

DURAMAX, CUMMINS, POWER STROKE

TECH
QUESTIONS
ANSWERED

DIESEL POWER

THE VOICE OF THE TURBODIESEL ENTHUSIAST

32 READER-BUILT
RIGS
IS YOURS INSIDE?

**POWER vs.
ECONOMY**

—Get Both.
We'll Show You How

**5-WAY
AIR-INTAKE
SHOOTOUT**

Featuring
Frederico
Performance
Anti-Swaybars
as a
POWER PRODUCT
of the month
and in
25 Ways
To Tow More
With Your Diesel

• TRANSMISSION SERVICE: THE RIGHT WAY
• TAKE THE GREATEST DIESEL ROAD



DIESELPowerMAG.COM

SWAY BE GONE

Sway bars can be the difference between a fantastic ride and a poor one. Federico Racing has come up with a sway bar for the 2500HD Duramax truck that really makes the truck feel stable. Solid bars, as opposed to the factory hollow ones, are available for front and rear, and we recommend you install both. This is a relatively inexpensive mod, and you will really appreciate the improvement in performance. For more information, contact: Federico Racing, (619) 501-3521, www.federicoracing.com.



ROADRIDER

Bestop's new Roadrider and Roadrider Pro seats for trucks have set a new highwater mark. The Roadrider Pro is available in natural leather or stain-resistant cloth and offers upgraded features and benefits, including adjustable telescoping headrest for utmost comfort; performance bolsters and sculpted lumbar support for comfort and stability; and variable rate of resistance springs give maximum comfort on the road. Roadrider seats are available in vinyl or premium cloth and include a built-in headrest, performance bolsters, and sculpted lumbar support. For more information, contact: Bestop, (800) 845-3567, www.bestop.com.

TURBO TIMER

Edge Products is now shipping the long-awaited Juice with Attitude application for the second-generation 24-valve Dodge Ram diesel. Edge engineers spent three years developing this system, which reliably adds as much as 120 more horsepower and 350 lb-ft of torque. Plus, its Turbo Timer prolongs turbo life by allowing the engine to run a specified cool-down time or until a predetermined EGT is reached. Edge Attitude also includes high-idle adjustment, low-boost smoke control, automatic defueling to prevent excessive EGT, turbo boost, transmission slip, and cold-start protection. For more information, contact: Edge Products, (888) 360-3343, www.edgeproducts.com.



SNAP-ON KEEP ON TRUCKIN'

In a daring test of strength, Snap-On Tools Company recently mounted a massive Peterbilt dump truck on Snap-On tool storage cabinets at Snap-On headquarters in Kenosha, Wisconsin, to demonstrate the durability of the storage units. The premium extended cab system rolling units are outfitted with steel plates and wheel chocks to stabilize the weight of the Peterbilt dump truck, which was

lifted onto the Snap-On cabinets with six heavy-duty mobile lifts. KRL storage cabinets are built with double-wall construction (two full-sized layers of high-quality "Class 1" heavy-duty steel). For more information, contact: Snap-On Tools, (262) 656-5200, www.snapon.com. **DP**

25 WAYS

TO TOW
MORE WITH
YOUR DIESEL

Since you read *Diesel Power*, you are already on the right path to becoming a trailer-towing master. You know that an oil-burner is the best type of engine for towing and that it has tremendous potential for upgrades. Now, let's look at ways to maximize the trailer-towing capacity of your truck through performance increases, safety improvements, and truck-buying tips.



1. LOWER AXLE GEARS

Lower gears, shorter gears, whatever you want to call them, they will result in your tires spinning fewer revolutions for each turn of the drive shaft. That means more of your engine's torque will reach the ground, giving you extra power for acceleration and pulling grades. If you are running 3.73 gears and they aren't giving you the leverage to pull with confidence, then you should consider swapping in 4.10 or 4.30 gears. Since the axle will need to be cracked open, this will give you the chance to add a limited-slip or locking differential for improved traction. If you own a four-wheel-drive truck, make sure to upgrade the front gears to the same ratio as the rear to prevent drivetrain binding when both axles are engaged.

“You are on the right path to becoming a trailer-towing master.”

2. ENGINE PROGRAMMING

Mild engine calibration changes can tailor your engine performance to your towing needs. Many aftermarket programmers and chips include tow settings that will limit engine revolutions, monitor and limit boost levels, and adjust the shift points of the transmission. The computer can also be set to de-fuel the engine to reduce EGT (exhaust gas temperature) and prevent heat-related damage to the engine. That allows you to concentrate on the road ahead, instead of worrying about gremlins sabotaging your drivetrain.

3. TURBO UPGRADES

Replacing your stock compressor will give you more air power, but bigger is not necessarily better. A giant turbo will produce gobs of boost, but it may take longer than your stock unit to spool up. This can result in power reduction at

low engine speeds, which is fine at the drag strip, but would not be good for towing. Turbos with ball bearings in the center cartridge spool up about 25 percent faster than standard journal bearing units, reducing the time lag before boost delivery. Twin-turbo setups combine the fast spool-up of a small turbo with the high boost pressure created by both the large and small compressors.

4. EGT GAUGE

If you don't know how hot your combustion chambers are running while you are towing, then you are asking for trouble. Your EGT should not exceed 1,250 degrees Fahrenheit for extended periods or you are risking serious damage to your engine and turbo. To get an accurate reading of the conditions being experienced by your engine, the temperature probe should be placed before the turbo, in the exhaust manifold. Once you have installed an EGT gauge, you need to keep an eye on the readings and adjust your driving habits. As mentioned earlier, a programmer can de-fuel your engine when the EGT gets into the dangerous range.

5. WATER/METHANOL INJECTION

Sometimes called “chemical intercooling,” a water/methanol injection system allows more

air to be crammed into the engine, plus the methanol acts as additional fuel in the combustion chamber. As an added benefit, even with power gains of more than 50 hp at the rear wheels, your EGT will be lowered by about 200 degrees Fahrenheit. To make sure you don't run out of chemicals while on a long haul, companies offer large reserve tanks to hold several gallons of drugs. In many states—sorry California—you can buy inexpensive window washing fluid that is a 50/50 mix of water/methanol to fill your tank.

6. FREE-FLOWING EXHAUST

You don't have to install vertical exhaust stacks on your truck to reap the benefits of a free-flowing exhaust system. Many companies offer 4- and even 5-inch-diameter exhaust pipes that will fit under your diesel truck. By allowing exhaust gases to escape with little resistance, your engine and turbo will have the freedom to produce more power. While towing, the main benefit of a large-bore exhaust system is lower EGT, which will allow you to pull harder without risking damage to your powerplant. Be sure to consider the exit path of your exhaust when having an upgrade installed, to prevent it from blowing soot all over your trailer. Turn-down tips that point at the street or side outlets are conventional alternatives to semi-truck-style stacks.





7. TRANSMISSION UPGRADES

With more power on tap, you will need to protect your transmission from the stress of pulling a trailer. High temperatures, combined with heavy loads, are the number one cause of transmission failures, and nothing ruins a trip quicker than metal shavings in the transmission pan. Upgrading to a multi-disc torque converter will reduce slippage between the engine and transmission, and help keep your automatic operating in the safe zone (less than 200 degrees Fahrenheit). A heavy-duty rebuild will often include a torque converter upgrade, along with stronger gears and shafts, better seals, high-performance pumps, new bearings, Kevlar bands, and a larger capacity oil pan with fins to aid cooling.

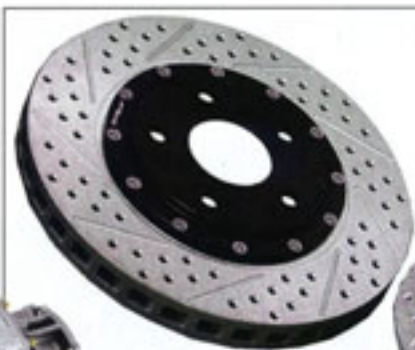
8. TRANSMISSION TEMPERATURE GAUGE AND AUXILIARY COOLER

Just like EGT, the operating temperature of your transmission should always be on your mind while towing. Any more than 200 degrees Fahrenheit for extended periods of time can make your slushbox vulnerable to failure, especially when you are pulling a heavy load. HD trucks may include a factory transmission temperature gauge, but if you don't have a way to monitor your transmission, then you need one. Some companies sell in-line transmission oil

filters (for added safety) that include a temperature gauge. If your readings are constantly pushing the limits, it's time to start shopping for auxiliary oil cooler. These units will lower the operating temperature of your automatic in all conditions, which is great, because a 20 degree reduction is said to double the life of a transmission.

9. BRAKE UPGRADES

Stock four-wheel disc brakes are great but can quickly be overwhelmed when asked to slow more than 10 tons of truck and trailer. Aftermarket brakes offer advantages such as larger discs, six-piston calipers that are better at clamping, and slotted and drilled disc rotors designed to funnel warmth into the ventilation vanes and out of the brakes. Upgrade brake pads are built with high-friction compounds for quick deceleration and extended fade resistance. When ordering, make sure the new brake kit is designed to work with your truck's antilock programming.



engines can slow a truck after a downshift because the engine is trying to pull air through a closed throttle. Since diesel powerplants have unrestricted access to air inside the intake, downshifts will not do much to slow your truck. An exhaust brake is a valve installed in the exhaust system that will restrict the exit of gases and provide resistance to revolutions in the drivetrain. This provides a way to slow your truck by as much as 50 percent without constantly using the wheel brakes, which can overheat and fail.



11. TRAILER BRAKE CONTROLLER

A Trailer Brake Controller (TBC) is a great way to increase your ability to safely tow a heavy load. It works by synchronizing the truck brakes and the trailer brakes, and allows the driver to adjust the output and gain to compensate for the load being carried. Trailer brake controllers are a factory option for some heavy-duty trucks and are available from many aftermarket companies. This is another one of the "if you don't have it, you need it" towing upgrades.



10. EXHAUST BRAKE

You've probably heard semi-trucks engaging their exhaust brakes on downgrades, and you can use the same technology. Gasoline

12. ALUMINUM DIFFERENTIAL COVER

Not only does it look cool, but an aluminum differential cover can keep your gears from tum-





ing into an axle grenade. Towing puts tremendous strain on the entire drivetrain, but a stock rear differential can have trouble dispersing the heat that is created. Aftermarket covers have more gear oil capacity and include heat-sink fins to help diffuse heat created by the gears' movement inside the differential.

13. SYNTHETIC LUBRICANTS

Another way to reduce the danger of heat-related part failure is by replacing petroleum lubricants with synthetic products. Man-made oils do not contain waxes and refining by-products that cause friction and heat in your truck's moving parts. In addition to parts running cooler, they will have less resistance, which can result in higher horsepower and torque output. You'll also save some cash in the long run because synthetic oils do not have to be replaced as often as petroleum products.

14. LOAD-DISTRIBUTING TRAILER HITCH

Like the name implies, a load-distributing trailer hitch will disperse the trailer's tongue weight so it's not all concentrated on the hitch ball. This is accomplished with spring arms mounted near the hitch ball that connect to the trailer using chains or shackles attached to brackets on the A-frame of the trailer. This spreads the tongue weight over a greater area, which increases stability and will help prevent the "trailer wheelie" look of an overloaded truck. The spring arms must be kept under tension to reap the benefits of the weight distribution.

There is a great variety of weight-distributing trailer hitches, including units designed for a maximum tongue weight of 1,200 pounds and a trailer weight of 12,000 pounds.

15. CLASS V TRAILER HITCH

If you are planning to tow more than 10,000 pounds of gross trailer weight or have more than 1,200 pounds of tongue weight, it's time to upgrade to a Class V hitch. These heavy-duty units are made to distribute the trailer weight and many are capable of pulling loads of as much as 14,000 pounds.

16. GOOSENECK OR FIFTH-WHEEL HITCH

If you want even more capacity than a Class V hitch is rated to handle, you need to step up to a gooseneck or a fifth-wheel trailer hitch. Both are able to manage enormous trailer and tongue weights because the hitch is attached to the frame above the rear axle. Goosenecks are commonly rated for trailers weighing more than 20,000 pounds with tongue weights of more than 5,000 pounds, and many include hitch balls that can be hidden under the truck bed when not in use. Fifth-wheel hitches include a locking jaw that will make a secure connection between your truck and the trailer. Another advantage to a fifth-wheel setup is the ability to adjust the placement of the unit on rails to prevent the trailer from hitting the cab, and to achieve optimum balance. Some fifth-wheels' hitches are motorized so you can move them on the adjustment rails from inside the cabin.

17. LARGER REAR SWAY BAR

Sway bars (aka anti-sway bars) are designed to distribute load weight evenly between your tires. When making turns, a sway bar transfers pressure away from the outboard wheels, which reduces body roll. Larger sway bars do a better job of keeping your truck on the proper track, which is ideal for towing heavy loads. Aftermarket sway bars are fairly inexpensive, include polyurethane bushings, and since they are usually bolt-on parts, you can install one yourself during a weekend.

18. BETTER SHOCKS

Ditch those factory shock absorbers for a smoother ride and better control in all driving situations. You have plenty of options for upgrading your shocks, including high-pressure nitrogen mono-tube units and shocks with remote oil reservoirs for heavy-duty cycling. Some shocks have valves that automatically adjust to different road conditions, while others have dials you can set to tailor performance for the load you will be moving.

19. AIR SPRINGS/HELPER SPRINGS

Maxed-out springs are an invitation to disaster when you are towing a trailer. If your stock springs can't handle the weight you need to carry, then supplemental helper springs or air springs should be on your shopping list. They are installed between your truck's frame and leaf springs to provide additional suspension capacity, and they keep the stock parts in their optimum operating range.



20. TIRES WITH HIGH LOAD CAPACITY

Go check your tire sidewalls. The number after the wheel rim size, such as LT245/75R17E, is the load range rating. On some tires, it is listed separately from the size. It refers to how much

horizontal stress can be put on your tires—a critical measurement for trailer towing due to the lateral loads that come into play when a trailer attempts to wander. Your tow rig should be equipped with at least “E” load rated tires or higher (“D” rated tires may not be strong enough). Make sure to check the pressure required for your set because high load rated tires often require more pressure than standard light truck models.

21. AUXILIARY FUEL TANK

Towing a trailer will lower your fuel economy, which means you’ll have to stop more often to fill your tank. One way to stay on the road during long hauls is to have more fuel at your disposal. An auxiliary fuel tank is a simple way to add more range between fill-ups.

22. TOWING MIRRORS AND VIDEO BACKUP CAMERA

What good is having a big trailer, if you can’t see what it’s doing? When ordering a tow rig, make sure to get the trailer mirrors. Some of the best features include power extending/tele-



scoping functions, heated glass, clearance lights, auto-dimming for bright headlights, and integrated turn signals to make sure other drivers stay out of your way. If you already have a truck equipped with small mirrors, you can order units with similar features from aftermarket suppliers. Beyond that, automotive video systems are becoming more common and less expensive. They are great for keeping an eye on what’s behind your trailer and can be very helpful when you are navigating parking lots.

23. DUAL REAR WHEELS

If four wheels are good, then six must be better, right? When it comes to towing a trailer, it’s hard to argue against having more load capacity, better contact with the road, and improved traction. If your truck is struggling to maintain stability while towing, you may need to start shopping for a dualie, especially if your trailer is large enough to require a gooseneck or fifth-wheel hitch.

24. LONGBED OPTION

Another thing to consider when ordering a heavy-duty truck is the distance between the cab and the rear axle. The more space you have, the better leverage your truck will have while towing, plus there is less of a chance the trailer will come into contact with the cab when you are towing a fifth wheel. So, choose the 8-foot box and you should have a more stable towing platform.

25. REGULAR CAB 2WD WEIGHT SAVINGS

To get the maximum trailer weight capacity straight from the factory, you have to order the lightest diesel truck. Two-wheel-drive pickups with the standard cab don’t have to carry around the extra weight of a transfer case, front drive parts, or the back seating area, so they can tow that much more weight. If your truck stays on-road, you don’t need extra passenger room, and want to tow a large trailer, then a regular cab two-wheel-drive dualie may be your best choice. **DP**





For more information about
Frederico Performance
Anti-Sway Bars
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and visit our website

<http://fredericoperformance.com>