

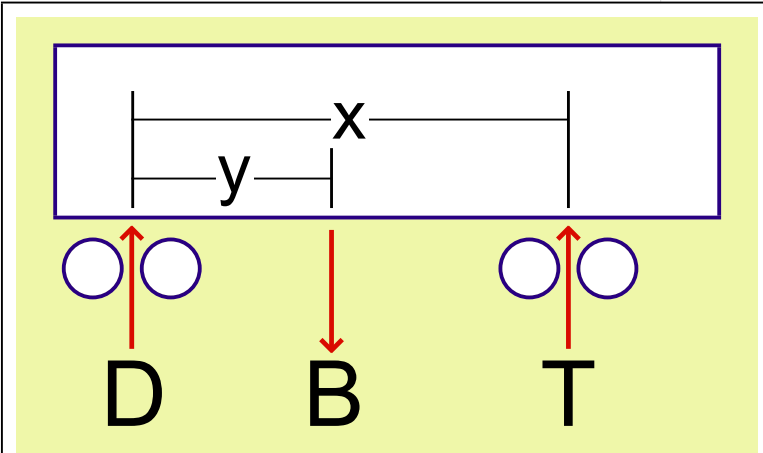
How Axle Weights Work

Step 1. Arrange pallets to set the value of y. Example:

Step 2. If necessary, slide tandems to balance the drive and tandem axles ($D \approx T$).

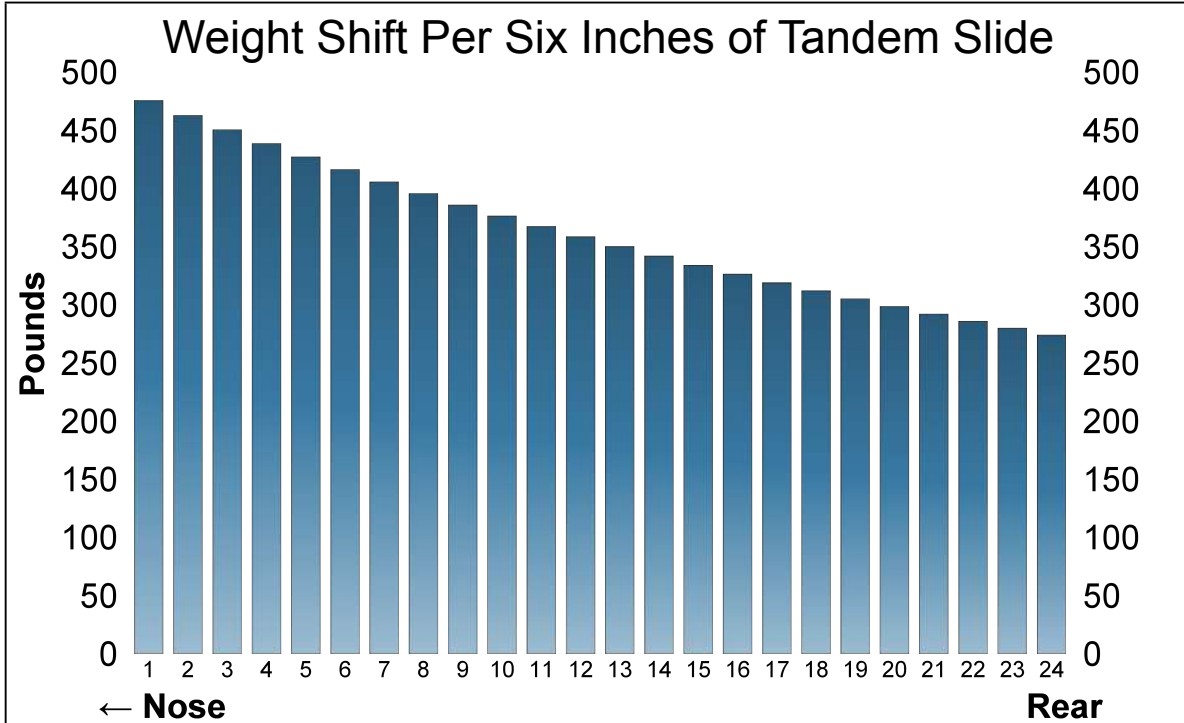
Step 3. If necessary, slide fifth wheel to fine-tune the drive and steer axles.

Targets { 12000 steers (advisable)
34000 drives (max legal)
34000 tandems (max legal)



x = kingpin to center of tandems
y = kingpin to balance point of box
B = total weight of box
D = weight of box on drive axles
T = weight of box on tandems
M = y × B

$$T = M \div x$$



As the chart above shows, since $T = M \div x$ is not a linear equation, the amount of weight per slider hole gradually decreases toward the rear.

Chart assumes an empty 53' box (excluding axle assembly) that weighs 15000 pounds with balance point in middle (318 inches from nose) loaded with 18 pallets weighing 2500 pounds apiece arranged in the pattern above (45000 pounds total with balance point 275 inches from nose). Further assumptions: distance from nose to kingpin is 36 inches, distance from center of trailer tandems to center of rear trailer axle is 30 inches, adjacent slider holes are 6 inches apart, and distance from kingpin to center of rear axle is 40' when slider pin is in fourth useable hole away from nose (chart begins with first one). Under these assumptions balance point of loaded box is $(0.25 \times 318 \text{ inches}) + (0.75 \times 275 \text{ inches}) \approx 286$ inches away from nose. Subtracting nose-to-kingpin distance (36 inches) produces $y = 250$. Since $B = 15000 + 45000 = 60000$, the value of M is $250 \times 60000 = 15$ million. The value of x when slider pin is in first useable hole from nose is 40' minus 30 inches minus 18 inches. This equals 432 inches. Height of first bar in chart (amount of weight shifted from first to second hole) is therefore $T(\text{first hole}) = (15 \text{ million}) \div 432 \approx 34722$ pounds minus $T(\text{second hole}) = (15 \text{ million}) \div 438 \approx 34247$ pounds. This equals 475 pounds. Other bars are calculated similarly. A chart of hole-to-hole weights for trailers with slider holes spaced four inches apart would look the same with weights roughly two thirds the weights above. *Balance point* is point at which load balances perfectly without tipping.