

Front Suspension

TOYOTA TERCEL

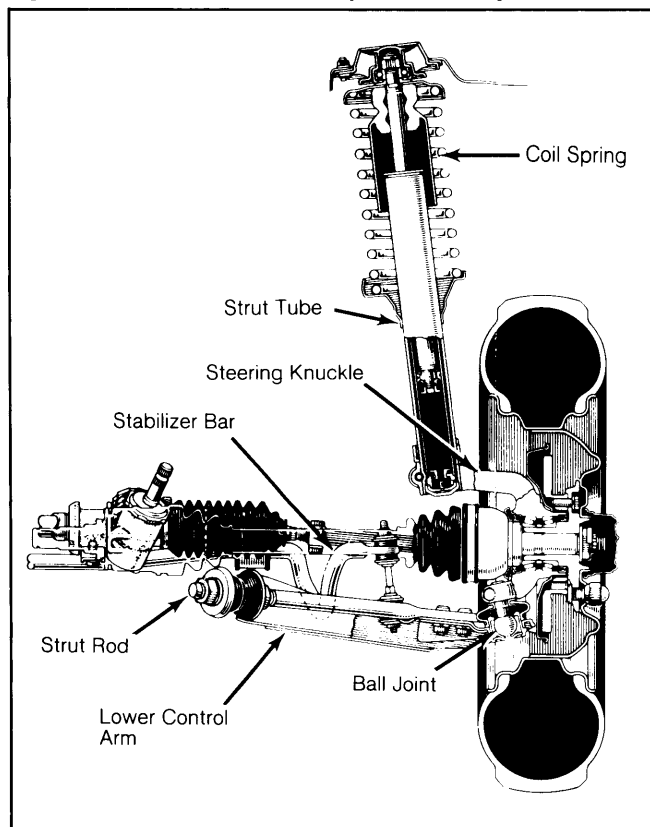
DESCRIPTION

Vehicles are equipped with front wheel drive and independent front suspension. Vertically mounted MacPherson type strut assemblies are used. Coil springs surround the strut tubes.

Struts are mounted at top of inner fender and steering knuckle at bottom. Tie rod ends connect rack and pinion steering to steering knuckle. A ball joint connects knuckle to lower control arm which attaches to frame crossmember.

Stabilizer bar attaches to lower control arm and crossmember in front of wheels. Strut rod attaches to lower control arm and chassis to the rear of front wheels.

Fig. 1: Assembled View of Suspension Components



ADJUSTMENT

WHEEL ALIGNMENT SPECIFICATIONS & PROCEDURES

See *Wheel Alignment Specifications & Procedures* in **WHEEL ALIGNMENT** section.

WHEEL BEARING

Wheel bearings are not adjustable. Whenever bearings are removed, replace with new bearings and races.

BALL JOINT CHECKING

1) Raise vehicle and place wooden block 7.09-7.87" (180-200 mm) in height under one front wheel assembly.

2) Lower floor jack until there is about half the load on front coil springs. Place safety stand under vehicle.

3) Insure that front wheel assemblies are in a straight ahead position and block them. Move lower arm up and down.

4) Ball joint should have no vertical play. Control arm and ball joint are serviceable as a unit only. If worn or damaged, replace entire assembly. Repeat in same manner for other side.

REMOVAL & INSTALLATION

WHEEL BEARING

Removal

1) Raise vehicle and support with safety stands. Remove wheel assembly. Remove cotter pin and dust cap. Remove caliper and support out of the way.

2) Remove axle nut. Disconnect strut bar end by removing nut retaining stabilizer bar-to-lower arm. Disconnect strut bar end by removing nut retaining strut bar-to-lower arm.

3) Remove cotter pin and castle nut retaining tie rod-to-steering knuckle. Using removal tool (SST 09610-20012) separate tie rod from steering knuckle. Place floor jack under steering knuckle side of lower arm and raise vehicle slightly to relieve pressure on lower arm.

4) Do this only on one side at a time. Remove bolt retaining lower arm-to-crossmember. Disconnect lower arm from crossmember. Remove the bolt retaining steering knuckle to strut tube.

5) Using puller (SST 09950-20014) remove axle hub from drive shaft. Separate strut tube from steering knuckle and remove steering knuckle.

6) Remove bolt retaining steering knuckle to lower arm. Separate steering knuckle from lower arm. Remove brake splash shield. Using puller (SST 09308-00010), remove oil seal from axle hub.

7) Using separator tool (SST 09608-16031) remove axle hub from steering knuckle. Remove inner bearing and spacer. Separate hub from disc by removing bolts.

8) Place hub in a vise. Using a hammer and chisel, open a clearance between outer bearing and hub. Using bearing puller (SST 09950-20014), remove outer bearing from hub. If necessary, remove any scratches on hub surface using an oil stone.

Installation

To install, reverse removal procedures.

CONTROL ARM & BALL JOINT

Removal

1) Raise vehicle and support with safety stands. Remove wheel assembly. Separate tie rod end from steering knuckle.

2) Remove strut rod and stabilizer bar from lower control arm. Separate lower control arm ball joint from steering knuckle.

3) Remove control arm pivot bolt. Remove control arm from vehicle.

NOTE: On left side, raise control arm with floor jack to remove bolt.

TOYOTA TERCEL (Cont.)

Bushing Replacement

Use press to remove and install bushings. When installing, there must be no oil or grease on bushing or arm boss. Press only on flange of outer tube.

Installation

To install, reverse removal procedures. Tighten the lower arm with vehicle weight on suspension. Check wheel alignment.

STRUT ASSEMBLY

Removal

1) Raise vehicle and support with safety stands. Remove wheel assembly. Remove caliper and support out of the way. Disconnect stabilizer bar end from lower control arm.

2) Remove bolt retaining strut assembly to steering knuckle. Tap on knuckle with a soft mallet to separate it from lower end of strut. Remove nuts retaining top of strut to fender. Remove strut from vehicle.

Disassembly

1) Place assembly in a vise, clamping portion of strut tube below flange or use holding fixture (09714-16010).

2) Use spring compressor to collapse spring enough to remove strut rod top nut. Relieve pressure on spring and remove spring. Disassemble inner shock absorber retaining components.

3) Remove ring nut. Remove gasket by picking out with a needle. Withdraw piston and rod guide from cylinder. Remove cylinder from shell. Using brass rod, remove base valve from cylinder, (do not attempt to disassemble piston rod and valve.

Reassembly

1) Thoroughly clean and inspect all components. Replace any damaged parts. Install shock absorber components into cylinder in reverse order of disassembly. When installing base valve into cylinder, use a soft mallet to drive it into place.

2) Fill shock absorber with 7.8 ounces of new shock absorber fluid. After assembling rod guide, install new gasket. Apply grease to ring nut oil seal.

3) Before fully tightening ring nut, pull out piston rod from cylinder 3-4". Assemble coil spring with paint mark downward.

Installation

To install, reverse removal procedures. Always use a new self-locking nut on top of piston rod. Check wheel alignment.

STABILIZER BAR

Removal

Remove engine under cover. Remove stabilizer bar ends from control arms, noting bushing positioning. Remove bolts retaining brackets to chassis. Remove stabilizer bar.

Installation

To install, reverse removal procedures.

STRUT ROD

Removal

1) Raise vehicle and support with safety stands, under vehicle body. Using a floor jack, raise control arm and remove nut from front of strut rod.

2) Remove washer, retainer, and rubber grommet. Remove bolts connecting strut rod to control arm. Remove rod from vehicle.

Installation

Set distance between outer side of staked nut (inside retaining nut) and inner mounting bolt to 13.0" (330.4 mm). Place rod in vehicle and tighten mounting hardware.

SUSPENSION CROSSMEMBER

Removal

1) Raise vehicle and support with safety stands. Disconnect steering intermediate shaft pinch bolt. Remove engine under cover and detach tie rod end from steering knuckle.

2) Remove stabilizer bar. Remove lower control arm pivot bolt. Detach engine shock absorber from crossmember. Remove steering link housing brackets. Remove steering assembly from vehicle.

3) Remove engine retaining nuts and support engine from below. Remove lower crossmember retaining bolts. Remove crossmember.

Installation

To install, reverse removal procedures. For the left side, raise lower control arm with floor jack, to install crossmember. Lower vehicle and jounce before tightening lower arm pivot bolts. Check wheel alignment.

TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Ball Joint-to-Steering Knuckle	40-52 (54-71)
Caliper Bolts	33-39 (45-53)
Control Arm-to-Crossmember ¹	51-65 (69-88)
Control Arm-to-Strut	29-39 (39-53)
Control Arm-to-Stabilizer	11-15 (15-20)
Control Arm-to-Strut Rod	29-39 (39-53)
Crossmember Bolts	30-39 (41-53)
Engine Mounting Bolts	26-39 (35-53)
Piston Rod Ring Nut	66-97 (90-132)
Piston Rod-to-Mounting Plate	29-39 (39-53)
Stabilizer Bar Bracket	22-32 (30-44)
Steering Link Bracket	22-32 (30-44)
Strut-to-Upper Mount	15-21 (20-29)
Tie Rod End-to-Steering Knuckle	37-50 (50-68)
Axle Nut	73-108 (99-147)

¹ — With vehicle at full curb weight.