Federal Legal Weight

The purpose of the Federal Bridge Weight Formula is to control the overstressing of bridges on the Interstate System.

Weights must be checked against the Bridge Formula to make sure equipment meets Federal weight limits. This formula is used to determine the maximum total gross vehicle weight (GVW) *and* the maximum axle group weight.

Rules

**Compliance may limit GVW to a total weight lower than the standard 80,000lb. **

Compliance may limit a single axle to a weight lower than the standard of 20,000lbs.

Distance or "*spacing*" between axle groups is measured from center of the *first* axle in the group to the center of the *last* axle in the next group.

In order to be compliant, the distance between all axle groups must comply with the bridge formula – see examples below – *this can be very complicated!*

Axle spacing is rounded to the nearest whole number. (31'8" = 32')

Permissible load weights are rounded to the nearest 500lbs (this may require rounding *down*).

Exception

Two consecutive tandem groups may weigh up to 34,000lbs each as longas the distance between those two axle groups is over 36'

Steer axle weight is limited to 550lbs/inch width of tire tread. Metric tire sizes are converted to inches by dividing by 25.4 and rounding *down* to the nearest .5".

Example – 11" steer tires
11 x 2 tires = 22
22 x 550 = 12,100lbs
12,100lbs

Example – 385mm steer tires

385mm / 25.4 = 15.157 rounded to 15”
15 x 2 tires = 30
30 x 550 = 16,500lbs

Single axle group weight is limited to 500lbs/inch width of tire tread. Metric tire sizes are converted to inches by dividing by 25.4 and rounding *down* to the nearest .5.

Example 1 – *dual* (4)11” tires
11 x 4 = 44
44 x 500 = 22,000
Maximum *single weight is limited to* 20,000lbs

Example 2 – *single* (2) 295mm tires
295mm / 25.4 = 11.6 rounded to 11.5”
11.5 x 2 tires = 23
23 x 500 = 11,500lbs (no rounding required)

Example 1 Tandem Axle Exception – Consecutive tandem axle groups with distance between groups of 36’
34,000 + 34,000 = 68,000lbs maximum

Example 2 – Consecutive tandem axle groups with distance between groups of 31’8”
31’8” rounded up to the nearest whole number = 32’
Bridge formula for a group of 4 axles with a spacing of 32’ = 63,500lbs maximum

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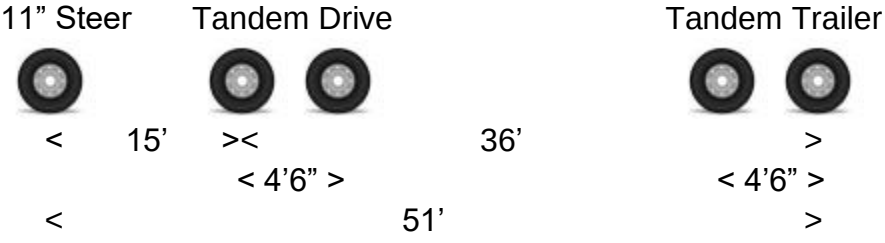
Example 1 complete 5 axle tractor/trailer combination



Weights
Steer = 12,000lbs
Drive = 34,000lbs
Trailer = 34,000lbs
Steer to Drive = 12,000 + 34,000 = 46,000lbs

Drive to Trailer = 66,000lbs – *exemption* for consecutive tandem groups with 36’ group distance allows 34,000lbs + 34,000lbs = 68,000lbs
Steer to Trailer = 80,000lbs
Total GVW = 80,000lbs
All measurements are compliant!

Example 2 – complete 6 axle tractor/trailer combination

11” Steer Tandem Drive Tandem Trailer

< 15’ >< 41’ >
< 4’6” >
< 9’ >
< 56’ >

Weights
Steer = 12,000lbs
Drive = 34,000lbs
Trailer = 42,500lbs
Steer to Drive = 12,000lbs + 34,000lbs = 46,000lbs
Drive to Trailer = 76,500lbs
Steer to Trailer = 83,000lbs

Problem
12,000 (steer) + 76,500 (drive to trailer) = 88,000lbs
Steer to trailer = 83,000lbs
Over 80,000 max GVW

Solution – 12,000lbs (steer) + 28,000lbs (drive) + 40,000lbs (trailer) = 80,000lbs
Any combination of weights under 80,000lbs between the steer, drive and trailer groups will satisfy the bridge formula so long as the steer is below 12,000lbs, tandem drive is below 34,000lbs, and the trailer is below 42,500lbs

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