

Solutions ‘E’

Truck ‘E’ Four Axle (single ‘lift’ axle in rear axle group)

The maximum allowable weight is computed by going to the gross weight chart. Go down the left side to 24 feet (the distance between the first and last axle of the truck), then go across to column 4 (which is the number of axles in the measurement) and you will find 58,000 pounds. This is the maximum allowable weight for this truck if the 58,000 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. Note the text box on sheet “E”. Since the metric tire size is 295mm, that number must be divided by 25.4 to find the measurement in inches. That number is 11.614 inches (rounded to 11.6 on the tire chart handout). Since the steering axle is allowed 600 pounds of weight per inch of tire size we must multiply the 11.6 by 600 to get the weight per tire. That weight is 6960 pounds per tire. Assuming both tires are the same size, this weight 6960 multiplied by 2 gives the maximum allowable weight (13,920#) on the steering axle unless the rating is less. The tire rating is 3450 kilograms per tire. This also should be converted to “pounds” to determine if it exceeds the allowable 600 pounds per inch weight. To convert the metric to pounds take the 3450kg times 2.2 which converts the metric 3450kg to 7590 pounds per tire. This weight in pounds (7590) multiplied by 2, gives the maximum allowable “rated” weight as 15,180 pounds. The tire rating allowable weight is 15,180 pounds.

The tire weight per inch allowable weight is 13,920.

13,920 is the lesser thus is the maximum allowable weight of the steering axle on this truck.

The difference from “C” and “D”

The last three axles of this truck are spaced 10 feet 7 inches apart. This is not a tridem as the measurement exceeds 9 feet. The axle group is limited to a maximum of their tire ratings or a weight calculated by the tire size multiplied by 500 pounds per inch (whichever is less) up to the maximum group weight allowed on the chart. This means that the maximum axle weights could individually be up to 18,000 (9-ton) or 20,000 (10-ton) as long as the group chart weight was not exceeded.

The 3 axle weight is found by going down the left side of the gross weight chart to the 11 foot measurement (note if the real measurement is 6 inches or greater (10 feet-7 inches) you can use the next foot (11). From the 11 foot measurement, move to the right on the chart to the 3 axle column. This shows 44,500 pounds. This is the weight that can be hauled on the last three axles as long as the tire ratings or weight per inch (500#) is not exceeded. Because the first axle in the group is a single tire, the tire size is important. These 10 inch tires can haul 5,000 pounds each (their rating is also 5000 pounds). The way this truck’s rear axle group is displayed it can

gross a maximum of 44,000 pounds. The first axle (lift) can weigh 10,000 pounds. The other two are a tandem group which can, together, gross 34,000 pounds which totals 44,000 pounds when combined with the first (lift) axle.

Keep in mind that each of the two axles that make up the tandem (last two axles) cannot individually exceed 18,000 pounds on a 9 ton route, or 20,000 pounds on a 10 ton route.

The actual legal weight of this truck is 57,920 pounds. (Steering 13,920, rear group 44,000 pounds = 57,920. (Only 80 pounds from the allowable weight of 58,000)

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 a 7 ton road it would be 14,000 pounds. Since the maximum legal weight on the steering axle is 13,920 pounds adjustments would have to be made (to 10,000 pounds) on the 5 ton routes only. The 13,920 pounds will remain the weight for a 7 ton.

The rear group on this truck is not a tridem and the weights used on the weight chart "I" for a tridem would not be valid.

The first axle of the rear group is limited to 10,000 pounds due to its rating. That weight is also the legal weight for a 5 ton road. The other two axles can be treated as a tandem. A tandem weight on a 5 ton road is 18,889 pounds. The two added together equal the 5 ton weight for the rear axle group of 28,889 pounds. On a 7 ton road the first axle of the rear group is still locked into 10,000 pounds due to the rating. The second two axles, a tandem, would be allowed by chart "I" 26,444 pounds. The total of all the axles in the rear group would be 36,444 pounds. Because of the single tire in this group, the single tire would not be able to exceed 10,000 pounds on any road, in any group because it is at its maximum rating.

10% Weight Increases

The maximum weight possible is whatever the weight on the gross weight chart allows plus 10%. This truck is allowed 58,000 pounds by the chart. When a 10% increase is allowed, this truck cannot gross more than 63,800 pounds (58,000 + 5,800) 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. Be careful!

The maximum allowable (non 10% increase) steering axle weight is 13,920 pounds. Add to that an additional 10% (1,392 pounds) computes to 15,312 pounds. The rated weight computed to 15,180 pounds. The 10% increase would be allowed up to the rated weight of 15,180. (Only 132 pounds short of the 10% possible).

The maximum allowable (non 10% increase) weight on the rear 3 axle group is 44,500. Add to that a possible 10% increase of 4450 pounds totals 48,950 pounds. Because the single tire lift axle is a 10 inch tire, rated at 5,000 pounds there can be no increase on this axle. The other two axles are spaced as a tandem and normally

allowed 34,000 pounds. Add 10% to that for a new increased gross of 37,400 pounds. Now add the lift axle (10,000 pounds) and the rear axle group can haul 47,400 pounds (10,000 + 37,400 = 47,400 pounds.)

The 10% increase on this truck would allow 15,180 on the steering and 47,400 pounds on the rear axle group (as previously distributed) for a total of 62,580. This is very close to the 63,800 pounds the gross weight table allows. (4 axles at 24 feet = 58,000 + 10% (5800) = 63,800 pounds.

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.