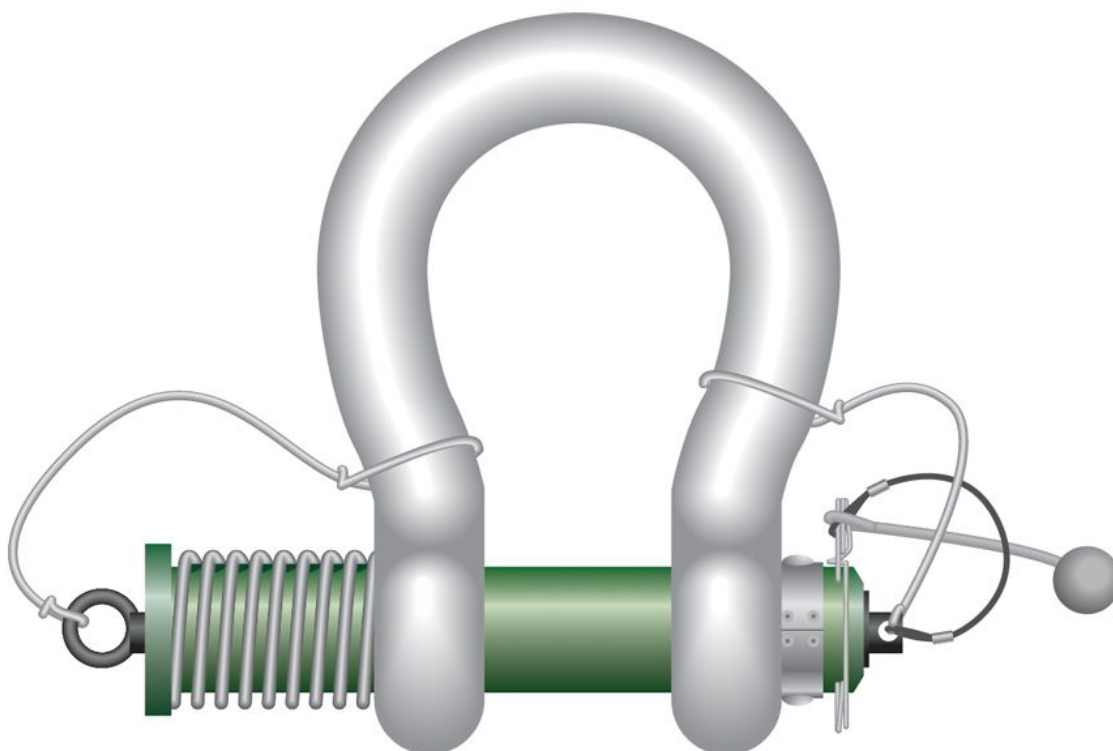


## GREEN PIN - ROV SPRING RELEASE POLAR SHACKLES INSTRUCTIONS



All Working Load Limits (WLL) indicated in this instruction are only applicable to recently supplied, new and unused products, which are used under normal conditions. Should extreme circumstances or shock loading be applicable, this must be taken into account when specifying the products to be used.

The Working Load Limit should be applied in a straight pull and overloads should be avoided. Side loads are not allowed, as the products are not designed for this purpose and the application of a side load may lead to product failure.

The Working Load Limit for the product corresponds to static use. In case of dynamic use (breaking, accelerations, shocks), the effective stress on the product increases significantly which can lead to product failure.

It is required that the products are regularly inspected and that the inspection should take place 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. with a consequence of 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.

The characteristics mentioned in this instruction are given merely as an indication. Van Beest is continuously working on product improvements. Therefore we reserve the right to make modifications to any product, even after acceptance of a customer order. The essential characteristics and performances of the products may never be negatively affected by such modifications.

Any dimension considered to be critical should be verified with our engineering department.

## APPLICATIONS

Green Pin® ROV Spring Release Polar shackles are used mainly for non-permanent applications to connect (steel) wire rope, chain and other fittings.

## RANGE

We can offer a wide range of Green Pin® ROV Spring Release Polar shackles. The range currently stretches from Working Load Limit (WLL) 12 ton up to and including 150 ton. Therefore, our customers have a very extensive range to choose the ideal shackle for the application. Most of the shackles are available from stock. Furthermore, Green Pin® ROV Spring Release Polar shackles are suitable for use in extreme climatic conditions with material properties guaranteed up to temperatures of -40°C.

## DESIGN

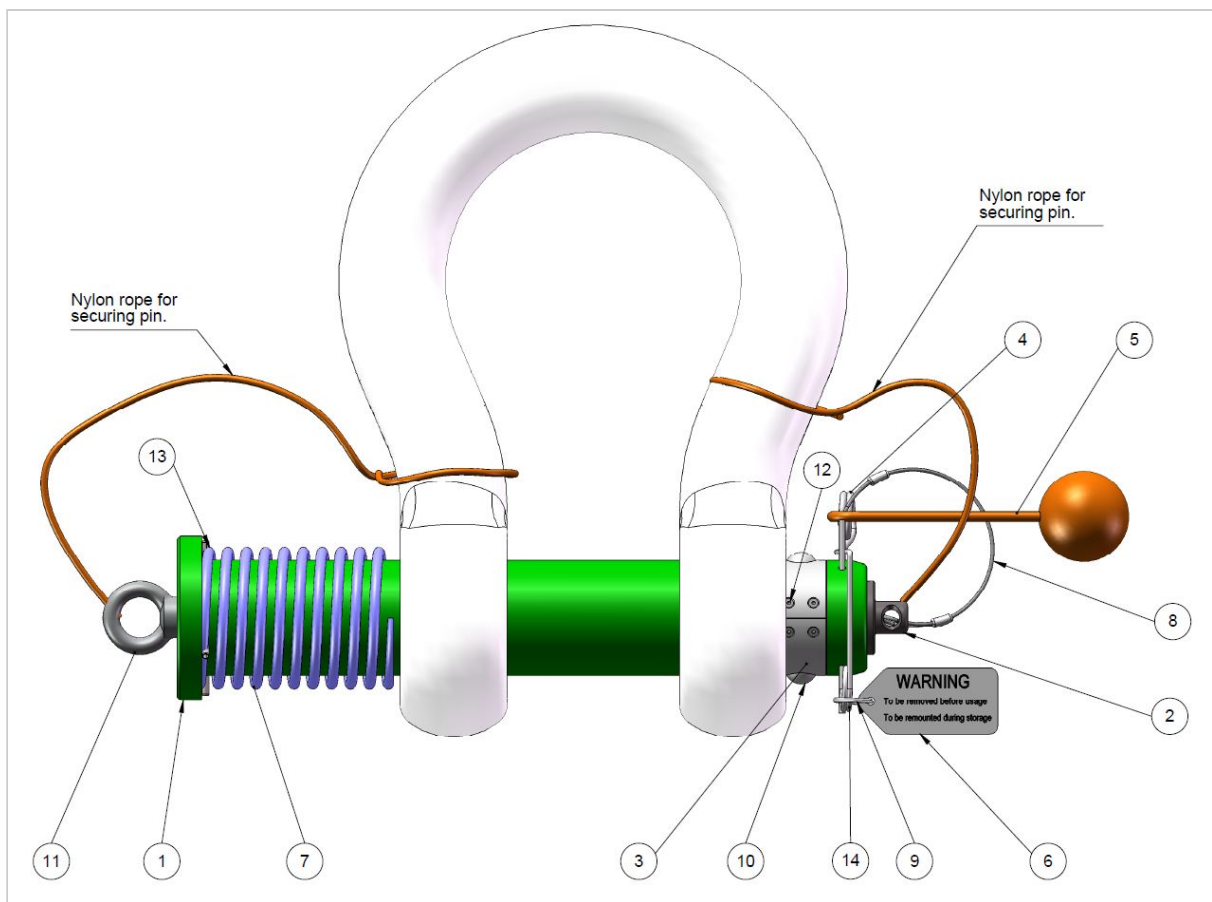
Green Pin® ROV Spring Release Polar shackles are specifically designed for ROV applications. All Green Pin® ROV Spring Release Polar Shackles are tested and ready for use. Green Pin® ROV Spring Release Polar Shackle parts are connected by ropes to prevent loss of any parts during release. The rope end is fitted with a monkey's fist for easy release by ROV tooling.

Compression tools can be provided upon customer's request. For Green Pin® ROV Spring Release Polar Shackles starting from WLL 42.5 ton compression tools are available. Green Pin® ROV Spring Release Polar Shackles up to and including WLL 35 ton can be compressed by hand.

Green Pin® ROV Spring Release Polar Shackles are stamped with the following markings. These markings serve to identify the product and check whether the correct shackle is being used:

- Working Load Limit • i.e. WLL 25 T
- manufacturer's identification symbol • i.e. GP, indicating Green Pin
- traceability code • i.e. HA pertaining to a particular batch
- steel grade • i.e. 8
- CE conformity code • i.e. CE, Conformité Européen

Green Pin® shackles meet all relevant requirements of latest version the Machinery Directive.



| Nr. | Quantity | Description             |
|-----|----------|-------------------------|
| 1   | 1        | Main Pin                |
| 2   | 2        | Firing Pin              |
| 3   | 1        | Ball Securing Pin       |
| 4   | 1        | Spring Pin, Double Type |
| 5   | 1        | monkeys fists           |
| 6   | 1        | warning tag             |
| 7   | 1        | compression spring      |
| 8   | 1        | wire rope sling         |
| 9   | 1        | key ring                |
| 10  | 2        | steel balls             |
| 11  | 1        | eyebolt DIN 580         |
| 12  | 8        | screws DIN 7991         |
| 13  | 5        | coiled pins DIN 1481    |
| 14  | 1        | safety pin              |

## FINISH

The body is painted white, the pin painted green.

## CERTIFICATION

All Green Pin® ROV Spring Release Polar shackles can be supplied with following documents or certificates:

- works certificate in accordance with EN 10204-2.1 or 2.2;
- material certificate in accordance with EN 10204 - 3.1;
- manufacturer test certificate;
- EC Declaration of Conformity in accordance with annex IIA of the machine directive 2006/42/EC;
- inspection certificate in accordance with EN 10204 - 3.2;
- individual proof load test certificate;
- certificate with the actual breaking load experienced on tested samples;
- test report of Magnetic Particle Inspection (M.P.I.);
- test report of Ultrasonic Inspection (U.S.).

The first four of the above mentioned certificates can be supplied at no extra charge. For all other certificates, additional costs will be charged. Purchase orders must clearly specify which certificates are required.

The individual test certificates can be supplied surveyed by all official classification societies, such as Lloyd's, Det Norske Veritas, British Standards Bureau, American Bureau of Shipping, Germanischer Lloyd's.

## INSTRUCTIONS FOR USE

Shackles should be inspected before use to ensure that:

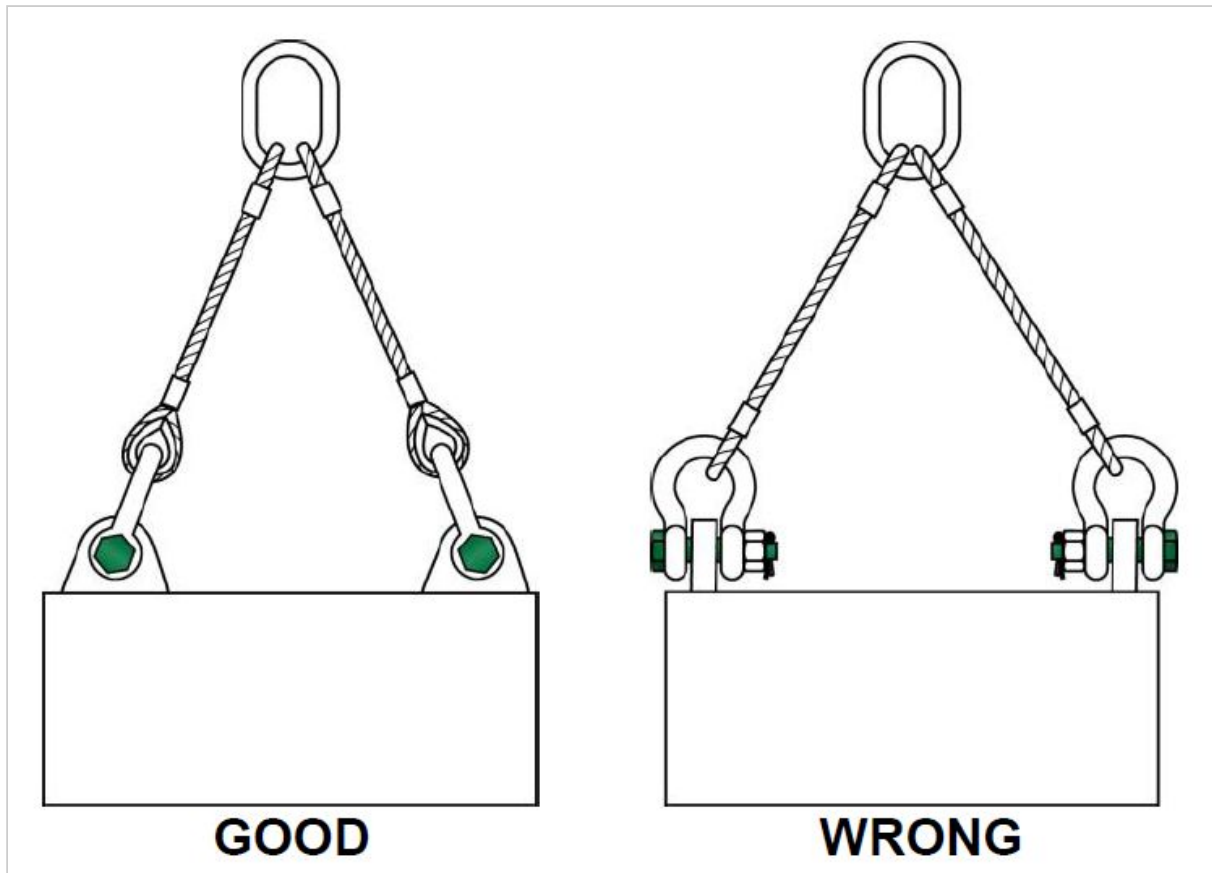
- all markings are legible;
- the body and pin are both identifiable as being of the same size, type and make;
- all parts of the pin and the body are undamaged;
- the body and the pin are not distorted or unduly worn;
- the body and pin are free from nicks, gouges, cracks and corrosion;
- shackles may not be heat treated as this may affect their Working Load Limit;
- never modify, repair or reshape a shackle by welding, heating or bending as this will affect the Working Load Limit.
- when using a spring loaded Green Pin® ROV Spring Release Polar shackle with an ROV the safety pin (14) is removed;
- when transporting a spring loaded Green Pin® ROV Spring Release Polar shackle the safety pin (14) is mounted;

## ASSEMBLY

Incorrect seating of the pin may be due to a bent pin 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 size, type and make as otherwise it may not be suitable for the loads imposed.

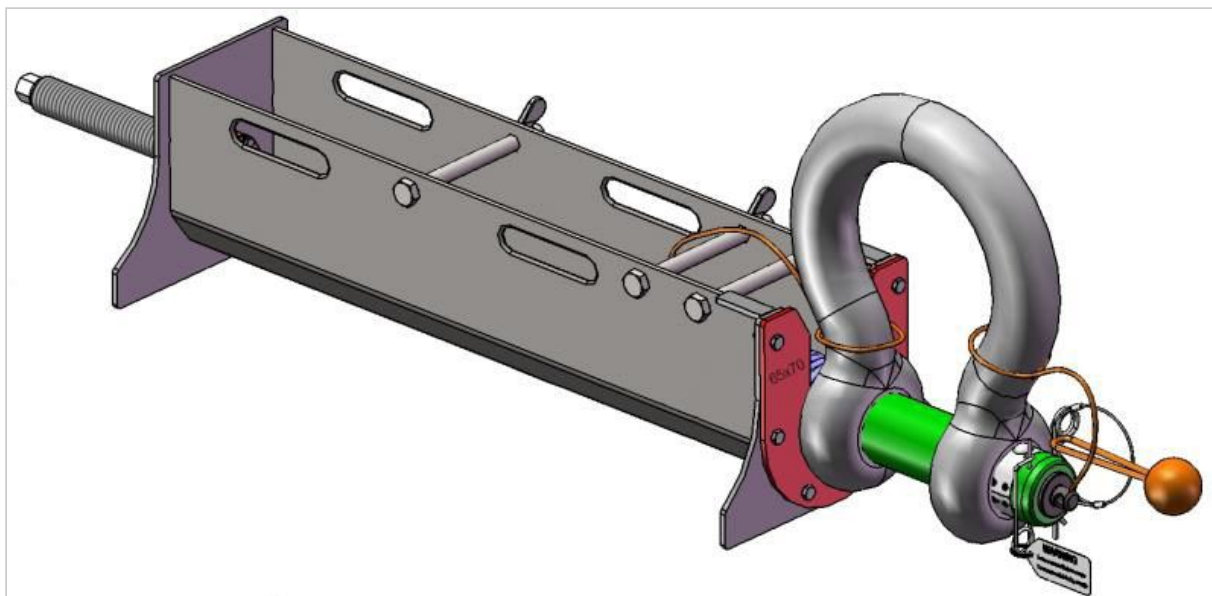
Select the correct type of shackle and Working Load Limit for the particular application. Should extreme circumstances or shock loading be applicable, this must well be taken into account when selecting the correct shackle.

Make sure that the shackle is supporting the load correctly, i.e. along the axis of the shackle body centerline. Avoid bending loads and unstable loads, and do not apply overloads.



## COMPRESSION

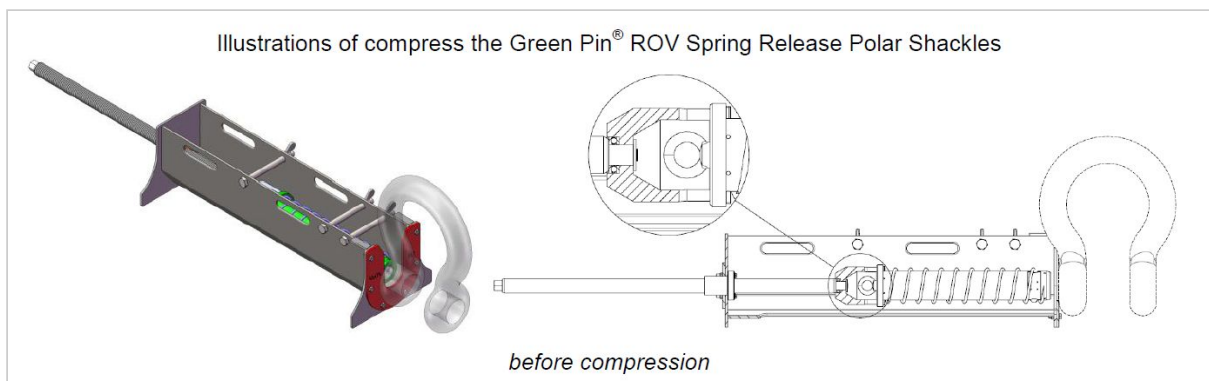
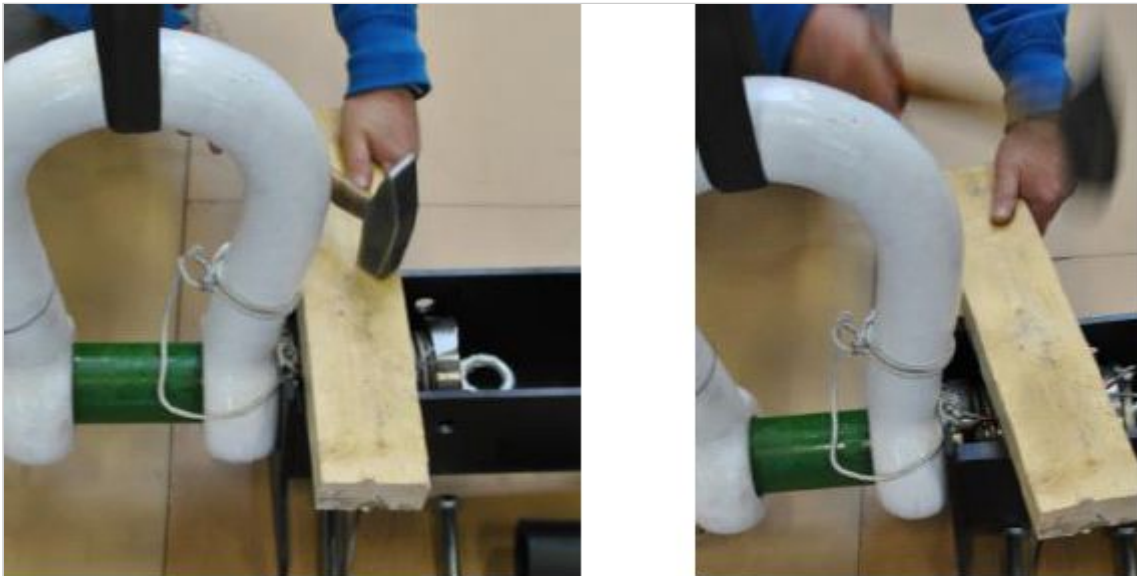
Two sizes of compression tools are available. Green Pin® ROV Spring Release Polar Shackles up to and including 35 ton can be compressed by hand. The first compression tool is provided with changeable plates that fits the different shackle sizes: 42.5t, 55t and 85t. These plates are marked with the shackle body size (e.g. 65) x shackle pin size (e.g. 70) and the WLL of the shackle size (e.g. 55t). The second compression tool is for 120t and 150t. This tool has only 1 changeable plate for the 120t. For the 150t shackles there is no changeable plate necessary.

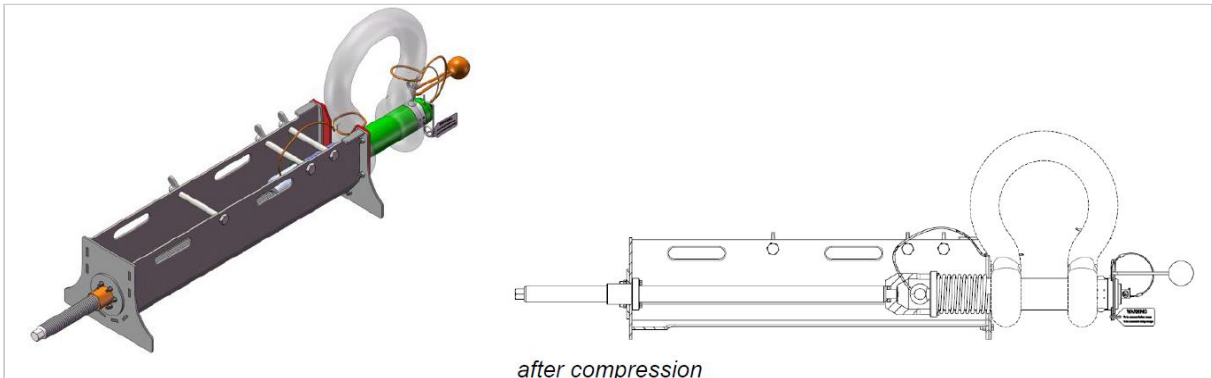
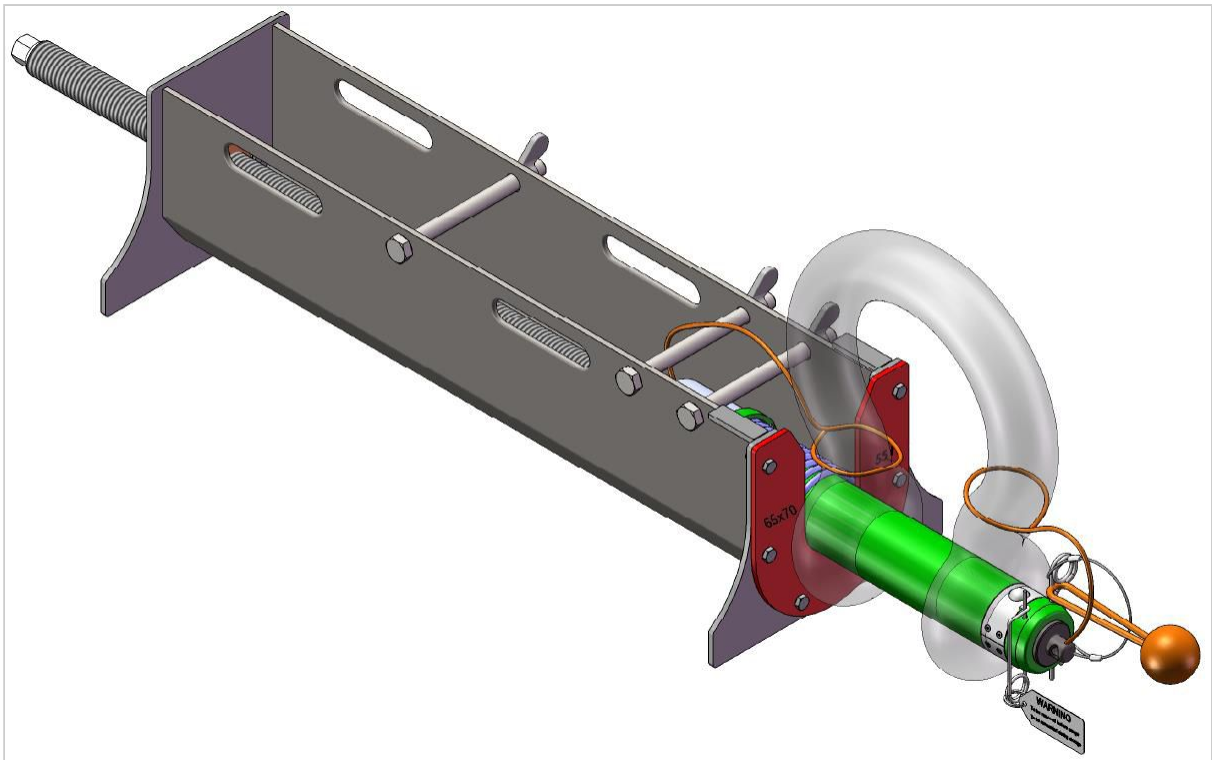


Compression Tool with 65x70 55t plate (red colored) and Green Pin® ROV Spring Release Polar Shackle

**For the drawing and parts list see Design.**

1. Make sure the threaded hole and threaded stud of the compression tool are properly greased.
2. Place the compression tool on a clean and steady floor.
3. Put the disassembled / not spring loaded Green Pin® ROV Spring Release Polar Shackle parts in the compression tool. Make sure that the main pin (1) and compression spring (7) are in a straight line with the shackle body holes.
4. Mount the hexagon bolts into the compression tool as a safety device.
5. The end of the spindle of the compression tool will fit over the eye bolt (11).
6. Turn the spindle clockwise into the frame, this will compress the compression spring (7) and move the main pin (1) into the shackle body.
7. After the steel balls (10) have passed the free shackle body, the firing pin (2) has to be mounted in the main pin (1).
8. Then the spring pin (4) has to be mounted in the main pin (1) to lock the firing pin (2).
9. Mount the safety pin (14) with warning tag (6) in the main pin (1). Now the shackle pin is fully secured.
10. Turn the spindle anticlockwise until the eye bolt (11) of the main pin (1) is completely free.
11. Disassemble the hexagon bolts.
12. Lift the shackle out of the compression tool. When needed push down the compression tool so this comes loose from the shackle, like shown in the pictures.





## RELEASING

When removing the safety pin (14), with warning tag (6) attached, the Green Pin® ROV Spring Release Polar Shackle is now ready for use by e.g. an ROV.

By means of the monkey fist the two safety features, spring pin (4) and firing pin (2), can be released.

The main pin (1) will be pushed out the shackle body by the compression spring (7).

**WARNING:** make sure that no persons or equipment are in the path of the main pin (1) when releasing the Green Pin® ROV Spring Release Polar Shackle.

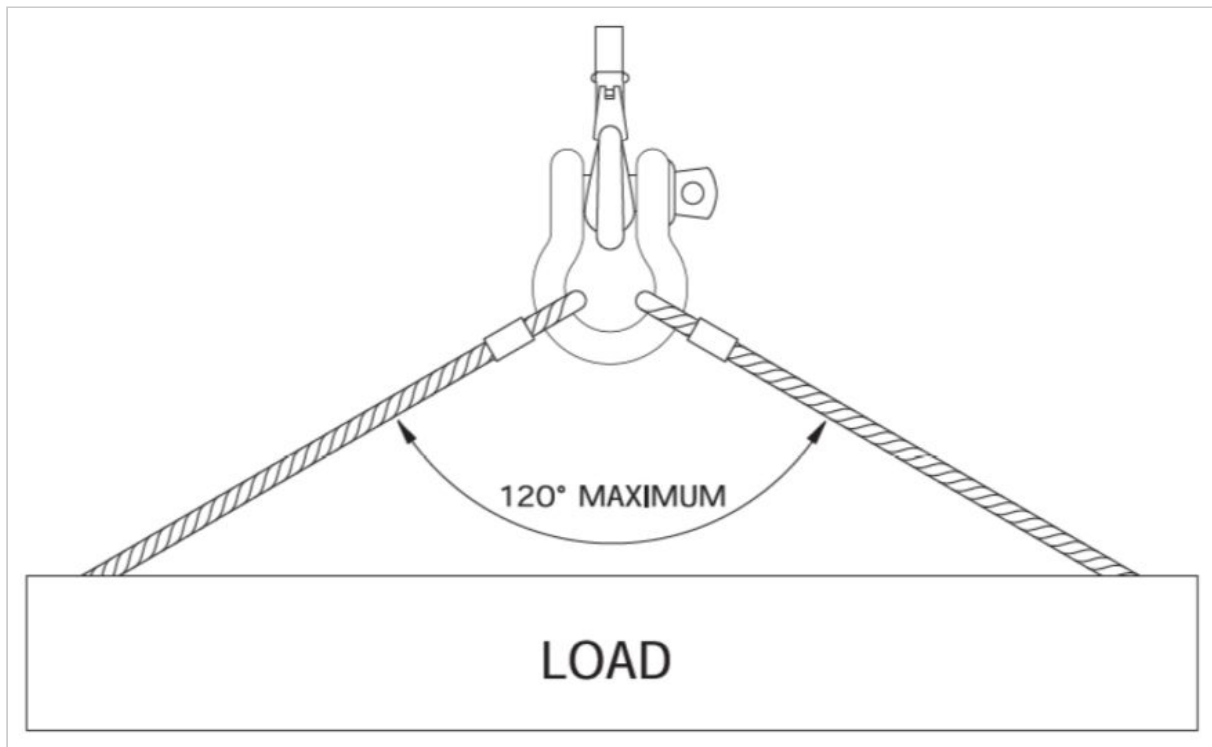
For transport purposes or as additional safety feature the safety pin (14), with warning tag (6) attached, must be mounted in the main pin (1).

**CAUTION:** when the safety pin (14), with warning tag (6) attached, is installed it is not possible to release the Green Pin® ROV Spring Release Polar Shackle by means of a robotized device such as an ROV.

## SIDE LOADS

Green Pin ROV® Spring Release Polar shackles are not designed to take side loads. These are for in-line use only. If side loads cannot be avoided, Green Pin® ROV Release Polar shackles with locking clamp (P-5365) should be used, with the corresponding reduction of the WLL for side loading that can be found in the table in our catalogue.

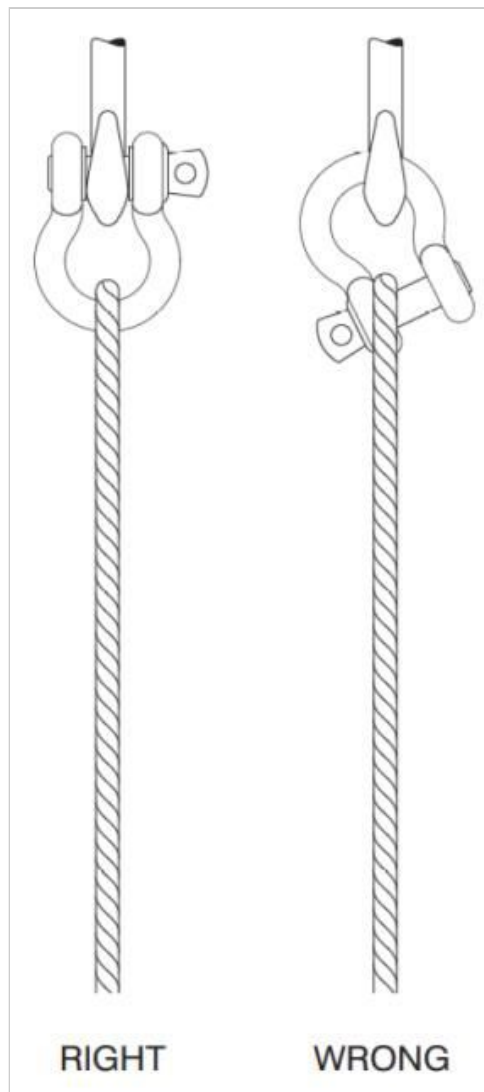
When using Green Pin® ROV Spring Release Polar shackles in connection with multi-leg slings the load must be symmetrical. Also due consideration should be given to the effect of the angle between the legs of the sling. As the angle increases, so does the load in the sling leg and consequently in any shackle attached to that leg.



When a Green Pin® ROV Release Polar shackle is used to connect two slings to the hook of a lifting device, the two slings must be assembled in the shackle body and the hook engaged with the shackle pin. The angle between the slings should not exceed 120°.

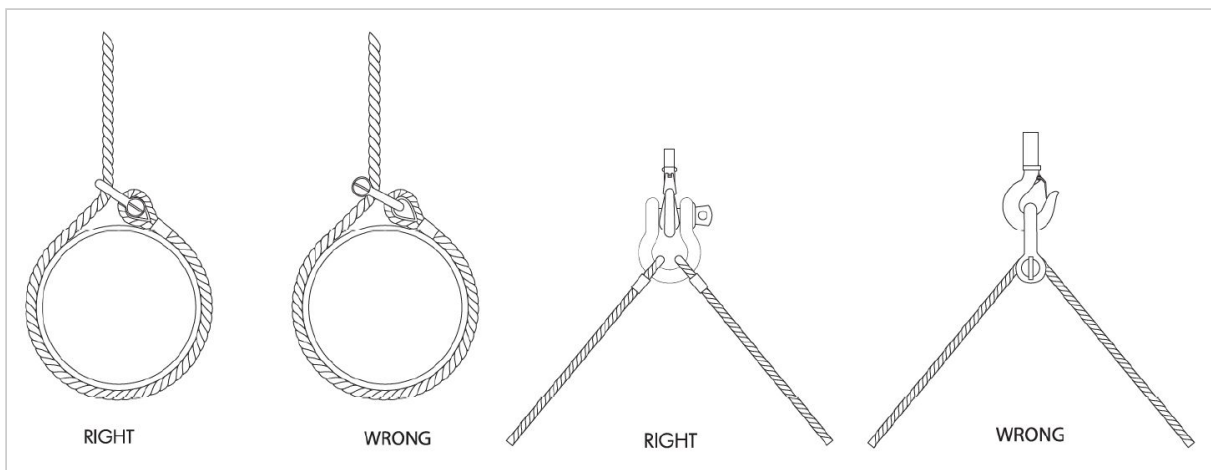
To avoid eccentric loading of the shackle a loose spacer may be used on either end of the shackle pin. Do not reduce the width between the shackle jaws by welding washers or spacers to the inside faces of the eyes or by closing the jaws, as this will affect the properties of the shackle. Please be aware that these washers or spacers do not block the movement of the pin during release.





When a shackle is used to secure the top block of a set of wire rope blocks, please take into account that the load on this shackle is increased by the value of the hoisting effect.

In applications where the shackle pin can rotate due to movement (e.g. of the load or the rope), use a Green Pin® ROV Release Polar shackle with locking clamp.



Green Pin® ROV Spring Release Polar Shackles should not be immersed in acidic solutions or exposed to acid fumes or other chemicals that are potentially harmful for the shackle.

## POINT LOADING

Most of the time the load bearing component that connects to a shackle is of a rounded shape. Point loading of Green Pin® ROV Spring Release Polar Shackles is allowed but the minimum diameter of a rounded component should be equal to or bigger than the body size of the shackle being used.

Using diameters bigger than the shackle body or using counterparts with a flat side to place against the pin may help to increase the contact area. Sharp edges should be avoided.

## TEMPERATURE

The temperature range for Green Pin® ROV Spring Release Polar Shackles is -40° C. up to 200° C.

The rating of Green Pin® ROV Spring Release Polar Shackles 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 safe working load should be reduced accordingly.

## INSPECTION

It is required that Green Pin® ROV Spring Release Polar Shackles are regularly inspected and that the inspection should take place 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. possibly resulting in deformation and alteration of the material structure. Inspection should take place at least every six months and even frequently when the shackles are used in severe operating conditions.

### Regular Maintenance

Visual inspection for damages and dirt should be carried out prior to use. The Green Pin® ROV Spring Release Polar Shackle must be inspected regularly by a competent person for proper functioning and damages. Please note that disassembly and reassembly of the Green Pin® ROV Spring Release Polar Shackle may be performed by competent persons only.

For the drawing and parts list see Design.

### Disassembly of Green Pin® ROV Spring Release Polar Shackles

1. If spring loaded, release the Green Pin® ROV Spring Release Polar Shackle by pulling the monkey fist. If the safety pin (14), with warning tag (6), is mounted, remove this first.

**WARNING: make sure that no persons or equipment are in the path of the main pin (1) when releasing the Green Pin® ROV Spring Release Polar Shackle.**

2. After releasing the Green Pin® ROV Spring Release Polar Shackle, the spring pin (4) and the firing pin (2) come loose from the main pin (1).

3. Remove the countersunk hexagon screws (12).

4. Remove the ball securing ring (3).

5. Remove the steel balls (10).

6. Inspect all parts for wear and cracks. Replacement parts are available upon request.

7. If all parts are free of wear and damages, the Green Pin® ROV Spring Release Polar Shackle can be re-assembled.

### Reassembly of Green Pin® ROV Spring Release Polar Shackles

1. Mount steel balls (10).

2. Mount ball securing ring (3).
  3. Mount the countersunk hexagon screws (12). Screws to be locked by retaining fluid such as Loctite 243.
  4. Check if the system is working correctly after re-assembling.
- Now the Green Pin® ROV Spring Release Polar Shackle is ready to be compressed, see the chapter Compression.

## REPLACEMENT PARTS

Replacement parts are available upon request.

## TOOLING

All parts supplied are metric. For compression, maintenance, disassembly and assembly use metric tooling. If tooling does not fit accurately because it is worn or damaged, it may damage the Green Pin® ROV Spring Release Polar Shackle parts. In the worst case, Green Pin® ROV Spring Release Polar Shackle may not be suitable for operation and cause life threatening situations!

## TESTING

After replacement of parts the Green Pin® ROV Spring Release Polar Shackle has to be tested. After replacement of the main pin (1) the Green Pin® ROV Spring Release Polar Shackle has to be proof load tested by an certified testing facility. The Working load limit (WLL) is mentioned on the shackle body, the required Proof Load (PL) is mentioned on, original test certificate and in the Green Pin® catalogue.

## TRANSPORT

For transport purposes or as additional safety feature the safety pin (14), with warning tag (6) attached, must be mounted in the main pin (1).

**CAUTION: when the safety pin (14), with warning tag (6) attached, is installed it is not possible to release the Green Pin® ROV Spring Release Polar Shackle by means of a robotized device such as an ROV.**

## STORAGE

The Green Pin® Spring Release Polar shackles can best be stored uncompressed.

Storing the Green Pin® ROV Spring Release Polar shackles uncompressed:

- is better for the preservation of the shackles;
- is easier in use, as the shackles often needs to be uncompressed to be assembled in a sling or pad eye.

The Green Pin® Spring Release Polar shackles are delivered uncompressed.

If the Green Pin® Spring Release Polar shackle is stored compressed, please be sure that the safety pin (14), with warning tag (6) attached, is mounted in the main pin (1).