

CHASSIS SUSPENSION

FRONT SUSPENSION

All Series

All parts of the front suspension including the steering arms, are made of high carbon alloy steel, heat-treated for toughness to obtain maximum strength. If any of these parts become damaged, it is recommended that they be replaced with new parts. See Fig. 3-1.

The use of heat in straightening is certain to cause soft spots at which fatigue and breakage will occur. Under no circumstances should these parts be welded.

Front Suspension Assembly

All Series

Information is given in the dimensional drawing section and frame section covering necessary dimensions and limits of frame and front cross members. Instructions for checking frame are given under "Frame" section.

Briefly, the essentials are that the holes for shock absorbers and control arms should be of the correct size and location given. The top and bottom faces of cross member should be parallel and the frame should be square within limits shown. See Fig. 2-2 in "Frame" section.

Lower Control Arms

Lower control arm assemblies can be inspected for principal dimensions. See "Dimensional Drawing" section.

All Series

Lower control arms use fabric bushings between lower control arm shaft and inner ends

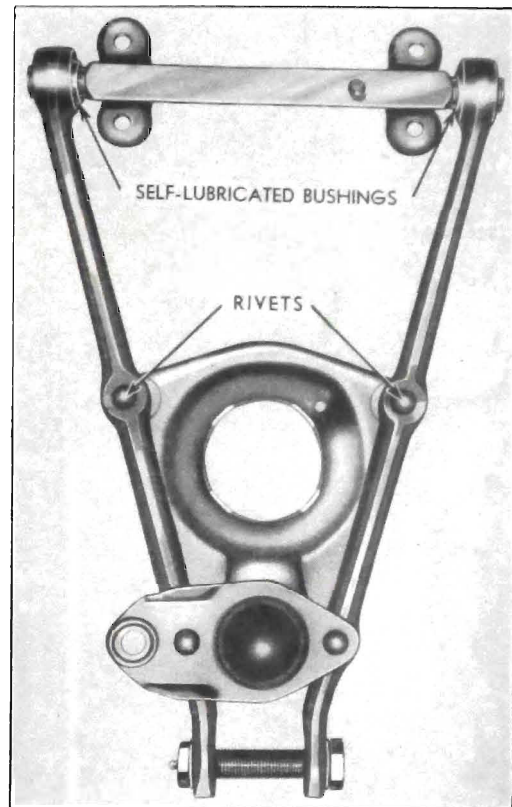


Fig. 3-2. Lower Control Arm—All Series

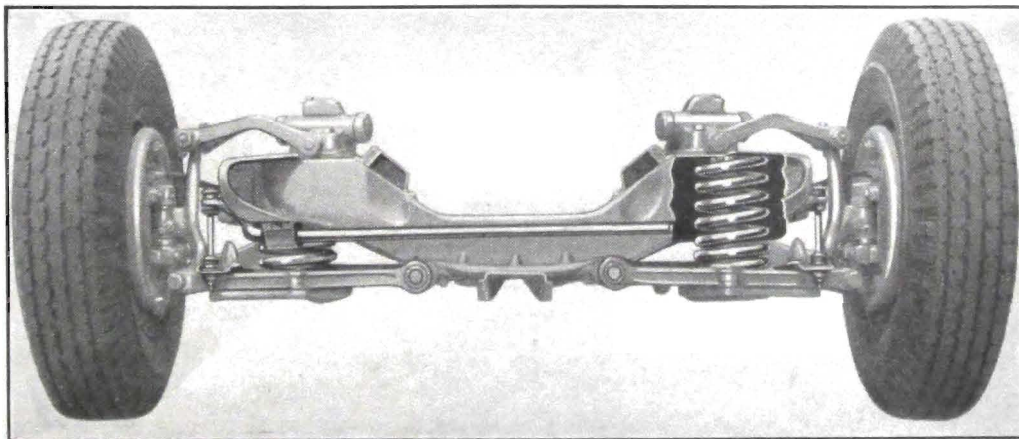


Fig. 3-1. Front Suspension—Series 40-50-60-70



of control arms. These bushings need no lubrication. See Fig. 3-2.

The bushings are swaged on grooved shafts. The inner ends of the lower control arms are then pressed on the bushing and shaft assembly using .002" to .007" press fit. The assembly of the lower control arms, inner shaft and spring seat is serviced as an assembly only.

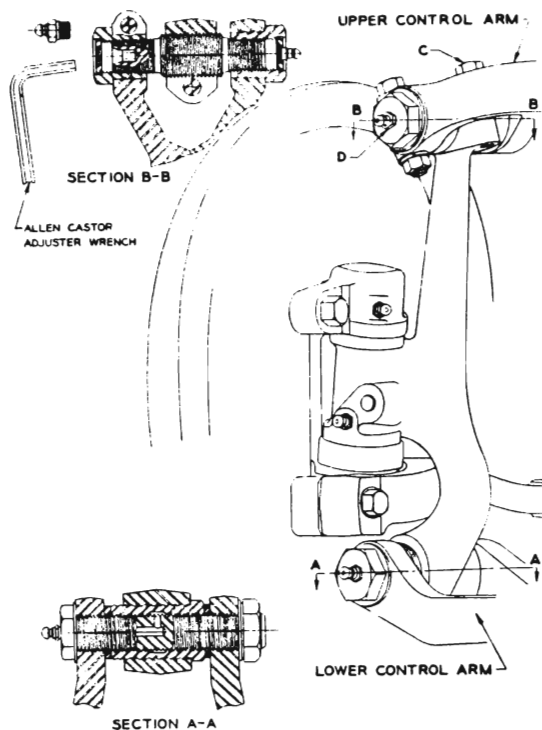


Fig. 3-3. Knuckle Support—All Series

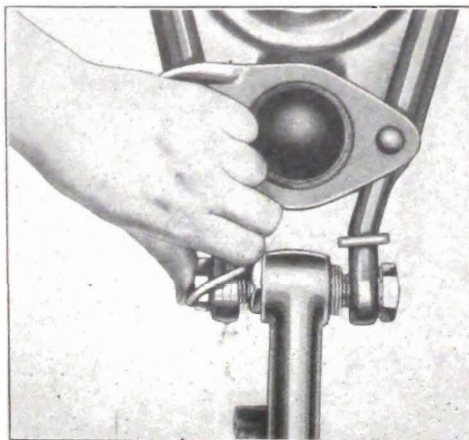


Fig. 3-4. Installing Dirt Seals

Outer ends of lower control arms are threaded and fastened with hardened steel bolt which acts as a bearing for the lower end of knuckle support. See Fig. 3-3.

Upper knuckle support threaded pin is clamped in center by bolt in split upper end of knuckle support. The hardened ends of upper pin are threaded and are carried in shock absorber arm by hardened threaded bushings. One of these bushings is threaded into one side of the shock absorber arm and this side should be assembled first. The second bushing is secured into the shock absorber arm by a clamp bolt. Care should be taken that assembly is free and bushing at clamp bolt end not drawn tight enough to cause bind in assembly.

Knuckle supports are provided with dust seals at bottom on all series. See Figs. 3-4 and 3-5.

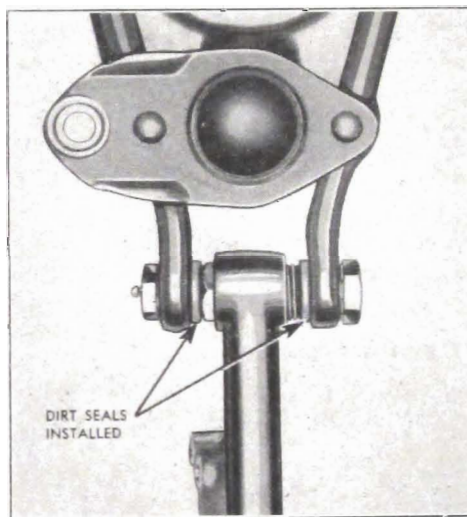


Fig. 3-5. Dirt Seals Installed

FRONT SHOCK ABSORBERS

All Series

All series use double-acting type, fastened to frame by three bolts. Two of these are used as pilot bolts and fit reamed holes for accuracy. Threaded pins are used at the knuckle support. See Fig. 3-6.

Front shock absorbers are interchangeable from left to right and vice versa with the exception that calibrations are different on the different series.

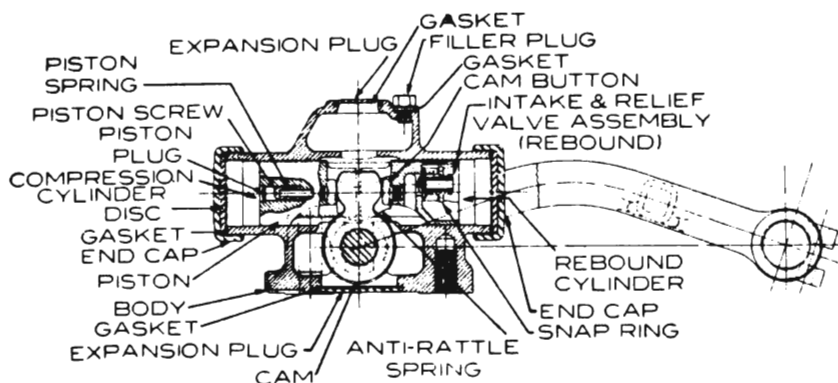


Fig. 3-6. Front Shock Absorber—All Series

SERVICING SHOCK ABSORBERS

All Series

Fill through filler hole in front side of the shock absorber body. The car bumper should be moved up and down several times to force out any air in the cylinders. More fluid should then be added and the bumper again moved up and down. This process should be repeated until no more fluid can be added.

IMPORTANT—ALL SERIES

There must be no free motion in the shock absorber arm. Free motion is an indication of air trapped in the fluid compression chambers. Use only Delco shock absorber fluid.

To check for leaks, fill and clean off the entire body of shock absorber with gasoline and blow off with an air hose. Test over a rough road for a few blocks and inspect with a good light (particularly at the end cap gaskets toward the inner side). A slight leak at the seal where the arm goes through housing with a full shock absorber is of little consequence and is due to initial expansion after filling. If, however, there is a leak at any of the caps, new gaskets should be installed and the shock absorber again cleaned and tested as described.

A dry or almost dry shock absorber indicates leakage and if not corrected, when filled it will continue to leak.

Special wrenches are available from Hinckley-Myers, Jackson, Michigan, for tightening cylinder caps as follows:

J-766—Shock Absorber Cylinder Cap Wrench (Serrated Type)

Shock absorber valves that are held open by chips in the valve seat will seriously affect shock

absorber control. If control is lacking when shock absorber is operated by hand remove and clean valves. Always clean out chips and worn metal from the housings when the shock absorber is disassembled for any reason.

The opposite effect is had when chips plug the valve orifice. A plugged valve orifice will offer excessive resistance when the arm is moved by hand.

Because it is difficult to clean a valve orifice, it is recommended that a new valve be installed.

Shock absorber action can usually be checked by pressing on ends of bumpers and comparing one side of car with other side or by comparing action of different cars.

REAR SHOCK ABSORBERS

All Series

A double acting parallel cylinder shock absorber is used on Series 40-50-60-70. See Fig. 3-8. Series 90 rear shock absorbers are double acting opposed cylinder type. See Fig. 3-9.

Series 40-50-60-70 rear shock absorbers are fastened to the backing plate by two bolts. See Fig. 3-7. Series 90 is fastened to frame. Series 40-50-60-70 may be removed by dismantling the wheel and brake drum.

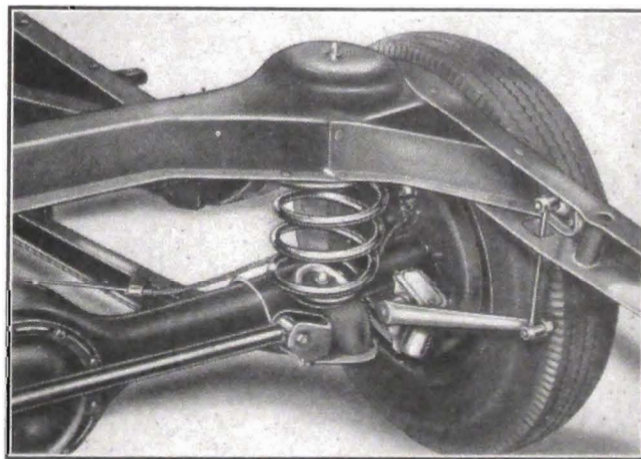


Fig. 3-7. Rear Shock Absorber Mounting—Series 40-60

The fluid channels are arranged on Series 40-50-60-70 rear shock absorbers so that the compression relief valve is on the opposite side

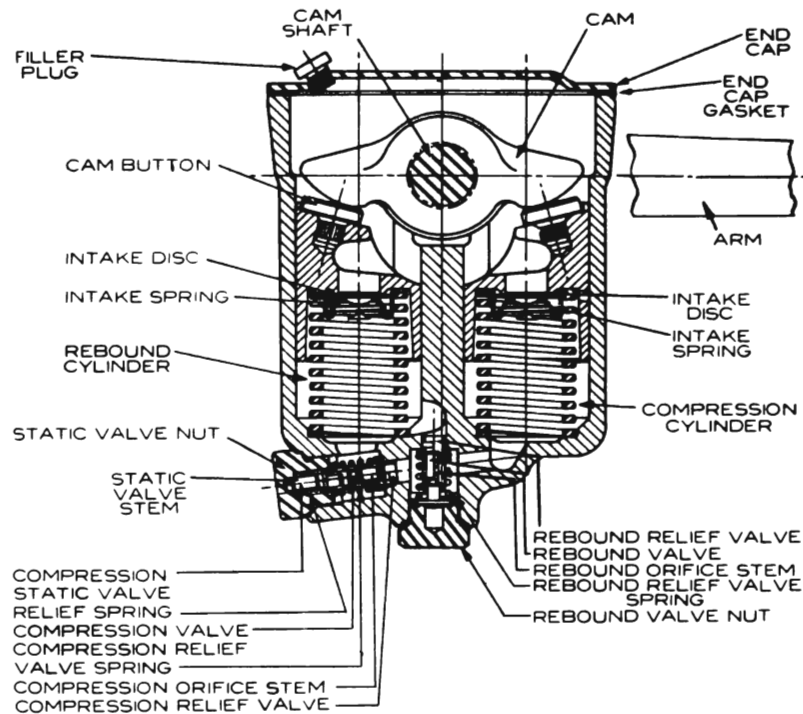


Fig. 3-8. Rear Shock Absorber—Series 40-50-60-70

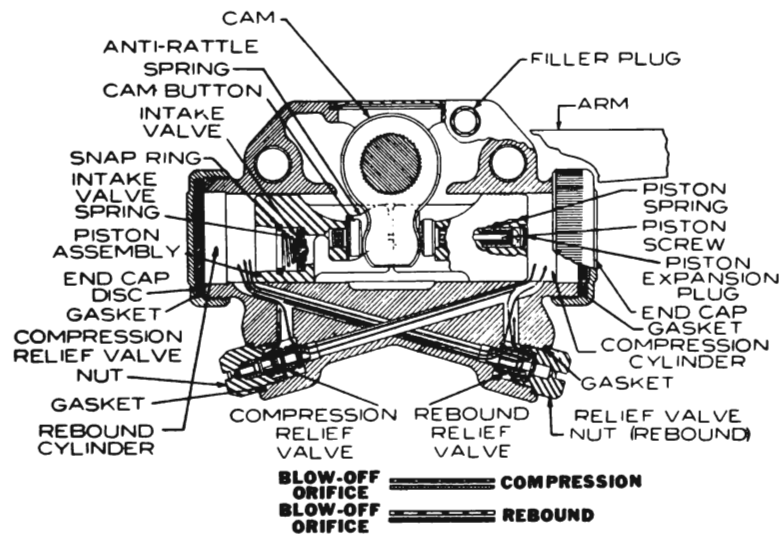


Fig. 3-9. Rear Shock Absorber—Series 90

of the shock absorber as the compression cylinder. The same is true of the rebound valve. See Fig. 3-8.

The fluid channels are arranged on Series 90 rear shock absorbers so that the compression relief valve is on the opposite end of the shock absorber as is the compression cylinder. The same is true of the rebound valve. See Fig. 3-9. End caps need not be removed in order to change calibrations.

Rear shock absorber links may be removed by using tool J-1591.

Calibration Changes

Shock absorbers as furnished on the car, are carefully engineered to meet average driving conditions. Attempts to change the riding qualities of the car by the use of special valves are not recommended.

Valves of all rear shock absorbers can be inspected by removing rebound or compression relief valve nut.

Valves of all front shock absorbers can be inspected by removing rebound or compression cylinder end caps. The valves in front shock absorbers are held in shock absorber pistons by snap rings.

Inlet check valves in Series 40-50-60-70 rear shock absorber pistons cannot be removed.

The original shock absorber calibrations are stamped on end caps of front shock absorbers and on relief valve nuts on rear shock absorbers.

Whenever shock absorber gaskets are disturbed, new gaskets should be installed.

REGULAR PRODUCTION SHOCK ABSORBER CALIBRATIONS

SERIES 40

Front	Rear
Part No.5313786	Part No.5313787 R 5313788 L
Rebound3F	Rebound5L
Compression3D	Compression.....2 Cd 5

SERIES 50

Part No.5313786	Part No.5313787 R 5313788 L
Rebound3F	Rebound5L
Compression3D	Compression.....2 Cd 5

SERIES 60

Part No.5313786	Part No.5313790 R 5313791 L
Rebound3F	Rebound5M
Compression3D	Compression.....2 Cd 5

SERIES 70

Part No.5313786	Part No.5313790 R 5313791 L
Rebound3F	Rebound5M
Compression3D	Compression.....2 Cd 5

SERIES 90

Part No.5313792	Part No.5313793 R 5313794 L
Rebound3G	Rebound5L
Compression3E	Compression.....2 Cd 5

Optional High or Export—Rear Shock Absorber

Calibrations

SERIES 40-50-60-70

Front	Rear
Same as Regular.	Part No.5328597 R 5328598 L
	Rebound60L
	Compression3C2

CHASSIS SPRINGS

Series 40-50-60-70

All series will have regular coil springs both front and rear, which will have the same road clearance as the low springs in the 1941 models.

For special requirements there are available in production or through the parts department optional high or export front and rear springs which are $\frac{5}{8}$ " higher than the regular springs. Optional high or export front springs have the same flexibility rate as the regular springs. Optional high or export rear springs have a higher rate of flexibility than the regular rear springs.

Overload rear springs are supplied for 200 lbs. and 500 lbs. See "Overload special rear springs."

Where excessive bottoming occurs on regular springs with normal loads, it is advisable to install optional high or export springs on either end of car before any overload springs are used.

Regardless of whether spring equipment is regular, optional high or export, springs may be changed in pairs, either front or rear.

- Optional high or export front springs require
- no change of shock absorber calibrations, how-
- ever, optional high or export rear springs and
- the 200 lbs. overload springs will give a better
- balance for ride and handling, if the optional
- high or export rear shock absorber calibrations
- are used.

Chassis Spring Identification

- All springs carry part number on coil near end
- of spring. The chart shown should be used for
- spring identification.

Rear Trim Dimension

Rear trim dimension "A" should be as follows when car is curb weight: (See Fig. 3-11, 3-12, 3-13.)

	Domestic
• Series 40-60	5¼ to 6¼
• Series 50-70	6½ to 7¼
• Series 90	5½ to 6¼

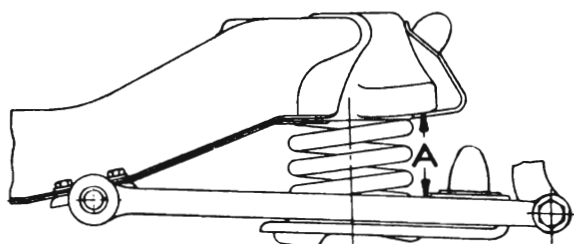


Fig. 3-10. Front Spring Trim Dimension

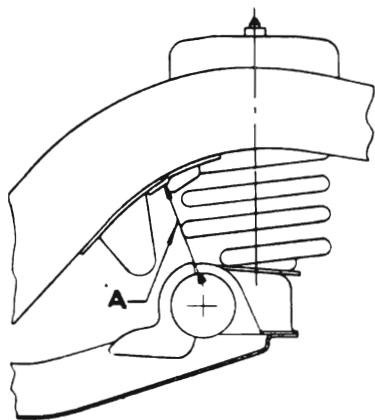


Fig. 3-11. Rear Spring Trim Dimension—Series 40

Overload Special Rear Springs

In event trim dimension is less than dimension "A" at curb load, new rear spring should be installed. If an excessive amount of spring bottoming occurs under loaded conditions, it is recommended to substitute a heavier spring. See overload chart.

In each case new spring installation should not increase trim dimension "A" more than 1" over limits given. The part numbers of the recommended substitute springs are as follows:

Special Rear Springs Overload Chart

Models	200 lbs. overload	500 lbs. overload
41-66S	1310399	1315233
44-44C-46-48	1315047	1315231
46S-47-48S	1312433	1315233
49	1315233
61	1315231	1315233
51-76S-76C	1324557	1324555
56S-56C	1324556	1324560
71	1324560	1324555
90-90L-91-91F	1304586	1305366

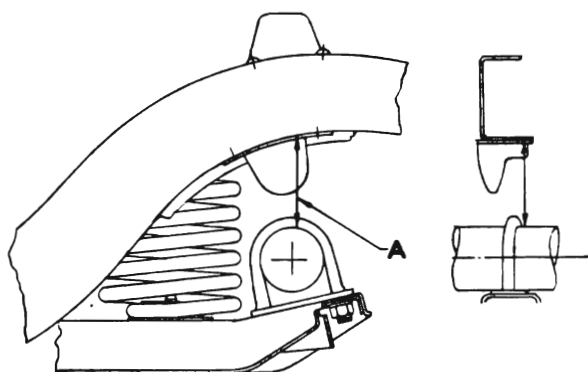


Fig. 3-12. Rear Spring Trim Dimension—Series 50-70

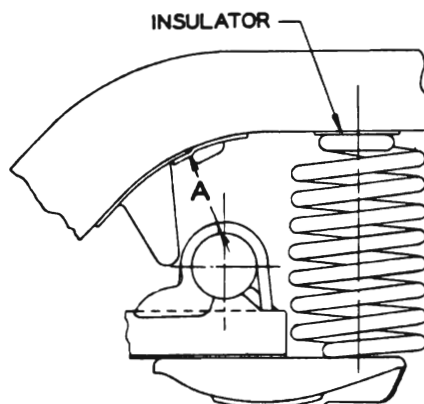


Fig. 3-13. Rear Spring Trim Dimension—Series 90

● CHASSIS SPRING IDENTIFICATION CHART

● Models	Domestic Fronts	Optional High or Export Fronts	Domestic Rears	Optional High or Export Rears
● 44	1314889	1323255	1324550	1323253
● 44C	1314889	1323255	1324551	1324552
● 47	1314889	1323255	1324553	1315047
● 48	1314889	1323255	1324551	1324552
● 48S	1314889	1323255	1324553	1315047
● 41SE	1314889	1314950	1324549	1312433
● 41	1314889	1314950	1324549	1312433
● 46	1314889	1314950	1324551	1324552
● 46S	1314889	1314950	1324553	1315047
● 46SSE	1314889	1314950	1324553	1315047
● 49	1314889	1315231
● 51	1324479	1314950	1322284	1324556
● 56S	1324479	1314950	1324559	1324558
● 56C	1324479	1314950	1324559	1322284
● 61	1317792	1324483	1324561	1310399
● 66S	1317792	1324483	1324549	1312433
● 71	1324482	1324483	1323977	1324557
● 76S	1317792	1324483	1322284	1324556
● 76C	1324482	1324483	1322284	1324556
● 90	1321203		1324562
● 90L	1321203		1324562
● 91	1321203		1324562
● 91F	1321203		1324562

Same part number springs should be used on each side of car.

The special rear springs listed above should be used with heavy trailers or for heavy loads in the rear compartments. These springs will maintain the proper trim dimension at curb load and carry an axle overload of 500 lbs.

In estimating axle overloads, place rear wheels of car on scale, car to be curb weight, no loads in either car or trunk other than tire and tool equipment. Hook trailer to car, car still on scale. Additional weight resulting from attached trailer is the amount of overload.

It is not recommended that any series rear axles be overloaded in excess of 500 pounds.

Trailer design and distance trailer coupling is located to rear of rear axle center line and are the major factors governing effective trailer overload. Instructions for attaching trailers to Buick cars may be obtained from Buick Motor Division Factory Service Department.

FRONT SPRING INSTALLATION

The coil springs are supplied of various load capacities for different models. Correct spring must be used. See Spring Chart.

The lower end of spring may be entered into the cup on lower control arm by swinging arm upward into contact with spring. Next raise the lower control arm to normal wheel height by using jack, making sure rubberized fabric spacer is in place. This spacer fits between the top of the spring and the recess in the frame and insulates the spring from the frame.

Upper end of front spring on all series are formed to similar shape as ends of all rear springs. Upper end pilots around cup which is attached to frame by shock absorber bolt. Pilot will remain in place unless shock absorber and spring are both removed. Rubber insulators are used between frame and upper end of springs on all series.

Lower end of all series front springs do not have the lower coil ground flat. For this reason the end of the last coil must be positioned in recess provided in spring seat.

Front Trim Dimension

Front springs are considered too high or too low when front spring dimensions are too short or too long by $\frac{1}{4}$ ".

Spacers are available when dimension "A" is found to be too low. See Fig. 3-10. Part number 1310413, thickness $\frac{1}{8}$ ".

Series	"A" (Regular Springs)	"A" (Optional High or Export Springs)
40-50-60-70	3 $\frac{7}{8}$ "	4 $\frac{1}{8}$ "
90	4"	4"

STABILIZER

Stabilizer Bracket Bushing

The front stabilizer is mounted on the frame in two rubber bushings which are held in stamped brackets. These bushings require no attention and should last for the life of the car. See Fig. 3-14.

If trouble is experienced with the stabilizer shaft rubber bushings popping out of position it is probably caused by excessive soaping of the bushings during assembly of the shaft.

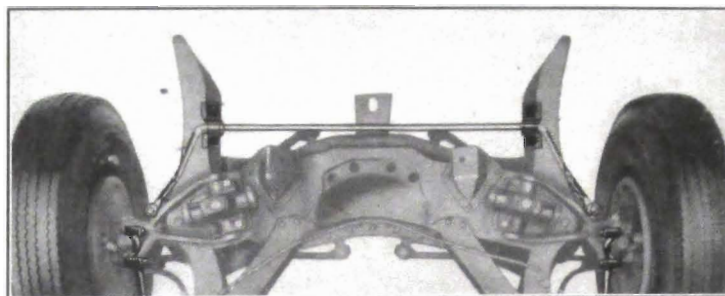


Fig. 3-14. Front Stabilizer

Instructions for reinstalling bushings in the brackets are outlined below:

1. Remove stabilizer shaft and bracket assembly from the car.
2. Break the welds between the brackets and retaining back plate of the brackets.
3. Clean the outside of bushings thoroughly using either steam or gasoline to remove all traces of soap and grease.
4. Relocate bushings on shaft in their original positions.
5. Place brackets over bushings and holding back plate in place, clamp in a vise. Wire the two pieces together tightly; it will be unnecessary to reweld the back plate to the bracket.
6. Reinstall the stabilizer shaft and bracket assembly on the car. After the brackets are bolted to the frame the retaining wires may be removed.

Should it become necessary to install new bushings, the following procedure is suggested in addition to the above:

Cut the old bushings from the shaft. A weak solution of soap suds and water should be applied to the shaft and new bushings in order to slide the bushings over the ends of the shaft. Under no consideration should strong soap or mineral lubricants be used.

STABILIZER LINKS

The stabilizer links consist of a rod which passes through the end of the stabilizer arm and is fastened to it by means of rubber grommets and steel retainers held in place by a nut on the end of the rod. Lower end of the front passes through the spring seat on the lower control

arms and the method of fastening is identical with that of the upper end. See Fig. 3-15.

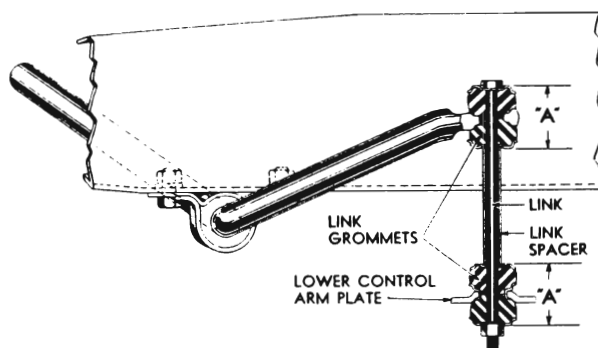


Fig. 3-15. Stabilizer Links

It is important that these grommets be compressed to these dimensions to insure proper riding qualities and stabilization.

All series stabilizer links are identical and are 7 inches overall length.

Links on all series are threaded so that when nuts at both ends are tightened to limit of threads, dimension "A" should be $1\frac{1}{8}$ ". **Link rod must be centered in grommets.** If dimension "A" is incorrect when nuts are tight the nuts should be adjusted to give correct dimension.

On all series a tubular spacer fits around the center section of link assembly and serves as a stop at each end for metal cups which retain inner rubber grommets. Outer grommets are held by metal cup which is retained by the stabilizer link.

Link grommets for all series are $\frac{7}{8}$ " overall free length when new.

CHASSIS SUSPENSION SPECIFICATIONS (Continued)

ITEMS	SERIES 40-A	SERIES 40-B	SERIES 50	SERIES 60	SERIES 70	SERIES 90
CHASSIS SPRINGS—FRONT						
• Make	Own	Own	Own	Own	Own	Own
Type	Coil	Coil	Coil	Coil	Coil	Coil
Approximate Free Length—						
Regular	14½"	14½"	14½"	14¾"	14¾"	14¾"
Optional High	14¾"	14¾"	14¾"	14½"	14½"	—
• Inside Diameter—						
Regular	4¾"	4¾"	4¾"	4¾"	4¾"	4¾"
Optional High	4¾"	4¾"	4¾"	4¾"	4¾"	—
Diameter of Wire—						
Regular	.648"	.648"	.660"	.690"	.690"	.713"
Optional High	.648"	.660"	.660"	.690"	.690"	—
Number of Active Coils—						
Regular	6¾	6¾	7	7¾	7¾*	7
Optional High	6¾	7	7	7¾	7¾	—
• Location of Rubber Bumpers	← Frame and Lower Control Arm on All Series →					
	*Model 76-S same as Series 60.					
CHASSIS SPRINGS—REAR						
• Make	Own	Own	Own	Own	Own	Own
Type	Coil	Coil	Coil	Coil	Coil	Coil
Approximate Free Length—						
Sedans—Regular	187½"	187½"	171½"	187½"	181¼"	195½"
• Optional High	187½"	18¼"	165½"	18¼"	165½"	—
Bus. Coupes—Reg. M/44 & 48	175½" & 18½"	18½"	—	—	—	—
Optional High	18" & 18½"	18½"	—	—	—	—
Conv. Coupes—Regular	18½"	—	17½"	—	17½"	—
• Optional High	18½"	—	17"	—	165½"	—
Sedanet—Regular	187½"	187½"	17½"	187½"	17½"	—
Optional High	187½"	18½"	17"	18¼"	165½"	—
Inside Diameter	5½"	5½"	5½"	5½"	5½"	51/16"
Diameter of Wire—						
Sedan—Regular	.568"	.580"	.607"	.587"	.619"	.607"
Optional High	.587"	.607"	.619"	.619"	.630"	—
Business Coupes—Regular	M/44—.550"	.568"	—	—	—	—
Optional High	M/44—.568"	.580"	—	—	—	—
• Business Coupes—Regular	M/48—.568"	—	—	—	—	—
Optional High	M/48—.580"	—	—	—	—	—
Convertible Coupes—Regular	.568"	—	.600"	—	.607"	—
Optional High	.580"	—	.607"	—	.619"	—
Sedanet—Regular	.568"	.568"	.600"	.580"	.607"	—
Optional High	.589"	.587"	.607"	.607"	.619"	—
Number of Active Coils—						
Sedans—Regular	69/16	65/8	61/8	61½	61/8	8
Optional High	6½	64	67/8	6¾	57/8	—
• Business Coupes—Regular	57/8 & 69/16	69/16	—	—	—	—
Optional High	69/16 & 6½	65/8	—	—	—	—
Convertible Coupes—Regular	69/16	—	6½	—	61/8	—
Optional High	65/8	—	57/8	—	57/8	—
Sedanet—Regular	69/16	69/16	6½	65/8	61/8	—
Optional High	6½	6½	57/8	6¾	57/8	—
SHOCK ABSORBERS						
• Make	Delco	Delco	Delco	Delco	Delco	Delco
Type—Front	Double Acting	Double Acting	Double Acting	Double Acting	Double Acting	Double Acting
Type—Rear	Double Acting	Double Acting	Double Acting	Double Acting	Double Acting	Double Acting
Calibration—Front						
Rebound Valve	3-F	3-F	3-F	3-F	3-F	3-G
• Compression Valve	3-D	3-D	3-D	3-D	3-D	3-E
Calibration—Rear						
Rebound Valve	.50-L	.50-L	.50-L	.50-M	.50-M	.50-L
Compression Valve	2-Cd.-5	2-Cd.-5	2-Cd.-5	2-Cd.-5	2-Cd.-5	2-Cd.-5
Calibration—Rear—Export						
Rebound	.60-L	.60-L	.60-L	.60-L	.60-L	.50-L
Compression	3-C-2	3-C-2	3-C-2	3-C-2	3-C-2	2-Cd.-5
Stabilizer—Front						
Yes	Yes	Yes	Yes	Yes	Yes	Yes
Shaft Material	1045 or 1065	1045 or 1065	1045 or 1065	1045 or 1065	1045 or 1065	1045 or 1065
• Shaft Diameter	44C-48: 5/8"	46—5/8"	11/16"	11/16"	11/16"	13/16"
Others: 11/16"	Others: 11/16"	Others: 11/16"	—	—	—	—
Radius Rod						
Location	← Rear Axle to Frame →	← Rear Axle to Frame →	← Rear Axle to Frame →	← Rear Axle to Frame →	← Rear Axle to Frame →	← Rear Axle to Frame →
• Mounting	In Rubber	In Rubber	In Rubber	In Rubber	In Rubber	In Rubber
Type	Tubular Bar	Tubular Bar	Tubular Bar	Tubular Bar	Tubular Bar	Tubular Bar