

## 1963-73 SAAB

95 & 96 3 Cyl. (1963-67)  
 95 & 96 V4 (1967-73)  
 99 (1969-73)  
 Sonett (1967-73)

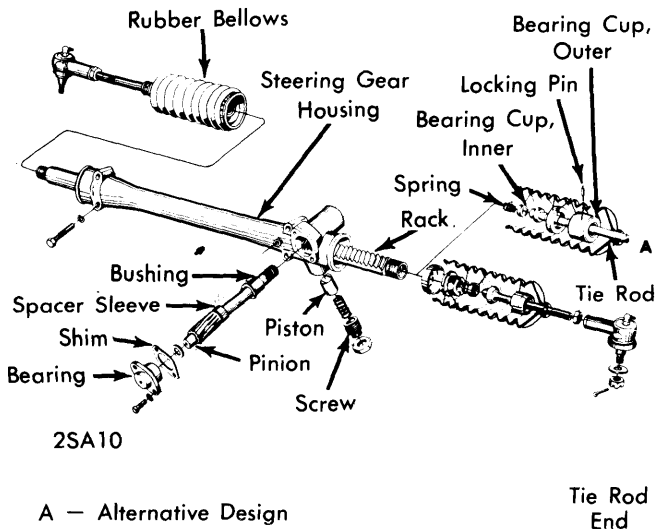
## DESCRIPTION

## STEERING GEARS

Steering gears are of the rack and pinion type. Rack is protected from dirt by rubber bellows. Steering gear may have a grease fitting on earlier models or be permanently lubricated on some later models.

## STEERING LINKAGE

Steering linkage is composed of tie rods, ball joints and rubber bushings.



## STEERING GEAR ASSEMBLY

## ADJUSTMENT

NOTE — See Overhaul Procedure in this article.

## REMOVAL &amp; INSTALLATION

95 & 96 ALL MODELS  
SONETT ALL MODELS

**Removal** — 1) Remove hood. Disconnect battery and raise front of car. Remove wheels and disconnect tie rod ends from steering arms, using suitable tool (819540). Then remove left tie rod end. Remove lower taper pin from gear shift shaft universal joint, release joint from transmission shift fork. Remove flywheel control from transmission.

2) Detach slave cylinder from clutch housing and remove throttle return spring. Disconnect speedometer cable from transmission. Remove clamping screw in steering column yoke, and pull column out of yoke. Remove instrument panel card-board.

3) Remove the four steering gear retaining bolts. Remove rubber grommet in instrument panel and lift steering gear forward and clear of instrument panel, out through the wheel house.

**Installation** — To install, reverse removal procedure. Tighten all nuts and bolts.

## 99 ALL MODELS

**Removal** — 1) Raise front of car and remove front wheels. Disconnect tie rod ends from steering arms and remove both retaining caps. Turn back floor carpet around steering shaft and pull up rubber bellows, then remove clamping screw on steering gear pinion.

2) Separate upper joint and remove the four screws retaining steering column tube. Pull up steering column slightly, remove intermediate shaft and remove steering gear assembly.

**Installation** — To install, reverse removal procedure. Tighten all nuts and bolts.

## OVERHAUL

95 & 96 ALL MODELS  
SONETT ALL MODELS

**Disassembly (Previous Design)** — Remove tie rod ends, tie rod ball joints and rubber boots. Remove the pinion. Disassemble ball joints noting the shims. Withdraw the rack from steering gear housing and remove the pinion spacer. NOTE — If they are to be replaced, drive out the pinion bushing and bushing on right side of steering gear. Bushing may be found locked with a pin.

**Disassembly (New Design)** — Remove tie rod ends and rubber bellows. Remove by drilling, the lock pins from inner ball joints. Remove outer bearing cup and lock nut and then remove piston and spring from steering gear housing. Loosen bolts of pinion bearing and lift out bearing and pinion. Pull out rack. Remove spacer ring from pinion and press the bushing out.

**Inspection** — Inspect all component parts for excessive wear or damage. Replace parts as necessary.

**Reassembly & Adjustment (Previous Design)** — 1) Lubricate rack and pinion with suitable steering gear grease. If removed, install pinion bushing in steering gear housing. Place a new retaining washer on pinion end of rack and install nut. Place shims on nut and install inner ball seat and retainer inside nut. NOTE — Position retainer with concave side facing ball seat.

2) Insert rack and pinion in steering gear housing. CAUTION — When assembling steering gear, pinion spacer must be installed before rack is placed in housing. Install outer seat on tie rod and secure it to the nut using suitable tool (784071). Check that shimming is correct. CAUTION — Tie rod inner ball nut must not be too tight, only a light manual pressure is needed to move it fully in all directions. Add or subtract shims as necessary. Lock tabs of retaining washers in place.

3) Adjust pinion axial play by inserting shims under pinion cover. Clearance should be .004-.008". Shims are available in .0012-.004". Pinion must move freely without play. Add or subtract shims as necessary. To adjust rack radial play, use the adjusting screw under the steering gear. Tighten the adjusting screw a little at a time until a slight drag is noticed, then

## 1963-73 SAAB (Cont.)

tighten the lock nut. Turn steering as far as it will go in both directions, check that rack movement is not stiff in any position. Install rubber boots and tie rod ends to tie rods. Tighten all nuts and bolts.

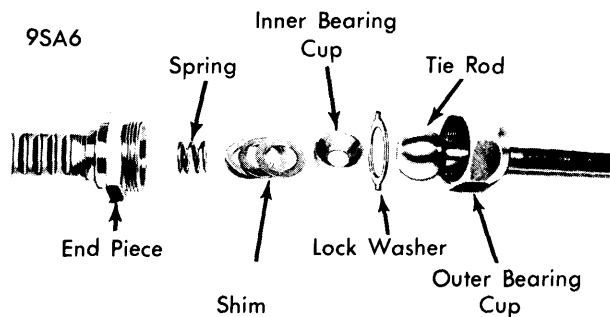
**Reassembly & Adjustment (New Design)** – 1) Lubricate rack and pinion with suitable steering gear grease. If removed, install pinion bushing into steering gear housing. Install inner ball joint to pinion end of rack. Adjust as above in step 2 and tighten lock nut. Drill a new hole for lock pin, 3/16" in diameter and to a depth of 4.5". Insert lock pin. Install rack in steering gear housing with spacer sleeve behind rack and install pinion.

2) Adjust axial and rack radial play as in step 3 above. **NOTE** – If steering gear somewhat stiff in any position after adjustment of rack and pinion, it may be due to stresses incurred when tightening bolts. Back off the two retaining bolts at end farthest away from the pinion and insert a washer under steering gear at the bolt where it does not lie flush. **NOTE** – Some models may have this spacer originally installed.

### 99 ALL MODELS

**Disassembly (To Chassis No. 99.022.279)** – Remove tie rod ends and rubber bellows. Remove tie rod ball joints. Remove lock nut of rack adjustment and remove fitting, spring and plunger. Unscrew fitting and tap the pinion free of housing. Remove the steering rack. Remove the plastic plug under rubber bushing.

**Disassembly (Chassis No. 99.022.279 & Later)** – Remove tie rod ends and rubber bellows. Drill out cotter pins from inner ball joints. Remove outer bearing cups and lock nuts. Remove rack adjustment screws, cap with gasket, shims, spring and plunger. Remove pinion screws and pinion with cap, gasket shims and upper bearing. Pull out rack from steering gear housing. Tap out lower pinion bearing. **NOTE** – Bushing in end of steering gear housing should not normally be changed as it must be precision reamed in order to function properly.



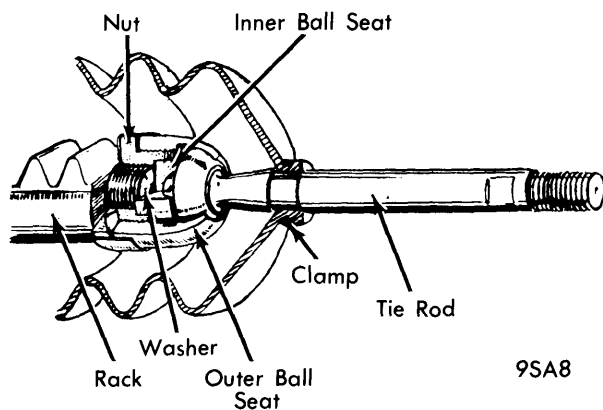
**BALL JOINT ASSEMBLY**

**Inspection** – Inspect all component parts for excessive wear or damage. Replace all parts as necessary.

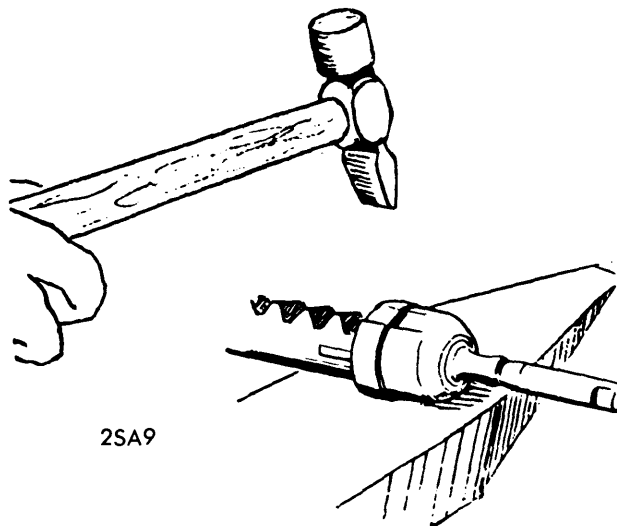
### Reassembly & Adjustment (To Chassis No. 99.022.279)

– 1) Lubricate rack and pinion with suitable steering gear grease. If removed, install bushings in steering gear housing aligning bushing hole. Install rack in housing, then pinion with bearing and lock ring and tighten the fitting against outer ring of ball bearing. Mount plunger, spring, fitting and lock nut.

2) Install bellows clamp on right end of steering gear. Install end on rack and lock washers, springs and shims with inner bearing cups. Mount outer bearing cup on tie rod and tighten. Adjust ball joint, and lock in place.



**INNER BALL JOINT, EARLY DESIGN**



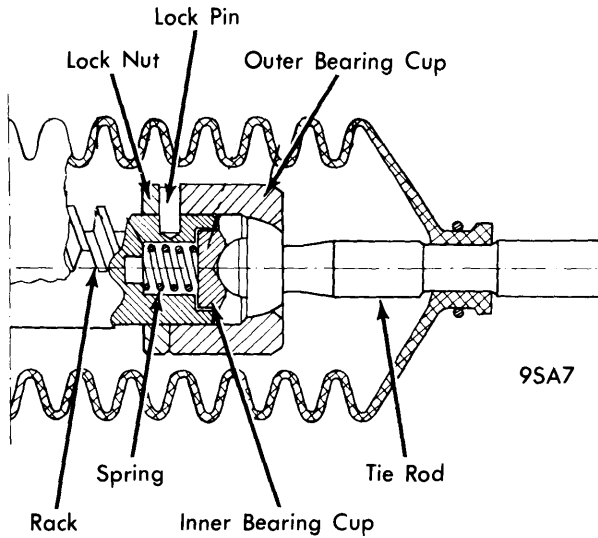
**SECURING INNER BALL JOINT**

3) To adjust radial backlash, tighten the adjusting screw on the underside of steering gear until it stops, then back off adjustment screw 1/8-1/4 turn and tighten lock nut. Check that rack does not stick in any position from lock to lock. Install rubber bellows and tighten clamps. Install tie rod assemblies and tighten lock nuts.

# Steering Gears & Linkage

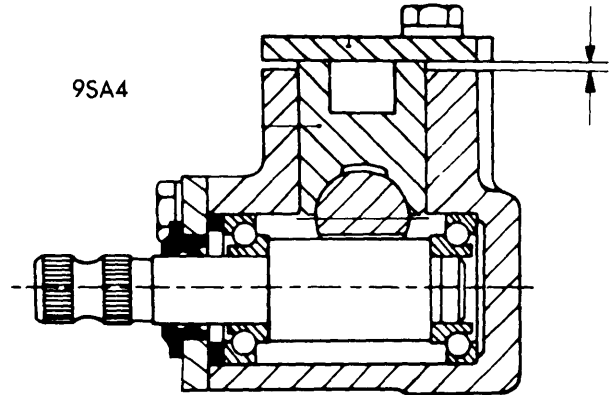
## 1963-73 SAAB (Cont.)

**Reassembly & Adjustment (Chassis No. 99.022.279 & Later)** - 1) Lubricate steering gear complete with suitable steering gear grease as it cannot be lubricated after installation. Seat the lower pinion bearing. **CAUTION** - Make sure both pinion bearings are the right way up. The extended parts of inner bearing track should face each other. Thread lock nut on rack, then outer bearing cup on rack and fill with grease. Insert spring and inner bearing cup and tighten bearing cup. **CAUTION** - Do not over tighten.



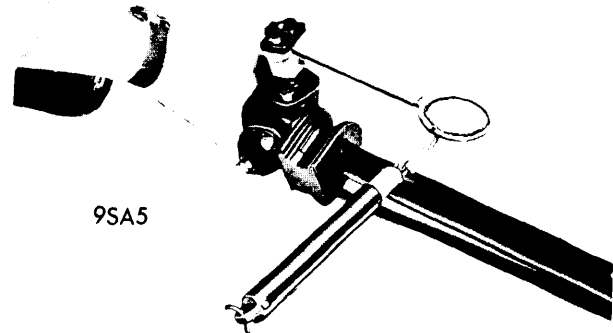
**INNER BALL JOINT, NEW DESIGN**

2) Tighten lock nut and recheck tightness of bearing cup. Drill a new hole and install cotter pin. Insert rack in housing and pinion with upper bearing. Adjust pinion, using shims, so that no axial play is present with gasket and cap in place. Adjust axial play as follows: Install plunger without spring, install cap and tighten screw until it contacts plunger (see illustration).



**CAP & PLUNGER CLEARANCE**

3) Measure clearance between cap and housing using a feeler gauge. Add .002-.006" shim to measured distance to allow for play after assembly. Install plunger, spring, shims, gasket and cap. Check that rack does not stick in any position. Torque should be .83-1.5 ft.



**STEERING GEAR TORQUE**

4) Assemble other ball joint and adjust. Install bellows and clips. Install tie rod ends and lock nuts. Tighten all nuts and bolts.