

USER MANUAL
SHACKLES



HANDELMAATSCHAPPIJ VLIERODAM B.V.
NIJVERHEIDSWEG 21

POSTBUS 827

3160 AA RHOON

010 - 5018000

010 – 5013843

www.vlierodam.nl



HANDELMAATSCHAPPIJ VLIERODAM B.V.

Nijverheidsweg 21 , 3160 AA Rhoon

010-5018000

www.vliero dam.nl

User manual shackles:

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 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.

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

Before use shackles must be checked on the following aspects:

- 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;
- the threads of the pin and the body are undamaged;
- the body and the pin are not distorted or unduly worn;
- 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;
- never modify, repair or reshape a shackle by machining, welding, heating or bending as this will affect the WLL;
- the bolt must be twisted completely in the bow, or the nut completely in the bolt;
- be aware that the correct shackle is being used for the correct load;
- the not correct load on the bolt or the body may lead to connection whereby the shackle can not be disconnected anymore;
- when shackles are being used with Multi-leg slings the capacity of the shackle must be in accordance with the WLL of the steel wire ropes or chain parts;
- shackles must be inspected every year and be tested every 4 years by an expert body.

Use:

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 seats against the surface of the shackle eye.

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.

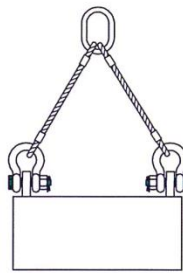
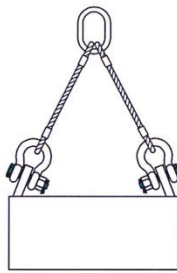
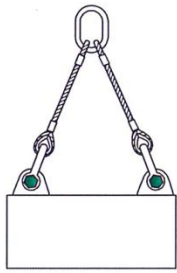


HANDELMAATSCHAPPIJ VLIERODAM B.V.

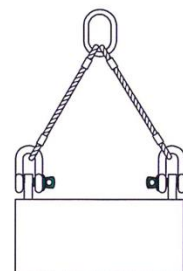
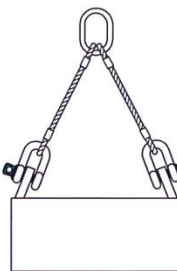
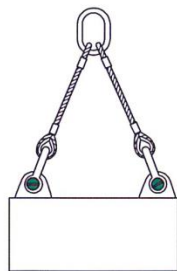
Nijverheidsweg 21 , 3160 AA Rhoon

010-5018000

www.vlierodam.nl



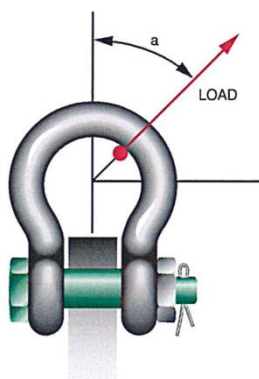
ONLY WITH REDUCED WLL



ONLY WITH REDUCED WLL

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

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



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.

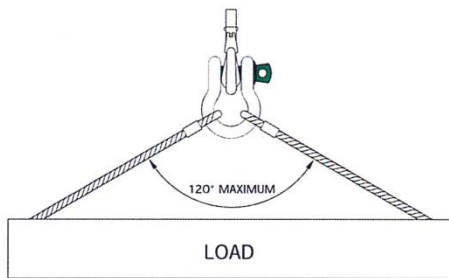


HANDELMAATSCHAPPIJ VLIERODAM B.V.

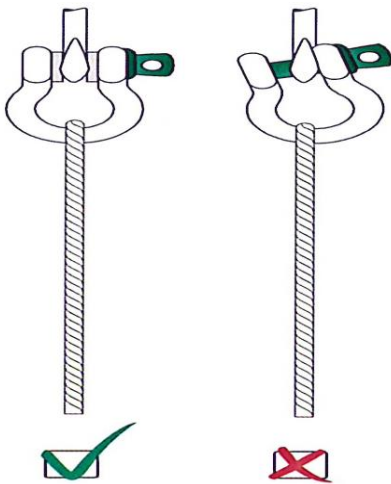
Nijverheidsweg 21 , 3160 AA Rhoon

010-5018000

www.vliero dam.nl



When a shackle is used to connect two slings to the hook of a lifting device, a bow type shackle must be used. 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.



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.

Avoid applications where the load moves over the shackle pin; the pin may rotate and possibly be unscrewed. If moving of the load can not 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.

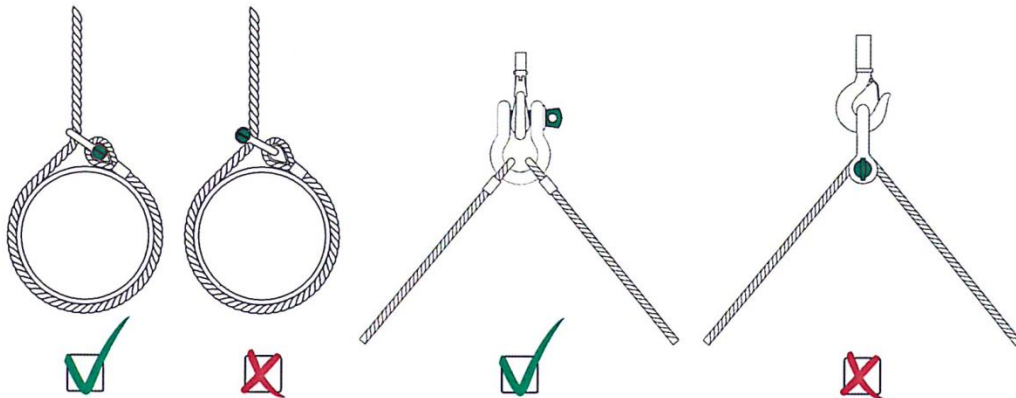


HANDELMAATSCHAPPIJ VLIERODAM B.V.

Nijverheidsweg 21 , 3160 AA Rhoon

010-5018000

www.vlierodam.nl

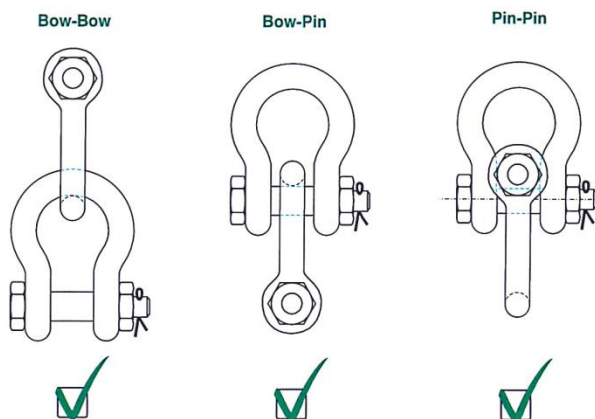


Shackles should not be immersed in acidic solutions or exposed to acidic fumes or other chemicals that are potentially harmful for the shackle.

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 but the minimum dimension of the rounded component to be lifted should be equal to or bigger than the size of the shackle being used. 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 should 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.



The crown of a green pin shackle is wider than that of a standard shackle, thus creating a bigger bearing surface. This improves the lifetime of the sling. 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.



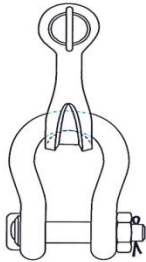
HANDELMAATSCHAPPIJ VLIERODAM B.V.

Nijverheidsweg 21 , 3160 AA Rhoon

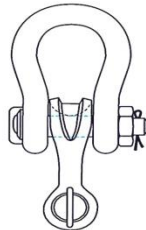
010-5018000

www.vlierodam.nl

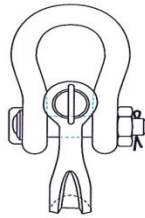
Bow-Bow



Bow-Pin



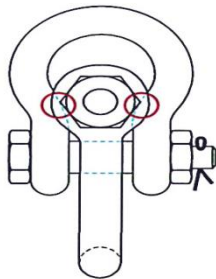
Pin-Pin



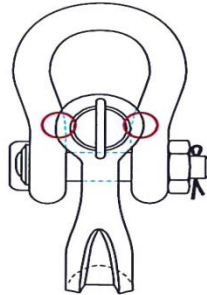
Pin-pin configuration:

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

Pin-Pin



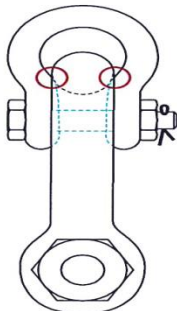
Pin-Pin



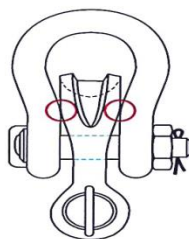
Bow-pin configuration:

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 should not be used.

Bow-Pin



Bow-Pin



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



HANDELMAATSCHAPPIJ VLIERODAM B.V.

Nijverheidsweg 21 , 3160 AA Rhoon

010-5018000

www.vlirodam.nl

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