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# GUIDE TO TOWING



SELECTING A TOW VEHICLE

TOWING TIPS

HITCHING BASICS

TRAILER-BRAKE CONTROLLERS

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FOLLOW THE ROAD TO ADVENTURE

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### Keeping within manufacturer-assigned tow ratings is critical in making the appropriate model and option choices

**T**here are many variables to consider when selecting the proper tow vehicle for your application. Among them are budget, brand and towing capacity — and it's important to examine them all carefully before making a purchase. Going through the effort to better understand each variable and to account for all of them up front will lead to a more pleasant trailering experience.

#### WEIGHT

The tow-ratings guide in this section lists the maximum tow ratings for vehicles with specific equipment, but many buyers interpret the maximum vehicles' tow ratings with far too much optimism. Always check the manufacturer's figures before making a purchase. The following is an explanation of the terms you need to know which, when combined with readings from a public scale and from your own calculator, should help you determine the correct tow rating for the tow vehicle you plan to buy.

#### Gross Combination Weight Rating

**(GCWR):** The total allowable weight of the tow vehicle, the trailer, the cargo in each, hitch hardware, fluids and occupants.

**Gross Vehicle Weight Rating (GVWR):** The total allowable weight for the vehicle, including occupants, fluids, options, hitch hardware, cargo and trailer-hitch weight.

**Gross Axle Weight Rating (GAWR):** The total allowable weight on an individual axle. This includes the weight of the tires, wheels, brakes and the axle itself.

**Maximum Tow Rating:** The manufacturer's weight limit for towed loads. For conventional trailers, this normally includes a hitch-weight limit as well; for fifth-wheels, the pin weight is applied to the truck's GVWR and its rear-axle GAWR.

#### MATCHING UP THE TOW VEHICLE AND TRAILER

The GVWR and GAWR for all motor vehicles are listed on the data plate, typically affixed to the





driver's door frame, fuel door, glove box, end of the dashboard or other easy-to-access location. Brochures and window stickers may be inaccurate; always look for the data plate. All trailers should have a weight sticker on the left front side wall. There should also be a sticker in an interior cabinet that lists the trailer's unloaded vehicle weight (UVW), GVWR, weight added by freshwater and LP-gas and the resulting cargo carrying capacity (CCC).

In many cases, especially on older trailers, optional equipment — such as air-conditioning units and AC generators — sneaks on board after weighing, and may not be reflected on the sticker. (And don't forget the fuel-fill tanks that some SURVs offer for campsite refueling of motorcycles and ATVs.)

The Recreation Vehicle Industry Association (RVIA) weight label requirements are more inclusive of dealer-added options and make it much easier for buyers to have access to more accurate weight figures.

The GVWR figures are neither guidelines nor estimates; they are limits, and there are numerous valid reasons the manufacturer arrived at these figures. If you think the figures are "close enough" or have a fudge-factor percentage built in, think again. Your warranty

coverage, and your safety, may be at risk.

The only surefire way to find out what your trailer weighs is to load it as usual for a trip and weigh it at a public scale. There you can get the hitch weight, axle weight and total weight. Assuming that the axle weight is lower than the GAWR, the total is within the GVWR and the hitch weight is lower than the maximum given for your tow vehicle, you can then move on to tow-vehicle selection.

When purchasing a trailer, consult the weight sticker on the unit of your choice on a dealer's lot and refer to the UVW and CCC.

Estimate how much cargo you will add, being mindful of the GVWR, and use that number while selecting a tow vehicle.

To a lesser extent, tow-vehicle weight is variable as well. Brochures and tow guides frequently list how much a tow vehicle weighs, but this number generally applies to the most basic model in that configuration, without any options. In some cases, distinctions are made by engine, transmission, drive system (2WD or 4WD/AWD) and, in other cases, by cab or bed styles. If the dealer does not have a vehicle equipped as you want that is available to weigh, or cannot provide option weights, you can form rough estimates — but exact figures are the only way to be certain.

Bigger engines add weight, diesels more so because they come with additional accessories (up to 700 pounds more than the standard gas engine is common). Add up to 175 pounds for an optional transmission, about 400 pounds for 4WD and a bit less than 300 pounds for longer beds. Then add other options like luxury-trim levels, as all those electric motors add up. The towing package and hitch could add another 100 pounds, and larger wheels and tires can also have an effect.

## FOR EXAMPLE

Here is an example of how to calculate the realistic towing capacity of a vehicle. Consider a fictional one-ton longbed, diesel, extended-cab, 2WD, single-rear-wheel pickup set up for towing. We'll arbitrarily assign it a GVWR of 9,900 pounds, a front GAWR of 5,000 pounds, a rear GAWR of 6,824 pounds, a GCWR of 23,000 pounds and a quoted maximum tow rating of 17,000 pounds.

As is often the case in single-rear-wheel trucks, the rear axle's GAWR on this truck is



## CHOOSE WISELY

derived from each tire's maximum load of 3,412 pounds. Pickups such as this normally start at more than 6,000 pounds, and with a diesel, automatic and nice trim, figure that with a full tank of fuel and hitch, this unit weighs at least 7,000 pounds. If we add two "standard-size" people (154 pounds each), a few tools and some cargo, it weighs 7,500 pounds. That is split to 4,000 pounds on the front axle, and 3,500 pounds on the rear axle.

The first thing you should have noticed is that the maximum tow rating cannot apply with the truck fully loaded because GCWR (23,000) minus GVWR (9,900) leaves 13,100 pounds — about 4,000 pounds less than quoted towing ability. After adding options and people to the example truck, and subtracting that value (7,500) from GCWR (23,000), the effective working tow rating of the truck becomes 15,500 pounds, about 1,500 pounds less than the truck's quoted maximum towing rating.

However, you have yet to check all the numbers and verify that a 15,500-pound trailer will work. If that trailer is a fifth-wheel and has 20 percent of its weight on the pin, that adds 3,100 pounds to the back of the truck. This would make the truck overweight — its 7,500-pound ready-to-roll weight plus the 3,100 pounds on the pin equals 10,600 pounds — 700 pounds more than the truck's GVWR, and just 224 pounds shy of the rear-axle limit of 6,824 pounds.

SUVs and other non-pickup tow rigs cannot escape scrutiny. The vehicle's loaded weight, with the anticipated load of passengers aboard, must be subtracted from the GCWR to determine the realistic tow rating.

### OTHER FACTORS

The tow-ratings chart in this publication lists vehicle-towing maximums segregated by engine, cab style, drive and single- or dual-rear wheels as appropriate. In general, assume the maximum tow rating always requires a towing package — and special towing equipment (see "Towing Packages," beginning on page 36) — and the highest numerical axle ratio offered, and as the example shows, maximums can be confusing. You can do your own estimates by starting with the information given and keeping the following generalizations in mind.

**Transmission:** For the majority of vehicles, automatic transmissions offer the higher tow



► Most automatic transmissions offer increased tow ratings over their manual counterparts. To be sure, always check with the manufacturer.

ratings when they vary by transmission. On heavy-duty (HD) models, the difference may be 1,000 pounds or less, and on lighter-duty vehicles, a manual tranny might rate a 2,000-pound lower tow rating. Exceptions include high-output engines that are available only with manual gearboxes, vehicles where the manual transmission weighs more than the automatic and transmissions in vehicles designed for high performance and not towing.

**Axle Ratio:** Lower gearing (the numerically higher ratios, e.g. 4.10:1, 4.56:1, as opposed to 3.31:1, 3.42:1), typically produces greater tow ratings because of greater torque multiplication. There is a wide variance in the axle ratio's effect on the tow rating, with some diesel-powered pickups varying only a few hundred pounds; on others, changing from a 3.73:1 to a 4.30:1 sometimes increases the tow rating by 3,500 pounds. In the past, some ratings have increased by a factor greater than three (from 2,000 to 7,100 pounds) simply by using a different axle ratio. Lower gearing will also make your vehicle accelerate quicker up to 50-55 MPH. In general, a one-step drop in axle ratio (4.10:1 to 3.73:1) on an HD pickup will drop the tow rating and the GCWR by a ton.

Lower gearing has an adverse effect on fuel economy, but it's usually not proportional to the gain in towing ability. Under the best circumstances, the difference between the highest and lowest gear ratios offered (say, 3.42:1 and 4.10:1) results in a 1.5-MPG decrease in non-towing, steady state-highway cruising. In most normal conditions that change is less than 1 MPG, and if you tow a relatively heavy trailer a lot, there's no question that the lowest gearing is best.



**Drive System:** Vehicles that drive only two wheels, be they front or rear, generally have higher tow ratings (all other things being equal). Even though modern 4WD and AWD systems are quite efficient, a small amount of parasitic loss uses up energy. More importantly, 4WD systems add weight — easily up to 400 pounds on some HD pickups — and that weight frequently comes off the tow rating. Unless the GCWR and GVWR are higher, a 4WD version will probably tow a few hundred pounds less than its 2WD counterpart.

**Towing Package:** If you can order a towing package, do so. Not only is it usually required to get the top tow rating, but the contents rarely can be duplicated for the original cost — and it will add to resale value. You can plainly see the hitch receiver or electrical receptacle, but there are often other changes to the wiring system (including up-rated wire and fuses), alternator, battery, cooling system, power steering and lubricants. In some cases, integrated brake controllers and fifth-wheel hitches are also offered.

**Bed Length/Style:** If there's a difference, a longbed truck may rate slightly lower in towing capacity — about 150-250 pounds — because the longer bed adds weight. In other cases there is no change because the longer wheelbase is beneficial. Note that the more “styled” beds marketed under a variety of names typically are heavier than conventional slab-sided beds, and that cab-and-chassis figures do not reflect any bed unless otherwise noted. A steel bed for a medium-duty cab-and-chassis could quickly eat up an entire ton of its GCWR.


**Single or Dual Rear Wheels:** Most people assume that a dually pickup will have a higher tow rating than a single-rear-wheel unit, but this is not always so. In many cases the GCWR is limited by factors other than the number of rear wheels and does not change, and in those cases the weight of the wider axle, bigger brakes and two more tires and wheels is subtracted from the GCWR. The dually no doubt provides a more stable towing platform for the heavier trailers, although not always with the highest tow rating. A dually will have a higher GVWR because the dual-wheel rear axle might have a 10,000-pound GAWR, for example, compared to the single-rear-wheel truck's 6,824-pound GAWR. GAWR is not always an exact calculation of the tire capacity times the number

of tires. A dually equipped truck will be better for hauling a heavy slide-in truck camper and handling heavy fifth-wheel pin weights because of the weight concentrated on the rear axle as compared to the conventional trailer's hitch weight.

**Tires:** Wheel sizes continue to grow commensurate with their popularity, with some tow vehicles offering 20-inch wheels as factory options. However, using a larger wheel and lower-profile tire means a smaller air cushion and lower tire sidewall, to the extent that tow ratings generally drop whenever the wheel size increases — and ride comfort can be compromised. Read the fine print on the packaging carefully.

## RESEARCH

Before purchasing any vehicle for towing, ensure that the equipment required is available for your vehicle. You may find that the new-kid-on-the-block is a very capable tow vehicle, but no one makes a fifth-wheel hitch for it. (Ford remedied this quandary by including one on all 2011 and later Super Duty trucks; GM also offers a fifth-wheel saddle-ready option.) Also beware of hitch-ball and receiver ratings, as some trucks are rated for heavier loads than any easily found hardware can handle, and therefore may require special-order parts.

Before purchasing a vehicle, we suggest you acquire the manufacturer's comprehensive towing guide, available online or at dealerships. Be sure to read the fine print because in many cases the maximum rating may apply only to one particular version and be for a fifth-wheel trailer; many larger pickups may have their actual tow rating limited by the hitch and hardware. 





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With more than just a few updates, 2014 brings new models, new drive-trains and new technologies for what could be the best-ever year for RVers

**I**f the new crop of trucks and SUVs for 2014 (and 2015!) doesn't get you excited, we're betting nothing will. After years of cautious product updates, the Big Three are getting back into the swing of things and are introducing the most capable vehicles ever. Just when we think they can't get roomier, more powerful or more economical, they do — and with all-new models, new engine choices and new transmissions, this is the best year for RVers we've seen in a long, long time. As in previous years, this intro portion of the 2014 Towing Guide focuses on the meat and potatoes of these vehicles as they relate to RVers — for more information about what's new as a whole, check out the article, *2014 and Beyond* in the December 2013 issue of *Trailer Life*.

Obviously, there's a lot to talk about, so let's get started!

**FORD**

Freshly updated with a new powertrain lineup for the 2011 model year, there's not much to

report on the F-150 from a mechanical standpoint — but there is news on model choices. New this year is the Ford F-150 Tremor, marking the company's return to the sport truck market. Available in 2WD or 4WD, the Tremor comes standard with the 3.5-liter EcoBoost V-6, producing 365 HP and 420 LB-FT of torque, not to mention a standard 4.10:1 axle for serious acceleration. The Tremor is outfitted with a "custom inspired" FX Appearance Package featuring flat-black accents and unique flat-black 20-inch wheels and a standard electronic locking differential. The off-road focused Raptor, meanwhile, now offers industry-exclusive beadlock capable wheels and high-intensity discharge (HID) headlamps. The Super Duty lineup is likewise mostly carryover, save for some improvements to the brake system. Engineers increased brake-rotor-swept area by 16.4 percent in front and by 14.5 percent in the rear to better dissipate heat, and thermal mass has been increased to reduce fade. Ford reports these changes support a 700-pound increase in the maximum





**2014 FORD F-350 SUPER DUTY CREW CAB WITH DUAL REAR WHEELS**

gross vehicle weight rating (GVWR) to a best-in-class 14,000 pounds.

Ford is also introducing its all-new full-size Transit van. Although initially targeted at professional tradesmen and commercial fleet customers, Ford reports that the Transit will eventually replace the E-Series nameplate in North America, meaning passenger models will also be available. In other global markets, the all-new vehicle will replace popular, market-specific Transit models first sold in 1965. Ford projects it will also achieve an average of 25 percent better fuel economy and haul at

least 300 pounds more than today's E-Series. Powered by either a standard 3.7-liter V-6 gas, 3.5-liter EcoBoost V-6 gas or the all-new 3.2-liter Power Stroke five-cylinder diesel, the rear-wheel-drive Transit is backed by a six-speed automatic transmission. It will be offered in more variations than the competition combined, according to Ford: three body lengths, two wheelbases, three roof heights; and in van, wagon, chassis cab and cutaway versions. Maximum tow ratings for this vehicle were not available at press time.

## CHRYSLER CORP.

Whether you're considering a 1500 or 2500/3500 Ram truck, you're going to see some big changes. Most significant in the 1500 series is the availability of the all-new 3.0-liter V-6 EcoDiesel engine, the only diesel offered in a half-ton truck. It produces 240 HP and 420 LB-FT of torque — good enough for a 9,200-pound maximum tow rating, and fuel economy that Chrysler claims will top 25 MPG on the highway. As with the other engines in the product line, the EcoDiesel is backed by a TorqueFlite eight-speed transmission, and will carry a \$2,850 premium above a similarly equipped Hemi-powered truck. Speaking of which, the Hemi continues on with Fuel Saver (cylinder deactivation) technology and variable valve timing, and produces 395 HP and 410 LB-FT of torque. Even the smallest engine in the lineup, the 3.6-liter Pentastar V-6, gets a 42 percent boost to 305 HP and 269 LB-FT of torque, bestowing it with a tow rating of up to 7,450 pounds. A class-exclusive air sus-



**2014 RAM 3500 HEAVY DUTY**

PHOTOS COURTESY OF MANUFACTURERS



**2014 DODGE DURANGO LIMITED**

pension is also available on some models, providing automatic load leveling, improved ride and easier ingress/egress.

Not to be outdone, the Ram 2500/3500 trucks are bringing some serious bragging rights to the heavy-duty segment, with best-in-class towing, payload and gross combined weight rating (GCWR), according to Chrysler. A new 6.4-liter Hemi gasoline engine also enters the fold this year, bridging the gap between the base 5.7-liter Hemi and the much pricier 6.7-liter Cummins diesel. The new engine offers a best-in-class 410 HP at 5,600 RPM and 429 LB-FT of torque at 4,000 RPM — and like its smaller Hemi sibling, is equipped with variable valve timing and cylinder deactivation for better efficiency. Both gas engines are backed by a 66RFE six-speed automatic transmission. If it's

diesel you want, Ram offers the 6.7-liter Cummins in three flavors. The first version produces 350 HP at 2,800 RPM and 660 LB-FT of torque at 1,400 RPM, and is paired with Ram's segment-exclusive six-speed manual transmission. The second option ups the ante with 370 HP and 800 LB-FT of torque, and is backed by the 68RFE automatic transmission. Finally, the high-output version churns out 385 HP and 850 LB-FT of torque, and is mated to an Aisin six-speed heavy-duty automatic transmission.

To improve ride quality when unloaded and/or driving solo, the new Ram 2500 trucks also benefit from a five-link coil rear suspension (in place of leaf springs), not to mention an available air suspension system that uses air bags in place of coil springs. The air suspension not only improves ride quality further, according to



**2014 FORD  
F-150 TREMOR  
SPORT TRUCK**



Chrysler, but also offers automatic load leveling. Ram 3500 trucks will continue on with leaf springs, but will now offer a supplemental air suspension system on single- and dual-rear-wheel applications. By adding supplemental air bags to the rear suspension, Ram engineers were able to soften the leaf springs, allowing for more unladen suspension movement. When a high-load-capacity condition exists, the air suspension automatically fills the rear air bags to level the truck to improve stability and ride quality. Other new features on the Ram HDs include a factory fifth-wheel option on the Ram 2500, and available dual alternator systems for both the 6.4-liter Hemi and 6.7-liter Cummins. We also know that a new Ram Power Wagon is in the offing, but we didn't have much information on it at press time.

Putting Chrysler back into the full-size van market is the new Ram ProMaster, offering a choice of either the base 3.6-liter Pentastar V-6 gas or 3.0-liter I-4 EcoDiesel engine, both of which are backed by a 62TE six-speed automatic transmission. Based on the long-standing Fiat Ducato van, the ProMaster is available in two roof heights, three wheelbases and four body lengths. Ram promises the front-wheel-drive van offers best-in-class fuel economy, cargo capacity and payload, along with a tow rating of 5,100 pounds on all models.

The Dodge Durango is updated for 2014, boasting a tow rating of up to 6,200 pounds with the 3.6-liter Pentastar V-6, or up to 7,400 pounds with the 5.7-liter Hemi. In addition to a freshened exterior look, increased content and up to 50 different seating configurations, the new Durango gets a new eight-speed automatic transmission that Dodge maintains is good for up to a 9 percent improvement in fuel economy.

If you like camping off the beaten path, you might be interested in the Jeep Cherokee, which is all-new for 2014. It offers three 4WD systems, along with better fuel economy and increased capability. Up to 31 MPG is made possible by the new 2.4-liter "Tigershark" inline-four-cylinder that delivers a 45 percent increase in fuel compared to the outgoing model, according to Chrysler. An industry-first rear-axle disconnect also helps fuel economy when 4WD isn't needed. The available 3.2-liter

V-6, meanwhile, delivers 271 HP and 239 LB-FT of torque, good enough for a tow rating of up to 4,500 pounds. Both engines are backed by a nine-speed automatic transmission, the first in the segment.

The new Grand Cherokee is available with the 3.0-liter EcoDiesel V-6, bestowing the SUV with an estimated 30 MPG, a driving range of up to 730 miles, and a tow rating of 7,400 pounds. This engine, along with the base 3.6-liter Pentastar V-6 and 5.7-liter Hemi V-8, are backed by a new eight-speed automatic transmission for improved fuel economy across the range. Three 4WD systems, available Quadra-Lift air suspension and Jeep Selec-Terrain traction management round out the mechanical improvements for 2014.

## GM

GM has big news on just about every utility front, from the 2014 1500 series pickups, to the 2015 2500/3500 heavy-duty trucks and 2015 full-size SUVs. First off, the Silverado/Sierra is fresh for 2014, and that includes a trio of all-new EcoTec3 engines: a 4.3-liter V-6 coming in at 285 HP and 305 LB-FT of torque; a 5.3-liter V-8 making 355 HP and 383 LB-FT of torque, and a new 6.2-liter V-8 thumping out 420 HP and 460 LB-FT of torque. The new engines are mated exclusively to the familiar 6L80 six-speed automatic transmission. Silverado/Sierra models equipped with the 4.3-liter V-6 can tow up to 7,600 pounds, which GM says is the highest for any base V-6 in the segment. Silverado models equipped with the 5.3-liter V-8 and the Max Towing Package offer tow ratings of up to 12,000 pounds, which is more than any 1500-series pickups on the market at press time.

While we don't have tow ratings for the 2015 GM 2500/3500 trucks, GM is reporting that they have the best-in-class maximum available payload at 7,374 pounds and the



2014 GM ECOTEC3 6.2-LITER V-8 ENGINE

highest conventional towing at a massive 19,600 pounds. All-new exterior styling with enhanced cooling airflow enables both the familiar 6.0-liter V-8 gas and 6.6-liter Duramax turbodiesel to maintain full towing power under heavy loads and high ambient temperatures. Of particular interest to RVers is GM's refinement of the HD's available cruise control, Auto Grade Braking and Diesel Exhaust Brake. GM maintains that the user can now set the desired speed and the truck will do the rest, increasing or decreasing power, downshifting to increase engine braking and engaging the exhaust brake (Duramax). The cabs are now stronger than before, the rear doors on crew cab models are larger, and as with the 1500-series trucks, there's now a new double cab model featuring forward hinged rear doors that replaces the extended cab.

Looking for something smaller? You're in luck, because the all-new Chevy Colorado will be available this fall as a 2015 model. Pitted against the dated Toyota Tacoma and Nissan Frontier, the Colorado is expected to deliver class-leading power, payload and tow capacity to the midsize segment. The base 2.4-liter inline-four-cylinder is estimated at 193 HP, while the 3.6-liter engine is estimated at 302 HP. Also available will be the segment's only diesel engine — a Duramax 2.8-liter turbodiesel already offered in global markets. All engines will be matched with a six-speed automatic transmission equipped with features like grade braking and tow/haul mode. When properly equipped, GM estimates the Colorado will be able to

tow up to 6,700 pounds. As before, it's safe to assume that a GMC Canyon version will be offered as well.

Along with its trucks, GM's bread and butter are full-size SUVs, and these are all-new for 2015 as well. The Chevy Tahoe/Suburban and GMC Yukon/Yukon XL get the new 5.3-liter V-8 from the 1500 truck family as the only engine offering, paired with a six-speed automatic transmission. Maximum tow capacity is stated as 8,500 pounds for 2WD models, 8,300 for 4WD models. The higher-end Yukon Denali and Cadillac Escalade, meanwhile, get the bigger 6.2-liter, delivering an impressive 420 HP and 450 LB-FT of torque for identical tow ratings on the short wheelbase models. Hybrid versions will be released later. All of GM's full-size SUVs deliver much improved refinement, a quieter ride and interiors that rival many European sedans.

The Chevy Avalanche and Cadillac EXT have been discontinued.

## NISSAN

Nissan has a new Titan on the way for the 2015 model year, and it will be available with a Titan of an engine: a 5.0-liter Cummins V-8 turbodiesel that will offer more than 300 HP and around 550 LB-FT of torque — the most twist available in a half-ton pickup. Nissan is remaining tight-lipped about other details, but did offer that engineering prototypes with the new engine are currently undergoing performance and durability testing. Look for more updates later in the year. 🚚

## 2015 CHEVROLET COLORADO Z71





**T**ow ratings for all vehicle manufacturers are listed in alphabetical order, and are organized by model type and configuration. In most instances, you will find a letter (or a letter and number) that identifies the equipment the rating is based on, i.e., automatic or manual transmission, gear ratio, towing package, etc. You will find the meaning for each of these letters in the "Key to Charts" section on page 18.

If there is no letter after the rating, that means there is only one rating available. Likewise, you may find the word "all" in the engine column; that means all available engines are capable of that particular tow rating.

differently, we have found it necessary to make some changes in an effort to keep this guide consistent and concise. For example, Ram trucks are listed with tow ratings depending on transmission type and axle. Ford distinguishes between conventional and fifth-wheel trailer towing. In the GM section, you'll note that some models have two ratings separated by a slash; the first rating is for conventional towing, the second is for fifth-wheel towing.

Where applicable, we've also included relevant manufacturer's notes for a particular vehicle or model line, but always check with your dealer for details on the model you plan to purchase, including tow rating, payload capacity, gross vehicle weight rating (GVWR), gross combination weight rating (GCWR) and gross axle weight rating (GAWR). 🚚

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# 2014 TOW RATINGS

KEY TO CHARTS

**a6**=Automatic transmission, Six Speeds  
**a8**=Automatic transmission, Eight Speeds  
**m6**=Manual transmission, Six Speeds

**p**=Cooling or other accessory package required

**t**=Towing package required

**b**=3.08:1

**c**=3.15:1

**d**=3.21:1

**e**=3.23:1

**f**=3.31:1

**g**=3.42:1

**h**=3.55:1

**i**=3.73:1

**j**=3.92:1

**k**=4.10:1

**l**=4.30:1

**n**=4.44:1

**o**=4.56:1

**q**=4.88:1

**r**=5.38:1

**AWD**=All-Wheel Drive

**CC**=Crew Cab

**KC**=King Cab

**SB**=Shortbed

**Std Bed**=Standard Bed

**LB**=Longbed

**SWB**=Short Wheelbase

**LWB**=Long Wheelbase

**DRW**=Dual Rear Wheels

**SRW**=Single Rear Wheels

**CV**=Cargo Van

**PV**=Passenger Van

**TD**=Turbo Diesel

**TC**=Turbocharged

**SC**=Supercharged

**NA**=Not applicable,

or not available

A forward slash (/) denotes either/or; comma indicates more than one footnote applies.

## VEHICLE ENGINE TOW LIMIT (lb)

### ACURA

MDX 3.7L V-6 5,000

### AUDI

Q5 All 4,000

Q7 All 5,500\*

Q7 3.6L V-6 6,600 (t)

\*With dealer installed hitch

### B M W

X3 2.8i 2.0 I-4 TC 3,500

X3 3.5i 3.0L I-6 TC 3,500

X5 3.5i 3.0L I-6 TC 6,000

X535d 3.0 I-6 TD 6,000

X55.0i 4.4L V-8 TC 6,000

X5M 4.4L V-8 TC 6,000

X635i 3.0L I-6 TC 6,000

X650i 4.4L V-8 TC 6,000

X6M 4.4L V-8 TC 6,000

### B U I C K

Enclave FWD 3.6L V-6 2,000

Enclave FWD 3.6L V-6 4,500 (t)

Enclave AWD 3.6L V-6 2,000

Enclave AWD 3.6L V-6 4,500 (t)

### C A D I L L A C

Escalade 2WD 6.2L V-8 8,300

Escalade AWD 6.2L V-8 8,100

Escalade ESV 2WD 6.2L V-8 8,000

Escalade ESV AWD 6.2L V-8 7,700

SRX FWD 3.6L V-6 2,500

SRX FWD 3.6L V-6 3,500 (t)

SRX AWD 3.6L V-6 2,500

SRX AWD 3.6L V-6 3,500 (t)

### C H E V R O L E T / G M C

Traverse/Acadia FWD 3.6L V-6 2,000

Traverse/Acadia FWD 3.6L V-6 5,200 (t)

Traverse/Acadia AWD 3.6L V-6 2,000

Traverse/Acadia AWD 3.6L V-6 5,200 (t)

Equinox/Terrain FWD/AWD 3.6L V-6 3,500 (t)

Captiva Sport FWD/AWD 3.0L V-6 3,500 (t)

Express/Savana 1500 SWB CV 2WD 4.3L V-6 4,300 (g)

Express/Savana 1500 SWB CV 2WD 5.3L V-8 6,700 (g/i)

Express/Savana 1500 SWB CV AWD 5.3L V-8 6,500 (g)

Express/Savana 1500 SWB PV 2WD 5.3L V-8 6,200 (g/i)

Express/Savana 1500 SWB PV AWD 5.3L V-8 6,000 (g/i)

Express/Savana 2500 SWB CV 2WD 4.8L V-8 7,400 (g)

Express/Savana 2500 SWB CV 2WD 6.0L V-8 10,000 (g)

Express/Savana 2500 SWB CV 2WD 6.6L V-8 TD 10,000

Express/Savana 2500 SWB PV 2WD 6.0L V-8 6,700 (g)

Express/Savana 2500 SWB PV 2WD 6.0L V-8 9,800 (g)

Express/Savana 2500 LWB CV 2WD 4.8L V-8 7,200 (g)

Express/Savana 2500 LWB CV 2WD 6.0L V-8 10,000 (g)

Express/Savana 2500 LWB CV 2WD 6.6L V-8 TD 10,000

Express/Savana 3500 SWB CV 2WD 4.8L V-8 7,400 (g)

Express/Savana 3500 SWB CV 2WD 6.0L V-8 10,000 (g)



Express/Savana 3500 SWB CV 2WD6.6L V-8 TD	10,000
Express/Savana 3500 SWB PV 2WD 6.0L V-8	9,700
Express/Savana 3500 SWB PV 2WD6.6L V-8 TD	10,000
Express/Savana 3500 LWB CV 2WD 4.8L V-8	7,100
Express/Savana 3500 LWB CV 2WD 6.0L V-8	10,000 (g)
Express/Savana 3500 LWB CV 2WD6.6L V-8 TD	10,000
Express/Savana 3500 LWB PV 2WD 6.0L V-8	9,300 (g)
Express/Savana 3500 LWB PV 2WD6.6L V-8 TD	9,700

### SILVERADO/SIERRA 1500 REGULAR CAB

1500 Reg Cab Std Bed 2WD	4.3L V-6	6,400 (e)
1500 Reg Cab Std Bed 2WD	5.3L V-8	9,300 (g)
1500 Reg Cab Std Bed 4WD	4.3L V-6	7,200 (g)
1500 Reg Cab Std Bed 4WD	5.3L V-8	9,100 (g)
1500 Reg Cab LB 2WD	4.3L V-6	6,300 (e)
1500 Reg Cab LB 2WD	5.3L V-8	10,200 (g)
1500 Reg Cab LB 4WD	4.3L V-6	7,000 (g)
1500 Reg Cab LB 4WD	5.3L V-8	9,900 (g)

### SILVERADO/SIERRA DOUBLE CAB

1500 Double Cab 2WD	4.3L V-6	6,000 (e)
1500 Double Cab 2WD	5.3L V-8	9,900 (g)
1500 Double Cab 2WD	5.3L V-8	11,500 (i,t)
1500 Double Cab 2WD	6.2L V-8	9,800 (g)
1500 Double Cab 2WD	6.2L V-8	12,000 (i,p)
1500 Double Cab 4WD	4.3L V-6	6,700 (g)
1500 Double Cab 4WD	5.3L V-8	9,600 (g)
1500 Double Cab 4WD	5.3L V-8	11,200 (i,t)
1500 Double Cab 4WD	6.2L V-8	9,500 (g)
1500 Double Cab 4WD	6.2L V-8	11,800 (i,p)

### SILVERADO/SIERRA 1500 SHORTBED/ STANDARD BED

1500 CC SB 2WD	4.3L V-6	5,900 (e)
1500 CC SB 2WD	5.3L V-8	9,800 (g)
1500 CC SB 2WD	5.3L V-8	11,400 (i,t)
1500 CC SB 2WD	6.2L V-8	9,700 (g)
1500 CC SB 2WD	6.2L V-8	12,000 (i,t)
1500 CC SB 4WD	4.3L V-6	6,700 (g)
1500 CC SB 4WD	5.3L V-8	9,600 (g)
1500 CC SB 4WD	5.3L V-8	11,200 (i,t)

1500 CC SB 4WD	6.2L V-8	9,500 (g)
1500 CC SB 4WD	6.2L V-8	11,800 (i,t)
1500 CC Std Bed 2WD	4.3L V-6	5,800 (e)
1500 CC Std Bed 2WD	5.3L V-8	9,700 (g)
1500 CC Std Bed 2WD	5.3L V-8	11,300 (i,t)
1500 CC Std Bed 2WD	6.2L V-8	9,600 (g)
1500 CC Std Bed 2WD	6.2L V-8	12,000 (i,t)
1500 CC Std Bed 4WD	4.3L V-6	6,600 (g)
1500 CC Std Bed 4WD	5.3L V-8	9,500 (g)
1500 CC Std Bed 4WD	5.3L V-8	11,100 (i,t)
1500 CC Std Bed 4WD	6.2L V-8	9,400 (g)
1500 CC Std Bed 4WD	6.2L V-8	11,700 (i,t)

### SIERRA DENALI CC SHORTBED, 1500 2WD AND AWD

Sierra Denali CC SB 2WD	6.2L V-8	9,600
Sierra Denali CC SB AWD	6.2L V-8	9,400

### SILVERADO/SIERRA TWO-MODE HYBRID

Two-mode hybrid 2WD	6.0L V-8	6,100
Two-mode hybrid 4WD	6.0L V-8	5,900

### SILVERADO/SIERRA 2500 CONVENTIONAL/FIFTH- WHEEL TOWING

2500 Reg Cab Longbed 2WD		
2500 Reg Cab LB 2WD	6.0L V-8	13,000/14,700 (k)
2500 Reg Cab LB 2WD	6.6L V-8 TD	13,000/17,800 (i)
2500 Reg Cab LB 4WD	6.0L V-8	13,000/14,400 (k)
2500 Reg Cab LB 4WD	6.6L V-8 TD	13,000/17,500 (i)

### SILVERADO/SIERRA 2500 CC STD BED

2500 CC Std Bed 2WD	6.0L V-8	13,000/14,200 (k)
2500 CC Std Bed 2WD	6.6L V-8 TD	13,000/17,400 (i)
Sierra Denali 2500 2WD	6.0L V-8	13,000/14,000 (k)
Sierra Denali 2500 2WD	6.6L V-8 TD	13,000/16,500 (i)
2500 CC Std Bed 4WD	6.0L V-8	13,000/13,900 (k)
2500 CC Std Bed 4WD	6.6L V-8 TD	13,000/15,800 (i)
Sierra Denali 2500 4WD	6.0L V-8	13,000/13,700 (k)
Sierra Denali 2500 4WD	6.6L V-8 TD	13,000/14,700 (k)

### SILVERADO/SIERRA 2500 CC LONGBED

2500 CC LB 2WD	6.0L V-8	13,000/14,200 (k)
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## 2014 TOW RATINGS

2500 CC LB 2WD	6.6L V-8 TD	13,000/16,700
2500 CC LB 4WD	6.0L V-8	13,000/13,800
2500 CC LB 4WD	6.6L V-8 TD	13,000/14,700

### SILVERADO/SIERRA 3500 CONVENTIONAL/FIFTH-WHEEL TOWING

3500 Reg Cab, Long Box		
3500 Reg Cab SRW 2WD	6.0L V-8	13,000/14,500 (k)
3500 Reg Cab DRW 2WD	6.0L V-8	14,100/14,200 (k)
3500 Reg Cab SRW 4WD	6.0L V-8	13,000/14,200 (k)
3500 Reg Cab SRW 4WD	6.6L V-8 TD	13,000/17,400 (i)
3500 Reg Cab DRW 4WD	6.0L V-8	13,800 (k)
3500 Reg Cab DRW 4WD	6.6L V-8 TD	16,000/23,100 (i)

3500 Crew Cab, Std Bed		
3500 CC Std Bed SRW 2WD	6.0L V-8	13,000/14,000 (k)
3500 CC Std Bed SRW 2WD	6.6L V-8 TD	13,000/17,200 (i)
3500 CC Std Bed SRW 2WD Denali	6.0L V-8	13,000/13,800 (k)
3500 CC Std Bed SRW 2WD Denali	6.6L V-8 TD	13,000/17,100 (i)
3500 CC Std Bed SRW 4WD	6.0L V-8	13,000/13,700 (k)
3500 CC Std Bed SRW 4WD	6.6L V-8 TD	13,000/17,000 (i)
3500 CC Std Bed SRW 4WD Denali	6.0L V-8	13,000/13,600 (k)
3500 CC Std Bed SRW 4WD Denali	6.6L V-8 TD	13,000/16,800 (i)
3500 CC LB SRW 2WD	6.0L V-8	13,000/13,900 (k)
3500 CC LB SRW 2WD	6.6L V-8 TD	13,000/17,300 (i)
3500 CC LB DRW 2WD	6.0L V-8	13,500 (k)
3500 CC LB DRW 2WD	6.6L V-8 TD	16,500/22,800 (i)
3500 CC LB DRW 2WD Denali	6.0L V-8	13,400 (k)
3500 CC LB DRW 2WD Denali	6.6L V-8 TD	16,500/22,600 (i)
3500 CC LB SRW 4WD	6.0L V-8	13,000/13,600 (k)
3500 CC LB SRW 4WD	6.6L V-8 TD	13,000/16,800 (i)
3500 CC LB DRW 4WD	6.0L V-8	13,200 (k)
3500 CC LB DRW 4WD	6.6L V-8 TD	18,000/22,500 (i)
3500 CC LB DRW 4WD Denali	6.0L V-8	13,000/13,100
3500 CC LB DRW 4WD Denali	6.6L V-8 TD	18,000/22,300 (i)

### CHEVY TAHOE AND SUBURBAN, GMC YUKON, YUKON XL, YUKON AND YUKON XL DENALI 1500 SERIES

Tahoe/Yukon 2WD	5.3L V-8	5,500 (b)
Tahoe/Yukon 2WD	5.3L V-8	6,000 (g)
Tahoe/Yukon 2WD	5.3L V-8	8,500 (g,p)
Tahoe/Yukon 4WD	5.3L V-8	5,200 (b)

Tahoe/Yukon 4WD	5.3L V-8	5,700 (g)
Tahoe/Yukon 4WD	5.3L V-8	8,200 (g,p)
Suburban/Yukon XL 2WD	5.3L V-8	5,100 (b)
Suburban/Yukon XL 2WD	5.3L V-8	5,600 (g)
Suburban/Yukon XL 2WD	5.3L V-8	8,100 (g,p)
Suburban/Yukon XL 4WD	5.3L V-8	5,000 (b)
Suburban/Yukon XL 4WD	5.3L V-8	5,500 (g)
Suburban/Yukon XL 4WD	5.3L V-8	8,000 (g,p)
Yukon Denali 2WD	6.2L V-8	8,300
Yukon Denali AWD	6.2L V-8	8,100
Yukon XL Denali 2WD	6.2L V-8	7,900
Yukon XL Denali AWD	6.2L V-8	7,800

## CHRYSLER

Dodge Grand Caravan	3.6L V-6	3,600 (t)
Dodge Journey FWD and AWD	3.6L V-6	2,500 (t)
Chrysler Town & Country	3.6L V-6	3,600 (t)
Dodge Durango RWD	3.6 V-6	6,200
Dodge Durango RWD	5.7 V-8	7,400
Dodge Durango AWD	3.6 V-6	6,200
Dodge Durango AWD	5.7 V-8	7,200

## RAM

### RAM 1500 REGULAR CAB SHORTBED

1500 Reg Cab SB 2WD	3.6L V-6	4,800 (a8,d)
1500 Reg Cab SB 2WD	3.6L V-6	7,300 (a8,h)
1500 Reg Cab SB 2WD	5.7L V-8	8,550 (a8,d)
1500 Reg Cab SB 2WD	5.7L V-8	9,150 (a8,h)
1500 Reg Cab SB 4WD	3.6L V-6	4,550 (a8,d)
1500 Reg Cab SB 4WD	3.6L V-6	7,050 (a8,h)
1500 Reg Cab SB 4WD	5.7L V-8	8,350 (a8,d)
1500 Reg Cab SB 4WD	5.7L V-8	8,950 (a8,j)

### RAM 1500 REGULAR CAB LONGBED

1500 Reg Cab LB 2WD	3.6L V-6	4,600 (a8,d)
1500 Reg Cab LB 2WD	3.6L V-6	7,300 (a8,h)
1500 Reg Cab LB 2WD	3.0L V-6 TD	8,200 (a8,h)
1500 Reg Cab LB 2WD	3.0L V-6 TD	9,200 (a8,j)
1500 Reg Cab LB 2WD	5.7L V-8	8,400 (a8,d)
1500 Reg Cab LB 2WD	5.7L V-8	10,450 (a8,j)
1500 Reg Cab LB 4WD	3.6L V-6	4,400 (a8,d)
1500 Reg Cab LB 4WD	3.6L V-6	7,100 (a8,h)



1500 Reg Cab LB 4WD	3.0L V-6 TD	7,950 (a8,h)
1500 Reg Cab LB 4WD	3.0L V-6 TD	8,950 (a8,j)
1500 Reg Cab LB 4WD	5.7L V-8	8,200 (a8,d)
1500 Reg Cab LB 4WD	5.7L V-8	10,350 (a8,j)

#### RAM 1500 QUAD CAB

Ram 1500 Quad Cab 2WD	3.6L V-6	4,400 (a8,d)
Ram 1500 Quad Cab 2WD	3.6L V-6	7,400 (a8,h)
Ram 1500 Quad Cab 2WD	3.0L V-6 TD	7,950 (a8,h)
Ram 1500 Quad Cab 2WD	3.0L V-6 TD	8,950 (a8,j)
Ram 1500 Quad Cab 2WD	5.7L V-8	8,200 (a8,d)
Ram 1500 Quad Cab 2WD	5.7L V-8	10,350 (a8,j)
Ram 1500 Quad Cab 4WD	3.6L V-6	4,200 (a8,d)
Ram 1500 Quad Cab 4WD	3.6L V-6	7,200 (a8,h)
Ram 1500 Quad Cab 4WD	3.0L V-6 TD	7,750 (a8,h)
Ram 1500 Quad Cab 4WD	3.0L V-6 TD	8,750 (a8,j)
Ram 1500 Quad Cab 4WD	5.7L V-8	8,000 (a8,d)
Ram 1500 Quad Cab 4WD	5.7L V-8	10,150 (a8,j)

#### RAM 1500 CREW CAB, 5'7" BED

Ram 1500 CC 2WD	3.6L V-6	4,350 (a8,d)
Ram 1500 CC 2WD	3.6L V-6	7,350 (a8,h)
Ram 1500 CC 2WD	3.0L V-6 TD	7,900 (a8,h)
Ram 1500 CC 2WD	3.0L V-6 TD	8,900 (a8,j)
Ram 1500 CC 2WD	5.7L V-8	8,150 (a8,d)
Ram 1500 CC 2WD	5.7L V-8	10,300 (a8,j)
Ram 1500 CC 4WD	3.6L V-6	4,150 (a8,d)
Ram 1500 CC 4WD	3.6L V-6	7,150 (a8,h)
Ram 1500 CC 4WD	3.0L V-6 TD	7,650 (a8,h)
Ram 1500 CC 4WD	3.0L V-6 TD	8,650 (a8,j)
Ram 1500 CC 4WD	5.7L V-8	7,900 (a8,d)
Ram 1500 CC 4WD	5.7L V-8	10,050 (a8,j)

#### RAM 1500 CREW CAB 6'4" BED

Ram 1500 CC 2WD	3.0L V-6 TD	7,850 (a8,h)
Ram 1500 CC 2WD	3.0L V-6 TD	8,850 (a8,j)
Ram 1500 CC 2WD	5.7L V-8	8,100 (a8,d)
Ram 1500 CC 2WD	5.7L V-8	10,250 (a8,j)
Ram 1500 CC 4WD	3.0L V-6 TD	7,600 (a8,h)
Ram 1500 CC 4WD	3.0L V-6 TD	8,600 (a8,j)
Ram 1500 CC 4WD	5.7L V-8	7,900 (a8,d)

Ram 1500 CC 4WD	5.7L V-8	10,050 (a8,j)
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#### RAM 2500 REGULAR CAB LONGBED

Ram 2500 LB 2WD	5.7L V-8	11,770 (a6,i)
Ram 2500 LB 2WD	5.7L V-8	13,770 (a6,k)
Ram 2500 LB 2WD	6.4L V-8	13,230 (a6,i)
Ram 2500 LB 2WD	6.4L V-8	16,230 (a6,k)
Ram 2500 LB 2WD	6.7L I-6 TD	16,710 (m6,g)
Ram 2500 LB 2WD	6.7L I-6 TD	17,810 (m6,g)
Ram 2500 LB 4WD	5.7L V-8	11,430 (a6,i)
Ram 2500 LB 4WD	5.7L V-8	13,430 (a6,k)
Ram 2500 LB 4WD	6.4L V-8	12,830 (a6,i)
Ram 2500 LB 4WD	6.4L V-8	15,830 (a6,k)
Ram 2500 LB 4WD	6.7L I-6 TD	16,360 (m6,g)
Ram 2500 LB 4WD	6.7L I-6 TD	17,440 (a6,g)

#### RAM 2500 CREW CAB SHORTBED

Ram 2500 Crew Cab SB 2WD	5.7L V-8	11,420 (a6,i)
Ram 2500 Crew Cab SB 2WD	5.7L V-8	13,420 (a6,k)
Ram 2500 Crew Cab SB 2WD	6.4L V-8	12,860 (a6,i)
Ram 2500 Crew Cab SB 2WD	6.4L V-8	15,860 (a6,k)
Ram 2500 Crew Cab SB 2WD	6.7L I-6 TD	16,390 (m6,g)
Ram 2500 Crew Cab SB 2WD	6.7L I-6 TD	17,450 (a6,g)
Ram 2500 Crew Cab SB 4WD	5.7L V-8	11,060 (a6,i)
Ram 2500 Crew Cab SB 4WD	5.7L V-8	13,060 (a6,k)
Ram 2500 Crew Cab SB 4WD	6.4L V-8	12,500 (a6,i)
Ram 2500 Crew Cab SB 4WD	6.4L V-8	15,500 (a6,k)
Ram 2500 Crew Cab SB 4WD	6.7L I-6 TD	16,050 (m6,g)
Ram 2500 Crew Cab SB 4WD	6.7L I-6 TD	17,120 (a6,g)

#### RAM 2500 CREW CAB LONGBED

Ram 2500 Crew Cab LB 2WD	5.7L V-8	11,220 (a6,i)
Ram 2500 Crew Cab LB 2WD	5.7L V-8	13,220 (a6,k)
Ram 2500 Crew Cab LB 2WD	6.4L V-8	12,700 (a6,i)
Ram 2500 Crew Cab LB 2WD	6.4L V-8	15,700 (a6,k)
Ram 2500 Crew Cab LB 2WD	6.7L I-6 TD	16,250 (m6,g)
Ram 2500 Crew Cab LB 2WD	6.7L I-6 TD	17,320 (a6,g)
Ram 2500 Crew Cab LB 4WD	5.7L V-8	10,840 (a6,i)
Ram 2500 Crew Cab LB 4WD	5.7L V-8	12,840 (a6,k)
Ram 2500 Crew Cab LB 4WD	6.4L V-8	12,300 (a6,i)
Ram 2500 Crew Cab LB 4WD	6.4L V-8	15,300 (a6,k)

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Ram 2500 Crew Cab LB 4WD	6.7L I-6 TD	15,910 (m6,g)
Ram 2500 Crew Cab LB 4WD	6.7L I-6 TD	16,980 (a6,g)

## RAM 2500 MEGA CAB

Ram 2500 Mega Cab 2WD	5.7L V-8	11,040 (a6,i)
Ram 2500 Mega Cab 2WD	5.7L V-8	13,040 (a6,k)
Ram 2500 Mega Cab 2WD	6.4L V-8	12,480 (a6,i)
Ram 2500 Mega Cab 2WD	6.4L V-8	15,480 (a6,k)
Ram 2500 Mega Cab 2WD	6.7L I-6 TD	16,090 (m6,g)
Ram 2500 Mega Cab 2WD	6.7L I-6 TD	17,150 (a6,g)
Ram 2500 Mega Cab 4WD	5.7L V-8	10,750 (a6,i)
Ram 2500 Mega Cab 4WD	5.7L V-8	12,750 (a6,k)
Ram 2500 Mega Cab 4WD	6.4L V-8	12,220 (a6,i)
Ram 2500 Mega Cab 4WD	6.4L V-8	15,220 (a6,k)
Ram 2500 Mega Cab 4WD	6.7L I-6 TD	15,720 (m6,g)
Ram 2500 Mega Cab 4WD	6.7L I-6 TD	16,790 (a6,g)

## RAM 3500 REGULAR CAB LONGBED

Ram 3500 Reg Cab LB SRW 2WD	5.7L V-8	11,810 (a6,i)
Ram 3500 Reg Cab LB SRW 2WD	5.7L V-8	13,810 (a6,k)
Ram 3500 Reg Cab LB SRW 2WD	6.4L V-8	13,270 (a6,i)
Ram 3500 Reg Cab LB SRW 2WD	6.4L V-8	16,270 (a6,k)
Ram 3500 Reg Cab LB SRW 2WD	6.7L I-6 TD	16,850 (m6,g)
Ram 3500 Reg Cab LB SRW 2WD	6.7L I-6 TD	17,890 (a6,g)
Ram 3500 Reg Cab LB SRW 2WD	6.7L I-6 TD	17,740 (a6,g)*
Ram 3500 Reg Cab LB DRW 4WD	5.7L V-8	11,460 (a6,i)
Ram 3500 Reg Cab LB DRW 4WD	5.7L V-8	13,460 (a6,k)
Ram 3500 Reg Cab LB DRW 4WD	6.4L V-8	12,920 (a6,i)
Ram 3500 Reg Cab LB DRW 4WD	6.4L V-8	15,920 (a6,k)
Ram 3500 Reg Cab LB DRW 4WD	6.7L I-6 TD	16,490 (m6,g)
Ram 3500 Reg Cab LB DRW 4WD	6.7L I-6 TD	17,540 (a6,g)
Ram 3500 Reg Cab LB DRW 4WD	6.7L I-6 TD	17,380 (a6,g)*

## RAM 3500 CREW CAB SHORTBED

Ram 3500 Crew Cab SB SRW 2WD	5.7L V-8	11,390 (a6,i)
Ram 3500 Crew Cab SB SRW 2WD	5.7L V-8	13,390 (a6,k)
Ram 3500 Crew Cab SB SRW 2WD	6.4L V-8	12,850 (a6,i)
Ram 3500 Crew Cab SB SRW 2WD	6.4L V-8	15,850 (a6,k)
Ram 3500 Crew Cab SB SRW 2WD	6.7L I-6 TD	16,430 (m6,g)
Ram 3500 Crew Cab SB SRW 2WD	6.7L I-6 TD	17,470 (a6,g)
Ram 3500 Crew Cab SB SRW 2WD	6.7L I-6 TD	17,320 (a6,g)*

Ram 3500 Crew Cab SB SRW 4WD	5.7L V-8	11,130 (a6,i)
Ram 3500 Crew Cab SB SRW 4WD	5.7L V-8	13,130 (a6,k)
Ram 3500 Crew Cab SB SRW 4WD	6.4L V-8	12,590 (a6,i)
Ram 3500 Crew Cab SB SRW 4WD	6.4L V-8	15,590 (a6,k)
Ram 3500 Crew Cab SB SRW 4WD	6.7L I-6 TD	16,110 (m6,g)
Ram 3500 Crew Cab SB SRW 4WD	6.7L I-6 TD	17,150 (a6,g)
Ram 3500 Crew Cab SB SRW 4WD	6.7L I-6 TD	17,000 (a6,g)*

## RAM 3500 CREW CAB LONGBED

Ram 3500 Crew Cab LB SRW 2WD	5.7L V-8	11,270 (a6,i)
Ram 3500 Crew Cab LB SRW 2WD	5.7L V-8	13,270 (a6,k)
Ram 3500 Crew Cab LB SRW 2WD	6.4L V-8	12,730 (a6,i)
Ram 3500 Crew Cab LB SRW 2WD	6.4L V-8	15,730 (a6,k)
Ram 3500 Crew Cab LB SRW 2WD	6.7L I-6 TD	16,270 (m6,g)
Ram 3500 Crew Cab LB SRW 2WD	6.7L I-6 TD	17,310 (a6,g)
Ram 3500 Crew Cab LB SRW 2WD	6.7L I-6 TD	17,160 (a6,g)*
Ram 3500 Crew Cab LB DRW 2WD	6.4L V-8	12,360 (a6,i)
Ram 3500 Crew Cab LB DRW 2WD	6.4L V-8	15,860 (a6,k)
Ram 3500 Crew Cab LB DRW 2WD	6.7L I-6 TD	15,880 (m6,g)
Ram 3500 Crew Cab LB DRW 2WD	6.7L I-6 TD	17,880 (m6,i)
Ram 3500 Crew Cab LB DRW 2WD	6.7L I-6 TD	16,930 (a6,g)
Ram 3500 Crew Cab LB DRW 2WD	6.7L I-6 TD	18,930 (a6,i)
Ram 3500 Crew Cab LB DRW 2WD	6.7L I-6 TD	21,930 (a6,k)
Ram 3500 Crew Cab LB DRW 2WD	6.7L I-6 TD	20,870 (a6,g)*
Ram 3500 Crew Cab LB DRW 2WD	6.7L I-6 TD	23,780 (a6,i)*
Ram 3500 Crew Cab LB DRW 2WD	6.7L I-6 TD	29,280 (a6,k)*
Ram 3500 Crew Cab LB SRW 4WD	5.7L V-8	10,960 (a6,i)
Ram 3500 Crew Cab LB SRW 4WD	5.7L V-8	12,960 (a6,k)
Ram 3500 Crew Cab LB SRW 4WD	6.4L V-8	12,420 (a6,i)
Ram 3500 Crew Cab LB SRW 4WD	6.4L V-8	15,420 (a6,k)
Ram 3500 Crew Cab LB SRW 4WD	6.7L I-6 TD	15,930 (m6,g)
Ram 3500 Crew Cab LB SRW 4WD	6.7L I-6 TD	16,970 (a6,g)
Ram 3500 Crew Cab LB SRW 4WD	6.7L I-6 TD	16,820 (a6,g)*
Ram 3500 Crew Cab LB DRW 4WD	6.4L V-8	12,020 (a6,i)
Ram 3500 Crew Cab LB DRW 4WD	6.4L V-8	15,520 (a6,k)
Ram 3500 Crew Cab LB DRW 4WD	6.7L I-6 TD	15,530 (m6,g)
Ram 3500 Crew Cab LB DRW 4WD	6.7L I-6 TD	17,530 (m6,i)
Ram 3500 Crew Cab LB DRW 4WD	6.7L I-6 TD	16,580 (a6,g)
Ram 3500 Crew Cab LB DRW 4WD	6.7L I-6 TD	18,580 (a6,i)
Ram 3500 Crew Cab LB DRW 4WD	6.7L I-6 TD	21,580 (a6,k)
Ram 3500 Crew Cab LB DRW 4WD	6.7L I-6 TD	20,430 (a6,g)*
Ram 3500 Crew Cab LB DRW 4WD	6.7L I-6 TD	23,430 (a6,i)*
Ram 3500 Crew Cab LB DRW 4WD	6.7L I-6 TD	29,930 (a6,k)*



## RAM 3500 MEGA CAB

Ram 3500 Mega Cab SRW 2WD	5.7L V-8	11,220 (a6,i)
Ram 3500 Mega Cab SRW 2WD	5.7L V-8	13,220 (a6,k)
Ram 3500 Mega Cab SRW 2WD	6.4L V-8	12,680 (a6,i)
Ram 3500 Mega Cab SRW 2WD	6.4L V-8	15,680 (a6,k)
Ram 3500 Mega Cab SRW 2WD	6.7L I-6 TD	16,150 (m6,g)
Ram 3500 Mega Cab SRW 2WD	6.7L I-6 TD	17,200 (a6,g)
Ram 3500 Mega Cab SRW 2WD	6.7L I-6 TD	17,050 (a6,g)*
Ram 3500 Mega Cab DRW 2WD	6.4L V-8	12,300 (a6,i)
Ram 3500 Mega Cab DRW 2WD	6.4L V-8	15,800 (a6,k)
Ram 3500 Mega Cab DRW 2WD	6.7L I-6 TD	15,770 (m6,g)
Ram 3500 Mega Cab DRW 2WD	6.7L I-6 TD	17,770 (m6,i)
Ram 3500 Mega Cab DRW 2WD	6.7L I-6 TD	16,820 (a6,g)
Ram 3500 Mega Cab DRW 2WD	6.7L I-6 TD	18,820 (a6,i)
Ram 3500 Mega Cab DRW 2WD	6.7L I-6 TD	21,820 (a6,k)
Ram 3500 Mega Cab DRW 2WD	6.7L I-6 TD	20,670 (a6,g)*
Ram 3500 Mega Cab DRW 2WD	6.7L I-6 TD	23,670 (a6,i)*
Ram 3500 Mega Cab DRW 2WD	6.7L I-6 TD	29,170 (a6,k)*
Ram 3500 Mega Cab SRW 4WD	5.7L V-8	10,960 (a6,i)
Ram 3500 Mega Cab SRW 4WD	5.7L V-8	12,960 (a6,k)
Ram 3500 Mega Cab SRW 4WD	6.4L V-8	12,420 (a6,i)
Ram 3500 Mega Cab SRW 4WD	6.4L V-8	15,420 (a6,k)
Ram 3500 Mega Cab SRW 4WD	6.7L I-6 TD	15,830 (m6,g)
Ram 3500 Mega Cab SRW 4WD	6.7L I-6 TD	16,880 (a6,g)
Ram 3500 Mega Cab SRW 4WD	6.7L I-6 TD	16,720 (a6,g)
Ram 3500 Mega Cab DRW 4WD	6.4L V-8	12,010 (a6,i)
Ram 3500 Mega Cab DRW 4WD	6.4L V-8	15,510 (a6,k)
Ram 3500 Mega Cab DRW 4WD	6.7L I-6 TD	15,430 (m6,g)
Ram 3500 Mega Cab DRW 4WD	6.7L I-6 TD	17,430 (m6,i)
Ram 3500 Mega Cab DRW 4WD	6.7L I-6 TD	16,480 (a6,g)
Ram 3500 Mega Cab DRW 4WD	6.7L I-6 TD	18,480 (a6,i)
Ram 3500 Mega Cab DRW 4WD	6.7L I-6 TD	21,480 (a6,k)
Ram 3500 Mega Cab DRW 4WD	6.7L I-6 TD	20,320 (a6,g)*
Ram 3500 Mega Cab DRW 4WD	6.7L I-6 TD	23,320 (a6,i)*
Ram 3500 Mega Cab DRW 4WD	6.7L I-6 TD	28,820 (a6,k)*

\*Heavy duty automatic transmission

## RAM PROMASTER VAN

Ram ProMaster Van	All	5,100
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## FORD

### E-SERIES VAN/WAGON

E-150 Van	4.6L V-8	6,000 (i)
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E-150 Van	4.6L V-8	6,500 (k)
E-150 Van	5.4L V-8	7,500 (i/k)
E-150 Extended Van	4.6L V-8	5,900 (i)
E-150 Extended Van	4.6L V-8	6,400 (k)
E-150 Extended Van	5.4L V-8	7,300 (i/k)
E-250 Van	4.6L V-8	6,000 (i)
E-250 Van	4.6L V-8	6,500 (k)
E-250 Van	5.4L V-8	7,400 (i/k)
E-250 Extended Van	4.6L V-8	5,900 (i)
E-250 Extended Van	4.6L V-8	6,400 (k)
E-250 Extended Van	5.4L V-8	7,300 (i/k)
E-350 Super Duty Van	5.4L V-8	7,400 (i/k)
E-350 Super Duty Van	6.8L V-10	9,100 (i)
E-350 Super Duty Van	6.8L V-10	10,000 (k)
E-350 Super Duty Extended Van	5.4L V-8	7,200 (i/k)
E-350 Super Duty Extended Van	6.8L V-10	9,000 (i)
E-350 Super Duty Extended Van	6.8L V-10	10,000 (k)
E-150 Wagon	4.6L V-8	5,600 (i)
E-150 Wagon	4.6L V-8	6,100 (k)
E-150 Wagon	5.4L V-8	7,000 (i/k)
E-350 Super Duty Wagon	5.4L V-8	6,700 i/k
E-350 Super Duty Wagon	6.8L V-10	8,500 (i)
E-350 Super Duty Wagon	6.8L V-10	10,000 (k)
E-350 Super Duty Ext. Wagon	5.4L V-8	6,500 (i/k)
E-350 Super Duty Ext. Wagon	6.8L V-10	8,300 (i)
E-350 Super Duty Ext. Wagon	6.8L V-10	10,000 (k)

### EDGE, ESCAPE, EXPLORER, EXPEDITION, FLEX

Edge	3.5L V-6	3,500 (t)
Edge	3.7L V-6	2,000*
Escape	1.6L I-4 TC	2,000
Escape	2.0L I-4 TC	3,500 (t)
Explorer	2.0L I-4 TC	2,000
Explorer	3.5L V-6	2,000
Explorer	3.5L V-6	5,000 (t)
Expedition 2WD	5.4L V-8	6,000
Expedition 2WD	5.4L V-8	9,200 (t)
Expedition 4WD	5.4L V-8	6,000
Expedition 4WD	5.4L V-8	9,000 (t)
Expedition EL 2WD	5.4L V-8	6,000
Expedition EL 2WD	5.4L V-8	8,900 (t)
Expedition EL 4WD	5.4L V-8	6,000
Expedition EL 4WD	5.4L V-8	8,700 (t)
Flex	3.5L V-6	4,500 (t)

\*Sport model

# 2014 TOW RATINGS

## F-150

F-150 Reg Cab SB 2WD	3.7L V-6	5,500 (h)
F-150 Reg Cab SB 2WD	3.7L V-6	6,600 (i)
F-150 Reg Cab SB 2WD	3.7L V-6	7,900 (i)
F-150 Reg Cab SB 2WD	5.0L V-8	8,300 (h)
F-150 Reg Cab LB 2WD	3.7L V-6	5,600 (h)
F-150 Reg Cab LB 2WD	3.7L V-6	6,700 (i)
F-150 Reg Cab LB 2WD	5.0L V-8	8,400 (f)
F-150 Reg Cab LB 2WD	5.0L V-8	9,800 (h)
F-150 Reg Cab LB 2WD	5.0L V-8	10,000 (i)*
F-150 Reg Cab LB 2WD	6.2L V-8	8,800 (i)
F-150 Reg Cab LB 2WD	3.5L V-6 TC	9,700 (c)
F-150 Reg Cab LB 2WD	3.5L V-6 TC	9,800 (h)
F-150 Reg Cab LB 2WD	3.5L V-6 TC	11,300 (i/k,t)*
F-150 Reg Cab SB 4WD	3.7L V-6	6,300 (i)
F-150 Reg Cab SB 4WD	5.0L V-8	7,600 (h)
F-150 Reg Cab SB 4WD	5.0L V-8	8,000 (i)
F-150 Reg Cab LB 4WD	3.7L V-6	6,500 (i)
F-150 Reg Cab LB 4WD	5.0L V-8	8,100 (h)
F-150 Reg Cab LB 4WD	5.0L V-8	9,700 (i)
F-150 Reg Cab LB 4WD	3.5L V-6 TC	9,600 (f)
F-150 Reg Cab LB 4WD	3.5L V-6 TC	9,700 (h/i)
F-150 Reg Cab LB 4WD	3.5L V-6 TC	11,300 (i/k,t)*
F-150 SuperCab Std Bed 2WD	3.7L V-6	6,400 (i)
F-150 SuperCab Std Bed 2WD	5.0L V-8	8,100 (f)
F-150 SuperCab Std Bed 2WD	5.0L V-8	9,500 (h)
F-150 SuperCab Std Bed 2WD	5.0L V-8	9,800 (i)
F-150 SuperCab Std Bed 2WD	6.2L V-8	11,300 (i)
F-150 SuperCab Std Bed 2WD	3.5L V-6 TC	9,500 (c)
F-150 SuperCab Std Bed 2WD	3.5L V-6 TC	9,800 (h)
F-150 SuperCab Std Bed 2WD	3.5L V-6 TC	11,300 (i/k,t)
F-150 SuperCab LB 2WD	5.0L V-8	7,900 (f)
F-150 SuperCab LB 2WD	5.0L V-8	9,300 (h)
F-150 SuperCab LB 2WD	5.0L V-8	9,600 (i)*
F-150 SuperCab LB 2WD	6.2L V-8	8,400 (i)
F-150 SuperCab LB 2WD	3.5L V-6 TC	9,300 (f)
F-150 SuperCab LB 2WD	3.5L V-6 TC	9,600 (h)
F-150 SuperCab LB 2WD	3.5L V-6 TC	11,300 (i/k,t)*
F-150 SuperCab SB 4WD (Raptor)	6.2L V-8	6,000 (k)
F-150 SuperCab Std Bed 4WD	3.7L V-6	6,100 (i)
F-150 SuperCab Std Bed 4WD	5.0L V-8	7,800 (h)
F-150 SuperCab Std Bed 4WD	5.0L V-8	9,400 (i)
F-150 SuperCab Std Bed 4WD	6.2L V-8	9,700 (h)
F-150 SuperCab Std Bed 4WD	6.2L V-8	11,200 (i)

F-150 SuperCab Std Bed 4WD	3.5L V-6 TC	9,400 (f)
F-150 SuperCab Std Bed 4WD	3.5L V-6 TC	9,700 (h/i)
F-150 SuperCab Std Bed 4WD	3.5L V-6 TC	11,300 (i/k,t)
F-150 SuperCab LB 4WD	5.0L V-8	7,600 (h)
F-150 SuperCab LB 4WD	5.0L V-8	9,200 (i)
F-150 SuperCab LB 4WD	5.0L V-8	9,300 (i)*
F-150 SuperCab LB 4WD	3.5L V-6 TC	9,300 (f)
F-150 SuperCab LB 4WD	3.5L V-6 TC	9,600 (h/i)
F-150 SuperCab LB 4WD	3.5L V-6 TC	11,100 (i/k,t)*
F-150 SuperCrew Cab SB 2WD	3.7L V-6	6,300 (i)
F-150 SuperCrew Cab SB 2WD	5.0L V-8	8,000 (f/h)
F-150 SuperCrew Cab SB 2WD	5.0L V-8	9,400 (i)
F-150 SuperCrew Cab SB 2WD	6.2L V-8	9,800 (h)
F-150 SuperCrew Cab SB 2WD	6.2L V-8	11,300 (i)
F-150 SuperCrew Cab SB 2WD	3.5L V-6 TC	9,400 (c)
F-150 SuperCrew Cab SB 2WD	3.5L V-6 TC	9,800 (h/i)
F-150 SuperCrew Cab SB 2WD	3.5L V-6 TC	11,300 (i/k,t)
F-150 SuperCrew Cab Std Bed 2WD	5.0L V-8	7,900 (f/h)
F-150 SuperCrew Cab Std Bed 2WD	5.0L V-8	9,300 (i)
F-150 SuperCrew Cab Std Bed 2WD	5.0L V-8	9,500 (i)*
F-150 SuperCrew Cab Std Bed 2WD	6.2L V-8	9,700 (h)
F-150 SuperCrew Cab Std Bed 2WD	6.2L V-8	11,200 (i)
F-150 SuperCrew Cab Std Bed 2WD	3.5L V-6 TC	8,400 (c)
F-150 SuperCrew Cab Std Bed 2WD	3.5L V-6 TC	9,300 (f)
F-150 SuperCrew Cab Std Bed 2WD	3.5L V-6 TC	9,700 (h/i)
F-150 SuperCrew Cab Std Bed 2WD	3.5L V-6 TC	11,300 (i/k,t)
F-150 SuperCrew Cab SB 4WD	5.0L V-8	7,700 (h)
F-150 SuperCrew Cab SB 4WD	5.0L V-8	9,300 (i)
F-150 SuperCrew Cab SB 4WD	6.2L V-8	9,600 (h)
F-150 SuperCrew Cab SB 4WD	6.2L V-8	11,100 (i)
F-150 SuperCrew Cab SB 4WD	3.5L V-6 TC	9,200 (f)
F-150 SuperCrew Cab SB 4WD	3.5L V-6 TC	9,600 (h/i/k)
F-150 SuperCrew Cab SB 4WD	3.5L V-6 TC	11,200 (i/k,t)
F-150 SuperCrew Cab SB 4WD (Raptor)	6.2L V-8	8,000 (k)
F-150 SuperCrew Cab Std Bed 4WD	5.0L V-8	7,500 (h)
F-150 SuperCrew Cab Std Bed 4WD	5.0L V-8	9,100 (i)
F-150 SuperCrew Cab Std Bed 4WD	5.0L V-8	9,200 (i)*
F-150 SuperCrew Cab Std Bed 4WD	6.2L V-8	9,500 (h)
F-150 SuperCrew Cab Std Bed 4WD	6.2L V-8	11,000 (i)
F-150 SuperCrew Cab Std Bed 4WD	3.5L V-6 TC	9,100 (f)
F-150 SuperCrew Cab Std Bed 4WD	3.5L V-6 TC	9,500 (h/i)
F-150 SuperCrew Cab Std Bed 4WD	3.5L V-6 TC	11,100 (i/k,t)*

\*requires heavy-duty payload package

NOTE: F-150 Limited models may tow less. See your dealer for details.



**F-250/F-350/F-450 SUPER DUTY, CONVENTIONAL TOWING**

F-250/350 Reg Cab SRW 2WD	6.2L V-8	12,500 (All)
F-250/350 Reg Cab SRW 2WD	6.7L V-8 TD	12,500 (All)
F-250/350 Reg Cab SRW 4WD	6.2L V-8	12,500 (All)
F-250/350 Reg Cab SRW 4WD	6.7L V-8 TD	12,500 (All)
F-350 Reg Cab DRW 2WD	6.2L V-8	13,100 (i)
F-350 Reg Cab DRW 2WD	6.2L V-8	15,000 (I)
F-350 Reg Cab DRW 2WD	6.7L V-8 TD	15,000 (All)
F-350 Reg Cab DRW 4WD	6.2L V-8	12,700 (i)
F-350 Reg Cab DRW 4WD	6.2L V-8	15,000 (I)
F-350 Reg Cab DRW 4WD	6.7L V-8 TD	15,000 (All)
F-250/F350 SC SRW 2WD	6.2L V-8	12,500 (All)
F-250/F350 SC SRW 2WD	6.7L V-8 TD	14,000 (All)
F-250 SC SRW 4WD	6.2L V-8	12,400 (i)
F-250 SC SRW 4WD	6.2L V-8	12,500 (I)
F-250 SC SRW 4WD	6.7L V-8 TD	14,000 (All)
F-350 SC SRW 4WD	6.2L V-8	12,300 (i)
F-350 SC SRW 4WD	6.2L V-8	12,500 (I)
F-350 SC SRW 4WD	6.7L V-8 TD	14,000 (All)
F-350 SC DRW 2WD	6.2L V-8	12,700 (i)
F-350 SC DRW 2WD	6.2L V-8	15,000 (I)
F-350 SC DRW 2WD	6.7L V-8 TD	15,000 (All)
F-350 SC DRW 4WD	6.2L V-8	12,300 (i)
F-350 SC DRW 4WD	6.2L V-8	15,000 (I)
F-350 SC DRW 4WD	6.7L V-8 TD	15,000 (All)
F-250/350 CC SRW 2WD	6.2L V-8	12,500 (All)
F-250/350 CC SRW 2WD	6.7L V-8 TD	14,000 (All)
F-250 CC SRW 4WD	6.2L V-8	12,200 (i)
F-250 CC SRW 4WD	6.2L V-8	12,500 (I)
F-250 CC SRW 4WD	6.7L V-8 TD	14,000 (All)
F-350 CC SRW 4WD	6.2L V-8	12,100 (i)
F-350 CC SRW 4WD	6.2L V-8	12,500 (I)
F-350 CC SRW 4WD	6.7L V-8 TD	14,000 (All)
F-350 CC DRW 2WD	6.2L V-8	12,500 (i)
F-350 CC DRW 2WD	6.2L V-8	15,000 (I)
F-350 CC DRW 2WD	6.7L V-8 TD	18,500 (All)
F-350 CC DRW 4WD	6.2L V-8	12,100 (i)
F-350 CC DRW 4WD	6.2L V-8	15,000 (I)
F-350 CC DRW 4WD	6.7L V-8 TD	18,500 (All)
F-450 DRW 4WD	6.7L V-8 TD	18,500 (All)

**F-250/F-350/F-450 SUPER DUTY, FIFTH-WHEEL TOWING**

F-250/350 Reg Cab SRW 2WD	6.2L V-8	12,900 (i)
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F-250/350 Reg Cab SRW 2WD	6.2L V-8	15,900 (I)
F-250/350 Reg Cab SRW 2WD	6.7L V-8 TD	16,800 (f/h)
F-250/350 Reg Cab SRW 4WD	6.2L V-8	12,500 (i)
F-250/350 Reg Cab SRW 4WD	6.2L V-8	15,500 (I)
F-250/350 Reg Cab SRW 4WD	6.7L V-8 TD	16,400 (f/h)
F-350 Reg Cab DRW 2WD	6.2L V-8	13,000 (i)
F-350 Reg Cab DRW 2WD	6.2L V-8	16,000 (I)
F-350 Reg Cab DRW 2WD	6.7L V-8 TD	23,200 (i)
F-350 Reg Cab DRW 4WD	6.2L V-8	12,600 (i)
F-350 Reg Cab DRW 4WD	6.2L V-8	15,600 (I)
F-350 Reg Cab DRW 4WD	6.7L V-8 TD	22,900 (i)
F-250/F-350 SC SRW 2WD	6.2L V-8	12,700/12,600 (i)
F-250/F-350 SC SRW 2WD	6.2L V-8	15,700/15,600 (I)
F-250/F-350 SC SRW 2WD	6.7L V-8 TD	16,500/16,400 (f/h)
F-250 SC SRW 4WD	6.2L V-8	12,300 (i)
F-250 SC SRW 4WD	6.2L V-8	15,300 (I)
F-250 SC SRW 4WD	6.7L V-8 TD	16,100 (f/h)
F-350 SC SRW 4WD	6.2L V-8	12,200 (i)
F-350 SC SRW 4WD	6.2L V-8	15,200 (I)
F-350 SC SRW 4WD	6.7L V-8 TD	16,100 (f/h)
F-350 SC DRW 2WD	6.2L V-8	12,600 (i)
F-350 SC DRW 2WD	6.2L V-8	15,600 (I)
F-350 SC DRW 2WD	6.7L V-8 TD	22,800 (i)
F-350 SC DRW 4WD	6.2L V-8	12,200 (i)
F-350 SC DRW 4WD	6.2L V-8	15,200 (I)
F-350 SC DRW 4WD	6.7L V-8 TD	22,400 (i)
F-250/F-350 CC SRW 2WD	6.2L V-8	12,400 (i)
F-250/F-350 CC SRW 2WD	6.2L V-8	15,400 (I)
F-250/F-350 CC SRW 2WD	6.7L V-8 TD	16,300 (f/h)
F-250 CC SRW 4WD	6.2L V-8	12,100 (i)
F-250 CC SRW 4WD	6.2L V-8	15,100 (I)
F-250 CC SRW 4WD	6.7L V-8 TD	15,900 (f/h)
F-350 CC SRW 4WD	6.2L V-8	12,000 (i)
F-350 CC SRW 4WD	6.2L V-8	15,000 (I)
F-350 CC SRW 4WD	6.7L V-8 TD	15,900 (f/h)
F-350 CC DRW 2WD	6.2L V-8	12,400 (i)
F-350 CC DRW 2WD	6.2L V-8	15,400 (I)
F-350 CC DRW 2WD	6.7L V-8 TD	22,600 (i)
F-350 CC DRW 4WD	6.2L V-8	12,100 (i)
F-350 CC DRW 4WD	6.2L V-8	15,000 (I)
F-350 CC DRW 4WD	6.7L V-8 TD	22,800 (i)
F-450 CC DRW 4WD	6.7L V-8 TD	24,700

# 2014 TOW RATINGS

## HONDA

Odyssey	3.5L V-6	3,500
Pilot 2WD	3.5L V-6	2,000
Pilot 4WD	3.5L V-6	4,500
Ridgeline	3.5L V-6	5,000

## HYUNDAI

Santa Fe	3.3L V-6	5,000
Tucson	All	2,000

## INFINITI

QX50	3.7L V-6	2,000
QX70	3.7L V-6	2,000
QX70	5.0L V-8	3,500
QX60	3.5L V-6	5,000
QX80	5.6L V-8	8,500

## JEEP

Cherokee	2.4L I-4	2,000
Cherokee	3.2L V-6	4,500 (t)
Grand Cherokee 2WD/4WD	3.6L V-6	6,200
Grand Cherokee 2WD	5.7L V-8	7,400
Grand Cherokee 4WD	5.7L V-8	7,200
Grand Cherokee 2WD	3.0L V-6 TD	7,400
Grand Cherokee 4WD	3.0L V-6 TD	7,200
Wrangler (All)	3.6L V-6	2,000

## KIA

Sorento	3.5L V-6	3,500
Sportage	All	2,000

## LAND ROVER

Land Rover LR2	2.0 I-4 TC	3,500
Land Rover LR4	5.0L V-8	7,716
Range Rover	5.0L V-8	7,716
Range Rover Sport	All	7,716
Range Rover Evoq	2.0L I-4 TC	3,500

## LEXUS

RX 350	3.5L V-6	3,500
RX 450h AWD (hybrid)	3.5L V-6	3,500
GX 470	4.6L V-8	6,500
LX 570	5.7L V-8	7,000

## LINCOLN

MKT	3.7L V-6	2,000
MKT	3.5L V-6 TC	4,500
MKX	3.7L V-6	3,500
Navigator 2WD	5.4L V-8	6,000
Navigator 2WD	5.4L V-8	9,000 (t)
Navigator L 2WD	5.4L V-8	6,000
Navigator L 2WD	5.4L V-8	8,700 (t)
Navigator 4WD	5.4L V-8	6,000
Navigator 4WD	5.4L V-8	8,700 (t)
Navigator L 4WD	5.4L V-8	6,000
Navigator L 4WD	5.4L V-8	8,500 (t)

## MAZDA

CX-5	2.0L I-4	2,000
CX-5	2.5L I-4	2,000
CX-9 (All)	3.7L V-6	3,500

## MERCEDES-BENZ

G550	5.5L V-8	7,716
G63 AMG	5.5L V-8 TC	7,716
GLK350	3.5L V-6	3,500
GLK250 BlueTEC	2.5L I-4 TD	3,500
GL350 BlueTEC	3.0 I-4 TD	7,500
GL450	4.6L V-8 TC	7,500
GL550	4.6L V-8 TC	7,500
GL63 AMG	5.5L V8 TC	7,500
ML350 BlueTEC	3.0L TD V-6	7,200
ML350	3.5L V-6	6,600
ML350 4WD	3.5L V-6	7,200
ML550	4.6L V-8 TC	7,200
ML63 AMG	5.5L V-8 TC	7,200

## MITSUBISHI

Outlander 2WD/4WD	3.0L V-6	3,500
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## NISSAN

Armada 2WD	5.6L V-8	8,200
Armada 4WD	5.6L V-8	9,000
Frontier KC 2WD	2.5L I-4	3,500
Frontier KC 2WD	4.0L V-6	6,300
Frontier KC 4WD	4.0L V-6	6,100
Frontier CC 2WD	4.0L V-6	6,300

Frontier CC 4WD	4.0L V-6	6,100
Murano	3.5L V-6	3,500
Pathfinder	3.5L V-6	5,000
Quest	3.5L V-6	3,500
Titan KC 2WD SB S	5.6L V-8	7,400
Titan KC 4WD SB S	5.6L V-8	7,400
Titan KC 2WD SB SV	5.6L V-8	9,500
Titan KC 4WD SB SV	5.6L V-8	9,400
Titan KC 4WD SB PRO 4X	5.6L V-8	9,300
Titan CC 2WD S	5.6L V-8	7,400
Titan CC 4WD S	5.6L V-8	7,300
Titan CC 2WD SV	5.6L V-8	9,400
Titan CC 4WD SV	5.6L V-8	9,300
Titan CC 4WD PRO 4X	5.6L V-8	9,300
Titan CC 4WD SL	5.6L V-8	9,200
Titan CC 4WD SL	5.6L V-8	9,100
Titan LB CC 2WD	5.6L V-8	9,300
Titan LB CC 4WD	5.6L V-8	9,100
Xterra	4.0L V-6	5,000

## PORSCHE

Cayenne	All	7,716
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## SUBARU

Tribeca	3.6L H6	2,000
Tribeca	3.6L H6	3,500 (t)
Outback	2.5L H4	2,700
Outback	3.6R H6	3,000

## TOYOTA

4Runner (All)	4.0L V-6	4,700
FJ Cruiser	4.0L V-6	4,700
Highlander	3.5L V-6	2,000
Highlander	3.5L V-6	5,000 (t)
Highlander Hybrid	3.5L V-6	3,500
Land Cruiser	5.7L V-8	8,500
Sienna	3.5L V-6	3,500 (t)
Sequoia 2WD SR5	5.7L V-8	7,400
Sequoia 4WD SR5	5.7L V-8	7,100
Sequoia 2WD Ltd	5.7L V-8	7,300
Sequoia 4WD Ltd	5.7L V-8	7,100
Sequoia 2WD Platinum	5.7L V-8	7,200
Sequoia 4WD Platinum	5.7L V-8	7,000

Tacoma Reg Cab	2.7L I-4	3,500
Tacoma Access Cab	2.7L I-4	3,500
Tacoma Access Cab 2WD/4WD	4.0L V-6	3,500
Tacoma Access Cab 2WD/4WD	4.0L V-6	6,500 (t)
Tacoma Double Cab 2WD/4WD	2.7L I-4	3,400
Tacoma Double Cab PreRunner	2.7L I-4	3,500
Tacoma Double Cab 2WD/4WD	4.0L V-6	3,500
Tacoma Double Cab 2WD/4WD SB	4.0L V-6	6,500 (t)
Tacoma Double Cab 2WD/4WD LB	4.0L V-6	6,400 (t)
Tundra Reg Cab LB 2WD	4.0L V-6	4,500
Tundra Reg Cab LB 2WD	5.7L V-8	8,500
Tundra Reg Cab LB 2WD	5.7L V-8	10,500 (t)
Tundra Reg Cab LB 4WD	5.7L V-8	8,200
Tundra Reg Cab LB 4WD	5.7L V-8	10,200 (t)
Tundra Double Cab Std Bed 2WD	4.0L V-6	4,500
Tundra Double Cab Std Bed 2WD	4.6L V-8	6,800
Tundra Double Cab Std Bed 2WD	5.7L V-8	8,200
Tundra Double Cab Std Bed 2WD	5.7L V-8	10,200 (t)
Tundra Double Cab Std Bed 4WD	4.6L V-8	6,500
Tundra Double Cab Std Bed 4WD	5.7L V-8	7,800
Tundra Double Cab Std Bed 4WD	5.7L V-8	9,900 (t)
Tundra Double Cab LB 2WD	5.7L V-8	8,100
Tundra Double Cab LB 2WD	5.7L V-8	10,100 (t)
Tundra Double Cab LB 4WD	5.7L V-8	9,800
Tundra CrewMax 2WD	4.6L V-8	6,600
Tundra CrewMax 2WD	5.7L V-8	8,100
Tundra CrewMax 2WD	5.7L V-8	10,100 (t)
Tundra CrewMax 4WD	4.6L V-8	6,300
Tundra CrewMax 4WD	5.7L V-8	7,800
Tundra CrewMax 4WD	5.7L V-8	9,800 (t)

*NOTE: Toyota Tundra tow ratings vary depending on trim level and equipment selected. See your dealer for details. All tow ratings compliant with SAE J2807 tow standard.*

## VOLKSWAGEN

Tiguan	2.0L I-4TC	2,200
Touareg	All	7,716

## VOLVO

S60	All	3,300
S80	All	3,300
XC60	All	3,300
XC70	All	3,300
XC90	All	3,970



## Selecting and maintaining the proper hardware for your tow vehicle and trailer

**T**he process of buying a new travel trailer or fifth-wheel is wrought with choices. Negotiating a price; arranging financing; settling on a fair trade-in value for your old rig; then choosing insurance, floorplans, décor schemes and optional equipment are only the beginning. However, one of the most important choices may be considered an afterthought: choosing the proper trailer hitch.

Fortunately, selecting the right hitch isn't difficult, nor is its installation — after locating a competent shop, that is. Maintaining proper adjustment of the hitch on an ongoing basis is important, and it has a large bearing on the safety and ease of trailer towing.

Trailers are available in two different designs: a travel trailer that's coupled to the rear of the tow vehicle by a conventional hitch ball, and a fifth-wheel trailer that utilizes a fifth-wheel (or gooseneck) hitch mounted in the truck bed, centered over the rear axle. The hitching methods are as different as the trailers and require specific knowledge by the installer and trailer owner.

### CONVENTIONAL HITCHES

All hitches are rated by their respective manufacturers to safely handle up to a specific gross vehicle weight rating (GVWR), which is the weight of the trailer with full water and LP-gas cylinders and all supplies aboard. Several weight classes exist for hitches designed for towing conventional travel trailers.

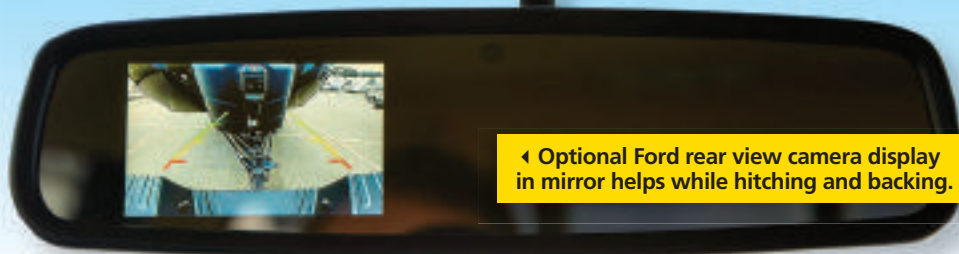
Weight-carrying hitches are intended for lighter trailers because the entire trailer's hitch weight is carried on the ball and transferred to the rear axle of the tow vehicle, whereas weight-distributing hitches are designed to distribute the trailer's hitch weight to all axles of the tow vehicle and trailer, making larger,

heavier trailers with considerably higher hitch weights towable without destabilizing the tow vehicle.

A travel trailer with ideal weight distribution will have a minimum hitch weight of about 12 percent of the gross weight, and the maximum can range upward to about 15 percent, provided it does not violate the rating of the hitch.

Except for the lightest folding trailers, hitches rated Class II and higher are used for recreational towing, and they use a receiver bolted to the tow vehicle's frame. The hitch receiver — which may have box dimensions of 1¼ inches square, 2 inches square or 2½ inches square, with the larger boxes for higher





◀ Optional Ford rear view camera display in mirror helps while hitching and backing.

load ratings — accepts a slide-in ball mount (or draw bar), which is secured with a pin.

Besides serving as the trailer/receiver attachment point, the ball mount also is used in varying heights (known as “drop”) to couple the trailer in a level fashion (frame parallel to the road surface), which is desirable for best stability and trailer-brake performance. Some ball mounts are fixed, while others are adjustable.

Ball mounts used for weight-carrying hitches are quite different than those used for weight distributing. The need for weight-distributing hitches varies with tow-vehicle type and trailer weight. A trailer with 350 pounds of hitch weight may present no challenge for a stiffly sprung, long-wheelbase HD pickup, while it may destabilize a softly sprung compact SUV. In general, a weight-distributing hitch will improve stability in most situations because weight resting on a hitch ball (when a weight-carrying hitch is used) loads the rear axle excessively by placing all of the hitch weight on that axle in addition to weight that is transferred from the front axle to the rear in a seesaw lever action.

Because many receivers are usable in either weight-carrying or weight-distributing configurations, depending on the ball mount, the receiver manufacturer may list both ratings.

Weight-distributing hitches should be used in many weight situations of Class II, and in most situations of Class III and above. Unlike their weight-carrying counterparts, these hitches typically use a much heavier ball mount (that’s height-adjustable), plus a pair of spring bars that provide the leverage needed to distribute weight fore and aft.

## HITCH ADJUSTMENT

After having a weight-distributing hitch of proper weight rating installed, owners may take the fine-tuning for granted. This can be a costly error because an improperly adjusted weight-distributing hitch can contribute to trailer sway, which is a very undesirable, and

unsafe, handling trait.

The keys to happy towing are proper hitch-ball height and proper tension on the spring bars. When all aspects are correct, the tow vehicle and the trailer are at the proper ride height, which in most cases is level. One exception will be described later. Proper hitch adjustment helps prevent rear-axle overloading and improves braking and steering response.

Evaluating the proper adjustment of a weight-distributing hitch is relatively simple: The tow vehicle should maintain the same attitude before hitching that it does after hitching, measured at reference points at the front and rear bumpers or wheel wells. If it is level before hitching, it should be level afterward, although slightly lower due to the addition of hitch weight. A level attitude means the adequate load has been placed on the spring bars to distribute portions of the hitch weight equally to the front and rear axles. If the rear of the tow vehicle sags after hitching, then the spring-bar loading isn’t adequate.

The exception to level attitude: If the tow vehicle is a stiffly sprung pickup and the rear of the truck is higher than the front, that attitude should be maintained after hitching. Such trucks will often carry heavy loads without the need for weight-distributing hitches and without sagging. But care must be exercised here. Although the truck may not look like it’s sagging visually, the hitch weight carried by the rear axle may still create an unstable situation.

If the trailer is not level after the spring bars have been adjusted to create the proper tow-vehicle attitude, then the ball height should be corrected.

Trailer sway can be a problem if trailer balance or hitch adjustment are not correct because the trailer exerts steering leverage on the tow vehicle by virtue of being connected to the tow vehicle 3 or 4 feet behind the rear axle. With correct hitching, trailer balance may be a problem if the hitch weight is less than 10 per-

# THE BASICS OF HITCHING

cent of gross weight. It should be more than 10 percent (we recommend a minimum of 12 percent) for best stability.

Even with a well-balanced trailer and a properly adjusted hitch, use of a sway-control device is highly recommended. Often called sway bars (not to be confused with anti-roll bars fitted to axles of tow vehicles), sway-control devices are designed to damp rotation of the coupler on the hitch ball. They improve the handling characteristics of the trailer/tow vehicle combination whether the hitch method is weight-carrying or weight-distributing.

Sway-control devices are available in two different configurations, the most popular of which is one that employs a steel bar, attached to the ball mount, that is encased in a rail or tube attached to a small ball on the trailer A-frame. Inside the rail or tube is friction material that is clamped against the steel bar. Any pivoting of the trailer coupler on the bar causes the bar to slide within the rail, creating drag and damping sway. On larger trailers, it's often possible to use a pair of friction-type units for additional sway control.

One popular hitch, the Equal-i-zer, includes a friction feature in the hitch design in that the tips of spring bars create friction on trailer-frame brackets. Cam-type sway units work by modifying the operation of the spring bars on a weight-distributing hitch. As the trailer turns, a cam increases the tension on one of the bars, creating a force that tends to pull the trailer back into a straight line. The harder the trailer turns, the stronger this self-centering force becomes. Since this scheme relies on spring-bar tension, it's generally most effective on trailers with relatively high hitch weights (e.g., trailers requiring considerable spring-bar tension).

The Hensley Arrow and PullRite hitch sys-

tems offer different approaches to controlling sway. The Hensley unit prevents sway through use of trapezoidal hitch linkages that make the tow vehicle and trailer act as a single unit, with no pivoting of the coupler on the ball unless the tow vehicle turns. Thus, during typical highway travel the tow vehicle and trailer are connected as non-articulated vehicles, and tend to function as a single unit. Even so, there is no restriction on the tow vehicle's capability for turns.

The PullRite, in effect, moves the hitch-pivot point to a location immediately aft of the tow vehicle's rear axle, dramatically reducing the leverage the trailer can exert on the tow vehicle.

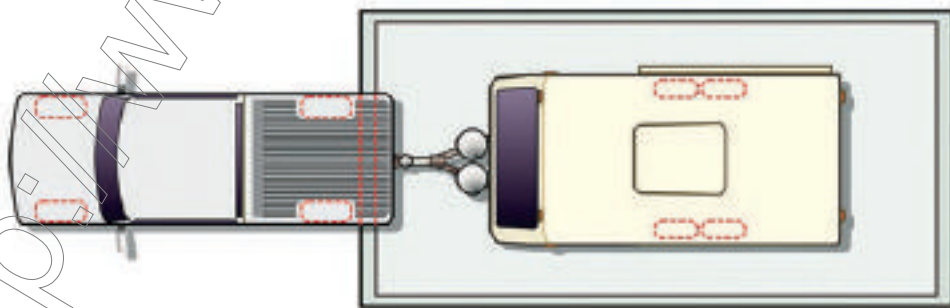
## FIFTH-WHEEL HITCHES

Fifth-wheel towing is a different story altogether. The trailer's kingpin serves as the pivot point for the fifth-wheel hitch, which is centered slightly ahead of or over the truck's rear axle. The trailer's kingpin slides into the hitch saddle, where it is secured by latching jaws or some other mechanism. This saddle is attached to a support base, which transfers the towing forces to the truck frame.

The design prevents the trailer from having any steering effect on the tow vehicle, and is what gives fifth-wheel trailers such good road manners. Wind gusts and road irregularities have little or no effect on tow-vehicle stability.

Most hitches are secured to the bed with a pair of mounting rails, while other underbed systems leave the truck bed flat after the hitch is removed.

Until a few years ago, fifth-wheel hitches have been strictly aftermarket add-ons. But Ford, GM and Ram upped the ante with the availability of a factory-installed fifth-wheel hitch, providing clean installation and a factory warranty. These factory hitches are installed



**To determine weight, first get a reading on axle weight, then unhitch the trailer for a total weight reading (with the tow vehicle's wheels off the scale), and then subtract the two.**





### USING A WEIGHT-CARRYING HITCH



### USING A WEIGHT-DISTRIBUTING HITCH

**A weight-distributing hitch distributes weight to all axles of the tow vehicle and the trailer.**

using specially designed pins that lock the rails into the bed. The trailer's electrical connection has been mounted into the side of the bed for added convenience.

Most removable aftermarket systems use permanently mounted rails with pins to secure the hitch saddle. The underbed style of the fifth-wheel-hitch mount is completely different in that the entire hitch mechanism is removed by simply pulling a lever in the wheel well. PullRite also uses an underbed system with removable connection pins. Some systems, such as the B&W Turnover Ball and Companion, allow the hitch saddle and support base to be removed separately, making it easier on the back when lifting the hardware.

Many fifth-wheel hitches are mounted so that they tilt fore and aft; however, having only the fore-and-aft pivot restricts side-to-side movement.

Some hitches have heads that pivot in multiple directions, allowing the pinbox to move

in any direction with respect to the pickup, while still maintaining a tight mechanical connection. This also makes it easier to hitch or unhitch the trailer on uneven ground.

Another strategy for improving trailer-truck flexibility involves the use of air springs as part of the hitch design. Typically, the hitch is suspended on multiple bladder-type air bags, which support most of the trailer's kingpin weight. Aside from providing considerable articulation, these bags are also capable of smoothing out much of the road shocks and vibration that would otherwise be transmitted from the trailer to the tow vehicle. Adjustments to the system can be accomplished by varying the amount of air pressure in the bags.

Other suspension-type hitches use a hinged pivot arm and a single airbag setup or a rubber spring in shear to provide truck-to-trailer impact damping while the hitch-saddle mechanism provides the side- and fore/aft head tilting.

Shortbed pickups are now more popular



**Factory fifth-wheel hitch in Ford Super Duty truck mounts using special pins.**

# THE BASICS OF HITCHING

**Equal-i-zer Sway-Control Hitch**



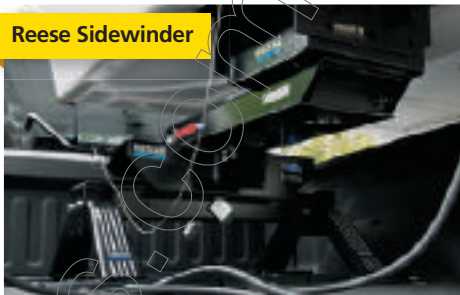
**Hensley Cub**



**B&W Companion Fifth-Wheel Hitch**



**Reese Sidewinder**




than ever, particularly among extended-cab models. However, a shortbed often causes complications when using the truck for towing a fifth-wheel because the proper hitch-mounting location is far enough forward to cause trailer-to-cab collisions during sharp turns. Installing an extended pinbox provides a workable solution with smaller trailers with modest pin weights; however, owners should first check with the pinbox manufacturer before adding any extension.

One solution is a conventional hitch that can be manually unlocked and moved aft on a special set of rails before making tight turns. PullRite offers a hitch that performs this motion automatically, returning to the forward-towing position after the turn is completed. Rearward travel can be as much as 22 inches for some models, which is generally adequate for accommodating 102-inch-wide trailers.

Turns as tight as 90 degrees are even possible.

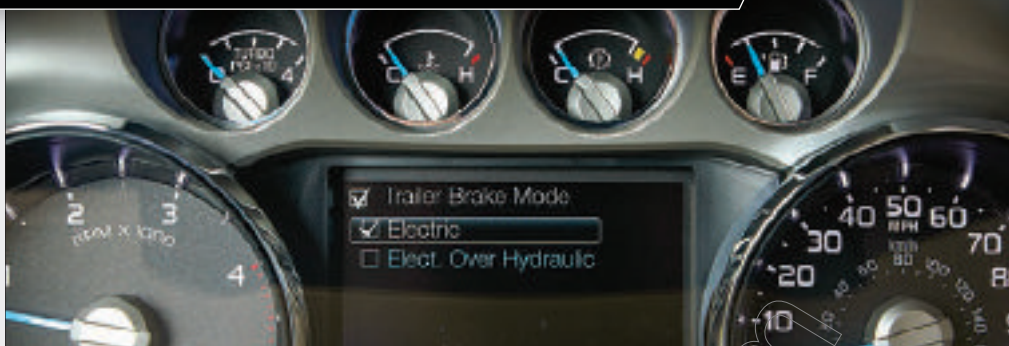
Some companies offer manually moving hitches to accommodate sharp turns, but the owner is responsible for unlatching the mechanism. Another system, the Reese Sidewinder, uses a special pin box that automatically handles clearance problems.

Maximum weight ratings for fifth-wheel hitches typically range up to 30,000 pounds gross weight, with as much as 25 percent of that on the hitch (most fivers have 20 percent hitch weight or less), and it's best to choose a unit that not only will handle the trailer it will be used to tow, but also any possibility of a larger trailer, although a higher-rated hitch will cost more and will be slightly heavier.

Whether towing a conventional trailer or a fifth-wheel, the use of a properly rated hitch, adjusted correctly, will aid in creating a safer and more manageable towing experience. 

**Husky Center Line Towing System**





## Technological advances help smooth out the process and improve safety and reliability

**E**lectric-brake systems have been employed for several decades on most trailers that have any significant weight. Each trailer with electric brakes, in turn, also requires that the tow vehicle be fitted with a brake controller.

For years, brake-controller choices have been extensive — all aftermarket and all electric. Ford changed the game in 2005 with the first trailer-brake-control (TBC) system included as a factory-installed integral part of the tow vehicle's design, and GM and Dodge have long since followed suit. The TBC system synchronizes vehicle and trailer brakes for seamless braking, even under heavy load, to provide added driving control and confidence.

Until the advent of anti-lock brake systems (ABS), most brake controllers were tapped directly into the hydraulic lines of the tow vehicle's onboard hydraulic-braking system. They were often described as hydraulic/electric brake controllers, as they converted hydraulic pressure in the tow vehicle's brake system to an electric signal used to activate the trailer's brakes directly proportional to hydraulic pressure in the vehicle's braking system. A significant factor in the elimination of this system was the advent of ABS because the tow vehicle manufacturers cautioned against tapping into the hydraulic system.

### FORD'S TBC SYSTEM

As Ford was first to offer a factory-installed brake controller in the tow vehicle, let's look at its system. Ford's integrated controller electronically tracks hydraulic pressure inside the vehicle's master cylinder and uses the pressure,

along with vehicle speed, to modulate the amount of current produced for trailer brakes. Thus, the system accurately follows tow-vehicle braking with more at high pedal pressure, less at low, even to the point of using ABS. If the wheels of the tow vehicle are slipping, ABS goes into action for the tow vehicle as well as the trailer. The Ford system doesn't give the trailer the same functions and characteristics of true ABS, but when the truck's ABS is activated, the trailer-brake application is reduced to avoid wheel lockup, just as with true ABS. A dash monitor indicates the level of trailer braking, and a manual override is provided so the trailer brakes can be applied independently of tow-vehicle brakes. TBC-equipped Ford Super Duty trucks also enjoy an added element of safety; if the trailer is swaying, the TBC will actually apply the trailer brakes to help stabilize the trailer.

While the Ford brake control uses brake-pressure sensing, the GM and Dodge integrated controllers use inertia-type sensing to regulate trailer brake action. None of the systems can be retrofitted to earlier truck models, and aftermarket controllers still must be used for most other vehicles, so the demand for those aftermarket controllers remains quite large. Accordingly, it's helpful to understand what's





# TRAILER-BRAKE CONTROLS

out there, and how to make a good choice.

In essence, all electronic brake controllers fall into two general categories: timer-based brake controllers and inertia-based proportional brake controllers. All brake controllers generate an output signal to a trailer-brake system when a user first touches the tow vehicle's brake pedal or activates the brake controller's manual control, if so equipped. What happens next varies greatly, depending on whether you're using a timer-based or proportional brake controller.

While most manufacturers identify their proportional brake controllers as such, you usually won't see the words "timer-based" in the literature for a nonproportional brake controller. Instead, marketers will sometimes advertise timer-based controllers as having the advantage of requiring no leveling, but even that idea is confusing. Several proportional brake controllers do not require leveling. Timer-based controllers are also touted as being microprocessor-operated, but all brake controllers contain a processor of some kind. Even the most sophisticated timer-based microprocessor doesn't determine how hard you are braking, but how long you've been braking. A good rule of thumb is that if it doesn't say the word "proportional" somewhere in the literature, it's probably a timer-based brake controller.

## TIMER-BASED VS. PROPORTIONAL

A timer-based brake controller has a timer that generates an output signal for your RV's brakes that increases with the amount of time you keep your foot on the brake pedal. It doesn't know whether you're braking gently on a gradual downhill grade, or if you're in a panic stop. The rate of increase in output (the

slope of the voltage ramp) has no bearing on pedal effort, but can usually be adjusted for braking aggressiveness.

An inertia-based proportional controller generates an output that is, as the name suggests, directly proportional to your braking needs. Most proportional brake controllers measure the tow vehicle's rate of deceleration by means of a pendulum. The quicker you slow, the farther the pendulum is displaced, via inertia, from its at-rest position. This creates an electric signal to your trailer's brakes that is proportional to the deceleration rate.

Tekonsha and its sister companies use a series of LEDs and photoelectric detectors in their proportional controllers to determine the position of the displaced pendulum, and therefore determine the deceleration rate. Hayes Lemmerz uses the Hall effect, a physics principal involving moving magnets, to determine the pendulum's position.

All pendulum controllers have some potential for inaccuracies, as the pendulum can tilt slightly forward or backward on steep grades. Most such controllers employ a damping device to stabilize the sensor against vibrations, and the damper helps reduce the effect of the fore-or-aft-tilt problem.

The pendulum's position is adjusted through the level-control knob, which allows the pendulum to be oriented to a true vertical resting position to compensate for the angle of the brake-controller body (the "leveling" referred to in some timer-based-controller advertising). The level adjustment also allows the driver to pitch the pendulum slightly forward or aft of its normal resting position to set up the trailer so that its braking is either aggressive or delayed.

Most drivers prefer some braking effect from the trailer's brakes on the initial touch of the brake pedal, and adjust the brake controller accordingly to provide this so-called



◀ Tuson DireLink

▶ Hensley TruControl Silver II

threshold voltage. This adjustment produces some output (typically 2 volts), without the initial time period having passed or deceleration having occurred in the two electric brake-controller types. This time period, or deceleration event, is normally needed to activate the timer-based controller or the proportional pendulum-based controller, respectively.

With dozens of different models of brake controllers on the market, many RVers may find the selection of the right controller difficult without some form of guidance. While budgetary considerations may force a user into one category of controller, this is a critical system where pinching pennies may not be advisable.

When faced with the need for a panic stop, most drivers want a controller that will respond in proportion to braking needs at that moment. Keep in mind that a timer-based controller can't respond in this manner, as its output is fixed for a certain timed duration.

Among more recent developments, solid-state accelerometers are being used to measure braking force. Tekonsha has embraced this technology in its Prodigy P2 brake control. Hayes uses an accelerometer in its G2 Brake Boss, as does Hensley Manufacturing in its high-tech TruControl trailer brake control. Tuson offers the DireLink, which is a true network-based unit. The DireLink receives its data from the OBDII diagnostic port and provides proportional control of trailer brakes.

Some brake controllers aren't compatible with disc-brake systems on trailers; in such cases, the installation of a controller module — such as the Carlisle HydraStar — is necessary on the trailer in order to ensure functional braking.

## AFTERMARKET INSTALLATION

Critical to every successful brake-controller installation is the proper tow-vehicle wiring. While you should carefully follow the manu-

facturer's recommendations, there are certain common elements to almost every controller.

A reliable power source is a priority, which may include a vehicle's built-in circuitry for an aftermarket brake controller. The main power line should be at least a 10 AWG wire from a circuit breaker at the fuse box, or the battery, to the brake controller's power-input connection (follow specific instructions for your controller). The circuit should continue from the controller, without any splices, and terminate at the seven-pin connector found at the rear of the tow vehicle. Most manufacturers advise against grounding the controller to the vehicle's firewall, but recommend routing a 10 AWG (or larger) separate ground wire directly to the battery; the controller may not function properly if the ground connection is not made directly to the battery terminal.

The other connection is made to the brake-light circuit, downstream of the brake-light switch mounted to the brake-pedal assembly, so the controller senses when the brakes have been activated.

Later-model vehicles with towing packages have brake-control wiring bundled under the dash with a plug-in connector attached. A pigtail with the mating part of the connector is supplied with the vehicle and is ready for connection to the brake-control wiring. This setup avoids most of the complexity and possible mistakes with locating the correct wiring among that maze under the dash.

Today's RVer has many choices in brake controllers from many manufacturers. It's important to carefully select the controller that is right for your needs and capable of handling the weight and number of axles on your trailer.

Be sure to follow the manufacturer's written instructions about every aspect of the brake controller's installation, operation, adjustment and maintenance for optimum performance. 🚚



▲ Tekonsha Primus IQ

▲ Hopkins Agility

▲ Hayes G2 Brake Boss

## What's included in these must-have tow-vehicle options?

**T**here are many bells and whistles available when choosing a new tow vehicle, but there's one option that is an absolute necessity: the towing package.

Plenty of advantages are involved in choosing factory-installed towing hardware. First, you have full warranty coverage on the equipment. Also, it was designed by the best engineering minds at a major auto manufacturer, which is reassuring when considering the hardware is tying your truck and trailer safely together. Plus, you'll probably save money over the cost of aftermarket hardware. And perhaps best of all, use of the factory options means being ready for the road is a turnkey operation that calls for few or no trips to specialty shops after leaving the dealership.

In many cases, you don't have a choice. If the vehicle is to be rated for its highest towing capacity, the towing-package option is mandatory to give the tow vehicle its optimum performance potential. For less-strenuous duty, the towing package is optional.

Check with the dealer to determine the content of the towing-package option. Here are some of the items you will likely encounter.

**Axle Ratio:** Most packages include a lower (numerically higher) axle ratio; for example, a 3.73:1 or 4.10:1 instead of the 3.55:1 that comes with the stock vehicle. A lower ratio results in greater torque multiplication at the rear wheels, which means more power for towing. It

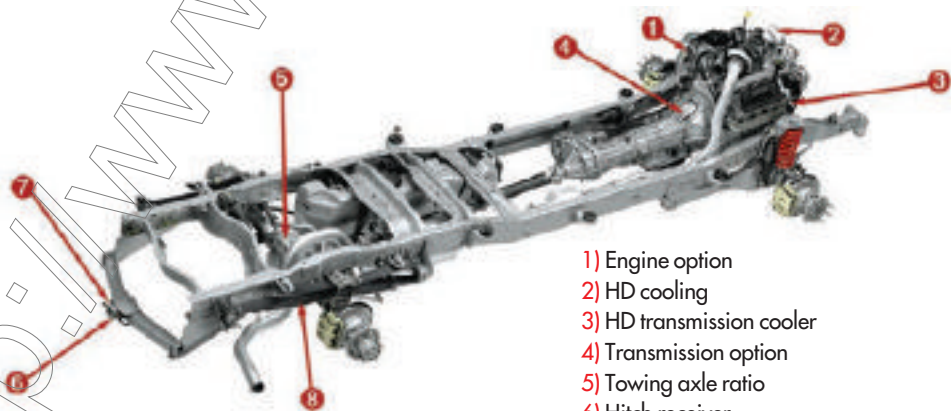
also means the engine turns somewhat faster for a given road speed, and thus gets slightly decreased mileage, but that's the tradeoff for improved towing performance.

**Hitch Receiver:** If the tow vehicle already has a receiver, all you need to select is the proper ball mount and the associated hardware, such as a load-distributing hitch. The receiver will be properly matched to the tow vehicle's trailer-towing rating, so you shouldn't worry about any hitch-overloading situations — as long as you pay attention to the numbers. You'll also avoid interference problems with the exhaust pipe(s), the fuel tank and the spare tire. Some trucks — such as 2011 and later Ford Super Duty pickups — also feature a factory-installed fifth-wheel hitch.

**Wiring Package:** The wiring package is a group of color-coded pigtails near the back bumper that is ready for installation of the trailer-plug receptacle. It can be as complete as a plug or two installed out back, or a pre-wired pigtail for brake-control installation under the dash and full integration with the tow vehicle's electric system.

**Alternator:** It takes extra charging current to keep a trailer's battery(ies) charged in addition to handling the electrical-power needs of the tow vehicle. The battery may also be larger.

**Heavy-Duty Suspension:** The trailer and its hitch weight add load on the tow-vehicle suspension, so the normal reaction among



- 1) Engine option
- 2) HD cooling
- 3) HD transmission cooler
- 4) Transmission option
- 5) Towing axle ratio
- 6) Hitch receiver
- 7) Wiring connector
- 8) Suspension /payload package





## TOWING - PACKAGE COMPONENTS

Overall packages vary by model, but here are some components that may be included:

Hitch receiver (or fifth-wheel hitch)

4- and/or 7-pin connector

Larger alternator

Larger battery

Larger radiator

Additional electric fan(s)

Transmission-oil cooler

Engine-oil cooler

Rear anti-sway bar

Extendible mirrors

Vehicle Dynamic Control

Integrated brake controller

Brake controller (or unit pre-wire)

Synthetic lubricants

Lower axle ratio

Re-valved shock absorbers

## TOWING PACKAGES

dealership sales staff and buyers is to order the optional heavy-duty (HD) suspension, particularly when fifth-wheel towing is involved. In fact, when the trailer is a conventional ball-type trailer, it's often best not to order a heavy-spring option if there is a choice (if the towing package does not include HD suspension) for trucks rated 8,600 pounds and higher because a stiff ride and the tendency of the rear springs to do some or most of the work of the load-distributing hitch can be the result. A stiff ride is a very common complaint among owners of three-quarter and one-ton pickups not towing fifth-wheels.

A possible alternative to not ordering an HD suspension even for fifth-wheel towing — except in very high pin-weight situations — is opting instead to install auxiliary springs or air bags after delivery to support the pin weight (if necessary). This allows a more civilized ride on standard rear springs while not towing. It's necessary to compare the standard and optional rear-axle-weight ratings relative to the anti-

pated trailer pin weight. It's easy to upgrade rear suspensions after a truck is built, but nearly impossible to soften the ride of an oversprung truck without replacing the suspension. SUVs have enough of their body weight on the rear axle, so that's generally not an issue.

**Brake Control:** Ford, Ram and GM HD pickups — and Ford half-ton trucks — all have factory-installed fully integrated trailer brake controls optionally available. This option is a no-brainer. If available, select it, as it's a terrific piece of equipment from the factory. Otherwise, towing packages usually include a trailer-wiring harness with a circuit for an aftermarket brake-control unit, a very worthwhile component of the package (see page 33).

**Stability Control:** More manufacturers are now offering electronic stability control. In addition, all 2011 and newer Ford F-150 trucks include Trailer Sway Control (TSC), which can determine the yaw motion (sway) of the truck and take action, from applying precise braking to reducing engine torque.







**Ford's towing mirrors easily extend for optimum visibility of the trailer — superior to add-on mirrors.**

**Mirrors:** Many towing packages offer mirrors designed to be extended outward while towing trailers. Some Ford mirrors even collapse electronically.

**Extra Cooling:** The largest possible radiator, a larger transmission-oil cooler and often a power-steering-fluid cooler are essential

parts of the usual HD cooling component of a towing package, and we advise that no tow vehicle should be ordered without them.

These components will not only help the tow vehicle avoid overheating any vital functional parts, but they will also lead to longer, trouble-free component service life. 🚚









# Plenty of practice and defensive driving skills lead to a safe and enjoyable RV experience

**T**railer towing isn't exactly rocket science, but it does represent a step up in complexity from driving a solo vehicle. Towing requires new awareness of combined vehicle length, trailer width, braking distance, turning characteristics and several other important factors that must be considered while on the road.

Most of us drive trucks, SUVs or passenger cars daily, and tow an RV only occasionally while vacationing. Thus, it's always necessary to make a mental transition and try to keep the size and handling characteristics of the larger truck and trailer combo in mind.

Allowing solo-vehicle habits to take over may result in a tendency to make turns too tightly, to run over curbs, to hit stationary objects such as overhanging tree limbs or to follow too closely.

## PAY ATTENTION

The first towing precautions are those that precede towing — matching the tow vehicle and trailer correctly, adhering to weight limits and making sure hitch selection and adjustment are correct, as described elsewhere in this guide. It's also important to refresh defensive driving skills. From there, the real fun begins.

The combined length of the tow vehicle and the trailer, as well as the combined weight, must be in the front of your mind, right from the start. Maintaining extended following distances is one of the most important towing-related driving habits that is initially difficult to adhere to.

Even though trailer brakes may be functional, braking distances almost always are extended. It's also important to make lane changes carefully and slowly, and to allow extended distances for passing. High-quality, properly adjusted towing mirrors with large reflective areas are also essential. Some manufacturers have factory-installed extendible towing mirrors available, and most such factory mirrors work well these days, such as those seen on many Ford trucks. If you need aftermarket portable mirrors, solidly mounted units like those from McKesh are a good idea.



## TOWING TIPS

Speedy traffic seems more tolerant of slower 18-wheelers than of slower RVs, which makes courtesy an important safety factor for RV owners because an irate driver trying to pass can pose a serious safety threat. Frequent monitoring of rearview mirrors is necessary while towing; when a vehicle is tailgating and trying to pass, we should help by driving slightly to the right to give the other driver a better view of the road ahead, even if a passing opportunity does not exist at the time. We should use turnouts whenever possible and avoid following another vehicle so closely that a vehicle overtaking from the rear cannot return to the proper lane.

### BRAKING

While tow-vehicle and trailer brakes are adequate for most situations, care is necessary to avoid overheating, which can lead to brake fade. If brake fade occurs, it will likely be on steep downgrades. Brake fade happens when friction raises the temperature of brake pads and linings to extremely high levels, resulting

integrated brake controls on full-size pickups, and these units all work very nicely and are valuable safety components.

When towing with a diesel, an aftermarket exhaust brake can be extremely beneficial, and many newer diesel trucks now offer fully integrated exhaust-brake control.

### TRAILER MANEUVERING

All trailers require more space for turns, and travel trailers follow the tow-vehicle track more closely than do fifth-wheels, which track farther to the inside of a turn.

There is need for continual awareness, which should eventually become second-nature after a modest amount of on-the-road experience.

Fifth-wheel trailers are different to back up than conventional trailers, and require more practice for someone accustomed to backing up a conventional trailer. A well-used technique involves placing one's hand at the bottom of the steering wheel and moving it in the same direction the trailer is intended to go.

**THERE IS NEED FOR CONTINUAL AWARENESS, WHICH EVENTUALLY SHOULD BECOME SECOND-NATURE AFTER A MODEST AMOUNT OF EXPERIENCE.**

in a temporary loss of braking.

The only known cure is prevention, such as downshifting to a gear that is low enough to retard speed sufficiently that brakes need not be used more than occasionally. This way, enough braking performance is reserved to make an emergency stop, should it become necessary.

When braking on a grade is necessary, apply the brakes intermittently, with moderate pressure, and release the pedal to allow the brakes to cool.

The action of electric trailer brakes should be apparent to the driver, and sufficient to handle the trailer's weight. The controller should be adjusted so that maximum braking action does not cause trailer-wheel lockup. Improper controller adjustment is a major cause of inadequate braking, so it's wise to study the manufacturer's instructions. Travel-trailer instability (fishtailing) should not occur in a well-balanced, well-hitched combination, but if it does, independent actuation of trailer brakes usually will bring the trailer back into line. Ford, GM and Dodge all offer factory-installed, fully

integrated brake controls on full-size pickups, and these units all work very nicely and are valuable safety components.

Handheld two-way radios can allow an assistant to more effectively relay backing instructions to the driver. In addition, back-up cameras help ease the difficulty of hitching up when a helper isn't available.

Before each trip, it's essential to check the tires to ensure that inflation pressures match those molded on tire sidewalls (cold), or that they are appropriate for your load (consult the tire and vehicle load/inflation tables). Also, be sure to inspect all vehicle fluids, per standard maintenance procedure during heavy-duty-vehicle-use cycles, and make sure trailer-wheel lug nuts are tightened to factory specifications.

Trailering is a great way to explore the new horizons and a great way to check out the wonderful camping destinations that are available to owners of recreational trailers. And always keep in mind that defensive driving will pay off in safe travel. 🚚



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