HERCULES SLR INC.
SECURING • LIFTING • RIGGING

Spreader Bar & Beam Overview

A spreader bar is a type of below-the-hook lifting device used to aid crane operators in picking up large and sometimes heavy loads. The idea behind a spreader bar is to simply distribute the load of a lift across more than one point, increasing stability and decreasing the loads applied during hoisting.

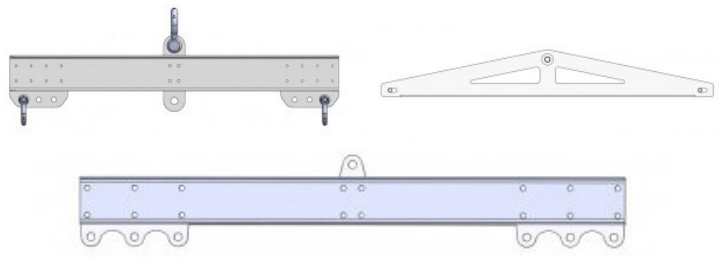
How a Spreader Bar Works

A spreader bar typically has two lugs going up to transmit load to the crane and two lugs down in order to attach to the object being lifted. The lines connecting the object being lifted to the spreader bar remain close to vertical in order to provide the simplest loading scenario on the object being lifted. The lines coming off the top of the spreader to the crane angle up at a known angle (usually 45 degrees or 60 degrees). When an engineer designs the spreader bar he designs it specifically to be strong enough to handle the increased loads from sloped slings out the top.

These bars are commonly telescopic in length and can range in size from 1ft to 60ft or bigger. The nature of these spreader bars is such that the loading through the bar has almost no bending. The lugs are orientated in such a way so that the majority of the load is purely compressive through the bar making it behave like a column. This is a fairly efficient structural loading scenario allowing for spreader bars to support a great deal of load given their size.

Spreader Beams

Spreader beams differ slightly from spreader bars in that they usually have one attachment point on the top and multiple attachment points on the bottom. Modern manufacturing techniques has lead to these beams coming in a variety of shapes and sizes historically they got their name as lifting beams because they were made from I-beams with the lugs welded on the top and bottom. Lifting beams have a couple unique features that make them beneficial over spreader bars in some applications.



Refs/Sources: Sparta Design Solutions Blog

Spreader Beams Advantages & Disadvantages

Advantages:

1) Spreader beams have multiple hook points on the bottom so you could spread the load of more than just two lines This is especially useful if you are lifting something that doesn't have the structure to support its own weight such as a flat piece of light gauge steel.

2) Another main advantage is they are built with a single point connection out the top so they take up a lot less crane height to lift since you don't have any rigging above the beam. This aspect makes them particularly popular for indoor cranes where hook height tends to be limited and nearly impossible to change.

3) The last main advantage of spreader beams is that they can be turned upside down to use two cranes to lift one object. This is a popular configuration if you are lifting something that exceeds the capacity of one crane and don't have access to simply get a larger crane to make the lift.

Disadvantages:

Now, with all those advantages there is one disadvantage to this device. Because of the single point lift on the top there is a bending moment in the beam which means they tend to be much larger and heavier than an equivalent spreader bar. In other words a 10 ton spreader bar would be significantly lighter and potentially cheaper than a 10 ton spreader beam. With multiple lugs on the bottom they also don't lend themselves to being adjustable or telescopic very easily.

If you are performing a complex large lift, it can be common to use multiple spreader bars stacked on top of each other in order to spread the load between more points. These lifts are common using between 3, 7 or even more pieces of lifting equipment. With each new layer, you lose the height of the slings so these lifts often require a really tall crane in order to have enough hook height for all the rigging. If you are attempting a multi-beam lift, a lift engineer can help you plan and specify appropriate hardware/rigging to perform the lift safely.