

Figure 1

The purpose of this manual is to define wire rope slings in keeping with good practice and sound engineering design. Many areas of design apply to all types of slings. Specific design criteria will be covered in the appropriate sections. Rated Capacities shown in this manual are for wire rope slings fabricated from new wire rope.

DESIGN FACTOR is a number which is divided into the nominal strength of a sling to arrive at a rated capacity. A design factor is necessary to allow for conditions such as wear, abrasion, damage and variations in load which are not readily apparent. Design factors have been established which allow the sling to give the most efficient service to the user. Rated capacity tables contained in this manual are based on a design factor of five (5). Other design factors may be applied for engineered lifts; however, the sling manufacturer should always be consulted.

Sling Rated Capacity is based upon the minimum breaking force, formerly called nominal (catalog) strength, of the wire rope used in the sling and other factors which affect the overall strength of the sling. These other factors include splicing efficiency, number of parts of rope in the sling, type of hitch (e.g., straight pull, choker hitch, basket hitch, etc.), diameter around which the body of the sling is bent (D/d) and the diameter of pin used in the eye of the sling (Figure 1).

SLING ANGLE is the angle measured between a horizontal plane and the sling leg or body. This angle is very important and can have a dramatic effect on the rated capacity of the sling (2A). As illustrated (Figure 2B), when this angle decreases, the load on each leg increases. This principle applies whether one sling is used to pull at an angle, in a basket hitch or for multilegged bridle slings. Sling angles of less than 30 degrees shall not be used.

SLING ANGLES



Figure 2A. How do you carry two buckets of water? The above illustration typify the stresses imposed on slings when the legs are attached to the load at various angles.

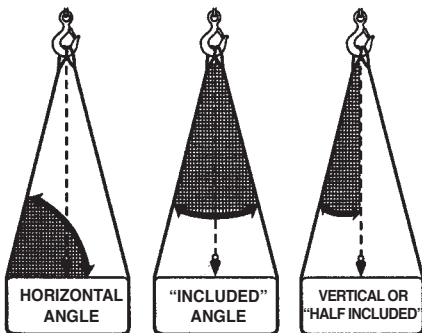


Figure 2C

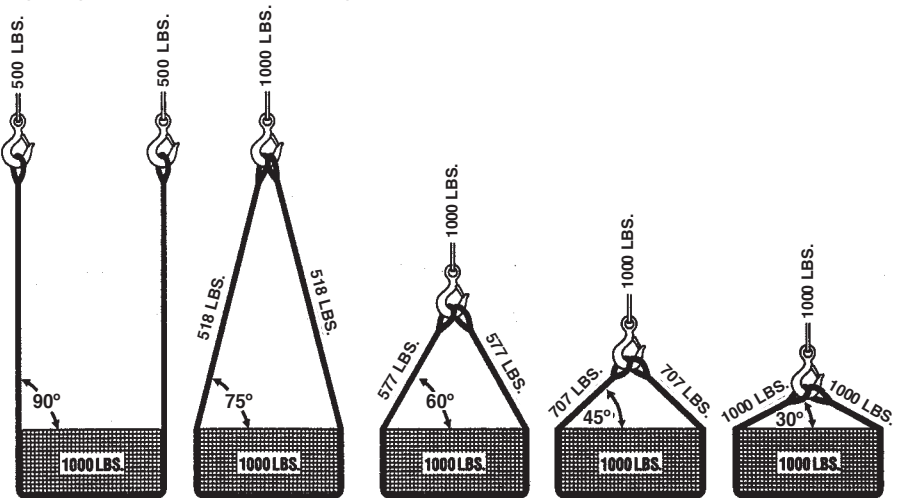


Figure 2B

SLING ANGLES in this manual are measured from the horizontal plane. If the horizontal angle is used you must use the trigonometric sine of the horizontal angle. When the vertical angle is used you must use the trigonometric cosine of the vertical angle (Figure 2C)