
2017

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tag of the sling is missing and the necessary information is not marked on the sling itself, the sling should be withdrawn from service.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

SHACKLES

Applications

Shackles are used in lifting operations and static systems as removable links to connect (steel) wire rope, chain and other fittings. Screw pin shackles are used mainly for non-permanent applications. Safety bolt and fixed nut shackles are used for long-term or permanent applications or where the load may slide on the pin causing rotation of the pin. Chain- or dee shackles are mainly used on one-leg systems whereas anchor- or bow shackles are mainly used on multi-leg systems.

Range

Green Pin® offers a wide range of bow and dee shackles for a variety of applications. The range stretches from WLL 0.33 t to 3000 t. This provides our customers with a very extensive range to choose a shackle that suits their application best. Most of the shackles are directly available from stock. Furthermore, shackles can be supplied to many standards such as the US Federal Specification RR-C-271, EN 13889, ISO 2415, British Standard 3032, DIN 82101 etc. Additionally we offer a wide range of general commercial shackles, which are not suitable for lifting but merely for fixing purposes. Van Beest offers a wide range of other shackles to complement the Green Pin® assortment.

Design

All Green Pin® shackles have a specific design for a specific application. Please find below some examples of highly functional designs, to optimize the use of the Green Pin® shackles in daily use:

- Green Pin Super® Shackles which are made from grade 8 steel. They are designed to be used in confined spaces. The higher material strength is used to reduce the physical dimensions of the product whilst maintaining its WLL and functionality;
- Green Pin Polar® Shackles are for use in extreme climatic conditions with material properties generally guaranteed up to temperatures of -60 °C;
- Green Pin Power Sling® Shackles are designed to provide a better bending efficiency for the sling. A larger radius increases the life span of the sling significantly;
- Another example of a functional design is a shackle pin with a square sunken hole. Because of the flat head there is less risk of the shackle getting caught in a net or a line.

How to recognize a genuine Green Pin® shackle?

- Marking in the shackle body and pin (from dia 13 mm and up)
- Steel grade (for example 6)
- CE conformity code
- Diameter bow (inch)
- Green Pin® logo (GP)
- Holland marking
- Working Load Limit (WLL in metric tonnes)
- Traceability code (2 letters)
- Green powder coated pin

Green Pin® Shackles meet all requirements of the Machinery Directive 2006/42/EC and its latest amendments.

Finish

Shackles supplied by Green Pin® are either hot dipped galvanized, electro-galvanized, painted or self-coloured, depending on the type of shackle and its application. You can find the finish of each type of shackle in the product section further on.

Certification

Upon request at time of order, all load rated shackles can be supplied with any of the following documents or certificates:

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 | CE IIA | CE IIB | ABS PDA | ABS MA

With additional charges:

MTC [b] | 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. Please verify your certification requirements with Green Pin® at the time of order.

Green Pin® Bow Shackles, Green Pin® Dee Shackles and Green Pin Polar® Shackles are DNV type approved. These shackles carry two DNV type approval certificates that show compliance with:

- DNV-ST-E271-2.71 Offshore Containers
- EN 12079-2 Offshore containers and associated lifting sets
- EN 13889 Forged steel shackles for general lifting purposes
- IMO/MSC Circular 860
- US Federal Specification RR-C-271
- DNV ST-E273 Portable Offshore Units
- DNV Standard No. 0378 Offshore and Platform Lifting Appliances
- ASME B30.26
- ISO 2415

The Green Pin Power Sling® Shackles are DNV type approved. This DNV type approval certificate is in compliance with:

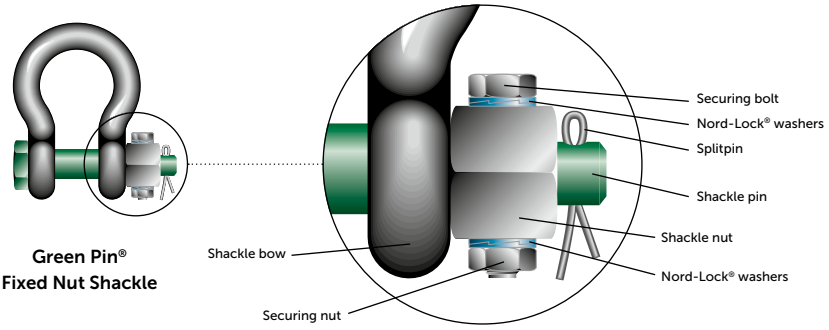
- DNV Standard for Certification No. 0377 Standard for Shipboard Lifting Appliances
- DNV Standard for Certification No. 0378 Offshore and Platform Lifting Appliances

Green Pin® Shackles G-4161, G-4163, G-4151, G-4153, G-5163, G-5261 and G-5263 are ABS Type Approved. The shackles have a Product Design Assessment Approval and a Manufacturer Assessment Approval Certificate. The shackles are type approved to be used as lifting gear or to be used as lifting device.

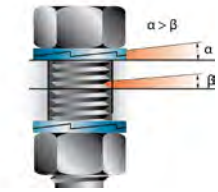
Type approval certificates can be found on **greenpin.com**.

Fixed Nut Shackles

Shackles can also be used in more permanent constructions. These can be subject to dynamic loads and/or extreme vibrations. In such applications there is a risk that, over time, the nut may start to move over the thread. We offer our range of Green Pin® Fixed Nut Shackles to avoid this risk. All Green Pin® shackles with bolt and nut can be equipped with an extra AISI 316 securing bolt that is assembled through the nut and shackle pin. This securing bolt is fastened with two sets of Nord-Lock® washers and a securing nut. This will keep the shackle nut in position. The Nord-Lock® wedge-locking washers lock when subjected to extreme vibration or dynamic loads.



Green Pin®
Fixed Nut Shackle



Nord-Lock®

Green Pin® Shackles with RFID

All lifting equipment requires regular inspection. Tracking and filing reports on paper can be a time consuming task. Green Pin® offers a solution with an easily accessible RFID (Radio Frequency Identification) chip in our range of Green Pin® Shackles. This RFID chip responds to a radio-signal that is transmitted by a reader. Each chip has a unique number and this number links the individual shackle to a record in an inspection management system. The chips are impact resistant and durable and they are countersunk into the end of the shackle pin. The chips are NFC (Near Field Communication) compatible, allowing users to scan, identify and track the shackles with the latest generation of NFC compatible smartphones.

Green Pin® offers the option of RFID implementation in all Green Pin® shackles. For detailed technical information please go to **www.greenpin.com/FAQ**.

- **RF Protocol :** ISO 15693
- **Operating Frequency :** HF – 13.56 MHz

Testing

Generally load rated products are Proofload tested, and certificates can be supplied upon request.
For specific information on certificates we refer to the separate paragraph on certification.

Green Pin® shackles are Proofload tested (bow-pin configuration) at the following loads:

working load limit	Green Pin® Bow or Dee Shackles Polar® Shackles Heavy Duty Shackles BigMouth® Bow Shackle proof load	Green Pin Super® Shackles proof load	Green Pin® Sling Shackles proof load	Green Pin Power Sling® Shackle proof load	Green Pin® Web Sling Shackle proof load	Green Pin BigMouth® Dee Shackle proof load
t	t	t	t	t	t	t
0.33	0.66					
0.5	1					
0.75	1.5					
1	2					
1.5	3					
2	4					
3.25	6.5				8.13	
3.3		6.6				
4.6						9.2
4.75	9.5				11.88	
5		10				
6.5	13				16.25	
7		14	14			
8.5	17				21.25	
8.6						17.2
9.5	19	19				
12	24					
12.5		25	25			
13.5	27					
15		30				
15.5						31
16	32					
17	34					
18		36	36			
21		42				
25	50					
30	60	60	60			
35	70					
40		80	80			
42.5	85					
55	110	110	110			
75	150		150			
85	170	170				
120	240	240				
125			250	250		
150	300	300	300	300		
175		350				
200	400		300	400		
250	500		375	500		
300	600		450	600		
400	600		532	800		
500	750		750	1000		
600	900		900	900		
700	1050		931	1050		
800	1200		1064	1200		
900	1350		1350	1350		
1000	1500		1330	1500		
1250	1875		1663	1875		
1500	2250					
1550			2061.5	2325		

Instructions for use

Select the correct type and WLL of the shackle for the particular application. If extreme circumstances or shock loading may occur, this must be taken into account when selecting the correct shackle. Please note that commercial shackles are not to be used for lifting applications.

Shackles should be inspected before use to ensure that:

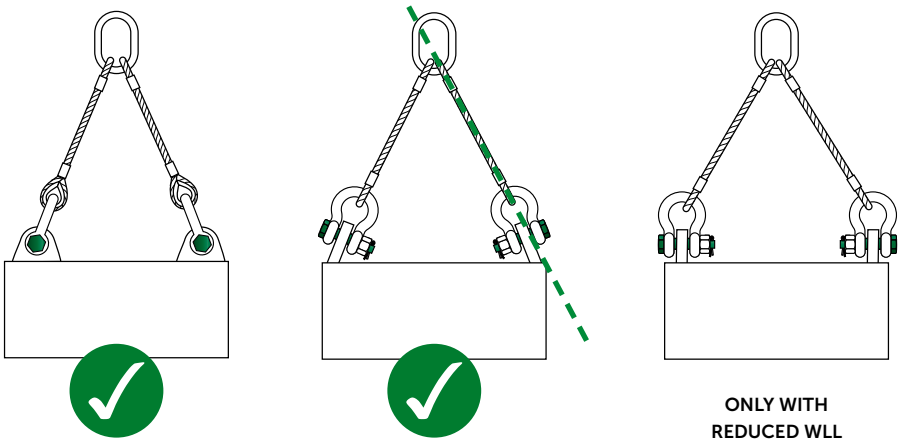
- all markings are legible;
- the body and pin are both of the same brand and type;
- the body and pin are both of the correct size;
- never use a safety bolt type shackle without using a securing pin;
- the pin, nut, cotter pin, or any other locking system cannot vibrate out of position;
- the threads of the pin and the body are undamaged;
- the body and the pin are not distorted or unduly worn;
- the body and pin are free from nicks, gouges, cracks and corrosion;
- shackles may not be heat treated as this may affect their WLL;
- never modify, repair or reshape a shackle by machining, welding, heating or bending as this will affect the WLL.

Assembly

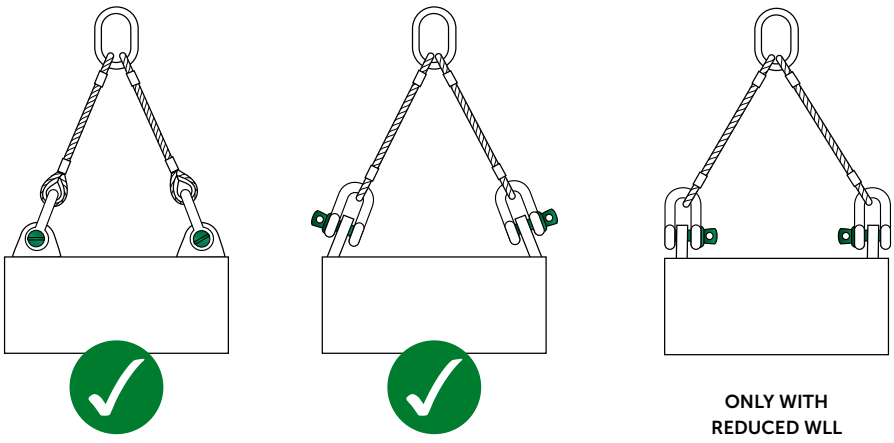
Ensure that the pin is correctly screwed into the shackle eye: tighten it hand-tight, then secure it using a wrench or other suitable tool so that the collar of the pin is fully seated against the shackle eye. Ensure that the pin is of the correct length so that it penetrates the full depth of the threaded eye and the collar of the pin touches the surface of the shackle eye.

Incorrect positioning of the pin may be caused by a bent pin, too tight fitting thread or misalignment of the pin holes. Do not use the shackle under these circumstances. Never replace a shackle pin except with one of the same brand, type, make and size to ensure the shackle maintains its original WLL.

Make sure that the shackle is supporting the load correctly, i.e. along the axis of the shackle body centerline. Avoid bending loads, unstable loads and overloads.



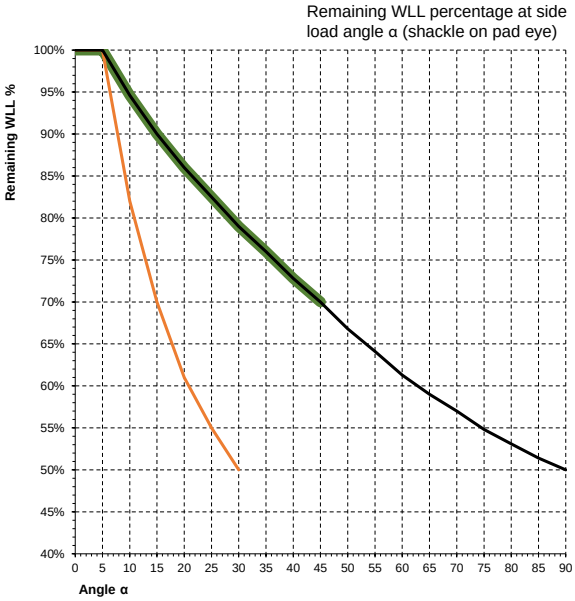
ONLY WITH
REDUCED WLL

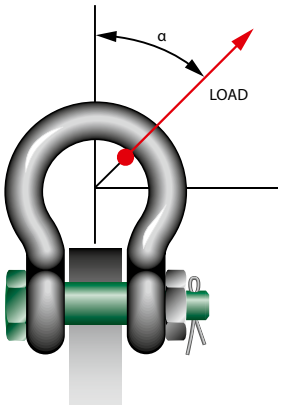


ONLY WITH
REDUCED WLL

Side loads

Side loads should be avoided, as the products are not designed for this purpose. If side loads cannot be avoided, the WLL of the shackle must be reduced:



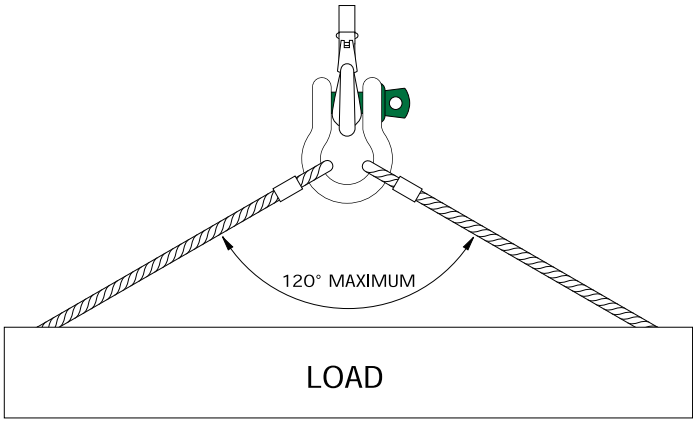


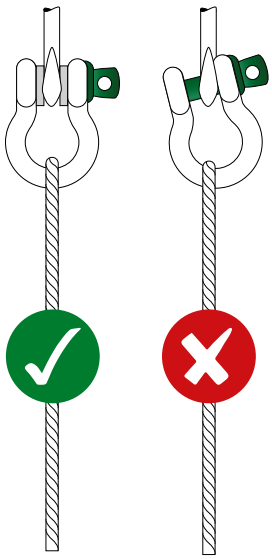
This black curve is valid for almost all Green Pin® shackles, except for ROV Shackles (P-5363 and P-5367) which are for in-line use only. The green curve is valid for Green Pin® Sling Shackles (P-6033, P-6013 and P-6065) and the orange curve is valid for the Green Pin Power Sling® Shackles (P-6043).

In-line lifting is considered to be a load perpendicular to the pin axis and in the plane of the bow. The load angles in the graph represent the deviating angles from in-line loading.

Maximum loading angle

When connecting shackles to multi-leg slings, consider the effect of the angle between the legs of the sling. As the angle increases, so does the load in the sling leg and consequently in any shackle attached to that leg.





When a shackle is used to connect two slings to the hook of a lifting device, a bow type shackle must be used. It's not allowed to configure bow shackles with more than 2 legs. The slings must be connected to the shackle body, and the shackle pin must be placed in the hook. The angle between the slings should not exceed 120°. If symmetrically loaded the shackle may be used to the full WLL.

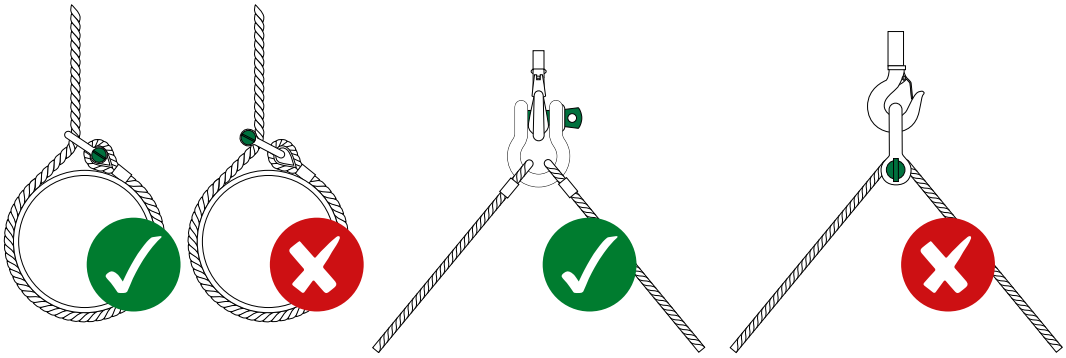
Avoiding eccentric loading

To avoid eccentric loading of the shackle a loose spacer may be used on either end of the shackle pin.
Do not reduce the width between the shackle jaws by welding washers or spacers to the inside of the shackle eyes or by narrowing the jaws, as this will affect the WLL of the shackle.

When a shackle is attached to the top block of a set of wire rope blocks the load on this shackle is increased by the value of the hoisting effect.

Avoiding pin rotation

Avoid applications where the load moves over the shackle pin; the pin may rotate and possibly be unscrewed. If moving of the load cannot be avoided, or when the shackle is to be left in place for a prolonged period or where maximum pin security is required, use a shackle with a safety bolt, nut and cotter pin or a shackle with a fixed nut.



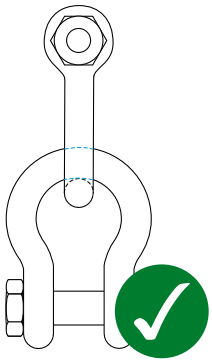
Chemicals

Shackles should not be immersed in acidic solutions or exposed to acidic fumes or other chemicals that are potentially harmful to the shackle.

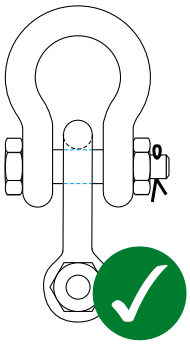
Point loading

Shackles are used in lifting- and static systems as removable links to connect (steel) wire rope, chain and other fittings. Most of the times the load bearing component that connects to a shackle is of a rounded shape. Point loading of shackles during lifting operations is allowed. The maximum load of the configuration is limited by the component with the lowest WLL. Increasing the contact area by using bigger diameters and/or pad eyes can be an advantage. Sharp edges shall be avoided. Green Pin® shackles can also be used in below configurations. The maximum load of the configuration is limited by the component with the lowest WLL.

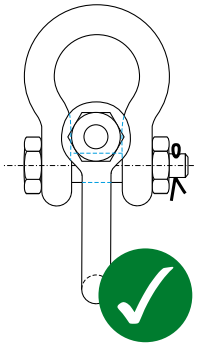
Bow-Bow



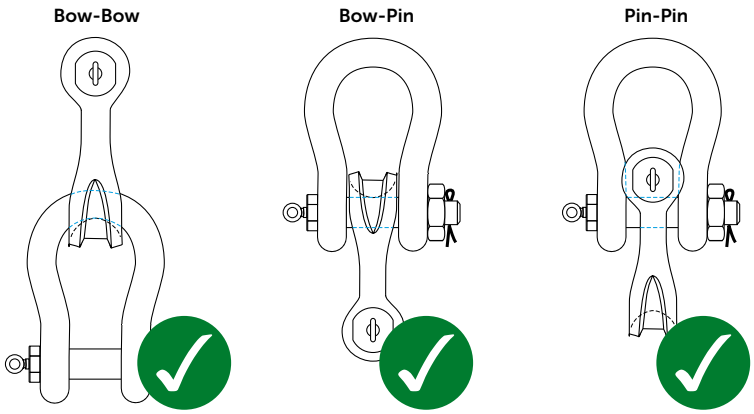
Bow-Pin



Pin-Pin

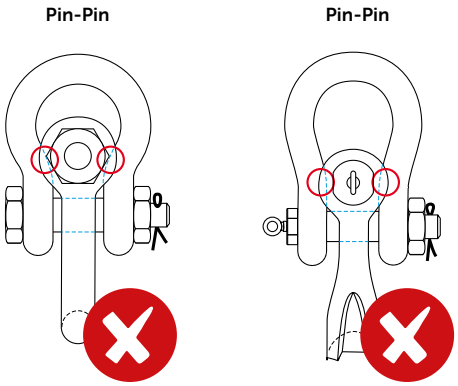


The crown of a Green Pin® Sling Shackle (P-6033) is wider than that of a standard shackle, thus creating a larger bearing surface. This improves the lifetime of the sling. Green Pin® Sling shackles can also be used in below configurations. The maximum load of the configuration is limited by the component with the lowest WLL. For information about point loading of the Green Pin Power Sling® Shackle (P-6043) please contact sales@vanbeest.eu.



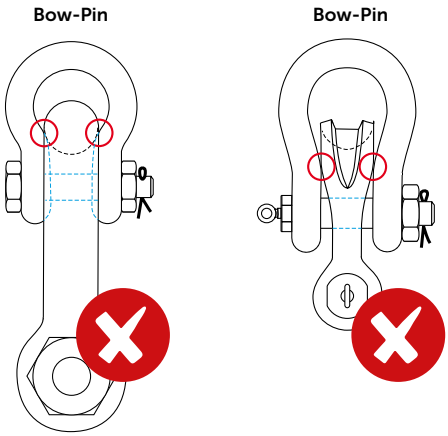
Pin- Pin configuration

When the shackle eyes touch and the pins do not bear properly, the configuration shall not be used.



Bow- Pin configuration

When the shackle body of the inner shackle touches the shackle eyes of the outer shackle and body and pin do not bear properly, the configuration shall not be used.



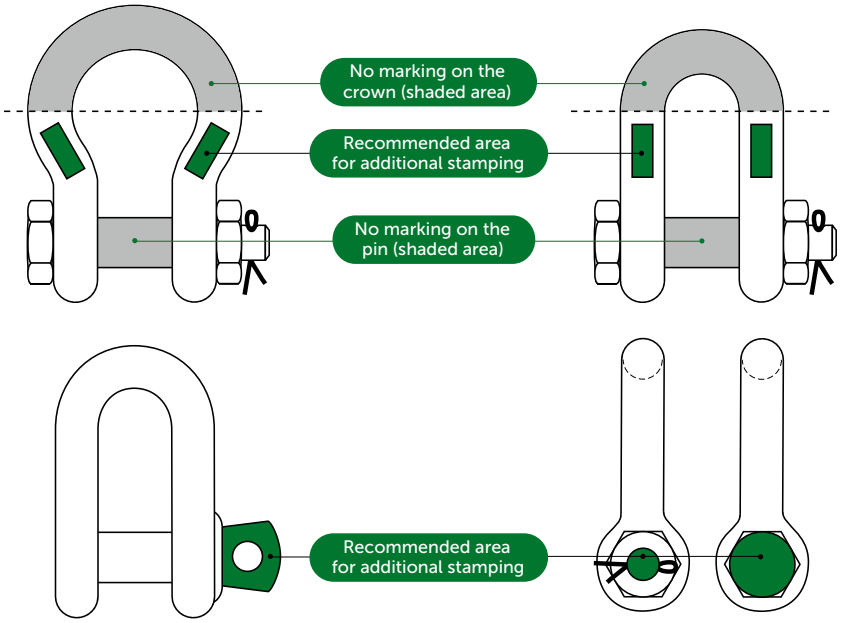
Contact Royal Van Beest, to check if a certain configuration is possible.

Additional markings

It is possible to add additional stamping on Green Pin® shackles, but make sure that you follow the recommendations below. If the recommendations are followed, the performance of the shackles is guaranteed.

- permanent identification marks or symbols are to be made by dot peen marking or with stamps having rounded profiles (low-stress stamps);
- laser markings are allowed as long as the heat of the laser does not influence in a negative way the material structure and properties. The laser marking must be legibly and indelibly marked in a place where the markings will not be removed by use;
- the number of marks on a shackle is to be kept to a minimum;
- the use of fractions and oblique strokes is to be avoided and a dot or hyphen is preferable to a dividing line;
- values of WLL are, generally, to be marked to one place of decimals (except for 0.25 and 0.75) up to 100 t and in integers thereafter. The word "tonnes" may be abbreviated to "t";
- recommended sizes of marks are
  - Diameter of the part to be marked > recommended size of the mark;
  - less than 12.5 mm > 3.0 mm;
  - 12.5 to 26 mm > 4.5 mm;
  - over 26 mm > 6.0 mm.

Typical arrangements of marks can be found in the following illustrations.



Temperature

If extreme temperature situations occur, the following load reductions must be taken into account:

Temperature	Reduction for elevated temperatures New Working Load Limit
up to 200 °C	100% of original Working Load Limit
200 - 300 °C	90% of original Working Load Limit
300 - 400 °C	75% of original Working Load Limit
> 400 °C	not allowed

The rating of shackles to EN 13889 assumes the absence of exceptionally hazardous conditions. Exceptionally hazardous conditions include offshore activities, the lifting of persons and the lifting of potentially dangerous loads such as molten metals, corrosive materials or fissile materials. In such cases a competent person should assess the degree of hazard and the WLL should be reduced accordingly.

Inspection

Shackles 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 material structure. Inspection should take place at least every six months (follow the local rules in the country of use) and more frequently when the shackles are used in severe operating conditions.


2017

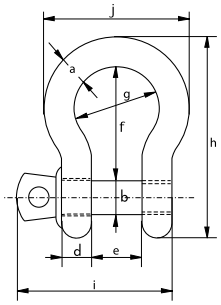
Green Pin® Bow Shackle SC

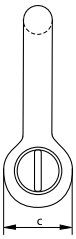
Standard bow shackle with screw collar pin

Scan for additional product details

G-4161

- **Material:** bow and pin high tensile steel, grade 6, quenched and tempered
- **Safety Factor:** MBL equals 6 x WLL
- **Standard:** ISO 2415, EN 13889 and meets performance requirements of US Fed. Spec. RR-C-271 Type IVA Class 2, grade A, from 2 t and upward these shackles comply with ASME B30.26
- **Finish:** hot dipped galvanized
- **Temperature Range:** -40 °C up to +200 °C
- **Certification:** 2.1 2.2 3.1 MTC [a] DNV 0378 CE IIA ABS PDA ABS MA
- **Article code:** scan QR code to see article codes





working load limit	diameter bow	diameter pin	diameter eye	width eye	width inside	length inside	width bow	length	length bolt	width	weight each
t	a mm	b mm	c mm	d mm	e mm	f mm	g mm	h mm	i mm	j mm	kg
0.33	5	6	12	5	9.5	22	16	36	29.5	26	0.02
0.5	7	8	16	7	12	29	20	48	38	34	0.05
0.75	9	10	20	9	13.5	32	22	56	46.5	40	0.10
1	10	11	23	10	17	37	26	64	54	46	0.14
1.5	11	13	25	11	19	43	29	73	59.5	51	0.19
2	13.5	16	34	13	22	51	32	90	73	59	0.36
3.25	16	19	40	16	27	64	43	110	89	75	0.63
4.75	19	22	46	19	31	76	51	129	103	89	1.01
6.5	22	25	52	22	36	83	58	144	119	102	1.50
8.5	25	28	59	25	43	95	68	164	137	118	2.21
9.5	28	32	67	28	47	108	75	186	153	131	3.16
12	32	35	73	32	51	115	83	201	170	147	4.31
13.5	35	38	79	35	57	133	92	227	186	162	5.58
17	38	42	88	38	60	146	99	249	203	175	7.43
25	45	50	104	45	74	178	126	300	243	216	12.5
35	50	57	112	50	83	197	138	332	272	238	17.2
42.5	57	65	132	57	95	222	160	378	310	274	26.3
55	65	70	145	65	105	260	180	433	344	310	37.6

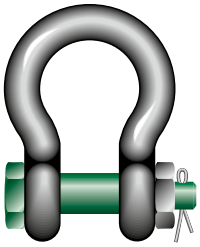
CAD RFID INFO

Green Pin® Bow Shackle BN

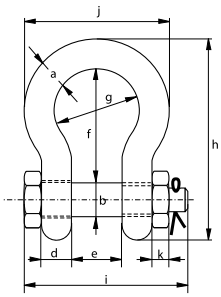
Standard bow shackle with safety bolt

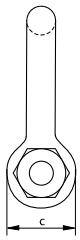
Scan for additional product details

- **Material:** bow and pin high tensile steel, grade 6, quenched and tempered
- **Safety Factor:** MBL equals 6 x WLL
- **Standard:** ISO 2415, EN 13889 and meets performance requirements of US Fed. Spec. RR-C-271 Type IVA Class 3, grade A, from 2 t and upward these shackles comply with ASME B30.26
- **Finish:** hot dipped galvanized
- **Temperature Range:** -40 °C up to +200 °C
- **Certification:** 2.1 | 2.2 | 3.1 | MTC [a] | DNV 2.7-1 [a] * | DNV 2.7-1 [b] * | DNV 0378 | CE IIA | ABS PDA | ABS MA
- **Article code:** scan QR code to see article codes



G-4163





working load limit	diameter bow	diameter pin	diameter eye	width eye	width inside	length inside	width bow	length	length bolt	width	thickness nut	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	kg
0.5	7	8	16	7	12	29	20	48	42	34	4	0.06
0.75	9	10	20	9	13.5	32	22	56	50	40	5	0.11
1	10	11	23	10	17	37	26	64	60	46	8	0.16
1.5	11	13	25	11	19	43	29	73	67	51	11	0.22
2	13.5	16	34	13	22	51	32	90	80	59	13	0.42
3.25	16	19	40	16	27	64	43	110	98	75	17	0.74
4.75	19	22	46	19	31	76	51	129	115	89	19	1.18
6.5	22	25	52	22	36	83	58	144	130	102	22	1.77
8.5	25	28	59	25	43	95	68	164	150	118	25	2.58
9.5	28	32	67	28	47	108	75	186	166	131	27	3.66
12	32	35	73	32	51	115	83	201	184	147	30	4.91
13.5	35	38	79	35	57	133	92	227	197	162	33	6.54
17	38	42	88	38	60	146	99	249	202	175	19	8.19
25	45	50	104	45	74	178	126	300	243	216	23	14
35	50	57	112	50	83	197	138	332	269	238	26	18.8
42.5	57	65	132	57	95	222	160	378	301	274	29	28.3
55	65	70	145	65	105	260	180	433	329	310	32	39.6
85	75	83	167	75	127	330	190	530	381	340	39	62

CAD | RFID | INFO

TYPE APPROVED PRODUCT DNV DNV.COM/AF

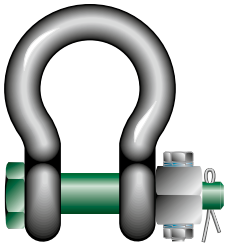
ABS TYPE APPROVED PRODUCT

* For shackles ≥ WLL 2 t

Green Pin® Bow Shackle FN

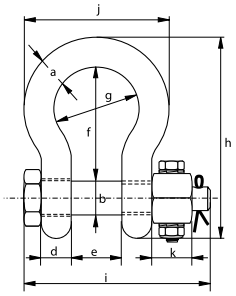
Standard bow shackle with safety bolt and fixed nut

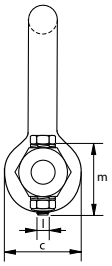
Scan for additional product details



- **Material:** bow and pin high tensile steel, grade 6, quenched and tempered
- **Safety Factor:** MBL equals 6 x WLL
- **Standard:** ISO 2415, EN 13889 and meets performance requirements of US Fed. Spec. RR-C-271 Type IVA Class 3, grade A, from 2 t and upward these shackles comply with ASME B30.26
- **Finish:** hot dipped galvanized
- **Temperature Range:** -40 °C up to +200 °C
- **Certification:** 2.1 | 2.2 | 3.1 | MTC [a] | DNV 2.7-1 [a] | DNV 2.7-1 [b] | CE IIA
- **Article code:** scan QR code to see article codes

G-4143





working load limit	diameter bow	diameter pin	diameter eye	width eye	width inside	length inside	width bow	length	length bolt	width bow	thickness nut	securing bolt thread	securing bolt length	torque	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	m mm	Nm	kg
2	13.5	16	34	13	22	51	32	90	80	59	13	M6	35	8.4	0.42
3.25	16	19	40	16	27	64	43	110	98	75	17	M6	40	8.4	0.74
4.75	19	22	46	19	31	76	51	129	115	89	19	M6	45	8.4	1.18
6.5	22	25	52	22	36	83	58	144	130	102	22	M8	50	20	1.77
8.5	25	28	59	25	43	95	68	164	150	118	25	M8	55	20	2.58
9.5	28	32	67	28	47	108	75	186	166	131	27	M10	60	39	3.66
12	32	35	73	32	51	115	83	201	184	147	30	M10	65	39	4.80
13.5	35	38	79	35	57	133	92	227	197	162	33	M10	70	39	6.54
17	38	42	88	38	60	146	99	249	202	175	19	M8	75	20	8.19
25	45	50	104	45	74	178	126	300	243	216	23	M8	90	20	14
35	50	57	112	50	83	197	138	332	269	238	26	M10	100	39	19.9
42.5	57	65	132	57	95	222	160	378	301	274	29	M12	110	68	28.3
55	65	70	145	65	105	260	180	433	329	310	32	M12	120	68	39.6
85	75	83	167	75	127	330	190	530	381	340	39	M12	140	68	62

CAD | RFID | INFO

TYPE APPROVED PRODUCT DNV DNV.COM/AF

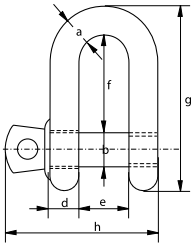
Green Pin® Dee Shackle SC

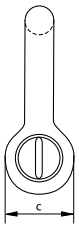
Standard dee shackle with screw collar pin

Scan for additional product details »

- **Material:** bow and pin high tensile steel, grade 6, quenched and tempered
- **Safety Factor:** MBL equals 6 x WLL
- **Standard:** ISO 2415, EN 13889 and meets performance requirements of US Fed. Spec. RR-C-271 Type IVB Class 2, grade A, from 2 t upward these shackles comply with ASME B30.26
- **Finish:** hot dipped galvanized
- **Temperature Range:** -40 °C up to +200 °C
- **Certification:** 2.1 | 2.2 | 3.1 | MTC [a] | DNV 0378 | CE IIA | ABS PDA | ABS MA
- **Article code:** scan QR code to see article codes

G-4151





working load limit	diameter bow	diameter pin	diameter eye	width eye	width inside	length inside	length	length bolt	weight each
t	a mm	b mm	c mm	d mm	e mm	f mm	g mm	h mm	kg
0.33	5	6	12	5	9.5	19	33	29.5	0.02
0.5	7	8	16	7	12	22.5	41.5	38	0.05
0.75	9	10	20	9	13.5	27	51	46.5	0.09
1	10	11	23	10	17	32	59	54	0.14
1.5	11	13	25	11	19	37	67	59.5	0.19
2	13.5	16	34	13	22	43	82	73	0.32
3.25	16	19	40	16	27	51	97	89	0.54
4.75	19	22	46	19	31	59	112	103	0.87
6.5	22	25	52	22	36	73	134	119	1.34
8.5	25	28	59	25	43	85	154	137	2.08
9.5	28	32	67	28	47	90	168	153	2.77
12	32	35	73	32	51	94	180	170	3.72
13.5	35	38	79	35	57	115	209	186	5.44
17	38	42	88	38	60	127	230	203	6.85
25	45	50	104	45	74	149	271	243	11.5
35	50	57	112	50	83	171	306	272	16.9
42.5	57	65	132	57	95	190	346	310	24.6
55	65	70	145	65	105	203	376	344	32.7

CAD | RFID | INFO

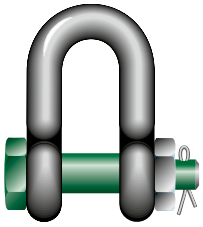
TYPE APPROVED PRODUCT DNV DNV.COM/AF

ABS TYPE APPROVED PRODUCT

Green Pin® Dee Shackle BN

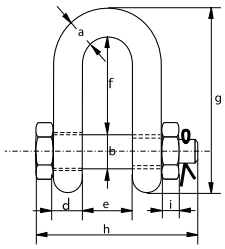
Standard dee shackle with safety bolt

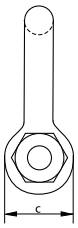
Scan for additional product details



- **Material:** bow and pin high tensile steel, grade 6, quenched and tempered
- **Safety Factor:** MBL equals 6 x WLL
- **Standard:** ISO 2415, EN 13889, ASME B30.26 and meets performance requirements of US Fed. Spec. RR-C-271 Type IVB Class 3, grade A
- **Finish:** hot dipped galvanized
- **Temperature Range:** -40 °C up to +200 °C
- **Certification:** 2.1 | 2.2 | 3.1 | MTC [a] | DNV 2.7-1 [a] * | DNV 2.7-1 [b] * | DNV 0378 | CE IIA | ABS PDA | ABS MA
- **Article code:** scan QR code to see article codes

G-4153





working load limit	diameter bow	diameter pin	diameter eye	width eye	width inside	length inside	length	length bolt	thickness nut	weight each
t	a mm	b mm	c mm	d mm	e mm	f mm	g mm	h mm	i mm	kg
2	13.5	16	34	13	22	43	82	80	13	0.39
3.25	16	19	40	16	27	51	97	98	17	0.67
4.75	19	22	46	19	31	59	112	115	19	1.08
6.5	22	25	52	22	36	73	134	130	22	1.66
8.5	25	28	59	25	43	85	154	150	25	2.46
9.5	28	32	67	28	47	90	168	166	27	3.40
12	32	35	73	32	51	94	180	184	30	4.51
13.5	35	38	79	35	57	115	209	197	33	6.10
17	38	42	88	38	60	127	230	202	19	7.63
25	45	50	104	45	74	149	271	243	23	12.9
35	50	57	112	50	83	171	306	269	26	17.4
42.5	57	65	132	57	95	190	346	301	29	25.9
55	65	70	145	65	105	203	376	329	32	35.3
85	75	83	167	75	127	229	429	381	39	53

CAD | RFID | INFO

TYPE APPROVED PRODUCT DNV DNV.COM/AF

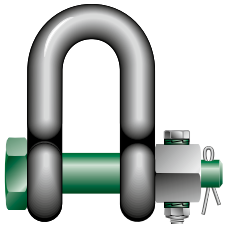
ABS TYPE APPROVED PRODUCT

* For shackles ≥ WLL 2 t

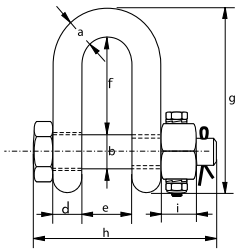
Green Pin® Dee Shackle FN

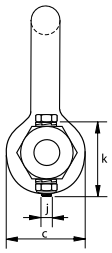
Standard dee shackle with safety bolt and fixed nut

Scan for additional product details



G-4133





- **Material:** bow and pin high tensile steel, grade 6, quenched and tempered
- **Safety Factor:** MBL equals 6 x WLL
- **Standard:** ISO 2415, EN 13889, ASME B30.26 and meets performance requirements of US Fed. Spec. RR-C-271 Type IVB Class 3, grade A
- **Finish:** hot dipped galvanized
- **Temperature Range:** -40 °C up to +200 °C
- **Certification:** 2.1 | 2.2 | 3.1 | MTC [a] | DNV 2.7-1 [a] | DNV 2.7-1 [b] | CE IIA
- **Article code:** scan QR code to see article codes

working load limit	diameter bow	diameter pin	diameter eye	width eye	width inside	length inside	length	length bolt	thickness nut	securing bolt thread	securing bolt length	torque	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	Nm	kg
2	13.5	16	34	13	22	43	82	80	13	M6	35	8.4	0.39
3.25	16	19	40	16	27	51	97	98	17	M6	40	8.4	0.67
4.75	19	22	46	19	31	59	112	115	19	M6	45	8.4	1.08
6.5	22	25	52	22	36	73	134	130	22	M8	50	20	1.66
8.5	25	28	59	25	43	85	154	150	25	M8	55	20	2.46
9.5	28	32	67	28	47	90	168	166	27	M10	60	39	3.40
12	32	35	73	32	51	94	180	184	30	M10	65	39	4.51
13.5	35	38	79	35	57	115	209	197	33	M10	70	39	6.10
17	38	42	88	38	60	127	230	202	19	M8	75	20	7.63
25	45	50	104	45	74	149	271	243	23	M8	90	20	13.3
35	50	57	112	50	83	171	306	269	26	M10	100	39	18.5
42.5	57	65	132	57	95	190	346	301	29	M12	110	68	25.9
55	65	70	145	65	105	203	376	329	32	M12	120	68	35.3
85	75	83	167	75	127	229	429	381	39	M12	140	68	53

CAD | RFID | INFO

TYPE APPROVED PRODUCT DNV DNV.COM/AF

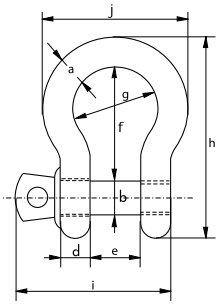
Green Pin Super® Bow Shackle SC

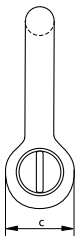
Grade 8 bow shackle with screw pin

Scan for additional product details

- **Material:** bow and pin alloy steel, grade 8, quenched and tempered
- **Safety Factor:** MBL equals 5 x WLL
- **Standard:** ASME B30.26 and meets performance requirements of US Fed. Spec. RR-C-271 Type IVA Class 2, grade B
- **Finish:** hot dipped galvanized
- **Temperature Range:** -20 °C up to +200 °C
- **Certification:** 2.1 2.2 3.1 MTC [a] CE IIA ABS PDA * ABS MA *
- **Article code:** scan QR code to see article codes

G-5261





working load limit	diameter body	diameter pin	diameter eye	width eye	width inside	length inside	width bow	length	length bolt	width	weight each
t	a mm	b mm	c mm	d mm	e mm	f mm	g mm	h mm	i mm	j mm	kg
3.3	13.5	16	34	13	22	51	32	90	73	59	0.36
5	16	19	40	16	27	64	43	110	89	75	0.63
7	19	22	46	19	31	76	51	129	103	89	1.01
9.5	22	25	52	22	36	83	58	144	119	102	1.50
12.5	25	28	59	25	43	95	68	164	137	118	2.21
15	28	32	67	28	47	108	75	186	153	131	3.16
18	32	35	73	32	51	115	83	201	170	147	4.31
21	35	38	79	35	57	133	92	227	186	162	5.58
30	38	42	88	38	60	146	99	249	203	175	7.43
40	45	50	104	45	74	178	126	300	243	216	12.5
55	57	57	119	57	83	197	138	341	286	252	17.2
85*	70	70	145	70	105	260	180	437	354	320	37.6

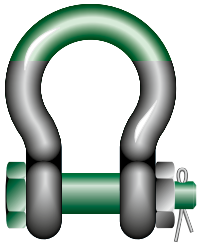
CAD RFID INFO

* Excluded from ABS Type Approval

Green Pin Super® Bow Shackle BN

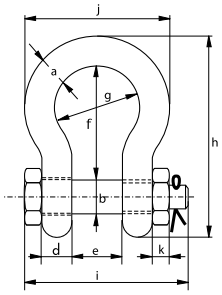
Grade 8 bow shackle with safety bolt

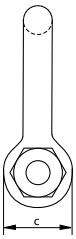
Scan for additional product details



- **Material:** bow and pin alloy steel, grade 8, quenched and tempered
- **Safety Factor:** MBL equals 5 x WLL
- **Standard:** ASME B30.26 and meets performance requirements of US Fed. Spec. RR-C-271 Type IVA Class 3, grade B
- **Finish:** hot dipped galvanized (150 t and upward are painted)
- **Temperature Range:** -20 °C up to +200 °C
- **Certification:** 2.1 2.2 3.1 MTC [a] LROS * CE IIA ABS PDA * ABS MA *
- **Article code:** scan QR code to see article codes

G-5263





working load limit	diameter bow	diameter pin	diameter eye	width eye	width inside	length inside	width bow	length	length bolt	width	thickness nut	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	kg
3.3	13.5	16	34	13	22	51	32	90	80	59	13	0.40
5	16	19	40	16	27	64	43	110	98	75	17	0.73
7	19	22	46	19	31	76	51	129	115	89	19	1.19
9.5	22	25	52	22	36	83	58	144	130	102	22	1.73
12.5	25	28	59	25	43	95	68	164	150	118	25	2.56
15	28	32	67	28	47	108	75	186	166	131	27	3.60
18	32	35	73	32	51	115	83	201	184	147	30	4.95
21	35	38	79	35	57	133	92	227	197	162	33	6.62
30	38	42	88	38	60	146	99	249	202	175	19	8.11
40	45	50	104	45	74	178	126	300	243	216	23	14.8
55	57	57	119	57	83	197	138	342	283	252	26	24.2
85	70	70	145	70	105	260	180	438	339	320	32	45.1
120	83	83	164	83	127	329	190	537	397	356	39	72
150*	95	95	204	95	147	400	238	644	453	428	50	112
175*	105	108	235	105	169	410	275	686	496	485	50	160

CAD RFID INFO

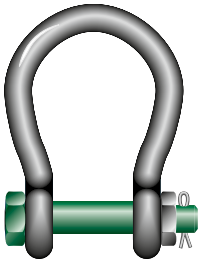
* For shackles WLL 150 t and WLL 175 t available with and without LROS
* With round headed bolt
* Excluded from ABS Type Approval

Green Pin BigMouth® Bow Shackle BN

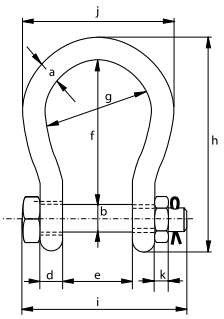
Grade 8 bow shackle with safety bolt and wider shackle mouth

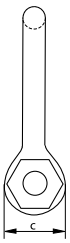
Scan for additional product details

- **Material:** bow and pin alloy steel, grade 8, quenched and tempered
- **Safety Factor:** MBL equals 6 x WLL
- **Standard:** ASME B30.26
- **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



G-4263





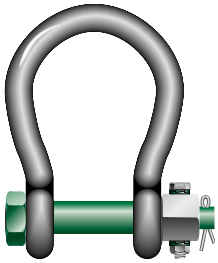
working load limit	diameter bow	diameter pin	diameter eye	width eye	width inside	length inside	width bow	length	length bolt	width	thickness nut	weight each
t	a mm	b mm	c mm	d mm	e mm	f mm	g mm	h mm	i mm	j mm	k mm	kg
4.75	22	25	52	22	63	112	88	173	157	132	22	2.08
6.5	25	28	59	25	75	135	105	204	183	155	25	3.14
8.5	28	32	66	28	82	148	115	225	205	171	27	4.36
9.5	32	35	72	32	90	162	126	248	224	190	30	5.95
12	35	38	79	35	100	180	140	274	245	210	33	7.87
16	38	42	88	38	106	216	159	319	248	235	19	10.2
25	45	50	103	45	127	248	175	370	296	265	23	16.7
30	50	57	118	50	146	273	207	411	332	307	26	25
55	65	70	145	65	165	314	213	487	389	343	32	45
75	83	83	164	83	184	330	254	537	455	420	39	70

CAD RFID

Green Pin BigMouth® Bow Shackle FN

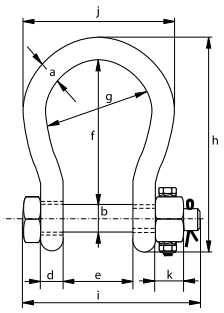
Grade 8 bow shackle with safety bolt, fixed nut and wider shackle mouth

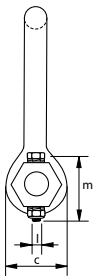
Scan for additional product details



G-4243

- **Material:** bow and pin alloy steel, grade 8, quenched and tempered
- **Safety Factor:** MBL equals 6 x WLL
- **Standard:** ASME B30.26
- **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





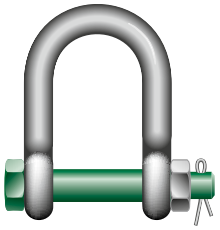
working load limit	diameter bow	diameter pin	diameter eye	width eye	width inside	length inside	width bow	length	length bolt	width	thickness nut	securing bolt thread	securing bolt length	torque	weight each
t	a mm	b mm	c mm	d mm	e mm	f mm	g mm	h mm	i mm	j mm	k mm	l mm	m mm	Nm	kg
4.75	22	25	52	22	63	112	88	173	157	132	22	M8	50	20	2.08
6.5	25	28	59	25	75	135	105	204	183	155	25	M8	55	20	3.14
8.5	28	32	66	28	82	148	115	225	205	171	27	M10	60	39	4.36
9.5	32	35	72	32	90	162	126	248	224	190	30	M10	65	39	5.95
12	35	38	79	35	100	180	140	274	245	210	33	M10	70	39	7.87
16	38	42	88	38	106	216	159	319	248	235	19	M8	75	20	10.2
25	45	50	103	45	127	248	175	370	296	265	23	M8	90	20	16.7
30	50	57	118	50	146	273	207	411	332	307	26	M10	100	39	25
55	65	70	145	65	165	314	213	487	389	343	32	M12	120	68	45
75	83	83	164	83	184	330	254	537	455	420	39	M12	140	68	70

CAD RFID INFO

Green Pin BigMouth® Dee Shackle BN

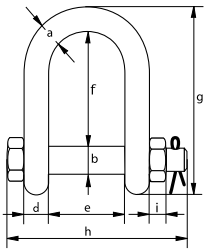
Dee shackle with a longer inside length, wider mouth and safety bolt

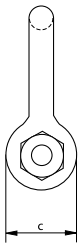
Scan for additional product details



- **Material:** bow and pin alloy steel, grade 8, quenched and tempered
- **Safety Factor:** MBL equals 5 x WLL
- **Standard:** ASME B30.26
- **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

G-4553





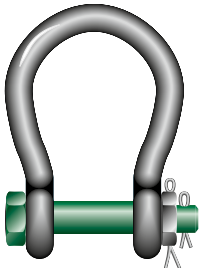
working load limit	diameter bow	diameter pin	diameter eye	width eye	width inside	length inside	length	length bolt	thickness nut	weight each
t	a mm	b mm	c mm	d mm	e mm	f mm	g mm	h mm	i mm	kg
4.6	19	22	46	19	70	116	169	154	19	1.50
8.6	25	28	59	25	83	140	208	190	25	3.13
15.5	38	42	88	38	115	178	281	257	19	9.42

CAD

Green Pin BigMouth® Towing Shackle BN

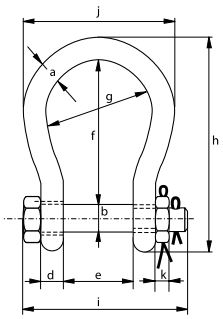
Grade 8 towing bow shackle with safety bolt and wider shackle mouth

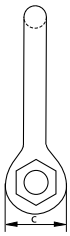
Scan for additional product details



G-4463

- **Material:** bow and pin alloy steel, grade 8, quenched and tempered
- **Finish:** hot dipped galvanized
- **Certification:** 2.1 2.2 3.1 CE IIA
- **Article code:** scan QR code to see article codes
- **Note:** for towing only, not for lifting applications





working load limit	diameter bow	diameter pin	diameter eye	width eye	width inside	length inside	width bow	length	length bolt	width	thickness nut	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	kg
22	38	42	88	38	106	216	159	319	248	235	19	10.2
30	45	50	103	45	127	248	175	370	296	265	24	16.7
40	50	57	118	50	146	273	207	411	338	307	27	25
55	65	70	145	65	165	314	213	487	389	343	33	45
100	83	83	164	83	184	330	254	540	455	420	40	70

CAD

LIFTING SLING FITTINGS FOR WIRE ROPE

WIRE ROPE CLIPS

Applications

Wire rope clips are used on wire rope eye-loop connections and on complete loops. They are used in end-to-end connections where socketing or splicing is not feasible and when a temporary joint is required.

More information about the range, certification and finish, please go to the introduction of chapter 3 lifting slings.

Design

Green Pin® wire rope clips are drop forged and have a bridge with grooves to tighten the wire rope properly in the clip; the DIN wire rope clips have a malleable base, without grooves.

Wire rope clips are generally marked with:

- manufacturer's symbol - e.g. GP
- wire rope diameter in mm or inches - e.g. 13 or $^1/_2$"
- traceability code - e.g. A1

Instructions for use

Wire rope clips should be inspected before use to ensure that:

- all markings are legible;
- a wire rope clip with the correct dimensions has been selected;
- the nuts or any other locking system cannot vibrate out of position;
- the wire rope clip is free from nicks, gouges and cracks;

Never modify, repair or reshape a wire rope clip by machining, welding, heating or bending as this may affect their performance.

The wire rope clip should be fitted to the wire rope as shown in below figures. The bridge of the wire rope clip should always be placed on the load bearing part of the rope. The U-bolt of the clip should be placed on the rope tail, also known as the dead end of the rope. Turn back enough wire rope length so that the required minimum number of clips can be installed according to the instructions below.

The first clip must be placed one bridge width from the turned-back rope tail or dead end of the rope, according to figure 1. Tighten the nuts to the specified torque.

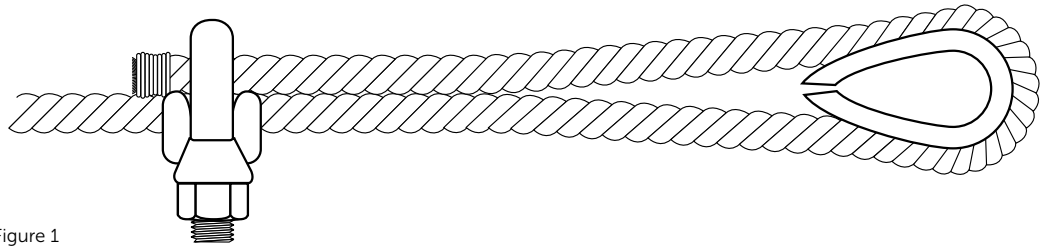


Figure 1

The second clip must be placed immediately against the thimble. Take care that the correct tightening of the clip does not damage the outer wires of the wire rope (figure 2). Tighten the nuts firmly but not yet to the specified torque.

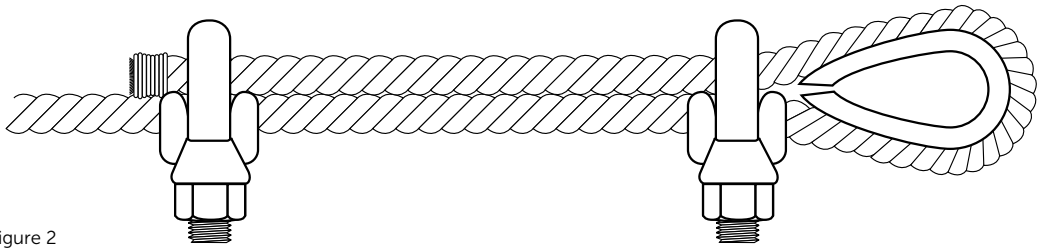


Figure 2

The following clips should be placed on the wire rope between the first and second clip in such a way that they are separated by at least 1½ times the clip-width with a maximum of 3 times the clip-width, according to figure 3.

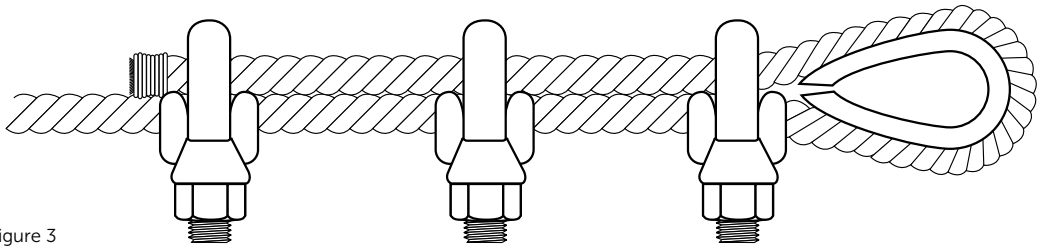


Figure 3

Apply light tension on the rope and tighten all nuts evenly, alternating until reaching the specified torque. After assembly and before the rope is taken into service, the nuts must be tightened further to the prescribed torque. After the load has been applied to the assembly for the first time, the torque value must be checked and corrected if necessary. Re-tightening of the nuts must be done at 10.000 cycles (heavy usage), 20.000 cycles (moderate usage) or 50.000 cycles (light usage). If cycles are unknown, a competent person could fix a time period, e.g. every 3 months, 6 months, annually.

The torque values and the minimum number of clips to be applied for a particular rope size are given in the following tables.

diameter wire rope	diameter wire rope	min. no of clips required	length of rope to turn back	torque value	torque value
inch	mm		mm	Nm	Ft.Lbs
1/8	3 - 4	2	85	6.1	4.5
3/16	5	2	95	10.2	7.5
1/4	6 - 7	2	120	20.3	15
5/16	8	3	133	40.7	30
3/8	9 - 10	3	165	61	45
7/16	11	3	178	88	65
1/2	12 - 13	3	292	88	65
9/16	14 - 15	3	305	129	95
5/8	16	3	305	129	95
3/4	18 - 20	4	460	176	130
7/8	22	4	480	305	225
1	24 - 26	5	660	305	225
1 1/8	28 - 30	6	860	305	225
1 1/4	32 - 34	7	1120	488	360
1 3/8	36	7	1120	488	360
1 1/2	38 - 40	8	1370	488	360
1 5/8	41 - 42	8	1470	583	430
1 3/4	44 - 46	8	1550	800	590
2	48 - 52	8	1800	1017	750
2 1/4	56 - 58	8	1850	1017	750
2 1/2	62 - 65	9	2130	1017	750
2 3/4	68 - 72	10	2540	1017	750
3	75 - 78	10	2690	1627	1200

Table 1, Green Pin® wire rope clips generally to EN 13411-5 Type B, required number and torque value

diameter wire rope	min. no of clips required	torque value	torque value
mm		Nm	Ft.Lbs
5	3	2	1.5
6.5	3	3.5	2.6
8	4	6	4.4
10	4	9	6.6
12	4	20	14.8
13	4	33	24.3
14	4	33	24.3
16	4	49	36
19	5	68	50
22	5	107	79
26	5	147	108
30	6	212	156
34	6	296	218
40	6	363	268

Table 2, Wire rope clips generally to EN 13411-5 Type A, required number and torque value

The efficiency of a wire rope termination made with wire rope clips depends on the correct placement of the clips on the rope and on correct fitting and tightening of the clips. With inadequately tightened nuts or with an insufficient number of wire rope clips the rope end may slide through the clips during use.

The fitting of the clips on the ropes may be affected by various circumstances, such as:
- the nut may be tight on the thread, yet not tight against the bridge;
- contamination of the thread by dirt, oil or corrosion products, which may prevent correct tightening of the nut.

Forged wire rope clips provide greater bearing surface and more consistent strength than malleable cast iron clips.

Suitable applications of wire rope clips to EN 13411-5 standards include suspending static loads and single use lifting operations which have been assessed by a competent person taking into account appropriate safety factors.

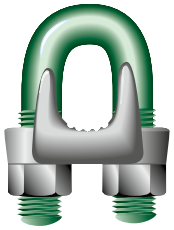
Wire rope clips should not be used in following applications:
- hoist ropes in mines;
- rope drives for cranes in steel works and rolling mills;
- permanent fastening of ropes in other rope drives;
- rope terminations for load suspension devices in the operation of lifting appliances, except in the case of lifting tackles where these are produced for a special application and used only once.

Wire rope clips must be regularly inspected in accordance with the safety standards 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 material structure. Inspection should take place at least every six months (follow the local rules in the country of use) and more frequently when the products are used in severe operating conditions.

Green Pin® Wire Rope Clip

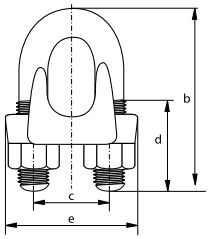
Wire rope clip generally to EN 13411-5 Type B

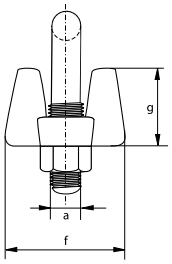
Scan for additional product details »



- **Material:** bridge: drop forged high tensile steel SAE 1045
  U-bolt: SAE 1015
- **Standard:** EN 13411-5 Type B
  formerly U.S. Federal Specification FF-C-450D
- **Finish:** hot dipped galvanized
  U-bolt and/or nuts for diameter bow 5, 6, 8 and 10 are electro-galvanized
- **Certification:** 2.1 2.2 CE IIB
- **Article code:** scan QR code to see article codes

G-6240





diameter wire rope	diameter	length bow	width inside	length thread	length base	thickness base	height base	weight per 100 pcs
mm	a mm	b mm	c mm	d mm	e mm	f mm	g mm	kg
3 - 4	5	24	12	11	24	21	10	3
5	6	31	15	13	29	24	13	7
6 - 7	8	34	19	13	37	30	18	8.40
8	10	45	22	19	43	33	19	12.4
9 - 10	11	49	26	19	49	42	25	21
11	12	60	30	25	58	46	26	33.2
12 - 13	13	61	30	25	58	48	31	33.1
14 - 15	14	72	33	32	63	52	31	45.6
16	14	74	33	32	64	54	36	45.8
18 - 20	16	86	38	37	72	57	38	64.3
22	19	98	45	41	80	62	40	96.4
24 - 26	19	108	48	46	88	67	47	115
28 - 30	19	117	51	51	91	73	48	127
32 - 34	22	130	59	54	105	79	56	197
36	22	140	60	59	108	79	58	206
38 - 40	22	147	66	60	112	85	64	254
41 - 42	25	161	70	67	121	92	67	322
44 - 46	29	174	78	70	134	97	76	418
48 - 52	32	195	86	78	150	113	85	602
56 - 58	32	213	98	81	162	116	100	776
62 - 65	32	227	105	87	168	119	113	862
68 - 72	32	243	112	91	174	127	124	1015
75 - 78	38	271	121	98	194	135	136	1272

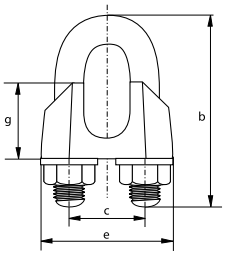
C

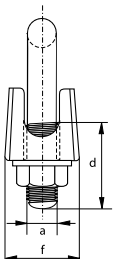
Wire Rope Clip

Generally to EN 13411-5 Type A

E-6260

- **Material:** bridge: malleable steel
  U-bolt: mild steel
- **Standard:** EN 13411-5 Type A
  formerly DIN 1142
- **Finish:** electro-galvanized
- **Certification:** 2.1 CE IIB





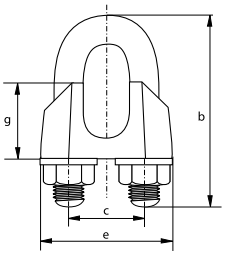
diameter wire rope	diameter	length bow	width inside	length thread	length base	thickness base	height base	weight per 100 pcs
mm	a mm	b mm	c mm	d mm	e mm	f mm	g mm	kg
5	5	25	12	14	25	13	13	2.30
6.5	6	32	14	17	30	16	14	3.90
8	8	41	18	20	39	20	18	8.40
10	8	46	20	24	40	20	21	8.40
12	10	56	24	28	50	25	24	17
13	12	64	29	29	55	28	29	26.1
14	12	66	28	31	59	30	28	28.6
16	14	76	34	35	64	32	35	42
19	14	83	37	36	68	33	40	49
22	16	96	41	40	74	34	44	67
26	20	111	46	50	84	38	51	111
30	20	127	54	55	95	41	59	140
34	22	141	60	60	105	45	67	202
40	24	159	68	65	117	49	77	268

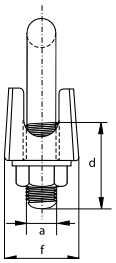
C

Wire Rope Clip

Generally to DIN 741

E-6220





- **Material:** bridge: cast
  U-bolt: mild steel
- **Standard:** formerly DIN 741
- **Finish:** electro-galvanized
- **Certification:** 2.1 CE IIB

diameter wire rope	diameter	length bow	width inside	length thread	length base	thickness base	height base	weight per 100 pcs
mm	a mm	b mm	c mm	d mm	e mm	f mm	g mm	kg
3	4	20	9	12	21	10	10	1
5	5	24	11	13	23	11	10	1.40
6	5	28	13	15	26	12	11	1.60
8	6	34	16	19	30	14	15	3.30
10	8	42	19	22	34	18	17	6
11	8	44	20	22	36	19	18	7
13	10	55	24	30	42	23	21	11.8
14	10	57	25	30	44	23	22	12.4
16	12	63	29	33	50	26	26	19
19	12	75	32	38	54	29	30	23.6
22	14	85	37	44	61	33	34	36.6
26	14	95	41	45	65	35	37	41
30	16	110	48	50	74	37	43	62
34	16	120	52	55	80	42	50	74.4
40	16	140	58	60	88	45	55	108
45	18	163	65	75	97	49	60	134
50	20	170	72	77	106	51	65	174