

REAR SUSPENSION

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DATA AND SPECIFICATIONS

Leaf Springs	1100 Sedan (up to No. for spares 960546)				1100 Sedan (from No. for spares 960547)			
	No. of Leaves	11				4		
	in.	lbs.	mm	kg	in.	lbs.	mm	kg
Camber, with Initial Load of	5.43 ± .12	286	138 ± 3	130	5.47 ± .12	275	139 ± 3	125
Deflection, with Static Load of	4.41 ± .23	595	112 ± 6	270	4.41 ± .23	595	112 ± 6	270
Deflection Limit	7.24 ± .35	794	184 ± 9	360	7.24 ± .35	794	184 ± 9	360
	1100 Family Car				1100 D Family Car			
No. of Leaves	10				10			
	in.	lbs.	mm	kg	in.	lbs.	mm	kg
Camber, with Initial Load of	5.04 ± .12	330	128 ± 3	150	5.51 ± .12	330	140 ± 3	150
Deflection, with Static Load of	3.56 ± .16	683	90.5 ± 4	310	3.64 ± .16	738	92.5 ± 4	335
Deflection Limit	6.32 ± .32	957	160.5 ± 8	434	6.40 ± .32	1047	162.5 ± 8	475
Front mounting	Hanger and rubber bushing							
Rear mounting	Shackle and rubber bushings							
Setting of Rubber Bushings with Pins:	42° to spring eye-to-eye centerline							
- in the Spring Rear Eye	36° to the vertical							
- in the Rear Mounting Bracket	Fiat CA 1 G Grease							
Lubrication	Anchored to underbody and linked to rear axle housing through rubber bushings							
Rear Stabilizer Bar	Anchored to underbody and linked to rear axle housing through rubber bushings							
Torques	ft/lbs.				kgm			
Spring-to-axle housing U-bolt nut	22.4				3.1			
Spring front mounting nut	59.3				8.2			
Shackle bushing pin nut	10.1				1.4			
Shock absorber upper and lower mounting nut	62.9				8.7			

Description.

The rear suspension (fig. 285) is of the semielliptic leaf spring type, completed by double-acting, telescopic, hydraulic shock absorbers and stabilizer bar.

The front end of the spring is attached to a hanger on the body floor by means of a bolt and a bushing in the eye of the spring (fig. 283).

The rear end of the spring is attached to the body floor by means of a shackle and bushings in the spring eye and body bracket (fig. 284).

The bushings used in spring mountings are made

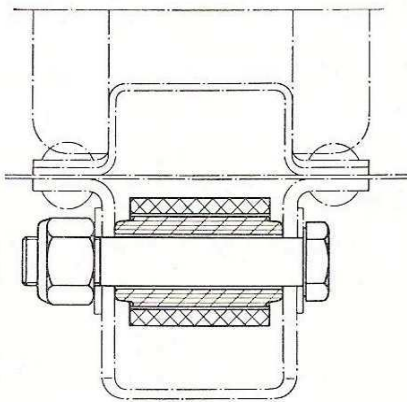


Fig. 283 - Semielliptic spring front end mounting. - Section through the bushing.

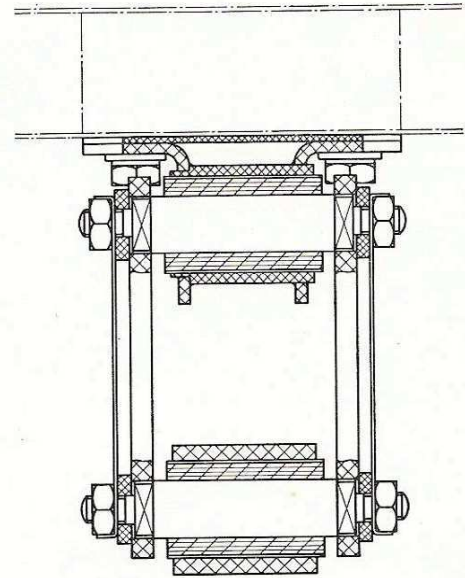


Fig. 284 - Semielliptic spring rear end mounting. - Section through shackles and bushings.

up of an inner and an outer metal shell, with a rubber bushing molded between them.

The axle housing is connected to the springs by means of «U» bolts, whose lower fixing plates are provided with a pin for attaching shock absorbers lower end. The upper attachment of shock absorbers is on a pin integral with the body floor.

Six rubber buffers, secured to the floor and arranged two laterally and one above the center

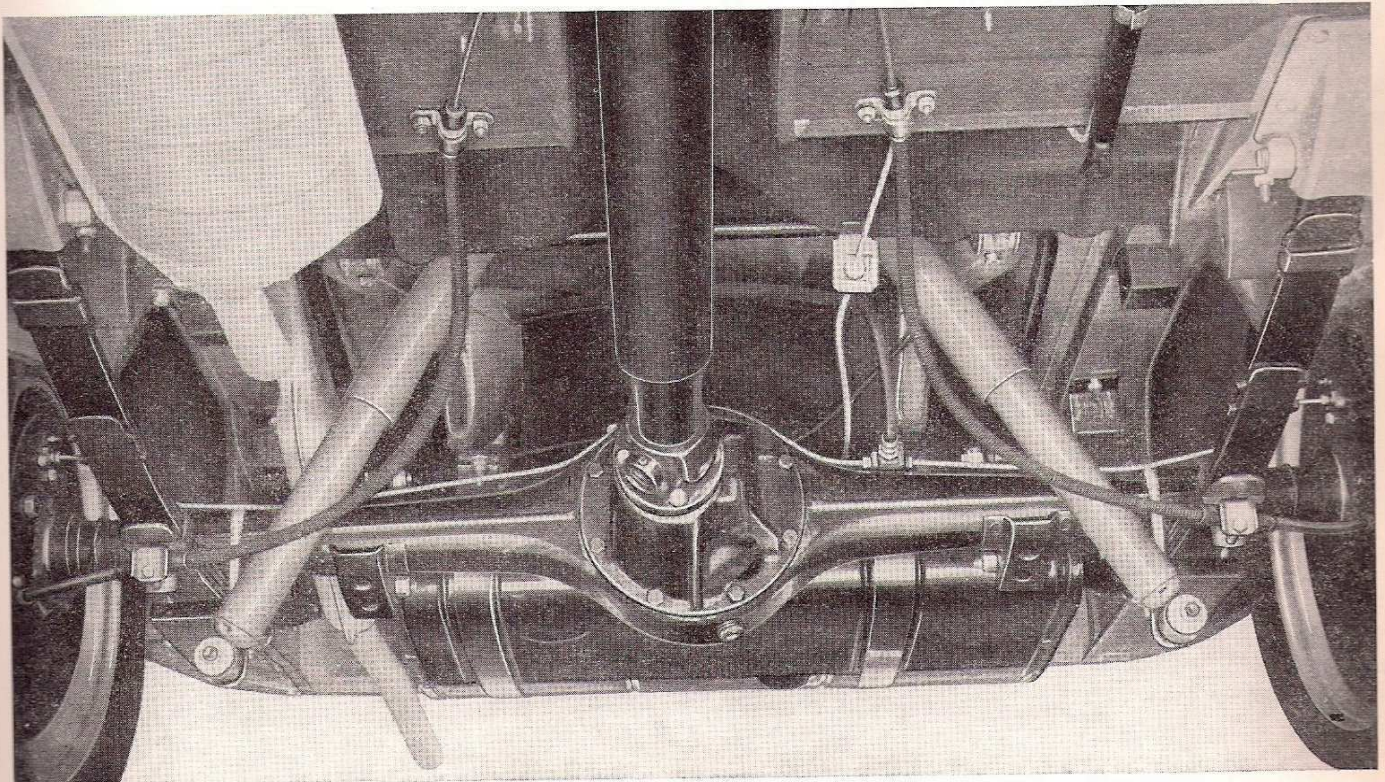


Fig. 285 - Rear suspension assembly bottom view.

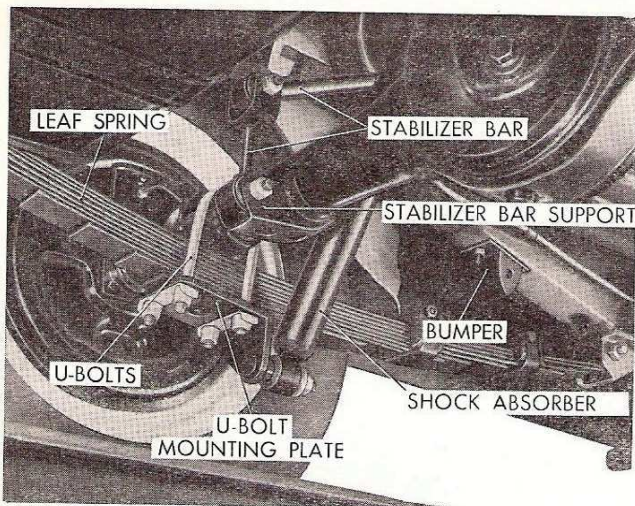


Fig. 286 - Detail of rear left suspension.

Removal.

Lift car rear end and rest on two stands **Arr. 2002 (D. 15051)**.

Remove rear wheels and place two more stands **Arr. 2002 (D. 15051)** under axle housing, so as to slightly unload the springs.

Loosen shock absorber bottom mounting nuts (fig. 285) and disconnect shock absorbers.

Loosen U bolt nuts (fig. 286).

Disconnect spring front ends by removing the nut and the bolt.

Loosen the three nuts securing the spring rear bracket to floor.

The spring is now free and may be removed with shackles and bracket.

Inspection and Repairs.

Disassemble the leaf spring by taking off the shackles, bracket, side clips and center bolt. Next, wash all parts carefully and inspect as follows:

- Check condition of leaves. If broken or cracked, replace the entire spring as an assembly, because only the main leaf is supplied separately.
- Remove any trace of paint between leaves.
- Mating faces of leaves must be perfectly smooth and clean; with a file, or other suitable means, eliminate any indentation or rough areas.
- Camber of leaves; if necessary, restore the required camber (see specifications).
- Condition of resilient bushings in main leaf eyes.

Check the rear bushing pins for looseness or incorrect position in their rubber blocks.

of each spring, limit the spring deflection. A seventh rubber buffer checks the differential housing movement,

The stabilizer bar is anchored at center to the floor by means of two brackets, through rubber pads; bar ends are linked to axle housing (fig. 285).

SEMIELLIPTIC LEAF SPRINGS

1100 Sedan, up to No. for spares 960546: the spring is made up of a main leaf and ten leaves.

1100 Sedan, from No. for spares 960547: the spring is made up of a main leaf and three leaves.

1100 and 1100 D Family car: the spring is made up of two counterleaves, a main leaf and other seven leaves.

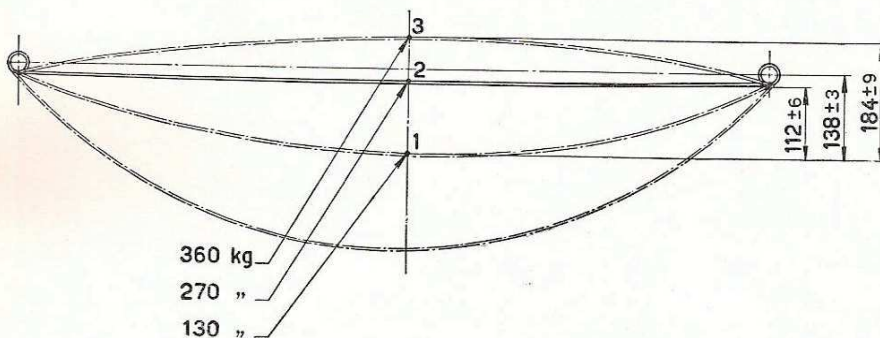
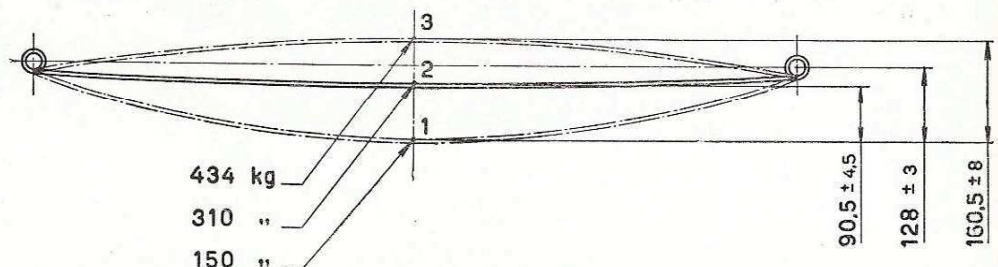


Fig. 287.

Diagram of loaded spring. - 1100, up to No. for spares 960546.

Fig. 288.
Diagram of loaded spring.
1100 Family car.



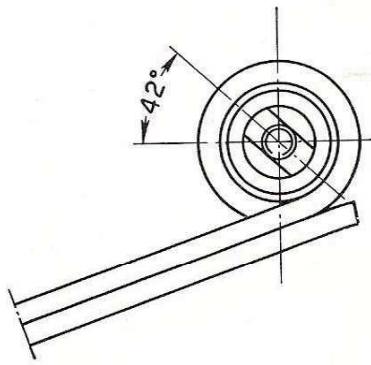


Fig. 289 - Diagram for correct bushing installation in spring rear eye.

If the above troubles, or excessive wear, traces of seizure and dryness of rubber parts are noticed, replace the bushings.

To remove spring front eye bushing and the bushings in rear eye and in bracket, use tool A. 6474 A/B (A. 74021).

— Check condition of all rubber pads, both at clips and at spring ends.

Replace parts as required.

Spring Assembly.

Mind the following in assembling the spring:

1) Press fit the bushing with pin in main leaf rear eye, taking care that the flat on pin forms an angle of 42° with the eye-to-eye centerline. To this purpose, using installer A. 10230 (A. 74020) set the pin flat in line with the tool slot and the two reference notches of tool on the eye-to-eye centerline (figs. 289 - 290).

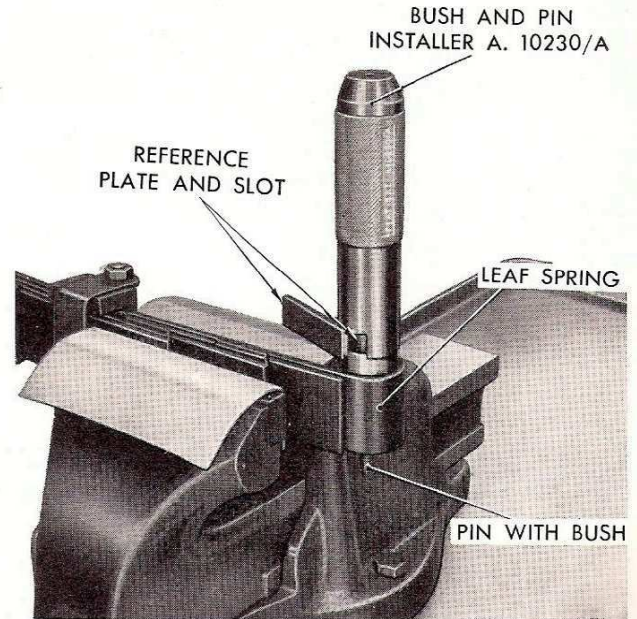


Fig. 290 - Installing the bushing with pin in spring rear eye, using installer A. 10230 (A. 74020).

2) Press fit the bushing with pin in spring rear bracket setting the pin flat at 36° to the vertical.

To this end, using installer A. 10230 (A. 74020) set the pin flat in line with the tool slot, and the tool plate parallel to bracket plane, as shown in fig. 293.

3) Use installer A. 10230 (A. 74020) to install spring front end bushing.

4) Leaf mating faces must be coated uniformly with OGC Graphite Oil.

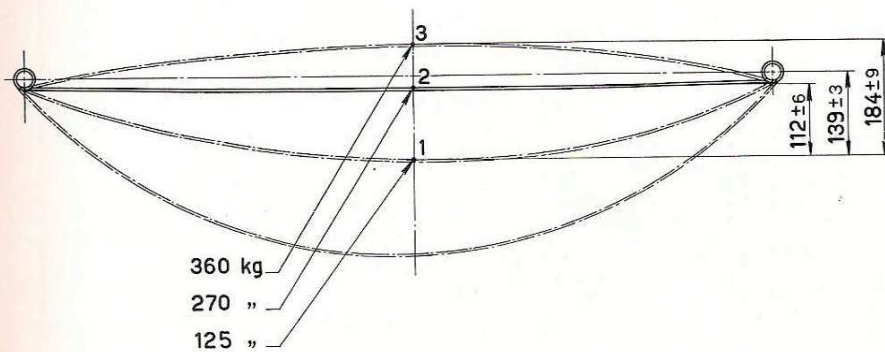


Fig. 292.
Diagram of loaded spring.
1100 D Family Car.

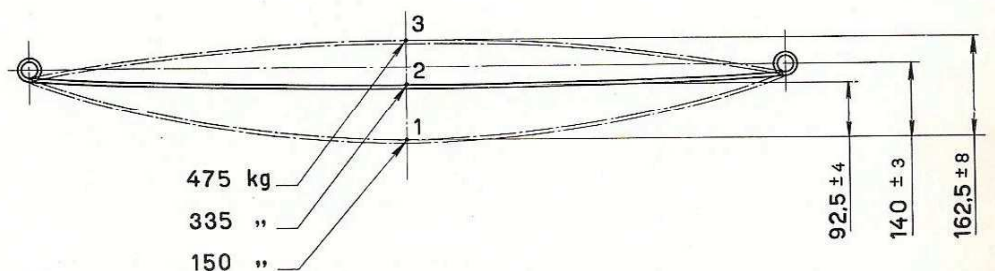


Fig. 291.
Diagram of loaded spring. - 1100, from
No. for spares 960547.

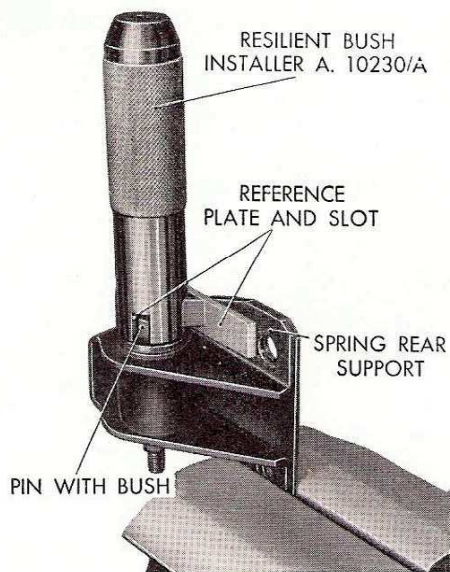


Fig. 293 - Installing the bushing in the spring rear bracket, using installer A. 10230 (A. 74020).

5) After the spring is assembled, wipe out any excess of grease on leaf sides, avoiding the use of gasoline or any other solvent.

6) Before assembly, pack with CA 1 G Grease the pockets of spring leaf end pads.

Installation.

Reverse the disassembly operations, with the provision of unloading slightly the springs while attaching them to the axle housing.

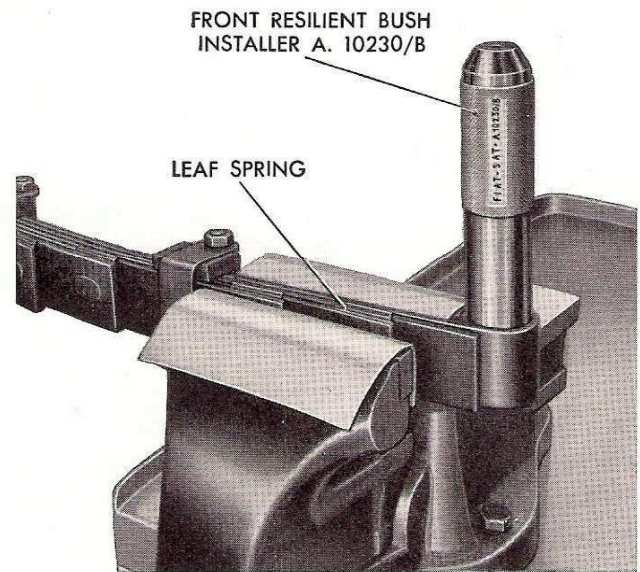


Fig. 294 - Installing the spring front end bushing, using installer A. 10230 (A. 74020).

Tighten the mounting nuts to the following torques:

- spring front self-locking nut: 59.3 ft.lbs (8.2 kgm);
- rear shackle bushing pin nut: 10.1 ft.lbs (1.4 kgm);
- spring-to-axle housing U-bolt nut: 22.4 ft.lbs (3.1 kgm);
- shock absorber upper and lower mounting nuts: 62.9 ft.lbs (8.7 kgm).

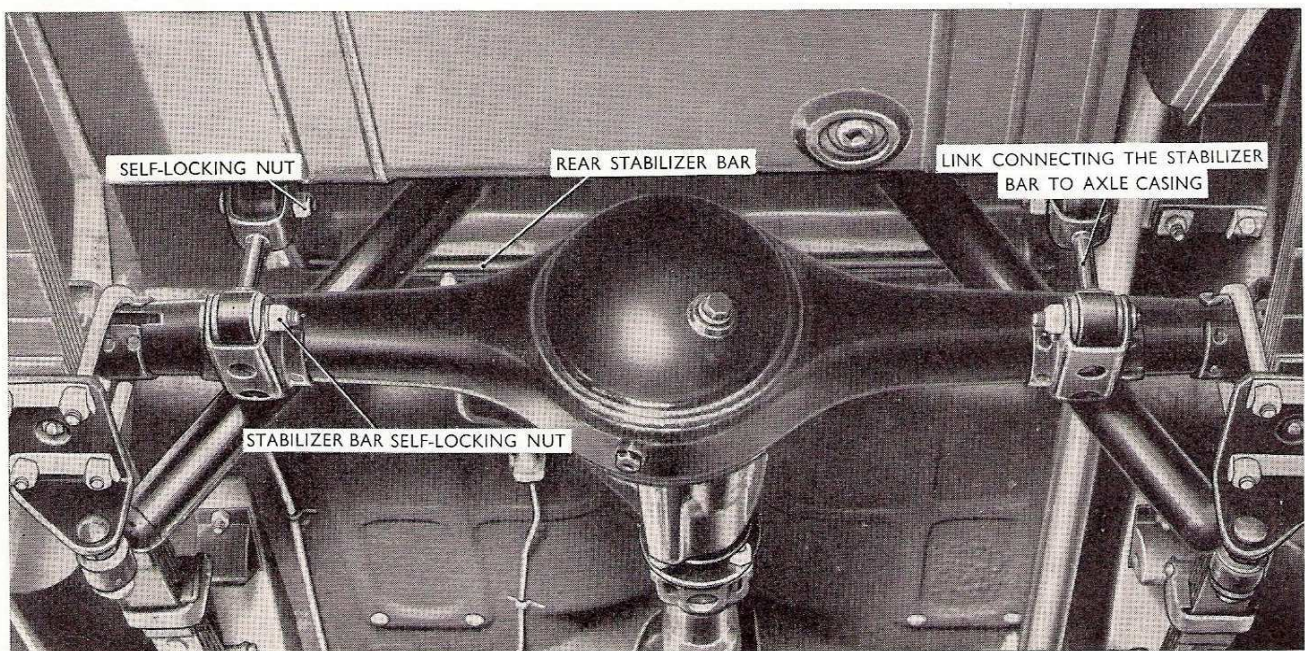


Fig. 295 - Bottom view of car rear end and detail of stabilizer bar mounting.

STABILIZER BAR

When servicing the rear suspension, take down the stabilizer bar and make sure that:

- The stabilizer bar is not bent, otherwise straighten as required.
- The links hinged to axle housing are not misaligned, otherwise straighten or replace as required. A distorted bar affects the performance of the entire suspension.

- The brackets on axle housing for link anchoring are not cracked or excessively worn, otherwise replace.

- The elastic bushings in the linkage both at the body and at the axle housing are in good condition: replace if worn.

- The two bar anchoring rubber pads are not worn to the extent of affecting the mounting of the bar.

Replace if necessary.

HYDRAULIC SHOCK ABSORBERS

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DATA AND SPECIFICATIONS

	Front		Rear	
	in.	mm	in.	mm
Inner Cylinder Diameter	1.26	32	1.063	27
Length (between eye centers):				
- telescoped in	8.228	209*	12.24	311
- telescoped out	12.323	313*	19.88	505
Stroke	4.094	104	7.64	194
	cc	kg	cc	kg
Fluid Capacity	165±5	0.150	190±5	0.170

(*) These lengths are measured from lower mounting eye center to rubber ring land on upper mounting shank.

Description and Operation.

Front and rear shock absorbers are the telescopic, double-acting type.

Rear shock absorbers differ from the front ones in the size, gauging and oil capacity, as well as in top mounting.

Essentially, a shock absorber of this type consists of a cylindrical body, formed by two coaxial tubes (14 and 13, fig. 296); the inner one acts as a working cylinder and the outer as a housing. The annular chamber between the two elements per-

forms as a fluid reservoir. A third outer cylinder (12) shields rod (2) from mud and stones.

On top, the cylinder body is closed by bushing (10), oil seal (5) and gasket (9), and seal housing (4).

Rod (2) slides through the plug and annexed parts: its upper end is fixed to body floor and its lower end carries piston (20), on which rebound (24) and inlet (19) valves are arranged.

Two concentric rows of orifices are provided in piston. The internal one is blanked underneath by the rebound valve which opens downwards. The external row is blanked by inlet valve which opens upwards.

STABILIZER BAR

When servicing the rear suspension, take down the stabilizer bar and make sure that:

- The stabilizer bar is not bent, otherwise straighten as required.
- The links hinged to axle housing are not misaligned, otherwise straighten or replace as required. A distorted bar affects the performance of the entire suspension.

- The brackets on axle housing for link anchoring are not cracked or excessively worn, otherwise replace.

- The elastic bushings in the linkage both at the body and at the axle housing are in good condition: replace if worn.

- The two bar anchoring rubber pads are not worn to the extent of affecting the mounting of the bar.

Replace if necessary.

HYDRAULIC SHOCK ABSORBERS

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DATA AND SPECIFICATIONS

	Front		Rear	
	in.	mm	in.	mm
Inner Cylinder Diameter	1.26	32	1.063	27
Length (between eye centers):				
- telescoped in	8.228	209*	12.24	311
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Stroke	4.094	104	7.64	194
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Fluid Capacity	165±5	0.150	190±5	0.170

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DATA AND SPECIFICATIONS

Leaf Springs	1100 Sedan (up to No. for spares 960546)				1100 Sedan (from No. for spares 960547)			
	11				4			
No. of Leaves	in.	lbs.	mm	kg	in.	lbs.	mm	kg
Camber, with Initial Load of	5.43 ± .12	286	138 ± 3	130	5.47 ± .12	275	139 ± 3	125
Deflection, with Static Load of	4.41 ± .23	595	112 ± 6	270	4.41 ± .23	595	112 ± 6	270
Deflection Limit	7.24 ± .35	794	184 ± 9	360	7.24 ± .35	794	184 ± 9	360
	1100 Family Car				1100 D Family Car			
	10				10			
No. of Leaves	in.	lbs.	mm	kg	in.	lbs.	mm	kg
Camber, with Initial Load of	5.04 ± .12	330	128 ± 3	150	5.51 ± .12	330	140 ± 3	150
Deflection, with Static Load of	3.56 ± .16	683	90.5 ± 4	310	3.64 ± .16	738	92.5 ± 4	335
Deflection Limit	6.32 ± .32	957	160.5 ± 8	434	6.40 ± .32	1047	162.5 ± 8	475
Front mounting	Hanger and rubber bushing							
Rear mounting	Shackle and rubber bushings							
Setting of Rubber Bushings with Pins:	42° to spring eye-to-eye centerline							
- in the Spring Rear Eye	36° to the vertical							
- in the Rear Mounting Bracket	Fiat CA 1 G Grease							
Lubrication	Anchored to underbody and linked to rear axle housing through rubber bushings							
Rear Stabilizer Bar								
	ft/lbs.				kgm			
Torques								
Spring-to-axle housing U-bolt nut	22.4				3.1			
Spring front mounting nut	59.3				8.2			
Shackle bushing pin nut	10.1				1.4			
Shock absorber upper and lower mounting nut	62.9				8.7			

Description.

The rear suspension (fig. 285) is of the semielliptic leaf spring type, completed by double-acting, telescopic, hydraulic shock absorbers and stabilizer bar.

The front end of the spring is attached to a hanger on the body floor by means of a bolt and a bushing in the eye of the spring (fig. 283).

The rear end of the spring is attached to the body floor by means of a shackle and bushings in the spring eye and body bracket (fig. 284).

The bushings used in spring mountings are made

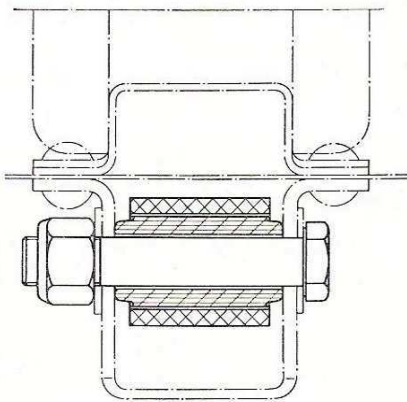


Fig. 283 - Semielliptic spring front end mounting. - Section through the bushing.

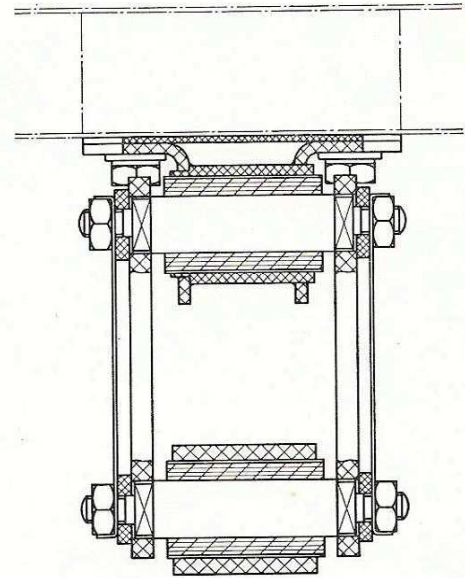


Fig. 284 - Semielliptic spring rear end mounting. - Section through shackles and bushings.

up of an inner and an outer metal shell, with a rubber bushing molded between them.

The axle housing is connected to the springs by means of «U» bolts, whose lower fixing plates are provided with a pin for attaching shock absorbers lower end. The upper attachment of shock absorbers is on a pin integral with the body floor.

Six rubber buffers, secured to the floor and arranged two laterally and one above the center

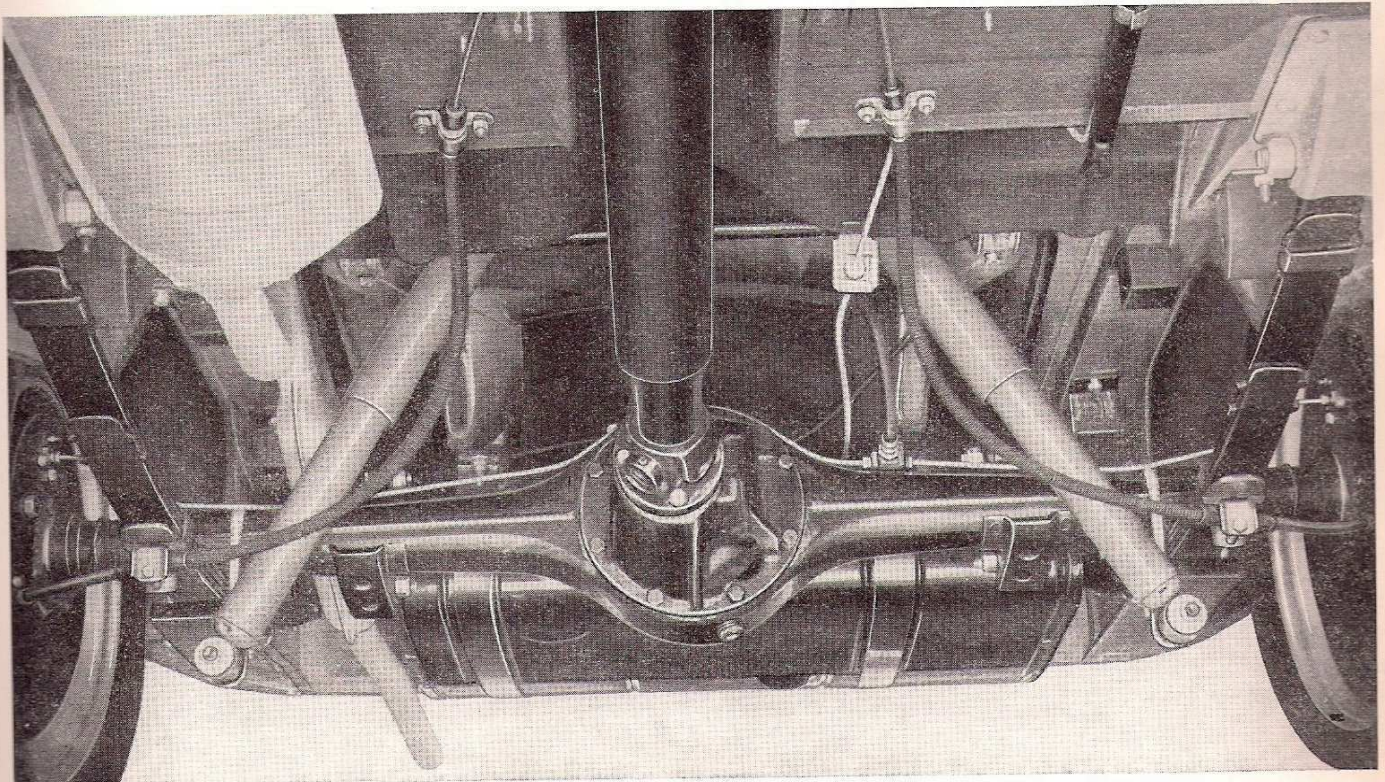


Fig. 285 - Rear suspension assembly bottom view.

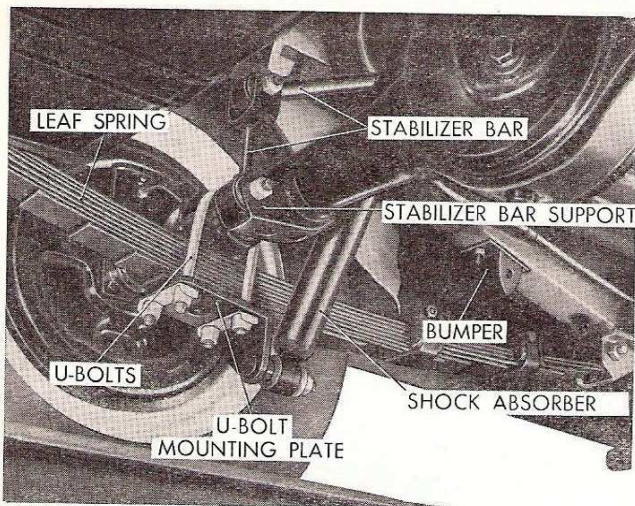


Fig. 286 - Detail of rear left suspension.

Removal.

Lift car rear end and rest on two stands **Arr. 2002 (D. 15051)**.

Remove rear wheels and place two more stands **Arr. 2002 (D. 15051)** under axle housing, so as to slightly unload the springs.

Loosen shock absorber bottom mounting nuts (fig. 285) and disconnect shock absorbers.

Loosen U bolt nuts (fig. 286).

Disconnect spring front ends by removing the nut and the bolt.

Loosen the three nuts securing the spring rear bracket to floor.

The spring is now free and may be removed with shackles and bracket.

Inspection and Repairs.

Disassemble the leaf spring by taking off the shackles, bracket, side clips and center bolt. Next, wash all parts carefully and inspect as follows:

- Check condition of leaves. If broken or cracked, replace the entire spring as an assembly, because only the main leaf is supplied separately.
- Remove any trace of paint between leaves.
- Mating faces of leaves must be perfectly smooth and clean; with a file, or other suitable means, eliminate any indentation or rough areas.
- Camber of leaves; if necessary, restore the required camber (see specifications).
- Condition of resilient bushings in main leaf eyes.

Check the rear bushing pins for looseness or incorrect position in their rubber blocks.

of each spring, limit the spring deflection. A seventh rubber buffer checks the differential housing movement,

The stabilizer bar is anchored at center to the floor by means of two brackets, through rubber pads; bar ends are linked to axle housing (fig. 285).

SEMIELLIPTIC LEAF SPRINGS

1100 Sedan, up to No. for spares 960546: the spring is made up of a main leaf and ten leaves.

1100 Sedan, from No. for spares 960547: the spring is made up of a main leaf and three leaves.

1100 and 1100 D Family car: the spring is made up of two counterleaves, a main leaf and other seven leaves.

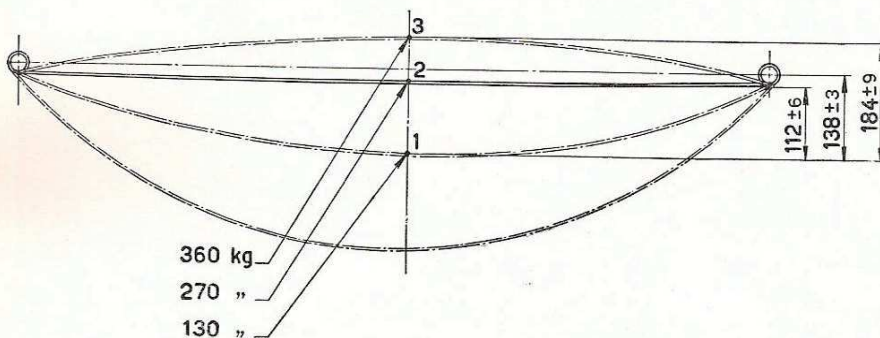
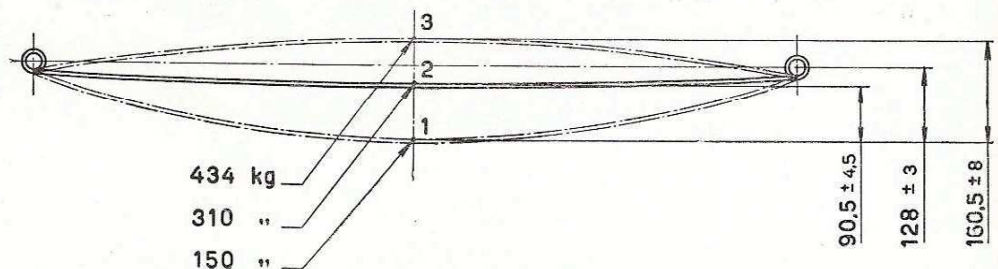


Fig. 287.

Diagram of loaded spring. - 1100, up to No. for spares 960546.

Fig. 288.
Diagram of loaded spring.
1100 Family car.



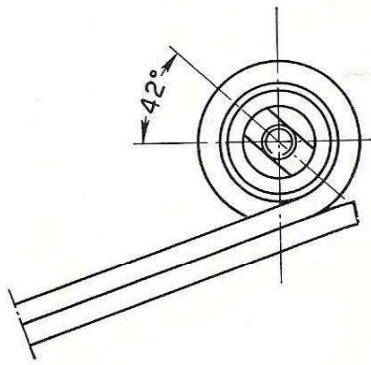


Fig. 289 - Diagram for correct bushing installation in spring rear eye.

If the above troubles, or excessive wear, traces of seizure and dryness of rubber parts are noticed, replace the bushings.

To remove spring front eye bushing and the bushings in rear eye and in bracket, use tool A. 6474 A/B (A. 74021).

— Check condition of all rubber pads, both at clips and at spring ends.

Replace parts as required.

Spring Assembly.

Mind the following in assembling the spring:

1) Press fit the bushing with pin in main leaf rear eye, taking care that the flat on pin forms an angle of 42° with the eye-to-eye centerline. To this purpose, using installer A. 10230 (A. 74020) set the pin flat in line with the tool slot and the two reference notches of tool on the eye-to-eye centerline (figs. 289 - 290).

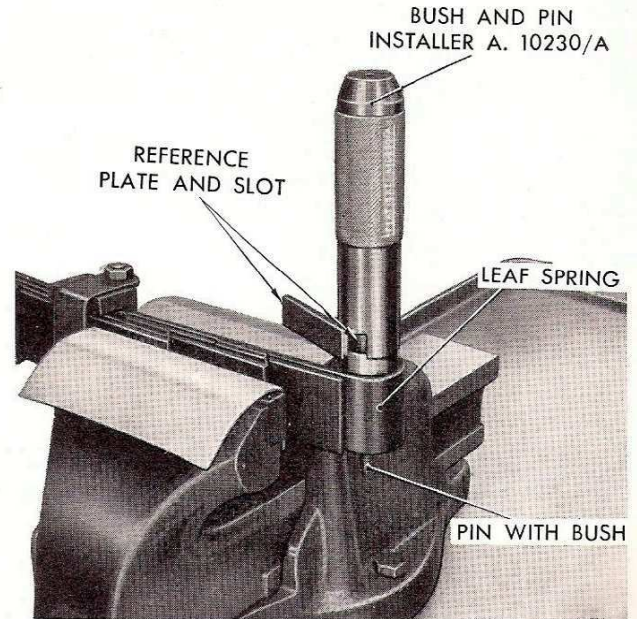


Fig. 290 - Installing the bushing with pin in spring rear eye, using installer A. 10230 (A. 74020).

2) Press fit the bushing with pin in spring rear bracket setting the pin flat at 36° to the vertical.

To this end, using installer A. 10230 (A. 74020) set the pin flat in line with the tool slot, and the tool plate parallel to bracket plane, as shown in fig. 293.

3) Use installer A. 10230 (A. 74020) to install spring front end bushing.

4) Leaf mating faces must be coated uniformly with OGC Graphite Oil.

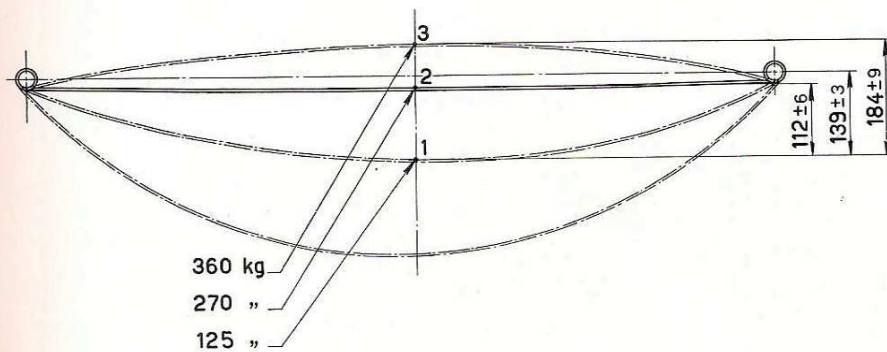
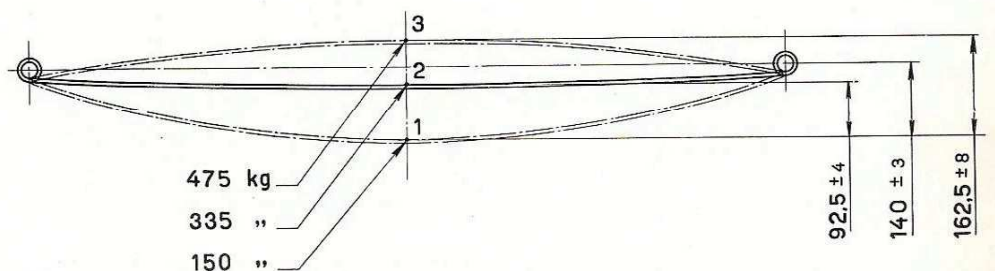


Fig. 291.

Diagram of loaded spring. - 1100, from No. for spares 960547.

Fig. 292.
Diagram of loaded spring.
1100 D Family Car.



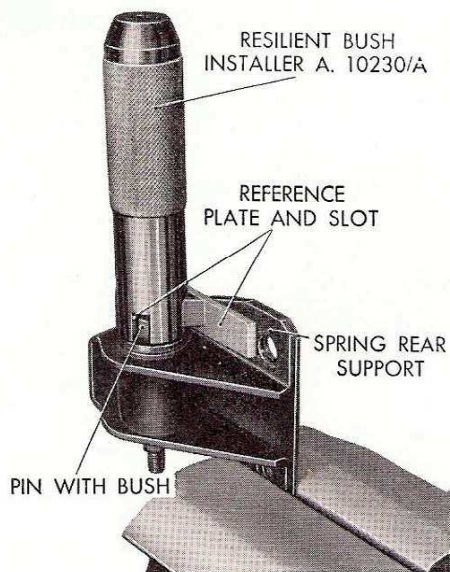


Fig. 293 - Installing the bushing in the spring rear bracket, using installer A. 10230 (A. 74020).

5) After the spring is assembled, wipe out any excess of grease on leaf sides, avoiding the use of gasoline or any other solvent.

6) Before assembly, pack with CA 1 G Grease the pockets of spring leaf end pads.

Installation.

Reverse the disassembly operations, with the provision of unloading slightly the springs while attaching them to the axle housing.

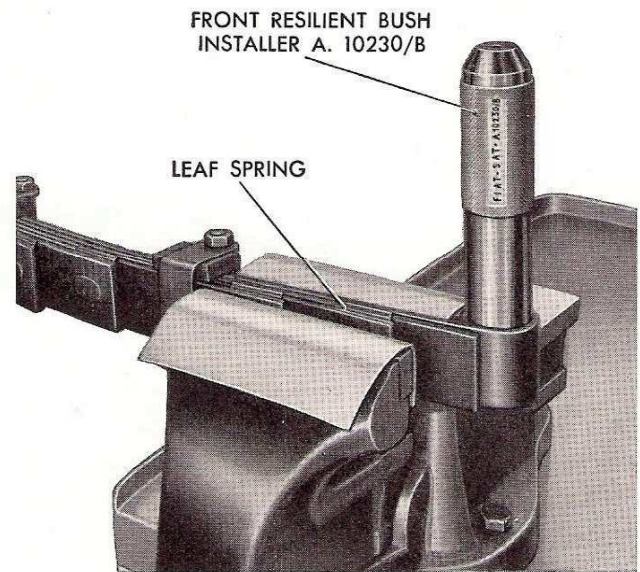


Fig. 294 - Installing the spring front end bushing, using installer A. 10230 (A. 74020).

Tighten the mounting nuts to the following torques:

- spring front self-locking nut: 59.3 ft.lbs (8.2 kgm);
- rear shackle bushing pin nut: 10.1 ft.lbs (1.4 kgm);
- spring-to-axle housing U-bolt nut: 22.4 ft.lbs (3.1 kgm);
- shock absorber upper and lower mounting nuts: 62.9 ft.lbs (8.7 kgm).

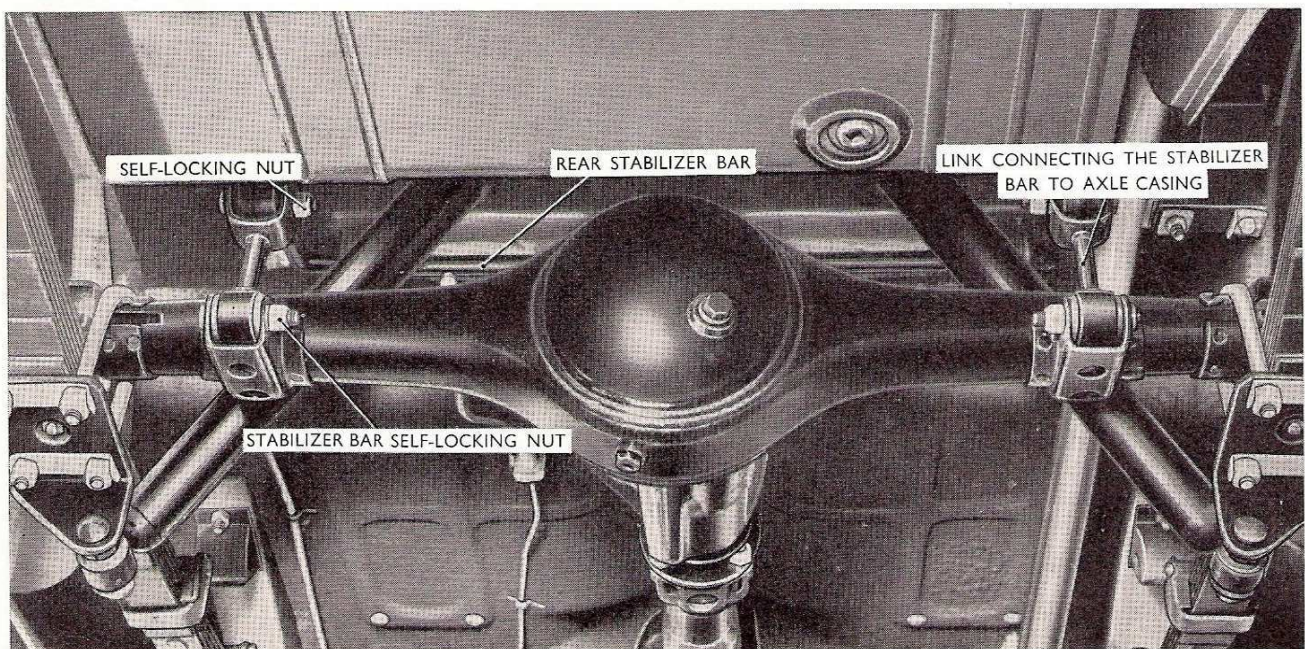


Fig. 295 - Bottom view of car rear end and detail of stabilizer bar mounting.