








the Crosby group®

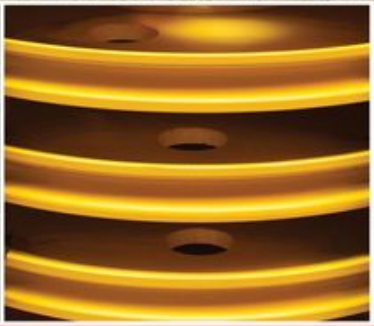
PRODUCT CATALOG

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 Conceicâo
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
Trådgatan 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

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

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+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.

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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:

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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.

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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.

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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

This is to certify that the management system of
Crosby Group LLC - Crosby Tulsa
2857 Dawson Road, Tulsa, OK, 74101, USA
and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the Quality Management System standard:
ISO 9001:2015

This certificate is valid for the following scope:
Sales, Design Engineering, Purchasing and Manufacturing of Fittings for Chain and Wire Rope, Swage Fittings and Presses, Blocks, Tackle, Sheaves, Standard and Custom Lifting Clamps used in Material Handling Systems for Construction, Energy, Industrial and Marine Applications

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

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- Users Guide for Lifting pocket cards
- Wall charts
- Catalogs

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thecrosbygroup.com/training

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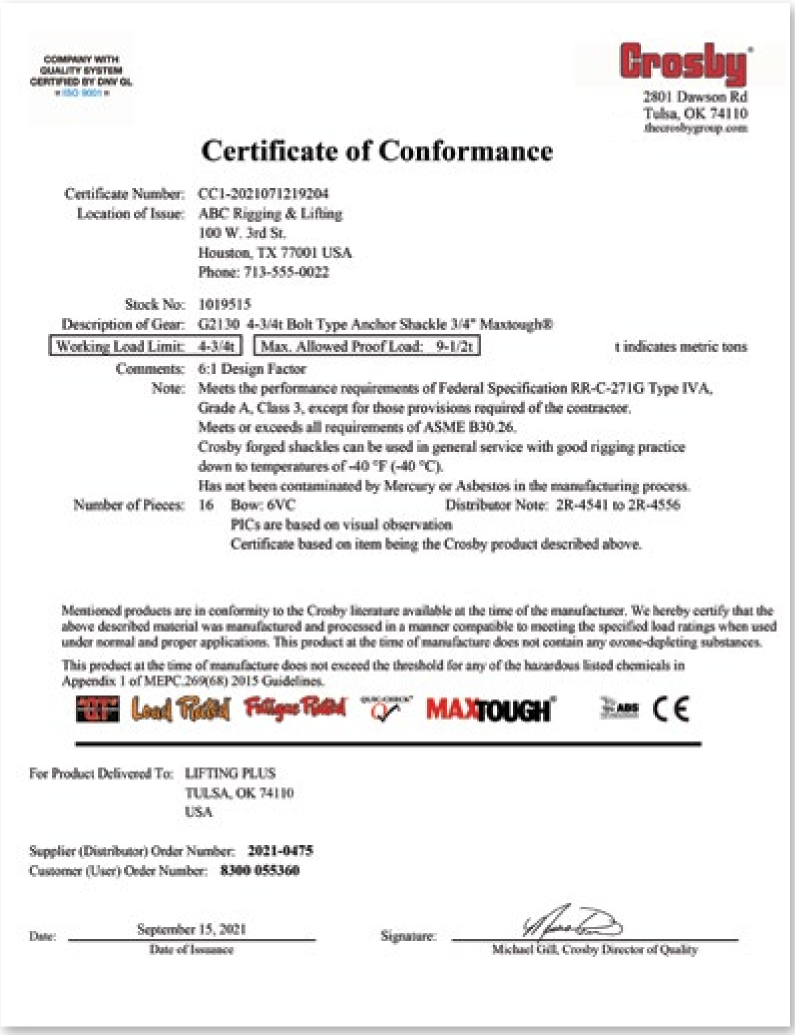
the Crosby group

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 = ISO 9001 =

Crosby
2801 Dawson Rd
Tulsa, OK 74110
thecrosbygroup.com

Certificate of Conformance

Certificate Number: CC1-2021071219204
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.

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.

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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.

CAD DRAWINGS

Download 2D DWG and 3D STEP files for most products from The Crosby Group website.

thecrosbygroup.com/CAD

Account required.

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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.)*

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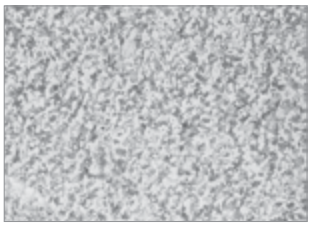
HEAT TREATMENT

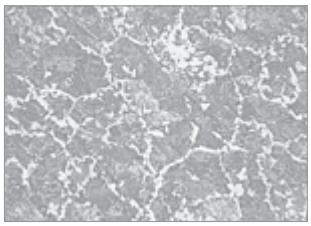
The heat treatment of steel is an ancient art and science that dates back to the Iron Age. Today, it has been refined to a sophisticated science. It is now possible to greatly enhance the strength, ductility, and resilience of steel through a properly controlled heat treatment process. The 'as forged' 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.

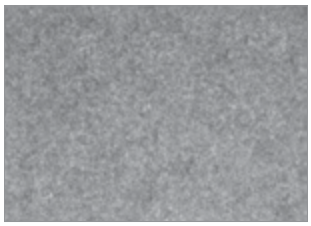
Microstructures for various heat treatment processes



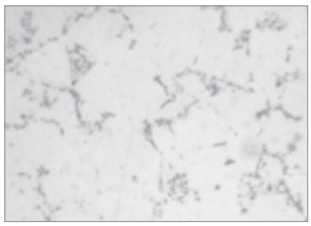
AS FORGED



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

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YouTube

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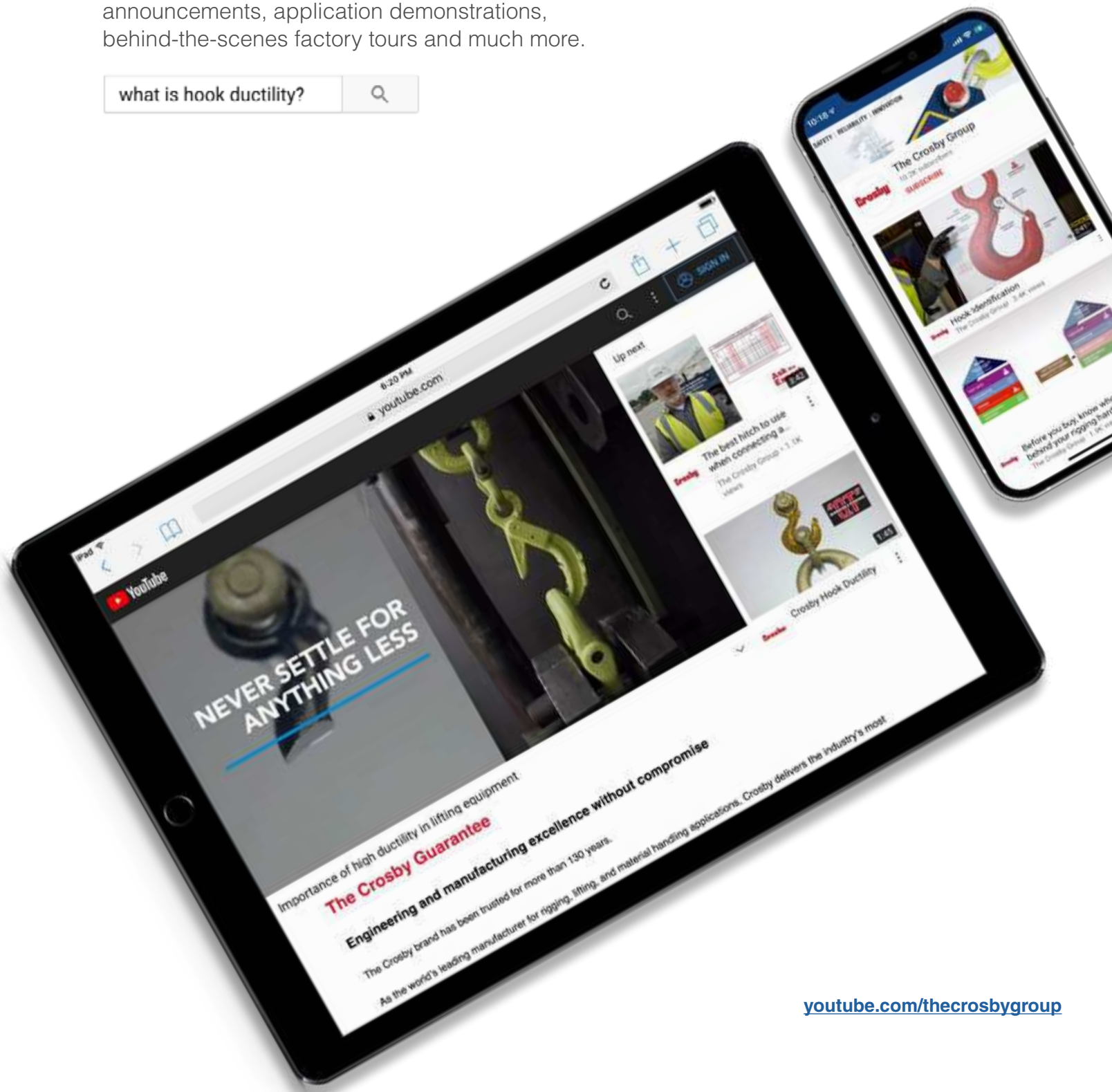
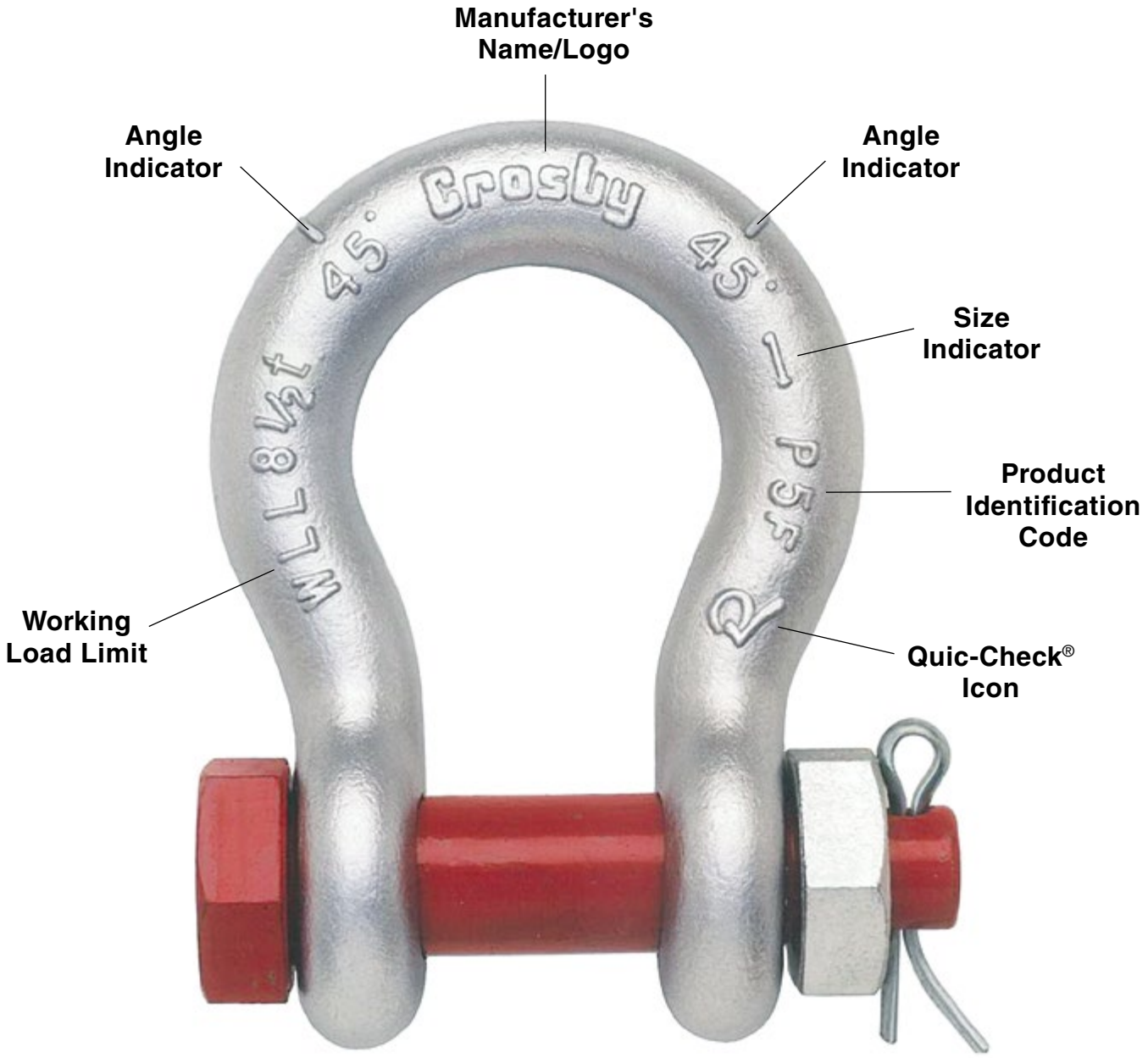
Training and insights, new product announcements, application demonstrations, behind-the-scenes factory tours and much more.



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

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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.

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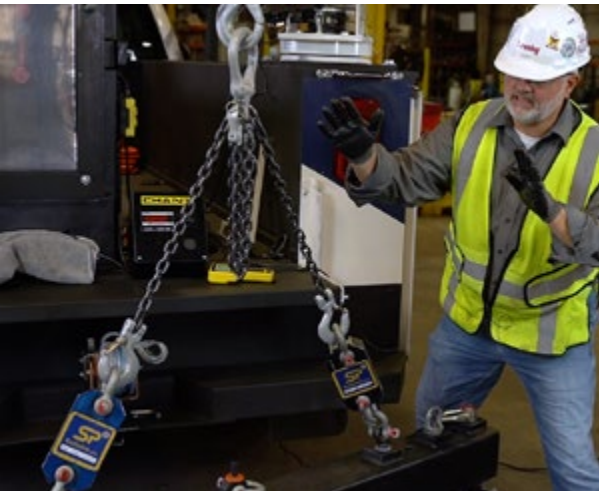
30+ years of making industries safer through world-class training



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**.

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Crosby Group hardware used on the SpaceX Starship lift

The latest news, events, insights (and some pretty interesting project photos).
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