

## PORSCHE 911 RACK & PINION

911

### REMOVAL & INSTALLATION

#### DESCRIPTION

Steering gear is a ZF safety rack and pinion type. Rack slides in replaceable bushings installed at each outer end of housing. Pinion is supported by a floating carrier, located in housing. Pinion presses against steering rack through a pressure block, spring, and adjusting nut. This results in play-free steering.

#### ADJUSTMENT

##### STEERING GEAR

Steering gear adjusting methods vary according to type of steering rack pressure block: (1) Steel pressure block with plastic contact surface and external housing dust boot seat; (2) Plastic pressure block with no external housing dust boot seat.

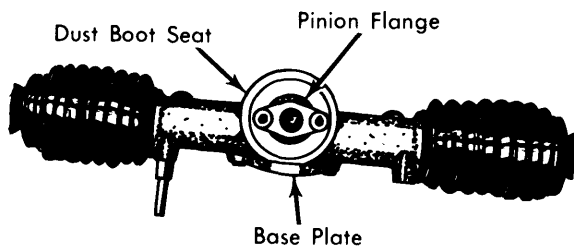


Fig. 1 Steel Pressure Block Housing Assembly

**Steel Pressure Block Type** – 1) With housing assembly in padded vise, detach base plate. Tighten adjusting nut seating contact. **NOTE** – Base plate has integral pins which may be used as a wrench for this adjustment. Back nut off contact by three teeth.

2) Check steering gear drag at pinion flange, using an INCH-lb. torque wrench. A measurement of 6.94 INCH lbs. (8 cmkg) should be obtained. If beyond this measurement, loosen adjusting nut; however, if this measurement is not less than 3.47 INCH lbs. (4 cmkg), do not retighten adjusting nut. Install base plate with gasket.

**NOTE** – When installing base plate, pin in plate must fit easily between teeth of adjusting nut. If necessary, move nut slightly.

**Plastic Pressure Block Type** – Remove base plate and tighten adjusting nut until 6.94 INCH lbs. (8 cmkg) torque is obtained, using method as described above. Install base plate with gasket.

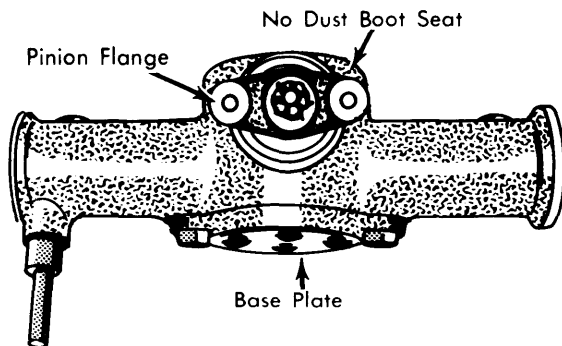


Fig. 2 Plastic Pressure Block Housing Assembly

##### STEERING GEAR

**Removal** – 1) Remove bottom bolt from lower universal joint and loosen nuts on track rod joints. Remove ball joints. Remove front axle underfloor protector. Loosen steering gear bolts on auxiliary carrier.

2) Unscrew torsion bars and remove seals, then remove auxiliary carrier, steering gear and track rods. Detach fork-type joint from track rod.

**Installation** – 1) Replace ball joints and tighten to specifications. Reseat bellows. Lubricate needle bearing on shaft and position in gear. **CAUTION** – When installing gear, steering shaft must first be inserted into lower universal joint such that hex screw installation is possible. Universal joint connection is not possible if gear is already in position.

2) Install auxiliary carrier (check for proper body pin fit). Use new spring washers for gear retaining bolts and torque to specification. Push transverse control arm down against stop in shock absorber, pushing adjusting lever as close as possible against stop on auxiliary carrier.

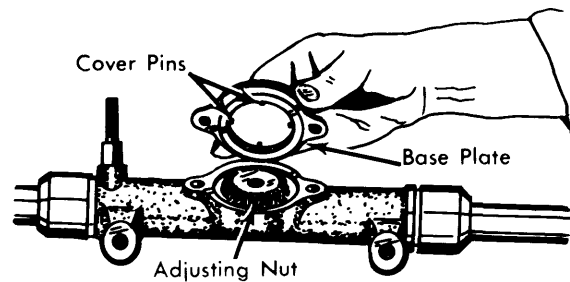


Fig. 3 Correct Procedure to Remove Adjusting Nut

3) Torque retaining bolts for bottom universal joint (in passenger compartment). Detach protective member on front transverse control arm bearing and check for correct seat of closing cover, then replace member.

#### OVERHAUL

##### STEERING GEAR

**Disassembly** – 1) Mount steering housing in padded vise and remove base plate retaining bolts. Unscrew adjusting nut (base plate may be used as wrench). Remove pressure block and spring.

2) Move steering rack to either lock position and remove castellated nut. Using suitable puller (P 293), remove flange from pinion. Remove oil seal, lock ring and spacer. Using suitable puller (P 282), remove pinion from pinion carrier (ensure bearing does not bind against housing). Remove Woodruff key from pinion and press bearing off pinion.

3) Mark position of rack (for assembly), remove from housing, and withdraw pinion carrier. Press bearing out of pinion carrier. Remove rack bushing spring retainer from end of housing. Extract support ring and drive rack bushing out.

## PORSCHE 911 RACK & PINION (Cont.)

**Reassembly** — Reverse disassembly procedure, noting the following: During assembly, coat all components with suitable gear lubricant. Use shims, if necessary, to adjust axial play of pinion to zero. Fill housing with suitable gear lubricant, either before installing pinion or after, by means of bolt hole opposite base plate.

### EYEBOLT

**CAUTION** — Eyebolt must be installed in precise position to ensure free movement of steering components and exact guiding of track rod.

**Disassembly** — Clamp gear into special tool (P 285b) without washers. Remove clamps on outer end of bellows and pull bellows off holder. Loosen bellows holder with hook spanner and unscrew eyebolt and bellows holder.

**Inspection** — Check eyebolt, bellows and clamps for visible wear. Replace as required.

**Assembly** — Mount bellows on housing. Screw bellows holder on eyebolt. Coat eyebolt threads and rack face end with sealer. Install eyebolts. Attach steering gear, without washers,

to original holding tool (P 285b). Locating pins should slide easily into eyebolts, with flattened end resting against outer pin. Tighten bellows holder. Clamp bellows to gear assembly.

### TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. ( mkg)
Wishbone Retaining Nut .....	54 (7.5)
Track Rod Joint Castellated Nut .....	33 (4.5)
Pivot Pin (Track Rod Fork End) .....	34 (4.7)
Steering Housing Mounting Bolts .....	34 (4.7)
Steering Shaft Bearing Cap .....	18 (2.5)
Steering Shaft Coupling .....	18 (2.5)
Drive Pinion Flange Castellated Nut .....	18 (2.5)
Drive Pinion Flange Self-Locking Nut .....	34 (4.7)
Steering Housing Base Plate .....	11 (1.5)
Steering Wheel Nut .....	58 (8.0)
Switch Assembly Clamp Strap .....	18 (2.5)
Steering Support Tube .....	18 (2.5)
"U" Joint Coupling Bolt .....	25 (3.5)