

Solutions “G”

Truck “G” Five axle semi combination

The steering axle weight is determined by taking the tire size (11 inches) times 600 pounds per inch of tire surface. $11 \times 600 = 6600$ pounds per tire. (Note the tire weight handout for quick reference). Also we must consider the manufacturer's weight rating on the tire and take whichever is less. In this case, the manufacturer's rating is 7,000 pounds per tire which is more than the 600 pound per inch of tire surface law allows. So we must use the 6600 pound weight per tire to determine the steering axle weight. 6600×2 (two tires on the steering axle) = 13,200 pounds and is the maximum allowable steering axle weight.

Both the drive axles and the trailer axles are spaced as legal “tandem” weights which allow 34,000 pounds per tandem on either a 9 or 10 ton route.

The maximum allowable “internal table weight” is determined by the measurement between the first axle of the drive axle and the last axle of the trailer. This is shown on truck “G” as 36 feet. To determine the maximum allowable weight for that spacing you must go to the gross weight table, down the left side to the 36 foot line and go right to the 4 axle (number of axles in this measurement) column. The blue box notes that two consecutive tandems with a 36 foot measurement can carry a gross weight of 34,000 pounds each with a total of 68,000 pounds combined. The allowable internal table weight is 68,000 pounds.

The maximum allowable weight on a 9 ton route is 80,000 pounds for this configuration as no 9-ton axle limits are violated. This law changed effective August 1, 2009 as prior to that law change the gross weight on a 9-ton route would have been 73,280.

The maximum allowable weight on a 10 ton route is also 80,000 pounds. (Note looking at the gross weight table, 5 axles spaced 51 feet is the minimum distance needed for 80,000 pounds on the table. Any distance less than 51 feet would take away from the maximum allowable gross weight. (example: 49 feet would change the maximum to 79,000 pounds).

In this example, the steering, drivers, and trailer axle weights are the same on both 9 and 10 ton roads. A common weight distribution could be steering 12,000, drivers 34,000, trailer 34,000 for a maximum gross of 80,000 pounds. Note that if the distance on the “internal table weight” was less than 36 feet, it would reduce the weight on the trailer. (example a measurement of 34 feet on the last 4 axles would maximize that weight at 65,000 pounds...that weight could be distributed up to 34,000 pounds per tandem, but not both tandems, as that would exceed the 65,000 pounds allowed.)

Restricted Weights

Look at chart "I" the Minnesota restricted gross weight table. The steering axle on a 5 ton route is limited to 10,000 pounds. Note each tandem (drive axle and trailer axle) is limited to 18,889 pounds. Though there is no gross weight restriction in law, the maximum allowable is limited to what the axles can carry. In the 5 ton example it would be steering = 10,000, drivers 18,889, trailer 18,889 which would mean a gross weight in excess of 47,778 would indicate an overweight somewhere on the vehicle.

On a 7 ton route the steering would be limited by size to 13,200 pounds (less than the 14,000 pounds a single axle can carry on a 7 ton route.) Again looking at the chart "I" tandems are allowed 26,444 each. The maximum weight without an overweight somewhere on the truck would be steering = 13,200, drivers 26,444, trailer 26,444 for a possible total of 66,088. This weight may not be possible to attain as usually a truck cannot get 13,200 pounds of weight on the steering axle of a semi without exceeding the 26,444 pounds on the drive axles.

10% Weight Increases

The non 10% allowable steering axle weight is 13,200 pounds. An additional 10% (1320 pounds) would make the steering axle 14,520 pounds which would, in this case, exceed the manufacturers rating of 14,000 pounds (7,000 pounds per tire). So the 10% increase on the steering would end at 14,000 pounds (the rated and correct steering axle weight.)

Each tandem is legal at 34,000 pounds, thus would be allowed an additional 3400 pounds each maximizing the tandem weights at 37,400 pounds each. Note that the internal table weight (68,000 pounds) allows an additional 6800 pounds making that weight allowable to 74,800 pounds. This is exactly what the new tandem weights will allow (37,400 + 37,400 = 74,800). If the internal table weight would have been less than 36 feet, the total weights of the two tandems could not exceed that internal table weight.

On either a 9 or 10 ton route, the maximum allowable weight during the 10% increase on a 5 axle truck is 88,000 pounds as long as individual axle weights are not violated. The maximum axle weights used to transport that weight would be steering 14,000 pounds, drivers 37,400, trailer 37,400 pounds.

Note when you add the maximums they equal 88,800 pounds. This would be excessive weight and not be legal to haul, as 88,000 is the maximum.

Registration Increase & permit?

If the registered weight on the cab card is exceeded by more than 1000 pounds, or 4%, (whichever is greater) the registered weight (license plate weight) must be increased to the weight hauled. This is always true.

A transportation permit is needed during harvest for any state highway but not valid on an Interstate highway.

During the winter weight increase a transportation permit is needed ONLY on an Interstate highway. (I-94, I-35 etc).

Always check with local agencies (city, county and township) prior to increasing any weights on their routes.

2009 Legislative Change:

As noted above, the 2009 legislature changed the law effective August 1, 2009 to remove the 73,280 gross weight limit for routes less than 10-ton. However, axle loads for routes less than 10-ton must be legal when hauling the additional gross weight. The 5 axle semi used in this example has the same weights for 9 or 10 ton routes as “tandem” weights are identical for either. But, if your trucks have “single” axles, or axle groups spaced to the extent they are single axles. Those single axle loads must be legal. If you had a two axle pup trailer with a 10-foot spacing towed by a common 3 axle dump truck the 80,000 pound gross weight still applies but those single axles would be only allowed 18,000 pounds whereas on a 10-ton route they would be allowed 20,000 pounds. So, in building your load to the new 80,000 pound possibility, remember to comply with the load limits for the road, including single axle load limits.

Important!

It’s very important to make sure you consider the “internal” table weight. The length (demonstrated in truck “G” as 36 feet) must be considered. Without enough length between axles, there could be violations of “combined” weight where no individual axle is, by itself, in violation.

As noted in the example, IF the internal measurement was 34 feet, (not 36 as shown) and IF each tandem was loaded to it’s individual maximum (34,000 pounds) there would be a weight violation of 3,000 pounds. Where? Remember that 4 axles spaced 34 feet apart are allowed a combined weight of 65,000 pounds. (see gross weight table, 4 axles spaced 34 feet). But if you loaded each tandem to it’s legal limit (34,000 pounds) they would total 68,000 pounds which would exceed the consecutive (table) axle weight allowed (65,000 pounds) by 3,000 pounds and could result in a citation and fine. Remember to measure.