

Vehicle Trailer-Truck-Hitch Matching Checklist

A.1. Overview This checklist helps units match an appropriate vehicle to a specific trailer. Units that conduct trailering operations use this checklist. For non-standard boats, see the Non-Standard Boat Operator's Handbook, COMDTINST M16114.28 (series).

NOTE:

When obtaining weights, units ensure vehicles have a "normal" load in them. All weights are to account for passengers and gear in the vehicle and include the boat (weight calculations assume 220 pounds per person).

A.2. In This Section This section includes the following:

- Trailer-truck-hitch matching checklist.
- Self check for compatibility and safety.

A.3. Checklist: Trailer Trailer:

1. ___ GROSS TRAILER WEIGHT (GTW).
 - a. Obtain GTW from trailer, boat, and gear sitting detached from tow vehicle on scales.
 - b. Ensure boats are at full fuel level and loaded with whatever gear is normally onboard during trailering operations.
 - c. For utility trailers, use maximum GVWR of the trailer posted on identification plate.
2. ___ TRAILER TONGUE WEIGHT (TTW).
 - a. Obtain TTW from detaching the trailer with normal load from the tow vehicle.
 - b. Weigh only the weight produced by the jack stand or nose-wheel.
 - c. Adjust trailer to its tow height.

A.4. Checklist: Tow Vehicle Tow vehicle:

3. ___ BASE CURB WEIGHT (BCW).
 - a. Is the weight of the vehicle with fuel and no passengers or cargo.
 - b. Obtain BCW from the vehicle owner's manual or the manufacturer.
4. ___ GROSS VEHICLE WEIGHT (GVW).
 - a. Is the BCW plus the weight on any passengers and cargo.
 - b. Obtain GVW by detaching the trailer from the tow vehicle.

Vehicle Trailer-Truck-Hitch Matching Checklist

- c. Weigh the vehicle with the passengers and cargo onboard.
 - d. If crew and payload vary, use manufacturer's GVWR.
5. ___ GROSS AXLE WEIGHT – FRONT (FRONT GAW).
- a. Is the total weight placed on the front axle.
 - b. To determine FRONT GAW, drive vehicle with trailer attached to a scale and park only the front wheels of the tow vehicle on the scale.
6. ___ GROSS AXLE WEIGHT RATING – FRONT (FRONT GAWR).
- a. Is the total weight the front axle is capable of carrying.
 - b. Locate FRONT GAWR printed on the safety placard located on the driver's door.
7. ___ GROSS AXLE WEIGHT REAR (REAR GAW).
- a. Is the total weight placed on the rear axle during towing operations.
 - b. Place all four wheels of the tow vehicle leaving the trailer wheels off of the scale.
 - c. Subtract FRONT GAW from this number to obtain REAR GAW.
8. ___ GROSS AXLE WEIGHT RATING – REAR (REAR GAWR).
- a. Is the total weight the rear axle is capable of carrying.
 - b. Locate REAR GAWR printed on the safety placard located on the driver's door.
9. ___ GROSS VEHICLE WEIGHT RATING (GVWR).
- a. Is the maximum allowable weight of the fully loaded vehicle.
10. ___ GROSS COMBINATION WEIGHT (GCW).
- a. Is the weight of the towing vehicle and fully loaded trailer including passengers and any cargo.
 - b. To obtain GCW, add GTW and GVW.
11. ___ GROSS VEHICLE COMBINATION WEIGHT RATING (GVCWR).
- a. Is the maximum allowable weight of the towing vehicle and fully loaded trailer including passengers and any cargo.
 - b. Is typically located in the owner's manual or through local dealer.
12. ___ MAXIMUM TRAILER TOWING RATING (MTTR).

Vehicle Trailer-Truck-Hitch Matching Checklist

- a. Is the maximum amount the vehicle is designed to tow.
- b. Is typically located on a plate attached to the hitch frame.

A.5. Checklist: Hitch

Hitch system:

13. ___ HITCH CAPACITY (HC).
 - a. Is the weight that the hitch is designed to safely tow.
 - b. Is typically located on a plate attached to the high frame.
14. ___ TOW BALL RATING (TBR).
 - a. Is the weight that the towing ball is designed to safely handle.
 - b. Is typically stamped onto the top of the ball.
15. ___ TONGUE WEIGHT RATING (TWR).
 - a. Is the weight that the hitch system is designed to safely support.
 - b. Is typically stamped on the hitch frame.
16. ___ DRAW BAR TONGUE RATING (DBTR).
 - a. Is the tongue weight that the draw bar is designed to safely carry.
 - b. Is typically stamped on the top of the draw bar.

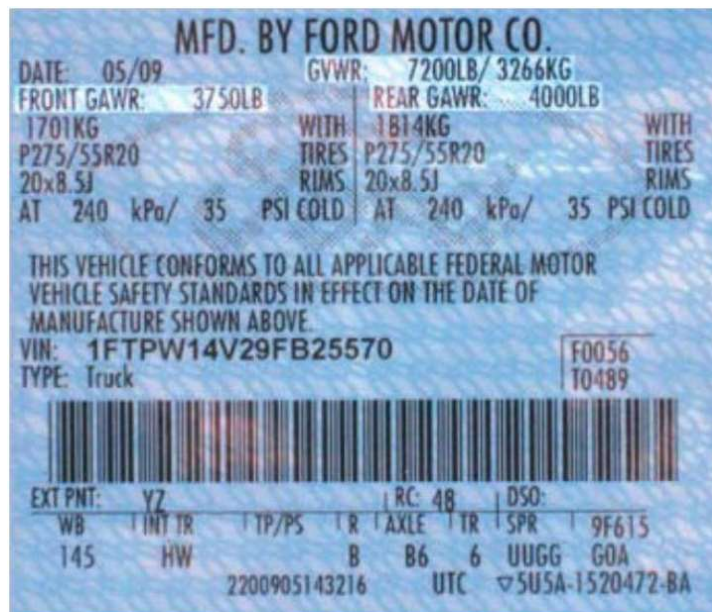


Figure 1 Typical manufacturer's identification label

Vehicle Trailer-Truck-Hitch Matching Checklist

A.6. Self Check for Compatibility and Safety

Self check:

1. ___ Is line 1 (GTW) less than line 12 (MTTR)?
 - a. If no, then vehicle is not authorized to tow trailer.
2. ___ Is line 2 (TTW) 10-25% of line 1 (GTW)?
 - a. If no, then trailer could be improperly loaded. 10-15% is an industry standard. Manufacturer's guidelines could be different.
 - b. Do not exceed manufacturer's recommendation for tongue weight.
3. ___ Is line 5 (FRONT GAW) less than line 6 (FRONT FAWR)?
 - a. If no, then front axle of tow vehicle is overloaded.
 - b. Redistribute weight or use a different hitch system to tow the trailer safely.
4. ___ Is line 7 (REAR GAW) less than line 8 (REAR GAWR)?
 - a. If no, then rear axle is overloaded.
 - b. Redistribute weight or use a different hitch system to tow the trailer safely.
5. ___ Is line 10 (GCW) less than line 11 (GVCWR)?
 - a. If no, then vehicle is not authorized to tow the trailer as loaded. Combination of vehicle and trailer are greater than vehicle manufacturer maximum capacity.
 - b. Remedies include:
 - (1) Increase the size of the tow vehicle to one with a higher GVCWR.
 - (2) Lower the GCW by removing gear or passengers.
6. ___ Is line 1 (GTW) less than line 13 (HC)?
 - a. If no, then vehicle is not authorized to tow trailer.
 - b. Do not exceed the capacity of the hitch system.
7. ___ Is line 1 (GTW) less than line 14 (TBR)?
 - a. If no, then vehicle is not authorized to tow trailer.
 - b. Do not exceed the capacity of tow ball rating.
 - c. Upgrade either tow ball or entire hitch system.
8. ___ Is line 2 (TTW) less than line 15 (TWR)?
 - a. If no, then exceeding the capacity of the hitch system.
 - b. Upgrade the hitch system to one with a higher TWR.

Vehicle Trailer-Truck-Hitch Matching Checklist

9. ___ Is line 2 (TTW) less than line 16 (DBTR)?
- If no, then exceeding the capacity of the draw bar.
 - Upgrade draw bar and/or hitch system.

WARNING:

Vehicle and trailer GVWR are based on ideal driving conditions. For conditions such as rough roads, adverse weather conditions and/or inexperienced drivers, loads are to be less than maximum capacity whenever possible. Trucking standards suggest 80% of maximum capacity when one or more of the above conditions are present. In severe weather conditions, trucking standards suggest 63% of maximum capacity.

NOTE:

Whatever weight is decided upon, ensure all components of the hitch and receiver are rated for the appropriate weight.

NOTE:

Units are to ensure that the trailer gross vehicle weight rating (GVWR) does not exceed the prospective tow vehicle tow capacity.