

Light Vehicle Weight Management

Navigating Weight Limits and Terminology

Background

Vehicles with manufacturer weight ratings greater than the legal road limits can load to these limits without fear of overloading equipment. For example, in Alberta, a tandem axle group with 8 total tires is limited to 17,000 kg (37,400 lbs) on most public highways [1]. Tandem drive axle and suspension manufacturer weight limits over 18,180 kg (40,000 lbs) are common in Class 8 trucks [2, 3]. A truck equipped with this type of axle limit can be loaded up to the legal maximum without fear of exceeding the manufacturer's limits.



For lighter vehicles, weight limits need to be determined from manufacturer and registration information. No single individual limit, such as registered Gross Vehicle Weight (GVW) or an axle's limit, can be exceeded. For the purposes of this bulletin, examples of light vehicles include units like a pickup truck pulling a tandem axle bumper-pull dump trailer or a one-ton dually crew cab that occasionally pulls a gooseneck trailer.

This bulletin will discuss terminology related to weights and towing, commercial vehicle registration considerations for Alberta, and present a checklist light and heavy vehicle operators alike can use to ensure a vehicle combination's different weight limits are taken into consideration.

Terminology

Here are explanations for common terms related to towing and loading vehicles.

Tare

Tare weight is the empty or unloaded weight of a vehicle and is a decal requirement for some commercial vehicles [4]. While Tare is often spelt "TARE", it is not an acronym and instead a word defined as the difference in weight between an item's gross weight and its net weight [5].

GVW

GVW stands for "Gross Vehicle Weight". Sometimes, the acronym GVWR is used which stands for "Gross Vehicle Weight Rating"; GVWR means the same as GVW. There are two types of GVWs carriers need to keep in mind: registered GVW and manufacturer's GVW.

Registered GVW

Commercial vehicles in Alberta that are not buses must be registered with a GVW and cannot be operated on public roadways at more than that weight [6]. This number is provided by the person registering the commercial vehicle to a registry agent; more information about registration will be provided in a later section.

This GVW number will be put on the vehicle's registration certificate and may not be the same as the manufacturer's GVW. However, the registered GVW needs to be an accurate reflection of the maximum operating weight of the vehicle. As a result, the vehicle should never weigh more than its registered GVW.

Registered GVW continued...

By extension, the registered GVW should never be less than the Tare weight of the vehicle. It is not possible for the vehicle to weigh less than its Tare, so its registered GVW must always be a reasonable amount higher.

Registered GVW must also take into consideration any trailers/cargo/accessories. If a vehicle is going to be pulling a trailer, the registered GVW must not be exceeded by the entire vehicle combination when the trailer is attached.

Manufacturer's GVW

The manufacturer's GVW is the maximum weight of the vehicle according to the engineers that built it. This number does not need to be the same as the registered GVW. A commercial vehicle in Alberta can register lower than the manufacturer's GVW as long as the owner/driver of the vehicle does not operate the vehicle over the registered amount [6].

The manufacturer's GVW may or may not include trailers. This will be explored further in the following section on GCVW and GCWR.

GCVW and GCWR

GCVW stands for "Gross Combined Vehicle Weight" or "Gross Combination Vehicle Weight"; you may also see GCWR, "Gross Combined Weight Rating", a term that is the same as GCVW. This is the maximum weight of a vehicle and any trailers being pulled by it.

GCVW/GCWR should encompass a power unit's towing capacity. It is generally the GVW of the power unit plus the power unit's towing capacity, but the calculation may not be this simple. The GCVW/GCWR should be obtained from the manufacturer since a vehicle operating at its full towing capacity may be restricted in other areas.

It is common for newer vehicles and light trucks to have the GCVW/GCWR listed on the sticker on the driver's door frame. Sometimes, the GVW of just the power unit may be given separately. This door sticker may also include the axle weight limits for the vehicle.

It can be difficult to figure out a light truck's GCVW/GCWR if it is not listed in an obvious location by the manufacturer. You might see a GVW that makes sense for the truck by itself but doesn't seem high enough to accommodate a trailer. Contact the vehicle's manufacturer or authorized dealer to determine the maximum weight of the vehicle plus trailer.

Towing Capacity

Towing capacity is the maximum weight of a trailer that can be safely towed by a vehicle. This number may change depending on whether the trailer is equipped with brakes or not and how it hitches to the power unit. Additionally, there are likely local laws related to trailer brakes for lighter vehicles.

The manufacturer may also set towing limits for the length, front area, and side profile of trailers being towed. This is done to reflect the effects of forward and cross winds on the trailer and power unit. A small, low, and heavy trailer will handle better than a high, wide, and long trailer of the same weight. Any additional limits should not be exceeded.

Hitch Capacity

Hitches and their components have capacity limits. Ball-and-socket bumper-pull hitches have a towing weight limit as well as a tongue limit where the tongue limit is the maximum downward weight a trailer may put on the power unit's hitch.

Hitch components include weight distributing hitches, fifth wheel plates, mounting hardware, pins, safety chains, and anything else that is part of the manufacturer's system. It is important to make sure no individual component rating is exceeded; consult the manufacturer for specific information.

Axle Weight Ratings

Each axle of a vehicle has a maximum weight (trailers too). Even if a vehicle is under its GVW, no single axle may be over that axle's limit. Also, it is common for the individual axle weight limits of a vehicle to add up to more than the vehicle's GVW. In such a case, the vehicle must always have at least one axle under its limit.

When towing a trailer, some of the trailer's weight will be added to the power unit. The power unit's GVW and axle limits need to be within their limits once the trailer is hooked up, so a power unit that is at its GVW before hooking to a trailer will require some weight reduction before towing.

Registration

In Alberta, the GVW must be listed on registration certificates for commercial vehicles (except buses). Even a light vehicle like a minivan needs to have a registered GVW if it is to be used commercially. It is the responsibility of the person registering the vehicle to provide a GVW (registry agents do not act in an enforcement capacity). [6]

The registered GVW can never be less than the Tare weight, but it could be less than the manufacturer's GVW as long as the vehicle is never operated over the registered GVW [6]. Since commercial vehicle registration costs increase with vehicle GVW, a business using a commercial vehicle for less than its manufacturer's limit can save money by choosing a lower registered GVW. [6]

Commercial vehicles that are used for more than one purpose may benefit from dual registration; perhaps the company owner wants to use the company truck for personal reasons without having to keep a logbook, or maybe a single vehicle is sometimes used to transport a work crew and only occasionally pulls a trailer. [AMTA has a bulletin](#) about Alberta's dual registration program [7].

Checklist

It can be challenging to manage all this terminology and different weight limits. To simplify things, here is a vehicle combination checklist that summarises the concepts in the sections above:

1. Make sure the overall weight of the power unit and trailer(s) is less than the registered GVW.
2. Make sure the overall weight of the power unit and trailer(s) is less than the power unit's manufacturer's GCVW or GCWR.
 - a. If there is no listed GCVW/GCWR, contact the manufacturer or dealer. It is likely a number similar to the vehicle's GVW plus the towing capacity, but don't assume.

Checklist continued...

3. Make sure each individual axle is within its limit, including trailer axles.
4. Make sure the rating of the hitch and hitch components are not exceeded.
5. Make sure the trailer being towed is within the towing capacity of the power unit.
 - a. Ensure the legal and manufacturer requirements for trailer brakes are met.

Carriers can improve their safety and compliance program by taking the time to confirm the limitations of their various equipment combinations and communicating this information to their drivers.

Need Help? Contact AMTA

AMTA can provide carriers with guidance on the information presented in this bulletin. If you have any questions, please contact AMTA and our experienced staff will be happy to help. For your safety and compliance questions, please email Workplace Support Services (WSS) directly at wss@amta.ca.

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References

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