

CHRYSLER CORP. POWER RACK & PINION

Dodge
Aries & Omni
Plymouth
Horizon & Reliant

DESCRIPTION

Power assisted rack and pinion steering gear is mounted on front frame crossmember behind left axle. Rotary turning motion of the steering shaft is converted to transverse movement of the rack through meshing of pinion and rack teeth. A rotary valve in the pinion assembly directs fluid to either side of the integral rack piston which is permanently secured to the rack. Tie rods and tie rod ends transmit movement to the steering arms and wheels while at the same time accommodating suspension movement. In event of drive belt or pump failure, manual steering control is accomplished through drive tangs on the pinion which are loosely mated with the stub shaft. (Steering effort will be increased.)

LUBRICATION, TROUBLE SHOOTING & TESTING

See *Power Steering General Servicing* in this section.

REMOVAL & INSTALLATION

Removal and installation of power rack and pinion is the same as for manual except for tubes to pump. See *Chrysler Corp. Rack & Pinion Steering Gear* in this section.

INNER TIE RODS

Removal — On Horizon and Omni, remove shock damper ring from inner tie rod housing and slide back on rack. On Aries and Reliant, remove roll pin. On all models, hold flat of rack with wrench and unscrew housing until tie rod separates from rack.

Installation — Reverse removal procedure and tighten housing. Stake housing to rack flat on both sides and check that .010" feeler gauge will NOT fit between rack and housing stakes on Horizon and Omni. On Aries and Reliant, install roll pin.

OVERHAUL

INPUT SHAFT & VALVE ASSEMBLY

Stub Shaft Seal Removal — 1) Remove retaining ring from upper end and dust cover from lower end of pinion shaft housing. Hold splined end of stub shaft with $1\frac{1}{16}$ " 12 point socket and remove pinion lock nut.

CAUTION — Damage to pinion teeth will occur if stub shaft is not held.

2) Press on threaded (bottom) end of pinion shaft until flush with ball bearing assembly and remove stub shaft dust seal, seal and, if required, needle bearing and race from splined end of shaft.

NOTE — Complete removal of valve and pinion assembly is not necessary.

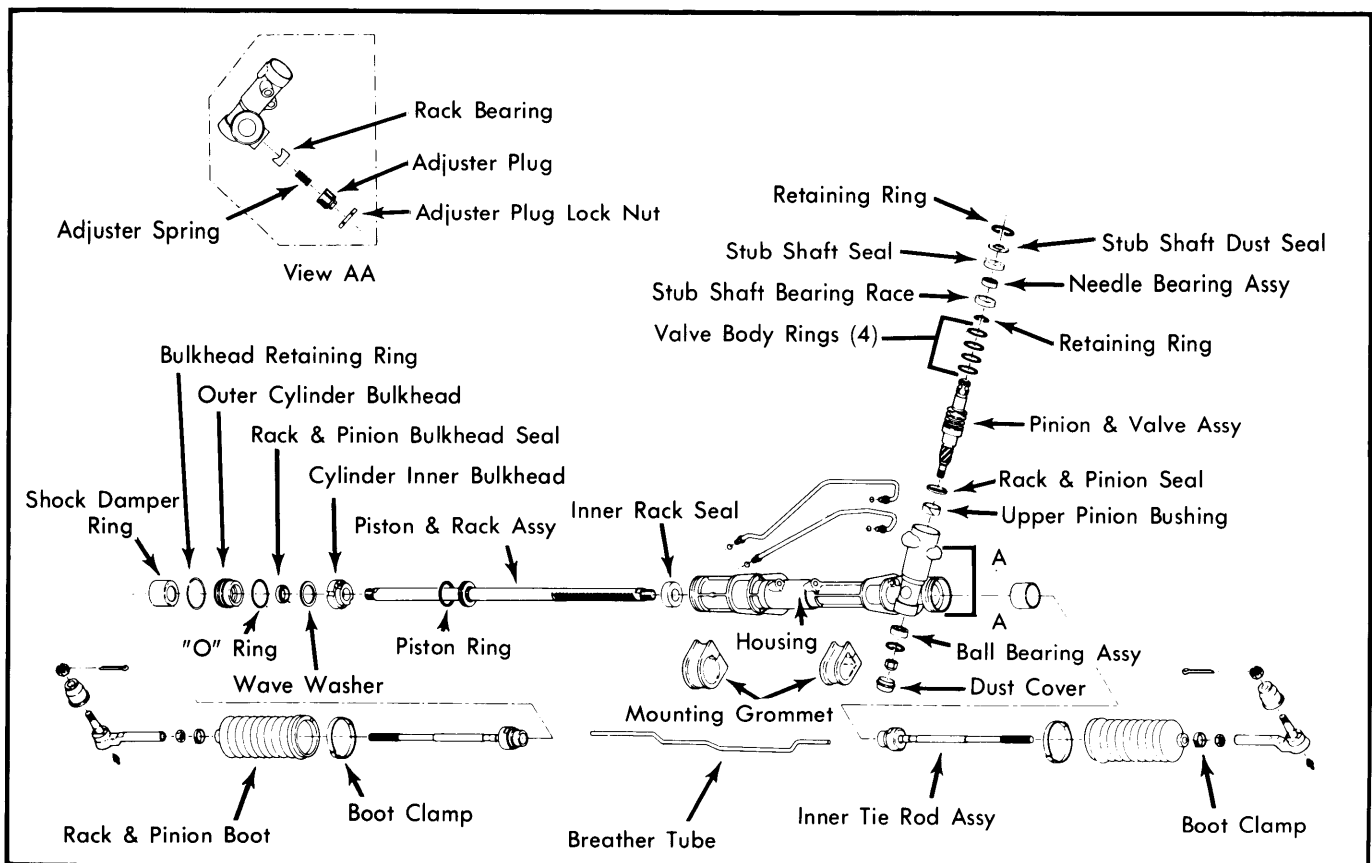


Fig. 1 Power Rack and Pinion Steering Assembly (Horizon and Omni Shown, Aries and Reliant Similar)

CHRYSLER CORP. POWER RACK & PINION (Cont.)

Installation — Prior to assembly, lubricate all seals with power steering fluid. On Horizon and Omni, use seal installer and protector tools (L-4595 and L-4596 or equivalent) to install seal. Hold stub shaft and seat lock nut. On Aries and Reliant, install seal with tools C-4667 and C-4668 (or equivalent).

Valve Pinion Removal — 1) Turn stub shaft until rack extends equal distance from both sides of housing. Mark location of stub shaft flat on housing and press on threaded end of pinion to remove valve and pinion assembly. Carefully remove rings from valve body if replacement is necessary.

2) If ball bearing assembly (lower) requires replacement, remove retaining ring (Horizon and Omni) or bearing cap (Aries and Reliant) and tap out bearing with drift or punch. Use suitable socket to press on outer race of new bearing assembly, ensuring that bearing does not cock when installing in housing. On Horizon and Omni, install retaining ring with large lug to right (counterclockwise) side of gap. On Aries and Reliant, install bearing cap.

3) Remove upper pinion bearing and seal with $\frac{1}{4}$ " punch. Install new bushing, then seat seal in housing with lip facing inward using seal installer.

Installation — Carefully place new rings on valve body assuring that they are not cut. With rack centered in housing, install valve and pinion assembly so that shaft flat and mark on housing line up when assembly is seated. Torque pinion lock nut and install dust cover.

Gear Housing and Rack Disassembly — 1) On Horizon and Omni, use punch in access hole of housing and remove retaining ring. On Aries and Reliant, use punch to rotate retaining wire clockwise to expose end of retaining wire. Pull wire out with pliers. Remove fluid lines and install plugs (finger tight) in cylinder line holes.

2) Remove adjuster plug and lock nut, spring and rack bearing. Turn pinion shaft to move rack to right, forcing bulkhead out of housing. Remove rack from housing, remove and dispose of piston ring. On Horizon and Omni, remove inner rack seal using driver (L-4627 or equivalent). On Aries and Reliant, use tool C-4665 (or equivalent) to remove seal.

NOTE — Coat all seals with power steering fluid and use lithium base grease on rack teeth prior to assembly.

Reassembly — 1) Install new piston ring on rack, using care not to cut ring. Install seal protector (L-4600 for Horizon and Omni or C-4666 for Aries and Reliant) and slide seal with lip facing piston over protector. Remove protector and bottom the seal on rack piston.

2) Slide plastic retaining ring on rack and onto seal. Slide rack and seal in housing, then tap rack with mallet to seat seal. On Horizon and Omni, install in order: cylinder inner bulkhead, spring (wave) washer, bulkhead rack seal, "O" ring seal, cylinder outer bulkhead, bulkhead retaining ring and shock dampener. Retaining ring must be fully seated with end approximately $\frac{1}{2}$ " from access hole.

3) On Aries and Reliant, install bulkhead outer oil seal into bulkhead using tool C-4669 (or equivalent), and install bulkhead assembly onto rack using protector tool C-4670 (or equivalent). Seat bulkhead assembly in rack tube using tool C-4675 (or equivalent) and install retaining wire by rotating bulkhead assembly counterclockwise.

4) Coat adjuster plug with lithium base grease and install rack bearing, spring, adjuster plug and lock nut. Tighten adjuster plug until it bottoms, then back off 40° - 60° . Check torque on pinion and tighten lock nut while holding adjuster plug stationary.

5) Install fluid lines using new "O" rings. Finger tighten both ends of lines prior to tightening to final torque. Install grommets and breather tube in proper location; install tie rods and boot seals.

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs.
Tie Rod End-to-Steering Arm	25
Tie Rod Jam Nuts	50
Adjuster Plug Lock Nut	26
Stub Shaft Lock Nut	50
Fluid Line Fittings	18
Mounting Bolts	250 INCH lbs.