

SUSPENSION - FRONT

2001 Chevrolet Camaro

2000-01 SUSPENSION
Front

Camaro & Firebird

MODEL IDENTIFICATION

MODEL IDENTIFICATION

Body Style	Models
"F"	Camaro & Firebird

DESCRIPTION

Independent front suspension allows each wheel assembly to compensate for changes in road surface without appreciably affecting opposite wheel assembly. Coil springs, which are combined with shock absorbers to form an assembly, bear vehicle weight. See Fig. 1. Steering knuckle rotates on ball joints that are mounted on upper and lower control arms. A one-piece hub and bearing assembly is bolted to steering knuckle. See Fig. 2.

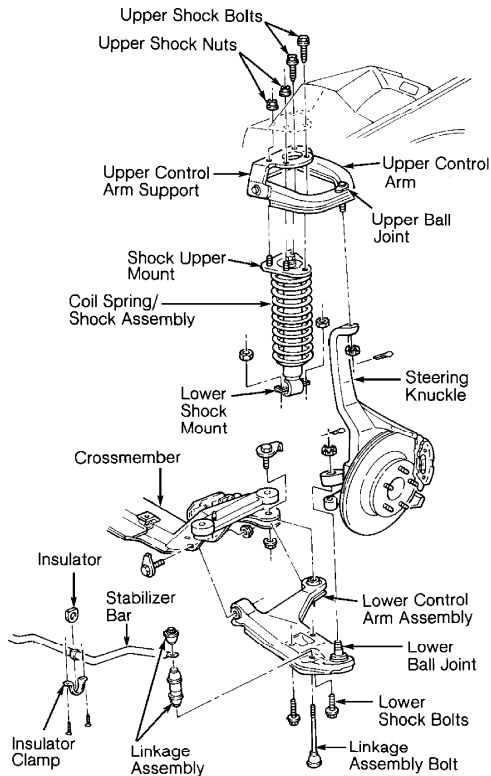


Fig. 1: Exploded View Of Front Suspension
Courtesy of General Motors Corp.

ADJUSTMENTS & INSPECTION

WHEEL ALIGNMENT

NOTE: See appropriate SPECIFICATIONS & PROCEDURES article in WHEEL ALIGNMENT.

RIDE HEIGHT

NOTE: See appropriate SPECIFICATIONS & PROCEDURES article in WHEEL ALIGNMENT.

WHEEL BEARINGS

NOTE: Information on how to check for bearing looseness is not available from manufacturer. Hub and wheel bearing assembly is sealed and non-serviceable. Replace as a complete assembly.

BALL JOINT CHECKING

Ball Joint

1) Raise vehicle. Position jack stands under lower control arms near ball joint. Lower vehicle so weight is on jack stands. Mount a dial indicator with plunger rod contacting outside of wheel rim, at bottom. Zero dial indicator.

2) Grasp tire at top and bottom. Rock wheel inward and outward at top and bottom. If dial indicator reads more than .047" (1.19 mm), replace ball joint. Check ball joint free play with ball joint disconnected from steering knuckle. If finger pressure spins ball joint stud in socket, replace ball joint.

REMOVAL & INSTALLATION

COIL SPRING/SHOCK ASSEMBLY

NOTE: If removing left coil spring/shock assembly, remove brake master cylinder, and position aside with brakelines connected.

Removal

1) Remove upper shock bolts and nuts. See Fig. 1. Raise and support vehicle at frame. Remove wheel. Remove stabilizer bar linkage from lower control arm.

NOTE: If assembly will be reinstalled, use chalk or paint (DO NOT scribe) to mark lower shock mount in relation to upper shock mount for installation reference.

2) Remove lower shock bolts and nuts. Remove cotter pin and nut from lower ball joint stud. Separate lower ball joint stud from steering knuckle using Ball Joint Separator (J-39549). See Fig. 5. Remove coil spring/shock assembly.

Disassembly

WARNING: If coil spring is compressed more than necessary, compressor may break, resulting in personal injury.

Compress coil spring about .5" (13 mm) using Spring Compressor (J-34013-B, -88, -114 and -115). Remove shock top nut using Modular Shock Nut Removal Set (J-39642). Disassemble coil spring/shock

assembly.

Reassembly

To reassemble, reverse disassembly procedure. DO NOT reuse shock absorber nut. When tightening shock absorber nut, prevent shock absorber rod from turning.

Installation

To install, reverse removal procedure. Tighten fasteners to specification. See TORQUE SPECIFICATIONS.

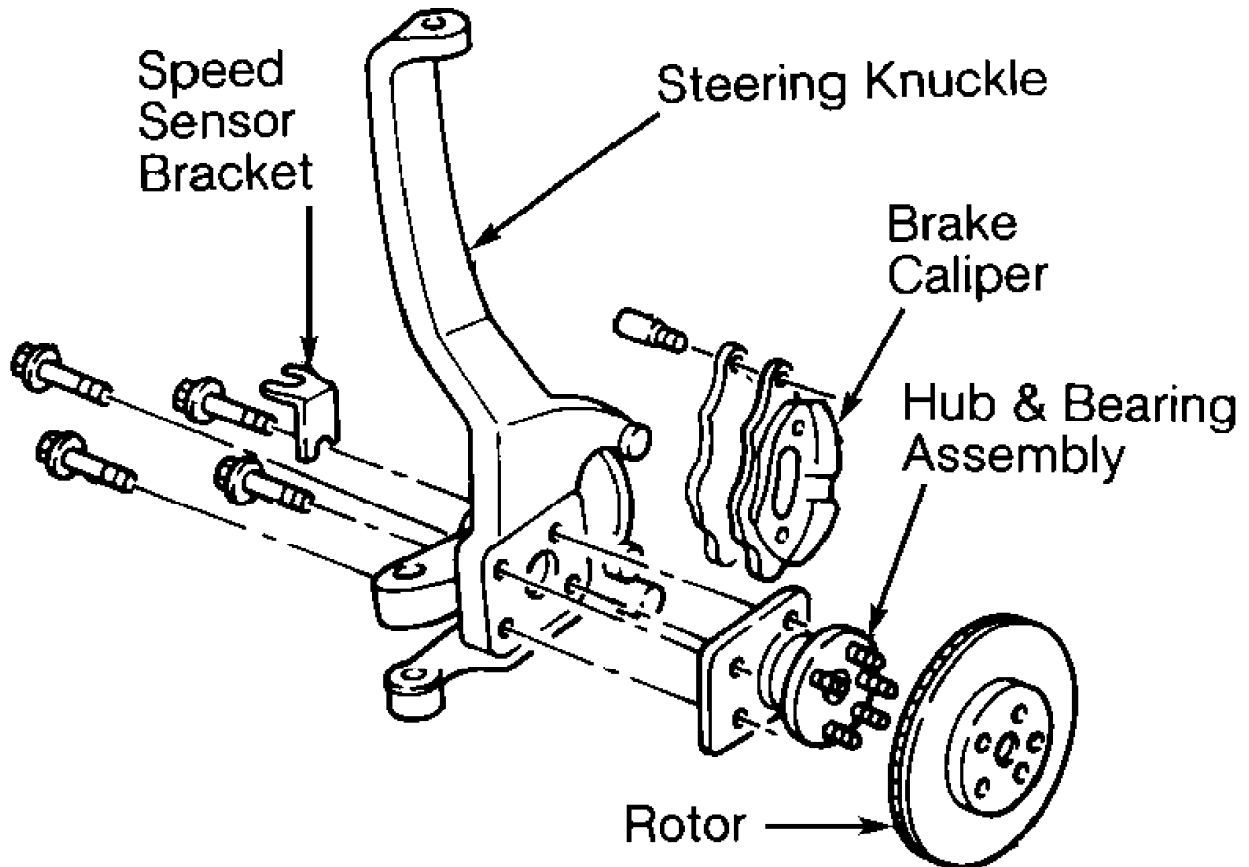
HUB & BEARING ASSEMBLY

Removal

Raise and support vehicle at frame. Remove wheel. Remove disc brake caliper, and wire aside, leaving brakeline connected. Remove rotor. Remove wheel speed sensor. Remove hub and bearing assembly bolts behind steering knuckle. See Fig. 2. Remove hub and bearing assembly.

Installation

To install, reverse removal procedure. Tighten fasteners to specification. See TORQUE SPECIFICATIONS.



G93C39539

Fig. 2: Replacing Hub & Bearing Assembly
Courtesy of General Motors Corp.

LOWER CONTROL ARM BALL JOINT

Removal

1) Raise and support vehicle at frame. Remove wheel. Position a floor jack under lower control arm to keep spring and lower control arm in place. Remove wheel speed sensor, and wire aside. Remove cotter pin and nut from lower ball joint stud.

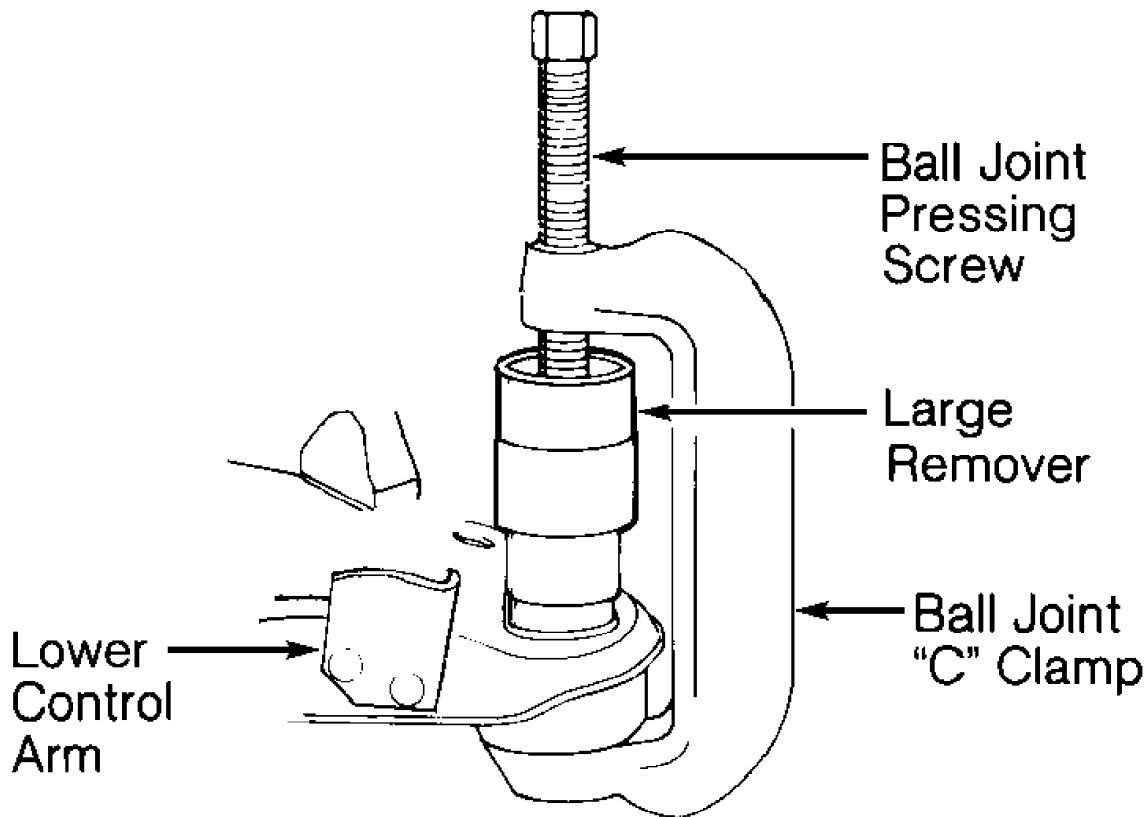
WARNING: Do not separate lower control arm ball joint stud from steering knuckle unless a floor jack or stand is placed under lower control arm, between spring seat and ball joint.

2) Separate ball joint stud from steering knuckle using Ball Joint Separator (J-39549). Press ball joint out of lower control arm using Ball Joint Pressing Screw (J-9519-18), Large Remover (J-9519-7) and Ball Joint "C" Clamp (J-9519-23). See Figs. 3 and 4.

Installation

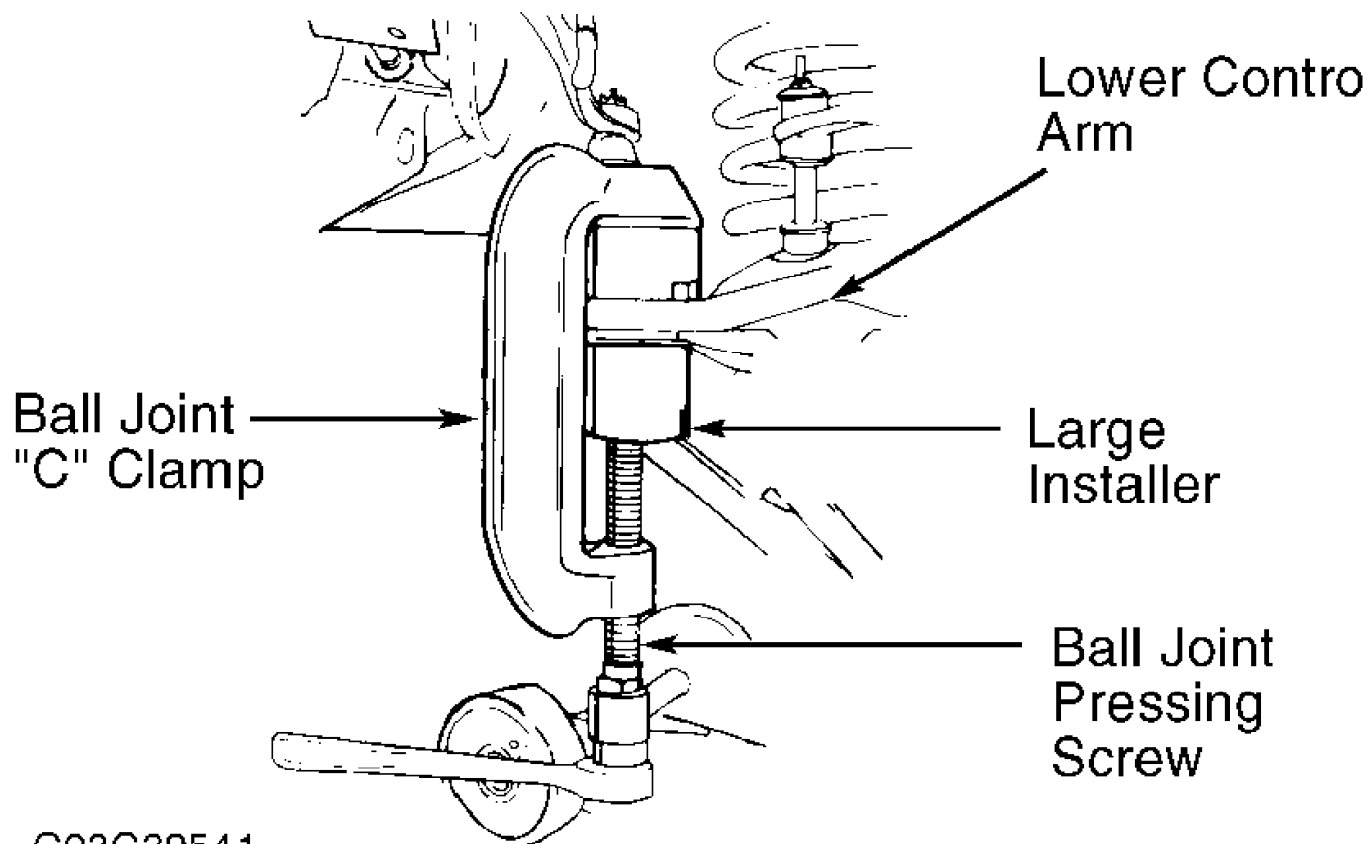
1) Install ball joint boot seal onto ball joint so grease purge hole faces inboard (toward frame). Using Ball Joint Pressing Screw (J-9519-18), Ball Joint "C" Clamp (J-9519-23) and Large Installer (J-9519-9), press ball joint into bore until fully seated. See Figs. 3 and 4.

2) To complete installation, reverse removal procedure. Tighten ball joint stud nut to specification. Check wheel alignment. See appropriate SPECIFICATIONS & PROCEDURES article in WHEEL ALIGNMENT.



G93F39540

Fig. 3: Removing Lower Ball Joint
Courtesy of General Motors Corp.



G93G39541

Fig. 4: Installing Lower Ball Joint
 Courtesy of General Motors Corp.

LOWER CONTROL ARM & BUSHINGS

Removal

WARNING: Do not separate lower control arm ball joint stud from steering knuckle unless a floor jack or stand is placed under lower control arm, between spring seat and ball joint.

1) Raise and support vehicle at frame. Remove wheel.

Disconnect tie rod end from steering knuckle. Disconnect stabilizer bar linkage assembly from lower control arm. See Fig. 1. Remove lower shock mount bolts. Position a floor jack under lower control arm to keep spring and lower control arm in place.

2) Remove cotter pin and nut from lower ball joint stud.

Separate lower ball joint stud from steering knuckle using Ball Joint Separator (J-39549). Remove bolts securing lower control arm to frame, and remove lower control arm.

Bushing Replacement (Front)

Replace bushings using following tools:

- * Lower Control Arm Screw Assembly (J-21474-3)
- * Lower Control Arm Nut Assembly (J-21474-4)
- * Control Arm Bushing Receiver (J-21474-5)
- * Control Arm Bushing Receiver (J-21474-6)
- * Half-Moon Spacer (J-39875)
- * Lower Control Arm Bushing Receiver (J-39876)

Ensure half-moon spacer is installed to prevent metal distortion during removal or installation.

Bushing Replacement (Rear)

Replace bushings using following tools:

- * Lower Control Arm Screw Assembly (J-21474-3)
- * Lower Control Arm Nut Assembly (J-21474-4)
- * Control Arm Bushing Receiver (J-21474-5)
- * Lower Control Arm Bushing Receiver (J-39874)
- * Lower Control Arm Bushing Receiver (J-39931)

Ensure all tools are properly aligned and window is facing up on bushing receiver during installation.

Installation

To install, reverse removal procedure. Tighten fasteners to specification. See TORQUE SPECIFICATIONS. Check wheel alignment. See appropriate SPECIFICATIONS & PROCEDURES article in WHEEL ALIGNMENT.

STABILIZER BAR

Removal

Raise and support vehicle at frame. Remove stabilizer bar linkage assembly from both lower control arms. See Fig. 1. Remove insulator clamp bolts and insulator clamps from frame. Remove stabilizer bar.

Installation

To install, reverse removal procedure. Install rubber insulators with slits facing front of vehicle. See Fig. 1. Tighten fasteners to specification. See TORQUE SPECIFICATIONS.

STEERING KNUCKLE

Removal

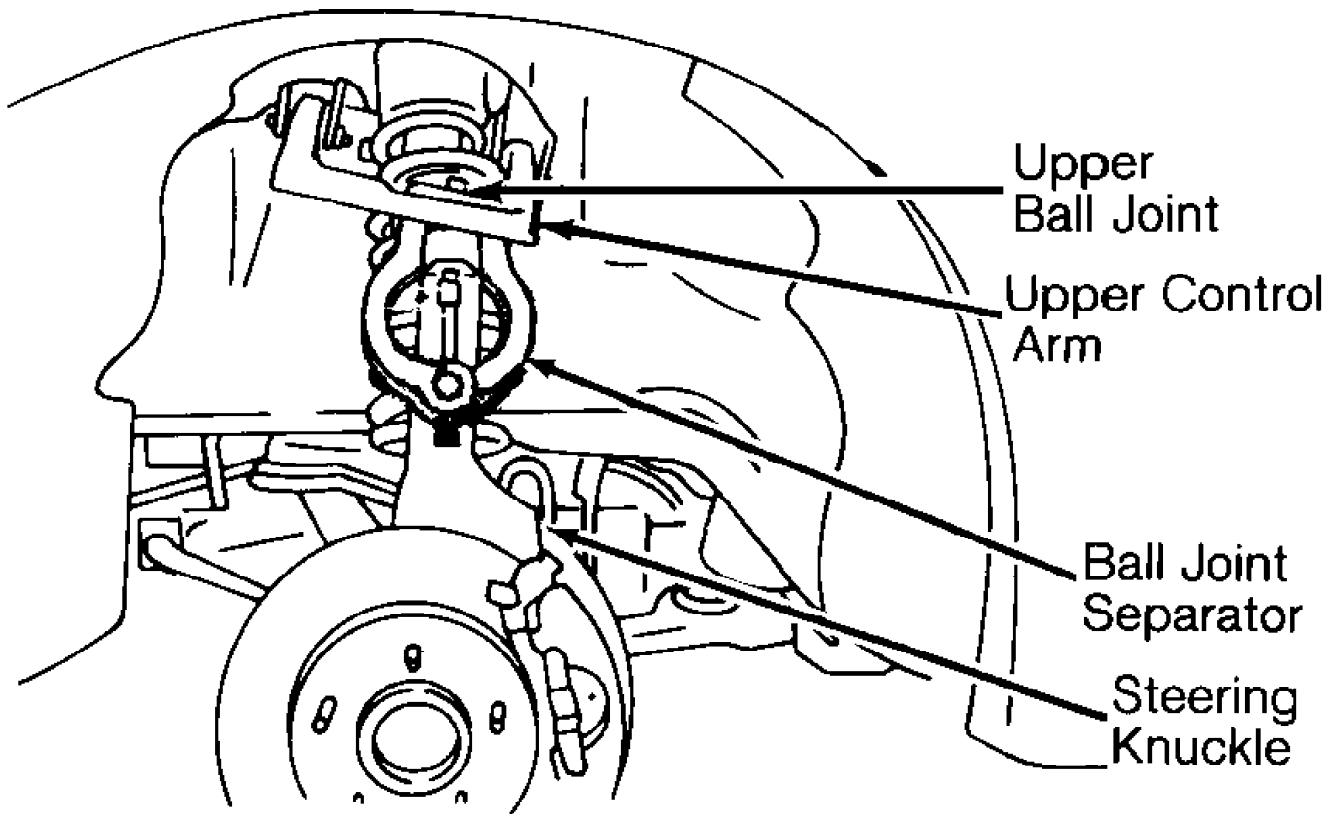
1) Raise and support vehicle at frame. Remove wheel. Remove brake caliper, and wire aside, leaving brakeline connected. Remove rotor. Disconnect wheel speed sensor electrical connector. Remove hub and bearing assembly bolts behind steering knuckle. See Fig. 2. Remove hub and bearing assembly.

2) Disconnect tie rod end from steering knuckle using Universal Puller (J-24319-01). Remove stabilizer bar linkage assembly from lower control arm. See Fig. 1. Position a floor jack under lower control arm to keep spring and lower control arm in place. Remove lower shock mount bolts.

3) Remove cotter pins and nuts from upper and lower ball joints. Separate lower ball joint stud from steering knuckle using Ball Joint Separator (J-39549). See Fig. 5. Support steering knuckle, and separate upper ball joint from steering knuckle using separator.

Installation

To install, reverse removal procedure. Tighten fasteners to specification. See TORQUE SPECIFICATIONS. Check wheel alignment. See appropriate SPECIFICATIONS & PROCEDURES article in WHEEL ALIGNMENT.



G93B39546

Fig. 5: Separating Upper Ball Joint From Steering Knuckle
 Courtesy of General Motors Corp.

UPPER CONTROL ARM BALL JOINT

Removal

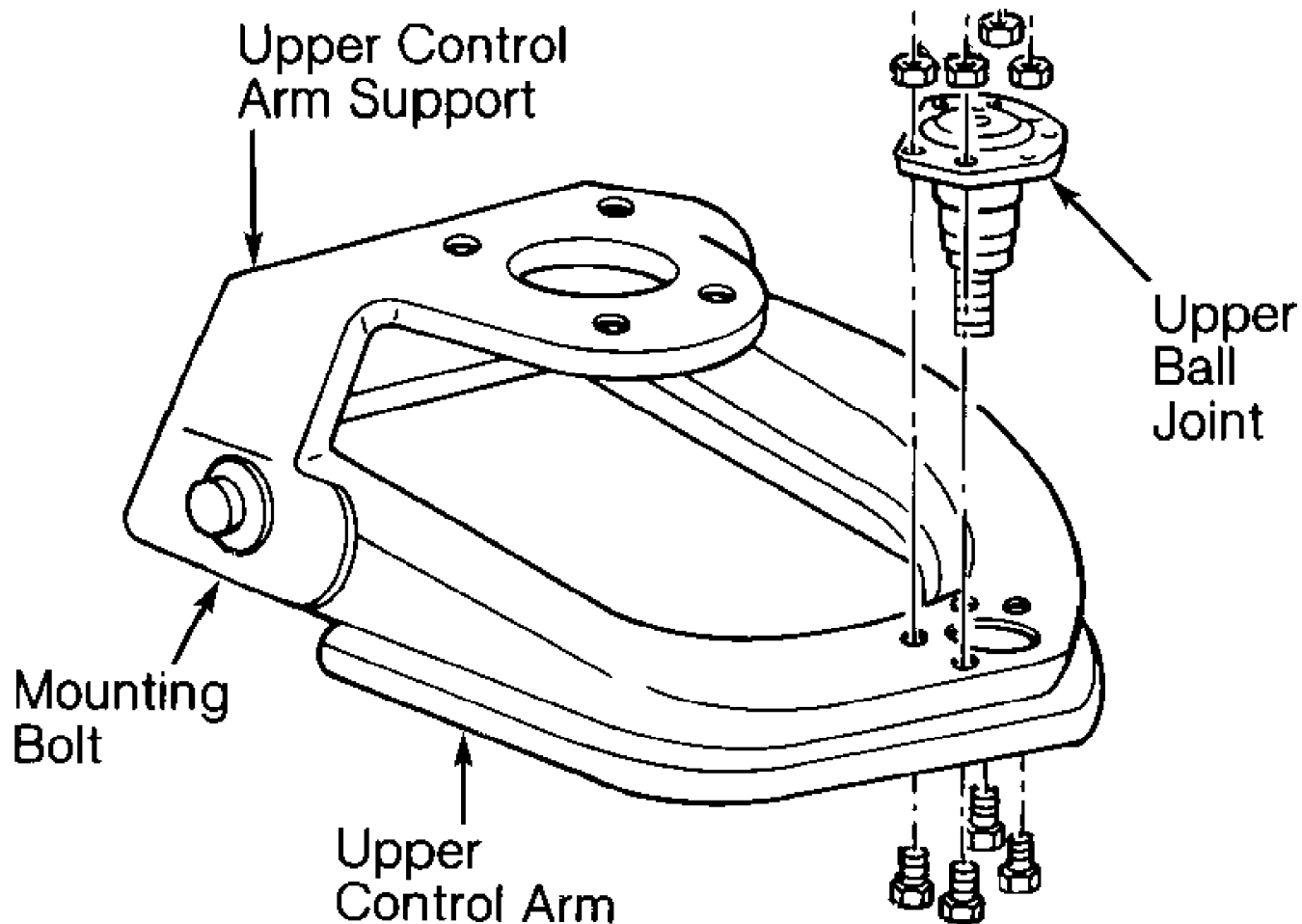
WARNING: DO NOT separate upper or lower control arm ball joint stud from steering knuckle unless a floor jack or stand is placed under lower control arm, between spring seat and ball joint.

1) Raise and support vehicle at frame. Remove wheel. Position a floor jack under lower control arm to keep spring and lower control arm in place. Remove cotter pin and nut from upper ball joint stud. Separate upper ball joint stud from steering knuckle using Ball Joint Separator (J-39549).

2) Support steering knuckle. Raise upper control arm. Using 1/8" drill bit, drill into ball joint rivets 1/4" deep. Drill off rivet heads with a 1/2" drill bit. Knock out rivets with a punch, and remove ball joint.

Installation

Install NEW ball joint. See Fig. 6. Install 4 bolts and nuts provided in service kit, with nuts on top of ball joint. Tighten nuts to specification provided in kit. To complete installation, reverse removal procedure. Tighten fasteners to specification. See TORQUE SPECIFICATIONS.



G93D39548

Fig. 6: Installing Upper Ball Joint
 Courtesy of General Motors Corp.

UPPER CONTROL ARM & BUSHINGS

Removal

1) If removing left control arm, remove brake master cylinder, and position aside with brakelines connected. On either side, remove upper shock bolts and nuts. See Fig. 1. Raise and support vehicle at frame. Remove wheel. Remove stabilizer bar linkage assembly.

WARNING: DO NOT separate upper or lower control arm ball joint stud from steering knuckle unless a floor jack or stand is placed under lower control arm, between spring seat and ball joint.

2) Remove lower shock mount bolts. Position a floor jack under lower control arm to keep spring and lower control arm in place. Remove cotter pin and nut from upper ball joint stud. Separate upper ball joint stud from steering knuckle using Ball Joint Separator (J-39549). Remove upper control arm and coil spring/shock assembly.

3) Remove 2 bolts and nuts securing upper control arm to upper control arm support. See Fig. 6. Separate upper control arm from upper control arm support.

Bushing Replacement

Replace bushings using following tools:

- * Control Arm Bushing Receiver (J-21474-5)
- * Upper Control Arm Nut Assembly (J-21474-18)
- * Upper Control Arm Screw Assembly (J-21474-19)
- * Half Moon Spacer (J-39872)
- * Upper Control Arm Bushing Receiver/Installer (J-39930)

Ensure half moon spacer is installed around outside of bushing during removal and installation to prevent metal distortion.

Installation

To install, reverse removal procedure. Tighten fasteners to specification. See TORQUE SPECIFICATIONS.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Ball Joint Stud Nut (1)	
Lower	81 (110)
Upper	39 (53)
Coil Spring/Shock Assembly	
Upper Shock Bolt	37 (50)
Upper Shock Nut	32 (43)
Lower Shock Mount Bolt	48 (65)
Hub & Bearing Assembly Bolt	63 (85)
Lower Control Arm-To-Crossmember Bolt/Nut	
Front	74 (100)
Rear	85 (115)
Stabilizer Bar	
Insulator Clamp Bolt (At Frame)	41 (56)
Linkage Bolt/Nut (At Control Arm)	17 (23)
Tie Rod End Nut (1)	35 (47)
Upper Ball Joint-To-Control Arm Nut	(2)
Upper Control Arm-To-Arm Support Bolt/Nut	72 (98)
Wheel Lug Nut	100 (136)

(1) - Always tighten nut to align cotter pin slot. DO NOT loosen nut.

(2) - Use specification provided with replacement ball joint.