SECTION A

43-44000 FRONT SUSPENSION

CONTENTS

DIVISION I
SPECIFICATIONS AND ADJUSTMENTS

30-1 BOLT TORQUE SPECIFICATIONS

a. Tightening Parts

Use a reliable torque wrench to tighten the parts listed in subparagraph b. The specifications given are for clean and lightly lubricated threads. Dry or dirty threads increase the amount of effective friction, preventing accurate measurement of torque.

b. Bolt Torques

Part	Location	Torque Lb. Ft.
Nut & Bolt	Upper Control Arm Shaft to Frame	45-60
Nut & Bolt	Lower Control Arm to Frame	65-85
Screw	Stabilizer Support to Frame	10-15
Nut	Upper Shock Absorber to Frame	5-10
Screw (2)	Lower Shock Absorber to Lower Control Arm	12-24
Nut	Lower Ball Joint Stud to Steering Knuckle	60-95
Nut	Upper Ball Joint Stud to Steering Knuckle	40-60
Nut	Lower Rubber Bumper to Lower Control Arm	15-25
Nut	Stabilizer Bar Link	5-10
Nut	Steering Linkage to Lower Control Arm	40-50
Nut & Bolt	Idler Arm to Frame	25-50
Bolt	Upper Control Arm Bushing to Shaft	45-60

30-2 DIMENSIONAL SPECIFICATIONS

Part	Dimensions
Stabilizer Bar	
Sedans, Coupes, Convertibles	25/32" Dia.
Skylark Gran Sport	15/16" Dia.
Station Wagons	7/8" Dia.
Sport Wagons	15/16" Dia.

DIVISION II
DESCRIPTION AND OPERATION

30-3 SUSPENSION DESCRIPTION

The front suspension on the 1966 Buick is designed to allow each wheel to compensate for changes in the road surface level without appreciably affecting the opposite wheel. Each wheel is independently connected to the frame by a steering knuckle, ball joint assemblies, and upper and lower control arms. The control arms are specifically designed and positioned to allow the steering knuckles to move only in a vertical arc. The front wheels are held in proper relationship to each other by two tie rods which are connected to steering arms on the knuckles and to an intermediate rod. See Figure 30-1.

Coil chassis springs are mounted between the spring housings on the frame and the lower control arms. Ride control is provided by double direct acting shock absorbers mounted inside the coil springs and attached to the lower control arms by bolts. The upper portion of each shock absorber extends through the spring housing and is secured with two grommets, two grommet retainers, and a nut.

Side roll of the front suspension is controlled by a spring steel stabilizer shaft. It is mounted in rubber bushings which are held to the frame side rails by brackets. The ends of the stabilizer are connected to the front side of the lower control arms. Rubber

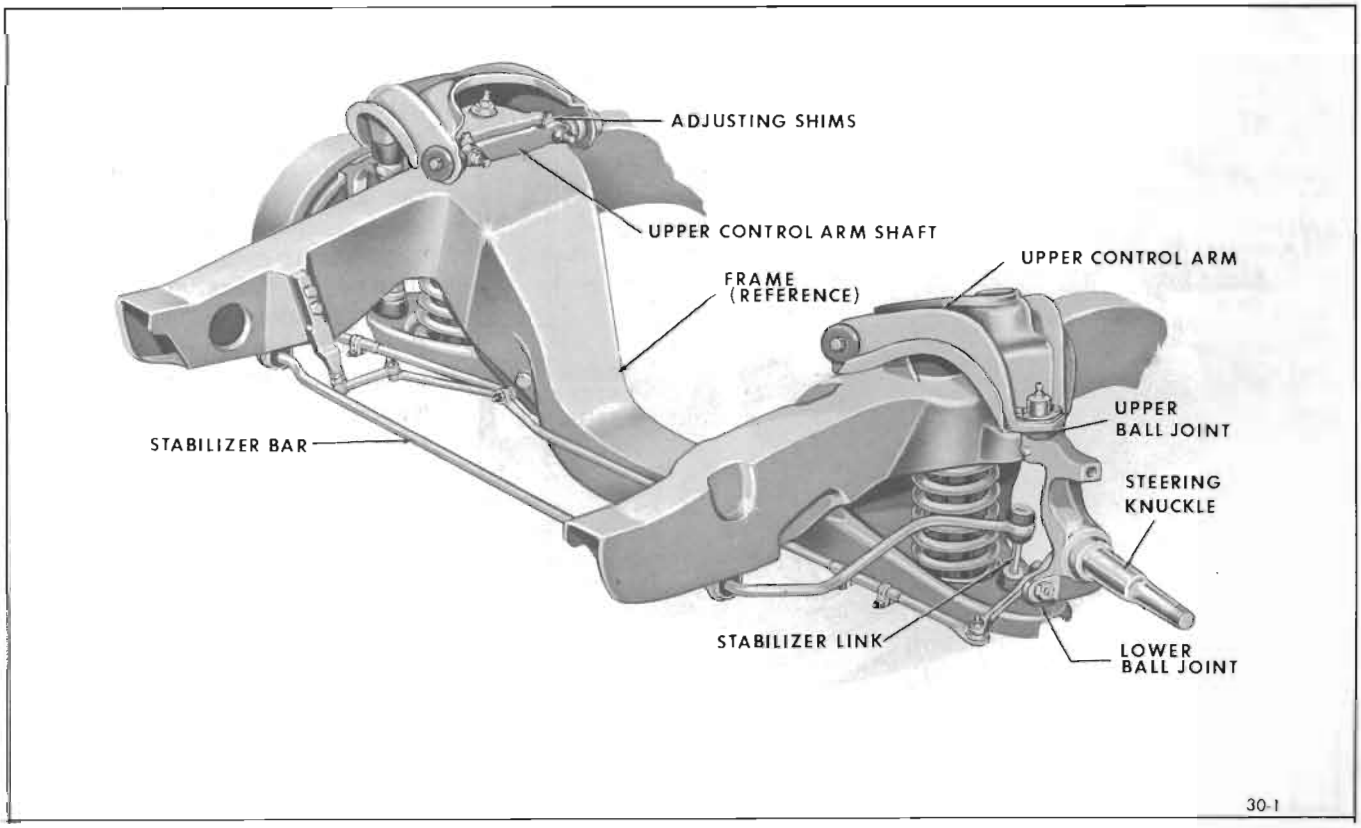


Figure 30-1—Front Suspension

grommets at these connections provide flexibility and prevent rattles.

The upper control arm is attached to a cross shaft through isolating rubber torsion bushings. The cross shaft, in turn, is bolted to frame brackets.

A ball joint is riveted to the outer end of the upper arm. It is spring loaded to insure proper alignment of the ball in the socket (see Figure 30-4).

The inner end of the lower control arm has pressed-in bushings. Two bolts, passing through the bushings, attach the arm to the frame. The lower ball joint is a press fit in the arm and attaches to the steering knuckle with a castellated nut that is retained with a cotter pin (see Figure 30-2).

Rubber seals are provided on upper and lower arm shafts and at ball socket assemblies to exclude dirt and moisture from bearing surfaces.

30-4 OPERATION OF SHOCK ABSORBERS

a. Shock Absorber Type and Location

Both front and rear shock absorbers are Delco, double, direct-action, (telescoping) hydraulic type. All shocks are filled with a calibrated amount of fluid and sealed during production; therefore, no refilling or other service is possible other than replacement of deteriorated rubber bushings.

Each front shock absorber is vertically mounted inside the front spring. The upper stem is attached to the frame by means of grommets and grommet retainers held in place by a nut. The lower insulated bracket is bolted to the lower control arm.

The shock absorbers are basically the same for all models but vary as to calibration. Front shock absorbers are interchangeable in respect to right and left, as are the rear. However, front and rear are not interchangeable with each other.

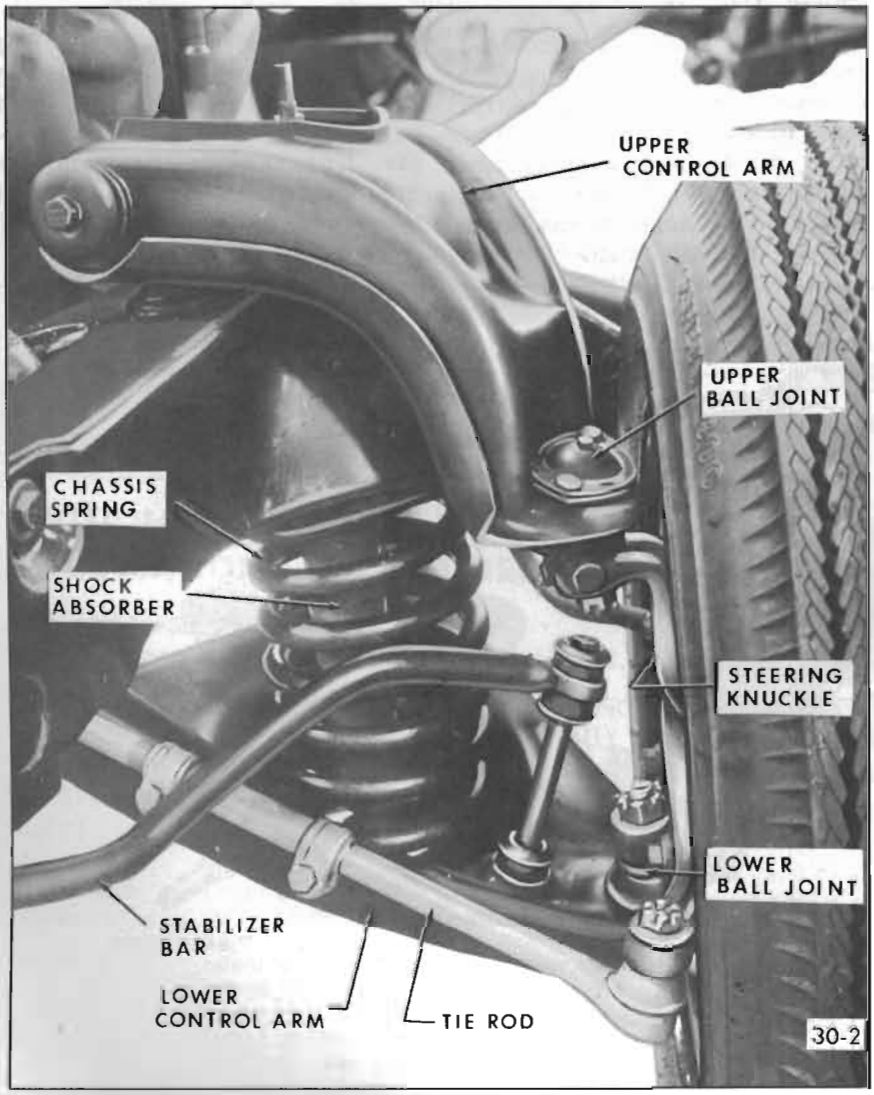


Figure 30-2—Steering Knuckle and Ball Joints

b. Shock Absorber Construction and Operation

The shock absorber consists of two concentric tubes, a piston and rod, and valves for controlling hydraulic resistance. The pressure (inner) tube provides a cylinder in which the piston and rod operate. The upper end is sealed by a piston rod seal, and the lower end is closed by the compression valve assembly. This tube is completely filled with fluid at all times. The reservoir tube provides space for reserve fluid and for overflow from the pressure tube during operation.

The piston, piston rod and outer tube are attached to the car frame, while the pressure and reservoir tubes are attached as a unit to the chassis suspension through the lower mounting. As the wheel moves up and down with respect to the frame, the chassis spring compresses or expands and the shock absorber is telescoped or extended. This action forces the fluid to move between the pressure and reservoir tubes through small restricting orifices in the valves. The relative slowness of fluid movement

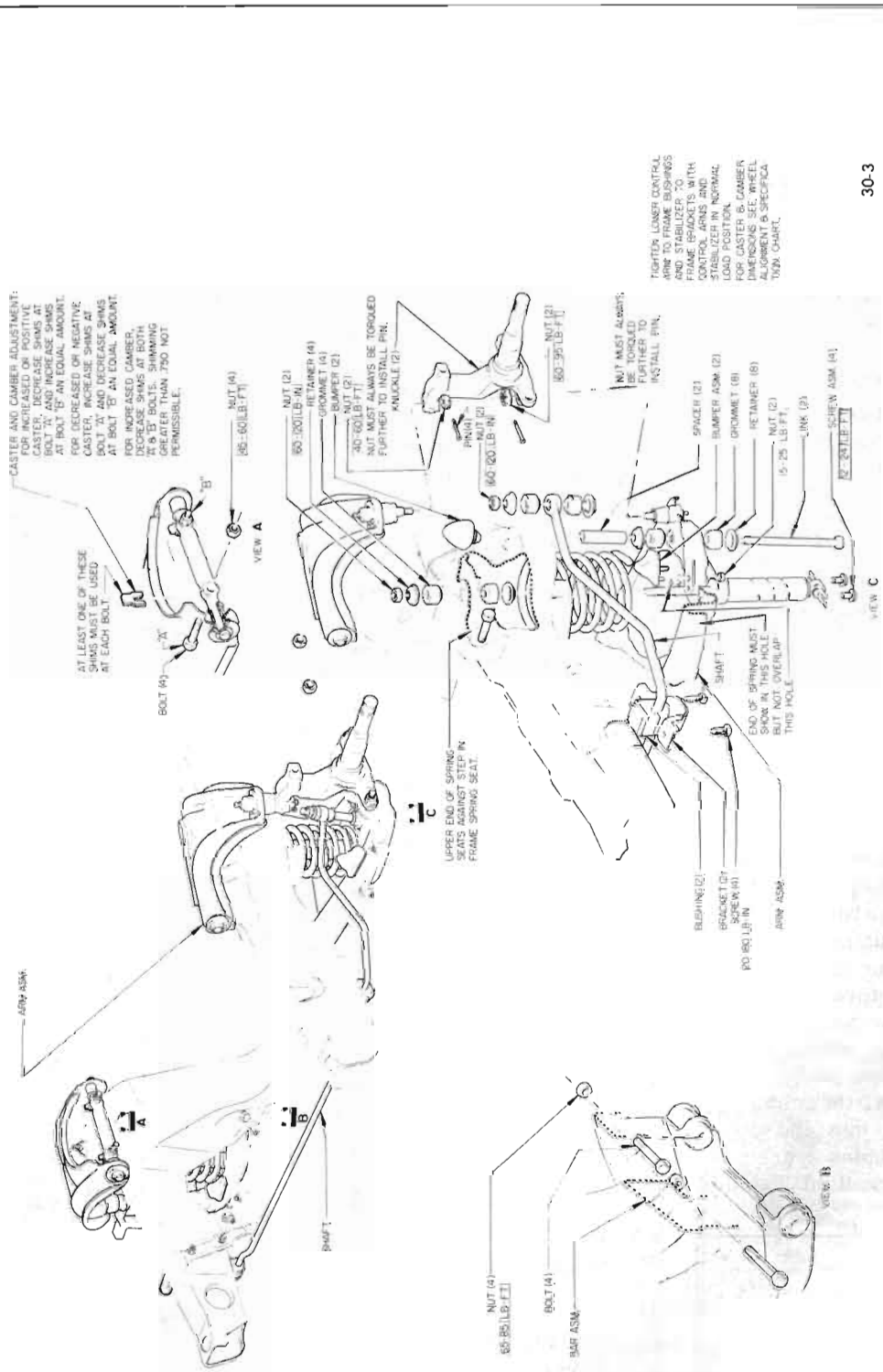


Figure 30-3—Front Suspension Details

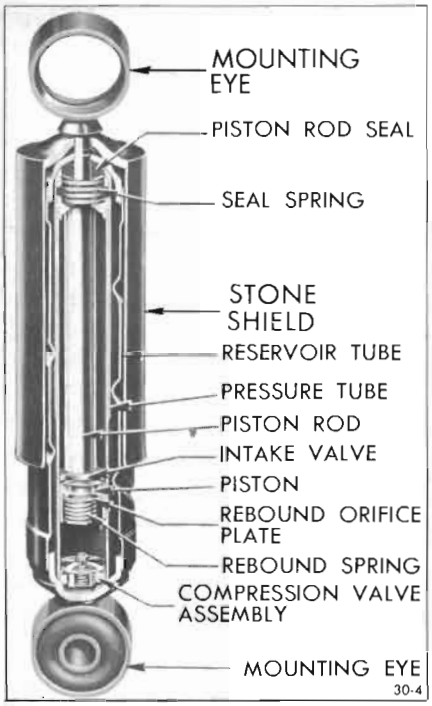


Figure 30-4—Typical Shock Absorber

imposes restraint on the telescoping or extension of the shock absorber, thus providing the required dampening effect on spring action.

1. Compression Stroke Operation. When the chassis spring is being compressed, the shock absorber is telescoped causing the piston to move down in the pressure tube forcing fluid through holes in the piston. The pressure lifts the intake valve plate, allowing fluid in lower chamber to pass into the upper chamber. As the piston rod moves downward into the pressure tube, it occupies space previously filled with fluid and this displaced fluid is forced out of the lower chamber into the reservoir through the restricting orifice in the compression valve. On fast or extreme movements when the fluid flow exceeds the capacity of the orifice, the spring loaded relief valve in the compression valve assembly is forced open to permit more rapid escape of fluid. The amount of compression control is governed entirely by the volume of fluid displaced by the piston rod, and the resistance to chassis spring travel is governed by the area of the orifice and the strength of the compression relief valve spring.

2. Rebound Stroke Operation. When the chassis spring expands, or rebounds, the shock absorber is extended and its resistance is instantly effective. As the piston is pulled upward, the intake valve plate seats and fluid in the upper chamber is forced through slots in the plate and holes in the piston to build up pressure against the rebound orifice plate. As the pressure increases, the rebound spring is compressed and the orifice plate leaves its seat to permit fluid to pass into the lower chamber. As the piston rod moves upward out of the pressure tube, the space previously occupied by the rod is filled with fluid drawn into the lower chamber from the reservoir. A separate intake valve in the compression valve assembly opens to permit return of this fluid.

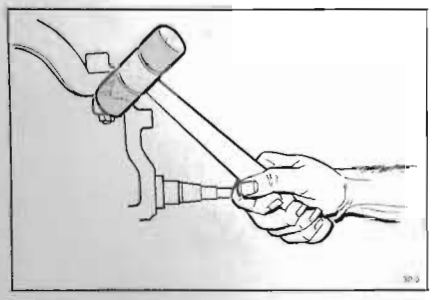


Figure 30-5—Separating Steering Knuckle From Ball Joint

DIVISION III
SERVICE PROCEDURES

31-1 REMOVAL AND INSTALLATION OF BALL JOINTS AND STEERING KNUCKLE

a. Upper Ball Joint Removal

1. Support car on car stand at the frame so front suspension is in full rebound position.

2. Remove front wheel.

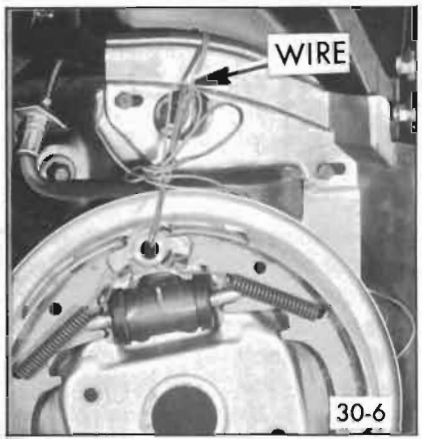


Figure 30-6—Wiring Brake Drum to Provide Clearance

3. Remove upper ball stud cotter key.

4. Loosen, but do not remove ball stud nut.

WARNING: If ball stud nut is removed, injury could result since heavily compressed chassis spring will be completely released.

5. Rap steering knuckle sharply in area of ball stud to allow force of chassis spring to disengage tapered stud from knuckle. See Figure 30-5.

6. Place jack under lower control arm at spring seat. Raise jack until compression is relieved on upper control arm rubber rebound bumper.

7. Remove the stud nut and lift

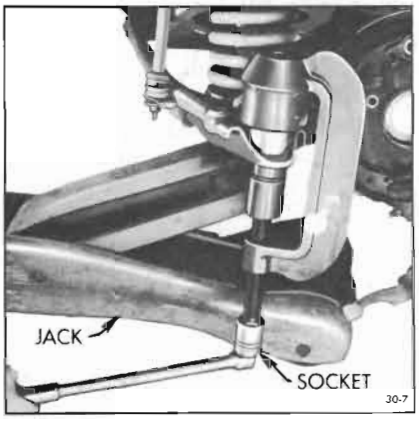


Figure 30-7—Lower Ball Joint Remover Installation

upper control arm from knuckle.

8. Support the brake drum assembly by wiring it to the frame or sheet metal out of way of work area. See Figure 30-6.

9. Place a wood block between the upper control arm and the frame to act as a support during the following operations.

10. Center punch the four rivets as close to the center as possible.

11. Drill a 1/8" hole through the center of the rivets about 1/2 to 3/4 the length of the rivet.

12. Using a 7/32" drill, enlarge the hole, drilling again about 1/2 the length of the rivet.

13. With a chisel, remove the rivet heads.

14. Using a 1/4" punch and hammer, remove the rivets. Remove ball joint.

b. Upper Ball Joint Installation

1. Install the new ball joint in the upper control arm and attach with the bolt and nut assemblies provided. Insert the bolts from the bottom with the nut on top. Torque to 8 lbs. ft.

2. Turn tapered stud so cotter pin hole is fore and aft. After unwiring the brake drum assembly and removing the wood block from between the arm and the frame, move the knuckle up by jacking under outer edge of spring seat.

3. Wipe tapered hole in knuckle and tapered stud clean and assemble stud to knuckle with castellated nut. Torque to 40-60 lb. ft. Install the cotter pin. Do not loosen nut to align cotter pin holes. Tighten nut to next slot that lines up with hole in ball joint stud.

4. Install wheel and tire.

c. Lower Ball Joint Removal

1. Raise front of car and place jack stands under frame side rails. Remove wheel with hub and drum assembly.

2. Remove the brake backing plate. If the backing plate is wired carefully out of the way as shown in Figure 30-6, there will be no need to disconnect the brake hose.

3. Remove the ball stud cotter key. Loosen, but do not remove the ball stud nut.

WARNING: If ball stud nut is removed, injury could result since heavily compressed chassis spring will be completely released.

4. Rap knuckle sharply in the area of the ball stud to allow the force of the chassis spring to disengage the tapered ball stud from the knuckle.

NOTE: It is sometimes helpful to wedge a block of wood under the upper control arm to provide a solid stop so the lower ball stud can be loosened with a more solid hammer rap.

5. Place a jack under the lower control arm at the spring seat. Raise the jack until compression is relieved on the upper control arm rubber rebound bumper. Remove the stud nut. Move the steering knuckle out of the way.

6. Install Lower Ball Joint Remover and Installer J-9519 as shown in Figure 30-7. Note that the larger O.D. portion of Detail J-9519-17 is positioned in J-9519-10.

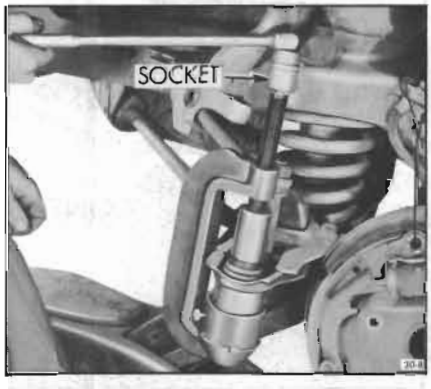


Figure 30-8—Removing Lower Ball Joint

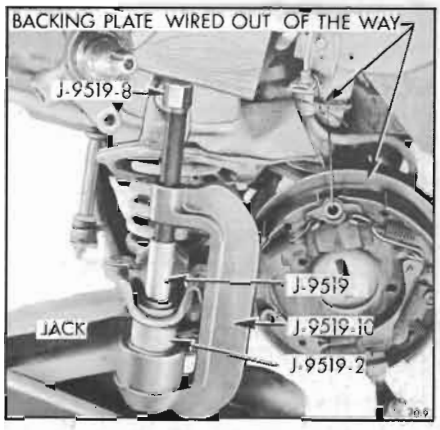


Figure 30-9—Lower Ball Joint Installer in Position

7. Tighten Detail J-9519-8 with a socket and handle as shown in Figure 30-8 until ball joint is forced out of the lower control arm.

WARNING: Ball joint may pop out suddenly!

d. Lower Ball Joint Installation

1. Position ball joint in lower control arm and install Tool J-9519 as shown in Figure 30-9. Note that the larger O.D. portion of Tool Detail J-9519-17 is positioned in Detail J-9519-10.

2. With a suitable socket and handle, force the ball joint into the lower control arm until it is fully seated. Turn the stud so the cotter key hole is fore and aft.

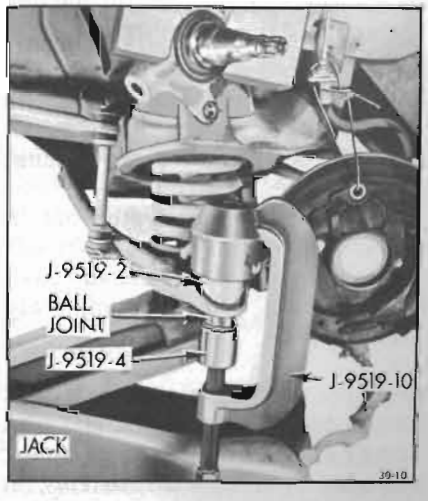


Figure 30-10—Installing Lower Ball Joint

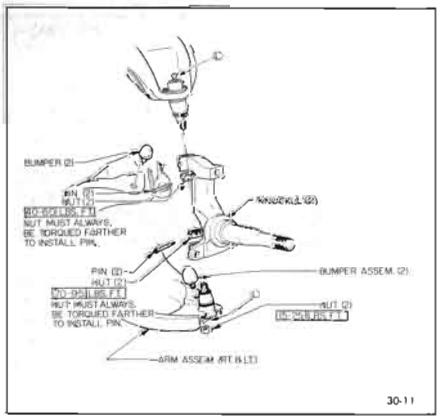


Figure 30-11—Steering Knuckle Detail

3. Position the tapered stud in the knuckle and install nut. Tighten the nut to 78 lbs. ft. and install cotter key. Do not loosen nut to align cotter pin holes. Tighten nut to next slot that lines up with hole in ball joint stud.

4. Install wheel with hub and drum assembly. Adjust wheel bearing. Remove car stand and lower car.

e. Steering Knuckle Removal

1. Raise front of car. Remove wheel with hub and drum assembly.

2. Disengage lock plate from brake anchor bolt and remove bolt. Remove two bolts holding brake backing plate and steering arm to steering knuckle. Support brake backing plate out of the way to avoid damage to brake hose and linings.

3. Remove cotter pins from nuts on both ball joint tapered studs. Loosen, but do not remove nuts.

WARNING: If ball stud nut is removed, injury could result since heavily compressed chassis spring will be completely released.

4. Force of chassis spring will tend to disengage ball joint tapered stud from steering knuckle. Rap knuckle sharply in area of ball stud to loosen stud from knuckle.

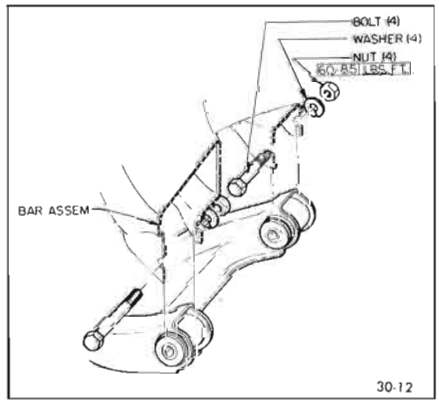


Figure 30-12—Lower Control Arm Attachment

5. Support lower control arm and remove nuts from ball joint tapered studs. Raise upper control arm and remove tapered studs from knuckle. Remove steering knuckle. See Figure 30-11.

f. Steering Knuckle Installation

1. Clean the tapered studs of the ball joints and insert into steering knuckle.

2. Align the cotter pin holes fore and aft and install the castellated nuts. Torque to 50 lb. ft. on the upper nut and 78 lb. ft. on the lower nut. Do not loosen nut to align cotter pin holes. Tighten nut to next slot that lines up with hole in ball joint stud. See Figure 30-12.

3. Position steering arm and brake backing plate to steering knuckle, being certain that the brake anchor pin engages properly in steering knuckle. Install backing plate retaining bolts and nuts. Torque to 60-82 lb. ft. Install anchor pin bolt and torque to 92 lb. ft. Bend lock plate to engage flats on brake anchor bolt head.

4. Install wheels, lubricate and adjust bearings.

31-2 REMOVAL AND INSTALLATION OF UPPER CONTROL ARM ASSEMBLY

a. Removal

1. Support car on car stand by frame, allowing front suspension to be in the full rebound position.

2. Remove front wheel.

3. Remove upper ball joint stud cotter key.

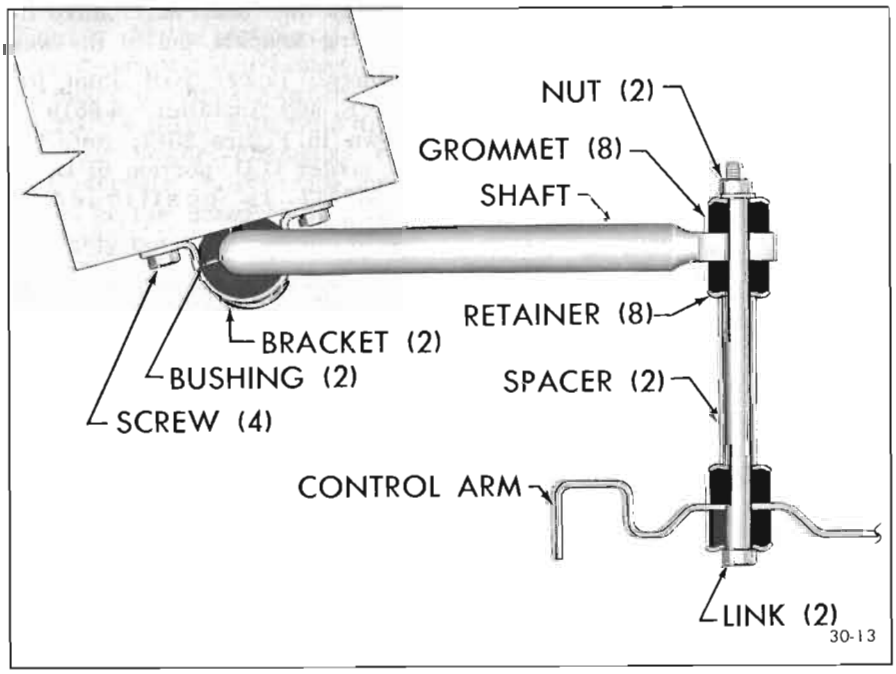


Figure 30-13—Stabilizer Link Installation

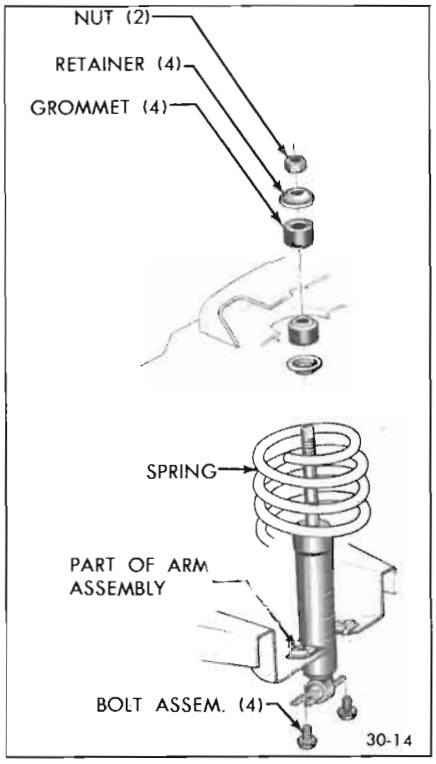


Figure 30-14—Shock Absorber Installation

4. Loosen, but do not remove ball stud nut.

WARNING: If ball stud nut is removed, injury could result since heavily compressed chassis spring will be completely released.

5. Rap steering knuckle sharply in area of ball stud to allow force of chassis spring to disengage tapered stud from knuckle.

6. Place jack under lower control arm at spring seat. Raise jack until compression on upper rebound bumper is relieved.

7. Remove ball stud nut and lift upper control arm from knuckle.

8. Remove upper control arm shaft to frame nuts and lock washers, noting the number, thickness and location of the adjusting shims.

9. Upper control arms are serviced only as complete assemblies. Therefore, the arm must be replaced if it is bent, or distorted, bushings are excessively worn, or the control arm shaft is damaged.

b. Installation

1. Torque bushing retaining bolts to 55 lb. ft. using vise to hold shaft.

2. Assemble upper control arm and shaft assembly to frame, making certain the number, thickness, and location of adjusting shims between shaft and bracket are correct. Torque shaft to frame nuts to 45-60 lb. ft. with a standard drive socket and J-1313 Torque Wrench or its equivalent.

3. Assemble tapered stud to knuckle with cotter pin holes fore and aft. Install castellated nut. Torque to 40-60 lb. ft. and install cotter pin. Do not loosen nut to align cotter pin holes. Tighten nut to next slot that lines up with hole.

4. Install wheel.

5. Check and adjust front end alignment if necessary.

6. Lubricate with a long effectiveness grease equivalent to Buick Specification #742.

31-3 REMOVAL AND INSTALLATION OF LOWER CONTROL ARM

a. Removal

1. Remove coil spring according to outline in paragraph 33-1.

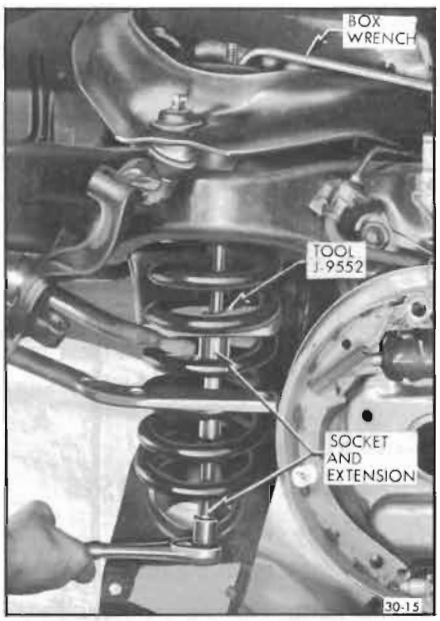


Figure 30-15—Installing J-9552 Compressor

2. Remove the two nuts and lock washers attaching the control arm to the frame. See Figure 30-12.

3. If lower control arm is to be replaced, remove the rubber bumper and attaching nut.

b. Installation

1. Install rubber bumper and attaching nut. Torque to 15-25 lb. ft.

2. Install arm with the bolt heads to the front of the car. See Figure 30-12.

3. Reinstall coil spring according to instructions in paragraph 33-1.

4. Tighten bushing retaining bolt nuts to 65-85 lb. ft.

33-1 REMOVAL AND INSTALLATION OF FRONT SPRINGS

1. Raise front of car. Remove tire, wheel, and hub and drum assembly.

2. Disconnect stabilizer link from lower control arm. See Figure 30-13.

3. Disconnect and remove shock absorber. Refer to Figure 30-14 for detail.

4. Disconnect lower control arm bolt joint from steering knuckle as outlined in paragraph 31-1.

5. Install spring compressor J-9552 as shown in Figure 30-15.

6. Lower jack beneath control arm until spring is off its seat. Carefully disengage spring compressor and remove chassis spring.

7. Position new spring in frame tower and install compressor. See Figure 30-15.

8. Raise lower control arm with jack until just enough clearance is attained to permit installation of knuckle. Connect ball to knuckle as outlined in paragraph 31-1.

9. Lower jack from beneath lower control arm. Connect shock absorber. See Figure 30-14.

10. Connect stabilizer link as shown in Figure 30-13. Reinstall wheel with hub and drum assembly. Adjust bearing as described in Group 100.

36-1 SHOCK ABSORBER SERVICE

a. Removal

1. Remove upper shock absorber attaching nut, grommet retainer, and grommet. See Figure 30-14.

2. Raise front of car.

3. Remove the two lower attaching screws and remove shock absorber.

b. Inspection

Check shock absorber for visible damage and oil leaks. Place shock absorber in upright position. Push and pull shock absorber noting resistance. If smooth hydraulic resistance is not present in both directions, replace absorber.

c. Installation

1. Select the correct shock absorber for particular car model. Refer to Master Chassis Parts Catalog for correct absorber. Substitution of an incorrectly calibrated shock absorber will adversely effect car handling performance.

2. Extend shock, install one grommet retainer, and one grommet on absorber and slide through hole in lower spring seat. Attach with two screws torqued to 12-24 lb. ft. See Figure 30-14.

3. Install one grommet, grommet retainer, and nut on shock absorber shaft protruding through frame. Torque nut to 5-10 lb. ft. Lower car and remove jack.

37-1 REMOVAL AND INSTALLATION OF STABILIZER SHAFT ASSEMBLY

a. Stabilizer Shaft, Removal and Replacement

Disconnect stabilizer links (subpar. c following) and disconnect the two underbody-to-shaft insulator mounts and brackets.

To install, position insulator mounts and brackets over shaft and connect bracket to underbody. Torque bracket bolts to 13 lb. ft. Connect stabilizer links, subparagraph c below. Do not lubricate insulator mounts.

b. Stabilizer Bracket and Insulator, Removal and Replacement

Stabilizer brackets should be replaced if damaged, and rubber insulator mounts replaced if deteriorated.

Replace by supporting stabilizer shaft in position and replacing brackets and mounts one at a time. Torque bracket bolts 35 lb. ft.

c. Stabilizer Link Removal and Replacement

1. Remove nut from upper end of link. Remove link, spacer, retainers and grommets. See Figure 30-13.

2. Inspect link and grommets.

3. Install grommets dry and use care to center the grommets in the seats on stabilizer shaft and bracket on lower control arm. Also, center the retainers on grommets before tightening rod nut.

4. Tighten rod nut to 7 lb. ft.

NOTE: The measured distance from stabilizer shaft to bracket on lower control arm should be equal at both links. If dimensions are not equal, adjust nut, or replace grommets.

DIVISION IV TROUBLE DIAGNOSIS

37-2 FAULTY SPRINGS, SHOCK ABSORBERS, AND BALL JOINTS

a. Trim Height Checking Consideration

Optional equipment, undercoating, accumulated dirt, etc., change the car weight and must be considered when checking spring trim dimensions. Because of the many possible variations in loading due to optional equipment, it is not possible to give dimensions for all conditions; therefore, the spring trim dimensions following are for the standard car only, without optional equipment or undercoating and with car at curb weight. Curb weight includes gas, oil, water, and spare tire but no passengers.

Before measuring spring trim dimensions, bounce both ends of car up and down several times to make sure there is no bind in suspension members, and to let springs take a natural position.

b. Measuring Trim Height

1. On a new car, the front spring trim dimension "Y" should be as shown in Figure 30-16.

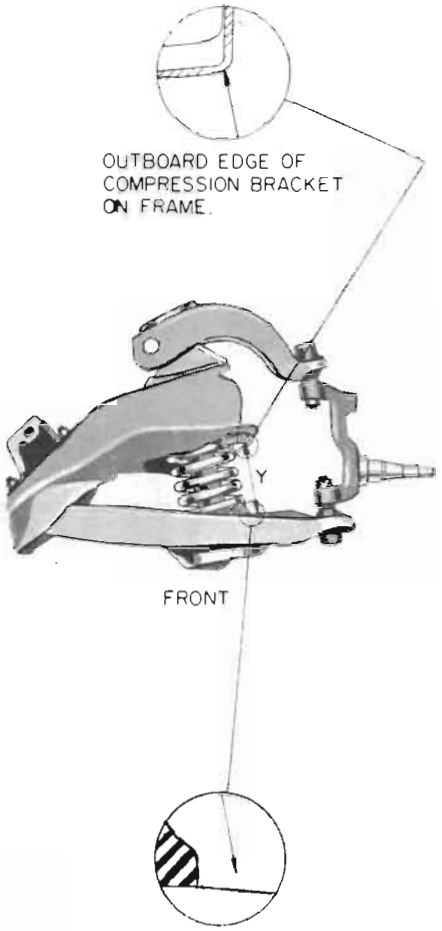
NOTE: On a car having service miles the trim height may be 1/4" less due to normal setting of bushings, dirt accumulation, etc.

2. On a new car, the rear spring trim dimension "Z" should be as shown in Figure 30-16.

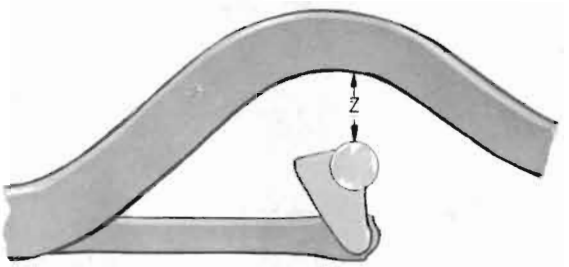
NOTE: On a car having service miles the trim height may be 3/8" less due to normal setting of bushings, dirt accumulation, etc.

3. When checking side to side differences in trim height at the front, take measurements at the front wheel house openings as shown in Figure 30-17.

NOTE: If a variation exists in trim height from side to side at front, installation of one shim will increase height of low side by approximately 3/4". Only one shim can be installed at each front location. If side to side variation is in excess of one inch, check suspension



CHASSIS TRIM DIMENSION		
MODEL	FRONT COIL Y - 1.4	REAR COIL Z - 1.4
	CURB WEIGHT	CURB WEIGHT
43307	3.95	4.98
43335	4.15	5.98
43367	3.95	4.98
43369	3.95	5.64
43507	3.95	4.98
43517	3.95	4.98
43535	4.15	5.98
43569	3.95	5.64
44307	3.95	4.98
44317	3.95	4.98
44339	3.95	5.64
44367	3.95	4.98
* 44607	2.92	4.27
* 44617	2.92	4.27
* 44667	2.92	4.27
* 44255	4.28	6.97
* 44265	4.28	6.97
* 44455	4.28	6.97
* 44465	4.28	6.97



REAR COIL SPRING

THESE DIMENSIONS DO NOT APPLY TO OPTIONAL SPRINGS.

ALL DIMENSIONS SHOWN ARE FOR V-6 BASE CAR EXCEPT 446 GS & SPORTWAGONS.

SUBTRACT 1/8" FROM FRONT CURB WEIGHT TRIM DIMENSIONS FOR V-8 CARS WITH A/C.

SUBTRACT 1/16" FROM FRONT CURB WEIGHT TRIM DIMENSIONS FOR V-8 CARS LESS A/C, & FOR V-6 CARS WITH A/C.

30-16

Figure 30-16—Trim Height Dimension Chart 43-44000 Series

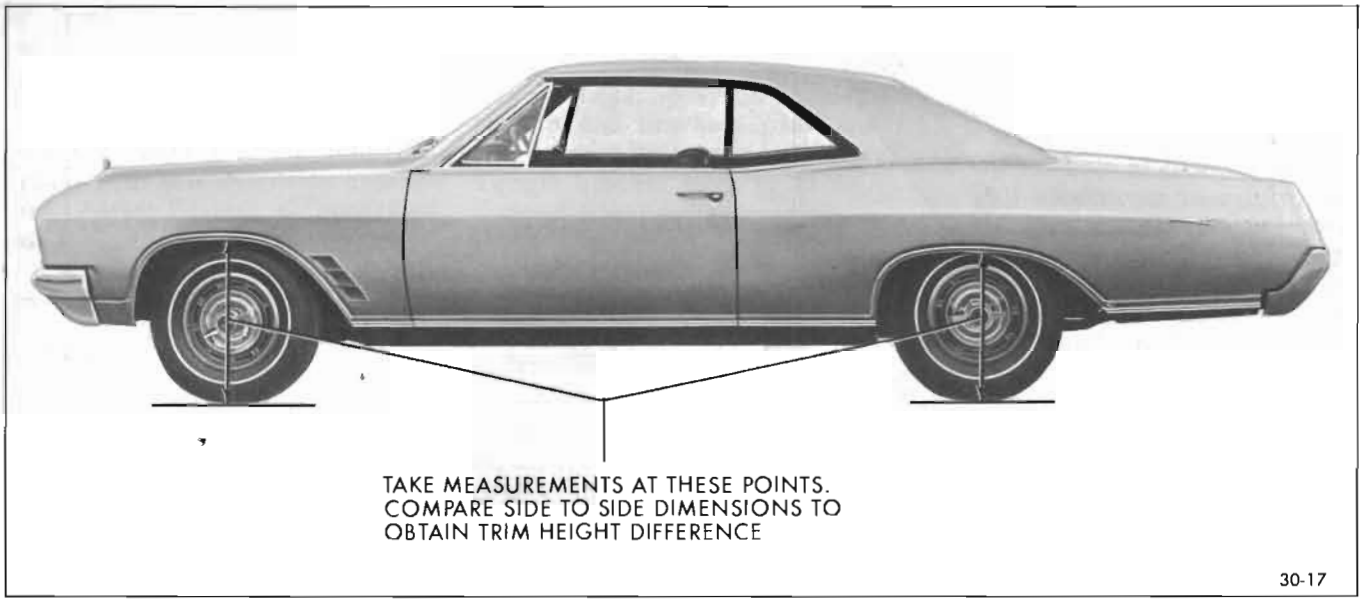


Figure 30-17—Trim Height Side - To - Side Checking Locations

components for damage, excessive wear, or incorrect spring installation. See subparagraph c following for front shim installation.

4. When checking side to side differences in trim height at rear, take measurements at rear wheel house openings as shown in Figure 30-17. If shimming is required, see subparagraph c following.

c. Installation of Front Spring Shim

To correct variations in trim height, front spring shims may be ordered from the Parts Department under group 7.425.

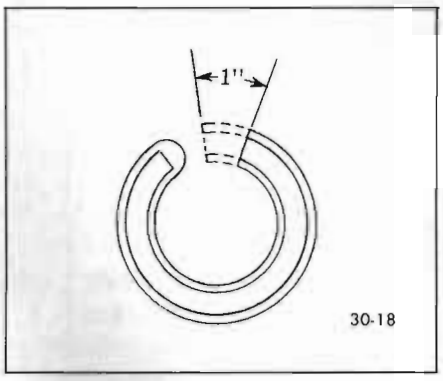


Figure 30-18—Removing Excess Stock From Front Spring Shim

1. Remove front spring from car as described in paragraph 33-1.

2. Remove 1" stock from end of shim as shown in Figure 30-18.

3. Place shim at top of spring as shown in Figure 30-19.

4. Install spring in car.

CAUTION: Be certain that end of shim is seated in groove as shown in Figure 30-20.

d. Weak and Non-Operative Shock Absorbers

Many shock absorbers have been replaced and returned to the factory with the report that they were weak. When tested with special factory equipment very few of these replaced units have been found weak or otherwise below standard in operation. This indicates that these shock absorbers were needlessly replaced in an attempt to improve riding conditions that were actually standard, or that erroneous methods were used in judging the operating condition of the units.

Before attempting to test shock absorbers make sure that all attaching bolts and nuts are tight. Tires should be uniformly inflated to specified pressure (Group 100). The chassis should be well lubricated to make sure

Figure 30-19—Installing Shim On Spring

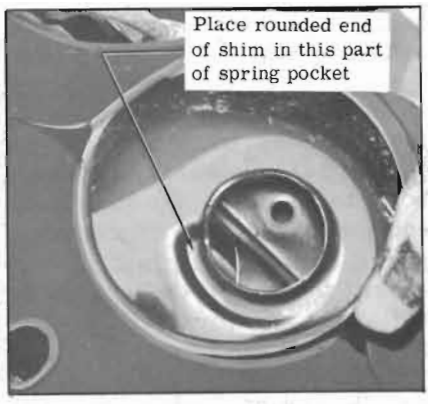


Figure 30-20—Spring Seat Location

that suspension parts are free moving.

Test each front and rear shock absorber in turn by quickly pushing down and then lifting up on the end of the car bumper closest to the unit being checked. Use the same amount of force on each test, and note the amount of resistance provided by the shock absorber on compression and rebound. A little practice on another car of the same model which has satisfactory ride control will aid in judging the amount of resistance that should exist. Both front shock absorbers should provide the same feeling of resistance as should both rear shock absorbers. Any noticeable variation between right and left shock absorbers indicates that one unit is not operating normally. Little or no resistance on compression or rebound indicates air in shock absorbers, internal leakage due to wear, or that the valve is held open by dirt. Excessive resistance indicates that bleeder hole in valve is plugged with dirt.

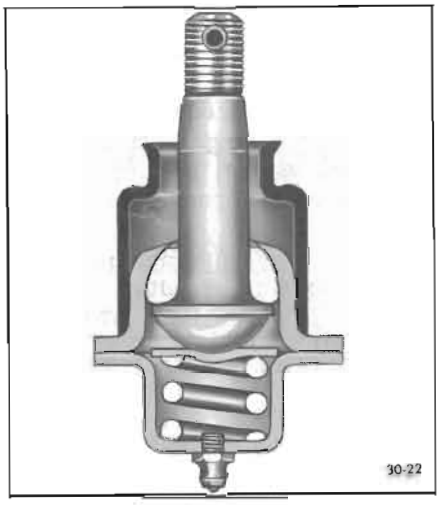


Figure 30-22—Lower Ball Joint Construction

If there is any doubt about the action of a shock absorber after testing as described above, remove the unit from car. Mount it vertically in vise with jaws gripping the mounting firmly, then move the piston rod up and down by hand. There should be no free movement in this test. Lack of resistance to movement indicates air in the shock absorber, internal leakage due to wear, or that the valve is held open by dirt. A faulty shock absorber must be replaced as it cannot be disassembled for repairs. In the test given above, the amount of force that can be applied is not sufficient to open a valve against its spring pressure; therefore, this test only checks the flow of fluid through the valve bleeder hole as well as any leakage due to a valve being held open, or due to internal wear of piston and cylinder. Since it is unlikely that the valve springs will weaken in service, it may be assumed that the shock absorber action is normal if it operates satisfactorily in the test given above.

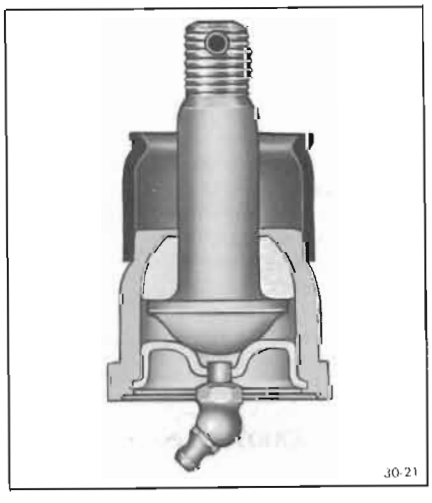


Figure 30-21—Upper Ball Joint Construction

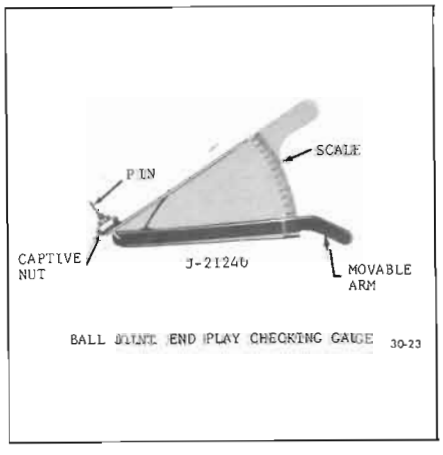


Figure 30-23—Ball Joint Checking Gauge J-21240

Figure 30-24—Ball Joint Checking Gauge Installed

e. Loose Ball Joints

The upper ball stud is spring-equipped and thus preloaded in its socket at all times. This minimizes looseness at this point and compensates for normal wear. If the upper stud has any perceptible lateral shake, or if it can be twisted in its socket with the fingers, the upper ball joint should be replaced.

The lower ball joint is not spring loaded but firmly seated by the weight of the car. With the chassis spring load removed from the ball joint, this ball joint may show looseness. Such looseness is probably due to normal operating clearance.

1. Place jack under lower control

arm as far outboard as possible and still have access to the lower ball joint grease fitting. Be sure the upper control arm does not contact the rebound bumper when the car is raised. Raise car until front wheel clears the floor.

2. Remove lower ball joint grease fitting and install Gauge J-21240.

3. Place a pry bar between floor and tire and raise tire. This puts a load on the ball joint.

4. Repeat procedure several times and take maximum and minimum gauge readings under load and no load conditions.

5. Subtract minimum reading from maximum reading. If difference is more than .070", replace ball joint.

f. Upper Control Arm Bushing Retaining Bolts

If loose upper control arm bushing retaining bolts are encountered, it is necessary to torque bolts to 55 lb. ft. On some cars equipped with air conditioning, power brakes, etc. it will be necessary to remove the upper control arm per paragraph 31-2 to torque the bolts.