

# Trailer Towing

2004



# Planning Your Towing Requirements

The purpose of this guide is to assist you in selecting the exact Dodge Truck you need for your particular trailer-towing application, and to help you make the best possible use of its capabilities. It is important to note that all Dodge Trucks are capable of towing trailers up to 907 kilograms (2000 pounds) without added equipment or alterations to standard equipment.<sup>†</sup>

The first step in selecting the most appropriate vehicle for your towing requirements is to identify all the possible ways you'll be using your truck:

- Will your tow vehicle be used exclusively for towing, or double as a personal or family vehicle?
- How far are you going to be towing? (Short distances place less demand on a tow vehicle than longer distances.)
- How many passengers and what cargo will you be taking while towing?
- Under what conditions will you be towing? Mountainous areas? Under extremely hot or cold temperatures? At high altitudes? The more extreme conditions you encounter while towing, the more important that your tow vehicle be optimized to those conditions.

• Will you be towing in any off-road conditions, such as fields, boat launches or gravel roads? Will you park the rig in grass or on soft dirt? Heavy trailers are difficult to get moving with a rear-wheel-drive vehicle under some of these conditions. Will you be towing in winter weather? Is a two-wheel-drive vehicle adequate, or is a 4x4 required?

• How often are you going to be towing? If towing is over 20 percent of your planned vehicle use, the vehicle should be optimized for performance while towing; if less, the vehicle should be adequate for the towing job, but optimized for regular use.

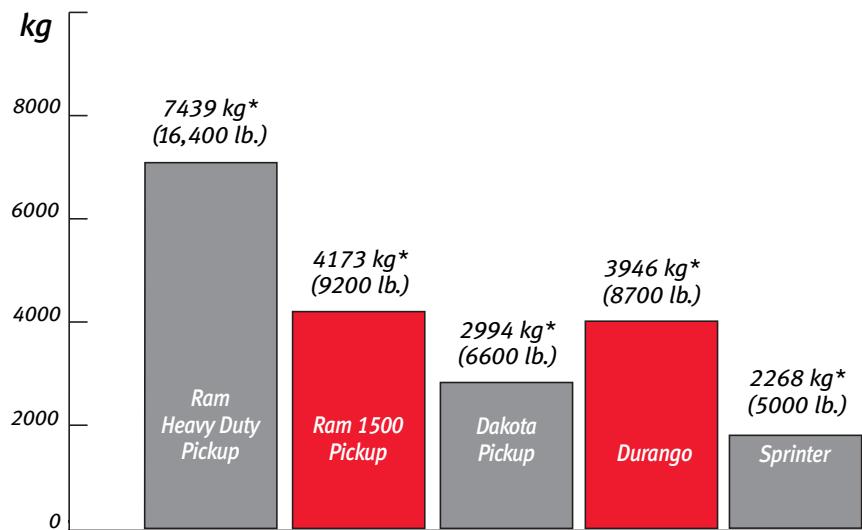
• Do you plan to change your trailer during the life of the tow vehicle? If so, plan ahead and select a tow vehicle that will meet your future towing needs as well as your current ones.

The answers to these questions are most helpful in selecting the right model, engine, transmission, and axle ratio for optimal towing performance. However, this is only a guide; personal preference for "optimal" performance is an important factor as well.

<sup>†</sup>Any trailer weighing over 454 kilograms (1000 pounds) must have its own brakes.

## Maximum Trailer Weights By Model

\*When properly equipped.



# How to Choose the Right Vehicle for Towing

Ram and Dakota Pickups and Durango all offer an extremely diverse range of trailer-towing capabilities. A wide variety of powertrain/axle ratio combinations and optional trailering packages assure the perfect vehicle for your trailer-towing needs. Your Dodge retailer can show you the various Trailer-Tow Groups and other Heavy-Duty Groups available on Dodge Trucks to help you select the equipment that's right for your towing needs.

Careful attention to details up front is the difference between the right towing vehicle and one that is not quite what you need to get the job done – a situation which could prove extremely dangerous on the road.

The first step is to familiarize yourself with terms that will be used in this guide when discussing vehicle choices for towing. You'll find the guide easier to use if you take a few moments and review this terminology. (Hitch terms will be discussed on page 6.)

## Important Trailer Terminology:

**Tow Rating** The maximum amount of weight a vehicle can tow, as rated by the manufacturer. Maximum tow limits usually have special requirements, such as axle ratio, cooling systems, types of hitches, etc.

**Curb Weight (vehicle weight)** The weight of the empty truck (without payload or driver), including fuel, coolant, oil and all items of standard or optional equipment.

**Loaded Trailer Weight** The weight of the trailer plus all cargo in it. Measure Loaded Trailer Weight by putting the fully loaded trailer on a vehicle scale.

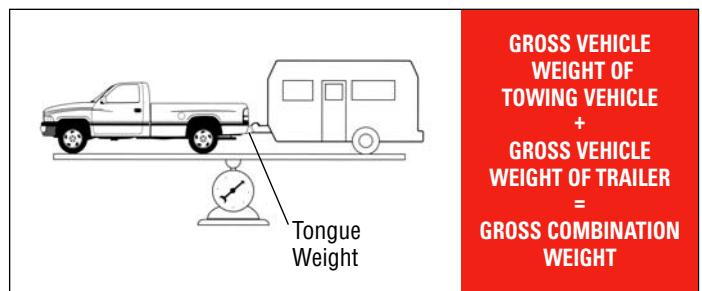
**Maximum Trailer Weight** Term used on charts throughout this publication. The maximum permissible loaded trailer weight.

**Trailer Tongue Weight** The downward force exerted on the hitch ball by the trailer coupler with weight distributing devices, if any, deactivated. Measure Trailer Tongue Weight with the trailer fully loaded and on a level surface, and with the coupler at its normal towing height. Measure directly with a commercial scale.

**Gross Axle Weight Rating (GAWR)** The maximum weight a specific axle is designed to carry safely. Includes the weight of the vehicle plus any load that must be supported by the axle, including Tongue Weight and/or payload. The load on front and rear axles should not exceed the GAWR specified on the safety certification label for front-and-rear axles, nor should total load exceed GVWR.

**Gross Vehicle Weight Rating (GVWR)** Total allowable weight of a fully equipped vehicle with driver, passengers, cargo, fluids, accessories and Tongue Weight. Maximum GVWR and front-and-rear GAWRs must not be exceeded.

**Gross Combination Weight (GCW)** A fully equipped vehicle with driver, passenger(s), fuel, fluids, standard and optional equipment, and a trailer with cargo.



**Gross Combination Weight Rating (GCWR)** Maximum allowable gross combination weight, which includes a fully equipped vehicle with driver, passenger(s), fuel, fluids, standard and optional equipment, and a trailer with cargo.

**Payload** The amount of weight that will be carried by a vehicle including driver, passengers, cargo and the tongue weight of a trailer, plus any options, factory or aftermarket, and the weight of any upfit body modifications.

# Axle Ratios Made Simple

**Definition:** The axle ratio is the relationship between driveshaft revolutions and axle revolutions. It's usually expressed as a numerical ratio, such as 3.00:1. The higher the axle ratio, the more engine revolutions are applied to move the load. The concept is similar to that of leverage. The leverage comes at a cost, however, by decreasing fuel economy and top-end speed.

For optimum performance with good fuel economy, a truck requires the proper ratio on its driving axle. Dodge Trucks are available with a wide range of rear axle choices, because no single ratio can meet varying factors such as engine output, tire size, load and terrain. All these factors must be considered when selecting an axle ratio to best meet your needs.

## Axle ratios: A closer look

The axle ratio is critical in the operation of the transmission/driveshaft/rear axle system that transmits engine torque to the driving wheels and lets the engine develop sufficient rpm to run efficiently.

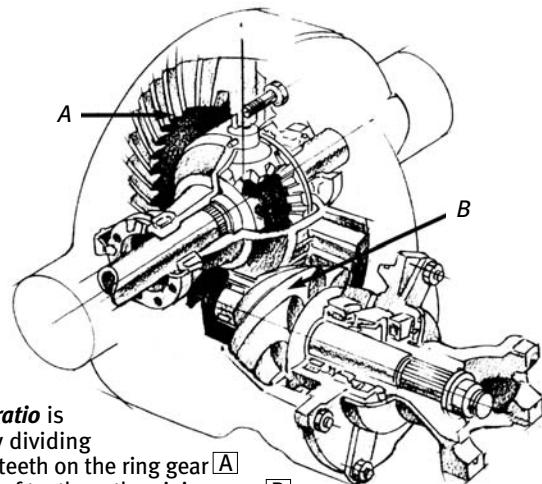
With too few rpm, an engine pulling a load on a grade is likely to "lug" and overheat. Imagine your vehicle trying to accelerate from low speed in its highest gear. With too many rpm, an engine will run noisily, get poor fuel economy and wear faster. The best rear axle ratio for the intended application lets the engine operate at its optimum power range, typically between peak torque and peak horsepower. This optimum range is different for each engine and can be determined from the engine's torque/rpm chart.

A low numerical rear axle ratio, such as 3.21:1, is also referred to as a high ratio, because the road speed is relatively fast for any given engine speed. The characteristics of this ratio are lower engine rpm, reduced power output, and higher fuel economy.

A *high numerical rear axle ratio*, such as 4.10:1, is also referred to as a low ratio, because the road speed is slow relative to engine speed. The characteristics of this ratio are higher engine rpm, more easily available power output, and lower fuel economy.

## Spec the ratio to the need

How will your truck be used? How much will it haul or tow? Will it be used on steep grades, on flat highways, or both? How important are fuel economy and acceleration? These are the questions you should ask yourself when determining the proper axle ratio for your needs.



**The rear axle ratio** is determined by dividing the number of teeth on the ring gear **A** by the number of teeth on the pinion gear **B** inside the differential. With a ratio of 4.00:1, the pinion gear on the driveshaft makes four rotations for each rotation of the larger differential ring gear on the rear axle driving shaft.

## Dodge Truck Axle Ratios

High Numerical ("Low Ratio")	Midrange	Low Numerical ("High Ratio")
4.10	3.92	3.73
More Pulling Power, Faster Acceleration, Lower Fuel Economy, Higher Engine rpm/Noise, More Engine Fan Cooling, Less Prone to "Lug," Slower Top Road Speed	3.55	3.21
Steep Grades	Varied Terrain	Flat Terrain
Maximum Towing Maximum Loads	Moderate Towing Moderate Loads	Light Towing Light Loads

# Hitch Selection

## Hitch Terminology

**Hitch** – Usually custom-designed for a specific model of towing vehicle. Rated for Loaded Trailer Weight and Tongue Weight.

**Coupler** – Part of the trailer. The socket must match the ball size.

**Hitch Ball** – Must match trailer coupler size and be rated to handle Gross Trailer Weight. Attachment must be compatible with mounting area of hitch.

**Safety Chains** – Usually provided by the trailer manufacturer. Strength is based on Gross Trailer Weight.

**Sway Controls** – (Optional) Sway controls help minimize the effects of sudden manoeuvres, wind gusts, and buffeting caused by other vehicles. Some are adjustable for varying conditions – recommended for trailers with large surface area.

**Receiver** – Attaches to towing vehicle. Rated for Gross Trailer and Tongue Weights. Ratings may be different, depending on whether weight-distributing hitch or weight-carrying ball mount is used.

## Hitch Selection

**Step One:** Determine the Loaded Trailer Weight and Tongue Weight (TW) of trailer.

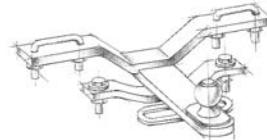
**Step Two:** Match trailer and tow vehicle to find the correct hitch.

**Step Three:** Choose the right hitch, as well as additional accessories that may be needed, such as hitch balls, ball mounts, drawbars, trailer wiring, safety chains, transmission coolers, locks, trailer brake controls, ball and receiver tube covers, tow bars or sway controls. Your Dodge retailer can supply you with the Mopar® equipment designed for your Dodge Truck.

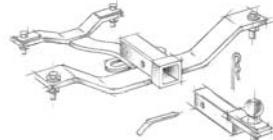
## There are Three Basic Types of Hitches:

**Weight-carrying hitch.** Supports Trailer Tongue Weight as though it were cargo located at the ball or other connecting point. It is the most popular type of hitch, and is commonly used to tow small and medium-sized trailers. It is usually custom-built for specific models of towing vehicles, and is rated by Loaded Trailer Weight and Tongue Weight capacities. In general, weight-carrying hitches are used for lightweight (Class I) trailers up to 907 kilograms (2000 pounds) and 91 kilograms (200 pounds) Tongue Weight when towed by passenger vehicles and with medium-duty (Class II) trailers up to 1588 kilograms (3500 pounds) and 159 kilograms (350 pounds) Tongue Weight when towed by pickups, vans and sport-utility vehicles.

*There are two basic styles of weight-carrying hitches:*



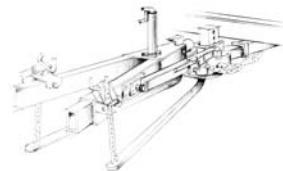
*Fixed Drawbar*



*Removable Drawbar*

**Weight-distributing hitch.** Rather than merely supporting the Tongue Weight, a weight-distributing hitch applies leverage between the towing vehicle and the trailer, thus distributing Tongue Weight to all the towing vehicle and trailer wheels. A weight-distributing hitch allows you to tow trailers with greater Tongue Weights, typically in Class III [2268 kilograms (5000 pounds)]\* and up to Class IV [5443 kilograms (12,000 pounds)]\*categories, resulting in a more level ride, reducing stress on the rear of the vehicle and providing greater steering and braking control. Please note that air springs, air shocks and overload springs are not substitutes for weight-distributing hitches, since they do not redistribute load to other axles.

A weight-distributing system includes a receiver attached to the tow vehicle, a removable hitch head and spring-bar assembly that fits into the receiver opening, and hook-up brackets that connect the spring bars to the trailer frame.



*Weight-Distributing Hitch*

**Fifth-wheel hitch.** A fifth-wheel hitch is a special high platform over the rear axle of the tow vehicle that connects a vehicle and a trailer with a trailer-mounted coupling pin (kingpin). Fifth-wheel trailers are the heaviest variety, typically Class IV and above. Mounting the hitch over the rear axle improves sway control and makes long trailers more manoeuvrable. In this case, the kingpin weight becomes payload in the truck bed for all calculations.

*\*When properly equipped.*

*Mopar is a registered trademark of DaimlerChrysler Corporation.*

**NOTE:** Trailer-Tow Group does not include the hitch shank or ball. Your Dodge retailer can supply you with the correct hitch to meet your specific needs and arrange to have it installed for you.







Ram 3500 Quad Cab® SLT and Laramie 4X2 Long Box (SRW)								
Engine & Transmission	Axe Ratio	GVWR	Payload <sup>(1)(2)</sup>	Base Curb Wt.	GAWR		GCWR	Maximum Trailer Wt. <sup>(3)(4)</sup>
					Front	Rear		
5.9L H0TD I-6 M6	3.73	4491 (9900)	1429 (3150)	3062 (6750)	2155 (4750)	2790 (6150)	9525 (21,000)	6396 (14,100)
5.9L H0TD I-6 M6	4.10	4491 (9900)	1429 (3150)	3062 (6750)	2155 (4750)	2790 (6150)	10433 (23,000)	7303 (16,100)
5.9L H0TD I-6 A4	3.73	4491 (9900)	1492 (3290)	2997 (6607)	2155 (4750)	2790 (6150)	9525 (21,000)	6464 (14,250)
5.9L H0TD I-6 A4	4.10	4491 (9900)	1492 (3290)	2997 (6607)	2155 (4750)	2790 (6150)	10433 (23,000)	7371 (16,250)

Ram 3500 Regular Cab ST 4X4 Long Box (DRW)								
Engine & Transmission	Axe Ratio	GVWR	Payload <sup>(1)(2)</sup>	Base Curb Wt.	GAWR		GCWR	Maximum Trailer Wt. <sup>(3)(4)</sup>
					Front	Rear		
5.7L V8 MS	4.10	5216 (11,500)	2300 (5070)	2915 (6426)	2359 (5200)	4241 (9350)	7711 (17,000)	4717 (10,400)
5.7L V8 AS	4.10	5216 (11,500)	2318 (5110)	2900 (6394)	2359 (5200)	4241 (9350)	7711 (17,000)	4740 (10,450)
5.9L H0TD I-6 M6	3.73	5443 (12,000)	2182 (4810)	3260 (7186)	2359 (5200)	4241 (9350)	9525 (21,000)	6192 (13,650)
5.9L H0TD I-6 M6	4.10	5443 (12,000)	2182 (4810)	3260 (7186)	2359 (5200)	4241 (9350)	10433 (23,000)	7099 (15,650)
5.9L H0TD I-6 A4	3.73	5443 (12,000)	2277 (5020)	3167 (6981)	2359 (5200)	4241 (9350)	9525 (21,000)	6282 (13,850)
5.9L H0TD I-6 A4	4.10	5443 (12,000)	2277 (5020)	3167 (6981)	2359 (5200)	4241 (9350)	10433 (23,000)	7189 (15,850)

Ram 3500 Regular Cab SLT and Laramie 4X4 Long Box (DRW)								
Engine & Transmission	Axe Ratio	GVWR	Payload <sup>(1)(2)</sup>	Base Curb Wt.	GAWR		GCWR	Maximum Trailer Wt. <sup>(3)(4)</sup>
					Front	Rear		
5.7L V8 MS	4.10	5216 (11,500)	2286 (5040)	2930 (6460)	2359 (5200)	4241 (9350)	7711 (17,000)	4717 (10,400)
5.7L V8 AS	4.10	5216 (11,500)	2300 (5070)	2916 (6428)	2359 (5200)	4241 (9350)	7711 (17,000)	4717 (10,400)
5.9L H0TD I-6 M6	3.73	5443 (12,000)	2168 (4780)	3274 (7219)	2359 (5200)	4241 (9350)	9525 (21,000)	6192 (13,650)
5.9L H0TD I-6 M6	4.10	5443 (12,000)	2168 (4780)	3274 (7219)	2359 (5200)	4241 (9350)	10433 (23,000)	7099 (15,650)
5.9L H0TD I-6 A4	3.73	5443 (12,000)	2263 (4990)	3181 (7014)	2359 (5200)	4241 (9350)	9525 (21,000)	6282 (13,850)
5.9L H0TD I-6 A4	4.10	5443 (12,000)	2263 (4990)	3181 (7014)	2359 (5200)	4241 (9350)	10433 (23,000)	7189 (15,850)

Ram 3500 Quad Cab® ST 4X4 Short Box (SRW)								
Engine & Transmission	Axe Ratio	GVWR	Payload <sup>(1)(2)</sup>	Base Curb Wt.	GAWR		GCWR	Maximum Trailer Wt. <sup>(3)(4)</sup>
					Front	Rear		
5.9L H0TD I-6 M6	3.73	4491 (9900)	1284 (2830)	3208 (7072)	2359 (5200)	2790 (6150)	9525 (21,000)	6260 (13,800)
5.9L H0TD I-6 M6	4.10	4491 (9900)	1284 (2830)	3208 (7072)	2359 (5200)	2790 (6150)	10433 (23,000)	7167 (15,800)
5.9L H0TD I-6 A4	3.73	4491 (9900)	1388 (3060)	3103 (6842)	2359 (5200)	2790 (6150)	9525 (21,000)	6350 (14,000)
5.9L H0TD I-6 A4	4.10	4491 (9900)	1388 (3060)	3103 (6842)	2359 (5200)	2790 (6150)	10433 (23,000)	7257 (16,000)

Ram 3500 Quad Cab® SLT and Laramie 4X4 Short Box (SRW)								
Engine & Transmission	Axe Ratio	GVWR	Payload <sup>(1)(2)</sup>	Base Curb Wt.	GAWR		GCWR	Maximum Trailer Wt. <sup>(3)(4)</sup>
					Front	Rear		
5.9L H0TD I-6 M6	3.73	4491 (9900)	1266 (2790)	3225 (7111)	2359 (5200)	2790 (6150)	9525 (21,000)	6237 (13,750)
5.9L H0TD I-6 M6	4.10	4491 (9900)	1266 (2790)	3225 (7111)	2359 (5200)	2790 (6150)	10433 (23,000)	7144 (15,750)
5.9L H0TD I-6 A4	3.73	4491 (9900)	1370 (3020)	3121 (6881)	2359 (5200)	2790 (6150)	9525 (21,000)	6327 (13,950)
5.9L H0TD I-6 A4	4.10	4491 (9900)	1370 (3020)	3121 (6881)	2359 (5200)	2790 (6150)	10433 (23,000)	7235 (15,950)

Ram 3500 Quad Cab® ST 4X4 Long Box (DRW)								
Engine & Transmission	Axe Ratio	GVWR	Payload <sup>(1)(2)</sup>	Base Curb Wt.	GAWR		GCWR	Maximum Trailer Wt. <sup>(3)(4)</sup>
					Front	Rear		
5.7L V8 MS	4.10	5216 (11,500)	2141 (4720)	3077 (6783)	2359 (5200)	4241 (9350)	7711 (17,000)	4559 (10,050)
5.7L V8 AS	4.10	5216 (11,500)	2155 (4750)	3062 (6751)	2359 (5200)	4241 (9350)	7711 (17,000)	4581 (10,100)
5.9L H0TD I-6 M6	3.73	5443 (12,000)	2018 (4450)	3424 (7549)	2359 (5200)	4241 (9350)	9525 (21,000)	6033 (13,300)
5.9L H0TD I-6 M6	4.10	5443 (12,000)	2018 (4450)	3424 (7549)	2359 (5200)	4241 (9350)	10433 (23,000)	6940 (15,300)
5.9L H0TD I-6 A4	3.73	5443 (12,000)	2114 (4660)	3331 (7344)	2359 (5200)	4241 (9350)	9525 (21,000)	6123 (13,500)
5.9L H0TD I-6 A4	4.10	5443 (12,000)	2114 (4660)	3331 (7344)	2359 (5200)	4241 (9350)	10433 (23,000)	7031 (15,500)

Ram 3500 Quad Cab® ST 4X4 Long Box (SRW)								
Engine & Transmission	Axe Ratio	GVWR	Payload <sup>(1)(2)</sup>	Base Curb Wt.	GAWR		GCWR	Maximum Trailer Wt. <sup>(3)(4)</sup>
					Front	Rear		
5.9L H0TD I-6 M6	3.73	4491 (9900)	1225 (2700)	3264 (7196)	2359 (5200)	2790 (6150)	9525 (21,000)	6192 (13,650)
5.9L H0TD I-6 M6	4.10	4491 (9900)	1225 (2700)	3264 (7196)	2359 (5200)	2790 (6150)	10433 (23,000)	7099 (15,650)
5.9L H0TD I-6 A4	3.73	4491 (9900)	1320 (2910)	3171 (6991)	2359 (5200)	2790 (6150)	9525 (21,000)	6282 (13,850)
5.9L H0TD I-6 A4	4.10	4491 (9900)	1320 (2910)	3171 (6991)	2359 (5200)	2790 (6150)	10433 (23,000)	7189 (15,850)

Ram 3500 Quad Cab® SLT and Laramie 4X4 Long Box (DRW)								
Engine & Transmission	Axe Ratio	GVWR	Payload <sup>(1)(2)</sup>	Base Curb Wt.	GAWR		GCWR	Maximum Trailer Wt. <sup>(3)(4)</sup>
					Front	Rear		
5.7L V8 M5	4.10	5216 (11,500)	2123 (4680)	3094 (6820)	2359 (5200)	4241 (9350)	7711 (17,000)	4559 (10,050)
5.7L V8 A5	4.10	5216 (11,500)	2136 (4710)	3079 (6788)	2359 (5200)	4241 (9350)	7711 (17,000)	4559 (10,050)
5.9L HODT I-6 M6	3.73	5443 (12,000)	2005 (4420)	3440 (7585)	2359 (5200)	4241 (9350)	9525 (21,000)	6010 (13,250)
5.9L HODT I-6 M6	4.10	5443 (12,000)	2005 (4420)	3440 (7585)	2359 (5200)	4241 (9350)	10433 (23,000)	6917 (15,250)
5.9L HODT I-6 A4	3.73	5443 (12,000)	2096 (4620)	3348 (7380)	2359 (5200)	4241 (9350)	9525 (21,000)	6101 (13,450)
5.9L HODT I-6 A4	4.10	5443 (12,000)	2096 (4620)	3348 (7380)	2359 (5200)	4241 (9350)	10433 (23,000)	7008 (15,450)

Ram 3500 Quad Cab® SLT and Laramie 4X4 Long Box (SRW)								
Engine & Transmission	Axe Ratio	GVWR	Payload <sup>(1)(2)</sup>	Base Curb Wt.	GAWR		GCWR	Maximum Trailer Wt. <sup>(3)(4)</sup>
					Front	Rear		
5.9L HODT I-6 M6	3.73	4491 (9900)	1184 (2610)	3305 (7286)	2359 (5200)	2790 (6150)	9525 (21,000)	6146 (13,550)
5.9L HODT I-6 M6	4.10	4491 (9900)	1184 (2610)	3305 (7286)	2359 (5200)	2790 (6150)	10433 (23,000)	7053 (15,550)
5.9L HODT I-6 A4	3.73	4491 (9900)	1279 (2820)	3212 (7081)	2359 (5200)	2790 (6150)	9525 (21,000)	6237 (13,750)
5.9L HODT I-6 A4	4.10	4491 (9900)	1279 (2820)	3212 (7081)	2359 (5200)	2790 (6150)	10433 (23,000)	7144 (15,750)

\*GVWR, Payload, Base Curb Weight, GAWR (front-and-rear), GCWR and Maximum Trailer ratings are all shown in kg (lb.).

(1) Payload figure shown must be reduced by the weight of the vehicle occupants, optional equipment and in-cab luggage, etc.

(2) Payload is rounded to the nearest 4.5 kg (10 lb.).

(3) Maximum trailer weight ratings include cargo and fluids in the trailer and must be decreased by the weight of optional equipment, trailer hitch, cargo in the truck and passengers other than the driver. 68 kg (150 lb.) allowance for driver. Dodge Trucks used to tow trailers over 907 kg (2000 lb.) loaded weight must be equipped with Trailer-Tow Group (AHC), and trailers over 454 kg (1000 lb.) loaded weight must have their own brakes. Trailer-Tow restrictions apply. See your retailer for details.

(4) Maximum trailer weights are rounded to the nearest 23 kg (50 lb.) Use synthetic axle lubricant with the Trailer-Tow Group. Use an exhaust brake for all 3500 manual transmission applications with a trailer weight over 4536 kg (10,000 lb.). A gooseneck or fifth-wheel hitch attached to the vehicle frame, should be used if the trailer being towed weighs over 5443 kg (12,000 lb.) or has more than 544 kg (1200 lb.) tongue weight.

GVWR – Gross Vehicle Weight Rating GAWR – Gross Axle Weight Rating GCWR – Gross Combined Weight Rating HODT – High-Output Turbo Diesel I-6 – In-line 6-cylinder 4X2 – Two-Wheel Drive 4X4 – Four-Wheel Drive M5 – 5-speed Manual M6 – 6-speed Manual A4 – 4-speed Automatic A5 – 5-speed Automatic DRW – Dual Rear Wheel SRW – Single Rear Wheel