

SLING ANGLE AND TENSION

Increased Tension Method (Recommended Method)

To use this method, the user shall:

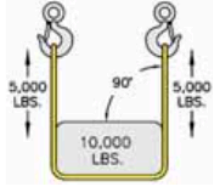
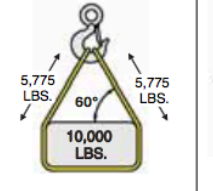

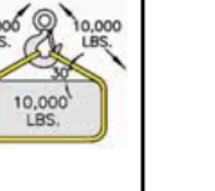
1. Determine the sling angle, as measured from the horizontal.
2. Determine the corresponding Tension Factor from Table 4-1.
3. Multiply the load weight by the tension factor to determine the loading on the sling leg(s).

The result is the INCREASED TENSION or actual loading on the sling leg(s).

Table 4-1 Effect of Sling Angle - Tension Factor Chart

Angle in Degrees from Horizontal	Tension Multiplier	Angle in Degrees from Horizontal	Tension Multiplier
90	1.000	55	1.221
85	1.004	50	1.305
80	1.015	45	1.414
75	1.035	40	1.555
70	1.064	35	1.742
65	1.104	30	2.000
60	1.155		

Table 4-2 Example of the Effect of Sling Angle on Tension

Tension in the Sling Increases as the Sling Angle Decreases				
Sling Angle (from Horizontal)	90°	60°	45°	30°
Tension Multiplier	1.00	1.155	1.414	2.000
Sling Leg Tension (Lbs. Per Leg)	5,000	5,775	7,070	10,000
Required Sling Capacity (Lbs. Basket Hitch)	10,000	11,550	14,140	20,000

WARNING

Do not exceed rated capacities. Sling capacity decreases as the angle from horizontal decreases. Slings should never be used at angles less than 30 degrees.

Reduced Sling Capacity Method (Alternative Method) - To use this method, the user shall first determine the angle and multiply the sling capacity by the appropriate loss factor for the specific angle. The result is the *Reduced Sling Capacity*.

1. Determine the sling angle, as measured from the horizontal.
2. Determine the corresponding (Sling Capacity) Loss Factor from Table 4-3.
3. Multiply the sling capacity by the loss factor to determine the actual sling capacity at the given angle of lift. The result is the reduced sling capacity. (See Figure 4-1).

Table 4-3 Effect of Sling Angle - (Sling Capacity) Loss Factor Chart

Angle in Degrees from Horizontal	Loss Factor	Angle in Degrees from Horizontal	Loss Factor
90	1.000	55	0.819
85	0.996	50	0.766
80	0.985	45	0.707
75	0.966	40	0.643
70	0.940	35	0.574
65	0.906	30	0.500
60	0.866		

EXAMPLE: A one (1) inch, class 7, Type V endless web sling, rated at 6,400 lbs. in a vertical basket hitch rating, is being used in a basket hitch at a 60 degree angle. What is its lifting capacity at this lifting angle? (See Figure 4-1).

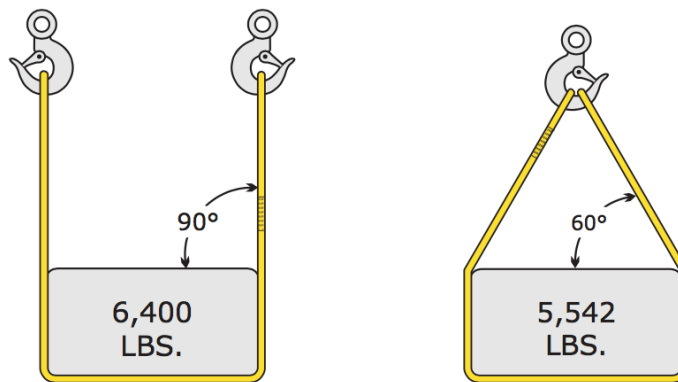


Figure 4-1

ANSWER: Sling lifting capacity at a 60 degree lifting angle equals its basket hitch capacity multiplied by the Loss Factor from Table 4-3, of .866 for a 60 degree angle.

$$6,400 \text{ lbs.} \times .866 = 5,542 \text{ lbs.}$$

WARNING

Do not exceed rated capacities. Sling capacity decreases as the angle from horizontal decreases. Slings should never be used at angles less than 30 degrees.