

How to weigh

This process is a relatively easy one, but can get a little complicated depending on how many wheels or axles you want to weigh, and by how many individual scales are available.

First, let's set some terminology for the purpose of this document. A "scale" is the device that tells how much something weighs, like a bathroom scale. A "weigh station" is where the scales are located, like at a truck stop.

Okay now, let's start weighing!

If you are doing this at a truck stop, you may need to pay a small fee for each weight reading you do. It might be best to check first to see what the best process will be for what you are trying to do and how much it will cost. You will probably get a slip of paper that shows each weight reading that you do, so you won't need to write anything down right away.

If you use a weigh station along the highway, you may be able to do this for free! Try to pick a time that the commercial traffic is low or not using them. That way you won't have to be in a hurry. Many weigh stations, when they are closed, will turn the scale read-out machine around so that you can see it from a window. You will need to write the weights down as you do them.

Alright, here are the weights we are after:

1. Front tow vehicle axle weight (A or D below).
2. Rear tow vehicle axle weight (B or E below)

And if you have a trailer with you...

(If you don't have a trailer, ignore the parts below that talk about weighing the trailer.)

3. Trailer hitch (or pin) weight (H below).
4. Trailer weight (J below).

First we'll start with just one scale at the weigh station.

Put each tow vehicle axle on the scale one at a time. Then put the trailer axles on the scale. Write the weights down here.

	First pass	Second pass
A. Front axle	_____	_____
B. Rear axle	_____	_____
C. Trailer axles	_____	_____

(I'll explain shortly what the "First pass" and "Second pass" are all about.)

Pull off the scale and find a place that you can park the trailer and unhitch it. Go back and weigh the front and rear tow vehicle axles again. Write down the weights here.

D. Front axle	_____
E. Rear axle	_____

We'll deal with the math shortly.

If there are 2 scales at the weigh station:

Put each tow vehicle axle on a separate scale. Write the weights down here.

	First pass	Second pass
A. Front axle	_____	_____
B. Rear axle	_____	_____

Pull forward and put the trailer axles on one of the scales, it doesn't matter which one. Write down the weight here.

C. Trailer axles	_____
------------------	-------

Pull off the scale and find a place that you can park the trailer and unhitch it. Go back and weigh the front and rear tow vehicle axles again. Write down the weights here.

D. Front axle	_____
E. Rear axle	_____

Hold on, we're getting to math.

Now if the weigh station has 3 scales, this is easy! Pull your entire rig onto the scales so that the front tow vehicle tires are on one scale, the rear tow vehicle tires are on another scale, and the trailer tires are on another scale. Write down the weights here.

	First pass	Second pass
A. Front axle	_____	_____
B. Rear axle	_____	_____
C. Trailer axles	_____	_____

Pull off the scale and find a place that you can park the trailer and unhitch it. Go back and weigh the front and rear tow vehicle axles again. Write down the weights here.

D. Front axle	_____
E. Rear axle	_____

Now it's time to do the math.

$A - D = F$, or the weight added to (or subtracted from) the front axle from the trailer tongue (or pin) weight (via the weight distribution hitch, if equipped). If weight was taken off the front axle, you may need to make some adjustments in your hitch setup.

$B - E = G$, or the weight added to the rear axle from the trailer tongue (or pin) weight (via the weight distribution hitch, if equipped).

$F + G = H$, or the total trailer tongue weight from the trailer tongue weight (via the weight distribution hitch, if equipped), or the total fifth wheel pin weight. For trailers (not fifth wheels), this is not your actual tongue weight, but the tongue weight that is being transferred to the tow vehicle through the use of the spring bars on the weight distribution hitch.

$C + H = J$, or the total trailer weight. This number should be less than or equal to the trailer's GVWR. If not, you have overloaded your trailer!

It is important that A, B, D or E do not exceed the tow vehicle's front or rear gross axle weight ratings (GAWR). If they do, you may experience premature wear of several components in your suspension and/or drive train.

While you are checking the GAWR's, check the load ratings on the tires. Make sure the load rating for the 2 rear tires adds up to more than the rear GAWR, and the same for the front. If the tire load ratings do not add up to more than the GAWR, you may need to upgrade the tires to a higher load rating. But if the actual weights of the axles do not exceed the tire load rating of the tires, then you should be okay.

First pass/Second pass

If you want to figure out what the actual tongue weight is for your trailer (not fifth wheel) and you

are using a weight distribution hitch, you would need to take another pass across the scales, but without the spring bars attached to the trailer. For example, with the 3-scale procedure, you would pull the tow vehicle and trailer onto the scales with the spring bars attached in the normal traveling position and get a weight reading. Write these numbers under "First pass". Then, while leaving the tow vehicle and trailer in place, unhook the chains from the snap-up hooks on the trailer and get another reading. Write these numbers under "Second pass". Your actual tongue weight would be the difference of the front and rear axle weight from the second pass (A+B) compared to the front and rear axle weight without the trailer attached (D+E). Comparing the first pass to second pass numbers will also show you what your weight distribution hitch is actually doing with all of that tongue weight you have. **DO NOT** travel very far without the spring bar chains attached to the snap-up hooks!!!

If you want to see how much each trailer axle weighs, that's simple. Just put each axle on a scale one at a time. It would help if you have someone to tell you when to stop as you pull the trailer forward onto the scale. Otherwise, you may need to pull forward or back up a few times to get just the one axle on the scale.

You can also see if the tow vehicle and/or trailer are loaded evenly side-to-side by doing any of the above steps with the tires of just one side on the scales at a time. Again, it might help if you have someone to tell you when to stop.

Another set of weights that was mentioned earlier were the front and rear axle weight ratings (or GAWR), which you can also find on the same sticker on the inside frame of the driver's door or in the engine compartment.

For fifth wheel's, almost all of the pin weight will be placed directly on the rear axle, while a small amount will go up front. Is the rear GAWR enough to handle the load?

For trailers that do not use a weight-distributing hitch (usually when the TW is less than 500 pounds), all of the TW will be placed on the rear axle. Is the rear GAWR enough to handle the load?

For trailers that do use a weight distributing hitch (TW over 500 pounds), the TW should be distributed between the front and rear axles of the tow vehicle as well as some moved back to the trailer axle(s). Are the GAWR's enough to handle the load? Just for argument sake, lets assume the worst situation. This would not be an ideal situation, but it could happen, where the weight-distributing hitch is not set up properly or is unable to distribute the TW to both front and rear axles and the TW is places entirely on the rear axle. Is the rear axle strong enough?

If you could answer yes to these GAWR questions, then you have selected a tow vehicle capable of towing the desired trailer.

It is strongly recommended to stay under the GAWR's, GVWR, GCWR and TGVWR. The manufacturer's came up with these numbers for a reason, and there is plenty of debate as to the validity of these numbers. Performance from the tow vehicle will begin to suffer the closer you get to the GCWR. When possible, get more tow vehicle than you think you will need to give you that extra margin of performance. You may be sorry if you don't!

Need to find a scale near you? Try Flying J (<http://www.flyingj.com/>) truck stops, or look for other weigh stations, rest areas, fuel and more this website (<http://www.dieselboss.com/restarea.asp>).

