Choosing the Correct Ball or Pintle Mount

A.1. Proper Height Measurements and Typical Ball/Pintle Hitches

For safe and comfortable towing, ensure the trailer is as level as possible. A level trailer puts less strain on the connection between trailer and hitch, and it helps the trailer stay in line behind the vehicle.

All trailer manufacturers have recommended towing heights. The rule of thumb is to level to slightly up in the nose but never down. An exaggerated nose up attitude or nose down can cause stability problems.

Different trailer and vehicle heights could require a ball mount with a rise or drop. Follow these steps to determine the amount needed for rise or drop:

1. Use a hitch pin with cotter pin retainer to secure the pintle hook which is bolted to a mount on the trailer hitch receiver.
2. Inspect the pintle hook often for cracks or abnormal wear.
3. Check the pintle hook weight rating which is designed to safely handle tow capacities up to a given rating. The rating is often stamped onto the top of the hook.
4. Confirm the hook has a rating equal to or greater than the maximum towing capacity of the tow vehicle.

A.2. Measure Hitch Height

Follow these steps to measure hitch height:

1. Measure the hitch height from the ground to the top of the receiver opening on the trailer hitch. See Figure 1.
2. With the vehicle parked on level ground, measure to the top of the 2 inch hole on class III and IV hitches, and 2 ½ inch hole on class V hitches.

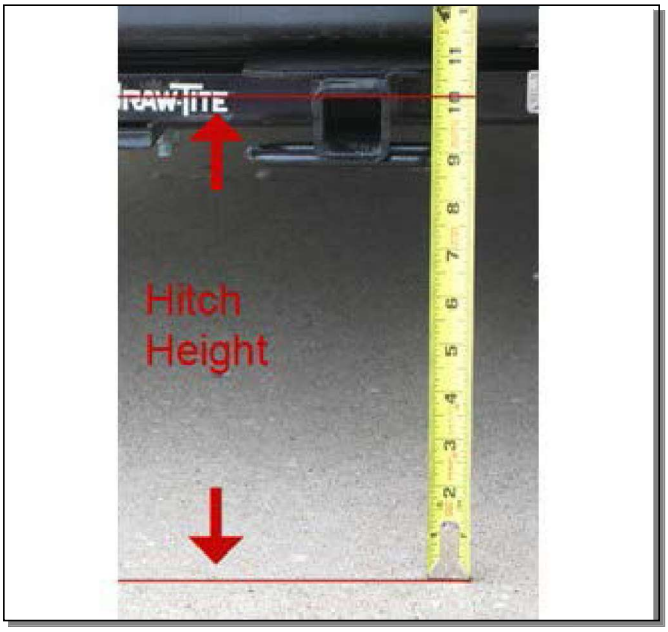
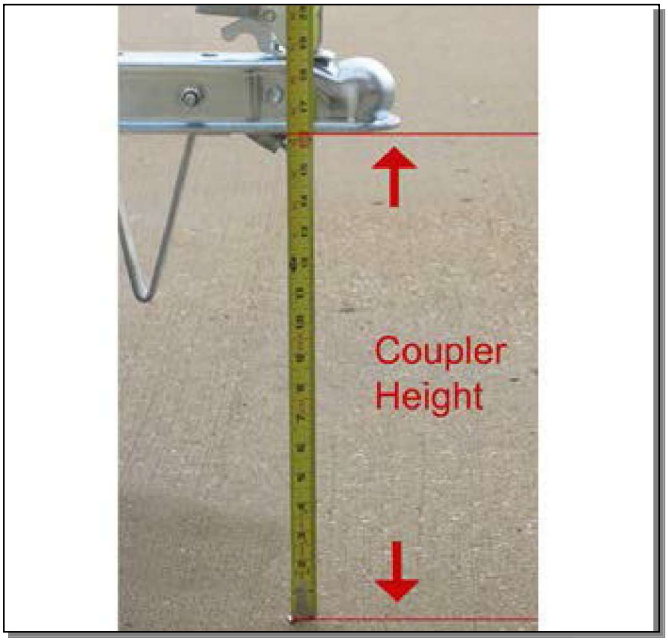


Figure 1 Hitch height measurement

A.3. Measure Coupler Height

Follow these steps to measure coupler height:

1. Measure the coupler height from the ground to the bottom of the trailer's coupler. See Figure 2.
2. Make sure the trailer is level and on level ground.



A.4. Compute Height Difference

Follow these steps to compute height difference:

1. Compute the difference between hitch height and coupler height.
   a. If hitch height is greater than coupler height, the difference is the required drop.
   b. If coupler height is greater than hitch height, the difference is the required rise.
2. Choose the ball mount with the rise or drop closest to the difference.
   a. If the hitch height equals 24 ¾ inches and the coupler height equals 17 inches, the greater hitch height requires a ball mount with a drop of 7 ¾ inches for a level trailer.
   b. Select the ball mount with an 8 inch drop which is the closed one offered.
3. Use a drop shank for hitch height greater than trailer height. See Figure F-3.

Figure 3 Shank drop measurement

4. Use a rise shank for a trailer height greater than the hitch height. See Figure 4.

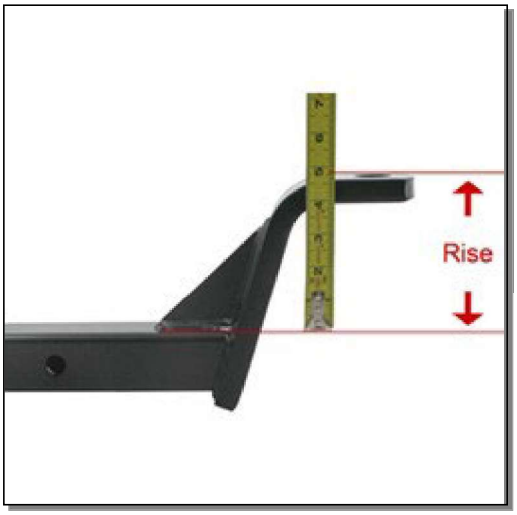


Figure 4 Shank rise measurement

A.5. Ball Hole Diameter

The ball hole diameter is the size of the hole in the platform of the ball mount. The ball hole determines the diameter shank of hitch ball. Typical sizes are ¾ inches, 1inch, and 1 ¼ inches. See Figure 5.

Figure 5 Ball hole measurement

A.6. Hitch Classifications

The Society of Automotive Engineers (SAE) created ball hitch classifications based on the maximum GVWR of the trailer being hauled. Most hitch systems and components are sold using these classifications. Alternately, some manufacturers only rate equipment by the maximum weight of the trailer that can be safely hauled using the equipment. This is true especially for components rated to haul trailers more than 10,000 lbs.

All components of the hitch system are to be matched and rated at or above the GVWR of the trailer being hauled. There are only four SAE official classifications (I, II, III, and IV). Recently, manufacturers added a Class V rated hitch not recognized by SAE at

this time. Table 1 provides maximum Tongue Weight (TW) and Gross Trailer Weight (GTW) for both Weight Carrying (WC) and Weight Distribution (WD) hitch. Each hitch and ball mount are rated by the manufacturer and could be rated differently than the table.

Hitch Class Table				
Hitch Class	Max TW (WC)	Max GTW (WC)	Max TW (WD)	Max GTW (WD)
I	up to 200 lbs.	up to 2,000 lbs.	N/A	N/A
II	up to 300 lbs.	up to 3,500 lbs.	N/A	N/A
III	up to 600 lbs.	up to 6,000 lbs.	up to 1,000 lbs.	up to 10,000 lbs.
IV	up to 1,000 lbs.	up to 10,000 lbs.	up to 14,000 lbs.	up to 14,000 lbs.
V	up to 1,200 lbs.	up to 12,000 lbs.	up to 17,000 lbs.	up to 17,000 lbs.

Table 1 Hitch class table

Operators:

- Check the manufacturer's sticker to verify the rated towing capacity of the hitch.
- Determine if using a weight carrying or weight distributing hitch.
- Confirm whether there is a drawbar adapter to determine correct rating.
- Maximize towing capacity to ensure vehicles have a drawbar that does not require an adapter.

A.7. Hitch Identification Plate

Figure 6 Hitch manufacturer identification plate

A.8. Weight Distributing Hitch

Figure 7 Weight distributing hitch

A.9. Ball Weight Carrying Hitch

Figure 8 Ball weight carrying hitch

A.10. Pintle Hitch

Figure 9 Pintle hitch