

**FIRST
LOOK!**

**50TH ANNIVERSARY
EDITION REVEALED**



Vette



AMERICA'S FAVORITE CORVETTE MAGAZINE

RARE AIR...

'67 FACTORY AIR 427/400 COUPE



BIGGER & BETTER! '02 CORVETTE CAR CLUB DIRECTORY

TRICK! RACK-AND-PINION STEERING FOR C3s

FAST! JAY LENO'S WILD 514-HORSE ZO6

VICTORIOUS! C5-R WINS AT SEBRING

VISIT www.vetteweb.com



Rack 'N' Roll



Installing And Evaluating The Steeroids™ Power Rack-And-Pinion Steering Conversion For '68-82s

By Bob Wallace and John Nelson
Photography by Bob Wallace

Nostalgia is great. Early model Corvettes, all of 'em, have style and a certain grace, a sensuousness that isn't there in a late model. There's nothing wrong with a C4 or a C5's appearance; their forms are functional, first and foremost, while their elders were designed to be eye candy, to be attractive, almost frivolous. But those same glorious shapes cover mechanical components that, while in many

instances were advanced compared to much else that was available in those days of old, now rank right up there with a Conestoga wagon.

For the restoration side of the hobby, that's part of charm. If you are lucky enough to own a nice original or correctly restored first-through third-gen, you accept the quirks that were built into the old timers. If your primary intent is to have a vintage Corvette that can be driven comfortably and safely, well, them oldies aren't always goodies.

Our subject '72 Stingray's steering system is typical of the setup used to steer '68-82 Corvettes. Even though its in pretty good shape for a collection of 29-year-old parts, it's all coming out. The Steeroids™ kit has extensive removal instructions, which we'll only cover briefly here. Start by breaking the outer tie rod ends loose, disconnecting the steering coupler (or "rag" joint) from the steering column, unbolting the power assist support bracket from the frame rail, disconnecting the power steering hoses from the pump, and removing two of the three bolts that hold the steering box to the frame.



Once all that's done, you'll end up here—at the passenger-side idler arm. After making sure someone is supporting the system, remove the two bolts holding the idler arm to the frame, and the last bolt securing the steering box. The entire system can then be removed from the bottom of the car.



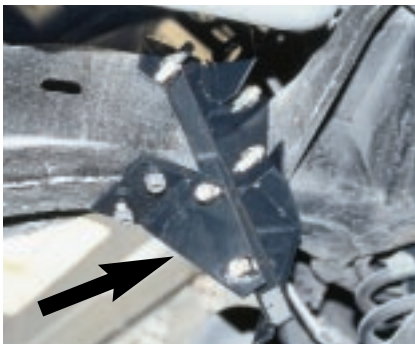
In a side-by-side comparison, the difference between old and new is striking. The rack-and-pinion is no larger than just the lower portion of the old system, sans the steering box and coupler. Speaking of the steering box, you've no doubt noticed that it's no longer connected to the Pitman arm (arrow). Because Loy McKenrick's '72 has tube headers, we used the appropriate puller to remove the Pitman arm from the steering box. This allowed us to work it past the headers. Another option would be to remove the driver-side headers. This shouldn't be an issue on cars running stock exhaust manifolds.



Before going any further, Loy laid out all the items necessary to mount the new hardware so that it'd be close at hand.



The passenger-side bracket for the new set up bolts in just as the old idler arm did.



Moving to the left side, the new driver-side bracket bolts in at the same location as the old steering box. The Steeroids setup also includes a driver-side gusset, which attaches to the mount for the power assist cylinder (arrow).



These two large, rubber split-bushings are then installed onto the rack-and-pinion unit. The shape of each one corresponds to its mounting surface on the new rack, making this a foolproof operation.



The rack-and-pinion is then mounted to the frame brackets that were previously installed and torqued to the specified value (30 ft-lbs, in this case).

Rack 'N' Roll



The next step is to bolt the tie rod bracket to the rack-and-pinion. The outer holes are positioned to the top of the rack.

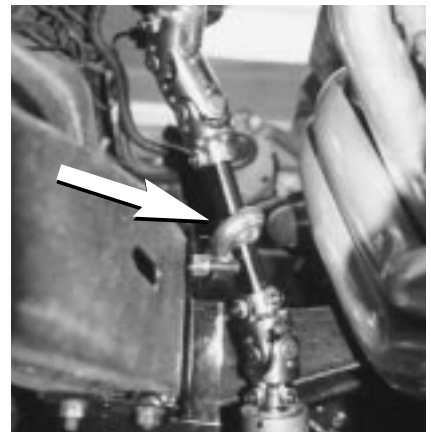


The U-joints are secured to their respective shafts with set screws. The steering column set screw should sit on the flat, machined surface before its tightened; the other set screws will need to be aligned with matching holes in the Steeroids™ shafts. Be sure to use a little thread-locking compound on the set screws.



At this point, our new rack unit is in place, and we're ready to get this baby hooked up.

The Steeroids™ kit includes an assembly made up of a single U-joint, an intermediate shaft, and a double U-joint. The single U-joints is removed and installed onto the steering rack.



Here's the completed coupler assembly. Before final tightening everything, the support bearing (*arrow*) will need to be adjusted to minimize U-joint binding while turning.



The intermediate shaft support bearing can then be installed onto the remaining part of the assembly.



As seen here, the double U-joint connects to the factory steering column, while the intermediate shaft has been reconnected to the single U-joint. The support bearing bolts to the driver-side bracket.



The new power steering hoses can then be installed on the rack and connected to the factory power steering pump.

Rack 'N' Roll

Possibly the two biggest deficiencies in the first three generations are brakes and steering. The four-wheel drums were scrapped in 1965. The disc brakes that were used from 1965-82 still work well, particularly when treated to the common upgrades like stainless steel sleeves. Systems like SSBC's Force 10 (see "Gimme A Brake," October 2001) bring those setups in the 21st century, and there's a plethora of quality bolt-on front disc brake conversions for the solid-axles.

There is, of course, the Paul Newman/Car Creations approach—extensively reworking both ends and portions of the center of '53-72 frames to adapt complete late C4 front and rear suspensions, brakes, and power rack steering into the older models. It's very well engineered, very well crafted, works incredibly well, and costs a lot more than many folks can afford to invest in an old Shark.

Steering upgrades? Well, that's another matter entirely. We know of at least one company that makes a bolt-in front suspension conversion, with disc brakes and a Mustang-sourced rack-and-pinion steering system, a la street rods, for '53-62 Corvettes. Owners of '63-82 Vettes who want something better than the bulky and imprecise factory worm and sector steering box and, if equipped with power assist, the even bulkier setup with hoses, slave cylinder, and power ram dangling below the car, have been pretty much out of luck.

There's a seeming ton of moving, "wear" parts in the old C1-C3 steering systems, and it's not at all unusual to have a quarter turn (of the steering wheel) dead area or slop in the system, just from wear in the box and related parts. If the idler arm is shot, a front-end shimmy is common. Delightful—dead-on-center steering, sloppy and imprecise, and the front tires and wheels shake and shimmy like a third-rate exotic dancer.

Just changing a power steering-equipped '63-82 over to a more contemporary, internally-booster steering box (and getting rid of the bulky and leaky ram, cylinder, and related parts) would be a tremendous improvement for a non-resto driver. Jeff Montgomery, the owner/builder of the silver split-window in the March 2002 issue, did such a swap, and we're working with him on creating a how-to.



After threading the new tie rod ends onto the supplied tie rod sleeves, the two tie rod assemblies are bolted to the tie rod bracket and each side's steering knuckle. Be sure to tighten both castle nuts so that new cotter pins can be installed.



With both tie rods in place and only a few steps left, this is a good point to admire the day's work—and to recheck every nut and bolt to make sure its been properly torqued.



Coming into the home stretch, Loy used a pair of adjustable wrenches to set an approximate alignment. Since Auto Perfections has an alignment rack, the '72 didn't have to travel far to get the job done correctly. For the rest of us, the Steeroids™ instruction sheet outlines a procedure for setting an approximate alignment.



Fluid is then added to the system to bring the level to the appropriate mark ("cold," in this case)...



...after which the car can be started and a thorough check for leaks made. Everything was fluid-tight. The only thing left at this point is to get the Vette's front-end precisely aligned—and then to enjoy the car's slop-free rack-and-pinion steering.

It would, however, be a quantum leap forward to be able to convert one of these vintage Vettes to a modern rack-and-pinion steering system, just like in all C4s and C5s, and almost everything else automotive in this day and age. Pure and simple, a rack-and-pinion steering system imparts a much more positive feel, is more compact, weighs less, and has substantially fewer moving and wear parts. It's a win-win situation, and there is now a true bolt-in, power-assisted, rack-and-pinion steering conversion kit for '68-82 Corvettes. The system or kit, called Steeroids™, was in development for at least a year and a half and has just been released for sale by the manufacturer, SpeedDirect of Santo, Texas.

The Steeroids™ power rack kit is a true bolt-in—no holes to drill, no cutting or welding, not a single permanent change required. It uses the original power steering pump. The rest is in the kit—a brand-new steering rack, well-engineered and crafted mounting brackets that bolt in place of the steering box and idler arm, all necessary hardware, new hoses, tie rod ends, and steering column adapter and extension shaft.


From the time we first heard about SpeedDirect's power rack conversion kit, we were hot to try one. Since the C5 Shark is still many months away from going back on the road, and since it's been nearly two years since the '76 had been driven, we opted to use Loy McKenrick's '72 coupe once again as a guinea pig. That was actually advantageous because, in spite of headers, a 383 stroker small-block, and a home-brewed 700-R4 tranny swap, the platform of the car is still stock. Plus, Loy has been using the old Vette as a daily driver for most of the past 25 or so years, and knows every nuance of how it drives. Who could be better for honestly evaluating a new product for an old Corvette than someone who's owned and driven the same car for multiple decades? The crew at Speed Direct agreed and sent us a kit out of their first production batch.

The Steeroids™ power rack conversion truly is a bolt-on. From start to finish, we invested roughly five man-hours of work, using a hoist and air tools at McKenrick's shop, Auto Perfections. This does not include the time and/or cost of having the frontend re-aligned by a quality alignment shop, but does include performing a rough, road test alignment before pulling the '72 off the hoist. Most important, at least from the installation standpoint, is that every single piece fitted where it was supposed to and as it was supposed to. Before we began

the installation, we weighed the Steeroids™ kit. After removing the original steering box, all linkages, and the power steering ram and slave cylinder, we weighed the old system and found the power rack setup tipped the scales at 12 fewer pounds than the OEM system.

The price of the Steeroids™ power rack-and-pinion conversion for Sharks is \$1156, FOB Santo, Texas. Yeah, that sounds like a healthy chunk of change, but consider the cost of completely refurbishing an original Shark power steering system. A brand-new, quick-ratio steering box from Flaming River Industries goes for \$459, all by itself. Using the catalogs of one of the major Corvette mail order companies, we came up with a parts-only cost of \$659.60 to completely refurbish the steering system (including idler arm, tie rod ends, hoses, etc.) with a rebuilt steering box, power steering control valve, and power steering cylinder (the ram). With all new parts, no "remanufactured" bits or pieces, the tally was \$959.60. Suddenly that \$1156 figure doesn't sound all that high.

Most telling was Loy McKenrick's reaction when we dropped the hoist and I climbed into the passenger side of "Old Yeller" and headed out for a test run. "Holy ****, this thing steers like a new C5!" was one of his first comments. He later related that the car's steering is very precise, feels much more positive than it ever had with the stock system, seemed to respond quicker to any steering wheel inputs, and, at the same time, didn't feel as heavy as the original setup.

It's always a pleasure to test a new product that lives up to the hype, and the Steeroids™ power rack kit for C3s easily lives up to, if not exceeds, the promise and the hype. It's a great addition to any non-resto, regularly driven third-gen, and a great way to have the best of nostalgia and a great driver at the same time. 

SOURCES

SPEEDDIRECT

1901 S. FM 129, Dept. VM
Santo, TX 76472
(888) 253-9680
www.speeddirect.com

AUTO PERFECTIONS

950 E. Whittier Blvd., Dept. VM
La Habra, CA 90631
(562) 694-3204