

# SUSPENSION - FRONT

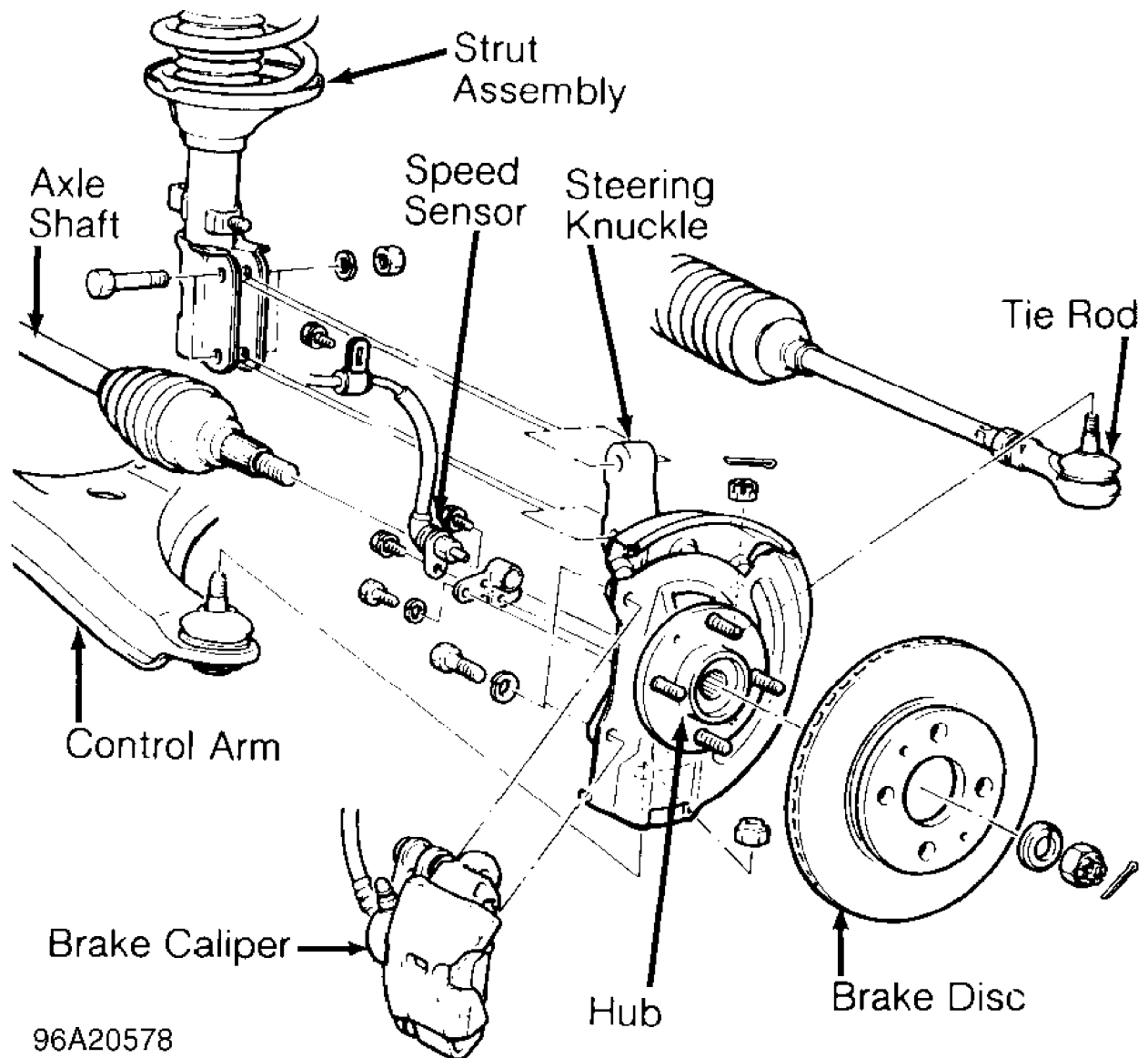
1998 Mitsubishi Galant

1997-98 SUSPENSION  
Mitsubishi - Front - AWD & FWD

Diamante, Eclipse, Galant, Mirage, 3000GT

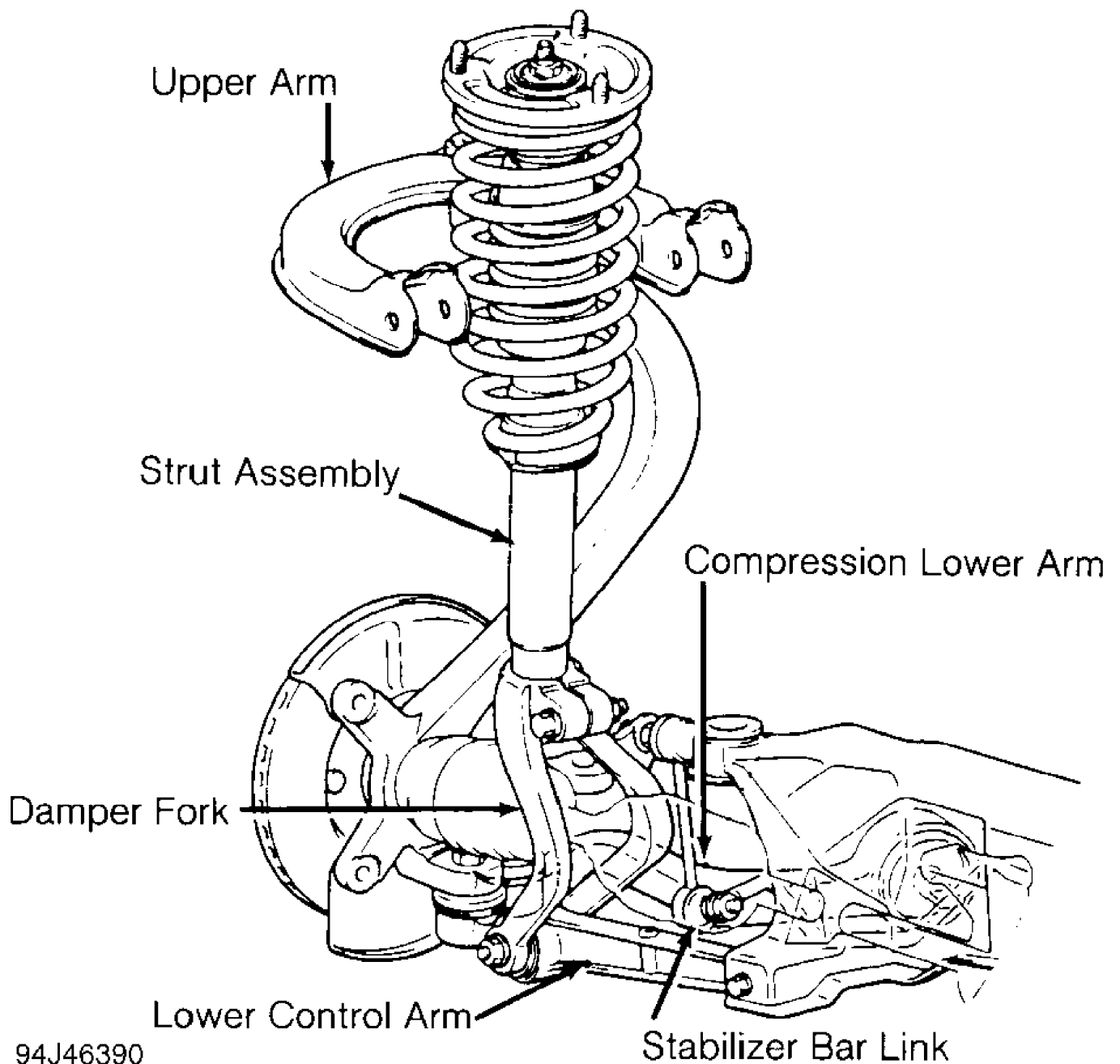
## DESCRIPTION

Front suspension consists of a MacPherson strut assembly, steering knuckle, control arm, ball joint and stabilizer bar. See Fig. 1 or 2.



96A20578

Fig. 1: Exploded View Of Front Suspension (Except Eclipse & Galant - Typical)  
Courtesy of Mitsubishi Motor Sales of America.



94J46390

Fig. 2: View Of Front Suspension (Eclipse & Galant)  
 Courtesy of Mitsubishi Motor Sales of America.

## ADJUSTMENTS & INSPECTION

### WHEEL ALIGNMENT SPECIFICATIONS & PROCEDURES

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

### WHEEL BEARING

Axial Play Inspection

- 1) Wheel bearings are not adjustable. To inspect bearings, raise and support vehicle. Remove wheel assembly. Remove brake caliper. Remove brake disc from hub (if necessary).
- 2) Attach dial indicator at right angle to hub. Move hub in and out, and measure axial play. Maximum play should be .002" (.05 mm). Replace bearings or hub assembly as needed if movement exceeds specification.

## BALL JOINT CHECKING

### Upper Control Arm Ball Joint

- 1) Raise and support vehicle. Remove wheel. Loosen ball joint nut. Using Steering Linkage Puller (MB991113-01), separate ball joint from steering knuckle. Install nut on ball joint stud. Move stud from side-to-side. Replace ball joint if side play is present.
- 2) Using INCH-lb. torque wrench, rotate ball joint and note starting torque. Replace ball joint if roughness is felt when rotating ball joint or if starting torque exceeds specification. See BALL JOINT STARTING TORQUE SPECIFICATIONS table.

### Lower Control Arm Ball Joint, Lateral Arm Ball Joint & Stabilizer Link Ball Joint

- 1) Raise and support vehicle. Remove wheel. Disconnect stabilizer bar from control arm (if needed). Loosen ball joint nut. Using Steering Linkage Puller (MB991113-01), separate ball joint from steering knuckle. Install nut on ball joint stud. Move stud from side-to-side. Replace ball joint if side play is present.
- 2) Using INCH-lb. torque wrench, rotate ball joint and note starting torque. Replace ball joint if roughness is felt when rotating ball joint or if starting torque exceeds specification. See BALL JOINT STARTING TORQUE SPECIFICATIONS table.

### BALL JOINT STARTING TORQUE SPECIFICATIONS

Application	INCH Lbs. (N.m)
Control Arm Ball Joint	
3000GT .....	86-191 (10-22)
Diamante .....	87-190 (10-22)
Eclipse & Galant	
Lower Control Arm Ball Joint .....	4-22 (.5-2.5)
Lateral Lower Arm Ball Joint .....	13 (1.5)
Upper Control Arm Ball Joint .....	3-13 (.3-1.5)
Mirage .....	9-56 (1.0-6.4)
Stabilizer Link Ball Joint	
Eclipse & Galant .....	4-13 (.5-1.5)
All Others .....	15-28 (1.7-3.2)

## REMOVAL & INSTALLATION

### LOWER CONTROL ARM & BALL JOINT

#### Removal (All Except Eclipse & Galant)

- 1) Raise and support vehicle. Remove wheel(s). Disconnect stabilizer bar from control arm (if necessary). Loosen ball joint nut.
- 2) Using Steering Linkage Puller (MB991113), separate ball joint from steering knuckle. Remove control arm bushing or clamp (if equipped). Loosen control arm mounting nuts. Remove control arm.

#### Removal (Eclipse & Galant)

- 1) Raise and support vehicle. Remove wheel(s). Loosen ball

joint nut. Using Steering Linkage Puller (MB991113), separate ball joint from steering knuckle.

2) Remove control arm mounting nuts. Remove lower control arm. Remove stay mounting bolts and remove stay. Unbolt damper fork from lower strut mount. Disconnect lateral lower arm ball joint connection. Remove lateral lower arm mounting bolt and lateral lower arm.

#### Inspection

1) Check ball joint dust cover for damage. Check control arm for bending and cracks. Check all bolts for damage and wear. Check clamp (if equipped) for damage or deterioration. Check ball joints. See BALL JOINT CHECKING under ADJUSTMENTS & INSPECTION. Replace ball joint if defective.

2) Inspect control arm bushings for cracks and deterioration. Replace bushings if damaged. See LOWER CONTROL ARM BUSHINGS under REMOVAL & INSTALLATION.

3) If ball joint dust cover replacement is necessary, remove dust cover from ball joint. Apply grease to lip and inside of dust cover. Install dust cover using dust cover installer. See DUST COVER INSTALLER APPLICATION table. Ensure dust cover is fully seated.

#### DUST COVER INSTALLER APPLICATION

Application	Dust Cover Installer
Diamante & 3000GT .....	MB990799
Eclipse, Galant & Mirage .....	MB990800

#### Installation

1) Install control arm to crossmember. Ensure control arm is not twisted. Install control arm mounting bolt, bushings and clamp (if equipped). Connect stabilizer bar to control arm (as necessary).

2) To complete installation, reverse removal procedure. Install new self-locking nuts (if used). Lower vehicle and tighten all bolts to specification. See TORQUE SPECIFICATIONS.

### LOWER CONTROL ARM BUSHINGS

#### Removal & Installation (Except Mirage)

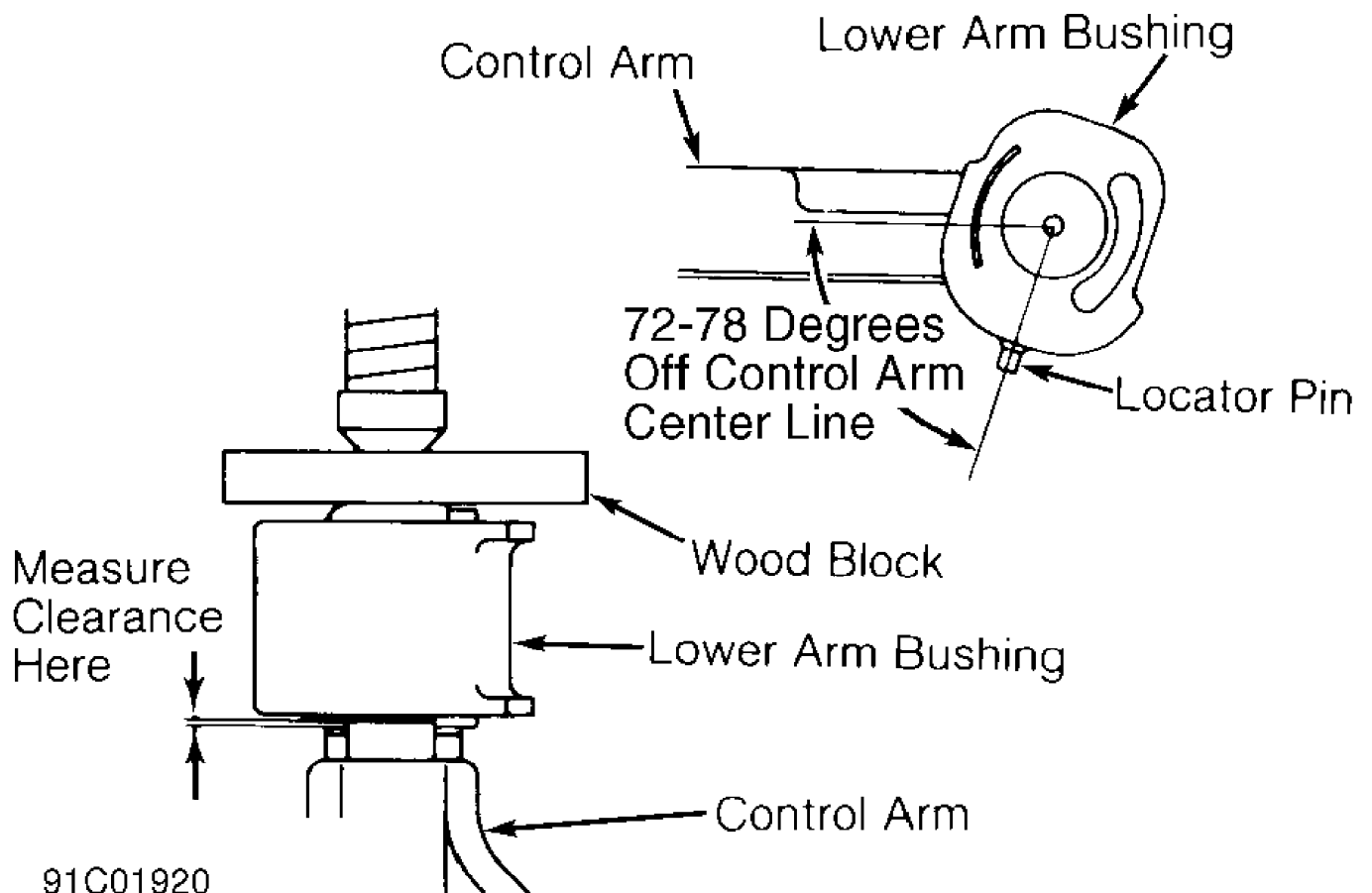
Information is not available from manufacturer.

#### Removal (Mirage)

Remove control arm. Apply soapy water solution between control arm bushing and shaft. Pry upward on bushing to remove.

#### Installation

Apply soapy water to control arm shaft and replacement bushing. Install bushing on control arm shaft, with locator pin located within 72-78 degrees of control arm center. See Fig. 3. Using press and wood block, press bushing on control arm until clearance between bushing and control arm is .04-.12" (1-3 mm).



91C01920

Fig. 3: Positioning Lower Control Arm Bushing For Installation (Mirage)  
 Courtesy of Mitsubishi Motor Sales of America.

## STABILIZER BAR

### Removal (Diamante)

1) Raise and support vehicle. Remove front exhaust pipe. Remove lower control arm. See LOWER CONTROL ARM & BALL JOINT under REMOVAL & INSTALLATION.

2) Remove stabilizer link mounting nuts. Remove stabilizer link. Remove stabilizer bar mounting brackets. Remove stabilizer bar and bushings. Remove bushings from stabilizer bar.

### Inspection

1) Check for bent stabilizer bar. Inspect all bushings for wear and deterioration. Check stabilizer link ball joint dust cover (if equipped) for cracks. Check bolts for damage and wear. Replace damaged parts as necessary.

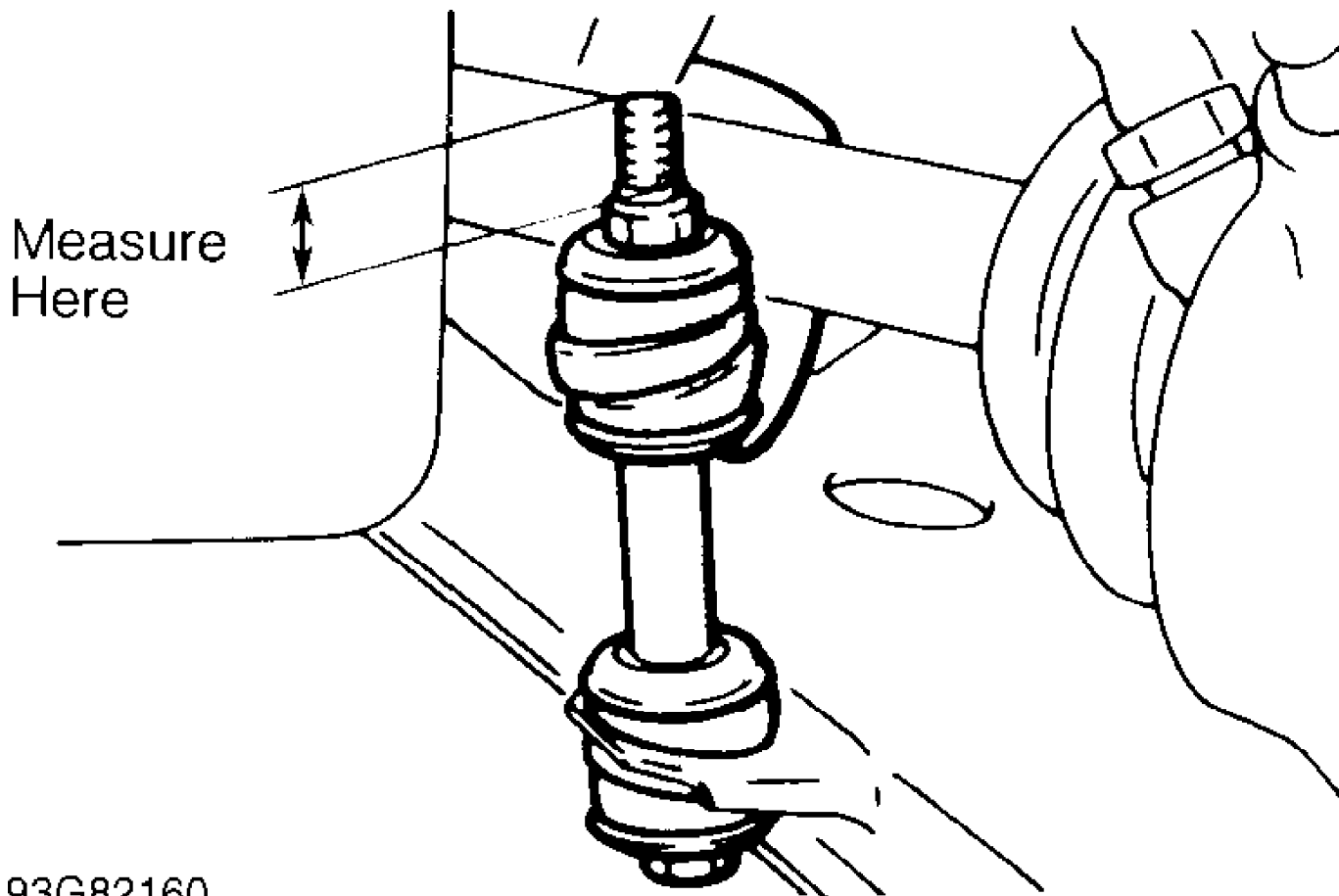
2) Check stabilizer link ball joint(s) starting torque. See BALL JOINT CHECKING under ADJUSTMENTS & INSPECTION. Replace the stabilizer bar link if ball joint starting torque exceeds specification.

### Installation

1) If stabilizer link ball joint dust cover needs replacing, remove clip ring and dust cover. Pack ball joint with grease. Apply grease to lip and inside of new dust cover. Tape threads of ball joint to protect them and install new dust cover. See DUST COVER INSTALLER APPLICATION table under LOWER CONTROL ARM & BALL

JOINT. Install clip ring. Ensure clip ring ends are perpendicular to link axis line.

2) To install stabilizer bar, reverse removal procedure. Install bushings securely in brackets. Position stabilizer brackets so that approximately .39" (10 mm) of the marking on the stabilizer bar is visible inside the brackets. Tighten all stabilizer bar fasteners with vehicle at normal riding height. See TORQUE SPECIFICATIONS.



### 93G82160

Fig. 4: Tightening Stabilizer Bar Link Nut (Typical)  
Courtesy of Mitsubishi Motor Sales of America.

#### Removal (Eclipse & Galant)

Raise and support vehicle. Remove front wheels. Disconnect stabilizer bar from link. Remove stabilizer bar bracket from chassis. Remove stabilizer bar and bushings.

#### Inspection

1) Check for bent or damaged stabilizer bar. Inspect all bushings for wear and deterioration. Check stabilizer link ball joint dust cover for cracks. Replace damaged parts as necessary.

2) Check stabilizer link ball joint(s) starting torque. See BALL JOINT CHECKING under ADJUSTMENTS & INSPECTION. Replace stabilizer link if ball joint starting torque exceeds specification.

#### Installation

To install stabilizer bar, reverse removal procedure. On all models, tighten all fasteners to specification. See TORQUE SPECIFICATIONS.

#### Removal (Mirage)

1) Raise and support vehicle. Remove front exhaust pipe. Disconnect rear crossmember bolts. Remove front and rear roll stopper brackets. Remove upper and lower centermember attaching bushings. Remove collar and centermember. Remove control arm attaching bolt locknut. Remove lateral arm lower mounting bolts.

2) Remove oil return pipe clamp. Remove steering gear and linkage clamp. Remove crossmember assembly. Note location of brackets and bushings. Remove stabilizer bar mounting bolts and brackets. Remove stabilizer bar and bushings. Remove bushings from stabilizer bar.

#### Inspection

1) Check for bent or damaged stabilizer bar. Inspect all bushings for wear and deterioration. Check stabilizer link ball joint dust cover for cracks. Replace damaged parts as necessary.

2) Check stabilizer link ball joint(s) starting torque. See BALL JOINT CHECKING under ADJUSTMENTS & INSPECTION. Replace stabilizer link if ball joint starting torque exceeds specification.

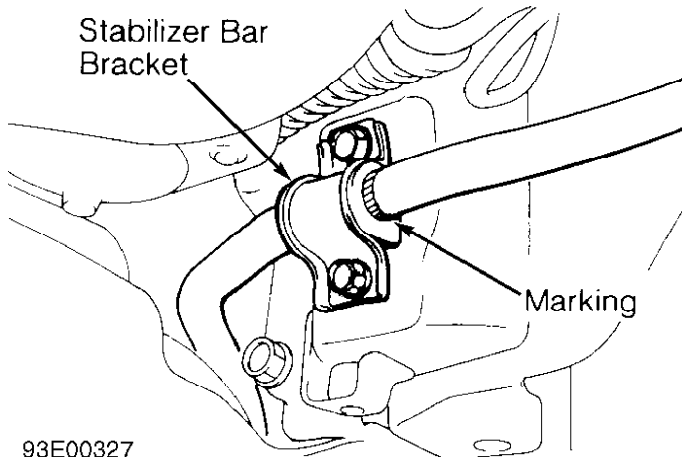
NOTE: Replace self-locking nuts (if used). Tighten stabilizer bar bolts to specification with vehicle at normal riding height. See TORQUE SPECIFICATIONS.

#### Installation

1) If stabilizer link ball joint dust cover needs replacing, remove clip ring and dust cover. Pack ball joint with grease. Apply grease to lip and inside of new dust cover. Install dust cover. See DUST COVER INSTALLER APPLICATION table under LOWER CONTROL ARM & BALL JOINT. Install clip ring. Ensure clip ring ends are perpendicular to link axis line.

2) To complete installation, reverse removal procedure. Stabilizer bar brackets are marked "R" for right and "L" for left. Position stabilizer bushing so marking on bushing is the left, and the marked area of stabilizer bar protrudes 0.4" (10 mm) from the edge of the inside of the bushing. See Fig. 5.

3) Tighten stabilizer link nuts until distance from end of bolt to nut is .87" (22 mm). See Fig. 4. Lower vehicle. To complete installation, reverse removal procedure. Tighten remaining stabilizer bar fasteners to specification. See TORQUE SPECIFICATIONS.



93E00327

Fig. 5: Adjusting Stabilizer Bar (Typical)  
Courtesy of Mitsubishi Motor Sales of America.

#### Removal (3000GT)

1) Raise and support vehicle. Remove front exhaust pipe.

Remove engine undercover. Remove right and left chassis members and crossmember (if necessary). On AWD vehicles with automatic transmission, remove transmission stay. On AWD models, remove transfer case and bracket.

2) On all models, remove stabilizer links. Note location of brackets and bushings. Remove stabilizer bar mounting brackets and hardware. Remove stabilizer bar and bushings.

#### Inspection

1) Check for bent or damaged stabilizer bar. Inspect all bushings for wear and deterioration. Check stabilizer link ball joint dust cover for cracks. Replace damaged parts as necessary.

2) Check stabilizer link ball joint(s) starting torque. See BALL JOINT CHECKING under ADJUSTMENTS & INSPECTION. Replace stabilizer link if ball joint starting torque exceeds specification.

#### Installation

1) If stabilizer link ball joint dust cover needs replacing, remove clip ring and dust cover. Pack ball joint with grease. Apply grease to lip and inside of new dust cover. Tape threads of ball joint to protect them and install new dust cover. See DUST COVER INSTALLER APPLICATION table under LOWER CONTROL ARM & BALL JOINT. Install clip ring. Ensure clip ring ends are perpendicular to link axis line.

2) To install stabilizer bar, reverse removal procedure. Position stabilizer brackets so they are inside marked area of stabilizer bar. See Fig. 5. Tighten all fasteners to specification. See TORQUE SPECIFICATIONS.

## STEERING KNUCKLE

#### Removal

1) Remove cotter pin, and loosen axle shaft nut. Raise and support vehicle. Remove wheel assembly. Remove axle shaft nut. Remove brake caliper, and wire aside. Do not allow caliper to hang from brake hose.

2) Remove brake disc from hub (if possible). Remove front speed sensor (if equipped). Disconnect stabilizer bar from control arm (as necessary). Support control arm. Disconnect damper fork (if equipped). Disconnect lateral lower arm ball joint connection. Remove lateral lower arm mounting bolt and lateral lower arm (if equipped). Disconnect lower ball joint and tie rod end from steering knuckle. Install puller on hub.

3) Tighten puller, and separate axle shaft from hub. On Eclipse and Galant, unbolt and separate upper ball joint from knuckle. On all other models, separate steering knuckle from strut. On all models, remove knuckle/hub assembly from vehicle. Separate hub from steering knuckle (if required). See WHEEL BEARINGS under REMOVAL & INSTALLATION.

#### Installation

To install, reverse removal procedure. Install washer on axle shaft, with raised area toward axle shaft nut. Tighten bolts to specification. See TORQUE SPECIFICATIONS. Tighten axle shaft nut to specification with vehicle on ground.

## STRUT ASSEMBLY

#### Removal (Eclipse & Galant)

1) Raise and support vehicle. Remove front wheels. Support lower control arms. Remove stabilizer link mounting nut. Remove strut assembly-to-damper fork pinch bolt.

2) Place punch mark on a upper strut mounting stud and on



inner fender adjacent to stud for reassembly reference. Remove upper strut mounting nuts and lower mounting bolt. Remove the damper fork. Remove strut assembly. Using Spring Compressor Body and Arm Set (MB991237 and MB991238) compress the coil spring. Remove self-locking nut, washer, bushings, bracket, spring pad, collar, cup assembly and dust cover noting the order of component removal.

NOTE: Air tools should NOT be used on tools (MB991237 and MB991238) or the self-locking nut.

#### Installation

To install, reverse removal procedure. Ensure strut assembly and damper fork mating surfaces are clean. Tighten fasteners to specification. See TORQUE SPECIFICATIONS.

#### Removal (Except Eclipse & Galant)

1) Raise and support vehicle. Remove front wheels. Separate brake hose bracket and speed sensor bracket (if equipped) from strut. Support lower control arms. Remove strut assembly-to-steering knuckle bolts.

2) Place punch mark on a upper strut mounting stud and on inner fender adjacent to stud for reassembly reference. Remove upper strut mounting nuts. Remove strut assembly carefully to avoid damaging actuator on struts (if equipped). Using Spring Compressor Body and Arm Set (MB991237 and MB991238) compress the coil spring. Remove the dust cover, self-locking nut, insulator, upper spring seat, bump rubber, coil spring and lower spring pad noting the order of component removal.

NOTE: Air tools should NOT be used on tools (MB991237 and MB991238) or the self-locking nut.

#### Installation

To install, reverse removal procedure. Ensure strut assembly and steering knuckle mating surfaces are clean. Tighten fasteners to specification. See TORQUE SPECIFICATIONS.

## WHEEL BEARINGS

NOTE: Eclipse & Galant use sealed bearings that are not serviceable. Hub and bearing unit must be replaced as a unit.

CAUTION: DO NOT use hammer to remove hub. Bearings may be damaged during removal.

#### Removal (3000GT)

1) Remove steering knuckle. See STEERING KNUCKLE under REMOVAL & INSTALLATION. Use an End Yoke Holder (MB990767) and Puller (MB991354) to pull the drive shaft from front hub. Unbolt and remove hub/bearing assembly.

2) Install Front Hub Remover/Installer (MB990998) and Knuckle Arm Bridge (MB991355) to hub/bearing assembly. Tighten nut and remove hub and rotor from knuckle. Crush the oil seal in 2 places so that the tabs of the Puller (MB990810) will catch on the wheel bearing inner race. Using the puller, remove wheel bearing inner race. Remove snap ring from knuckle. Use Knuckle Arm Bridge (MB991355) and Press Tools (MB99032 and MB990938) to remove wheel bearing.

#### Installation

1) Pack bearing with grease. Coat steering knuckle and bearing contact areas with grease. Using Press Tools (MB990883 and MB990890) and press, install bearing with inner race removed. Install the inner race into the bearing. Drive the hub side oil seal into the

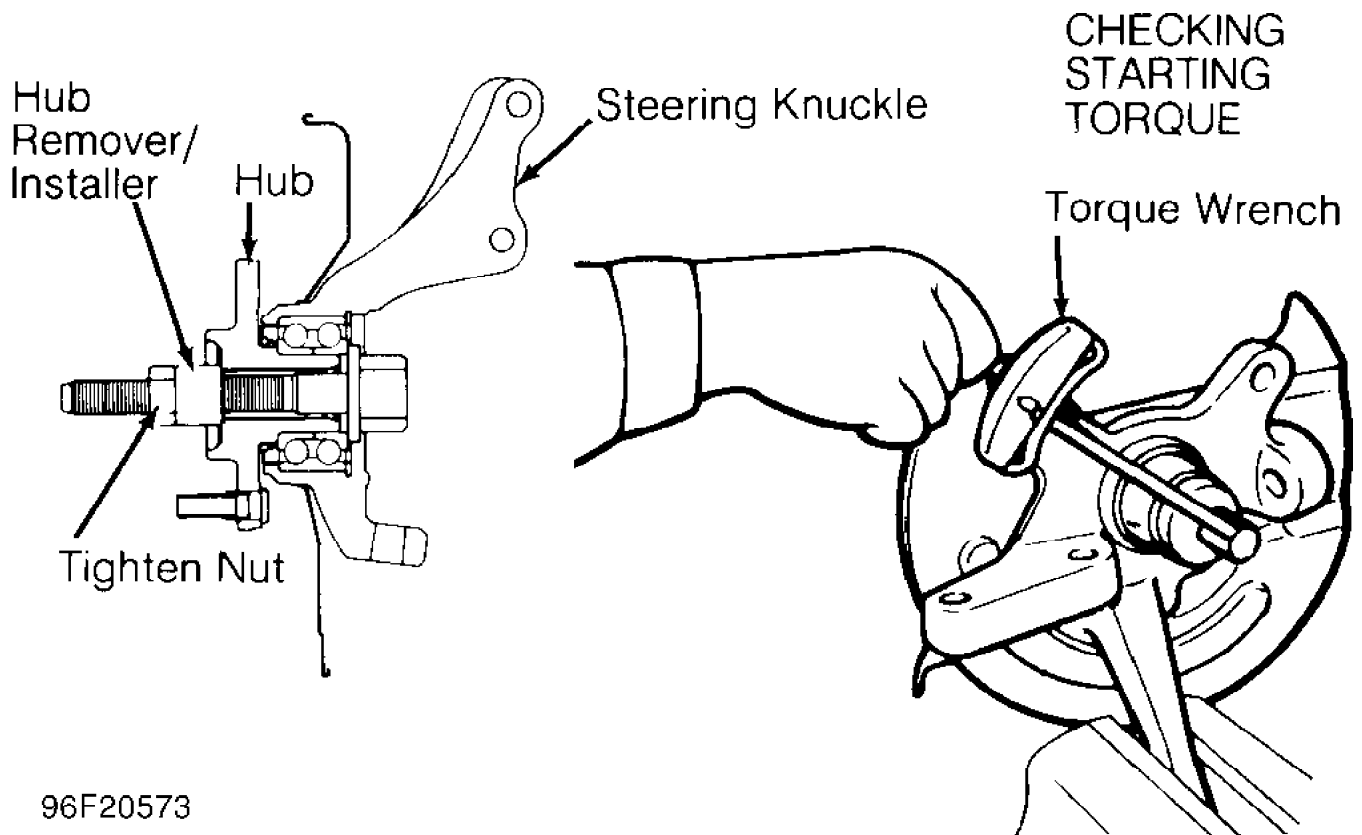
knuckle until it is flush with the knuckle end surface using Bearing and Oil Seal Installer (MB990947 and MB990955). Grease the oil seal lip and the surfaces which contact hub. Place hub on steering knuckle.

2) Using Hub Remover/Installer (MB990998), install hub on steering knuckle. Tighten nut to 145-188 ft. lbs. (1200-260 N.m.). Rotate hub to seat bearing. Using an INCH-lb. torque wrench, measure bearing starting torque. See Fig. 6.

3) Starting torque should be 16 INCH lbs. (1.8 N.m) or less. Rotation roughness must not be felt. Install steering knuckle in vise. Install dial indicator, with stem resting against hub surface. Check hub axial play.

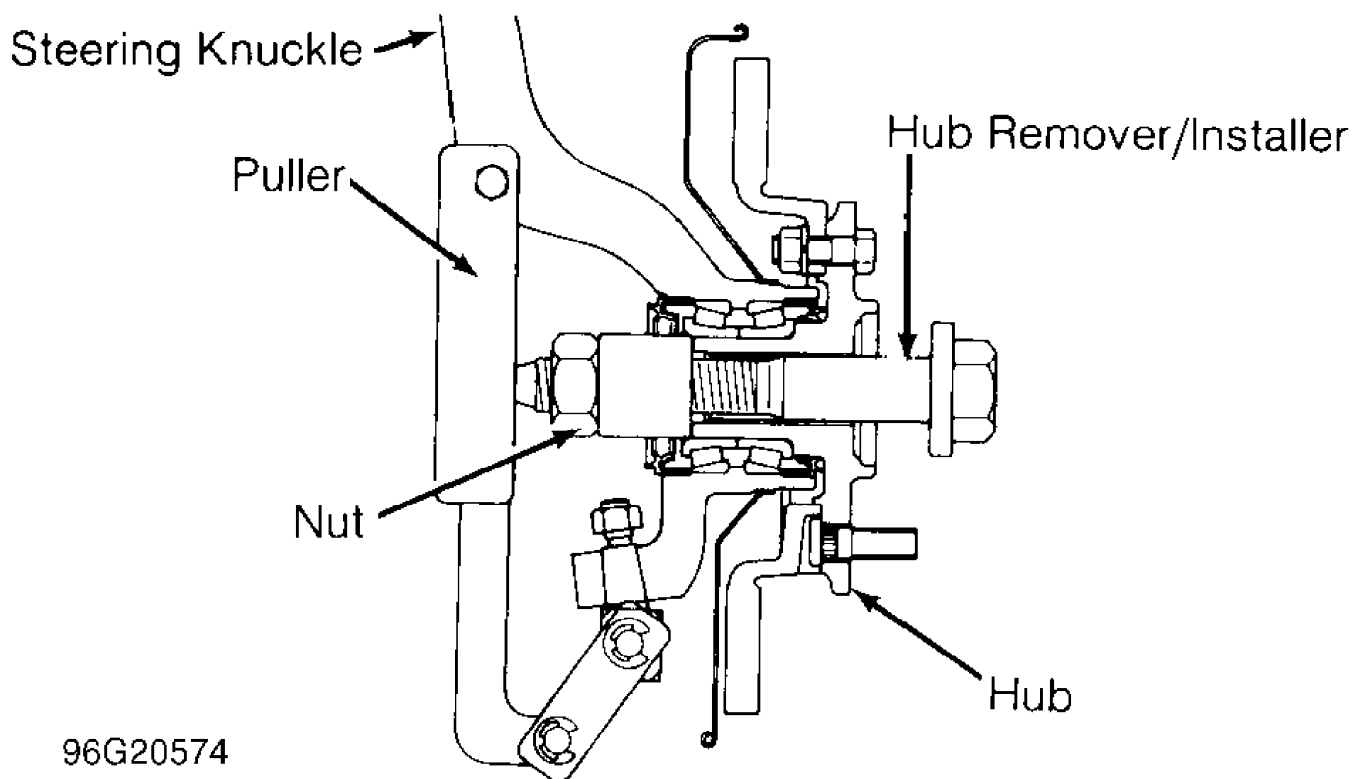
4) Hub axial play should not exceed specification. See WHEEL BEARING AXIAL PLAY SPECIFICATIONS table under ADJUSTMENTS & INSPECTION . If starting torque or hub axial play are not to specifications, check component installation. Remove hub remover/installer.

5) Apply grease to bearing and inside of steering knuckle. Using Seal Installer (MB990890) and Handle (MB990883), install inner oil seal until seal contacts snap ring. Apply grease to lip of oil seal. To complete installation, reverse removal procedure. Tighten axle shaft nut to 188 ft. lbs. (260 N.m) with brakes applied. Install new cotter pin.



96F20573

Fig. 6: Installing Hub & Checking Bearing Starting Torque (Typical)  
Courtesy of Mitsubishi Motor Sales of America.



96G20574

Fig. 7: Removing Hub From Steering Knuckle (Typical)  
 Courtesy of Mitsubishi Motor Sales of America.

#### Removal (Diamante & Mirage)

Remove steering knuckle. See STEERING KNUCKLE under REMOVAL & INSTALLATION. Use an Endyoke Holder (MB990767) and Puller (MB990241) to pull the driveshaft from the front hub. Unbolt and remove hub/bearing assembly. Install Front Hub Remover/Installer (MB990998) and Knuckle Arm Bridge (MB991055) to hub/bearing assembly. Tighten nut and remove hub from knuckle. Crush the oil seal in 2 places so that the tabs of the Puller (MB990810) will catch on the wheel bearing inner race. Using the Puller, remove wheel bearing inner race. Remove the wheel bearing inner race (outside) from the front hub using Puller (MB990810 on Mirage, MB990197 on Diamante). See Fig. 9. Install the removed race to the wheel bearing and use Knuckle Arm Bridge (MB991355) and Press Tools (MB99032 and MB990938) to remove the wheel bearing.

#### Installation

1) Pack bearing with grease. Coat steering knuckle and bearing contact areas with grease. Using Press Tools (MB990883 and MB990890 on Diamante, MB991050 on Mirage) and press, install bearing. Drive the hub side oil seal into the knuckle until it is flush with the knuckle end surface using Bearing and Oil Seal Installer (MB990947 and MB990955 on Diamante, MB991387 on Mirage). Grease the oil seal lip and the surfaces which contact hub. Place hub on steering knuckle.

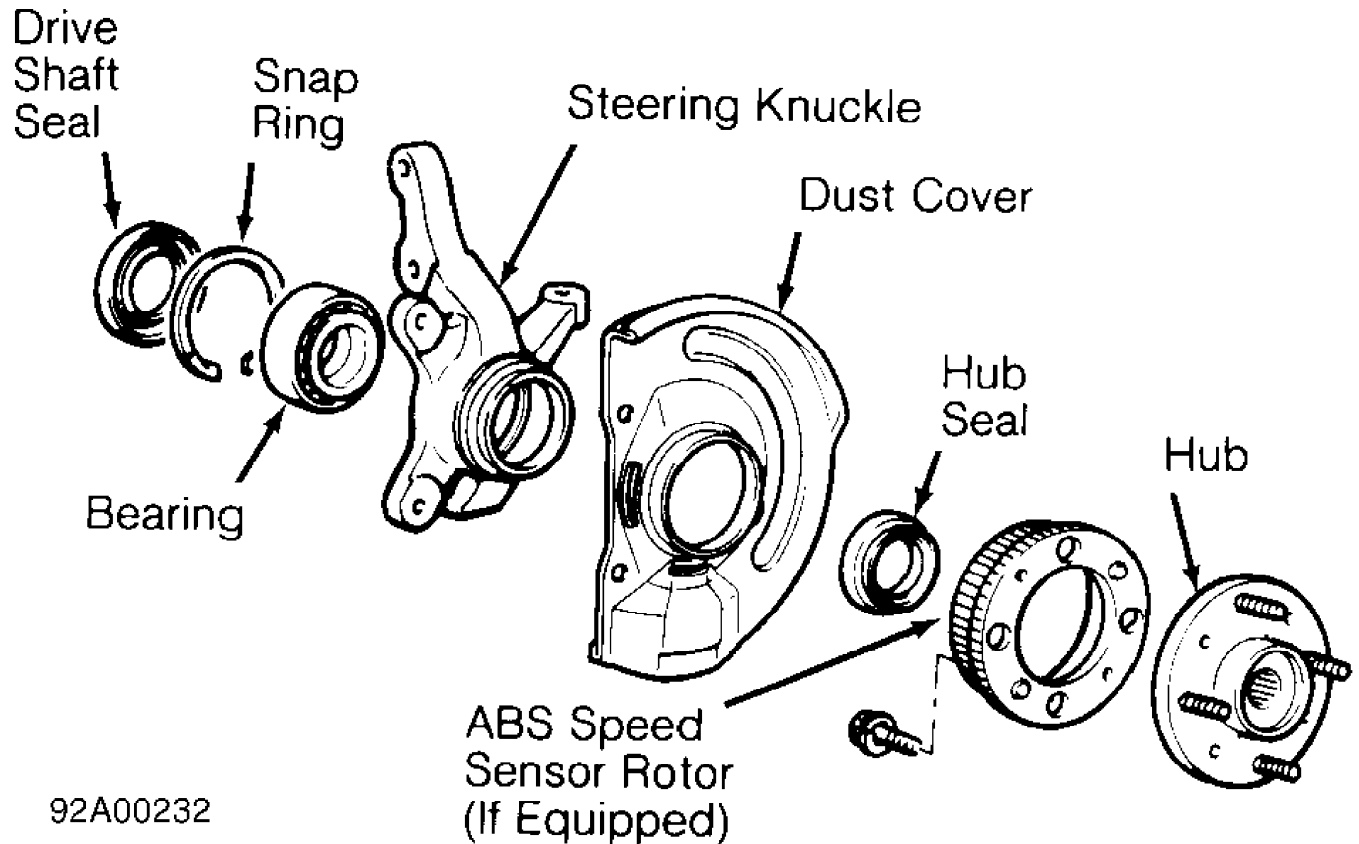
2) Using Hub Remover/Installer (MB990998), install hub on steering knuckle. On Diamante, tighten nut to 145-188 ft. lbs. (1196-255 N.m.). On Mirage, tighten 130-203 ft. lbs. (177-275 N.m). Rotate hub to seat bearing. Using an INCH-lb. torque wrench, measure bearing starting torque. See Fig. 6.

3) Starting torque should be 15.62 INCH lbs. (1.8 N.m) or less. Rotation roughness must not be felt. Install steering knuckle in vise. Install dial indicator, with stem resting against hub surface.

Check hub axial play.

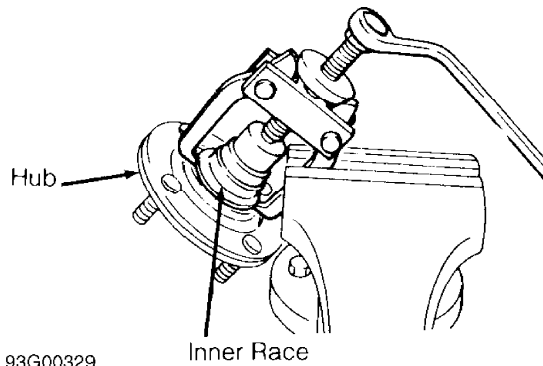
4) Hub axial play should not exceed specification. See WHEEL BEARING AXIAL PLAY SPECIFICATIONS table under ADJUSTMENTS & INSPECTION . If starting torque or hub axial play are not to specifications, check component installation. Remove hub remover/installer.

5) Apply grease to bearing and inside of steering knuckle. Using Seal Installer (MB991389), install inner oil seal until seal contacts snap ring. To complete installation, reverse removal procedure.



92A00232

Fig. 8: Exploded View Of Typical Steering Knuckle & Hub  
Courtesy of Mitsubishi Motor Sales of America.



93G00329

Fig. 9: Removing Inner Race From Hub  
Courtesy of Mitsubishi Motor Sales of America.

## TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Axle Shaft Nut	
3000GT	188 (260 N.m)
Mirage	130-203 (177-275 N.m)
All Others	145-188 (196-255)
Caliper Assembly-To-Knuckle Bolts	
3000GT	65 (90)
Mirage	67-81 (90-110)
All Others	65 (88)
Centermember Rear Mounting Bolt Or Nut	
Mirage	65 (88)
Damper Fork Pinch Bolt	
Eclipse & Galant	75 (103)
Damper Fork-To-Lower Control Arm Bolt	
Eclipse & Galant	64 (88)
Hub/Bearing-To-Knuckle	
Mirage	43-52 (59-71)
All Others	65 (88)
Lower Ball Joint-To-Knuckle Nut	43-52 (59-71)
Lower Lateral Arm-To-Crossmember Bolt (1)	
Eclipse & Galant	71-85 (98-118)
Lower Control Arm Bushing Bracket-To-Body Bolt	
Mirage	58-72 (78-98)
Lower Control Arm Bushing Bracket-To-Body Self-Locking Nut	
3000GT	29 (40)
Lower Control Arm-To-Crossmember Bolt (1)	
3000GT	72-87 (100-120)
Lower Control Arm Pivot Bolt	
3000GT & Mirage	78 (106-108)
Diamante	72-87 (100-120)
Lower Control Arm Rear Pivot Nut	
3000GT & Diamante	72 (100)
Lug Nut	
Eclipse & 3000GT	87-101 (120-140)
All Others	65-80 (88-108)
Roll Stopper (Mirage)	
Center Bolts	38 (52)
Mounting Bolts	25 (34)
Stabilizer Bar Bracket-To-Crossmember Bolt	
3000GT	29 (40)
Diamante	25-33 (34-44)
Eclipse & Galant	28 (39)
Mirage	16 (22)
Stabilizer Link Mounting Nuts	
3000GT	29 (40)
Diamante	26-33 (35-44)
Eclipse & Galant	28 (39)
Strut-To-Body Mounting Nut	
Diamante	29-36 (40-50)
Mirage	32 (44)
All Others	32-33 (44-45)
Strut-To-Insulator Lock Nut	
3000GT	56 (78)
Eclipse	14-18 (20-25)
Galant	18 (25)
Mirage	43 (59)
Strut-To-Steering Knuckle Bolt	
3000GT	65-76 (90-105)
Diamante	65-76 (90-105)

Mirage .....	80-94 (108-127)
Tie Rod-To-Knuckle Nut	
3000GT FWD .....	21 (29)
3000GT AWD .....	36 (50)
Diamante .....	20 (27)
Eclipse & Galant .....	18-24 (24-33)
Mirage .....	11-25 (15-33)
Upper Ball Joint Nut .....	20 (28)
Upper Control Arm Shaft-To-Body Mounting Nut .....	62 (86)
Upper Control Arm Pivot Bolt .....	41 (57)

(1) - Fastener should be temporarily tightened, and then fully tightened when installation is completed with vehicle at normal operating height.

---