

MOTORHOME

PROGRESSIVE DINGHY BRAKING

U.S. GEAR'S D-CELERATOR
UNIFIED TOW BRAKE
IS A PERMANENT SOLUTION
TO SAFE STOPPING

by GARY BOHINC

Making the decision to tow a vehicle behind a motorhome is pretty easy: If you need auxiliary transportation, you buy a small car or SUV that's manufacturer-rated to be towed four-down and connect it with a tow bar and appropriate brake-light activation. Deciding on a braking device for that dinghy is more complicated.

It's a decision that can't be taken lightly. Laws in the United States vary from state to state, but if you plan on wandering far from home with your dinghy, or just for the sake of safety, it's a good idea to install a braking device.

There are many portable and semi-permanently installed auxiliary-braking devices with a wide range of prices and capabilities. U.S. Gear's concept with its D-Celerator Unified Tow Brake (UTB) is to provide the convenience of a permanent installation along with smooth, well-modulated dinghy braking that's directly proportional to the motorhome brake application.

BIG DIFFERENCE UNDER THE HOOD

The UTB includes several desirable features, but most significant is its ability

to activate and employ the full capabilities of the dinghy's power-brake system. That feature alone is worth the cost of admission.

U.S. Gear includes a vacuum-pump assembly that's tied into the UTB power module and plumbed into the dinghy's vacuum line. When the system is activated the vacuum pump starts up and causes the dinghy's power brakes to become active, so the UTB pedal activator only needs to gently move the pedal while the power-assist system does the hard work, just as if you were driving the car. The importance of this detail can't be overstated. Having well-modulated full-power braking available all the way from a gentle feathering up to full-on throw out the anchor means the dinghy is literally pulling, or stopping, its fair share of the load. The extra safety this imparts is a valuable asset.

A few new vehicles come with non-vacuum-assist power brakes. Instead they use a hydroboost system, which involves an electric pump activated by the brake pedal that provides the power-braking boost. For such vehicles, U.S. Gear omits the vacuum pump and hardware because whether the dinghy's igni-

tion is on or off, the power brakes always activate when the pedal is depressed.

IN THE BOX

U.S. Gear sells four versions of the UTB kit. Some motorhome chassis, such as certain Freightliner and Workhorse models, come prewired for a dinghy brake-wiring system, as do 2007 and newer Winnebago Class A's. Those UTB kits don't include the motorhome wiring harness because it's already installed. Likewise, UTB kits for vehicles with hydroboost brakes delete the vacuum-pump hardware. Your dealer can help you match the proper UTB kit to your rig and dinghy setup. Our setup used the TV-100K (prewired coach, vacuum-assist dinghy), which retails for \$1,095.

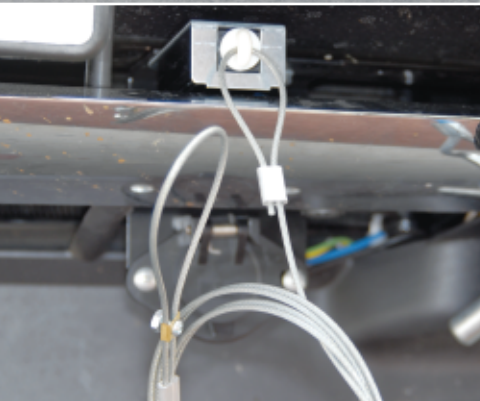
Up front, there's a control module that installs in a convenient location where it's readily accessible and viewable to the motorhome driver. The module incorporates a manual-activation or emergency-braking lever, a gain control and a band of red LEDs illuminates in proportion to the degree of brake-activation signal being sent to the dinghy. The control module also includes solid-state inertia sensors that monitor the rig's decelera-



The solenoid that pulls the cable used to depress the dinghy's brake pedal is mounted under the dash on the passenger's side.



With solenoid and wiring complete, the dinghy's stock carpeting is replaced and secured, virtually hiding this portion of the system.



The dinghy is outfitted with a breakaway switch and cable (included) that will activate the dinghy brakes if the vehicle comes loose.



The system's charge and control wires are connected to the six-pin receptacle on the dinghy vehicle that was originally installed when it was wired for towing.



A T-fitting is spliced into the brake system's vacuum line in back of the check valve, allowing the UTB vacuum pump to actuate the dinghy's power-brake system.



tion rate and use that data to modulate the dinghy's proportional braking.

Other than the wiring loom and control harness connector plug at the coach's back bumper, the balance of the hardware is installed in the dinghy. Significant hardware in the dinghy part of the kit includes the vacuum pump, a power module, emergency breakaway switch and the brake-pedal-activation solenoid. Of course, all of the required wiring and hardware are part of the kit.

INSTALLATION

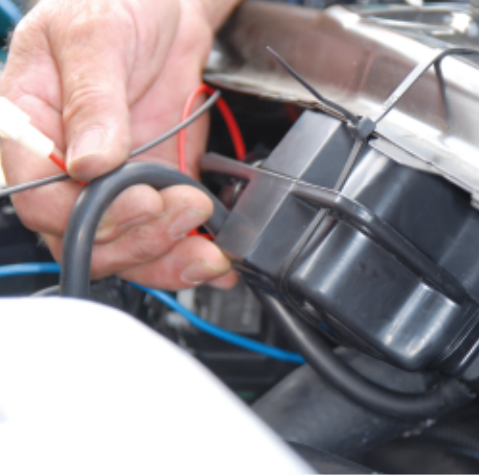
We installed a system on a 2008 Saturn VUE, a car that required the standard vacuum power-brake-booster application. Our Winnebago had the requisite prewiring, so that was also taken into account when selecting the kit. Owners who are handy with tools and have technical prowess may want to undertake installation because the kit comes with an instructional DVD and manual. Others with less mechanical background may want to leave it to a professional. Figure on three hours of labor for the installation.

We started with the control module, which we mounted on the motorhome's instrument panel and plugged into the existing wiring harness. That's the easy part. Aboard the dinghy the first step is choosing a location for the electric solenoid, which is used to pull the cable that will be attached to the brake pedal. U.S. Gear recommends installing it under the dash on the passenger side and securing it to the firewall. Other acceptable locations are under or behind a seat or in the trunk — provided you have adequate cable length. It takes some gymnastics to get the solenoid to fit under the dash, but it was wedged in nicely in the Saturn and it's mostly out of sight.

When routing the cable you have to pay close attention to the measurements and angles noted in the instruction manual. On our installation we temporarily positioned the solenoid under the dash on the passenger side so that we could verify that we could indeed run the cable successfully and connect it to the brake pedal without obstructions. Once we were comfortable with the location, the solenoid was bolted to the firewall with the enclosed hardware. The next step was to connect the wires from the electric solenoid to the UTB power module, which was also mounted under the dash. From here wires were routed from inside the vehicle to underneath the hood through the firewall. Although this is a permanent installation, the well-designed nature of the components means it's virtually invisible to the dinghy driver and passengers. Yet, all it takes to make it work is plugging in the umbilical cord that runs from the coach to the dinghy.

Once the work was completed inside the Saturn it continued under the hood. For the Saturn, a vacuum pump is used to provide power assist to the brakes when the engine is off. This pump should be mounted as close to the power-brake booster as possible, because you'll need to splice into the vacuum hose leading between the booster and the engine. A few more wiring connections to the battery were made and we were ready to link the two vehicles.

The dinghy vehicle is connected to the motorhome using a six-wire



The U.S. Gear-supplied vacuum-pump assembly is installed under the hood on the firewall.



The D-Celerator Unified Tow Brake power module is mounted under the dinghy's dash. All wires will be neatly tied up and away from possible foot snags.

FOR MORE INFORMATION

SATURN VUE

(800) 553-6000, www.saturn.com.

U.S. GEAR

(800) 874-3271, www.usgear.com.

umbilical cord. Because this motorhome already had a six-wire cable previously installed for brake, turn and running lights, all we had to do was insert two wires into the vacant pins to complete the electrical connection for the Tow Brake. If the motorhome has already been prewired and has a seven-pin receptacle, you will have to purchase a six- or seven-pin adapter as specified in the instructions.

To complete the installation, a breakaway switch is mounted to the dinghy. If the dinghy were to separate, the pin will be pulled out of the switch and its brakes applied. When the dinghy is disconnected, a dummy pin is inserted into the switch to prevent the system from activating.

ON THE ROAD

Set up and ready to drive, the in-dash control module displays a green light that indicates all's well and the system is intact. During an unexpected disconnect or if a wiring connection fails, for example, the green light goes out and the controller beeps to indicate something's wrong and the system isn't fully functional.

We did a brake and turn-signal check and drove around the parking lot for a preliminary test to make sure everything was working. The override thumb-switch lever on the control module can be used to determine if the towed vehicle's brakes are activating. With a few tweaks of the gain control up and down from the factory-recommended "5" midpoint starting adjustment, we were ready to head out onto the streets.

Because we didn't have access to certain precision-measurement equipment, our UTB results are strictly seat-of-the-pants. Given the driver's long RVing experience and the miles he's done with his coach and new dinghy car, these results are worth noting.

All driving tests were done with the UTB deactivated, then repeated with the device up and running. We implemented several different braking scenarios from easy braking — such as city-driving speed easing to a halt — to higher-speed forceful braking that fell short of a full panic stop.

Those higher-speed stops, in particular, can be uneasy with the dinghy's dead weight shoving against the motorhome's aft end. For the coach driver, there's no missing that feeling when the brake pedal is mashed down. This is especially noticeable when braking in a long sweeping curve, at which point the dinghy's dead weight is pushing at an angle to the coach's direction of travel. The aft end feels like it's trying to scoot to the side.

Once we reactivated the UTB the picture changed completely. Not only did the lashup draw down with less apparent effort by the coach brakes, there was none of that tail-pushing sensation we felt before. We experimented with more-aggressive or less-aggressive braking by tweaking the control module gain control, and it doesn't take much of a change to notice more or less braking action by the dinghy. The wide range of adjustment means there's a setting to suit almost every driver-and-vehicle combination.

During all speeds when stopping, the range of dinghy-braking assist was well-matched to the motorhome's braking. We didn't have soft brakes at high speed that ended with grabbing nearer the stop, for example, or grabby high-speed brakes that softened as we drew down. The brake-assist matching was impressive.

An auxiliary braking system for your dinghy vehicle should be your next must-have motorhome-accessory investment, and it may even be legally required where you live. Given the combination of highly effective, well-modulated braking and the well-integrated nature of the components, the D-Celerator Unified Tow Brake looks like a serious contender for outfitting your dinghy. ♦