

GROUP

SUSPENSION

04

(3000 & 5000)

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SECTION 04-00 Suspension—Service

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VEHICLE APPLICATION

Taurus / Sable.

DESCRIPTION

The section covers Adjustments and Cleaning and Inspection procedures for the front and rear suspensions. Refer to the appropriate section in this group for Diagnosis, Removal and Installation and Disassembly and Assembly procedures.

CLEANING AND INSPECTION

Suspension, Front

Inspection

Do not check alignment without first making the following inspection for front end damage or wear:

1. Check for specified air pressure in all four tires.

2. Raise front of vehicle off floor. Refer to Section 00-02. Grasping upper and lower surfaces of tire, move each front wheel in and out to check front suspension ball joints and mounts for looseness, wear and damage. Tighten all loose nuts and bolts to specification. Replace all worn parts. Refer to Section 04-01.

CLEANING AND INSPECTION (Continued)

3. Check steering gear mountings and tie rod connections for looseness. Tighten all mountings to specification. If tie rods are worn or bent, replace parts. Refer to Section 11-02.
4. Spin each front wheel with wheel spinner and check and balance each wheel as necessary. Refer to Section 04-01.
5. Check action of shock absorbers and suspension springs. If they are not in good condition, vehicle may not settle in normal / level position.

Ball Joint, Lower

Inspection

1. Raise vehicle until wheels fall to full down position. Refer to Section 00-02.
2. Have an assistant grasp lower edge of tire and move wheel and tire assembly in and out.
3. As wheel is being moved in and out, observe lower end of knuckle and lower control arm. Any movement indicates abnormal ball joint wear.
4. If any movement is observed, install new lower control arm assembly.

Suspension, Rear

At regular intervals, the following rear suspension checks should be made:

1. Check for evidence of fluid leaks on rear shock absorbers. (A light film of fluid is permissible. Make sure fluid is not from sources other than shock absorber.)
2. Check shock absorber operation.
3. Check condition of upper and lower suspension arms pivot bushings and tension strut bushings. Replace any damaged or worn components. Refer to procedures under Removal and Installation.

Shock Absorber Checks

All vehicles are equipped with low-pressure gas-filled hydraulic shock absorber struts of the direct acting type. They are non-adjustable and non-refillable. They cannot be serviced as a cartridge and must be serviced as an assembly.

1. **Oil Leak:** A light film of oil (weepage) on the upper portion of the shock absorber is permissible and is a result of proper shock lubrication. Weepage is a condition in which a thin film of oil may be deposited on the shock outer tube (body) and is normally noticed due to the collection of dust in this area. Shock absorbers which exhibit this weepage condition are functional units and should not be replaced. Leakage is a condition in which the entire shock body is covered with oil and the oil will drip from the shock onto the pavement. If this condition exists:
 - a. Ensure that fluid observed is not from sources other than the shock absorber.
 - b. Replace the worn or damaged shock absorber.
2. **Vehicle Sag:** Many times shock absorbers are replaced in an effort to solve a vehicle sag concern. Shock absorbers by design are hydraulic damping units only, and unlike suspension springs, do not support any suspension loads. Therefore, replacing a shock absorber will not correct a vehicle sag concern.
3. **Replacement in Pairs:** In the past it was recommended that shock absorbers be replaced in pairs if one unit became unserviceable. Improved sealing, due to new materials and design and improved rod machining and hardening techniques along with improved manufacturing quality checks have added to the functional reliability of shock absorbers. **Therefore, shocks no longer need to be replaced in pairs when only one unit is not serviceable.**

Vehicle Inspection

1. Check all tires for proper inflation pressure.
2. Check tire condition to confirm proper front end alignment, tire balance and overall tire condition such as separation or bulges.
3. Check the vehicle for optional suspension equipment such as heavy duty handling or trailer tow suspensions. These suspensions will have a firmer ride feeling than standard suspensions.
4. Check vehicle attitude for evidence of possible overload or sagging. Check luggage compartment area.
5. Road test vehicle to confirm customer concern after performing above Steps.

Hoist Check

1. **Noise:** Noise can be caused by loose suspension or shock attachments. Verify that all attachments or the suspension components and shock absorbers are tight. Replace any worn or damaged upper stud insulators. Replace any shock absorber that has a damaged integral lower mounting bushing. Check shock absorbers for external damage.

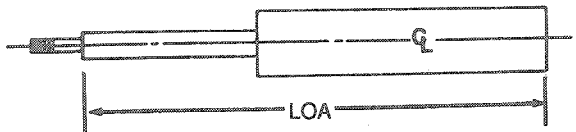
CLEANING AND INSPECTION (Continued)

2. **Bottom/Hopping:** Check condition of the rubber suspension travel stops (jounce/rebound bumpers). Replace if worn or missing. Examine for evidence of previous overload or damaged components.
3. **Force-Check:** Support lower arm or axle, and remove lower shock attachment. Stroke shock absorber body using as much travel as possible. The action should be smooth and uniform throughout each stroke. Damping forces should be equivalent on both sides of the vehicle.
4. Replace only the worn or damaged shock absorber. **Shock absorbers do not require replacement in pairs, unless both units are worn or damaged.**

Bench Test

The shock absorbers are gas-pressurized, which results in the shocks being fully extended when not restrained. If a shock does not fully extend, it is damaged and should be replaced. Check length overall (LOA). If the shock does not meet the length overall requirement, there is a good indication something internal is not to specification and the shock should be replaced.

With the shock in the normal upright position, compress it and allow it to extend three times to purge the pressure chamber of any gas that may have been introduced during handling.



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SHOCK LOA SPECIFICATION

Front	Rear
541-533mm (21.30-20.98 in.)	646-636mm (25.4-25 in.)

Place the shock absorber right side up in a vise. Hand stroke the shock absorber as fast as possible using as much travel as possible. Action should become smooth and uniform throughout each stroke. Higher resistance on extension than on compression is normal.

CAUTION: If the combination dust shield/jounce bumper has been removed from the shock absorber, care must be taken to avoid excessive bottoming of the rod during the compression stroke to avoid internal damage.

The following conditions are abnormal:

- A lag or skip at reversal of travel near mid-stroke when shock is properly primed and in the installed position
- Seizing
- Noise, other than a faint swish, such as a clicking upon fast stroke reversal
- Excessive fluid leakage
- With rod fully extended, any lateral motion of rod in relation to outer can

If shock absorber action remains erratic after purging air, install a new shock absorber, replacing only the damaged unit. Shock absorbers are not to be replaced as sets. Refer to Section 04-01 for Front Shocks or Section 04-02 for Rear Shocks.

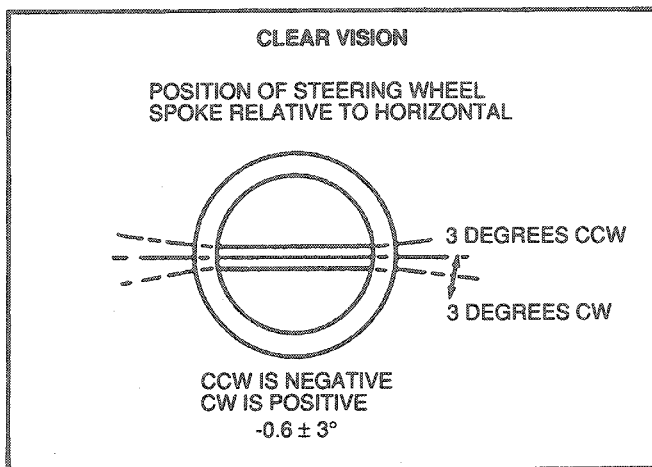
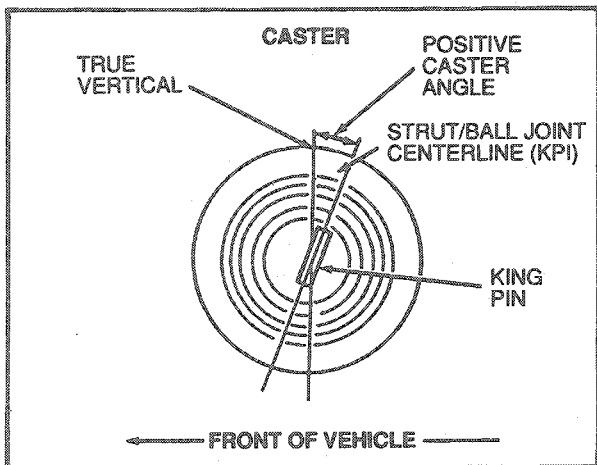
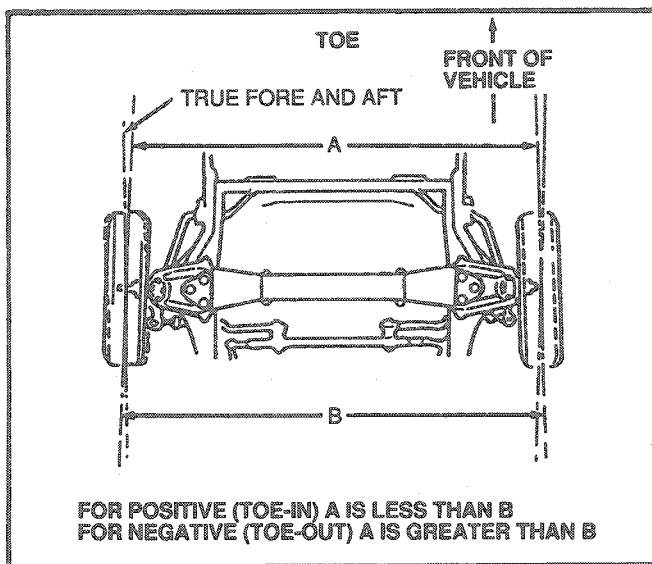
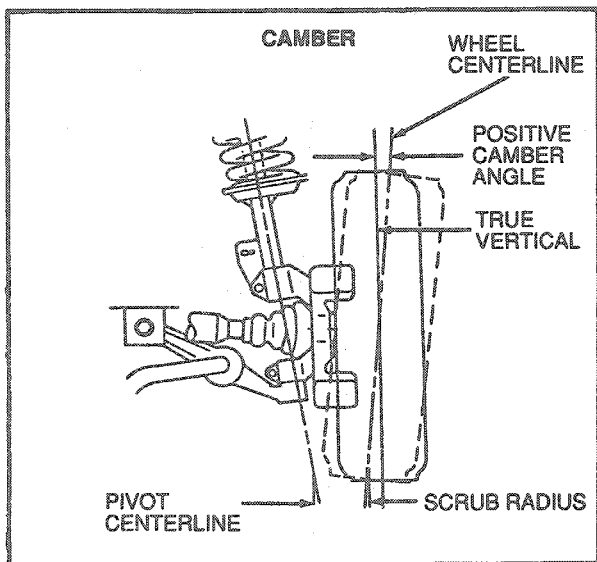
ADJUSTMENTS

Equipment Installation

Equipment used for alignment inspection must be accurate. All wheel alignment readings must be performed on an alignment rack leveled to within 1.59mm (1/16-inch) side-to-side and front-to-rear. The instrumentation used must have a means of compensating for wheel runout and must be capable of reading individual (LH and RH) toe measurements.

ADJUSTMENTS (Continued)

Reference Definitions, Front



SIDE-TO-SIDE

SIDE-TO-SIDE MEANS THE VALUE OF THE LEFT SIDE MINUS THE VALUE OF THE RIGHT SIDE

EXAMPLE:
 LEFT CAMBER = + 3/4 DEGREES
 RIGHT CAMBER = + 1/4 DEGREES
 SIDE-TO-SIDE = 3/4 DEGREES — 1/4 DEGREES = + 1/2 DEGREES

EXAMPLE:
 LEFT CAMBER = + 1/4 DEGREES
 RIGHT CAMBER = +3/4 DEGREES
 SIDE-TO-SIDE = 1/4 DEGREES - 3/4 DEGREES = -1/2 DEGREES

NOMINAL

THE NOMINAL VALUE IS THE PREFERRED VALUE

TOLERANCE

THE TOLERANCE IS THE RANGE OF ACCEPTABLE VALUES AROUND THE NOMINAL VALUE

EXAMPLE:
 S-S CAMBER = + 1/2 DEGREES (NOM.) ± 3/4 DEGREES (TOL.) MEANS THAT VALUES BETWEEN +1-1/4 DEGREES AND -1/4 DEGREES ARE ACCEPTABLE.

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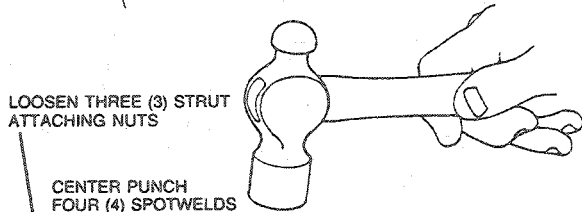
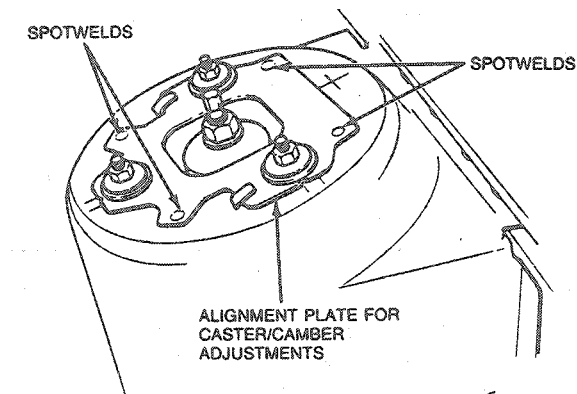
ADJUSTMENTS (Continued)

Caster and Camber, Front

NOTE: Refer to Section 02-01 to check subframe alignment before caster / camber adjustments are performed.

NOTE: Vehicles that require camber / caster adjustment can be corrected by loosening the subframe retaining bolts and shifting the subframe as required. If further adjustment is required, use the following procedure:

1. Center punch four spot welds on alignment plate(s).

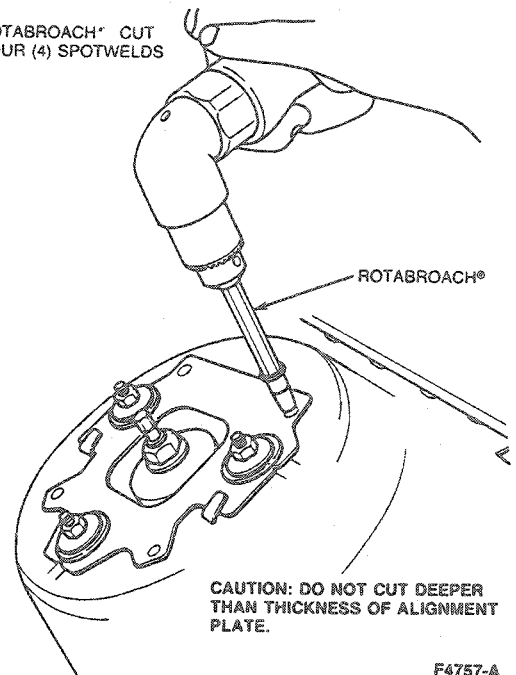


2. Loosen three nuts attaching strut to vehicle.
3. Use Rotabroach® or an equivalent to remove four welds.

CAUTION: Do not cut deeper than necessary to remove alignment plate.

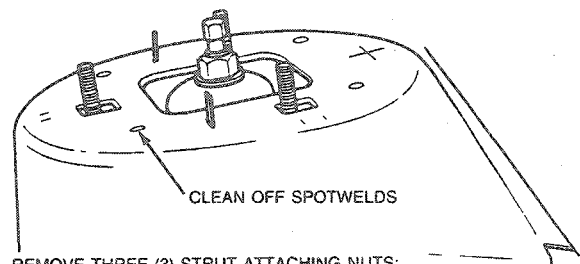
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USE ROTABROACH® CUT OUT FOUR (4) SPOTWELDS



F4757-A

4. Remove three nuts attaching strut mount to tower.
5. Remove alignment plate.
6. Clean burrs from tower and alignment plate and paint exposed metal on strut tower and plate.



REMOVE THREE (3) STRUT ATTACHING NUTS; REMOVE ALIGNMENT PLATE. CLEAN BURRS AND SPOTWELDS FROM STRUT TOWER. STRAIGHTEN ALIGNMENT PLATE. PAINT EXPOSED METAL TO PREVENT CORROSION.

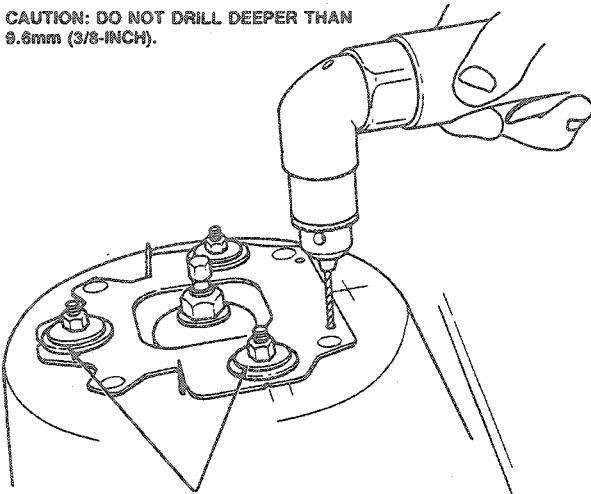
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7. Install alignment plate.
8. Install three strut mount nuts, loosely.
NOTE: Caster measurements must be made on the LH side by turning the LH wheel through the prescribed angle of sweep and on the RH side by turning the RH wheel through the prescribed angle of sweep.
NOTE: When using alignment equipment designed to measure caster on both the RH and LH side, turning only one wheel will result in a significant error in the caster angle for the opposite side.
9. Make alignment-camber / caster adjustments.
10. Tighten three strut mount nuts to 27-41 N·m (20-30 lb-ft).

ADJUSTMENTS (Continued)

11. Drill three 3.2mm (1/8 inch) holes through alignment plate and strut tower and paint exposed metal.

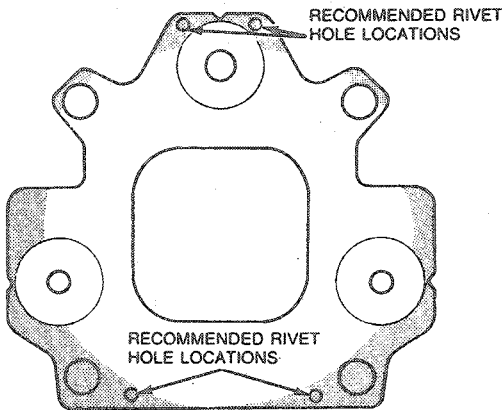
CAUTION: DO NOT DRILL DEEPER THAN 9.6mm (3/8-INCH).



INSTALL ALIGNMENT PLATE
INSTALL THREE STRUT ATTACHING NUTS
LOOSELY
MAKE ALIGNMENT ADJUSTMENTS
TIGHTEN STRUT ATTACHING NUTS
DRILL THREE HOLES FOR RIVETS

F4759-B

CAUTION: Do not drill deeper than 9.6mm (3/8 inch) into shock tower.

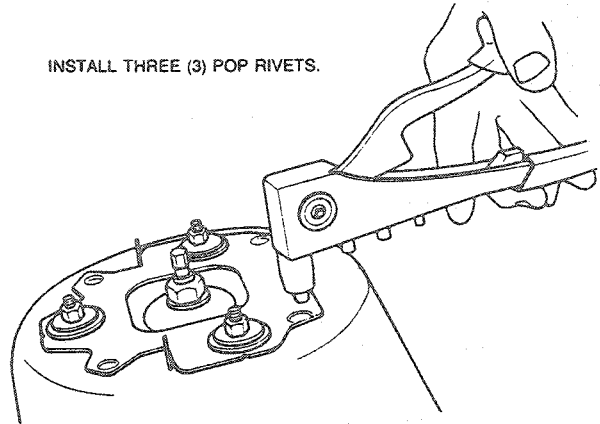


DRILL THREE (3) HOLES IN ALIGNMENT PLATE
FOR 3.2mm (1/8-INCH)
DRILL IN SHADED AREA ONLY

F4760-A

12. Install three pop-rivets 3.2mm (1/8 inch) diameter x 6.4mm (1/4 inch) grip range.

INSTALL THREE (3) POP RIVETS.



F4761-A

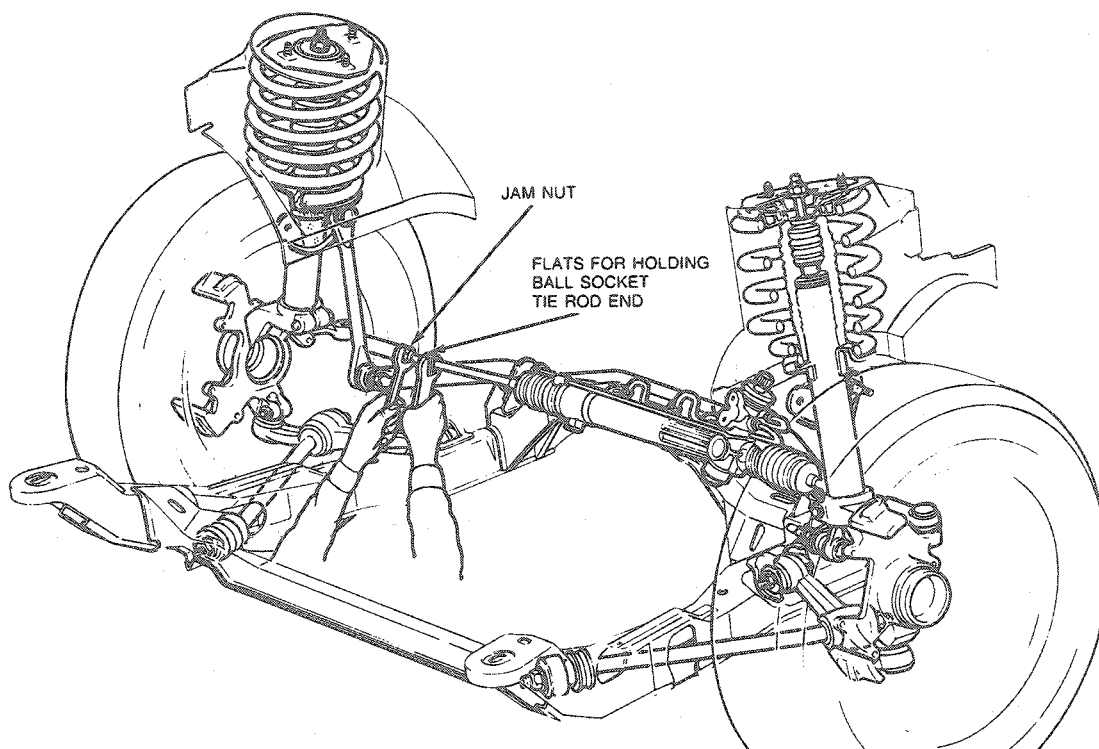
Toe, Front

1. Ensure alignment equipment is calibrated and in good working condition to obtain accurate results.
2. Start engine (power steering only) and move steering wheel back and forth several times until it is in straight-ahead or centered position.
3. Turn engine OFF (power steering only) and lock steering wheel in place using a steering wheel holder. Loosen and slide off small outer clamp from steering gear boot prior to starting toe adjustment to prevent boot from twisting.

NOTE: When jam nuts are loosened for toe adjustment, the nuts must be tightened to 48-68 N-m (35-50 lb-ft). Attach boot clamp after setting is completed and ensure boot is not twisted.

ADJUSTMENTS (Continued)

4. Adjust LH and RH tie rods until each wheel has one-half of desired total toe specification. Correct toe setting is given in Specifications.



F4229-A

Wheel Turning Angle, Front

The turning angle cannot be adjusted directly because it is a result of the combination of caster, camber and toe adjustments and should, therefore, be measured only after the toe adjustment has been made. When the inside wheel is turned 20 degrees, turning angle of outside wheel should be as specified in Specifications.

NOTE: If the turning angle does not measure to specification, check the steering knuckle or other suspension or steering parts for a bent or loose condition.

Steering Pull/Drift

NOTE: When trying to correct for pull/drift, refer to the following conditions:

Vehicle will pull/drift:

- Toward the side with the most positive camber.
- Toward the side with the least positive caster.

NOTE: Rear camber is preset at the factory for the sedan and wagon. However, if the rear camber for the station wagon is out of specification, refer to Camber, Rear.

Camber, Rear**Adjustment Kit Installation****Taurus/Sable Station Wagons Only**

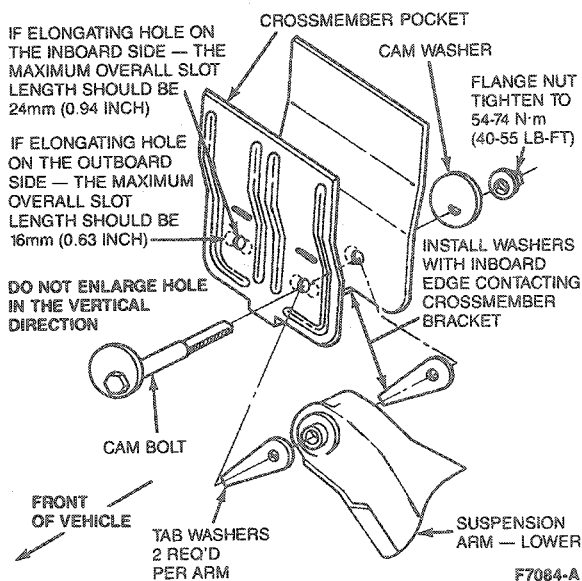
Excessive wear on the inboard edges of the rear tires may be caused by camber and rear toe settings that are not within specification. To correct this, reset rear camber and rear toe to specification. If camber cannot be set to specification, install an adjustable camber kit if not previously installed, using the following service procedure.

- Inspect rear suspension for damage. Replace any damaged components before continuing.
- Measure and record vehicle rear wheel alignment settings for LH camber, RH camber, LH toe and RH toe.
 - If vehicle is in specification for camber but out of specification for toe, reset toe to nominal specification of +0.06 degrees toe-in for each individual wheel.
 - If both camber and toe are within specification, reset toe to nominal specification of +0.06 degrees toe-in for each individual wheel.
 - If vehicle is out of specification for camber on either side, proceed with Step 3.

ADJUSTMENTS (Continued)

3. Obtain Rear Camber Adjustment Kit E7DZ-5K75 1-A or equivalent.
4. Raise vehicle using frame hoist. Refer to Section 00-02.
5. Remove stabilizer bar U-brackets from outboard ends of lower arms.
6. Remove parking brake cable retaining bracket from crossmember center bracket.
7. Place a floor jack with a wood block under lower arm stamping midway between lower arm inner pivot bushing and lower arm coil spring.
8. Remove and discard lower arm inner pivot retaining nut.
9. Using floor jack, pre-load underside of lower arm. Remove and discard lower arm inner pivot bolt.
10. Using floor jack, slowly lower the arm out of crossmember pocket until coil spring is completely relaxed. A pry bar will be required to guide lower arm toward outboard direction to clear crossmember stamping as arm is being lowered.
11. Using a 1/2-inch diameter tapered rotary file, elongate both forward and rearward lower arm crossmember holes to the following dimensions.
 - a. If camber measurement from Step 2 was out-of-specification in the negative direction, elongate hole horizontally on inboard side until overall slot length measures 24mm (0.94 inch).
 - b. If camber measurement from Step 2 was out-of-specification in the positive direction, elongate hole horizontally on outboard side until overall slot length measures 16mm (0.63 inch).
12. Using floor jack, raise lower arm back up into crossmember pocket.
13. Install kit inner pivot cam bolt from front side of crossmember. As cam bolt is being installed, the two kit tab washers are to be installed on bolts so that one washer is trapped between each end of inner pivot bushing inner sleeve and inside surface of crossmember pocket.

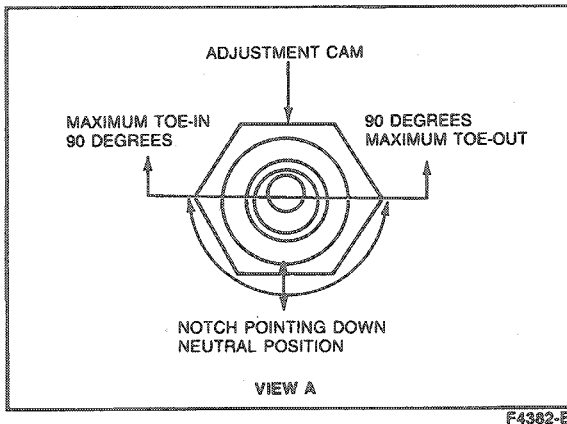
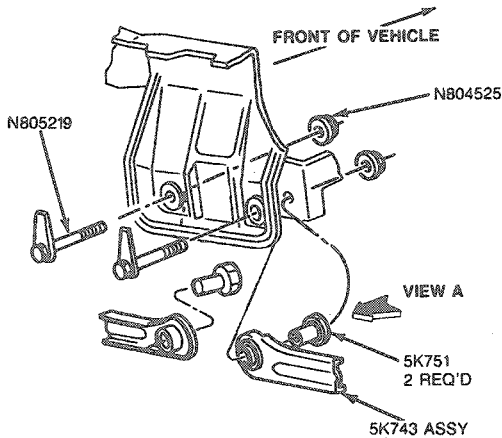
14. Place kit cam washer and nut on bolt, position tab washers to be in contact with crossmember bracket, and tighten nut to 54-74 N·m (40-55 lb-ft).
15. Repeat Steps 7 through 14 for opposite side of vehicle.
16. Reinstall stabilizer bar U-brackets and parking brake cable bracket. Tighten U-bracket retaining bolts to 27-40 N·m (20-30 lb-ft).
17. Align rear wheels as outlined.



ADJUSTMENTS (Continued)

Toe, Rear

Toe-in and Toe-out can be adjusted when it is determined that the vehicle is not within alignment specification. To adjust the toe of either wheel, loosen the bolt attaching rear control arm to body and rotate alignment cam until the required alignment setting is obtained. Tighten control arm retaining bolt to 54-74 N·m (40-55 lb-ft).



Place a ruler on the center of the front wheel and note where the vertical line of light crosses the scale. Do the same for the other side.

The difference between the two readings should not exceed 25.4mm (1 inch).

Wheel Alignment, Rear

1. Place vehicle on alignment rack.
2. Reset rear toe to nominal specification of +0.06 degrees (+0.031 inch) toe-in for each individual wheel.

- a. Loosen lower arm pivot nut approximately one turn.
- b. Adjust camber to -0.90 degrees by rotating cam bolt.

NOTE: Rim of cams will ride against ribs which are formed in crossmember bracket. The cam is not intended to be turned a full 360 degrees.

- c. Hold cam bolt head in position with a back-up wrench and tighten inner pivot nut to 54-74 N·m (40-55 lb-ft).

CAUTION: Use care when tightening so as not to disturb cam / alignment setting.

SPECIFICATIONS

FRONT WHEEL TURNING ANGLE

Vehicle	Turning Angle at Outside Wheel with Inside Wheel Turned 20 Degrees
Taurus / Sable	Left Wheel and Right Wheel 18.25°

Wheel Toe, Rear—Individual

NOTE: If the alignment equipment is Rotunda, computerized 4-wheel alignment system 006-01803 or equivalent, the following method for determining individual rear wheel toe can be used instead of sighting the rear wheels.

SPECIFICATIONS (Continued)

WHEELBASE AND TREAD WIDTH

Vehicle	Wheelbase		Tread Width			
	mm	Inches	Front		Rear	
			mm	Inches	mm	Inches
Taurus/Sable						
Sedan	2694	106.1	1565.6	61.6	1520.8	59.9
Wagon	2694	106.1	1565.6	61.6	1518	59.8

FRONT WHEEL ALIGNMENT (CURB HEIGHT WITH 1/2 TANK OF FUEL)

Item	Alignment Factors		
	Nominal	Minimum	Maximum
Taurus/Sable Sedan			
Caster ^a	+3.8°	+2.8°	+4.8°
Caster Difference Side-to-Side (left minus right)	0°	-0.85°	+0.85°
Camber	-0.5°	-1.1°	+0.1°
Camber Difference Side-to-Side (left minus right)	0°	-0.70°	+0.70°
Total Toe (left plus right)	-0.100 inch -0.200°	-0.225 inch -0.450°	+0.15 inch +0.30°
Clear Vision ^b	-0.6°	-3.6°	+2.4°
Taurus/Sable Station Wagon			
Caster ^a	+3.7°	+2.7°	+4.7°
Caster Difference Side-to-Side (left minus right)	0°	-0.85°	+0.85°
Camber	-0.40°	-1.00°	-0.20°
Camber Difference Side-to-Side (left minus right)	0°	-0.70°	+0.70°
Total Toe (left plus right)	-0.100 inch -0.200°	-0.225 inch -0.450°	+0.15 inch +0.30°
Clear Vision ^b	-0.6°	-3.6°	+2.4°

- a Caster measurements must be made on the LH side by turning left wheel through the prescribed angle of sweep and on the RH side by turning the right wheel through the prescribed angle of sweep for the equipment being used. When using alignment equipment designed to measure caster on both the RH and LH side, turning only one wheel will result in a significant error in caster angle for the other wheel.
- b Steering wheel angle—negative is ccw.

REAR WHEEL ALIGNMENT (CURB HEIGHT WITH 1/2 TANK OF FUEL)

Item	Alignment Factors		
	Nominal	Minimum	Maximum
Taurus/Sable Sedan			
Camber ^a	-0.90°	-1.60°	-0.20°
Camber Difference ^a Side-to-Side (left minus right)	0°	-1.20°	+1.20°
Toe (individual sides)	+0.030 inch +0.06°	-0.095 inch -0.19°	+0.155 inch +0.31°
Total Toe (left plus right)	+0.060 inch +0.12°	-0.060 inch -0.13°	+0.185 inch +0.37°
Taurus/Sable Station Wagon			
Camber ^b	-0.90°	-1.90°	+0.10°
Camber Difference ^b Side-to-Side (left minus right)	0°	-1.20°	+1.20°
Toe (individual sides)	+0.030 inch +0.06°	-0.095 inch -0.19°	+0.155 inch +0.31°
Total Toe (left plus right)	+0.060 inch +0.12°	-0.080 inch -0.13°	+0.185 inch +0.37°

- a Camber is factory set and cannot be adjusted.
- b Adjustable with kit, Part No. E70Z-5K751-A.

SPECIFICATIONS (Continued)

TORQUE SPECIFICATIONS

Description	N-m	Lb-Ft
Strut Top Mount Nuts	27-41	20-30
Tie Rod Jam Nuts	48-68	35-50
Rear Control Arm Bolt	61-88	45-65
Rear Alignment Kit Cam Nut	54-74	40-55
Rear Stabilizer U-Bracket Bolts	27-40	20-30

SPECIAL SERVICE TOOLS

ROTUNDA EQUIPMENT

Model	Description
006-01803	Computerized 4-Wheel Alignment System

SECTION 04-01 Suspension and Wheel Ends, Front

SUBJECT	PAGE	SUBJECT	PAGE
ADJUSTMENTS		REMOVAL AND INSTALLATION (Cont'd.)	
Wheel Bearings	04-01-17	Shock Absorber Strut, Spring, Bearing and Seat Assembly, and Upper Mount	04-01-12
DESCRIPTION		Stabilizer Bar/Link Assembly and/or Insulators	04-01-8
Component Replacement	04-01-2	Steering Knuckle	04-01-16
Components	04-01-2	Tension Strut-to-Subframe Insulators	04-01-8
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Wheel Assembly	04-01-5	SPECIFICATIONS	04-01-17
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Control Arm, Lower	04-01-6		
Hub and Wheel Bearings	04-01-9		

VEHICLE APPLICATION

Taurus/Sable.

DESCRIPTION

The front-wheel drive front suspension is a MacPherson gas-pressurized strut design. The shock absorber strut assembly includes a rubber isolated top mount, seat and bearing assembly and coil spring insulator, and is attached at the top by three bolts retaining the top mount of the strut to the body side apron. The lower end of the assembly is inserted into a pinch joint designed into the knuckle. A forged lower arm assembly is attached to the subframe and steering knuckle. A tension strut connects to the lower arm and to the subframe. A sealed cartridge bearing is pressed into the steering knuckle and retained with a snap ring. The front-wheel hub is pressed into the bearing. A halfshaft outboard CV joint spline is pressed through the hub and is retained by a prevailing torque nut.

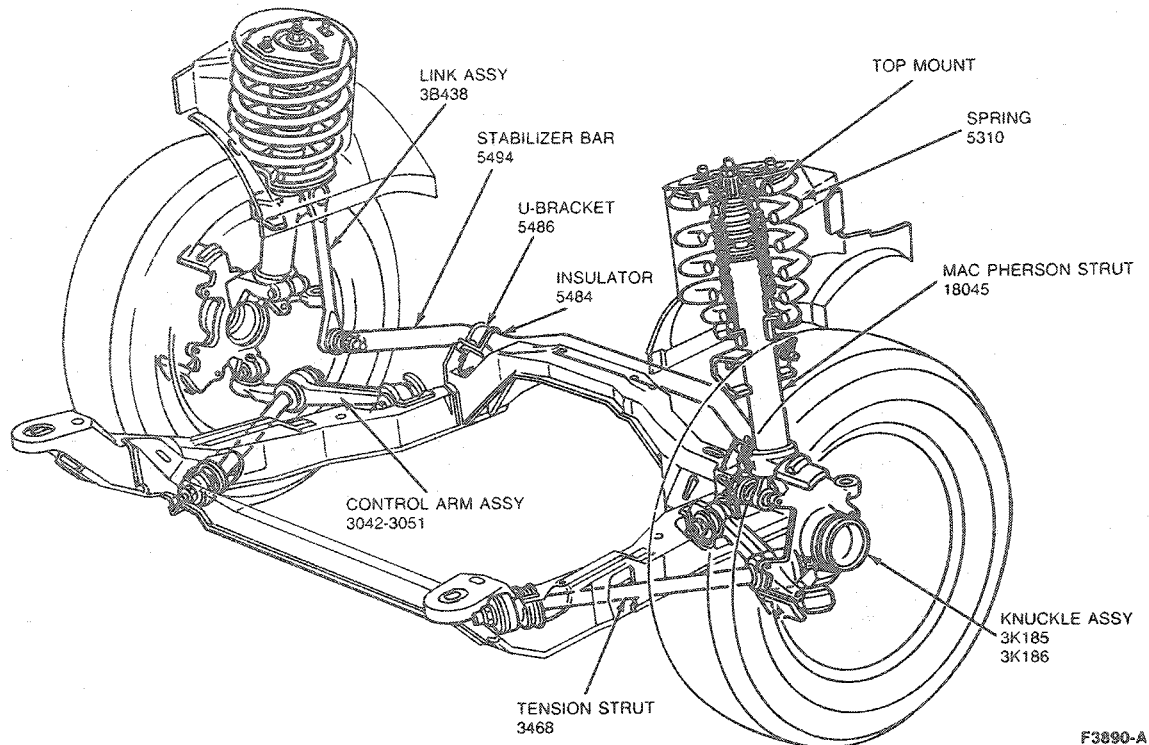
WARNING: ALL VEHICLES ARE EQUIPPED WITH GAS-PRESSURIZED SHOCK ABSORBERS WHICH WILL EXTEND UNASSISTED. DO NOT APPLY HEAT OR FLAME TO THE SHOCK STRUT DURING REMOVAL.

When a gas-pressurized shock strut is held in a vertical position, it is normal for it to be fully extended because the strut is charged with a gas pressure of up to 593 kPa (86 psi) above the oil level which results in an extending force on the piston rod that can produce a fully extended preload of up to 222 N (50 lb) on the piston rod.

Due to the preload, it will take up to 222 N (50 lb) to push the strut rod down into the cylinder tube (outer can). This is normal and does not indicate a binding condition.

DESCRIPTION (Continued)

When installed on the vehicle, the gas-pressurized shock strut will exhibit more oscillation (bounce) when the vehicle is bounced up/down at the front bumper than with a conventional strut. This is due to the gas pressure and valving and is a normal condition.



Components

- **Strut Upper Mounts:** Isolate strut and spring from body.
- **Seat and Bearing Assembly:** Provides a bearing pivot point and retains suspension spring.
- **Coil Springs:** Allow proper setting of suspension ride heights and control suspension travel during driving/handling maneuvers.
- **Steering Knuckles:** Transmit steering input pivoting about the lower control arm ball joints and upper mount bearing, house driveline components which propel vehicle, and support brake caliper through pins.
- **Forged Lower Control Arms:** Control lateral (side-to-side) movement of each front wheel. Inner pivot attachment is pivot point for suspension.
- **Ball Joints:** Connect steering knuckle to outer ends of forged lower control arms. They are pivot points for suspension travel and turning.
- **Tension Struts:** Control longitudinal (fore-and-aft) movement of wheels to reduce harshness when wheels hit sudden irregularities in road surface.
- **Stabilizer Bar:** Transmits forces to control vehicle roll during cornering.

- **Stabilizer Bar Link Assembly:** Provides increased roll control by attaching the stabilizer bar to the shock strut.
- **Shock Absorber Struts:** Provide dynamic damping of suspension, limit downward movement of wheels by an internal rebound stop and upward movement with an external jounce bumper. Provide lateral, longitudinal and vertical support for the front wheels.

All suspension mounting points are rubber insulated to minimize transfer of road noise and vibration to body and interior.

Component Replacement

The following components may be replaced either individually or as an assembly:

- Gas-pressurized shock absorber struts must be replaced as an assembly. The strut is not serviceable. Replace only the damaged shock absorber strut. Shock absorbers are not to be replaced as sets.
- Strut upper mounts may be replaced individually.

DESCRIPTION (Continued)

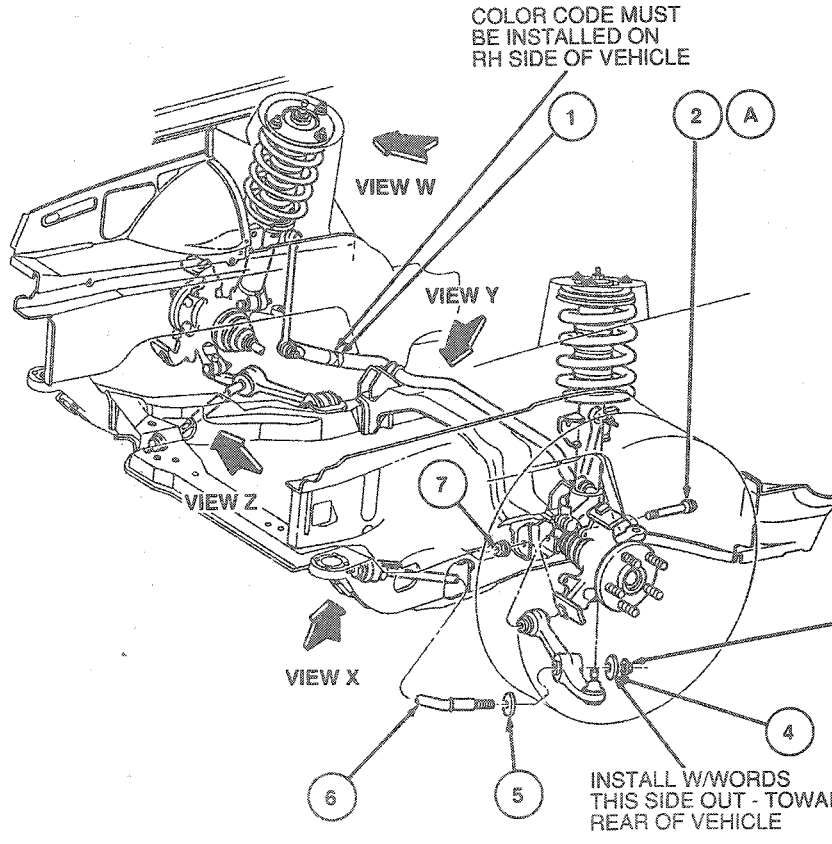
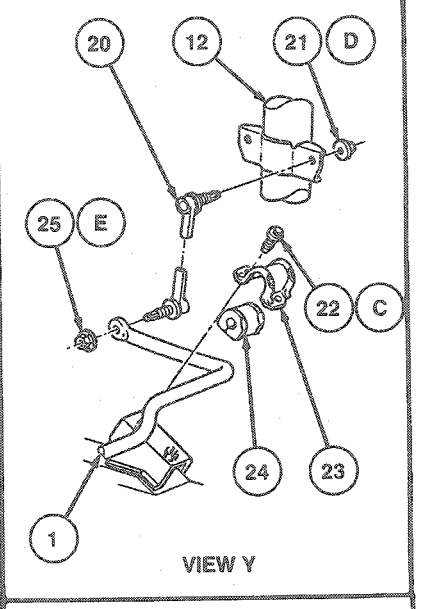
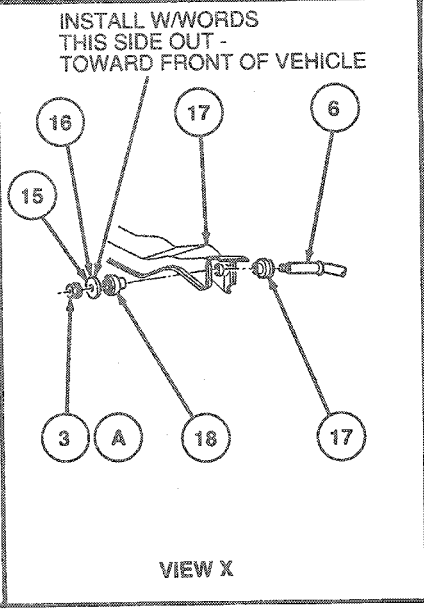
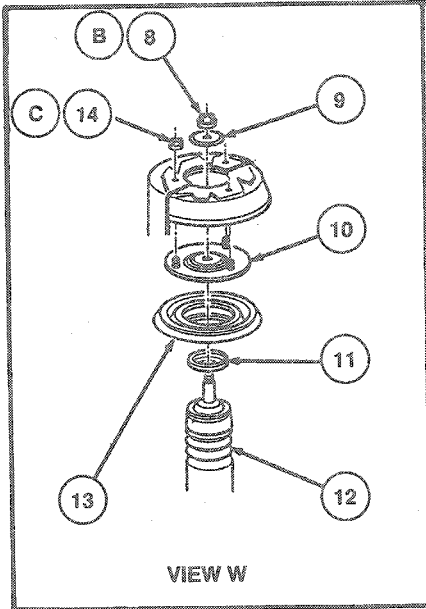
- Bearing and seat assemblies may be replaced individually.
- Coil springs may be replaced individually.
- Lower coil spring insulator may be replaced individually.
- Steering knuckles may be replaced individually.
- Wheel hubs may be replaced individually.
- Bearings and /or retaining rings may be replaced individually.
- Forged lower arm assemblies are replaceable with the ball joint, inner bushing and tension strut-to-arm insulator included in the assembly. The arm assemblies may be replaced individually.
- Ball joint seals are not replaceable.
- Ball joint is not replaceable.
- Tension strut insulators in the lower arm may be replaced individually.
- Lower arm inner pivot bushings may be replaced individually.
- Tension struts may be replaced individually.
- Tension strut-to-subframe insulators may be replaced individually.
- Tension strut washers at the subframe and lower control arm are replaceable with proper Ford approved hardened components.

- Stabilizer bar may be replaced.
- Stabilizer bar-to-subframe insulators may be replaced individually.
- Stabilizer bar brackets may be replaced individually.
- Stabilizer bar double ball joint links may be replaced individually.
- Stabilizer bar link ball joints are not replaceable.

Suspension Fasteners

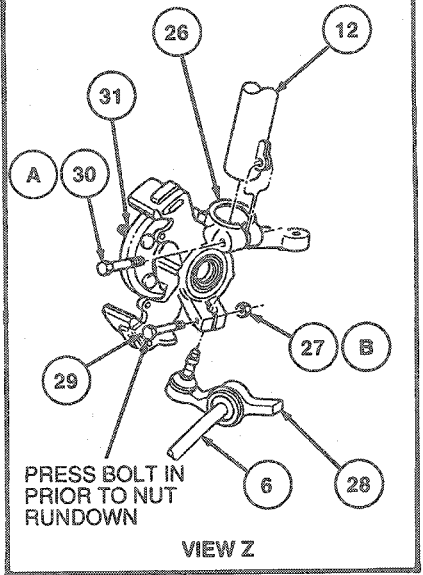
Suspension fasteners are important attaching parts in that they could affect performance of vital components and systems, and /or could result in major service expense. They must be replaced with ones of the same part number or with an equivalent part if replacement becomes necessary. **DO NOT** use a replacement part of lesser quality or substitute design. Torque values must be as specified during assembly to ensure proper retention of parts. New fasteners must be used whenever old fasteners are loosened or removed and when new components are installed.

DESCRIPTION (Continued)



COLOR CODE MUST BE INSTALLED ON RH SIDE OF VEHICLE

INSTALL W/WORDS THIS SIDE OUT - TOWARD REAR OF VEHICLE



PRESS BOLT IN PRIOR TO NUT RUNDOWN

F3891-H

DESCRIPTION (Continued)

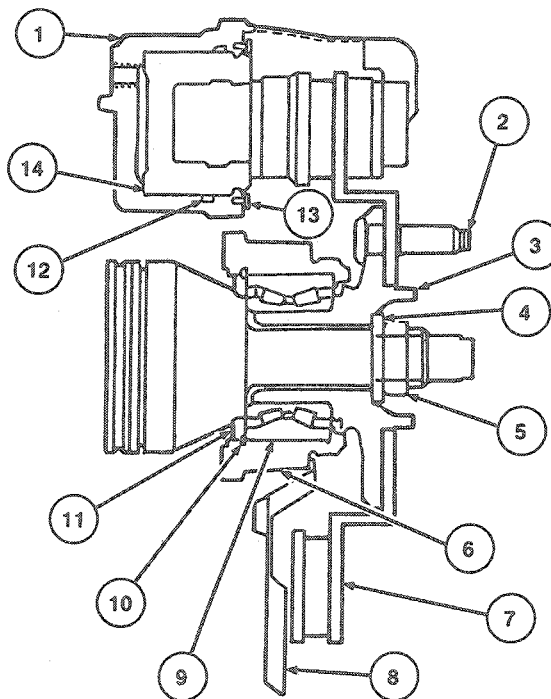
Item	Part Number	Description
1	5494	Stabilizer Bar
2A	N803990-S160	Bolt (2 Req'd)
3A	N800237-S101	Nut (4 Req'd)
4	N804350-S1036	Washer (2 Req'd)
5	N805708-S7	Washer (2 Req'd)
6	3468	Tension Strut (2 Req'd)
7	N805480-S160	Nut (2 Req'd)
8B	N804608-S150	Nut (2 Req'd)
9	N804002-S100	Washer (2 Req'd)
10	18183	Strut Mount Assy (2 Req'd)
11	N806779-S100	Washer (2 Req'd)
12	18045	Strut Assy
13	3K028	Bearing and Seat Assy (2 Req'd)
14C	N803826-S150	Nut (6 Req'd)
15	N804018-S36M	Flat Washer (Except SHO/MTX and Police) (2 Req'd)
16	N805627-S36M	Cupped Washer (SHO/MTX and Police) (2 Req'd)
17	—	Subframe
18	3C078	Bushing Insulator (Red—SHO/MTX and Police) (2 Req'd)

(Continued)

Item	Part Number	Description
19	3C067	Bushing Assy (2 Req'd)
20	3B438	Link Assy (2 Req'd)
21D	N804911-S160	Nut (2 Req'd)
22C	N806899-S7	Bolt (4 Req'd)
23	5486	U-Bracket (2 Req'd)
24	5484	Insulator (2 Req'd)
25E	N804446-S160	Nut (2 Req'd)
26	3K185 RH 3K186 LH	Knuckle Assy
27B	N803985-S160	Nut (2 Req'd)
28	3051 LH 3042 RH	Control Arm Assy
29	N804021-S160	Bolt (2 Req'd)
30A	N803989-S160	Bolt (2 Req'd)
31	1104	Hub Assy
A		Tighten to 98-132 N·m (73-97 Lb·Ft)
B		Tighten to 53-72 N·m (40-53 Lb·Ft)
C		Tighten to 30-40 N·m (23-29 Lb·Ft)
D		Tighten to 77-103 N·m (57-75 Lb·Ft)
E		Tighten to 47-63 N·m (35-46 Lb·Ft)

Wheel Assembly

Each front wheel is bolted to a hub assembly. There are two opposed tapered roller bearings (inner and outer) with grease retainer seals (inner and outer), encased in one single cup or cartridge. This bearing assembly is pressed into the steering knuckle bore from the inboard side until it rests against the shoulder on the outboard side. A snap ring is installed in a groove on the inboard side of the knuckle bore for added bearing retention. A bearing dust seal is installed on the constant velocity (CV) joint, inboard of the knuckle/bearing/hub assembly. The hub assembly is pressed into the bearing/knuckle assembly. The CV joint splined shaft is pressed through the hub. A prevailing torque hub nut and washer retain the hub assembly to the CV joint.



F7655-A

DESCRIPTION (Continued)

Item	Part Number	Description
1	2B118 RH 2B119 LH	Caliper Assy
2	1107	Wheel Bolt Assy
3	1104	Hub Assy
4	N801336-S101	Washer
5	N804199-S191	Hub Nut
6	3K185 RH 3K186 LH	Knuckle Assy
7	1125	Rotor
8	2K004 RH 2K005 LH	Dust Shield
9	1215	Cartridge Bearing Assy
10	N803955-S	Snap Ring
11	1N013	Dust Seal Assy
12	—	Seal
13	—	Boot
14	—	Piston

REMOVAL AND INSTALLATION

Control Arm, Lower

Removal

1. Raise vehicle on a hoist. Refer to Section 00-02.
2. Remove wheel and tire assembly.
3. Remove and discard nut from tension strut. Pull off dished washer.

NOTE: Ensure steering column is in unlocked position. **DO NOT** use a hammer to separate ball joint from knuckle.

4. Remove and discard lower control arm ball joint nut and pinch bolt. Using a screwdriver, slightly spread the knuckle pinch joint and separate control arm from steering knuckle. A drift punch may be used to remove bolt. **Use extreme care to not damage ball joint boot seal.**

CAUTION: Do not allow steering knuckle/halfshaft to move outward. Over-extension of the tripod CV joint could result in separation of internal parts, causing failure of the joint.

5. Remove and discard lower control arm inner pivot bolt and nut.
6. Remove lower control arm assembly from tension strut.

Installation

NOTE: Ensure the front washer is present at tension strut-to-arm attachment.

1. Insert tension strut into lower control arm bushing.
2. Position lower control arm into subframe bracket. Install a new nut and bolt. Tighten to 98-132 N·m (73-97 lb-ft).

3. Assemble lower control arm ball joint stud to steering knuckle, making sure that ball stud groove is properly positioned. **Use extreme care to not damage ball joint seal.**
4. Insert a new pinch bolt and nut. Tighten to 53-72 N·m (40-53 lb-ft).
5. Clean tension strut threads to remove dirt and contamination.
6. Install dished washer, dished side away from lower arm bushing and new nut on tension strut. Tighten to 98-132 N·m (73-97 lb-ft).
7. Install wheel and tire assembly. Refer to Section 04-04. Tighten nuts to 109-142 N·m (81-105 lb-ft).
8. Lower vehicle.

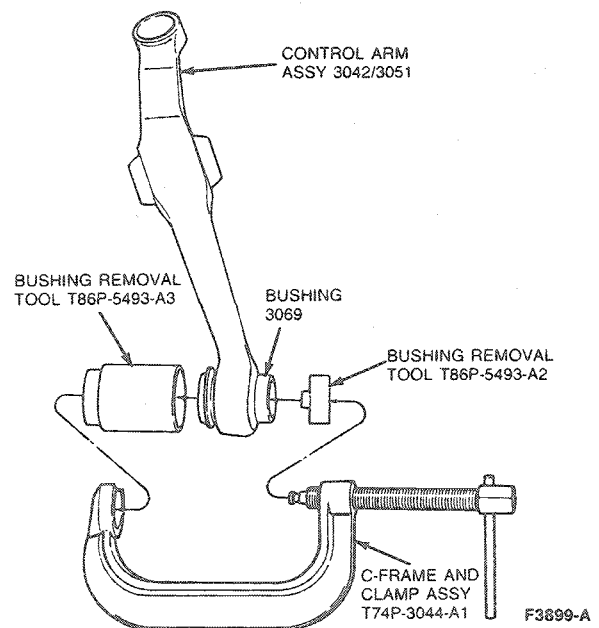
Inner Pivot Bushing

Tools Required:

- C-Frame and Clamp Assembly T74P-3044-A1
- Lower Control Arm Bushing Service Set T86P-5493-A
- Bushing Removal Tool T86P-5493-A2
- Bushing Removal Tool T86P-5493-A3
- Bushing Installation Tool T86P-5493-A4

Removal

1. Remove lower control arm as outlined.
2. Using Bushing Removal Tools T86P-5493-A3, T86P-5493-A2 from Lower Control Arm Bushing Service Set T86P-5493-A, and C-Frame and Clamp Assembly T74P-3044-A1, remove old bushing from control arm.



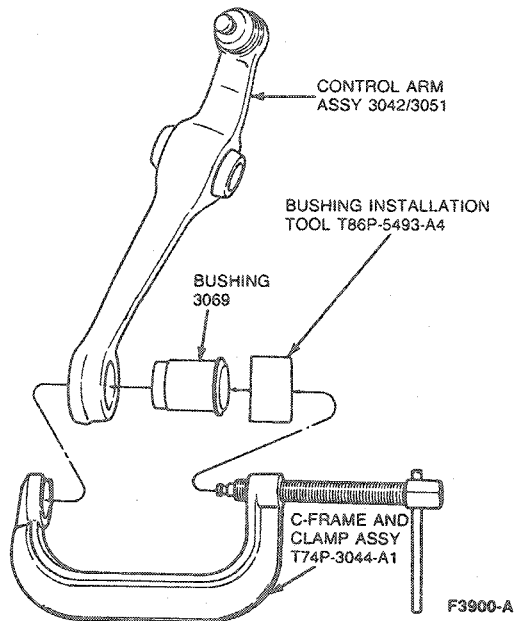
NOTE: C-clamp must be held tight in a bench vise.

REMOVAL AND INSTALLATION (Continued)

Installation

NOTE: Ensure that the bushing flange is at front of the arm.

- Using Bushing Installation Tool T86P-5493-A4 from Lower Control Arm Bushing Service Set T86P-5493-A, and C-Frame and Clamp Assembly T74P-3044-A 1, install new bushing in lower control arm by tightening C-clamp slowly until the tool bottoms on arm. Tool sets the bushing to correct installation depth.



- Install lower control arm as outlined.

Control Arm-to-Tension Strut Insulator, Lower
Tools Required:

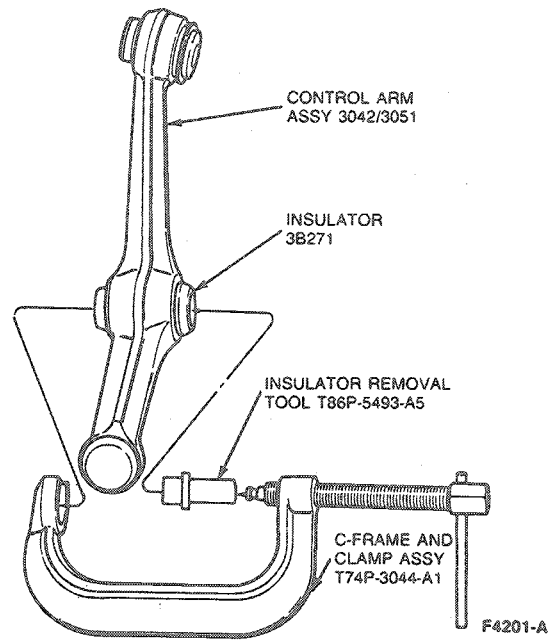
- C-Frame and Clamp Assembly T74P-3044-A 1
- Lower Control Arm Bushing Service Set T86P-5493-A
- Insulator Installation Tool T86P-5493-A 1
- Insulator Installation Tool T86P-5493-A 2

Removal

- Remove lower control arm as outlined.

NOTE: C-clamp must be held tight in a bench vise.

- Using Insulator Removal Tool T86P-5493-A5 from Lower Control Arm Bushing Service Set T86P-5493-A, and C-Frame and Clamp Assembly T74P-3044-A 1, remove old bushing from control arm.

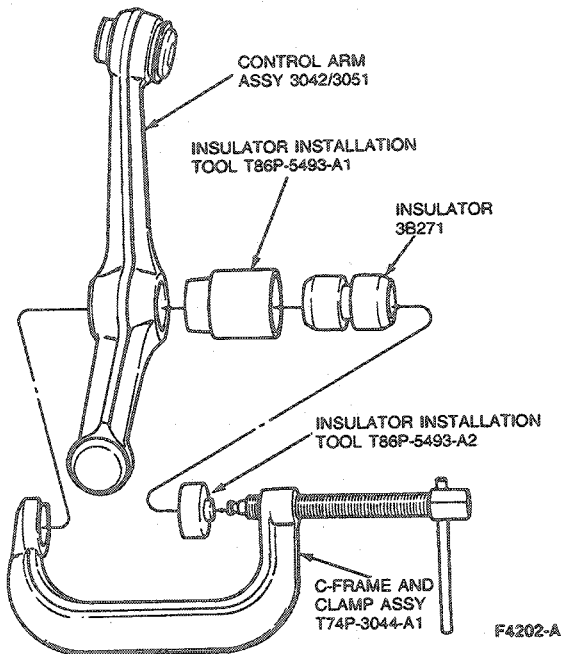
**Installation**

NOTE: Saturate new bushing and lower arm with vegetable oil such as Mazola® or an equivalent oil. Use only vegetable oil. Any mineral or petroleum based oil or brake fluid will deteriorate the rubber bushing.

- Using Insulator Installation Tools T86P-5493-A 1, T86P-5493-A 2 from Lower Control Arm Bushing Service Set T86P-5493-A, and C-Frame and Clamp Assembly T74P-3044-A 1, install new insulator bushing in lower control arm by tightening the C-clamp very slowly until bushing pops into place.

REMOVAL AND INSTALLATION (Continued)

2. Install lower control arm as outlined.



Tension Strut-to-Subframe Insulators

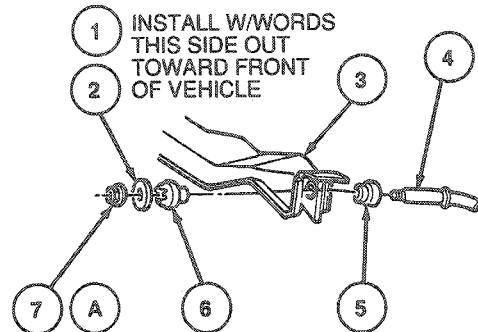
Removal

1. Remove lower control arm as outlined.
2. Remove and discard nut, washer and insulator from front of tension strut and pull strut rearward to remove from subframe.
3. Remove and discard insulator from tension strut.

Installation

1. Install new insulator on tension strut end and insert into subframe.
2. Install new front insulator.
3. Clean tension strut threads to remove dirt and contamination.

4. Install new washer and new nut. Tighten to 98-132 N-m (73-97 lb-ft).
5. Install lower control arm as outlined.



F5126-D

Item	Part Number	Description
1	N8040 18-S36M	Flatwasher (Except SHO/MTX and Police) (2 Req'd)
2	N805627-S36M	Cupped Washer (SHO and Police) (2 Req'd)
3	—	Subframe
4	3468	Tension Strut (2 Req'd)
5	3C078	Insulator (2 Req'd)
6	3C067	Bushing Assy (2 Req'd)
7A	N800237-S101	Nut (2 Req'd)
A		Tighten to 98-132 N-m (73-97 Lb-Ft)

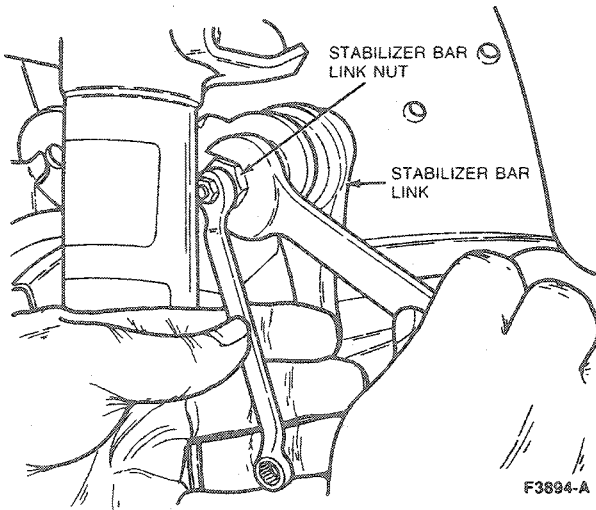
Stabilizer Bar/Link Assembly and/or Insulators

Removal

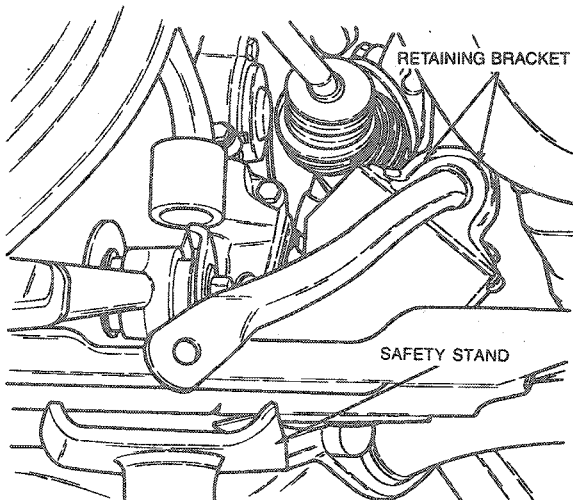
1. Raise vehicle on a hoist. Refer to Section 00-02.
2. Support vehicle with hoist or safety stands behind subframe.

REMOVAL AND INSTALLATION (Continued)

3. Remove and discard nuts retaining link assembly to stabilizer bar and shock strut with a 8mm closed-end wrench and 18mm open-end wrench.



4. Remove nuts retaining steering gear to subframe, and move gear off the subframe.
5. With another set of support safety stands under subframe, remove two rear subframe retaining bolts. Lower rear of the subframe to obtain access to stabilizer bar mounting brackets.



6. Remove stabilizer bar U-bracket bolts and replace insulators, U-brackets and / or stabilizer bar as required. Discard insulators and bolts.

Installation

1. Clean stabilizer bar to remove dirt and contamination in area of stabilizer bar insulator installation position.

2. Lubricate inside diameter of new insulators with Rubber Suspension Insulator Lube E25Y-19553-A (ESF-M99B112-A) or equivalent. Do not use any mineral or petroleum based lubricants as they will deteriorate the rubber insulators.
3. Install new insulators onto stabilizer bar and position them in approximate location.
4. Install U-brackets on insulators and install new bolts. Tighten to 30-40 N-m (23-29 lb-ft).
5. Raise subframe and install new subframe-to-body retaining bolts. Position steering gear onto subframe and install retaining nuts. Tighten to 115-135 N-m (85-99 lb-ft).
6. Install new nuts and secure link assembly to stabilizer bar and shock strut. Tighten to 77-103 N-m (57-75 lb-ft) at shock strut and 47-63 N-m (35-46 lb-ft) at stabilizer bar.
7. Remove safety stands.
8. Lower vehicle.

Hub and Wheel Bearings**Tools Required:**

- Hub Remover / Replacer T81P-1104-C
- Front Bearing Remover T83P-1104-AH2
- Wheel Bolt Adapters T83P-1104-BH1
- Drive Tube T83T-3132-A1
- Two Stud Adapter T86P-1104-A1
- Front Bearing Spacer T86P-1104-A2
- Bearing Installer T86P-1104-A3
- Bearing Dust Seal Installer T86P-1104-A4
- Shaft Protector D80L-625-1
- Front Hub Puller D80L-1002-L
- Three-Jaw Puller D80L-1013-A

Removal

1. Remove wheelcover / hub cover from wheel and tire assembly and loosen wheel lug nuts.
2. Remove hub nut retainer and washer by applying sufficient torque to the nut to overcome prevailing torque feature of crimp in nut collar. Do not use an impact-type tool to remove hub nut retainer. Hub nut retainer must be discarded after removal.
3. Raise vehicle on hoist. Refer to Section 00-02.
4. Remove wheel and tire assembly.
5. Remove brake caliper by loosening caliper locating pins and rotating caliper off rotor, starting from lower end of caliper and lifting upward. Do not remove caliper pins from caliper assembly. Lift caliper off rotor and hang it free of rotor. Do not allow caliper assembly to hang from brake hose. Support caliper assembly with a length of wire.

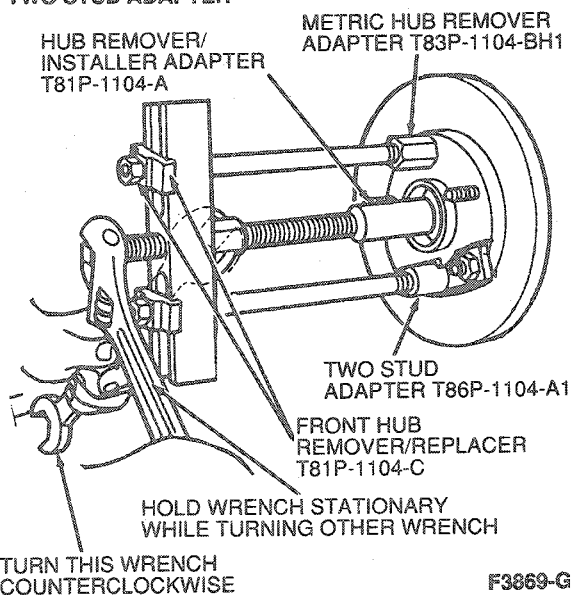
REMOVAL AND INSTALLATION (Continued)

6. Remove rotor from hub by pulling it off the hub bolts. If rotor is difficult to remove from hub, strike rotor sharply between studs with a rubber or plastic hammer.

If rotor will not pull off, apply Rust Penetrant and Inhibitor D7AZ-19A501-AA (ESR-M99C56-A) or equivalent to inboard and outboard rotor hub mating surfaces. Install 3-Jaw Puller D80L-1013-A or equivalent and remove rotor by pulling on rotor outside diameter and pushing on hub center. If excessive force is required for removal, check rotor for lateral runout prior to installation.

7. Lateral runout must be checked with nuts clamping stamped hat section of rotor.
8. Remove rotor splash shield. Refer to Section 06-03.
9. Disconnect lower control arm and tie rod from knuckle (leave strut attached) as outlined.
10. Loosen two strut top mount-to-apron nuts.
11. Install Hub Remover / Installer Adapter T81P-1104-A with Front Hub Remover / Replacer T81P-1104-C and Wheel Bolt Adapters T83P-1104-BH1 and Two Stud Adapter T86P-1104-A1 and remove hub, bearing and knuckle assembly by pushing out CV joint outer shaft until it is free of assembly.

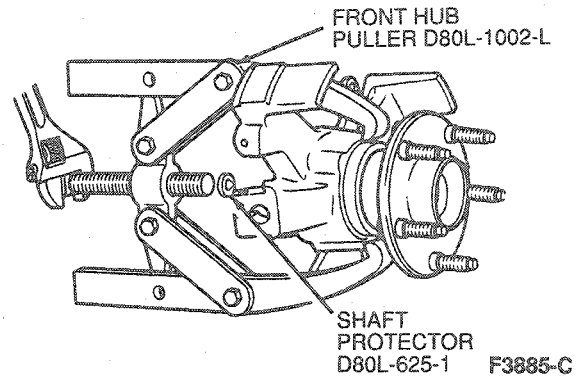
MAKE SURE THE HUB REMOVER ADAPTER IS FULLY THREADED ONTO THE HUB STUD AND IS POSITIONED OPPOSITE THE TWO STUD ADAPTER



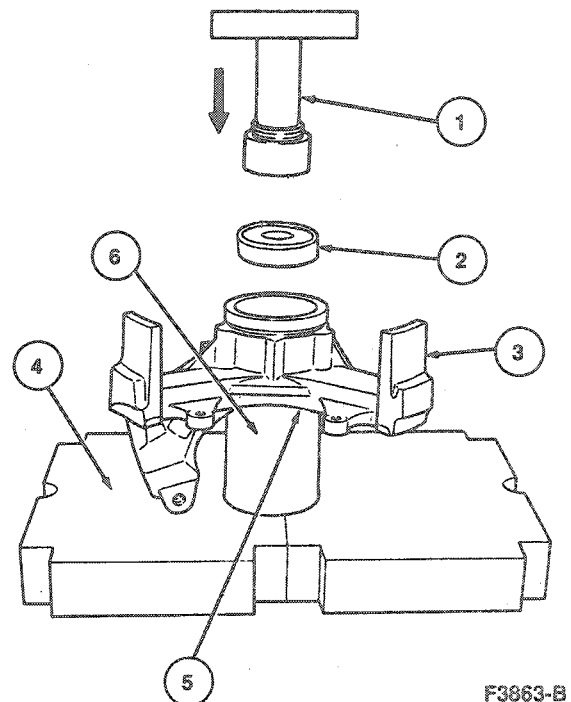
12. Support knuckle with a length of wire, remove strut bolt and slide hub / bearing / knuckle assembly off strut.
13. Carefully remove support wire, and carry hub / bearing / knuckle assembly to a bench.

14. On the bench, install Front Hub Puller D80L-1002-L and Shaft Protector D80L-625-1 or equivalent, with jaws of puller on knuckle bosses and remove hub.

NOTE: Ensure the shaft protector is centered, clears the bearing ID, and rests on the end face of the hub journal.



15. Remove snap ring, which retains bearing in knuckle assembly, with snap ring pliers and discard.
16. Using a hydraulic press, place Front Bearing Spacer T86P-1104-A2 step side up on press plate and position knuckle (outboard side up) on the spacer. Install Front Bearing Remover T83P-1104-AH2 centered on the bearing inner race and press bearing out of the knuckle.
17. Discard bearing.



REMOVAL AND INSTALLATION (Continued)

Item	Part Number	Description
1	—	Arbor Press
2	T83P-1104-AH2	Front Bearing Remover Tool
3	—	Knuckle-Outboard Side Up
4	—	Face Plate
5	—	Step Side Up
6	T86P-1104-A2	Front Bearing Spacer Tool

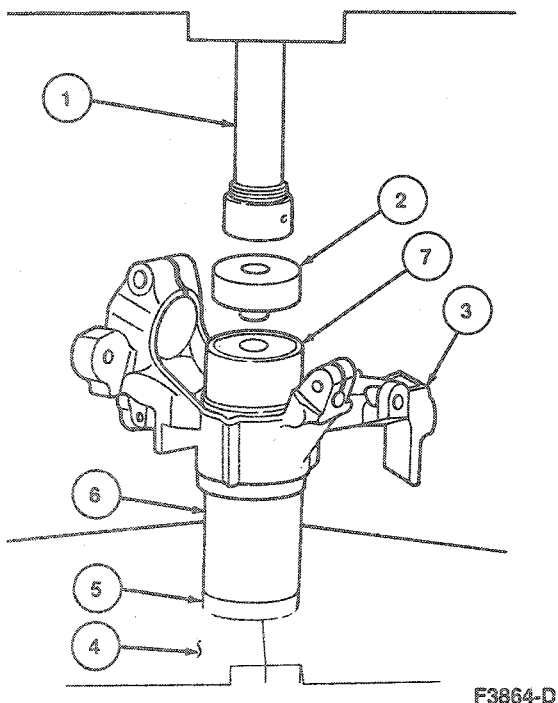
TF3863B

Installation

NOTE: If hub bearing journal is scored or damaged, replace hub. Do not attempt to service. The front wheel bearings are of a cartridge design and are pregreased, sealed, and require no scheduled maintenance. The bearings are preset and cannot be adjusted. If a bearing is disassembled for any reason, it must be replaced as a unit. No individual service seals, roller or races are available.

1. On bench, remove all foreign material from knuckle bearing bore and hub bearing journal to ensure correct seating of new bearing.
2. Place Front Bearing Spacer T86P-1104-A2 step side down on hydraulic press plate and position knuckle (outboard side down) on spacer. Position a new bearing in inboard side of knuckle. Install Bearing Installer T86P-1104-A3 (undercut side facing bearing), on bearing outer race and press bearing into knuckle. Ensure that bearing seats completely against shoulder of knuckle bore.

CAUTION: Bearing Installer T86P-1104-A3 must be positioned as indicated above to prevent bearing damage during installation.

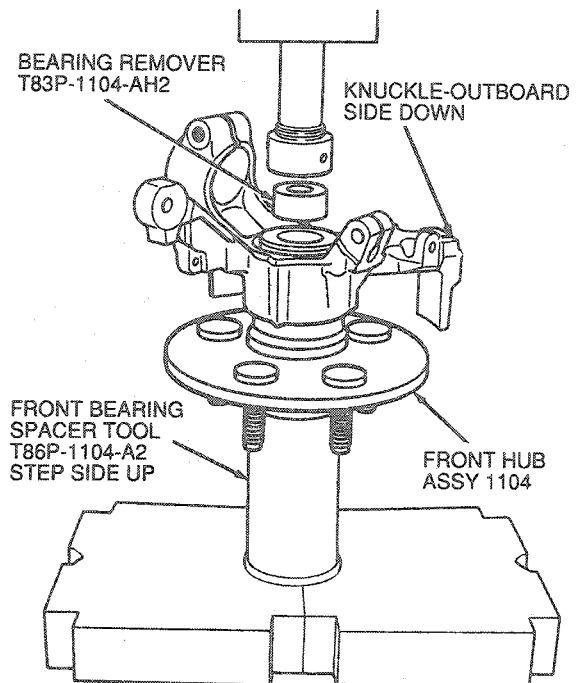


F3864-D

Item	Part Number	Description
1	—	Arbor Press
2	T86P-1104-A3	Bearing Installer Tool (Must be Positioned with Undercut Side Facing Bearing)
3	—	Knuckle-Outboard Side Down
4	—	Face Plate
5	—	Step Side Down
6	T86P-1104-A2	Front Bearing Spacer Tool
7	1215	Bearing Assy

TF3864D

3. Install a new snap ring (part of bearing kit) in knuckle groove using snap ring pliers.
4. Place Front Bearing Spacer T86P-1104-A2 on the arbor press plate and position hub on tool with lugs facing downward. Position knuckle assembly (outboard side down) on the hub barrel. Place Bearing Remover T83P-1104-AH2 flat side down, centered on inner race of the bearing and press down on tool until bearing is fully seated onto hub. Ensure that hub rotates freely in knuckle after installation.

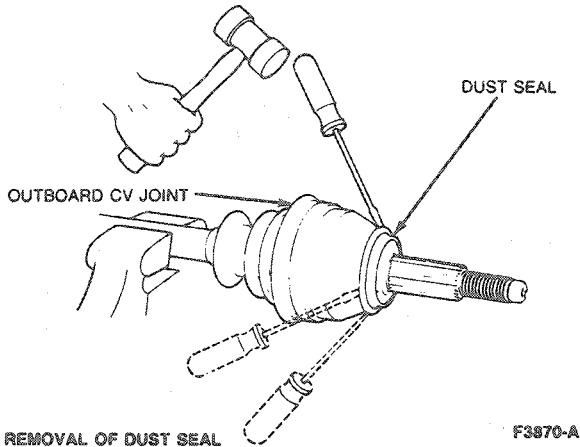


F3865-D

REMOVAL AND INSTALLATION (Continued)

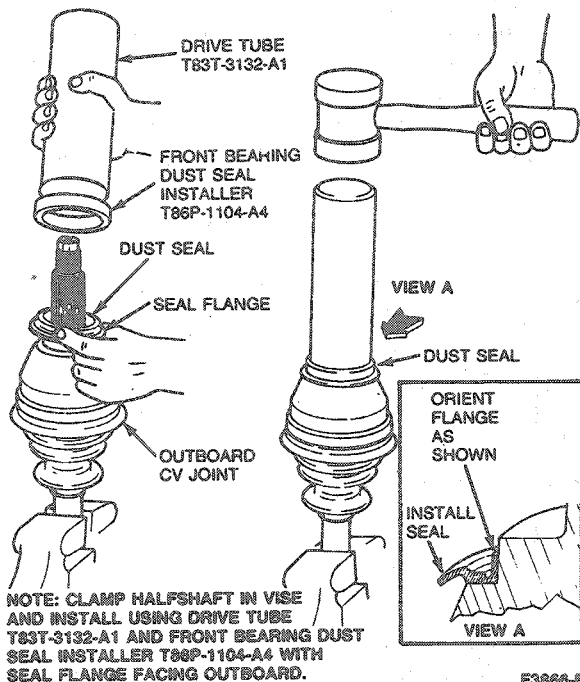
5. Prior to hub / bearing / knuckle installation, replace bearing dust seal on the outboard CV joint with new seal from bearing kit.

NOTE: TAP UNIFORMLY TO REMOVE DUST SEAL, USING LIGHT DUTY HAMMER AND SCREWDRIVER.



6. Install new dust seal, ensuring seal flange faces outboard toward bearing. Use Drive Tube T83T-3132-A1 and Front Bearing Dust Seal Installer T86P-1104-A4.

DUST SEAL INSTALLATION



7. Suspend the hub / bearing / knuckle assembly on the vehicle with wire and attach the strut loosely to the knuckle. Lubricate the CV joint stub shaft splines with SAE 30 weight motor oil and insert shaft into hub splines as far as possible using hand pressure only. Check that splines are properly engaged.

8. Temporarily fasten rotor to hub with washers and two lug nuts. Insert a steel rod into rotor diameter and rotate clockwise to contact knuckle.

CAUTION: Do not use power or impact-type tools to tighten the hub nut.

9. Install hub nut washer and new hub nut retainer. Rotate nut clockwise to seat CV joint. Tighten nut to 230-275 N-m (170-202 lb-ft). Remove steel rod, washers and lug nuts.

10. Complete installation of front suspension components as outlined.

NOTE: Apply a small amount of Disc Brake Caliper Slide Grease D7AZ-19590-A (ESA-M1C172-A) or equivalent to pilot diameter of rotor.

11. Install rotor splash shield. Refer to Section 06-03.
12. Install disc brake rotor to hub assembly.
13. Install disc brake caliper over rotor.
14. Ensure outer brake shoe spring hook is seated under upper arm of knuckle.
15. Install wheel and tire assembly, tightening wheel lug nuts finger-tight.
16. Lower vehicle and block wheels to prevent vehicle from rolling.

WARNING: REPLACEMENT LUG NUTS OR STUDS MUST BE OF THE SAME TYPE AND SIZE AS THOSE BEING REPLACED.

17. Tighten wheel lug nuts to 115-142 N-m (85-105 lb-ft).
18. Install wheelcover or hub cover and lower vehicle completely to the ground.
19. Remove wheel blocks.

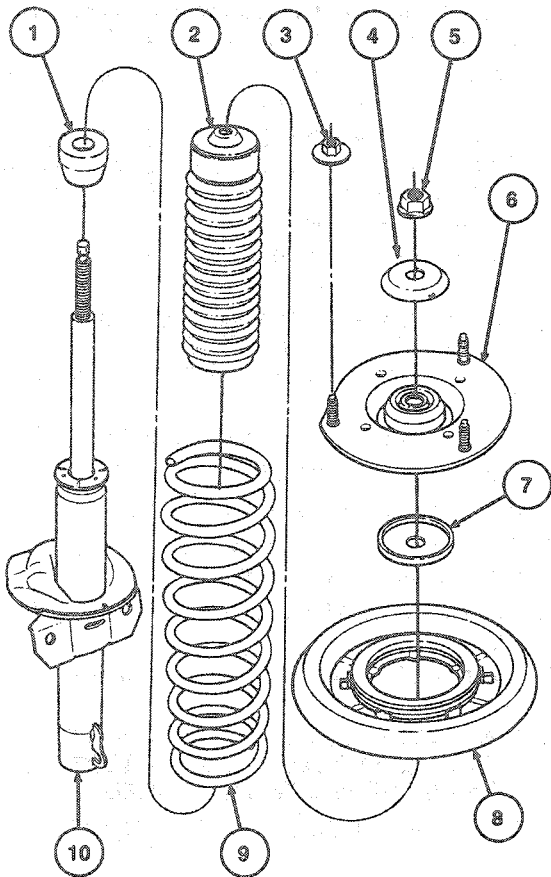
Shock Absorber Strut, Spring, Bearing and Seat Assembly, and Upper Mount

Tools Required:

- Tie Rod Remover Adapter T81P-3504-W
- MacPherson Strut Spring Compressor D85P-7 178-A or Rotunda Spring Compressor D86-00029
- Tie Rod End Remover TOOL-3290-D

CAUTION: Never attempt to disassemble the spring or top mount without first compressing the spring using Universal MacPherson Strut Spring Compressor D85P-7 178-A or Rotunda Spring Compressor D86-00029, or equivalent.

REMOVAL AND INSTALLATION (Continued)

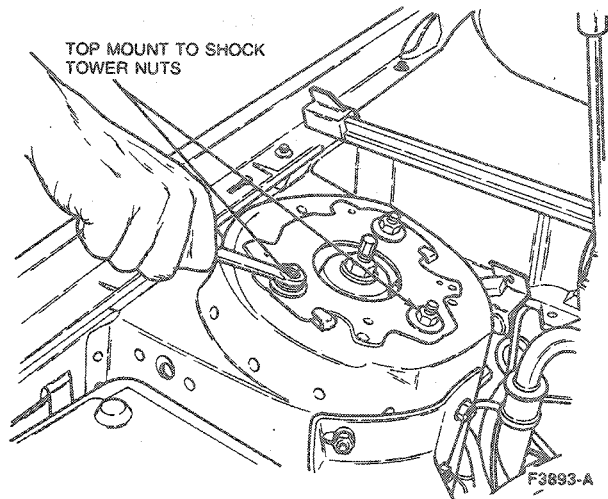


F3892-C

Item	Part Number	Description
1	18A085	Jounce Bumper
2	18K005	Dust Boot
3	N803826-S100	Nut (3 Req'd)
4	N804002-S100	Washer
5	N804104-S36	Nut
6	18183	Top Mount Bracket Assy
7	N806779-S100	Washer
8	3K028	Bearing and Seat Assy
9	5310	Front Spring
10	18045	Shock Strut

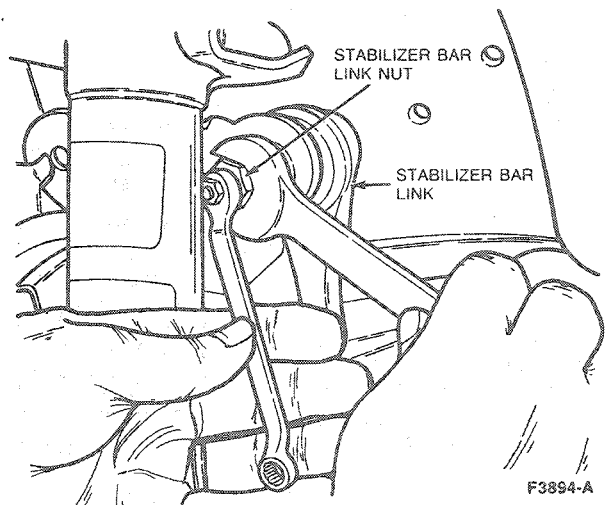
Removal

1. Turn ignition to OFF position to place steering column in unlocked position.
2. Remove hub nut as outlined.
3. Loosen, but do not remove, three top mount-to-shock tower nuts.



NOTE: Do not raise vehicle by lower control arms.

4. Raise vehicle on a hoist. Refer to Section 00-02.
5. Remove tire and wheel assembly. Refer to Section 04-04.
6. Move brake caliper and wire out of the way. Refer to Section 06-03.
7. Remove brake rotor. Refer to Section 06-03.
8. Remove cotter pin from tie rod end stud and remove slotted nut. Discard cotter pin and nut.
9. Using Tie Rod End Remover TOOL-3290-D and Tie Rod Remover Adapter T8 1P-3504-W or equivalent, remove tie rod from knuckle.
10. Remove stabilizer bar link nut, and remove link from strut.



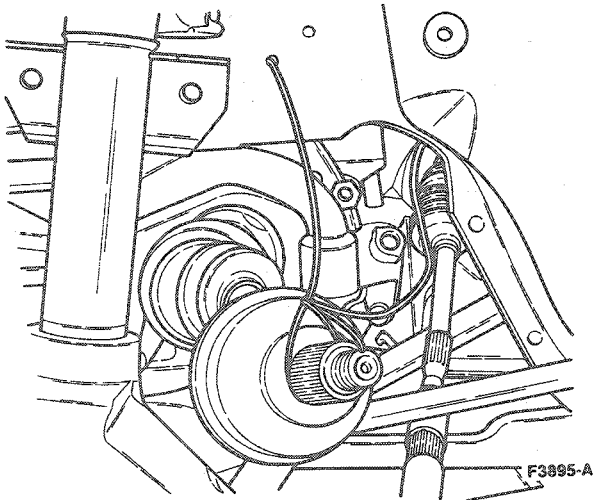
CAUTION: Use extreme care to not damage the ball joint boot seal.

REMOVAL AND INSTALLATION (Continued)

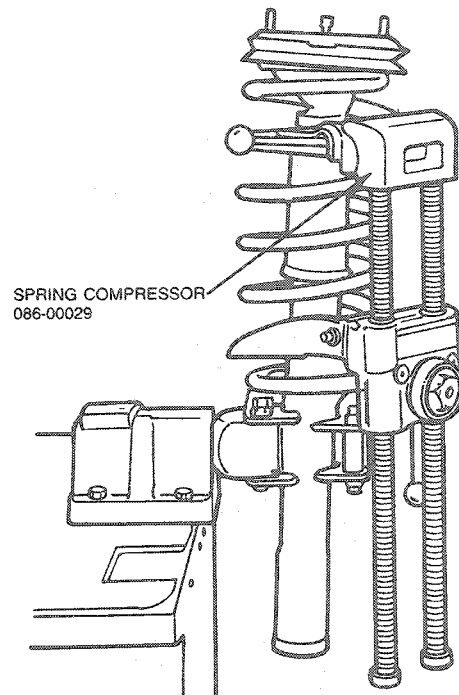
11. Remove and discard lower arm-to-steering knuckle pinch bolt and nut. (A drift punch may be used to remove bolt.) Using a screwdriver, slightly spread knuckle-to-lower arm pinch joint and remove lower arm from steering knuckle.

CAUTION: Do not allow the halfshaft to move outboard. Over-extension of the tripod CV joint could result in separation of internal parts, causing failure of the joint.

12. Press halfshaft from hub as outlined. Wire halfshaft to body to maintain level position.



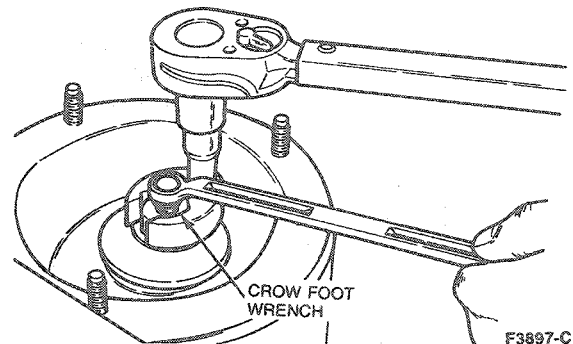
13. Remove shock absorber strut-to-steering knuckle pinch bolt. Using a large screwdriver, slightly spread knuckle-to-strut pinch joint, if required, for removal.
14. Remove steering knuckle and hub assembly from shock absorber strut.
15. Remove three top mount-to-shock tower nuts and remove strut and spring assembly from vehicle.
16. Compress spring with Spring Compressor 086-00029 or equivalent.



F4975-A

CAUTION: It is important that the retaining nut be turned and rod held still to prevent fracture of the rod at the base of the hex.

17. Place 10mm box-end wrench on top of shock strut shaft and hold while removing top shaft retaining nut with a 21mm 6-point crow foot wrench and ratchet.



F3897-C

18. Loosen Spring Compressor 086-00029 or equivalent, then remove top mount bracket assembly, bearing plate assembly and spring.

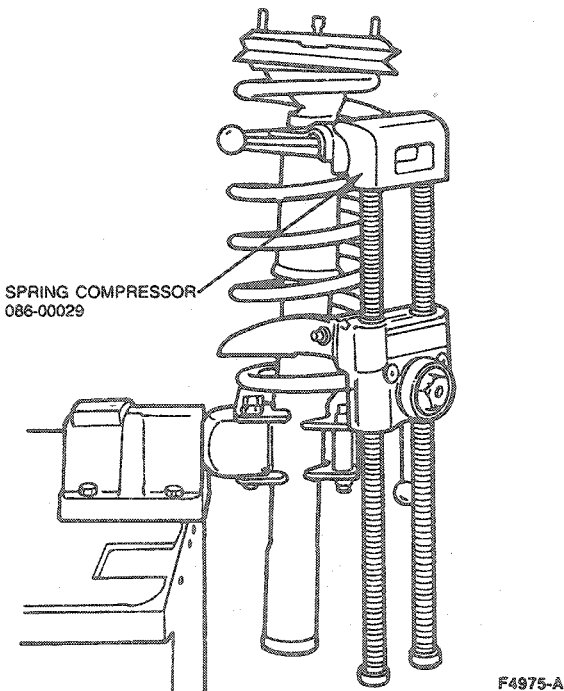
Installation

CAUTION: Make sure that the correct assembly sequence and proper positioning of bearing and seat assembly are followed. The bearing and seat assembly is press-fit onto the upper mount.

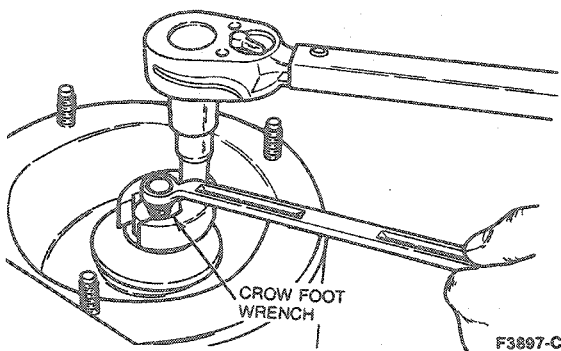
NOTE: When servicing, check the spring insulator for damage before assembly. If the outer metal splash shield is bent or damaged, it must be bent back carefully so that it does not touch the locator tabs on the bearing and seal assembly.

REMOVAL AND INSTALLATION (Continued)

1. Install Spring Compressor 086-00029 or equivalent.
2. Install spring, bearing plate assembly, lower washer and top mount bracket assembly.
3. Compress spring with Spring Compressor 086-00029 or equivalent.
4. Install upper washer and nut on the shock strut shaft.

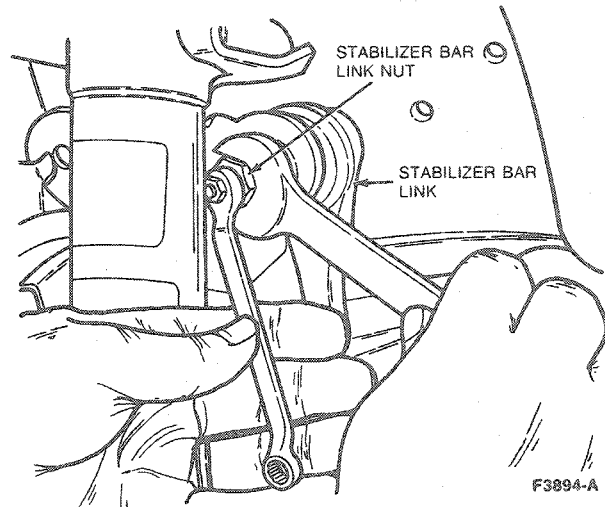


5. Place a 10mm box-end wrench on top of shock strut shaft and hold while tightening top shaft retaining nut with a 21mm 6-point crow foot wrench and ratchet to 53-72 N-m (40-53 lb-ft).

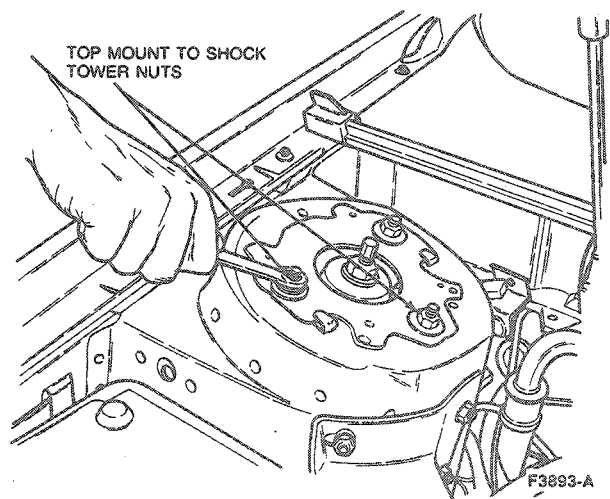


6. Install strut and spring assembly and three top mount-to-shock tower nuts.
7. Install steering knuckle and hub assembly to shock absorber strut.
8. Install a new shock absorber strut-to-steering knuckle pinch bolt. Tighten to 98-132 N-m (73-97 lb-ft).

9. Install halfshaft into hub as outlined.
10. Install lower arm to steering knuckle ensuring that ball stud groove is properly positioned. Use extreme care to not damage ball joint seal. Install a new pinch bolt and nut. Tighten to 53-72 N-m (40-53 lb-ft).
11. Install stabilizer bar link to strut and install a new stabilizer bar link nut. Tighten to 77-103 N-m (57-75 lb-ft).



12. Install tie rod end onto knuckle.
13. Install a new tie rod end slotted nut. Tighten to 31-47 N-m (23-34 lb-ft).
14. Install a new slotted nut retaining cotter pin.
15. Install brake rotor. Refer to Section 06-03.
16. Install brake caliper. Refer to Section 06-03.
17. Install tire and wheel assembly.
18. Tighten three top mount-to-shock tower nuts to 30-40 N-m (23-29 lb-ft).



REMOVAL AND INSTALLATION (Continued)

19. Lower vehicle and tighten hub nut to 230-275 N·m (170-202 lb-ft).
20. Depress brake pedal several times prior to moving vehicle.

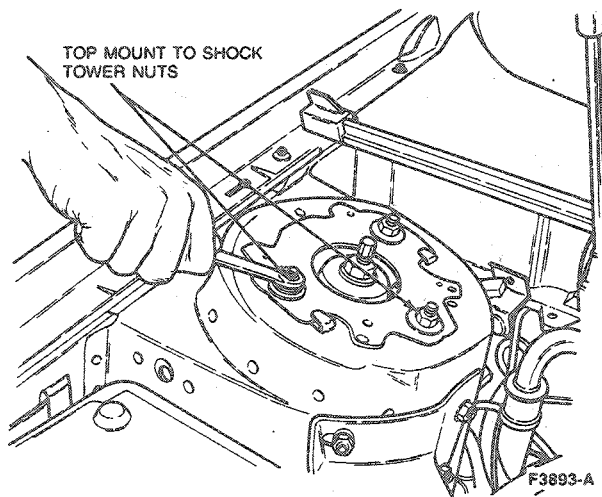
Steering Knuckle

Tools Required:

- Tie Rod End Remover Adapter T81P-3504-W
- Heavy Duty Riveter D80L-23200-A

Removal

1. Turn ignition to OFF position to place steering column in unlocked position.
2. Remove hub nut as outlined.
3. Raise vehicle on a hoist. Refer to Section 00-02.
4. Remove tire and wheel assembly. Refer to Section 00-02.
5. Remove cotter pin from the tie rod end stud and remove slotted nut. Discard cotter pin and nut.
6. Using Tie Rod End Remover TOOL-3290-D and Tie Rod End Remover Adapter T81P-3504-W or equivalent, remove tie rod end from knuckle.
7. Remove stabilizer bar link assembly from strut.
8. Remove brake caliper and wire in such a manner as to obtain working space. Remove brake rotor. Refer to Section 06-03.
9. Loosen, but do not remove, three top retaining nuts (top mount-to-shock tower).

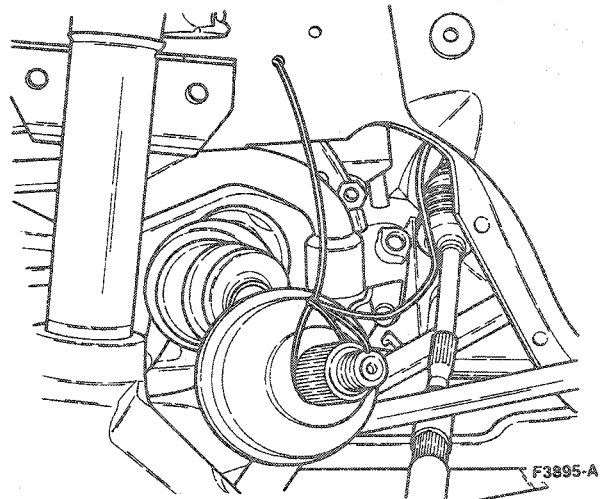


NOTE: Ensure steering column is in unlocked position, and do not use a hammer to separate ball joint from knuckle. Use extreme care not to damage boot seal.

10. Remove and discard lower arm-to-steering knuckle pinch bolt and nut. (A drift punch may be used to remove bolt.) Using a screwdriver, slightly spread knuckle-to-lower arm pinch joint and remove lower arm from steering knuckle.

CAUTION: Do not allow the halfshaft to move outboard. Over-extension of the tripod CV joint could result in separation of internal parts, causing failure of the joint.

11. Remove shock absorber strut-to-steering knuckle pinch bolt. Using a large screwdriver, slightly spread knuckle-to-strut pinch joint.
12. Press halfshaft from hub as outlined. Wire halfshaft to body to maintain a level position.



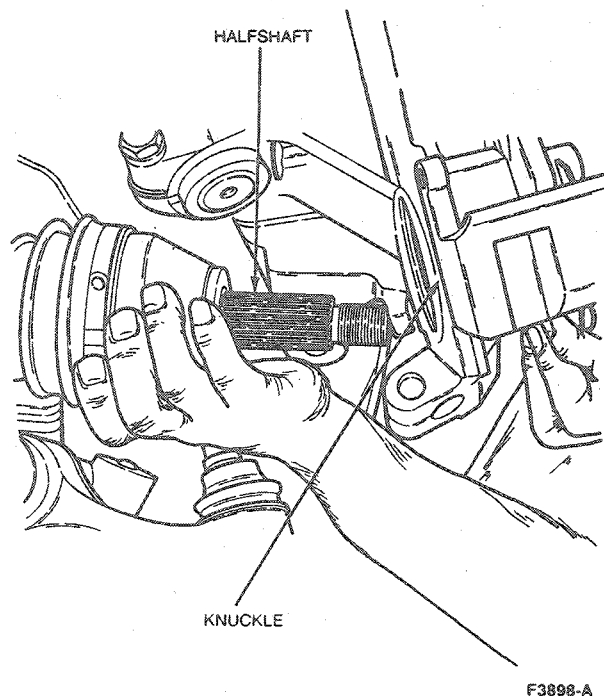
13. Remove rotor splash shield, if so equipped, from knuckle. Refer to Section 06-03.
14. Remove steering knuckle and hub assembly from the shock absorber strut.
15. Place assembly on a bench and remove the hub, retainer ring and bearing as outlined.

Installation

1. Install rotor splash shield using new rivets and Heavy Duty Riveter D80L-23200-A or equivalent. Refer to Section 06-03.
2. Install bearing, retainer ring and hub as outlined. Replace seal pressed on outboard CV joint, if required.
3. Install steering knuckle onto shock absorber strut and loosely install a new pinch bolt in knuckle to retain strut.

REMOVAL AND INSTALLATION (Continued)

4. Install steering knuckle and hub on halfshaft.



5. Install lower control arm to knuckle, making sure that ball stud groove is properly positioned. Install a new nut and bolt and tighten nut. **Use extreme care not to damage boot seal.** Tighten to 53-72 N·m (40-53 lb-ft). Tighten strut-to-knuckle pinch bolt to 98-132 N·m (73-97 lb-ft).
6. Install the rotor and brake caliper. Tighten caliper locking pins to 25-34 N·m (19-25 lb-ft). Refer to Section 06-03.
7. Position tie rod end into knuckle, install a new slotted nut and tighten. If necessary, advance nut to align slot and install a new cotter pin. Tighten to 31-47 N·m (23-34 lb-ft).
8. Install stabilizer bar link assembly to strut and install a new nut. Tighten to 77-103 N·m (57-75 lb-ft).
9. Install tire and wheel assembly. Refer to Section 00-02.
10. Lower vehicle.
11. Install the three nuts retaining top mount to apron. Tighten to 30-40 N·m (23-29 lb-ft). Tighten hub nut to 230-275 N·m (170-202 lb-ft).
12. Pump brake pedal prior to moving vehicle to position brake linings.

ADJUSTMENTS

Wheel Bearings

The front wheel bearings are of a cartridge design and are pregreased, sealed and require no scheduled maintenance. The bearings are preset and cannot be adjusted. If a bearing is disassembled for any reason, it must be replaced as a unit. No individual service seals, roller or races are available. The hub nut torque of 230-275 N·m (170-202 lb-ft) restricts bearing / hub relative movement and maintains axial position of the hub. Due to the importance of the hub nut torque / tension relationship, take the following precautions during service:


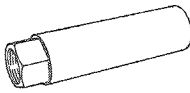
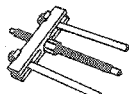


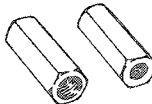
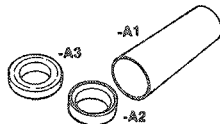
1. Since the bearing cannot be adjusted, the hub nut retainer must not be backed off after reaching the required torque of 230-275 N·m (170-202 lb-ft) during installation.
2. The hub nut must be replaced with a new nut whenever the nut is backed off or removed. Never reuse the nut.
3. Impact-type tools must not be used to tighten the hub nut or bearing damage will result.
4. The hub and CV joint splines have an interference fit requiring special tools for disassembly. The hub nut retainer must not be used to accomplish assembly. Refer to Section 05-04.
5. To remove the hub nut retainer, apply sufficient torque to the nut to overcome the prevailing torque feature of the nut collar.

SPECIFICATIONS

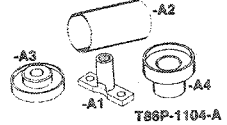
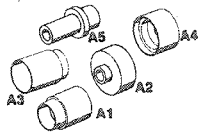
TORQUE SPECIFICATIONS

Description	N·m	Lb·Ft
Strut Top Mount to Body	30-40	23-29
Strut to Top Mount	53-72	40-53
Strut to Knuckle	98-132	73-97
Control Arm to Knuckle	53-72	40-53
Control Arm to Subframe	98-132	73-97
Tension Strut to Control Arm	98-132	73-97
Tension Strut to Sub-Frame	98-132	73-97
Stabilizer Bar Bracket to Subframe	30-40	23-29
Stabilizer Bar Link Assembly to Stabilizer Bar	47-63	35-46
Stabilizer Bar Link Assembly to Shock Strut	77-103	57-75
Tie Rod End to Steering Knuckle	31-47	23-34
Steering Gear Nuts	115-135	85-99
Caliper Locking Pins	25-34	19-25
Hub Nut	230-275	170-202
Lug Nuts	115-142	85-105

SPECIAL SERVICE TOOLS

Tool Number/ Description	Illustration
T74P-3044-A1 C-Frame and Clamp	 T74P-3044-A1
T81P-1104-A Hub Remover/Installer Adapter	 T81P-1104-A
T81P-1104-C Front Hub Remover/Installer	 T81P-1104-C
T81P-3504-W Tie Rod Remover Adapter	 T81P-3504-W
T83P-1104-AH2 Front Bearing Remover	 T83P-1104-AH
T83P-1104-BH1 Wheel Bolt Adapters	 T83P-1104-BH
T83T-3132-A1 Drive Tube	 T83T-3132-A

(Continued)

Tool Number/ Description	Illustration
T86P-1104-A1 Two Stud Adapter T86P-1104-A2 Front Bearing Spacer T86P-1104-A3 Bearing Installer T86P-1104-A4 Front Bearing Dust Seal Installer	 T86P-1104-A
T86P-5493-A1 Insulator Installation Tool T86P-5493-A2 Bushing Removal/Insulator Installation Tool T86P-5493-A3 Bushing Removal Tool T86P-5493-A4 Bushing Installation Tool T86P-5493-A5 Insulator Removal Tool	 T86P-5493-A

Tool Number	Description
D80L-1002-L	Front Hub Puller
D80L-625-1	Shaft Protector
D85P-7178-A	Universal MacPherson Strut Spring Compressor
TOOL-3290-D	Tie Rod End Remover

ROTUNDA EQUIPMENT

Model	Description
086-00029	Spring Compressor

SECTION 04-02 Suspension and Wheel Ends, Rear

SUBJECT	PAGE	SUBJECT	PAGE
DESCRIPTION AND OPERATION		REMOVAL AND INSTALLATION (Cont'd.)	
Component Replacement	04-02-4	Shock Absorber Strut, Upper Mount and Spring	04-02-13
Components	04-02-3	Springs	04-02-25
Sedan	04-02-1	Stabilizer Bar, Insulators and Link Assembly	04-02-16
Station Wagon	04-02-2	Suspension Arm, Lower	04-02-21
Wheel Assembly	04-02-8	Suspension Arms, Upper	04-02-19
REMOVAL AND INSTALLATION		Tension Strut	04-02-21
Anti-Lock Sensor Ring	04-02-30	SPECIAL SERVICE TOOLS	04-02-32
Bearing and Hub Assembly, Disc Brakes	04-02-29	SPECIFICATIONS	04-02-31
Bearing and Hub Assembly, Drum Brakes	04-02-29	VEHICLE APPLICATION	04-02-1
Control Arm	04-02-28		
Shock Absorber	04-02-12		

VEHICLE APPLICATION

Taurus/Sable.

DESCRIPTION AND OPERATION

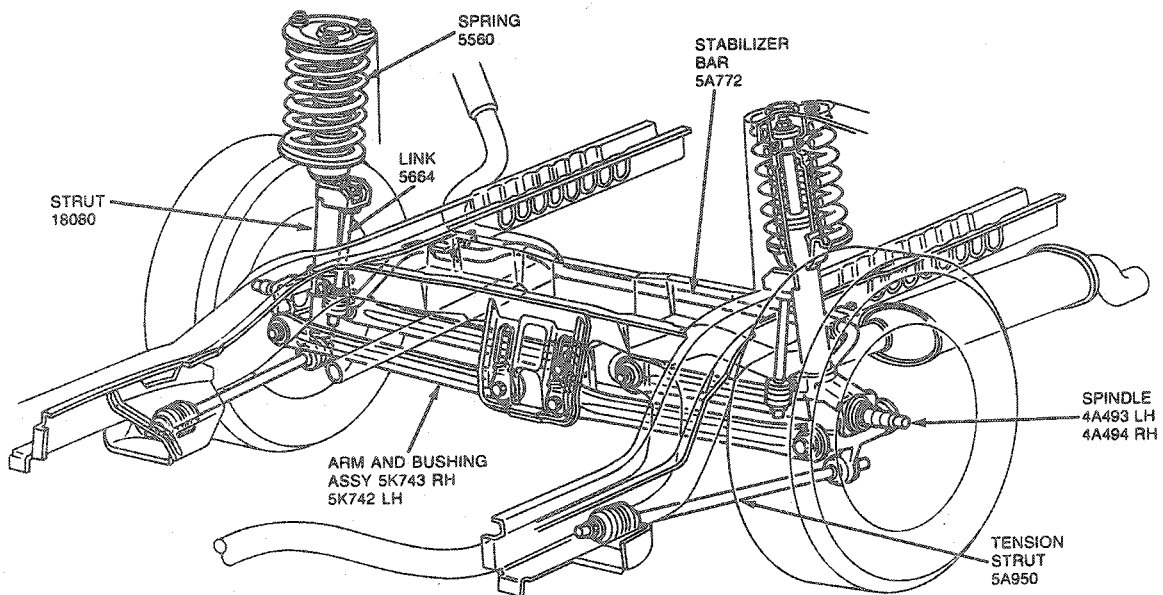
Sedan

These vehicles use a MacPherson strut independent rear suspension. Each side consists of an upper mount and washers, a shock absorber strut assembly, two parallel control arms per side, tension strut, cast spindle and shock strut mounted stabilizer bar.

DESCRIPTION AND OPERATION (Continued)

The shock absorber strut assembly includes an upper washer, top mount, dust shield, jounce bumper, coil spring insulator, coil spring, spring damper and lower washer. The strut assembly is attached at the top by three studs, which retain the top mount of the strut to the inner body side panel. The lower end of the assembly is attached to the spindle with a pinch clamp and bolt that goes through a locator tab welded to the strut. The two stamped control arms attach to the underbody and spindle with nuts and bolts. A tension strut attaches to the underbody and to the cast spindle.

CAUTION: Rear suspension fasteners are important parts because they could affect the performance of vital components and systems and/or could result in major service expense. They must be replaced with the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during re-assembly to ensure proper retention of this part.



F4349-B

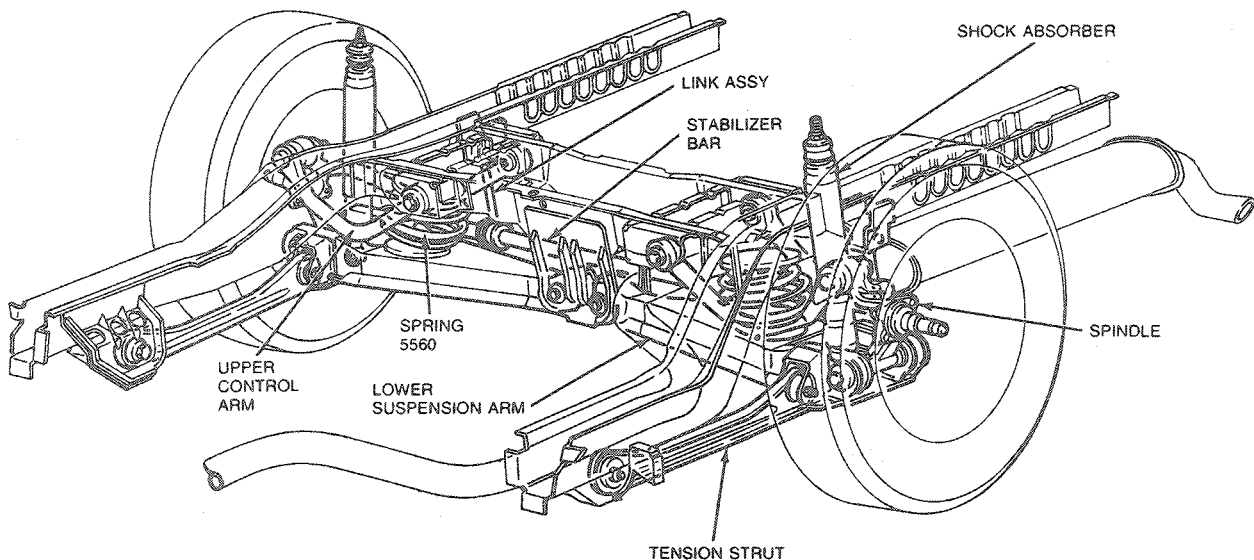
Station Wagon

The station wagon suspension consists of five major components: the upper and lower control arms, shock absorber, two-piece cast spindle, tension strut, and a coil spring mounted between the lower suspension arm and the body crossmember.

DESCRIPTION AND OPERATION (Continued)

The shock absorber assembly is connected to the body side panel by a rubber insulated top mount assembly and nut, and to the lower suspension arm by two studs pressed into a bar pin mounted in a rubber bushing. The upper suspension arms connect at the spindle and the crossmember while the lower suspension arm connects to the underbody and spindle. A coil spring is located between the lower suspension arm and body crossmember inboard of the shock absorber. A tension strut is connected to the underbody and the lower suspension arm.

NOTE: Never attempt to heat, quench or straighten any rear suspension part. Replace with a new part.



F4231-A

Components

Sedan

- **Stamped Control Arms:** Two per side, control lateral (side-to-side) movement of each wheel.
- **Toe Adjustment Cam:** Adjusts length of rear control arms for setting rear wheel toe-in alignment.
- **Tension Strut:** Controls fore-and-aft wheel movement.
- **Coil Spring:** Controls suspension travel and provides ride height control.
- **Shock Absorber Strut:** Reacts to braking forces, provides necessary suspension damping, and also provides controlled entry into the full travel conditions through an internal rebound stop and integral jounce bumper.
- **Cast Spindle:** This two-piece cast spindle with pressed-in stem, supports the wheel and attaches the two control arms, tension strut, shock absorber strut, and brake assembly.
- **Stabilizer Bar:** Resists body roll to keep vehicle level during cornering.

- **Suspension Bushing and Insulator:** All suspension mounting points are rubber insulated to minimize road noise and vibrations to the passengers.
- **Suspension Fasteners:** These fasteners are important attaching parts that could affect the performance of vital components and systems and / or could result in major service expense. They must be replaced with fasteners of the same part number or with an equivalent part if replacement becomes necessary. **Do not** use a replacement part of lesser quality or substitute design. Torque values must be used as specified during assembly to ensure proper retention of these parts. New attaching fasteners must be used whenever the old attaching fasteners are loosened or removed and when new component parts are installed.

Station Wagon

- **Upper Control Arms:** Control lateral (side-to-side) movement of each wheel.
- **Stamped Lower Arm:** Controls the lateral (side-to-side) movement of each wheel and contains the lower spring seat and holds the rear suspension toe setting cam.

DESCRIPTION AND OPERATION (Continued)

- **Tension Strut:** Controls fore-and-aft wheel movement.
- **Coil Spring:** Controls suspension travel and provides ride height control.
- **Shock Absorber:** Provides necessary suspension damping. It also provides rebound control through an internal rebound stop.
- **Cast Spindle:** Supports the wheel and attaches the lower and upper arms and brake assembly.
- **Stabilizer Bar/Link Assembly:** Controls body lean during cornering.
- **Suspension Bushings and Insulators (Rubber):** Minimize road noise and vibration.
- **Suspension Fasteners:** These fasteners are important parts that could affect the performance of vital components and systems and / or could result in major service expense. They must be replaced with the same part number or with an equivalent part if replacement becomes necessary. **DO NOT** use a replacement part of lesser quality or substitute design. Torque value must be used as specified during assembly to ensure proper part retention. New fasteners must also be used whenever the old fasteners are loosened or removed and when new components are installed.

Component Replacement**Sedan**

On the MacPherson strut independent rear suspension, the following components may be replaced individually or as an assembly:

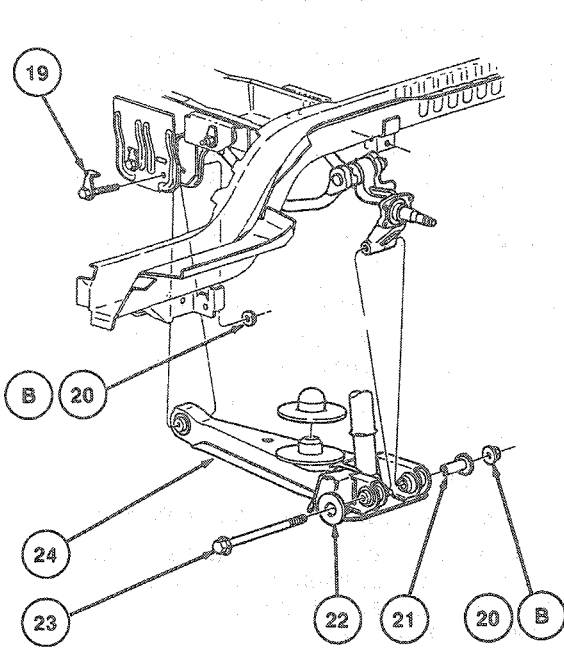
- The shock absorber strut upper mount may be replaced individually.

- The jounce bumpers may be replaced individually.
- The shock absorber strut is not serviceable as a cartridge and must be replaced as an assembly. Replace individual assemblies as required. They do not need to be replaced in pairs.
- Control arm bushings are not serviceable. They must be replaced with a control arm and bushing assembly.
- Tension strut and tension strut bushings may be replaced individually.
- Coil springs may be replaced individually.
- The spindle stem is not serviceable and must be replaced with a spindle and stem assembly.
- All stabilizer bar components may be replaced individually.

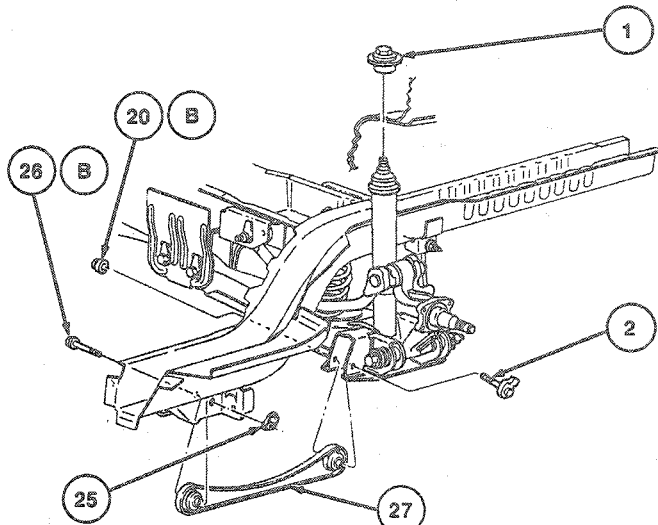
Station Wagon

- The shock absorber upper mounting is serviceable.
- The shock absorber is serviceable and must be replaced as an assembly. Replace only the damaged shock absorber. It is not necessary to replace them in pairs.
- Upper and lower suspension arms are serviced as an assembly. The bushings are not serviced.
- Tension strut bushings are not serviced. They must be replaced with a tension strut and bushing assembly.
- Stabilizer bar, U-brackets and insulators are serviceable. The link is serviced as an assembly.
- Coil springs are serviceable.

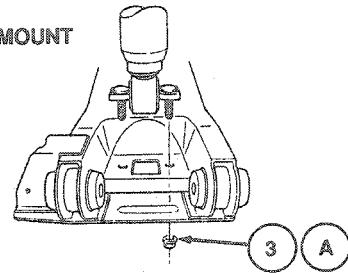
DESCRIPTION AND OPERATION (Continued)



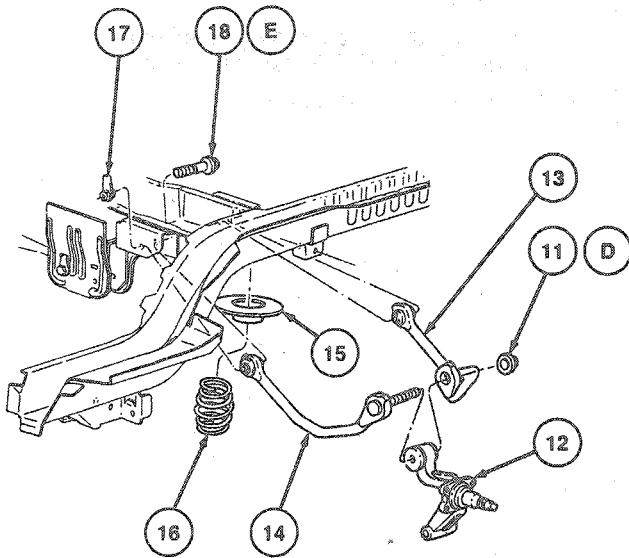
INSTALLATION LOWER ARM AND LOWER SPRING SEAT



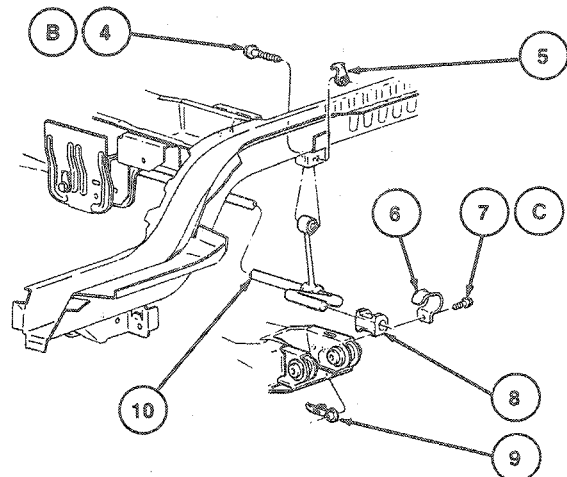
INSTALLATION TENSION STRUT AND UPPER SHOCK MOUNT



INSTALLATION LOWER SHOCK MOUNT



INSTALLATION UPPER ARM SPINDLE AND UPPER SPRING SEAT



INSTALLATION STABILIZER BAR

F4232-G

Item	Part Number	Description
1	18A192	Assy (2 Req'd)
2	N805219-S150	Bolt (2 Req'd)
3A	N620481-S101	Nut (4 Req'd)
4B	N804414-S150	Bolt (2 Req'd)
5	N804411-S150	Nut (2 Req'd)

(Continued)

Item	Part Number	Description
6	5486	U-Bracket (2 Req'd)
7C	N605919-S7	Bolt (2 Req'd)
8	4A037	Insulator (2 Req'd)
9	N804004-S161	Nut (2 Req'd)
10	5A771	Assy

(Continued)

DESCRIPTION AND OPERATION (Continued)

Item	Part Number	Description
11D	N804891-S150	Nut (2 Req'd)
12	4A494RH 4A493 LH	Spindle Assy
13	5A926 RH 5A927 LH	Upper Arm Rear Assy
14	5A922 RH 5A923 LH	Upper Arm Front Assy
15	5536	Insulator (2 Req'd)
16	5560	Spring (2 Req'd)
17	N805408-S150	Nut (4 Req'd)
18E	N803990-S160	Bolt (4 Req'd)
19	N804010-S150	Bolt (2 Req'd)
20B	N800937-S160	Nut (2 Req'd)
21	5K751	Adjusting Cam (2 Req'd)
22	N804284-S36M	Washer

(Continued)

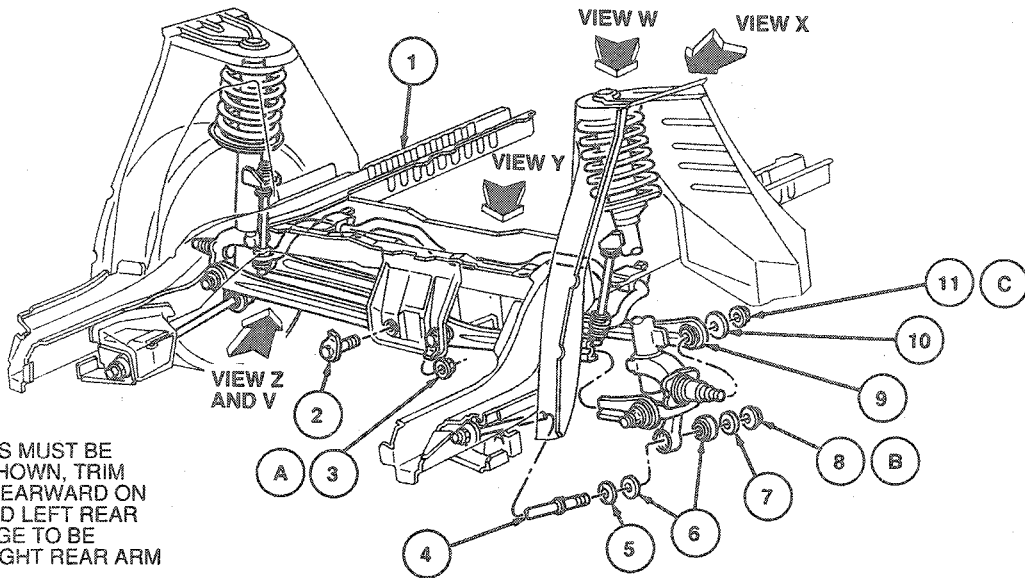
Item	Part Number	Description
23	N804635-S150	Bolt
24	5A649 RH 5A648 LH	Lower Arm Assy
25	N804410-S150	Nut (2 Req'd)
26B	N804641-S150	Bolt (2 Req'd)
27	5A952	Tension Strut Assy (2 Req'd)
A		Tighten to 19.1-25.9 N·m (13-20 Lb-Ft)
B		Tighten to 54-71 N·m (40-52 Lb-Ft)
C		Tighten to 30-40 N·m (23-30 Lb-Ft)
D		Tighten to 203-258 N·m (150-190 Lb-Ft)
E		Tighten to 98-132 N·m (73-97 Lb-Ft)

Inspection

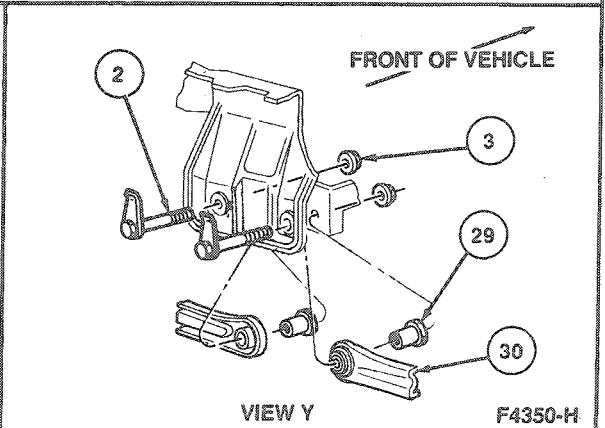
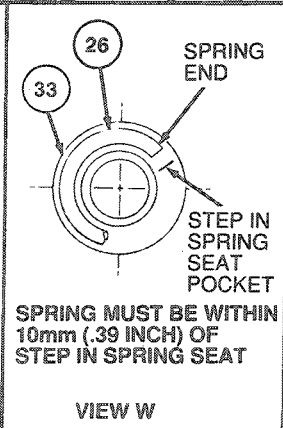
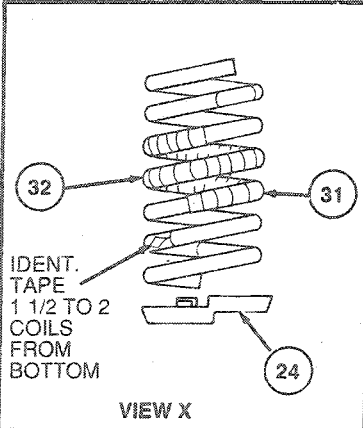
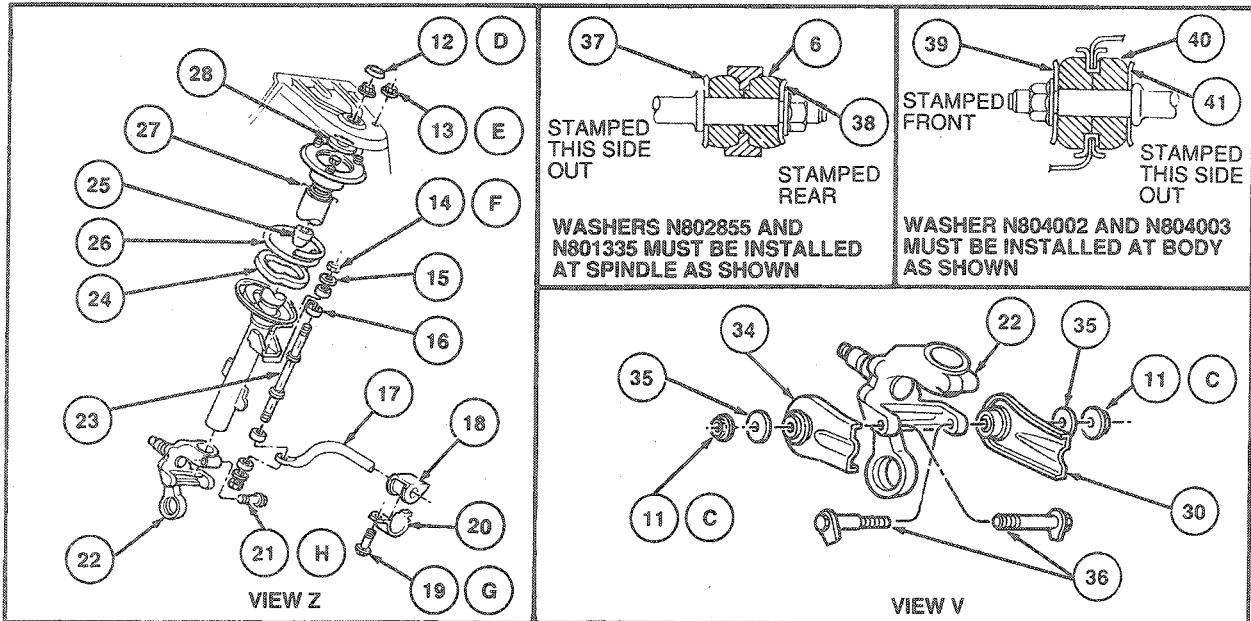
1. Check for evidence of fluid leaks on shock absorbers. (A light film of fluid is permissible. Verify fluid is not from sources other than shock absorber).
2. Check shock absorber operation (whether operation is stiff, rough or spongy).

3. Check condition of control arm pivot bushings and tension strut bushings.
If the above checks reveal evidence of excessive wear, deterioration, or improper operation, replace damaged components.

DESCRIPTION AND OPERATION (Continued)



ARM ASSEMBLIES MUST BE INSTALLED AS SHOWN, TRIM FLANGE TO BE REARWARD ON FRONT ARMS AND LEFT REAR ARM. TRIM FLANGE TO BE FORWARD ON RIGHT REAR ARM



F4350-H

DESCRIPTION AND OPERATION (Continued)

Item	Part Number	Description
1	—	Frame
2	N805219-S151	Bolt (4 Req'd)
3A	N8044525-S150	Nut (4 Req'd)
4	5A950	Tension Strut (2 Req'd)
5	N802855-S36	Washer (2 Req'd)
6	5K897	Insulator (4 Req'd)
7	N801335-S36	Washer (2 Req'd)
8B	N620484-S151	Nut (4 Req'd)
9	5K743	Arm Assy (2 Req'd)
10	N804001-S100	Washer (4 Req'd)
11C	N800937-S160	Nut
12D	N804608-S150	Nut
13E	N801310-S100	Nut (6 Req'd)
14F	N800280-S7	Nut (4 Req'd)
15	N802100-S36M	Washer (4 Req'd)
16	5493	Insulator (8 Req'd)
17	5A772	Stabilizer Bar
18	4A037	Insulator (2 Req'd)
19G	N804637-S56	Bolt (2 Req'd)
20	4AD47	U-Bracket (2 Req'd)
21H	N80194-2-S100	Bolt (2 Req'd)
22	4A493 Assy LH 4A494 Assy RH	Spindle
23	5664	Link (2 Req'd)
24	5K617	Insulator (2 Req'd)
25	18A085	Jounce Bumper (2 Req'd)
26	5560	Spring (2 Req'd)
27	N804232-S100	Washer (2 Req'd Some Vehicles)

(Continued)

Item	Part Number	Description
28	N804232-S100	Washer (2 Req'd)
29	5K751	Adjusting Cam (2 Req'd)
30	5K743	Arm Assy
31	5A669	Rear Spring Damper (4 Req'd)
32	5A545	Rear Spring Insulator Retainer
33	10080	Spring Seat Pocket
34	5K742	Arm Assy (2 Req'd)
35	N804001	Washer
36	N804348-S150	Bolt (4 Req'd)
37	N802855	Washer (2 Req'd)
38	N801335	Washer (2 Req'd)
39	N804002-S36	Washer (2 Req'd)
40	5A959	Insulator (4 Req'd)
41	N804003-S36	Washer (2 Req'd)
A		Tighten to 68-92 N-m (50-67 Lb-Ft)
B		Tighten to 47-63 N-m (35-46 Lb-Ft)
C		Tighten to 59.5-80.5 N-m (44-59 Lb-Ft)
D		Tighten to 53-72 N-m (40-53 Lb-Ft)
E		Tighten to 25-34 N-m (19-25 Lb-Ft)
F		Tighten to 7-9.5 N-m (5-7 Lb-Ft)
G		Tighten to 34-46 N-m (25-33 Lb-Ft)
H		Tighten to 68-92 N-m (50-67 Lb-Ft)

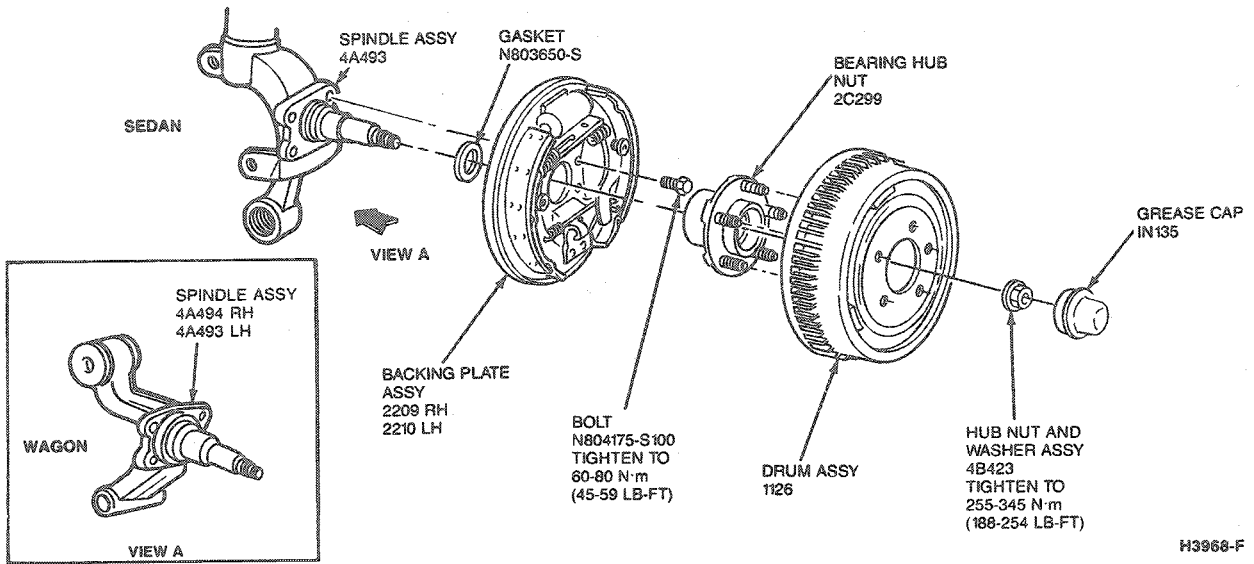
Wheel Assembly

Each rear wheel is bolted to a bearing and hub assembly. The bearing and hub assembly is lubricated for life and has integral seals.

A nut and washer assembly retains the bearing and hub assembly to the spindle.

DESCRIPTION AND OPERATION (Continued)

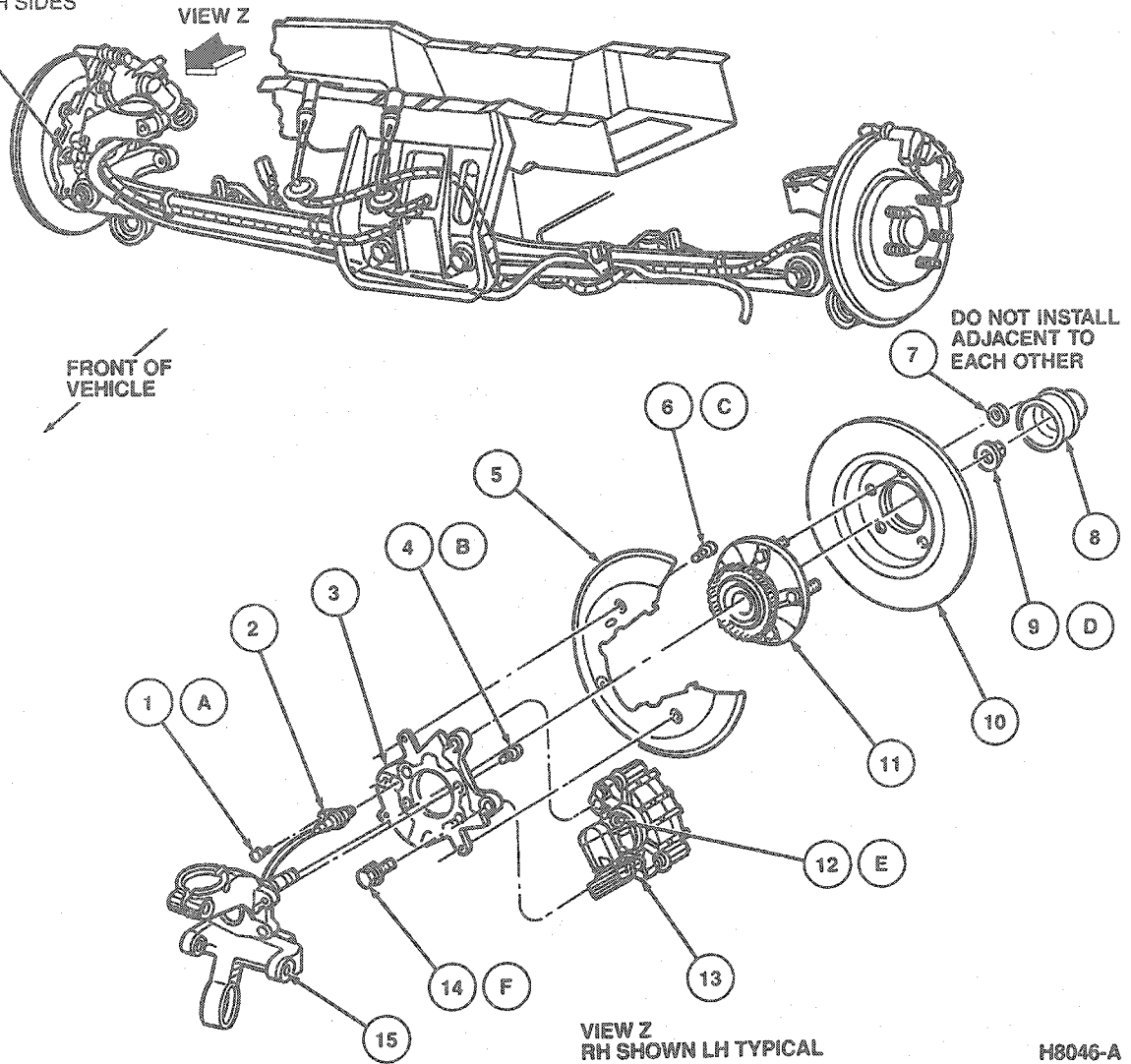
Drum Brakes



DESCRIPTION AND OPERATION (Continued)

Disc Brakes with Anti-Lock
Sedan

ROUTE ANTI-LOCK WIRE
UNDER PARKING BRAKE
CABLE-BOTH SIDES



Item	Part Number	Description
1A	NG05518-S100	Bolt
2	2C216 (LH) 2C190 (RH)	Anti-Lock Sensor Assy
3	2C101 (LH) 2C100 (RH)	Disc Brake Adapter
4B	N805086-S100	Bolt (4 Req'd)
5	2C028	Splash Shield
6C	N602726-S2	Bolt (3 Req'd)
7	W623485-S2	Retainer Nut (2 Req'd)
8	1N135	Dust Cap
9D	2B423	Nut

(Continued)

Item	Part Number	Description
10	2C026	Rotor
11	2B664	Hub Assy
12E	—	Bleed Screw
13	2K327 (RH) 2K328 (LH)	Caliper Assy
14F	N805163-S150	Bolt (2 Req'd)
15		Knuckle Assy
A		Tighten to 4.5-6.8 N-m (3-5 Lb-Ft)
B		Tighten to 59-81 N-m (44-60 Lb-Ft)

(Continued)

DESCRIPTION AND OPERATION (Continued)

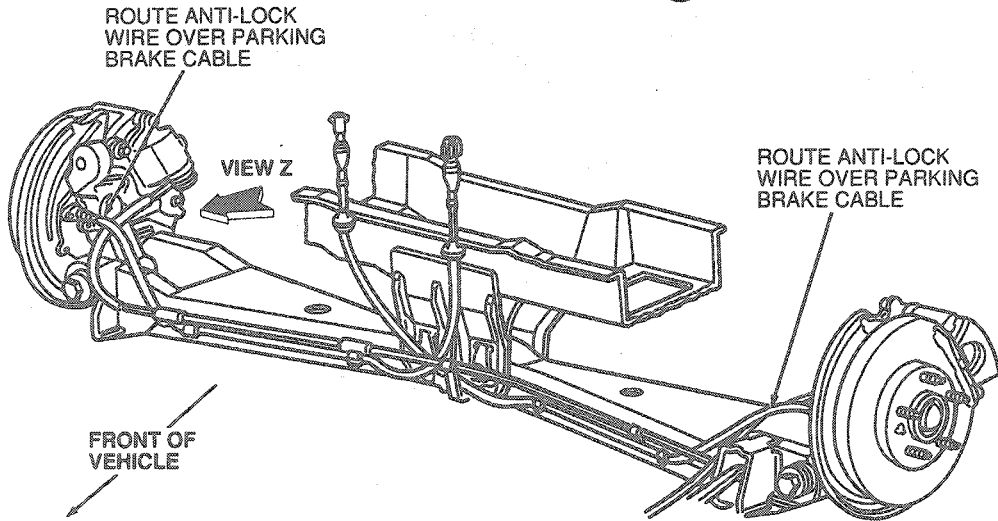
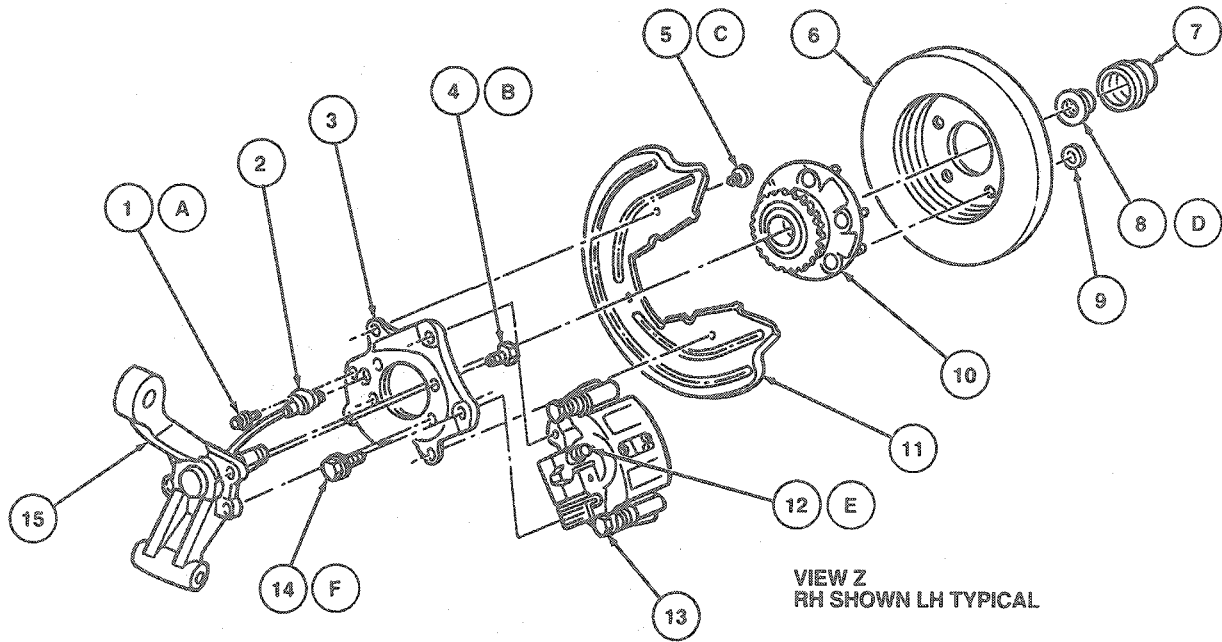
Item	Part Number	Description
C		Tighten to 8-12 N-m (6-9 Lb-Ft)
D		Tighten to 255-345 N-m (188-254 Lb-Ft)

Item	Part Number	Description
E		Tighten to 8-13 N-m (6-10 Lb-Ft)
F		Tighten to 87-119 N-m (64-88 Lb-Ft)

(Continued)

TH8046A

Station Wagon



H8047-A

DESCRIPTION AND OPERATION (Continued)

Item	Part Number	Description
1A	N6055 18-S100	Bolt
2	2C216 (LH) 2C190 (RH)	Anti-Lock Sensor Assy
3	2C100 (RH) 2C101 (LH)	Disc Brake Adapter
4B	N805086-S100	Bolt (4 Req'd)
5C	N602726-S2	Bolt (3 Req'd)
6	2C026	Rotor
7	1N135	Dust Cap
8D	4B423	Nut
9	W623485-S2	Retainer Nut (2 Req'd)
10	2B664	Hub Assy
11	2C028	Splash Shield
12E	—	Bleed Screw

(Continued)

Item	Part Number	Description
13	3K327 (RH) 3K328 (LH)	Caliper Assy
14F	N805163-S150	Bolt (2 Req'd)
15	—	Rear Knuckle
A		Tighten to 4.5-6.8 N·m (3-5 Lb-Ft)
B		Tighten to 59-81 N·m (44-60 Lb-Ft)
C		Tighten to 8-12 N·m (6-9 Lb-Ft)
D		Tighten to 255-345 N·m (188-254 Lb-Ft)
E		Tighten to 8-13 N·m (6-10 Lb-Ft)
F		Tighten to 87-119 N·m (64-88 Lb-Ft)

TH8047A

REMOVAL AND INSTALLATION

Shock Absorber

Station Wagon

Removal

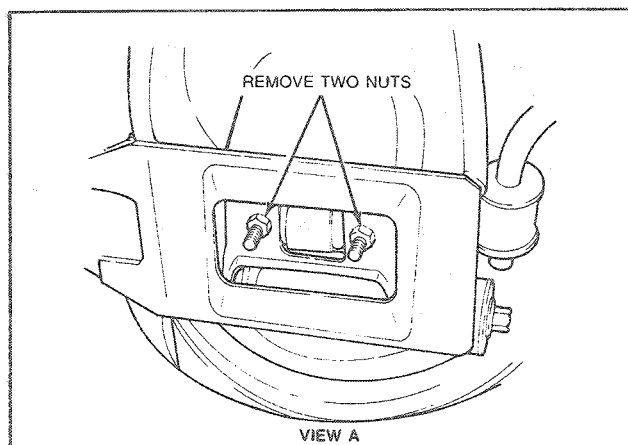
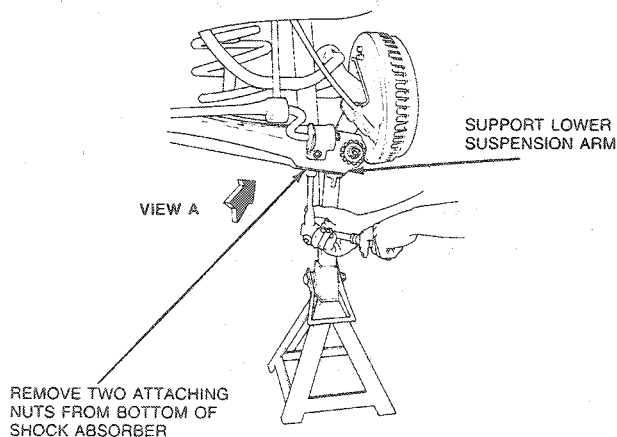
Refer to illustration under Description.

NOTE: Refer to the diagnostic procedure in Section 04-00 before replacing a shock absorber for a noise concern.

1. Raise vehicle on a hoist. Refer to Section 00-02.

2. Remove tire and wheel assembly.
3. Position a jackstand under lower suspension arm and remove two nuts retaining shock absorber to lower suspension arm.

CAUTION: The lower suspension arm must be supported before removal of upper or lower shock absorber attachments to prevent damage to attached components.



F4234-B

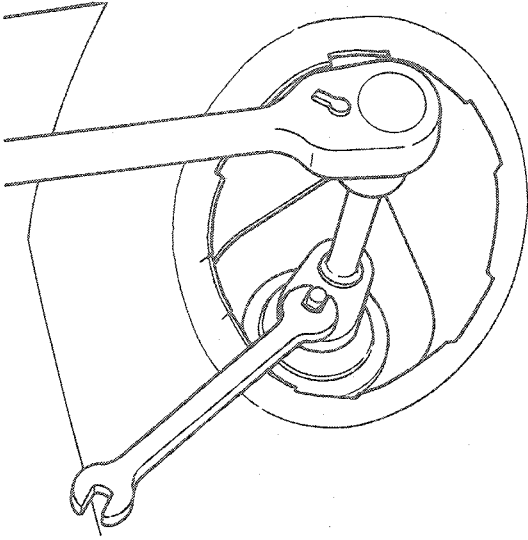
4. From inside of vehicle, remove rear compartment access panels.

NOTE: If the shock absorber is to be reused, do not grip the shaft with pliers or vise grips as this will damage the shaft surface finish and result in severe oil leakage.

NOTE: If a frame contact hoist is used, support the lower suspension arm with a floor jack. If a twin-post hoist is used, support the body with floor jacks on lifting pads forward of the tension strut body bracket.

REMOVAL AND INSTALLATION (Continued)

5. Remove and discard top shock absorber retaining nut using a crow foot wrench and ratchet while holding the shock absorber shaft with an open-end wrench.

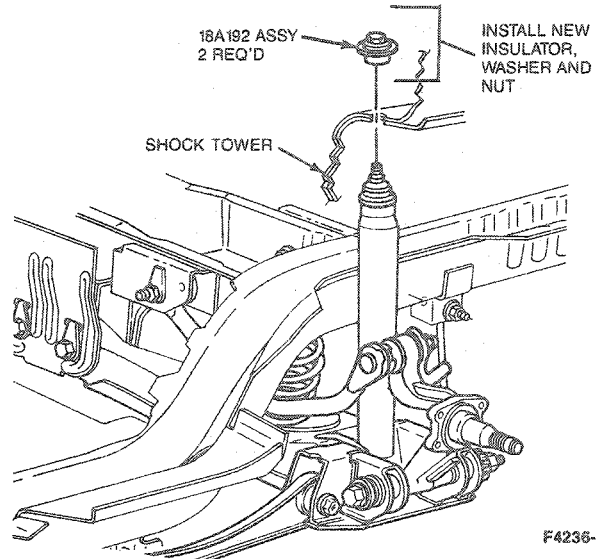


F4233-A

6. Remove washer and rubber insulator from shock.
NOTE: The shock absorbers are gas-filled. It will require an effort to collapse the shock in order to remove the shock absorber from the lower arm.
7. Remove shock absorber from vehicle.

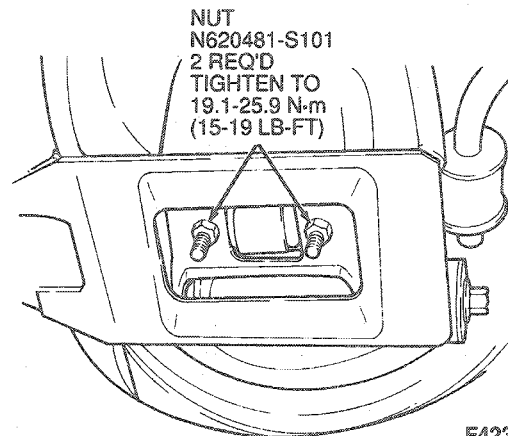
Installation

1. Install a new washer and insulator assembly on upper shock absorber rod.
2. Position upper part of shock absorber into shock tower opening in the body and push slowly on lower part of shock absorber until mounting studs are lined up with mounting holes in the lower suspension arm.
3. Install new lower retaining nuts. Do not tighten at this time.
4. Install a new insulator, washer and nut assembly on top of shock absorber. Tighten nut to 25.5-34.5 N-m (19-25 lb-ft).
5. Install rear compartment access panel.



F4236-C

6. Tighten two lower retaining nuts to 19.1-25.9 N-m (15-19 lb-ft).



F4237-C

7. Install wheel and tire assembly.
8. Remove floor jack and lower vehicle.

Shock Absorber Strut, Upper Mount and Spring Sedan

Tools Required:

- Rotunda Spring Compressor 086-00029

WARNING: DO NOT ATTEMPT TO REMOVE THE SPRING FROM THE STRUT WITHOUT FIRST COMPRESSING THE SPRING WITH A TOOL DESIGNED FOR THAT PURPOSE.

NOTE: Refer to the diagnostic procedure in Section 04-00 before replacing a shock absorber for a noise concern.

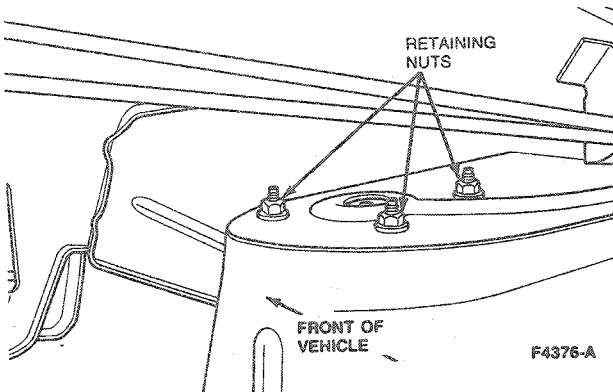
REMOVAL AND INSTALLATION (Continued)

Removal

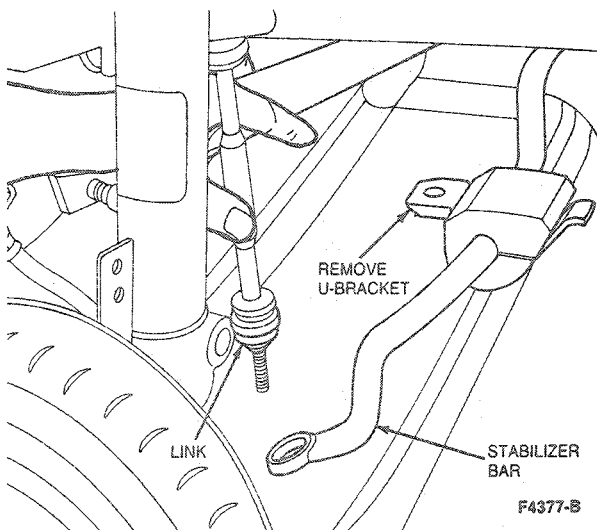
1. Raise hoist or jack only enough to contact body. Refer to Section 00-02.

CAUTION: Do not raise vehicle by tension strut. Damage to strut may result.

2. Open luggage compartment lid and loosen but do not remove, three nuts retaining the upper strut mount to body.



3. Raise vehicle. Remove wheel and tire.
4. Remove bolt retaining brake differential control valve to control arm.
5. Wire brake control valve to body to ensure proper support leaving about 152mm (6 inches) clearance to aid in strut removal.
6. Remove clip attaching brake hose to shock strut bracket and carefully move hose out of the way.
7. Remove stabilizer bar U-bracket from body, if so equipped.
8. Remove nut, washer and insulator attaching stabilizer bar to link and separate stabilizer bar from link, if so equipped.



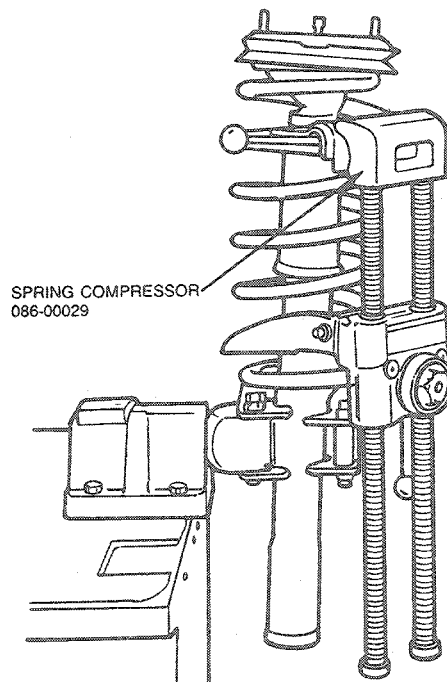
9. Remove nut, washer and insulator retaining tension strut to spindle. Move spindle rearward enough to separate it from the tension strut.
10. Remove and discard shock strut-to-spindle pinch bolt. Using a large screwdriver, slightly spread strut-to-spindle pinch joint, if required, for removal.
11. Lower jackstand and separate shock strut from spindle.
12. From inside luggage compartment area, remove and discard three upper mount-to-body nuts. Care should be taken so the shock strut does not drop when removing the three upper nuts.
13. Remove strut from vehicle.
14. Remove nut, washer and insulator attaching link to shock link and remove link.

WARNING: DO NOT ATTEMPT TO REMOVE THE SPRING FROM THE STRUT WITHOUT FIRST COMPRESSING THE SPRING WITH A TOOL DESIGNED FOR THAT PURPOSE.

CAUTION: Do not attempt to remove strut rod nut by turning rod and holding nut. Nut must be turned and rod held stationary to avoid possible fracture of rod at base of hex.

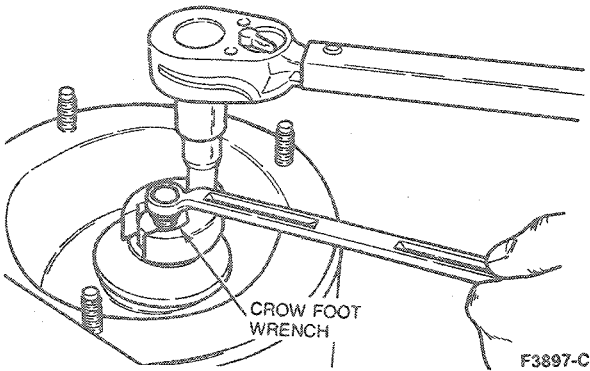
NOTE: Before compressing spring, mark location of insulator to top mount using a grease pencil.

15. Place strut, spring and upper mount assembly in Spring Compressor 086-00029 or equivalent.



REMOVAL AND INSTALLATION (Continued)

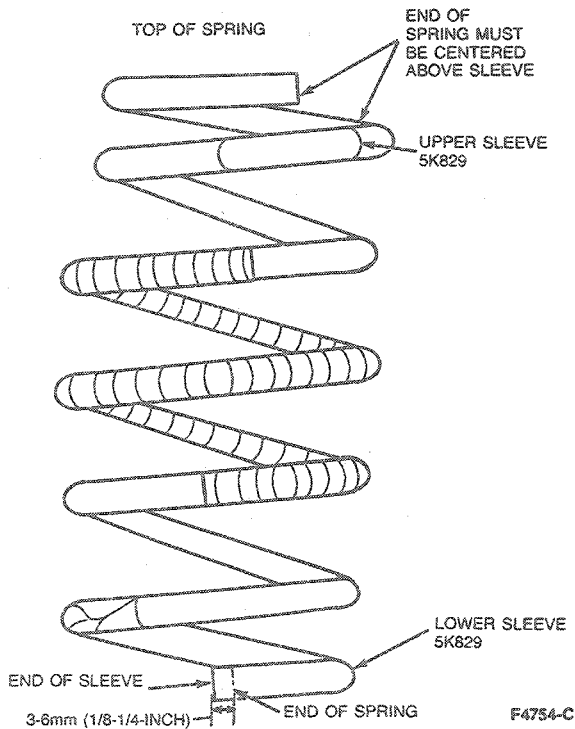
- Place 10mm box wrench on top of shock strut shaft and hold while removing top shaft mounting nut with a 21mm 6-point crow foot wrench and ratchet.



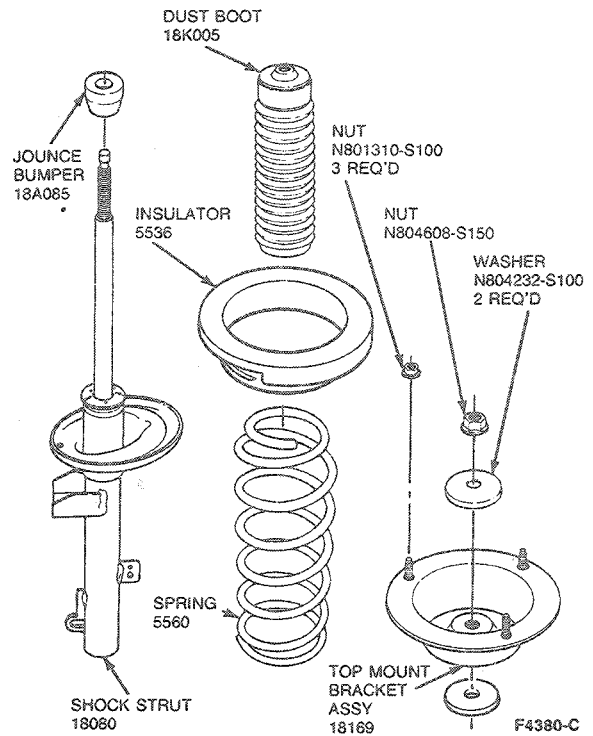
- Loosen spring compressor tool, then remove top mount bracket assembly, spring insulator and spring.

Installation

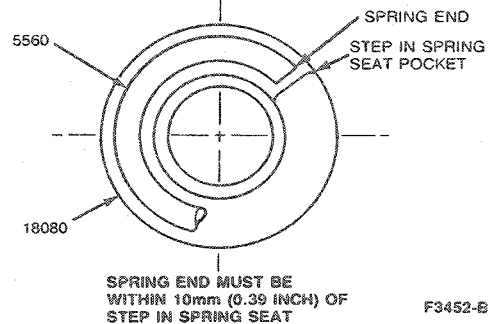
- Inspect spring to ensure dampers, sleeves and clips are properly positioned.



- Using Spring Compressor 086-00029 or equivalent, install spring, spring insulator, bottom washer, if equipped, top mount, upper washer and nut on strut shaft.



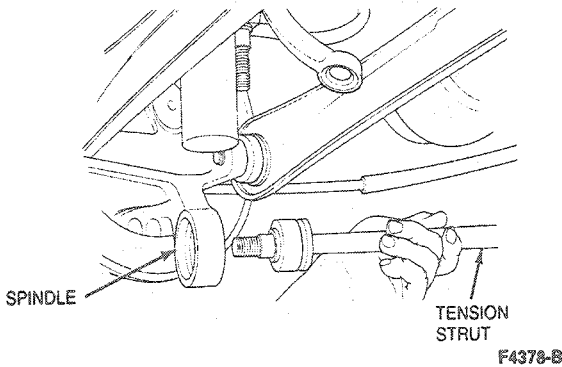
- Ensure spring is properly located in upper and lower spring seats and that mount washers are positioned correctly.



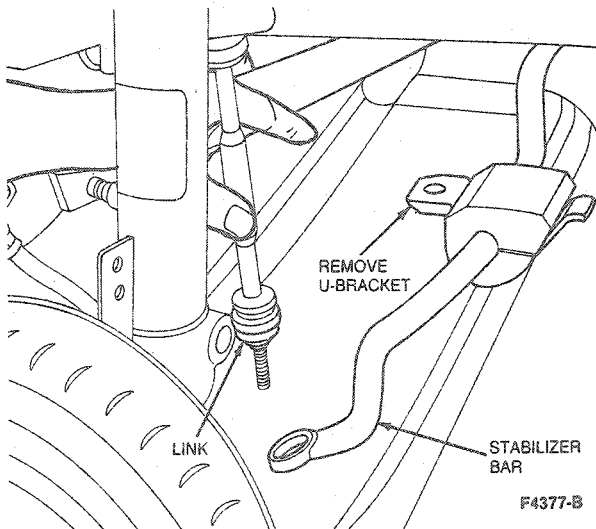
- Tighten rod nut to 53-72 N-m (40-53 lb-ft). Use a 21mm crow foot wrench to turn the nut and a 10mm box wrench to hold shaft so it will not turn while tightening nut. Do not use pliers or vise-grips on strut rod as finished rod surface could be damaged.
- Position stabilizer bar link in shock strut bracket. Install insulator, washer and nut. Tighten to 7-9.5 N-m (5-7 lb-ft).
- Insert three upper mount studs into strut tower in apron and hand start three new nuts. Do not tighten at this time.
- Partially raise vehicle. Refer to Section 00-02.
- Install shock strut into spindle pinch joint.
- Install a new pinch bolt into spindle and through the shock strut bracket. Tighten to 68-92 N-m (51-67 lb-ft).

REMOVAL AND INSTALLATION (Continued)

10. Move spindle rearward and install tension strut into spindle. Install insulator, washer and nut on tension strut. Tighten nut to 47-63 N·m (35-46 lb-ft).



11. Position link into stabilizer bar. Install insulator, washer and nut on link. Tighten to 7-9.5 N·m (5-7 lb-ft).
12. Position stabilizer bar U-bracket on body. Install bolt. Tighten to 34-46 N·m (25-33 lb-ft).
13. Install brake hose to shock strut bracket.
14. Install brake control differential valve on control arm and remove retaining wire.
15. Tighten three top mount-to-body nuts to 25-34 N·m (19-25 lb-ft).
16. Install wheel and tire assembly and lower vehicle.



Stabilizer Bar, Insulators and Link Assembly Sedan

Removal

CAUTION: Do not raise vehicle by tension strut. Damage to strut may result.

1. Raise vehicle on a hoist. Refer to Section 00-02.
2. Remove nuts, washers and insulators retaining stabilizer bar to right side and left side links. Discard nuts.
3. Remove and discard bolts attaching U-brackets and stabilizer bar to body and remove stabilizer bar.
4. Inspect U-bracket insulators and replace if damaged or worn.
5. Remove nut, washer and insulator retaining link to shock strut bracket. Discard nut.
6. Check link insulators and replace if damaged or worn.

Installation

1. Position link into shock strut bracket and install the insulator, washer and a new nut. Tighten to 7-9.5 N·m (5-7 lb-ft).
2. Position stabilizer bar, U-brackets and insulators on body. Install new bolt. Tighten to 34-46 N·m (25-34 lb-ft).
3. Position stabilizer bar onto links. Install insulators, washers and new nuts. Tighten to 7-9.5 N·m (5-7 lb-ft).
4. Lower vehicle.

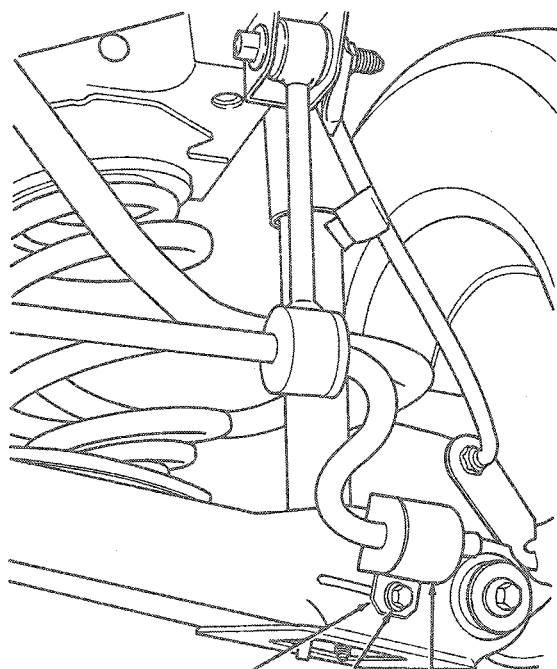
Station Wagon

Removal

1. Raise vehicle on hoist. Refer to Section 00-02.
2. Support vehicle with jackstands under lower arms so that stabilizer bar lower arm insulator is neutralized.

REMOVAL AND INSTALLATION (Continued)

3. Remove and discard two bolts and nuts retaining U-brackets and insulators to lower suspension arms.



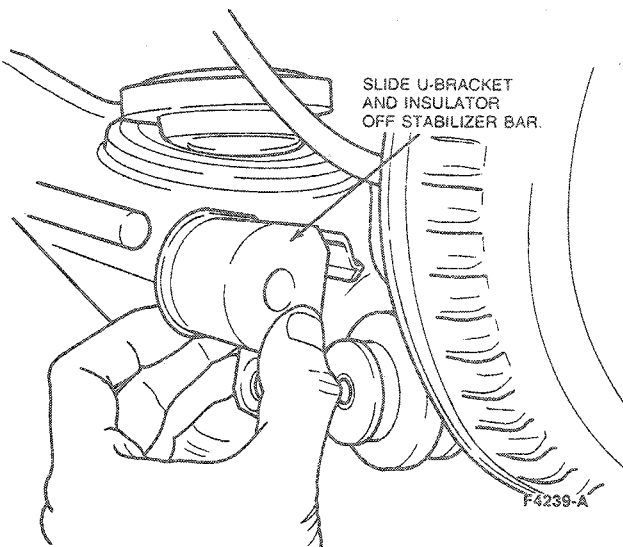
U-BRACKET
5486

REMOVE BOLT
AND NUT

INSULATOR
4A037

F4238-C

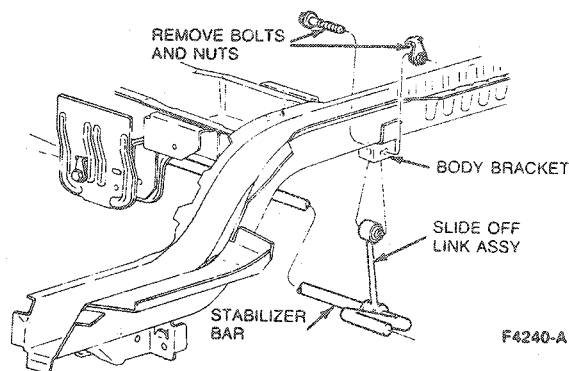
4. Clean stabilizer bar of dirt and other contamination and slide U-bracket and insulator off of stabilizer bar. Separate U-bracket from insulator and inspect insulator. Replace insulator if damaged or worn.



SLIDE U-BRACKET
AND INSULATOR
OFF STABILIZER BAR.

F4239-A

5. Remove and discard two bolts and nuts attaching link assemblies to body brackets.
6. Remove stabilizer bar and link assemblies from vehicle.
7. Slide link assemblies off of stabilizer bar. Inspect link assemblies and replace if damaged or worn.



REMOVE BOLTS
AND NUTS

BODY BRACKET

SLIDE OFF
LINK ASSY

STABILIZER
BAR

F4240-A

Installation

1. Clean stabilizer bar of dirt and other contamination.

NOTE: If the rear stabilizer bar to body link assemblies are being re-used, clean the link lower insulator inside diameter with a bottle brush to remove any dirt or paint build-up. Lubricate the insulator prior to reassembly. ONLY use Ford Rubber Insulator Lubricant E25Y-19553-A (ESF-M99B112-A) or equivalent.

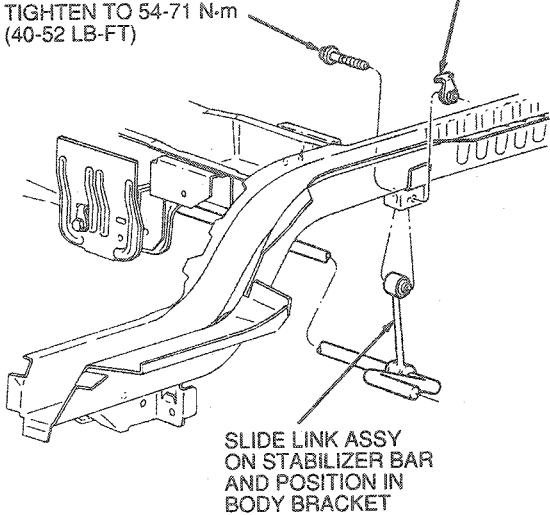
2. Lubricate stabilizer bar from the stabilizer bar end to the link insulator contact area with Ford Rubber Insulator Lubricant E25Y-19553-A (ESF-M99B112-A) or equivalent and slide on two link assemblies to approximate position.

REMOVAL AND INSTALLATION (Continued)

3. Install stabilizer bar and link assemblies on vehicle. Attach link assemblies to body brackets with two new bolts and nuts. Tighten bolts to 54-71 N·m (40-52 lb-ft).

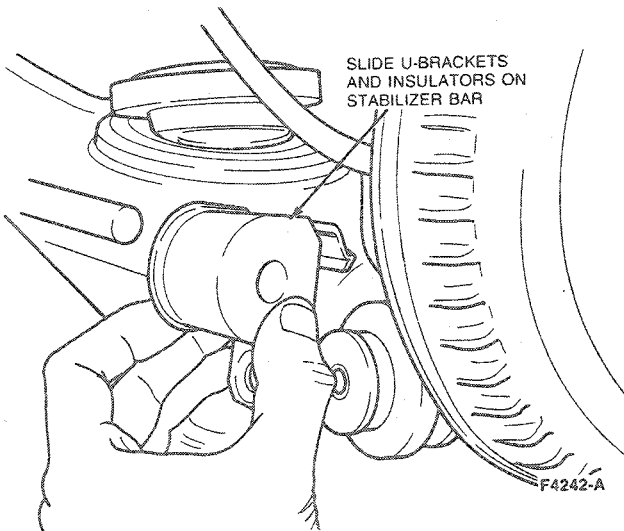
INSTALL NEW BOLT
TIGHTEN TO 54-71 N·m
(40-52 LB-FT)

INSTALL NEW NUT

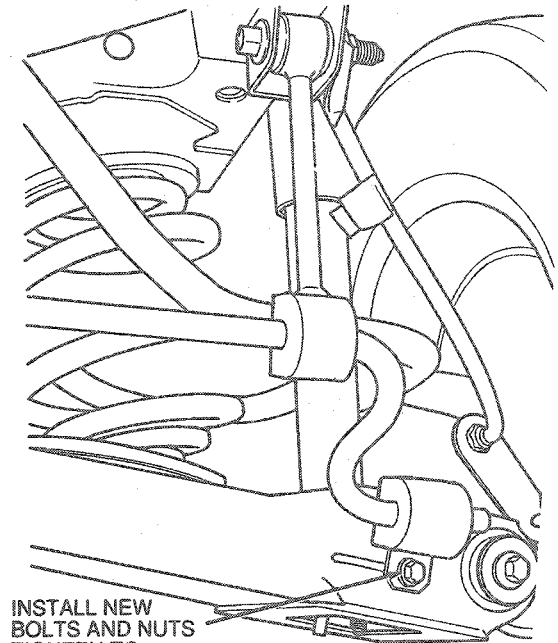


NOTE: If the rear stabilizer bar insulators are reinstalled, clean the insulator inside diameter with a bottle brush to remove any dirt or paint build-up. Lubricate the insulators using Ford Rubber Insulator Lubricant E25Y-19553-A (ESF-M99B112-A) or equivalent.

4. Slide U-brackets and insulators on both ends of stabilizer bar.



5. Position U-brackets on lower suspension arms and install two new bolts and nuts. Tighten bolts to 30-40 N·m (23-30 lb-ft).



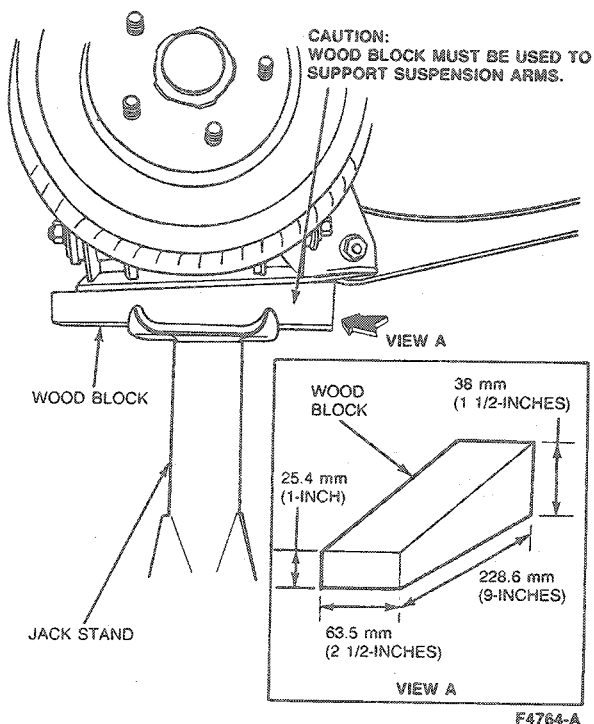
REMOVAL AND INSTALLATION (Continued)

Suspension Arms, Upper

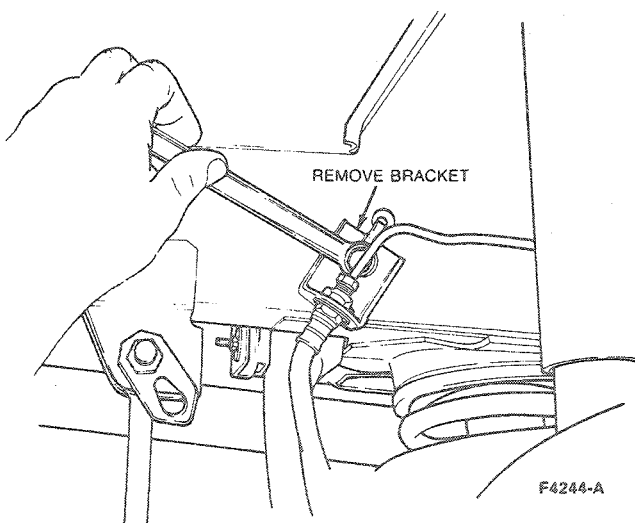
Station Wagon

Removal

1. Raise vehicle on a hoist and place a jackstand and wood block under rear lower suspension arm to support it at normal curb height. Refer to Section 00-02.

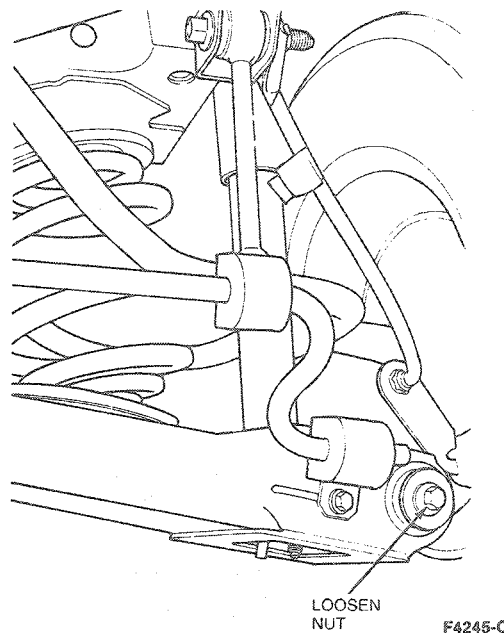


2. Remove wheel and tire assembly.
3. Remove brake line flexible hose bracket from body.

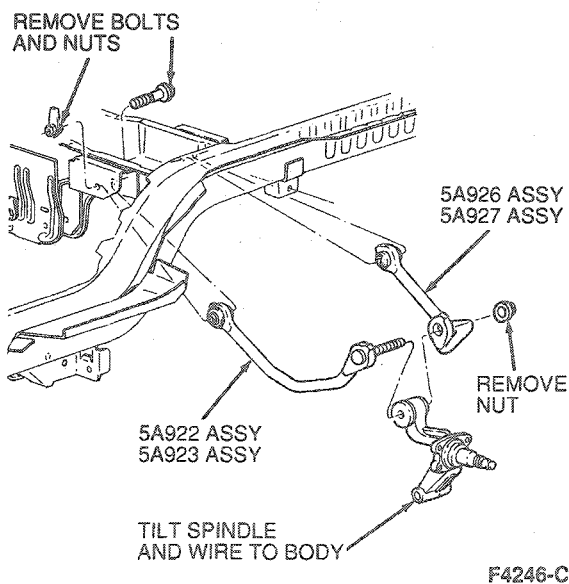


4. Loosen, do not remove, nut attaching spindle to upper arms.

5. Loosen, do not remove, nut attaching spindle to lower suspension arm.



6. Remove and discard bolts and nuts attaching front and rear upper suspension arms to body brackets. Make sure that spindle does not fall outward.
7. Carefully tilt top of spindle outward, allowing it to pivot on lower suspension arm retaining bolt until ends of the upper suspension arms are clear of the body bracket. Wire spindle to body in this position.
8. Remove and discard nut connecting upper suspension arms to spindle and remove arms from vehicle.



REMOVAL AND INSTALLATION (Continued)

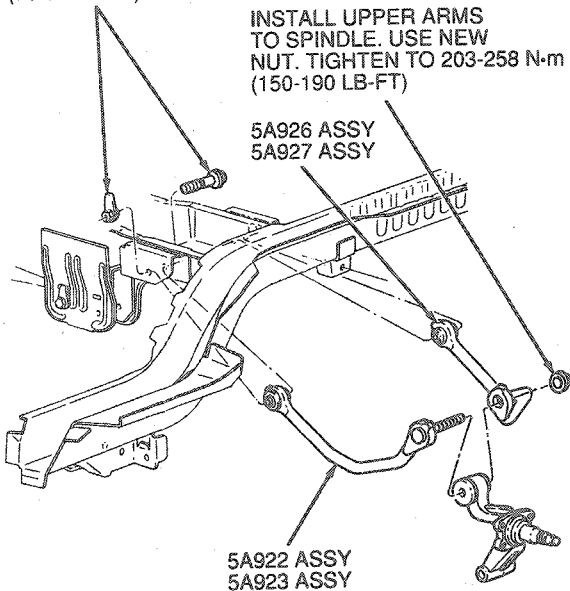
Installation

1. Install upper suspension arms on spindle and install a new nut. DO NOT tighten at this time.
2. Position upper suspension arm ends to body bracket and install new bolts and nuts. Tighten to 98-132 N·m (73-97 lb-ft). Remove wire from spindle.
3. Tighten nut attaching upper suspension arms to spindle to 203-258 N·m (150-190 lb-ft).

INSTALL UPPER ARMS TO BODY BRACKET — USE NEW BOLTS AND NUTS. TIGHTEN TO 98-132 N·m (73-97 LB-FT)

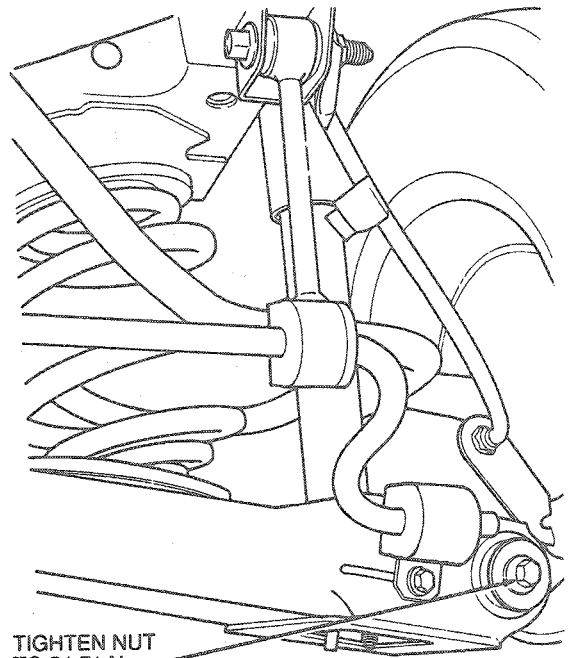
INSTALL UPPER ARMS TO SPINDLE. USE NEW NUT. TIGHTEN TO 203-258 N·m (150-190 LB-FT)

5A926 ASSY
5A927 ASSY



F4247-D

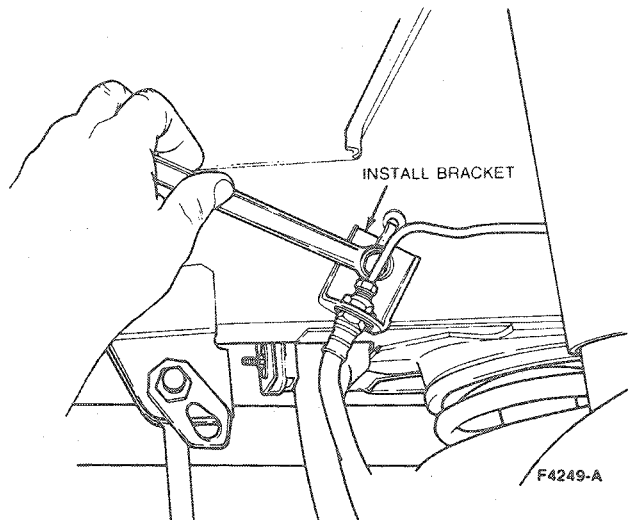
4. Tighten nut attaching lower suspension arm to spindle to 54-71 N·m (40-52 lb-ft).



TIGHTEN NUT TO 54-71 N·m (40-52 LB-FT)

F4248-E

5. Install brake line bracket to body.



F4249-A

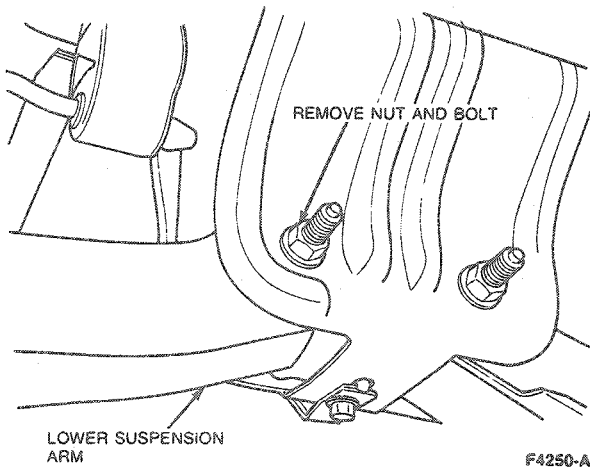
6. Install wheel and tire assembly.
7. Remove jackstand and lower vehicle.
8. Check rear wheel alignment.

REMOVAL AND INSTALLATION (Continued)

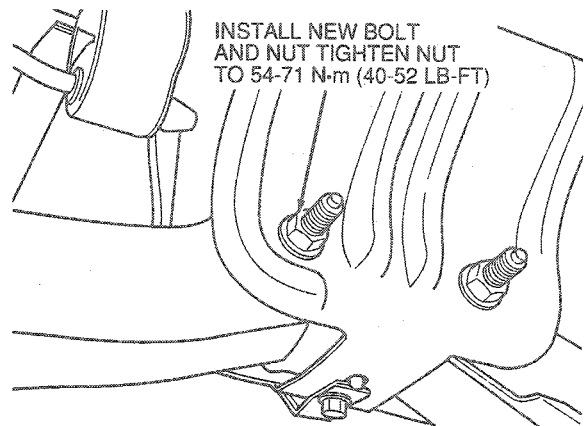
Suspension Arm, Lower**Station Wagon****Removal**

NOTE: If a twin-post hoist is used, a floor jack must be placed under the lifting pads on the underbody forward of the tension strut body bracket. Lower the rear hoist post out of the way.

1. Raise vehicle on a hoist. Refer to Section 00-02.
2. Remove tire and wheel assembly.
3. Remove spring as outlined under Springs, Removal.
4. Remove and discard bolt and nut attaching lower suspension arm to center body bracket and remove arm.

**Installation**

1. Position lower suspension arm-to-center body bracket and install a new bolt and nut. Do not tighten at this time. Install this bolt with bolt head toward front of vehicle.
2. Install spring as outlined under Springs, Installation.
3. Support lower suspension arm in normal curb height. Tighten nut attaching arm to body bracket to 54-71 N·m (40-52 lb-ft).



4. Tighten nut attaching lower suspension arm to spindle to 54-71 N·m (40-52 lb-ft).

NOTE: After lower arm installation, it is necessary to check rear alignment.

5. Remove floor jacks and lower vehicle.

Tension Strut**Sedan****Removal**

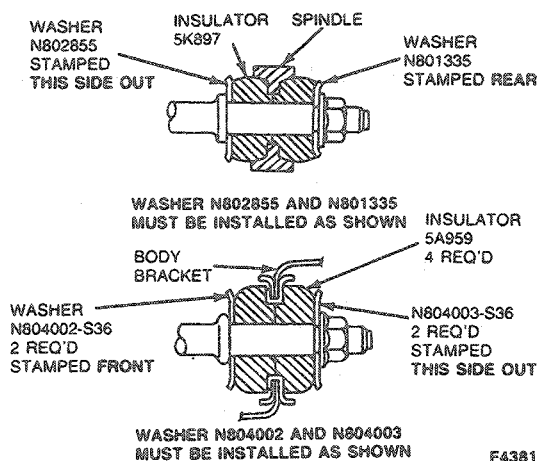
1. Raise vehicle on frame contact hoist using lift pads located to rear of front wheels and forward of rear wheels. Raise hoist only enough to contact body. Refer to Section 00-02.
2. From inside luggage compartment, loosen, but do not remove, three nuts retaining the upper shock strut mount to body.
3. Raise vehicle and remove wheel and tire assembly.
4. Remove and discard nut retaining tension strut to spindle.
5. Remove and discard nut retaining tension strut to body.
6. Move spindle rearward enough for tension strut to be removed.

Installation

1. Place new washers and bushings on both ends of new tension strut. Bushings at front and rear of tension strut are different. The rear bushings have indentations in them.

REMOVAL AND INSTALLATION (Continued)

- Insert one end into body bracket and install a new bushing, washer and nut. Do not tighten at this time.

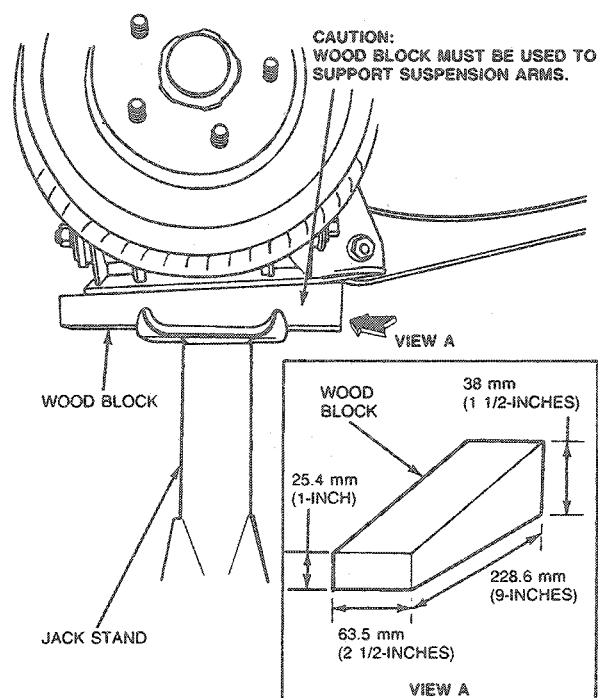


- Pull back on spindle enough so tension strut end can be installed in spindle.
- Install new bushing, washer and nut. Refer to illustration under Installation, Step 2. Verify that bushings are correctly piloted into the spindle. Tighten nut to 47-63 N·m (35-46 lb-ft).
- Verify that bushings are correctly piloted into the body bracket. Tighten nut to 47-63 N·m (35-46 lb-ft).
- Support spindle with jackstand. Remove three strut-to-body retaining nuts. Install three new strut-to-body retaining nuts. Tighten to 25-34 N·m (19-25 lb-ft).
- Remove jackstand.
- Install tire and wheel assembly.
- Lower vehicle.

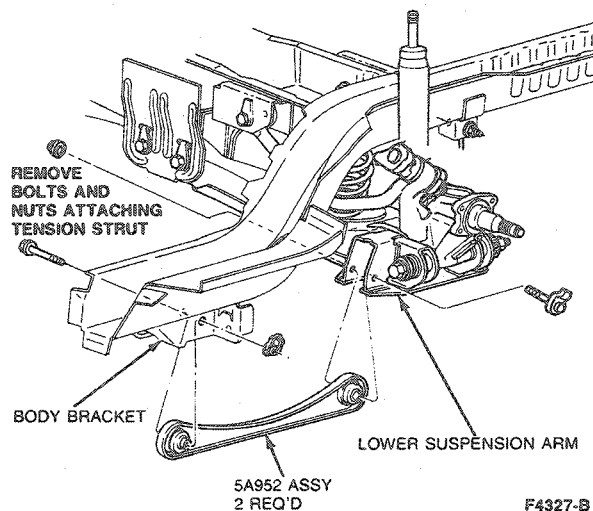
Station Wagon

Removal

- Raise vehicle on a frame contact hoist. Refer to Section 00-02.
- Place a floor jack and a wood block under rear lower suspension arm and raise arm to normal curb height.



- Remove wheel and tire assembly.
- Remove and discard nut and bolt retaining tension strut to lower suspension arm.
- Remove and discard nut and bolt retaining tension strut to body bracket and remove strut assembly.



Installation

- Insert front end of tension strut into body bracket and install a new bolt and nut. Do not tighten at this time.
- Position tension strut in lower suspension arm. Install a new bolt and nut. Tighten nut to 54-71 N·m (40-52 lb-ft).
- Tighten retaining bolt at front of tension strut to body bracket to 54-71 N·m (40-52 lb-ft).

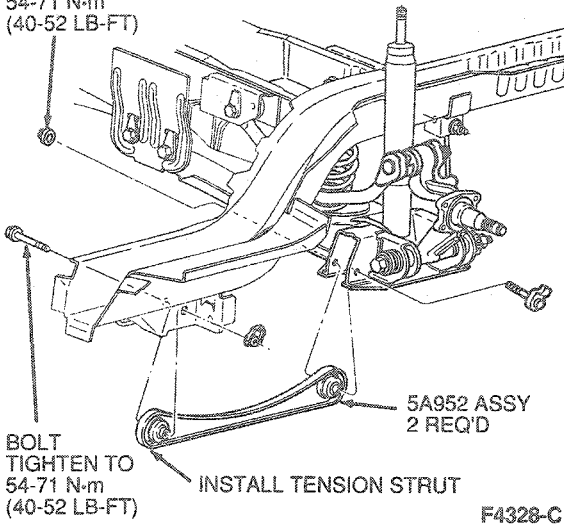
REMOVAL AND INSTALLATION (Continued)

4. Install wheel and tire assembly.

NOTE: After tension strut installation it may be necessary to check rear wheel alignment.

5. Remove floor jack and lower vehicle.

NUT
TIGHTEN TO
54-71 N·m
(40-52 LB-FT)



Sedan

Removal

CAUTION: Do not raise vehicle by tension strut. Damage to strut may result.

1. Raise vehicle on a hoist. Refer to Section 00-02.
2. Remove tire and wheel assembly.
3. Remove brake drum. Refer to Section 06-02.
4. Remove clip retaining brake flex hose to shock strut bracket.

NOTE: Care should be taken to ensure that brake flex hose is not stretched and brake tube is not bent.

5. Remove four bolts retaining brake backing plate to the spindle. Refer to Section 06-02.
6. Remove brake backing plate from spindle and wire it out of the way.
7. Remove and discard control arm to spindle bolts, washers and nuts.
8. Remove tension strut nut, washer and bushing. Discard nut.
9. Remove and discard pinch bolt retaining spindle to shock strut and remove spindle from vehicle.

Installation

1. Loosely assemble new arm bolt through spindle boss holes.
2. Position spindle onto tension strut and then onto shock strut.
3. Insert a new strut-to-spindle pinch bolt. Do not tighten at this time.

4. Install tension strut bushing, washer and new nut. Do not tighten at this time.
5. Install new arm to spindle, washers and nuts.
6. Install a jackstand to support suspension at normal curb height before tightening fasteners.
7. Tighten spindle-to-strut bolt to 68-92 N·m (50-67 lb-ft).
8. Tighten tension strut nut to 47-63 N·m (35-46 lb-ft).
9. Tighten control arm to spindle nuts to 59.5-80.5 N·m (44-59 lb-ft).
10. Install brake backing plate. Refer to Section 06-02.
11. Install brake flex line clip onto shock strut.
12. Install brake drum. Refer to Section 06-02.
13. Install wheel and tire assembly.
14. Lower vehicle.

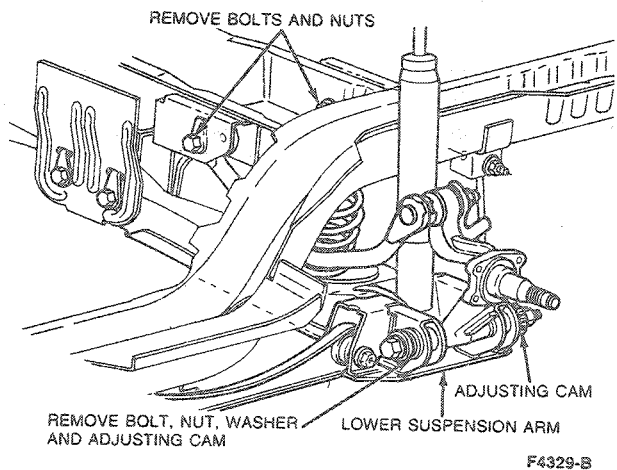
Station Wagon

Removal

1. Raise vehicle on hoist. Refer to Section 00-02.

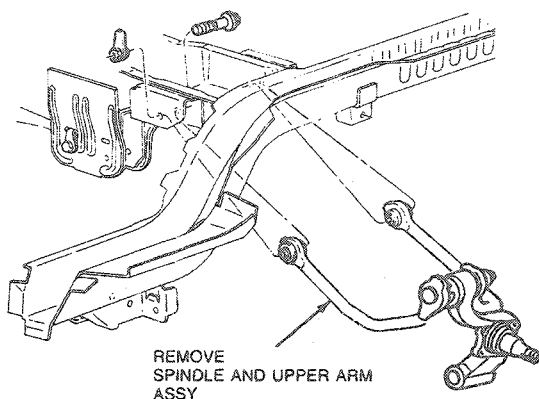
NOTE: If a frame contact hoist is used, a jackstand must be placed under the lower suspension arm to raise it to curb height.

2. Remove wheel and tire assembly.
3. Remove brake drum and wheel bearings as outlined.
4. Remove brake backing plate assembly from spindle. Refer to Section 06-02.
5. Remove and discard bolts and nuts attaching front and rear upper suspension arms to body crossmember.
6. Remove bolt, one washer, adjusting cam and nut attaching spindle to lower suspension arm. Discard bolt, washer and nut.



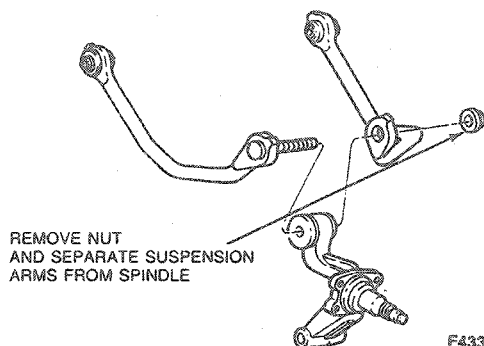
REMOVAL AND INSTALLATION (Continued)

7. Remove spindle and upper suspension arms from vehicle as an assembly.



F4330-B

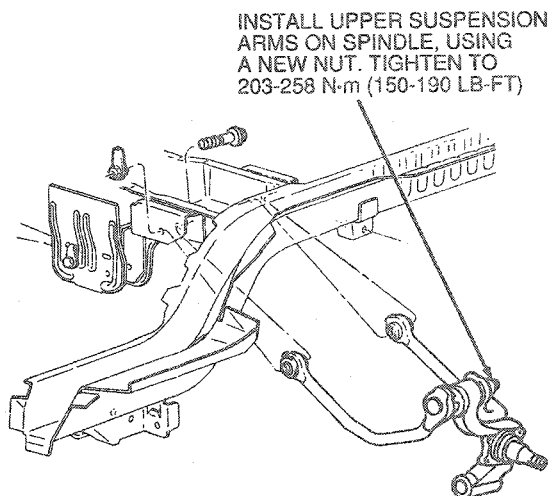
8. Remove and discard nut attaching upper suspension arm to spindle and remove suspension arms from spindle.



F4331-B

Installation

1. Install upper suspension arms on spindle using a new nut. DO NOT tighten at this time.



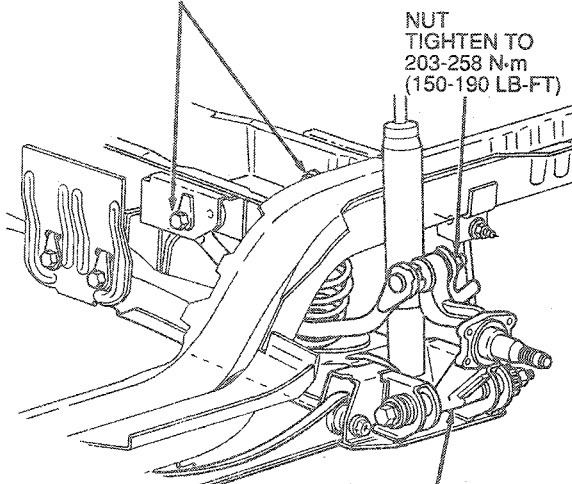
F4332-C

2. Position spindle and suspension arm assembly on lower suspension arm. Install new bolt, washer, existing adjusting cam and a new nut. DO NOT tighten at this time.
3. Position front and rear upper suspension arms to body bracket and install new bolts and nuts. DO NOT tighten at this time.
4. Ensure that the lower suspension arm is supported so that the lower suspension arm is at normal curb height.
5. Tighten the bolts attaching the front and rear upper suspension arms to body to 98-132 N·m (73-97 lb-ft).
6. Tighten the nut attaching the upper suspension arms to spindle to 203-258 N·m (150-190 lb-ft).
7. Tighten the nut attaching the spindle to lower suspension arm to 54-71 N·m (40-52 lb-ft).

REMOVAL AND INSTALLATION (Continued)

8. Install brake backing plate assembly to spindle.
Refer to Section 06-02.

POSITION UPPER SUSPENSION ARMS IN
BODY BRACKETS. USE NEW BOLTS AND
NUTS. TIGHTEN TO 98-132 N·m (73-97 LB-FT)



NUT
TIGHTEN TO
203-258 N·m
(150-190 LB-FT)

POSITION SPINDLE IN
LOWER SUSPENSION ARM.
INSTALL NEW BOLT, WASHER,
NUT AND EXISTING CAM.
TIGHTEN NUT TO 54-71 N·m
(40-52 LB-FT)

F4333-F

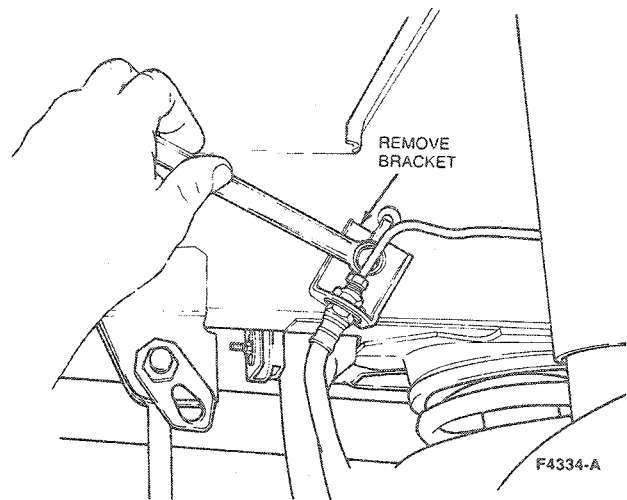
9. Install brake drum and wheel bearings.
10. Install wheel and tire assembly.
11. Remove jackstand and lower vehicle.
12. Check rear wheel alignment.

Springs

Removal

NOTE: If a twin-post hoist is used, vehicle must be supported on jackstands placed under pads of the underbody forward of the tension strut bracket.

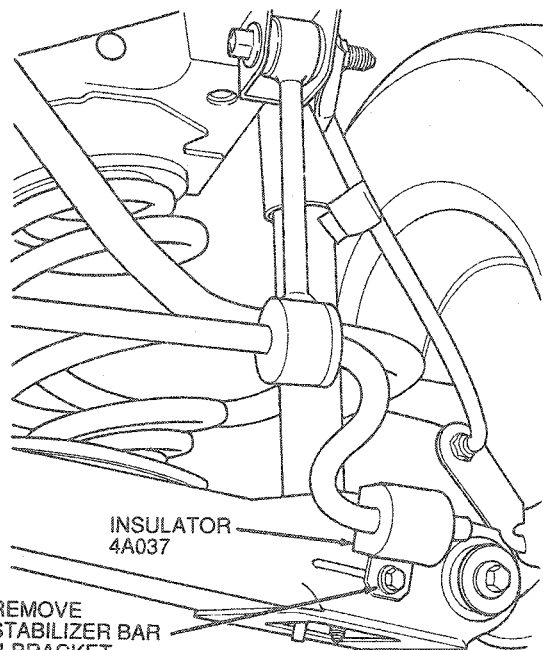
1. Raise vehicle on a hoist and place a floor jack under lower suspension arm. Raise lower arm to normal curb height. Refer to Section 00-02.
2. Remove wheel and tire assembly.
3. Remove the bracket retaining the brake flexible hose to body.



REMOVE
BRACKET

F4334-A

4. Remove stabilizer bar U-bracket from lower suspension arm.



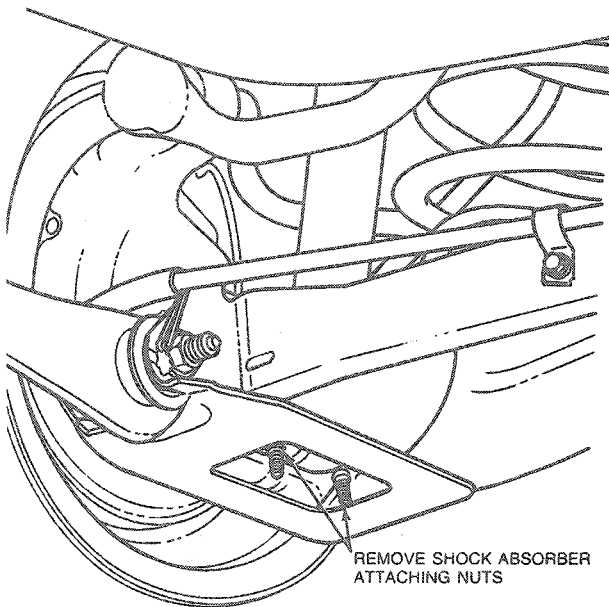
INSULATOR
4A037

REMOVE
STABILIZER BAR
U-BRACKET
5486

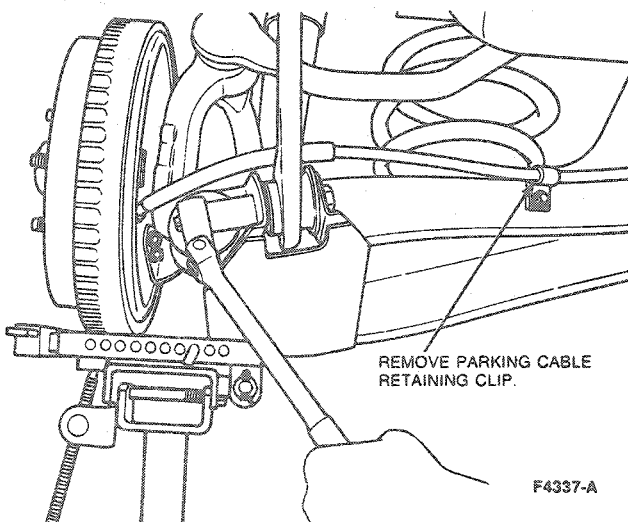
F4335-C

REMOVAL AND INSTALLATION (Continued)

5. Remove and discard nuts attaching shock absorber to lower suspension arm.

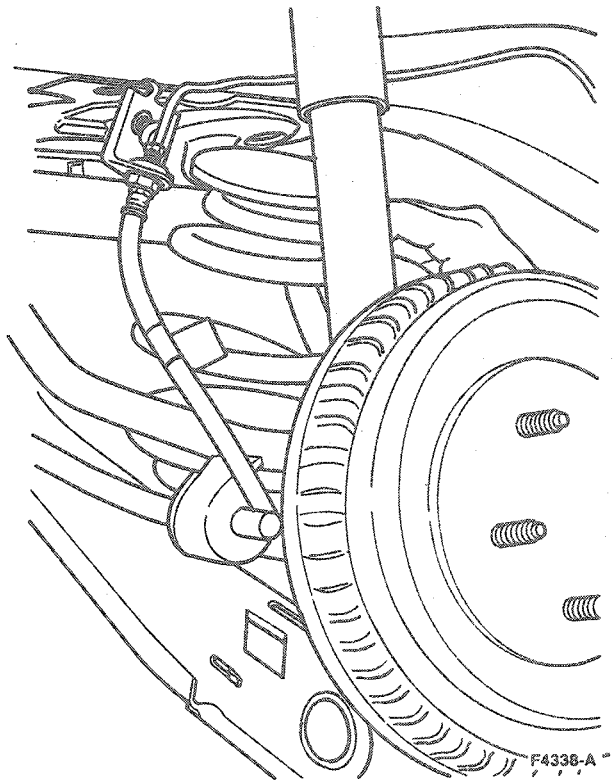


6. Remove parking brake cable and clip from lower suspension arm.
7. On vehicles equipped with rear disc brakes, remove ABS cable from clips on lower suspension arm.
8. Remove and discard bolt and nut attaching tension strut to lower suspension arm.
9. Wire spindle and upper suspension arms to body to prevent them from dropping down.



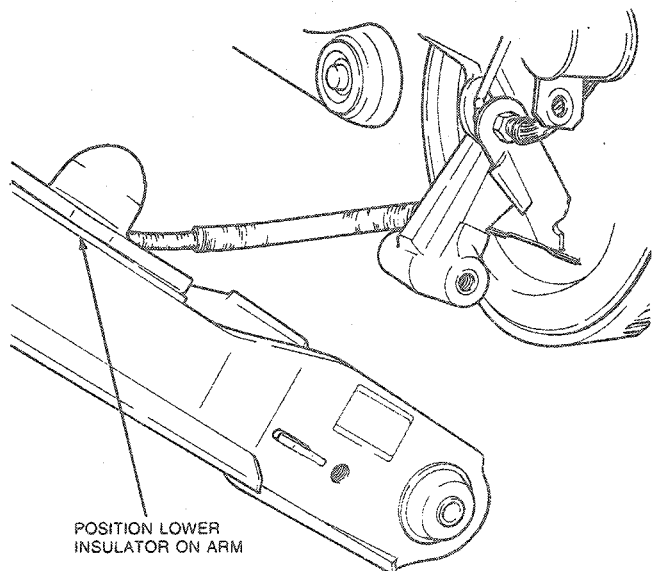
10. Remove nut, bolt, washer and adjusting cam retaining lower suspension arm to spindle. Discard nut, bolt and washer.

11. Slowly lower suspension arm with floor jack until spring can be removed.



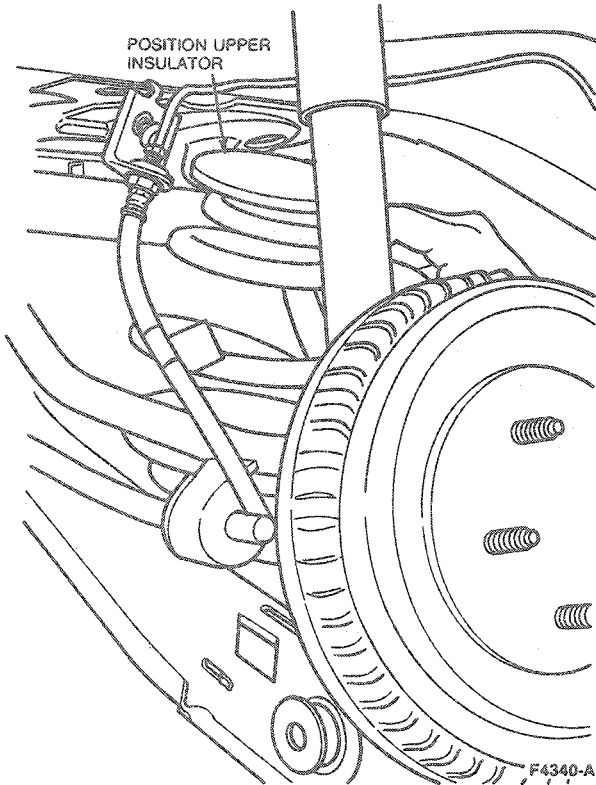
Installation

1. Position lower insulator on lower suspension arm and press insulator downward into place. Verify insulator is properly seated.

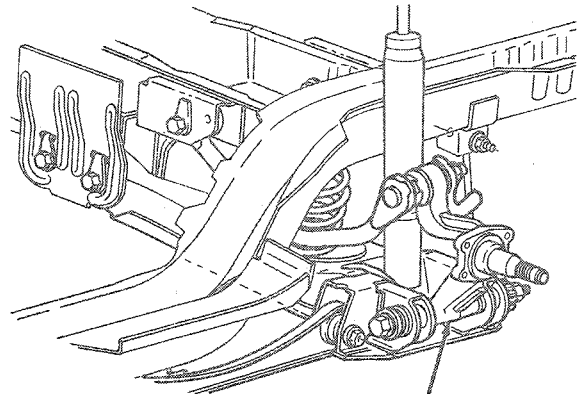


REMOVAL AND INSTALLATION (Continued)

2. Position upper insulator on top of spring. Install spring on lower suspension arm, making sure spring is properly seated.
3. Slowly raise suspension arm with floor jack and guide upper spring insulator onto upper spring seat on underbody.

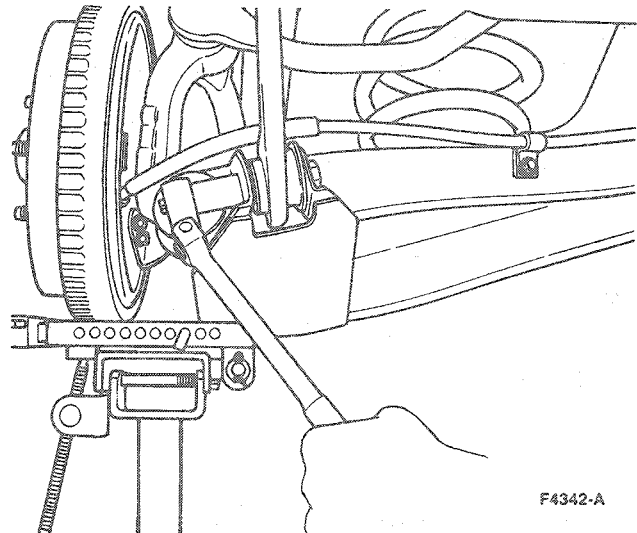


4. Position spindle in lower suspension arm and install a new bolt, nut, washer and existing cam. Install bolt with the head toward front of vehicle. DO NOT tighten at this time.



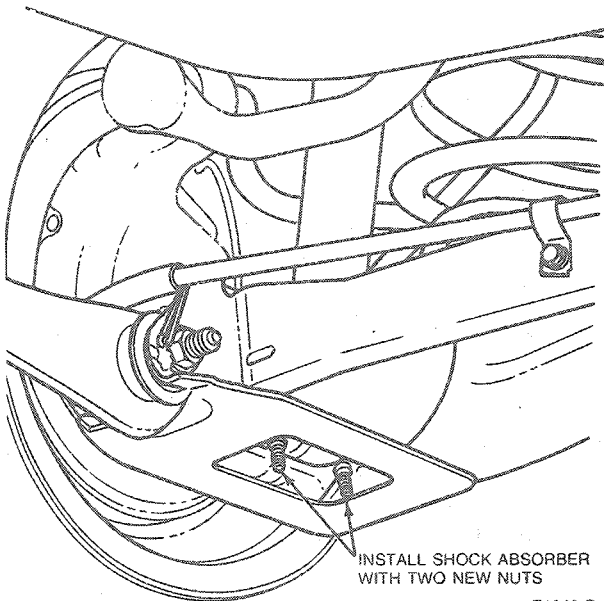
F4341-D

5. Remove wire from spindle and suspension arms.
6. Install tension strut in lower suspension arm using a new bolt and nut. DO NOT tighten at this time.
7. Install parking brake cable and clip to lower suspension arm.
8. On vehicles equipped with rear disc brakes, install ABS cable into clips on lower suspension arm.

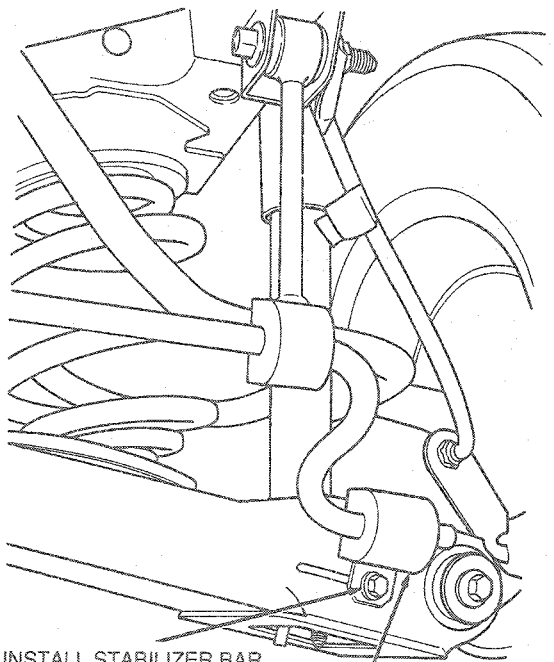


REMOVAL AND INSTALLATION (Continued)

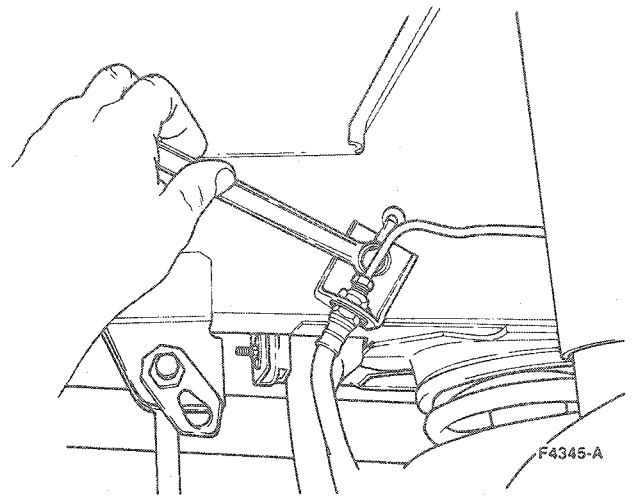
9. Position shock absorber on lower suspension arm and install two new nuts. Tighten to 19.1-25.9 N·m (15-19 lb-ft).



10. Install stabilizer bar and U-bracket to lower suspension arm using a new bolt. Tighten to 30-40 N·m (23-30 lb-ft).



11. Install flexible brake hose bracket to body. Tighten bolt to 11-16 N·m (8-12 lb-ft).



12. Using floor jack, raise lower suspension arm to normal curb height. Tighten lower suspension arm to spindle nut to 54-71 N·m (40-52 lb-ft). Tighten tension strut to body bracket bolt to 54-71 N·m (40-52 lb-ft).
13. Install wheel and tire assembly.
14. Remove floor jack and lower vehicle.
15. Check rear wheel alignment.

Control Arm

Sedan

Removal

CAUTION: Do not raise vehicle by tension strut.

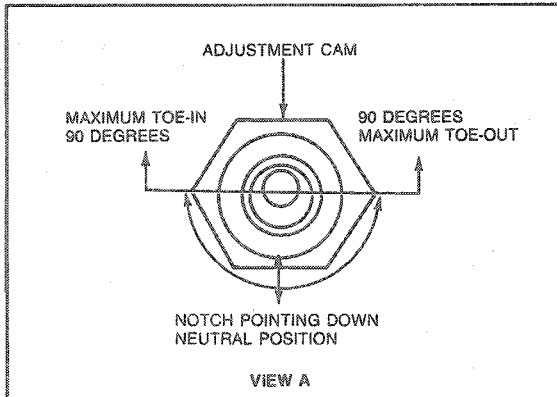
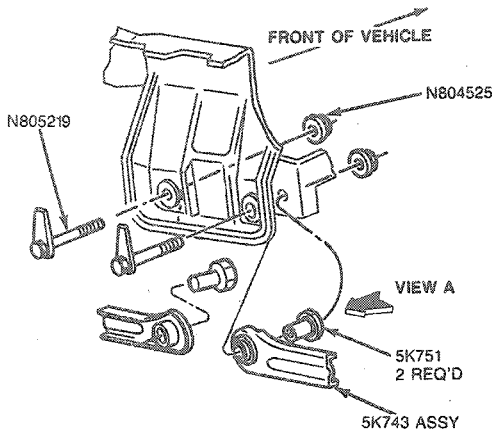
1. Raise vehicle on a hoist. Refer to Section 00-02.
2. Disconnect brake proportioning valve from left side front arm. Refer to Section 06-00.
3. Disconnect parking brake cable from front arms. Refer to Section 06-05.
4. Remove and discard arm-to-spindle bolt, washer and nut.
5. Remove and discard arm-to-body bolt and nut.
6. Remove arm from vehicle.

Installation

NOTE: When installing new control arms, the offset on all arms must face up. (The arms are stamped "bottom" on the lower edge.) The flange edge of the right side rear arm stamping must face the front of the vehicle. The other three must face the rear of the vehicle.

REMOVAL AND INSTALLATION (Continued)

NOTE: The rear control arms have two adjustment cams that fit inside the bushings at the arm-to-body attachment. The cam is installed from the rear on the left arm and from the front on the right arm.



F4382-E

1. Position arm, and cam where required, at center of vehicle. Insert new bolt and nut. **Do not** tighten at this time.
2. Move arm end up to spindle and insert new bolt, washer and nut. Tighten nut to 59.5-80.5 N-m (44-59 lb-ft).
3. Tighten arm-to-body nut to 68-92 N-m (50-67 lb-ft).
4. Install parking brake cable to front arms. Refer to Section 06-05.
5. Install brake proportioning valve to left side front arm. Refer to Section 06-00.
6. Lower vehicle.
7. After control arm replacement, the alignment should be checked for rear toe and reset if required.

Bearing and Hub Assembly, Drum Brakes

Tools Required:

- Coil Remover T89P-19623-FH

Removal

1. Raise vehicle on hoist. Refer to Section 00-02.
2. Remove wheel and tire assembly. Refer to Section 04-04.
3. Remove two pushnuts retaining drum to hub and remove drum.
4. Remove grease cap from bearing and hub assembly and discard cap.
5. Remove hub retaining nut and discard.
6. Remove bearing and hub assembly from spindle.

Installation

1. Position bearing and hub assembly on spindle.
2. Install new hub retaining nut and tighten to 255-345 N-m (188-254 lb-ft).
3. Install new grease cap using Coil Remover T89P-19623-FH. Tap on tool until grease cap is fully seated.
4. Install brake drum on hub. Install two pushnuts that retain drum.
5. Install wheel and tire assembly.
6. Lower vehicle.

Bearing and Hub Assembly, Disc Brakes

Removal

1. Raise vehicle on hoist. Refer to Section 00-02.
2. Remove wheel and tire assembly. Refer to Section 04-04.
3. Remove caliper assembly from brake adapter. Support caliper assembly with a length of wire. Refer to Section 06-04.
4. Remove push on nuts that retain rotor to hub and remove rotor.
5. Remove grease cap from bearing and hub assembly and discard grease cap.
6. Remove bearing and hub assembly retaining nut and discard.
7. Remove bearing and hub assembly from spindle.

Installation

1. Position bearing and hub assembly on spindle.
2. Install new hub retaining nut. Tighten to 255-345 N-m (188-254 lb-ft).
3. Install a new grease cap using Coil Remover T89P-19623-FH. Tap on tool until grease cap is fully seated.
4. Install rotor assembly on hub. Install two push-on nuts that retain rotor.
5. Install caliper assembly to brake adapter.

REMOVAL AND INSTALLATION (Continued)

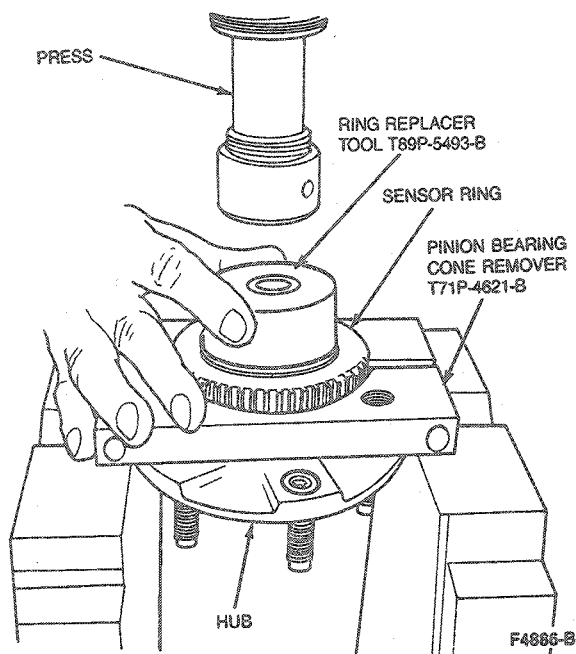
6. Install wheel and tire assembly.
7. Lower vehicle.

Anti-Lock Sensor Ring**Tools Required:**

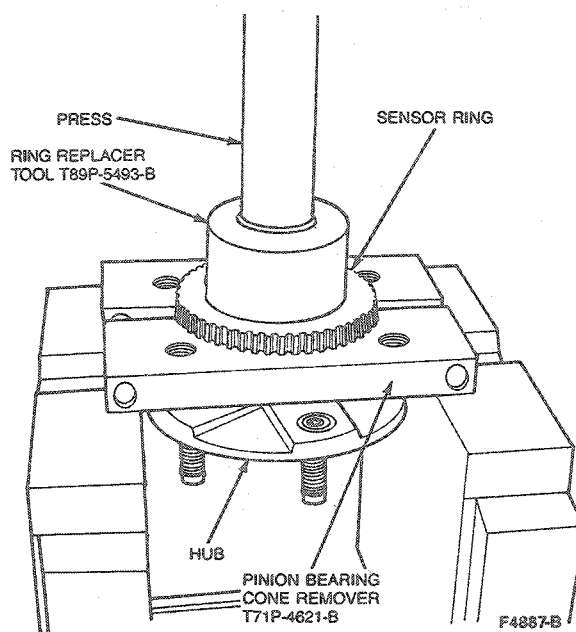
- Pinion Bearing Cone Remover T71P-4621-B
- Anti-Lock Sensor Ring Installer T88P-20202-B
- Ring Replacer Tool T89P-5493-B

Removal

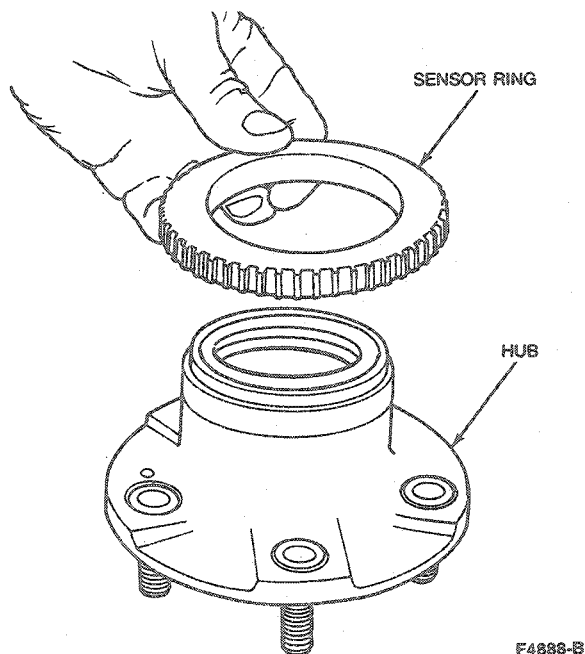
1. Place hub assembly on press, using Pinion Bearing Cone Remover T71P-4621-B. Position tool between sensor ring and hub. Position Ring Replacer tool T89P-5493-B on the hub.



2. Press anti-lock sensor ring off of hub assembly.

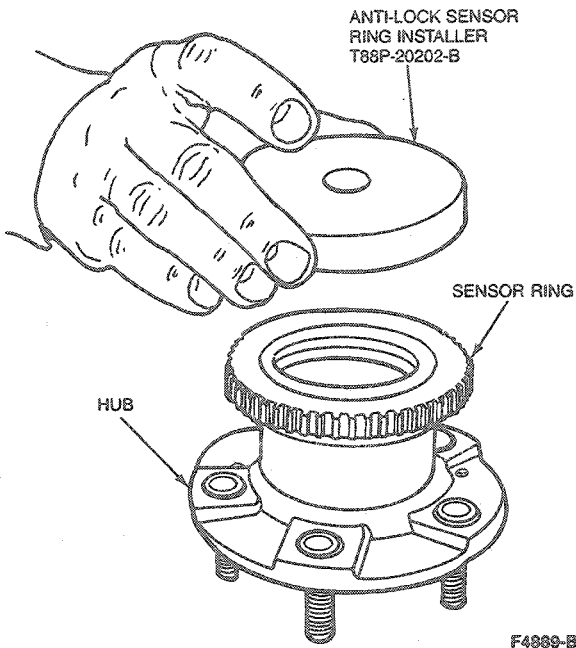
**Installation**

1. Place anti-lock sensor ring on hub assembly.

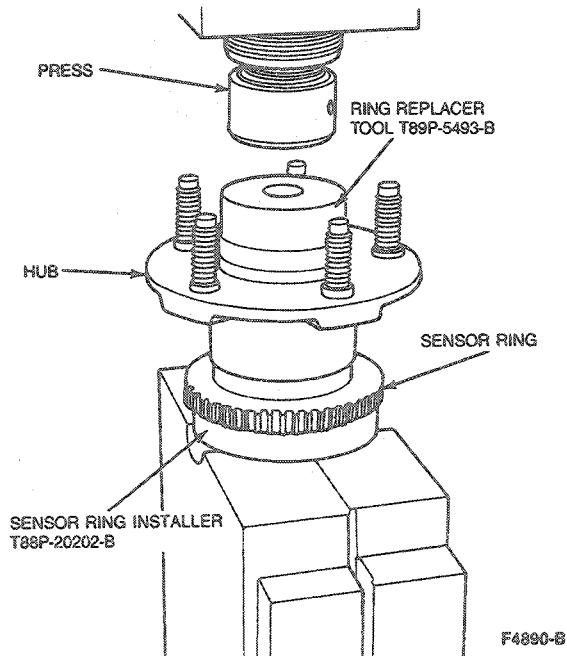


REMOVAL AND INSTALLATION (Continued)

2. Place Anti-Lock Sensor Ring Installer T88P-20202-B over speed indicator ring.



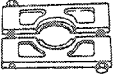



3. Place hub, anti-lock sensor Ring and Anti-Lock Sensor ring Installer T88P-20202-B in press. Using Ring Replacer Tool T89P-5493-B press anti-lock sensor ring on hub until ring bottoms on hub.



SPECIFICATIONS

Description	N-m	Lb-Ft
Shock Absorber-to-Body	25.5-34.5	19-25
Shock Absorber-to-Lower Suspension Arm	19.1-25.9	13-20
Upper Suspension Arms-to-Body	95-129	70-95
Shock Absorber-to-Body (Wagon)	25.5-34.5	19-25
Shock Absorber-to-Lower Suspension Arm (Wagon)	19.1-25.9	15-19
Upper Suspension Arms-to-Body (Wagon)	98-132	73-97
Upper Suspension Arms-to-Spindle (Wagon)	203-258	150-190
Lower Suspension Arm-to-Body (Wagon)	54-71	40-52
Lower Suspension Arm-to-Spindle (Wagon)	54-71	40-52
Tension Strut-to-Body (Wagon)	54-71	40-52
Tension Strut-to-Lower Suspension Arm (Wagon)	54-71	40-52
Stabilizer Bar U-Bracket-to-Lower Suspension Arm (Wagon)	30-40	23-30
Stabilizer Link Assembly-to-Body (Wagon)	54-71	40-52
Brake Hose Bracket-to-Body	11-16	8-12
Lower Control Arm-to-Spindle (Sedan)	59.5-80.5	44-59
Lower Control Arm-to-Body (Sedan)	68-92	50-67
Tension Strut-to-Body (Sedan)	47-63	35-46
Tension Strut-to-Spindle (Sedan)	47-63	35-46
Strut Top Mount-to-Body (Sedan)	25-34	19-25
Strut-to-Spindle Bolt	68-92	50-67
Stabilizer Link-to-Strut Bracket (Sedan)	7-9.5	5-7
Stabilizer Link-to-Stabilizer Bar (Sedan)	7-9.5	5-7
Stabilizer Bar U-Bracket (Sedan)	34-46	25-33
Hub Nut	255-345	188-254
Brake Adapter-to-Caliper Bolt	59-81	44-59
Brake Adapter-to-Spindle Bolt	59-81	44-59
Shield-to-Brake Adapter Screw	8-12	6-8
Anti-Lock Sensor Screw	4.5-6.8	40-60 (Lb-In)
Caliper Bleeder Screw	8-13	71-115 (Lb-In)
Backing Plate Bolt	60-80	45-59
Rear Strut Rod-to-Upper Mount	53-72	40-53

SPECIAL SERVICE TOOLS

Tool Number	Description
T71P-4621-B Pinion Bearing Cone Remover	 <p style="text-align: center;">T71P-4621-B</p>
T88P-20202-B Anti-Lock Sensor Ring Installer	 <p style="text-align: center;">T88P-20202-B</p>
T89P-5493-B Ring Replacer Tool	 <p style="text-align: center;">T89P-5493-B</p>
T89P-19623-FH Coil Remover	 <p style="text-align: center;">T89P-19623-FH</p>

ROTUNDA EQUIPMENT	
Model	Description
086-00029	Spring Compressor

SECTION 04-04 Wheels and Tires

SUBJECT	PAGE	SUBJECT	PAGE
ADJUSTMENTS		DESCRIPTION	
Steel Wheels	04-04-7	Spare Tire, Lightweight Temporary	04-04-4
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Tread Wear Indicators.....	04-04-9	Hoisting.....	04-04-5
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Tire Inspection	04-04-7	VEHICLE APPLICATION	04-04-1
Tire Sizes.....	04-04-7		
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VEHICLE APPLICATION

Taurus / Sable.

DESCRIPTION

Factory installed tires and wheels are designed to operate satisfactorily with loads up to and including full-rated load capacity when inflated to recommended inflation pressures.

Correct tire pressures and driving techniques have an important influence on tire life. Heavy cornering, excessively rapid acceleration and unnecessary sharp braking increase tire wear.

Tires

When replacing tires, only tires of the size, speed rating, load range, and construction type (radial) originally installed on the vehicle are recommended. Use of any other tire size or type may seriously affect ride, handling, speedometer / odometer calibration, vehicle ground clearance, and tire clearance to the body and chassis.

WARNING: DO NOT MIX DIFFERENT TYPES OF TIRES ON THE SAME VEHICLE SUCH AS RADIAL, BIAS, OR BIAS-BELTED TIRES EXCEPT IN EMERGENCIES (TEMPORARY SPARE USAGE), BECAUSE VEHICLE HANDLING MAY BE SERIOUSLY AFFECTED AND MAY RESULT IN LOSS OF CONTROL.

Consider the following when replacing tires:

1. To achieve best all around vehicle performance, tires of different construction should not be mixed on the same vehicle.
2. It is recommended that new tires be installed in pairs on the same axle.
3. When replacing only one tire, it should be paired with the tire having the most tread, to equalize braking traction.
4. Snow tires should be of a size and type equivalent to other tires on the vehicle as recommended on the tire decal.

CAUTION: Tire chains cannot be used on vehicles equipped with P215/60R16-94V tires.

DESCRIPTION (Continued)**Wheels**

Wheels must be replaced when they are bent, dented, heavily rusted, have air leaks (aluminum wheels can, in most cases, be serviced using the procedure under Adjustments) or elongated bolt holes, and have excessive lateral or radial runout. Wheels with a lateral or radial runout greater than the recommended specification may cause an objectionable, high-speed vehicle vibration.

Replacement wheels must be equal to the original equipment wheels in load capacity, diameter, width, offset and mounting configuration. An improper wheel may affect wheel and bearing life, ground and tire clearance, or speedometer and odometer calibrations.

Corrosion buildup can result in wheels sticking to the axle or rotor flange after extensive service. To prevent this from recurring once the wheels are removed, use the following procedure:

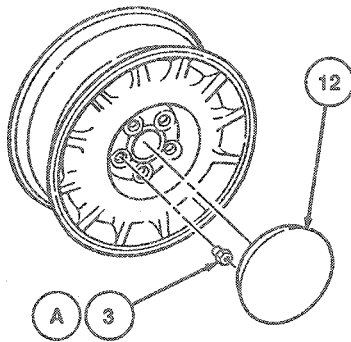
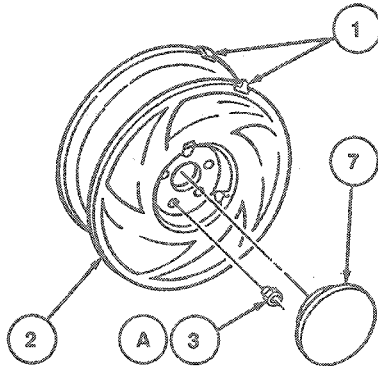
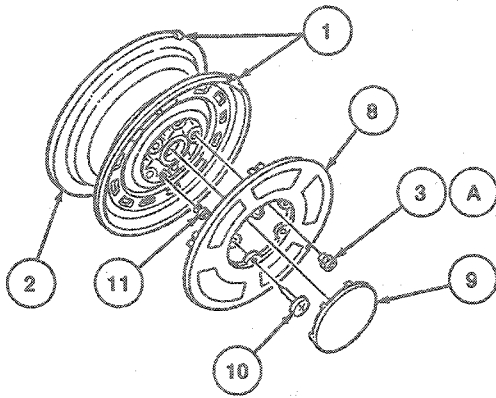
1. Clean axle/rotor flange and wheel bore of corrosion with wire brush, steel wool or other suitable material.
2. Coat wheel bore with Disc Brake Caliper Slide Grease D7AZ-19590-A (ESA-M1C172-A) or equivalent. Do not apply grease to wheel lug nut seats or wheel studs.
3. Install wheel on vehicle.

Wheelcovers**Ornament Applique Replacement (All Types Using Medallions—Except Snap-On Type Ornaments)**

If a wheelcover is not damaged but is missing its ornament applique, the applique should be replaced by using the following procedure:

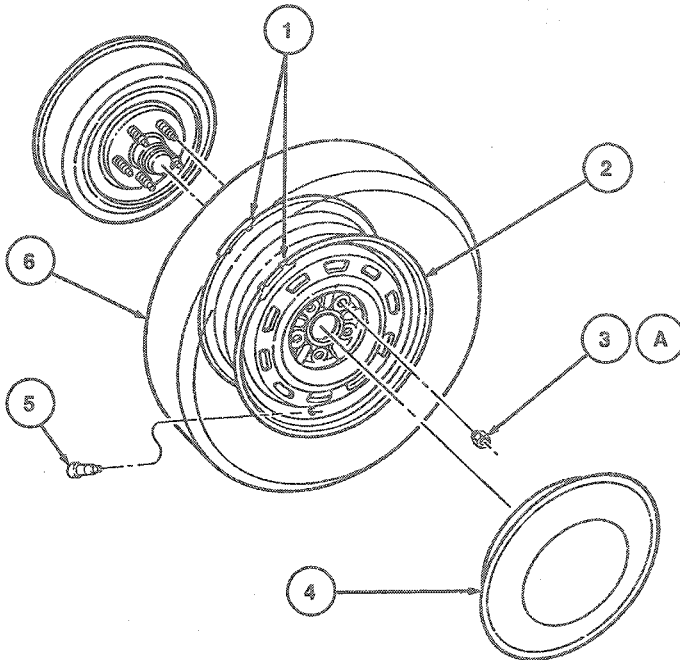
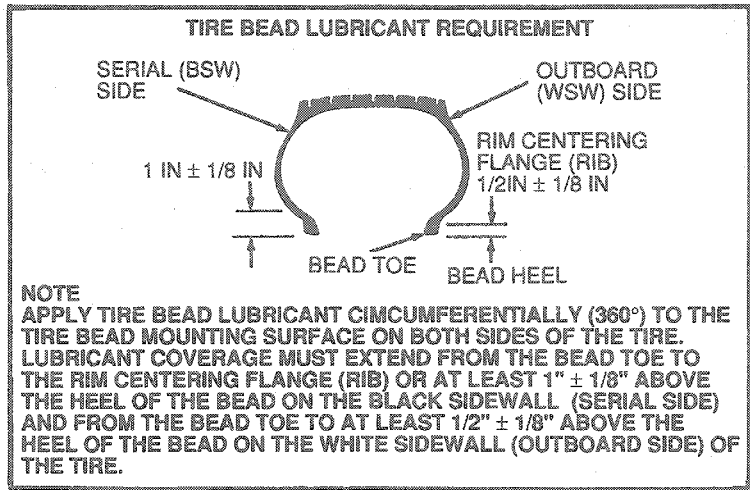
1. Remove any old mastic present in wheelcover ornament cavity.
2. Thoroughly clean contact area on wheelcover with Extra Strength Spot and Stain Remover B7A-19521-AA (ESR-M5B197-A) or equivalent.
CAUTION: Do not allow solvent to contact other wheelcover surfaces.
3. Apply three dime-sized daubs of Ford Silicone Rubber E7TZ-19562-A (WSE-M4G320-A2) to wheelcover.
4. Install ornament applique with slight twisting pressure to ensure proper seating. Ideal curing time before installing wheelcover is 24 hours.

DESCRIPTION (Continued)



INSTALLATION FOR CAST ALUMINUM WHEEL SAME AS MAIN VIEW EXCEPT AS SHOWN

SABLE LS +



NOTE:
 WHEEL LUG NUT TORQUE MUST BE CONTROLLED TO PREVENT WHEEL DAMAGE. NUTS MUST BE ASSEMBLED WITHOUT LUBRICATION.

F7656-A

Item	Part Number	Description
1	—	Split Weights
2	1007	Wheel
3A	1012	Wheel Lug Nuts
4	1130	Wheelcover
5	1700	Air Valve

(Continued)

Item	Part Number	Description
6	1508	Tire
7	1A097	Center Piece
8	1000	Wheelcover
9	1141	Center Piece
10	N806654-S55	Cover Retainer

(Continued)

DESCRIPTION (Continued)

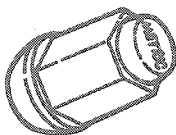
Item	Part Number	Description
11	1A100	Cover Retainer

(Continued)

Item	Part Number	Description
12 A	1A096	Center Piece Tighten to 115-142 N·m (85-105 Lb-Ft)

Wheel Lug Nuts

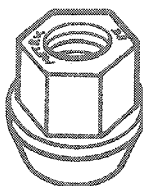
All vehicles use metric (M-12) wheel lug nuts. Replacement wheel lug nuts must be of the same type and thread size. All metric (M-12) wheel lug nuts are identified by the word METRIC stamped on the top surface of the nut.



F3494-B

Aluminum Wheel Lug Nuts

Aluminum wheels must use special "bulge" type metric (M-12) wheel lug nuts with enlarged chamfers, or distortion of the aluminum wheel lug nut seat will result.



F7808-A

Anti-Theft Wheel Lug Nuts

Optional aluminum wheels on vehicles are equipped with anti-theft wheel lug nuts (one per wheel) that are installed during vehicle pre-delivery. The key is attached to the wheel lug nut wrench, stowed with the spare tire. To allow vehicle service in the event the key has been misplaced, a Rotunda Locking Wheel Lug Nut Master Key Set 013-00006 or equivalent is available at most Ford and Lincoln/Mercury dealer service departments. The key has a circular keyway that is matched to the female slot in the anti-theft wheel lug nut.

To remove or install the anti-theft wheel lug nut, insert the key into the slot of the wheel lug nut, place the wheel lug nut wrench on the key, and while applying pressure on the key, remove or install the wheel lug nut.

Spare Tire, Lightweight Temporary

WARNING: THE TEMPORARY SPARE IS PROVIDED ONLY FOR TEMPORARY EMERGENCY USE. DO NOT USE AS A REGULAR TIRE. SERVICE AND REPLACE THE REGULAR TIRE AS SOON AS POSSIBLE. ANY CONTINUOUS ROAD USE OF THIS TEMPORARY, EMERGENCY TIRE MAY RESULT IN TIRE FAILURE, LOSS OF VEHICLE CONTROL, AND POSSIBLE INJURY TO VEHICLE OCCUPANTS.

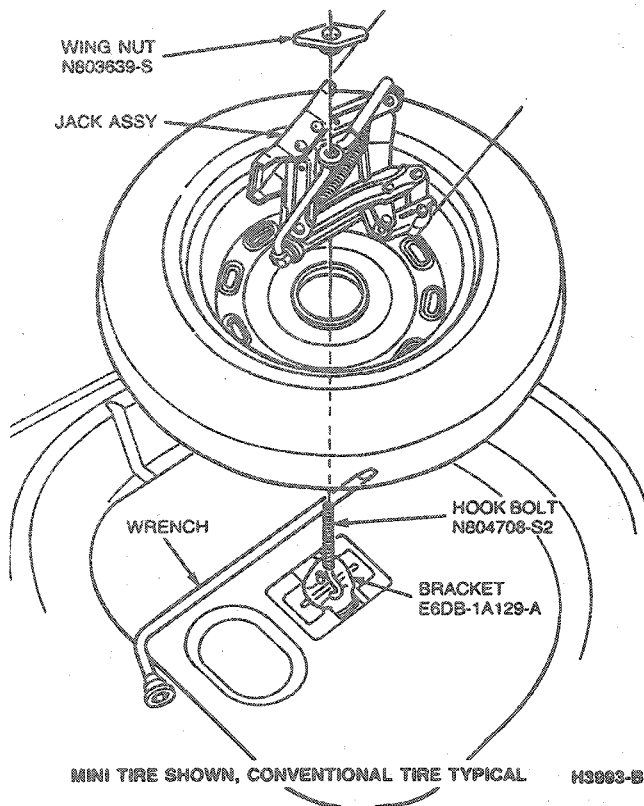
CAUTION: Because the temporary spare is a smaller diameter than the standard tire, ground clearance is reduced. Use care when a temporary spare is being used and avoid any obstacles that may come in contact with the underside of the vehicle.

A lightweight, temporary spare tire and wheel is standard equipment.

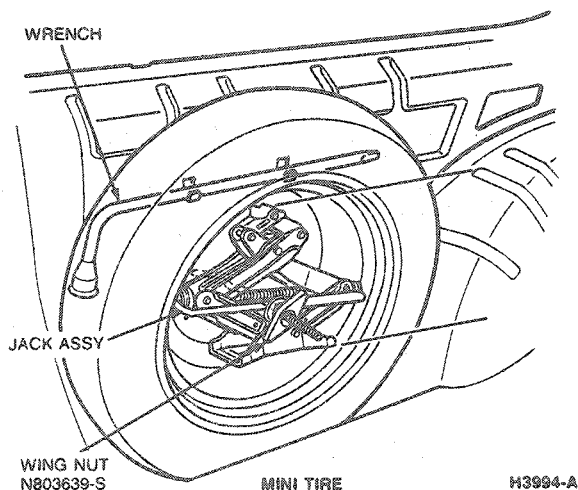
The temporary spare is designed to provide additional luggage room and a lightweight, easy-to-use spare tire. This spare is a normal-type radial ply with a reduced tread depth to provide an estimated tread life of 3218.6 km (2000 miles). It is intended for emergency use only and has a maximum speed capacity of 80 km/h (50 mph).

DESCRIPTION (Continued)

Sedan



Wagon



Directions for Use

1. The temporary spare tire is for temporary, emergency use only and not for continuous use as a road wheel. Do not exceed 80 km/h (50 mph) under any circumstances. Replace with a regular tire as soon as possible.
2. Do not use tire chains with temporary spare. Check cold inflation pressure monthly and when used, maintain cold inflation pressure as specified on vehicle tire pressure decal.

3. Avoid abusive use such as driving over potholes. Carefully read Owner Guide before using this emergency spare. When tread wear indicators appear on tire, replace tire/wheel assembly. Do not reuse wheel once tire has worn out.
4. Do not exceed vehicle maximum load rating noted on tire decal.
5. Do not attempt to service or remove the temporary spare from its wheel.
6. Do not attempt to use the wheel for any other type of tire.

REMOVAL AND INSTALLATION

Hoisting

Incorrect hoisting can damage steering linkage components and front end suspension struts. Refer to Section 00-02 for hoisting instructions.

Wheel and Tire

Removal

1. Remove wheelcover with tapered end of wheel lug nut wrench by inserting and twisting handle, then prying against inner wheelcover flange. Loosen, but do not remove, the wheel lug nuts.

NOTE: All wheel lug nuts are metric (M-12).

Replacement wheel lug nuts must be of the same type and thread size as original. Metric wheel lug nuts are identified by the word METRIC stamped on the top surface of the nut.

Aluminum wheels require a special bulge-type wheel lug nut with enlarged chamfer to prevent distortion of the wheel lug nut seat.

2. Raise vehicle until tire clears floor.
3. Remove wheel lug nuts and pull wheel off hub and drum assembly (rear) or hub assembly (front).

Installation

1. Clean dirt from hub mounting surface.
2. Place wheel on hub and drum assembly or hub assembly and tighten wheel lug nuts alternately.

NOTE: Replacement wheel lug nuts must be metric (M-12) and same type and size as original equipment (19mm HEX). Some dealers have Mazda (M-12) which do not have a 19mm hex and will not work with the Taurus/Sable wrench.

3. Lower vehicle and tighten wheel lug nuts to 115-142 N-m (85-105 lb-ft).
4. Align wheelcover with valve stem extension matching the hole in the wheelcover (also identified on backside of wheelcover with valve stem logo). Hit with the palm of your hand on the outside edges of the wheelcover until it is snapped in place all the way around.

REMOVAL AND INSTALLATION (Continued)

Wheel Ornaments

Removal and Installation

Aluminum Wheels

Installation of the wheel ornament is made by inserting one side of the ornament into the center of the wheel opening and striking the opposite of the ornament with the palm of the hand until the ornament is seated in the opening.

Center Attached Two-Piece Bolt-On Wheelcover

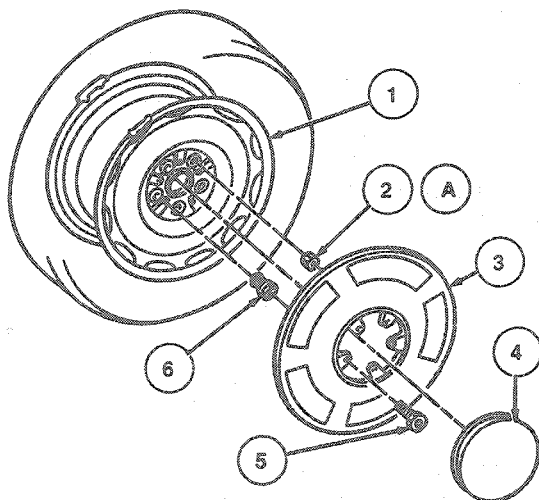
NOTE: A Phillips screwdriver is required for the installation of the wheelcover; however, the wheel may be removed from the vehicle without removing the wheelcover. Only the center cap of the wheelcover needs to be removed.

Removal

1. Pry the center cap from the wheelcover using the lug wrench provided with the vehicle.
2. The wheel, with the wheelcover still attached, may now be removed from the vehicle by removing the five lug nuts.
3. If the tire needs to be removed from the wheel, first remove the five screws, using the Phillips screwdriver, and pull the wheelcover off of the wheel.

Installation

1. Align the valve hole in the wheelcover with the valve stem and install the wheelcover into the wheel.
2. Align the holes in the wheelcover mounting pads with the center holes in the anchor.
3. Install the five screws and tighten securely with a Phillips screwdriver.
4. Align the legs of the center ornament with the slots on the wheelcover and install.



INSTALLATION OF SEMI-STYLED STEEL WHEEL WITH SCREW ON WHEEL COVER

F7809-A

Item	Part Number	Description
1	1007	Wheel Assy
2A	1012	Lug Nut (5 Req'd)
3	1000	Wheelcover
4	1141	Wheelcover
5	N806654-S55	Screw (5 Req'd)
6	1A100	Wheel Ornament Screw Anchor
A		Tighten to 115-142 N-m (85-105 Lb-Ft)

Tire

Tools Required:

- Rotunda Tire Changer 104-00235

Follow instructions provided with Rotunda Tire Changer 104-00235 or equivalent.

Use appropriate equipment and adhere to prescribed safety instructions to avoid damage to the tire and possible injury.

Do not remove temporary spare tire from the wheel assembly. If tread wear indicators appear on temporary spare, replace complete tire and wheel assembly.

CLEANING AND INSPECTION

Appearance

To clean wheels, wheelcovers and wheel ornamentation, use a mild soap and water solution and rinse thoroughly with clear water.

CAUTION: Do not use steel wool, abrasive-type cleaner or strong detergents containing high alkaline or caustic agents as damage to the protective coating and discoloration may result.

NOTE: Automatic car wash tire brushes may damage aluminum and styled road wheel protective coatings. Before using such a service, be sure abrasive-type brushes are not being used.

Wheel Inspection

Inspect the wheel lug nuts and tighten to 115-142 N-m (85-105 lb-ft). Loose wheel lug nuts can cause shimmy and vibration, and may also destroy the stud holes in the wheels.

Ensure wheels and hubs are clean. Stones wedged between the wheel and rotor or rear drum or lumps of mud and grease can unbalance the wheel.

Check for wheel damage. Wobble or shimmy caused by a damaged wheel will eventually damage the bearings. Inspect the rims for dents that could leak air.

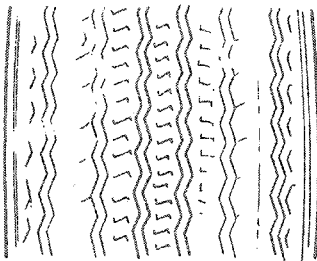
CLEANING AND INSPECTION (Continued)

Tire Sizes

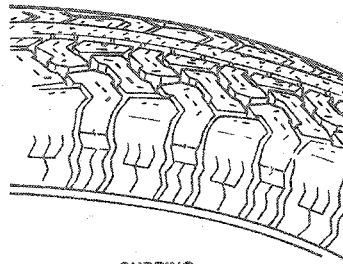
It is mandatory to use only the tire sizes recommended on the tire chart attached to the vehicle. Larger or smaller tires can damage the vehicle and affect durability and may require changing of the speedometer drive gears. Ensure wheel size and offsets match those recommended for the tire in use.

Tire Inspection

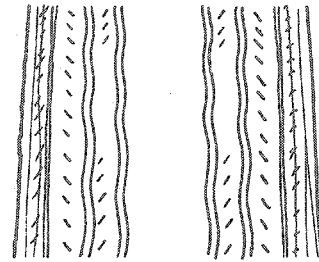
Inspect tires for wear. Abnormal or excessive wear may be caused by incorrect wheel alignment, wheel / tire imbalance, or improper tire pressure.



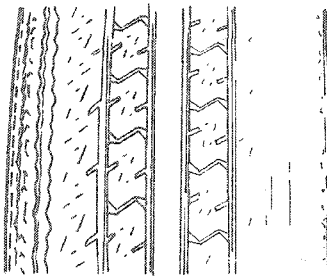
UNDERINFLATION



CUPPING

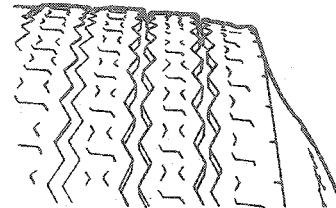


OVERINFLATION



INCORRECT TOE-IN OR EXTREME CAMBER

UNDERINFLATION AND/OR MECHANICAL IRREGULARITIES SUCH AS OUT-OF-BALANCE CONDITION OF WHEEL AND/OR TIRE, AND BENT OR DAMAGED WHEEL. POSSIBLE LOOSE OR WORN STEERING TIE-ROD OR STEERING IDLER ARM. POSSIBLE LOOSE, DAMAGED OR WORN FRONT SUSPENSION PARTS.



FEATHERING DUE TO MISALIGNMENT

F3050-C

Spare Tire

The spare tire and jack are stowed under the rear load floor in sedan, and rear quarter panel in station wagon. Refer to Section 00-02 for information on how the tire, jack and wrench are stowed.

Temporary Spare Tire

The temporary spare tire is lightweight and is for limited mileage, emergency use only. It should be used only until the regular tire is serviced. This tire is identified by the wording TEMPORARY USE ONLY moulded into the tire.

ADJUSTMENTS

Steel Wheels

Wheel services that use welding, heating or peening are not approved. An inner tube is not acceptable service for leaky wheels or tires.

Air Leaks

Tools Required:

- Rotunda Electric Heat Gun 107-00300

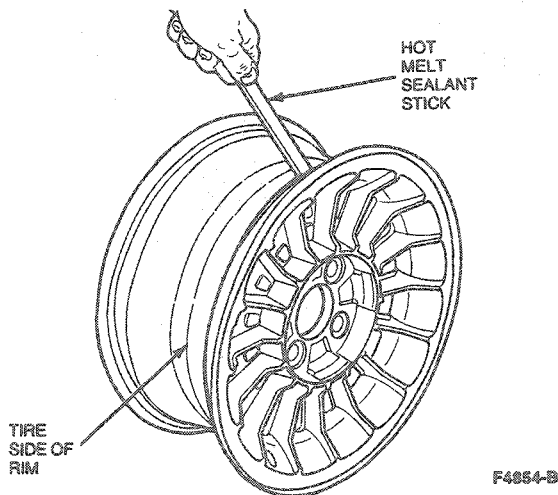
If air pressure in an aluminum wheel is low, the following procedure should be performed prior to considering wheel replacement.

1. Remove tire and wheel assembly, and inspect wheel for structural damage. If none exists, go to Step 2. If the wheel is damaged, replace.

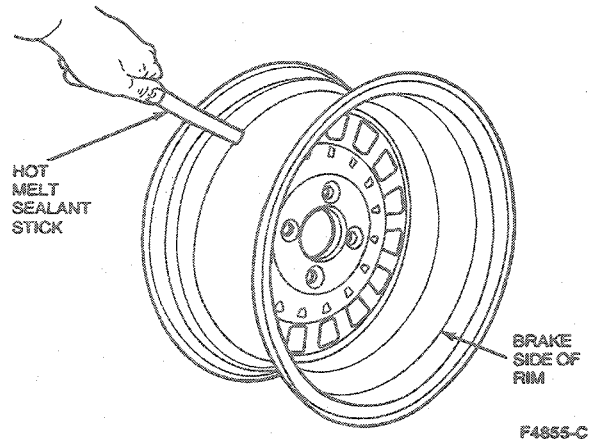
ADJUSTMENTS (Continued)

2. With tire mounted on wheel, locate air leak using a water bath or equivalent method, and mark location. Check complete wheel for possible additional leaks. When leaks are marked, dismount tire. Mark the valve location on the tire for proper indexing.
3. On the tire side of the wheel, thoroughly clean the leaking area with Professional Choke and Linkage Cleaner E8AZ-19A501-AA (ESR-M14P10-A) or equivalent, or use sandpaper of approximately 80-grit to remove all contamination. Using the sandpaper, score the surface of the wheel to improve adhesion of the sealer. Adequate area around the leak should be prepared to ensure covering the leak. If the valve stem is close to the area, remove it.
4. Use a clean cloth to remove all cleaner or sanding dust.
NOTE: Do not use a torch containing oxyacetylene.
5. Heat the prepared area with Rotunda Electric Heat Gun 107-00300 or equivalent or propane torch until Hot Melt Sealant Stick E7AZ-19554-A (ESA-M4G280-A) flows. Apply the hot melt material over the prepared area using a liberal flow and wiping action to ensure coverage of the leaking area. The service is most effective when heat is applied to the brake side of the wheel and sealer is melted by heat in the metal rim.
6. Apply only enough heat to melt the sealer, then remove heat source. After servicing the leak, allow the wheel to cool until it can be handled safely.

Tire Side of Wheel



Brake Side of Wheel



7. Assemble tire and wheel. Inflate tire to the recommended pressure as indicated on the tire pressure decal.
8. Repeat Step 2 to verify service.
9. When the service is complete, inflate properly, balance the assembly and install on vehicle.
NOTE: Use caution when mounting the tire so as not to damage the sealer.

Tire Maintenance

To maximize tire performance, inspect tires for signs of improper inflation and uneven wear, which may indicate a need for balancing, rotation or front suspension alignment.

Tires should also be checked frequently for cuts, stone bruises, abrasions, blisters and for objects that may have become imbedded in the tread. More frequent inspections are recommended when rapid or extreme temperature changes occur, or where road surfaces are rough or occasionally littered with debris.

As a further visible check of tire condition, tread wear indicators are moulded into the bottom of the tread grooves. The tire should be replaced when these indicator bands become visible.

To clean tires, use a mild soap and water solution only, and rinse thoroughly with clear water. Do not use any caustic solutions or abrasive materials. Do not use steel wool, wire brushes, gasoline, paint thinner or similar materials having a mineral oil base. These materials are harmful to tires and will eventually discolor the whitewalls and raised letters.

Tire Inflation

Tire inflation pressure is carefully calculated to give the vehicle satisfactory ride and steering characteristics without compromising long tire tread life.

ADJUSTMENTS (Continued)

A vehicle tire pressure decal, located on the rear door RH lock pillar below the rear door striker, gives the recommended cold tire inflation pressure. The cold tire inflation pressure can be measured after the vehicle has been parked for three hours or has been driven less than 5 km (3 miles).

A higher tire inflation pressure than the recommended pressure can cause a hard ride, tire bruising, carcass damage and rapid wear at the center of the tire. Low tire pressure can produce tire squeal, hard steering, rim dents, high temperatures and rapid wear on the outer edges of the tires. Unequal pressures can cause uneven braking and reduced handling.

WARNING: OVER- OR UNDER-INFLATED TIRES CAN REDUCE TIRE LIFE, ADVERSELY AFFECT VEHICLE HANDLING, AND POSSIBLY LEAD TO A SUDDEN FAILURE THAT COULD RESULT IN THE LOSS OF VEHICLE CONTROL WITHOUT WARNING.

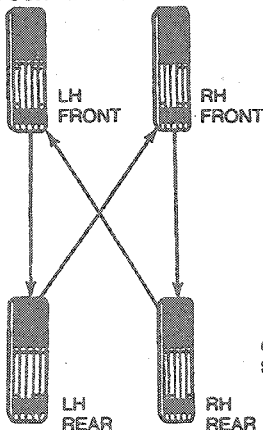
Tire Rotation

To equalize tire wear, tires may be rotated, but not until the cause of unusual or uneven tire wear is determined and corrected.

Front and rear tires perform different jobs and can wear differently depending on the type of vehicle and driving habits. To equalize wear and optimize tire life, rotate tires at approximately 12,000 km (7,500 miles) and then each 24,000 km (15,000 miles) thereafter.

If abnormal wear is detected, find and correct the cause, and rotate the tires following the diagram to allow more even wear.

FOUR TIRE ROTATION



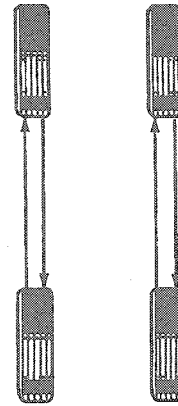
FOUR TIRE ROTATION

ROTATE THE LH REAR TIRE TO THE RH FRONT POSITION AND THE RH REAR TO THE LH FRONT POSITION. ROTATE THE LH FRONT TO THE LH REAR AND THE RH FRONT TO THE RH REAR POSITION

CAUTION: DO NOT USE TEMPORARY SPARE TIRES IN THE TIRE ROTATION.

F3647-D

UNI-DIRECTIONAL TIRE 4 TIRE ROTATION

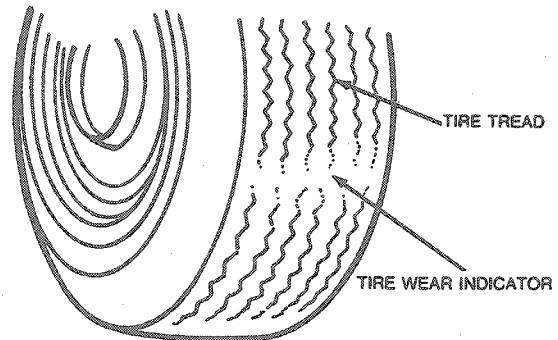


F7083-A

CAUTION: Never use the temporary spare for tire rotation or as a regular tire.

Tread Wear Indicators

Original equipment tires have built-in tread wear indicators to show when tires need replacement. These indicators will appear as 12.7mm (1/2 inch) wide bands when the tire tread depth becomes 1.58mm (1/16 inch). When the indicators appear in two or more adjacent grooves, at three locations around the tire, or when cord or fabric is exposed, tire replacement due to tread wear is recommended.



F2890-C

Wheel and Tire Indexing

When servicing wheels or tires, the following procedure for matching the tire and wheel must be followed to ensure that the best possible ride characteristics are maintained.

1. When removing a worn tire from a wheel, mark the valve location on the tire prior to removal.

ADJUSTMENTS (Continued)

2. If the original tire is to be remounted, index the valve mark on the tire to the valve of the original wheel. Go to Step 6.
If a new wheel is being installed, locate the tire matching point based on the valve position on the original wheel relative to its matching point described in Step 3.
3. Locate the matching point on the wheel.
Steel Wheels: There is either a chartreuse sticker on the outside rim flange, or, if the sticker is missing, a yellow paint mark in the dropwell of the rim that must be transferred to the outside rim flange.
Aluminum Wheels: The matching point on aluminum wheels is at the tire valve.
4. Locating the matching point on a new tire:
Many replacement tires as well as original equipment tires are marked for first harmonic matching to the wheel. These marks vary in type and color. Consult the tire dealer for details on mark identification.
5. Mount the tire on the wheel and line up the chartreuse paint mark or sticker on the new tire sidewall or the matching point of the original tire with the mark on the rim of the steel wheel or the tire valve of the aluminum wheel.
6. Inflate and balance the tire and wheel assembly.

Tire Replacement

Tools Required:

- Rotunda Tire Changer 104-00235

Use the Rotunda Tire Changer 104-00235 or equivalent to mount or dismount tires. Follow the equipment manufacturer's instructions. Do not use hand tools or tire irons alone to change tire as this may cause damage to the tire beads or wheel rim.

Rim bead seats on steel wheels should be cleaned with a wire brush or coarse steel wool to remove lubricants, old rubber and light rust.

Aluminum wheel rim bead seats should be cleaned with a non-abrasive cleaner to remove tire mounting lubricants and old rubber. Before mounting or dismounting a tire, bead area should be well lubricated with Rubber Lubricant D9AZ-19583-A (ESR-M99B 135-A) or equivalent.

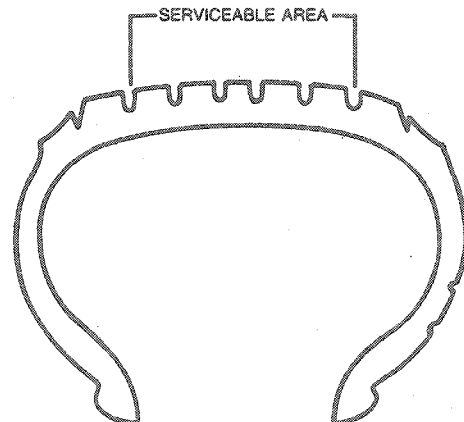
After mounting, inflate the tire so its beads are completely sealed. Install the valve core and inflate the tire to the proper pressure.

Tire Service

Punctured tires should be removed from the wheel and permanently serviced from the inside using a combination service plug and vulcanized patch. When servicing a puncture, always follow the manufacturer's instructions for using the service kit.

Service punctures in the tread area only. Never attempt to service punctures in the tire shoulders or sidewalls. In addition, do not service any tire that has sustained the following damage:

- Bulges or blisters
- Ply separation
- Broken or cracked beads
- Fabric cracks or cuts
- Tires worn to the fabric, or if wear indicators are visible
- Punctures larger than 6.35mm (1/4 inch)



F2891-C

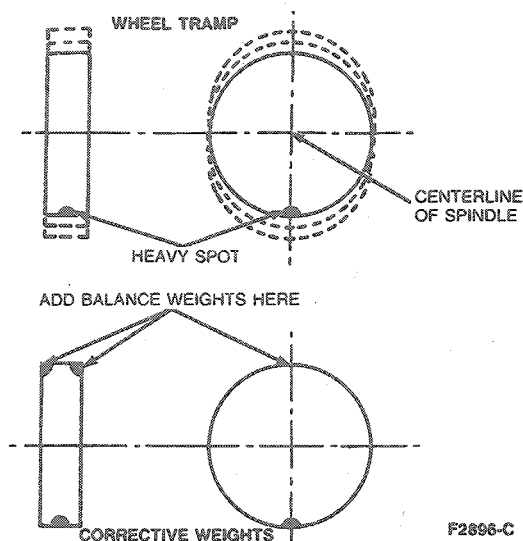
WARNING: TIRE SEALANTS THAT ARE INJECTED THROUGH THE VALVE STEM ARE NOT TO BE USED TO SERVICE PUNCTURED TIRES BECAUSE THEY CAN PRODUCE WHEEL RUST AND CAUSE TIRE IMBALANCE.

Tire and Wheel Balance

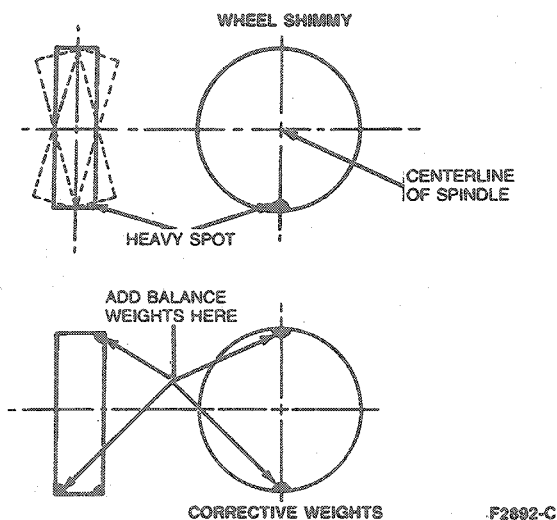
There are two types of wheel and tire balance: static and dynamic.

ADJUSTMENTS (Continued)

A **Static balance** is the equal distribution of weight around the wheel. Wheels that are statically unbalanced cause a bouncing action called wheel tramp.



A **Dynamic balance** is the equal distribution of weight on each side of the centerline so that when the tire spins there is no tendency for the assembly to move from side-to-side. Wheels that are dynamically unbalanced may cause wheel shimmy.



Deposits of mud must be cleaned from the inside of the rim. Stones should be removed from the tread in order to avoid operator injury during spin balancing and to obtain a good balance. The tire should be inspected for any damage, then balanced according to the equipment manufacturer's explicit instructions.

Off-Vehicle Balancing**Tools Required:**

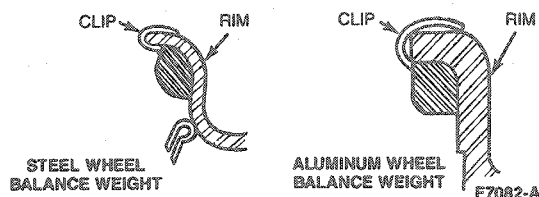
- Rotunda Off-Vehicle Wheel Balancer 078-00153 with Adapter Set 078-00055 or 078-00071
- Rotunda Off-Vehicle Balancer 006-01699 with Accessory Kit 006-01640

When balancing wheels off the vehicle, use a balancer that pilots the wheel by its center hole. If the wheel tramp and vehicle vibration is not corrected by the off-vehicle balance, an on-vehicle balance may be needed.

When performing an off-vehicle wheel balance on vehicles equipped with aluminum wire spoke wheels, use one of the following electronic balancers to provide the proper wheel balance:

- Rotunda Off-Vehicle Wheel Balancer 078-00153 with Rotunda Wheel Adapter Set 078-00055, 078-00071 or equivalent
- Rotunda Off-Vehicle Wheel Balancer 006-01699 with Accessory Kit 006-01640 or equivalent

Aluminum wheels have thicker rim flanges and require specially designed balance weights. Wheel weights for aluminum wheels are coated to prevent corrosion and should be installed with a plastic mallet.



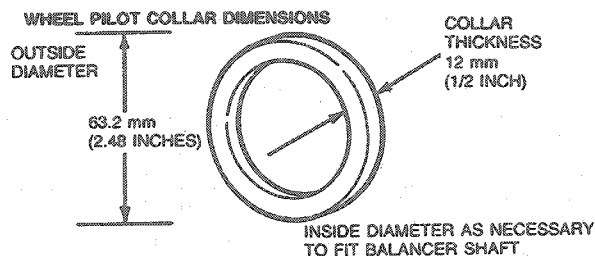
1. Loosen wheel lug nuts of wheel(s) to be balanced. Raise front or rear of vehicle, as required. Refer to Section 00-02.
2. Remove wheel to be balanced. Remove center cap and mount wheel to balance machine. Lock hub adapter into spindle.
3. The balance equipment should have been calibrated by factory approved technicians within the last 90 days.
4. The equipment retaining surfaces, cones, cone springs, wing nuts, and mounting cups must be clean and without defects.
5. All tire labels, stones, dirt, and any other foreign material must be removed from the tire and wheel assembly. Particular attention should be paid to ensuring that the wheel mounting face and pilot hole are clean and free of foreign material.
6. The tire and wheel assembly must be mounted on the machine using a back mounted cone. Front coning of the assembly is not permitted.
7. The machine must be operated in the DYNAMIC mode only.
8. The factory balance weights should not be removed from the wheel before checking the balance status.

ADJUSTMENTS (Continued)

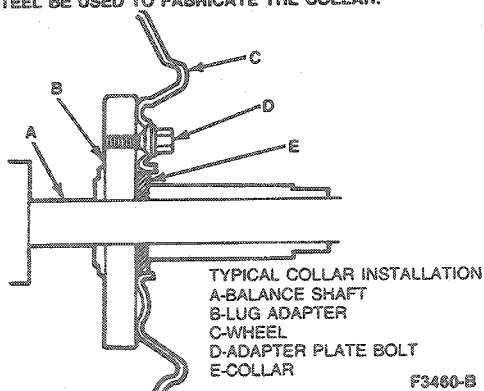
9. Spin the tire and wheel assembly on the machine in accordance with the balance equipment manufacturer's instructions.
 10. Any tire and wheel assembly that shows a machine reading of 0.50 ounces or less in the DYNAMIC mode cannot be considered outside of factory specifications when checked on field accurate balance equipment.
 11. If DYNAMIC correction is required, remove and discard the factory balance weights. Re-spin the tire and wheel assembly and add new correction weights in accordance with balance equipment manufacturer's instructions. Never add more than 85g (3 oz) to either rim flange. Always recheck balance after weight is added.
- NOTE: Tire and wheel rebalancing should not be required when rotating tires.
12. Remove the tire and wheel assembly from the machine and mount on the vehicle.
 13. Lower the vehicle to the ground. Tighten the wheel lug nuts to 115-142 N·m (85-105 lb-ft).

Optional Lug Adapter

For a more consistent wheel balance, optional lug adapters and wheel pilot collars should be used. This additional equipment ensures proper wheel position on the balance equipment. This equipment is available for all Rotunda off-vehicle wheel balancers. Refer to Specifications.



NOTE: THE COLLAR DIMENSION SHOULD BE SUCH THAT THE COLLAR WILL FIT SNUGLY WITHIN THE WHEEL PILOT HOLE. THIS WILL REQUIRE THAT THE ABOVE OUTSIDE DIAMETER DIMENSION BE HELD TO WITHIN .001-INCH. IT IS RECOMMENDED THAT HARDENED STEEL BE USED TO FABRICATE THE COLLAR.



F3460-B

On-Vehicle Balancing

CAUTION: The suspension should not be allowed to hang free. When the constant velocity joint is run at a very high angle, extra vibrations can occur as well as damage to seals and joints.

The lower control arm should be supported as far outboard as possible.

If the above method cannot be used, an off-vehicle balancer should be used.

WARNING: ON FRONT-WHEEL DRIVE VEHICLES, FRONT WHEELS SHOULD BE SPUN WITH THE ENGINE. DRIVE WHEEL SPIN SHOULD BE LIMITED TO 56 KM/H (35 MPH) AS INDICATED ON THE SPEEDOMETER. THIS LIMIT IS NECESSARY BECAUSE THE SPEEDOMETER INDICATES ONLY ONE-HALF OF THE ACTUAL WHEEL SPEED WHEN ONE DRIVE WHEEL IS SPINNING AND THE OTHER DRIVE WHEEL IS STOPPED. UNLESS CARE IS TAKEN IN LIMITING DRIVE WHEEL SPIN, THE SPINNING WHEEL CAN REACH EXCESSIVE SPEEDS. THIS CAN RESULT IN POSSIBLE TIRE DISINTEGRATION OR DIFFERENTIAL FAILURE, WHICH COULD CAUSE SERIOUS PERSONAL INJURY OR EXTENSIVE VEHICLE DAMAGE.

Vibration

NOTE: Do not align vehicle for vibration concerns. Vibration cannot be improved or eliminated by alignment.

If vehicle vibration persists after the wheels have been balanced, it may be caused by either tire or wheel runout. The vibration may also be caused by damage to the tire tread or sidewall, worn or bent halfshafts, engine vibration or worn engine mounts, frozen (seized) shock absorbers or unindexed tires/wheels.

Tire and Wheel Runout

Tools Required:

- Rotunda Radial Run-Out Gauge 007-00014

Excessive radial and lateral runout of a wheel and tire assembly can cause roughness, vibration, wheel tramp, and steering wheel nibble (tremor).

To avoid false readings caused by temporary flat spots in the tires, check runout only after the vehicle has been driven. Visually inspect the tire carcass for abnormal bulges or distortions.

Runout should be measured with a Radial Run-Out Gauge 007-00014 or equivalent. All measurements should be made on the vehicle with the tires inflated to recommended load inflation pressures and with the wheel bearings adjusted to specification.

For service and adjustment, refer to Section 00-04.

ADJUSTMENTS (Continued)

Wheel Bearing, Front

Wheel bearings are not adjustable. Loose, worn or damaged wheel bearings can cause noise, vibration and uneven tire wear, and should be replaced.

SPECIFICATIONS

WHEEL SPECIFICATIONS

Type	Color/Code	Wheel Size	No. of Bolts	Bolt Diameter	Offset	Tire Usage	Size
Steel	Brown/Brown GA ¹	14 x 5.5	5	107.95	42	P195/70R14 O205/70R14	14
Steel	Blue/Yellow JA ¹	15 x 6	5	107.95	42	P205/65R15	15
Aluminum Cast	—	15 x 6	5	107.95	42	P205/65R15	15
Steel Mini-Spare	Red/Red SP ¹	14 x 4	5	107.95	35.6	T135/80R14 T135/80D14	14

¹ Code stamped at valve stem

WHEEL SPECIFICATIONS—TAURUS SHO

Type	Color/Code	Wheel Size	No. of Bolts	Bolt Diameter	Offset	Tire Usage	Size
Aluminum Cast	—	16 x 6	5	107.95	42	P215/60R 16-94V	16
Steel Mini-Spare	Blue/Brown TW [*]	15 x 4	5	107.95	38.9	T125/90R15	15

^{*} Code stamped at valve stem.

TORQUE SPECIFICATIONS

Description	N-m	Lb-Ft
Wheel Lug Nuts	115-142	85-105

SPECIAL SERVICE TOOLS

ROTUNDA EQUIPMENT

Model	Description
006-01640	Adapter Set for 006-01699
006-01699	Off-Vehicle Wheel Balancer

(Continued)

ROTUNDA EQUIPMENT (Cont'd)

Model	Description
036-00118	Off-Vehicle Wheel Balancer
078-00055, 71	Adapter Set for 078-00153
078-00153	Off-Vehicle Wheel Balancer
104-00235	Tire Changer
007-00014	Radial Run-Out Gauge
107-00300	Electric Heat Gun
013-00006	Master Key Set Locking Lug Nut