CAPRI II RACK & PINION

Capri II

DESCRIPTION

Rack and pinion steering gear is mounted in rubber insulators on brackets attached to front crossmember. Movement of steering wheel is transmitted by steering shaft through universal joint and flexible coupling to helical pinion. Rotation of pinion causes rack to move laterally where connecting rods, attached to rack, transmit this movement to spindle arms, causing front wheels to change direction. Connecting rod inner ball joints are protected by convoluted rubber bellows. Design of steering gear provides for two adjustments: rack damper adjustment and pinion bearing preload adjustment. Both adjustments are obtained by varying the thickness of shim packs under cover plates.

ADJUSTMENT

NOTE – *Adjustments can be made only after steering gear assembly is removed from vehicle.* Place gear in padded vise with rack preload cover plate on top and rack in horizontal position. Remove rack preload cover plate, shim pack and gaskets. Withdraw spring and slipper. Remove pinion bearing preload cover plate, shim pack and gaskets, then make adjustments as follows:

PINION BEARING PRELOAD

Position shim pack and pinion cover plate on bearing. NOTE – *Shim pack must have at least three shims with one shim .093" (2.36 mm) thick against cover plate.* Tighten cover bolts then loosen until cover plate just touches shim pack. Measure distance between cover plate and steering gear housing. Distance should be .011-.013" (.28-.33 mm), if not to specifications, add or remove shims to obtain this clearance. NOTE – *The .093" (2.36 mm) shim must be used next to the cover plate.* When correct specification is obtained, tighten cover plate bolts.

RACK DAMPER ADJUSTMENT

Assemble slipper to rear of rack and push fully into bore. Using straightedge and feeler gauge, measure distance between top of slipper and cover plate mounting surface. Assemble a shim pack, including two gaskets, .0005-.0035" (.013-.089 mm) GREATER than measurement. Replace slipper spring, position shim pack, replace cover plate, and tighten bolts.

STARTING TORQUE CHECK

Install a suitable torque wrench to splined end of pinion shaft. Measure torque required to start pinion rotating. If this torque is not 10-18 INCH lbs. (11.5-20.7 cmkg), check for improper adjustment or gear assembly malfunction (causing friction increase).

REMOVAL & INSTALLATION

STEERING GEAR

Removal – 1) Set steering wheel in center position. Raise and support front of vehicle (use wheel stands or hoist, not chassis stands). Unbolt flexible coupling from pinion spline. Bend back lock tabs and unscrew steering gear mounting brackets from crossmember.

2) Loosen castellated nuts securing connecting rod ends to spindle arms. Remove castellated nuts, turn wheel to either lock (to permit sideways movement), and remove gear assembly.

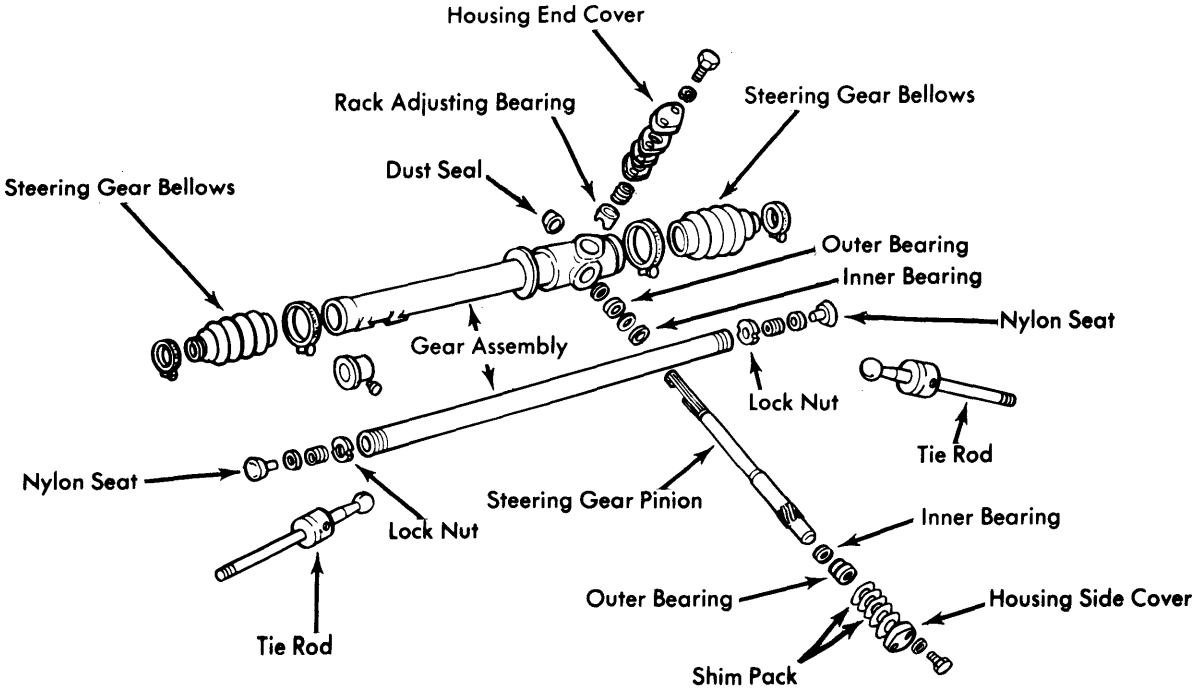

Fig. 1 Exploded View of Capri Rack & Pinion Steering Gear Assembly

CAPRI II RACK & PINION (Cont.)

3) Remove connecting rod ends and lock nuts, noting number of turns required for removal.

Installation – 1) Replace connecting rod ends and lock nuts (use same number of turns as during removal). Check steering wheel and gear in straight-ahead position. Place gear and splines on flexible coupling.

2) Secure gear assembly to crossmember (use new locking plates under screw heads). Torque screws to specification. Tighten flexible coupling-to-pinion shaft securing bolt to specification. Lower vehicle and check toe-in.

CONNECTING ROD END

Removal – Raise vehicle on hoist. Loosen lock nut on outer end of connecting rod, adjacent to ball joint. Remove nut securing connecting rod end to spindle arm, then use suitable puller (3290-C) to separate connecting rod end from spindle arm. Unscrew connecting rod end, noting number of turns required for removal.

Installation – To install, reverse removal procedure, noting the following: Note that rod end is screwed on exact same number of turns as required for removal. Torque nut on spindle arm. Recheck toe-in and wheel lock angles. Tighten lock nut on connecting rod end.

OVERHAUL

STEERING GEAR

Disassembly – NOTE – *Pinion bearings utilize bearing races and loose balls (28); take care not to lose bearings into gear assembly.* Remove pinion dust seal. Withdraw pinion and lower bearing assembly. Remove remainder of bearing from inside pinion housing. NOTE – *Preferably withdraw rack from pinion end of housing.*

Reassembly – Remove pinion oil seal from housing and install new seal. Install new upper pinion bearing. Slide rack into housing and locate it so that teeth are adjacent to pinion location. Position rack shaft in center of travel. Assemble lower bearing to pinion and install assembly into housing with alignment mark on pinion in vertical position (as installed in car).

STEERING GEAR BELLOWS

NOTE – *Removal and replacement of bellows should be done on one end at a time.*

Disassembly – Remove connecting rod end and lock nut from appropriate connecting rod, noting number of turns required for removal. Loosen bellows clamps. NOTE – *In production, some bellows may have been secured with wire. Replace with screw clamp.* Pull bellows off rod and housing, keeping bellows higher than gear housing to avoid spilling lubricant. Drain lubricant from assembly by traversing rack from lock to lock several times.

Reassembly – Mount steering gear in padded vise with end (from which bellows has been removed) higher than gear housing. Traverse rack to fully extend upper connecting rod. Pour 0.3 pint SAE 90 EP oil into gear housing under inner ball joint. Move rack laterally to assist oil flow. Install new bellows and securing clamps. Reinstall lock nut and connecting rod end (using same number of turns as during removal).

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (mkg)
Pinion Cover Plate	6-8 (.83-1.11)
Rack Damper Cover Plate	6-8 (.83-1.11)
Gear-to-Crossmember	15-18 (2.07-2.49)
Connecting Rod-to-Spindle Arm	18-22 (2.49-3.04)
Coupling-to-Pinion Shaft	12-15 (1.66-2.07)
"U" Joint Pinch Bolt	12-15 (1.66-2.07)
Connecting Rod End-to-Connecting Rod	30-35 (4.15-4.84)