

CUSTOM CABINETS: BUILD YOUR OWN!

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BY THE EDITORS OF HOT ROD MAGAZINE

LO-BUCK VANNING: REBUILD A TOTAL

RX FOR RUST & BUMPS
4-WHEEL V-DRIVE VAN

HOW-TOs:

ADD-A-ROOM

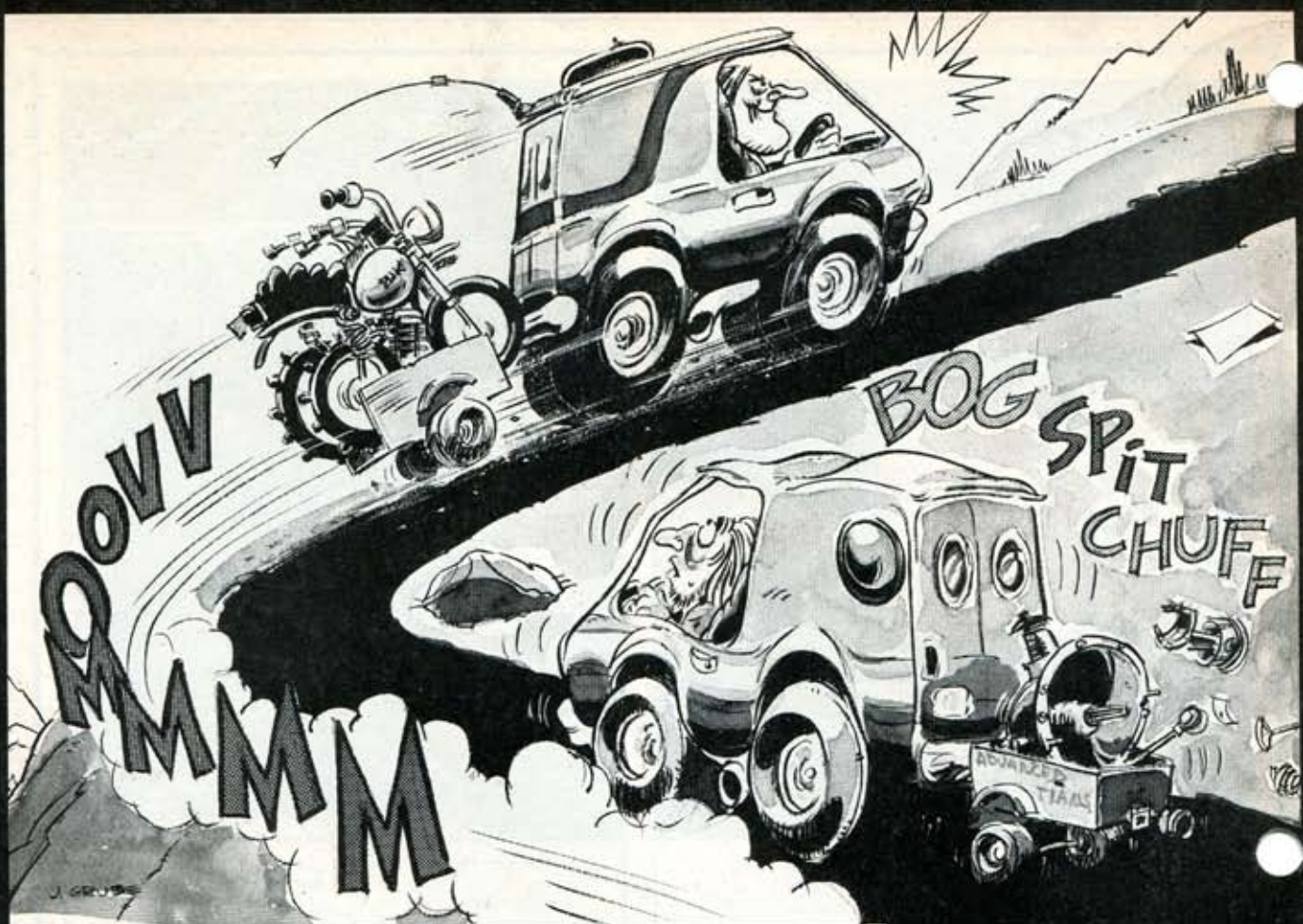
**HOOD SCOOPS
& LOUVERS**



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PREP YOUR VAN FOR HEAVY-DUTY TOWING



TOWING PREP

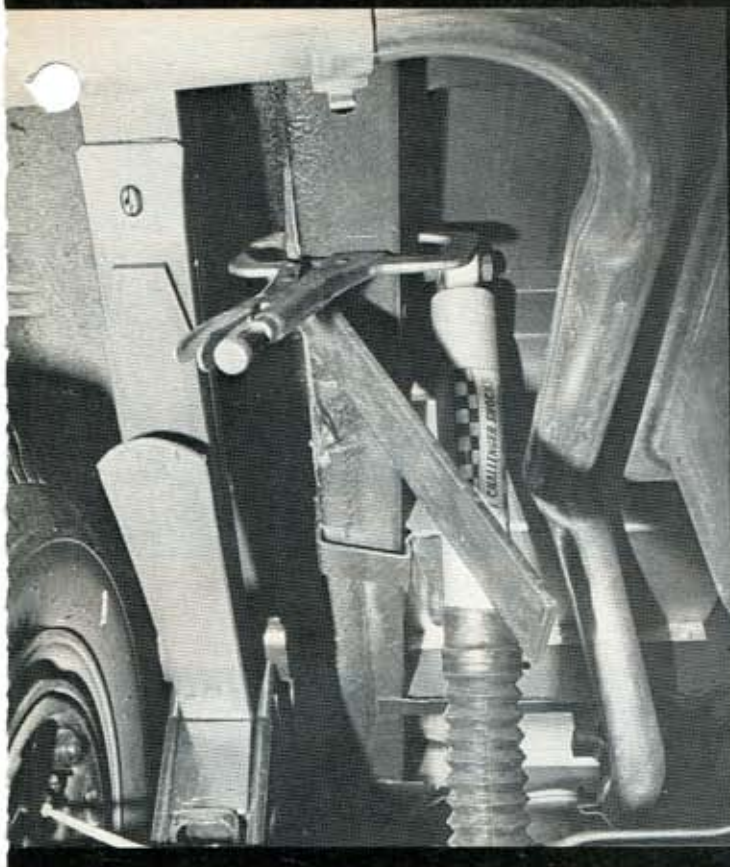
MAKE TOWING EASIER AND HELP YOUR DRIVETRAIN LAST LONGER WITH A PROPERLY OUTFITTED VAN/By Ron Cogan



So you've purchased a new boat or trailerable boonie-crasher and it's time to get things together for a little towing action, eh? More power to you. Vans make great tow vehicles and, more often than not, you'll find their adequate power, fine handling characteristics and camping capabilities put them near the top of the list of ideal towing rigs. However, there are some guidelines that should be followed to make (and keep) towing a pleasurable experience for you and your equipment.

First, take a hard look at what you'll be towing and the machine you will be towing with. If the van is an older one which has any one component in a state of disrepair, then the obvious answer is to get it up to snuff mechanically. The inconvenience of being stuck out on the highway is worsened when you're accompanied by a boat, buggie or whatever. Even if the van is brand new, though, consideration should be made when prepping it for towing so the additional weight being hauled won't have a detrimental effect on your drivetrain or suspension.

Your first move should be to look



g we opted for the very best in tow equipment, project began with a trip to Hitchmasters for a receiver-type hitch. First step is to weld braces to crossmembers.

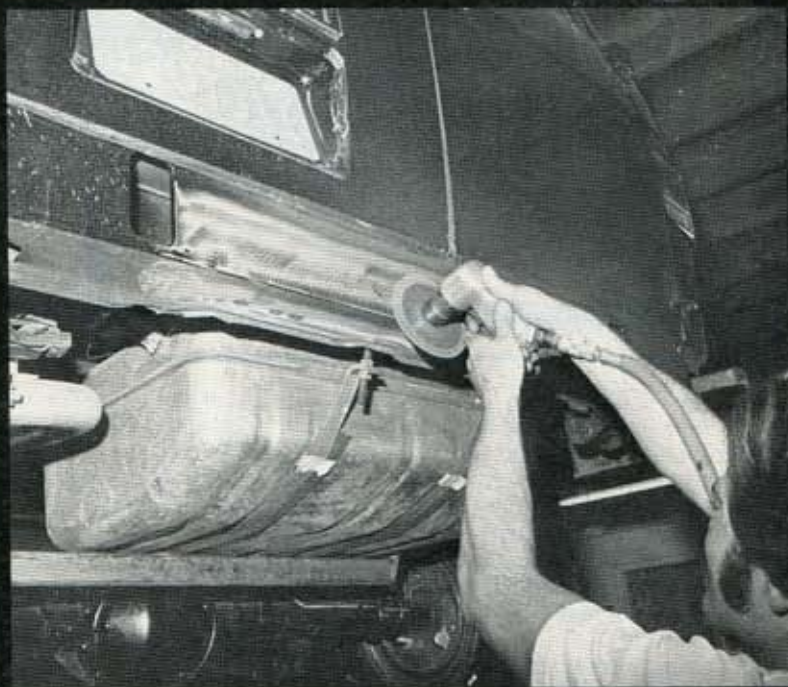


After the two angled metal bars are secured to the crossmembers, a hefty bar is located just underneath the gas tank and connected to the crossmember bars.

into equipping the van with a hitch. Far from being just a simple requirement needed to get the show on the road, a trailer hitch is the one important link between your van and trailer. It is absolutely senseless to scrimp on bucks here when you consider that this lump of metal is responsible for securely hanging on to the trailer tongue lock and guiding your sizable investment along highways and streets.

Although there are several types of bolt-on hitches available from a variety of manufacturers, experts in this field suggest that you install a custom-fabricated unit to get the best, trouble-free performance. Although this type of hitch does cost more, it is fully guaranteed and normally serviced free of charge in the remote event of any sort of failure.

Our sample installation was performed at Hitchmasters (7254 Woodley Avenue, Van Nuys, California 91406), a shop that specializes in nothing but custom hitches, wiring and towing aids. Because of our emphasis on utilizing the best equipment for the job, a receiver-type hitch was chosen for the project.



Next the rear bumper is dropped and the metal just behind the bumper sanded to bare metal. A sturdy length of angle iron will be welded here to provide the additional hitch strength.

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Taking the sheetmetal down to bare metal provides a good surface for joining the angle iron and is well worth the time. Iron will be out of view when bumper is reinstalled.



The receiver bar is angled to follow the contour of the gas tank and cut so it meets the side-to-side bar flush. Note trailer socket plate to left of bar.



Locate a mounting position for the trans oil cooler in the grille area, taking into account the space needed for an air conditioning condenser if added later.



Adding the in-series cooler into your transmission oil cooling system is a simple matter that should take about 15 minutes. Application is outlined at right.

Basically, a receiver hitch is constructed in two parts. The main body of the component is welded to the frame's crossmembers with a stock steel receiver section running to a centrally located section just under the rear bumper. A slightly smaller (in diameter) hitch bar equipped with a 2-inch ball comprises the second part of the system.

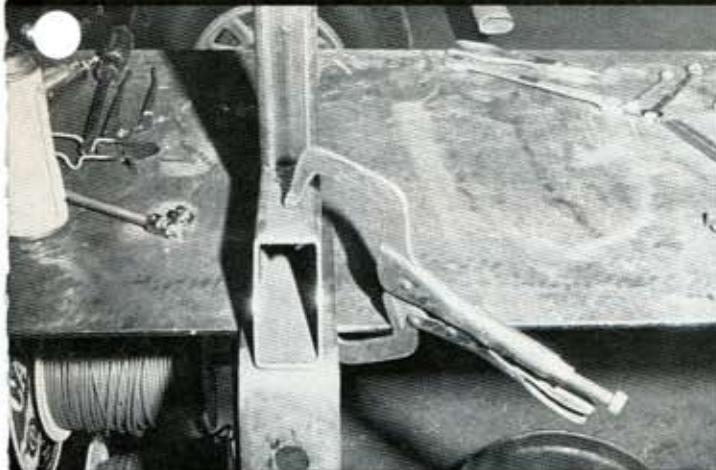
Until the time comes to do some towing, the hitch bar remains separate from the assembly and is safely stored away, leaving only the very end of the main hitch assembly as visible evidence that the van has towing capabilities. This is especially important to those who value the clean lines of a custom van and dislike the

appearance of an unused hitch bar. When it is needed, though, all you have to do is slide the hitch bar into the receiver, slip a hardened locking pin through a hole that's been drilled into both the receiver and hitch bar, and you're all set to go. A set bolt is provided on the bottom of the receiver so the two components can be snugged together to prevent squeaks and rattles.

This style hitch is probably the most ideal for towing ski boats, buggies or other trailerable loads up to a total of 5000 pounds. Those who will be pulling trailers with a combined load of over 5000 pounds should equip their vans with a special weight equalizing hitch assembly, and look

into a main hitch body that uses two bars between crossmembers instead of one. The second bar serves to strengthen the van's frame, which was not designed to handle the stress produced by pulling such a heavy load. Again, although this will prove to be a more costly consideration, we're looking at a system that will handle the job easily and probably outlast the van itself.

The last part of a hitch installation involves equipping the van with a trailer light socket and splicing wires into your electrical system. This is easily handled by tying into the turn signal, taillight and brake light wires at the backside of your taillight assemblies inside the van. The plug

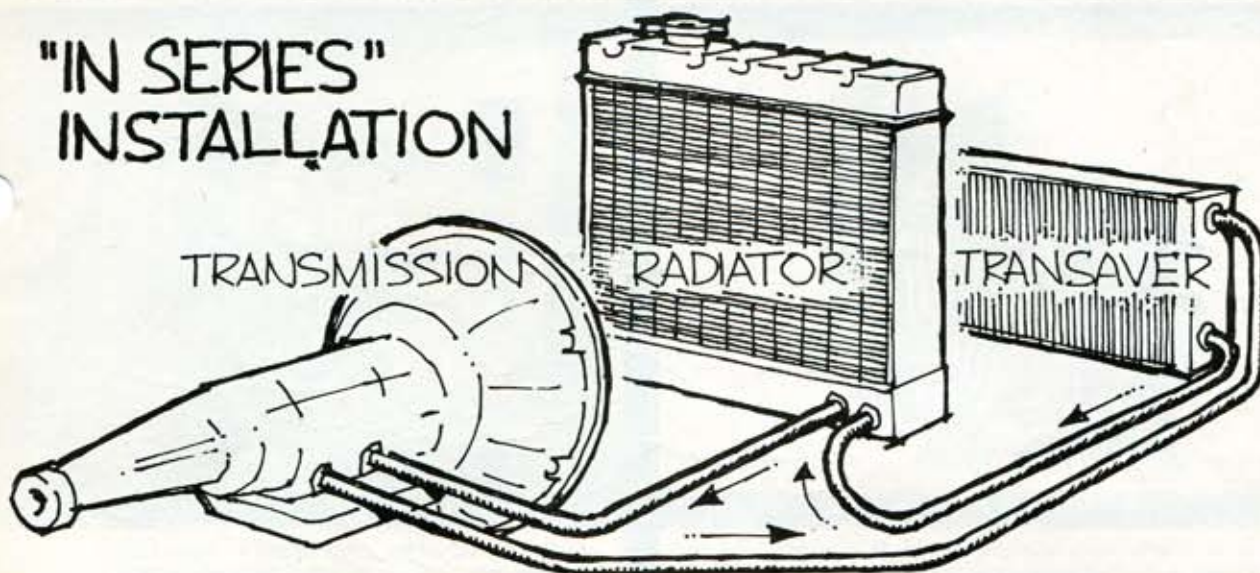


The removable hitch bar is then made from stock steel. The bar should be custom fitted to your van so the ball height will be right for the trailer you're towing.



And here's the finished product—painted, pretty and ready to go. Note the drop-down of the hitch bar to bring the ball to proper trailer-tongue lock height.

"IN SERIES" INSTALLATION



socket itself should be located as far above the water level as possible (if you'll be towing a boat) so the socket won't be submerged during launching.

After the hitch is installed, you should immediately move on to another important area—your transmission. Pulling this extra weight places additional strain on even the best transmission, which results in hot transmission fluid and a higher trans operating temperature. This directly affects transmission efficiency and can cut down the life of your trans by as much as 50 percent. Also, since trans oil is cooled in a separate core toward the bottom end of the radiator, you will experience a

certain amount of heat transfer to the cooling system and radiator boilover may occur.

One of the least expensive answers to this problem is to add a separate transmission oil cooler, either used with the stock cooler or routed directly to the trans in a system that bypasses the cooler at the radiator. Each application has its own merits and the decision is yours, but either way you will definitely experience a drop in the operating temperature of your transmission fluid. Hitchmasters prefers to use the "in series" installation utilizing both cooling coils for optimum results.

A viable addition to this system is a transmission oil temperature gauge,

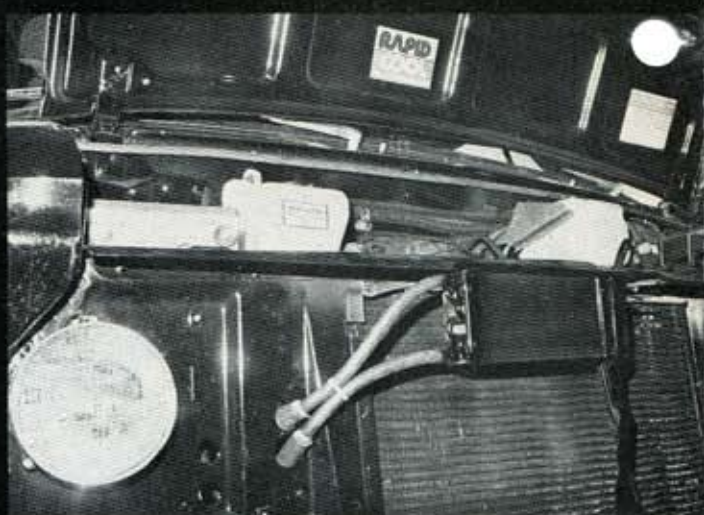
or a standard engine oil temperature gauge equipped with a switching assembly and two separate sensors to allow the monitoring of both engine and trans oil temperatures as desired. These can be mounted easily in under-dash or above-dash panels, or in your dash if adequate room is present. As is the case with instruments provided in your stock dash cluster, this will help you keep tabs on drivetrain operation and serve as a watchdog for mechanical trouble.

The cause of this higher fluid operating temperature is undue friction in the transmission itself, a situation caused by the comfort-conscious automotive market. Instead of being set up for maximum shifting efficiency,

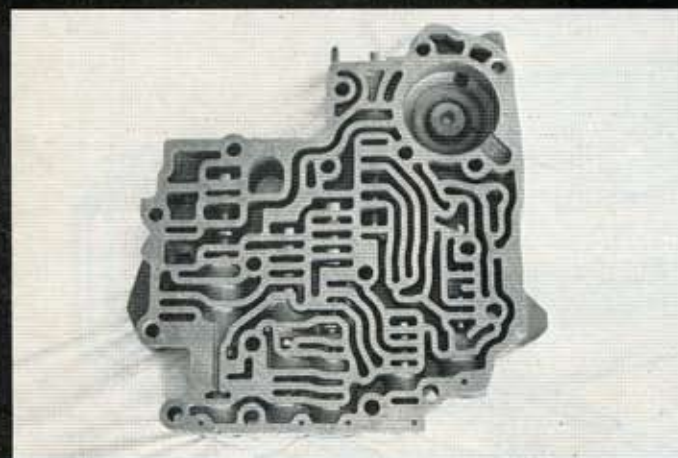
TOWING PREP



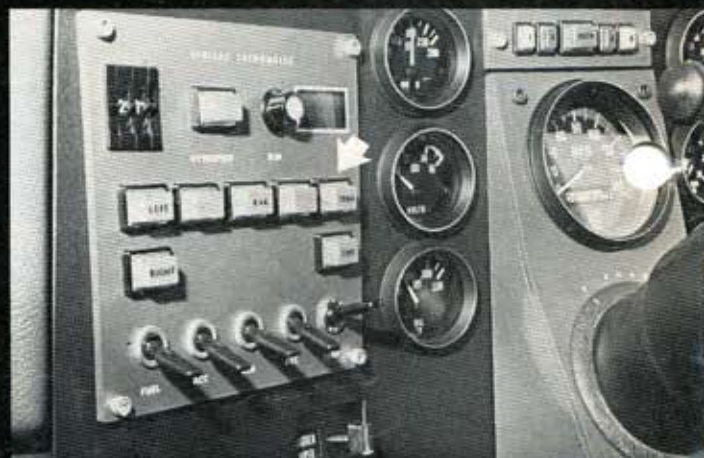
Now it's time to secure the trans cooler in place. This can be accomplished with the mounting hardware supplied, or you can weld it as we did.



Paint the cooling coil black as a final touch. This will make it blend in with the radiator and eliminate it from being seen through the grille.



Like aftermarket trans reprogramming kits, Bulldog 350 runs a modified valve body to improve response. Other Bulldog parts increase trans life.



This RLS Industries setup utilizes an S-W oil temp gauge with switches to check trans and engine oil temperature.

automatic transmissions are manufactured with a comfortable shift in mind. This is all well and good for a smooth ride, but this comfort is achieved at the expense of your transmission's life expectancy. The smoother the shift, the more friction involved in the shifting process—and friction means heat.

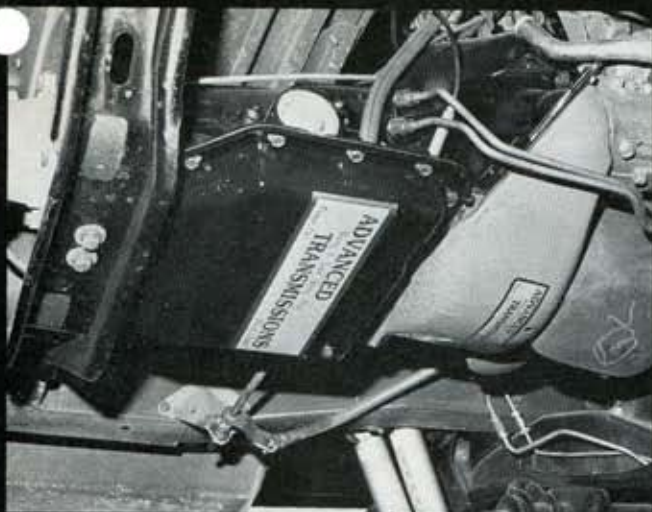
Ideally, the answer to this problem is to replace your stock transmission with one that is designed for efficiency, such as the Bulldog 350 trans available from Advanced Transmissions (1156 W. Holt Blvd., Ontario, California 91762). By reworking the transmission's internal components—either by completely replacing

some or "beefing" others—the transmission offers a positive shift and radically cuts down on friction heat. Additionally, the Bulldog 350 enables you to manually shift into low gear as needed without internal damage (as might be experienced in a stock transmission).

One alternative to shelling out the bucks for a custom transmission is tackling a shift kit installation yourself. If you possess a reasonable mechanical ability, then you should be able to modify the shift to your own requirements with one of the many aftermarket packages available. This will reprogram the shift for less friction in the transition from one gear

to another, but you'll be missing out on other component modifications offered by direct replacement transmissions like the Bulldog 350. Like anything else, your choice in this area will probably depend on your budget, and a simple shift kit is far better than nothing.

The last area of importance when prepping your van for towing is equipping your suspension to handle the job. This will be a matter that varies greatly from one van to the next but, almost without exception, every van could use a little help. The most critical problem might be tire clearance or the necessity to level out an overburdened rear end of the



To provide a more positive shift and boost efficiency, we opted for a Bulldog Turbo 350 from Advanced Transmissions, Ontario, California.



Advanced adds a third bearing surface to eliminate wobble where the high gear clutch drum meets the front pump reaction shaft.



van, especially if your leaf springs are weak or your trailer sports too much tongue weight. This is a problem best handled with a pair of air-adjustable rear shocks or a set of helper springs.

Again, each individual van might require modifications or additions in certain areas of the suspension to correct inherent problems, depending upon the model and year of the van, general condition of suspension components, and the type of trailer, boat or buggy being towed. Various aftermarket accessories available to enhance riding and handling characteristics include anti-swaybars, torsion bars, special shock absorbers,

traction bars and so on. Because the Chevy Van used for this project was already equipped with an optional torsion bar from the factory and all other suspension components were in good shape, the only modification made for handling was the addition of Mickey Thompson high-performance shocks.

Since many things sound great in theory but prove to be almost nonsense in reality, credibility has been lent to our suggestions with some road testing. And, just as we suspected, results and conclusions are very clear. A quality hitch does indeed make for trouble-free towing, a trans cooler keeps transmission oil

temperatures within reason (a 1000-mile trip in 100-degree heat proved this), and a specially prepared transmission can supply a positive shift and offer increased efficiency without sacrificing comfort.

Now, with our basic suggestions in mind, do yourself and your van a favor before slapping on a hitch and hitting the road. Take the time to talk your situation over with the experts and get a good idea of what is needed before you do anything. Sure, we realize that certain budget limitations have to be taken into consideration, but money that's wisely spent at the start will surely save headaches and repair bills in the future. ●