



# PUMP IT DOWN

*Cheapskates' guide to feeling firm.*



**Story and photos  
by Richard Ehrenberg, S.A.E.**

**W**e've all driven modern cars, with direct-acting rack and pinion steering. The difference in precision and road feel, vs. a typical well-used '60-'70s power-assisted Mopar, is pretty startling. The truth, however, is that it doesn't need to be that way. Over the decades, we've detailed many steering upgrades, such as larger tie rods, K-member reinforcements, and increased caster, which all play a part. Of course, as we've also detailed, a large

part of the improvement comes from internal steering box changes, primarily careful select-fit assembly and stiffer reaction springs—an upgrade introduced by Ma Mopar on 1975 cop cars. For decades, a

## QUICK FACTS

- Reducing power steering line pressure costs zero, improves road feel
- Works with all Saginaw pumps
- Does not magically "fix" a worn-out steering box

left-coast outfit (Firm Feel, Inc.) and, later, others, have been selling uprated (firmed-up) rebuilt chucks. Now hear this: If your steering box has much over 60,000-70,000 miles, experience has shown that it needs to be rebuilt or replaced. End of story. No amount of adjusting or other tweaks will take out the slop, unless you're also willing to put up with on-center "numbness," which is way worse than the slop.

OK, but, what if you have a true low-mileage box? Or, like us, got a rebuilt box from a non-FFI source and are dissatisfied with its overboosted feel? Well, there's more to recirculating ball power assist than meets

*(1) Love those twisties...IF your steering is firm and precise. We'll show you a lowbuck secret way to get yours up (actually, down) to snuff.*



Photo: Brian Shaughnessy

the eye. Besides internal mods, the assist level is proportional to the pump's line pressure. Decrease the pressure, and you decrease the assist.

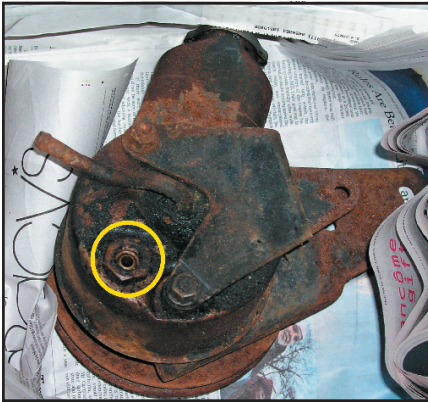
With that fact burned into our grey matter, we researched the heck out of power steering pumps. Most muscle-era Mopar ones were rated 950 to 1300 PSI, with some of the modern ones designed for racks as high as 1450 PSI. Buried in the reams of data in the MA archives, however, we learned that many slant-six A-bodies were only 800-850 PSI. Aha! We scrounged up a well-used pump from one of those cars and scavenged the

Slightly different appearance from printed version due to computer/font variation.

Best I could do!

Rick





(2) All Saginaw pump have the pressure fitting on the rear (circled), whether built in the '60s or '00s. Metric or USS, round or ham-shaped reservoir all use the same fitting OD threads (which are USS). This is our nasty junkyard slant-six A-body pump, circa late-'60s.

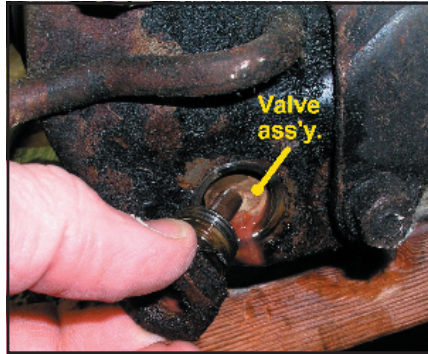


(3) We picked up an inexpensive power steering pressure tester, which is just a high-pressure gauge, a length of hose, and a fitting assortment.

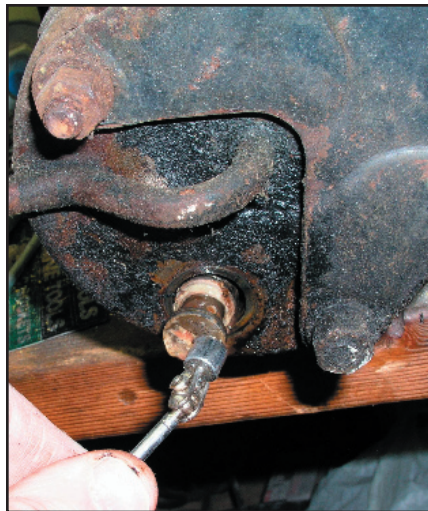


(4) Unscrewing the pressure fitting from our prize (7/8" hex), we discovered...

regulator valve assembly from it. These are very easy to change on Saginaw pumps, it simply drops out (no disassembly required) from behind the outlet (pressure) fitting; in fact, it is common to install a '60s-'70s fitting on an '80-up pump, allowing a later metric pump to bolt right on to a muscle-era Mopar. Valves can also be changed on TRW and F-M pumps, but it isn't nearly as easy and, besides, the Saginaw is so far superior that we'd advise you to swap to a Sag if you're serious about *driving* your muscle Mopar.



(5) ...some nasty moisture-induced scuzz inside. We hoped the valve would be OK.



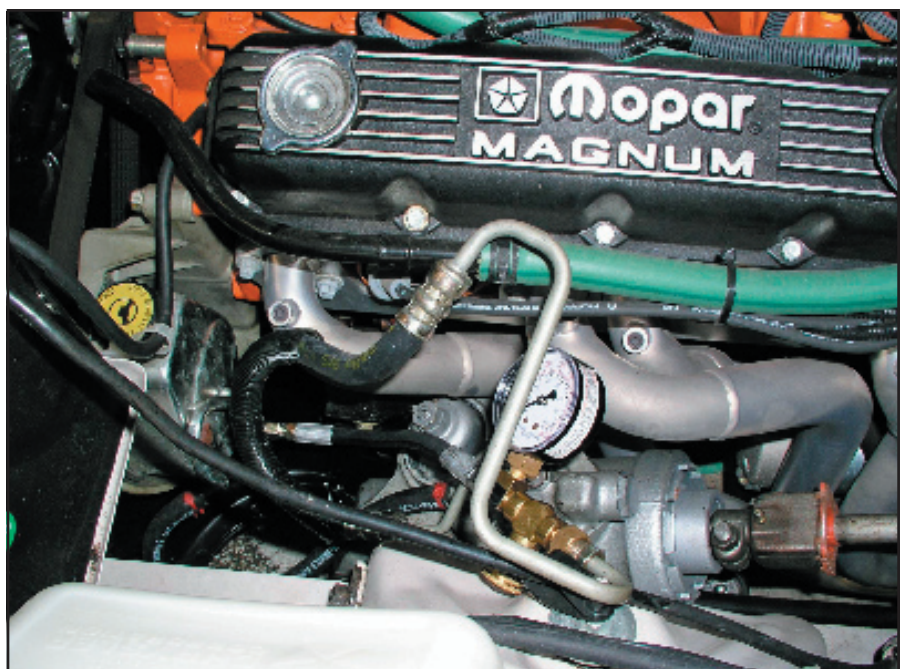
(6) If the valve doesn't drop out in your hand when you remove the fitting, use a magnetic tool and it'll come right out. If the large spring behind it drops out, too, just shove it back in. Note: There's no need to remove the pump from the car.



(7) We cleaned up the valve—it looked OK., but...

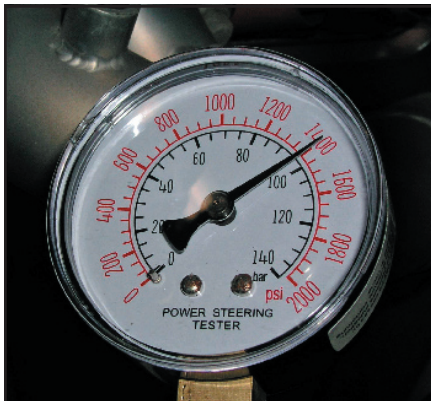


(8) ...we had to have a peek inside. The old FSMs suggest a soft-jaw vise for disassembly, but that's not really practical. We had an old US-made Vise-Grips (got a pair? They are like gold), which fit between the "piston ring" lands (careful, don't damage the machined surfaces). Then the end cap nut comes right off (7/16" hex). Later, we'd discover that all that's needed for a pressure drop is a thicker shim-washer pack...a true zero-buck upgrade!

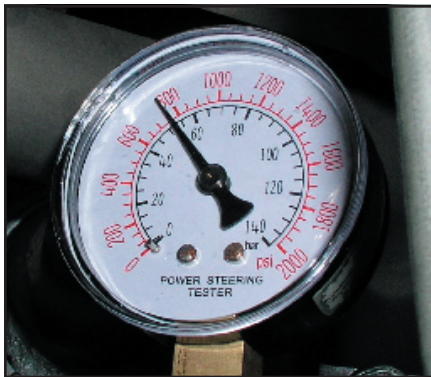


(9) We hooked up the gauge with our pump as yet unmodified.





(10) Depending on temperature and RPM, it read between 1375 and 1450 PSI.



(11) We swapped in the /6 valve assembly, and the gauge reading dropped to 750-825 PSI. Big change! But it still felt power assisted, and a road test proved the worth of the pressure reduction. No negatives whatsoever! A scrawny 9-year-old neighborhood kid was able to still very easily turn the wheel from lock to lock, with the tires on coarse concrete.

Our guinea pig in this experiment is our 1962 Plymouth, none other than project "Savvy Savoy." We began by measuring the pressure at fast idle, it registered 1450 PSI cold and just under 1400 hot (this is a stock 2001 pump with the fitting swapped to allow an early pressure hose to fit). Next, we swapped in the 6-cylinder valve, and the measurement was 800 PSI. Progress? Could be! Road test time.

The Savoy was pretty loosey-goosey feeling before this tweak, part of that was due to the none-too-firm chuck, and another part we blamed on the huge (17-in.) steering wheel (converting, to, say, a stock 14½-in. Tuff wheel would effectively quicken the steering, and increase the effort, both by

### STOP THE SLOP

Like it firm? Who doesn't? A precision-built Firm Feel box and reduced line pressure are only part of the equation. Having a slop free column coupler, beefed linkage (11/16" tie rod ends, slotless rods with jam nuts), and a reinforced K-member all play a part. We ran a 3-part steering tweak article in our December 2008 and February and April 2010 issues. Read them, then get to work.



(12) OK, admittedly, it isn't a 2010 Viper ACR. Still, we can thread the needle with the best of 'em now. The Savoy put away a 6-speed 2007 Pontiac GTO on this road.



(13) We took the slant-six valve back out, and measured the shim pack. One washer was 0.047", and the second one was 0.030".



(14) The shims are ⅜" ID, ½" OD (exactly, nothing metric here!) A hardware store ⅜" flatwasher (left) has way too large of an OD. You'll need to either grind down the OD (need not be precise), or start with a ½" OD washer and drill the center hole to ⅜". If you're shooting in the dark (no pressure gauge), we'd start by adding about 0.062" to whatever you find in your valve. Brass might be easier to work with than steel and would be fine.

15%). With the reduced line pressure, the difference was immediately felt. While parking maneuvers took a bit more effort, they are still well within the normal range. On the interstate, the on-center feel was markedly improved, and the twisties became much more pleasurable.

Now we got greedy. Hell, let's do this to all our Mopars (the entire MA fleet has the Sagnia pump, except, of course, the Green Brick Valiant road racer, which has a fast-ratio manual box from Firm Feel, Inc. — a beautiful thing). But scouring the earth for a slew of slant-six A-body pumps seemed like a hassle, plus, once this article hit, the price of 'em would immediately triple. How about finding out what's different in the regulator valves? Maybe we can source a different drop-in spring for 25¢? Here's where it gets

interesting. We stripped down the stock high-pressure valve from the Savoy, and miked up the spring. Surprise...It's virtually the same darn spring as the 800/850 PSI version. The real difference? The thickness of the shim washer pack! That's right, just a ⅜" flatwasher (see photos 8, 13, and 14).

Conclusion: Firming up your power steering is basically free, except for a quart of PS fluid (don't use ATF!) You don't even need the pressure gauge, you can just try it—it is not carved in stone that the pressure be exactly so-and-so. Drop it 250, 350, 450 PSI—you'll love it. Don't, however, do this on a rack-equipped later Mopar—racks need the higher pressure, and, unless really shot, typically have good feel without that overboosted greased-pig feel.

After this stunning lowbuck success, we did more homework, and learned that most aftermarket (race car) PS pumps are in the 800 PSI range, too. We consider this to be a stamp of approval for our handiwork.

Get out the Craftsmans, then head for the esses!