

Solutions ‘F’

Truck ‘F’ Five Axle (dual tires on all rear (4) axles)

The maximum allowable weight is computed by going to the gross weight chart. Go down the left side to 26 feet (the distance between the first and last axle of the truck), then go across to column 5 (which is the number of axles in the measurement) and you will find 64,500 pounds. This is the maximum allowable weight for this truck if the 64,500 pounds were to be legally distributed within the maximum allowable weights of the axles in the measurement (no overweight axles).

The steering axle weight is noted as “metric”. In order to find the maximum allowable weight it is necessary to convert metric size to inches. Since the metric tire size is 345mm, that number must be divided by 25.4 to find the measurement in inches. That number is 13.58 inches (rounded to 13.6 on the tire chart handout). Since the steering axle is allowed 600 pounds of weight per inch of tire size we must multiply the 13.6 by 600 to get the weight per tire. That weight is 8160 pounds per tire. Assuming both tires are the same size, this weight (8160#) multiplied by 2 gives the maximum allowable weight (16,320#) on the steering axle unless the rating is less. The tire rating is 8000 pounds per tire. This weight, (8000#) multiplied by 2, gives the maximum allowable “rated” weight as 16,000 pounds (both tires). The tire “size” weight per inch (both tires) is 16,320 pounds.

The rating, 16,000 pounds is the lesser thus it is the maximum allowable weight of the steering axle on this truck.

The rear group of axles is commonly called a “quad” axle..(Meaning 4 axles in a group). There is no definition of “quad” in Minnesota state law. This rear group’s weight is calculated by measuring the distance from the first axle in the “quad” group to the last. In this case it is 13 feet. Looking at the gross weight chart, 4 axles spaced 13 feet allow a maximum allowable weight of 51,000 pounds. This would be the maximum weight allowed on this group unless individual tire weights would be exceeded. (Exceeding the rating or size limits of a single tire). Since these axles all have duals, we are making an assumption, in this example, that there are no issues of overweight with tire sizes or ratings.

If you are operating on a 9-ton route, none of the axles within the group can individually exceed 18,000 pounds. If you’re on a 10-ton group, none can exceed 20,000 pounds.

The actual legal weight of this truck is 64,500 pounds. Note that if you add the steering axle weight of 16,000 pounds, and the rear group of 51,000 pounds you have a total weight of 67,000 pounds. This exceeds the table weight for 5 axles spaced 26 feet which only is allowed 64,500 pounds. This example shows the need to continually compare the sum of the axle weights with the table of weights and **use whichever is less.**

Restricted Weights

Look at the restricted gross weight table chart “I”.

The steering axle weight on a 5 ton road would be 10,000 pounds. On an 8 ton road it would be 16,000 pounds. Since the maximum legal weight on the steering axle is 16,000 pounds adjustments would have to be made (to 10,000 pounds) on the 5 ton route. The 16,000 pounds on the steering axle will remain the weight for an 8 ton. The rear group on this truck found on the lower numbers on the restricted gross weight table which is for four axles spaced within 14 feet or less. On a 5 ton route the rear group would be allowed 28,611. On an 8 ton route the rear axle group would be allowed 45,778.

10% Weight Increases

The maximum weight possible is whatever the weight on the gross weight chart allows plus 10%. This truck is allowed 64,500 pounds by the chart. When a 10% increase is allowed, the truck cannot gross more than 70,950 pounds (64,500 + 6,450) and then only when the axles are within their legal limits. If it's not monitored, there are occasions where the axle weight increases may imply more gross weight than the increased chart limit would allow. In this example it happens..Be careful!

The maximum allowable (non 10% increase) steering axle weight is 16,000 pounds and already at the “rated” weight so no increase would be allowed on the steering axle.

The maximum allowable (non 10% increase) weight on the rear 4 axle group is 51,000 pounds. Add to that a possible 10% increase of 5100 pounds totals 56,100 pounds. The 10% increase on the individual axle groups on this truck would imply 16,000 pounds on the steering and 56,100 pounds on the rear axle group for a possible total weight of 72,100 pounds. **THIS IS NOT THE LEGAL WEIGHT.** Remember that the gross weight chart allowed this unit (prior to any increases) to gross 64,500 pounds. If you add the 10% to that weight you have $64,500 + 6,450 = 70,950$. **This would be the legal weight of the vehicle with the 10% increase.**

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 in Minnesota only.

A transportation permit is needed during potato, carrot or sugarbeet 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.

Note: Transportation for certain forest harvests require unique permits. Check first with MN/DOT permit office for details.