

Black Pin US Fed Spec Shackles RR-C-271 User Manual

IT IS ESSENTIAL THAT THE OPERATOR/USER OF THIS EQUIPMENT READS AND UNDERSTANDS THE INFORMATION CONTAINED IN THIS BOOKLET.

General purpose slinging practice - this information is of a general nature, essentially covering the main points for the use of various types of slings and accessories used for lifting purposes. This should be read in conjunction with the instructions for use given overleaf, of which it forms an integral part of, together with any specific instructions issued by the supplier.

Only suitably trained persons should carry out lifting operations!

Always:

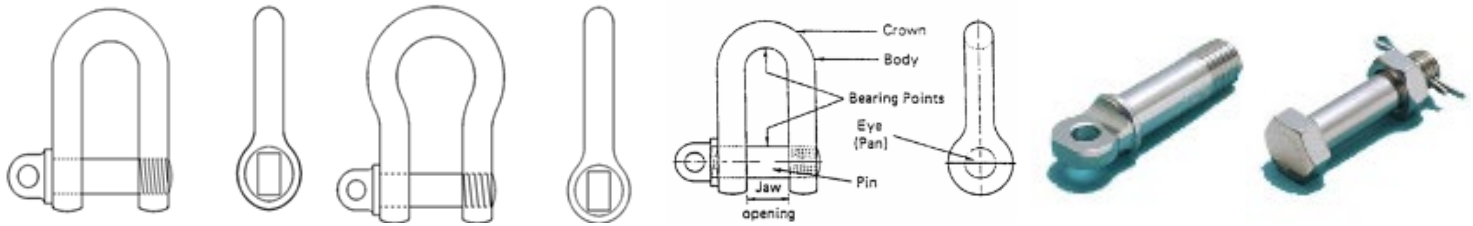
- Use personal protection equipment (PPE equipment supplied by your employer), safety boots, gloves and eye protection should be the minimum.
- Lifting gear in general can be heavy; care is required in the manual handling of any equipment.
- Plan the lift, establish the weight of the load and prepare the landing area ensuring that it will take the weight/mass of the load. Check for any obstructions which may impair the load during the lifting operation paying careful consideration to other personnel, overhead power lines/cables, possible obstructions and clearance matters. If in doubt consult a competent person or expert. Avoid transport of loads over personnel and never allow people to ride on lifted loads.
- Choose the correct equipment; in the case of chain slings consider the grade of material and the type of sling configuration to suit the application ensuring that the capacity of the sling/s are of sufficient SWL allowing for all load factors. Never exceed the Working Load Limit (WLL) or rated angles marked on the sling.
- Check that the slings and any other ancillary equipment are free from damage and use slinging methods suitable for the load to be lifted. Protect the sling from damage i.e. sharp edges or corners, by the use of packing equipment
- Attach the sling securely to the load using correctly sized shackles/lifting points and position the hooks to face outwards. The sling must not be twisted or knotted in any way. When using shackles in conjunction with multi-leg slings, 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.
- Ensure that the lifting point of the load is over the centre of gravity and use recognised shortening devices to alter the sling leg length to achieve this, ensuring that the load is balanced and will not tilt or fall.
- Ensure that any loose parts of the load can be removed or secured.
- Ensure that the load is free to be lifted, for example not bolted down or trapped by other loads or obstructions.
- Ensure that fingers, toes etc. are kept clear and that they cannot become trapped when lifting, lowering or controlling the load.
- Make a trial lift by raising the load a little to ensure that it is balanced, stable and secure and if not, lower and make the necessary adjustment to the slinging arrangement.
- Where appropriate use tag lines to control longer loads.
- Use an established code of signals to instruct the crane driver.
- Make a trial set down of the load and ensure that the sling cannot become trapped and that the load cannot tip when the lifting equipment is removed.
- Never drag lifting equipment over the floor and never attempt to drag a trapped sling from under the load.
- Following the completion of the lift, return the equipment to a proper storage area and check for damage. Report any faults found to a responsible person.

User Guide For Brindley Black Pin Shackles

Instructions for the use of Brindley Black Pin shackles to US Federal Specification RR-C-271 type 4 and later versions to EN 13889.

General

Selecting the correct type / pattern Dee (or chain shackle), Bow (or anchor shackle) and pin type (screw pin or safety pin) to suit the lifting application.



Dee (chain) shackles are normally used to connect or join two pieces of lifting equipment, while Bow (anchor) shackles are typically employed where more than one attachment has to be made to the body. For Dee and Bow Shackles there are essentially only two types of pin commonly used: the screw pin and the nut and bolt pin.

The screw pin is suitable for most purposes provided that there is little risk of the pin becoming unscrewed during the lifting operation. It has the advantage of keeping the shackle as a quick to assemble two component item. The nut and bolt type complete with its split pin is a four component item, and its main advantage is that the pin cannot unscrew in service. It is therefore more suitable in applications where there may be movement which could cause the pin to rotate and unscrew, or where connection is needed for longer time periods or in areas that the shackle cannot be seen easily.

Shackles for lifting purposes are generally stamped or embossed with the WLL, manufacturers mark or name, grade and batch ID number. BS and ISO standard shackles are designed and rated for the pin to accept a central point load, other common available types are designed and rated for the load to be evenly distributed over the full width of the pin. Unless the basis for rating is known it should always be assumed that the jaw must be fully filled and the load evenly spread.

Limitations on use

Never modify, repair or reshape a shackle by welding, heating or bending as this will affect the working load limit and also invalidate the certification.

Never galvanize or subject a shackle to other plating processes without the approval of the manufacturer.

Restrictions of use

Hazardous or dangerous conditions

Effects of temperature:

The reduction of load capacity caused by high temperatures ceases once the lifting component returns to room temperature. Shackles should not be used outside of the temperature range as stated below.

Temperature		New working load
0 - 200° C	-	100% of original working load
200 - 300° C	-	90% of original working load
300 - 400° C	-	75% of original working load
Over 400° C	-	NOT ALLOWED

Effects of acids, caustics and chemicals:

Shackles should not be immersed in acid or caustic solutions, or exposed to acid fumes or other chemicals that could potentially be harmful to the shackle. Be aware that certain production procedures can release acids and/or fumes.

Working load limit:

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 safe working load (SWL) should be reduced accordingly from the Working Load Limit.

Direction of load permissible on Dee and Bow shackles:

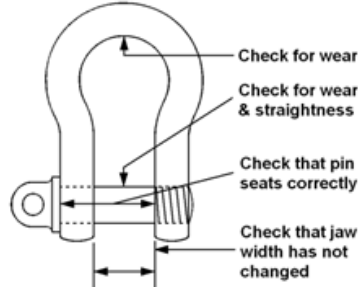


User Guide For Brindley Black Pin Shackles

Elimination criteria following visual inspection:

Do **NOT** use the shackle if :-

- all of the markings are not legible. Shackles for lifting purposes are generally stamped or embossed with the WLL, manufacturers mark or name, grade and batch ID number.
- the body and pin are not both identifiable as being of the correct size, type, grade and make.
- if the threads of the pin and the body are damaged.
- if the body and pin are distorted or unduly worn or suffer from nicks, gouges, cracks and corrosion.
- if the pin cannot be fully tightened.



Repair

It is not recommended to repair shackles as the relative low cost of replacement will prohibit repair costs, misused and damaged shackles should be disposed of responsibly to ensure that other users cannot use rejected shackles.

Storing and handling Shackles

Shackles should be stored in clean and dry conditions and protected from corrosion. Never return damaged shackles to storage.

Use of shackles

Do not attempt lifting operations unless you understand the use of the equipment, the slinging procedures and the mode factors to be applied.

Shackles should be inspected before use and before placing into storage.

Assembly

Select the correct type of shackle with the correct Working Load Limit for the particular application. Should extreme circumstances or shock loading be applicable, this must be taken into account. If in doubt refer to a competent person for advice.

Ensure that the pin is correctly screwed into the shackle eye i.e. tighten by hand, then secure using a wrench or other suitable tool so that the pin is fully seated on the shackle eye. Ensure that the pin is of the correct length so that it penetrates the full depth of the screwed eye and allows the collar of the pin to seat on the surface of the shackle eye.

Incorrect seating of the pin may be due to a bent pin, too tightly fitting thread or misalignment of the pin holes. Do not use the shackle under these circumstances.

Make sure that the shackle is supporting the load correctly, i.e. along the axis of the shackle body centreline, and avoid the introduction of bending loads / unstable loads. Never subject a shackle to overloads.

Always check

- All markings are legible. Shackles for lifting purposes are generally stamped or embossed with the WLL, manufacturers mark or name, grade and batch ID number.
- The body and pin are both identifiable as being of the same size, type, grade and make.
- The threads of the pin and the body are undamaged.
- The body and pin are not distorted or unduly worn.
- The body and pin are free from nicks, gouges, cracks and corrosion.
- Ensure that the load acts through the centre line of the shackle, using spacers if required to meet this requirement.
- Allow for the full resultant imposed load, When using shackles in connection with multi-leg slings, 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.

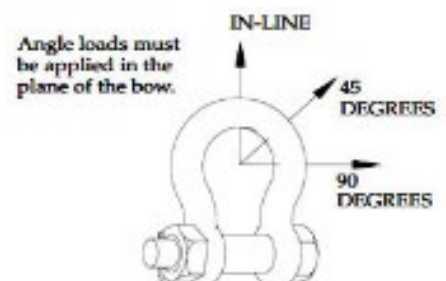
Side Loading (Bow type shackle)

Angle of Side Load from the vertical in-line of the shackle

0° - 5°	-
45° from in-line	-
90° from In -line	-

Adjusted new working load

100% of rated working load
75% of rated working load
50% of rated working load



User Guide For Brindley Black Pin Shackles

Never

- Use shackles with bent pins or deformed bodies.
- Replace a screw pin with a nut and bolt, or replace a safety pin with a nut and bolt not made for the shackle, unless it of the same type size and make, as it may be unsuitable for the loads imposed.

Never replace a shackle pin with a bolt

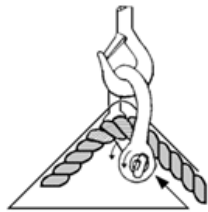
The load will bend the bolt



- Use a safety bolt type shackle without using the split cotter pin.
- Modify, repair or re-shape a shackle by welding, heating or bending as this will affect the working load limit and also invalidate the certification.
- Galvanize or subject a shackle to other plating processes without the approval of the manufacturer.
- Force, wedge or hammer shackles into position.
- Fit shackle pins in contact with moving parts, which may loosen or unscrew them.



Correct - use two ropes with eyes



Incorrect - if the load shifts, the sling will unscrew the shackle pin

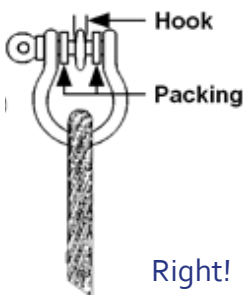


Correct - shackle pin cannot turn



Incorrect - shackle pin bearing on running line can work loose

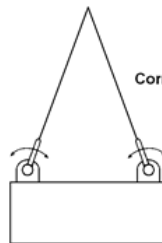
- Eccentrically load shackles.



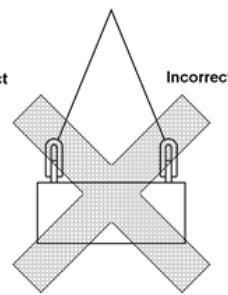
Right!



Wrong!



Correct



Incorrect

- Shock load shackles.

Periodic Inspections:

It is a requirement that shackles be subject to periodic inspection by a competent person, in accordance with the safety regulations in the country of use. This inspection should be at least every 6 months or more frequently if the shackles are used in severe conditions.