

1st Gen Rack and Pinion Conversion

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LIKE MOST 1ST GEN OWNERS, I had become accustomed to the ridiculously large amount of play in the steering wheel. I was aware it was there but could drive the hell out of my car with it present. It was just something I knew how to deal with, and over time forgot about.

Enter the rack kit. I pulled into the street for the first time two years ago with my rack kit freshly installed. I wasn't really sure what to expect, and preceded to slowly take the car around the block, swerving the car back and forth in an attempt to get a feel for my "new" feeling vehicle. I found myself dumfounded at the amount of input I now had. Any



change in the position of the wheel was instantly translated to the wheels with no measurable play. This concept had been one I only associated with FC and FD cars prior to this late night test run. After having felt out the car, I decided it was time to put the rack through its paces. I found the dirtiest, most twisted, most uneven, ill-maintained country road in the area, and to the displeasure of my nice aftermarket suspension, proceeded to rip through the gears at full throttle making several back and forth passes. The car handled flawlessly, no bump-steering or darting, just repeated perfect performances.

Next was a highway run, I hopped onto a 400-series highway to head home and did some straight-line high-speed tests. This turned out to be quite the reality check, because like all other 1st Gen owners with sloppy boxes, at high speed the play becomes worse. My drag racing friend J.O. refers to this phenomenon as "white-knuckle driving." I always found myself wandering the steering wheel back and forth to remain aware of when the grip would start. After two minutes of re-adjustment to how a car should be driven on the highway, results were smooth, quiet, precise, and most importantly, devoid of all play.

Next came the abuse test at Shannonville Motorsport Park. This is a tight, twisty road course circuit with only one little straight away, renowned for its tire consuming ways. My goal was to find a weakness, or try and break the kit. For five straight hours of abuse I beat my 12A

bridgeport, brakes and tires. At one point I am sure I heard the rack laughing at me. This is what the chassis had been waiting for.

That was 102,000 kms ago, and still no change in performance. I have run countless track days since, plus a ton of spirited street abuse, and still no change. It makes me wonder how I raced the car around for all these years without it. The recovery is so much nicer, turn-in is better, and the rack shaved several seconds off my lap times. Most of my immediate friends are racers of just about every type. One friend is a seasoned road circuit driver, typically in VWs. He had an opportunity to drive the car after the conversion, having no idea what he was supposed to be feeling. He drove the car around, stepping it out sideways at every opportunity, and recovering with relative ease. He was rambling about sway bar tech and spring rates and blah, blah, blah. No mention of the rack or steering components at all. This is because the car drives as though the rack was meant to be there. An individual that was not familiar with the nightmare that is SA and FB steering boxes would never hop behind the wheel and identify the rack conversion. That's because it feels like a sports car should feel. I did not have to pre-warn about sensitivity or "tricks." If my car was not bridge ported, I would have sent my grandmother down the road for her impression.

The CP Racing Rack and Pinion Stage 2 kit for a '79-'85 RX-7 consists of:

- 1 pre-modified manual steering rack
- 2 pre-threaded inner tie rods
- 1 sub-frame
- 1 universal joint
- 1 metal split pin
- 1 steering column bearing and carrier assembly, ready for install

Preparation:

- 1) Place the vehicle on four secure jack stands. Place stands under the sub-frame in front, and differential housing in the rear. Remove front wheels, and disconnect left and right tie rod ends from the steering knuckles.
- 2) Unbolt the control arms from the sub-frame on both sides, and tap out the control arm hardware. This would be a good time to replace the control arm bushings and hardware.
- 3) Re-install the hardware through control arms from the front side of the sub-frame, so that the threaded portion that receives the nut is pointing to the rear of the vehicle. Then slide the bolts through the control arms and sub-frame, thread on the nuts two or three threads only.
- 4) Disconnect the idler arm and assembly from the vehicle frame.
- 5) On the steering box, use a chisel or screwdriver and hammer to tap loose the jam ring nut on the steering box where it meets the column. Once it's loose, use a pipe wrench to back off the steering column shaft to the steering box nut.
- 6) Disconnect steering box from the vehicle, while remaining attached to the center link.
- 7) Drop the steering box, center link, tie rods, and idler assembly as a whole unit to the floor.

How-To: 1st Gen



- 8) Using a hammer and long screwdriver, tap the gear drive on the end of the steering column shaft down and away from the column, allowing the lower steering assembly to become loose. Once loosened, slide the lower steering shaft out of the steering column.
- 9) Gently tap the huge nut and jam nut off the steering column tube.
- 10) Using a grinder, cut 3 1/2 inches off of the steering column tube.
- 11) From inside the car, drill 1/2-inch hole in the bottom of the steering column tube seven inches up the tube measured from the firewall.

Installation:

- 1) Be sure the rack is centered. Use the universal joint at this time to center rack. Place universal joint on steering rack spline, count the total number of rotations from left lock to right lock. Rotate spline 50% of total full rotations from lock to lock. Double or triple check this step to ensure even left to right steering amounts.
- 2) Insert pre-assembled universal joint and steering column shaft/bearing holder assembly into steering column. Only place top bolt

through bearing holder bracket, and loosely thread on the nut.

- 3) Take the pre-assembled rack and sub-frame, and place them in the vehicle from beneath. Remove loosely placed control arm nuts and slide rack sub-frame into place, and loosely replace hardware. Be sure when lifting rack into position that the universal joint is on the spline. Install left and right side rack onto vehicle frame using the factory idler arm bracket hardware. With all steering rack sub-frame hardware in place, tighten sub-frame hardware to recommended torque specs. Position steering column bearing carrier bracket over the remaining hole, and insert the final nut and bolt, then tighten the bracket.
- 4) Gently rock steering wheel back and forth to assure there are no binding components, and everything is functioning correctly. Be sure not to lose the rack center point. Insert steering rack jam nut through universal joint on steering rack spline and tighten. Do not install the jam nut and bolt until after testing steering action.
- 5) From inside the vehicle, locate the previously drilled 1/2-inch hole. Using a 1/8-inch drill bit, drill a hole through the steering column and tap in supplied split pin.
- 6) Place jack stands beneath the ball joints only in the front. Thread factory inner tie rod ends and jam nuts onto rack tie rods. Re-install wheels, and visually straighten the wheel and tire assembly, install tie rod ends into steering knuckle on both sides. Do not reuse old cotter pins.
- 7) Re-torque all nuts and bolts to recommended specs.
- 8) Lower vehicle onto the ground and turn the steering wheel back and forth, feeling for smooth motion. Note the lack of play in the wheel!
- 9) Take the car straight to an alignment shop. Have alignment set to factory specs, or whatever race alignment you prefer. **RX**

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