

## EFFECT OF ANGLE OF LIFT ON A SLING'S RATED CAPACITY

**⚠ WARNING** *Read Definition on page 3 of our 2017 Catalog*

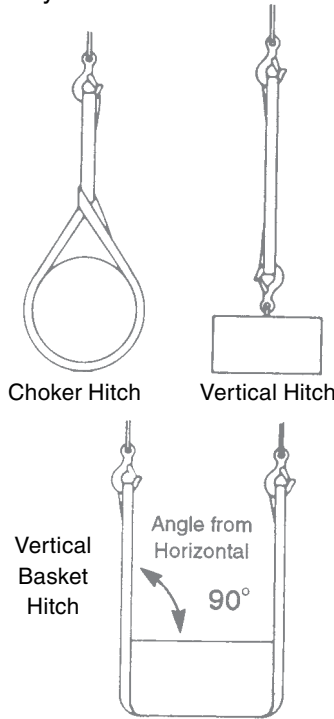
Using slings at an angle **can become deadly** if that angle is not taken into consideration when selecting the sling to be used. The tension on each leg of the sling is increased as the angle of lift, from horizontal, decreases. It is most desirable for a sling to have a larger angle of lift, approaching 90°. Lifts with angles of less than 30° from horizontal are not recommended. If you can measure the angle of lift or the length and height of the sling as rigged, you can determine the properly rated sling for your lift.

### INCREASED TENSION

**What capacity sling do I need?**

1. Determine the weight that the sling will be lifting [LW].
2. Calculate the Tension Factor [TF].
  - a. Using the angle from horizontal, read across the angle chart to the corresponding number in the Tension Factor column.
- OR
- b. Divide sling length\* [L] by sling height\* [H].
3. Lifting Weight [LW] x the Tension Factor [TF] = Minimum Sling Rating for the type of hitch that will be used.

*\* Measured from a common horizontal plane to the hoisting hook.*



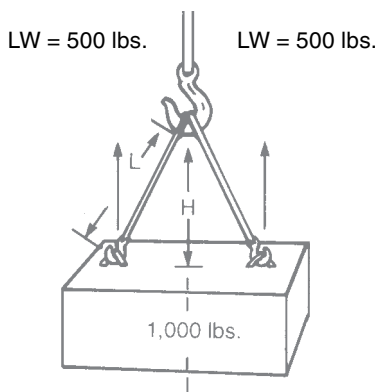
### REDUCED CAPACITY

**What would be the rating of each sling rigged at this angle?**

1. Calculate the Reduction Factor [RF].
  - a. Using the angle from horizontal, read across the Angle Chart to the corresponding number in the Reduction Factor column.
- OR
- b. Divide sling height\* [H] by sling length\* [L].
2. Reduction Factor [RF] x the sling's rated capacity for the type hitch that will be used = Sling's Reduced Rating.

*\* Measured from a common horizontal plane to the hoisting hook.*

### Increased Tension



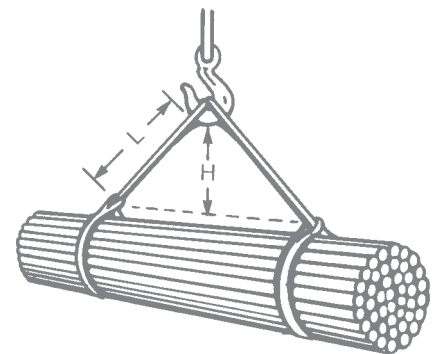
**Example:**  
 Load weight = 1,000 lbs.  
 Rigging — 2 slings in vertical hitch  
 Lifting Weight (LW) per sling = 500 lbs.  
 Measured Length (L) = 10 ft.  
 Measured Height (H) = 5 ft.  
 Tension Factor (TF) = 10 (L) ÷ 5 (H) = 2.0  
 Minimum Vertical Rated Capacity required for this lift = 500 (LW) x 2.0 (TF) = 1000 lbs. per sling

### Effect of Angle Chart

| Tension Factor (TF) | Angle From Horizontal | Reduction Factor (RF) |
|---------------------|-----------------------|-----------------------|
| 1.000               | 90°                   | 1.000                 |
| 1.004               | 85°                   | 0.996                 |
| 1.015               | 80°                   | 0.985                 |
| 1.035               | 75°                   | 0.966                 |
| 1.064               | 70°                   | 0.940                 |
| 1.104               | 65°                   | 0.906                 |
| 1.155               | 60°                   | 0.866                 |
| 1.221               | 55°                   | 0.819                 |
| 1.305               | 50°                   | 0.766                 |
| 1.414               | 45°                   | 0.707                 |
| 1.555               | 40°                   | 0.643                 |
| 1.742               | 35°                   | 0.574                 |
| 2.000               | 30°                   | 0.500                 |

Sling capacity decreases as the angle from horizontal decreases. Sling angles of less than 30° are not recommended.

### Reduced Capacity



**Example:**  
 Vertical Choker rating of each sling = 6,000 lbs.  
 Measured Length (L) = 6 ft.  
 Measured Height (H) = 4 ft.  
 Reduction Factor (RF) = 4 (H) ÷ 6 (L) = .667  
 Reduced sling rating in this configuration = .667 (RF) x 6,000 lbs. = 4,000 lbs. of lifting capacity per sling