

**PHR PROJECT CAR**  
**STREET FIGHTER**

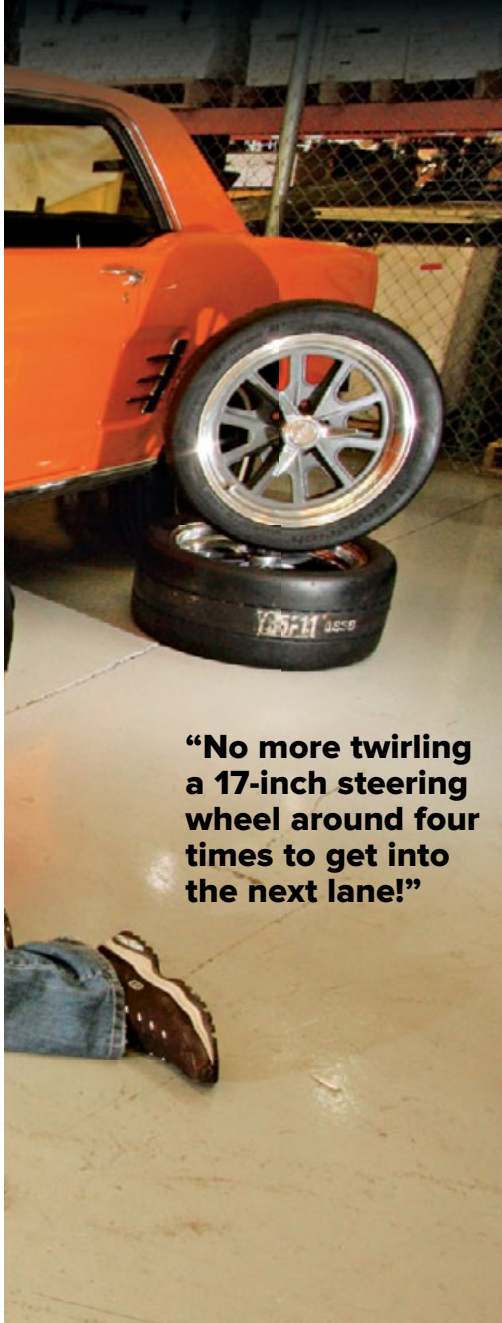


# BETTER

**We toss the stock steering box on project Street Fighter Mustang for a tight and tidy rack-and-pinion system from Total Control Products.**



# STEERING



**“No more twirling a 17-inch steering wheel around four times to get into the next lane!”**

**W**e're swiftly moving our way through the front end of our 1966 Mustang, giving it the updates expected to make it perform. The vague steering feel was not going to fly on the street or at the track. It wasn't as wild in the lane as some 40-year-old steering systems are, but a couple new parts weren't going to cure it. Our choices were: do the best we could with a steering-box-style system by replacing all the worn joints, or start from scratch and do a rack-and-pinion conversion. We went with the rack.

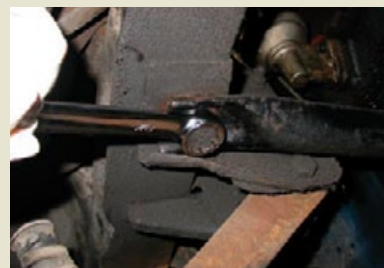
Nearly all modern cars use rack-and-pinion steering because of its light weight and compact packaging. We like it because of its precision and superior road feel. The next question was whether to run a manual or power rack. Since ultimately this is a street car, and it would have some seriously sticky and wide meats on the front, power would be a whole lot easier for car show and city cruising.



The first step for our six-cylinder '66 Mustang is to remove the factory components to make way for the Total Control Products rack. You will need to remove the tie-rod ends from the spindles, and the idler and steering box from the frame.

To go along with the rest of our suspension, we chose Total Control Products' rack-and-pinion setup. Total Control Products is a division of Chris Alston's Chassisworks that specializes in making early Fords outperform late models. They have rack-and-pinion conversion kits for '60-65 Comets, '67-70 Cougars, '60-65 Falcons, '64-70 Mustangs, and '60-65 Rancheros. The rack itself is a direct bolt-in unit that requires zero cutting or welding to install. Instead of having the more traditional ends seen on late-model cars, this rack uses a center link that you can bolt onto the factory tie-rod ends. Because our Mustang was originally a six-cylinder, the tie-rod ends don't work with the V-8 spindles or the steering rack.

To remedy this problem, we used TCP's tie-rod ends and bumpsteer kit. Bumpsteer is a phenomenon where the wheels steer without input from the steering wheel. It's caused by incorrect steering geometry. TCP's bumpsteer kit



Next, it's time to ditch the factory cross-member by removing the two bolts attaching it to the frame. The rack will serve as its replacement.



To get the steering box out, we removed the steering wheel, unbolted the clamp at the edge of the dash panel, and pulled the column housing out over the shaft.

## BETTER STEERING



In order to get the steering box out of its home, the center link of the steering assembly needs to be unbolted from the Pitman arm. Once the column housing is out of the way, the box can slide out with the shaft.



The Flaming River steering rack in the Total Control system uses the factory lower control arm mounting hole to mount its driver-side bracket. (There are three mounting brackets total: One for the driver's side, and two for the passenger side that consist of an inner and outer bracket.) The new supplied hardware should be snug, but not too tight to allow proper alignment with the other brackets.



Like the driver's side, the inner bracket on the passenger side uses the lower control arm hole. The outer passenger-side bracket uses a factory threaded insert on the underside of the frame where the cross-member was mounted. Remember to only snug down the bolts after the rack is aligned.



With all three of the clamps loosely bolted to the rack, you can begin tightening them evenly so as not to bind up any portion of the rack. From this rear view, you can see the center link on the backside of the rack where you bolt the factory tie-rod ends.



These Total Control Product's tie-rod ends replace the outer ball joint to allow adjustment for bumpsteer. The camber, caster, and toe need to be set before bumpsteer can be addressed.



The Total Control rack kit comes with a new firewall pass-through bracket for the column. To remove the old one, unscrew the 3 Phillips-head bolts.



Here is the old and new firewall mount. Which one would you want in your Mustang when you assault a high-speed corner? Notice how the new one from Total Control Products has a floating support ring. Instead of sheetmetal screws, the new unit uses three button head Allen bolts.



Before sliding the column through the firewall, we used the supplied adhesive pads on the factory clamp bracket. This is to keep the bracket from scratching our new Flaming River column.

allows you to shim the bolt connecting the tie-rod end to the spindle to give it the desired angle, which in most cases closely parallels the lower control arm. In order to make this adjustment correct, you need to have the camber, caster, and toe correct. We will be installing TCP's coilover conversion and tubular control arms at a later date, so the bumpsteer adjustment will have to wait.

These early Mustangs have an interesting way of putting their steering systems together. Unlike GM, the shaft is one with the steering box unless you disassemble it. To adapt the new rack, we replaced this assembly with a stainless steel tilt-wheel column from

Flaming River. The new column bolts in the same way the old one did, but with an updated firewall mount and GM-style wiring. Our Mustang's wiring harness is a mess of shorts, so building a connector to fit the new column would be a waste of time. All the pins and the diagram were supplied with the kit, which will make it really easy when the time for new wiring comes.

The last piece to complete the steering chain of command is the steering wheel itself. We got Grant's Formula GT wheel for its simple race-inspired styling. It's also a couple inches smaller in diameter than stock at 13 inches, so it makes quick steering input a lot easier.

No more twirling a 17-inch steering wheel around four times to get into the next lane!

When we pulled this Mustang into the shop, it was a sad and tired stocker without a purpose. Each improvement we've done on this car is bringing it one step closer to being a pavement-hungry supercar.

We tightened the column clamp under the dash to secure the column's depth. At this point, you'll need to set up your new column linkage and cut your steering shaft to length. Once the column depth is set, install the U-joints on the column and the rack. Measure the distance from the face of each joint while they point at each other. Add 1 7/8 inches to this measurement to get the cut length for the included shaft. This ensures the shaft goes into each joint enough to fasten correctly. To install the shaft after being cut, slide the column out for clearance, then back down after you slip the shaft in.



With the column in, install the turn signal lever. Test it to make sure it's not too tight. If it's overtightened, it can make it hard to cancel the signal without signaling the opposite direction. Next, install the steering-wheel base and components in the order shown here. It can be done on the bench, but it's much easier when the column is already mounted.



Here's the final product. We were really happy with the clean, no-nonsense look. It will go great with what else we've got in store for this soon-to-be race car.

### WHERE THE MONEY WENT

Part:	Source:	Part number:	Cost:
Rack-and-pinion kit (with column) .....	TCP .....	RCKPA126 .....	\$2,644
Bumpsteer kit .....	TCP .....	TIER-14 .....	\$269
Formula GT 13-inch wheel .....	Grant .....	773 .....	\$82
Steering wheel installation kit .....	Grant .....	3196 .....	\$17
<b>Total</b> .....			<b>\$3,012</b>