# Front Suspension

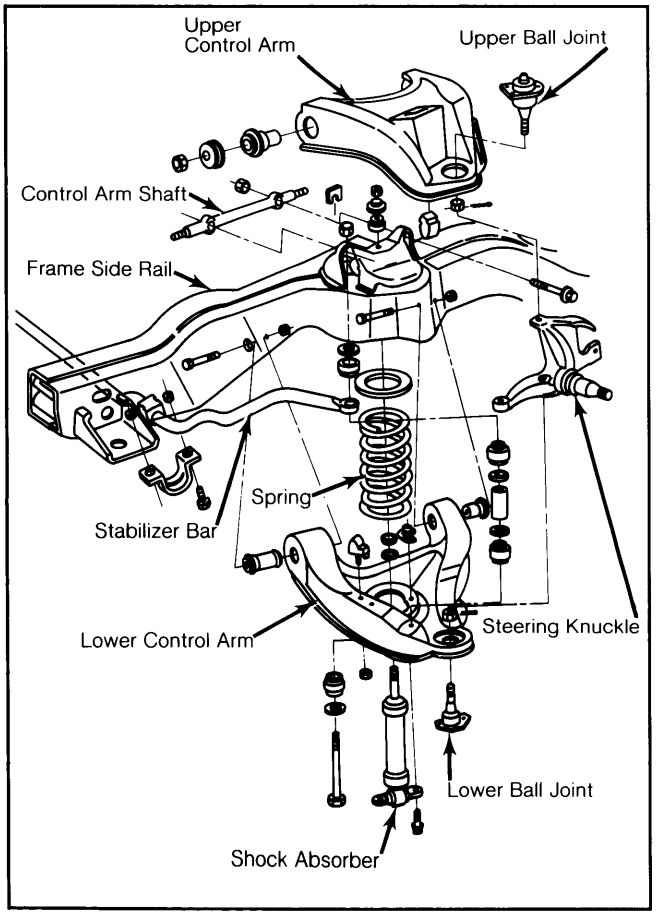
## GENERAL MOTORS COIL SPRING TYPE — S10

**Chevrolet, GMC**

## DESCRIPTION

Independent front suspension consists of upper and lower control arms with steering knuckle mounted by ball joints. The upper control arms are mounted with pivot shafts, through rubber bushings. The lower control arms have pressed in bushings and are mounted by bolts which thread through the frame. Coil springs are mounted between lower control arm and a formed seat in suspension crossmember. Hydraulic shock absorbers fit inside coil spring, between lower control arm and frame. A stabilizer bar is mounted to frame side rails and connected to lower control arms by links.

***Fig. 1: Exploded View of Front Suspension Assembly***




## ADJUSTMENT & CHECKING

### WHEEL ALIGNMENT SPECIFICATIONS & PROCEDURES

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

### WHEEL BEARING ADJUSTMENT

Tighten bearing nut to 12 ft. lbs. (16 N.m) while spinning wheel forward. Back off nut until it is just loose. Hand-tighten nut, then loosen slightly (no more than ½ turn) until cotter pin can be inserted. End play should be .001-.005" (.03-.13 mm).

### BALL JOINT CHECKING

**Upper Ball Joint**

Upper ball joint is spring-loaded. Raise vehicle and support with jack stands under the lower control arms. Stands must be as far outboard as possible. Place a dial indicator against rim, then rock wheel in and out. If deflection exceeds .125" (3.2 mm), if upper stud has any lateral shake, or if it can be twisted with fingers, relpace ball joint.

**Lower Ball Joint**

Lower ball joint is a loose fit with no weight applied. A wear indicator is built into the ball joint. With vehicle weight on wheels, check to see that wear indicator protrudes from bottom of ball joint. If wear indicator is flush or recessed, replace ball joint.

## REMOVAL & INSTALLATION

### SHOCK ABSORBERS

**Removal**

Remove nuts at top of shock absorber. Remove 2 bolts retaining shock absorber pivot to lower control arm. Pull shock absorber down and remove from vehicle.

**Installation**

Position shock absorber into control arm with shaft extended. Hold shaft and tighten upper nut. Bolt pivot to control arm.

### STABILIZER BAR

**Removal**

Raise vehicle. Remove link bolts and bushings at lower control arm. Remove nuts and bolts attaching stabilizer bar brackets to frame. Remove stabilizer bar, bushings and brackets from vehicle.

**Installation**

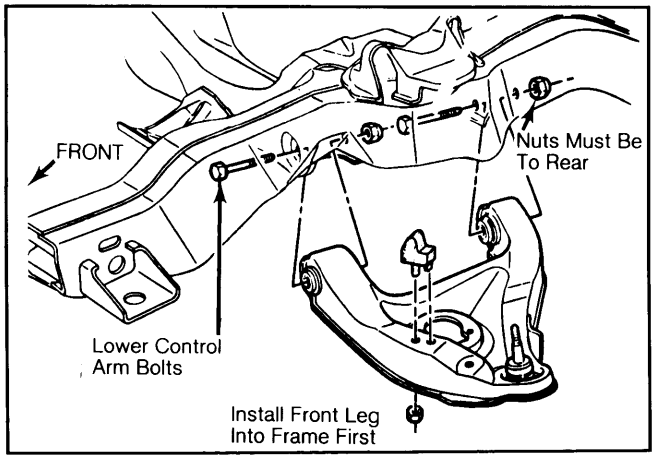
Position stabilizer bar on frame. Loosely install frame bushings and brackets. Slit in bushing should be toward front of vehicle. Install link units at lower control arms. Tighten all nuts and bolts.

### COIL SPRINGS

**Removal**

**1)** Raise vehicle. Remove 2 shock absorber bolts and push shock up into spring. Support under frame

***Fig. 2: Lower Control Arm and Spring Removal***




*Install bolts in direction shown.*

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## GENERAL MOTORS COIL SPRING TYPE — S10 (Cont.)

so that control arms hang free. Install a support tool (J-23028) onto jack. Disconnect stabilizer bar. Position tool under lower control arm shaft so that shaft seats in grooves of tool.

**2)** Install a safety chain through lower control arm and spring. Raise jack to relieve tension on lower control arm shaft and remove control arm bolts (rear bolt first). Carefully lower jack until all tension is released from spring. Remove spring from vehicle.

**Installation**

To install coil spring, reverse removal procedure. Spring must cover one drain hole in control arm, leaving the other open. Install front control arm pivot bolt first. Bolts must be installed with the nuts toward rear of vehicle.

### STEERING KNUCKLE

**Removal**

**1)** Raise and support vehicle at front lift points. Do not place stands under control arm, but position floor jack slightly below arm. Remove wheel, caliper, hub and disc rotor. Remove disc splash shield. Remove tie rod from knuckle with puller.

**2)** Carefully remove seal if knuckle will be reused. Remove ball joints from knuckle. Raise jack until arm is just supported. Raise upper control arm to disengage ball stud. Remove knuckle.

**Installation**

Clean all parts thoroughly, and inspect for damage. To install, reverse removal procedure and tighten all nuts and bolts.

**CAUTION: When installing ball joint nuts, do not loosen nut to install cotter pin. If necessary, tighten one extra notch.**

### UPPER BALL JOINT

**Removal**

**1)** Raise and support vehicle under lower control arms. Jacks must remain under lower control arm to retain spring and control arm. Remove wheel. Remove cotter pin from upper ball stud and remove nut.

**2)** Install tool J-23742 between the ball studs. Loosen ball stud. Remove tool and support knuckle to protect brake line. Drill out rivets and remove ball joint assembly.

**Installation**

To install, reverse removal procedure. Use nuts and bolts in place of rivets to attach ball joint to control arm. Check and adjust front alignment.

### LOWER BALL JOINT

**Removal**

**1)** Raise vehicle. Support front end with safety stands positioned under frame. Place jack under lower control arm. Remove wheel and tire. Remove lower stud cotter pin and stud nut.

**2)** Install tool J-23742 between the ball studs. Loosen ball stud. Remove tool. Guide lower control arm out of opening in brake shield by using putty knife or scraper. Place a wooden block between upper control arm and frame to keep knuckle out of the way. Remove grease fitting from ball joint. Using "C" clamp type tool and drivers (J-9519-10), press ball joint out.

**Installation**

Using special tools (J9519-10 and J9519-9), install new ball joint in control arm. Reverse removal procedure to complete installation. Check and adjust front alignment.

### UPPER CONTROL ARM

**Removal**

**1)** Note location of alignment shims. Remove nuts and shims. Raise vehicle. Support front end with safety stands under lower control arms. Remove cotter pin and nut from upper ball joint. Using suitable tool (J-23742), loosen ball joint in steering knuckle.

**2)** Raise control arm to clear steering knuckle. Remove nuts and bolts attaching control arm shaft to frame. Remove control arm from vehicle. Remove pivot shaft nuts. Press bushings out of control arm.

**Installation**

To install, press bushings into control arm. Bushing outer sleeve should have ½" (13 mm) clearance from face of control arm. Reverse removal procedure and check wheel alignment. *See WHEEL ALIGNMENT Section for procedures and specifications.*

### LOWER CONTROL ARM

**Removal**

Raise vehicle and place safety stands under frame side rails. Remove coil spring and loosen ball joint stud. Support control arm and guide arm out of brake shield. Remove control arm. Replace bushings if necessary, using standard tools to press out of control arm.

**Installation**

To install, reverse removal procedure, tighten all nuts and bolts, and check wheel alignment. *See WHEEL ALIGNMENT Section for procedures and specifications.*

***TIGHTENING SPECIFICATIONS***

| Application | Ft. Lbs. (N.m) |
|---|---|
| Lower Control Arm-to-Frame | [1] 65 (90) |
| Upper Control Arm-to-Frame | 45 (60) |
| Upper Control Arm Pivot Nuts | 85 (115) |
| Upper Ball Joint Nut | 65 (90) |
| Lower Ball Joint Nut | 90 (120) |
| Stabilizer Bar Brackets | [1] 24 (33) |
| Shock Absorber-to-Control Arm Bolts | 20 (27) |

[1] — Tighten with weight on suspension.

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