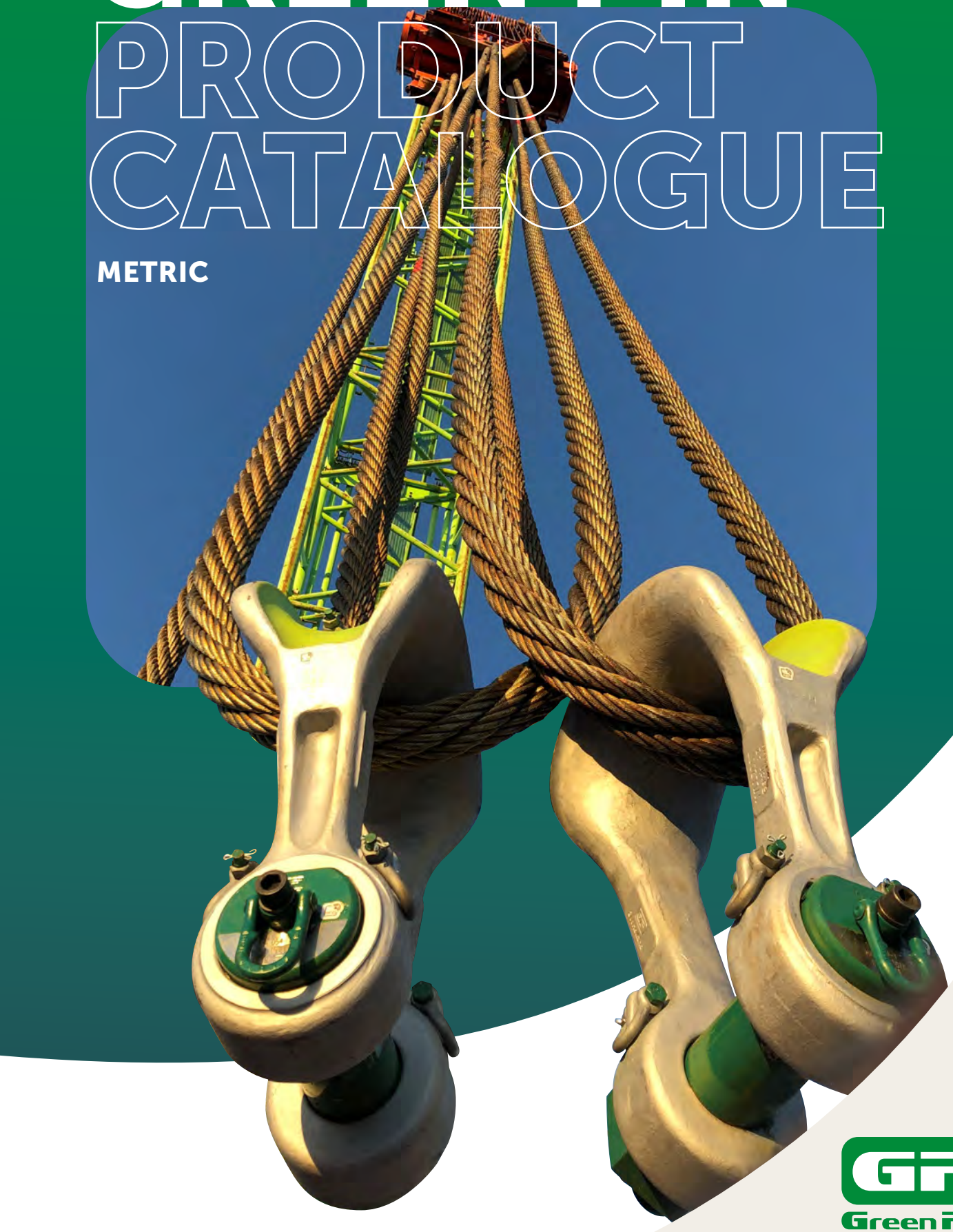
VAN BEEST

GREEN PIN®

PRODUCT CATALOGUE

METRIC



GP Green Pin®

KEY ICONS

Certificates

Depending on the type of product and certificate availability for a certain product, the below mentioned certificates are used in this catalogue. For more information see page 15.

Type 2.1	Works certificate to EN 10204	2.1
Type 2.2	Works certificate to EN 10204	2.2
Type 3.1	Inspection certificate to EN 10204	3.1
Type MTC a	Manufacturer test certificate	MTC [a]
Type MTC b	Manufacturer test certificate	MTC [b]
Type LROS	Proofload Statement	LROS
Type MPI a	Non-destructive testing report	MPI [a]
Type MPI b	Non-destructive testing report	MPI [b]
Type US a	Non-destructive testing report	US [a]
Type US b	Non-destructive testing report	US [b]
Type DNV 2.7-1 a	Type Approval certificate to DNV - ST - E271/E273	DNV 2.7-1 [a]
Type DNV 2.7-1 b	Type Approval certificate to DNV - ST - E271/E273	DNV 2.7-1 [b]
Type DNV CG3	Certificate Proof load witnessed and issued by DNV	DNV CG3
Type DNV 0377	Type Approval certificate to DNV - ST 0377 (former DNV 2.22)	DNV 0377
Type DNV 0378	Type Approval certificate to DNV - ST 0378 (former DNV 2.22)	DNV 0378
Type NYTEK / NS 9415	Type Approval certificate to NYTEK-regulation and NS 9415	DNV NS 9415
Type DGUV	DGUV Type approval certificate to EN 1677	DGUV
Type CE IIA	CE declaration of conformity	CE IIA
Type CE IIB	CE declaration of incorporation	CE IIB
Type BL	Break Load test certificate	BL
Type ABS PDA	Certificate of Product Design Assessment Approval	ABS PDA
Type ABS MA	Certificate of Manufacturing Assessment Approval	ABS MA

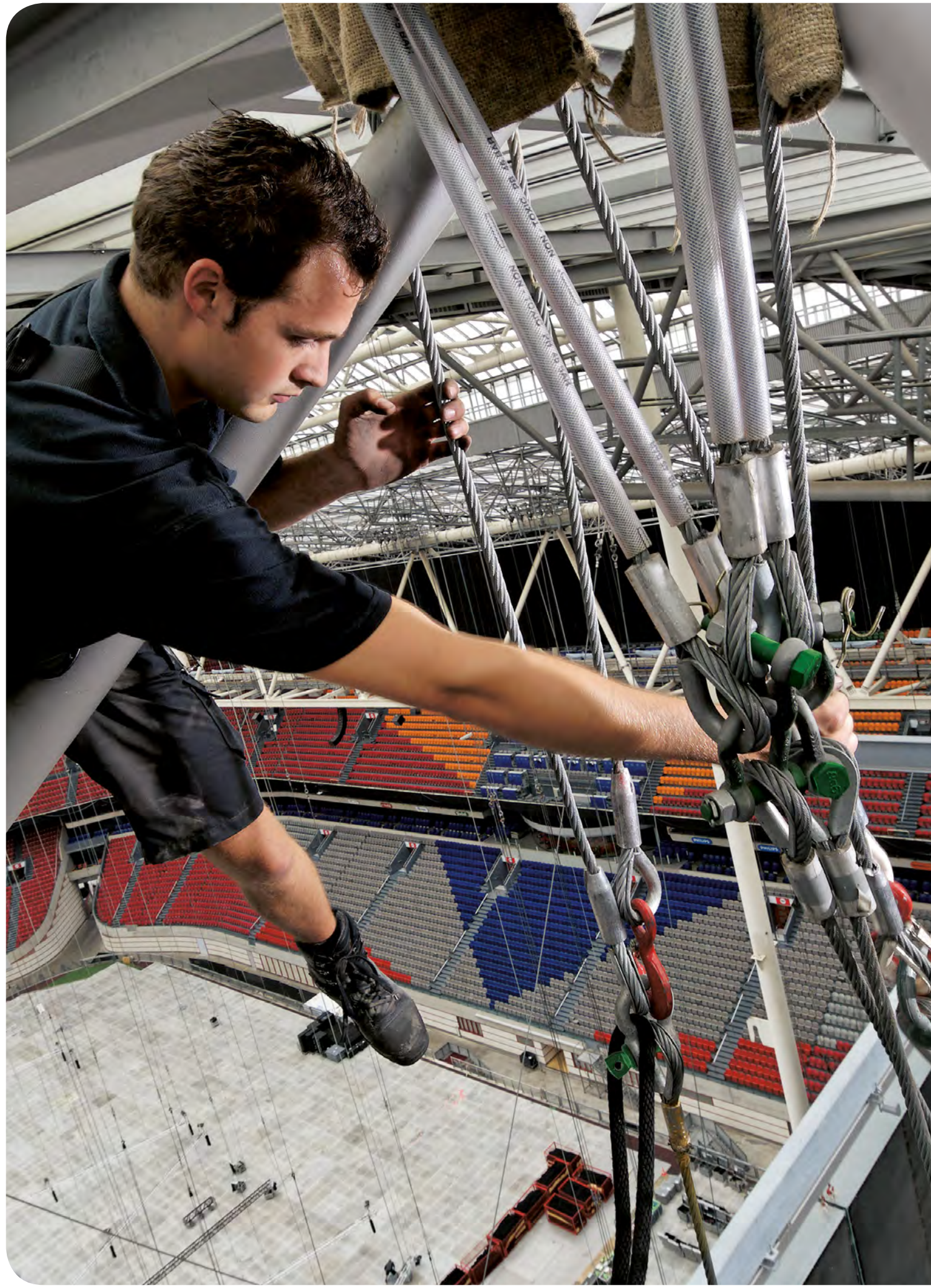
Conditions

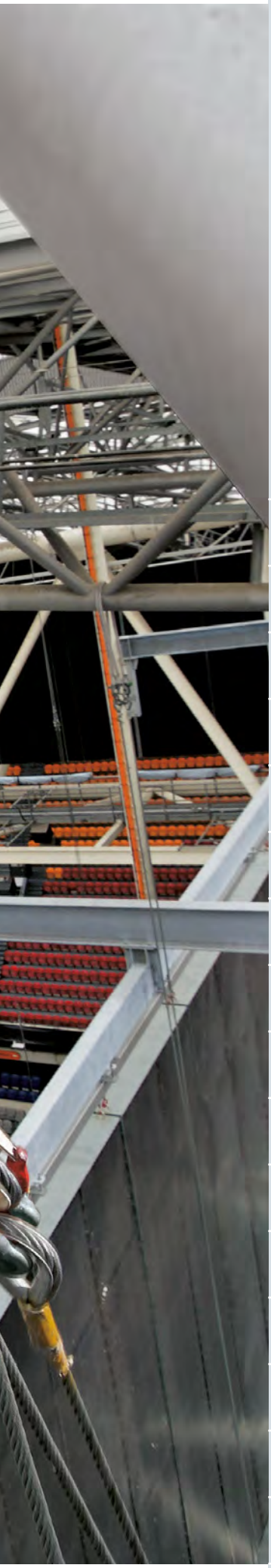
Certificate types 2.1, 2.2, 3.1, MTC a, DNV 2.7-1 a, DNV 2.7-1 b, DNV 0377, DNV 0378, DGUV, ABS PDA, ABS MA and CE can be supplied at no extra charge. For all other certificates, additional costs will be charged.

Other

RFID Tag	RFID
CAD drawings	CAD
More info	INFO

Complementary product	C





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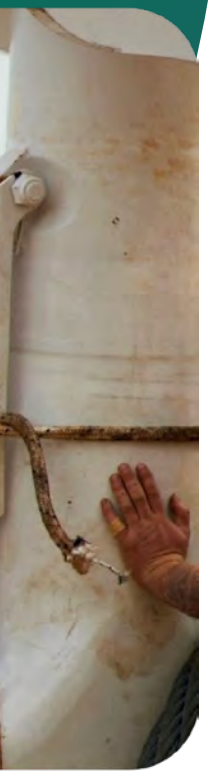
WELCOME TO THE WORLD OF GREEN PIN®



THE CENTREPIECE OF RIGGING

Welcome to the world of Green Pin®, the leading brand for premium quality lifting and lashing equipment. Leading, but modest. We know our role, the place of our Green Pin® products in your bigger picture. And that is right in the centre of your rigging. The centre of safety. The centre of reliability. And the centre of responsibility. Because we know that Green Pin® products are often part of extremely large and complex projects.

Being part of project that come with great risks and great interests to people and products at the same time, great responsibility is required. Taking that responsibility is key to Green Pin®. We want to reassure our customers by always providing products of the highest quality, as we have done for over a hundred years. Our quality is always 100%, but guaranteeing a 99% availability of our products is just as essential to us.

ALWAYS IN THE CENTRE OF RIGGING

Green Pin® combines innovative, high-quality products with the quickest delivery and the best customer support. The best lifting and lashing equipment developed with a clear vision of what you need. Produced with raw materials from trustworthy suppliers, at our state-of-the-art production facilities. Facilities that produce products with minimal margins of error compared to other production methods. These Green Pin® products are available all over the world by one of our 900 distributors. We make sure that we are always ready to meet the demands of the most complex lifting projects in the world.

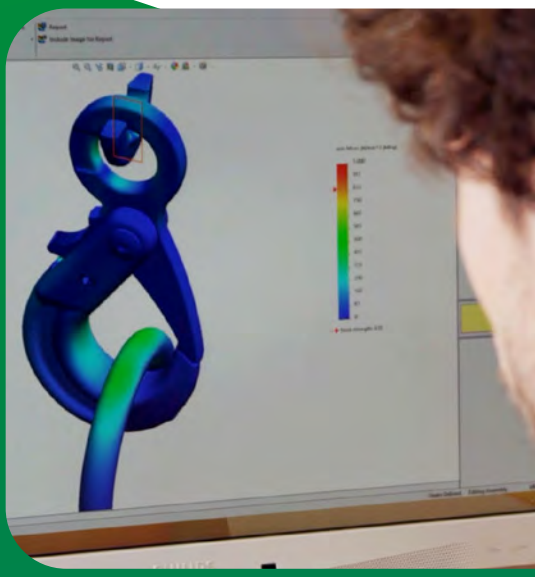
OVER 1000 DISTRIBUTORS IN MORE THAN 100 COUNTRIES STOCK GREEN PIN® PRODUCTS

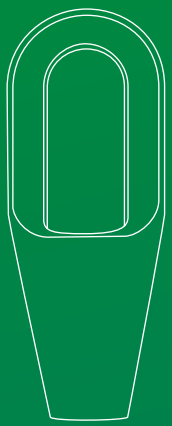
RELY ON THE BEST EQUIPMENT AND SUPPORT. GUARANTEED

The core, of the Green Pin® brand is quality. Green Pin® products are better designed, developed, engineered, produced, packed, delivered, and serviced. When it comes to quality, Green Pin® will not settle for less than best in breed. So, all our raw materials come from highest qualified suppliers who guarantee full traceability. Our steel is sourced from leading, fully certified European mills. Green Pin® is all about quality. That quality is the centrepiece of our brand, and our promise to you is we will never let you down. You can trust us to be the centrepiece of your rigging.

YOU GET THE BEST

- CAD-drawings and technical documentation that are distinguishing by their accuracy;
- A technical helpdesk that provides comprehensive answers swiftly;
- Technical training to provide insights into the benefits of our products and the different ways to apply them.





THE GREEN PIN® HISTORY

Green Pin® can trace its origins back to 1922. In Sliedrecht, which is located right at the heart of the Dutch maritime industry, blacksmith Dirk van Beest started producing components for dredging. He developed the shackles that would later be branded as Green Pin®. Van Beest's company grew quickly, in line with the expansion of the Dutch dredging and maritime industry.

Today, Green Pin® is part of the Royal Van Beest Group and is headquartered in The Netherlands with branches in the United States, France, Germany, Spain and Brazil.

2022

1922

COMPLEMENTARY PRODUCTS

In addition to the Green Pin® product range of chain and rope fittings, Green Pin® 's corporate parent Royal Van Beest offers complementary products (such as wire rope thimbles, sleeves, general hardware, etc.) to make a lifting assembly complete.

These products are all produced to the specifications indicated in this catalogue and are subject to the quality control of Royal Van Beest. Complementary products are highlighted on the product pages of the catalogue with this icon c.

PROUD MEMBER OF

We are a member of several organizations who promote common interests in our industry. Companies with similar interests come together to share ideas and solutions for industry issues. These organizations spread (technical) information through publications, internet, meetings, and represent the interests of their members on a collective basis. Some of them also organize trade missions, seminars, workshops, member meetings and collective participation in exhibitions worldwide.

AVAILABLE WORLDWIDE

We believe Green Pin® products should be available to everyone on earth within 72 hours. That's why Green Pin works with the most and the best distributors on this planet. To find the distributor nearest to you, please contact us at: info@greenpin.com

REFERENCES

Some companies that use our products in projects:

- ADNOC
- Aker Marine Contractors
- Allseas
- BAE Systems
- Bechtel Corporation
- BHP Billiton
- Bluestream Offshore
- Bluewater
- Boskalis
- Bouygues
- BP
- Buckner Heavylift Cranes
- Caterpillar
- Chevron
- Codelco
- ConocoPhillips
- Delmar Systems
- EDF
- Eiffage
- Equinor
- ExxonMobil
- Fluor
- Fugro
- General Electric
- Heerema Marine Contractors
- Hyundai Heavy Industries
- InterMoor
- Jumbo
- Kiewit
- Lamprell
- Liebherr
- Mammoet / ALE
- Manitou
- McDermott
- Nordex
- NOV
- NPCC
- Oceaneering
- Pacific Drilling
- Rio Tinto
- Saipem
- Sapura Energy
- Saudi Aramco
- Schlumberger
- Shell
- Siemens
- SpaceX
- Subsea 7
- Tata
- TechnipFMC
- TotalEnergies
- Transocean
- US Steel
- Van Oord
- Vestas
- Vinci
- Wood Group

INSIGHTFUL AND HANDS-ON GREEN PIN® TRAINING

Green Pin® seminars and webinars give you the chance to improve your knowledge and discover new features about Green Pin® products and instruct you on how to operate them safely and properly. The training also provides you with insights into the engineering and production technology that goes into manufacturing them.

All sessions are interactive: they allow you to ample opportunities to ask any questions you have, or put forward any challenges that you have faced in the past to knowledgeable presenters.

Organized online via webinar, via a hybrid set-up, or face-to-face at a Green Pin® location or an external venue, there's always a seminar to be found or to be created that fits your schedule and location. In case you want to use the training for accreditation points we can supply you with an official Green Pin® certificate of participation.

Available Green Pin® training

Green Pin® seminars and webinars are available in several pre-defined formats as shown in the table below. However, completely customized training can also be made. Such sessions allow us to focus on precisely those challenges that you and your colleagues have questions about.

E-mail info@greenpin.com for any inquiries.

Green Pin® Training	What will you learn?	Industry focus	Duration
Shackles	The complete resource on Green Pin® shackles. Topics include the product range, production method, design, testing, instructions for use, certifications and inspection.	All	Two parts of 1 hour each
ROV Shackles and Hooks	An overview of all the shackles and hooks specially designed for Remotely Operated Vehicles, includes many pointers for the most effective use of the products.	Subsea, Offshore	1 hour
Aquaculture Range	Overview of all products specially designed for fishing and aquaculture. Extremely safe products and designed for long use underwater.	Fishing, Aquaculture	1 hour
Chain Fittings	Overview of complete chain fittings range, production method, design, testing, instructions for use, certifications and inspection.	All	Two parts of 1 hour each
Catch Shackle	Reducing the number of injuries and possible deaths by preventing objects from falling with the Catch shackle when assembly or disassembly during installation at a height.	Onshore and Offshore installations	45 min
Fixed Nut Shackles	The benefits, functionality and applications of this extremely secure way of fastening a shackle bolt for permanent use.	Multiple but mostly Marine, Offshore	1 hour
Heavy Duty Master Links	Overview of the range and features that make this forged master link unique in its class.	Offshore	1 hour
Green Pin Tycan® Chain	The complete resource on Green Pin Tycan® fibre chain for lashing and lifting; topics include the product range, design, testing, instructions for use, certifications, inspections and project examples.	All	1 hour
Power Sling® Shackles	Improving rigging safety and saving wire rope costs with the most innovative heavy-lifting shackle in the industry. The session covers this and other benefits, design features, certifications and application instruction.	Offshore, Wind	1 hour
General introduction	The benefits of Green Pin®, usage in various industries and a general overview of the assortment.	All	1 hour
Royal Van Beest Group	Background on Green Pin®'s corporate parent, the Royal Van Beest Group: its history, current operations, subsidiary companies and their products.	All	1 hour
Tailormade webinars	A tailormade session focused on your specific topic of interest or zooming in on a technical challenge you have faced with our type of products (conditions apply).	-	-

INTRODUCTION

General

In case you do not use the products yourself but are reselling these as part of a manufactured product, please take our general cautions and warnings into account and make these known to your customers as well. In any case, we do not accept any responsibility or liability, nor can we be held responsible for any misuse or damage with, by or at your customers due to negligent use.

Definitions

Material

Various raw materials are used for the production of shackles, hooks and other lifting devices, depending on the use of the finished product. The following raw materials may be used:

- Mild steel, untreated, grade 3;
- High tensile steel, untreated or normalized, grade 4;
- High tensile steel, quenched and tempered, grade 6;
- Alloy steel, quenched and tempered, grade 8;
- Alloy steel, quenched and tempered, grade 10;
- Stainless steel AISI316L, AISI316 or Duplex 1.4462, grade 5.

Load

Following terms are used to define a load:

- Working Load Limit or WLL: the maximum load the product is designed to sustain, in general use and in in-line lifting.
- Proof Load or PL: this is the load applied on proof testing the product. At this load the product may not show visual deformation. For information about the proof load applied, we refer to the separate paragraph on testing.
- Minimum Breaking Load or MBL: the minimum load at which the product may fail or no longer sustain the load. Where applicable the MBL is specified.
- Shock Load: a sudden impact of the load on the lifting product. Shock loads are to be avoided at all times since they increase the stress on the product significantly and may affect its product life.

The unit that is used in this catalogue to indicate WLL, PL and MBL is t, which stands for metric tonne.

Safety factor

This indicates the ratio between the MBL and the WLL. For example, the standard range of Green Pin® shackles has a the safety factor of 6:1. This means that the shackle may only fail to retain the load, when the load is in exceedance of at least 6 times its designed WLL. Green Pin® chain fittings generally have a safety factor of 4:1 (lifting eyes have a safety factor of 5:1).

Product dimensions

All product dimensions mentioned in this catalogue are nominal dimensions. Product design, materials and/or specifications may be changed without prior notification. You can find the most up to date information including CAD-drawings on **greenpin.com/products**.

Finish

Products can have the following finish:

- Self-coloured: the product is delivered in the condition as it has been forged or machined and has undergone no specific finish treatment.
- Electro-galvanized: the finished product is electro-galvanized according to the customary standards. The thickness of the galvanization is at least 5 µm.
- Hot dipped galvanized: the finished product is hot dipped galvanized according to the customary standards. The thickness of the coating is at least 70 µm.
- Painted: the finished product is painted in a specific colour.
- Polished: stainless steel products are polished.

Standard

These refer to the specific standards indicated for the product.

Temperature range

This indicates the temperature range at which the product can be used. Beyond the advised temperature range the WLL of a product may be affected.

Abbreviations

The following abbreviations are used in this catalogue:

Product class abbreviations (for example, G-4161)

C Carbon steel
A Alloy steel
R Stainless steel
S Self-coloured
P Painted
E Electro-galvanized
G Hot dipped galvanized

Product name abbreviations (for example, Green Pin® Bow Shackle BN)

BN	Bolt & Nut or safety bolt	HH	Hook-Hook
CL	Clevis	HK	Hook
CP	Cotter Pin	H-type	Horizontal
D	D-Handle	JJ	Jaw-Jaw
E	Eye	ROV	Remotely Operated Vehicle
EE	Eye-Eye	RT	Recessed Trigger
EJ	Eye-Jaw	S	Shackle
EH	Eye-Hook	S/S	Stainless Steel
F	Fishtail handle	SC	Screw Collar or Screw Pin
FN	Fixed Nut	SCL	Swivel Clevis
FP	Flush Pin	SE	Swivel Eye
GR5	Grade 5	SQ	Square headed Screw Pin
GR8	Grade 8	U-type	Universal (Horizontal and Vertical)
GR10	Grade 10	V-type	Vertical

Certificates

Our company is ISO certified by Lloyd's; currently we are ISO 9001-2015 certified. Depending on the type of product and certificate availability for a certain product, below mentioned certificates can be provided.

Type 2.1	2.1	**Works certificate to EN 10204** Statement of compliance with the order.
Type 2.2	2.2	**Works certificate to EN 10204** Statement of compliance with the order, stating the results of non-specific inspection.
Type 3.1	3.1	**Inspection certificate to EN 10204** Statement of compliance with the order, stating the results of material specific inspection. This includes chemical composition and mechanical properties at component level.
Type MTC a	MTC [a]	**Manufacturer test certificate** Statement of compliance with the order, stating the results of proof load testing samples of a production batch. Products are not individually tested.
Type MTC b	MTC [b]	**Manufacturer test certificate** Statement of compliance with the order, stating the results of individual proof load testing.
Type LROS	LROS	**Proofload Statement** Statement of witness of proof load testing and visual examination by a surveyor from Lloyds Register, stating the results of individual proof load testing.
Type DNV PL	DNV PL	**Proofload Statement** Statement of witness of proof load testing and visual examination by a surveyor from DNV, stating the results of individual proof load testing. For P-6043, these shackles are proof load tested with presence of a DNV surveyor.
Type MPI a	MPI [a]	**Non-destructive testing report** Statement of compliance with the order, stating the results of Magnetic Particle Inspection (M.P.I.) in accordance with EN 10228-1 on samples of a production batch. Products are not individually tested.
Type MPI b	MPI [b]	**Non-destructive testing report** Statement of compliance with the order, stating the results of individual Magnetic Particle Inspection (M.P.I.) in accordance with EN 10228-1.

Table continues on next page

Type US a	US [a]	**Non-destructive testing report** Statement of compliance with the order, stating the results of Ultrasonic Inspection (U.S.) in accordance with EN 10228-3 on samples of a production batch. Products are not individually tested.
Type US b	US [b]	**Non-destructive testing report** Statement of compliance with the order, stating the results of individual Ultrasonic Inspection (U.S.) in accordance with EN 10228-3.
Type DNV 2.7-1 a	DNV 2.7-1 [a]	**Type Approval certificate to DNV 2.7-1** Green Pin® Standard Shackles, Green Pin Polar® Shackles, DNV Master links and DNV Master link assemblies are DNV Type approved to DNV standards DNV-ST-E271-2.71 Offshore containers and DNV-ST-E273 Portable offshore units. DNV Type approval certificates TAS000033J and TAS00003F7.
Type DNV 2.7-1 b	DNV 2.7-1 [b]	**Type Approval certificate to DNV 2.7-1** Statement of compliance with the order, of Green Pin® Standard Shackles and Green Pin Polar® Shackles, DNV Type approved to DNV standards DNV-ST-E271-2.71 Offshore containers and DNV-ST-E273 Portable offshore units. Stating the results of proof load testing samples of a production batch. Products are not individually tested.
Type DNV 0377	DNV 0377	**Type Approval certificate to DNV 0377** Green Pin Power Sling® shackles are DNV Type approved to DNV Standard DNV-ST-0377 Standard for shipboard lifting appliances. DNV Type approval certificate TAS000018M. Former DNV Certification No 2.22, Lifting Appliances – Application – Loose gear for offshore cranes.
Type DNV 0378	DNV 0378 DNV CG3	**Type Approval certificate to DNV 0378** Green Pin® Standard Shackles, Green Pin Polar® Shackles and Green Pin Power Sling® shackles are DNV Type approved to DNV Standard DNV-ST-0378 – Standard for offshore and platform lifting appliances. DNV Type approval certificates TAS00001H7 and TAS000018M. Former DNV Certification No 2.22, Lifting Appliances – Application – Loose gear for offshore cranes.
Type NYTEK / NS 9415	DNV NS 9415	**Type Approval certificate to NYTEK-regulation and NS 9415** Green Pin® products, (G-4139, G-8310, G-4863, G-4163BG and G-6870), are primarily used for Aquaculture applications. These products and the Royal Van Beest management system are certified by DNV for compliance with NYTEK-regulation and NS 9425 standard. DNV approval certificate PRONO 121.
Type DGUV	DGUV	**DGUV Type test certificate to EN 1677** Many Green Pin® chain sling components have a DGUV type approval certificate. Tests are based on GS-OA-15-05:2012-05: Principles for the testing and certification of chains and chain components. These components are Type approved to EN 818-2 or EN 1677 and are entitled to be marked H94.
Type CE IIA	CE IIA	**CE Declaration of Conformity** CE Declaration of Conformity in accordance with annex IIA of the Machinery Directive 2006/42/EC and the latest amendments.
Type CE IIB	CE IIB	**CE Declaration of Incorporation** CE Declaration of Incorporation in accordance with annex IIB of the Machinery Directive 2006/42/EC and the latest amendments.
Type BL	BL	**Break Load test certificate** A certificate with the actual breaking load results on tested samples.
Type ABS PDA	ABS PDA	**Certificate of Product Design Assessment Approval** The Green Pin® Standard Shackles G-4161, G-4163, G-4151, G-4153; The Green Pin Polar® Shackles G-5163 and the Green Pin Super® Shackles G-5261 and G-5263 are ABS Type Approved. Intended service: Loose Gear Items. Use on Lifting Equipment. ABS PDA certificates 23-2397435-PDA, 23-2397436-PDA and 23-2397437-PDA.
Type ABS MA	ABS MA	**Certificate of Manufacturing Assessment Approval** ABS MA certificate 18-RO 3524956.

Conditions

Certificate types 2.1, 2.2, 3.1, MTC a, DNV 2.7-1 a, DNV 2.7-1 b, DNV 0377, DNV 0378, DNV NS 9415, DGUV, ABS PDA, ABS MA and CE can be supplied at no extra charge. For all other certificates, additional costs will be charged.

Free of charge:

2.1 | 2.2 | 3.1 | MTC [a] | DNV 2.7-1 [a] | DNV 2.7-1 [b] | DNV 0377 | DNV 0378 | DNV NS 9415 | DGUV | CE IIA | CE IIB | ABS PDA | ABS MA

With additional charges:

MTC [b] | LROS | MPI [a] | MPI [b] | US [a] | US [b] | DNV CG3 | BL

On request the proof load test certificates can be supplied surveyed by an official classification society, such as LROS, DNV, BV, ABS or any other officially certified inspection body. Specific details of certificate availability can be found in each product chapter. Please verify your certification requirements at the time of order. For more information and specifications, see the table below for an overview of the different test methods.

Test method	Test type	Test description	Document
Visual inspection	Non Destructive	The products are inspected and approved by our QC-department. The products are inspected and approved by our QC-department, stating the results of non-specific inspection.	2.1 2.2
Material specific inspection	Destructive	The material of the products is inspected. This includes chemical composition and mechanical properties at component level.	3.1
Proof Load test	Non Destructive	Samples of a production batch of products are proof load tested. Products are not individually tested. All products of a production batch are individually proof load tested.	MTC[a] MTC[b]
Magnetic Particle inspection	Non Destructive	Samples of a production batch of products are Magnetic Particle Inspection (M.P.I.) tested in accordance with EN 10228-1. Products are not individually tested. All products of a production batch are individually Magnetic Particle Inspection (M.P.I.) tested in accordance with EN 10228-1.	MPI[a] MPI[b]
Ultrasonic inspection	Non Destructive	Samples of a production batch of products are Ultrasonic Inspection (U.S.) tested in accordance with EN 10228-3. Products are not individually tested. All products of a production batch are individually Ultrasonic Inspection (U.S.) tested in accordance with EN 10228-3.	US[a] US[b]
Break Load test	Destructive	Samples of a production batch are break load tested.	BL

CAD drawings

Green Pin® products are used in a wide variety of applications; from a simple lift to move an item from A to B in a workplace, to very complex lifting systems for offshore applications. In the latter case, engineers use Computer Aided Design (CAD) software to develop a 2D or 3D specification of the entire system.

For standard products engineers normally use a CAD drawing library. The use of this kind of libraries saves considerable design time and costs. And of course it prevents mistakes that may occur whilst copying data from a product catalogue into the design program.

To help engineers, Green Pin® has made CAD drawings available in various formats (e.g. STEP, IGS, CATIA, etc.) on the Green Pin® website (**www.greenpin.com**). These drawings can be integrated in almost every design program. Further details can be obtained through our website: **www.greenpin.com/cad**.

CAD In the product chapters the CAD icon indicates that cad drawings are available.

RFID RFID

Green Pin® offers an identification solution with an easily accessible Radio Frequency Identification (RFID) chip in our range of Green Pin® Shackles. The RFID icon in the product chapters indicates that the products can be equipped with a countersunk RFID chip.

For more information see page 24.

INFO More information

For some products we provide detailed technical information on our website. In the product chapters the INFO icon indicates that there is extra information on this product available at **www.greenpin.com/FAQ**.

General cautions and warnings

All WLL's indicated in this catalogue or in other Green Pin® literature or publications are only applicable to recently-supplied, new and unused products used under prescribed operating conditions. Any extreme circumstances or shock loading that occur during use must be taken into account when specifying the products to be used.

The WLL should be applied in in-line lifting. Overloads must be avoided. Side loads should be avoided too, as the products are not designed for this purpose and the application of a side load may significantly decrease product life. The WLL of the product represents the limit in static use. In case of dynamic use (breaking, accelerations, shocks), the effective stress on the product increases significantly which can lead to product failure.

Products must be regularly inspected in accordance with the safety standards valid in the country of use. This is required because the products in use may be affected by wear, misuse, overloading etc. which may lead to deformation and alteration of the material structure. Inspection should take place at least every six months and more frequently when the products are used in severe operating conditions.

Green Pin® is constantly improving products to make sure they meet the latest industry standards. Therefore some dimensions or product markings may differ from those stated in this catalogue. The characteristics mentioned in this catalogue or in other Green Pin® literature or publications are given merely as an indication. Green Pin® reserves the right to make any suitable modification to any product, even after acceptance of the customer order. The essential characteristics and performances of the products shall not be negatively affected by such modifications. Any critical dimensions or characteristics should be verified with our engineering department before ordering the product.

Green Pin® products are typically used to transfer loads during lifting, lashing or towing. These fittings are usually combined with steel wire rope, chain or synthetic rope or chain (Green Pin Tycan® chain) to form a lifting sling. You must therefore conduct the following verifications to safely use the products:

Verification before first use

Before first use of the sling it should be ensured that:

- The sling meets the exact requirements specified in the order;
- The valid manufacturer certificate and CE declaration are at hand;
- The identification and the WLL mentioned on the sling correspond to the information stated on the certificate;
- Full details of the sling (components, diameter, number of legs, angle, grade) are recorded in the register of lifting equipment;
- The users of the sling have received appropriate instruction and training.

Verification before each use

Before each use the sling should be visually inspected for obvious damage or deterioration. If faults are found during this inspection, the sling should be withdrawn from service and referred to a competent person for thorough examination. Some parts can be replaced or the complete sling can be discarded.

A thorough inspection should be carried out by a competent person at intervals not exceeding six months and more frequently when the slings are used in severe operation conditions. Records of such inspections should be maintained. Slings should be thoroughly cleaned to remove any oil, dirt or rust prior to inspection. Any cleaning method which does not damage the material is acceptable. Avoid the use of acids, overheating, removal of metal or movement of metal which may cover cracks or surface defects.

The sling should be inspected throughout its full length to detect any evidence of wear, distortion or external damage.

Any replacement component or part of the sling should be in accordance with the appropriate European Standard or the safety standards given in the country of use for that component or part. If a chain link in one of the legs of a chain sling is damaged, then the entire chain leg should be replaced. The repair of a link in a welded chain sling should exclusively be carried out by the chain manufacturer using the adequate welding process. Components showing any defects should be discarded and replaced. When replacing a mechanically assembled component, always use a replacement component that meets the certification requirements of the sling.

Handling of the load

- It is important to check the sling before lifting. Check if the manufacturer of the load indicates any specific instructions for the lifting of the load. Before starting the lift, make sure that the load is free to move and is not bolted down. Also check if no loose objects could fall down from the load. The path between the current location of the load and the new one must be free.
- The weight of the load must be known in order to select a sling with the correct WLL. If the weight of the load is not marked, the information should be obtained from the consignment notes, manuals or drawings, or assessed by calculation.
- Please observe the centre of gravity of the load. To prevent any tilting or toppling, the following conditions should be met:
  - for single leg slings and endless slings the lifting point should be positioned directly above the centre of gravity.
  - for two leg slings the lifting points should be positioned on both sides of, and higher than, the centre of gravity.
  - for three and four leg slings the lifting points should be distributed in a plane around the centre of gravity. Distribute the weight evenly over the lifting points, which should be placed higher than the centre of gravity.
- When using multi leg slings make sure that the angles between the lifting points and sling legs are within the range marked on the sling. The angle ß, which is the angle between the sling leg and the vertical, should never exceed 60°. Details about load reductions for slings at certain angles can be found in the tables corresponding to the relevant chain grade.
- Use the below reduction table if a multi leg sling is not used for the purpose for which it has been designed, for example for a lifting operation with fewer legs than the number of legs of the sling:

Types of chain sling	Number of legs used	Factor to apply to marked WLL
Two-leg	1	1/2
Three- and four-leg	2	2/3
Three- and four-leg	1	1/3

- The sling should at least have a WLL equal to or greater than the weight to be lifted.
- Ensure that the load to be moved is able to resist both the vertical and horizontal force without being damaged.
- A suspended load should not be left unattended.
- Riggers should be aware of the risks and dangers of shock loading which may lead to failure of the sling. The load should always be lifted and lowered slowly.

Method of connection

- A sling is usually attached to the load with endfittings such as hooks and/or links.
- The components should be used for in-line loading only in order to avoid bending.
- The lifting points fixed on the load should be seated well in the load bearing part of the hook (never on the tip of the hook or wedged in the opening of the hook).
- We refer to the detailed warnings of each component in the product chapters.

Symmetry of loading

The WLL values mentioned in our catalogue for each grade have been determined on the basis that the loading of the sling is symmetrical. This means that when the load is lifted the sling legs are symmetrically distributed in the plane and all legs of the sling have the same angles to the vertical.
For chain slings refer to EN 818-6:2000+A1:2008 for more details.

The loading can be assumed to be symmetric if all of the following conditions are met:

- the load is less than 80% of marked WLL and
- sling leg angles to the vertical are all more than 15° and
- sling leg angles to the vertical are all within 15° to each other and
- in the case of three- and four- leg slings, the plane angles are within 15° of each other.

If one of the above parameters is not met, the loading should be considered to be asymmetric and the lift should be referred to a competent engineer to establish the safe rating for the sling. Alternatively, in the case of asymmetric loading, the sling should be derated to half the marked WLL. If the load tends to tilt during the lift, it should be lowered and the attachments changed by repositioning the attachment points or by using compatible shortening devices. The safety factor on the individual components is designed for safety only. Never exceed the indicated WLL.

Safety of lift

Hands and other body parts should be kept away from the chain to prevent injuries. The load should be lifted slowly until the sling leg is taut. As soon as the load is slightly raised, check that it is secure and has the desired position. Refer to ISO 12480-1 for planning and management of the lifting operation and for a safe way of executing it. Never move the load over people during the lift.

Lowering the load
The point of destination of the load should be prepared and should be adapted to the weight and shape of the load. The access to this site must be clear of any unnecessary obstacles and people. The load should be lowered carefully. Avoid trapping the sling beneath the load as this may cause damage to the load or sling. Before taking the tension off the sling legs, the load should be checked to ensure that it is properly supported and stable. The sling should be removed by hand and not with the lifting device. The load should not be rolled off the sling as this may damage the sling.

Storage of slings
When not in use slings should be kept on a properly designed rack. They should not be left lying on the ground where they may be damaged. If the slings are left suspended from a crane hook, the sling hooks should be engaged in an upper link to reduce the risk of sling legs swinging freely or snagging. If the slings are out of use for some time they should be cleaned, dried and protected from corrosion, e.g. lightly oiled.

Maintenance
Slings must be regularly inspected in accordance with the safety standards valid in the country of use.

A competent engineer should examine the sling, observing the following:
- the sling markings (ID, WLL) must be legible;
- there may be no distortion of the upper or lower end fittings;
- sling leg stretch and wear may not exceed the tolerances.

If the identification tag of the sling is missing and the necessary information is not marked on the sling itself, the sling should be withdrawn from service. Use original Green Pin® spare kits to replace parts (such as a load pin or the latch of a hook) or if a load pin is misused, damaged or distorted.

Limitations in use
- Never modify components by welding, heat treating, grinding or any other process. It could alter their mechanical and/or chemical characteristics;
- Consult Green Pin® if the sling is to be exposed to highly concentrated chemicals. Green Pin® products may not be used under chemical influences such as acids or alkaline solutions;
- The rating of lifting accessories in European Standards assumes the absence of exceptionally hazardous conditions. This concerns offshore activities, lifting of persons and lifting of potentially dangerous loads. In such cases the degree of hazard should be assessed by a competent engineer and the WLL adjusted accordingly;
- If a product is used under extreme temperature conditions, the WLL must be reduced. We refer to the relevant product chapter in this catalogue for guidance on use at extreme temperatures.

Conversion factors

To convert		
from	**to**	**multiply by**
Length		
mm	inch	0.0393701
inch	mm	25.4
Mass		
US tonnes	metric tonnes	0.9071847
metric tonnes	US tonnes	1.1023113
metric tonnes	pounds	2204.6226218
pounds	metric tonnes	0.0004536
metric tonnes	kilogram	1000
kilogram	metric tonnes	0.001
metric tonnes	kilo Newton	9.8066500
kilo Newton	metric tonnes	0.1019716
pounds	kilogram	0.4535924
kilogram	pounds	2.2046226
Temperature		
Celcius	Fahrenheit	1.8 +32
Fahrenheit	Celcius	(-32) * 0.5555556
Torque		
Newton meter	foot pound-force	0.7375621
foot pound-force	Newton meter	1.3558180

TURNBUCKLES

Applications

Turnbuckles are used for rigging or tensioning wires, ropes, rods etc. They are designed for in-line rigging, tensioning or lashing. Green Pin® Turnbuckles (G-6313, G-6323, G-6333, G-6311, G-6312, G-6315 and G-6314) can be used in lifting applications. The closed body rigging screws (G-6343, G-6340 and G-6345) can also be used in lifting applications.

Range

Green Pin® offers a wide range of turnbuckles:
- Load rated Green Pin® turnbuckles;
- Open body rigging screws generally to DIN 1480;
- Rigging screws with welding ends;
- Closed body rigging screws;
- Special turnbuckles for lashing (hamburgers).

Royal Van Beest offers a wide range of other turnbuckles to complement the Green Pin® assortment.

Design

Green Pin® turnbuckles are manufactured to ASTM F1145-92 (formerly U.S. Fed. Spec. FF-T-791). They are drop-forged and available with the following end fittings: eye/eye, hook/hook, hook/eye, jaw/jaw and jaw/eye. All fittings are interchangeable. Locking nuts are supplied with all sizes.

All Green Pin® turnbuckles are generally marked with:
- Working Load Limit - e.g. 2.36 t
- manufacturer's symbol - e.g. GP
- thread diameter - e.g. $^{3}/_{4}$"
- traceability code - e.g. A1
- thread - L (lefthanded) and R (righthanded)

Rigging screws generally to DIN 1480 are available with welding ends and in hook/eye, eye/eye, hook/hook and jaw/jaw combinations. Closed body rigging screws are available in jaw/jaw, jaw/eye and eye/eye combinations.

Finish

Load rated Green Pin® turnbuckles and closed body rigging screws are hot dipped galvanized. Rigging screws to DIN 1480 are electro-galvanized. Lashing turnbuckles are self-coloured.

Certification

Specific details of certificate availability can be found on each product page. Please verify your certification requirements at the time of order.

Instructions for use

Turnbuckles must be used for in-line applications only. Special attention should be paid to prevent overloading. During tensioning, avoid forces on the turnbuckle that may lead to deformation. Should a turnbuckle start to deform, the tension should be decreased immediately and any deformed parts should be replaced. Should extreme circumstances or shock loading, possibly occur during use, this must be taken into account when selecting the correct products to be used for the application.

For the rigging of wires, ropes, rods etc., Green Pin® turnbuckles are recommended to be used. The WLL should be applied in in-line lifting only and overloading is not permitted. Nor should side loads be applied, as the products have not been designed for this purpose.

Open body rigging screws are used for tensioning wires and ropes for less demanding applications (for example rope railings).

Turnbuckles must be regularly inspected in accordance with the safety standards and regulations given in the country of use. This is required because the products in use may be affected by wear, misuse, overloading etc. which may lead to deformation and alteration of the steel structure.

Safe use of turnbuckles

Turnbuckles should be inspected before use to ensure that:
- all markings are legible;
- the threads of the body and the end fittings are of the same type;
- the pin, nut, cotter pin or any other locking system cannot vibrate out of position;
- the threads of the body and the end fittings are undamaged;
- the body and end fittings are not distorted or unduly worn;
- the body and end fittings are free from nicks, gouges and cracks.

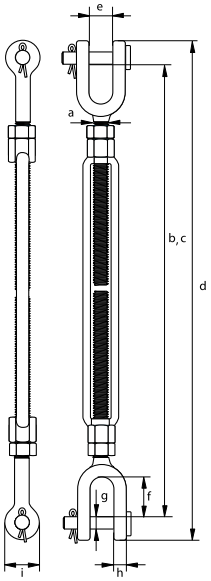
Make sure that the end fittings are correctly screwed into the body. Always use the locking nuts provided to prevent the turnbuckles from unscrewing. Never replace an end fitting by anything other than one designed for the purpose, otherwise the turnbuckle may not be suitable for the loads imposed.

Green Pin® JJ Turnbuckle CP

Turnbuckle with jaw-jaw end-fitting and cotter pins, generally to ASTM F1145-92

Scan for additional product details

G-6313



- **Material:** drop forged high tensile steel SAE 1035 or 1045
- **Safety factor:** MBL equals 5 x WLL
- **Standard:** generally to ASTM F1145-92 formerly U.S. Federal Specification FF-T-791b
- **Finish:** hot dipped galvanized
- **Temperature Range:** -20 °C up to +200 °C
- **Certification:** 2.1 2.2 3.1 MTC [a] CE IIA
- **Article code:** scan QR code to see article codes

working load limit	diameter thread		take up	length closed position	length open position	length closed position	opening jaw	length inside	diameter pin	thickness jaw eye	diameter jaw eye	weight each
t	a inch	a mm	inch	b mm	c mm	d mm	e mm	f mm	g mm	h mm	i mm	kg
2.36	3/4	19	6	369	487	439	24	38	16	16	41	2.59
2.36	3/4	19	9	444	640	514	24	38	16	16	41	3.13
2.36	3/4	19	12	520	792	590	24	38	16	16	41	3.42
2.36	3/4	19	18	670	1096	740	24	38	16	16	41	4.51
3.27	7/8	22	12	561	826	638	27	42	19	19	48	4.93
3.27	7/8	22	18	713	1132	790	27	42	19	19	48	6.41
4.54	1	25	6	447	554	532	31	50	22	20	54	5.18
4.54	1	25	12	598	859	683	31	50	22	20	54	6.43
4.54	1	25	18	750	1168	835	31	50	22	20	54	8.08
4.5	1	25	24	903	1470	988	31	50	22	20	54	8.56
6.9	1 1/4	32	12	641	914	748	44	71	29	26	68	11.2
6.9	1 1/4	32	18	803	1228	910	44	71	29	26	68	13.6
6.9	1 1/4	32	24	962	1539	1069	44	71	29	26	68	15
9.71	1 1/2	38	12	675	942	806	52	71	35	28	80	17.1
9.71	1 1/2	38	18	825	1244	956	52	71	35	28	80	19.3
9.71	1 1/2	38	24	980	1551	1111	52	71	35	28	80	21.8
12.7	1 3/4	45	18	938	1316	1092	60	86	41	33	90	27.3
12.7	1 3/4	45	24	1089	1621	1243	60	86	41	33	90	31.7
16.8	2	50	24	1151	1671	1338	63	93	51	40	107	49
27.2	2 1/2	64	24	1255	1831	1480	75	114	57	41	143	88
34	2 3/4	69	24	1348	1882	1604	90	110	70	41	158	103

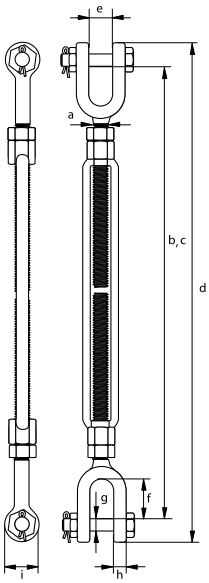
CAD INFO

Green Pin® JJ Turnbuckle BN

Turnbuckle with jaw-jaw end-fitting and safety bolt, generally to ASTM F1145-92

Scan for additional product details

G-6323



- **Material:** drop forged high tensile steel SAE 1035 or 1045
- **Safety factor:** MBL equals 5 x WLL
- **Standard:** generally to ASTM F1145-92 formerly U.S. Federal Specification FF-T-791b
- **Finish:** hot dipped galvanized
- **Temperature Range:** -20 °C up to +200 °C
- **Certification:** 2.1 2.2 3.1 MTC [a] CE IIA
- **Article code:** scan QR code to see article codes

working load limit	diameter thread		take up	length closed position	length open position	length closed position	opening jaw	length inside	diameter pin	thickness jaw eye	diameter jaw eye	weight each
t	a inch	a mm	inch	b mm	c mm	d mm	e mm	f mm	g mm	h mm	i mm	kg
0.54	3/8	10	6	273	409	304	12	21	7	9	21	0.55
1	1/2	12	6	304	435	343	16	26	10	11	25	0.97
1	1/2	12	9	379	588	418	16	26	10	11	25	1.15
1	1/2	12	12	455	740	494	16	26	10	11	25	1.46
1.59	5/8	16	6	346	469	406	18	32	13	14	33	1.75
1.59	5/8	16	9	421	622	480	18	32	13	14	33	2.14
1.59	5/8	16	12	498	774	557	18	32	13	14	33	2.43
2.36	3/4	19	6	369	487	439	24	38	16	16	41	2.70
2.36	3/4	19	9	444	640	514	24	38	16	16	41	3.23
2.36	3/4	19	12	520	792	590	24	38	16	16	41	3.57
2.36	3/4	19	18	670	1096	740	24	38	16	16	41	4.55
3.27	7/8	22	12	561	826	638	27	42	19	19	48	5.22
3.27	7/8	22	18	713	1132	790	27	42	19	19	48	6.56
4.54	1	25	6	447	554	532	31	50	22	20	54	5.54
4.54	1	25	12	598	859	683	31	50	22	20	54	6.70
4.54	1	25	18	750	1168	835	31	50	22	20	54	8.61
4.5	1	25	24	903	1470	988	31	50	22	20	54	8.87
6.9	1 1/4	32	12	643	916	748	44	71	28	26	68	11.9
6.9	1 1/4	32	18	805	1230	910	44	71	28	26	68	13.6
6.9	1 1/4	32	24	964	1541	1069	44	71	28	26	68	14.2
9.71	1 1/2	38	12	675	942	806	52	71	35	28	80	18.5
9.71	1 1/2	38	18	825	1244	956	52	71	35	28	80	19.3
9.71	1 1/2	38	24	980	1551	1111	52	71	35	28	80	22
12.7	1 3/4	45	18	938	1316	1092	60	86	41	33	90	29
12.7	1 3/4	45	24	1089	1621	1243	60	86	41	33	90	33
16.8	2	50	24	1153	1673	1338	63	93	50	40	107	50
27.2	2 1/2	64	24	1255	1831	1480	75	114	57	41	143	88
34	2 3/4	69	24	1348	1882	1604	90	110	70	41	158	109

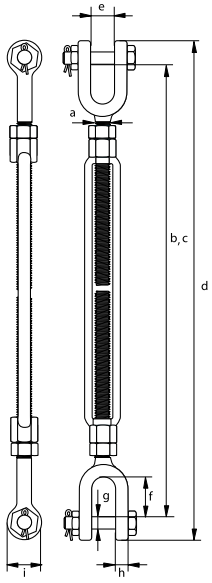
CAD INFO

Green Pin Polar® JJ Turnbuckle BN

Grade 8 turnbuckle with jaw-jaw end-fitting and safety bolt for use under low temperatures, generally to ASTM F1145-92

Scan for additional product details

G-6333



- **Material:** drop forged alloy steel, grade 8, quenched and tempered
- **Safety factor:** MBL equals 5 x WLL
- **Standard:** ASME B30.26 generally to ASTM F1145-92 formerly U.S. Federal Specification FF-T-791b
- **Finish:** hot dipped galvanized
- **Temperature Range:** -40 °C up to +200 °C
- **Certification:** 2.1 2.2 3.1 MTC [a] CE IIA
- **Article code:** scan QR code to see article codes
- **Note:** jaw ends up to and including 5/8" are fitted with bolts and nuts, sizes 3/4" and up are equipped with bolts, nuts and cotter pins

working load limit	diameter thread		take up	length closed position	length open position	length closed position	opening jaw	length inside	diameter pin	thickness jaw eye	diameter jaw eye	weight each
t	a inch	a mm	inch	b mm	c mm	d mm	e mm	f mm	g mm	h mm	i mm	kg
1	1/2	12	12	455	740	494	16	26	10	11	25	1.38
1.59	5/8	16	12	498	774	557	18	32	13	14	33	2.32
2.36	3/4	19	18	670	1096	740	24	38	16	16	41	4.57
3.27	7/8	22	18	713	1132	790	27	42	19	19	48	6.50
4.54	1	25	18	750	1168	835	31	50	22	20	54	8.40
6.9	1 1/4	32	18	805	1230	910	44	71	28	26	68	13.6
9.71	1 1/2	38	18	825	1244	956	52	71	35	28	80	21.1
12.7	1 3/4	45	18	938	1316	1092	60	86	41	33	90	30

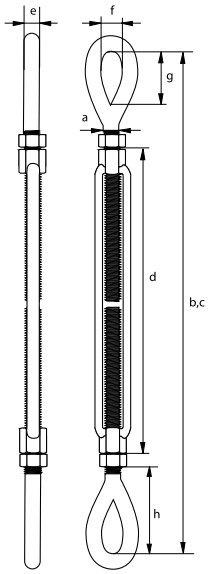
CAD INFO

Green Pin® EE Turnbuckle

Turnbuckle with eye-eye end-fitting, generally to ASTM F1145-92

Scan for additional product details

G-6311



- **Material:** drop forged high tensile steel SAE 1035 or 1045
- **Safety factor:** MBL equals 5 x WLL
- **Standard:** generally to ASTM F1145-92 formerly U.S. Federal Specification FF-T-791b
- **Finish:** hot dipped galvanized
- **Temperature Range:** -20 °C up to +200 °C
- **Certification:** 2.1 2.2 3.1 MTC [a] CE IIA
- **Article code:** scan QR code to see article codes

working load limit	diameter thread		take up	length closed position	length open position	length	diameter	width inside	length inside	length closed position	weight each
t	a inch	a mm	inch	b mm	c mm	d mm	e mm	f mm	g mm	h mm	kg
0.54	3/8	10	6	292	428	183	10	13	29	49	0.48
1	1/2	12	6	325	455	193	12	18	36	58	0.81
1	1/2	12	9	400	608	270	12	18	36	57	1.07
1	1/2	12	12	476	760	346	12	18	36	57	1.29
1.59	5/8	16	6	380	503	203	14	21	45	79	1.33
1.59	5/8	16	9	455	656	280	14	21	45	78	1.61
1.59	5/8	16	12	531	808	356	14	21	45	78	1.96
2.36	3/4	19	6	413	532	214	17	26	54	89	2.03
2.36	3/4	19	9	490	685	291	17	26	54	89	2.47
2.36	3/4	19	12	564	837	367	17	26	54	88	2.90
2.36	3/4	19	18	718	1143	519	17	26	54	89	3.94
3.27	7/8	22	12	604	870	377	20	32	61	101	4.31
3.27	7/8	22	18	756	1174	529	20	32	61	101	5.51
4.54	1	25	6	498	604	234	24	37	76	118	4.23
4.54	1	25	12	649	909	387	24	37	76	117	5.75
4.54	1	25	18	801	1215	539	24	37	76	117	7.27
4.5	1	25	24	952	1518	692	24	37	76	116	7.80
6.9	1 1/4	32	12	712	985	385	29	47	91	145	9.28
6.9	1 1/4	32	18	862	1287	537	29	47	91	144	11.1
6.9	1 1/4	32	24	1015	1592	690	29	47	91	144	12.1
9.71	1 1/2	38	12	756	1023	401	32	55	106	156	12.6
9.71	1 1/2	38	18	916	1335	553	32	55	106	160	15.8
9.71	1 1/2	38	24	1065	1636	706	32	55	106	158	17.3
12.7	1 3/4	45	18	1020	1396	577	38	61	120	197	23.9
12.7	1 3/4	45	24	1171	1703	730	38	61	120	196	26.7
16.8	2	50	24	1264	1784	748	46	69	147	230	38.3
27.2	2 1/2	64	24	1430	1934	802	51	80	165	274	65
34	2 3/4	69	24	1450	1988	802	57	84	178	284	84

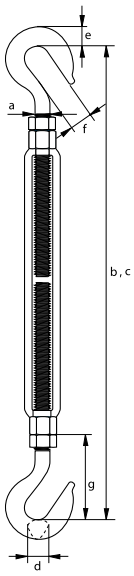
CAD INFO

Green Pin® HH Turnbuckle

Turnbuckle with hook-hook end-fitting, generally to ASTM1145-92

Scan for additional product details

G-6312



- **Material:** drop forged high tensile steel SAE 1035 or 1045
- **Safety factor:** MBL equals 5 x WLL
- **Standard:** generally to ASTM F1145-92 formerly U.S. Federal Specification FF-T-791b
- **Finish:** hot dipped galvanized
- **Temperature Range:** -20 °C up to +200 °C
- **Certification:** 2.1 2.2 3.1 MTC [a] CE IIA
- **Article code:** scan QR code to see article codes

working load limit	diameter thread		take up	length closed position	length open position	thickness hook	thickness hook	opening hook	length closed position	weight each
t	a inch	a mm	inch	b mm	c mm	d mm	e mm	f mm	g mm	kg
0.54	3/8	10	6	278	415	13	16	15	42	0.53
1	1/2	12	6	305	434	16	22	16	48	0.93
1	1/2	12	9	380	587	16	22	16	47	1.16
0.68	1/2	12	12	456	739	13	19	16	47	1.34
1.59	5/8	16	6	356	479	16	23	21	67	1.40
1.59	5/8	16	9	431	632	20	24	21	66	1.96
1.59	5/8	16	12	507	784	16	23	21	66	1.79
2.36	3/4	19	6	393	511	22	27	24	79	2.04
1.36	3/4	19	9	468	664	20	27	24	78	2.49
2.36	3/4	19	12	544	816	22	27	24	78	3.27
4.54	1	25	6	479	586	26	35	31	109	4.23
4.54	1	25	12	625	886	26	35	31	106	6.64
2.27	1	25	18	778	1191	26	35	31	106	6.50
2.27	1	25	24	928	1495	26	35	31	105	8.13

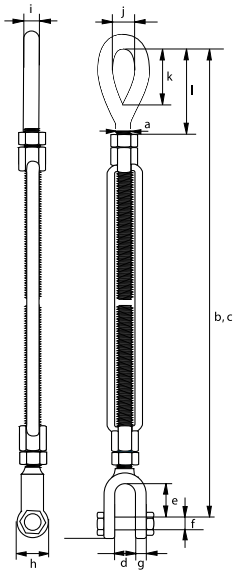
CAD INFO

Green Pin® EJ Turnbuckle

Turnbuckle with eye-jaw end-fitting and cotter pin or safety bolt (depending on size), generally to ASTM1145-92

Scan for additional product details

G-6315



- **Material:** drop forged high tensile steel SAE 1035 or 1045
- **Safety factor:** MBL equals 5 x WLL
- **Standard:** generally to ASTM F1145-92 formerly U.S. Federal Specification FF-T-791b
- **Finish:** hot dipped galvanized
- **Temperature Range:** -20 °C up to +200 °C
- **Certification:** 2.1 2.2 3.1 MTC [a] CE IIA
- **Article code:** scan QR code to see article codes

working load limit	diameter thread		take up	length closed position	length open position	opening jaw	length inside jaw	diameter pin jaw	thickness eye jaw	diameter eye jaw	diameter eye	width inside eye	length inside eye	length closed position	weight each
t	a inch	a mm	inch	b mm	c mm	d mm	e mm	f mm	g mm	h mm	i mm	j mm	k mm	l mm	kg
0.54	3/8	10	6	283	418	12	21	8	9	21	10	13	29	49	0.52
1	1/2	12	6	315	446	16	26	10	11	25	12	18	36	58	0.88
1	1/2	12	9	390	598	16	26	10	11	25	12	18	36	57	1.13
1	1/2	12	12	466	751	16	26	10	11	25	12	18	36	57	1.37
1.59	5/8	16	6	363	486	18	32	13	14	33	14	21	45	79	1.55
1.59	5/8	16	9	438	639	18	32	13	14	33	14	21	45	78	1.61
1.59	5/8	16	12	514	790	18	32	13	14	33	14	21	45	78	2.17
2.36	3/4	19	6	391	510	24	38	16	16	41	17	26	54	89	2.28
2.36	3/4	19	9	467	663	24	38	16	16	41	17	26	54	89	2.82
2.36	3/4	19	12	542	815	24	38	16	16	41	17	26	54	88	3.16
2.36	3/4	19	18	694	1120	24	38	16	16	41	17	26	54	89	4.10
3.27	7/8	22	12	583	848	27	42	19	19	48	20	32	61	101	4.10
3.27	7/8	22	18	735	1153	27	42	19	19	48	20	32	61	101	5.84
4.54	1	25	6	473	579	31	50	22	20	54	24	37	76	118	4.60
4.54	1	25	12	624	884	31	50	22	20	54	24	37	76	117	6.17
4.54	1	25	18	776	1190	31	50	22	20	54	24	37	76	117	7.10
4.5	1	25	24	928	1494	31	50	22	20	54	24	37	76	116	8.35
6.9	1 1/4	32	12	677	950	44	71	29	26	68	29	47	91	145	10.4
6.9	1 1/4	32	18	833	1258	44	71	29	26	68	29	47	91	144	11.5
6.9	1 1/4	32	24	989	1566	44	71	29	26	68	29	47	91	144	13.2
9.71	1 1/2	38	12	716	983	52	71	35	28	80	32	55	106	156	13.9
9.71	1 1/2	38	18	871	1290	52	71	35	28	80	32	55	106	160	16.7
9.71	1 1/2	38	24	1023	1594	52	71	35	28	80	32	55	106	158	19.7
12.7	1 3/4	45	18	979	1356	60	86	41	33	90	38	61	120	197	25.1
12.7	1 3/4	45	24	1130	1662	60	86	41	33	90	38	61	120	196	29
16.8	2	50	24	1208	1728	63	93	51	40	107	46	69	147	230	42
27.2	2 1/2	64	24	1343	1899	75	114	57	41	143	51	80	165	274	68.5
34	2 3/4	69	24	1399	1953	90	110	70	41	158	57	84	178	284	93

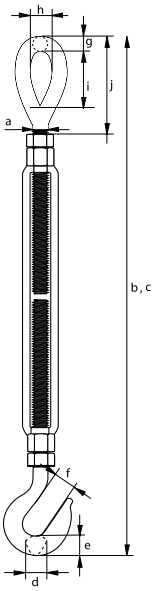
CAD INFO

Green Pin® EH Turnbuckle

Turnbuckle with eye-hook end-fitting, generally to ASTM F1145-92

Scan for additional product details

G-6314



- **Material:** drop forged high tensile steel SAE 1035 or 1045
- **Safety factor:** MBL equals 5 x WLL
- **Standard:** generally to ASTM F1145-92 formerly U.S. Federal Specification FF-T-791b
- **Finish:** hot dipped galvanized
- **Temperature Range:** -20 °C up to +200 °C
- **Certification:** 2.1 2.2 3.1 MTC [a] CE IIA
- **Article code:** scan QR code to see article codes

working load limit	diameter thread		take up	length closed position	length open position	thickness hook	thickness hook	opening hook	diameter eye	width inside eye	length inside eye	length closed position	weight each
t	a inch	a mm	inch	b mm	c mm	d mm	e mm	f mm	g mm	h mm	i mm	j mm	kg
0.54	3/8	10	6	285	422	13	16	15	10	13	29	49	0.40
1	1/2	12	6	315	445	16	22	16	12	18	36	58	0.73
1	1/2	12	9	390	598	16	22	16	12	18	36	57	0.89
0.68	1/2	12	12	466	750	13	19	16	12	18	36	57	1.05
1.59	5/8	16	6	368	491	16	23	21	14	21	45	79	1.11
1.59	5/8	16	9	443	644	20	24	21	14	21	45	78	1.39
1.59	5/8	16	12	519	796	16	23	21	14	21	45	78	1.79
2.36	3/4	19	6	403	521	22	27	24	17	26	54	89	1.83
1.36	3/4	19	9	479	675	20	27	24	17	26	54	89	2.30
2.36	3/4	19	12	554	827	22	27	24	17	26	54	88	2.30
4.54	1	25	6	488	595	26	35	31	24	36	75	118	3.90
4.54	1	25	12	636	897	26	35	31	24	36	75	117	5.48
2.27	1	25	18	789	1202	26	35	31	24	36	75	117	6
2.27	1	25	24	939	1506	26	35	31	24	36	75	116	7.52

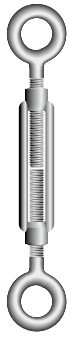
CAD INFO

C

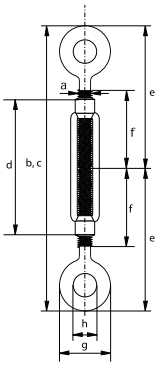
Rigging screws Eye-Eye

According to DIN 1480

- **Material:** drop forged mild steel
- **Standard:** DIN 1480
- **Finish:** electro-galvanized
- **Certification:** 2.1



E-6351



diameter thread	length closed position	length open position	length body	length end fitting	length thread	diameter eye outside	diameter eye inside	weight each
a mm	b mm	c mm	d mm	e mm	f mm	g mm	h mm	kg
5	114	170	70	57	35	16	8	0.07
6	160	246	110	80	55	20	9	0.11
8	168	248	110	84	57	22	10	0.2
10	210	300	125	105	68	31	14	0.28
12	222	305	125	110	70	35	16	0.43
14	244	334	140	123	75	40	18	0.61
16	300	416	170	143	88	47	22	1
20	334	466	200	165	105	52	24	1.60
22	372	527	220	185	118	60	27	2.20
24	410	587	255	208	135	65	27	2.80
30	440	605	255	220	135	71	31	4.10
33	490	690	295	245	148	88	36	6
36	554	740	295	277	158	94	38	8.50
42	600	800	330	300	170	110	49	11

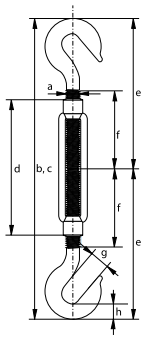
C

Rigging screws Hook-Hook

According to DIN 1480

- **Material:** drop forged mild steel
- **Standard:** DIN 1480
- **Finish:** electro-galvanized
- **Certification:** 2.1

E-6352



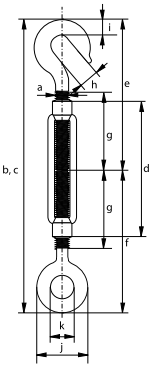
diameter thread	length closed position	length open position	length body	length end fitting	length thread	opening hook	thickness hook	weight each
a mm	b mm	c mm	d mm	e mm	f mm	g mm	h mm	kg
6	184	270	110	92	55	8	15	0.11
8	200	280	110	100	57	10.5	15	0.20
10	234	323	125	117	68	13	11	0.28
12	260	343	125	130	70	16	13	0.43
14	278	368	140	139	75	18	15	0.61
16	322	438	170	161	88	20	17	1
20	382	514	200	191	105	21	21	1.60
22	456	601	220	228	118	24	28	2.20
24	496	673	255	248	135	26	33	2.80
30	550	715	255	275	135	34	35	4.10
33	600	799	295	300	148	38	40	6
36	640	825	295	320	158	46	45	8.30

C

Rigging screws Eye-Hook

According to DIN 1480

E-6354



- **Material:** drop forged mild steel
- **Standard:** DIN 1480
- **Finish:** electro-galvanized
- **Certification:** 2.1

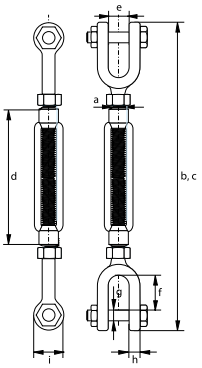
diameter thread	length closed position	length open position	length body	length end fitting	length end fitting	length thread	opening hook	thickness hook	diameter eye outside	diameter eye inside	weight each
a mm	b mm	c mm	d mm	e mm	f mm	g mm	h mm	i mm	j mm	k mm	kg
5	125	180	70	56	57	35	7	12	16	8	0.07
6	172	258	110	77	80	55	8	15	20	9	0.11
8	184	264	110	85	84	57	10.5	15	22	10	0.20
10	222	311	125	106	105	68	13	11	31	14	0.28
12	241	324	125	117	111	70	16	13	35	16	0.43
14	261	351	140	124	122	75	18	15	40	18	0.61
16	311	427	170	144	150	88	20	17	47	22	1
20	358	490	200	170	167	105	21	21	52	24	1.60
22	414	559	220	200	186	118	24	28	60	27	2.20
24	453	630	255	215	205	135	26	33	65	27	2.80
30	495	660	255	240	220	135	34	35	71	31	4.10
33	545	744	295	260	245	148	38	40	88	36	6
36	597	782	295	275	277	158	46	45	94	38	8.40

C

Rigging screws Jaw-Jaw

According to DIN 1480

E-6353



- **Material:** drop forged mild steel
- **Standard:** DIN 1480
- **Finish:** electro-galvanized
- **Note:** supplied with locking nuts
- **Certification:** 2.1

diameter thread	length closed position	length open position	length body	opening jaw	length inside	diameter pin	thickness jaw eye	diameter jaw eye	weight each
a mm	b mm	c mm	d mm	e mm	f mm	g mm	h mm	i mm	kg
6	191	277	110	7.5	12	M 6	5	13	0.16
8	194	274	110	8.5	12	M 6	6	14	0.21
10	236	325	125	11	16	M 8	8	18	0.38
12	266	349	125	13	20	M 10	10	24	0.66
14	316	406	140	16	30	M 12	12	28	1.15
16	374	490	170	18	38	M 12	12	32	1.45
20	438	570	200	20	42	M 16	16	38	2.61
22	466	611	220	22	44	M 18	18	40	3.24
24	514	691	255	24	46	M 20	20	42	4.35
30	544	709	255	30	50	M 24	22	46	6.48

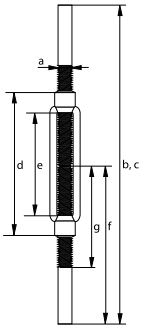
C

Rigging screws with Welding Ends

According to DIN 1480

- **Material:** drop forged mild steel
- **Standard:** DIN 1480
- **Finish:** Body: electro-galvanized
  Welding ends: self-coloured
- **Certification:** 2.1

E-6355



diameter thread	length closed position	length open position	length body	length body inside	length stub-ends	length thread	weight per 100 pcs
a mm	b mm	c mm	d mm	e mm	f mm	g mm	kg
6	240	326	110	86	120	65	9.30
8	240	320	110	80	120	65	14
10	300	389	125	89	150	75	29
12	300	383	125	83	150	75	40
14	330	420	140	90	165	85	66
16	400	516	170	116	200	100	89
20	440	572	200	132	220	120	160
22	440	585	220	145	220	130	227
24	520	697	255	177	260	150	282
30	520	685	255	165	260	160	423
36	600	780	295	185	300	180	710

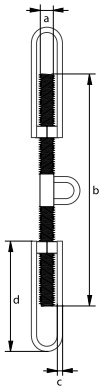
C

Turnbuckles (hamburgers)

For deck lashing

- **Material:** mild steel
- **Finish:** self-coloured
- **Certification:** 2.1

S-6330

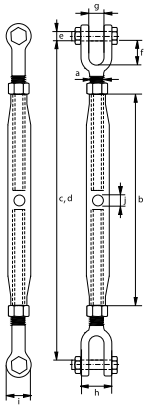


minimum breaking load	diameter thread	length thread	diameter bow	length bow	weight each
t	a mm	b mm	c mm	d mm	kg
13	24	400	16	210	2.80
18	27	400	18	210	4.40
20	30	400	20	210	5
21	36	400	20	210	7

C

Closed body rigging screws Jaw-Jaw

G-6343



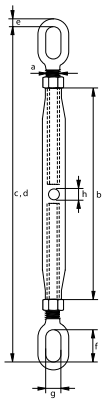
- **Material:** mild steel
- **Safety factor:** MBL equals 5 x WLL,
- **Finish:** hot dipped galvanized
- **Certification:** 2.1 2.2 CE IIA
- **Note:** end fittings of 6 and 8 mm rigging screws are electro-galvanized

working load limit	diameter thread	length body	length closed position	length open position	diameter pin	length inside	opening jaw	width jaw	diameter jaw eye	diameter hole	weight each
t	a mm	b mm	c mm	d mm	e mm	f mm	g mm	h mm	i mm	j mm	kg
0.2	6	100	170	250	5	19	7	20	13	6	0.15
0.32	8	108	199	279	6	25	9	24	14	8	0.26
0.5	10	125	222	312	8	26	10.5	28	19	8	0.45
0.7	12	195	315	470	10	32	13	34	23	10	0.85
1.2	16	230	388	568	12	39	18	42	29	11	1.51
1.5	20	270	449	654	16	46	20	51	33	12	2.62
2.2	22	295	490	715	20	55	25	55	38	12	3.94
3.2	24	325	538	793	22	63	30	70	46	12	5.16
4.8	33	370	680	965	30	85	38	82	60	14	11.6
6	39	400	707	1002	33	86	45	85	76	15	14.2
8.5	45	400	761	1011	39	105	50	94	85	16	20.8
11	48	400	780	1005	45	119	58	98	92	16	24

C

Closed body rigging screws Eye-Eye

G-6340



- **Material:** mild steel
- **Safety factor:** MBL equals 5 x WLL,
- **Finish:** hot dipped galvanized
- **Certification:** 2.1 2.2 CE IIA
- **Note:** end fittings of 6 and 8 mm rigging screws are electro-galvanized

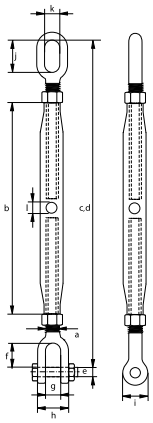
working load limit	diameter thread	length body	length closed position	length open position	diameter	length eye inside	width eye inside	diameter hole	weight each
t	a mm	b mm	c mm	d mm	e mm	f mm	g mm	h mm	kg
0.2	6	100	160	240	5.5	11	11	6	0.12
0.32	8	108	175	255	6	12	12	8	0.19
0.5	10	125	205	300	8.5	13	13	8	0.34
0.7	12	195	298	458	11	19	15	10	0.77
1.2	16	230	356	531	12	28	20	11	1.31
1.5	20	270	423	628	16	34	24	12	2.36
2.2	22	295	463	688	16	34	24	12	2.94
3.2	24	325	502	752	19	37	28	12	3.86
4.8	33	370	602	882	29	41	35	14	8.95
6	39	400	651	951	35	45	40	15	11
8.5*	45	400	721	897	31	49	49	16	13.4
11*	48	400	767	1032	37	52	52	16	17.9

* Different design

C

Closed body rigging screws Eye-Jaw

G-6345



- **Material:** mild steel
- **Safety factor:** MBL equals 5 x WLL,
- **Finish:** hot dipped galvanized
- **Certification:** 2.1 2.2 CE IIA
- **Note:** end fittings of 6 and 8 mm rigging screws are electro-galvanized

working load limit	diameter thread	length body	length closed position	length open position	diameter pin	length jaw inside	opening jaw	width jaw	diameter jaw eye	length eye inside	width eye inside	diameter hole	weight each
t	a mm	b mm	c mm	d mm	e mm	f mm	g mm	h mm	i mm	j mm	k mm	l mm	kg
0.2	6	100	165	245	5	19	7	20	13	11	11	6	0.14
0.32	8	108	187	267	6	25	9	24	14	12	12	8	0.24
0.5	10	125	214	306	8	26	10.5	28	19	13	13	8	0.53
0.7	12	195	307	464	10	32	13	34	23	19	15	10	0.83
1.2	16	230	372	549	12	39	18	42	29	28	20	11	1.49
1.5	20	270	436	641	16	46	20	51	33	34	24	12	2.54
2.2	22	295	477	701	20	55	25	55	38	34	24	12	3.34
3.2	24	325	520	772	22	63	30	70	46	37	28	12	4.65
4.8	33	370	641	923	30	85	38	82	60	41	35	14	10.5
6	39	400	679	976	33	86	45	85	76	45	40	15	12.8
8.5*	45	400	741	945	39	105	50	94	85	49	49	16	20.8
11*	48	400	774	1018	45	119	58	98	92	52	52	16	24

* Different design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LEEA

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