



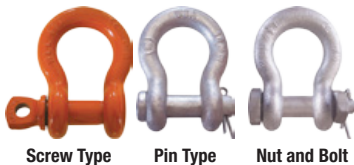
Overview

Shackles and clevises are U-shaped mechanical couplers closed by a pin or bolt. They are used to facilitate attaching a chain, wire rope or synthetic sling for rigging, towing and lifting. They are designed with various shapes, pin styles and strength levels. The size is specified by the diameter of the body, not the size of the pin. Shackles are primarily used in construction, rigging and lifting. A clevis is used in less demanding applications such as farming and towing.

Reference: Department of Energy Standard: DOE-STD-1090-2007, 12.3 SHACKLES AND CLEVISES

NOTE: Alloy steel shackles should be used for overhead lifting. Shackles with round pin solely restrained with a cotter pin are not recommended for overhead lifting.

Shackle and Clevis Types



Screw Type

Pin Type

Nut and Bolt

Anchor Shackles are also known as **Bow Shackles** and have a generously-sized loop that is better suited to allow multiple connections.



Screw Type

Pin Type

Nut and Bolt

Chain Shackles, also known as **D-Shackles**, are shaped like a chain link and are narrower than anchor shackles. The smaller loop reduces rigging line movement. They are primarily designed to take the load in-line. Side loads may twist or bend the shackle.



Straight

Twist

Utility or Farm Clevises are not to be used for overhead lifting or rigging.

Pin Types

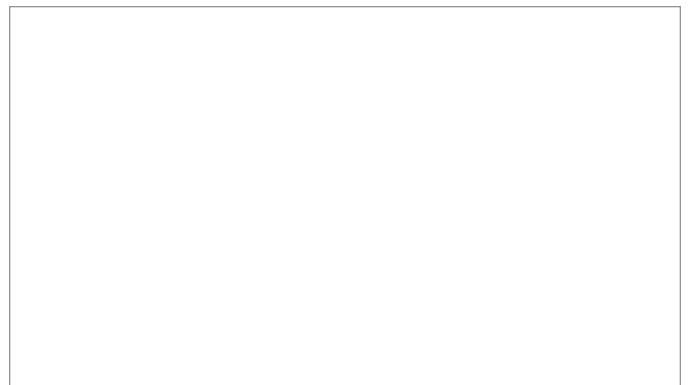
Screw type shackles afford quick, easy removal of the screw pin which is secured with torque.

Pin type shackles also afford easy removal of the retaining pin. They perform well when the pin is subjected to twisting.

Nut, bolt and cotter pin type shackles are the most secure and best resist axial and torsional loading. They are better suited for semi-permanent applications.

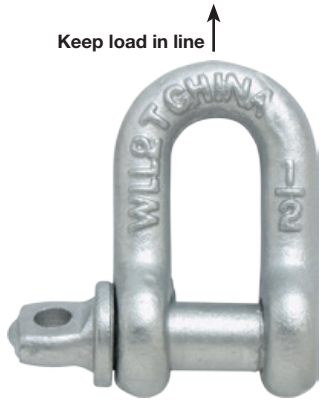
When to Remove a Shackle from Service

- If the working load rating is worn off or unidentifiable
- If there are indications of heat damage or welding spatter
- If there are bent, twisted, stretched or cracked load-bearing components
- If there is a 10% reduction in dimension at any point around the body

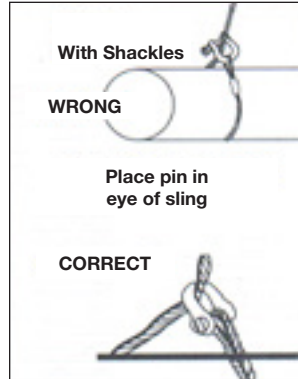


Shackle and Clevis Instructions

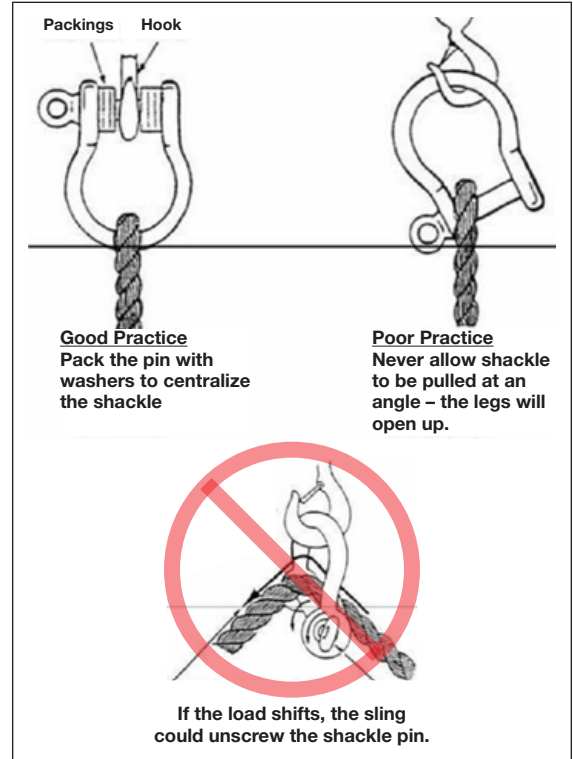
Chain Shackle Loading



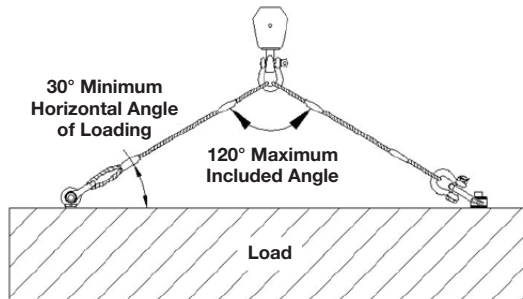
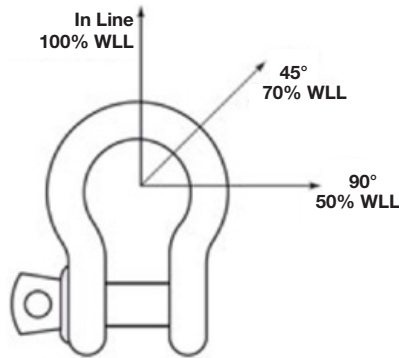
Choker Hitch Forming



Anchor Shackle Loading



Effect of Loading Angle



Horizontal Angle	Load Multiplier
90°	1.000
60°	1.155
45°	1.414
30°	2.000

If the load in this example weighs 2,000 lbs., the working load limit of the shackle on the hook must be:
 Working Load Limit = Load x Load Multiplier
 2,000 lbs. x 2.000 = 4,000 lbs.