WDS COMPONENTS
THE HOME OF STANDARD PARTS & MACHINE ACCESSORIES

Technical guide - Hoist Rings & Lifting Information

What they are:

A Hoist Ring is a specialised heavy-duty lifting ring used with hoists to lift or lower loads securely. Unlike eye bolts or eye nuts, Hoist Rings are designed to pivot and swivel, offering greater flexibility and a broader range of motion. This versatility makes them ideal for lifting operations where the force is applied at an angle, as they can align with the load's direction, reducing stress and increasing safety.

By minimising the risk of binding, where a lifting component becomes stuck or restricted, or side-loading, where the lifting force is applied to the component at an angle rather than in-line with its load path, hoist rings provide a more reliable and efficient solution for complex lifting applications.

Types of Hoist Rings:

Centre-Pull:

Centre-Pull Hoist Rings offer 360° swivel and 180° pivot action, these are rated with a 5:1 safety factor and are proof tested to twice their load capacity. Made from alloy steel, they deliver reliable, high-quality performance.

Side-Pull:

Side-Pull Hoist Rings offer 360° swivel and pivoting around the bolt, providing better clearance for side lifting and rotating loads. They are rated with a 5:1 safety factor and proof tested to twice their load capacity.

Lift-Check™:

Lift-Check™ uses a hex head cap screw with a Visual Tension Indicator to show if a bolt joint is loose or tight with Red indicating the former and Black the latter. With a ±10% tension accuracy, it enables hands-free, remote inspection while speeding up installation.

Corrosion Resistant:

WDS supply corrosion-resistant hoist rings with either the Envirolox™ protective finish or Stainless Steel. The Envirolox™ finish is a nickel-based coating that provides superior corrosion protection, surface hardness, and lubricity, outperforming traditional paints.

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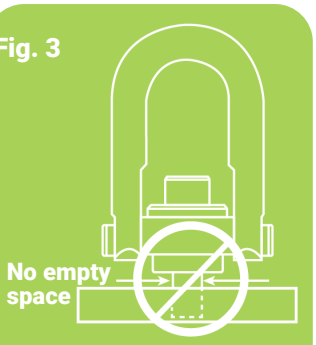
Fig. 1

Never use a hook or other lifting device which will pry or tend to open the "U" shaped bar on Center-Pull Hoist Rings!

Fig. 2

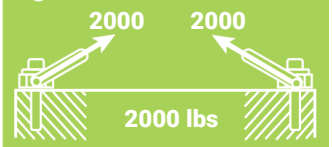
After installation, check the hoist ring to be sure it swivels and pivots freely in all directions. **The side of the ring must not contact *anything*!**

Fig. 3



Always ensure full thread engagement when installing hoist rings!

Fig. 4



Depending upon the sling angle, the applied load may be more than the weight being lifted. Two point lifting of a 2000 pound weight, with a sling angle of 30°, will result in an applied load of 2000 pounds to ***each*** hoist ring!

Select the proper Hoist Ring for the job. Do not attempt to apply more than the rated load capacity. The load capacity is marked on the Hoist Ring.

Drill and tap the workpiece so that the hoist ring bolt is installed perpendicular to the surface of the workpiece. Countersink the tapped hole to prevent "swelling" of the top thread when the hoist ring bolt is torqued. The workpiece surface must be flat, providing complete contact for the hoist ring bushing.

Do not use spacers between the hoist ring bushing and the workpiece surface.

When installing in soft metal, such as aluminium, the minimum effective thread engagement should be two times the diameter of the thread. When installing in steel, thread engagement should be 1-1/2 times the thread diameter.

Always tighten the bolt to the proper torque value, which is stamped on the Hoist Ring.

Loosening of the bolt may develop during use. Re-tightening to the required torque must be done whenever the bolt loosens. The proper tightening torque is stamped on the Hoist Ring.

When lifting, apply force gradually. DO NOT APPLY SHOCK LOADS.

For through-hole applications, be sure that nut/washer are the same quality grade as the Hoist Ring.

Periodic visual inspection and pull testing is recommended as damage can occur from improper usage.

Engineer the lift!!!:

- WDS recommends the use of swivelling and pivoting Hoist Rings, rather than conventional eye bolts.
- Are you using the proper hoist ring for the application?
- Is the Hoist Ring free to swivel and pivot? Any movement restrictions?
- Are lifting hole(s) in the proper location?
- Do you have the correct hole size for the hardware - safe lift capacity?
- Are the holes tapped deep enough to assure full thread engagement? (See Figure #3 on Installation Information; page 2)
- Recommended hole depth:

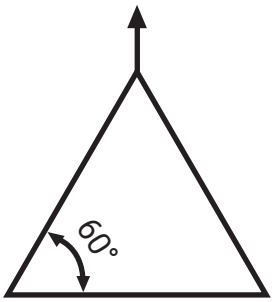
Δ Steel – 1-1/2 times the bolt diameter (min.)
Δ Aluminium – 2 times the bolt diameter (min.)

- RULE OF THUMB, IF IN DOUBT – **DON'T!!!**

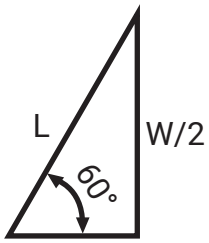
Applied Load Changes with Sling Angle

WDS swivelling hoist rings are designed and rated to be pulled at any angle at the rated load. However, the applied load on a multipoint lift will increase if the sling angle is less than 90°. So be sure to consider the sling angle when selecting lifting equipment. See illustration below.

Sample Calculation:

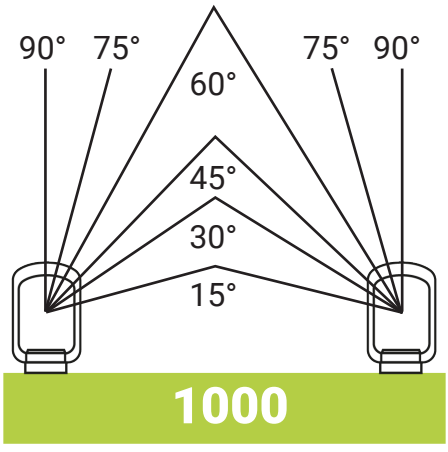


W=1000kg



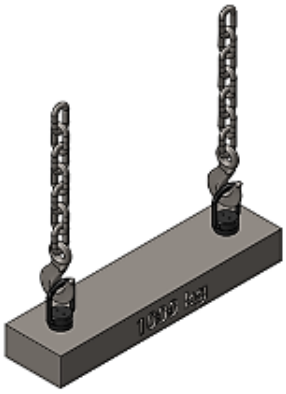
L= APPLIED LOAD ON EACH LEG OF SLING

$$L = \frac{W/2}{\text{SIN } 60} = \frac{500}{0.866} = 577$$



SLING ANGLE (DEGREES)	APPLIED LOAD (KILOGRAMS)
90	500
75	520
60	577
45	705
30	1000
15	1930

90°



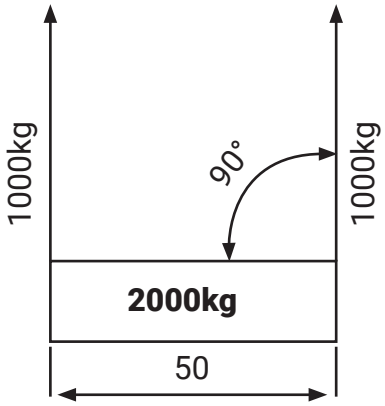
60°

45°

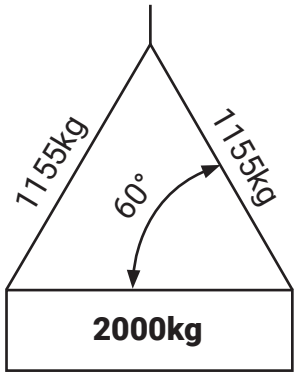
30°

Load ratings for Slings:

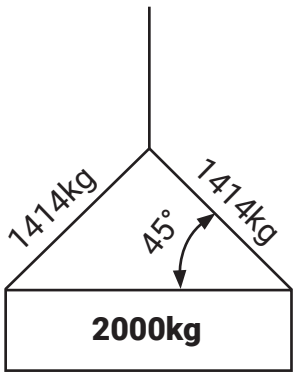
VERTICAL SLING ANGLE 90°



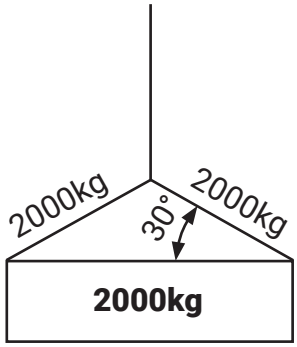
SLING ANGLE 60°



SLING ANGLE 45°



SLING ANGLE 30°



Lift Check:

The NEW WDS Lift-Check™ hoist rings ensure your lift is secure and ready to go. It features a hex head cap screw with a built-in Visual Tension Indicator for added safety and reliability.

Some of the key features include:

✓ Lift-Check™ Centre Pull and Forged Style hoist rings

✓ 5:1 strength factor, proof tested to 200% of rated load (ASME B30.26 compliant, proof test certificate included)

✓ Visual Tension Indicator clearly shows if the bolt is loose or tight

✓ Ensures safety with +/- 10% accuracy of designed tension

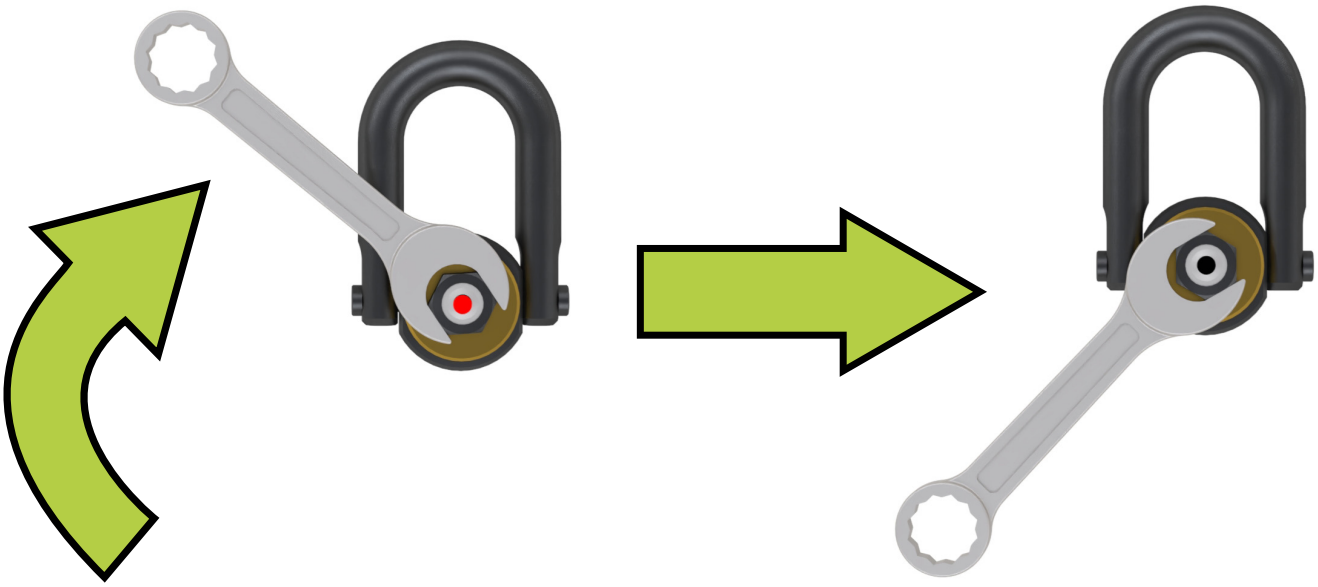
✓ Hands-free inspection from a distance before lifting

✓ Faster installation—no torque wrench or calibration required

✓ Reusable Lift-Check™ bolts with reliable visual clamping force indication

✓ Bolt kits available for upgrading WDS hoist rings

Lift-Check™ hoist rings are part of WDS's full range of lifting solutions, including adjustable chain slings, pivoting lifting rings, eye nuts, swivel eye bolts, and hold-down clips.



Red means NO, Black means GO

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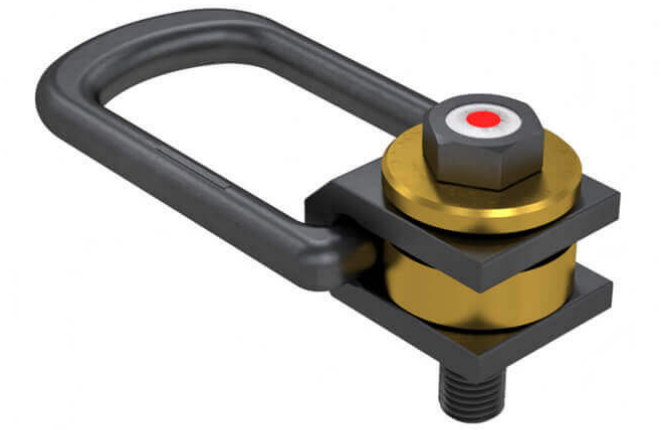
Safety Factor:

Lifting safety factors serve as critical safety margins designed to prevent equipment failure by ensuring lifting equipment can handle loads beyond its designated Safe Working Load (SWL). These factors account for variables such as minor defects, material degradation, and unexpected forces, thereby significantly reducing the risk of failure.

It is worth noting that WDS hoist rings have a different safety factor to the industry standard. A 5:1 safety factor instead of the standard industry factor of 4:1. This is to be considered when specifying a hoist ring for an application.



Do's:

1. Observe working load limitations (be especially careful with eyebolts used for angle lifts – see sling angle chart).
2. Visually inspect Hoist Ring prior to use.
3. Fully tighten Hoist Ring to recommended torque. Full thread engagement is required (no space between swivel bushing and lift).
4. Assure proper thread depth - do not shim.
5. Make sure hoist rings have free travel - it must swivel and pivot without restrictions.
6. When installing in soft metal, such as aluminium, the minimum effective thread engagement should be two times the diameter of the thread (1-1/2 times bolt diameter – steel).

Don'ts:

1. Never pull a Centre Pull Style Hoist Ring from the side.
2. Never use an oversized hook in eyebolts or Hoist Rings (See figure #1 on Installation Information; page 2).
3. Never use excessive sling angle.
4. Never steam clean or degrease Hoist Rings (could cause rusting and binding).
5. Never apply shock loads.
6. Never allow the side of a Hoist Ring to make contact with the lift. (See figure #2 on Installation Information; page 2)

scan the QR code to view
our range of hoist rings