

# Front Suspension

## TOYOTA — EXCEPT LAND CRUISER, PICKUP & TERCEL

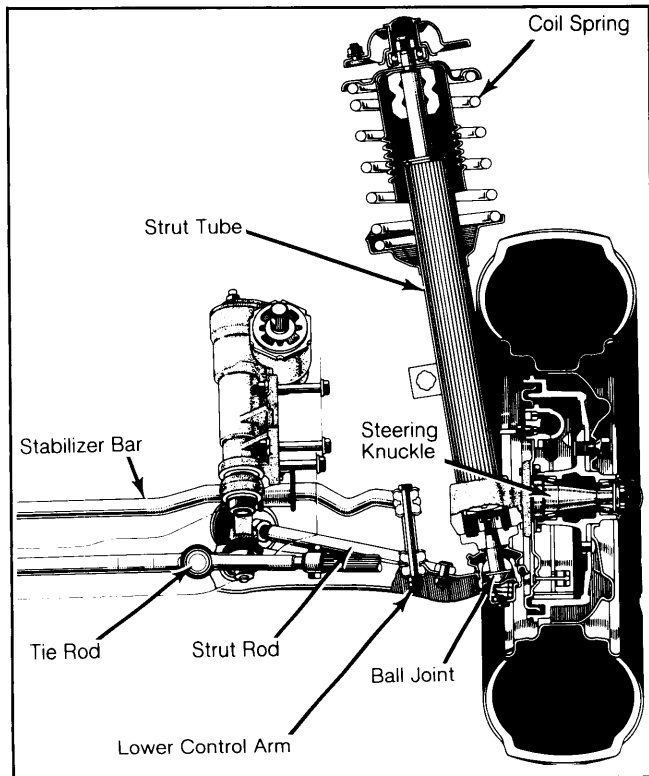
### DESCRIPTION

An independent MacPherson type strut suspension is used. Suspension consists of vertically mounted strut assemblies, lower control arms, strut rods and a stabilizer bar.

Individual strut assembly is mounted at top to inner fender by a thrust bearing and at bottom to lower control arm by means of a ball joint. Strut assembly consists of a shock absorber built into strut tube, coil spring mounted on outside of strut tube. Steering knuckle is integral with bottom of strut tube.

A strut rod is mounted between lower control arm and frame. A stabilizer bar is mounted to front frame members and connected at ends to lower control arms. The suspension crossmember that serves as support for all suspension components is removable.

**Fig. 1: Assembled View of Corolla Suspension Assembly**



Other models are similar.

### ADJUSTMENT

#### WHEEL ALIGNMENT SPECIFICATIONS & PROCEDURES

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

#### WHEEL BEARING

Tighten nut to 22 ft. lbs. (30 N.m), while turning hub to seat bearings. Loosen hub nut until it can be turned with fingers. Tighten nut finger tight using a socket without a handle. If not aligned for cotter pin installation, tighten until installation is possible. Hub preload should be within specifications listed in Bearing Preload Specifications table.

### BEARING PRELOAD SPECIFICATIONS

Application	Preload Lbs. (N.m)
Corolla, Starlet, Supra .....	.7-1.5 (0.1-2.0)
Celica, Cressida, Corona .....	.8-1.9 (1.1-2.6)

### BALL JOINT CHECKING

Check ball joints for worn or damaged rubber boot, excessive looseness or play. If damaged or excessively worn, replace lower control arm and ball joint as an assembly. Maximum vertical play is .10" (3.0 mm).

## REMOVAL & INSTALLATION

### WHEEL BEARING

#### Removal

1) Raise vehicle and support with safety stands. Remove wheel assembly. Remove dust cap. Remove cotter pin and loosen hub nut.

2) Remove caliper retaining bolts. Remove caliper and support out of the way. Remove hub nut, washer, outer bearing and brake rotor. Remove seal from hub. Remove inner bearings.

#### Installation

To install, reverse removal procedure.

### CONTROL ARM

#### Removal

1) Raise vehicle and support with safety stands. Remove wheel assembly. On Cressida, remove engine under cover and detach strut bar and stabilizer bar from lower arm.

2) On all models, remove strut assembly-to-knuckle retaining bolts. Push lower arm down and disconnect strut from knuckle arm. On Corolla, separate stabilizer bar and strut bar from lower arm.

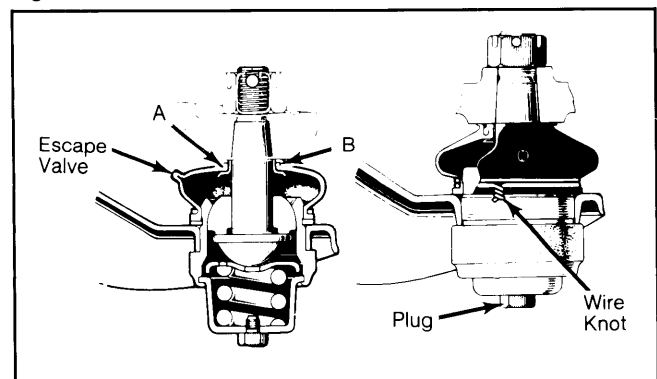
3) On Celica, Corolla, Corona and Supra, disconnect knuckle arm from ball joint. On Celica, Supra and Corona, disconnect stabilizer bar and strut bar from lower arm. On Cressida, detach tie rod end from knuckle arm.

4) On all models, remove bolt retaining lower arm to crossmember and remove lower arm. If ball joint is worn or damaged, replace lower control arm and ball joint as an assembly.

#### Disassembly

1) On Cressida, place control arm in a vise and use separator tool, to remove knuckle arm from ball joint.

**Fig. 2: Ball Joint and Dust Cover**



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2) On all models, pry dust cover from ball joint and discard (also discard dust cover snap ring or retaining wire).

3) Press bushing out of control arm toward front side of arm, using press and arbor.

### Reassembly

1) Using a support, press in new bushing. Apply ball joint grease to points "A" and "B" of new dust cover. See Fig. 2.

2) Install dust cover with escape valve facing rear of vehicle. Wind wire twice around dust cover and bend wire knot down, facing rear of ball joint.

3) Remove plug and install grease fitting. Fill ball joint with grease. Remove fitting and install plug.

### Installation

To install, reverse removal procedures.

## STRUT ASSEMBLY

### Removal

1) Raise vehicle and support with safety stands. Remove wheel assembly. Disconnect brake line and flexible hose. Plug brake line openings.

2) Remove nuts retaining top of strut assembly to vehicle. Remove bolts retaining lower end of strut tube to steering knuckle.

3) Pull down on control arm to gain clearance and remove strut assembly (with brake and hub assembly attached) from vehicle.

### Disassembly

1) Install assembly in vise, clamping portion of strut tube below flange.

2) Use spring compressor to collapse spring enough to remove strut rod top nut. Relieve pressure and remove spring.

3) Using ring nut removal tool, remove ring nut. Remove gasket by picking out with a needle. Remove piston rod, rod guide, and rebound stopper.

4) Remove cylinder from shell. Using a brass rod, remove base valve from cylinder.

**NOTE:** Do not attempt to disassemble piston rod and valve.

### Reassembly

1) Thoroughly clean and inspect all components. Replace any worn or damaged parts. Install shock absorber components into cylinder in reverse of disassembly procedures. After installing piston nut, stake it in place.

2) When installing base valve onto cylinder, use a soft mallet to drive into place. Add specified amount of new shock absorber oil to cylinder. Install new oil seal to ring nut.

3) Before fully tightening ring nut, pull piston rod out of cylinder about 3-4". Always use new self-locking nut on top of piston rod.

## SHOCK ABSORBER OIL CAPACITIES

Application	Oz.
Celica & Supra .....	11.0
Corolla .....	10.6
Corona	
13" (330 mm) Shock .....	10.6
14" (325 mm) Shock .....	11.0
Cressida .....	10.8
Starlet .....	8.1

### Installation

After top end of strut is attached to mounting, fill bearing recess, which protrudes into engine compartment, with multi-purpose grease. To complete installation, reverse removal procedures.

## STABILIZER BAR

### Removal

Remove strut rods from lower arms. Remove engine under cover, (if equipped). Disconnect stabilizer bar from lower arms. Remove bolts retaining stabilizer brackets to chassis. Remove stabilizer bar.

### Installation

To install, reverse removal procedure.

## STRUT ROD

### Removal

Raise vehicle and support with safety stands, under vehicle body. Remove nut from front of strut rod. Remove washer, retainer, and rubber grommet. Remove bolts connecting strut rod to control arm. Remove rod from vehicle.

**NOTE:** Do not attempt to loosen staked nut.

### Installation

Check distance between staked nut and center of bolt hole. Distance should be 14.64" (372 mm) on Corolla, 15.90" (405 mm) on Cressida and 14.92" (379 mm) on all other models. Place rod in vehicle and tighten retaining bolts.

## CROSSMEMBER

### Removal

1) Remove engine under cover, (if equipped). Remove nuts retaining both sides of crossmember to engine mounts. Raise vehicle and support with safety stands.

2) Remove bolts retaining lower arms to crossmember. On Corolla and Corona, remove engine shock absorber. On all models, raise engine with chain or floor jack.

3) On Cressida, disconnect stabilizer bar from lower arm. On all models remove bolts retaining crossmember to frame. Remove crossmember.

### Installation

To install, reverse removal procedures.

## TIGHTENING SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Ball Joint-to-Knuckle Arm .....	51-65 (69-88)
Control Arm-to-Crossmember <sup>1</sup>	
Cressida .....	65-94 (88-128)
All Other Models .....	51-65 (69-88)
Control Arm-to-Stabilizer .....	11-15 (15-20)
Control Arm-to-Strut Rod	
Cressida .....	43-53 (58-72)
All Other Models .....	29-40 (39-54)
Knuckle Arm-to-Strut Tube	
Corolla .....	51-65 (69-88)
All Other Models .....	58-86 (79-117)
Piston Rod-to-Mounting Plate .....	29-40 (39-54)
Piston Rod Ring Nut .....	73-108 (99-147)

<sup>1</sup> — With vehicle at full curb weight.