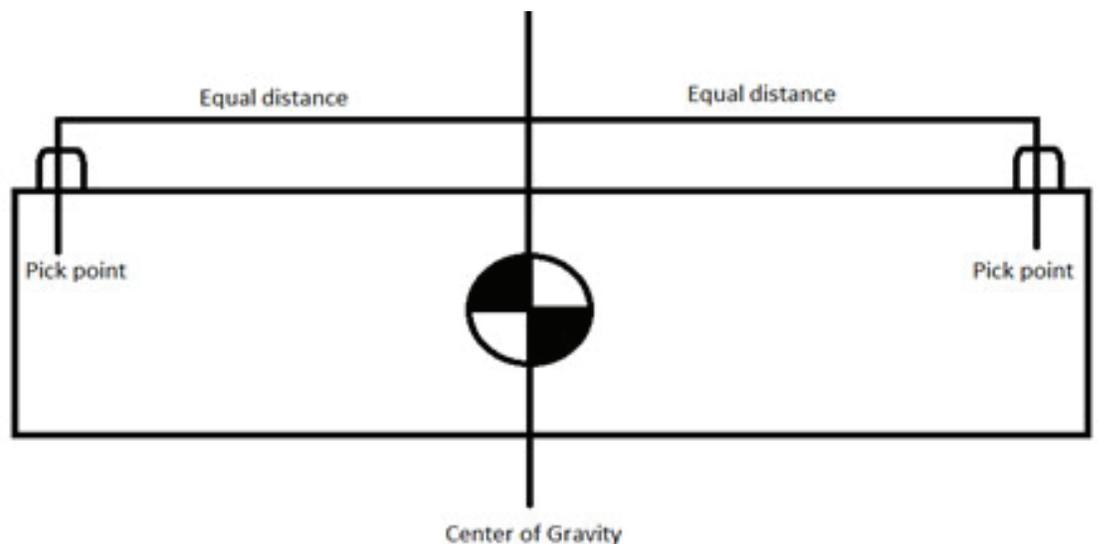


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Rigging 101

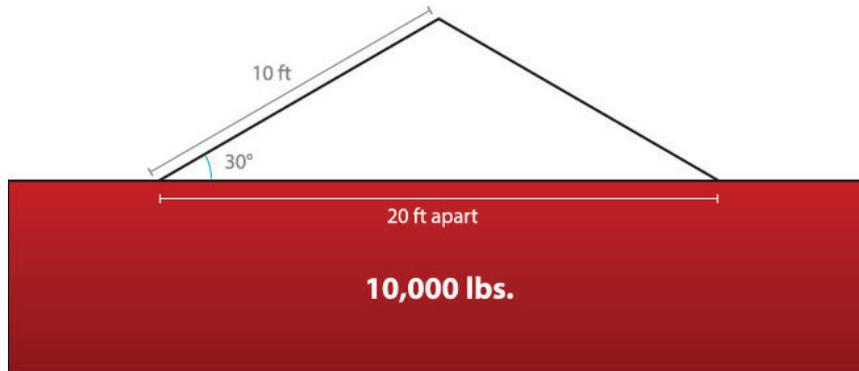
If you follow our newsletter, then you already read some interesting facts about qualified personnel and the roles they play during the lifting operation. Among the key roles when executing a lift is that of the rigger. A rigger is charged with the selection, inspection, and attachment of rigging to the crane and load. To be considered a qualified rigger, one must pass written and practical exams that focus on the three aforementioned areas. In this article, we will go through the basic, fundamental tasks that a rigger needs to accomplish in order for a lift to go off without a hitch.

To select the appropriate rigging for a lift, the rigger must take several factors into account. First, and arguably the most important, is the weight of the load. The sum capacity of the rigging's components: slings, shackles, etc., must be able to handle the weight of the load. Secondly, factors such as, sling angle tension and weight distribution, if using multiple slings, must be accounted for as well. And lastly, a qualified rigger must be able to apply mathematical formulas to calculate the precise load stress each piece of rigging component will endure during the lift.



In the examples that follow, we are using a symmetrical load to demonstrate how sling length affects sling angle and tension. The pick points are equal distance from the load's center of gravity, and each sling bears equal weight.

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Scenario 1: A pair of 10' slings

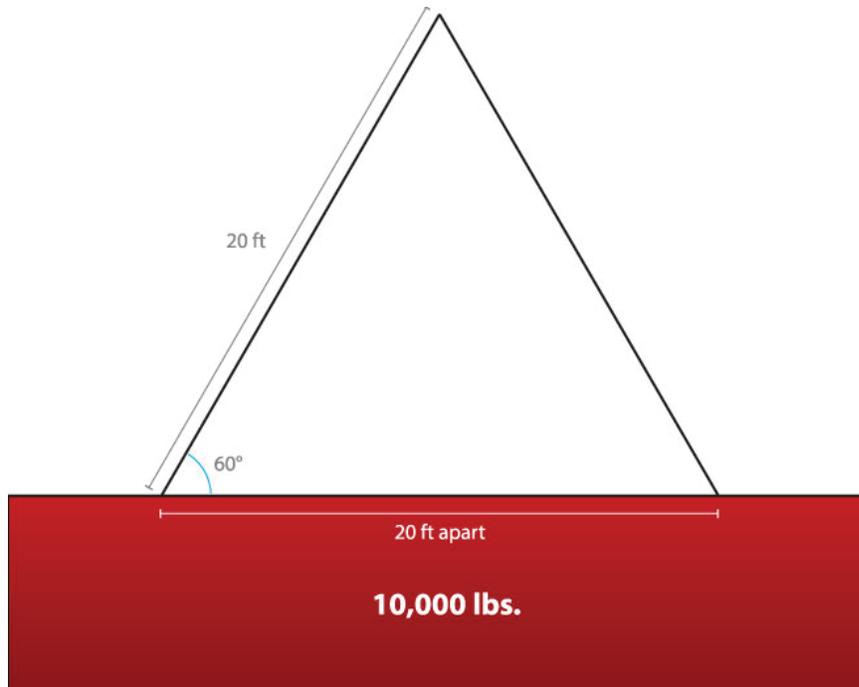
Angle would be 30° and increases tension to 200% or 10,000 lbs. per sling. This scenario would most likely end in catastrophic failure.



Scenario 2: A pair of 15' slings

Angle would be 45° and increases tension to 141% or 7050 lbs. per sling. The additional sling length increases the angle, therefore decreasing sling tension. The slings in this scenario, even with an increase in sling length and angle, would still become overloaded.

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Scenario 3: A pair of 20' slings

Angle would be 60° and increases tension to 115% or 5750 lbs. per sling. The slings in this scenario bear a sling tension below their rated capacity. Therefore, out of three choices demonstrated, the 20' slings are the right choice for the lift.

When using slings, remember the sling's rated capacity, also known as its "vertical rating", is the capacity it can bear with 0% tension at 90°. Once a sling is used at an angle, its capacity is diminished due to the additional strain the angle introduces.

As the Pro Crane operators are setting up for the job, you can rest assured the lift and all of its elements are being calculated correctly. When a comprehensive lift plan is being implemented, then Pro Crane operators use predetermined rigging and math to support their selections. If you have any questions or would like to know more about the science and math of rigging, please give Pro Crane a call at 1.866.PRO.CRANE.