SAAB RACK & PINION

900

DESCRIPTION

Steering gear is the rack and pinion type. Rack is protected from dirt by rubber bellows. The pinion bearing uses an adjustable spring-loaded plunger. The gear is oil-lubricated. The steering linkage is a direct link from the steering rack to the steering knuckles, consisting of tie rods and ball joints.

ADJUSTMENT

NOTE – *See Overhaul procedure in this article.*

REMOVAL & INSTALLATION

STEERING GEAR

Removal – **1)** Remove steering gear to intermediate shaft clamp bolt. Raise and support vehicle. Remove front wheels. Separate tie rods from steering knuckles.

2) Remove steering gear clamp bolts. Separate steering column (intermediate shaft) joint from steering gear, lift steering gear to the side and remove by guiding it diagonally downwards through opening in engine compartment.

Installation – To install, reverse removal procedures and check wheel alignment.

OVERHAUL

STEERING GEAR

Disassembly – **1)** Remove tie rod ends and rubber bellows. Drill out lock pins from inner ball joints, using a .16" (4 mm) drill bit. Drill only .375" (9.5 mm) deep. Remove outer bearing cups and lock nuts.

2) Remove rack adjustment screw, cap with gasket, shims, spring and plunger. Remove pinion and cap with gasket shims, and upper bearing. Pull rack out from housing. Tap out lower pinion bearing.

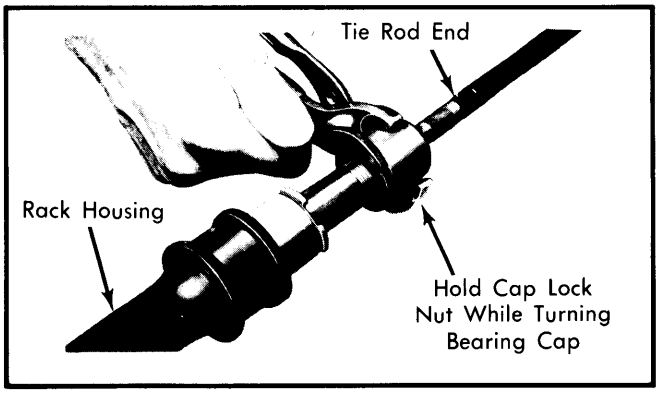

Fig. 2 Procedure for Removing Outer Bearing Cap Lock Nut

Reassembly – **1)** Ensure all parts are thoroughly cleaned before proceeding with reassembly. Lubricate all parts during reassembly. Seat the lower pinion bearing.

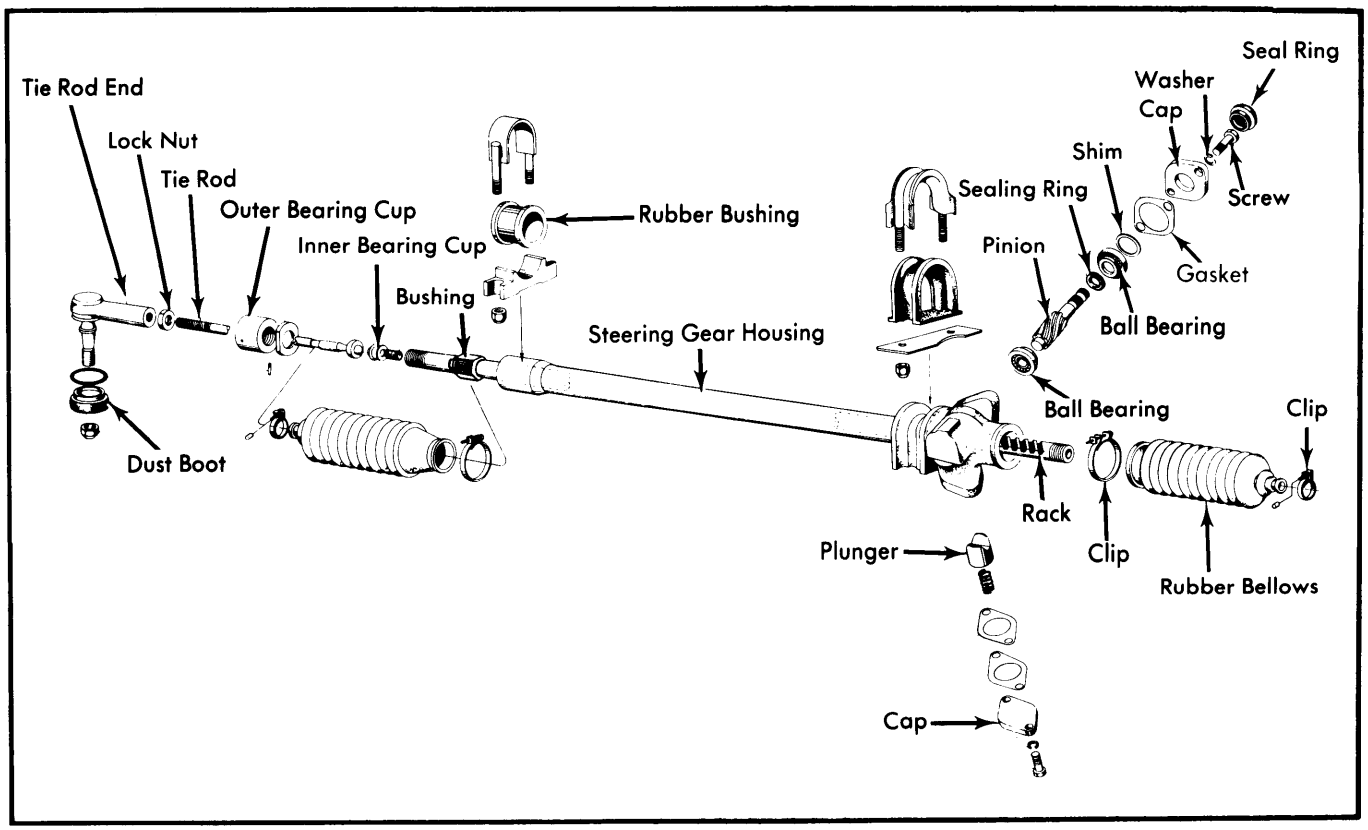

Fig. 1 Exploded View of Saab Rack & Pinion Steering Gear Assembly

SAAB RACK & PINION (Cont.)

NOTE – *Be sure extended parts of the inner bearing tracks are facing each other.*

2) Assemble inner ball joint on pinion end of rack as follows: Thread lock nut onto rack. Fit outer bearing cup on rack and fill with suitable gear oil. Insert spring and inner bearing cup. Tighten bearing cup so that there is no looseness in ball joint, but without tightness.

3) If rack, with tie rod mounted, is held horizontally, the tie rod should be able to be placed in any position without falling under its own weight. Tighten lock nut against bearing cup and recheck ball joint tightness. Drill a new hole .375" (9.5 mm) deep and insert and stake a new lock pin.

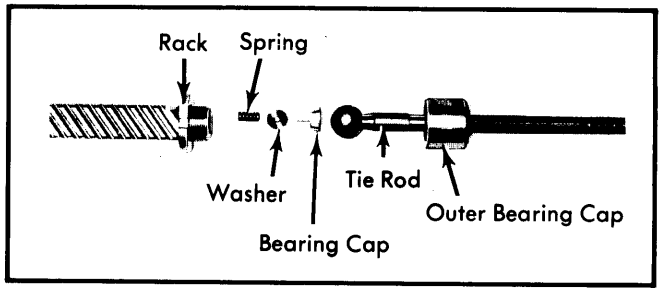

Fig. 3 Exploded View of Ball Joint Assembly

4) Insert rack into housing, then fit pinion and upper bearing. Adjust pinion with shims so that there is no axial play when pinion gasket and cap are attached. Various shim sizes are available.

5) Adjust radial play of rack as follows: Insert plunger without spring and gasket, then attach cap with bolts (finger tight only). Measure clearance which exists between the cap and the housing face. To this measurement add .002-.006" (.05-.15 mm), to allow for play after completion of adjuster assembly.

6) This total thickness will be the thickness of gasket and shims required. Measure shims and gasket together, then remove cap and install shims, gasket and cap. Check rack for free movement by rotating pinion.

7) Measure pinion rotating torque. Using a torque wrench and a 12 sided 18 mm socket, rotate pinion through full travel of rack. Pinion torque should be 7-24 ft. lbs. (10-33 N·m).

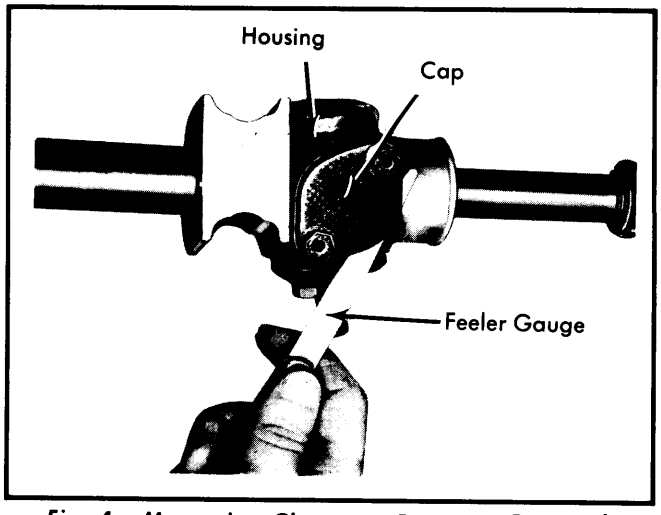

Fig. 4 Measuring Clearance Between Cap and Gear Housing

8) Assemble and adjust other ball joint in same manner as previously described. Attach bellows after lubricating contact area between bellows and tie rod (use silicone grease). Attach both inner clamps.

9) Stand gear on end and pour 5.0 oz. of suitable EP 90 gear oil into bellows. Attach outboard bellows with clamps. Screw on lock nuts and mount tie rod assemblies.

NOTE – *Outer bellows clamps should be protected with rubber caps.*

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (N·m)
Inner Ball Joint Lock Nut	30-36 (41-49)
Lower Joint Clamp Bolt	26-30 (35-41)
Steering Gear Clamp Bolts	44-60 (60-82)
Steering Wheel Nut	22 (30)
Tie Rod End	35-44 (48-60)
Tie Rod Lock Nut	44-60 (60-82)