

Group 2

FRONT SUSPENSION

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DATA AND SPECIFICATIONS

MODELS	PS-1, PS-3, PC-1	PC-2	PC-3	PY-1
STEERING AXIS INCLINATION		$5\frac{1}{2}^{\circ} - 7\frac{1}{2}^{\circ}$		
CAMBER		Left $+3\frac{3}{8}^{\circ} \pm 1\frac{1}{4}^{\circ}$ ($+3\frac{3}{8}^{\circ}$ Preferred) Right $+1\frac{1}{8}^{\circ} \pm 1\frac{1}{4}^{\circ}$ ($+1\frac{1}{8}^{\circ}$ Preferred)		
CASTER (Manual Steering)		$-1\frac{1}{2} \pm 1\frac{1}{2}^{\circ}$		
(Power Steering)		$+3\frac{3}{4} \pm 1\frac{1}{2}^{\circ}$		
TOE-IN		$3\frac{3}{32}$ inch to $5\frac{3}{32}$ inch ($1\frac{1}{8}$ inch preferred)		
TOE-OUT ON TURNS		$21\frac{1}{2}^{\circ}$ ($\pm 1^{\circ}$) Inner Wheel, When Outer Wheel is 20°		
TREAD				
Front	61.0	61.0	61.2	61.8
Rear	59.7	59.7	60.0	62.2
WHEELBASE (Inches)	122	126	126	129
Town and Country (Inches)	122 (PC-1 Only)	—	126	—

SPECIAL TOOLS

C-485.....	Torque Wrench—Foot Pounds
C-3409.....	Gauge—Camber and Caster
C-3479.....	Gauge and Scriber—Toe-In
C-3553.....	Remover and Installer—Shock Absorber Lower Bushing (All Models)
C-3556.....	Installer—Lower Control Arm Bushing (PC-1, PS-1, PS-3)
C-3557.....	Installer—Lower Control Arm Bushing (PC-2, PC-3 and PY-1)
C-3560.....	Wrench (socket)—Ball Joint Assembly to Upper and Lower Control Arm (PC-1, PS-1, PS-3)
C-3561.....	Wrench (socket)—Ball Joint Assembly to Upper and Lower Control Arm (PC-2, PC-3 and PY-1)
C-3564.....	Remover—Ball Joint Stud (All Models)
C-3608.....	Gauge—Front End Height and Level
C-3669.....	Remover and Installer—Upper Control Arm Bushing
C-3675.....	Wrench, Camber and Caster Adjusting (long)
C-3696.....	Wrench, Camber and Caster Adjusting (short)
C-3710.....	Upper Control Arm Bushing Remover and Installer (All Models)
DD-435.....	Turntable—Wheel Aligning
SP-3233A.....	Adapter—Use with Tool C-3669

TIGHTENING REFERENCE

	Foot-Pounds	Inch-Pounds
BALL JOINTS IN CONTROL ARMS	125 Min.	
LOWER BALL JOINT STUD	135	
UPPER BALL JOINT STUD 9/16 (PC-1, PS-1, PS-3)	100	
$\frac{5}{8}$ (PC-2, PC-3, PY-1)	135	
LOWER CONTROL ARM		
Bumper Nut		200
Shaft Nut—Outer $\frac{3}{4}$ (PC-1, PS-1, PS-3)	180	
$\frac{7}{8}$ (PC-2, PC-3, PY-1)	200	
Inner $\frac{5}{8}$	100	
Strut Bolt Nut	100	
Strut Bushing Nut—Cotter Pin	35	
Torque Nut	50	
UPPER CONTROL ARM		
Bumper		200
Support Bracket Cam Bolt	65	
SWAY ELIMINATOR SHAFT		
Cushion Retainer Bolt Nut	35	
Frame Bracket Screws	13	
Link Nut		110
FRONT SHOCK ABSORBER		
Upper Mounting Nut	35	
Lower Mounting Nut	55	
Steering Knuckle to Brake Support Bolt	55	
Steering Knuckle to Steering Knuckle Arm Nut	50	

SERVICE DIAGNOSIS

1. FRONT END NOISES

- a. Ball joints or tie rod ends need lubricant.
- b. Worn or loose front wheel bearings.
- c. Worn tie rod ends.
- d. Loose control arm mounting brackets.
- e. Worn upper ball joint.
- f. Worn lower ball joint.
- g. Worn upper control arm pivot bushings.
- h. Worn lower control arm pivot bushings.
- i. Loose sway eliminator or worn bushings.

- j. Shock absorber and bushing worn or loose.
- k. Idler arm bushing worn.

2. BODY PITCH OR ROLL

- a. Low or uneven tire pressure.
- b. Incorrect front suspension height.
- c. Loose sway eliminator.
- d. Shock absorber inoperative.

3. HARD STEERING

- a. Ball joints or tie rod ends need lubrication.
- b. Low or uneven tire pressure.

- c. Steering gear low on lubricant.
- d. Steering gear not adjusted properly.
- e. Improper caster.
- f. Upper control arm bent.
- g. Lower control arm bent.
- h. Steering knuckle bent.

4. EXCESSIVE PLAY IN STEERING

- a. Steering gear in need of adjustment or worn.
- b. Worn or loose front wheel bearings.
- c. Worn ball joints on tie rods.
- d. Worn upper control arm bushing.
- e. Worn lower control arm bushing.
- f. Loose idler arm.

5. FRONT WHEEL SHIMMY

- a. Tire, wheel and hubs out of balance.
- b. Uneven tire pressure.
- c. Worn or loose wheel bearings.
- d. Worn tie rod ends.

- e. Worn ball joints.
- f. Shock absorber inoperative.
- g. Loose or bent steering knuckle.
- h. Incorrect front end alignment.
- i. Strut mounting bushings loose.
- j. Strut mounting bushings worn.
- k. Upper control arm bushings loose.
- l. Lower control arm bushings worn.
- m. Idler arm loose.

6. CAR PULLS TO ONE SIDE

- a. Low or uneven tire pressure.
- b. Brake dragging.
- c. Incorrect front end alignment.
- d. Upper control arm bent.
- e. Lower control arm bent.
- f. Shock absorber inoperative.
- g. Uneven front car height.
- h. Broken or weak rear springs.

Group 2

FRONT SUSPENSION

SERVICE PROCEDURES

7. PREPARATION AND INSPECTION

(1) Inflate the tires to recommended pressure. All tires should be the same size, in good condition and have equal wear. Note the type of wear to aid in diagnosing. See "Wheels, Bearings and Tires", Group 22.

(2) Inspect the suspension and steering linkage pivot points for excessive looseness and the rear springs for proper position on axle spring seats and tightness of "U" bolts.

(3) Check the rear spring height by measuring the vertical distance from the top of the rear spring leaf to the underside of the body frame on both sides of the vehicle. Measurements should be made from identical spots on the spring and the heights should not vary more than $\frac{3}{4}$ inch.

(4) Inspect the front wheels for running true and the bearings for proper adjustment (Paragraph 8).

(5) Inspect the body to stub frame alignment. (See Frame Group 13.)

(6) Measure the wheelbase on both sides of vehicle. Measurement should be equal when front wheels are in the straight ahead position.

(7) Locate the car with floating turn tables Tool C-3409 under the front wheels and the rear wheels level with the front wheels. The car should have a full fuel tank, or equivalent, but no luggage or passenger load.

All inspections and adjustments should be made in the following order:

1. Front Suspension Height
2. Caster and Camber
3. Toe-in
4. Steering Axis Inclination
5. Toe Out on Turns
6. Head Lamp Aiming (If height has been changed)

A measurement of steering axis inclination and toe out on turns is valuable in determining that parts are bent or damaged, particularly when adjustments will not bring camber and caster within specifications.

(8) In order to obtain accurate readings, the car should be jounced in the following manner just prior to taking any measurement: Grasp the bumpers at the center (rear bumper first) and jounce the car up and down several times. Jounce the car the same number of times and release the bumper at the same point in the cycle each time.

8. FRONT WHEEL BEARING ADJUSTMENT

(1) Tighten the wheel bearing adjusting nut to

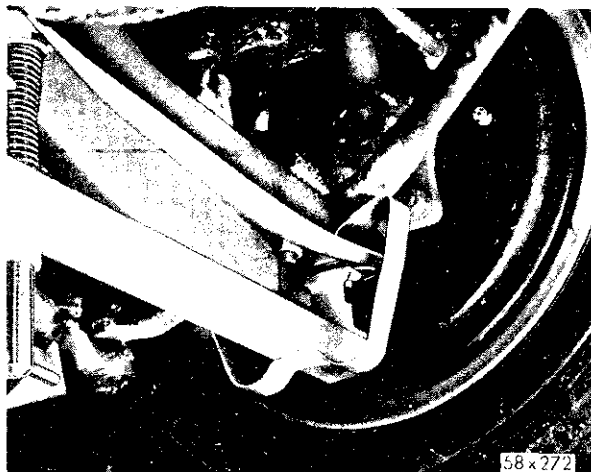


Fig. 1—Height and Level Gauge in Position on Right Side

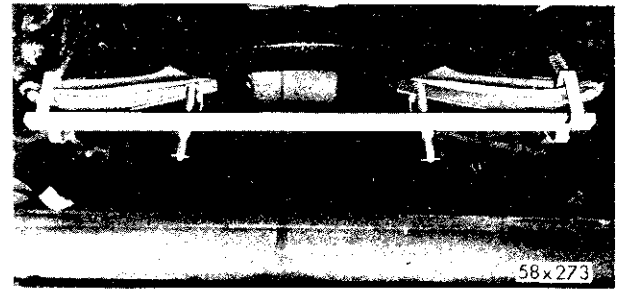


Fig. 2—Height and Level Gauge Installed

180 inch-pounds while rotating the wheel.

(2) Position the nut lock on the nut with one pair of slots in line with the cotter pin hole.

(3) Back off the adjusting nut $1\frac{1}{2}$ slots. This will position the nutlock so that a tang blocks the cotter pin hole in the spindle.

(4) Remove lock and re-position it so the cotter pin can be inserted. **Do not move adjusting nut.**

(5) Install the cotter pin.

9. FRONT SUSPENSION HEIGHT ADJUSTMENT

a. Using Height and Level Gauge Tool C-3608

(1) Clean the lower control arm ball joints and the control arm bushing housings.

(2) With the measuring pins of Tool C-3608 retracted, latch the tool retaining springs securely to the flanges of the control arms, making sure that the stop pads on the ends of the tool are in contact with the cleaned area of the ball joints (Figs. 1 and 2).

(3) Carefully unlatch the measuring pins and

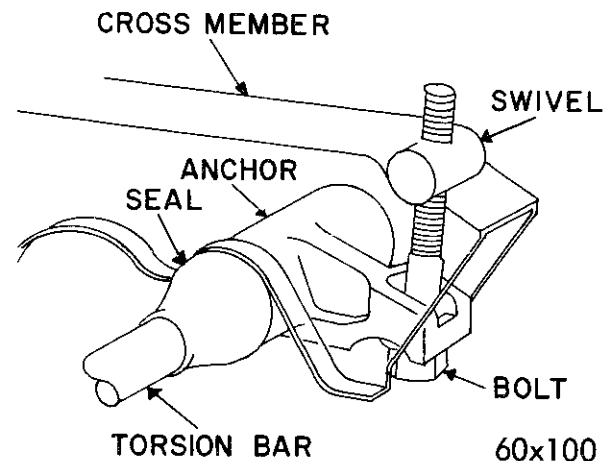


Fig. 3—Torsion Bar Adjustment Bolt

See Page 16 for Caster and Camber Correction Chart

CAMBER AND CASTER ADJUSTMENT CHART

ALL MODELS

CAMBER

Left $+ \frac{3}{8}^{\circ} \pm \frac{1}{4}^{\circ}$
 (+ $\frac{3}{8}$ Preferred)
 Right $+ \frac{1}{8}^{\circ} \pm \frac{1}{4}^{\circ}$
 (+ $\frac{1}{8}$ Preferred)

CASTER

Manual Steering $- \frac{1}{2}^{\circ} \pm \frac{1}{2}^{\circ}$
 Power Steering $+ \frac{3}{4}^{\circ} \pm \frac{1}{2}^{\circ}$

guide them into contact with the cleaned surface of the bushing housings.

(4) Jounce the car as outlined in Step 8, Paragraph 7.

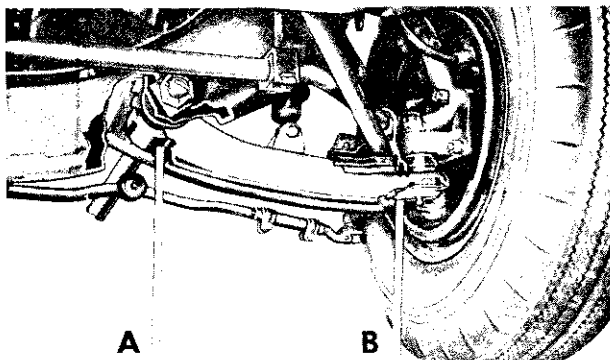
(5) The reading on both measuring pins should be 2 inches $\pm \frac{1}{8}$ inch for all models, and 2½ inches $\pm \frac{1}{8}$ inch for cars with heavy duty springs (Town and Country models). The difference from side to side should be no more than $\frac{1}{8}$ inch.

(6) Adjust, if necessary, by turning the torsion bar anchor bolt clockwise to increase the height and counter-clockwise to decrease the height (Fig. 3). If it is necessary to adjust the anchor bolts, measure the torque required to move the bolt clockwise. If it requires over 200 foot-pounds, replace the anchor adjusting bolt.

WARNING

The torsion bar adjusting bolt should only be loosened (or tightened) with the use of a foot-pound torque wrench, with vehicle supported under the frame to relieve load on torsion bars. If more than 200 foot-pounds torque is required to turn the adjusting bolt, then bolt and swivel must be replaced.

(7) After adjusting, jounce the car and read both gauges even though only one side may have been adjusted.



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Fig. 4—Checking Front Suspension Height at Ball Joint and Lower Control Arm

b. Without Using Tool C-3608

(1) Jounce the car and measure from the ball joint to the floor (Fig. 4) and from the bottom of the lower control arm bushing housing to the floor.

(2) Subtract measurement "B" from measurement "A". The difference should be 2 inches $\pm \frac{1}{8}$ for all models and 2½ inches $\pm \frac{1}{8}$ inch for cars with heavy duty springs (Town and Country models).

(3) Measure the right control arm in the same manner. The difference between the side to side measurement should not be more than $\frac{1}{8}$ inch.

(4) Adjust if necessary, by turning the torsion bar anchor bolt clockwise to increase the height and counter-clockwise to decrease the height (Fig. 3). (See "Warning" above.)

(5) After adjusting, jounce the car even if only one side may have been adjusted.

10. FRONT WHEEL ALIGNMENT

a. Caster and Camber

(1) Wire brush foreign matter and any rust from the exposed threads of the upper control arm cam bolts and apply No. 1879318 lubricant to the exposed threads.

(2) Install caster and camber gauge Tool C-3409.

(3) Take initial camber and caster readings before loosening the cam bolt nuts. After the lubricant has penetrated any rust, and if an adjustment is required, carefully loosen the upper control arms nuts with Tool C-3675 while holding the bolts from turning.

(4) Refer to caster-camber correction chart and make adjustments in the sequence as listed in the chart.

(5) After both caster and camber readings are correct, tighten the adjusting bolt nuts to 65 foot-pounds. Use wrench Tool C-3675 as a straight-line

extension for the torque wrench. Because of this extension a torque wrench reading of 45 foot-pounds will tighten the nut correctly to 65 foot-pounds.

b. Toe-In

(1) Measure the toe-in readings with the front wheels in the straight-ahead position. Jounce the front end of vehicle up and down several times. Position the Tool C-3479 in front of the wheels and scribe a line in the center of the tread of each tire. After scribing the tires from the front, move the gauge to the rear of the front tires and check toe by placing the stationary scribe on one of the scribe marks and adjusting the gauge scribe on the other. Check the gauge for Toe-in or Toe-out.

(2) When necessary to adjust, loosen the clamps at each end of both adjusting tubes.

(3) Adjust toe-in to $\frac{1}{8}$ inch $\pm 1/32$ inch by turning the tie rod sleeve which will "center" the steering wheel spokes. If steering wheel was centered, make the final toe-in adjustment by turning both sleeves an equal amount.

(4) Position the clamps and tighten the bolts to 15 foot-pounds torque.

c. Steering Axis Inclination

There is no adjustment for steering axis inclination, however, the following test is used for determining that steering knuckles have been bent or damaged. (Excessive camber readings, either positive or negative, generally indicate a bent steering knuckle.)

(1) With front wheels on turn tables, Tool DD-435 and gauge C-3409 attached to the right wheel, set the foot brakes, center the bubble level on gauge and turn the front wheel more than 20 degrees to the left, then return to 20 degrees.

(2) Adjust secondary screw (which controls the short pointer) to center the bubble. Do not disturb the gauge setting or release the brakes.

(3) Turn front wheels to the right more than 20 degrees then return to 20 degrees.

(4) Adjust primary screw (which moves the long [hair-line] pointer) to center the bubble. The reading on the 40 degree scale will be the steering axis inclination for the right wheel. If the reading is not to data and specifications, inspect for a bent steering knuckle.

To check the angle of the left wheel, attach the gauge and take readings as above but with the wheels to the right first, then to the left.

d. Toe-Out on Turns

This test is used for determining that knuckle arms and steering gear arms have not been bent or the frame damaged.

(1) With front wheels on turn tables and foot brake released, turn right wheel 20 degrees to the left.

(2) Reading on left wheel should be $21\frac{1}{2}$ degrees ± 1 degree.

(3) Turn left wheel to the right 20 degrees.

(4) Reading on right wheel should be $21\frac{1}{2}$ degrees ± 1 degree.

Once front wheel alignment has been properly adjusted, it should only be necessary to measure the alignment every 10,000 miles, except in case of accidental damage resulting in hard steering or excessive front tire wear. All parts of the front suspension have been heat treated and should be replaced if they are found to be bent. In new cars or after reconditioning a front suspension system, it is advisable to measure the alignment after a short period of operation, approximately 1,000 miles or at the regular lubrication period.

11. SWAY BAR (Models So Equipped)

a. Removal (Fig. 5)

(1) Remove the two sway bar link retaining nuts and concave washers.

(2) Remove the two sway bar cushion retaining nuts, lockwashers and bolts (one to each strut). Slide sway bar out through control arm struts and away from vehicle. **The sway bar cushions are not serviced separately. If replacement is necessary, install new sway bar assembly. Remove lower concave washers.**

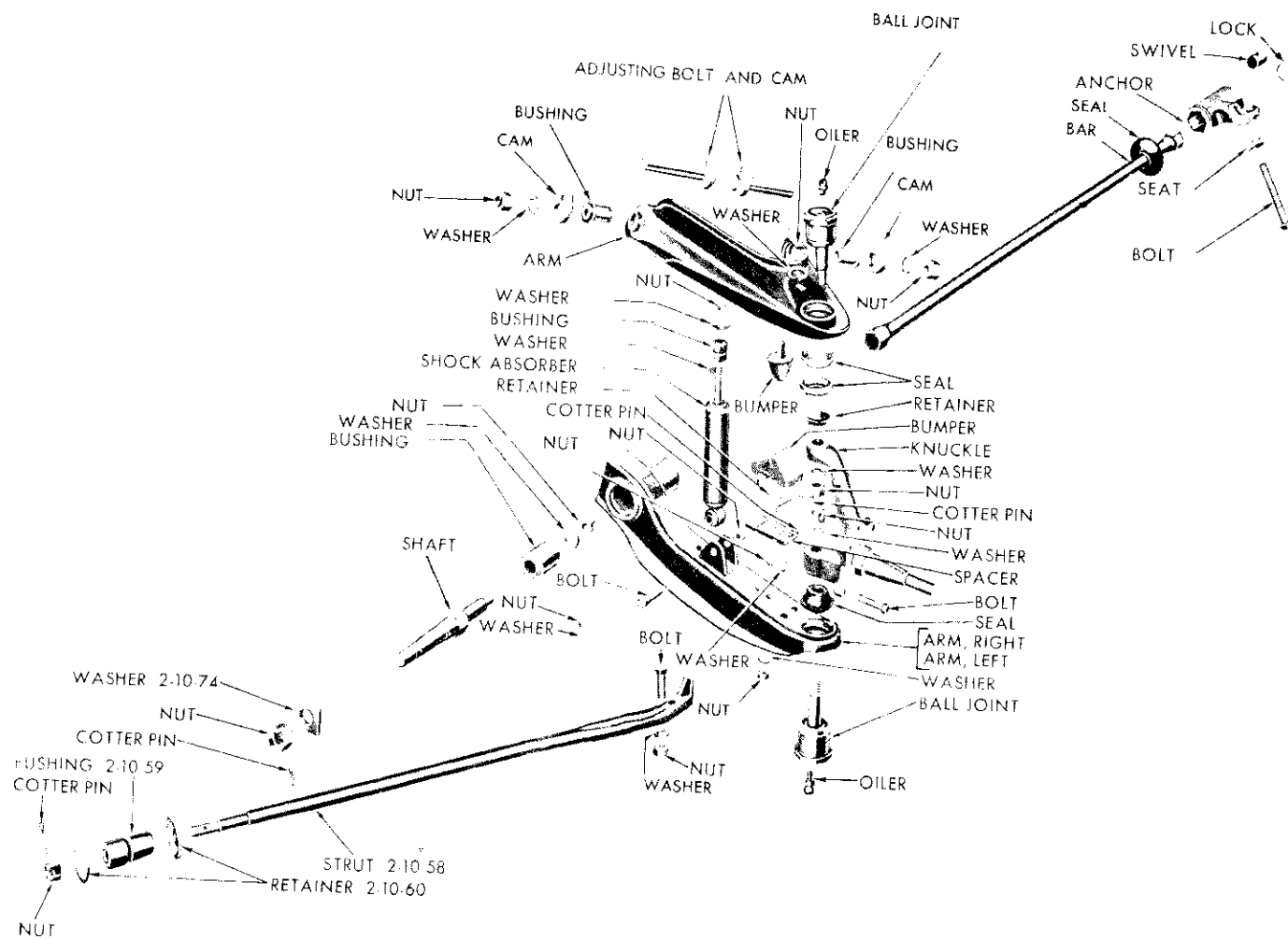
(3) Remove the sway bar link insulating bushings from frame bracket. If bushings are worn or deteriorated, install new bushings as required.

b. Installation

(1) Dip the new sway bar link bushings in water and install them in the opening in the frame bracket, using a twisting motion. **When installed properly, the groove in the bushing will index with opening in frame bracket.**

(2) Thread the sway bar into position over top of the lower control arm struts.

(3) Engage the sway bar cushion housings with the struts and install lock plates. Insert the bolts,



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Fig. 5—Front Suspension (Exploded View) (Typical)

lockwashers and nuts and tighten to 35 foot-pounds torque.

(4) Install the washers over ends of links (concave side up), then slide the links up through the bushings. Install the washers (concave side down), over the ends of the links and down on the bushings. Install the nuts and tighten to 110 inch pounds torque.

12. LOWER CONTROL ARM STRUT

a. Removal (Figs. 5 and 6)

(1) Remove the nuts, lockwashers, and bolts that attach the sway bar bushing housings to the struts. Disconnect the sway bar from the struts.

(2) Remove the strut to lower control arm mounting bolts and nuts.

(3) Remove the cotter pin, nut and bushing retainer from the forward end of strut at crossmember.

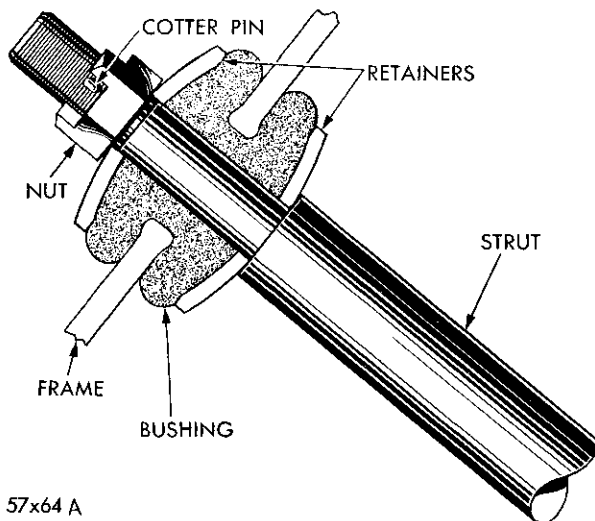
(4) Slide the strut and inner bushing retainer from the bushing in the frame.

(5) Using a screwdriver, pry the bushing out front of the frame.

b. Installation

(1) Dip the new bushing in water and with the tapered portion toward rear of the vehicle, install in the opening in the frame using a twisting motion until the groove in the bushing indexes properly with the frame.

(2) With the cupped side out, slide the washer over threaded end of the strut. Push the strut through the bushing in the frame, position the



57x64 A

Fig. 6—Lower Control Arm Strut Mounting
(Sectional View)

outer washer over the end of the strut (cupped side in) and install the nut.

(3) Tighten the nut sufficiently to install the strut to the lower control arm mounting bolts. Install the bolts, lockwashers and nuts, and tighten to 100 foot-pounds torque.

(4) Tighten the nut on forward end of the strut to 50 foot-pounds torque.

(5) Install the sway bar if so equipped.

13. TORSION BARS

The torsion bars are not interchangeable side for side. The bars will be indicated as either right or left by an "R" or an "L" (right or left hand side) stamped on the end of the bars.

a. Removal

WARNING:

The torsion bar adjusting bolt should only be loosened (or tightened) with the use of foot-pound torque wrench, with vehicle supported under the frame to relieve load on torsion bars. If more than 200 foot-pounds torque is required to turn the adjusting bolt, then bolt and swivel must be replaced.

CAUTION

If the vehicle is to be raised on a hoist, make sure it is lifted on the frame only so that Front Suspension is in full rebound under no load.

(1) Place a jack under center of the front crossmember and raise the vehicle off the floor, so the front suspension is in full rebound under no load.

(2) Release the load from the torsion bar by backing off the anchor adjusting bolts (Fig. 3). Remove bolt and swivel and discard.

(3) Remove the plastic seal from the rear end of the torsion bars anchor. Remove the lock ring from the rear of the torsion bar anchor (Fig. 7).

IMPORTANT:

If a vise is used, be sure to protect the torsion bar by placing it between two blocks of wood before tightening the vise. Installation of the seal will also be simplified by using a small amount of MoPar Ruglyde.

(4) Slide the torsion bar toward rear of the car sufficiently to disengage the forward end from the lower control arm. Slide the torsion bar forward and down, disengaging it from the anchor. Remove the torsion bar from under the car.

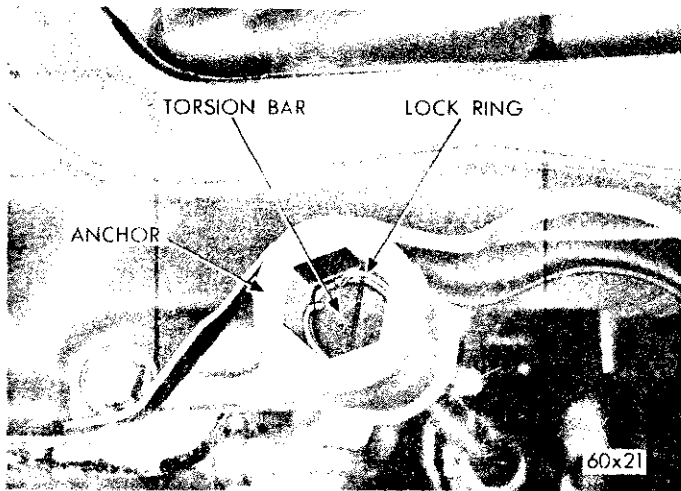


Fig. 7—Torsion Bar Lock Ring

b. Installation

(1) Before installing the torsion bar, obtain a new adjusting bolt and swivel. Install the torsion bar as follows:

(2) The torsion bars are marked (R) right and (L) left on the end. It is important that each torsion bar is installed on its respective side.

(3) Slide a new rear anchor end seal over the end of the torsion bar with the cup side facing to the rear.

(4) Apply a liberal coating of wheel bearing lu-

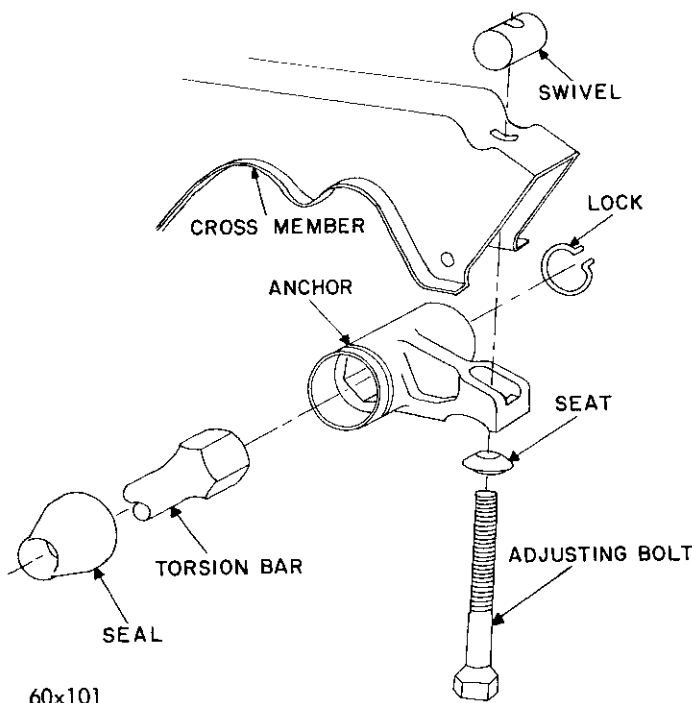


Fig. 8—Torsion Bar Rear Support Assembly

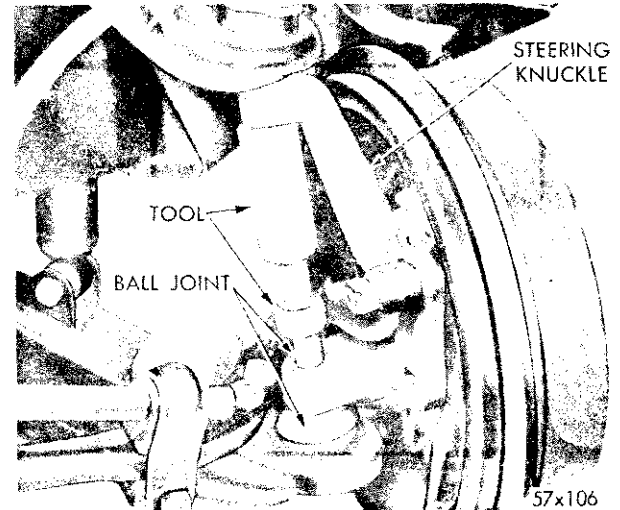


Fig. 9—Removing Lower Ball Joint from Knuckle

bricant around each end of the torsion bar. The rear end of the torsion bar should be coated equal to the depth of the anchor hub socket.

(5) Install the torsion bar (Fig. 8) and position the seal in the groove on the anchor hub.

(6) Turn the torsion bar until the anchor end is positioned approximately 120 degrees (eight o'clock position) down from the frame.

(7) Engage the front end of the bar in the hex opening of the lower control arm. If the anchor end is not in the position just described when installing the torsion bar, it will be impossible to adjust the front suspension to the correct height.

(8) Before installing the lock ring, center the bar so that full contact is obtained at anchor and arm shaft. Install the lock ring, making sure it is seated in its groove.

(9) Pack the torsion bar anchor seal with high melting point lubricant and position lip of seal in the groove in the anchor hub. Install the plastic seal into the rear end of the torsion bar anchor.

(10) Slide the adjusting bolt swivel in position on the frame. Hold in position while installing the new adjusting bolt and seat. Tighten the bolt into a new swivel until approximately 1 inch of threads are showing out of the swivel. This is an approximate setting and is to be used only as a starting point when adjusting for correct height. This setting is also necessary to place a load on the torsion bar before lowering the vehicle to the floor.

(11) Lower the vehicle to the floor, then measure and adjust the suspension as required (see Paragraph 9).

14. LOWER BALL JOINTS

a. Removal

(1) Place a jack under the lower control arm and raise the vehicle.

(2) Remove the wheel and tire assembly.

(3) Remove the upper and lower ball joint and nuts. Slide the Tool C-3564 over the upper stud until the tool rests on the steering knuckle. Turn the threaded portion of the tool locking it securely against the lower stud (Fig. 9). Spread the tool enough to place the lower stud under pressure, then strike the steering knuckle sharply with a hammer to loosen the stud. Do not attempt to force the stud out of the knuckle with the tool alone.

(4) Remove the tool, then disengage the ball joint from the knuckle. Remove the ball joint dust cover and seal.

(5) Using Tool C-3560 for Models PC-1, PS-1, PS-3, or C-3561 for Models PC-2, PC-3 and PY-1, as shown in Figure 10, unscrew the ball joint from the lower control arm and remove.

b. Installation

NOTE: When installing new ball joint, it is very important that the ball joint threads engage those of the control arm squarely.

(1) Screw the ball joint into control arm as far as possible by hand.

(2) Using Tool C-3560 for Models PC-1, PS-1 and PS-3, or C-3561 for Models PC-2, PC-3 and PY-1, tighten the ball joint housing to a minimum of 125 foot-pounds torque until seated in the control arm.

(3) Slide the seal into position, over the stud, then

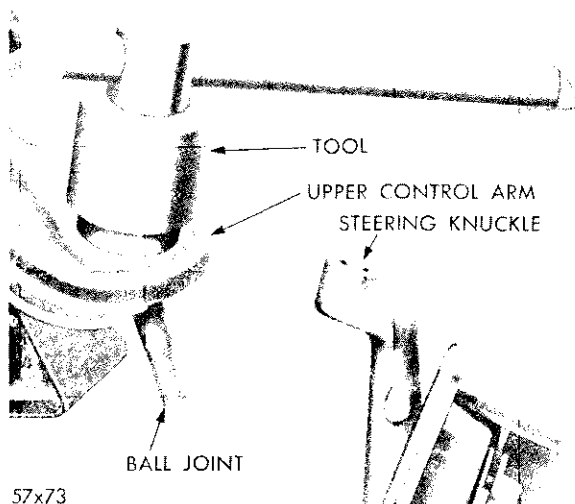


Fig. 10—Removing or Installing Ball Joint

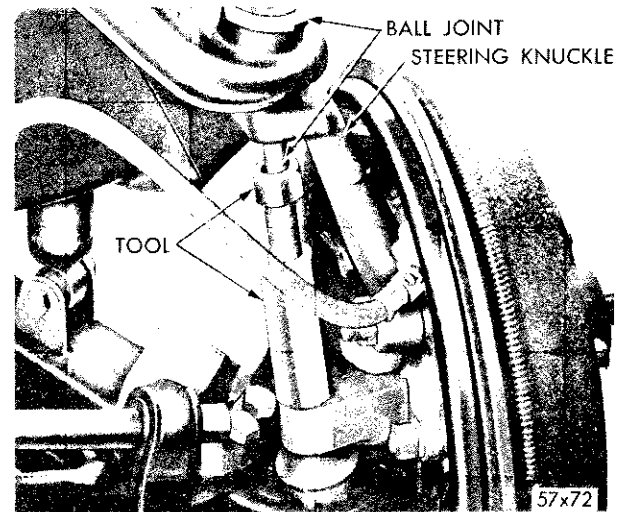


Fig. 11—Removing Upper Ball Joint from Knuckle

position stud in the steering knuckle. Install the washer and nut. Tighten to 135 foot-pounds and install the cotter pin.

(4) Lubricate the ball joint, using a good grade of heavy duty chassis lubricant.

(5) Reinstall the wheel and tire.

15. UPPER BALL JOINTS

a. Removal

(1) Place a jack under the lower control arm as close to the wheel as possible. Raise the wheel off the floor.

(2) Remove the wheel and tire assembly.

(3) Remove the upper and lower ball joint stud nuts. Slide the Tool C-3564 down over the lower stud until the tool rests on the steering knuckle. Turn the threaded portion of the tool locking it securely against upper stud (Fig. 11). Spread the tool enough to place the upper stud under pressure, then strike the steering knuckle sharply with a hammer to loosen the stud. **Do not attempt to force the stud out of the knuckle with the tool alone.**

(4) Remove the tool, then disengage the ball joint from the knuckle. Remove the ball joint dust cover and grease seal.

(5) Remove the lubrication fitting from the top of the ball joint. Using Tool C-3560 for Models PC-1, PS-1 and PS-3, or C-3561 for Models PC-2, PC-3 and PY-1 (Fig. 10) unscrew the ball joint from the upper control arm.

b. Installation

When installing a new ball joint, it is very important

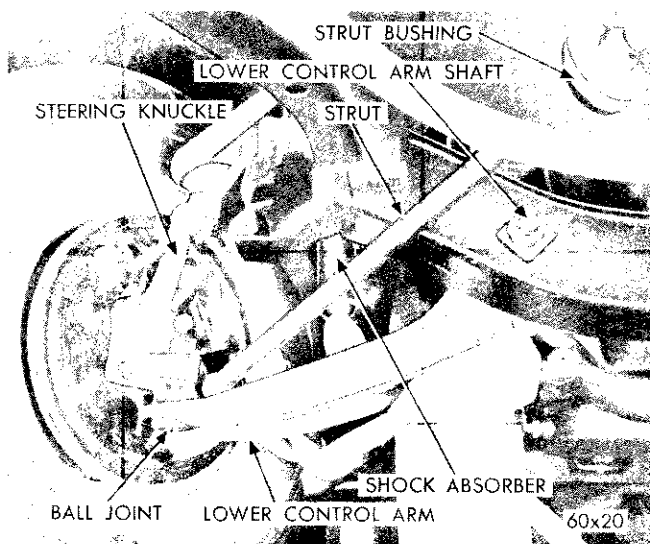


Fig. 12—Lower Control Arm Mounting

that the ball joint threads engage those of the control arm squarely.

(1) Screw the ball joint squarely into the control arm as far as possible by hand.

(2) Using Tool C-3560, or C-3561 according to model indicated as above, tighten until the ball joint housing is seated on the control arm. Tighten to a minimum of 125 foot-pounds torque.

(3) Slide the seal and dust cover up into position over the stud, then position the stud in the steering knuckle. Install the washer and nut. Tighten to 100 foot-pounds torque on Models PC-1, PS-1 and PS-3. Tighten to 135 foot-pounds torque on Models PC-2, PC-3 and PY-1 and install the cotter pins.

(4) Install the lubrication fitting and lubricate the ball joint, using a good grade of heavy duty chassis lubricant.

(5) Reinstall the wheel and tire.

16. LOWER CONTROL ARM AND SHAFT (Fig. 12)

a. Removal

(1) Place a jack under the Number 2 crossmember and raise the vehicle until both front wheels clear the floor.

(2) Remove the torsion bar, Paragraph 13.

(3) Remove the wheel and tire assembly.

(4) Disconnect the shock absorber at the lower control arm bracket then push the shock absorber up into the frame out of the way.

(5) Remove the nuts, lockwashers and bolts that attach the strut to the lower control arm.

(6) Remove the upper and lower ball joint stud nuts. Slide Tool C-3564 over the upper stud until the tool rests on the steering knuckle. Turn the threaded portion of the tool locking it securely against the lower stud (Fig. 9). Spread the tool enough to place the lower stud under pressure, then strike the steering knuckle sharply with a hammer to loosen the stud. **Do not attempt to force the stud out of the knuckle with the tool alone.**

(7) Remove the tool, and disengage the ball joint from knuckle.

(8) Remove the cotter pin, nut and washer that attaches the lower control arm shaft to the frame. With the washer and cotter pin removed, reinstall the nut until it is flush with the end of the shaft to protect the threads.

(9) Using a hammer and brass drift, loosen the shaft (a tapered fit in front crossmember), then remove the nut. Slide the lower control arm and shaft out from the rear of the crossmember.

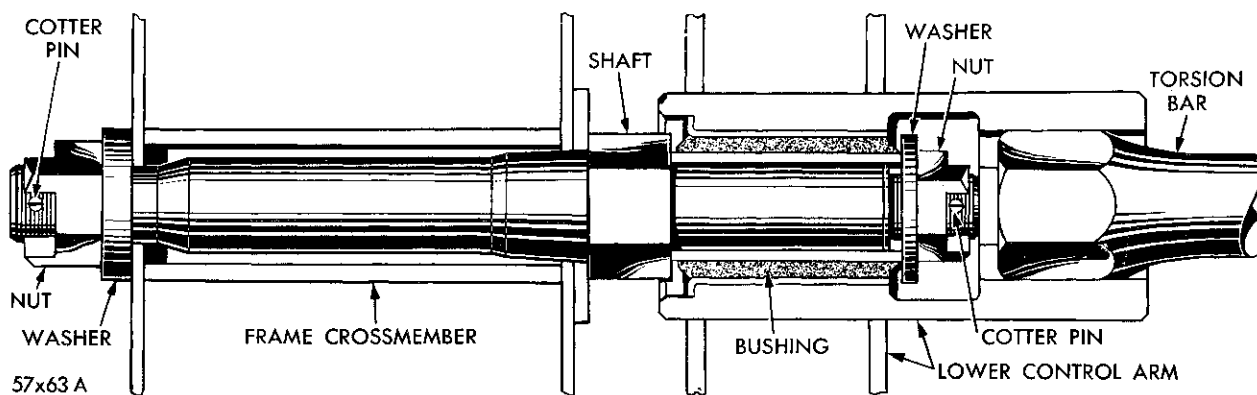


Fig. 13—Removing Lower Control Arm Shaft and Bushing from Housing (Typical)

b. Disassembly

(1) Place the lower control arm in an arbor press (with torsion bar hex opening up). Press the shaft and bushing out of the control arm, using a brass drift (Fig. 13).

(2) Remove the cotter pin, nut and washer from the end of the shaft, and remove the bushing from the shaft (Fig. 14).

c. Assembly

(1) Position the new bushing over the shaft (flange end first) and seat on the shoulder of the shaft. Install the washer and nut, then tighten to 100 foot-pounds torque. (Hold shaft securely in vise with protector jaws.) Install the cotter pin.

(2) Press the lower control arm shaft and bushing into the lower control arm with an arbor press, or drive into place using Tool C-3556 for Models PC-1, PS-1 and PS-3, or C-3557 for Models PC-2, PC-3 and PY-1, and a hammer (Fig. 15).

(3) Press until the flanged position of the bushing is seated, past locking groove.

(4) Thread the ball joint into the arm using Tool C-3560 for Models PC-1, PS-1 and PS-3, or C-3561 for Models PC-2, PC-3 and PY-1 (Fig. 10).

(5) Tighten to a minimum of 125 foot-pounds torque until the ball joint is seated (the ball joint will cut threads into the arm during tightening operation).

d. Installation

Before installing the parts, clean all rust scale, mud and other foreign matter off of the mounting surfaces.

(1) Position the shaft and control arm in the frame crossmember in approximate operation position. Install the washer and nut. Tighten ($\frac{3}{4}$ inch) nut to 180 foot-pounds torque for Models PC-1, PS-1, PS-3, and ($\frac{7}{8}$ inch) nut 200 foot-pounds torque for Models PC-2, PC-3 and PY-1. Install the cotter pin.

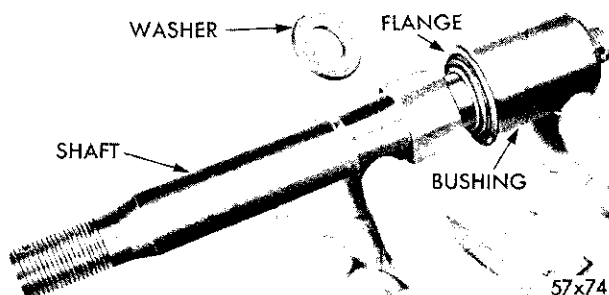


Fig. 14—Removing or Installing Shaft Bushing

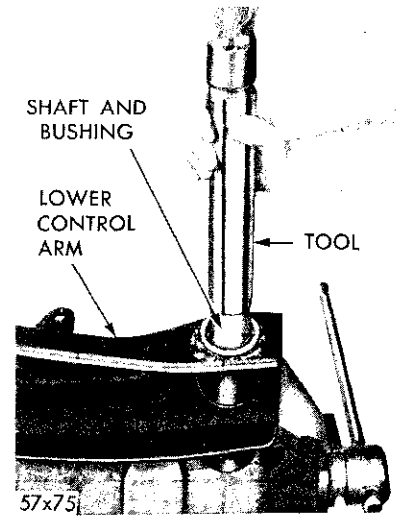


Fig. 15—Installing Lower Control Arm Shaft and Bushing

(2) Slide the lower ball joint stud into the steering knuckle and install the washer and nut. Tighten the nut to 135 foot-pounds torque and install the cotter pin.

(3) Withdraw the shock absorber from its position in frame opening and engage with the mounting bracket on the lower control arm. Install the bolt, washer and nut. Tighten to 55 foot-pounds torque.

(4) Position the strut on the lower arm, install the bolts, washers and nuts. Tighten to 100 foot-pounds torque.

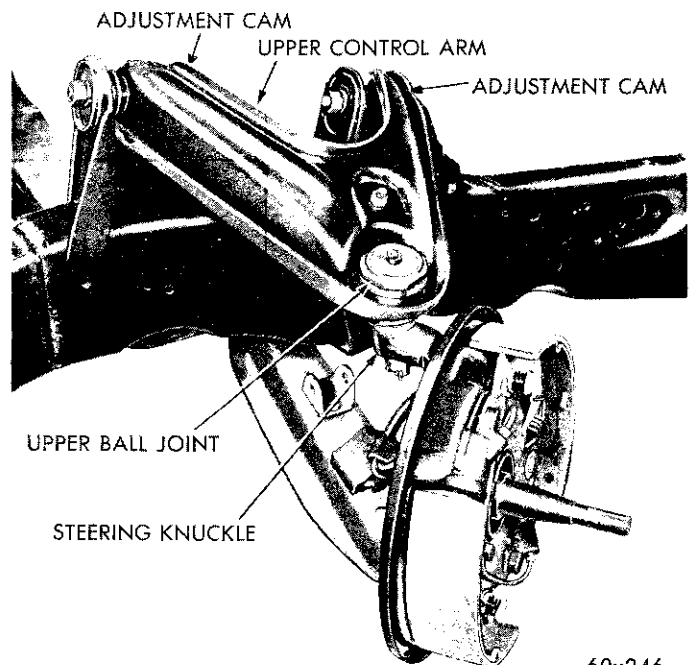


Fig. 16—Upper Control Arm Mounting

- (5) Install the wheel and tire assembly.
- (6) Install the torsion bar, Paragraph 13 (b).
- (7) Lower the vehicle to the floor, then measure and adjust suspension as required.

17. UPPER CONTROL ARMS

a. Removal

The upper control arm support mounting brackets are welded to the frame side rails (Fig. 16).

(1) Place a jack under the lower control arm as close to the wheel as possible. Raise the jack until the front wheel clears the floor.

(2) Remove the wheel and tire assembly.

(3) Remove the upper and lower ball joint stud nuts. Slide the Tool C-3564 down over the lower stud until the tool rests on the steering knuckle. Turn the threaded portion of the tool locking it securely against the upper stud (Fig. 11). Spread the tool enough to place the upper stud under pressure, then strike the knuckle sharply with a hammer to loosen the stud. Do not attempt to force the stud out of the knuckle with the tool alone.

(4) Remove the tool, then disengage the ball joint from the knuckle.

(5) Remove the nuts, lockwashers and bolts attaching the upper control arm bushings to the front and rear support. Lift the upper control arm up and away from the support.

b. Disassembly

(1) Remove the ball joint using Tool C-3560 for Models PC-1, PS-1 and PS-3, or C-3561 for Models

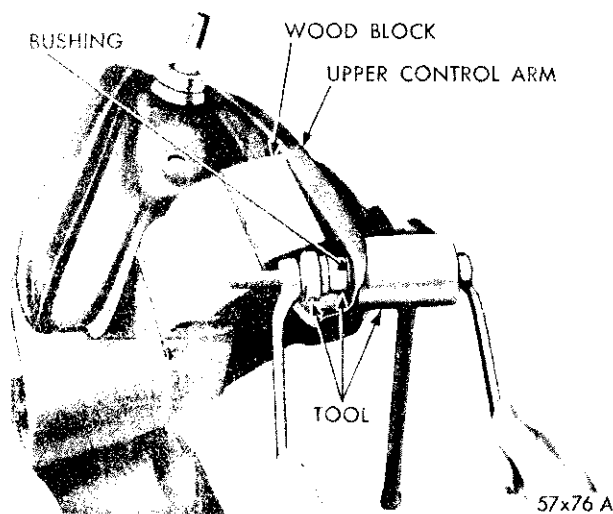


Fig. 17—Removing Upper Control Arm Bushing (Typical)

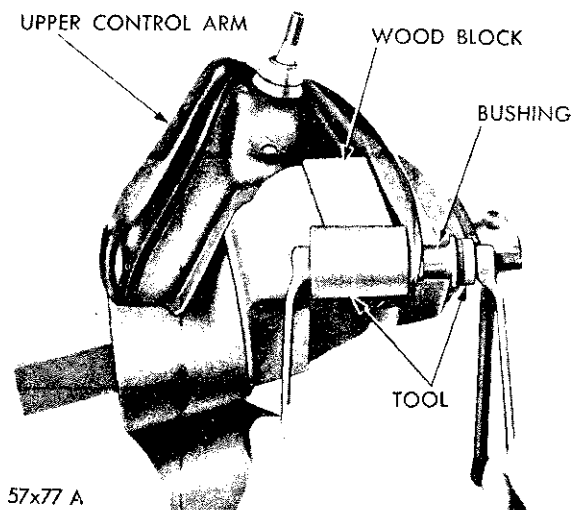


Fig. 18—Installing Upper Control Arm Bushing—Typical

PC-2, PC-3 and PY-1 (Fig. 10).

(2) Assemble Tool C-3710 over bushing and press the bushing out of the arm (from inside out) (Fig. 17). Be sure the control arm is firmly supported if a hammer and drift is used in place of the tool.

NOTE: Tool C-3669 with adapter SP-3233A is the same as Tool C-3710.

c. Assembly

When installing the new bushings, be sure the control arm is supported squarely at the point where the bushing is being pressed in. Do not use oil or grease to aid in installation.

(1) Position the flange end of new bushing in Tool C-3710 and then support the control arm squarely.

(2) Force the bushings into the control arm (from outside) until the tapered position of the bushing seats on the arm (Fig. 18).

(3) Thread the ball joint into the arm, using Tool C-3560 for Models PC-1, PS-1 and PS-3, or C-3561 for Models PC-2, PC-3 and PY-1 (Fig. 10).

(4) Tighten until seated (100 to 125 foot-pounds torque minimum). The ball joint will cut threads into the arm during the tightening operation. After the bushings have been pressed in place, install the upper control arm on the vehicle.

d. Installation

(1) Slide the upper control arm into position (Figure 17). Install the arm washers and nuts and tighten the nuts 55 to 65 foot-pounds torque.

(2) Slide the upper ball joint stud into position in the steering knuckle, and install the washer and

nut. Tighten the nut to 100 foot-pounds torque for Models PC-1, PS-1, PS-3 and 135 foot-pounds torque for Models PC-2, PC-3 and PY-1. Install the cotter pin.

(3) Install the wheel and tire. Remove the jack.

18. STEERING KNUCKLES

a. Removal

(1) Place a jack under the lower control arm as near to the wheel as possible. Remove the wheel, tire and drum. Be sure the brake shoes are covered to prevent dirt or grease from soiling the lining.

(2) Remove the cotter pins, nuts and lockwashers that attach the steering arm and brake dust shield to the steering knuckle. Remove the steering arm, brake dust shield, brake supports and shoes from the steering knuckle as an assembly but leaving the brake hose attached.

CAUTION

Do not allow the assembly to hang by the brake hose.

(3) Remove the ball joint studs from the steering knuckles. Lift the steering knuckle out and away from the vehicle.

b. Installation

(1) Slide the upper and lower ball joint studs into the steering knuckle and install the lockwashers and nuts. Tighten the upper ball joint stud nut to 100 foot-pounds torque on Models PC-1, PS-1, PS-3 and 135 foot-pounds torque on Models PC-2, PC-3 and PY-1. Tighten the lower ball joint stud nut to 135 foot-pounds torque and install the cotter pin.

(2) Slide the brake dust shield, support and shoe assembly over knuckle and into position. Install the lockwashers and nuts on the upper rear and lower front bolts.

(3) Install the upper front and lower rear bolts through dust shield and steering knuckle. Slide the steering arm over the bolts. Install lockwashers and nuts. Tighten the steering knuckle to brake support bolts 55 foot-pounds torque and the steering knuckle to steering knuckle arm 50 foot-pounds torque. Install the cotter pins.

(4) Remove the covering from brake shoes. Install the wheel, tire and drum assembly. Properly adjust the front wheel bearings. (Refer to Paragraph 8 "Front Wheel Bearing Adjustment.")

