

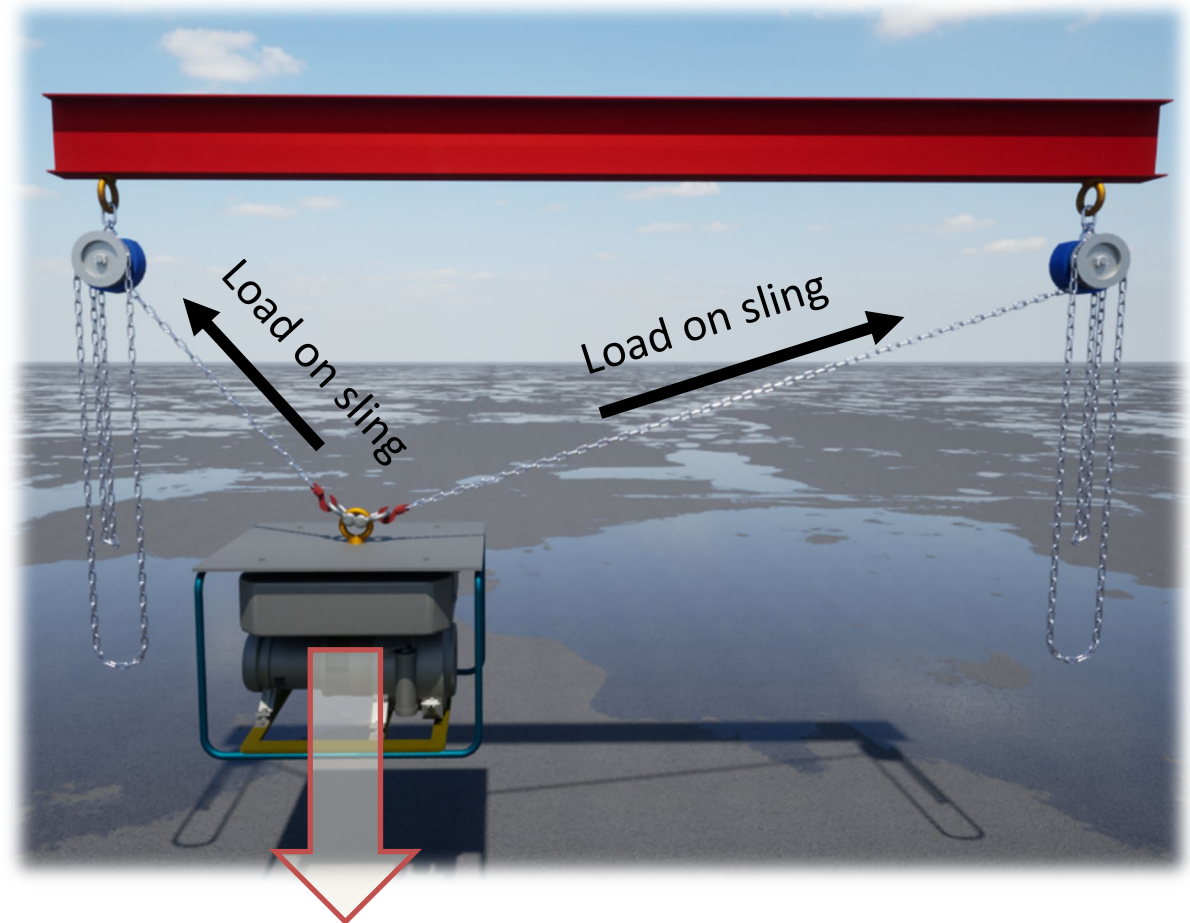
10.- Calculating Sling Loads



Sling Loads

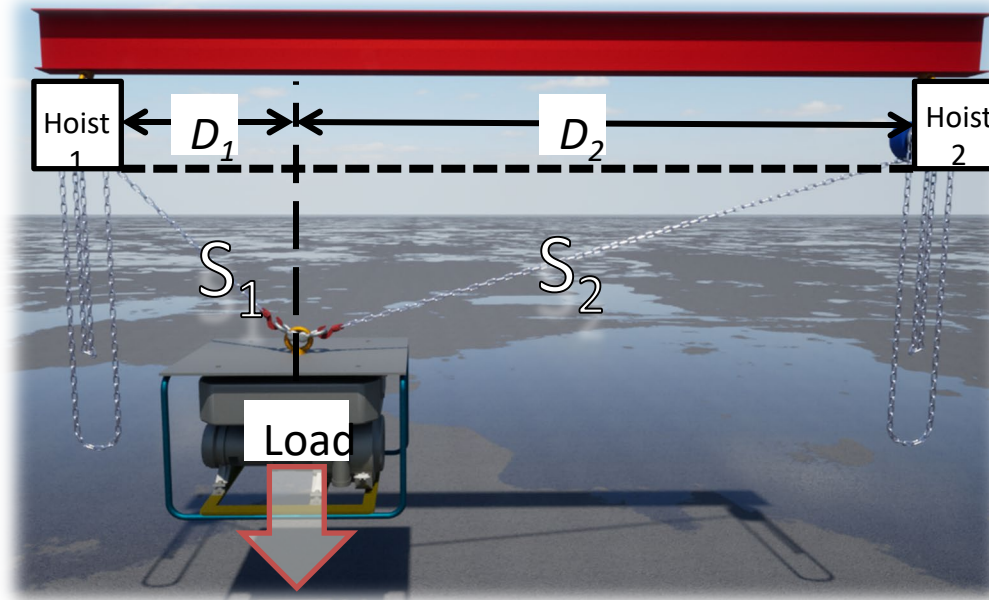
An important part of the riggers job is to determine the weight of the load and how the slings share this load.

- It is important to calculate the load on the sling segments so that we can size the hooks to be able to handle the load forces.
- As the length of the sling changes, so do the forces acting on them, so it is important to know what those force fluctuations are to select the appropriate rigging equipment.



Weight of the load

Calculating Sling Loads



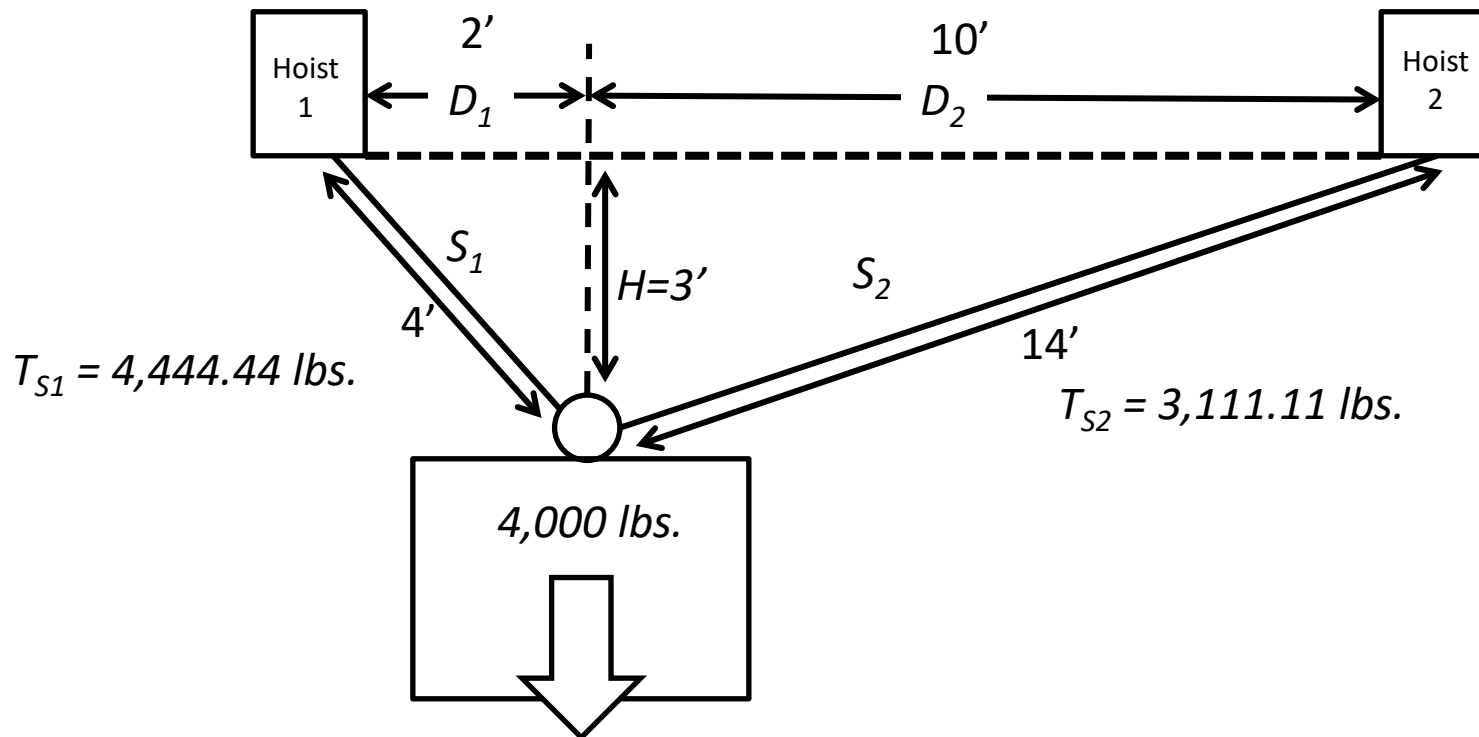
To calculate the load on each sling segment we use the following equations:

$T_{S1} = (\text{Load} \times D_2 \times S_1) / (H (D_1 + D_2))$, where T_{S1} is the Tension on sling 1 , D_2 is the horizontal distance from the center of the pick point of the load to hoist 2, D_1 is the horizontal distance from the center of the pick point of the load to hoist 1 and H is the vertical height from the load pick point to the lift anchor.

$T_{S2} = (\text{Load} \times D_1 \times S_2) / (H (D_1 + D_2))$, where T_{S2} is the Tension on sling 2 , D_1 is the horizontal distance from the center of the pick point of the load to hoist 1, D_2 is the horizontal distance from the center of the pick point of the load to hoist 2 and H is the vertical height from the load pick point to the lift anchor.

Calculating Sling Loads

Simplifying as diagram



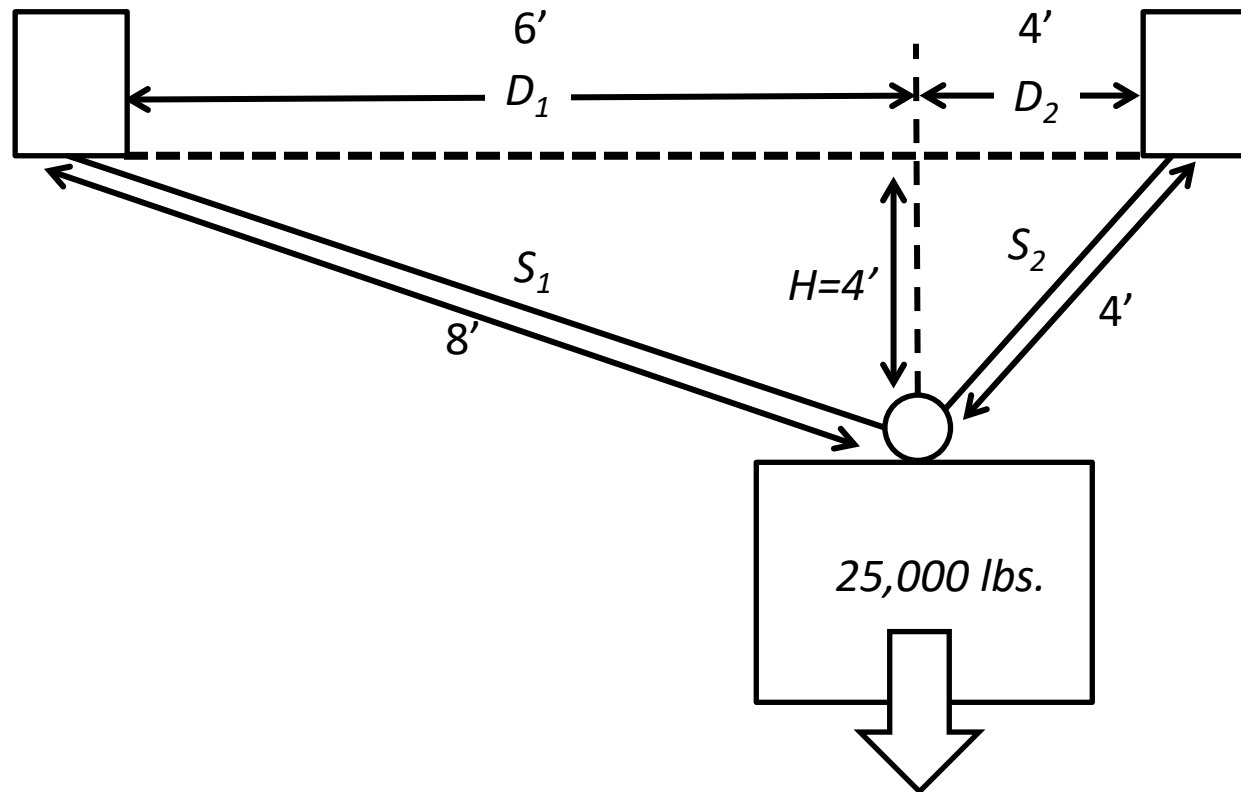
To calculate the load on each sling segment we use the following equations:

$$T_{S1} = (\text{Load} \times D_2 \times S_1) / (H (D_1 + D_2))$$
$$T_{S1} = (4,000 \times 10 \times 4) / (3 (2 + 10))$$
$$T_{S1} = 4,444.44 \text{ lbs.}$$

$$T_{S2} = (\text{Load} \times D_1 \times S_2) / (H (D_1 + D_2))$$
$$T_{S2} = (4,000 \times 2 \times 14) / (3 (2 + 10))$$
$$T_{S2} = 3,111.11 \text{ lbs.}$$

Calculating Sling Loads

Practice problem



Calculate the load on each sling segment we use the following equations:

$$T_{S1} = (Load \times D_2 \times S_1) / (H (D_1 + D_2)) \quad T_{S2} = (Load \times D_1 \times S_2) / (H (D_1 + D_2))$$