is retained, to ensure no lost bolts.
- Can be furnished with bronze bushings or roller bearings.
- Center pin equipped with pressure lube fitting.
- All sizes feature sheave grooves suited for a range of wireline diameters.
- Meets or exceeds all requirements of ASME B30.26. Importantly, these blocks meet other critical performance requirements including fatigue life and material traceability, not addressed by ASME B30.26.
- Visit thecrosbygroup.com/engineeredsolutions for more information.

APPLICATION AND WARNING INFORMATION
SECTION 17

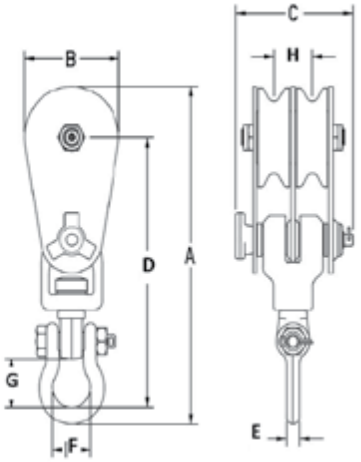
Working Load Limit (t)	Wire Rope Diameter (in)	Sheave Diameter (in)	Bearing Code	Weight Each (lb)	Model No.	Stock No.	Dimensions (in)							
							A	B	C	D	E	F	G	H
15 metric tons														
15	3/4 - 7/8	8	BB	30	406	108311	13.19	8.12	5.13	2.35	1.25	6.75	2.13	2.38
15	3/4 - 7/8	8	RB	30	406	108312	13.19	8.12	5.13	2.35	1.25	6.75	2.13	2.38
15	3/4 - 7/8	10	BB	42	406	108406	14.94	10.12	5.13	2.35	1.25	7.50	1.94	2.38
15	3/4 - 7/8	10	RB	42	406	108407	14.94	10.12	5.13	2.35	1.25	7.50	1.94	2.38
20 metric tons														
20	1 - 1-1/8	8	BB	42	407	103523	13.56	8.12	6.00	2.55	1.50	7.12	2.37	2.38
20	1 - 1-1/8	8	RB	42	407	103541	13.56	8.12	6.00	2.55	1.50	7.12	2.37	2.38
20	1 - 1-1/8	10	BB	55	407	103603	15.63	10.12	6.00	2.55	1.50	8.19	2.44	2.38
20	1 - 1-1/8	10	RB	55	407	103621	15.63	10.12	6.00	2.55	1.50	8.19	2.44	2.38
20	1 - 1-1/8	12	BB	70	407	103685	17.75	12.25	6.00	2.55	1.50	9.25	2.56	2.38
20	1 - 1-1/8	12	RB	70	407	103701	17.75	12.25	6.00	2.55	1.50	9.25	2.56	2.38
20	1 - 1-1/8	14	BB	90	407	103765	20.10	14.00	6.00	2.55	1.50	10.72	2.97	2.38
20	1 - 1-1/8	14	RB	90	407	103783	20.10	14.00	6.00	2.55	1.50	10.72	2.97	2.38
25 metric tons														
25	1 - 1-1/4	8	BB	50	401	178151	13.49	8.25	6.13	2.55	1.50	7.12	2.37	2.25
25	1 - 1-1/4	10	BB	65	401	179167	15.43	10.25	6.13	2.55	1.50	8.19	2.44	2.12
25	1 - 1-1/4	18	BB	165	407	119652	24.62	18.25	7.12	3.05	1.75	13.00	3.13	2.5
25	1 - 1-1/4	18	RB	165	407	119653	24.62	18.25	7.12	3.05	1.75	13.00	3.13	2.5
30 metric tons														
30	1 - 1-1/4	12	BB	95	401	179178	18.62	12.25	7.00	3.05	1.75	10.00	3.13	2.5
30	1 - 1-1/4	14	BB	110	401	179187	20.88	14.25	7.00	3.05	1.75	11.25	3.38	2.5
30	1 - 1-1/4	20	BB	215	407	119669	28.88	20.25	8.31	3.55	2.25	15.25	4.13	3.5
30	1 - 1-1/4	20	RB	215	407	119678	28.88	20.25	8.31	3.55	2.25	15.25	4.13	3.5
30	1 - 1-1/4	24	BB	290	407	119687	32.50	24.25	8.31	3.55	2.25	16.88	3.76	3.5
30	1 - 1-1/4	24	RB	290	407	119696	32.50	24.25	8.31	3.55	2.25	16.88	3.76	3.5
60 metric tons														
60	1 - 1-1/4	12	BB	95	401	8027292	20.32	12.12	8.66	2.78	2.50	10.75	3.50	3.5

4:1 Design Factor.

SNATCH BLOCK WITH HOOK OR SHACKLE FITTING DOUBLE SHEAVE, 4-12t



408
With Hook



409
With Shackle

- Two sheave snatch block to allow for additional mechanical advantage, must be reeved with four parts of line.
- Opening feature permits easy insertion of wireline in both sheaves with removal of one bolt.
- 408 is furnished with S-4320 hook latch.
- Center Pin equipped with pressure lube fittings.
- All sizes feature sheave grooves suited for a range of wireline diameters.
- Meets or exceeds all requirements of ASME B30.26. Importantly, these blocks meet other critical performance requirements including fatigue life and material traceability, not addressed by ASME B30.26.
- Crosby's Engineered Solutions Group is ready to discuss your requirements and help select or develop the ideal block for your application. Visit thecrosbygroup.com/engineeredsolutions for more information.

408 Double Sheave Snatch Block with Hook

Working Load Limit (t)	Wire Rope Diameter (in)	Sheave Diameter (in)	Bearing Code	Weight Each (lb)	Stock No.	Dimensions (in)								
						A	B	C	D	E	F	G	H	I
4 metric tons														
4	3/8 - 1/2	4.5	BB	18	104023	14.77	4.24	5.25	5.24	1.00	10.78	0.94	1.87	1.72
12 metric tons														
12	5/8 - 3/4	6	BB	45	104103	21.12	6.00	6.13	7.86	1.56	15.50	1.44	2.62	2.03
12	5/8 - 3/4	6	RB	45	104121	21.12	6.00	6.13	7.86	1.56	15.50	1.44	2.62	2.03
12	5/8 - 3/4	8	BB	53	104185	23.18	8.12	6.13	7.86	1.56	16.50	1.44	2.62	2.03
12	5/8 - 3/4	8	RB	53	104201	23.18	8.12	6.13	7.86	1.56	16.50	1.44	2.62	2.03

4:1 Design Factor.

409 Double Sheave Snatch Block with Shackle

Working Load Limit (t)	Wire Rope Diameter (in)	Sheave Diameter (in)	Bearing Code	Weight Each (lb)	Stock No.	Dimensions (in)							
						A	B	C	D	E	F	G	H
4 metric tons													
4	3/8 - 1/2	4.5	BB	18	105022	14.03	4.24	5.25	11.22	0.62	1.70	2.01	1.72
12 metric tons													
12	5/8 - 3/4	6	BB	50	105102	21.12	6.00	6.13	16.36	1.50	3.12	3.12	2.03
12	5/8 - 3/4	6	RB	50	105120	21.12	6.00	6.13	16.36	1.50	3.12	3.12	2.03
12	5/8 - 3/4	8	BB	58	105184	23.17	8.12	6.13	17.36	1.50	3.12	3.12	2.03
12	5/8 - 3/4	8	RB	58	105200	23.17	8.12	6.13	17.36	1.50	3.12	3.12	2.03

4:1 Design Factor.

Fatigue Rated

APPLICATION AND WARNING INFORMATION
SECTION 17

HF-1

- Hay Fork Pulleys with Swivel Hook or Swivel Eye
- Forged steel eyes and hooks.
- Available painted or zinc plated.
- One piece pressed steel shells.
- Edges well rounded to prevent chaffing of rope.
- Can be equipped with hook latch.
- Furnished with roller bearings.
- Pressure lube fittings.
- Natural Rope: Rope constructed of natural or plant based fibers, including manila, hemp, linen, cotton, coir, jute, and sisal.

HF-2

HF-1 / HF-2 Hay Fork Pulleys with Swivel Hook or Swivel Eye

Sheave Diameter (in)	Model No.	Hay Fork Pulleys Stock No.		Working Load Limit (short tons)	Wire Rope Diameter (in)	Rope Type	End Fitting	Weight Each (lb)
		Painted	Zinc Plated					
4.5	HF-1	170022	170594	1	1-1/4	Natural Rope	Swivel Hook	6
4.5	HF-2	170086	170629	1	1-1/4	Natural Rope	Swivel Eye	6
4.5	HF-3	170148	170656	1	1/2	Wire Rope	Swivel Hook	6
4.5	HF-4	170200	170683	1	1/2	Wire Rope	Swivel Eye	6
8	HF-5	170264	-	2	1/2	Wire Rope	Swivel Eye	11
6	HF-11	170380	-	2	1-1/2	Natural Rope	Swivel Hook	11
6	HF-12	170442	-	2	1-1/2	Natural Rope	Swivel Eye	11
6	HF-13	170503	-	2	5/8	Wire Rope	Swivel Hook	11
6	HF-14	170567	-	2	5/8	Wire Rope	Swivel Eye	11

4:1 Design Factor.

171

- Steel sheaves with roller bearings and pressure lubrication.
- Forged steel swivel eyes.
- Easy opening feature shown available in 8” size only.

APPLICATION AND WARNING INFORMATION
SECTION 17

171 Tong Block

Sheave Diameter (in)	Stock No.	Working Load Limit (short Tons)	Wire Rope Diameter (in)	Weight Each (lb)
6	171012	0.5	3/4	11
8	171058	1	3/4	12
10	171101	2.5	3/4	30
12	171156	2.5	3/4	35

4:1 Design Factor.

443

- All steel construction, steel sheaves mounted on roller bearings, grooved for maximum of 3/4" wire rope diameter.
- May be used with three parts of line if utilizing dead end becket.

443 Lay Down Block

Sheave Diameter (in)	Stock No.	Working Load Limit (short Tons)	Wire Rope Diameter (in)	Weight Each (lb)
4.5	171414	0.25	1/2	12
6	171432	0.5	3/4	17

4:1 Design Factor.

Tower/Derrick Hoist Blocks

M-491

G-491

- New design provides the dependability of standard McKissick® Snatch Blocks, along with features that make it perfect for the challenging needs of Tugger Hoist and Tower Erection applications.
- Fully recessed sideplate design eliminates gap between sheave rim and sideplate, providing failsafe capture of the sheave in the case of center pin overloading.
- Sealed tapered roller bearings extend the life of the center pin and bearings, and allows for faster line speeds than recommended with standard snatch blocks.
- Holes through side plates are available for secondary block securement device.
- Suitable for hoisting personnel, contingent upon all employees, including the winch operator, being trained to follow applicable Federal, local and industry standards.
  - Tugger/Derrick applications: API RP54
  - Tower applications: OSHA directive CPL 2-1.36
- Blocks furnished with dual rated wireline sheaves.
- Forged steel swivels, tees, yokes and shackles are Quenched & Tempered.
- Sheave lubrication through center pin for easy maintenance.
- All blocks 14" and larger are furnished with McKissick® Roll Forged sheaves with flame hardened grooves.
- Shackle fitting swivels for easy positioning.
- Manufactured by an API Q1 Certified facility.
- ABS Type Approval and Certification under 2019 Guide for Certification of Lifting Appliances and 2019 Guide for Classification of Drilling Systems.

APPLICATION AND WARNING INFORMATION
SECTION 17

M-491 / G-491 Tower/Derrick Hoist Blocks

Working Load Limit (t)	Sheave Diameter (in)	Wire Rope Diameter (in)	M-491 Stock No. Painted	G-491 Stock No. Galvanized	Weight Each (lb)
4	8	3/8 - 1/2	2020161	2020170	35
8	10	3/8 - 1/2	2020806	2020815	55
8	10	1/2 - 9/16	2020824	2020833	55
12	10	1/2 - 9/16	2021118	2021127	55
12	14	1/2 - 5/8	2021136	2021145	95
12	14	5/8 - 3/4	2021154	2021163	95
15	16	3/4 - 7/8	2021172	2021181	150
15	16	7/8 - 1	2021190	2021199	150
25	18	1 - 1 1/8	2032312	2032315	260
30	20	1 1/8 - 1 1/4	2032321	2032324	675

4:1 Design Factor.

70 Series
Blocks

McKissick® Oilfield Tubing Blocks

- Manufactured in the USA to API-8C PSL-1 specifications with a minimum design temperature of -4°F (-20°C).
- The 70 Series has a spring loaded hook that is desirable for higher utilization and larger depths. The spring mitigates shock loadings and reduces wear on components.
- The 80 Series is not spring loaded and is desirable for shallow depths and rework.
- Utilizing the McKissick® revolutionary split nut retention system, these critical components:
  - Are precision machined and individually fitted for maximum performance.
  - Eliminate conventional threaded nut and potential problems associated with thread corrosion during regular maintenance.
- Equipped with a duplex hook for easy elevator operation which features:
  - An eight position locking mechanism and rotates on a roller thrust bearing.
  - Locking arms with self-retaining bolts to mitigate drop hazards.
  - Available with optional 35 Ton rod hook clevis.
- McKissick® API-8C sheaves are roll-forged and come equipped with flame hardened grooves for exceptional groove life.
  - Each sheave is individually lubricated from easily accessible lubrication fittings located on the center pin.
  - Equipped with double row tapered roller bearings and seals.
- The E-Z opening roll guards facilitate the fastest possible exposure of sheave cluster for quick reeving and contain no bolts to pull out and lose.
- Engineered for short overall length, extra weight, excellent balance for fast non-wobbling falls.
- Completely streamlined exterior surfaces with no unnecessary projections minimize opportunities for interference during operations.
- Contact the BS&E (Blocks, Sheaves and Engineered Solutions) team for any special requests.
- Email: specials@kitocrosby.com
- Phone: 1-800-777-1555

80 Series
Blocks

APPLICATION AND WARNING INFORMATION
SECTION 17

	Standard Tubing Block Offerings							
	Series	Number of Sheaves	Block Capacity (Tons)	Sheave Diameter (in)	Nominal Wire Rope Size (in)			
					7/8	1	1-1/8	1-1/4
70 Series	72	2	75	24		■		
	73	3	75	20	■			
	73	3	125	24		■	■	
	73	3	175	30		■	■	■
	74	4	175	30	■	■	■	
80 Series	82	2	75	24	■	■		
	83	3	75	20	■	■		
	83	3	125	24		■	■	
	83	3	175	30		■	■	■
	84	4	125	24		■		
	84	4	175	30		■	■	

WELL LOGGER'S BLOCKS

475

477

476

- Alloy aluminum housing for maximum strength and minimum weight.
- Extra large double row, pre-adjusted sealed tapered bearing.
- Quick opening pin for fast string-up, light weight for easy handling.

Licensed Under API Spec 8C–0021

APPLICATION AND WARNING INFORMATION
SECTION 17

475 / 477 Floor Blocks

Sheave Diameter (in)	Model No.	Floor Block Stock No.	Working Load Limit (short Tons)	Conductor Cable Size (in)	Weight Each (lb)	Connection
7	475	180020	1.5	3/16	10	Swivel Hanger
10	475	180253	2.5	5/16	21	Swivel Hanger
12	475	180440	2.5	5/16	24	Swivel Hanger
14	475	180618	2.5	5/16	43	Swivel Hanger
14	477	169784	6	1/4	58	Swivel Clevis
20	477	191072	6	1/4	70	Swivel Clevis
24	477	191107	10	5/16	130	Swivel Clevis

4:1 Design Factor.

476 Top Blocks

Sheave Diameter (in)	Model No.	Top Block Stock No.	Working Load Limit (short Tons)	Conductor Cable Size (in)	Weight Each (lb)	Connection
7	476	180075	2.5	3/16	10	Stinger Pin
10	476	180333	4	5/16	21	Stinger Pin
12	476	180529	4	5/16	24	Stinger Pin
14	476	180707	4	5/16	43	Stinger Pin

4:1 Design Factor.

458

Guy Line Blocks

- Used on guy lines to gain mechanical advantage through rapid take-up, taking less pull to guy down.

459

APPLICATION AND WARNING INFORMATION
SECTION 17

Guy Line Blocks

Model No.	No. of Sheaves	Stock No.	Working Load Limit (short Tons)	Sheave Diameter (in)	Wire Rope Diameter (in)	Weight Each (lb)
458	1	171619	5	6	1/2	21
458H	1	239067	8	6	9/16 - 5/8	25
459	2	171637	10	6	1/2	28
459H	2	239076	12	6	9/16 - 5/8	31

731

Crown Blocks

- McKissick® Roll-Forged sheaves with flame hardened grooves.
- Double row pre-adjusted sealed tapered bearings mounted on a steel shaft.
- Heavy center and side plates for proper support of center pin.
- Pre-assembled units for rapid attachment to crown assembly for installation on derrick.
- On multiple sheave assemblies, one sheave can be grooved for sand line on request.
- Other sizes available upon request.
- Sheaves manufactured to API-8C specifications.

APPLICATION AND WARNING INFORMATION
SECTION 17

Crown Blocks

Sheave Diameter (in)	Model No.	Stock No.	No. of Sheaves	Working Load Limit (short Tons)	Wire Rope Diameter (in)	Weight Each (lb)
24	241	351158	1	15	7/8	200
24	242	351167	2	30	7/8	278
24	243	351176	3	45	7/8	375
24	731	351185	1	35	1	200
24	732	351194	2	75	1	350
24	733	351201	3	100	1	525
24	734	351210	4	125	1	720
30	741	351229	1	40	1-1/8	325
30	742	351238	2	80	1-1/8	560
30	743	351247	3	110	1-1/8	800
30	744	351256	4	140	1-1/8	982
30	745	351265	5	170	1-1/8	1163

Marine Blocks

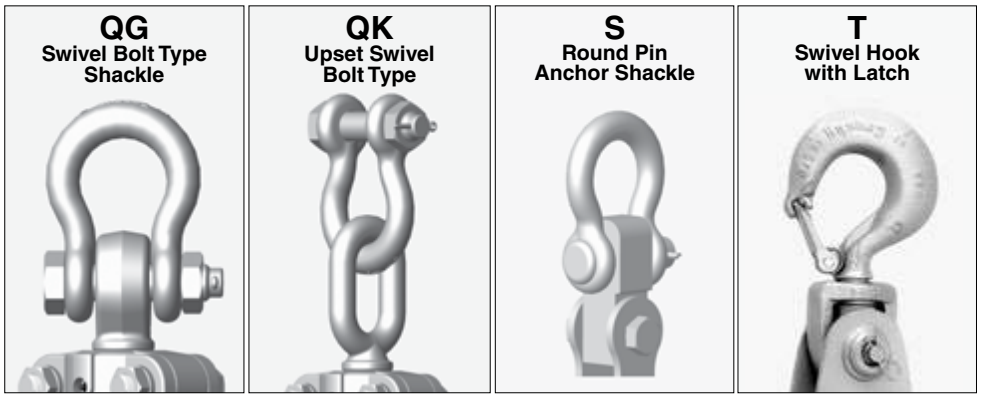
McKissick® Marine Blocks offer solutions for the unique application of marine environments.

Where corrosion resistance is paramount, hot dip galvanized finishes are available as the best solution for saltwater or highly corrosive environments.

Blocks that follow have sheaves specifically grooved for certain rope types. Ensure that the correct block is specified for the type of rope being used.

rope Types:

- Wire rope: Rope constructed of metal (most commonly steel) wires, twisted into strands that are laid in a helical pattern around a core.
- Natural Rope: Rope constructed of natural or plant based fibers, including manila, hemp, linen, cotton, coir, jute, and sisal.
- Synthetic Rope: Rope constructed of Synthetic or man-made fibers including polypropylene, nylon, polyesters, polyethylene, Aramids, and acrylics.



Regular Wood Blocks for Natural Manila Rope

HS-21-B

- Hot-dip Galvanized for corrosion resistance.
- Grade 5 bolts secured with lock washers and staked nuts.
- Bronze bushed sheaves with large bearing diameter for extended block life.
- Beckets furnished on all blocks.
- Meets or exceeds all requirements of ASME B30.26. Importantly, these blocks meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.
- Fitting Type: HS-Latch Hook; N-Swivel Hook with Latch; S- Round Pin Anchor Shackle

21B, 22B, 23B

Block Size (in)	Fitting	Single Sheave 21 B Stock No.	Double Sheave 22 B Stock No.	Triple Sheave 23 B Stock No.
4	HS	603831	604634	605438
5	HS	603859	604652	605456
6	HS	603877	604670	605474
8	HS	603911	604714	605517
4	N	606437	606838	607230
5	N	606455	606856	607258
6	N	606473	606874	607276
8	N	606516	606918	607310
4	S	610039	611635	613232
5	S	610057	611653	613250
6	S	610075	611671	613278
8	S	610119	611715	613312

21B, 22B, 23B

Block Size (in)	Sheave Diameter	Manila Rope Size (in)	Working Load Limit (lb)			Weight Each (lb)		
			21 Single	22 Double	23 Triple	21 Single	22 Double	23 Triple
4	2.25	1/2	1000	1400	1800	1.75	3.00	4.00
5	3.00	5/8	1200	1800	2400	3.25	5.60	6.50
6	3.50	3/4	1800	2400	3200	5.00	8.50	11.50
8	4.75	7/8 - 1	2800	3800	4800	13.00	14.00	21.50

4:1 Design Factor.

APPLICATION AND WARNING INFORMATION
SECTION 17

Steel Shell Blocks for Natural or Manila Rope

P-303B

- Hot-dip Galvanized for corrosion resistance.
- Grade 5 bolts secured with lock washers and staked nuts.
- Bronze bushed sheaves with large bearing diameter for extended block life.
- Fitting Type: HS- Latch Hook; N- Swivel Hook with Latch; P- Screw Pin Anchor Shackle

301B, 302B, 303B

Block Size (in)	Fitting	Single Sheave 301 B Stock No.	Double Sheave 302 B Stock No.	Triple Sheave 303 B Stock No.
4	HS	680971	681373	681774
6	HS	680999	681391	-
8	HS	681015	681417	681818
4	N	682639	683031	683433
6	N	682675	683077	683479
8	P	691111	692717	694314

301B, 302B, 303B

Block Size (in)	Sheave Diameter	Manila Rope Size (in)	Working Load Limit (lb)			Weight Each (lb)		
			Single	Double	Triple	Single	Double	Triple
4	2.25	1/2	1100	1600	2200	2.25	3.75	5.00
6	3.5	3/4	2000	3300	4000	5.50	9.25	12.50
8	4.75	1	3300	5100	7000	10.00	16.50	22.00

3.5:1 Design Factor.

HS-262 Double

Loose Side Hooks with Latch for Manila Rope

- Grade 5 bolts secured with lock washers and staked nuts.
- Bronze bushed sheaves with large bearing diameter for extended block life.
- Fitting Type : HS - Latch Hook

HS-262 Double, HA-261, 262, 263

Block Size (in)	Fitting	Manila Rope Size (in)	Sheave Diameter	261 B Stock No.	262 B Stock No.	263 B Stock No.	Working Load Limit (lb)			Weight Each (lb)		
							261 Single	262 Double	263 Triple	261 Single	262 Double	263 Triple
4	HS	1/2	2.25	666826	666229	667228	900	1400	1800	1.38	3.21	3.25
5	HS	5/8	3.00	666844	666247	-	1200	1800	-	2.25	3.88	-
6	HS	3/4	3.50	666862	666265	-	1800	2500	-	3.75	6.00	-
8	HS	7/8 - 1	4.75	666906	666309	667308	2800	3800	4800	7.13	10.75	14.75

3:1 Design Factor.

APPLICATION AND WARNING INFORMATION
SECTION 17

T-350-C

Gin Blocks for Manila Rope

- For light hoisting by roofers and contractors.
- Furnished with drop forged swivel latch hooks.
- Equipped with swivel hook with latch.

APPLICATION AND WARNING INFORMATION
SECTION 17

350C, 350B, 350R

Block Size (in)	Gin Block Stock No.			Sheave Size (in)			Manila Rope Size (in)	Working Load Limit (lb)	Weight Each (lb)
	T-350-B	T-350-R	T-350-C	Outside Diam.	Rim Thickness	Bearing Diam.			
8	710403	710207	710001	8.00	1.25	.75	7/8	1000	9.0
10	710421	710225	710029	10.00	1.25	.88	1	1000	9.8
12	710449	710243	710047	12.00	1.38	.88	1	1000	12.7

3:1 Design Factor.

Bearing Code : B - Self Lubricating Bronze Bushed; R - Roller Bearing; C - Common Iron

STEEL SHELL & WOOD SHELL

T-390
Painted

T-390
Galvanized

T-385
Painted

T-385
Galvanized

- New style blocks feature higher working load limits.
- Painted or Galvanized steel with replaceable wood bumpers.
- Side plate opens for insertion of wire rope.
- Incorporates exclusive bolt retaining spring to assure no lost bolts, plus utilizes secondary retaining pin.
- Bronze bushed sheaves with large bearing diameter for extended block life.
- Utilizes Crosby "N" style hooks with integrated latch.
- Lubricated center pin.
- 10" and 12" sizes utilize steel sheaves.
- Meets or exceeds all requirements of ASME B30.26. Importantly, these blocks meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.

APPLICATION AND WARNING INFORMATION
SECTION 17

385B, 390B Blocks

Block Size (in)	Fitting	Wood Shell		Steel Shell	
		385-B Stock No. S.C.	385-B Stock No. Galv.	390-B Stock No. S.C.	390-B Stock No. Galv.
6	T	702000	702108	702216	702324
8	T	702009	702117	702225	702333
10	T	702018	702126	702234	702342
12	T	702027	702135	702243	702351
6	J	702036	702144	702252	702360
8	J	702045	702153	702261	702369
10	J	702054	702162	702270	702378
12	J	702063	702171	702279	702387
6	G	702072	702180	702288	702396
8	G	702081	702189	702297	702405
10	G	702090	702198	702306	702414
12	G	702099	702207	702315	702423

385B, 390B Blocks

Sheave Diameter	Manila Rope Size (in)	Working Load Limit (Tons)	Weight Each (lb)
3.00	3/4 - 7/8	2	7
4.00	1 - 1-1/8	4	13
6.00	1-1/4	8	28
8.00	1-1/2	8	34

4:1 Design Factor

N-411B

Blocks for Synthetic Fiber Rope with loose swivel hooks

- These blocks are built to carry the increased loads of synthetic fiber ropes.
- Self-lubricated bronze bushed sheaves with large bearing diameter for extended block life.
- Meets or exceeds all requirements of ASME B30.26. Importantly, these blocks meet other critical performance requirements including fatigue life, impact properties and material traceability, not addressed by ASME B30.26.
- Fitting Type: S- Round Pin Anchor; N- Swivel Hook Latch

411B, 412B, 413B

Block Size (in)	Fitting	411 B Stock No.	412 B Stock No.	413 B Stock No.
4	S	755105	755301	755506
6	S	755123	755329	755524
4	N	757103	757309	757504
6	N	757121	757327	757522

411B, 412B, 413B

Block Size (in)	Fitting	Sheave Diameter	Synthetic Rope Size (in)	Working Load Limit (lb)			Weight Each (lb)		
				Single	Double	Triple	Single	Double	Triple
4	S	2.25	1/2	2000	3000	3000	3.00	4.00	6.00
6	S	3.5	3/4	3000	7000	8000	6.25	10.00	14.00
4	N	2.25	1/2	2000	3000	3000	3.00	4.00	6.00
6	N	3.5	3/4	3000	4000	6000	6.25	10.00	14.00

4:1 Design Factor.

APPLICATION AND WARNING INFORMATION
SECTION 17

TRY NET BLOCKS

F-453 6”

F-454 6”

J-454 8”

- Forged steel swivel eyes.
- Hot-dip galvanized.
- 6” 453 - Pressed steel side plates with flared edges. Figure 8 grooved, self-lubricating bronze bushed sheaves, with pressure lube fittings. 453 has an extra wide throat opening to allow fittings to pass through.
- 6” 454 - Forged side plates designed to eliminate rope jamming. Wide throat opening and pressure lube fitting on sheave and eye fitting.
- 8” 454 - Forged steel side plates designed to eliminate possibility of rope jamming. Furnished with sealed tapered bearings. Flame-hardened forged steel sheaves for wear resistance.

APPLICATION AND WARNING INFORMATION
SECTION 17

453, 454, Blocks

Sheave Dia. and Model No.	Bearing Type	Stock No.	Working Load Limit (short Tons)	Weight Each (lb)	Sheave Dimensions (in)	
					Outside Diameter	Rim Thickness
6" F-453	Bronze Bushed	769886	5	35	6	2-3/4
6" F-454	Needle Bearing	2001763	5	23	6	2-3/4
8" J-454	Tapered Bearing	130726	10	36	8	2-7/8

4:1 Design Factor.

DOUBLE RIG TRAWL BLOCKS

J-452

Double Rig Trawl Blocks

- Steel sheave with flame hardened groove, for maximum wear under abrasive conditions.
- Double row, permanently sealed tapered roller bearings.
- Pressure lubrication throughout.
- All steel construction.
- Hot-dip Galvanized.
- Available in "J" oblong swivel eye and "F" standard swivel eye.

APPLICATION AND WARNING INFORMATION
SECTION 17

J-452 Blocks

Sheave Dia. and Model No.	Stock No.	Working Load Limit (short Tons)	Weight Each (lb)	Sheave Dimensions (in)	
				Outside Diam.	Rim Thickness
8" J-452	130655	10	48	8	3.75
12" J-452	130673	10	85	12	3.75
16" F-452	130682	20	116	16	3.75
18" J-452	2015467	25	300	18	5.44
22" F-452	130708	30	240	22	3.75

4:1 Design Factor.

Marine Block Fitting Codes

QG
Swivel Bolt Type
Shackle

QK
Upset Swivel
Bolt Type

CARGO HOISTING BLOCKS

E-566
with Drilled
Swivel Eye

- Block is galvanized.
- Blocks 14” and larger have flame-hardened roll forged sheaves that assure greater wire life.
- Roll forged sheave is fitted closely into mortise of shell so wire cannot jam between sheave and shell.
- Available for 3/4” or 1” wire.
- Block is fitted with tapered roller bearings which take both load and side thrusts and hold sheave central so it cannot chafe or wear on the sides.
- Tapered Roller bearing with neoprene seals and stainless steel center pin provide long life and trouble-free service.
- Stainless steel center pin has recessed nuts with lock washers.
- Swivel fitting has permanently sealed thrust bearing.
- Pressure lubrication fittings are standard on both center pin and swivel.
- Individually Proof Tested at 4 times Working Load or 2 times Resultant Load.
- A.B.S. recognized load test certificates are furnished.
- Cargo hoist blocks are rated by the maximum single line pull of the wire rope being used.
- Resultant Load equals 2 times single line pull. Ultimate load equals 5 times the Resultant Load.

J-566
with Oblong
Swivel Eye

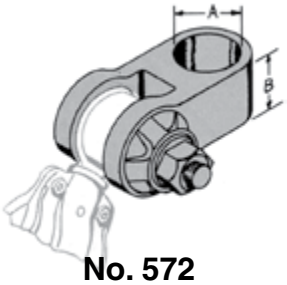
APPLICATION AND WARNING INFORMATION
SECTION 17

566 Hoisting Blocks

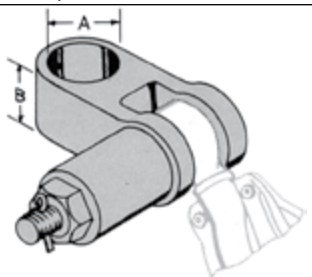
Sheave Size (in)	E-566 Stock No.	J-566 Stock No.	QG-566 Stock No.	QK-566 Stock No.	Single Line Pull (short Tons)	Wire Rope Diameter (in)	Weight Each (lb)
12	775003	775209	775806	776002	5	3/4	95
14	775058	775254	775450	775655	5	3/4	100
14	775067	775263	775469	775664	10	1	100
16	776609	776672	776681	776690	10	3/4	130
16	752956	752965	752974	752983	10	1	130

5:1 Design Factor based on Resultant Load. Working Load equals maximum single line pull.

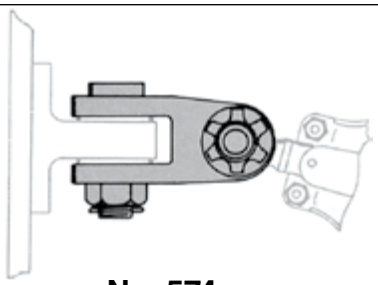
HEEL AND LEAD BLOCK ADJUSTER FITTINGS
(For use with E-566 Cargo Blocks)



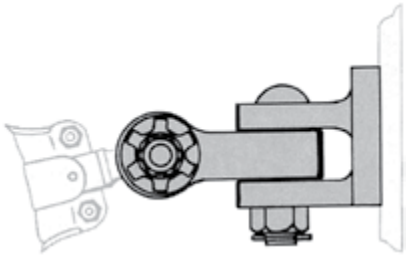
No. 572
Self-adjuster Fitting with Tension Pin, Cup Spring and Washers.



No. 573
Self-adjuster Fitting with Tension Pin, Coil Spring, Cup and Washers.

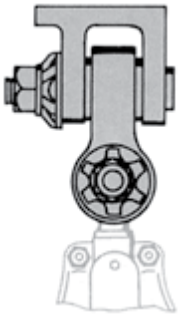


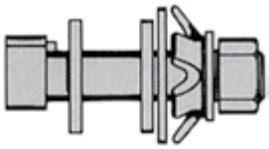
No. 574
Self-adjuster Fitting with Tension Pin, Cup Spring and Washers, and King Pin to fit Pad Eye (can also be furnished with 2 Tension Pins).



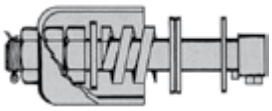
No. 576
Self-adjuster Fitting with Pad Jaw, King Pin, Tension Pin, Cup Spring and Washers.

No. 575
Self-adjuster Fitting with Tension Pin, Cup Spring, and Washer.





No. 571
Tension Pin with Cup Spring, Nut and Washers.



No. 570
Tension Pin with Coil Spring, Nut and Washers, Cotter and Cup.

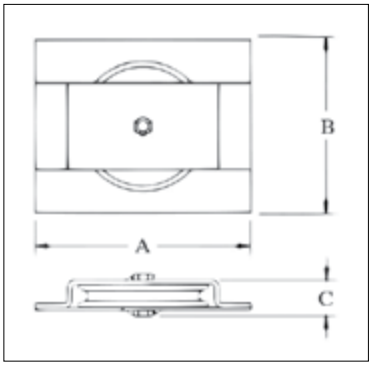
When ordering Specify: "A" - Pin Diameter, "B" -Height of Fitting, and Tension Pin Diameter.

15

S-600S

Horizontal Lead Blocks

- Available painted or galvanized.
- Fitted with steel sheaves.
- Self-lubricated Bronze Bushed.



S-600S / G-600S

Sheave Diameter (in)	600 Series Stock No.		Resultant Working Load Limit (Short Tons)	Wire Rope Diameter (in)	Weight Each (lb)	Dimensions (in)		
	S-600-S Painted	G-600-S Galv.				A	B	C
6	771999	772006	2	3/8	10	11.00	6.38	2.50
8	772015	772024	2.5	1/2	21	13.00	8.50	3.00
10	772033	772042	3	5/8	36	15.00	10.50	3.25
12	772051	772060	4	3/4	61	17.00	12.50	4.00
14	772079	772088	5	7/8	96	19.00	14.50	4.00

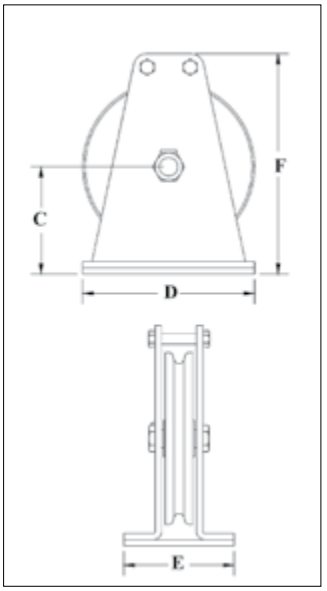
4:1 Design Factor

APPLICATION AND WARNING INFORMATION
SECTION 17

G-601S

Vertical Lead Blocks

- Available painted or galvanized.
- Fitted with steel sheaves.
- Self-lubricated Bronze Bushed.



S-601S / G-601S

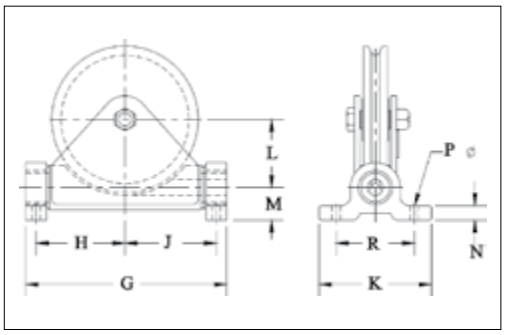
Sheave Diameter (in)	601 Series Stock No.		Resultant Working Load Limit (short Tons)	Wire Rope Diameter (in)	Weight Each (lb)	Dimensions (in)			
	S-601-S Painted	G-601-S Galv.				C	D	E	F
6	772195	772202	2	3/8	10.00	3.50	6.00	5.50	7.00
8	772211	772220	2.5	1/2	25	4.88	8.00	6.75	9.75
10	772239	772248	3	5/8	31.50	6.38	10.00	7.75	11.75
12	772257	772266	4	3/4	60.00	7.25	12.00	6.00	15.25
14	2003424	2003425	5	7/8	98.00	8.75	14.00	9.00	18.00

4:1 Design Factor.

G-602S

Flag Blocks

- Base plates are drilled.
- Available painted or galvanized.
- Fitted with steel sheaves.
- Self-lubricated Bronze Bushed.



S-602S / G-602S Flag Blocks

Sheave Diameter (in)	602 Series Stock No.		Resultant Working Load Limit (shortTons)	Wire Rope Diameter (in)	Weight Each (lb)	Dimensions (in)								
	S-602-S Painted	G-602-S Galv.				G	H	J	K	L	M	N	P	R
6	772391	772408	2	3/8	17.00	9.00	3.75	3.88	6.25	2.88	1.62	.75	.56	4.75
8	1420885	772426	2.5	1/2	31.50	11.38	4.75	5.12	7.00	3.62	2.00	1.00	.69	5.50
10	772435	772444	3	5/8	42.00	13.38	5.69	6.06	7.00	4.62	2.00	1.00	.69	5.50
12	772453	772462	4	3/4	115.00	17.25	7.25	7.75	10.75	5.38	3.12	1.38	.81	7.50
14	772471	-	5	7/8	136.50	19.25	8.50	8.75	10.75	6.50	3.12	1.38	.81	7.50

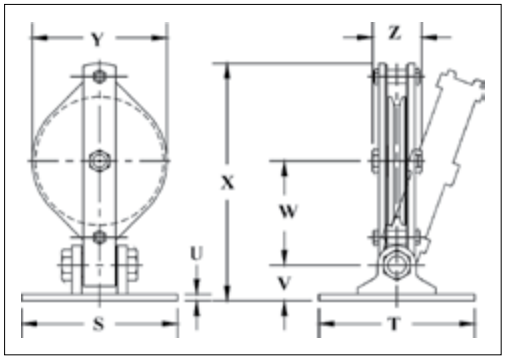
4:1 Design Factor.

APPLICATION AND WARNING INFORMATION
SECTION 17

S-603S

Hinged Lead Blocks

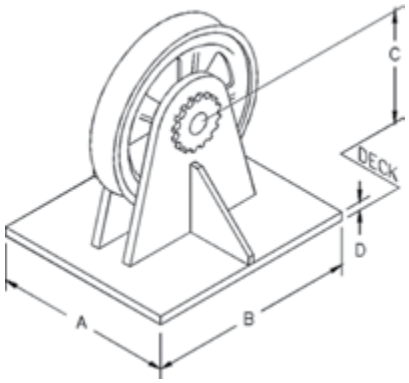
- Base plates are not drilled.
- Available painted or galvanized.
- Self-lubricated Bronze Bearings.



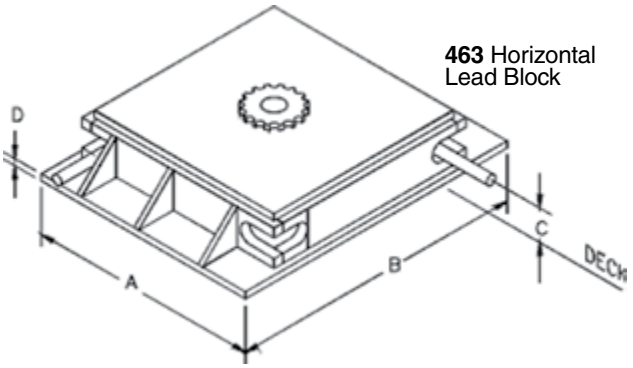
S-603S / G-603S Hinged Lead Blocks

Sheave Diameter (in)	603 Series Stock No.		Resultant Working Load Limit (short Tons)	Wire Rope Diameter (in)	Weight Each (lb)	Dimensions (in)							
	S-603-S Painted	G-603-S Galv.				S	T	U	V	W	X	Y	Z
6	772596	772603	2	3/8	30.00	6.00	4.50	.50	2.00	5.81	12.80	6.75	3.25
8	772612	772621	2.5	1/2	34.00	8.00	6.75	.38	2.62	6.56	15.48	9.00	3.75
10	772630	772649	3	5/8	45.00	12.00	12.00	.50	2.75	8.00	18.25	10.75	4.38
12	772658	772667	4	3/4	75.00	12.00	12.00	.50	2.75	9.50	18.63	13.00	4.58
14	772676	772685	5	7/8	100.00	12.00	12.00	.50	2.75	10.75	20.63	15.00	4.81

4:1 Design Factor.



461 Vertical Lead Block



463 Horizontal Lead Block

Furnish the following important information when ordering:

- A,B and C dimensions.
- Line pull in pounds and degree of wrap.
- Line speed.
- Diameter of wire rope.
- Roller bearings, bronze bushings, or sealed double row tapered bearings.

- Guide and control your deck lines with McKissick's deck-mounted wire rope blocks. Built to your specific requirements.
- Extra heavy construction, built to withstand breaking strength of indicated rope (XIP, IWRC).
- Flame-hardened sheaves, machined grooves for proper rope size.
- For special requirements contact Crosby.

461 Vertical & 463 Horizontal Lead Blocks

Figure No.	Stock No.	Sheave Diameter (in)	Wire Rope Diameter (in)	Weight Each (lb)	Dimensions (in)			
					A	B	C	D
461-18	239753	18	7/8	500	12.00	20.00	11.00	1.50
461-24	131574	24	1-1/4	500	15.00	26.00	14.00	1.50
461-26	238120	26	1-1/2	660	16.00	28.00	15.00	1.50
461-36	148389	36	1-5/8	850	20.00	36.00	19.50	2.00
461-40	136285	40	2	2006	23.00	42.00	22.50	2.00
461-42	130753	42	2-1/2	4000	28.00	52.00	25.50	2.50
463-26	4440359	26	1	988	33.00	33.00	3.75	1.50
463-30	1404377	30	1-1/4	1225	37.00	37.00	3.50	1.50
463-36	146522	36	1-1/2	1900	43.00	43.00	3.50	1.50
463-42	1406525	42	1-3/4	2975	50.00	50.00	4.38	2.00
463-48	131583	48	2	3600	55.00	55.00	4.63	2.00
463-60	123164	60	2-1/2	6400	68.00	68.00	5.75	2.00

For custom orders contact our Block Hotline, (1-800-727-1555).

OVAL PATTERN CONSTRUCTION BLOCKS

Q-681-Z

Q-682-Z

Q-683-Z

- All blocks are galvanized.
- Sheave lubricated through pressure lube fitting in center pin.
- Assembled with self lubricated bronze bushing.
- Combines weight of regular oval blocks with strength of extra heavy oval blocks.
- Assembled with bolt type anchor shackle.
- Side plates are rounded to provide additional stiffness and reduce wear and chaffing of the rope.

Q-681-Z / Q-682-Z / Q-683-Z

Block Size (in)	Stock No.Bronze Bushed Steel Sheaves		
	Q-681-Z	Q-682-Z	Q-683-Z
6	760441	760665	-
6	760452	760676	760812
8	760463	760687	760823
10	760474	760698	760834

Q-681-Z / Q-682-Z / Q-683-Z

Block Size (in)	Sheave Dimensions (in)			Wire Rope Diameter (in)	Working Load Limit (short Tons)			Weight Each (lb)		
	Outside Diam.	Rim Thickness	Center Pin Dia.		Single	Double	Triple	Single	Double	Triple
6	6	1.00	.75	3/8	3	4	-	15	28	-
6	6	1.00	.75	1/2	3	4	5	16	28	32
8	8	1.25	1.00	5/8	4	6	7	29	43	62
10	10	1.25	1.00	5/8	4	7	8	38	61	80

4:1 Design Factor

Crosby

A NAME THAT ENCOMPASSES YEARS OF

ENGINEERING & MANUFACTURING EXCELLENCE







Whether you need a variation of a catalog item or a special designed solution for a challenging or unique application, The Crosby Group can help. By combining the experience of our technical support, research and development, engineering, and manufacturing teams, we are capable of designing and fabricating custom products for nearly any special application.

ENGINEERED SOLUTIONS

Special Request Forms

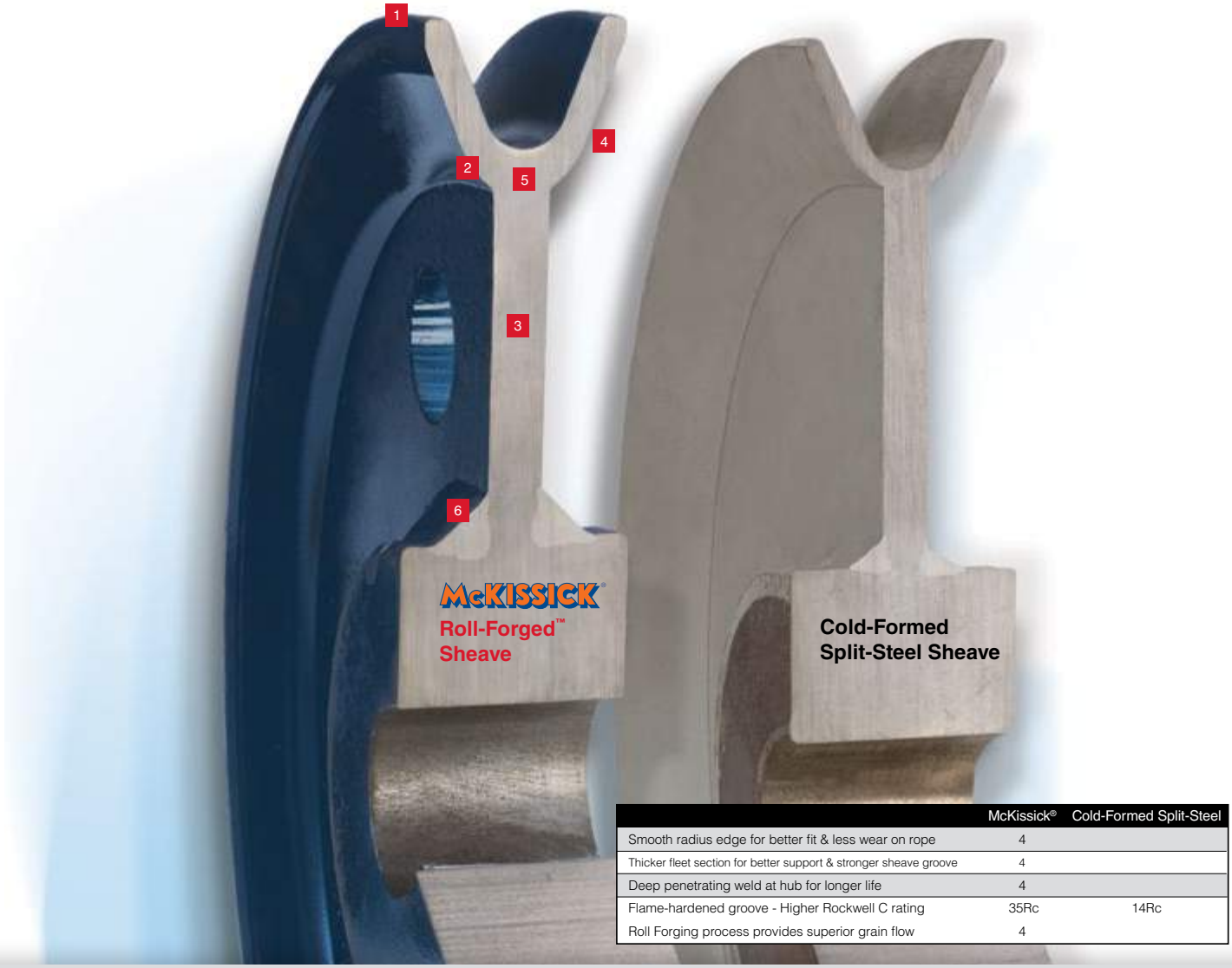
To submit a request for a custom product, please complete one of our special request forms online. Our Engineered Solutions group will review your request and follow up to discuss your project and next steps.

thecrosbygroup.com/engineeredsolutions

16

Superior sheaves to meet your most demanding applications

Every McKissick® Roll-Forged™ sheave starts as a single piece of AISI C-1035 carbon steel plate. Utilizing a time-proven proprietary roll forging process that adds extra strength to the critical groove section, the sheave is formed from a precision flame cut blank. The hub is then pressed into place with complete metal-to-metal contact and secured with a deep penetrating weld to ensure proper fit and longer life. Before the McKissick name is added, each sheave is thoroughly inspected to meet applicable industry and Crosby® quality standards.



	McKissick®	Cold-Formed Split-Steel
Smooth radius edge for better fit & less wear on rope	4	
Thicker fleet section for better support & stronger sheave groove	4	
Deep penetrating weld at hub for longer life	4	
Flame-hardened groove - Higher Rockwell C rating	35Rc	14Rc
Roll Forging process provides superior grain flow	4	

ELEMENTS OF A SUPERIOR SHEAVE

1 A smooth radius at the rim provides superior transition from outside diameter to groove, eliminating sharp corners that can damage rope. Cold-formed split-steel sheaves may contain a sharp transition radius at rim of sheave.

2 Size for size, McKissick Roll-Forged sheaves have a thicker section under the tread of the wire rope groove, providing more substantial support of the rope. Cold-formed split-steel sheaves are limited to a thinner section thickness under the groove, reducing sheave life in heavy service conditions. Thinner sections produce a sharp corner under the tread, resulting in potential stress risers.

3 Thicker web on the sheave provides required stiffness to support a stronger sheave that contains thicker flange sections. The thinner web on cold-formed split-steel sheaves, inherent to the process, does not support thicker flange sections. The sharp, pointed cutter used in forming the groove during the cold-formed split-steel process may produce a concealed crack in the bottom of the groove.

4 Heavier flange sections provide a much stronger wire rope groove and maintain proper consistent groove angles, ensuring long term wire rope performance. Cold-formed split-steel sheaves tend to have flange sections that are thinner as well as variations in thickness on the same sheave, resulting in less than desired performance during critical applications. Cold-formed split-steel sheaves are limited to a maximum flange thickness of 50% of web section.

5 Minimum 35Rc for higher hardness in the bottom of the groove results in less wear to the sheave, thus extending life of wire rope. Unless requested at time of order, cold-formed split-steel sheaves have a much lower hardness rating (approximately 14Rc). The standard material used in cold-formed split-steel process may not allow higher hardness in groove.

6 Precision alignment of hub with blank, then finished with a deep penetrating weld ensuring proper fit, longer life, and confidence during the most extreme of applications.

Additional important features: The grain flow associated with the McKissick Roll-Forged sheave process results in excellent performance properties, and each sheave is permanently marked with 'McKissick,' sheave outside diameter, wire rope size, and the Product Identification Code (PIC) to provide complete material traceability.

APPLICATIONS & WARNINGS

Read and understand these instructions before using products.



TABLE OF CONTENTS

thecrosbygroup.com

Application Information

RIGGING PRACTICE SHACKLES

Screw pin shall be fully engaged. If designed for a cotter pin, it shall be used and maintained. Applied load should be centered in the bow to prevent side loading. Multiple sling legs should not be applied to the pin. If side loaded, the rated load shall be reduced according to Table 1 on the following page.

Screw Pin Shackles Pin Security

MOUSE SCREW PIN WHEN USED IN LONG-TERM OR HIGH-VIBRATION APPLICATIONS.
Mouse or Mousing (screw pin shackle) is a secondary securement method used to secure screw pin from rotation or loosening. Annealed iron wire is looped through hole in collar of pin and around adjacent leg of shackle body with wire ends securely twisted together.

Shackles

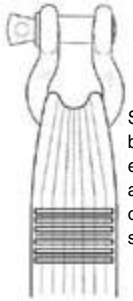
ROUND PIN
Do not side load, do not use as a collector ring, always use cotter pin.

SCREW PIN
Use when picking and placing a load, tighten pin prior to each lift.

BOLT-TYPE
Use in permanent or long-term installations, always use nut and cotter.

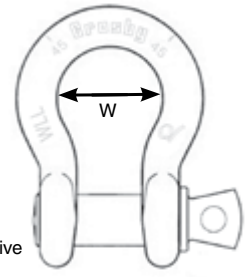
Connection of Slings to Shackles

Diameter of shackle must be greater than wire rope diameter if no thimble in eye.



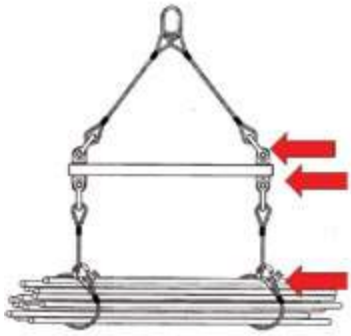
Shackle must be large enough to avoid pinching of synthetic slings.

Note that the effective width of the curved surface is only 75% of width.



Effective Width = .75 x W

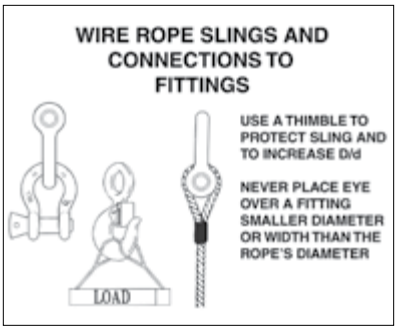
Bolt-Type Shackles

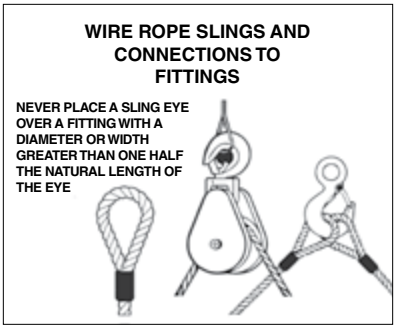


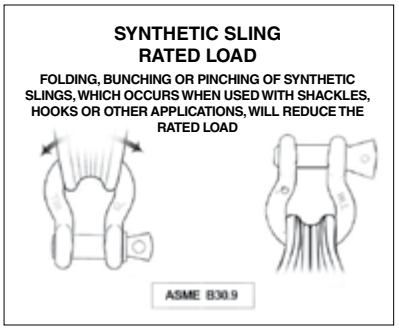
Use Bolt-Type Shackle for permanent or long-term connection.

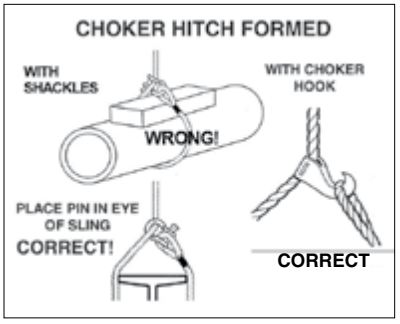
Use Screw Pin Shackle for temporary connection.

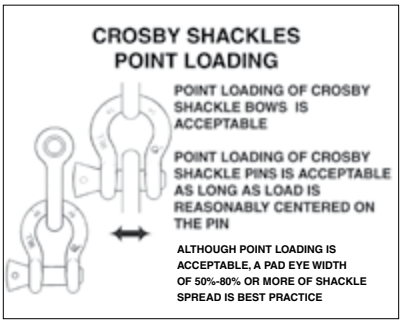
Not necessary to tighten nut. Always use cotter pin.











Installation Guidelines

1. Extended prong cotter pins should be inserted into hole until the head is tangent to the bolt/pin, and oriented so the axis of the eye is parallel to the shank of the bolt/pin.
2. The prongs are to be bent in opposite directions around the bolt or pin as shown in Figure 1 below.
3. After installation, the cotter pin prongs should wrap around the bolt or pin by at least 60 degrees opposite directions of bolt or pin diameter.
4. The prongs may be bent with pliers or by gently tapping with a hammer. *Note: Avoid bending the prongs over sharp radii which may promote breakage. If a prong breaks off or becomes damaged during installation, replace the cotter pin.
5. The ends of the prongs may be curled to form a small loop to reduce the potential for snagging or puncture wounds.

Cotter Pin Sizes For Crosby Shackles

213 & 215 SHACKLES	
SHACKLE SIZE	COTTER PIN SIZE
1/4”	3/32 x 3/4”
5/16”	3/32 x 1”
3/8”	1/8 x 1”
7/16”	1/8 x 1”
1/2”	1/8 x 1”
5/8”	3/16 x 1 1/4”
3/4”	3/16 x 1 1/4”
7/8”	5/16 x 1 1/2”
1”	5/16 x 1 3/4”
1 1/8”	5/16 x 1 3/4”
1 1/4”	5/16 x 2”
1 3/8”	5/16” x 2 1/4”
1 1/2”	5/16” x 2 1/4”
1 3/4”	5/16” x 2 3/4”
2”	3/8 x 3”

2140 SHACKLES	
SHACKLE SIZE	COTTER PIN SIZE
1 1/2”	5/16” x 2 1/4”
1 3/4”	5/16” x 2 3/4”
2”	3/8” x 3”
2 1/2”	7/16” x 4”
3”	3/8” x 4 1/2”
3 1/2”	3/8” x 4 1/2”
4”	3/8” x 4 1/2”
4 3/4”	3/8” x 7”
5”	3/8” x 8”
6”	3/8” x 8 1/2”
7”	3/8” x 10 1/2”
7 1/2”	3/8” x 10 1/2”
8”	3/8” x 13 1/2”

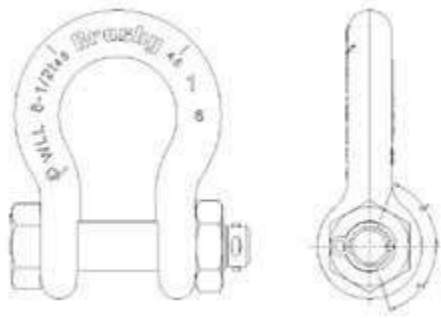


Figure 1
Cotter pin installation in a 1" bolt type shackle.

2130 & 2150 SHACKLES	
SHACKLE SIZE	COTTER PIN SIZE
3/16”	3/32 x 3/4”
1/4”	3/32 x 3/4”
5/16”	3/32 x 1”
3/8”	1/8 x 1”
7/16”	1/8 x 1”
1/2”	1/8 x 1”
5/8”	3/16 x 1 1/4”
3/4”	3/16 x 1 1/4”
7/8”	1/4 x 1 1/2”
1”	1/4 x 1 3/4”
1 1/8”	1/4 x 1 3/4”
1 1/4”	1/4 x 2”
1 3/8”	5/16 x 2 1/4”
1 1/2”	5/16 x 2 1/4”
1 3/4”	5/16 x 2 3/4”
2”	3/8 x 3”
2 1/2”	7/16 x 4”
3”	3/8 x 4 1/2”
3 1/2”	3/8 x 4 1/2”
4”	3/8 x 4 1/2”

2160 SHACKLES	
SHACKLE WLL (t)	COTTER PIN SIZE
7	3/16” x 1 1/4”
12-1/2	1/4” x 1 3/4”
18	1/4” x 2”
30	5/16 x 2 1/4”
40	5/16” x 2 3/4”
55	3/8” x 3”
75	3/8” x 3”
125	3/8” x 4”
200	1/2” x 5 1/4”
300	5/8” x 6”
400	5/8” x 8”
500	3/4” x 9”
600	3/4” x 10”
700	3/4” x 11”
800	3/4 x 13” R3
900	3/4” x 13”
1000	3/4” x 14”
1250	3/4” x 15”
1500R3	3/4” x 17”
4	3/8 x 4 1/2”

Application Information

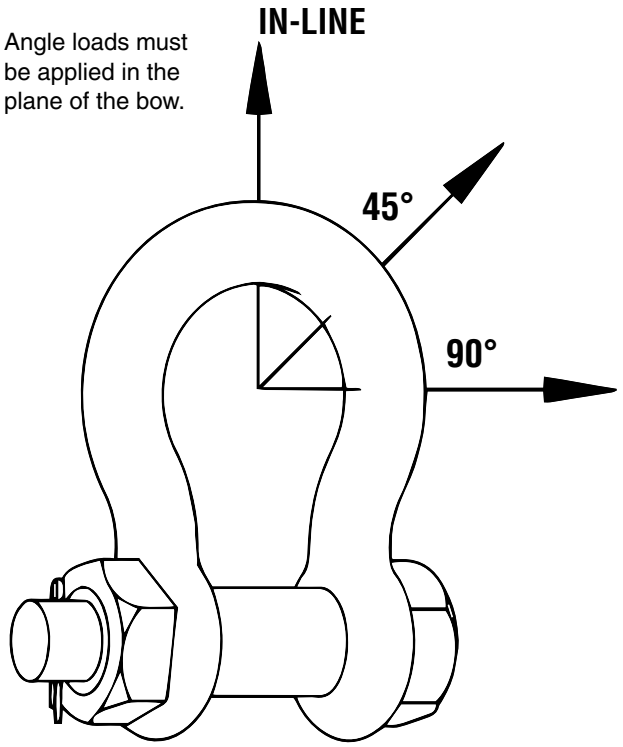
Point Loading of Crosby® Shackles

It has been determined that all Crosby® shackles can be point-to-point loaded to the Working Load Limit without bending of the pin/bolt. This loading can be bow-to-bow, bow-to-pin, or pin-to-pin (if there is not interference between the diameter of the shackle ears). However, caution should be given to maintain the load at the center of the span by spacers so the load will not slide over to one side, and overload that ear. See "Off Center Loading Of Crosby® Screw Pin & Bolt Type Shackles – 3/16" to 3" Sizes".

Angular Loading Of Crosby® Screw Pin & Bolt Type Shackles

Crosby® has made representative tests with smaller size shackles with the load applied at 90 degrees to the normal plane of loading (ie. in-line). The test results indicated that in order to maintain a proof load of 2 times the Working Load Limit (2 x WLL), the Working Load Limit should be reduced to 50% (ie. one-half the catalog working load rating). DO NOT SIDE LOAD G/S-213 OR G/S-215 ROUND PIN SHACKLES. Calculations based on the above test indicates the Working Load Limit should be reduced as shown below for loads applied at various angles to the normal plane of loading:

Angle loads must be applied in the plane of the bow.



SIDE LOADED RATING REDUCTION TABLE FOR 3/16" - 3" (120 METRIC TONS)

Table 1

Side Loading Reduction Chart for Screw Pin and Bolt Type Shackles Only+

Angle of Side Load from Vertical In-Line of Shackle	Adjusted Working Load Limit
0° - 10° In-Line*	100% of Rated Working Load Limit
11°- 20° from In-Line*	85% of Rated Working Load Limit
21°- 30° from In-Line*	75% of Rated Working Load Limit
31°- 45° from In-Line*	70% of Rated Working Load Limit
46°- 55° from In-Line*	60% of Rated Working Load Limit
56°- 70° from In-Line*	55% of Rated Working Load Limit
71°- 90° from In-Line*	50% of Rated Working Load Limit

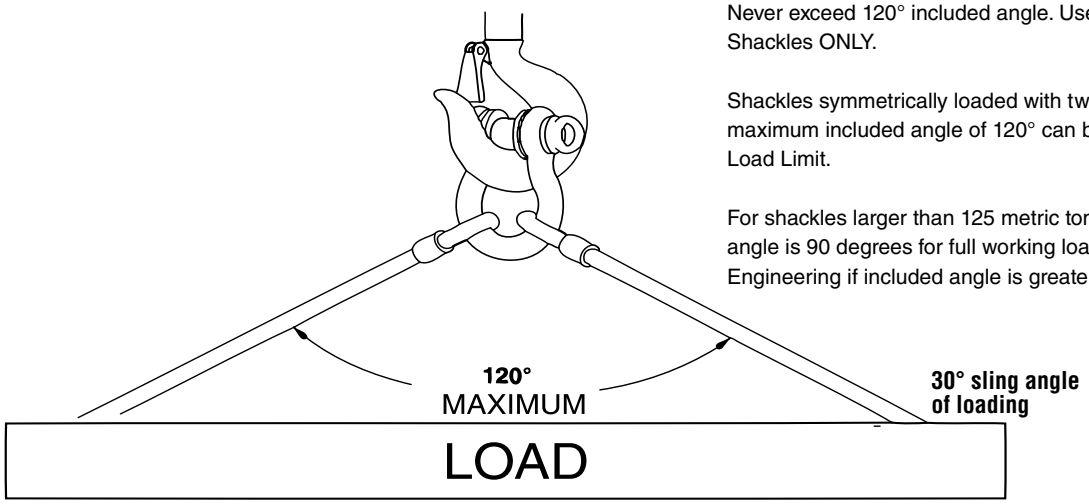
+ In-Line load is applied perpendicular to pin. *** DO NOT SIDE LOAD ROUND PIN SHACKLE.**

Table 1

SHACKLE SIZE GREATER THAN 3" ANGLE FROM IN-LINE (DEGREES)	REDUCTION IN WLL
0° - 5° In-Line*	0% of Rated Working Load Limit
6°- 10° from In-Line*	15% of Rated Working Load Limit
>10° from In-Line*	ANALYSIS REQ'D.

For shackles larger than 125 metric tons, where the angle of the side load is greater than 5 degrees, contact Crosby Engineering.

INCLUDED ANGLE - SHACKLES



Never exceed 120° included angle. Use Bolt Type and Screw Pin Shackles ONLY.

Shackles symmetrically loaded with two leg slings having a maximum included angle of 120° can be utilized to full Working Load Limit.

For shackles larger than 125 metric tons, the maximum included angle is 90 degrees for full working load limit. Contact Crosby Engineering if included angle is greater than 90 degrees.

For shackles larger than 125 metric tons, the maximum included angle is 90 degrees for full working load limit. Contact Crosby Engineering if included angle is greater than 90 degrees.

This application/warning information apply to Crosby products only.

Application Information

Round Pin Shackles

G/S-213

G/S-215

Round Pin Shackles can be used in tie down, towing, suspension or lifting applications where the load is strictly applied in-line. Round pin shackles should never be used in rigging applications to gather multiple sling legs, or where side loading conditions may occur.

Bolt-Type Shackles

G/S-2130

G/S-2150

G/S-2140

G/S-2160

G-2140E

Screw Pin Shackles

G/S-209

S-209T

G-209A

G/S-210

S-253

G-2169

Screw Pin Shackles are used in Pick and Place* applications. For permanent or long-term installations, Crosby recommends the use of bolt type shackles.

If you choose to disregard Crosby's recommendation, the screw pin shall be secured from rotation or loosening .

Screw pin shackles can be used for applications involving side-loading circumstances. Reduced working load limits are required for side-loading applications. While in service, do not allow the screw pin to be rotated by a live line, such as a choker application.

* Pick and Place application: Pick (move) a load and place as required. Tighten screw pin before each pick.

Bolt-Type Shackles can be used in any application where round pin or screw pin shackles are used. In addition, they are recommended for permanent or long term installations and where the load may slide on the shackle pin causing the pin to rotate. The bolt-type shackle's secondary securement system, utilizing a nut and cotter, eliminates the requirement to tighten nut before each lift or movement of load.

QUIC-CHECK®

All Crosby Shackles, with the exception of 2160, 2169, 2170, 252 and 253 styles incorporate markings forged into the product that address an easy to use **QUIC-CHECK®** feature. Angle indicators are forged into the shackle bow at 45 degree** angles from vertical. These are utilized on screw pin and bolt type shackles to quickly check the approximate angle of a two-legged hitch, or quickly check the angle of a single leg hitch when the shackle pin is secured and the pull of the load is off vertical (side loaded), thus requiring a reduction in the working load limit of the shackle.

G-2130

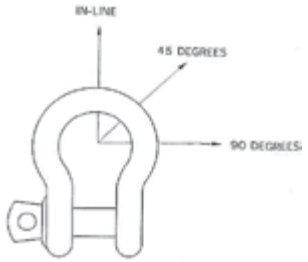
** **Round Pin Shackles** utilize the 45 degree **QUIC-CHECK®** indicators to ensure load is applied strictly in-line.

Technical Information

2006/42/EC highlights the responsibility of the manufacturer, distributor and end user of lifting gear.
Gunnebo Industries shackles are specified, monitored and documented in compliance with the most stringent requirements for the product concerned. A certified ISO 9001:2008 to 9001:2015 system is an evidence of our quality standard. See website or user instructions for assembly instructions. Meets listed current specifications and standards at time of publication of this catalog.

Instructions For Safe Use

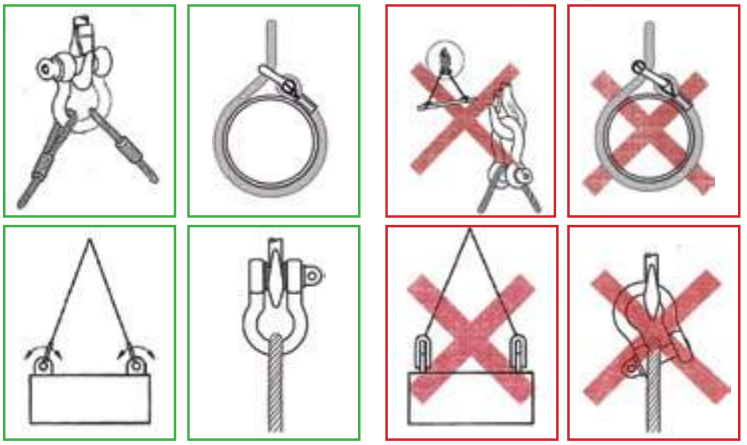
1. The user is obliged to keep a valid Test Certificate for any shackle being used in a lifting operation.
2. Before use each shackle should be inspected to ensure that:
   - all markings in the body and the pin of the shackle are legible and in compliance with the relevant Test Certificate.
   - the shackle pin is of the correct type.
   - the body and pin are not distorted or unduly worn.
   - The body and pin are free from nicks, cracks, grooves and corrosion.
   - If there is any doubt with regards to the above criteria being met, the shackle should not be used for a lifting operation.
3. It is important to ensure that the pin is safely locked after assembly. For repeated lifting between inspections of the gear, it is recommended to use a safety bolt type shackle with nut and split-pin - the user must ensure that the split-pin is fitted, to prevent the nut from unscrewing during use.
4. Incorrect seating of a pin may be due to a bent pin, damaged threads or misalignment of the holes. Do not use the shackle under these circumstances, but refer the matter to a competent person (i.e. dealer, manufacturer)
5. Shackles should be fitted to the load in a manner that allows the shackle body to take the load in a straight line along its centerline to avoid undue bending stresses which will reduce the load capacity of the shackle. When using shackles in conjunction with multi-leg slings, due consideration should be given to the effect of the angle between the sling legs. When a shackle is used to secure the top block of a set of block and tackle the load on this shackle is increased by the value of the hoisting effect.
6. To avoid eccentric loading of the shackle it is recommended to center load on pin. as far as possible over the total length of the pin or to use loose spacers.
7. Never modify, repair or reshape a shackle by welding, heating or bending as this will affect the nominal WLL.
8. Never heat treat a shackle as this may affect the WLL.



Side loads should be avoided as the products are not designed for this purpose. If side loads cannot be avoided, the following reduction factors must be taken into account:

Reduction for side loading

Load angle	New Working Load Limit
0°	100% of original WLL
45°	70% of original WLL
90°	50% of original WLL



Avoid applications where, due to load movement, the shackle pin can rotate

Shackle must be loaded in straight direction

Temperature

If extreme temperature situations are applicable, the following load reductions must be taken into account.

Reduction for elevated temperatures

Temperature:	New Working Load Limit
-20 - 200° C	100% of original Working Load Limit
200 - 300° C	90% of original Working Load Limit
300 - 400° C	75% of original Working Load Limit
> 400° C	not allowed

Crosby® HOIST HOOKS

WARNINGS & APPLICATION INSTRUCTIONS

S-3319 Series Positioning Only | S-319 Series | S-3316 Series | L-320N Series | L-322 Series Positioning Only | L-3322B

⚠ WARNING

- **Loads may disengage from hook if proper procedures are not followed.**
- **A falling load may cause serious injury or death.**
- **See OSHA Rule 1926.1431(g)(1)(i)(A) and 1926.1501(g)(4)(iv)(B) for personnel hoisting by cranes and derricks, and OSHA Directive CPL 2-1.36 - Interim Inspection Procedures During Communication Tower Construction Activities. A Crosby 319, L-320 or L-322 hook with a PL latch attached and secured with a bolt, nut and cotter pin (or toggle pin) may be used for lifting personnel. A Crosby 319N, L-320N or L-322N hook with an S-4320 latch attached and secured with cotter pin or bolt, nut and pin; or a PL-N latch attached and secured with toggle pin may be used for lifting personnel. A hook with a Crosby SS-4055 latch attached shall NOT be used for personnel lifting.**
- **See OSHA Directive CPL 2-1.36 - Crosby does not recommend the placement of lanyards directly into the positive locking Crosby hook when hoisting personnel. Crosby requires that all suspension systems (vertical lifelines / lanyard) shall be gathered at the positive locked load hook by use of a master link, or a bolt-type shackle secured with cotter pin.**
- **Threads may corrode and/or strip and drop the load.**
- **Remove securement nut to inspect or to replace L-322, S-3316, and S-3319 bearing washers (2).**
- **Hook must always support the load. The load must never be supported by the latch.**
- **Never apply more force than the hook's assigned Working Load Limit (WLL) rating.**
- **Read and understand these instructions before using hook.**

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

1. **Deformation Indicators –** Two strategically placed marks, one just below the shank or eye and the other on the hook tip, which allows for a **QUIC-CHECK®** measurement to determine if the throat opening has changed, thus indicating abuse or overload.
2. **To check**, use a measuring device (i.e., tape measure) to measure the distance between the marks. The marks should align to either an inch or half-inch increment on the measuring device. If the measurement does not meet criteria, the hook should be inspected further for possible damage.

QUIC-CHECK®

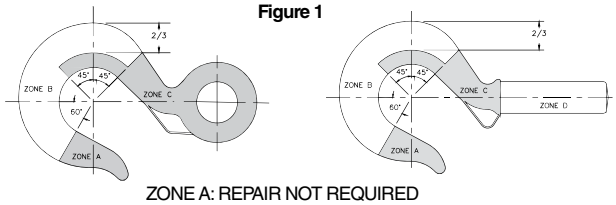
3. **Angle Indicators** – Indicates the maximum included angle which is allowed between two (2) sling legs in the hook. These indicators also provide the opportunity to approximate other included angles between two sling legs.

IMPORTANT SAFETY INFORMATION - READ & FOLLOW

A visual periodic inspection for cracks, nicks, wear, gouges and deformation as part of a comprehensive documented inspection program, should be conducted by trained personnel in compliance with the schedule in ASME B30.10.

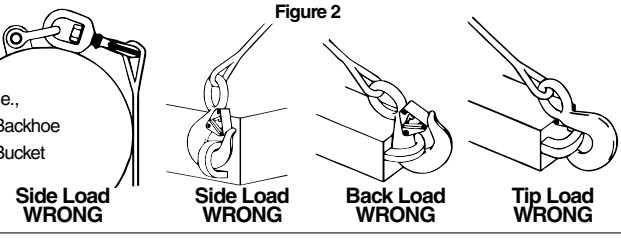
- For hooks used in frequent load cycles or pulsating loads, the hook and threads should be periodically inspected by Magnetic Particle or Dye Penetrant (Note: Some disassembly may be required).
- Never use a hook whose throat opening has been increased, or whose tip has been bent more than 10 degrees out of plane from the hook body, or is in any other way distorted or bent. Note: A latch will not work properly on a hook with a bent or worn tip.
- Never use a hook that is worn beyond the limits shown in Figure 1.
- Any crack in a hook is reason to take it out of service. Hooks with a nick or gouge can be repaired only by a qualified person by grinding lengthwise, following the contour of the hook, provided that the reduced dimension is within the limits shown in Figure 1. Contact Crosby Engineering to evaluate any crack.
- Never repair, alter, rework, or reshape a hook by welding, heating, burning, or bending.
- Never side load, back load, or tip load a hook.(Side loading, back loading and tip loading are conditions that damage and reduce the capacity of the hook.) (See Figure 2)
- Eye, Shank and Swivel hooks are designed to be used with wire rope or chain. Clevis hooks are design to be used with chain. Efficiency of assembly may be reduced when used with synthetic material.
- Do not swivel the L-322, S-3316, or S-3319 swivel hooks while supporting a load. These hooks are distinguishable by hex nuts and flat washers.
- The L-3322 swivel hook is designed to rotate under load. The L-3322 is distinguishable from the L-322 by use of a round nut designed to shield bearing.
- The frequency of bearing lubrication on the L-3322 depends upon frequency and period of product use as well as environmental conditions, which are contingent upon the user's good judgment.
- The use of a latch may be mandatory by regulations or safety codes; e.g., OSHA, MSHA, ANSI/ASME B30, Insurance, etc. (Note: When using latches, see instructions in "Understanding The Crosby Group Warnings" for further information.)
- Always make sure the hook supports the load (See Figure 3). The latch must never support the load (See Figure 4).
- When multileg slings are placed in the base (bowl/saddle) of the hook, the maximum included angle between sling legs shall be 90 deg. The maximum sling leg angle with respect to the hook centerline for any rigging arrangement shall be 45 degrees. A collector ring, such as a link or shackle, should be used to maintain in-line load when more than two legs are placed in a hook or for angles greater than 45 degrees with respect to hook centerline. When more than two legs are placed in the hook bunching of the legs shall be avoided.
- See ASME B30.10 "Hooks" for additional information.

Figure 1



ZONE A: REPAIR NOT REQUIRED
ZONE B: 10% OF ORIGINAL DIMENSION
ZONE C: 5% OF ORIGINAL DIMENSION
ZONE: D: SEE MINIMUM THREAD SIZE CHART

Figure 2



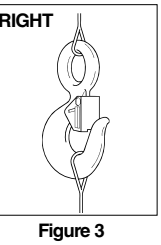


Figure 3

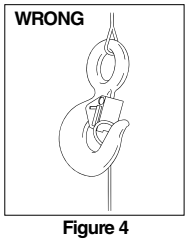


Figure 4

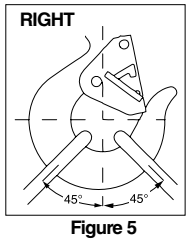
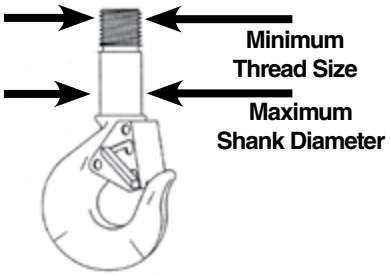


Figure 5

READ AND UNDERSTAND THESE INSTRUCTIONS BEFORE USING HOOKS
IMPORTANT – BASIC MACHINING AND THREAD INFORMATION

- Wrong thread and/or shank size can cause stripping and loss of load.
- The maximum diameter is the largest diameter, after cleanup, that could be expected after allowing for straightness, pits, etc.
- All threads must be Class 2 or better.
- The minimum thread length engaged in the nut should not be less than one (1) thread diameter. Install a properly sized retention device to secure the nut to the hook shank after the nut is properly adjusted at assembly. Nut retention devices such as set screws or roll pins are suitable for applications using anti-friction thrust bearings or bronze thrust washers. If the hook is intended for other applications that introduce a higher torque into the nut, a more substantial retaining device may be required.
- Hook shanks are not intended to be swaged on wire rope or rod.
- Hook shanks are not intended to be drilled (length of shank) and internally threaded.
- Crosby can not assume responsibility for, (A) the quality of machining, (B) the type of application, or (C) the means of attachment to the power source or load.
- Consult the Crosby Hook Identification & Working Load Limit Chart (See below) for the minimum thread size for assigned Working Load Limits (WLL).†
- Remove from service any Hook which has threads corroded more than 20% of the nut engaged length.



CROSBY HOOK IDENTIFICATION & WORKING LOAD LIMIT CHART†

Hook Identification			Working Load Limit (t)					Frame Size	Maximum Shank Diameter after Machining (in)	Minimum Thread Size	
319C 319CN L-320C L-320CN L-322C L-322CN	319AN L-320A L-320AN L-322A L-322AN 3319 L-3322B	319BN	319C 319CN L-320C L-320CN L-322C L-322CN	319A 319AN L-320A L-320AN L-322A L-322AN L-3322B	319BN	S-3319	S-3316			319C 319CN (Carbon)	319A 319AN (Alloy)
DC	DA	DB	.75	1	.5	—	—	D	.53	1/2 - 13unc	1/2 - 13 unc
FC	FA	FB	1	1.5	.6	—	.45	F	.62	5/8 - 11unc	5/8 - 11 unc
GC	GA	GB	1.5	2	1	—	—	G	.66	5/8 - 11unc	5/8 - 11 unc
HC	HA	HB	2	3	1.4	1.63	.91	H	.81	3/4 - 10unc	3/4 - 10 unc
IC	IA	IB	3	*4.5 / 5	2.0	2.5	—	I	1.03	7/8 - 9unc	7/8 - 9 unc
JC	JA	JB	5	7	3.5	4.5	—	J	1.27	1-1/8 - 7unc	1-1/8 - 7 unc
KC	KA	KB	7.5	11	5.0	—	—	K	1.52	1-1/4 - 7unc	1-3/8 - 6 unc
LC	LA	LB	10	15	6.5	—	—	L	1.75	1-5/8 - 8un	1-5/8 - 8 un
NC	NA	NB	15	22	10	—	—	N	2.00	2 - 8un	2 - 8 un
OC	OA	—	20	30	—	—	—	O	2.50	2-1/4 - 8un	2-1/4 - 8 un
PC	PA	—	25	37	—	—	—	P	3.50	2-3/4 - 8un	2-3/4 - 8 un
SC	SA	—	30	45	—	—	—	S	3.50	3 - 8un	3 - 8 un
TC	TA	—	40	60	—	—	—	T	4.00	3-1/4 - 8un	3-1/2 - 8 un
UC	UA	—	50	75	—	—	—	U	4.50	3-3/4 - 8un	4 - 4 unc
—	WA	—	—	100	—	—	—	W	6.12	—	4-1/2 - 8 un
—	XA	—	—	150	—	—	—	X	6.38	—	5-1/2 - 8 un
—	YA	—	—	200	—	—	—	Y	7.00	—	6-1/4 - 8 un
—	ZA	—	—	300	—	—	—	Z	8.62	—	7-1/2 - 8 un

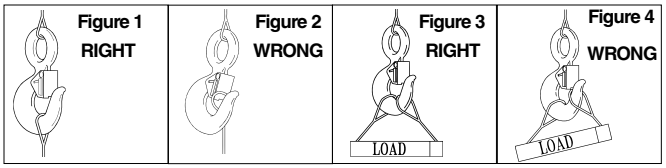
* 319AN, L-320AN, L-3322 and L-322AN are rated at 5 tons.

† Working Load Limit - The maximum mass or force which the product is authorized to support in general service when the pull is applied in-line, unless noted otherwise, with respect to the centerline of the product. This term is used interchangeably with the following terms: 1. WLL, 2. Rated Load Value, 3. SWL, 4. Safe Working Load, 5. Resultant Safe Working Load.

Warning and Application Instructions For Crosby® Hook Latch Kit

IMPORTANT SAFETY INFORMATION - READ & FOLLOW

- Always inspect hook and latch before using.
- Never use a latch that is distorted or bent.
- Always make sure spring will force the latch against the tip of the hook.
- Always make sure hook supports the load. The latch must never support the load (See Figures 1 & 2).
- When placing two (2) sling legs in hooks, make sure the angle between the legs is less the 90° and if the hook or load is tilted, nothing bears against the bottom of this latch (See Figures 3 & 4).
- Latches are intended to retain loose sling or devices under slack conditions.
- Latches are not intended to be an anti-fouling device.



⚠ WARNING

- **Loads may disengage from hook if proper procedures are not followed.**
- **A falling load may cause serious injury or death.**
- **See OSHA Rule 1926.1431(g)(1)(i)(A) and 1926.1501(g)(4)(iv)(B) for personnel hoisting for cranes and derricks. Only a Crosby or McKissick hook with a PL Latch attached and secured with bolt, nut and cotter (or Crosby Toggle Pin) or a Crosby hook with a S-4320 Latch attached and secured with a cotter pin, or a Crosby SHUR-LOC® hook in the locked position may be used for any personnel hoisting. A hook with a Crosby SS-4055 latch attached shall NOT be used for personnel lifting.**
- **Hook must always support the load. The load must never be supported by the latch.**
- **DO NOT use this latch in applications requiring non-sparking.**
- **Read and understand these instructions before using hook and latch.**

McKissick® HOIST HOOKS

WARNINGS & APPLICATION INSTRUCTIONS

L-320N Series

S-319 Series

L-322 Series Positioning Only

L-3322B Series

⚠ WARNING

- **Loads may disengage from hook if proper procedures are not followed.**
- **A falling load may cause serious injury or death.**
- **See OSHA Rule 1926.1431(g)(1)(i)(A) and 1926.1501(g)(4)(iv)(B) for personnel hoisting by cranes and derricks, and OSHA Directive CPL 2-1.36 - Interim Inspection Procedures During Communication Tower Construction Activities. A Crosby 319, L-320 or L-322 hook with a PL latch attached and secured with a bolt, nut and cotter pin (or toggle pin) may be used for lifting personnel. A Crosby 319N, L-320N or L-322N hook with an S-4320 latch attached and secured with cotter pin or bolt, nut and pin; or a PL-N latch attached and secured with toggle pin may be used for lifting personnel. A hook with a Crosby SS-4055 latch attached shall NOT be used for personnel lifting.**
- **See OSHA Directive CPL 2-1.36 - Crosby does not recommend the placement of lanyards directly into the positive locking Crosby hook when hoisting personnel. Crosby requires that all suspension systems (vertical lifelines / lanyard) shall be gathered at the positive locked load hook by use of a master link, or a bolt-type shackle secured with cotter pin.**
- **Threads or Split-Nut may corrode and/or strip and drop the load.**
- **Remove securement nut to inspect or to replace S-322 and S-3319 bearing washers (2).**
- **Hook must always support the load. The load must never be supported by the latch.**
- **Never apply more force than the hook's assigned Working Load Limit (WLL) rating.**
- **Read and understand these instructions before using hook.**

QUIC-CHECK® Hoist hooks incorporate markings forged into the product which address two (2) QUIC-CHECK® features:
Deformation Indicators - Two strategically placed marks, one just below the shank or eye and the other on the hook tip, which allows for a **QUIC-CHECK®** measurement to determine if the throat opening has changed, thus indicating abuse or overload.

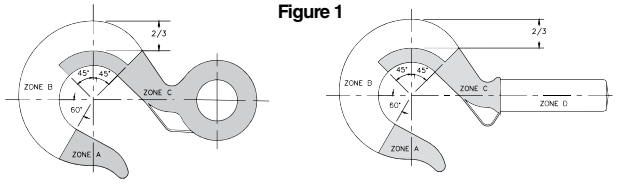
QUIC-CHECK®

To check, use a measuring device (i.e., tape measure) to measure the distance between the marks. The marks should align to either an inch or half-inch increment on the measuring device. If the measurement does not meet criteria, the hook should be inspected further for possible damage.
Angle Indicators - Indicates the maximum included angle which is allowed between two (2) sling legs in the hook. These indicators also provide the opportunity to approximate other included angles between two sling legs.

IMPORTANT SAFETY INFORMATION - READ & FOLLOW

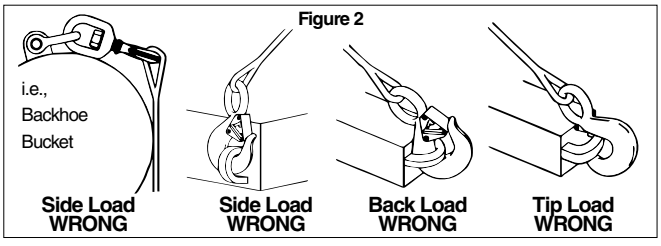
- A visual periodic inspection for cracks, nicks, wear, gouges and deformation as part of a comprehensive documented inspection program, should be conducted by trained personnel in compliance with the schedule in ASME B30.10.
- For hooks used in frequent load cycles or pulsating loads, the hook and threads should be periodically inspected by Magnetic Particle or Dye Penetrant. (Note: Some disassembly may be required.)
- Never use a hook whose throat opening has been increased, or whose tip has been bent more than 10 degrees out of plane from the hook body, or is in any other way distorted or bent.
- **Note: A latch will not work properly on a hook with a bent or worn tip.**
- Never use a hook that is worn beyond the limits shown in Figure 1.
- Any crack in a hook is reason to take it out of service. Hooks with a nick or gouge can be repaired only by a qualified person by grinding lengthwise, following the contour of the hook, provided that the reduced dimension is within the limits shown in Figure 1. Contact Crosby Engineering to evaluate any crack.
- Remove from service any hook which has threads corroded more than 20% of the nut engagement length.
- Never repair, alter, rework, or reshape a hook by welding, heating, burning, or bending.
- Never side load, back load, or tip load a hook.(Side loading, back loading and tip loading are conditions that damage and reduce the capacity of the hook.) (See Figure 2)
- Eye hooks, shank hooks and swivel hooks are designed to be used with wire rope or chain. Efficiency of assembly may be reduced when used with synthetic material.
- Do not swivel the L-322 or S-3319 swivel hooks while supporting a load. These hooks are distinguishable by hex nuts and flat washers.
- The L-3322 swivel hook is designed to rotate under load. The L-3322 is distinguishable from the L-322 by use of a round nut designed to shield bearing.
- The frequency of bearing lubrication on the L-3322 depends upon frequency and period of product use as well as environmental conditions, which are contingent upon the user's good judgment.
- The use of a latch may be mandatory by regulations or safety codes; e.g., OSHA, MSHA, ASME B30, Insurance, etc.. (Note: When using latches, see instructions in "Understanding: The Crosby Group Warnings" for further information.)
- Always make sure the hook supports the load (See Figure 3). The latch must never support the load (See Figure 4).
- When multileg slings are placed in the base (bowl/saddle) of the hook, the maximum included angle between sling legs shall be 90 deg. The maximum sling leg angle with respect to the hook centerline for any rigging arrangement shall be 45 degrees. A collector ring, such as a link or shackle, should be used to maintain in-line load when more than two legs are placed in a hook or for angles greater than 45 degrees with respect to hook centerline. When more than two legs are placed in the hook bunching of the legs shall be avoided.
- Reference Crosby's Hoist Hook Warning and Application Information for basic machining and minimum thread size.
- See ASME B30.10 "Hooks" for additional information.

Figure 1



ZONE A: REPAIR NOT REQUIRED
ZONE B: 10% OF ORIGINAL DIMENSION
ZONE C: 5% OF ORIGINAL DIMENSION
ZONE: D: SEE MINIMUM THREAD SIZE CHART

Figure 2



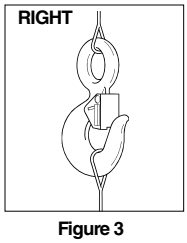


Figure 3

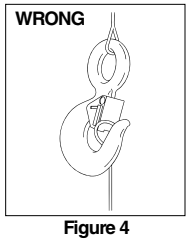


Figure 4

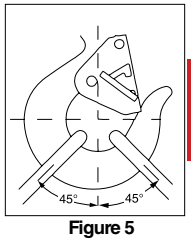


Figure 5

17

Removal of Split-Nut assembly (Reference Figure A):

- Remove vinyl cover.
- Remove spring retaining ring.
- Slide steel keeper ring off split nuts **⚠CAUTION Removal of keeper ring will allow split nut halves to fall from hook shank).**
- Remove split nut halves.

Inspection of split nut assembly and hook shank interface area (Reference Figure B):

- Inspect hook shank and split nut for signs of deformation on and adjacent to the load bearing surfaces.
- Inspect outside corner of hook shank load bearing surface to verify the corner is sharp.
- Verify retaining ring groove will allow proper seating of the retaining ring.
- Inspect retaining ring for corrosion or deformation. Remove from service any retaining ring that has excessive corrosion or is deformed.
- Use fine grit emery or crocus cloth to remove any corrosion from machined hook shank and split nut assembly.
- Follow inspection recommendations listed in this document under IMPORTANT SAFETY INFORMATION.
- If corrosion is present on the nut / shank interface area and deterioration or degradation of the metal components is evident, further inspection is required.
  - The use of a feeler gauge is required to properly measure the maximum allowable gap width between the split nut inside diameters and shank outside diameters.
  - With one split nut half seated against the hook shank, push the nut to one side and measure the maximum gaps as shown in Figure B. The hook should be measured in four places, 90-degrees apart.
  - Repeat above inspection procedure with other half of split nut.
  - Remove from service any hook and split nut assembly that exhibits a gap greater than 0.030".

Installation of split nut assembly (Reference Figure A):

- Coat hook shank and inside of split nut with an anti-seize compound or heavy grease.
- Install split nut halves onto shank. The flanged bottom of the split nut should be closest to the hook shoulder.
- Slide steel keeper ring over split nut halves. Verify the split nut halves properly seat against the load bearing surface of the hook shank and the steel keeper ring seats against the flange of the split nut.
- Install retaining ring onto split nut halves. Verify the retaining ring seats properly in the retaining ring groove on the outside diameter of the split nut assembly.
- Install vinyl cover over split nut and hook shank assembly.
- Verify all fasteners are correctly installed.
- Always use Genuine Crosby replacement parts.

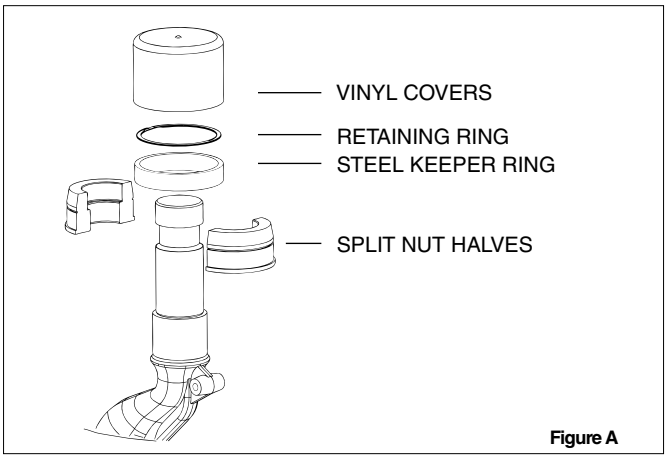


Figure A

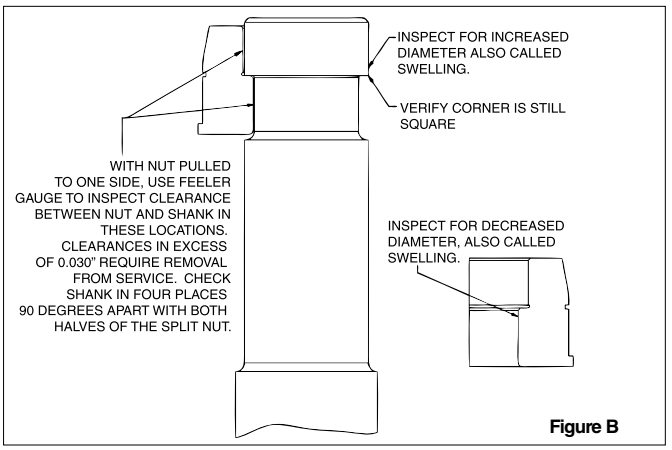
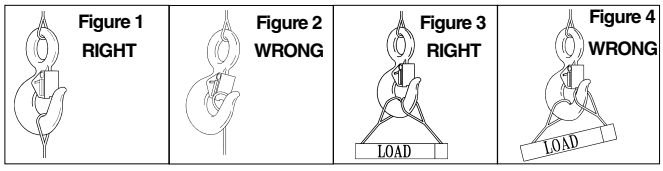


Figure B

Warning and Application Instructions For McKissick® Hook Latch Kit

IMPORTANT SAFETY INFORMATION - READ & FOLLOW

- Always inspect hook and latch before using.
- Never use a latch that is distorted or bent.
- Always make sure spring will force the latch against the tip of the hook.
- Always make sure hook supports the load. The latch must never support the load (See Figures 1 & 2).
- When placing two (2) sling legs in hooks, make sure the angle between the legs is less the 90° and if the hook or load is tilted, nothing bears against the bottom of this latch (See Figures 3 & 4).
- Latches are intended to retain loose sling or devices under slack conditions.
- Latches are not intended to be an anti-fouling device.



⚠ WARNING

- **Loads may disengage from hook if proper procedures are not followed.**
- **A falling load may cause serious injury or death.**
- **See OSHA Rule 1926.1431(g)(1)(i)(A) and 1926.1501(g)(4)(iv)(B) for personnel hoisting for cranes and derricks. Only a Crosby or McKissick hook with a PL Latch attached and secured with bolt, nut and cotter (or Crosby Toggle Pin) or a Crosby hook with a S-4320 Latch attached and secured with a cotter pin, or a Crosby SHUR-LOC® hook in the locked position may be used for any personnel hoisting. A hook with a Crosby SS-4055 latch attached shall NOT be used for personnel lifting.**
- **Hook must always support the load. The load must never be supported by the latch.**
- **Do not use this latch in applications requiring non-sparking.**
- **Read and understand these instructions before using hook and latch.**

Crosby® / BULLARD® GOLDEN GATE® HOOKS

WARNINGS & APPLICATION INSTRUCTIONS

QUIC-CHECK® Hoist Hooks incorporate markings forged into the product which address two (2) **QUIC-CHECK®** features: **Deformation Indicators** – Two strategically placed marks, one just below the shank or eye and the other on the hook tip, which allows for a **QUIC-CHECK®** measurement to determine if the throat opening has changed, thus indicating abuse or overload.

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

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

IMPORTANT SAFETY INFORMATION - READ & FOLLOW

- A visual periodic inspection for cracks, nicks, wear, gouges and deformation as part of a comprehensive documented inspection program, should be conducted by trained personnel in compliance with the schedule in ANSI B 30.10.
- For hooks used in frequent load cycles or pulsating loads, the hook and threads should be periodically inspected by Magnetic Particle or Dye Penetrant. (Note: Some disassembly may be required.)
- See WARNING box and Figure 6 for special instructions for securing the nut to the shank at assembly.
- Never use a hook whose throat opening has been increased, or whose tip has been bent more than 10 degrees out of plane from the hook body, or is in any other way distorted or bent. **Note: A gate will not work properly on a hook with a bent or worn tip.**
- Manual - closing gates must be completely closed for the lock to work.
- Never use a hook that is worn beyond the limits shown in Figure 1.
- Remove from service any hook with a crack, nick, or gouge. Hooks with a nick or gouge shall be repaired by grinding lengthwise, following the contour of the hook, provided that the reduced dimension is within the limits shown in Figure 1. Contact Crosby Engineering to evaluate any crack.
- Never repair, alter, rework, or reshape a hook by welding, heating, burning, or bending.
- Never side load, back load, or tip load a hook. Side loading, back loading and tip loading are conditions that damage and reduce the capacity of the hook (See Figure 2).
- Eye hooks, shank hooks and swivel hooks are designed to be used with wire rope or chain. Efficiency of assembly may be reduced when used with synthetic material.

⚠ WARNING

- **Loads may disengage from hook if proper procedures are not followed.**
- **A falling load may cause serious injury or death.**
- **Before using, inspect the hook and gate daily to ensure it is in proper operating condition.**
- **Failure to properly insert the pin could result in the load falling.**
- **All Golden Gate® Hooks with threaded shanks require a pin to secure the nut to the shank. This pin prevents the nut from backing off or unscrewing from the threads and causing the load to drop.**
- **If the pin and nut are removed from the shank to replace any hook components, the pin and nut must be installed before use.**

  NOTE: 1. If a solid pin was used, the old pin "must"be discarded and a new pin inserted to secure the nut to the shank.

  2. If a spring pin (coil type) was used, it may be reused provided that the spring pin and / or the drill hole was not damaged.
- **The gate is not a load-bearing device. Do not allow the sling or other loads to bear against the gate.**
- **Threads may corrode and / or strip and drop the load.**
- **Hands, fingers and body should be kept away from the hook and load whenever possible.**
- **Never apply more force than the hook's assigned Working Load Limit (WLL) rating.**
- **Read and understand these instructions before using.**

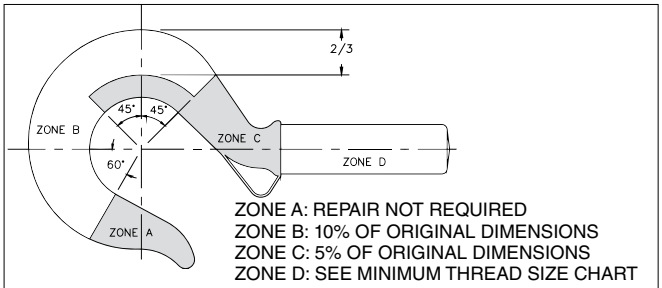


Figure 1

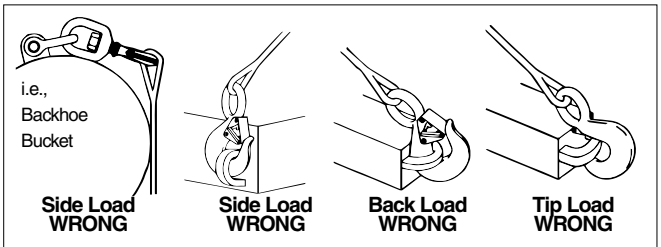
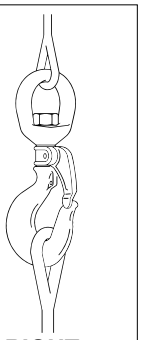


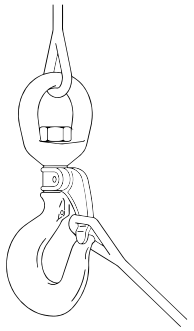
Figure 2

17

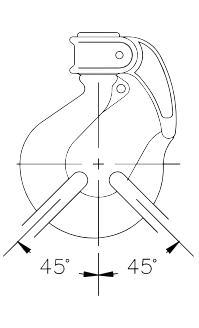
- The use of a latch may be mandatory by regulations or safety codes: e.g., OSHA, MSHA, ASME B30, Insurance etc.
- Always make sure the hook supports the load (See Figure 3). The gate must never support the load (See Figure 4).
- When multileg slings are placed in the base (bowl/saddle) of the hook, the maximum included angle between sling legs shall be 90 deg. The maximum sling leg angle with respect to the hook centerline for any rigging arrangement shall be 45 degrees. A collector ring, such as a link or shackle, should be used to maintain in-line load when more than two legs are placed in a hook or for angles greater than 45 degrees with respect to hook centerline. When more than two legs are placed in the hook bunching of the legs shall be avoided.
- See ASME B30.10 “Hooks” for additional information.
- If any of the following conditions exist, remove hook from service immediately and repair with genuine Crosby / Bullard Golden Gate® hook parts or replace the hook.
  - The gate does not lock in the closed position.
  - The gate is worn, deformed, inoperative, or fails to bridge the hook throat opening.
  - Load pins or bolts in the chain connectors are worn or bent.
- When hook is used to support a hoist, the weight of the hoist must be deducted from the assigned hook Working Load Limit.
- The rated capacity of chain connector hook assemblies must equal or exceed the capacity of the hoist.



RIGHT
Figure 3



WRONG
Figure 4



RIGHT
Figure 5

Important – Basic Machining and Thread Information – Read and Follow

- Wrong thread and/or shank size can cause stripping and loss of load.
- The maximum diameter is the largest diameter that will fit into the gate.
- All threads must be Class 2 or better.
- The minimum thread length engaged in the nut should not be less than one (1) thread diameter.
- All nuts must be secured to the shank by cross drilling the nut and threaded shank and inserting the appropriate coil type spring pin (See WARNING box and Figure 6 for special instructions).
- Coil type spring pin must be as long as the distance across the nut flats or diameter (See Figure 6).
- Consult the Crosby / Bullard Golden Gate® Hook Identification and Working Load Limit Chart (See below) for the coil type spring pin diameter.
- Remove any hook from service that requires a larger coil type spring than that shown in the chart below.
- Hook shanks are not intended to be swaged on wire rope or rod.
- Hook shanks are not intended to be drilled and internally threaded.
- Crosby cannot assume responsibility for:
  (A) the quality of machining,
  (B) the type of application, or
  (C) the means of attachment to the power source or load.

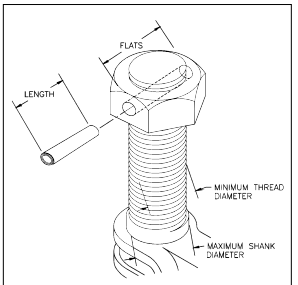


Figure 6

- Consult the Crosby/Bullard Golden Gate® Hook Identification & Working Load Limit Chart (below) for the minimum thread size for assigned Working Load Limits (WLL). +
- Remove from service any hook which has threads corroded more than 20% of the nut engaged length.

Crosby® / Bullard Golden Gate® Hook Identification and Working Load Limit Chart

Hook / Gate Size	Working Load Limit ** + (t)	Maximum Shank Diameter (in)	Minimum Thread Size	Spring* Pin Size (in)	Drilled Hole Size (in)	Hook / Gate Size	Working Load Limit (t)	Maximum Shank Diameter (in)	Minimum Thread Size	Spring* Pin Size (in)	Drilled Hole Size (in)
1	.5	—	—	—	—	11	9.2	1.497	1-1/2 - 6 UNC	5/16	.308 / .319
2	1.0	.498	1/2 - 13 UNC	1/8	.124 / .129	12	12.3	1.622	1-5/8 - 5-1/2 UNC	5/16	.308 / .319
3	1.4	.559	9/16 - 12 UNC	1/8	.124 / .129	13	15.0	1.747	1-3/4 - 5 UNC	3/8	.370 / .383
4	1.7	.623	5/8 - 11 UNC	1/8	.124 / .129	14	18.5	1.997	2 - 4-1/2 UNC	3/8	.370 / .383
5	2.3	.747	3/4 - 10 UNC	5/32	.155 / .160	16	24.7	2.747	2-3/4 - 4 UNC	1/2	.493 / .510
6	4.0	.872	7/8 - 9 UNC	3/16	.185 / .192	16-A	33.0	2.747	2-3/4 - 4 UNC	1/2	.493 / .510
7	4.2	.997	1 - 8 UNC	3/16	.185 / .192	17	49.5	3.996	4 - 4 UNC	3/4	.743 / .760
8	5.5	1.122	1-1/8 - 7 UNC	1/4	.247 / .256	17-A	66.0	3.996	4 - 4 UNC	3/4	.743 / .760
9	7.2	1.247	1-1/4 - 7 UNC	1/4	.247 / .256	—	—	—	—	—	—

* Heavy Duty Coil Type Spring Pin.

** Minimum ultimate strength is 4 times the Working Load Limit.

+ Working Load Limit - The maximum mass or force which the product is authorized to support in general service when the pull is applied in-line, unless noted otherwise with respect to centerline of the product. This term is used interchangeably with the following terms: 1. WLL, 2. Rated Load Value, 3. SWL, 4. Safe Working Load, 5. Resultant Safe Working Load. Ultimate Load is 4 times the Working Load.

S-4320 HOOK LATCH KIT

WARNINGS & APPLICATION INSTRUCTIONS

(For Crosby 319N, 320N, and 322N, S-1327, and A-1339 Hooks)

Important Safety Information - Read & Follow

- Always inspect hook and latch before using.
- Never use a latch that is distorted or bent.
- Always make sure spring will force the latch against the tip of the hook.
- Always make sure hook supports the load. The latch must never support the load (See Figures 1 & 2).
- When placing two (2) sling legs in hook, make sure the angle between the legs is less than 90° and if the hook or load is tilted, nothing bears against the bottom of this latch (See Figures 3 & 4).
- Latches are intended to retain loose sling or devices under slack conditions.
- Latches are not intended to be an anti-fouling device.
- When using latch for personnel lifting, select proper cotter pin (See Figure 5). See Step 7 below for proper installation instructions.
  - Never reuse a bent cotter pin.
  - Never use a cotter pin with a smaller diameter or different length than recommended in Figure 5.
  - Never use a nail, a welding rod, wire, etc., in place of recommended cotter pin.
  - Always ensure cotter pin is bent so as not to interfere with sling operation.
  - Periodically inspect cotter pin for corrosion and general adequacy.

⚠ WARNING

- **Loads may disengage from hook if proper procedures are not followed.**
- **A falling load may cause serious injury or death.**
- **Hook must always support the load. The load must never be supported by the latch.**
- **See OSHA Rule 1926.1431(g)(1)(i)(A) and 1926.1501(g)(4)(iv)(B) for Personnel Hoisting by Crane or Derricks. A Crosby S-319N, S-320N, S-322N, S-1327, and A-1339 Hook with an S-4320 latch attached (when secured with cotter pin) may be used for lifting personnel.**
- **An S-4320 Latch is only to be used with a Crosby S-319N, S-320N, S-322N, S-1327, and A-1339 Hook.**
- **DO NOT use this latch in applications requiring non-sparking.**
- **Read and understand these instructions before using hook and latch.**

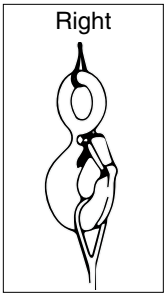


Figure 1

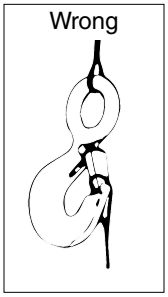


Figure 2

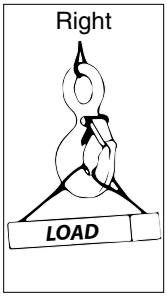


Figure 3

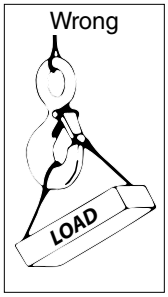
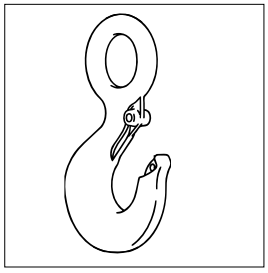


Figure 4

Hook Identification Code	Recommended Cotter Pin Dimensions (in)	
	Diameter	Length
D	1/8	3/4
F	1/8	3/4
G	1/8	1
H	3/16	1-1/4
I	1/4	1-1/2
J	5/16	2
K	5/16	2
L	3/8	3
N	3/8	3

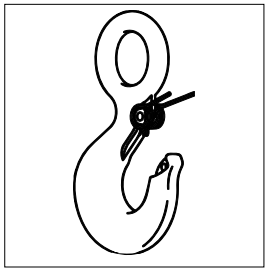
† The current SS-4055 latch kit and the PL latch will not fit new 319N, 320N, or 322N hooks. They will continue to be offered in both styles to service existing hooks. Important – The new S4320 latch kit will not fit the old 319, 320, or 322 hooks.

IMPORTANT – Instructions for Assembling S-4320 Latch on Crosby 320N Hooks



Step 1

1. Place hook at approximately a 45 degree angle with the cam up.

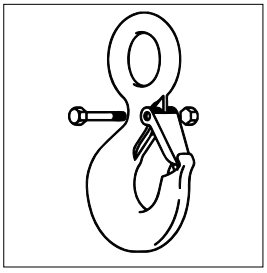


Step 2

2. Position coils of spring over cam with legs of spring pointing toward point of hook and loop of spring positioned down and lying against the hook.

Step 3

3. Position latch to side of hook points. Slide latch onto spring legs between lockplate and latch body until latch is partially over hook cam. Then depress latch and spring until latch clears point of hook.

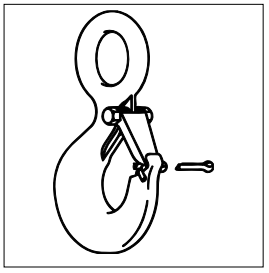


Steps 4, 5, & 6

4. Line up holes in latch with hook cam.

5. Insert bolt through latch, spring, and cam.

6. Tighten self-locking nut on one end of bolt.



Step 7 – For Personnel Lifting

7. With latch in closed position and rigging resting in bowl of hook, insert cotter pin through hook tip and secure by bending prongs.

Crosby® HOOK LATCH KIT

WARNINGS & APPLICATION INSTRUCTIONS

SS-4055
(Stainless Steel)

IMPORTANT SAFETY INFORMATION - READ & FOLLOW

- Always inspect hook and latch before using.
- Never use a latch that is distorted or bent.
- Always make sure spring will force the latch against the tip of the hook.
- Always make sure hook supports the load. The latch must never support the load (See Figures 1 & 2).
- When placing two (2) sling legs in hook, make sure the angle between legs is small enough and the legs are not tilted so that nothing bears against the bottom of the latch (See Figures 3 & 4).
- Latches are intended to retain loose sling or devices under slack conditions.
- Latches are not intended to be an anti-fouling device.

⚠ WARNING

- **Loads may disengage from hook if proper procedures are not followed.**
- **A falling load may cause serious injury or death.**
- **See OSHA Rule 1926.1431(g)(1)(i)(A) and 1962.1501(g)(4)(iv)(B) A hook and this style latch must not be used for lifting personnel.**
- **Hook must always support the load. The load must never be supported by the latch.**
- **Read and understand these instructions before using hook and latch.**

RIGHT

Figure 1

WRONG

Figure 2

RIGHT

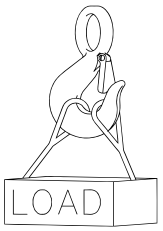


Figure 3

WRONG

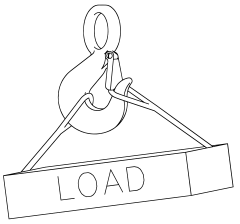
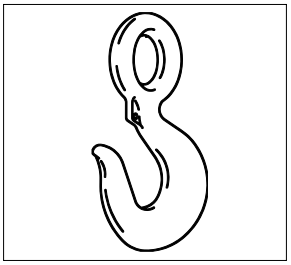


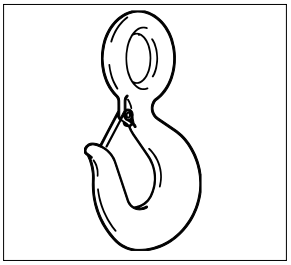
Figure 4

IMPORTANT – Instructions for Assembling Model SS-4055 Latch on Crosby Hooks



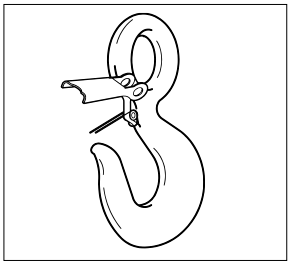
Step 1

1. Place hook at approximately a 45 degree angle with the cam up.



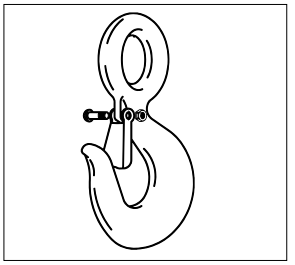
Step 2

2. Position coils of spring over cam with tines of spring pointing toward point of hook and loop of spring positioned down and lying against the hook.



Step 3

3. Position latch over tines of spring with ears partially over hook cam. Swing latch to one side of hook, point and depress latch and spring until latch clears point of hook.



Steps 4, 5, & 6

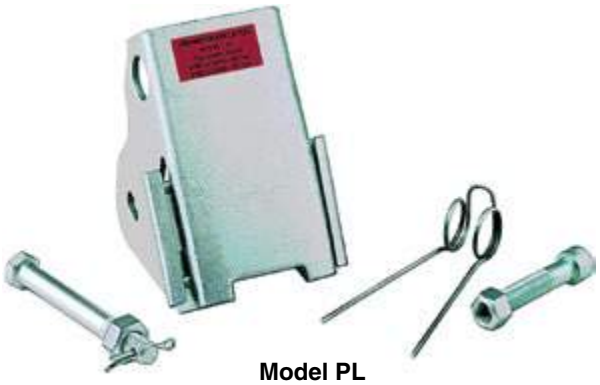
4. Line up holes in latch with hook cam.

5. Insert bolt through latch, spring, and cam.

6. Tighten self-locking nut on one end of bolt.

Crosby® MODEL PL HOOK LATCH KIT

WARNINGS & APPLICATION INSTRUCTIONS



Model PL

IMPORTANT SAFETY INFORMATION - READ & FOLLOW

(Pat. USA & Canada)

- Always inspect hook and latch before using.
- Never use a latch that is distorted or bent.
- Always make sure spring will force the latch against the tip of the hook.
- Always make sure hook supports the load. The latch must never support the load (See Figures 1 & 2).
- When placing two (2) sling legs in hook, make sure the angle between the legs is less than 90° and if the hook or load is tilted, nothing bears against the bottom of this latch (See Figures 3 & 4).
- Latches are intended to retain loose sling or devices under slack conditions.
- Latches are not intended to be an anti-fouling device.

⚠ WARNING

- **Loads may disengage from hook if proper procedures are not followed.**
- **A falling load may cause serious injury or death.**
- **See OSHA Rule 1926.1431(g)(1)(i)(A) and 1926.1501(g)(4)(iv)(B) for Personnel Hoisting by Cranes or Derricks. A Crosby or McKissick Hook with a positive Locked PL or S-4320 Latch may be used to Lift Personnel.**
- **Hook must always support the load. The load must never be supported by the latch.**
- **DO NOT use this latch in applications requiring non-sparking.**
- **Read and understand these instructions before using hook and latch.**

Right

Figure 1

Wrong

Figure 2

Right

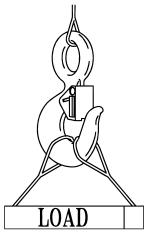


Figure 3

Wrong

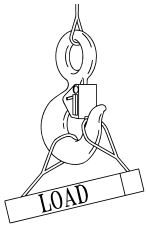
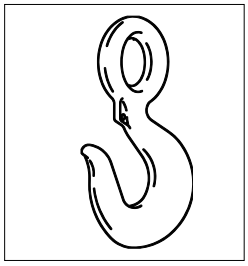


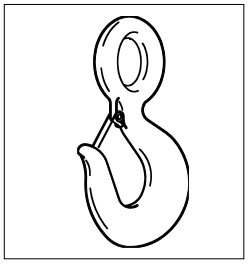
Figure 4

IMPORTANT - Instructions for Assembling Model PL Latch on Crosby or McKissick Hooks



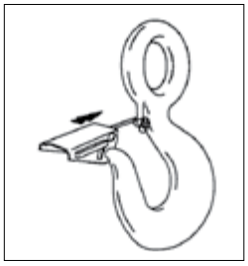
Step 1

1. Place hook at approximately a 45 degree angle with the cam up.



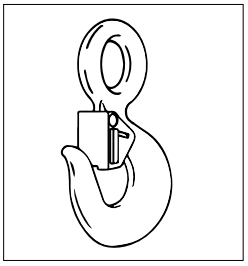
Step 2

2. Position coils of spring over cam with legs of spring pointing toward point of hook and loop of spring positioned down and lying against the hook.



Step 3

3. Position latch to side of hook points. Slide latch onto spring legs between lockplate and latch body until latch is partially over hook cam. Then depress latch and spring until latch clears point of hook.

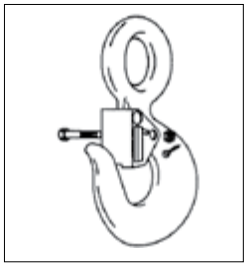


Steps 4, 5, & 6

4. Line up holes in latch with hook cam.

5. Insert bolt through latch, spring, and cam.

6. Tighten self-locking nut on one end of bolt.



Step 7 — For Personnel Lifting

7. With latch in closed position and rigging resting in bowl of hook, insert bolt through latch and secure with nut and cotter pin. When bolt, nut and cotter pin are not being used, store them in a designated place upon the personnel platform.

Crosby® MODEL PL-N/O HOOK LATCH KIT

WARNINGS & APPLICATION INSTRUCTIONS

Model PL-N/O

IMPORTANT SAFETY INFORMATION - READ & FOLLOW

- Always inspect hook and latch before using.
- Never use a latch that is distorted or bent.
- Always make sure spring will force the latch against the tip of the hook.
- Always make sure hook supports the load. The latch must never support the load (See Figures 1 & 2).
- When placing two (2) sling legs in hook, make sure the angle between the legs is less than 90° and if the hook or load is tilted, nothing bears against the bottom of this latch (See Figures 3 & 4).
- Latches are intended to retain loose sling or devices under slack conditions.
- Latches are not intended to be an anti-fouling device.

⚠ WARNING

- **Loads may disengage from hook if proper procedures are not followed.**
- **A falling load may cause serious injury or death.**
- **See OSHA Rule 1926.1431(g)(1)(i)(A) and 1926.1501(g)(4)(iv)(B) for Personnel Hoisting by Crane or Derricks. A Crosby or McKissick Hook with a Positive Locked PL-N/O or S-4320 Latch may be used to lift personnel.**
- **Hook must always support the load. The load must never be supported by the latch.**
- **DO NOT use this latch in applications requiring non-sparking.**
- **Read and understand these instructions before using hook and latch.**

RIGHT

Figure 1

WRONG

Figure 2

RIGHT

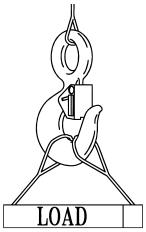


Figure 3

WRONG

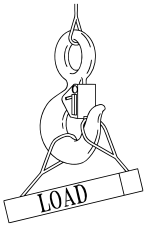
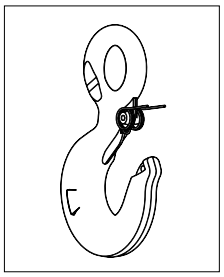


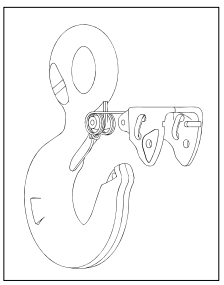
Figure 4

IMPORTANT - Instructions for Assembling Model PL-N/O Latch on Crosby or McKissick Hooks



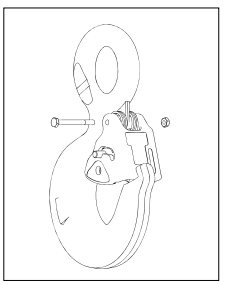
Step 1

1. Place hook in upright position. Position coils of spring over cam with legs of spring pointing toward tip of hook, and loop of spring positioned down and lying against the hook.



Step 2

2. Slip the latch over the spring until the two spring legs are positioned into the grooves located on the inside of the latch housing (legs of spring should fit between the gate and the housing).



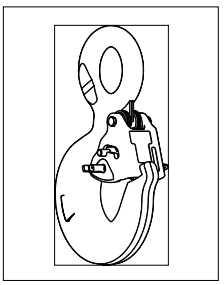
Step 3 4, 5, & 6

3. Slide latch housing up the spring legs until latch clears hook tip.

4. Resting latch on interlocking hook tip, line up holes in latch with hook cam.

5. Insert bolt through latch spring & cam.

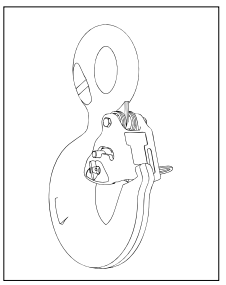
6. Tighten self-locking nut on one end of bolt.



Step 7,8 - For Personnel Lifting

7. Rigging should be resting in bowl of hook, with latch in closed position and gate locked.

8. Insert toggle lock pin through hole and depress spring until toggle clears hole on other side of latch.



Step 9 - For Personnel Lifting

9. Rotate toggle 90 degrees to secure pin (ensure toggle is in closed position as shown).

Crosby® SHUR-LOC® HOOKS

WARNING & APPLICATION INSTRUCTIONS

Important Safety Information - Read and Follow

- A visual periodic inspection for cracks, nicks, wear, gouges and deformation as part of a comprehensive documented inspection program, should be conducted by trained personnel in compliance with the schedule in ASME B30.10.
- For hooks used in frequent load cycles, pulsating loads, or severe duty as defined by ASME B30.10, the hook and threads should be periodically inspected by Magnetic Particle or Dye Penetrant (Note: Some disassembly may be required).
- Never use a hook whose throat opening has been increased 5%, not to exceed 1/4",(6mm) or shows any visible apparent bend or twist from the plane of the unbent hook, or is in any other way distorted or bent. **NOTE: A latch will not work properly on a hook with a bent or worn tip.**
- Never use a hook that is worn beyond the limits shown in Figure 1.
- Remove from service any hook with a crack, nick, or gouge. Hooks with a nick, or gouge shall be repaired by grinding lengthwise, following the contour of the hook, provided that the reduced dimension is within the limits shown in Figure 1. Contact Crosby Engineering to evaluate any crack.
- Never repair, alter, rework, or reshape a hook by welding, heating, burning, or bending.
- Never side load, back load or tip load a hook. Side loading, back loading and tip loading are conditions that damage and reduce the capacity of the hook (See Figure 2).
- S-1326A can be used for limited rotations under load (infrequent, noncontinuous).
- Efficiency of synthetic sling material may be reduced when used in eye or bowl of hook.
- Always make sure the hook supports the load (See Figure 3). Do not use hook tip for lifting (See Figure 4).

⚠WARNING

- **Loads may disengage from hook if proper procedures are not followed.**
- **A falling load may cause serious injury or death.**
- **Positive locking latch will unlock when trigger is depressed. Never use hook unless hook and latch are fully closed and locked.**
- **Keep body parts clear of pinch point between hook tip and hook latch when closing.**
- **Keep hand(s) from between throat of hook and sling or other device.**
- **Do not use hook tip for lifting.**
- **Do not use hook handle for lifiting.**
- **Do not rig the finger pull open, place objects in the finger pull area, or in any way inhibit complete and full operation of the finger pull mechanism.**
- **Shank threads may corrode and/or strip and drop the load.**
- **Remove securement nut to inspect threads for corrosion or to replace S-1326A bearing washers (2) and or S-13326 thrust bearing.**
- **Never apply more force than the hook's assigned Working Load Limit (WLL) rating.**
- **See OSHA Rule 1926.1431(g) and 1926.1501(g) for personnel hoisting by cranes or derricks. A Crosby 1318A, 1326A, 13326, 1316A, or 1317A hook may be used for lifting personnel.**
- **Use only genuine Crosby parts as replacements.**
- **Read and understand these instructions before using hook.**

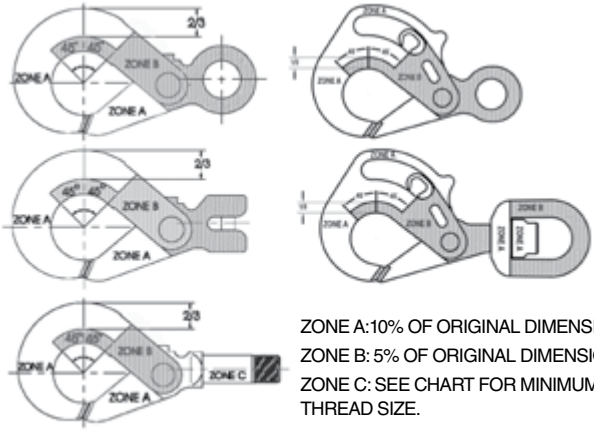


FIGURE 1

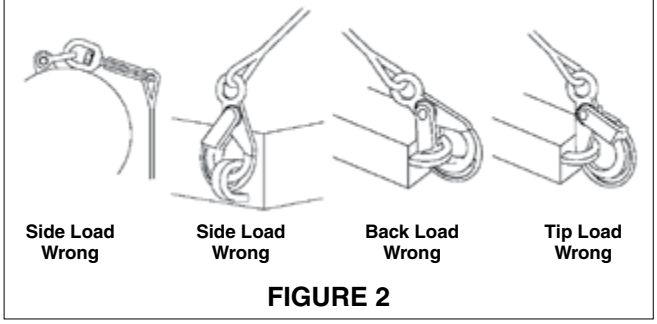
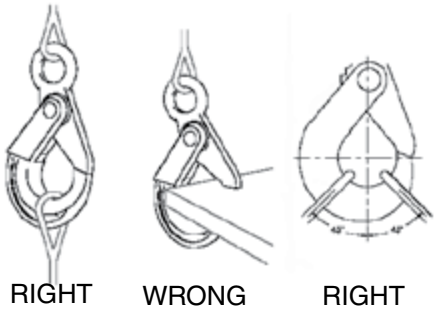


FIGURE 2

- When placing two (2) sling legs in hook, make sure the angle from vertical to the leg nearest the hook tip is not greater than 45 degrees, and the included angle between the legs does not exceed 90 degrees* (See Figure 5).
- See ASME B30.10 “Hooks” for additional information.

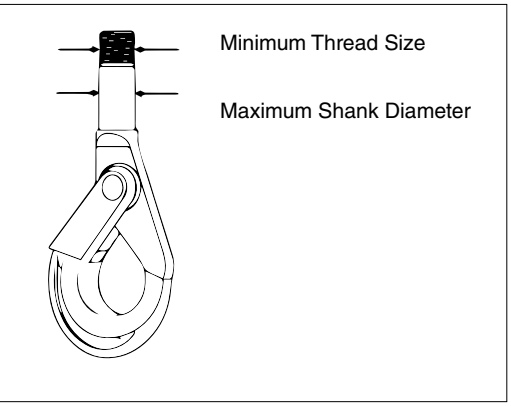
*For two legged slings with angles greater than 90°, use an intermediate link such as a master link or bolt type shackle to collect the legs of the slings. The intermediate link can then be placed over the hook to provide an en línea load on the hook. This approach must also be used when using slings with three or more legs.



RIGHT **FIGURE 3** WRONG **FIGURE 4** RIGHT **FIGURE 5**

Important Basic Machining and Thread Information: Read and Follow

- Wrong thread and/or shank size can cause stripping and loss of load.
- The maximum diameter is the largest diameter, after cleanup, that could be expected after allowing for straightness, pits, etc.
- All threads must be Class 2 or better.
- The minimum thread length engaged in the nut should not be less than one (1) thread diameter.
- Hook shanks are not intended to be swaged on wire rope or rod.
- Hook shanks are not intended to be drilled (length of shank) and internally threaded.
- Crosby cannot assume responsibility for, (A) the quality of machining, (B) the type of application, or (C) the means of attachment to the power source or load.
- Consult the Crosby Hook Identification & Working Load Limit Chart (See below) for the minimum thread size for assigned Working Load Limits (WLL).†
- Remove from service any Hook which has threads corroded more than 20% of the nut engaged length.



Crosby® Hook Identification & Working Load Limit Chart †

S-1316A & S-1317A Only Grade 100 Chain			S-1318A, S-1326A					S-1318A Only † †		
Chain Size		Working Load Limit (lb)** 4:1	Grade 100 Chain			Wire Rope XXIP Mechanical Splice		Maximum Shank Diameter		Minimum Thread Size (in)
			Chain Size		Working Load Limit (lb)** 4:1	Wire Rope Size (in)	Working Load Limit (lb)* 5:1			
(in)	(mm)		(in)	(mm)				(in)	(mm)	
—	6	3200	—	6	3200	5/16	2200	.72	18	5/8 - 11 UNC
1/4	7	4300	1/4	7 - 8	4300	7/16	4200	.94	24	5/8 - 11 UNC
5/16	8	5700	5/16	8	5700	7/16	4200	.94	24	3/4 - 10 UNC
3/8	10	8800	3/8	10	8800	1/2	5600	1.06	27	3/4 - 10 UNC
1/2	13	15000	1/2	13	15000	5/8	8600	1.19	30	1-1/8 - 7 UNC
5/8	16	22600	5/8	16	22600	7/8	16600	1.38	35	1-3/8 - 6 UNC
3/4	18/20	35300	3/4	18-20	35300	1	22000	—	—	—
7/8	22	42700	7/8	22	42700	1-1/8	26500	—	—	—
1	26	59700	1	26	59700	1-1/4	32500	—	—	—

* Ultimate Load is 5 times the Working Load Limit based on XXIP Wire Rope.

** Ultimate Load is 4 times the Working Load Limit based on Grade 100 Chain.

+ Working Load Limit - The maximum mass of force which the product is authorized to support in general service when the pull is applied in-line, unless noted otherwise, with respect to the centerline of the product. This term is used interchangeably with the following terms: 1. WLL, 2. Rated Load Value, 3. SWL, 4. Safe Working Load, 5. Resultant Safe Working Load.

Technical Information

The following information aims to give advice and explain the most common questions in order to ensure safe and proper use of lifting equipment.

It is of the utmost importance that this information is known to the user, and in accordance with the Machinery Directive 2006/42/EC this information must be delivered to the customer.

See website or user instructions for assembly instructions.

Meets listed current specifications and standards at time of publication of this catalog.

All G80 and G100 Alloy Chains, and Alloy components meet or exceed the safety standards as prescribed by ASME B30.9 and OSHA 1910-184 for slings. Always comply with applicable International, National, Federal and local regulations as they govern worksite activity. Understand all governing laws and safety standards before any products are used. Contact your International, National, Federal and local standards and regulations organizations for reference assistance.

Extreme Environments

The in-service temperature affects the WLL as follows:

Temperature (°F)	Reduction of WLL			
	Gunnebo Grade 10 (400) chain	Crosby Grade 10 & Gunnebo Grade 10 (200) chain	Crosby & Gunnebo Grade 10 components	Crosby & Gunnebo Grade 8 chain & components
-40 to + 392 °F	0 %	0 %	0 %	0 %
+392 to + 572 °F	10 %	Not allowed	10 %	10 %
+572 to + 752 °F	25 %	Not allowed	25 %	25 %

Upon return to normal temperature, the sling reverts to its full capacity within the above temperature range. Chain slings should not be used above or below these temperatures. Note: A chain sling with Grade 10 (100) chain must not be used in temperatures above 392°F.

- Chain and components must not be used in alkaline (>pH10) or acidic conditions (<pH6).
- Comprehensive and regular examination must be carried out when used in severe or corrosive inducing environments.
- In uncertain situations consult your Gunnebo Industries dealer.

Surface Treatment

Note: Hot-dip galvanizing or plating is not allowed outside the control of the manufacturer.

Protect Yourself and Others

- Before each use the chain sling should be checked for obvious damage or deterioration.
- Know the weight of the load, the center of gravity and ensure it is ready to move and no obstacles will obstruct the lift.
- Check the conformity of the load with the WLL of the ID tag for the specific working configuration. Never use a sling without a legible valid ID tag!
- Prepare the landing site.
- Never overload a sling and avoid shock loading.
- Never use an improper sling configuration.
- Never use a worn out or damaged sling.
- Never ride on the load.
- Never walk or stand under a suspended load.
- Take into consideration that the load may swing or rotate.
- Watch your feet and fingers while loading/unloading.
- Always ensure that your back is clear.

General Advice

- Ensure that the sling is precisely as ordered.
- Ensure that the manufacturers certificate is in order.
- A metal I.D. Tag must always be attached to a chain sling, showing serial number, size, reach, rated capacity at angle of lift and manufacturer.
- Ensure that all details of the chain sling are recorded.
- Ensure that the staff using the chain sling has received the appropriate information and training.

Asymmetrical Loading Conditions

For unequally loaded chain legs we recommend that the WLL are determined as follows:

- 2-leg slings calculated as the corresponding 1-leg sling
- 3 and 4-leg slings calculated as the corresponding 1-leg sling. (If it is certain that 2-legs are equally carrying the major part of the load, it can be calculated as the corresponding 2-leg sling.)

Correct Use

Machining and threading specifications for BKT shank hook

- BKT self-locking hook shank machining limits are defined and are given in TABLE 2 and these limits are required for WLL's given. Failure to comply can result in stripped threads and loss of load. Hook shank threads shall end with a thread relief. Hook shank shall not be swaged to wire rope or rod. Hook shank shall not be drilled and internally threaded.
- Gunnebo Industries cannot assume responsibility for:
  1. Machining quality,
  2. Application,
  3. Attachment to power source or load

Table 2a

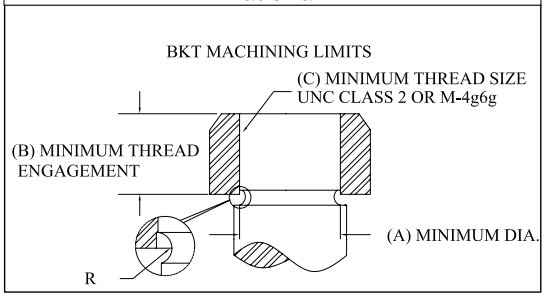
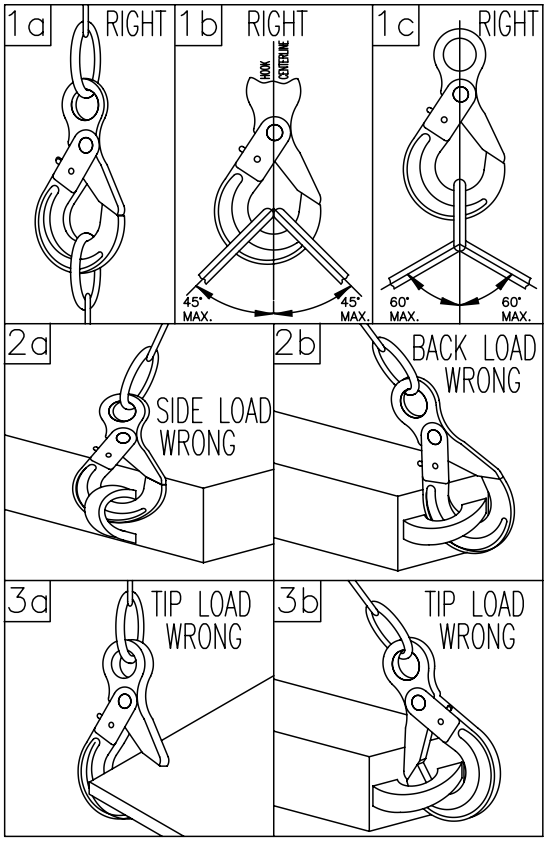


Table 2b				
English				
Trade Size		(A)	(B)	(C) Min. Thread
MM	IN	Dia.	Len.	Class 2
5/6	7/32	.430	.563	9/16-12 UNC
7/8	9/32	.485	.625	5/8-11 UNC
10	3/8	.600	.750	3/4-10 UNC
13	1/2	.820	1.00	1-8 UNC
16	5/8	1.048	1.25	1-1/4-7 UNC

Table 2c				
Metric				
Table Size		(A)	(B)	(C) Min. Thread
MM	IN	Dia.	Len.	Class 4g6g
5/6	7/32	11	14	M14x2
7/8	9/32	13	16	M16x2
10	3/8	16	20	M20x2.5
13	1/2	20	24	M24x3
16	5/8	25	30	M30x3.5

Safe use of self-locking hook

- Alloy steel BK self-locking hooks may be used to rig personnel platforms when lift system is in full compliance with OSHA 1926.1501(g) and passing the applicable inspection criteria.
- Loads shall be centered in the base (bowl/ saddle) of hook to prevent point loading of the hook (See Figure 1a, 1b & 1c).
- Hooks shall not be used in such a manner as to place a side load or back load on the hook (See Figure 2a & 2b).
- When using a device to close the throat opening of the hook, care shall be taken that the load is not carried by the closing device (See Figure 3a & 3b).
- Hands, fingers and body shall be kept from between hook and load.
- The use of a hook with a latch does not preclude the inadvertent detachment of a slack sling or a load from the hook. Visual verification of proper hook engagement is required in all cases.
- Self-locking hooks shall be locked during use.
- When a hook is equipped with a latch, the latch should not be restrained from closing during use.
- Self-locking hooks shall not be rigged with more than two (2) sling legs in the hook saddle and sling leg angles shall not be greater than 45° from hook centerline (Figure 1b).
- Self-locking hooks shall be rigged with a master ring or shackle when three (3) or more sling legs are used or sling leg angles exceed 45° from hook centerline (Figure 1c).



Correct Use

A chain sling is usually attached to the load and the crane by means of terminal fittings such as hooks, links etc.

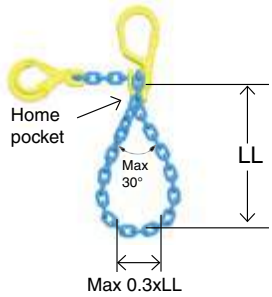
When frequently using a sling to it's maximum load, we recommend increasing the sling size by one dimension.

Chain should be without twists or knots, if the chain leg needs length adjustment use a shortening device. The lifting point should be seated well down in the terminal fitting, never on the point or wedged in the opening. The terminal fitting should be free to incline in any direction.

The chain may be passed under or through the load to form a choke hitch or basket hitch. The chain should be allowed to assume it's natural angle and should not be hammered down.

Where choke hitch is employed the WLL of the chain sling shall be reduced by 20%.

Endless chain slings shall be rated in the same way as a 2-legged sling.

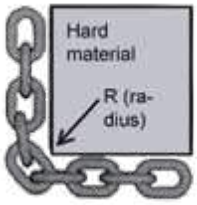


Home pocket loop shall have an internal loop top angle of max. 30°. Rule of thumb: Cross dimension of the load shall be max. 0.3 times the loop length (LL)

Definition: The home pocket is the shortening pocket of the top component directly above the clevis to which the chain is connected.

Sharp edges

Use edge protectors to prevent sharp edges from damaging the chain. If lifting over sharp edges reduce the working load with the following reduction tor.



Edge load	R >2 x chain Ø	R > chain Ø	R < chain Ø
Reduction factor	1.0	0.7	0.5

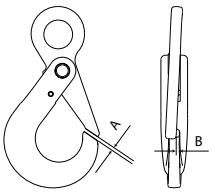
- The angle of the edge must not be below 90°.
- Chain links shall be protected from being bent or deformed and from receiving cuts or gouges.
- Chain sling WLL is to be reduced when chain is rigged over an edge radius R less than two (2) x chain diameter (d).
- Reduced WLL equals chain sling WLL from identification tag x reduction factor.
- Slings shall be padded or protected from the edges of their loads when the edge radius is less than 0.5 of the chain diameter(d).
- Slings shall be rigged to prevent chain from sliding over a load edge radius while lifting.
- Slings used in basket hitch shall have the loads balanced to prevent slipping.

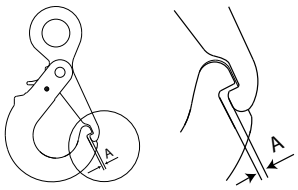
When lifting with chain directly on lugs the lug diameter > 3x the pitch of the chain, otherwise the WLL must be reduced by 50%.

Maintenance

Periodic thorough examination must be carried out at least every 12 months or more frequently according to local statutory regulations, type of use and past experience.

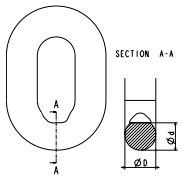
1. Overloaded chain slings must be taken out of service.
2. If the lifting equipment is more than 25 years old, it must be recorded in the inspection register. An investigation into both its previous operating history and its current use should be made, as there is a potentially significant risk of fatigue, environmental impact etc.
3. Chain and components including load pins which have been damaged, deformed, elongated, bent or showing signs of cracks or gouges shall be replaced. Carefully grind away small sharp cuts and burrs. Additional testing by magnetic particle inspection and/or proof loading at max. 2 x WLL may be carried out.
4. The maximum permissible increase in hook aperture must not exceed 10% of the products nominal dimension.
5. Check the function of latches, triggers and retaining pins / bushes, replace when necessary. Always use Gunnebo Industries original spare parts.
6. Max. clearance between hook and latch. Note: For a Griplatch hook measure the difference between dimension A with unloaded spring and dimension A when the latch is pressed against the hook. Clearance B not applicable.





Trade size		Max. clearance (A)				Max. clearance (B)	
		Material handling		Personnel handling		(NA for griplatch hooks)	
mm	inch	mm	inch	mm	inch	mm	inch
6	7/32	2.2	0.09	1.5	0.06	3.5	0.14
7/8	9/32	2.7	0.11	1.9	0.07	4.5	0.18
7	9/32	2.7	0.11	1.9	0.07	4.5	0.18
8	5/16	2.7	0.11	1.9	0.07	4.5	0.18
10	3/8	3.0	0.12	2.1	0.08	6.0	0.24
13	1/2	3.3	0.13	2.3	0.09	7.0	0.28
16	5/8	4.0	0.16	2.8	0.11	9.0	0.35
18/20	3/4	5.5	0.22	3.9	0.15	10.0	0.39
22	7/8	6.0	0.24	4.2	0.17	11.0	0.43
26	1	6.5	0.26	4.6	0.18	12.0	0.47
32	1 1/4	7.0	0.28	4.9	0.19	13.0	0.51

7. The wear of the chain and component shall in no place exceed 10% of the products nominal dimension. The chain link wear is defined and measured as the reduction of the mean diameter measured in two perpendicular directions, see picture.



$$\frac{d_1 + d_2}{2} > 0.9d_{nn}$$

d_n = nominal diameter

17

Quality assurance

Type testing

In order to prove the design, material, heat treatment and method of manufacture, each size of component and chain has been type tested in the finished condition in order to demonstrate that the component and chain possesses the required mechanical properties. The following testing procedures are particularly relevant:

Test for deformation

The Manufacturing Proof Force (MPF) for the relevant size of the component is applied and removed. The dimensions after proof loading shall not alter from the original dimensions within the tolerances prescribed in our specifications and in the international standards.

Static tensile test

The Breaking Force (BF) for each component and size is verified. The verified value shall be at least equal to the Minimum Breaking Force (MBF) value. The MBF value is equal to the Working Load Limit (WLL) multiplied by the safety factor.

Fatigue test

By fatigue testing in pulsator testing machines the toughest conditions of service are simulated.

Manufacturing testing

During manufacture continuous process tests are carried out according to the requirements in our specifications and in the latest international standards. The following testing procedures are particularly relevant:

Non destructive test

3% of every production batch of forged components are subject to magnetic particle or dye penetrating examination.

Proof force / visual inspection

Each individual component and chain link is tested to the Manufacturing Proof Force (MPF) level before delivery. The MPF level is 2.5 times the WLL, equal to 62.5% of the Minimum Breaking Force. Visual inspection is carried out on each chain link and each forged component to detect defects.

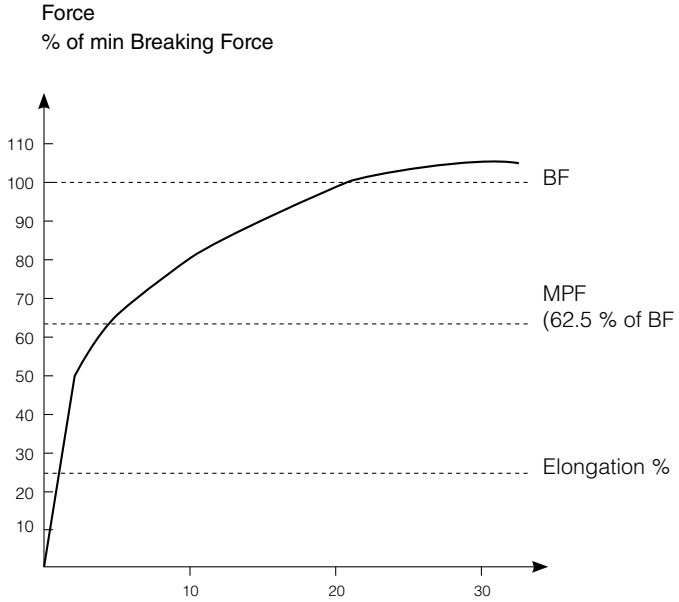
Static tensile and ultimate elongation test

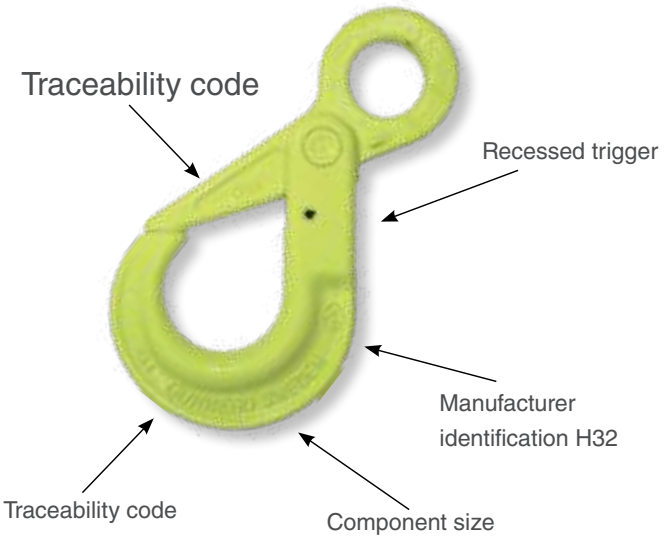
During chain manufacture, samples are tested and the Minimum Breaking Force (MBF) value and the total ultimate elongation are verified.

Bending deflection

During manufacturing, of chain and master links, samples are taken and the minimum bend deflection is verified.

Stress / elongation diagram





Crosby® S-4338 Pin Latch

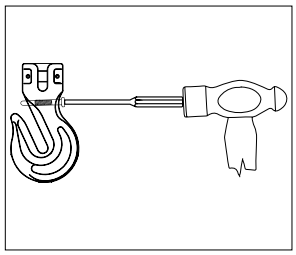
WARNING & APPLICATION INSTRUCTIONS

S-4338 Pin Latch

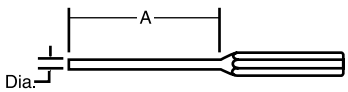
Important Safety Information Read and Follow

- Always inspect hook and pin latch before using.
- Never use a pin latch that is distorted or bent.
- Always make sure internal spring will force the pin latch forward closing throat opening of grab hook (See Figure 1).
- When a Pin Latch is provided, it is designed to retain loose chain under slack condition.
- Always make sure hook supports the load. The pin latch must never support the load (See Figure 1, 2, 3 and 4).
- Pin latch is not intended to be an anti-fouling device.
- Recommended for use with Crosby L-1338 or L-1358 Grab Hooks.

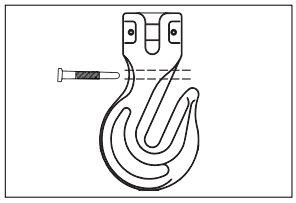
Important – Instructions for Assembling



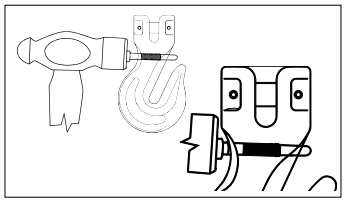
Step 1: Using a hammer and the correct roll-pin punch per chart on the right, drive the old latch pin assembly out of hook.



Hook Size (in)	Hook Size (mm)	Punch Dia. (in)	A (in)
1/4	7	7/32	3
5/16	8	7/32	3
3/8	10	7/32	3
1/2	13	5/16	4
5/8	16	3/8	4



Step 2: Insert new S-4338 pin assembly into hook.



Step 3: Using hammer, tap lightly on latch pin head until guide bushing shoulder touches hook.

⚠WARNING

- **Loads may disengage from hook if proper procedures are not followed.**
- **A falling load may cause serious injury or death.**
- **Hook must always support the load. The load must never be supported by the pin latch.**
- **See OSHA Rule 1926.1431(g)(1)(i)(A) and 1926.1501(g)(4)(iv)(B). A hook and this style latch must not be used for lifting personnel.**
- **Read and understand these instructions before using hook and pin latch.**

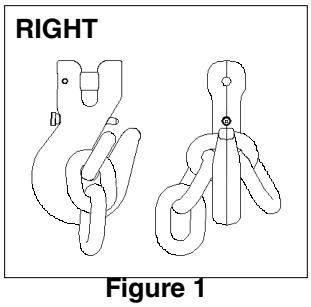


Figure 1

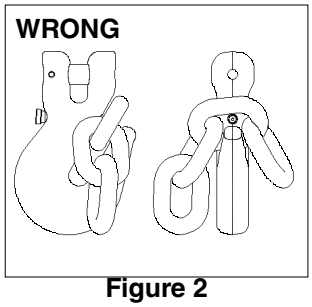


Figure 2

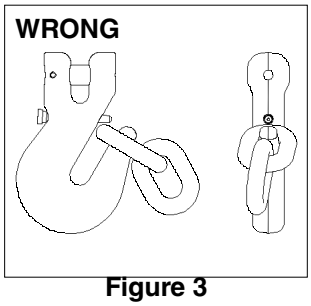


Figure 3

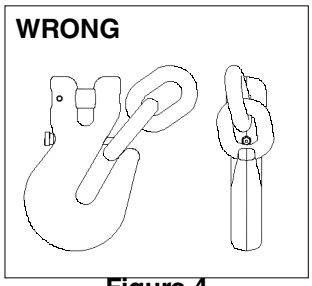


Figure 4

17

ALLOY STEEL CHAIN SLINGS AND CROSBY ELIMINATOR®

WARNING SELECTION, USE & APPLICATION INFORMATION

⚠ WARNING

- **Loads may disengage from sling if proper rigging procedures and inspection are not followed.**
- **A falling load may cause serious injury or death.**
- **Inspect sling for damage before each use.**
- **Do not attempt to use sling above rated load and angle upon which it is based.**
- **Consult sling load chart for capacity reduction due to sling angle or type of hitch used.**
- **Read and understand these instructions before using sling.**

IMPORTANT SAFETY INFORMATION

Read and Follow

These warnings and instructions are applicable to alloy chain slings produced from Crosby Grade 8 (80) and Grade 10 (100) chain and components.

- Only alloy chain, grade 80 (Crosby Spectrum 8®), or grade 100 (Crosby Spectrum 10®), should be used for overhead lifting applications.
- Working Load Limit (WLL) is the maximum load in pounds which should ever be applied to chain, when the chain is new or in "as new" condition, and when the load is uniformly applied in direct tension to a straight length of chain.
- Working Load Limit (WLL) is the maximum working load for a specific minimum sling angle, measured from the horizontal plane. The minimum sling angle and Working Load Limit is identified on the sling.
- The Working Load Limit or Design factor may be affected by wear, misuse, overloading, corrosion, deformation, intentional alterations, sharp corner cutting action diameter of curvature over which the sling is used (D/d) and other use conditions.
- Shock loading and extraordinary conditions must be taken into account when selecting alloy chain slings.
- See OSHA Regulation for Slings 1910.184, ASME B30.9-"SLINGS", ASME B30.10-"HOOKS", and ASME B30.26 "RIGGING HARDWARE" for additional information.

ASME B30.9 requires a designated person inspect each new sling and attachments prior to initial use, as well as the user or other designated person perform a visual inspection on a sling each day it is used. In addition, a periodic inspection shall be performed by a designated person at least annually, and shall maintain a record of the last inspection. For further inspection information, see Chain Inspection section of this document, or refer to ASME B30.9-1.9.

CAUSE FOR REMOVAL FROM SERVICE

A sling shall be removed from service if any of the following are visible on chain or attachments:

- Wear, nicks, cracks, breaks, gouges, stretch, bend, weld splatter, discoloration from excessive temperature, or throat openings of hooks.
- Chain links and attachments that do not hinge freely to adjacent links.
- Latches on hooks, if present, that do not hinge freely, seat properly or show evidence of permanent distortion.
- Excessive pitting or corrosion.
- Missing or illegible sling identification.
- Makeshift fasteners, hooks, or links formed from bolts, rods, etc.
- Mechanical coupling links in the body of the chain.
- Other damage that would cause a doubt as to the strength of the chain.

OPERATING PRACTICES

- The weight of the load must be known, calculated, estimated or measured. The loading on the slings will depend on where the center of gravity is located.
- Select sling having suitable characteristics for the type of load, hitch and environment.
- Slings shall not be loaded in excess of the rated capacity.
- Consideration shall be given to the sling load angle which affects rated capacity (See load chart Table 4 for Grade 100 (SPECTRUM 10®) and Table 5 for Grade 80 (SPECTRUM 8®).
- Never rig a sling with an angle less than 30 degrees to horizontal.
- Slings in a basket hitch should have the load balanced to prevent slippage.
- The sling shall be hitched in a manner providing control of the load.
- Never side load, back load, or tip load a hook.
- Always make sure the hook supports the load. The latch must never support the load.
- Read and understand Crosby hook and hook latch Warnings and Application Instructions.
- For two legged slings with angles greater than 90 degrees, use an intermediate link such as a master link or bolt type shackle to collect the legs of the slings. The intermediate link can be placed over the hook to provide an in-line load on the hook. This approach must also be used when using slings with three or more legs.
- When using chain slings in choker applications, the Working Load Limit must be reduced by 20%. Crosby recommends a minimum angle of choke of 120 degrees (see Figure 1). Consult the manufacturer when planning to use an angle of choke less than 120 degrees. If Crosby A-1338 Cradle Grab hooks are used at the minimum angle of choke of 120 degrees, the full sling rated WLL can be utilized.

Figure 1

- When using chain slings in basket applications where the D/d (see figure 2) is less than 6, the rated load must be reduced by the values given in Table 1. This reduction does not eliminate the need to protect chain slings against damage caused by contact with edges, corners, or protrusions. Do not use a chain sling with a D/d that is less than two.

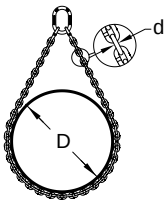


Figure 2

- In shortening applications, a 20% reduction of the Working Load Limit is required except when using the Crosby A-1338 Cradle Grab Hooks, S-1311 Chain Shortener Link, the A-1355 Chain Choker Hook in conjunction with the S-1325 Chain Coupler Link, or the Crosby ELIMINATOR® shortener link. They can be used without any reduction to the Working Load Limit.

- Slings should always be protected from being damaged by sharp corners.
- Slings should not be dragged on the floor or over abrasive surfaces.
- Chain sling links should not be twisted or kinked.
- Slings should not be pulled from under loads if the load is nesting on the sling.
- Slings that appear to be damaged should not be used unless inspected and accepted by designated person.
- All portions of the human body should be kept from between the sling and the load, and from between the sling and the crane hook or hoist hook.
- Personnel shall stand clear of the suspended load.
- Personnel shall not ride the sling.
- Shock loading should be avoided.
- Twisting or kinking the legs (branches) should be avoided.
- During lifting, with or without the load, personnel should be alert for possible snagging.
- When using a basket hitch, the legs of the sling should contain or support the load from the sides, above the center of gravity, so that the load remains under control.
- Sling shall be long enough so that the rated capacity of the sling is adequate when the angle of the legs (branches) is taken into consideration (See Table 4 for Grade 100 Chain and Table 5 for Grade 80 Chain).

General Usage

It must be recognized that certain factors in the usage of chain and attachments can be abusive and lessen the load that the chain or attachments can withstand. Some examples are twisting of the chain; disfigurement; deterioration by straining, usage, weathering and corrosion; rapid application of load or jerking; applying excessive loads; sharp corner cutting, D/d, action and non-symmetrical loading effects.

Environmental Effects

- Excessive high or low temperatures or exposure to chemically active environments such as acid or corrosive liquids or fumes can reduce the performance of the chain and components.
- Extreme temperature will reduce the performance of alloy steel chain slings.
- Normal operating temperature is –40°F to 400°F (-40°C to 200°C).
- Reference temperature exposure chart to determine reduction of WLL due to operating at, and after exposure to, elevated temperatures (see Table 2 for Grade 80 Chain and Table 3 for Grade 100 chain).
- Chemically active environments can have detrimental affects on the performance of chain. The effects can be both visible loss of material and undetectable material degradation causing significant loss of strength.

Special Surface Coating/Plating/Galvanizing

- Chain should not be subjected to galvanizing, or any plating process. If it is suspected the chain has been exposed to chemically active environment, remove from service.

Table 1
Use of Crosby Chain with Diameter of Curvature Less Than 6

D/d	Reduction of Basket Hitch Rated Load
2	40%
3	30%
4	20%
5	10%
6 and above	none

Table 2
Grade 80 Crosby & Gunnebo Chain At Elevated Temperatures

Temperature of Chain (F°)	Temperature of Chain (C°)	Temporary Reduction of Rated Load at Elevated Temperature*	Permanent Reduction of Rated Load After Exposure to Temperature**
Below 400	Below 200	None	None
400	200	10%	None
500	260	15%	None
600	316	20%	5%
700	371	30%	10%
800	427	40%	15%
900	482	50%	20%
1000	538	60%	25%
Over 1000	Over 538	OSHA 1910.184 requires all slings exposed to temperatures over 1000° F to be removed from service.	

* The Crosby Group does not recommend the use of alloy chain slings at temperatures above 800° F.
** When chain slings are used at normal operating temperature after being heated to temperatures shown in the first column.

Table 3
Grade 100 Crosby & Gunnebo Chain At Elevated Temperatures

Temperature (F°)	Temperature (C°)	Temporary Reduction of Rated Load at Elevated Temperature*	Permanent Reduction of Rated Load After Exposure to Temperature**
Below 400	Below 200	None	None
400	200	15%	None
500	260	25%	5%
600	316	30%	15%
700	371	40%	20%
800	427	50%	25%
900	482	60%	30%
1000	538	70%	35%
Over 1000	Over 538	OSHA 1910.184 requires all slings exposed to temperatures over 1000 F to be removed from service.	

* The Crosby Group does not recommend the use of alloy chain slings at temperatures above 800° F.
** When chain slings are used at normal operating temperature after being heated to temperatures shown in the first column.

CHAIN INSPECTION
INSPECTION AND REMOVAL FROM SERVICE PER ASME B30.9

Refer to ASME B30.9-1.9 for further information

Frequent Inspection

a. A visual inspection for damage shall be performed by the user or designated person each day the sling is used.
b. Conditions such as those listed in ASME B30.9-1.9.4 Removal Criteria, or any other condition that may result in a hazard, shall cause the sling to be removed from service. Slings shall not be returned to service until approved by a qualified person.
c. Written records are not required for frequent inspections.

Periodic Inspection

a. A complete inspection for damage of sling shall be periodically performed by a designated person. Each link and component shall be examined individually, taking care to expose and examine all surfaces including the inner link surface. The sling shall be examined for conditions such as those listed in ASME B30.9-1.9.4 Removal Criteria, and a determination made as to whether they constitute a hazard.
b. Periodic Inspection Frequency: Periodic inspection intervals shall not exceed one year. The frequency of periodic inspections should be based on:
   1. Frequency of sling use.
   2. Severity of service conditions.
   3. Nature of lifts being made.
   4. Experience gained on the service life of slings used in similar circumstances.

Guidelines for the interval are:
1. Normal Service – yearly
2. Severe Service – monthly to quarterly
3. Special Service – as recommended by a qualified person

c. Written records of the most recent periodic inspection shall be maintained, and shall include the condition of the sling.

Removal Criteria

An alloy sling chain shall be removed from service if conditions such as the following are present:

a. Missing or illegible sling identification.
b. Cracks or breaks.
c. Excessive wear, nicks, or gouges. Minimum thickness on chain link shall not be below the values listed in Table 6.
d. Stretched chain links or components.
e. Bent, twisted, or deformed chain links or components
f. Evidence of heat damage.
g. Excessive pitting or corrosion.
h. Lack of ability of chain or components to hinge (articulate) freely.
i. Weld spatter.
j. For hooks, removal criteria as stated in ASME B30.10.
k. Other conditions, including visible damage, that cause doubt as to the continued use of the sling.

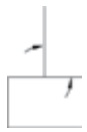
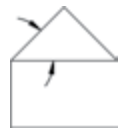
Repair

a. Slings shall be repaired only by the sling manufacturer or a qualified person.
b. A repaired sling shall be marked to identify the repairing agency per ASME B30.9 Section 9-1.7.
c. Chain and components used for sling repair shall comply with the provisions of ASME B30.9.
d. Repair of hooks shall comply with ASME B30.10.
e. Cracked, broken or bent chain links or components other than hooks shall not be repaired; they shall be replaced.
f. Mechanical coupling links shall not be used within the body of an alloy chain sling to connect two pieces of chain.
g. Modifications or alterations to the sling or components shall be considered as repairs and shall conform to all other provisions of ASME B30.9.
h. All repairs shall comply with the proof test requirements of ASME B30.9 Section 9-1.6.

Table 6
Minimum Allowable Chain Link Thickness at Any Point

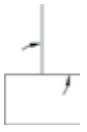
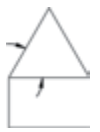
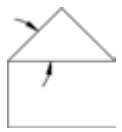
Nominal Chain Size		Minimum Thickness	
(in)	(mm)	(in)	(mm)
7/32	5.5	0.189	4.80
9/32	7	0.239	6.07
5/16	8	0.273	6.93
3/8	10	0.342	8.69
1/2	13	0.443	11.26
5/8	16	0.546	13.87
3/4	20	0.687	17.45
7/8	22	0.750	19.05
1	26	0.887	22.53
1-1/4	32	1.091	27.71
Refer to ASME B30.9			

Table 4
Grade 100 (Spectrum 10®) Alloy Chain Working Load Limit – 4 to 1 Design Factor

Spectrum 10® Alloy Chain Size		90°	60°	45°	30°	60°	45°	30°
								
(in)	(mm)	Single Leg	Double Leg / Single Basket			Triple and Quad Leg / Double Basket		
—	6	3200	5500	4500	3200	8300	6800	4800
1/4 (9/32)	7	4300	7400	6100	4300	11200	9100	6400
5/16	8	5700	9900	8100	5700	14800	12100	8500
3/8	10	8800	15200	12400	8800	22900	18700	13200
1/2	13	15000	26000	21200	15000	39000	31800	22500
5/8	16	22600	39100	32000	22600	58700	47900	33900
3/4	20	35300	61100	49900	35300	91700	74900	52950
7/8	22	42700	74000	60400	42700	110900	90600	64000
1	26	59700	103400	84400	59700	155100	12600	89550
1-1/4	32	90400	156600	127800	90400	234900	191700	135600

* For choker applications, the Working Load Limit must be reduced by 20%. The Crosby A-1338 cradle grab hook and S1311N chain shortener link do not require any reduction of the Working Load Limit. The design factor of 4 to 1 on Spectrum® 10 Alloy Chain agrees with the design factor used by the International Standards Organization (I.S.O.) and ANSI B30.9 and is the preferred set of Working Load Limit values to be used. Do not use sling angles of less than 30°.

Table 5
Grade 80 (Spectrum 8®) Alloy Chain Working Load Limit – 4 to 1 Design Factor

Spectrum 8® Alloy Chain Size		90°	60°	45°	30°	60°	45°	30°
								
(in)	(mm)	Single Leg	Double Leg / Single Basket			Triple and Quad Leg / Double Basket		
—	6	2500	3600	3000	2500	6500	5300	3750
1/4 (9/32)	7	3500	6100	4900	3500	9100	7400	5200
5/16	8	4500	7800	6400	4500	11700	9500	6800
3/8	10	7100	12300	10000	7100	18400	15100	10600
1/2	13	12000	20800	17000	12000	31200	25500	18000
5/8	16	18100	31300	25600	18100	47000	38400	27100
3/4	20	28300	49000	40000	28300	73500	60000	42400
7/8	22	34200	59200	48400	34200	88900	72500	51300
1	26	47700	82600	67400	47700	123900	101200	71500
1-1/4	32	72300	125200	102200	72300	187800	153400	108400

* For choker applications, the Working Load Limit must be reduced by 20%. The Crosby A-1338 cradle grab hook and S1311N chain shortener link do not require any reduction of the Working Load Limit. The design factor of 4 to 1 on Spectrum® 8 Alloy Chain agrees with the design factor used by the International Standards Organization (I.S.O.) and ASME B30.9 and is the preferred set of Working Load Limit values to be used. Do not use sling angles of less than 30°.

CROSBY ELIMINATOR®

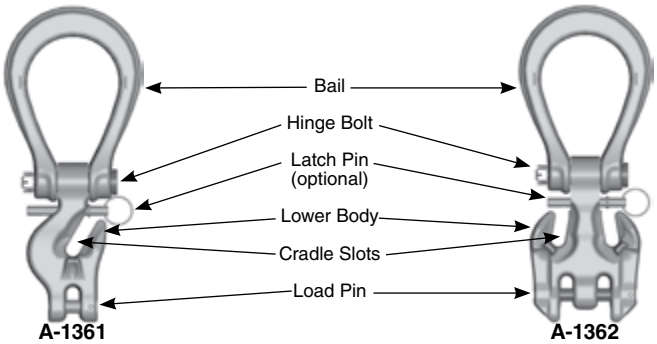
WARNING & APPLICATION INSTRUCTIONS

⚠ WARNING

- **Failure to read, understand, and follow these instructions may cause death or serious injury.**
- **Read and understand these instructions before using the Crosby ELIMINATOR®.**
- **Incorrectly rigging or terminating exerts additional force or loading, which the Crosby ELIMINATOR® is not designed to accommodate.**

Crosby ELIMINATOR® Definitions

The **Crosby ELIMINATOR®** consists of a bail, hinge bolt, latch pin, and lower body with cradle slot/slots.



The **Crosby ELIMINATOR®** incorporates markings forged into the product which address a **QUIC-CHECK®** feature:

Deformation Indicators – Two strategically placed marks on each leg of the bail, which allows for a **QUIC-CHECK®** measurement to determine if the bail opening has changed, thus indicating abuse or overload. To check, use a measuring device (i.e. tape measure) to measure the distance between the marks. The marks should align to either an inch or half-inch increment on the measuring device. If the measurement does not meet criteria, the **Crosby ELIMINATOR®** bail should be inspected further for possible damage.

Important Safety Information Read and Follow

- A visual periodic inspection for cracks, nicks wear, gouges and deformation as part of a comprehensive documented inspection program, should be conducted by trained personnel in compliance with ANSI B30.9.
- Remove from service any **Crosby ELIMINATOR®** components with a crack, nick, or gouge. The bail and body of a **Crosby ELIMINATOR®** with nick or gouge shall be repaired by a qualified person. The qualified person shall repair by grinding longitudinally following the contour of the forging, provided that the reduced dimension is within the limits shown in (Fig. A).

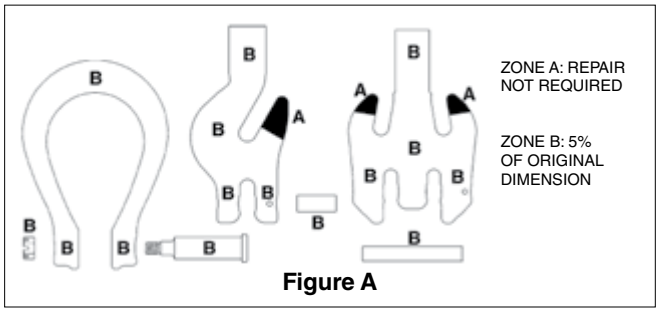


Figure A

- Never repair, alter, rework, or reshape a **Crosby ELIMINATOR®** by welding, heating, burning, or bending.
- **Crosby ELIMINATOR®** combination master link and chain shortener shall not be used in a manner other than that for which it is intended.
- The sling may be shortened by use of the cradle slot/slots (see Fig. C).
- In shortening applications, the **Crosby ELIMINATOR®** can be used without any reduction to the Working Load Limit.
- Never terminate (i.e. place a load bearing chain sling hook), or reeve load bearing chain through **Crosby ELIMINATOR®** bail (see Fig. B).
- Never exceed the rated capacity shown on sling's identification tag.
- Attach lifting device to ensure free fit of **Crosby ELIMINATOR®** bail (see Fig. D). Never allow lifting device to apply forces on side of bail (see Fig. E), as this condition will damage and reduce the capacity of the **Crosby ELIMINATOR®.**
- The **Crosby ELIMINATOR®** is intended for tension or pull. Side loading must be avoided, as it exerts additional force or loading which the product is not designed to accommodate (see Fig. F).

Figure B

Figure C

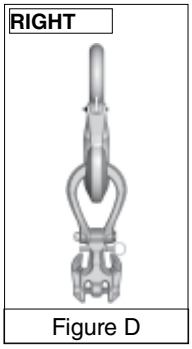


Figure D

Figure E

Figure F

- Never use a **Crosby ELIMINATOR®** where the bail shows signs of deformation or overloading (see Table 1).
- Read and understand the other sections of the ALLOY STEEL CHAIN SLINGS Warning, Selection, Use & Maintenance Information.

TABLE 1
Crosby ELIMINATOR® Bail Dimensions

Chain Size (in)	Chain Size (mm)	Frame I.D. Code	Inside Length (in)	Inside Width (in)	Jaw Width (in)	QUIC-CHECK® Dim (in)
1/4 - 5/16	7 - 8	2	3.88	3.00	.94	3.50
3/8	10	3	4.81	3.50	1.13	4.00
1/2	13	4	6.00	4.13	1.31	5.00
5/8	16	5	6.88	4.75	1.63	6.00

- A **Crosby ELIMINATOR®** under load shall be allowed to self-align itself about the hinge pin.
- The use of a latch may be mandatory by regulations or safety codes; e.g. OSHA, MSHA, ASME B30.10 and B30.9.
- If Crosby latch pin is present, it should fit and function properly, and show no signs of distortion or bending.
- Always make sure the chain is seated in the cradle slot, and the cradle supports the load. The latch pin must never support the load.
- Latch pins are not intended to be an anti-fouling device.
- Use only genuine Crosby repair and latch pins parts.

A-1361 Single Leg Crosby ELIMINATOR®

- The A-1361 single leg **Crosby ELIMINATOR®** is designed to support a single leg vertical load. The cradle slot may be used to make a loop in the leg (see Fig. G). However, the Working Load Limit is still limited to the single leg values shown in Table 4 (Grade 100) and Table 5 (Grade 80).
- To produce a single basket hitch and achieve the full Working Load Limit, use only one length of chain with both ends terminated into the load pins of two A-1361 single leg **Crosby ELIMINATOR®** fittings (see Fig. H). Basket may be shortened with cradle slot.
- Never exceed the single leg Working Load Limit shown in Table 4 (Grade 100) and Table 5 (Grade 80) for an individual A-1361 **Crosby ELIMINATOR®** fitting.

Figure G

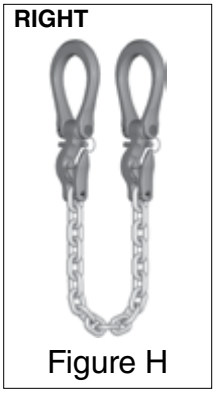


Figure H

A-1362 Double Leg Crosby ELIMINATOR®

- The A-1362 double leg **Crosby ELIMINATOR®** is designed to support symmetrically loaded double leg slings at 60, 45, and 30 degree horizontal angles. The cradle slots may be used to make loops in the legs (see Fig. J). However, the Working Load Limit is limited to the double leg values shown in Table 4 (Grade 100) and Table 5 (Grade 80).
- To produce a single basket hitch, and achieve the full Working Load Limit, use only one length of chain with both ends terminated into the load pin (see Fig. K). Basket may be shortened with the cradle slot or slots.
- To produce a double basket hitch and achieve the full Working Load Limit, two A-1362 double leg **Crosby ELIMINATOR®** fittings must be used, with both being terminated at their load pin (see Fig. L).
- Never exceed the double leg / single basket Working Load Limit on an individual A-1362 **Crosby ELIMINATOR®** fitting.

Figure J

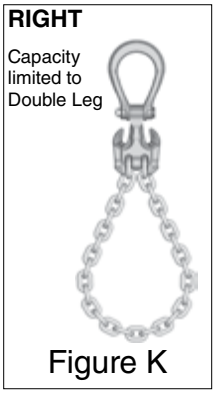


Figure K

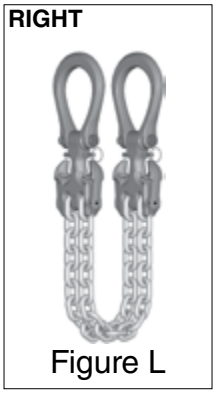


Figure L

Alloy Fittings Application and Information

HOW TO ASSEMBLE AN S-1325 COUPLER LINK ONTO MASTER LINK

1. Slide Coupler Link over Engineered Flat of Master Link.

2. Rotate Coupler Link so that clevis fitting is to the outside of Master Link and attach to chain sling.

HOW TO ASSEMBLE A CROSBY CLEVIS TYPE FITTING

1. Place chain link into clevis of chain coupler. Insert pin fully into the clevis ears.

2. Place the coupler link on its side and using a hammer, drive the locking pin into the clevis ear until it is flush with the outside surface.

HOW TO ASSEMBLE A LOK-A-LOY® CONNECTING LINK

1. Place the locking sleeve between the assembled half link forgings.

2. Drive the pin through the assembled link ends and sleeve until the end of the pin is flush with the outside of the connecting link halves.

HOW TO ASSEMBLE LOAD PIN IN CROSBY ELIMINATOR® FITTINGS

1. Place both chain links into clevis slots of fitting, insert pin fully into the two-leg clevis.

2. Place Eliminator assembly on a firm surface. Using a hammer, drive the locking pin into the two-leg clevis until it is flush with the top of the hole.

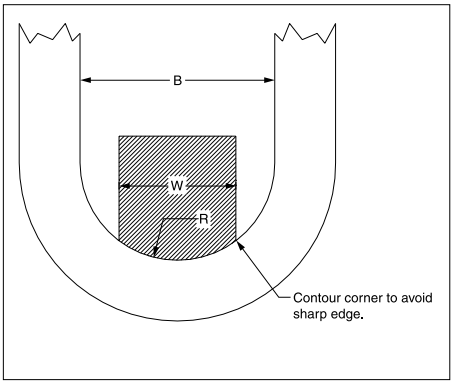


Figure 1

Crosby master links and master link assemblies are proof tested with special fixtures in accordance with ASTM A952 and EN-1677-4. The purpose of the special fixture is to prevent localized point loading during the proof test. Point loading at the proof test load may result in permanent deformation. ASTM A952 allows for a maximum proof test fixture width (W) of 60% of the inside width (B) of the master link. EN 1677-4 allows for a maximum proof test fixture width (W) of 70% of the inside width (B) of the master link. The radius of the fixture (R) is one-half of inside width of the master link. A sketch showing an example of the special fixture is shown in Figure 1. Note that the corner of the fixture should be contoured so that a sharp edge does not make contact with the master link during the loaded condition.

Over the years some master links and master link assemblies have changed dimensions and working load limits. Special consideration should be given to the actual inside width of the master link being tested and its correct allowable proof load value. If the correct allowable proof load value is in question, then Crosby Engineering should be consulted for the appropriate proof load value.

Grade 80 & 100 Alloy Chain

WORKING LOAD LIMIT

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

PROOF TEST

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

MINIMUM ULTIMATE LOAD

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

ATTACHMENTS

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

SYMMETRICAL LOADING

Rated Working Load Limit assumes symmetrical loading of all sling legs.

SPECIFICATIONS: ASME B30.9 2006

Paragraph 9-1.6.1 "Prior to initial use, all new and repaired chain and components of an alloy steel chain sling, either individually or as an assembly, shall be proof tested by the sling manufacturer or qualified person."

CAUTION

Only Crosby Alloy chain, Spectrum 8® or Spectrum 10®, should be used for overhead lifting applications.

General Usage – It must be recognized that certain factors in the usage of chain and attachments can be abusive and lessen the load that the chain or attachments can withstand. Some examples are twisting of the chain; disfigurement; deterioration by straining, usage, weathering and corrosion; rapid application of load or jerking; applying excessive loads; sharp corner cutting action and non-symmetrical loading effects.

When using chain slings in choker applications, the Working Load Limit must be reduced by 20%. Crosby recommends a minimum angle of choke of 120 degrees. Consult Crosby when planning to use an angle of choke of less than 120 degrees. If Crosby A-1338 cradle grab hooks are used at a minimum angle of choke of 120 degrees, the full sling rated WLL can be utilized.

In shortening applications, a 20% reduction of the Working Load Limit is required except when using the Crosby A-1338 Cradle Grab Hooks, S-1311 Chain Shortener Link, the A-1355 Chain Choker Hook in conjunction with the S-1325 Chain Coupler Link, or the Crosby ELIMINATOR® shortener link. They can be used without any reduction to the Working Load Limit.

Care should be taken to observe these derated applications or chain may fracture or permanently stretch at loads less than the advertised chain ultimate strength and proof load respectively.

Environmental Effects – Excessive high or low temperatures, or exposure to chemically active environments such as acids or corrosive liquids or fumes, can reduce the performance of the chain.

Temperature

- Extreme temperatures will reduce the performance of alloy steel chain slings.
- Normal operating temperature is -40° F to 400° F (-40° C to 204° C).
- See the Temperatura exposure chart (Tabla 1) to determine Reducción de WLL due to operation at, and exposure to, elevated Temperaturas.

Chemically Active Environments can have detrimental effects on the performance of chain. The effects can be both visible loss of material and undetecTabla material degradation causing significant loss of strength.

- Usage Exposure – Exposure to chemically active environments such as acids or corrosive liquids or fumes can reduce the performance of the chain.
- Special Surface Coating/Plating/Galvanizing – Chain should not be subjected to galvanizing, or any plating process.
- If it is suspected that the chain has been exposed to chemically active environment, remove from service.

TABLE 1
Use of Crosby Alloy Chain at Elevated Temperatures

Temperature of Chain		Grade 8 (80) Chain		Grade 10 (100) Chain	
(F°)	(C°)	Temporary Reduction of Rated Load at Elevated Temperature*	Permanent Reduction of Rated Load After Exposure to Temperature**	Temporary Reduction of Rated Load at Elevated Temperature*	Permanent Reduction of Rated Load After Exposure to Temperature**
Below 400	Below 200	None	None	None	None
400	200	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	OSHA 1910.184 and ASME B30.9 requires all slings exposed to temperatures over 1000° F to be removed from service.			

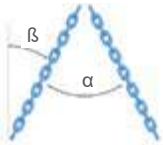
* Crosby does not recommend the use of Alloy Chain at temperatures above 800° F.

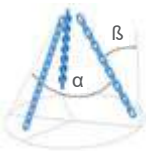
** When chain is used at room temperature after being heated to temperatures shown in the first column.

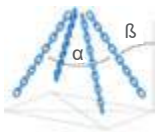
Working load limits - Europe

Based on EN 818-4:2008 WLL+25%

WLL tonnes Grade 10 GrabiQ





Sling type	1-leg	2-leg		3- and 4-leg		Choke Hitch
Condition of use	Straight	ß 0-45° α 0-90°	ß 45-60° α 90-120°	ß 0-45° α 0-90°	ß 45-60° α 90-120°	Endless sling in choke hitch
Load factor	1	1.4	1	2.1	1.5	1.6
Chain size						
6	1.4	2	1.4	3	2.12	2.24
7	1.9	2.65	1.9	4	2.8	3
8	2.5	3.55	2.5	5.3	3.75	4
10	4	5.6	4	8	6	6.3
13	6.7	9.5	6.7	14	10	10.6
16	10	14	10	21.2	15	16
18	12.5	18	12.5	26.5	19	20
19	14	20	14	30	21.2	22.4
20	16	22.4	16	33.5	23.6	25
22	19	26.5	19	40	28	30
23	21.2	28	21.2	42.5	31.5	33.5
26	26.2	37.5	26.5	56	40	42.5
28	31.5	42.5	31.5	63	45	50
32	40	56	40	85	60	63

Safety factor 4:1. Working load limits are based upon equally loaded and disposed sling legs.

WLL tonnes Grade 8 Classic

EN 818-4:2008





Sling type	1-leg	2 -leg		3- and 4-leg		Choke Hitch
Condition of use	Straight	ß 0-45° α 0-90°	ß 45-60° α 90-120°	ß 0-45° α 0-90°	ß 45-60° α 90-120°	Endless sling in choke hitch
Load factor	1	1.4	1	2.1	1.5	1.6
Chain size						
6	1.12	1.6	1.12	2.36	1.7	1.8
7	1.5	2.12	1.5	3.15	2.24	2.5
8	2	2.8	2	4.25	3	3.15
10	3.15	4.25	3.15	6.7	4.75	5
13	5.3	7.5	5.3	11.2	8	8.5
16	8	11.2	8	17	11.8	12.5
18	10	14	10	21.2	15	16
19	11.2	16	11.2	23.6	17	18
20	12.5	17	12.5	26.5	19	20
22	15	21.2	15	31.5	22.4	23.6
23	16	23.6	16	35.5	25	26.5
26	21.2	30.0	21.2	45	31.5	33.5
28	25	33.5	25	50	37.5	40
32	31.5	45.0	31.5	67	47.5	50

Safety factor 4:1. Working load limits are based upon equally loaded and disposed sling legs.

Rules for correct WLL

Where choke hitch is employed, the WLL of the chain sling should be reduced by 20 % (unless the LK choker hook is used).

Asymmetrical loading conditions

For unequally loaded chain slings, the following is recommended:

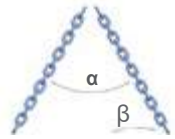
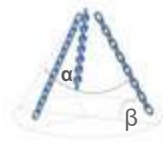
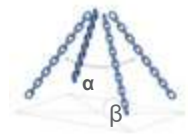
- A two-legged system is treated as a single-legged system.
- A three- or four-legged system is treated as a two-legged system.

Working Load Limits - United States

WLL lb Grade 10 GrabiQ

Working Load Limits in pounds for chain slings grade 10, according to NACM

Based on A 906/A 906M-2

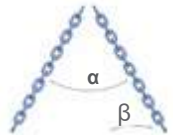
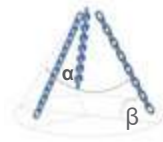
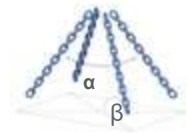
			1-leg	2-leg		3- and 4-leg		
								
				β 60°	β 45°	β 30°	β 60°	β 45°	β 30°
Chain size (mm)	Chain size (in)	WLL (lb)		α 60°	α 90°	α 120°	α 60°	α 90°	α 120°
6	-	3300		5500	4625	3300	8400	6800	4850
7	9/32"	4300		7400	6100	4300	11200	9100	6400
8	5/16"	5700		9900	8100	5700	14800	12100	8500
10	3/8"	8800		15200	12400	8800	22900	18700	13200
13	1/2"	15000		26000	21200	15000	39000	31800	22500
16	5/8"	22600		39100	32000	22600	58700	47900	33900
20	3/4"	35300		61100	49900	35300	91700	74900	52950
22	7/8"	42700		74000	60400	42700	110900	90600	64000
26	1"	59700		103100	84100	59500	155600	126600	89250
32	1-1/4"	88160		152700	124600	88160	229000	186950	132200

Note 1: WLL for 2-leg sling and single leg basket slings = 2 x 1-leg WLL x sin of horizontal angle α
Note 2: WLL for 3- and 4-leg sling and 2-leg basket slings = 3 x 1-leg WLL x sin of horizontal angle α
Note 3: WLL based upon equally loaded and disposed sling legs

WLL lb Grade 8 Classic

Working Load Limits in pounds for chain slings grade 8, according to NACM

Based on A 906/A 906M-2

			1-leg	2-leg		3- and 4-leg		
								
				β 60°	β 45°	β 30°	β 60°	β 45°	β 30°
Chain size (mm)	Chain size (in)	WLL (lb)		α 60°	α 90°	α 120°	α 60°	α 90°	α 120°
6	-	2450		4200	3300	2425	6400	5050	3525
7	9/32"	3500		6100	4900	3500	9100	7400	5200
8	5/16"	4500		7800	6400	4500	11700	9500	6800
10	3/8"	7100		12300	10000	7100	18400	15100	10600
13	1/2"	12000		20800	17000	12000	31200	25500	18000
16	5/8"	18100		31300	25600	18100	47000	38400	27100
20	3/4"	28300		49000	40000	28300	73500	60000	42400
22	7/8"	34200		59200	48400	34200	88900	72500	51300
26	1"	47700		82600	67400	47700	123900	101200	71500
32	1-1/4"	72300		125200	102200	72300	187800	153400	108400

Note 1: WLL for 2-leg sling and single leg basket slings = 2 x 1-leg WLL x sin of horizontal angle α
Note 2: WLL for 3- and 4-leg sling and 2-leg basket slings = 3 x 1-leg WLL x sin of horizontal angle α
Note 3: WLL based upon equally loaded and disposed sling legs

Working load limits - Australia

WLL tonnes Grade 10 GrabiQ

Based on AS 3775.2:2014

Sling type	1-leg			2-, 3- and 4-leg				Basket Slings		GrabiQ home pocket loop		
Condition of use	Straight	Adjustable with no deration	Reeved sling (Choke)	Straight 60°	Straight 90°	Straight 120°	Reeved (Choke) Max angle 60°	1-leg	2-leg	1-leg α max 30°	2-,3- and 4-leg 60° α max 30°	2-,3- and 4-leg 90° α max 30°
Load factor	1	1	0.75	1.73	1.41	1	1.3	1.3	2.25	1	1.73	1.41
Chain size												
6	1.4	1.4	1.1	2.4	2	1.4	1.8	1.8	3.4	1.5	2.6	2.1
7	1.9	1.9	1.4	3.3	2.7	1.9	2.5	2.5	4.3	2	3.3	2.7
8	2.5	2.5	1.9	4.3	3.5	2.5	3.3	3.3	5.9	2.6	4.5	3.7
10	4	4	3	6.9	5.6	4	5.2	5.2	9	4	6.9	5.6
13	6.7	6.7	5	11.6	9.4	6.7	8.8	8.8	15.3	6.8	11.8	9.6
16	10	10	7.5	17.3	14.1	10	13	13	23.2	10.3	17.8	14.5
20	16	16	12	27.7	22.6	16	20.8	20.8	36	-	-	-
22	19	19	14.3	32.9	26.8	19	24.7	24.7	45	-	-	-
26	26.5	26.5	19.9	45.8	37.4	26.5	34.5	34.5	60.7	-	-	-
32	40	40	30	69.2	56.4	40	52	52	90	-	-	-

Note 1: Advice regarding the appropriate deration should be sought by the manufacturer
Note 2: The determination of the angle of the multi-leg sling is the largest angle at the apex of the configuration
Note 3: Reeved (choke) slings and basket slings, in a two leg configuration have a maximum angle for us of 60°
Note 4: In the 2-leg basket sling, the master link to be used shall be of an appropriate WLL and with intermediate links. This ensures that the factor 2,25 can be accommodated and that there is no overcrowding with back hooking.
Note 5: For engineered lifts, see Clause 7.2.2 in AS 3775.2:2014

WLL tonnes Grade 8 Classic in Australia

Based on AS 3775.2:2014

Sling type	1-leg			2-, 3- and 4-leg				2-leg
Condition of use	Straight	Adjustable with no deration	Reeved sling (Choke)	Straight β 60°	Straight β 90°	Straight β 120°	Reeved (Choke) Max angle 60°	Basket
Load factor	1	1	0.75	1.73	1.41	1	1.3	2.25
Chain size								
6	1.1	1.1	0.8	1.9	1.6	1.1	1.5	2.5
7	1.5	1.5	1.1	2.6	2.1	1.5	2	3.4
8	2	2	1.5	3.5	2.8	2	2.6	4.5
10	3.2	3.2	2.4	5.5	4.5	3.2	4.1	7.2
13	5.3	5.3	4	9.2	7.5	5.3	6.9	11.9
16	8	8	6	13.8	11.3	8	10.4	18
19	11.2	11.2	8.4	19.4	15.8	11.2	14.6	25.2
20	12.5	12.5	9.4	21.6	17.6	12.5	16.3	28.1
22	15	15	11.3	26	21.2	15	19.5	33.8
26	21.2	21.2	15.9	36.7	29.9	21.2	27.6	47.7
32	31.5	31.5	23.6	54.5	44.4	31.5	41	70.9

Note 1: Advice regarding the appropriate deration should be sought by the manufacturer
Note 2: The determination of the angle of the multi-leg sling is the largest angle at the apex of the configuration
Note 3: Reeved (choke) slings and basket slings, in a two leg configuration have a maximum angle for us of 60°
Note 4: In the 2-leg basket sling, the master link to be used shall be of an appropriate WLL and with intermediate links. This ensures that the factor 2,25 can be accommodated and that there is no overcrowding with back hooking.
Note 5: For engineered lifts, see Clause 7.2.2 in AS 3775.2:2014

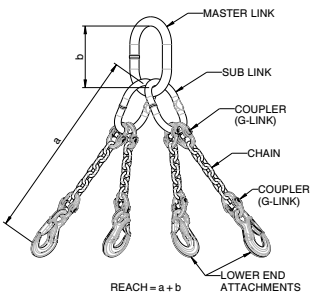
Tips for chain sling assembly

General

1. The reach of the sling is the length measured from the load bearing surface of the master link to the load bearing surface of the hook or lower terminal (as shown in illustrations).
2. A metal ID tag must always be attached to a chain sling, showing serial number, size, reach, Working Load Limit at angle of lift and manufacturer.
3. Each sling manufactured shall have a completed certificate of test provided to user.

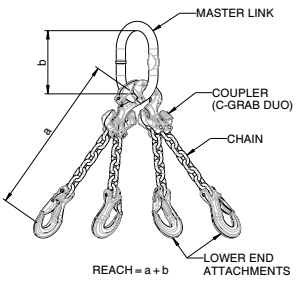
Classic chain slings

4. Single Leg Sling
   If the required measurement falls in the middle of a link, the next link is cut.
5. Double Leg Sling (clevis system)
   Cut chain to length and count the links. You must have an even number of links so hooks hang in the correct plane. Hooks should always point out, as shown in diagram.
6. Triple or Quadruple Leg Sling (clevis system)
   Cut chain to length and count the links. You must have an odd number of links so hooks hang in the correct plane. Hooks should always point out, as shown in diagram. If the measurement falls in the middle of a link, the next link that produce an odd number is cut.



GrabiQ chain slings

7. It is a common practice, when possible, to keep all hooks in the same plane as the master link. This is easily accomplished on 1, 2, & 4 leg slings. It is not possible with 3-leg GrabiQ slings when single and dual fittings are mixed.
8. It is a common practice, when possible, to attach hooks so that latches point away from the master link.
9. Mixing GrabiQ fittings: Adding two additional chain links to the CL & CLD gives the same effective reach as CG & CGD. The MG & MGD have the same effective reach.
10. Normally, the master link will have a maximum of two connecting links, CG, CGD, CL, or CLD. The maximum number of connecting links that can ever be mounted on a single master link is three, when constructing a double leg basket.



11. A GrabiQ sling can never have more than four independent legs or two basket legs.
12. Attaching CG, CGD, CL, & CLD connectors to MF and MFX Master Links: Insert the connector onto the master link at the engineered flat. C-Connecting links are normally attached to the master link using the Dismountable Connecting Set type CS or the Permanent Connecting Set type CP. Each C-Connector includes one solid retainer pin, 1 larger rolled spring keeper pin and 1 smaller rolled spring keeper pin. When the dismountable connecting set is used the sling can be disassembled for repair. The permanent connecting set cannot be disassembled for repair.
    a. CS – First install the solid retainer pin. Second drive the smaller rolled spring keeper pin through the hole provided at a right angle to the solid retainer pin. The fit should be very snug.
    b. CP – First install the solid retainer pin. Second drive the larger rolled spring keeper pin into the same hole, directly behind solid retainer pin. The fit should be very snug.

Technical Information

Chain Manufacturing - Quality and Strength Requirements

Chains are divided into grades based on minimum nominal breaking stress.

Chain Grade	Surface treatment	Code	Minimum breaking stress N/in²	Minimum breaking stress N/mm²	Mean breaking stress "ksi"	Load factors			Typical use
						WLL	MPF	Breaking force	
8	Yellow U Black B	KL	31.50	800	116	1	2.5	4	General lifting (KL), Container lashing (LL). Extra heavy towing (ML), Lashing (KL, LL). Fishing (KL, ML, LL)
		ML	31.50	800	116	-	1	4	
		LL	31.50	800	116	-	1	4	
10	Blue A	KL	39.37	1000	145	1	2.5	4	General lifting

Testing and Quality Control- GrabiQ & Classic Chain (Grade 10 & 8)

In each step of the manufacturing of the chain, our systematic quality monitoring will ensure the highest safety and the longest life span in the product. Here are some especially important aspects of quality:

Material

The incoming material is supplied with test certificates only from qualified manufacturers and according to our stated material specifications.

Manufacturing

During forming and welding, the operators continuously control that the links meet the specified dimensions both before and after welding.

Single link samples are continuously mandrel tested on the weld. Shape, dimensions and deburring are then inspected visually.

Sample lengths are heat treated and then destruction load tested. Following these tests, the chain is heat treated.

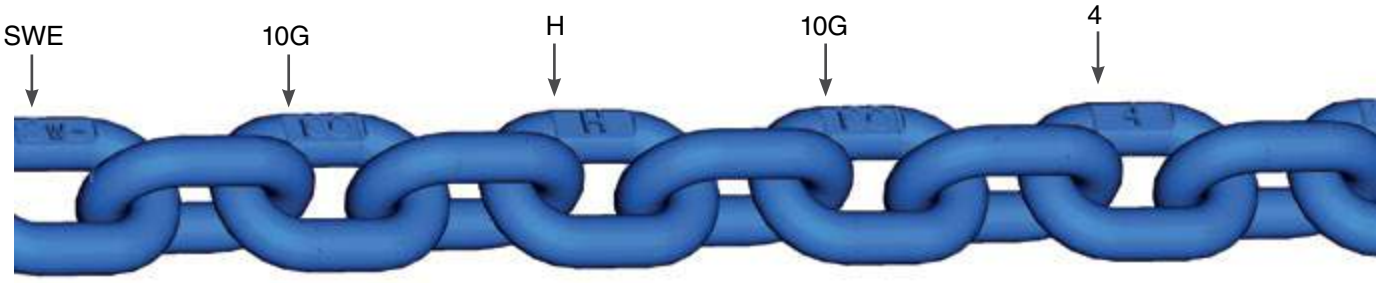
Hardening and tempering is carried out continuously in computer controlled induction furnaces with regular samplings.

Proof Force

The entire chain is test loaded. The manufacturing proof force for short link chain is 2.5 times the permitted working load limit. This gives the chain high safety in use. The chain is then visually inspected and cut into delivery lengths. A sample is taken from every length and tested to destruction. Dimensions and shape are also checked. All results are documented.

Marking and Traceability

The international standards for lifting chain require that the chain is marked with Grade and Manufacturers ID. On our chain we stamp "SWE - 10G - H - 10G - 4", where the "H" and the "4" is the combination for the traceability code. In case of the unlikely event of chain failure, we can trace the specific chain link back to the very batch and raw material as well as the year and place of manufacture. Each individual delivery length also has its unique batch number.



Use

- Never lift with a twisted chain.
- Use shortening hooks, knotting is not allowed.
- Use edge protectors to prevent sharp edges from damaging the chain.

See website or user instructions for assembly instructions.

Meets listed current specifications and standards at time of publication of this catalog.

Maintenance

Periodic thorough examination must be carried out at least every 12 months or more frequently according to local statutory regulations, type of use and past experience.

1. Overloaded chain slings must be taken out of service.
2. Chain and components including load pins which have been damaged, deformed, elongated, bent or showing signs of cracks
   or gouges shall be replaced. Carefully grind away small nicks and burrs.
3. Additional testing by magnetic particle inspection and/or proof loading at max. 2 x WLL may be carried out. The wear of the chain and component shall in no place exceed 10% of the original dimensions.
4. The chain link wear - max. 10% - is defined as the reduction of the mean diameter measured in two directions.

Severe Environment

Chain and components must not be used in alkaline (>pH10) or acidic conditions (<pH6). Comprehensive and regular examination must be carried out when used in severe or corrosive inducing environments. In uncertain situations consult your Gunnebo Industries dealer.

Extreme Temperature Conditions

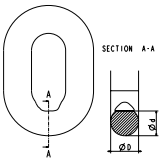
The in service temperature effects the WLL as following :

Temperature (°F)	Reduction of WLL			
	Grade 10 chain (400)	Grade 10 chain (200)	Grade 10 components	Grade 8 chain & components
-40 to +392 °F	0 %	0 %	0 %	0 %
+392 to +572 °F	10 %	Not allowed	10 %	10 %
+572 to +752 °F	25 %	Not allowed	25 %	25 %

After short heat exposure, maximum one hour, the sling reverts to its full capacity. Upon return to normal temperature, the sling reverts to its full capacity within the above temperature range. Chain slings should not be used above or below these temperatures. **For chain grade 10(200) the maximum in service temperature is 200° C.**

Definitions

Proof force:
Each individual chain link is tested to the Manufacturing Proof Force (MPF) level before delivery. The MPF level is 2.5 times the WLL, equal to 62.5% of the Minimum Breaking Force.



$$\frac{D+d}{2} > 0.9d_n$$

Breaking force (BF):
The highest static force a chain is exposed to during test loading before breaking.

Working load limit (WLL):
The maximum permitted load on a lifting chain under normal (vertical) lifting conditions.

Total ultimate elongation:
The elongation of the test item, relative to the original length, at the moment of breaking.

Scope

This procedure is provided to give instructions for installation of wire rope into the Crosby® SB-427B Spelter Button using WIRELOCK® socketing material, or zinc socketing material. **Additionally, instructions regarding the reuse of spelter buttons are included.** The spelter button is part of a socket assembly that includes a socket basket, pin, cotter pin and button. If there are any questions regarding these instructions, please contact The Crosby Group LLC at (918) 834-4611 and request technical assistance.

NOTE: Many high performance ropes require special attention to prevent rope damage during cutting, seizing and brooming in preparation for the speltering operation. Attention to the special instructions is required to ensure proper termination efficiency. Consult rope manufacturer for specific details.

Installation

Install button on the rope so that the live end of the rope extends out of small inside diameter of the button. Broomed end of rope should be pulled into button and placed completely to the “MAX FILL” line marked on the button to ensure correct length of engagement with socketing material.

Socketing using WIRELOCK® Resin Material

Seizing, cleaning, brooming and preparation of wire rope and pouring of WIRELOCK® is to be carried out per instructions provided in the *Wire Rope End Terminations User’s Manual,* and *WIRELOCK® Warnings and Application Instructions* located on the WIRELOCK® Product or in the Crosby General Catalog.

Socketing Using Zinc Spelter Material

Seizing, cleaning, brooming and preparation of the wire rope, and pouring of zinc is to be carried out in accordance with recommendations of the Crosby® *Wire Rope End Terminations Manual* or other approved procedures.

Note: Before operation of the wire rope assembly, it is recommended that all poured sockets, whether with zinc or resin, be proof loaded to seat the cone.

Reuse Of Crosby® Spelter Buttons

The following are general guidelines for the reuse of a Crosby® SB-427B Button. The use and inspection of used buttons are the responsibility of the user.

Procedure For Removing Spelter Cone

- Cut the rope close (½”) to the nose end of the button and press the cone out of the button.
- For metallurgical, medical and environmental reasons, we do not recommend the use of heat to remove the spelter cone.
  - However, if this is the only means available for removing the zinc cone, care should be taken not to exceed 850˚F (450˚C) surface temperature. The preferred method would be a slow heat in a temperature controlled oven. If a torch (rosebud)is used, the heated area shall be monitored with a Tempil stick or a temperature indicator to prevent localized heating from exceeding the 850˚F (450˚C) limit.
  - To remove a WIRELOCK® cone, heat the surface of the button to 350˚F (177˚C) (do not exceed the 850˚F (450˚C) limit for any localized hot spot). Leave for 5-10 minutes, then drive the cone out with a hammer and drift.

Selection Of Buttons For Reuse

- Use only buttons that:
  - Do not show discoloration from excessive heating.
  - Do not show any signs of welding.
  - Select only buttons that have been cleaned and have passed a Magnetic Particle Inspection by a qualified technician (level II ASNT-SNT-TC-1A-88) per ASTM E709. Acceptance criteria shall be per ASTM E125, Types II-VIII, Degree 1. No cracks are acceptable.
  - Select only buttons that do not show any signs of overloading or wear.
  - Select buttons that are free from nicks, gouges and abrasions. Indications may be repaired by lightly grinding until surfaces are smooth, provided they do not reduce the dimensions by more then 10% of the nominal catalog dimension.
  - Select buttons that are not distorted, bent or deformed.

NOTE: Buttons having any of the indications as outlined above shall not be reused.

CROSBY® FORGED WIRE ROPE CLIP WARNINGS & APPLICATION INSTRUCTIONS

G-450
(Red-U-Bolt®)

⚠ WARNING

- **Failure to read, understand, and follow these instructions may cause death or serious injury.**
- **Read and understand these instructions before using clips.**
- **Match the same size clip to the same size wire rope.**
- **Prepare wire rope end termination only as instructed.**
- **Do not use with plastic coated wire rope.**
- **Apply first load to test the assembly. This load should be of equal or greater weight than loads expected in use. Next, check and retighten nuts to recommended torque (See Table 1).**
- **The reuse of clips is discouraged. As recommended by Crosby, have qualified personnel inspect product before use.**

Efficiency ratings for wire rope end terminations are based upon the minimum breaking force of wire rope. The efficiency rating of a properly prepared loop or thimble-eye termination for clip sizes 1/8" through 7/8" is 80%, and for sizes 1" through 3-1/2" is 90%.

The number of clips shown (see Table 1) is based upon using RRL or RLL wire rope, 6 x 19 or 6 x 37 Class, FC or IWRC; IPS or XIP, XXIP. If Seale construction or similar large outer wire type construction in the 6 x 19 Class is to be used for sizes 1 inch and larger, add one additional clip. If a pulley (sheave) is used for turning back the wire rope, add one additional clip.

The number of clips shown also applies to rotation-resistant RRL wire rope, 8 x 19 Class, IPS, XIP, XXIP sizes 1-1/2 inch and smaller; and to rotation-resistant RRL wire rope, 19 x 7 Class, IPS, XIP, XXIP sizes 1-1/2 inch and smaller.

For other wire rope manufacture designs not mentioned above, we recommend contacting Crosby Engineering at the address or telephone number on the back cover to ensure the desired efficiency rating.

The style of wire rope termination used for any application is the obligation of the user.

For OSHA (Construction) applications, see OSHA 1926.251.

1. Refer to Table 1 following these instructions. Turn back specified amount of rope from thimble or loop. Apply first clip one base width from dead end of rope. Apply U-Bolt over dead end of wire rope – live end rests in saddle (Never saddle a dead horse!). Use torque wrench to tighten nuts evenly, alternate from one nut to the other until reaching the recommended torque (See Figure 1).

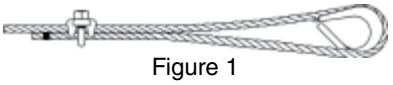


Figure 1

2. When two clips are required, apply the second clip as near the loop or thimble as possible. Use torque wrench to tighten nuts evenly, alternating until reaching the recommended torque. When more than two clips are required, apply the second clip as near the loop or thimble as possible, turn nuts on second clip firmly, but do not tighten. (See Figure 2)

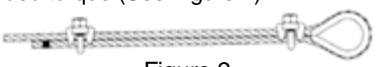


Figure 2

3. When three or more clips are required, space additional clips equally between first two – take up rope slack – use torque wrench to tighten nuts on each clip evenly, alternating from one nut to the other until reaching recommended torque (See Figure 3).

Figure 3

4. If a pulley (sheave) is used in place of a thimble, add one additional clip. Clip spacing should be as shown.

(See Figure 4)

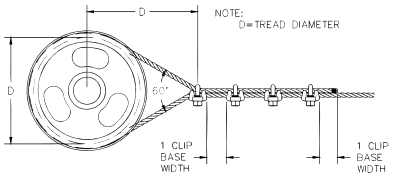


Figure 4

5. WIRE ROPE SPLICING PROCEDURES:

The preferred method of splicing two wire ropes together is to use inter-locking turnback eyes with thimbles, using the recommended number of clips on each eye

(See Figure 5).

Figure 5

An alternate method is to use twice the number of clips as used for a turnback termination. The rope ends are placed parallel to each other, overlapping by twice the turnback amount shown in the application instructions. The minimum number of clips should be installed on each dead end (See Figure 6). Spacing, installation torque, and other instructions still apply.

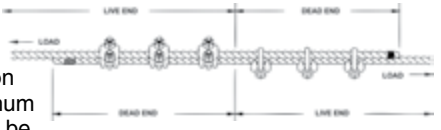


Figure 6

6. IMPORTANT

Apply first load to test the assembly. This load should be of equal or greater weight than loads expected in use. Next, check and use torque wrench to retighten nuts to recommended torque.

In accordance with good rigging and maintenance practices, the wire rope end termination should be inspected periodically for wear, abuse, and general adequacy.

Table 1

Rope Size (in)	Rope Size (mm)	Minimum No. of Clips	Amount of Rope to Turn Back in inches	*Torque in ft•lbf
1/8	3-4	2	3-1/4	4.5
3/16	5	2	3-3/4	7.5
1/4	6-7	2	4-3/4	15
5/16	8	2	5-1/4	30
3/8	9-10	2	6-1/2	45
7/16	11-12	2	7	65
1/2	13	3	11-1/2	65
9/16	14-15	3	12	95
5/8	16	3	12	95
3/4	18-20	4	18	130
7/8	22	4	19	225
1	24-25	5	26	225
1-1/8	28-30	6	34	225
1-1/4	33-34	7	44	360
1-3/8	36	7	44	360
1-1/2	38-40	8	54	360
1-5/8	41-42	8	58	430
1-3/4	44-46	8	61	590
2	48-52	8	71	750
2-1/4	56-58	8	73	750
2-1/2	62-65	9	84	750
2-3/4	68-72	10	100	750
3	75-78	10	106	1200
3-1/2	85-90	12	149	1200

If a pulley (sheave) is used for turning back the wire rope, add one additional clip. See Figure 4.

If a greater number of clips are used than shown in the table, the amount of turnback should be increased proportionately.

*The tightening torque values shown are based upon the threads being clean, dry, and free of lubrication.

CROSBY® FIST GRIP® CLIPS

WARNINGS & APPLICATION INSTRUCTIONS

New Style Fist Grip®
3/16" - 5/8"

Fist Grip® Clips
3/4" - 1-1/2"

⚠ WARNING

- **Failure to read, understand, and follow these instructions may cause death or serious injury.**
- **Read and understand these instructions before using clips.**
- **Match the same size clip to the same size wire rope.**
- **Do not mismatch Crosby clips with other manufacturer's clips.**
- **Prepare wire rope end termination only as instructed.**
- **Do not use with plastic coated wire rope.**
- **Apply first load to test the assembly. This load should be of equal or greater weight than loads expected in use. Next, check and retighten nuts to recommended torque (See Table 1).**
- **The reuse of clips is discouraged. As recommended by Crosby, have qualified personnel inspect product before use.**

Efficiency ratings for wire rope end terminations are based upon the minimum breaking force of wire rope. The efficiency rating of a properly prepared loop or thimble-eye termination for clip sizes 1/8" through 7/8" is 80%, and for sizes 1" through 3-1/2" is 90%.

The number of clips shown (see Table 1) is based upon using RRL or RLL wire rope, 6 x 19 or 6 x 37 Class, FC or IWRC; IPS or XIP, XXIP. If Seale construction or similar large outer wire type construction in the 6 x 19 Class is to be used for sizes 1 inch and larger, add one additional clip. If a pulley (sheave) is used for turning back the wire rope, add one additional clip.

The number of clips shown also applies to rotation-resistant RRL wire rope, 8 x 19 Class, IPS, XIP, XXIP sizes 1-1/2 inch and smaller; and to rotation-resistant RRL wire rope, 19 x 7 Class, IPS, XIP, XXIP sizes 1-1/2 inch and smaller.

For other wire rope manufacture designs not mentioned above, we recommend contacting Crosby Engineering at the address or telephone number on the back cover to ensure the desired efficiency rating.

The style of wire rope termination used for any application is the obligation of the user.

For OSHA (Construction) applications, see OSHA 1926.251.

1. Refer to Table 1 in following these instructions. Turn back specified amount of rope from thimble or loop.

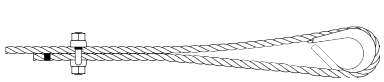


Figure 1

Apply first clip one base width from dead end of rope. Use torque wrench to tighten nuts evenly, alternating from one nut to the other until reaching the recommended torque (See Figure1).

2. When two clips are required, apply the second clip as near the loop or thimble as possible. Use torque wrench to tighten nuts evenly, alternating until reaching the recommended torque. When more than two clips are required, apply the second clip as near the loop or thimble as possible, turn nuts on second clip firmly, but do not tighten. (See Figure 2)

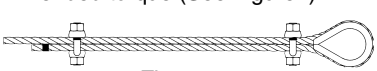


Figure 2

3. When three or more clips are required, space additional clips equally between first two – take up rope slack – use torque wrench to tighten nuts on each clip evenly, alternating from one nut to the other until reaching recommended torque (See Figure 3).

Figure 3

4. If a pulley (sheave) is used in place of a thimble, add one additional Fist Grip. Fist Grip spacing should be as shown. (See Figure 4)

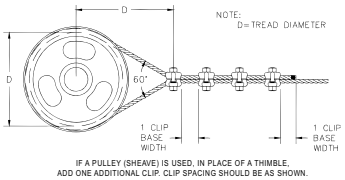


Figure 4

5. WIRE ROPE SPLICING PROCEDURES:

The preferred method of splicing two wire ropes together is to use inter-locking turnback eyes with thimbles, using the recommended number of clips on each eye (See Figure 5).

Figure 5

An alternate method is to use twice the number of clips as used for a turnback termination. The rope ends are placed parallel to each other, overlapping by twice the turnback amount shown in the application instructions. The minimum number of clips should be installed on each dead end (See Figure 6). Spacing, installation torque, and other instructions still apply.

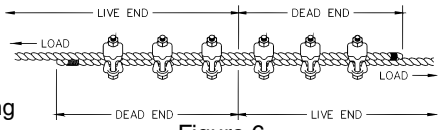


Figure 6

6. IMPORTANT

Apply first load to test the assembly. This load should be of equal or greater weight than loads expected in use. Next, check and use torque wrench to retighten nuts to recommended torque.

In accordance with good rigging and maintenance practices, the wire rope end termination should be inspected periodically for wear, abuse, and general adequacy.

Table 1

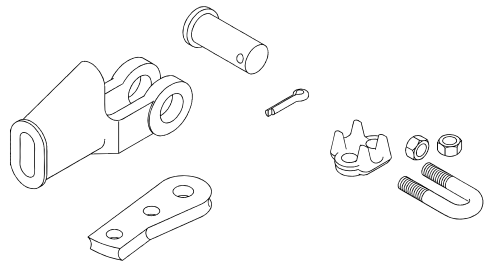
Clip Size/ Rope Size (in)	Clip Size/ Rope Size (mm)	Minimum No. of Clips	Amount of Rope to Turn Back in Inches	*Torque in ft•lbf
3/16	5	2	4	30
1/4	6-7	2	4	30
5/16	8	2	5	30
3/8	9-10	2	5-1/4	45
7/16	11-12	2	6-1/2	65
1/2	13	3	11	65
9/16	14-15	3	12-3/4	130
5/8	16	3	13-1/2	130
3/4	18-20	3	16	225
7/8	22	4	26	225
1	24-25	5	37	225
1-1/8	28-30	5	41	360
1-1/4	32-34	6	55	360
1-3/8	36	6	62	500
1-1/2	38-40	7	78	500

If a pulley (sheave) is used for turning back the wire rope, add one additional clip. See Figure 4.

If a greater number of clips are used than shown in the table, the amount of turnback should be increased proportionately.

*The tightening torque values shown are based upon the threads being clean, dry, and free of lubrication.

CROSBY TERMINATOR
WARNINGS & APPLICATION INSTRUCTIONS



S-421T / US-422T
CROSBY TERMINATOR

NOTE: The design of the basket for the S-421T 1-1/4" TERMINATOR® Wedge Socket does not allow proper fit to the old style Crosby S-421W wedge (see Fig. 1). **Do not assemble or use.** The design of the basket for each US-422T TERMINATOR Wedge Socket does not allow proper fit to the old style UWO-422 wedge (See Fig. 1). **Do not assemble or use.** All S-421T and US-422T TERMINATOR baskets are marked with a capital "T" or TERMINATOR .

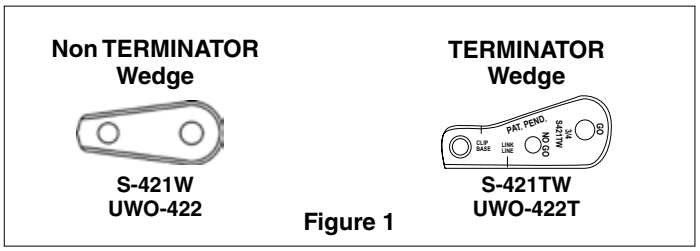


Figure 1

QUIC-CHECK® "Go" and "No-Go" features cast into wedge. The proper size wire rope is determined when the following criteria are met:

QUIC-CHECK®

1. The wire rope shall pass thru the "Go" hole in the wedge.
2. The wire rope shall NOT pass thru the "No-Go" hole in the wedge.

Important Safety Information – Read and Follow Inspection/Maintenance Safety

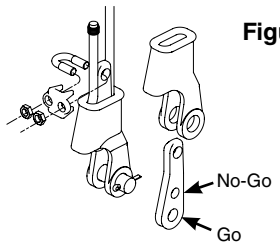
- Always inspect socket, wedge and pin before using.
- Do not use part showing cracks.
- Do not use modified or substitute parts.
- Repair minor nicks or gouges to socket or pin by lightly grinding until surfaces are smooth. Do not reduce original dimension more than 10%. Do not repair by welding.
- Inspect permanent assemblies annually, or more often in severe operating conditions.
- Do not mix and match wedges or pins between models or sizes.
- Always select the proper wedge and socket for the wire rope size.

Assembly Safety

- Use only with standard 6 to 8 strand wire rope of designated size. For intermediate size rope, use next larger size socket. For example: When using 9/16" diameter wire rope use a 5/8" size Wedge Socket Assembly. Welding of the tail on standard wire rope is not recommended. Seizing of the tail is preferred following the recommended practices of the wire rope manufacturer. The tail length of the dead end should be a minimum of 6 rope diameters but not less than 6" (See Figure 2).
- **To use with Rotation Resistant wire rope** (special wire rope constructions with 8 or more outer strands) ensure that the dead end is welded, brazed or seized before inserting the wire rope into the wedge socket to prevent core slippage or loss of rope lay. Seizing of the tail is preferred following the recommended practices of the wire rope manufacturer. The tail length of the dead end should be a minimum of 20 rope diameters but not less than 6" (See Figure 2).
- Properly match socket, wedge and clip (See Table 1) to wire rope size.
- Align live end of rope, with center line of pin (See Figure 2.)
- Secure dead end section of rope (See Figure 2).
- Tighten nuts on clip to recommended torque (See Table 1).
- Do not attach dead end to live end or install wedge backwards (See Fig. 3).
- Use a hammer to seat Wedge and Rope as deep into socket as possible before applying first load.

⚠ WARNING

- **Loads may slip or fall if the Wedge Socket is not properly installed.**
- **Load misapplied in direct contact with the wedge can dislodge the wedge and cause loss of load.**
- **A falling load can seriously injure or kill.**
- **Read and understand these instructions before installing the Wedge Socket.**
- **Do not side load the Wedge Socket.**
- **Apply first load to fully seat the Wedge and Wire Rope in the socket. This load should be of equal or greater weight than loads expected in use.**
- **Do not interchange wedges between S-421T and US422T or between sizes.**
- **Do not assemble an old style 1-1/4" (30-32mm)S-421W wedge into an S-421T 1-1/4" (30-32mm) TERMINATOR basket.**
- **Do not assemble an old style UWO-422 wedge into a US-422T TERMINATOR basket.**
- **The reuse of clips is discouraged. As recommended by Crosby, have qualified personnel inspect product before use.**



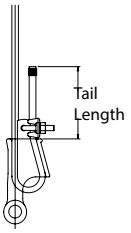


Figure 2

*Tail Length	
Standard 6 to 8 Strand Wire Rope	**Rotation Resistant Wire Rope**
A minimum of 6 rope diameters, but not less than 6"	A minimum of 20 rope diameters, but not less than 6"

TABLE 1								
Rope Size (in)	3/8	1/2	5/8	3/4	7/8	1	1-1/8	1-1/4
Clip Size (in)	3/8	1/2	5/8	3/4	7/8	1	1-1/8	1-1/4
* Torque ft•lbf	45	65	95	130	225	225	225	360

* The tightening torque values shown are based upon the threads being clean, dry, and free of lubrication.

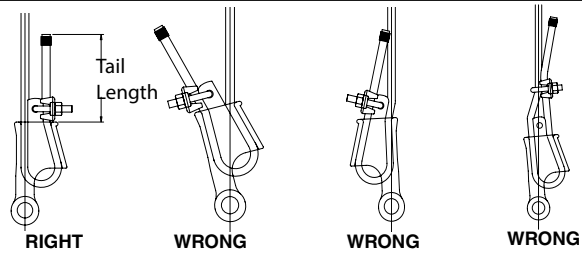


Figure 3

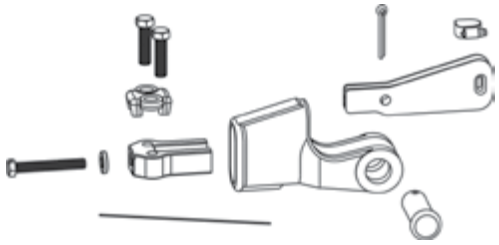
Operating Safety

- Apply first load to fully seat the Wedge and Wire Rope in the socket. This load should be of equal or greater weight than loads expected in use.
- Efficiency rating of the Wedge Socket termination is based upon the catalog breaking strength of Wire Rope. The efficiency of a properly assembled Wedge Socket is 80%.
- During use, do not strike the dead end section or wedge with any other elements of the rigging (Called two blocking).
- Do not allow a direct load to contact the wedge.

SUPER TERMINATOR WEDGE SOCKET

WARNINGS & APPLICATION INSTRUCTIONS

US Patented 6,898,827.



S-423T SUPER TERMINATOR

The intended purpose of the SUPER TERMINATOR is to offer a Wedge Socket termination, which when assembled properly with high performance, high strength, compacted strand, rotation resistant wire rope will achieve an 80% termination efficiency. Due to the unique construction of these ropes, Crosby cannot make a broad general statement that all current and future designed ropes, when properly assembled with a SUPER TERMINATOR , will achieve a minimum 80% termination efficiency (To determine the efficiency rating for a specific rope, contact Crosby Engineering at 918-834-4611.).

The SUPER TERMINATOR may be purchased as a complete Wedge Socket assembly or the Wedge assembly may be purchased for retrofit onto your Crosby S-421T wedge socket basket.

The Crosby S-423T SUPER TERMINATOR Wedge is designed to be assembled only into the Crosby S-421T socket basket. For the 1-1/4" S-423T, assemble only on to S-421T basket marked TERMINATOR .

Important Safety Information - Read and Understand

Inspection/Maintenance Safety

- Always inspect socket, wedge and pin before using.
- Do not use part showing cracks.
- Do not use modified or substitute parts.
- Repair minor nicks or gouges to socket or pin by lightly grinding until surfaces are smooth. Do not reduce original dimension more than 10%. Do not repair by welding.
- Inspect permanent assemblies annually, or more often in severe operating conditions.
- Do not mix and match wedges or pins between models or sizes.
- Always select the proper wedge and socket for the wire rope size.

Assembly Safety

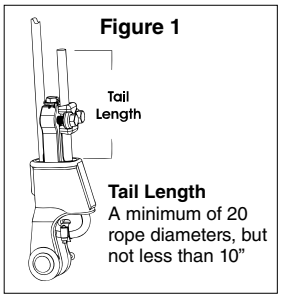
- Properly match socket and wedge assembly to wire rope size.
- Ensure the dead end is properly seized before inserting the wire rope into the wedge socket basket. High performance, high strength, compacted strand, rotation resistant wire ropes are sensitive to seizing methods. For specific seizing procedures, contact the wire rope manufacturer.
- The tail length of the dead end should be a minimum of 20 rope diameters but not less than 10" (See Fig. 1).
- Mount wedge socket basket in vice.
- Insert live end of wire rope into wedge basket, aligning live end of rope with center line of pin. Make a loop and return (See Figure 2).
- Pull on live line to remove excess out of loop, leaving enough room to properly insert wedge into basket (See Figure 3).
- Secure rope to SUPER TERMINATOR Wedge with clamp (See Figure 4).
- Pull Wedge and rope into basket until tensioner bolt, with washers properly applied, can engage threads in nose of wedge. Auxillary power may be required to fully pull wedge and rope into basket (See Figure 5).
- Use torque wrench to tighten tensioner bolt to recommended torque value, properly seating wedge and rope into basket. Reference Table 1 for recommended Torque in Ft Lbs.
- Secure dead end section of rope with clip base. Tighten bolts to recommended torque values (See Table 1).
- Properly install wire to securely lock tensioner bolt to tensioner. (See Figure 6).
- Do not attach dead end to live end or install wedge backwards. (See Figure 7).

Operating Safety

- Proper application of the Super TERMINATOR eliminates the “first load” requirement of conventional wedge socket terminations.
- Efficiency rating of the Wedge Socket termination is based upon the catalog breaking strength of Wire Rope. The efficiency of a properly assembled Super Terminator on most high performance, high strength, compacted strand, rotation resistant ropes will achieve 80% of catalog breaking strength of rope, depending on the unique construction of these ropes (To determine the efficiency rating for a specific rope, contact Crosby Engineering at 918-834-4611.).
- During use, do not strike the dead end section or wedge with any other elements of the rigging (Called two blocking).
- The SUPER TERMINATOR wedge socket may also be used with standard 6 to 8 strand and rotation resistant wire rope (special wire rope constructions with 8 or more strands).
- Do not allow direct load to contact the wedge.

⚠ WARNING

- **Loads may slip or fall if the Wedge Socket is not properly installed.**
- **A falling load can seriously injure or kill.**
- **Load misapplied in direct contact with the wedge can dislodge the wedge and cause loss of load.**
- **Read and understand these instructions before installing the Wedge Socket.**
- **Do not side load the Wedge Socket.**
- **Apply recommended torque to tensioner and clip bolts, and properly install wire to securely lock tensioner bolt to tensioner.**
- **Do not assemble the S-423 Wedge in any brand or model socket basket other than the Crosby S-421T TERMINATOR.**
- **The size is marked on the socket basket and wedge, do not interchange wedge between sizes.**
- **The reuse of clips is discouraged. As recommended by Crosby, have qualified personnel inspect product before use.**



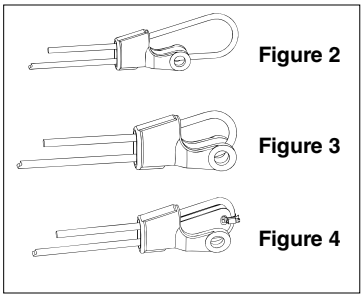
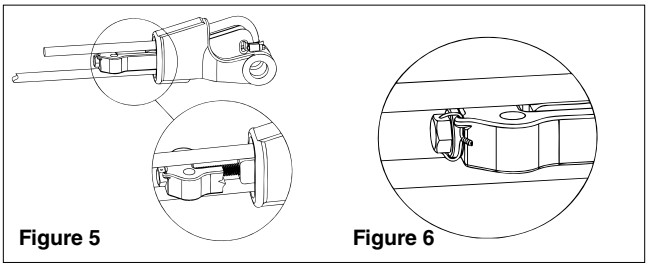
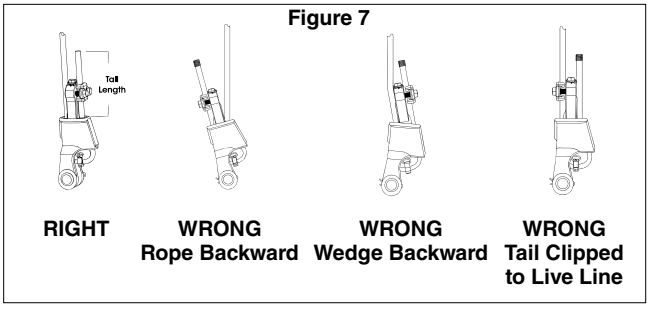


TABLE 1
S-423T Torque Value Table

Wedge Size (in)	Tensioner Bolt Torque ft•lbf*	Clip Bolts Torque ft•lbf*
5/8	110	95
3/4	150	130
7/8	380	225
1	380	225
1-1/8	600	225
1-1/4	900	360

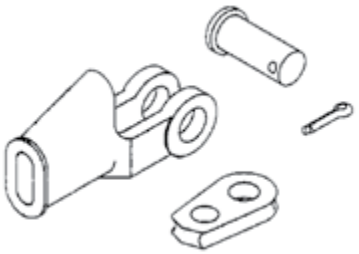
* The tightening torque values shown are based upon the threads being clean, dry, and free of lubrication.





WEDGE SOCKET

WARNINGS & APPLICATION INSTRUCTIONS



S-421 / US-422

Important Safety Information - Read and Follow Inspection/Maintenance Safety

- Always inspect socket, wedge and pin before using.
- Do not use part showing cracks.
- Do not modify or substitute parts.
- Repair minor nicks or gouges to socket or pin by lightly grinding until surface are smooth. Do not reduce original dimension more than 10%. Do not repair by welding.
- Inspect permanent assemblies annually, or more often in severe operating conditions.
- Do not mix and match wedges or pins between models or sizes.
- Always select the wedge and socket for the wire rope size.

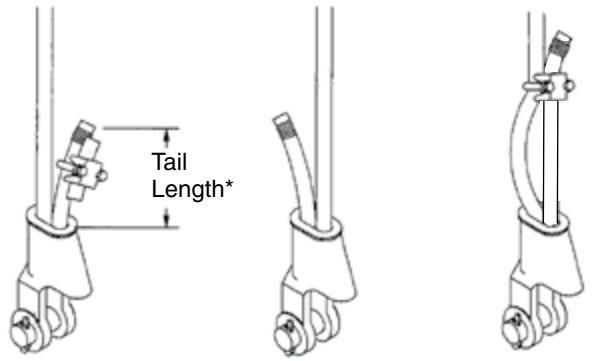
Assembly Safety

- Use only with standard 6 to 8 strand wire rope of designated size. For intermediate size rope, use next larger size socket. For example: When using 9/16" diameter wire rope use a 5/8" size Wedge Socket Assembly. Welding of the tail on standard wire rope is not recommended. Seizing of the tail is preferred following the recommended practices of the wire rope manufacturer. The tail length of the dead end should be a minimum of 6 rope diameters but not less than 6".
- Align live end of rope, with center line of pin (See Figure 1).
- Secure dead end section of rope (See Figure 1).
- DO NOT ATTACH DEAD END TO LIVE END (See Figure 1).
- Use a hammer to seat Wedge and Rope as deep into socket as possible before applying first load.
- To use with Rotation Resistant wire rope (special wire rope constructions with 8 or more outer strands) ensure that the dead end is welded, brazed or seized before inserting the wire rope into wedge socket to prevent core slippage or loss of rope lay. The tail length of the dead end should be a minimum of 20 rope diameters but not less than 6" (Figure 1).

⚠ WARNING

- **Loads may slip or fall if the Wedge Socket is not properly installed.**
- **Load misapplied in direct contact with the wedge can dislodge the wedge and cause loss of load.**
- **A falling load can seriously injure or kill.**
- **Read and understand these instructions before installing the Wedge Socket.**
- **Do not side load the Wedge Socket.**
- **Do not interchange Crosby wedge socket, wedge or pin with non Crosby Wedge socket, wedge or pin.**
- **Apply first load to fully seat the Wedge and Wire Rope in the socket. This load should be of equal or greater weight than loads expected in use.**
- **Do not interchange wedge between S-421 and US-422 or between sizes.**
- **The reuse of clips is discouraged. As recommended by Crosby, have qualified personnel inspect product before use.**

Figure 1



*Tail Length
Standard 6 to 8 strand wire rope
A minimum of 6 rope diameters, but not less than 6".
(i.e. - For 1" rope: Tail Length = 1" x 6 = 6")

Rotation Resistant Wire Rope
A minimum of 20 rope diameters, but not less than 6"
(i.e. - For 1" rope: Tail Length = 1" x 20 = 20")

Operating Safety

- Apply first load to fully seat the Wedge and Wire Rope in the socket. This load should be of equal or greater weight than loads expected in use.
- Efficiency rating of the Wedge Socket termination is based upon the catalog breaking strength of Wire Rope. The efficiency of properly assembled Wedge Socket is 80%.
- During use, do not strike the dead end section with any other elements of the rigging (Called two-blocking).
- Do not allow a direct load to contact the wedge.

WIRELOCK®

WARNINGS & APPLICATION INSTRUCTIONS

⚠ WARNING

- **WIRELOCK® should be stored in a cool dry place (10°C to 24°C/ 50°F to 75°F)**
- **Incorrect use of WIRELOCK® can result in an unsafe termination which may lead to serious injury, death, or property damage.**
- **Do not use WIRELOCK® with stainless steel rope in salt water environment applications.**
- **Use only soft annealed iron wire for seizing.**
- **Do not use any other wire (copper, brass, stainless, etc.) for seizing.**
- **Never use an assembly until the WIRELOCK® has gelled and cured.**
- **Remove any non-metallic coating from the broomed area.**
- **Non Crosby sockets with large grooves need to have those grooves filled before use with WIRELOCK®.**
- **Read, understand, and follow these instructions and those on product containers before using WIRELOCK®.**

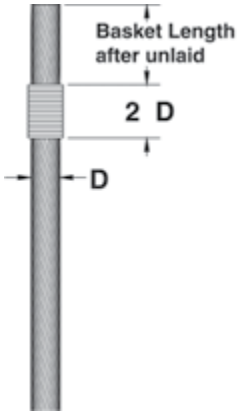
The following simplified, step-by-step instructions should be used only as a guide for experienced, trained users. **For full information, consult Crosby's Wire Rope End Terminations Manual, API (American Petroleum Institute) Recommended Practice 9B, ISO Standards, Wire Rope Manufacturers Catalogs, and Wire Rope Sling Users Manual.**

STEP 1 – SOCKET SELECTION

1. **WIRELOCK®** is recommended for use with Crosby 416-417 Spelter Sockets. Structural strand requires a socket with the basket length approximately 5 times the strand diameter or fifty (50) times the wire diameter, whichever is greater, to achieve 100% efficiency. Consult the Wire Rope End Terminations Manual for proper selection of Wire Rope or Structural Strand sockets.
2. For use with sockets other than Crosby 416-417 consult the socket manufacturer or Crosby Engineering.
3. Sockets used with **WIRELOCK®** shall comply with Federal or International (CEN, ISO) Standards.
4. **WIRELOCK®**, as with all socketing media, depends upon the wedging action of the cone within the socket basket to develop full efficiency. A rough finish inside the socket may increase the load at which seating will occur. Seating is required to develop the wedging action.

STEP 2 – MEASURE AND SEIZE

The rope ends to be socketed should be of sufficient length so that the end of the unlaid wires (from the strands) will be at the top of the socket basket. Seizing should be placed at a distance from the end equal to the length of the basket of the socket.



STEP 3 – BROOMING

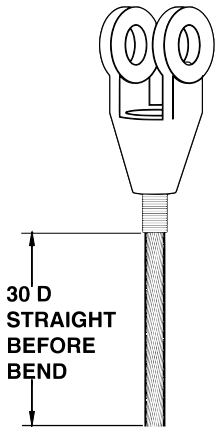
1. Unlay the individual strands and fully broom out the wires of the wire rope and IWRC as far as the seizing. The wires should be separated but not straightened.
2. Cut out any fiber core.
3. Unlay the individual wires from each strand, including the IWRC, completely, down to the seizing.
4. Remove any plastic material from broomed area.

STEP 4 – CLEANING

1. The method of cleaning will depend on the lubriant and/or coating on the wire.
2. The methods and materials used for cleaning should comply with the current EPA or local regulations.
3. Consult your Wire Rope supplier or Wire Rope manufacturer for recommended material and methods. Follow the solvent supplier's recommendations for cleaning the broomed end.
4. Allow the broom to dry thoroughly.

STEP 5 – POSITIONING OF SOCKET

1. Position socket over the broom until it reaches the seizing on the wire rope. The wires should be LEVEL with the top of the socket basket.
2. Clamp rope and socket vertically ensuring alignment of their axes.
3. **CAUTION: DO NOT USE OVERSIZED SOCKETS FOR WIRE ROPE.**



STEP 6 – SEAL SOCKET

Seal the base of the socket with putty or plasticine to prevent leakage of the **WIRELOCK®**.

STEP 7 – WIRELOCK® KITS

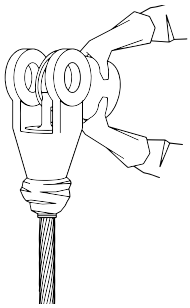
1. **WIRELOCK®** kits are pre-measured and consist of two (2) containers – one (1) with resin and one (1) with granular compound.
2. Use the complete kit – **NEVER MIX LESS THAN THE TOTAL CONTENTS OF BOTH CONTAINERS.**
3. Each kit has a shelf life clearly marked on each container and this must be observed. **NEVER USE OUT-OF-DATE KITS.**

⚠ CAUTION

- **WIRELOCK® resin, in liquid state, is flammable.**
- **Chemicals used in this product can give off toxic fumes and can burn eyes and skin.**
- **Never use out-of-date material.**
- **Use only in well-ventilated work areas.**
- **Never breathe fumes directly or for extended time.**
- **Always wear safety glasses to protect eyes.**
- **Always wear gloves to protect hands.**
- **Avoid direct contact with skin anywhere.**

STEP 8 – MIXING AND POURING

1. Mix and pour **WIRELOCK®** within the temperature range of 48° to 110° F. Booster kits are available for reduced temperatures.
2. Wirelock is set up to gel in 20 minutes at 65° F. For every 18° F rise in temperature the gel time willl halve. At 83° F the gel time will be 10 minutes and at 101° F it will be 5 minutes. To give extra working time of pot life it is worth considering refrigerating the kits for two hours prior to mixing and pouring. The socket should also be as cool as possible - out of direct sunlight, as an example.
3. Pour all the resin into a container containing all the granular compound and mix thoroughly for two (2) minutes with a flat paddle.
4. The **WIRELOCK®** will turn a green blue color. If it does not turn a green blue after mixing, DO NOT USE.
5. Immediately after mixing, slowly pour the mixture down one side of the socket until the socket basket is full.
6. Check for leakage at nose of socket, add putty if required.



STEP 9 – CURING

1. **WIRELOCK®** will gel in approximately 20 minutes, in a temperature range 65° F (18° C) to 75° F (24° C).
2. The socket must remain undisturbed in the vertical position for an additional ten (10) minutes after gel is complete.
3. The socket will be ready for service 60 minutes after gelling.
4. Never heat sockets to accelerate gel or curing.

STEP 10 – RE-LUBRICATION

Re-lubricate wire rope as required.

STEP 11 – PROOF LOADING

Whenever possible, the assembly should be proof loaded. In accordance with ASME B30.9.

ALTERNATE SEIZING AND BROOMING METHOD

Reference the **Wire Rope End Terminations User's Manual** from Crosby for an alternative socketing method.

NATIONAL DIE INFORMATION

⚠ CAUTION

- **Improper die selection could result in significant loss of efficiency in the termination.**

National dies and die holders are made solely for swaging properly designed fittings on wire rope, and any other uses are prohibited.

The swaging operation results in a high degree of cold metal flow. The movement that occurs between the fitting and the dies will cause wear of the dies. Therefore, to prolong the life of the dies, it is important to always lubricate die faces and cavities between each pass with a light weight oil or high pressure grease.

When scores appear in the die cavities, the dies should be removed from service.

NEVER EXCEED THE WORKING LOAD LIMIT OF DIES OR DIE HOLDERS.

All National Standard dies 1/4" through 1" include an open channel die cavity and a tapered die cavity in the same die block.

Dies for S-505 Standard Steel Sleeves (Flemish Eyes)

Die sizes for 1/4" through 1"

Swaging 1/4" through 1" Standard Steel S-505 sleeves on Flemish Eye terminations requires the use of the taper cavity only. Refer to the *Wire Rope End Termination User's Manual* for proper die selection.

Die sizes for 1-1/8" and above

Swaging 1-1/8" and larger Standard Steel S-505 sleeves on Flemish Eye terminations requires using 2 sets of open channel dies (1st stage and 2nd stage) for each size. Beginning with the 1st stage die and finishing with the 2nd stage die will achieve proper after swage dimensions. Dies for S-505 Sleeves 1-1/8" and larger are single cavity with open channel. Refer to the *Wire Rope End Termination User's Manual* for proper die selection.

Using S-505 Sleeves with Metric Ropes

Although Crosby National S-505 Standard Steel sleeves are designed to be used with most metric ropes, there are selected "intermediate" sizes of metric ropes that when swaged in standard National dies utilizing Crosby National S-505 sleeves do not achieve required after swage dimensions and efficiencies. To ensure all 505 sleeves achieve the required efficiency when used with metric ropes, Crosby provides special National swaging dies to be used in conjunction with selected size metric ropes. These new dies will produce the required efficiencies and after swage dimensions.

The table found in the *Wire Rope End Termination User's Manual* identifies the new dies that are required to properly swage the selected intermediate size wire ropes not covered in the standard product offering found on page 24 of the manual.

Dies for 6mm through 26mm (except 12mm, 20mm and 24mm)

Swaging on 6mm through 26mm metric ropes for Flemish Eye slings requires the selection of the proper S-505 Standard Steel sleeve and the use of the tapered cavity only. Refer to page 24 of the *Wire Rope End Termination User's Manual* for proper sleeve and die selection.

Dies for 12mm, 20mm and 24mm

Swaging on 12mm, 20mm and 24mm metric ropes for Flemish Eye slings requires the selection of the proper S-505 Standard Steel sleeve and the use of both the open cavity and tapered cavity in special dies. Refer to page 25 of the *Wire Rope End Termination User's Manual* for proper sleeve and die selection.

Dies for 28mm and larger

Swaging on 28mm and larger metric ropes for Flemish Eye slings requires the selection of the proper S-505 Standard Steel sleeve and the use of 2 sets of open channel dies (1st stage and 2nd stage) for each size. Beginning with the 1st stage die and finishing with the 2nd stage die will achieve proper after swage dimensions. Dies for S-505 sleeves 28mm and larger are single cavity with open channel. Refer to page 24 of the *Wire Rope End Termination User's Manual* for proper sleeve and die selection.

Important: If the specific size metric rope required is not listed on page 24 of the *Wire Rope End Termination User's Manual* refer to Intermediate Metric Die Chart on page 25 of the manual for proper sleeve and die selection.

Dies for QUIC-PASS® Swaging System – 1/4" through 1-1/2"

The *QUIC-PASS®* swaging system allows "Flemish style" wire rope terminations to be swaged in only two passes. This is accomplished while maintaining currently published efficiency ratings and utilizing National Swage S-505 Standard "COLD TUFF"® Steel Sleeves.

The special design of the *QUIC-PASS®* dies allows the swaging process to be completed in just two passes, resulting in a 50-75% reduction in the number of passes required with conventional swaging systems. Unlike standard round dies, the *QUIC-PASS®* dies close completely with each pass, resulting in an increase in overall swaging process efficiencies (the job can be performed quicker), a reduction in the complexity of swaging (the concern for excess flashing between dies has been eliminated) and a reduction in training time needed for operators (more user friendly).

The finished sleeve has a "Hex" appearance that provides a *QUIC-CHECK®* look to determine if the termination has been swaged and provides a flat surface that allows for ease of I.D. stamping on the finished sleeve. Refer to page 24 of the *Wire Rope End Termination User's Manual* for proper die selection.

Dies for S-501 & S-502 Swage Sockets

Swaging all S-501 & S-502 Swage Sockets requires the use of single cavity die. This is a special die designed with a relief for swage sockets and extra length to swage the full length of the shank. Refer to pages 36 and 37 of the *Wire Rope End Termination User's Manual* for proper die selection.

Swage Sockets for Spiral Strand Rope
Our tests indicate that if the spiral strand is 1 x 19 or greater, and the ultimate strength does not exceed Table 1 of ASTM A586, you can use dies for size swage sockets up to the 1-1/4". For sizes greater than 1-1/4" the following will apply:

1. Closed S-502 Sockets: One (1) socket size larger with shank modified for actual strand diameter 1-3/8" through 2".
2. Open S-501 Sockets: One (1) socket size larger with shank modified for actual strand diameter 1-3/8" through 2".
3. If the strand is of greater strength than Table 1 of ASTM A586 or has less metallic area, we must recalculate the design and test for adequacy.

Dies for S-506 Turnback Sleeves

Turnback eye terminations using 5/16" through 1" S-506 Sleeves utilize the S-505 Standard Steel Sleeve die (1st Stage open channel die only). The 1-1/4" S-506 Sleeve utilizes the 1-3/8" socket (S-501 and S-502) die. Refer to page 46 of the *Wire Rope End Termination User's Manual* for proper die selection.

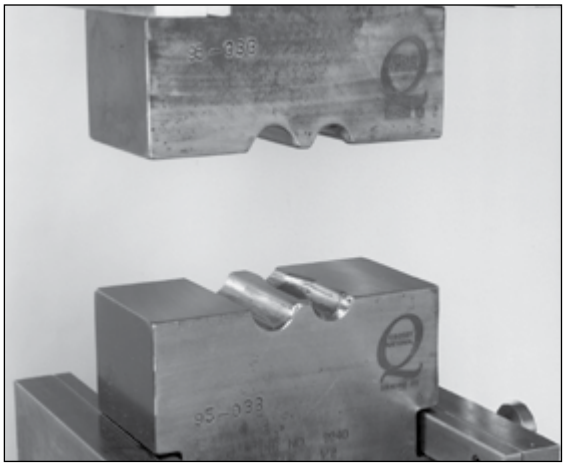
Dies for S-409 Buttons

Buttons are swaged in open channel dies. Refer to page 42 of the *Wire Rope End Termination User's Manual.*

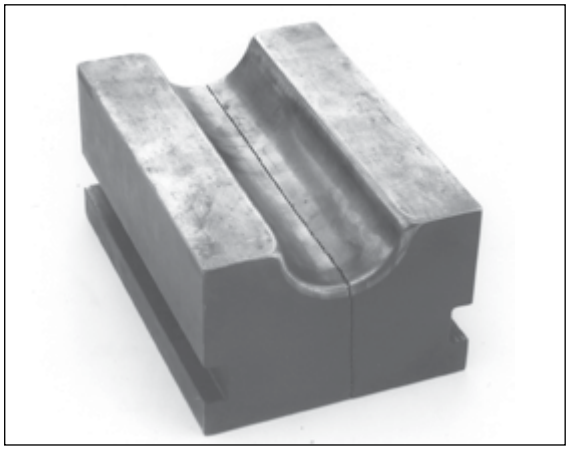
Specific recommended swaging practices can be found in each product section of this catalog. The proper die selection and the recommended maximum after swage dimensions are referenced in the section of this catalog that contains the product you are swaging. This information can also be found in the National Swage Die Guide, or by referring to the National Swage Die Chart.

Dies and die adapters to fit other type swaging machines are available upon request (Refer to page 19 of the *Wire Rope End Termination User's Manual*).

Single Cavity Die



Two Cavity Die



Never use dies that are cracked, worn or abraided (galled).

After Swage Inspection Procedures

⚠ WARNING

- **Read, understand, and follow these instructions before using the National QUIC-PASS® Swaging System.**
- **Improper after swage dimensions can result in sling failure resulting in property damage, serious injury or death.**
- **Always gauge or measure the after swage dimensions to ensure proper sling performance.**
- **Using National Swaging System with ropes and termination styles other than shown in these procedures may reduce the performance of the termination and lead to premature failure.**
- **When using rope constructions other than shown in this procedure, the termination must be destructive tested and documented to prove adequacy of the assembly to be manufactured.**
- **The QUIC-PASS® Swaging System is designed only for "Flemish Eye" terminations using National S-505 Standard Steel Sleeves.**
- **The QUIC-PASS® Swaging System is not designed for Cable-Laid wire rope slings.**

Checking Swaging Dimensions

One of the important considerations in producing a quality termination is the overall diameter of the fitting after the swaging process is complete. Since all dies wear, and the swaged fitting used in terminations has spring back, the results of swaging should be checked periodically to determine the wear condition of the die as well as to ensure the fitting is swaged to proper dimensions.

Key Facts About After Swage Dimensions:

1. In addition to worn dies, not achieving the proper after swage dimension can also be due to the die not being fully closed during swaging. Dies showing excessive wear should be replaced.
2. The effective swaging that dies can accomplish stops when the die lands touch each other. Any continued swaging adds needless wear and strain on the dies and swaging machine.
3. By placing a light oil on the die faces and in the cavity, the dies will be lubricated as well as protected.
4. The oozing of the oil from the faces of the dies as they touch will indicate when the dies have closed. At this point, stop the swaging cycle.
5. Additional swaging adds needless wear and strain to the dies and swaging machine.
6. Never use dies that are cracked, worn or abraded (galled).
7. The Crosby Group does not recommend the checking of die dimensions as an acceptable method of determining the quality of a swage sleeve, button, ferrule, or socket.
8. It is our recommendation that the checking of the after swage dimension of the swaged fitting is the most accurate indicator of a properly swaged termination. Measuring the die cavity only is not an acceptable process control check.
9. If the die cavity wears, the dies are not closed completely during swaging. If an inadequate number of presses are used, it could be quickly identified by checking the after swage dimension of the part.
10. Swaging Machine not producing sufficient tonnage will affect after swage dimensions.

No-Go Gauge Information

To assist in checking the after swage dimensions of the fitting, the Crosby Group provides the National No-Go Gauges. When used correctly the National No-Go Gauges can determine if the fittings were swaged to the proper diameter. We would recommend that all Crosby products or product swaged in Crosby dies be checked with the proper gauge to determine the acceptability of the swaging process.

- Gauges are made of hardened alloy steel and machined to strict tolerances.
- Gauge can be used to verify that all fittings have been swaged properly.
- After swage dimensions not within the maximum limits may result from worn dies or improper swaging techniques.
- Other type gauges are available upon request.
- National No-Go Gauges are available for a variety of products (See Table 1).
- **No-Go Gauges and QUIC-PASS® No-Go Gauges are not interchangeable.**

Table 1 - Standard Round No-Go Gauges

Fitting	Size	Part No.
505 Sleeve	1/4 - 7/8	1095512
505 Sleeve	1 - 1-1/2	1095521
505 Sleeve	1-3/4	1095530
505 Sleeve	2	1095549
505 Sleeve	2-1/4	1095558
505 Sleeve	2-1/2	1095567
505 Sleeve	2-3/4	1095576
505 Sleeve	3	1095585
505 Sleeve	3-1/2	1095594
505 Sleeve	3-3/4	1095601
505 Sleeve	4	1095610
501/502 Socket	1/4 - 1	1095647
501/502 Socket	1-1/8 - 1-3/4	1095656
501/502 Socket	2	1095665

Using No-Go Gauges

When swaged properly, the gauge will go up and down (see Figure 1) and around the full length of the fitting (see Figure 2).

For the proper after swage dimensions, see the section in this publication for the specific product you are swaging.

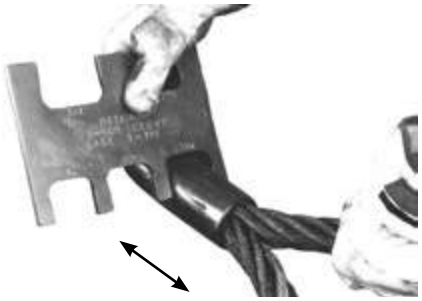


Figure 1

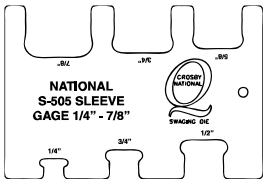
Figure 2

QUIC-PASS® No-Go Gauges

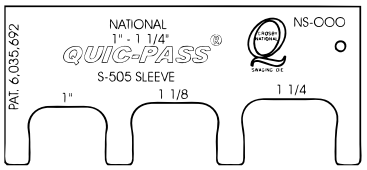
As a further aid, QUIC-PASS® No-Go gauges are available for checking the sleeve's dimensions after swaging is complete.

- Gauges are made of hardened alloy steel and machined to strict tolerances.
- Gauge can be used to verify that all sleeves have been swaged properly.
- "After Swage" dimensions not within the maximum limits may result from worn dies or improper swaging techniques.
- **No-Go Gauges and QUIC-PASS® No-Go Gauges are not interchangeable.**

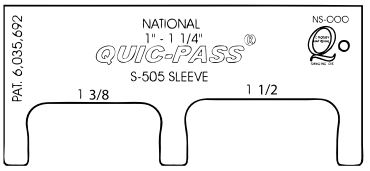
QUIC-PASS® No-Go Gauges	
Sleeve and Size	**Stock No.**
No-Go Gauge for S-505 1/4" - 7/8"	1923705
No-Go Gauge for S-505 1" - 1-1/4"	1923712
No-Go Gauge for S-505 1-3/8" - 1-1/2"	1923714



Stock No. 1923705

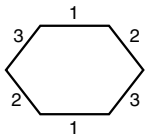


Stock No. 1923712



Stock No. 1923714

Use a National QUIC-PASS® No-Go Gauge to check the after swage dimensions to ensure that it has been swaged to the proper dimension. When swaged properly, the gauge will slide up and down the full length of the sleeve on all three sets of opposing flats.



QUIC-PASS® Maximum After Swage Dimensions

Size (in)	Maximum "After Swage" Dimension (in)
1/4	0.565
5/16 - 3/8	0.769
7/16 - 1/2	1.016
9/16 - 5/8	1.247
3/4	1.475
7/8	1.738
1	1.955
1-1/8	2.170
1-1/4	2.405
1-3/8	2.610
1-1/2	2.835

Important Safety Information

- **Crosby does not recommend** a "Texas Tuck" style termination with Crosby National S-505 "COLD TUFF®" Standard Steel Sleeves.
- Only Crosby National S-505 "COLD TUFF®" Standard Steel Sleeves are recommended when using the QUIC-PASS® Swaging System.
- National S-505 Standard Steel Sleeves, when used with the QUIC-PASS® Swaging System, are only recommended for use with one (1) part 6 X 19 or 6 X 37, IPS or XIP (EIP), XXIP (EEIP), RRL, IWRC rope.
- The condition of the swaging machine can cause sleeve "After Swage" size not to be within the proper dimensions. Example: worn bushings, loose tie rods, loose die holders, misaligned platens, worn pins, worn linkage, etc.
- Swaging dies being worn, damaged, misused, or undersized can cause sleeve "After Swage" size not to be within the proper dimension.
- Swaging die holders excessively worn, damaged, misused or loose can cause sleeve "After Swage" size not to be within the proper dimension. Only use QUIC-PASS® dies and die holders inspected and properly secured in National swaging machines.
- Always refer to Warning and Application information found in this catalog and *Wire Rope End Terminations User's Manual.*

CROSBY® THIMBLE EYE BUNDLE CLIPS

WARNING & APPLICATION INSTRUCTIONS

G-461

The Bundle Clip is utilized in a choker hitch application to maintain the shape of bundled packages after a load is placed. The Bundle Clip is attached to live line of choker hitch, but it is never to be used as a button or ferrule to carry a load in the primary load path.

Certain conditions (such as extreme variation of the choke size) or improper installation may cause the eye of the choke hitch to disengage from the Bundle Clip and allow the eye to seat away from or below the Bundle Clip (see Figure 3). If this occurs, the Bundle Clip must be removed and installed in the proper position.

The Bundle Clip is sized to provide a grip to the live rope without reducing the efficiency of a choker hitch. This grip is adequate to keep the bundle clip in position.

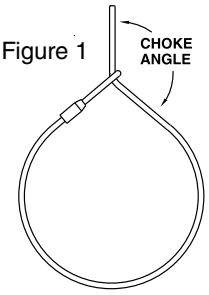
These instructions are for use with thimble eyes formed with RRL or RLL wire rope, 6 x 19 or 6 x 36 Class, FC or IWRC; IPS or XIP, XXIP, and a Crosby Thimble. For other classes of wire rope not mentioned above, we recommend contacting Crosby Engineering.

For Soft Eye applications see the Crosby G-460 Soft Eye Bundle Clip.

For OSHA (Construction) applications, see OSHA 1926.251.

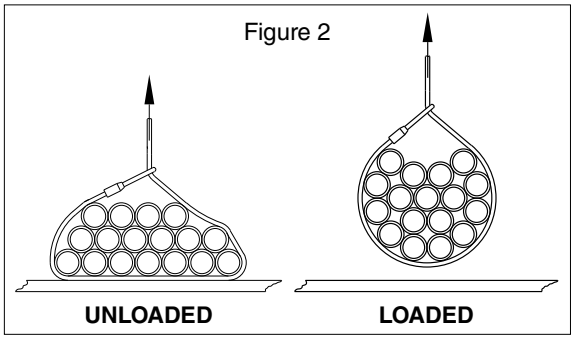
1. The eye of the sling must be in the choked position (around live line). Choker hitch applications should comply with the requirements of ASME B30.9 Slings. Install the choker hitch to provide a minimum choke angle of 120 degrees (See Figure 1). Refer to ASME B30.9 for required de-rating of the sling if choke angle is less than 120 degrees.

Figure 1



2. Before installing Bundle Clip, apply initial load by lifting the bundle and clearing the support, producing a tight choke. Repeat as necessary until the bundle package is in the most compact position (See figure 2, Loaded). **Keep hands and feet from under load.**

Figure 2



⚠ WARNING

- **Failure to read, understand, and follow these instructions may cause death or serious injury.**
- **A falling load may seriously injure or kill.**
- **Read and understand these instructions before using clips.**
- **Failure to properly position the Bundle Clip may allow the load to slip and fall.**
- **Match the same size clip to the same size wire rope.**
- **Install Bundle Clip only as instructed.**
- **Do not use with plastic coated wire rope.**
- **Do not use for lifting personnel.**

3. After initial loading, install the Bundle Clip. The orientation of the Bundle Clip on the live line is not an important consideration, as the assembly is of adequate size to prevent passage through proper size Crosby Thimble and next larger size Thimble. Insert U-bolt through the Bundle Clip. Properly position the clip base over the U-bolt and install nuts (See Figure 3). Use torque wrench to tighten evenly, alternating from one nut to the other until the bundle stop bottoms out on the clip base, and the recommended torque is reached (See Table 1).

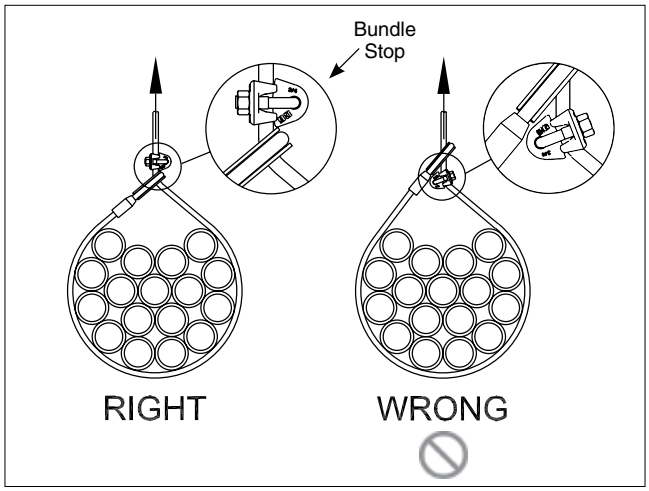


Figure 3

Table 1 – Recommended Torque

Clip Size	Rope Size (in)	Torque (Ft.-Lb.)
5/8	5/8	95
3/4	3/4	130
7/8	7/8	225

4. Before each lift, check to ensure that the choke eye has not slipped from the Bundle Clip. Repeat Step 3 if necessary.
5. When disconnecting, the load should be clear of the stable support (See figure 2, Loaded). Remove Bundle Clip. Stay clear of the load as the bundle is lowered and the load is removed from the sling.

In accordance with good rigging and maintenance, the wire rope sling should be inspected periodically for wear, abuse, and general adequacy.

CROSBY® SOFT EYE BUNDLE CLIPS

WARNING & APPLICATION INSTRUCTIONS

G-460

The Bundle Clip is utilized in a choker hitch application to maintain the shape of bundled packages after a load is placed. The Bundle Clip is attached to live line of choker hitch, but it is never to be used as a button or ferrule to carry a load in the primary load path.

Certain conditions (such as extreme variation of the choke size) or improper installation may cause the eye of the choke hitch to disengage from the Bundle Clip and allow the eye to seat away from or below the Bundle Clip (see Figure 3). If this occurs, the Bundle Clip must be removed and installed in the proper position.

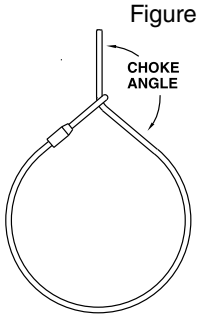
The Bundle Clip is sized to provide a grip to the live rope without reducing the efficiency of a choker hitch. This grip is adequate to keep the bundle clip in position. The eye may pull free of the Bundle Clip if not positioned properly.

These instructions are for use with soft eyes (no thimble) formed with RRL or RLL wire rope, 6 x 19 or 6 x 36 Class, FC or IWRC; IPS or XIP, XXIP. For other classes of wire rope not mentioned above, we recommend contacting Crosby Engineering.

For Thimble Eye applications see the Crosby G-461 Thimble Eye Bundle Clip.

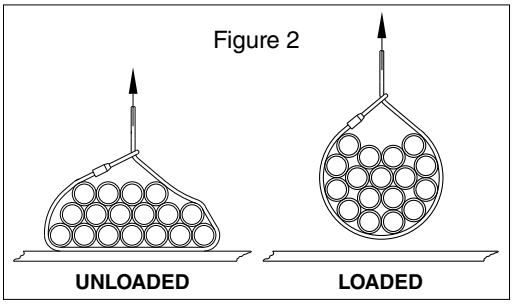
For OSHA (Construction) applications, see OSHA 1926.251.

Figure 1



1. The eye of the sling must be in the choked position (around live line). Choker hitch applications should comply with the requirements of ASME B30.9 Slings. Install the choker hitch to provide a minimum choke angle of 120 degrees (See Figure 1). Refer to ASME B30.9 for required de-rating of the sling if choke angle is less than 120 degrees.
2. Before installing Bundle Clip, apply initial load by lifting the bundle and clearing the support, producing a tight choke. Repeat as necessary until the bundle package is in the most compact position (See figure 2, Loaded). **Keep hands and feet from under load.**

Figure 2



⚠ WARNING

- **Failure to read, understand, and follow these instructions may cause death or serious injury.**
- **A falling load may seriously injure or kill.**
- **Read and understand these instructions before using clips.**
- **Failure to properly position the Bundle Clip may allow the load to slip and fall.**
- **Do not use the Bundle Clip to form the choke hitch (See Figure 3).**
- **Match the same size clip to the same size wire rope.**
- **Install Bundle Clip only as instructed.**
- **Do not use with plastic coated wire rope.**
- **Do not use for lifting personnel.**

3. After initial loading, install the Bundle Clip in proper orientation, with curved portion (Bundle Clip tip) over the eye of the sling. Insert U-bolt through the Bundle Clip. Properly position the clip base over the U-bolt and install nuts (See Figure 3). Use torque wrench to tighten evenly, alternating from one nut to the other until the curved portion bottoms out on the clip base, and the recommended torque is reached (See Table 1).

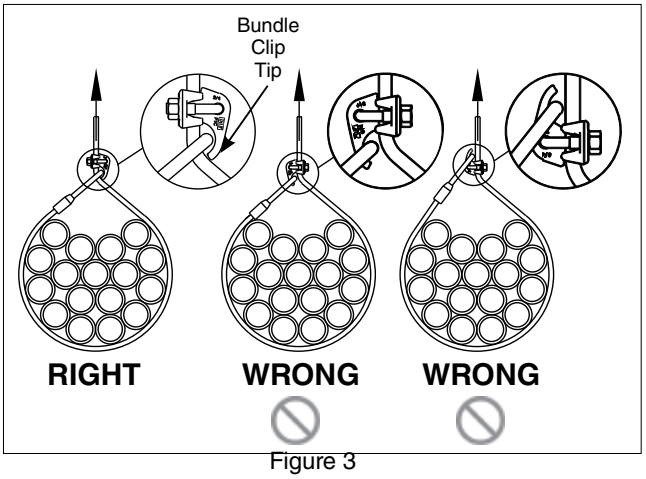


Figure 3

Table 1 – Recommended Torque

Clip Size	Rope Size (in)	Torque (Ft.-Lb.)
5/8	5/8	95
3/4	3/4	130
7/8	7/8	225

4. Before each lift, check to ensure that the choke eye has not slipped from the Bundle Clip tip. Repeat Step 3 if necessary.
5. When disconnecting, the load should be clear of the stable support (See figure 2, Loaded). Remove Bundle Clip. Stay clear of the load as the bundle is lowered and the load is removed from the sling.

In accordance with good rigging and maintenance, the wire rope sling should be inspected periodically for wear, abuse, and general adequacy.

Crosby® ROV HOOKS

WARNINGS & APPLICATION INSTRUCTIONS

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

QUIC-CHECK®

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

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

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

IMPORTANT SAFETY INFORMATION - READ & FOLLOW

- A visual periodic inspection for cracks, nicks, wear, gouges and deformation as part of a comprehensive documented inspection program, should be conducted by trained personnel in compliance with the schedule in ASME B30.10 and/or regulations governing your industry or jurisdiction.
- For ROV hooks used in frequent load cycles or pulsating loads, the ROV hook components (hoist hook, eye bolt and hexagon body) and their threads should be periodically inspected by Magnetic Particle or Dye Penetrant (Disassembly will be required).
- Disassemble the eye bolt and shank hook from hexagon body (sizes up to and including 31.5t WLL). This requires removing the 2 spiral pins and unscrewing the eye bolt and hoist hook.
- Always use new spiral pins when re-assembling the ROV Hook.
- After reassembly, Crosby recommends a proof test equal to 2 times the ROV hook's stated WLL.
- Never use a hoist hook whose throat opening has been increased, or whose tip has been bent more than 10 degrees out of plane from the hook body, or is in any other way distorted or bent. Note: A latch will not work properly on a hook with a bent or worn tip.
- Never use a hoist hook that is worn beyond the limits shown in Figure 1.
- Remove from service any hoist hook with a crack, nick or gouge. Hoist hooks with a nick or gouge shall be repaired by grinding lengthwise, following the contour of the hook, provided that the reduced dimension is within the limits shown in Figure 1. Contact Crosby Engineering to evaluate any cracks.
- Never repair, alter, rework, or reshape an ROV hook by welding, heating, burning, or bending.
- Remove from service a hoist hook or eye bolt which has threads corroded more than 20% of the hexagon body engagement length.
- Never side load, back load, or tip load the hoist hook, eye bolt or hexagon body. (Side loading, back loading and tip loading are conditions that damage and reduce the capacity of the ROV hook.) (See Figure 2)
- The use of a latch may be mandatory by regulations or safety codes. Follow the regulations governing your industry or jurisdiction.

⚠ WARNING

- **Loads may disengage from hook if proper procedures are not followed.**
- **A falling load may cause serious injury or death.**
- **Hook must always support the load. The load must never be supported by the latch.**
- **Read and understand these instructions before using hook and latch.**

Figure 1

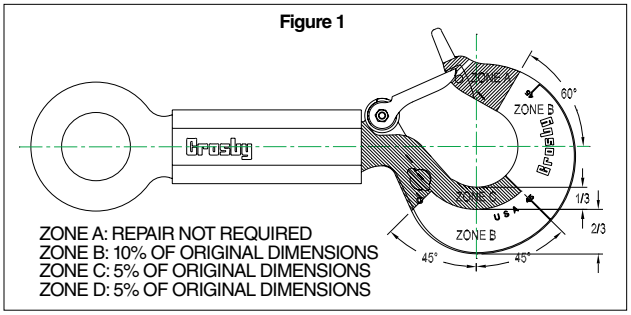
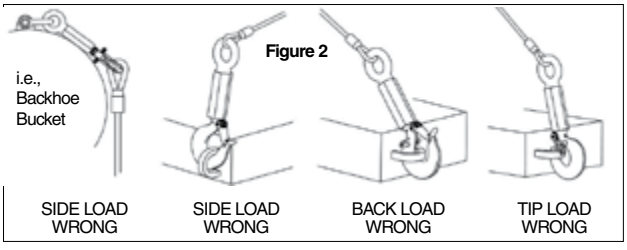


Figure 2



- Always make sure the hook supports the load. The latch must never support the load.
- When multileg slings are placed in the base (bowl/saddle) of the hook, the maximum included angle between sling legs shall be 90 deg. The maximum sling leg angle with respect to the hook centerline for any rigging arrangement shall be 45 degrees. A collector ring, such as a link or shackle, should be used to maintain in-line load when more than two legs are placed in a hook or for angles greater than 45 degrees with respect to hook centerline. When more than two legs are placed in the hook bunching of the legs shall be avoided.
- See ASME B30.10 "Hooks" for additional information.
- Remove from service any eye bolt with a crack, nick or gouge. Eye bolt with a nick or gouge shall be repaired by grinding lengthwise, following the contour of the eye bolt, provided that the reduced dimension is no greater than 5% of original dimension. Contact Crosby Engineering to evaluate any cracks.

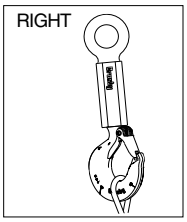


Figure 3

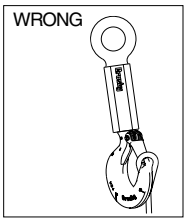


Figure 4

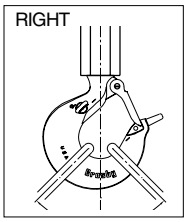


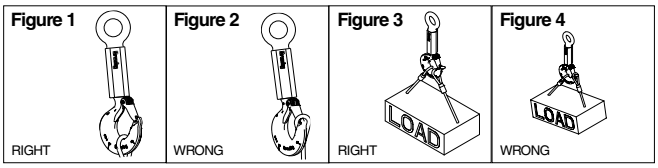
Figure 5

- Never use an eye bolt if eye or shank is bent or elongated.
- Remove from service the hexagon body if internal threads are corroded beyond 20% of the eye bolt or hoist hook shank's threaded engagement lengths.
- Hexagon body with nicks or gouges may be repaired by grinding lengthwise.
- Inspect the spiral pin holes on the hoist hook, hexagon body and eye bolt. At assembly, the spiral pin must engage with a press fit.

Warning and Application Instructions for Crosby® Hook Latch

Important Safety Information – Read & Follow

- Always inspect hook and latch before using.
- Never use a latch that is distorted or bent.
- Always make sure spring will force the latch against the tip of the hook.
- Always make sure hook supports the load. The latch must never support the load (See Figures 1 & 2).
- When placing two (2) sling legs in hooks, make sure the angle between the legs is less the 90° and if the hook or load is tilted, nothing bears against the bottom of this latch (See Figures 3 & 4).
- Latches are intended to retain loose sling or devices under slack conditions.
- Latches are not intended to be an anti-fouling device.

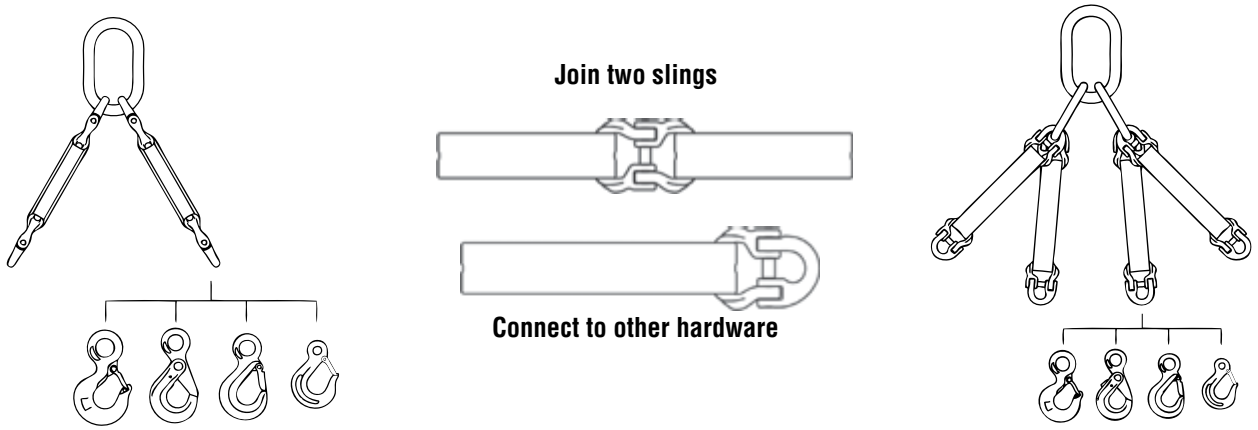


⚠ WARNING

- **Loads may disengage from hook if proper procedures are not followed.**
- **A falling load may cause serious injury or death.**
- **See OSHA Rule 1926.550 (g)(4)(iv)(B) for personnel hoisting for cranes and derricks. Only a Crosby or McKissick hook with a PL Latch attached and secured with bolt, nut and cotter (or Crosby Toggle Pin) or a Crosby hook with a S-4320 Latch attached and secured with a cotter pin, or a Crosby SHUR-LOC® hook in the locked position may be used for any personnel hoisting. A hook with a Crosby SS-4055 latch attached shall NOT be used for personnel lifting.**
- **Hook must always support the load. The load must never be supported by the latch.**
- **Read and understand these instructions before using hook and latch.**

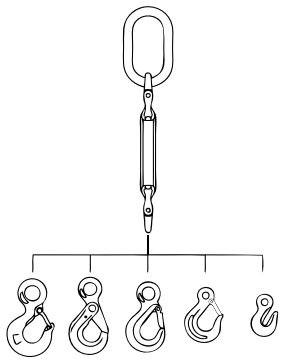
Typical Application

The S-237 and S-238 connectors have been designed to easily adapt to other Crosby fittings to develop complete systems for high performance Synthetic Slings.



These easy-to-use charts are designed to allow you to quickly determine the Crosby Fitting required for your high performance sling.

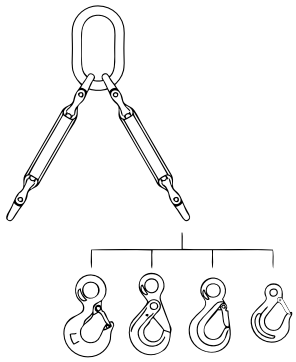
Single Leg Sling



S-237 Frame	Working Load Limit (lb)*	A-1337 Lok-A-Loy (in)	A-342 (in)	A-344 (in)	L-320A L-320AN† (t)	L-320A L-320AN† Frame	S-1316 (in)	S-315A (in)	L-1327 (in)
5	5000	3/8	1	7/8	†7	JA	5/8	5/8	5/8
10	10000	5/8	1	7/8	†7	JA	5/8	5/8	5/8
15	15000	3/4	1-1/4	1	†11	KA	3/4	–	3/4
25	25000	7/8	1-1/2	1-1/4	†15	LA	7/8	–	7/8
30	30000	7/8	1-1/2	1-1/4	†15	LA	7/8	–	7/8
40	40000	1	1-3/4	–	†22	NA	1	–	–
60	60000	1-1/4	2	–	30	OA	–	–	–

* Ultimate load is 5 times the Working Load Limit. † L-320AN Style Hook.

Double Leg Sling

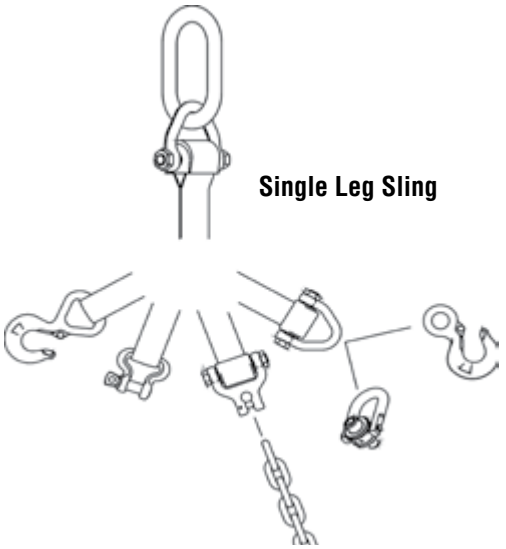


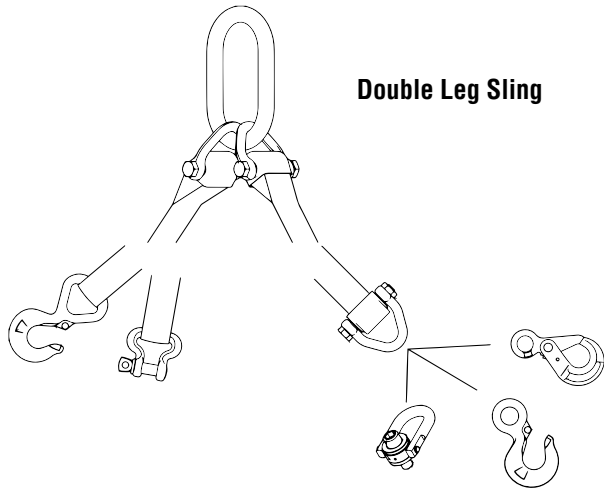
S-237 Frame	Working Load Limit (lb)*	A-1337 Lok-A-Loy (in)	A-342 (in)	A-344 (in)	L-320A L-320AN† (t)	L-320A L-320AN† Frame	S-1316 (in)	S-315A (in)	L-1327 (in)
5	5000	3/8	1-1/4	1-1/4	†7	JA	5/8	5/8	5/8
10	10000	5/8	1-1/4	1-1/4	†7	JA	5/8	5/8	5/8
15	15000	3/4	1-1/2	–	†11	KA	3/4	–	3/4
25	25000	7/8	1-3/4	–	†15	LA	7/8	–	7/8
30	30000	7/8	1-3/4	–	†15	LA	7/8	–	7/8
40	40000	1	2	–	†22	NA	1	–	–
60	60000	1-1/4	2-1/4	–	30	OA	–	–	–

* Ultimate load is 5 times the Working Load Limit. † L-320AN Style Hook.

For Triple and Quad leg slings, contact Crosby Engineering at (918) 834-4611

17





These easy-to-use charts are designed to allow you to quickly determine the fitting required to create the Web Sling or Round Sling you need.

Single and Double Leg Slings Component Recommendations based on Type III, (Eye & Eye), Class 7, 2 Ply web slings.

S-280 Web Connector S-281 Web Sling Shackle							S-280 Web Connector				
Web Sling											
Round Sling Size (No.)	Web Width (in)	Eye Width (in)	Ply.	S-280 S-281 Working Load Limit (tons)	Web Sling Hook WSL-320 (t)	Spectrum 8® Chain Size (in) – (mm)	Eye Hoist Hook L-320AN (t)	Eye SHUR-LOC® S-1316A (in)	Swivel Hoist Ring HR-125 (lb)	Master Link A-342 Single Leg (in)	Master Link A-342 Double Leg (in)
1 & 2	2	2	2	3-1/4	3	3/8 - 10	3	1/2	7,000	5/8	3/4
3	3	1.5	2	4-1/2	5	1/2 - 13	5	5/8	10,000	3/4	1
4	4	2	2	6-1/2	—	5/8 - 16	7	5/8	15,000	1	1
5 & 6	6	3	2	8-1/2	—	—	11	—	24,000	1	1-1/4

Triple and Quad Leg Slings Component Recommendations based on Type III, (Eye & Eye), Class 7, 2 Ply web slings.

S-280 Web Connector S-281 Web Sling Shackle							S-280 Web Connector				
Web Sling											
Round Sling Size (No.)	Web Width (in)	Eye Width (in)	Ply.	S-280 S-281 Working Load Limit (tons)	Web Sling Hook WSL-320 (t)	Spectrum 8® Chain Size (in) – (mm)	Eye Hoist Hook L-320AN (t)	Eye SHUR-LOC® S-1316 (in)	Swivel Hoist Ring HR-125 (lb)	Master Link A-342 Triple Leg (in)	Master Link A-342 Quad Leg (in)
1 & 2	2	2	2	3-1/4	3	3/8 - 10	3	1/2	7,000	1	1
3	3	1.5	2	4-1/2	5	1/2 - 13	5	5/8	10,000	1	1-1/4
4	4	2	2	6-1/2	—	5/8 - 16	7	5/8	15,000	1-1/4	1-1/2
5 & 6	6	3	2	8-1/2	—	—	11	—	24,000	1-1/2	1-3/4

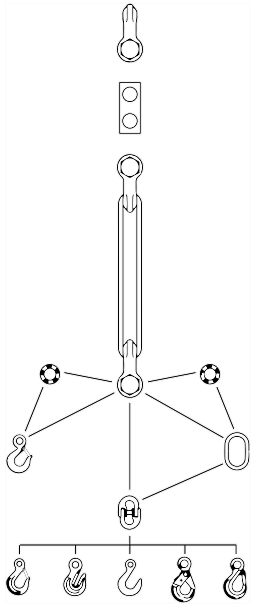
Easily Integrated into Synthetic Sling System

The Synthetic Sling Saver shackles line has been designed to easily adapt Crosby Sling fittings in the development of complete systems for synthetic slings.

Single Leg Slings

Sling Saver Shackle							LOK-A-LOY® Link* A-1337				
Web Sling Eye Width (in)	Working Load Limit (T)	Sling Saver Shackle Spool S-255 (in)	Sling Saver Shackle Link Plate S-256 (in)	Eye Hoist Hook L-320AN† L-320A (t)	Alloy Master Link A-342 (in)	Master Link Assy. A-345 (in)	Sling Hook L-1327 (in)	Eye Grab Hook A-1328 (in)	Eye Foundry Hook A-1329 (in)	Eye SHUR-LOC® S-1316A (in)	Eye Latching S-315A (in)
1	3-1/4	1	1	†5	3/4	—	3/8	3/8	3/8	3/8	3/8
1.5	6-1/2	1.5	1.5	†7	1	—	5/8	5/8	5/8	5/8	5/8
2	8-3/4	2	2	†11	1	—	5/8	5/8	5/8	5/8	5/8
3	12-1/2	3	3	†15	1-1/4	—	3/4	3/4	3/4	—	3/4
4	20-1/2	4	4	†22	1-3/4	—	—	3/4	—	3/4	—
5	35	5	5	37	2	—	—	3/4	—	—	—
6	50	6	6	60	2-1/4	—	—	3/4	—	—	—

* LOK-A-LOY® size same as hook size. † New 320N Eye Hook.

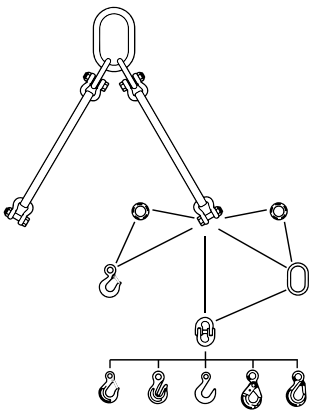


Single Leg Sling

Double Leg Slings

Sling Saver Shackle							LOK-A-LOY® Link* A-1337				
Web Sling Eye Width (in)	Working Load Limit (T)	Sling Saver Shackle Spool S-255 (in)	Sling Saver Shackle Link Plate S-256 (in)	Eye Hoist Hook L-320AN† L-320A (t)	Alloy Master Link A-342 (in)	Master Link Assy. A-345 (in)	Sling Hook L-1327 (in)	Eye Grab Hook A-1328 (in)	Eye Foundry Hook A-1329 (in)	Eye SHUR-LOC® S-1316A (in)	Eye Latching S-315A (in)
1	3-1/4	1	1	†5	3/4	1	3/8	3/8	3/8	3/8	3/8
1.5	6-1/2	1.5	1.5	†7	1	1-1/4	5/8	5/8	5/8	5/8	5/8
2	8-3/4	2	2	†11	1	1-1/4	5/8	5/8	5/8	5/8	5/8
3	12-1/2	3	3	†15	1-1/4	1-1/2	3/4	3/4	3/4	—	3/4
4	20-1/2	4	4	†22	1-3/4	1-3/4	—	3/4	—	—	—
5	35	5	5	37	2	—	3/4	—	—	—	—
6	50	6	6	60	2-1/4	—	3/4	—	—	—	—

* LOK-A-LOY size same as hook size. † New 320N Eye Hook.



Double Leg Sling

17

Sling Saver Inspection Information

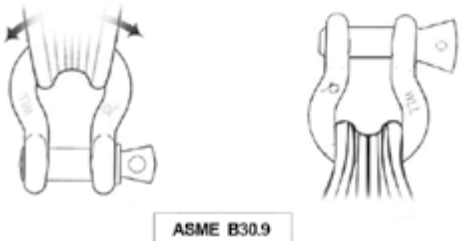
WEB SLINGS
Shall not be constricted or bunched between the ears of a clevis or shackle, or in a hook.

ROUND SLINGS
Shall not be constricted or bunched between the ears of a clevis or shackle, or in a hook.

The opening of fittings shall be proper shape and size to ensure that the fitting will seat properly on the round sling.

When a round sling is used with a shackle, it is recommended that it be used (rigged) in the bow of the shackle.

SYNTHETIC SLINGS RATED LOAD
Folding, bunching or pinching of synthetic slings, which occurs when used with shackles, hooks or other application will reduce the rated load.



When connecting Web or Round Slings, use conventional fittings with:
1. Large Radius. 2. Straight Pins. 3. Pads or use special fittings designed for Synthetic Slings.

SYNTHETIC SLING CONNECTIONS AND HITCHES

WEB SLING IDENTIFICATION INCLUDES:

SLING TYPE:
TC – TRIANGLE CHOKER
TT – TRIANGLE TRIANGLE
EE – EYE AND EYE
EN – ENDLESS

NUMBER OF PLIES: 1 OR 2
WEBBING GRADE: 9 OR 6
SLING WIDTH (INCH)

EE 2-9 04 x 12 ← **SLING LENGTH (INCH)**

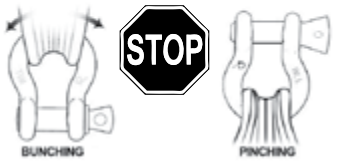
ROUND SLING IDENTIFICATION INCLUDES:

SLING NUMBER: 1-13
Sling numbers are for reference only. some round slings have different ratings.

SLING COLOR: PURPLE, GREEN, YELLOW, TAN, RED, WHITE, BLUE, ORANGE

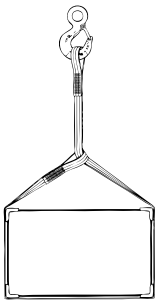
Sling color is not followed by all manufacturers, and some colors have more than one rated load.

Folding, bunching or pinching of synthetic slings, which occurs when used with shackles, hooks or other applications will reduce the rated load.



CHOKER CAPACITY

A choker hitch has 80% of the capacity of a single leg sling only if the angle of choke is 120 degrees or greater. a choke angle less than 120 degrees will result in a capacity as low as 40% of the single leg.



BASKET HITCH CAPACITY

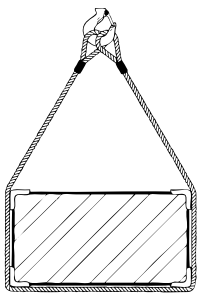
HORIZONTAL ANGLE	CAPACITY % OF SINGLE LEG
90	200%
60	170%
45	140%
30	100%

A true basket hitch has twice the capacity of a single leg only if the legs are vertical.

MULTIPLE LEG SLINGS

TRIPLE LEG SLINGS have 50% more capacity than double leg slings (at same sling angle) only if the center of gravity is in the center of connection points and legs adjusted properly (they must have an equal share of the load).

QUAD (4-LEG) SLINGS offer improved stability but provide increased capacity only if all legs share an equal share of the load.



ALWAYS SELECT AND USE WEB SLINGS AND ROUND SLINGS BY THE RATED LOAD SHOWN ON THE SLING IDENTIFICATION TAG, NEVER BY WIDTH, COLOR OR SLING NUMBER.

FORGED EYE BOLT

WARNINGS & APPLICATION INSTRUCTIONS

Regular Nut Eye Bolt G-291

Shoulder Nut Eye Bolt G-277

Machinery Eye Bolt S-279 / M-279

Important Safety Information - Read & Follow

Inspection/Maintenance Safety:

- Always inspect eye bolt before use.
- Never use eye bolt that shows signs of wear or damage.
- Never use eye bolt if eye or shank is bent or elongated.
- Always be sure threads on shank and receiving holes are clean.
- Never machine, grind, or cut eye bolt.
- Do not leave threaded end of machinery eye bolt in aluminum loads for long periods of time as it may cause corrosion.

Assembly Safety:

- Never exceed load limits specified in Table I & Table 2.
- Never use regular nut eye bolts for angular lifts.
- Always use shoulder nut eye bolts (or machinery eye bolts) for angular lifts.
- For angular lifts, adjust working load as follows:

ANGLE FROM "IN-LINE"	ADJUSTED WORKING LOAD LIMIT
5 degrees	100% of rated working load
15 degrees	80% of rated working load
30 degrees	65% of rated working load
45 degrees	30% of rated working load
90 degrees	25% of rated working load

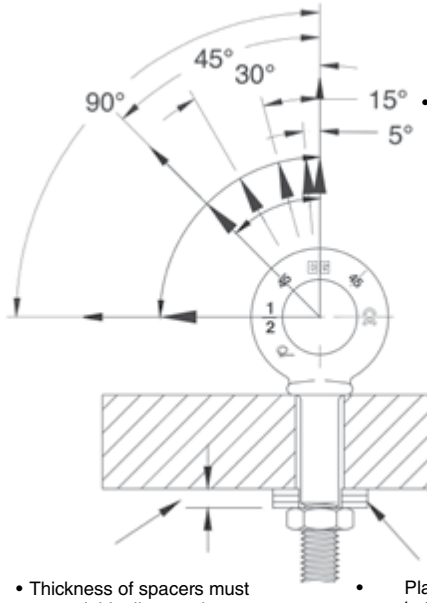
- Never undercut eye bolt to seat shoulder against the load.
- Always countersink receiving hole or use washers with sufficient I.D. to seat shoulder.
- Always screw eye bolt down completely for proper seating.
- Always tighten nuts securely against the load.

⚠ WARNING

- **Load may slip or fall if proper eye bolt assembly and lifting procedures are not used.**
- **A falling load can seriously injure or kill.**
- **Read and understand these instructions, and follow all eye bolt safety information presented here.**
- **Read, understand, and follow information in diagrams and charts below before using eye bolt assemblies.**

Shoulder Nut Eye Bolt – Installation for Angular Loading

IN-LINE



- The threaded shank must protrude through the load sufficiently to allow full engagement of the nut.
- If the eye bolt protrudes so far through the load that the nut cannot be tightened securely against the load, use properly sized washers to take up the excess space BETWEEN THE NUT AND THE LOAD.
- Thickness of spacers must exceed this distance between the bottom of the load and the last thread of the eye bolt.
- Place washers or spacers between nut and load so that when the nut is tightened securely, the shoulder is secured flush against the load surface.

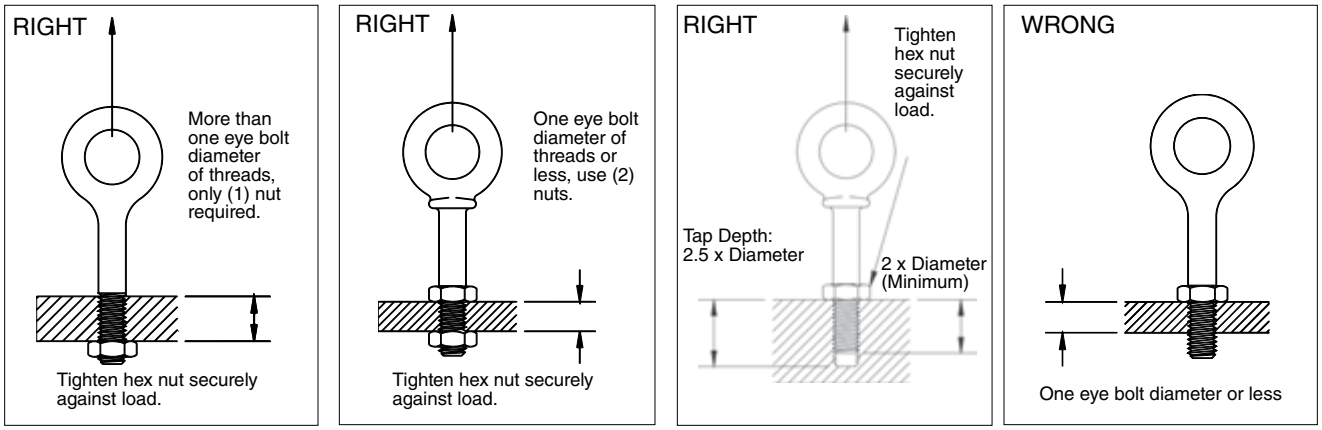
Figure 1

Table 1 (In-Line Load)	
Size (in)	**Working Load Limit (lb)**
1/4	650
5/16	1,200
3/8	1,550
1/2	2,600
5/8	5,200
3/4	7,200
7/8	10,600
1	13,300
1-1/8	15,000
1-1/4	21,000
1-1/2	24,000
1-3/4	34,000
2	42,000
2-1/2	65,000

Table 2 (In-Line Load)	
Metric Size	**Working Load Limit - kg**
m6	200
m8	400
m10	640
m12	1000
m16	1800
m20	2500
m24	4000
m27	5000
m30	6000
m36	8500
m42	14000
m48	17300
m64	29500

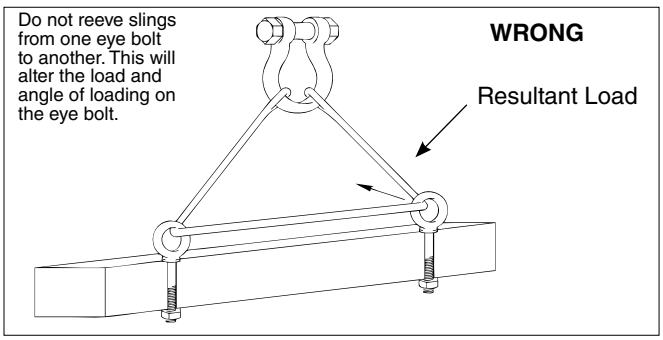
Important – Read and understand these instructions before using eye bolts.

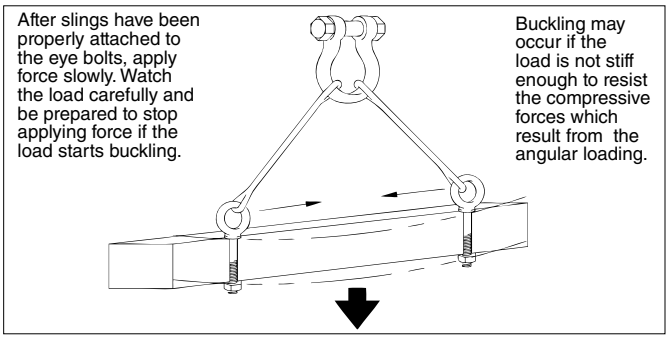
Regular Nut & Shoulder Nut Eye Bolt – Installation for In-Line Loading



Operating Safety

- Always stand clear of load.
- Always lift load with steady, even pull – do not jerk.
- Always apply load to eye bolt in the plane of the eye – not at an angle.
- Never exceed the capacity of the eye bolt–see Table 1 & 2.
- When using lifting slings of two or more legs, make sure the loads in the legs are calculated using the angle from the vertical sling angle to the leg and properly size the shoulder nut or machinery eye bolt for the angular load.





Machinery Eye Bolt - Installation for In-Line & Angular Loading

These eye bolts are primarily intended to be installed into tapped holes.

1. After the loads on the eye bolts have been calculated, select the proper size eye bolt for the job.

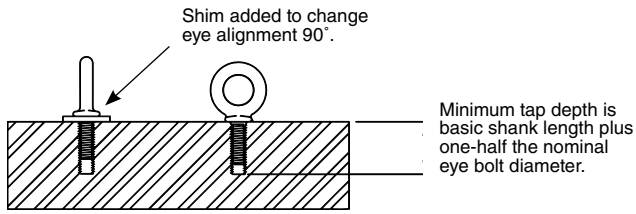
   For angular lifts, adjust working load as follows:

Direction of Pull (from In-Line)	Adjusted Working Load
45 degrees	30% of rated working load
90 degrees	25% of rated working load

2. Drill and tap the load to the correct sizes to a minimum depth of one-half the eye bolt size beyond the shank length of the machinery eye bolt.
3. Thread the eye bolt into the load until the shoulder is flush and securely tightened against the load.
4. If the plane of the machinery eye bolt is not aligned with the sling line, estimate the amount of unthreading rotation necessary to align the plane of the eye properly.
5. Remove the machinery eye bolt from the load and add shims (washers) of proper thickness to adjust the angle of the plane of the eye to match the sling line. Use Table 3 to estimate the required shim thickness for the amount of unthreading rotation required.

Table 3

Eye Bolt Size (in)	Shim Thickness Required to Change Rotation 90° (in)	Eye Bolt Size (mm)	Shim Thickness Required to change Rotation 90° (mm)
1/4	.0125	M6	.25
5/16	.0139	M8	.31
3/8	.0156	M10	.38
1/2	.0192	M12	.44
5/8	.0227	M16	.50
3/4	.0250	M20	.62
7/8	.0278	M24	.75
1	.0312	M27	.75
1-1/8	.0357	M30	.88
1-1/4	.0357	M36	1.00
1-1/2	.0417	M42	1.13
1-3/4	.0500	M48	1.25
2	.0556	M64	1.50
2-1/2	.0625	—	—



CROSBY® PIVOT HOIST RING
WARNINGS & APPLICATION INSTRUCTIONS

HR-100

⚠ WARNING

- **Load may slip or fall if proper Hoist Ring assembly and lifting procedures are not used.**
- **A falling load can seriously injure or kill.**
- **Do not use with damaged slings or chain. For inspection criteria see ASME B30.9.**
- **Never apply load except in line with the pivot direction.**
- **Use only genuine Crosby bolts as replacements.**
- **Read and understand these warnings and application instructions.**

Pivot Hoist Ring Application / Assembly Instructions

- Use pivot hoist ring only with ferrous metal (steel, iron) workpiece. Do not leave threaded end of hoist ring in aluminium for long periods of time due to corrosion.
- After determining the loads on each pivot hoist ring, select the proper size using the Working Load Limit (WLL) ratings in Table 1 for UNC threads.
- Drill and tap the workpiece to the correct size to a minimum depth of one-half the threaded bolt diameter plus the effective thread projection length (see Table 1, on next page). To select proper bolt and thread sizes see Table 1 on next page.
- Install the pivot hoist ring to recommended torque with a torque wrench making sure the pivot hoist ring body meets the load (workpiece) surface. See rated load limit and bolt torque requirements imprinted on top of the pivot hoist ring body (see Table 1, on next page).
- Never use spacers between the pivot hoist ring body and workpiece surface.
- Always select proper load rated lifting device for use with pivot hoist ring.
- Attach lifting device ensuring free fit to pivot hoist ring bail (lifting ring) (Figure 1).
- Apply partial load and check proper pivot. Ensure load alignment is in the direction of pivot (Figure 4). There should be no interference between load (workpiece) and pivot hoist ring bail (Figure 2).

Pivot Hoist Ring Inspection / Maintenance

- Always inspect pivot hoist ring before use.
- Regularly inspect pivot hoist ring parts (Figure 3).
- Never use pivot hoist ring that shows signs of corrosion, wear or damage.
- Never use pivot hoist ring if bail is bent or elongated.
- Do not use parts showing cracks, nicks or gouges.
- Always be sure threads on bolts and receiving holes are clean, not damaged or worn, and fit properly.
- Always check with torque wrench before using an already installed pivot hoist ring.
- Always make sure there are no spacers (washers) used between pivot hoist ring body and the workpiece surface. Remove any spacers (washers) and retorque before use.
- Always ensure free movement of the bail. The bail should pivot 180 degrees (Figure 4).
- Always be sure total workpiece surface is in contact with the pivot hoist ring body mating surface. Drilled and tapped holes must be 90 degrees to load (workpiece) surface.
- Always make sure that the load is applied in the direction of pivot.

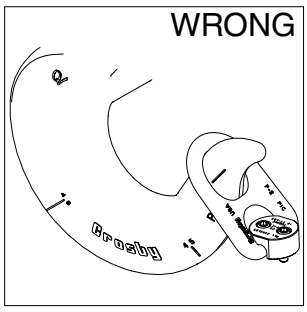


Figure 1

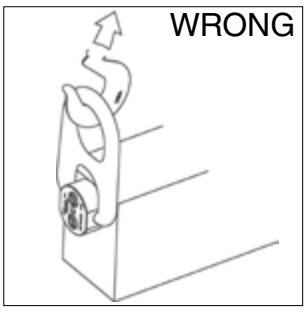


Figure 2

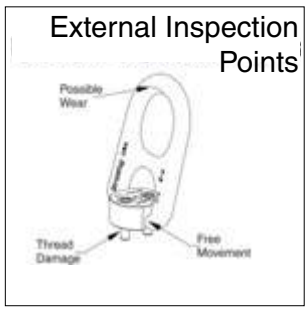


Figure 3

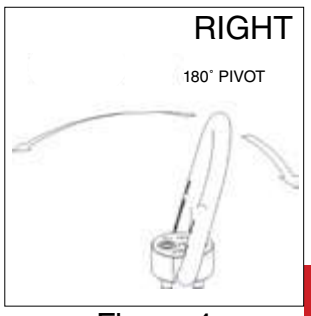


Figure 4

17

Operating Safety

- Never exceed the capacity (WLL) of the pivot hoist ring, See Table 1 for UNC threads.
- When using lifting slings of two or more legs, make sure the forces in the legs are calculated using the angle from the horizontal sling angle to the leg and select the proper size pivot hoist ring. When using a multi-leg lifting sling, the pivot hoist ring must be mounted so that the pivot direction is inline with the load applied.

Table 1
HR-100 Pivot Hoist Rings**

Working Load Limit* (lb)	Torque in Ft • lb †	No. of Bolts	Dimensions (in)	
			Bolt Size††	Effective Thread Projection Length
2,000	7	2	5/16 - 18	0.82
2,500	12	2	3/8 - 16	0.65
5,000	28	2	1/2 - 13	1.40
12,000	28	4	1/2 - 13	1.65
20,000	60	4	5/8 - 11	1.65

* Ultimate load is 5 times the working load limit. Individually proof tested to 2-1/2 times the working load limit.

† Tightening torque values shown are based upon threads being clean, dry and free of lubrication.

** Designed to be used with ferrous workpiece only.

†† Only use Crosby high strength replacement bolts. Do not use any other bolts.

After slings have been properly attached to the hoist ring, apply force slowly.
Watch the load and be prepared to stop applying force if the load starts buckling.

Buckling may occur if the load is not stiff enough to resist the compressive forces which result from the angular loading.

Do not reeve slings from one bail to another. This will alter the load and angle of loading on the hoist ring.

WRONG

SIDE PULL HR-1200

WARNINGS & APPLICATION INSTRUCTIONS

HR-1200

Hoist Ring Application / Assembly Instruction

- The Crosby side pull swivel hoist ring is designed to accept standard Crosby fittings to facilitate wider slings and quick attachment. In order to use the larger fittings, the load rating on the (shackle) fitting may be greater than the hoist ring frame. **Never exceed the Working Load Limit of the hoist ring frame.**
- Use swivel hoist ring only with a ferrous metal (steel, iron) or non-ferrous (i.e., aluminum) loads (workpiece). Do not leave threaded end of hoist ring in aluminum loads for long time periods due to corrosion.
- After determining the loads on each hoist ring, select the proper size hoist ring using the Working Load Limit ratings in Table 1 for UNC threads and Table 2 for Metric threads (on next page.)
- For Subsea or Metric environment application, use the HR-1200 CT Series hoist ring only.
- Drill and tap the workpiece to the correct size to a minimum depth of one-half the threaded shank diameter plus the threaded shank length.
- Install hoist ring to recommended torque with a torque wrench making sure the bushing flange is fully supported by the load (workpiece) surface. See rated load limit and bolt torque requirements imprinted on hoist ring body (See Table 1 or Table 2).
- Never use spacers between bushing flange and mounting surface.
- Always select proper lifting device for use with Swivel Hoist Ring (See Tables 1 & 2 on next page).
- Attach lifting device ensuring free fit to hoist shackle (See Figure 3).
- Apply partial load and check proper rotation and alignment of shackle. There should be no interference between load (workpiece) and hoist shackle (See Figure 1 and Figure 4).
- The Hoist ring should rotate into normal operating position, with shackle aligned with load as shown in Figure 3. If shackle is oriented as shown in Figure 4, **DO NOT LIFT**.
- **Special Note:** when a Hoist Ring is installed with a retention nut, the nut must have full thread engagement and must meet one of the following standards to develop the Working Load Limit (WLL).
  1. ASTM A-563 (A) Grade D Hex Thick
  2. (B) Grade DH Standard Hex
  3. SAE Grade 8 - Standard Hex

Hoist Ring Inspection / Maintenance

- Always inspect hoist ring before use.
- Regularly inspect hoist ring parts (Figure 2).
- For hoist rings used in frequent load cycles or on pulsating loads, the bolt threads should be periodically inspected by magnetic particle or dye penetrant.
- Do not use part showing cracks, nicks or gouges.
- Repair minor nicks or gouges to hoist frame by lightly grinding until surfaces are smooth. Do not reduce original dimension more than 10%. Do not repair by welding.

⚠ WARNING

- **Loads may slip or fall if proper Hoist Ring assembly and lifting procedures are not followed.**
- **A falling load may cause serious injury or death.**
- **Install hoist ring bolt to torque requirements listed in tables.**
- **The side pull hoist ring frame will be only one part of a lifting system with several components (i.e., shackles and slings). Never exceed the Working Load Limit of the hoist ring frame.**
- **Do not use damaged slings or chain. For inspection criteria, see ASME B30.9.**
- **Read and understand these instructions before using hoist ring.**
- **The tension of the sling must be calculated or measured and can not exceed the working load limit (WLL) of the load connection fitting.**
- **Use only genuine Crosby parts as replacements.**
- **Replacement bolt kits are available from Crosby.**

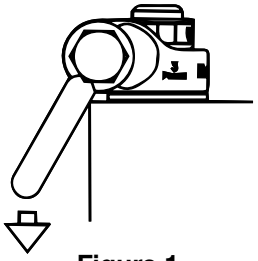


Figure 1

Figure 2

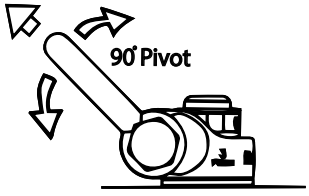


Figure 3

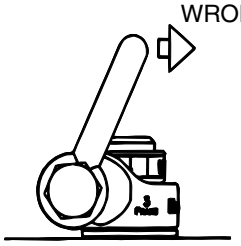
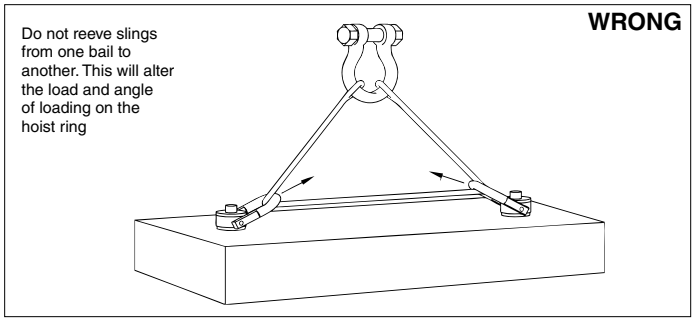


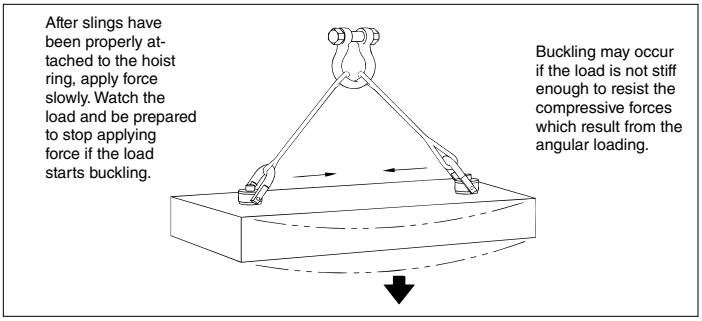
Figure 4

- Never use hoist ring that shows signs of corrosion, wear or damage.
- Never use hoist ring if components are bent or elongated.
- Always be sure threads on bolt and receiving tapped holes are clean, undamaged, and fit properly.
- Always check with torque wrench before using an already installed hoist ring.
- Always make sure there are no spacers (washers) used between bushing flange and the mounting surface. Remove any spacers (washers) and retorque before use.
- Always ensure free movement of shackle. The shackle should pivot 90° and the hoist ring should swivel 360° (See Figure 3).
- Always be sure total workpiece surface is in contact with hoist ring bushing mating surface. Drilled and tapped hole must be 90° to load (workpiece) surface.

OPERATING SAFETY

- Never exceed the capacity of the hoist ring, see Table 1 for UNC threads and Table 2 for Metric threads.
- When using lifting slings of two or more legs, make sure the forces in the legs are calculated using the angle from the horizontal sling angle to the leg and select the proper size swivel hoist ring to allow for the angular forces.





HR-1200 UNC Threads

TABLE 1

Frame Size	Working Load Limit * (lb)	Hoist Ring Bolt Torque in Ft • lb †	Bolt Size ‡ (in)	Effective Thread Projection Length (in)	Recommended Shackles	
					Red Pin ® Shackles 209, 210, 213 215, 2130, 2150	Red Pin ® Web Shackles S-281
1	650†† 800††	7 12	5/16 - 18 x 1.5 3/8 - 18 x 1.5	.59 .59	1/2" - (2) 5/8" - (3-1/4)	2" - (3-1/4)
2	2000 2000†† 3000 3000††	28 28 60 60	1/2 - 13 x 2.0 1/2 - 13 x 2.5 5/8 - 11 x 2.0 5/8 - 11 x 2.75	.71 1.21 .71 1.46	5/8" - (3-1/4) 3/4" - (4-3/4)	2" - (3-1/4) 1-1/2" - (4-1/2)
3	5000 5000†† 6500 6500†† 8000 8000††	100 100 160 160 230 230	3/4 - 10 x 2.75 3/4 - 10 x 3.5 7/8 - 9 x 2.5 7/8 - 9 x 3.5 1 - 8 x 3.0 1 - 8 x 4.0	1.46 1.63 .90 1.68 1.15 2.15	7/8" - (6-1/2)	2" - (6-1/4)
4	14000	470	1-1/4 - 7 x 4.5	2.22	1" - (8-1/2) 1-1/8" - (9-1/2) 1-1/4" - (12)	3" - (8-1/2)
5	17200 29000	800 1100	1-1/2 - 6 x 6.5 2 - 4-1/2 x 6.5	2.88 2.98	1-3/8" - (13-1/2) 1-1/2" - (17) 1-3/4" - (25)	—

HR-1200M Metric Threads

TABLE 2

Frame Size	Working Load Limit * (kg)	Hoist Ring Bolt Torque in Nm †	Bolt Size ‡ (mm)	Effective Thread Projection Length (mm)	Recommended Shackles	
					Red Pin ® Shackles 209, 210, 213 215, 2130, 2150	Red Pin ® Web Shackles S-281
1	300 400	10 16	M8 x 1.25 x 40 M10 x 1.5 x 40	16.9 16.9	1/2" - (2) 5/8" - (3-1/4)	2" - (3-1/4)
2	1000 1400	38 81	M12 x 1.75 x 50 M16 x 2.00 x 60	17.2 27.2	5/8" - (3-1/4) 3/4" - (4-3/4)	2" - (3-1/4) 1-1/2" - (4-1/2)
3	2250 3500	136 312	M20 x 2.50 x 75 M24 x3.00 x 80	28.1 33.1	7/8" - (6-1/2)	2" - (6-1/4)
4	6250	637	M30 x 3.5 x 120	65.1	1" - (8-1/2) 1-1/8" - (9-1/2) 1-1/4" - (12)	3" - (8-1/2)
5	7750 10000 13000	1005 1005 1350	M36 x 4.0 x 150 M42 x 4.5 x 160 M48 x 5.0 x 160	60.6 70.6 70.6	1-3/8" - (13-1/2) 1-1/2" - (17) 1-3/4" - (25)	—

Designed to be used with Ferrous workpiece only.

* Ultimate load is 5 times the Working Load Limit. Individually proof tested to 2-1/2 times the Working Load Limit.
† Tightening torque values shown are based upon threads being clean, dry and free of lubrication.
†† Long bolts are designed to be used with soft metal (i.e., aluminum) workpiece. While the long bolts may also be used with ferrous metal (i.e., steel & iron) workpieces, short bolts are designed for ferrous workpieces only.
‡ Bolt specification is a Grade 8 Alloy socket head cap screw to ASTM A574. All threads are UNC - 3A.
‡‡ Bolt specification is a Grade 12.9 Alloy socket head cap to DIN 912. All threads are metric (ASME/ANSI B18.3.1m).

CROSBY® WELD-ON PIVOTING LINK

WARNING & APPLICATION INSTRUCTIONS

S-265

⚠ WARNING

- **Loads may disengage from link if proper welding, assembly, and lifting procedures are not used.**
- **A falling load may cause serious injury or death.**
- **Do not use with damaged slings or chain. For sling inspection criteria see ASME B30.9.**
- **Read and understand these instructions before welding on, or using the pivoting link.**

Important Safety Information - Read and Follow

- Use weld-on pivoting link only with ferrous metal (steel) workpiece.
- After determining the loads on each weld-on pivoting link, select the proper size using the Working Load Limit (WLL) ratings in Table 1 on next page.
- Always make sure the weld-on pivoting link and mounting surface is free of dirt or contaminants before installation.
- Never use spacers between the weld-on pivot link and mounting surface.
- Always select proper load rated lifting device for use with weld-on pivoting link.
- Attach lifting device ensuring free movement of weld-on pivoting link bail (Figure 1).
- Apply partial load and check proper alignment. There should be no interference between load (workpiece) and weld-on pivoting link (Figure 2).
- Always ensure free movement of bail. The bail should pivot 180 degrees (Figure 4).
- The support structure that the pivot link is attached to must be of suitable size, composition and quality to support the anticipated loads of all operating positions. The required support structure thickness for a given application is dependent on variables such as unsupported length and material strength, and should be determined by a qualified individual.
- Never repair, alter, rework or reshape the pivoting link bail by welding, heating, burning or bending.

Weld-on Pivoting Link Inspection / Maintenance

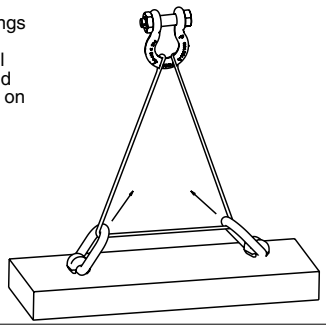
- Always inspect weld-on pivoting link before use.
- Regularly inspect weld-on pivoting link parts (Figure 3).
- Never use weld-on pivoting link that shows signs of corrosion, wear or damage.
- Never use weld-on pivoting link if bail is bent or elongated.
- Do not use part showing cracks, nicks or gouges.
- Always make sure there are no spacers used between weld-on pivoting link and the mounting surface.
- Always be sure workpiece surface is in total contact with the weld-on pivoting link base mating surface.
- Always inspect the weld-on pivoting link bail and base for wear.
- A visual periodic inspection of the weld should be performed. Check the weld visually, or use a suitable NDE method if required.

Operating Safety

- Never exceed the capacity (WLL) of the weld-on pivoting link (Table 1, next page).
- Always apply load within 90° of inline, at any pivot angle (Figure 4 & 5).
- When using lifting slings of two or more legs, make sure the forces in the legs are calculated using the angle from the horizontal sling angle to the leg and select the proper size link.

Do not reeve slings from one bail to another. This will alter the load and angle of loading on the pivoting link.

WRONG



After slings have been properly attached to the pivoting link, apply force slowly. Watch the load and be prepared to stop applying force if the load starts buckling.

Buckling may occur if the load is not stiff enough to resist the compressive force which results from the angular loading.

WRONG

Figure 1

WRONG

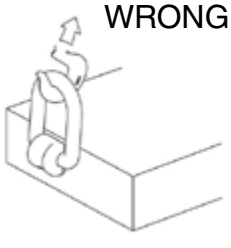


Figure 2

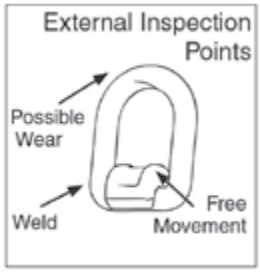


Figure 3

RIGHT

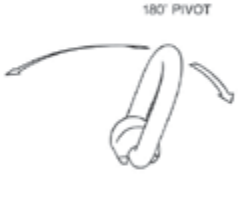


Figure 4

RIGHT

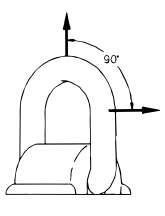


Figure 5

17

Weld-on Pivoting Link Welding Guidelines

1. Select the correct size weld-on pivoting link to be used. Be sure to calculate the maximum load that will be applied to the weld-on pivoting link.
2. Place the weld-on pivoting link onto the mounting surface. The bottom of the link base must be parallel and even with the mounting surface.
3. Welding is to be performed by a qualified welder using a qualified procedure in accordance with American Welding Society and/or American Society of Mechanical Engineers requirements. Always follow your country or local mandatory regulations or codes.
4. The following welding recommendations should be included in the qualified procedure for welding to low or medium carbon plate steel. For welding to other grades of steel, a qualified weld procedure must be developed.
   - A. Saddle material is equivalent to SAE/AISI 1024, EN S355J2, or DIN 1.0570.
   - B. Weld material is to have a minimum tensile strength of 70,000 PSI (such as AWS A5.1 E-7018). Observe the electrode manufacturer's recommendations. Completely fill internal fillet created between weld-on pivoting link base and mounting surface.
   - C. Before welding, all weld surfaces must be clean and free from rust, grease, paint, slag and any other contaminants.
   - D. Fillet weld leg size should be minimum shown in Table 1. Weld profiles to be in accordance with AWS. Weld size is measured by length of leg.
   - E. Welding should be carried out in a minimum of two passes to ensure adequate root penetration at the base of the pivoting link.
   - F. Weld full length of "D" dimension on both sides of link base (Figure 5).
   - G. Do not weld close to the bail. After welding, ensure bail pivots full 180° without interfering with the weld.
   - H. Do not rapidly cool the weld.
   - I. The ends of the weld must be ground sufficiently so that the weld-on pivoting link will fit flush against the mounting surface.
   - J. A thorough inspection of the weld should be performed. No cracks, pitting, inclusions, notches or undercuts are allowed. If doubt exists, use a suitable NDE method, such as magnetic particle or liquid penetrant to verify.
   - K. If repair is required, grind out the defect and re-weld using the original qualified procedure.

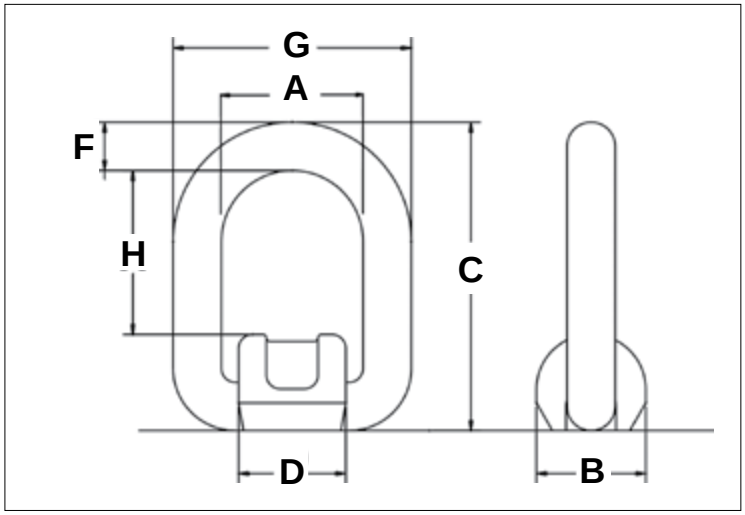


Figure 5

Table 1
S-265 Weld-on Pivoting Links*

Stock Number	Working Load Limit (t)		Dimensions (in)								Weight Each (lb)
	Design Factor 5:1	Design Factor 4:1	A	B	C	D	F	G	H	Minimum Fillet Weld Size	
1290839	1	1.2	1.57	1.42	3.27	1.38	0.51	2.60	1.65	3/32	.88
1290848	2.5	3.2	1.77	1.73	3.90	1.65	0.71	3.19	1.89	3/32	1.32
1290857	4	5.3	2.17	1.97	4.84	1.93	0.87	3.90	2.24	1/4	2.65
1290866	6.4	8	2.76	2.52	5.67	2.52	1.02	4.80	2.64	1/4	5.29
1290875	12	15	3.82	3.54	7.60	3.39	1.34	6.50	3.70	5/16	13.01

*Designed to be used with ferrous workpiece only.

CROSBY SWIVEL HOIST RING

WARNING & APPLICATION INSTRUCTIONS

HR-125/SS-125
(Red Washer)
HR-125M
SS-125M
(Silver Washer)

HR-1000
(Red Washer)
HR-1000M
(Sliver Washer)
HR-1000CT
(Blue Washer)

Hoist Ring Application Assembly Safety

- Use swivel hoist ring only with a ferrous metal (steel, iron) or soft metal (i.e., aluminum) load (workpiece). Do not leave threaded end of hoist ring in aluminum loads for long time periods due to corrosion.
- For subsea or marine environment applications, use the HR-1000CT series Hoist Ring only.
- After determining the loads on each hoist ring, select the proper size hoist ring using the Working Load Limit ratings in Tables 1, 3, and 5 for UNC threads and Tables 2, 4 and 6 for Metric threads (on next page).
- Drill and tap the workpiece to the correct size to a minimum depth of one-half the threaded shank diameter plus the threaded shank length. See rated load limit and bolt torque requirements imprinted on top of the swivel trunnion (See Table 1 through Table 6 on next page).
- When a hoist ring is used in a side load application, ensure equal loading on the pins by aligning the bail as shown in (Fig. 3).
- Always be sure total hoist ring bushing mating surface is in contact with the (workpiece) surface. Drilled and tapped hole must be 90 degrees to load (workpiece) surface.
- Install hoist ring to recommended torque with a torque wrench making sure the bushing flange meets the load (workpiece) surface.
- Never use spacers between bushing flange and mounting surface.
- Always select proper load rated lifting device for use with Swivel Hoist Ring.
- Attach lifting device ensuring free fit to hoist ring bail (lifting ring) (Fig. 1).
- Apply partial load and check proper rotation and alignment. There should be no interference between load (workpiece) and hoist ring bail (Fig. 2).
- Special Note: Recommended thru hole clearance is 1/32" for bolts smaller than 1" and 2/32" for bolts 1" and larger in diameter.

UNC NUTS

1. **ASTM A-563**
   Grade D
   (Heavy Hex or Hex Thick)
   Grade DH
   Grade DH3
2. **ASTM A-194**
   Grade 2H
   Grade 4
   Grade 7
3. **FNL**
   Grade 9
4. **SAE J995**
   Grade 8

METRIC NUTS

1. **ASTM A-563M**
   Class 10S
2. **ISO 898-2**
   (EN 20898-2/DIN 267-4)
   Class 10
   Class 12

Minimum thread engagement length is one times thread diameter.

Hoist Ring Inspection / Maintenance

- Always inspect hoist ring before use.
- Regularly inspect hoist ring parts.
- Never use hoist ring that shows signs of corrosion, wear or damage.
- Never use hoist ring if bail is bent or elongated.
- Always be sure threads on shank and receiving hole are clean, not damaged, and fit properly.
- Always check with torque wrench before using an already installed hoist ring.
- Always make sure there are no spacers (washers) used between bushing flange and the mounting surface. Remove any spacers (washers) and retorque before use.
- Prior to loading always ensure free movement of bail. The bail should pivot 180 degrees and swivel 360 degrees.

⚠ WARNING

- **Loads may slip or fall if proper Hoist Ring assembly and lifting procedures are not used.**
- **A falling load may cause serious injury or death.**
- **Install hoist ring bolt to torque requirements listed in tables 1, 2, 3, 4, 5, & 6 for the HR-125, HR-1000, HR-1000CT, HR-125M, HR-1000M and SS-125.**
- **Read, understand and follow all instructions and chart information.**
- **Do not use with damaged slings, chain, or webbing. For inspection criteria see ASME B30.9.**
- **The tension of the sling must be calculated or measured and can not exceed the working load limit (WLL) of the load connection fitting.**
- **Use only genuine Crosby parts as replacements.**

Operating Safety

- Never exceed the capacity of the swivel hoist ring, see Tables 1, 2 and 5 for UNC threads and Tables 3, 4 and 6 for Metric threads (See next page for tables.).
- When using lifting slings of two or more legs, make sure the forces in the legs are calculated using the angle from the horizontal sling angle to the leg and select the proper size swivel hoist ring to allow for the angular forces.

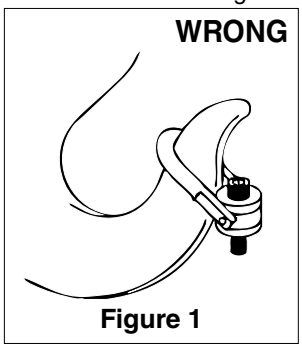


Figure 1

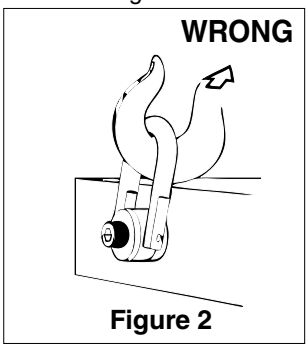


Figure 2

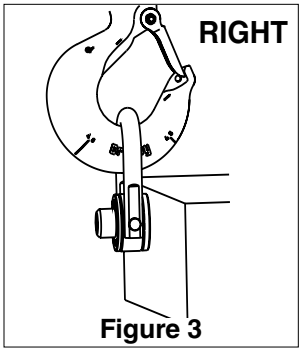


Figure 3

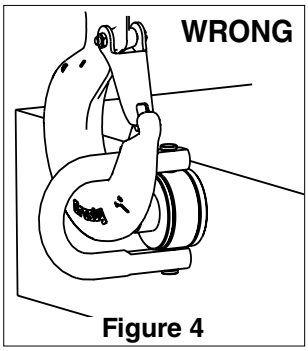
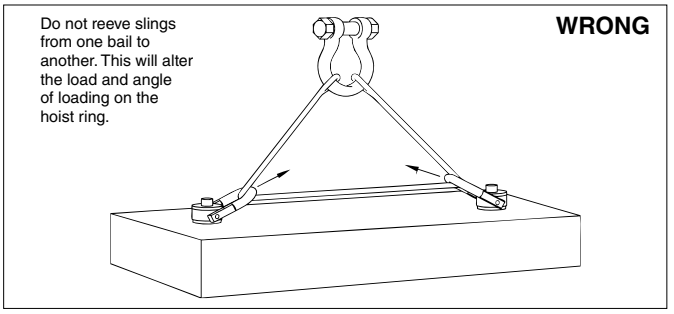


Figure 4

17

Table 1					
		HR-125		HR-1000	
WLL* 5:1 (lb)	Hoist Ring Bolt Torque Ft•lbs †	Bolt Size ‡ (in)	Effective Thread Projection Length (in)	Bolt Size ‡ (in)	Effective Thread Projection Length (in)
800 ††	7	5/16 - 18 x 1.50	.58	5/16 - 18 x 1.50	.52
1000 ††	12	3/8 - 16 x 1.50	.58	3/8 - 16 x 1.50	.52
2500	28	1/2 - 13 x 2.00	.70	1/2 - 13 x 2.25	.69
2500 ††	28	1/2 - 13 x 2.50	1.20	1/2 - 13 x 2.75	1.19
4000	60	5/8 - 11 x 2.00	.70	5/8 - 11 x 2.25	.69
4000 ††	60	5/8 - 11 x 2.75	1.45	5/8 - 11 x 3.00	1.44
5000	100	3/4 - 10 x 2.25	.95	3/4 - 10 x 2.50	.94
5000 ††	100	3/4 - 10 x 2.75	1.45	3/4 - 10 x 3.00	1.44
7000 Ω	100	3/4 - 10 x 2.75	.89	3/4 - 10 x 3.00	.85
7000 ††Ω	100	3/4 - 10 x 3.50	1.64	3/4 - 10 x 3.50	1.35
8000	160	7/8 - 9 x 2.75	.89	7/8 - 9 x 3.00	.85
8000 ††	160	7/8 - 9 x 3.50	1.64	7/8 - 9 x 3.50	1.35
10000	230	1 - 8 x 3.00	1.14	1 - 8 x 3.50	1.35
10000 ††	230	1 - 8 x 4.00	2.14	1 - 8 x 4.50	2.35
15000	470	1-1/4 - 7 x 4.50	2.21	1-1/4 - 7 x 5.00	2.09
24000	800	1-1/2 - 6 x 6.75	2.97	1-1/2 - 6 x 5.50	2.59
30000	1100	2 - 4-1/2 x 6.75	2.97	—	—
50000	2100	2-1/2 - 4 x 8.00	4.00	—	—
75000	4300	3 - 4 x 10.50	5.00	—	—
100000	5100	3-1/2 - 4 x 13.00	7.00	—	—

Ω Ultimate Load is 4.5 times Working Load Limit for 7000# Hoist Ring when tested in 90° orientation. All sizes are individually proof tested to 2-1/2 times the Working Load Limit. *, †, ††, ‡ (See footnotes at bottom of Table 5).



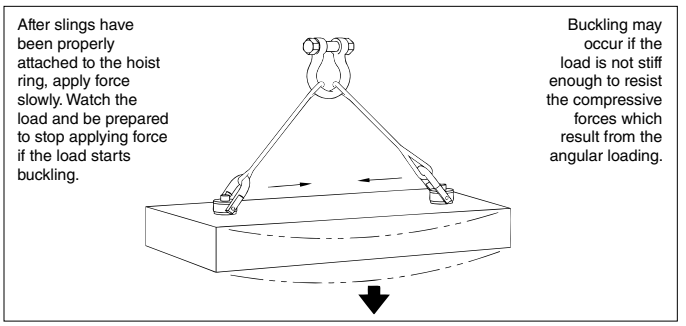


Table 2				
Working Load Limit (kg) ****		HR-1000MCT		
Design Factor 5:1	Design Factor 4:1	Hoist Ring Bolt Torque in (Nm) †	Bolt Size (mm) ‡‡	Effective Thread Projection Length (mm)
825	1030	38	M12 x 1.75 x 55	15.6
1350	1690	81	M16 x 2.00 x 65	25.5
2250	2810	136	M20 x 2.50 x 80	25.3
3175	3970	312	M24 x 3.00 x 90	35.4
5450	6810	637	M30 x 3.50 x 140	65.9
7450	9310	1005	M36 x 4.00 x 130	56.3
13250	16560	1350	M48 x 5.00 x 180	50.7

Table 3			
HR-1000CT			
Working Load Limit 5:1 (lb) ****	Hoist Ring Bolt Torque in (Ft • lbs) †	Bolt Size (in) Δ	Effective Thread Projection Length (in)
1900	28	1/2 - 13 x 2.25	.70
1900	28	1/2 - 13 x 2.75	1.20
3000	60	5/8 - 11 x 2.25	.70
4800	100	3/4 - 10 x 3.00	.85
6200	160	7/8 - 9 x 3.00	.85
8300	230	1 - 8 x 3.50	1.35
12500	470	1 1/4 - 7 x 5.00	2.10
20000	800	1 1/2 - 6 x 5.50	2.60
20000	800	1 1/2 - 8 x 5.50	2.60
28000	1100	2 - 4.5 x 7.50	3.20
45000	2100	2 1/2 - 4 x 9.50	3.73

Table 4						
Working Load Limit (kg)***			HR-125M		HR-1000M	
Design Factor 5:1	HR-125M Design 4:1	Hoist Ring Bolt Torque in Nm †	Bolt Size ‡‡ (mm)	HR-125M Effective Thread Projection Length (mm)	Bolt Size ‡‡ (mm)	HR-1000M Effective Thread Projection Length (mm)
400	500	10	M 8 X 1.25 X 40	16.9	M 8 X 1.25 X 40	15.2
450	550	16	M 10 X 1.50 X 40	16.9	M 10 X 1.50 X 40	15.2
1050	1300	38	M 12 X 1.75 X 50	17.2	M 12 X 1.75 X 55	15.5
1900	2400	81	M 16 X 2.00 X 60	27.2	M 16 X 2.00 X 65	25.5
2150	2700	136	M 20 X 2.50 X 65	31.2	M 20 X 2.50 X 70	30.5
3000	3750	136	M 20 X 2.50 X 75	28.1	M 20 X 2.50 X 80	25.4
4200	5250	312	M 24 X 3.00 X 80	33.1	M 24 X 3.00 X 90	35.4
7000	8750	637	M 30 X 3.50 X 120	65.1	M 30 X 3.50 X 140	66.2
11000	13750	1005	M 36 X 4.00 X 150	60.6	M 36 X 4.00 X 150	56.2
12500	15600	1005	M 42 x 4.50 x 160	70.6	—	—
13500	16900	1350	M 48 x 5.00 x 160	101	—	—
22300	27900	2847	M 64 x 6.00 x 204	101	—	—
31500	39400	5830	M 72 x 6.00 x 265	132	—	—
44600	55800	6914	M 90 x 6.00 x 330	177	—	—

See Footnotes on next page.

† Tightening torque values shown are based upon threads being clean, dry and free of lubrication.

Footnotes below relate to tables 1-4

* Ultimate load is 5 times the Working Load Limit. Individually proof tested to 2-1/2 times the Working Load Limit.

** Ultimate load is 4 times the Working Load Limit. Individually proof tested to 2-1/2 times the Working Load Limit.

*** Individually proof tested to 2-1/2 times the Working Load Limit based on 4:1 design factor

**** Ultimate load is 5 times the Working Load Limit. Individually proof tested to 2 times the Working Load Limit.

†† Long bolts are designed to be used with soft metal (i.e., aluminum) workpiece. While the long bolts may also be used with ferrous metal (i.e., steel & iron) workpieces, short bolts are designed for ferrous workpieces only.

‡ Bolt specification is a Alloy socket head cap screw to ASTM A574. All threads are UNC .

‡‡ Bolt specification is a Grade 12.9 Alloy socket head cap screw to DIN 912. All threads are metric (ASME/ANSI B18.3.1m)

Δ Bolt specification is a Grade L7 or L43 Alloy socket head cap screw to ASTM A320. All threads are UNC.

‡‡‡ Tighten bolt to specified torque, then tighten nut to specified torque.

All Swivel Hoist Rings are individually proof tested.

Table 5

SS-125 ¥¥

Working Load Limit (lb) ¥	Torque in Ft • lbs †	Bolt Size (in) §	Effective Thread Projection (in)
400	3.5	5/16 - 18 x 1	.29
400	3.5	5/16 - 18 x 1.25	.54
500	6	3/8 - 16 x 1.25	.54
1250	14	1/2 - 13 x 2	.78
1250	14	1/2 - 13 x 2.25	1.03
1250	14	1/2 - 13 x 2.5	1.28
2000	30	5/8 - 11 x 2	.78
2000	30	5/8 - 11 x 2.25	1.03
2000	30	5/8 - 11 x 2.5	1.28
2500	50	3/4 - 10 x 2.25	1.03
2500	50	3/4 - 10 x 2.75	1.53
3500	50	3/4 - 10 x 2.75	1.04
3500	50	3/4 - 10 x 3.25	1.54
4000	80	7/8 - 9 x 2.75	1.04
4000	80	7/8 - 9 x 3	1.29
5000	115	1 - 8 x 3	1.29
5000	115	1 - 8 x 3.25	1.54
5000	115	1 - 8 x 4	2.29
7500	235	1-1/4 - 7 x 4	1.89
12000	400	1-1/2 - 6 x 5.5	2.70
15000	550	2 - 4-1/2 x 5.75	2.96
25000	1050	2-1/2 - 4 x 8	4.00
25000	1050	2-1/2 - 8 x 8	4.00
37500	2150	3 - 4 x 10.25	5.00
50000	2550	3-1/2 - 4 x 13	7.00

Table 6

SS-125M ¥¥

SS-125M ¥¥ Working Load Limit (kg) ¥	Torque in Lbs †	Bolt Size (mm) §§	Effective Thread Projection (mm)
200	4	M 8 x 1.25x30	13
250	8	M 10 x 1.50x35	18
525	18	M 12 x 1.75x50	19
950	40	M 16 x 2.00x60	29
1075	68	M 20 x 2.50x65	34
1500	68	M 20 x 2.50x75	32
2100	108	M 24 x 3.00x80	37
2100	108	M 30 x 3.50x110	58
3500	318	M 30 x 3.50x95	42
3500	318	M 30 x 3.50x115	62
5500	542	M 36 x 4.00x135	64
6250	542	M 42 x 4.50x155	82
6750	746	M 48 x 5.00x155	82
11150	1423	M 64 x 6.00x205	101
15750	2915	M 72 x 6.00x265	132
22300	3459	M 90 x 6.00x330	177

Footnotes below relate to Tables 5 and 6

¥ Ultimate load is 5 times the Working Load Limit. Individually proof tested to 2 times the Working Load Limit.

¥¥ All components are 316 Stainless Steel, except Bolt Retainers, which are made from15-7 PH (UNS 15700) magnetic stainless steel.

§ Bolt specification is 316 Stainless Steel socket head cap screw to ASTM F837 Group 1 (316).

§§ Bolt specification is 316 Stainless Steel socket head cap screw to ASTM F837M (316). All threads are Metric (ASME/ANSI B18.3.1M).

CROSBY Slide-Loc® Lifting Point

WARNINGS & APPLICATION INSTRUCTIONS

SL-150 & SL-150M
Slide-Loc Lifting Point

⚠ WARNING

- **Load may slip or fall if proper Lifting Point assembly and lifting procedures are not used.**
- **A falling load can seriously injure or kill.**
- **Do not use with damaged slings or chain. For inspection criteria see ASME B30.9.**
- **Use only genuine Crosby bolts as replacements.**
- **Read and understand these warnings and application instructions.**
- **Do not load the Lifting Point if the slide lock is in the installation position (Red QUIC-CHECK mark is visible).**
- **The tension of the sling must be calculated or measured and can not exceed the working load limit (WLL) of the load connection fitting.**

LIFTING POINT APPLICATION / ASSEMBLY INSTRUCTIONS

- Lifting Points incorporate a red indented area on each forged bail that provides a quick indicator to determine whether the Lifting Point is in the installation position or the lifting position. If the **QUIC-CHECK** mark is visible, product is in installation mode and shall not be used for lifting.

QUIC-CHECK®

- **To check,** look for indented surface (red) on bail. A visible **QUIC-CHECK** mark (Figure 2) means the slide lock and bolt are engaged for installation. When Lifitng Point is properly installed, move slide lock to lifting position (Figure 1).
- Use Lifting Points only with a ferrous metal (i.e., steel, iron) or soft metal (e.g., aluminum) load (workpiece). Do not leave threaded end of Lifting Point in aluminum loads for long time periods due to corrosion.
- When using lifting slings of two or more legs, make sure the forces in the legs are calculated using the angle from the horizontal sling angle to the leg and select the proper size swivel hoist ring to allow for the angular forces.
- After determining the loads on each Lifting Point, select the proper size Lifting Point using the Working Load Limit ratings in Table 1 for UNC threads and Table 2 for Metric threads.
- Never exceed rated capacity of Lifting Point. See Table 1 for UNC threads, and Table 2 for metric threads.
- Drill and tap the workpiece to the correct size to a minimum depth of one-half the threaded shank diameter plus the threaded shank length.
- Install Lifting Point by hand so that the bushing flange is held tight to the mounting surface by the bolt. The bushing flange should engage the entire mounting surface.
- Never use spacers between bushing flange and mounting surface.
- Always select proper load rated lifting device for use with Lifting Points.
- Attach lifting device ensuring free fit to Lifting Point bail (Figure 6).
- Never lift load if Red **QUIC-CHECK** indicator is visible (Figure 2).
- Apply partial load and check proper rotation and alignment. The Lifting Point bail should be in-line with the direction of the load.

USING THE LIFTING POINT

Slide-Loc LIFTING Position

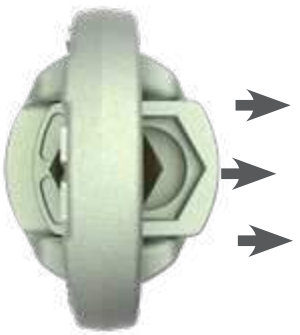


Figure 1

Slide-Loc INSTALLATION Position

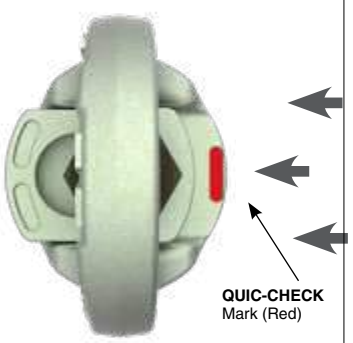


Figure 2

- Do not load in a direction perpendicular to the bail (Figure 5).
- Special Note: Recommended thru hole clearance is 1/32" for bolts smaller than 1" and 2/32" for bolts 1" and larger in diameter.

1. ASTM A-563

   A. Grade D Hex Thick

   B. Grade DH Standard Hex

2. SAE Grade 10.9 — Standard Hex

To place the Lifting Point:

- Move the slide lock into the installation position, such that the four flats on the bolt head are engaged (Figure 2).
- Thread the bolt of the Lifting Point into the hole of your workpiece making sure that the entire length of exposed bolt thread is engaged. If the hole on your workpiece is not threaded, ensure that the Lifting Point is secured with a nut on the opposite side of your workpiece and that that nut thread is fully engaged.

- Before applying any load, ensure that the slide lock has been moved back into the lifting position and that the bail is free to rotate (Figure 1).
- The Lifting Point can be loaded in any direction shown in Figure 4.
- Do not swivel the Lifting Point while supporting a load. The Lifting Point is a positioning device and is not intended to swivel under load.

To remove Lifting Point

- Move the slide lock into the installation position, such that the four flats on the bolt head flats are engaged (Figure 2).
- Unthread the Lifting Point from your workpiece.

Lifting Point Inspection / Maintenance

- Perform regular daily inspections as recommended.
- Always inspect Lifting Point before use.
- Regularly inspect Lifting Point parts (Figure 3).
- Never use Lifting Point that shows signs of corrosion, wear or damage.
- Never use Lifting Point if bail is bent or elongated.
- Always be sure threads on shank and receiving hole are clean, not damaged, and fit properly.
- Never use spacers (washers) between bushing flange and the mounting surface.
- Always ensure free movement of bail. The bail should swivel 360 degrees (Figure 3).
- Always be sure total workpiece surface is in contact with Lifting Point bushing mating surface. Drilled and tapped hole must be 90 degrees to load (workpiece) surface.

Table 1

Working Load Limit 4:1 (t)	UNC Bolt Size (in)	Effective Thread Projection Length (in)
.5	3/8	.61
.75	1/2	.80
1.50	5/8	1.01
2.30	3/4	1.28
2.30	7/8	1.63
3.20	1	1.93

Table 2

Working Load Limit 4:1 (t)	Metric Bolt Size (mm)	Effective Thread Projection Length (mm)
.5	10	14.7
.75	12	18.1
1.50	16	24.5
2.30	20	31.0
3.20	24	37.0

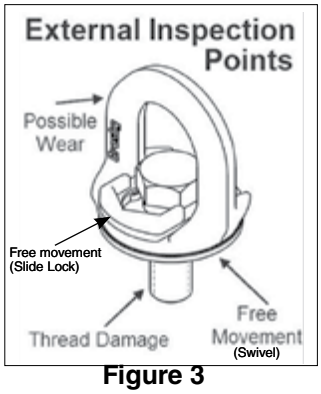


Figure 3

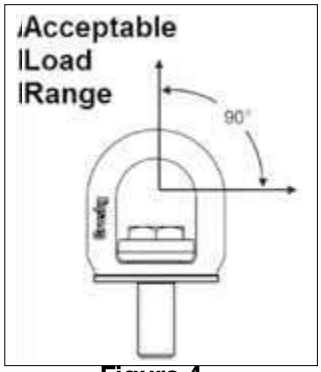


Figure 4

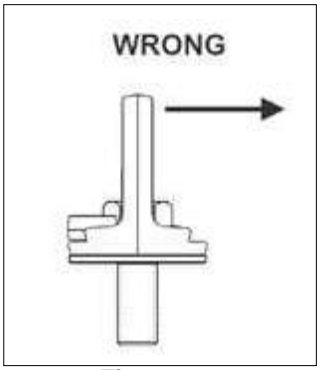


Figure 5

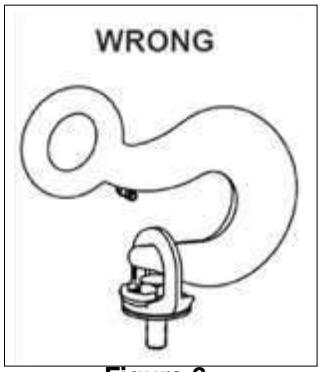
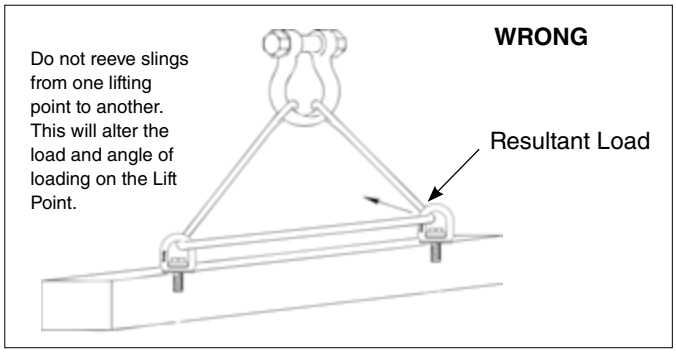
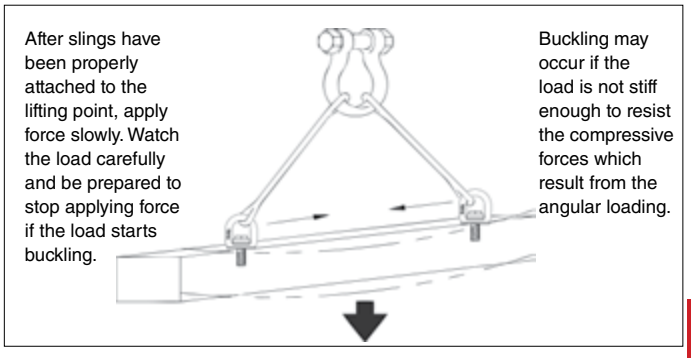


Figure 6





Technical Information

The following information aims to give advice and explain the most common questions in order to ensure correct and proper use of lifting points. This technical information refers to RELP, RLP, DLP and BLP unless other is stated. Always refer to the user instructions of the specific model of lifting point before use. It is of the most importance that this information is known to the user and in accordance with the Machinery Directive 2006/42/EC this information must be delivered to the customer. See website or user instructions for assembly instructions. Meets listed current specifications and standards at time of publication of this catalog.

General Advice

Reference should be made to relevant standards and other statutory regulations. Inspections must be carried out only by people who possess sufficient knowledge.

Before installation and before every use, visually inspect the lifting points, paying particular attention to any evidence of corrosion, wear, weld cracks or deformations. Please ensure compatibility of bolt thread and tapped hole.

The material construction, to which the lifting point will be attached, should be of adequate strength to withstand forces during lifting without deformation.

Ensure minimum thread depth, see table (d refers to bolt diameter).

Thread depth	Yield limit of base material
1 x d	For steel, yield limit >29 ksi
1.25 x d	For cast iron, yield limit >29 ksi
2.5 x d	Aluminum
	For other metal alloys or base materials consult your Gunnebo Industries distributor.

- If the bolt length needs to be adjusted the bolt should be cut with a cold saw or lathe and temperature kept as low as possible during cutting. After cutting check the shape of the threads nearest the cut with an appropriately sized die (there must not be any burrs).
- The surface facing around the thread hole shall be flat (plane), clear of dirt and smooth to ensure perfect contact with the shoulder surface of the Lifting Point.

Nut and washer

The nut and washer must be the original equipment supplied from Gunnebo Industries to ensure the correct mechanical properties. No warranty, insurance or liability will be accepted if bolts not supplied by Gunnebo Industries have been used.

Extreme Environments

The in-service temperature affects the WLL as follows:

RLP

Temperature (°F)	Reduction of WLL
-40 to +392 °F	0 %
+392 to +572 °F	10 %
+572 to +752 °F	25 %
Temperatures below -40°F or above 752 °F are not allowed.	

RELP

Temperature (°F)	Reduction of WLL
-40 to +212 °F	0 %
+212 to +392 °F	15 %
+392 to +482 °F	20%
+482 to +662 °F	25 %
Temperatures below -40 F or above 662 F are not allowed.	

BLP / DLP

Temperature (°F)	Reduction of WLL
-40 to +392 °F	0 %
Temperatures below -40° F or above 392º F are not allowed.	

Severe Environments

Lifting points must not be used in alkaline (> pH10) or in acidic condition (< pH6).
Comprehensive and regular examination must be carried out when used in severe or corrosive environments. In uncertain situations consult your Gunnebo Industries distributor.

Surface Treatment

- Hot dip galvanizing or plating is not allowed outside the control of the manufacturer.
- Acid or Alkaline cleaning is not allowed.

Protect yourself and others

- Before each use the Lifting Point should be checked for obvious damage or deterioration.
- Know the weight of the load and its center of gravity.
- Ensure the load is ready to move and that no obstacles will obstruct the lifting.
- Check the conformity of the load with the Working Load Limit.
- Prepare the landing site.
- Never overload and avoid shock loading.
- Never use an improper configuration.
- Never use a worn or damaged Lifting Point.
- Do not ever ride on the load.
- Do not ever walk or stand under a suspended load.
- Take into consideration that the load may swing or rotate.
- Watch your feet and fingers while loading/unloading.

Inspection

Periodic thorough examination must be carried out at least every 12 months or more frequently according to local statutory regulations, type of use and past experience.

- Ensure correct bolt and nut size, quality and length.
- Ensure compatibility of bolt thread and tapped hole – control of the torque.
- The lifting point should be complete.
- The working load limit and manufacturers stamp should be clearly visible.
- Check for deformation of the component parts such as body, load ring and bolt.
- Check for mechanical damage, such as notches, particularly in high stress areas.
- Wear should be no more than 10 % of cross sectional diameter.
- Evidence of corrosion.
- Evidence of cracks.
- Damage to the bolt, nut and/or thread.
- The body of the Lifting Point must be free to rotate.

Symmetric Loading Conditions

- For three and four leg lifts, the Lifting Points should be arranged symmetrically around the center of gravity and in the same plane if possible.
- The WLL for Gunnebo Industries Lifting Points is based on symmetrical loading.
- The Lifting Point must be positioned on the load in such way that movement is avoided during lifting.
- For single leg lifts, the lifting point should be vertically above the center of gravity of the load.
- For two leg lifts, the Lifting Points must be equidistant to or above the center of gravity of the load.

Asymmetric Loading Conditions

- For unequally loaded lifts we recommend that the WLL is determined as follows:
- 2-leg slings are calculated as the corresponding 1-leg sling.
- 3 and 4-leg slings are calculated as the as the corresponding 1-leg sling*

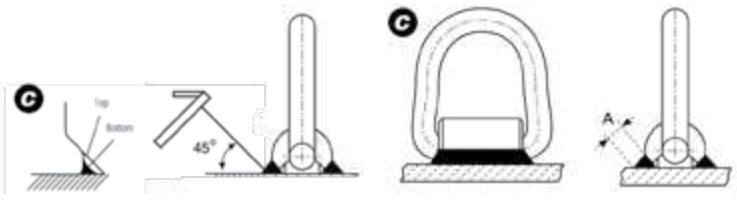
**(If 2-legs with full certainty are carrying the major part of the load, the WLL can be calculated as for the corresponding 2-leg sling).*

WLP - WELDING

Preheat the structure if the temperature is below 0°C; otherwise follow AS 1554 or other suitable national standard.

- Ensure that the WLP cannot move during welding by welding the corners of the welding block. Continue the weld around the welding block without interruption in a single operation.
- The nozzle or electrode should be at 45° (see Fig. C), so that the required penetration is obtained. The minimum throat (A) should be maintained.

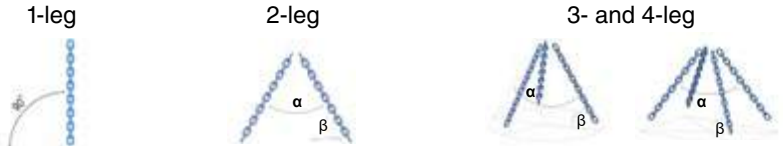
Product	Min. plate gauge (Rm-181.3 ksi) tmin	Min. throat thickness
WLP 2.5 T	43”	0.43
WLP 4 T	74”	0.51
WLP 7 T	94”	0.63
WLP 10 T	1.18”	0.71
WLP 16 T	1.57”	0.79



- The weld should not contain cracks or pores.
- Do not cool the weld with water. It should be left to cool naturally.

17

Working Load Limits (lb) for WLP



Typ	WLL lb*	α 0-90° β 45°	α 90-120° β 30°	α 0-90° β 45°	α 90-120° β 30°
WLP-2.5T	5 510	7 714	5 510	11 681	8 115
WLP-4T	8 816	12 342	8 815	18 514	13 224
WLP-7T	15 428	21 599	15 428	32 619	23 142
WLP-10T	22 040	31 076	22 040	46 725	33 060
WLP-16T	35 300	49 810	35 300	74 716	52 896

Working Load Limits (lb) for SLP

Typ	WLL lb*	α 0-90° β 45°	α 90-120° β 30°	α 0-90° β 45°	α 90-120° β 30°
SLP-1T	2 204	3 085	2 204	4 628	3 306
SLP-3T	6 612	9 256	6 612	13 885	9 918
SLP-5T	11 020	15 428	11 020	23 362	16 530

Working Load Limits (lb) for ELP

Typ	WLL (lb)*	α 0-90° β 45°	α 90-120° β 30°	α 0-90° β 45°	α 90-120° β 30°
ELP-16-8	2 204**	3 085	2 204	4 628	3 306
ELP-20-8	3 306**	4 628	3 306	6 832	4 848
ELP-24-8	4 408**	6 171	4 408	9 256	6 612
ELP-30-8	6 612**	9 256	6 612	13 885	9 918

Note: The above loads apply to normal usage and equally loaded legs. For asymmetric loaded chain slings, the following is recommended:

- A two-legged system is rated as a single-legged system.
- A three- or four-legged system is rated as a two-legged system.

** In case of 1-leg application where loading is limited to straight loading in the direction of thread (no bending force) it is possible to use ELP with four times higher WLL. Note: Threaded depths need to be at least 1xM for steel, 1.25xM for cast iron and 2xM for aluminum alloy.

Speedbinders TORQUE DRIVE LOAD BINDER

Warnings and Application Instructions

Speedbinders Torque Drive Load Binder

Important Safety Information - Read & Follow

For maximum safety and efficiency, load securement systems must be properly designed, used and maintained. You must understand the use of load binders in a load securement system. These instructions provide this knowledge. Read them carefully and completely.

⚠ WARNING

- **Failure to use this load binder properly may result in serious injury or even death to you or others.**
- **Do not operate load binder while standing on the load.**
- **You must be familiar with state and federal regulations regarding size and number of chain systems required for securing loads on trucks.**
- **Always consider the safety of nearby workers as well as yourself when using load binder.**
- **While under tension, the load binder must not be side loaded.**
- **Chain tension may decrease due to load shifting during transport.**
- **Do not throw these instructions away. Keep them close at hand and share them with any others who use this load binder.**
- **Care should be taken to reduce the speed of the drill as the chain becomes taut, to minimize the twist of the drill. It may be necessary to use both hands to secure the drill at high torque- even at slow speeds.**
- **Use only genuine Speedbinders parts as replacement.**

PRIOR TO USE

- Apply user preferred EP type grease to the gear set via the zerk fitting. Rotate the barrel 180° between applications for best results.
- Add preferred form of lubricant to the threaded posts. Add just enough to reduce the resistance, as overuse of lubricant can cause additional resistance during operation.

Instructions- Torque Drive Load Binder

- Position the Torque Drive load binder so it can be operated from the ground or a stable location. Be aware of ice, snow, rain, oil, etc. that can affect your footing. Make certain your footing is secure.
- Position the load binder with short portion of barrel close to the trailer attachment point, so the reaction bar rests against the floor of the trailer after tensioning. Alternately, position the reaction bar against the object being secured. **Reaction Bar must be positioned against a solid surface for proper retention.**
- Do not attempt to hold the reaction bar to prevent rotation while tensioning. Always hold the drill with two hands, one cradling the battery to prevent twist.

- Tension the Torque Drive binder using a rotation tool such as cordless drill equipped with a 14 mm socket. If the cordless drill is not available, a manual wrench or tool equipped with a 14 mm socket can be used to tighten or loosen.
- To tighten the load binder, the drill rotates the 14 mm hex head clockwise. Loosening is achieved by counterclockwise rotation of the 14 mm hex head.
- Cordless drills with approximately 800 Lb.- In. maximum torque output can be used and provide adequate tensioning for most load securement applications.
- For best results, first run down all binders in the drill's high-speed setting. Then return to each binder and finish tightening in the low-speed/high-torque setting on the drill.
- Never exceed the Working Load Limit of the load binder.
- **Do not use impact drivers,** as the torque of these devices can damage the gears and under-tension the load securement system.
- After tensioning, it should take about 15– 20 pounds of force to pull the reaction bar away from the floor or secured object. Reaction bar should return to surface immediately if pulled on.
- Chain tension may change due to load shifting during transport. Ensure the load binder remains in proper position, and retighten as required.
- When releasing the load, be aware that the load may have shifted, and may have become unstable.

Inspection / Maintenance

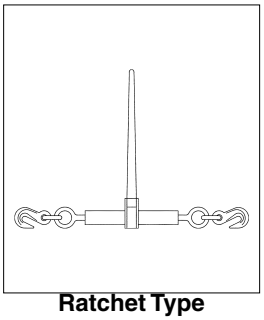
- Routinely check load binders for elongation, wear, bending, cracks, nicks, gouges or corrosion. **If bending or cracks are present – Do not use load binder.**
- Routinely (approximately every 30 cycles) grease the gear set through the grease fitting, using a medium consistency EP grease.
- Routinely clean and lubricate screw threads of load binder to extend product life and reduce friction wear.
- Inspect drive bolt head for any signs of wear.
- • After approximately 600 cycles, uninstall the end fittings, clean and re-lubricate the threads, and reinstall. Also, if desired, remove side plates and clear out old grease in gear set. Replace side plates and add enough grease to fill the cavity.

Crosby® Load Binder

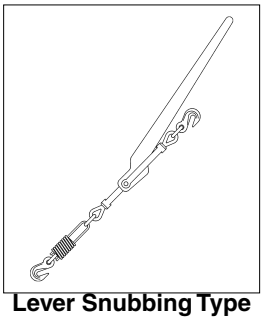
WARNINGS & APPLICATION INSTRUCTIONS

⚠ WARNING

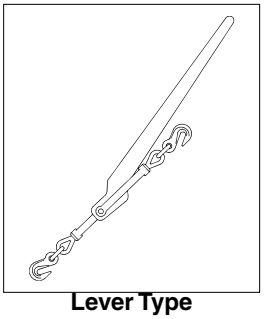
- **Failure to use this load binder properly may result in serious injury or even death to you or others.**
- **Do not operate load binder while standing on the load.**
- **Move handle with caution. It may whip – Keep body clear.**
- **Keep yourself out of the path of the moving handle and any loose chain laying on the handle.**
- **You must be familiar with state and federal regulations regarding size and number of chain systems required for securing loads on trucks.**
- **Always consider the safety of nearby workers as well as yourself when using load binder.**
- **While under tension, load binder must not bear against an object, as this will cause side load.**
- **Do not throw these instructions away. Keep them close at hand and share them with any others who use this load binder.**
- **Do not use handle extender – see instructions.**
- **Do not attempt to close or open the binder with more than one person.**



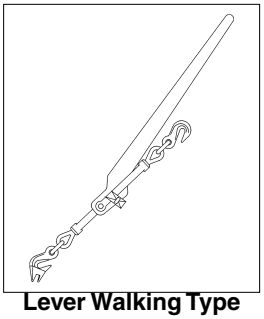
Ratchet Type



Lever Snubbing Type



Lever Type



Lever Walking Type

Mechanical Advantage

Lever Type Binder = 25 : 1
Ratchet Type Binder = 50 : 1

Example: 100 pounds of effort applied to the binder results in the following force on the binder.

Lever Type:
100 lb x 25 = 2500 lb of force

Ratchet Type:
100 lb x 50 = 5000 lb of force

Instructions – Lever Type Load Binders

- Hook load binder to chain so you can operate it while standing on the ground. Position load binder so its handle can be pulled downward to tighten chain (see photo). **Be aware of ice, snow, rain, oil, etc. that can affect your footing. Make certain your footing is secure.**
- The Crosby Group LLC specifically recommends AGAINST the use of a handle extender (cheater pipe). If sufficient leverage cannot be obtained using the lever type load binder by itself, a ratchet type binder should be used.

- If the above recommendation is disregarded and a cheater pipe is used, it must closely fit the handle and must slide down the handle until the handle projections are contacted. The pipe should be secured to the handle, for example, by a pin, so that the pipe cannot fly off the handle if you lose control and let go. The increased leverage, by using a cheater pipe, can cause deformation and failure of the chain and load binder.
- During and after tightening chain, check load binder handle position. **Be sure** it is in the locked position and that its bottom side touches the chain link.
- Chain tension may decrease due to load shifting during transport. To be sure the load binder remains in proper position: Secure handle to chain by wrapping the loose end of chain around the handle and the tight chain, or tie handle to chain with soft wire.
- When releasing load binder, remember there is a great deal of energy in the stretched chain. This will cause the load binder handle to move very quickly with great force when it is unlatched. **Move handle with caution. It may whip – Keep body clear.**
- **Never use a cheater pipe or handle extender to release handle.** Use a steel bar and pry under the handle and stay out of the path of handle as it moves upward.
- If you release the handle by hand, use an open hand under the handle and push upward. **Do not close your hand around the handle. Always keep yourself out of the path of the moving handle.**

Instructions - Ratchet Load Binders

- Position ratchet binder so it can be operated from the ground.
- **Make sure your footing is secure.**

Maintenance of All Load Binders

- Routinely check load binders for wear, bending, cracks, nicks, or gouges. **If visual wear bending or cracks are present - Do not use load binder.**
- Routinely lubricate pivot and swivel points of Lever Binders, and pawl part and screw threads of Ratchet Binders to extend product life and reduce friction wear.

This application/warning information apply to Crosby products only.

Crosby® L-180 WINCHLINE TAIL CHAIN

WARNING & APPLICATION INSTRUCTIONS

L-180

⚠ WARNING

- **Loads may disengage from winchline tail chain if proper procedures are not followed.**
- **A falling load or disengaged winchline tail chain may cause serious injury or death.**
- **Inspect winchline tail chain for damage before each use.**
- **Wire rope should not be terminated to tail chain by the use of a knot.**
- **Do not attach slings or other devices in hook for overhead lifting – see operating practices.**

Important Safety Information – Read & Follow

- Only winchline tail chains made from alloy chain, Grade 80 or Grade 100, should be used for overhead lifting applications.
- Working Load Limit (WLL) is the maximum load in pounds which should ever be applied to winchline tail chain.
- The Working Load Limit or Design Factor may be affected by wear, misuse, overloading, corrosion, deformation, intentional alterations, sharp corner cutting action and other use conditions.
- Never repair, alter, rework, or reshape a hook or chain by welding, heating, burning or bending.
- Recommended for IPS or XIP (EIP), RRL, FC or IWRC wire rope.
- Shock loading and extraordinary conditions must be taken into account when selecting winchline tail chains.

CAUSE FOR REMOVAL FROM SERVICE

A winchline tail chain shall be removed from service if any of the following are visible on chain or hook:

- Wear, nicks, cracks, breaks, gouges, stretch, bend, weld splatter and discoloration from excessive temperature. Minimum thickness on chain link shall not be below the values listed on Table 1.
- Chain links and hook that do not hinge freely to adjacent links.
- Excessive pitting or corrosion on chain, hook or termination fitting.
- Makeshift fasteners, hooks, or links formed from bolts, rods, etc.

Table 1

L-180 Stock No.	Wire Rope Diameter (in)	Nominal Chain Size (in)	Nominal Chain Size (mm)
1091482	1/2 - 5/8	5/8	16
1091511	3/4 - 7/8	7/8	22
1091516	1-1-1/8	1	26
1091525	1-1-1/8	1	26
1091532	1-1/4	1-1/4	32

- Mechanical coupling links in the body of the chain.
- Other damage that would cause a doubt as to the strength of the chain.
- Winchline tail chain should not be subjected to galvanizing or any plating process. If it is suspected the chain has been exposed to chemically active environment, remove from service.
- Termination end attachments that are cracked, deformed, or worn.
- For wire rope inspection procedures and removal from service criteria refer to manufacturer's recommendations.

OPERATING PRACTICES

- Know the winch lifting/pulling systems capacity rating.
- Know the applied load on tail chain. In dragging applications, the applied load may be greater or less than its weight due to friction.
- During lifting/dragging with or without the load, personnel should be alert for possible snagging.
- WORKING LOAD LIMIT (WLL) is the maximum load in pounds which should ever be applied to winchline tail chain when the chain is new or in "as-new" condition, and when the load is uniformly applied in direct tension to a straight length of chain.

Wire Rope Diameter (in)	L-180 Stock No.	Working Load Limit 3.5 to 1 Design Factor (lb)
1/2 - 5/8	1091482	13000
3/4 - 7/8	1091511	34200
1 - 1-1/8	1091516	47700
1 - 1-1/8	1091525	47700
1-1/4	1091532	73200

5/16 thru 5/8 made from Grade 40 High Test carbon steel.

3/4 thru 1-1/4 made from Grade 80 or Grade 100 alloy steel. Only alloy tail chain should be used for overhead lifting applications.

- Wire rope termination efficiency and tail chain Working Load Limit (WLL) must be considered when selecting termination fitting and tail chain.
- Efficiency of wire rope end termination is based on the catalog breaking strength of wire rope.

Typical Termination Method & Efficiency	
Termination	**Efficiency**
S-409 Swage Button	80%

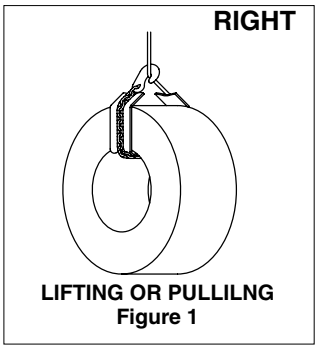
- The winchline tail chain hook is designed to fit the winchline diameter when hooked or connected back to winchline (See Figure 1).
- When used to pull or drag a load, the winchline tail chain may be wrapped around the load and the hook connected to the winchline. Also, when used to pull or drag a load over the tail board roller, the tail chain hook may be attached directly to the load at a connection point authorized by a competent rigger (See Figure 5). In either case, a visual verification of proper hook engagement is required during the entire operation.
- When used in overhead lifting applications, the winchline tail chain may be wrapped around the load and the hook connected to the winchline (See Figure 1). Used in this manner, this connection provides the same load control advantages and limitations as a single leg wire rope sling basket or choker hitch. The winchline tail chain should contain and support the load from the sides, above center of gravity, so load remains under control.

- The winchline tail chain hook is designed to fit the winchline diameter when hooked or connected back to winchline (See Figure 1).
- When used to pull or drag a load, the winchline tail chain may be wrapped around the load and the hook connected to the winchline. Also, when used to pull or drag a load over the tail board roller, the tail chain hook may be attached directly to the load at a connection point authorized by a competent rigger (See Figure 5). In either case, a visual verification of proper hook engagement is required during the entire operation.
- When used in overhead lifting applications, the winchline tail chain may be wrapped around the load and the hook connected to the winchline (See Figure 1). Used in this manner, this connection provides the same load control advantages and limitations as a single leg wire rope sling basket or choker hitch. The winchline tail chain should contain and support the load from the sides, above center of gravity, so load remains under control.
  A visual verification of proper hook engagement is required during the entire operation.
- The tail chain hook has no provision for a latch; therefore, The Crosby Group, LLC. specifically recommends AGAINST placing the load, slings or other devices directly into the tail chain hook for the purpose of overhead lifting. A latch may be mandatory by regulations or safety codes: e.g. OSHA, MSHA, ASME B30, insurance, etc (See Figure 2).

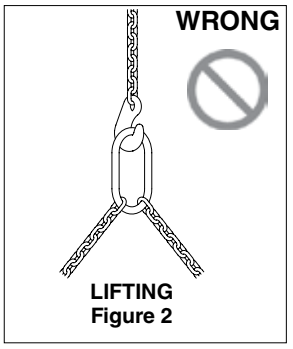
If the above Crosby recommendation is disregarded and slings or other devices are placed directly into the tail chain hook, as a minimum ensure:

- Personnel shall stand clear of the suspended load.
- Visual verification of proper hook engagement is required in all cases.
- The sling or device should be centered in the base (bowl/saddle) of the hook.
- The user must assure connection to the hook is secure throughout the movement of the load.
- A designated competent rigger must verify that all appropriate rigging practices are followed for attachment and control of load.

- The winchline and tail chain links should always be protected from being damaged by sharp corners (See Figure 3).
- Chain links should not be twisted or kinked.
- Winchline or tail chain should not be pulled from under loads if the load is resting on winchline or tail chain.
- Winchline or tail chain that appears to be damaged should not be used unless inspected and accepted by a designated person.
- Never side load, back load, or tip load hook (See Figura 4).
- All portions of the human body should be kept from between the winchline / tail chain and load.
- Personnel shall stand clear of the suspended load.
- Shock loading should be avoided.
- Extreme Temperatura will reduce the performance of winchline tailchain.
- Normal operating Temperatura is -40°F to 400°F (-40°C to 204°C).



LIFTING OR PULLILNG
Figure 1



LIFTING
Figure 2

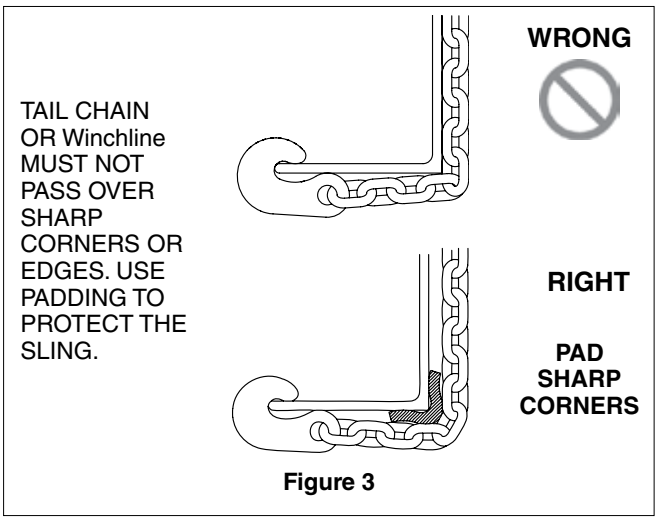


Figure 3

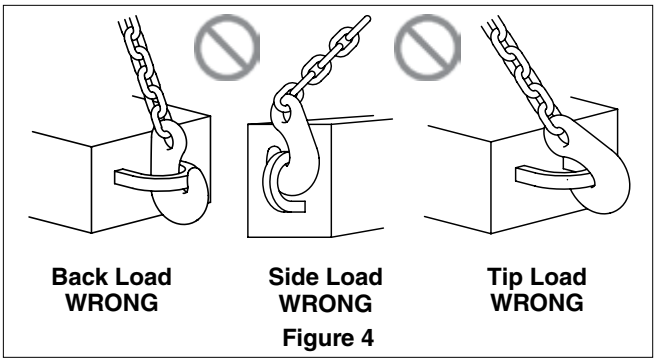


Figure 4

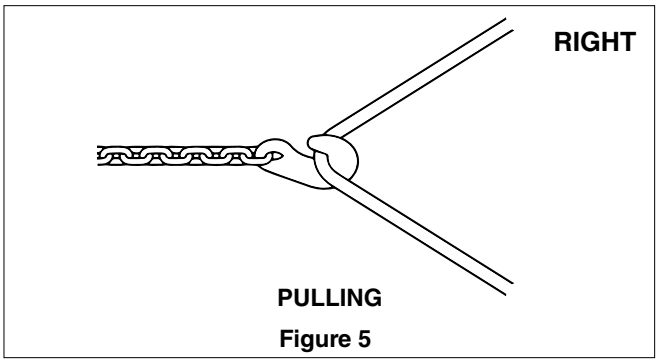


Figure 5

TACKLE BLOCK & SHEAVE ASSEMBLY

WARNINGS, USE AND MAINTENANCE INFORMATION

⚠ WARNING

- **A potential hazard exists when lifting or dragging heavy loads with tackle block assemblies.**
- **Failure to design and use tackle block systems properly may cause a load to slip or fall – the result could be serious injury or death.**
- **Failure to design lifting system with appropriate sheave assembly material for the intended application may cause premature sheave, bearing or Wireline wear and ultimate failure - the result could be serious injury or death.**
- **A tackle block system should be rigged by a qualified person as defined by ANSI/ASME B30.26.**
- **Instruct workers to keep hands and body away from block sheaves and swivels – and away from "pinch points" where rope touches block parts or loads.**
- **Do not side load tackle blocks.**
- **See OSHA Rule 1926.1431(g)(1)(i)(A) and 1926.1501(g)(4)(iv)(B) for personnel hoisting by cranes and derricks, and OSHA Directive CPL 2-1.36 — Interim Inspection Procedures During Communication Tower Construction Activities. Only a Crosby or McKissick Hook with a PL latch attached and secured with a bolt, nut and cotter pin (or toggle pin) or a PL-N latch attached and secured with toggle pin; or a Crosby hook with an S-4320 latch attached and secured with cotter pin or bolt, nut and pin; or a Crosby SHUR-LOC® Hook in the locked position may be used for any personnel hoisting. A hook with a Crosby SS-4055 latch attached shall NOT be used for personnel lifting.**
- **Instruct workers to be alert and to wear proper safety gear in areas where loads are moved or supported with tackle block systems.**
- **Use only genuine Crosby parts as replacement.**
- **Read, understand, and follow these instructions to select, use and maintain tackle block systems.**
- **Do not use a block or ball that does not have a legible capacity tag.**

Important:

For maximum safety and efficiency, tackle block and sheave systems must be properly designed, used, and maintained. You must understand the use of tackle block components and sheaves in the system. The responsibility for the use and application of products rests with the user. Read them carefully and completely.

Some parts of these instructions must use technical words and detailed explanations. NOTE: If you do not understand all words, diagrams, and definitions – **A block and system must be designed by a qualified person.** For further assistance, call:

In U.S.A. – Crosby Engineered Products Group at (800)777-1555.
In CANADA – Crosby Canada, Ltd. (877) 462-7672.
In EUROPE – N.V. Crosby Europe (+32)(0)15 75 71 25.

As you read instructions, pay particular attention to safety information in bold print.

KEEP INSTRUCTIONS FOR FUTURE USE – DO NOT THROW AWAY!

General Cautions or Warnings

Ratings shown in Crosby Group literature are applicable only to new or in "as new" products.

Working Load Limit ratings indicate the greatest force or load a product can carry under usual environmental conditions. Shock loading and extraordinary conditions must be taken into account when selecting products for use in tackle block systems. Working Load Limit ratings are based on all sheaves of tackle block system being utilized. If all sheaves are not utilized, balance must be maintained, and the Working Load Limit must be reduced proportionally to prevent overloading sheave components. Changes from full sheave reeving arrangement should be only at the recommendation of a qualified person, and incorporate good rigging practices.

In general, the products displayed in Crosby Group literature are used as parts of a system being employed to accomplish a task. Therefore, we can only recommend within the Working Load Limits, or other stated limitations, the use of products for this purpose.

The Working Load Limit or Design (Safety) Factor of each Crosby product may be affected by wear, misuse, overloading, corrosion, deformation, intentional alteration, and other use conditions. Regular inspection must be conducted to determine whether use can be continued at the catalog assigned WLL, a reduced WLL, a reduced Design (Safety) Factor, or withdrawn from service.

Crosby Group products generally are intended for tension or pull. Side loading must be avoided, as it exerts additional force or loading which the product is not designed to accommodate.

Always make sure the hook supports the load. The latch must never support the load.

Welding of load supporting parts or products can be hazardous. Knowledge of materials, heat treatment, and welding procedures are necessary for proper welding. Crosby Group should be consulted for information.

Crane component parts, i.e., the boom, block, overhaul ball, swivel, and wire ropes are metallic and will conduct electricity. Read and understand OSHA standard covering crane and derrick operations (29 CFR 1926.1501 SUBPART N) before operating proximate to power lines.

Definitions

STATIC LOAD – The load resulting from a constantly applied force or load.

WORKING LOAD LIMIT – The maximum mass or force which the product is authorized to support in general service when the pull is applied in-line, unless noted otherwise, with respect to the center line of the product. This term is used interchangeably with the following terms.

1. WLL
2. Rated Load Value
3. SWL
4. Safe Working Load
5. Resultant Safe Working Load

WORKING LOAD – The maximum mass or force which the product is authorized to support in a particular service.

PROOF LOAD – The average force applied in the performance of a proof test; the average force to which a product may be subjected before deformation occurs.

PROOF TEST – A test applied to a product solely to determine non-conforming material or manufacturing defects.

ULTIMATE LOAD – The average load or force at which the product fails, or no longer supports the load.

SHOCK LOAD – A force that results from the rapid application of a force (such as impacting and/or jerking) or rapid movement of a static load. A shock load significantly adds to the static load.

DESIGN (SAFETY) FACTOR – An industry term denoting a product's theoretical reserve capability, usually computed by dividing the catalog Ultimate Load by the Working Load Limit. Generally expressed for blocks as a ratio of 4:1.

TACKLE BLOCK – An assembly consisting of a sheave(s), side plates, and generally an end fitting (hook, shackle, etc.) that is used for lifting, lowering, or applying tension.

SHEAVE / SHEAVE BEARING ASSEMBLY – Purchased by O.E.M. or end user to be used in their block or lifting system design.

Fitting Maintenance

Fittings, including hooks, overhaul balls, shackles, links, etc., may become worn and disfigured with use, corrosion, and abuse resulting in nicks, gouges, worn threads and bearings, sharp corners which may produce additional stress conditions and reduce system load capacity.

Grinding is the recommended procedure to restore smooth surfaces. The maximum allowance for reduction of a product's original dimension due to wear or repair before removal from service is:

1. Any single direction - No more than 10% of original dimension;
2. Two directions - No more than 5% of each dimension.

For detailed instructions on specific products, see the application and warning information for that product. Any greater reduction may necessitate a reduced Working Load Limit.

Any crack or deformation in a fitting is sufficient cause to withdraw the product from service.

Selection Guide

Some of the blocks shown in Crosby Group literature are named for their intended use and selection is routine. A few examples include the "Double Rig Trawl Block" used in the fishing industry, the "Well Loggers Block" used in the oil drilling industry, and the "Cargo Hoisting Block" used in the freighter boat industry and "Derrick and Tower Block" used for hoisting personnel. Others are more generally classified and have a variety of uses. They include snatch blocks, regular wood blocks, standard steel blocks, etc. For example, snatch blocks allow the line to be attached by opening up the block instead of threading the line through the block. This feature eliminates the use of rope guards and allows various line entrance and exit angles to change direction of the load. These angles determine the load on the block and/or the block fitting (See "Loads on Blocks."). Snatch blocks are intended for infrequent and intermittent use with slow line speeds.

A tackle block sheave assembly is one element of a system used to lift, change direction or drag a load. There are other elements in the system including the prime mover (hoist, winch, hand), supporting structure, power available, etc. All of these elements can influence the type of tackle block or sheave required. When selecting a block or sheave for the system in your specific application, you should consider the other elements as well as the features of the blocks and sheaves shown in Crosby Group literature.

To select a tackle block or sheave to fit your requirements, consider the following points:

1. Are there regulations which could affect your choice of blocks or sheaves, such as federal or state, OSHA, elevator safety, mine safety, maritime, insurance, etc.?
2. What is the weight of the load, including any dynamics of impacts that add to load value? You must know this to determine the minimum required Working Load Limit value of the block or load on sheave.
3. How many parts of line are required? This can be determined given the load to be lifted and the line pull you have available. As an alternative, you could calculate the line pull required with a given number of parts of line and a given load weight. (See "How to Figure Line Parts.")
4. What is the size of line to be used? Multiply the available line pull by the desired safety factor for Wireline to determine the minimum catalog Wireline breaking strength; consult a Wireline catalog for the corresponding grade and diameter of Wireline to match. You should also consider fatigue factors that affect Wireline life (See "Sheave Size & Wireline Strength").
5. What is the speed of the line? This will help you determine the type of sheave bearing necessary. There are several choices of bearings suitable for different applications, including:
   A. Common (Plain) Bore for very slow line speeds and very infrequent use (high bearing friction).
   B. Self Lubricating Bronze Bushings for slow line speeds and infrequent use (moderate bearing friction).
   C. Bronze Bushing with pressure lubrication for slow line speeds and more frequent use at greater loads (moderate bearing friction).
   D. Anti-friction Bearings for faster line speeds and more frequent use at greater loads (minimum bearing friction).
6. What type of fitting is required for your application? The selection may depend on whether the block will be traveling or stationary. Your choices include single or multiple hooks with or without throat latches and shackles, which are the most secured load attachment. You should also decide whether the fitting should be fixed, swivel or swivel with lock. If it is a swivel fitting, then selection of a thrust bearing may be necessary. There are plain fittings with no bearings for positioning at no load, bronze bushed fittings for infrequent and moderate load swiveling, and anti-friction bearing equipped fittings for frequent load swiveling.
7. How will the block be reeved and does it require a dead end becket? (See "The Reeving of Tackle Blocks.")
8. How will the block be reeved and does it require a dead end becket? (See "The Reeving of Tackle Blocks.")
9. If the block is to be a traveling block, what weight is required to overhaul the line? (See "How to Determine Overhaul Weights.")
10. What is the fleet angle of the Wireline? Line entrance and exit angles should be no more than 1-1/2 degrees.
11. How will the block or sheave be maintained? Do conditions in your application require special maintenance considerations? (See "Tackle Block and Sheave Maintenance," and "Fitting Maintenance.")
12. Reference current edition of "Wireline Users Manual" for additional sheave design and maintenance information.

Tackle Block and Sheave Maintenance

Tackle Blocks and Sheaves must be regularly inspected, lubricated, and maintained for peak efficiency and extended usefulness. Their proper use and maintenance is equal in importance to other mechanical equipment. The frequency of inspection and lubrication is dependent upon frequency and periods of use, environmental conditions, and the user's good judgment.

Inspection: As a minimum, the following points should be considered:

1. Wear on pins or axles, rope grooves, side plates, bushing or bearings, cases, trunnions, hook shanks, and fittings (See Fitting Maintenance). Excessive wear may be a cause to replace parts or remove block or sheave from service.
2. Deformation in side plates, pins and axles, fitting attachment points, trunnions, etc. Deformation can be caused by abusive service or overload and may be a cause to remove block or sheave from service.
3. Misalignment or wobble in sheaves.
4. Security of nuts, bolts, and other locking methods, especially after reassembly following a tear down inspection. Original securing method should be used; e.g., staking, set screw, cotter pin, cap screw.
5. Pins retained by snap rings should be checked for missing or loose rings.
6. Sheave pin nuts should be checked for proper positioning. Pins for tapered roller bearings should be tightened to remove all end play during sheave rotation. Pins for bronze bushings and straight roller bearings should have a running clearance of .031 inch per sheave of end play and should be adjusted accordingly.
7. Hook or shackle to swivel case clearance is set at .031 to .062 at the factory. Increased clearance can result from component wear. Clearance exceeding .12 to .18 should necessitate disassembly and further inspection.
8. Deformation or corrosion of hook and nut threads. Your block's hook may be fitted with the Crosby/McKissick Patented Split Nut. Refer to the Split Nut section for proper removal, inspection and installation procedures.
9. Loss of material due to corrosion or wear on external area of welded hook and nut may indicate thread corrosion or damage. If these conditions exist, remove from service or perform load test.
10. Surface condition and deformation of hook (See Fitting Maintenance and ASME B30.10.)
11. Welded side plates for weld corrosion or weld cracking.
12. Hook latch for deformation, proper fit and operation.
13. Remove from service any bushings with cracks on inside diameter or bushing end. Bushings that are cracked and/or extended beyond sheave hub are indications of bushing overload.

LUBRICATION: The frequency of lubrication depends upon frequency and period of product use as well as environmental conditions, which are contingent upon the user's good judgment. Assuming normal product use, the following schedule is suggested when using lithium-base grease of a medium consistency.

SHEAVE BEARINGS

Tapered Roller Bearings – Every 40 hours of continuous operation or every 30 days of intermittent operation.
Roller Bearings – Every 24 hours of continuous operation or every 14 days of intermittent operation.
Bronze Bushings – (Not Self Lubricated) – Every 8 hours of continuous operation or every 14 days of intermittent operation.
Self Lubricating Bronze Bushing – are for slow line speeds and infrequent use (moderate bearing friction). Frequent inspection is required to determine the condition of bushing.

HOOK BEARINGS

Anti Friction – Every 14 days for frequent swiveling; every 45 days for infrequent swiveling.
Bronze Thrust Bushing or No Bearing Every 16 hours for frequent swiveling; every 21 days for infrequent swiveling.

Tackle Block Maintenance also depends upon proper block selection (see "Loads on Blocks"), proper reeving (see "The Reeving of Tackle Blocks"), consideration of shock loads, side loading, and other adverse conditions.

Sheave Bearing Application Information

Sheaves in a system of blocks rotate at different rates of speed, and have different loads. When raising and lowering, the line tension is not equal throughout the system. Refer to "How to Figure Line Parts" in the Sheaves Section for assistance in determining lead line loads used for bushing or bearing selection.

BRONZE BUSHINGS

Bronze Bushings are used primarily for sheave applications using slow line speed, moderate load, and moderate use. The performance capability of a bearing is related to the bearing pressure and the bearing surface velocity by a relationship known as true PV (Maximum Pressure - Velocity Factor). The material properties of the Bronze Bushings furnished as standard in Crosby catalog sheaves are:

(BP) Maximum Bearing Pressure :4500 PSI
(BV) Maximum Velocity at Bearing :1200 FPM
(PV) Maximum Pressure Velocity Factor: 55000

(It should be noted that due to material property relations, the maximum BP times the maximum BV is NOT equal to the maximum PV.)

Formula for Calculating Bearing Pressure:

$$BP = \frac{\text{Line Pull x Angle Factor}}{\text{Shaft Size x Hub Width}}$$

Note: Angle Factor Multipliers listed in the Sheaves Section

Formula for Calculating Bearing Velocity:

$$BV = \frac{PV}{BP}$$

Formula for Calculating Line Speed:

$$\text{Line Speed} = \frac{\text{BV (Tread Diameter + Rope Diameter)}}{\text{Shaft Diameter}}$$

Calculations can be made to find the maximum allowable line speed for a given total sheave load. If the required line speed is greater than the maximum allowable line speed calculated, then increase the shaft size and/or the hub width and recalculate. Continue the process until the maximum allowable line speed is equal to or exceeds the required line speed.

Example

Using a 14 in. sheave (Stock # 917191; refer to Wireline sheave section of this Catalog for dimensions)with a 4,600 lbs line pull and an 80° angle between lines, determine maximum allowable line speed.

$$BP = \frac{\overset{\text{(Line pull) (Angle Factor)}}{\text{4,600 lbs x 1.53}}}{\underset{\text{(Shaft Size) (Hub Width)}}{\text{1.50 x 1.62}}} = \text{2,896 PSI}$$

$$BV = \frac{\text{55,000 (PV Factor)}}{\text{2,896 (BP)}} = \text{19 FBM Allowable}$$

Line Speed =
[19 x (11.75 + .75)] ÷ 1.50 = 158.3 FPM ALLOWABLE
(BV) (Tread Dia. + Rope Size) ÷ (Shaft Dia.)

If the application required a line speed equal to 200 FPM, then another calculation would be necessary. Trying another 14 in. sheave (stock # 4104828) under the same loading conditions, the results are as follows:

BP = (4,600 lbs x 1.53) ÷ (2.75 x 2.31) = 1,108 PSI

BV = 55,000 ÷1,108 = 50 FPM

Line Speed =
[50 x (11.75 + .75)] ÷ 2.75 = 227.3 FPM ALLOWABLE

COMMON (PLAIN) BORE –
Very slow line speed, very infrequent use, low load.

ROLLER BEARING –
Faster line speeds, more frequent use, greater load. Refer to manufacturer's rating. Reference appropriate bearing manufacturer's catalog for proper bearing selection procedure.

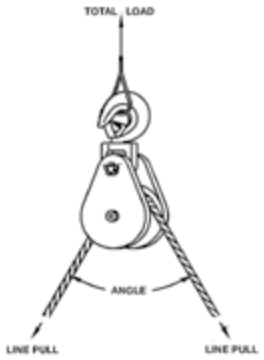
Loads on Blocks

The Working Load Limit (WLL) for Crosby Group blocks indicates the maximum load that should be exerted on the block and its connecting fitting.

This total load value may be different from the weight being lifted or pulled by a hoisting or hauling system. It is necessary to determine the total load being imposed on each block in the system to properly determine the rated capacity block to be used.

A single sheave block used to change load line direction can be subjected to total loads greatly different from the weight being lifted or pulled. The total load value varies with the angle between the incoming and departing lines to the block.

The following chart indicates the factor to be multiplied by the line pull to obtain the total load on the block.

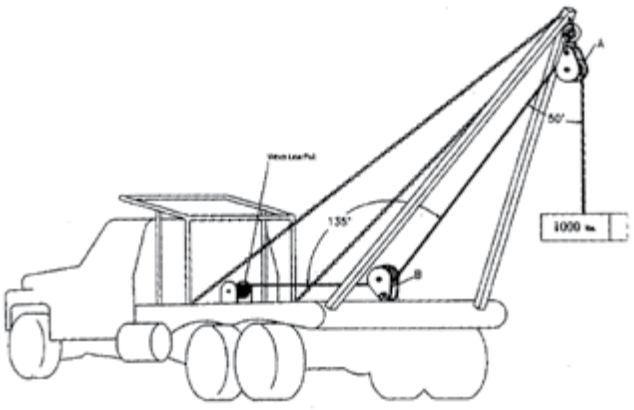


Angle Factor Multipliers			
Angle	**Factor**	**Angle**	**Factor**
0°	2.00	100°	1.29
10°	1.99	110°	1.15
20°	1.97	120°	1.00
30°	1.93	130°	.84
40°	1.87	135°	.76
45°	1.84	140°	.68
50°	1.81	150°	.52
60°	1.73	160°	.35
70°	1.64	170°	.17
80°	1.53	180°	.00
90°	1.41	—	—

Example A

(Calculations for determining total load value on single line system.)

A gin pole truck lifting 1,000 lbs.



There is no mechanical advantage to a single part load line system, so winch line pull is equal to 1,000 lbs or the weight being lifted.

To determine total load on snatch block A:
A = 1,000 lbs x 1.81 = 1,810 lbs
(line pull) (factor 50° angle)

To determine total load on toggle block B:
B = 1,000 lbs x .76 = 760 lbs
(line pull) (factor 135° angle)

Example B
(Calculation for determining total load value for mechanical advantage system.)

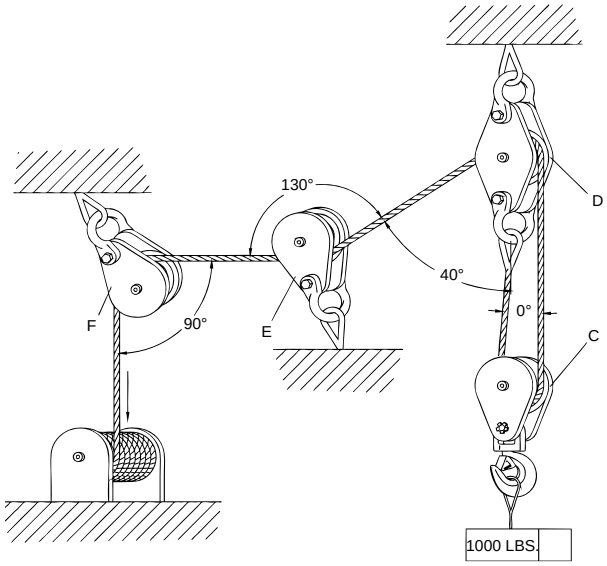
Hoisting system lifting 1,000 lb. using a traveling block. The mechanical advantage of traveling block C is 2.00 because two (2) parts of load line support the 1,000 lbs weight. (Note that this example is simplified for determination of resultant load on blocks. Lead line pull will be greater than shown due to efficiency losses.) (To determine single line pull for various bearing efficiency see "How to Figure Line Parts".)
To Determine Line Pull:
Line Pull = 1,000 lbs ÷ 2.00 = 500 lbs

To determine total load on traveling block C:
C = 500 lbs x 2.0 = 1,000 lbs
(line pull)(Factor 0° angle)

To determine total load on stationary block D:
D = 500 lbs x 1.87 + 500 lbs = 1,435 lbs
(line pull) (dead-end load)
(Factor 40° angle)

To determine total load on block E:
E = 500 lbs x .84 = 420 lbs
(line pull) (Factor 130° angle)

To determine total load on block F:
F = 500 lbs x 1.41 = 705 lbs
(line pull) (Factor 90° angle)



The Reeving of Tackle Blocks

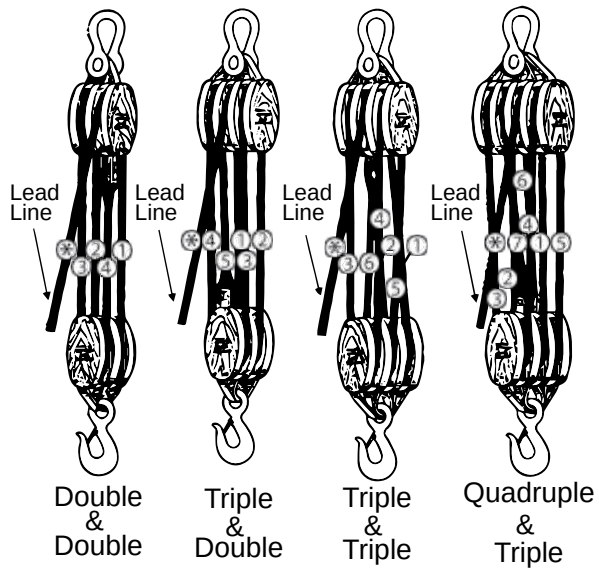
In reeving of tackle blocks, there are many methods. The method discussed below is referred to as "Right Angle" reeving. Please consult your rigging manual for other methods of reeving.

RIGHT ANGLE REEVING

In reeving a pair of tackle blocks, one of which has more than two sheaves, the hoisting rope should lead from one of the center sheaves of the upper block to prevent toppling and avoid injury to the rope. The two blocks should be placed so that the sheaves in the upper block are at right angles to those in the lower one, as shown in the following illustrations.

Start reeving with the becket or dead end of the rope. **Use a shackle block as the upper one of a pair and a hook block as the lower one as seen below.** Sheaves in a set of blocks revolve at different rates of speed. Those nearest the lead line revolve at the highest rate of speed and wear out more rapidly. All sheaves should be kept well lubricated when in operation to reduce friction and wear.

Reeving Diagram



⚠ CAUTION

- **Exercise care when block is standing in vertical position, as the potential for tipping exists. Potential causes of tipping are unstable work area, boom movement and the reeving process.**
- **If work area is unstable, lay block flat on side plate.**

17

Sheave Size & Wireline Strength

Strength Efficiency

Bending Wireline reduces its strength. To account for the effect of bend radius on Wireline strength when selecting a sheave, use the table below:

Ratio A	Strength Efficiency Compared to Catalog Strength in %
40	95
30	93
20	91
15	89
10	86
8	83
6	79
4	75
2	65
1	50

$$\text{Ratio A} = \frac{\text{Sheave Diameter}}{\text{Rope Diameter}}$$

Example

To determine the strength efficiency of 1/2" diameter Wireline using a 10" diameter sheave:

$$\text{Ratio A} = \frac{\text{10" (sheave diameter)}}{\text{1/2" (Wireline diameter)}} = 20$$

Refer to ratio A of 20 in the table then check the column under the heading "Strength Efficiency Compared to Catalog Strength in %"..91% strength efficiency as compared to the catalog strength of Wireline.

Fatigue Life

Repeated bending and straightening of Wireline causes a cyclic change of stress called "fatiguing." Bend radius affects Wireline fatigue life. A comparison of the relative effect of sheave diameter on Wireline fatigue life can be determined as shown below:

Ratio B	Relative Fatigue Bending Life
30	10.0
25	6.6
20	3.8
18	2.9
16	2.1
14	1.5
12	1.1

$$\text{Ratio B} = \frac{\text{Sheave Diameter}}{\text{Rope Diameter}}$$

$$\text{Relative Fatigue Bending Life} = \frac{\text{Relative Fatigue Bending Life Sheave \#1}}{\text{Relative Fatigue Bending Life (Sheave \#2)}}$$

Example

To determine the extension of fatigue life for a 3/4" Wireline using a 22.5" diameter sheave versus a 12" diameter sheave:

$$\text{Ratio B} = \frac{\text{22.5" (sheave diameter)}}{\text{3/4" (Wireline diameter)}} = 30$$

$$\text{Ratio B} = \frac{\text{12" (sheave diameter)}}{\text{3/4" (Wireline diameter)}} = 16$$

The relative fatigue bending life for a ratio B of 16 is 2.1 (see above Table) and ratio B of 30 is 10.

$$\text{Relative Fatigue Bending Life} = \frac{10}{2.1} = 4.7$$

Therefore, we expect extension of fatigue life using a 22.5" diameter sheave to be 4.7 times greater than that of a 12" diameter sheave.

How to Determine Overhauling Weights

To determine the weight of the block or overhaul ball that is required to free fall the block, the following information is needed: size of Wireline, number of line parts, type of sheave bearing, length of crane boom, and drum friction (use 50 lbs unless other information is available).

Wireline Size (in)	Factor A – Wireline Weight (lbs per ft) 6 x 19 IWRC
3/8	.26
7/16	.35
1/2	.46
9/16	.59
5/8	.72
3/4	1.04
7/8	1.42
1	1.85
1-1/8	2.34
1-1/4	2.89

Number of Line Parts	Factor B – Overhaul Factors	
	Roller Bearing Sheaves	Bronze Bushed Sheaves
1	1.03	1.05
2	2.07	2.15
3	3.15	3.28
4	4.25	4.48
5	5.38	5.72
6	6.54	7.03
7	7.73	8.39
8	8.94	9.80
9	10.20	11.30
10	11.50	12.80

The Formula is:

Required Block Weight = [(Boom Length x Factor A) + Drum Friction] x Factor B

Example:
To determine the required block or overhaul weight using 5 parts of 7/8" diameter Wireline, a 50 ft. boom and roller bearing sheaves:

Required Block Weight = [(50 ft. x 1.42) + 50 lbs] x 5.38 = 651 lbs
(Boom Length) (Drum Friction)
(Factor A) (Factor B)

How to Figure Line Parts

Sheaves in a system of blocks rotate at different rates of speed, and have different loads. When raising and lowering, the line tension is not equal throughout the system. To help figure the number of parts of line to be used for a given load, or the line pull required for a given load, (for example, use Reeving Diagram in the Sheaves Section. Only numbered lines shall be used in the calculation). The following ratio table is provided with examples of how to use it. The ratios are applicable for blocks as shown on the diagram and also independent sheave systems that line is reeved through.

Ratio A Bronze Bushed Sheaves	Ratio B Anti-Friction Bearing Sheaves	Number of Line Parts
.96	.98	1
1.87	1.94	2
2.75	2.88	3
3.59	3.81	4
4.39	4.71	5
5.16	5.60	6
5.90	6.47	7
6.60	7.32	8
7.27	8.16	9
7.91	8.98	10
8.52	9.79	11
9.11	10.60	12
9.68	11.40	13
10.20	12.10	14
10.70	12.90	15
11.20	13.60	16
11.70	14.30	17
12.20	15.00	18
12.60	15.70	19
13.00	16.40	20

Ratio A or B = Total Load to be Lifted / Single Line Pull (lb)

After calculating Ratio A or B, consult table to determine number of parts of line.

Examples:
To find the number of parts of line needed when weight of load and single line pull are known, and using Bronze Bushed Sheaves.

Ratio A = 72,180 lbs (load to be lifted) / 8000 lbs (single line pull) = 9.02 (Ratio A)

In table above refer to ratio 9.02 or next higher number, then check column under heading "Number of Line Parts" = 12 parts of line to be used for this load.

To find the single line pull needed when weight of load and number of parts of line are known, and using Anti-Friction Bearing Sheaves.

Single Line Pull = 68,000 lbs (load to be lifted) / 7.32 (Ratio B of 8part line) = 9,290 lbs

9,290 lbs single line pull required to lift this load on 8 parts of line.

To find the lift capacity when the parts of line and single line pull are known, and using anti-friction bearing sheaves.

10,000 lbs (Single line pull)
x 4.71 (Ratio B of 5 parts of line)
= 47.100 lbs (Lift Capacity)

10,000 lbs single line pull with 5 parts of line will accommodate 47.100 lbs lift capacity.

Repairs

For repair of blocks, contact the following numbers for return material authorization.

IN U.S.A. – Crosby Engineered Products Group at (800) 777-1555

IN CANADA – Crosby Canada at (877) 462-4672

IN EUROPE – N.V. Crosby Europe at (+32) (0)15 75 71 25

Your block, after receipt by Crosby, will be inspected and a free estimate of repair charges will be provided. Authorization for repairs from block owners must be given to Crosby before repairs are made. Transportation charges, both to and from factory, are to be paid by the block owner.

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INDEX

INDEX

INDEX

Decimal and Metric Conversion Table

Fractional Equivalent (in.)	Decimal Equivalent (in.)	Metric Equivalent (mm)
1/64	.0156	.397
1/32	.0312	.794
3/64	.0469	1.191
1/16	.0625	1.588
5/64	.0781	1.984
3/32	.0938	2.381
7/64	.1094	2.778
1/8	.1250	3.175
9/64	.1406	3.572
5/32	.1562	3.969
11/64	.1719	4.366
3/16	.1875	4.762
13/64	.2031	5.159
7/32	.2188	5.556
15/64	.2344	5.953
1/4	.2500	6.350
17/64	.2656	6.747
9/32	.2812	7.144
19/64	.2969	7.541
5/16	.3125	7.938
21/64	.3281	8.334
11/32	.3438	8.731
23/64	.3594	9.128
3/8	.3750	9.525
25/64	.3906	9.922
13/32	.4062	10.319
27/64	.4219	10.716
7/16	.4375	11.112
29/64	.4531	11.509
15/32	.4688	11.906
31/64	.4844	12.303
1/2	.5000	12.700

Fractional Equivalent (in.)	Decimal Equivalent (in.)	Metric Equivalent (mm)
33/64	.5156	13.097
17/32	.5312	13.494
35/64	.5469	13.891
9/16	.5625	14.288
37/64	.5781	14.684
19/32	.5938	15.081
39/64	.6094	15.478
5/8	.6250	15.875
41/64	.6406	16.272
21/32	.6562	16.669
43/64	.6719	17.065
11/16	.6875	17.462
45/64	.7031	17.859
23/32	.7188	18.256
47/64	.7344	18.653
3/4	.7500	19.050
49/64	.7656	19.447
25/32	.7812	19.844
51/64	.7969	20.241
13/16	.8125	20.638
53/64	.8281	21.034
27/32	.8438	21.431
55/64	.8594	21.828
7/8	.8750	22.225
57/64	.8906	22.622
29/32	.9062	23.019
59/64	.9219	23.416
15/16	.9375	23.812
61/64	.9531	24.209
31/32	.9688	24.606
63/64	.9844	25.003
1	1.0000	25.400

Mass Conversions

To convert from U.S. tons to metric tons multiply by .907185

To convert from metric tons to U.S. tons multiply by 1.10231

To convert from metric tons to pounds multiply by 2204.62

To convert from metric tons to kilograms multiply by 1000

To convert from pounds to kilograms multiply by .453592

To convert from kilograms to pounds multiply by 2.20462

Temperature Conversion

To convert from degree Fahrenheit to degree Celsius use

Tc=5/9 (Tf-32)

To convert from degree Celsius to degree Fahrenheit use

Tf=9/5 (Tc)+32

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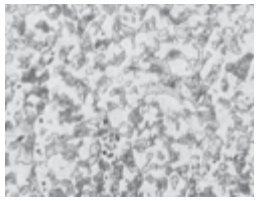

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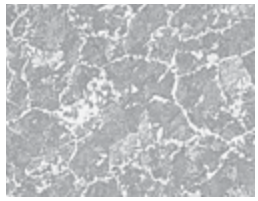

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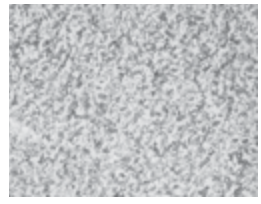

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