

SAFE SLINGING PRINCIPLES

The main hazard where work at height is concerned is falling. Whether it be people or objects, falling is an event that causes harm to people and/or property. The aim should always be to prevent an occurrence that could cause a fall; in doing so, you will mitigate fall risk.

When it comes to rigging and lifting, slinging principles are critical to ensuring safe lifting operations. Whether you are working in construction, manufacturing or any industry that involves lifting heavy loads, understanding and implementing proper slinging principles is crucial to ensure the safety of yourself and those around you.

The following items need to be considered when you are slinging a load for a lift:

- The weight of the load – this will be a determining factor in the sling you select as well as the configuration of that sling.
- Limitations of the equipment selected in terms of fit-for-purpose and safe-for-use criteria.
- Number of attachment points – where more than one attachment point exists you must make use of multiple slings.
- Centre of gravity in relation to the slinging point.
- The history of the selected equipment.

SELECTING THE RIGHT SLING:








Choose the correct type of sling for the load. Common types include wire rope slings, chain slings and synthetic web slings. Ensure that the sling's capacity and design are suitable for the intended load. Inspect slings for any signs of damage or wear before use.

SLING CONFIGURATION:

Proper configuration is key to distributing the load evenly and preventing damage from occurring. **Follow these guidelines:**

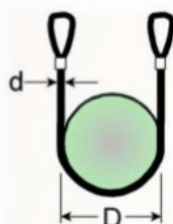
- Avoid sharp edges and corners that can cause sling damage. Use protective measures such as edge protectors, padding or sleeves.
- Select the appropriate hitching method, such as a vertical, choker or basket hitch, based on load characteristics and sling type.

LIMITATIONS OF WEBBING SLINGS

	Straight lift	Choked lift	Basket 0 degrees	Basket 0-7 degrees	Basket 7-45 degrees	Basket 45-60 degrees	Basket 45-60 degrees
Various configurations							
Percentage of strength due to configuration	100%	80%	200%	140%	100%	70%	50%

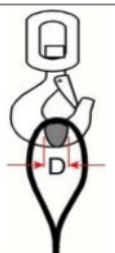
It is important to understand the forces on the slings in relation to the diameter of the load or the hook diameter (D).

To the right are a few examples of how to determine the correct hook diameter to sling diameter (d) ratios.

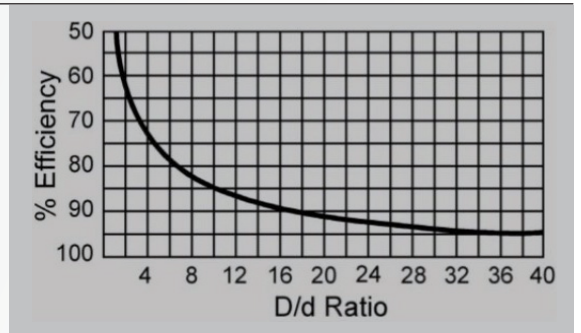


When the configuration is in a basket formation the advised ratio is 25:1 (D:d).

With this configuration, the ratio will be more than 6:1 (D:d).



Based on the percentage listed in the limitation table, the efficiency should not be less than 80%. For example, if $d = 4$ mm then D cannot be less than 24 mm.

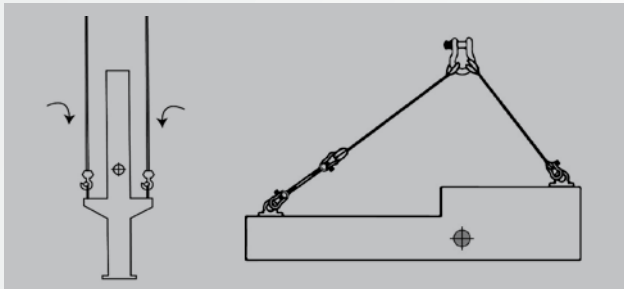


- c) Ensure that slings are securely and properly attached to the load and that the weight is evenly distributed.

When lifting a load with multiple lift points, a separate sling must be attached to each lift point with the opposite eye of the sling placed on the lifting system (1:1, 2:1, 3:1 or 4:1 system).



If the load shifts the sling will unscrew the shackle pin.



The correct method shows two slings for two attachment points, whereas the incorrect method demonstrates only one sling. Using the incorrect method may cause the sling or the anchors to fail as a result of additional forces on the anchors, or having unequal forces due to the centre of gravity not being vertically aligned to the lift connection point.

When in doubt follow the manufacturer's lifting/slinging chart.

INSPECTIONS AND MAINTENANCE:

Regularly inspect slings for signs of wear, damage or deformation. Replace damaged or worn slings immediately. Store slings properly in a clean and dry area away from corrosive substances and direct sunlight.

CONCLUSION:

By following these slinging principles, we can significantly reduce the risk of accidents, injuries and damage during lifting operations. Always prioritize safety and make it a collective responsibility to promote a safe working environment. Remember, safety is not just a slogan; it is a vital part of our daily work. Stay vigilant, communicate effectively and work together to ensure everyone's well-being.



References:

- Hoisting and Rigging Safety Manual – CA (Rev Jan 2020)
- Gravity Training Mechanical Lifting and Basic Rope Rigging Manuals
- NSL Rigging and Lifting Handbook

For more information on safe slinging principles book your Basic Rope Rigging training with Gravity Training (Pty) Ltd.