

SERVICE MANUAL

VOLVO
P 1800

Export Service Department

AKTIEBOLAGET

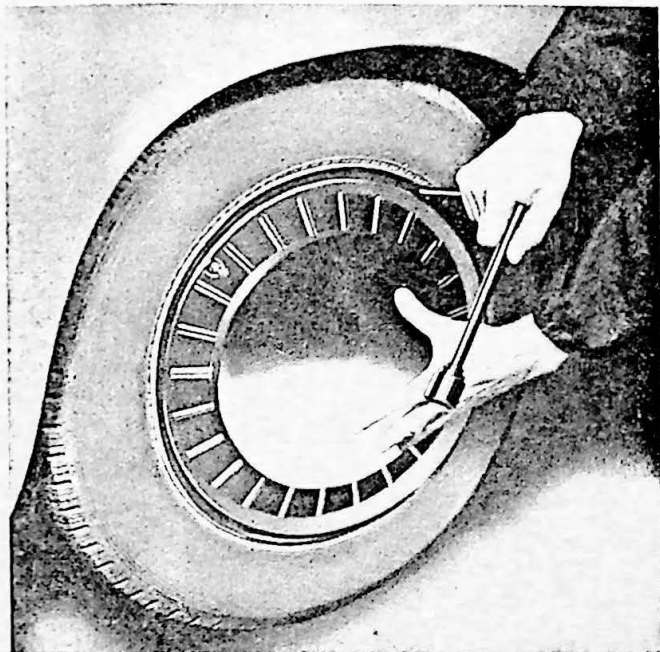
VOLVO

GÖTEBORG · SWEDEN

PART 8

WHEELS

The following instructions apply when only the car tool kit is available. If wheel changing is to be carried out in a workshop, a heavier jack is used as well as a cross-type wheel nut wrench and a torque wrench whereby the instructions below must be modified.



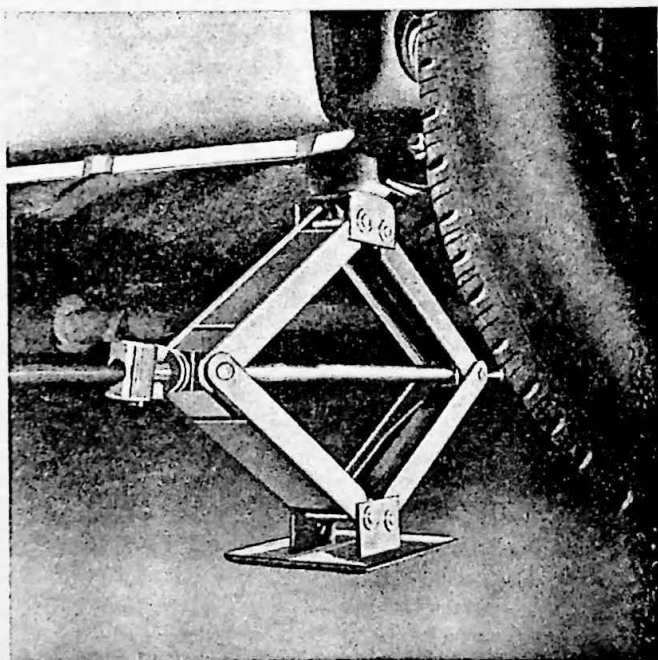
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Fig. 8-1. Remove hub cap



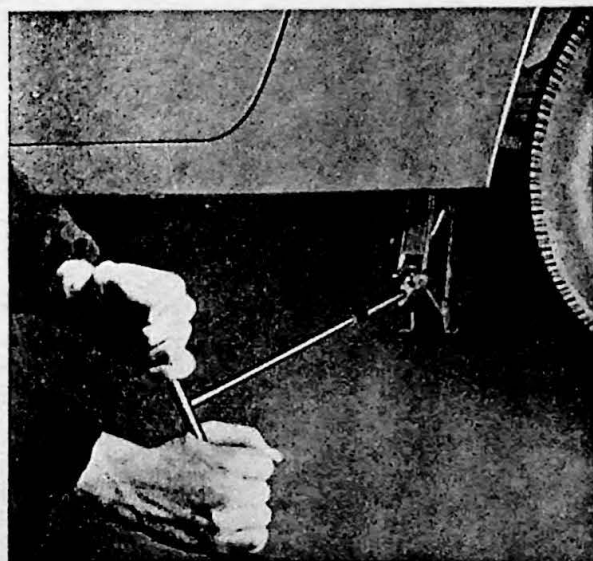
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Fig. 8-2. Loosen wheel nuts



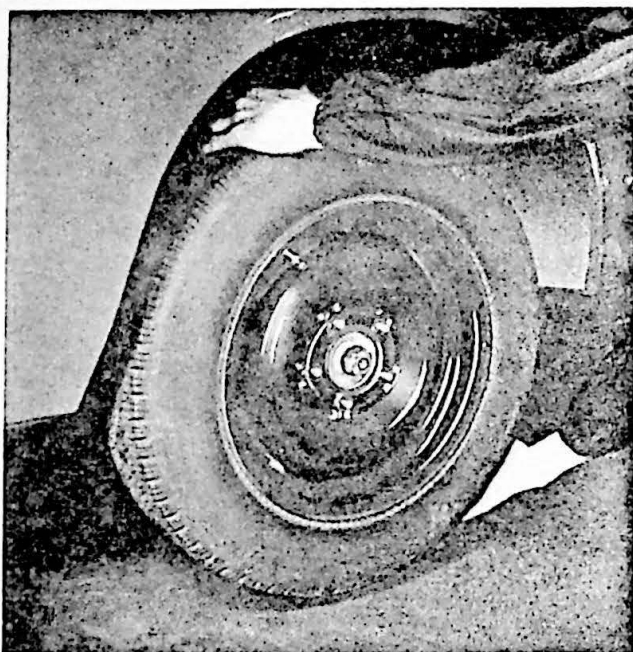
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Fig. 8-3. Fit jack in recess



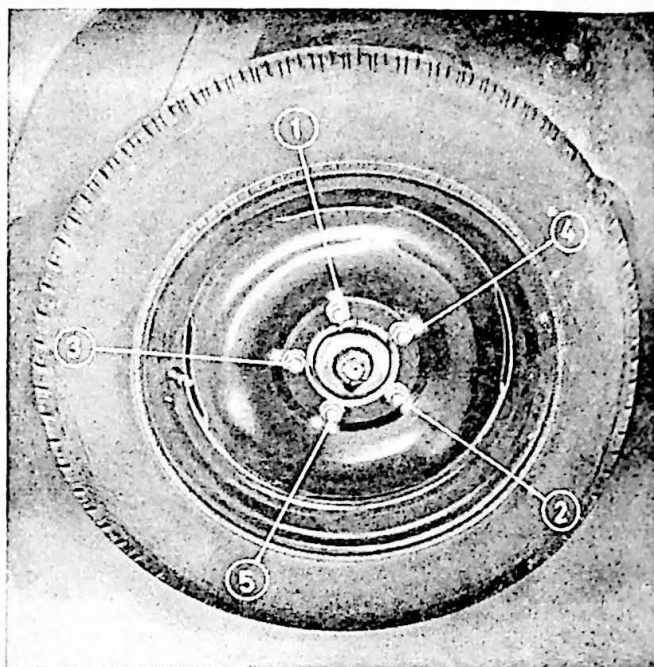
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Fig. 8-4. Lift car with jack



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Fig. 8-5. Remove wheel nuts and lift off wheel, taking care to avoid damage to wheel studs.



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Fig. 8-6. Lift on the new wheel after cleaning the contact surface between the wheel and the hub. Tighten the nuts so that the wheel is firmly on the hub. Lower the car and tighten the wheel nuts. Tighten each nut a little at a time until they are all tightened to a torque of 70—100 lb.ft. (10—14 kgm)

SPECIFICATIONS

WHEELS

Size	2 1/2 J × 15 L
Number of wheel nuts	5
Max. permissible eccentricity	0.071" (1.8 mm)
Max. permissible runout	0.071" (1.8 mm)
Max. permissible out-of-balance (complete wheel)	0.87 lb.in. (900 gcm)
Wheel revolutions per mile	approx. 840
Wheel nut tightening torque	70—100 lb.ft. (10—14 kgm)

TIRES

Type	Braced tread with inner tube
Size	165 mm — 15"
Rolling radius	11.97" (304 mm)
Air pressure (cold tires), front	26 lb/sq.in. (1.8 kg/cm ²)
" " " " , rear	28 lb/sq.in. (2.0 kg/cm ²)

PART 9

SPRINGS

DESCRIPTION

The Volvo P1800 is fitted with coil springs front and rear. There is individual wheel suspension.

The upper ends of the front springs are seated in housings in the front cross-member while the lower ends are carried in the lower control arms which are fitted between the front-member and the lower ball joint on each side.

The upper ends of the rear springs are carried in housings in the body while the lower ends of the springs are seated on the rear axle. The car is also fitted with a stabilizer. This consists of a torsion spring in front of the front suspension cross-member across the car.

REPAIR INSTRUCTIONS

FRONT SPRINGS

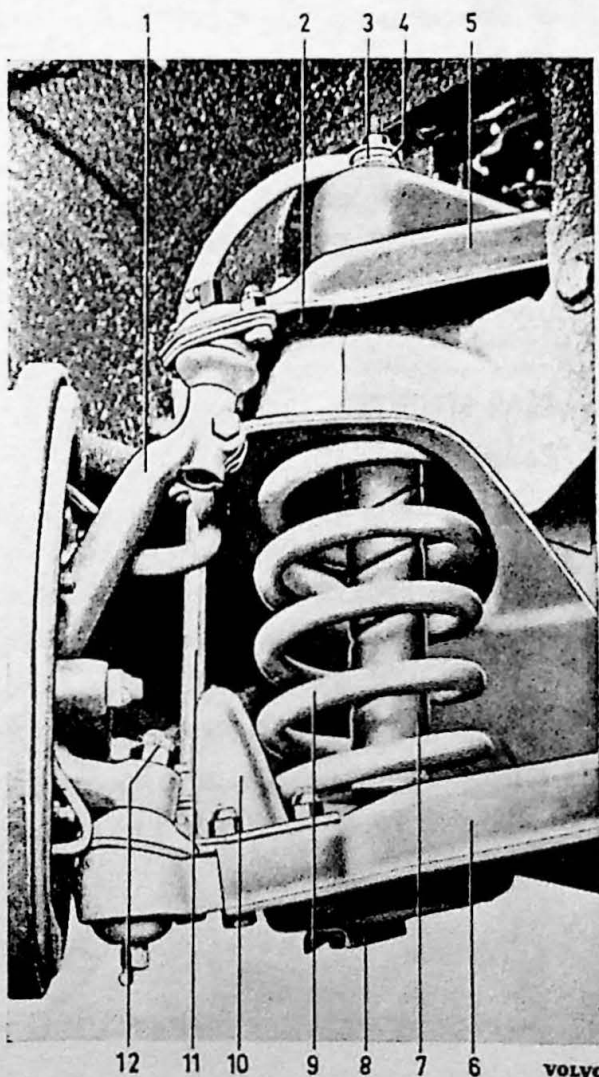
Removing

1. Remove the hub cap and loosen the wheel nuts.
2. Jack up the front end of the car and block up the front cross-member.
3. Remove the wheel nuts and lift off the wheel.
4. Remove the shock absorber nuts and washers and take off the outer rubber bushings (3, Fig. 9-1 and 1, Fig. 9-2). Remove the bolts (4, Fig. 9-2 for the attaching plate (3) and pull this together with the shock absorber downwards.
5. Place a jack under the lower control arm directly under the spring and jack up until the upper control arm rubber bumper lifts.
6. Disconnect the stabilizer bar from the lower control arm. Remove the nut (12, Fig. 9-1) for the lower ball joint.

7. Lower the jack slowly and remove the spring when the control arm has come down far enough. If the lower ball joint does not loosen when the jack is lowered, use tool SVO 2281.

Fig. 9-1. Front spring and shock absorber

1. Steering knuckle
2. Upper rubber bumper
3. Rubber bushing
4. Washer
5. Upper control arm
6. Lower control arm
7. Shock absorber
8. Attaching plate
9. Spring
10. Lower rubber bumper
11. Stabilizer bar
12. Nut for lower ball joint



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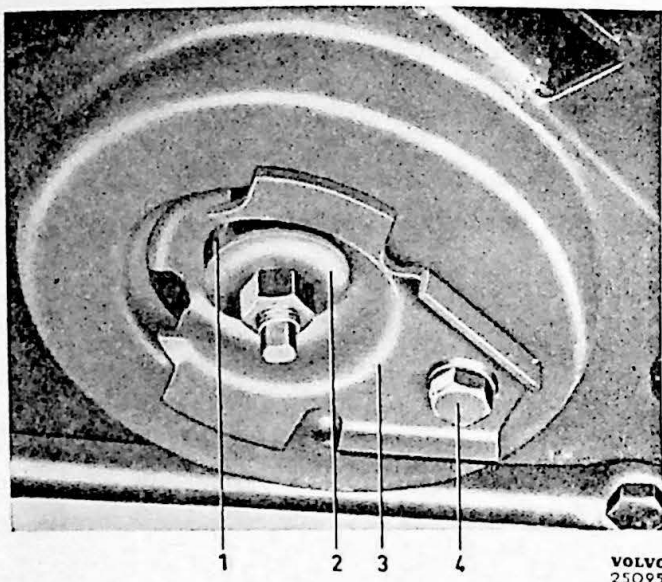


Fig. 9-2. Lower attachment for front shock absorber
 1. Rubber bushing 3. Attaching plate
 2. Washer for rubber bushing 4. Bolt

Check measuring

Check the spring before fitting it. Compress the spring fully and then check its length under the loading shown in the specifications. Replace sagging or damaged springs. Check the rubber spacer (5, Fig. 9-4).

Fitting

Place the rubber spacer (5, Fig. 9-4) and washer (6) in position in the spring seating in the member and fit the spring in reverse order to that used when removing.

REAR SPRINGS

Removing

1. Loosen the wheel nuts on the rear wheels. Jack up the rear end of the car and put blocks under the rear jacking points.
2. Remove the wheels and release the handbrake.
3. Place a jack under the rear axle housing and jack it up until the shock absorber bands slacken.
4. Loosen the lower shock absorber attachment (Fig. 9-6) and the upper attachment for the shock

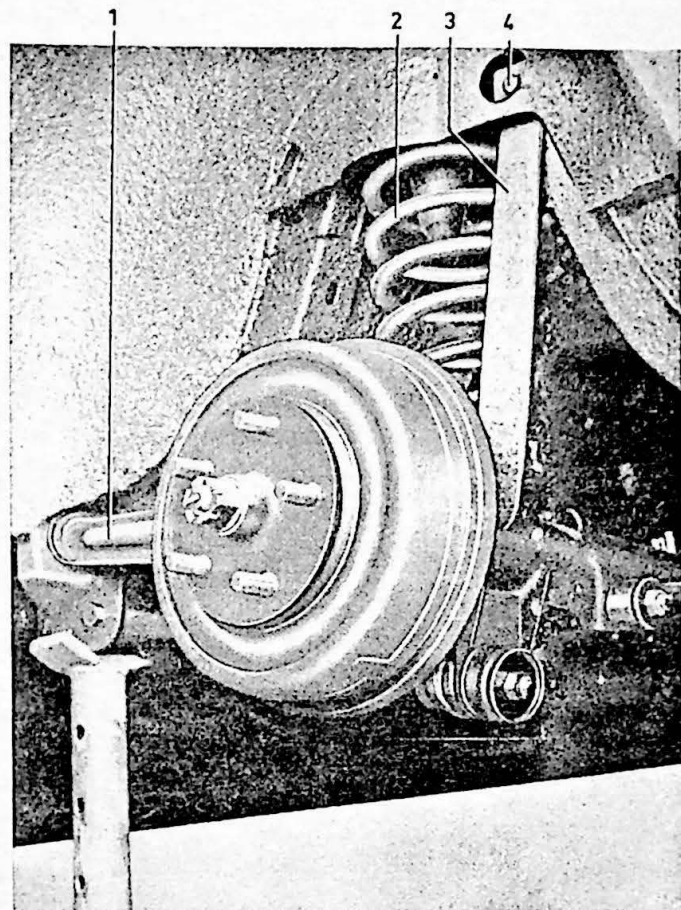


Fig. 9-3. Rear spring

1. Support arm
2. Spring
3. Shock absorber band
4. Attachment for shock absorber band

absorber band (4, Fig. 9-3) on both sides. Slacken the front support arm attachment slightly.

5. Lower the rear axle until the spring is free and then remove the spring and spacer.

Check measuring

See under the heading. "Check measuring" for the front springs.

Fitting

Fitting is carried out in the reverse order to that used in removing. Make sure that the rubber pad (7, Fig. 9-5) and the rubber spacer (4) come in the correct position.

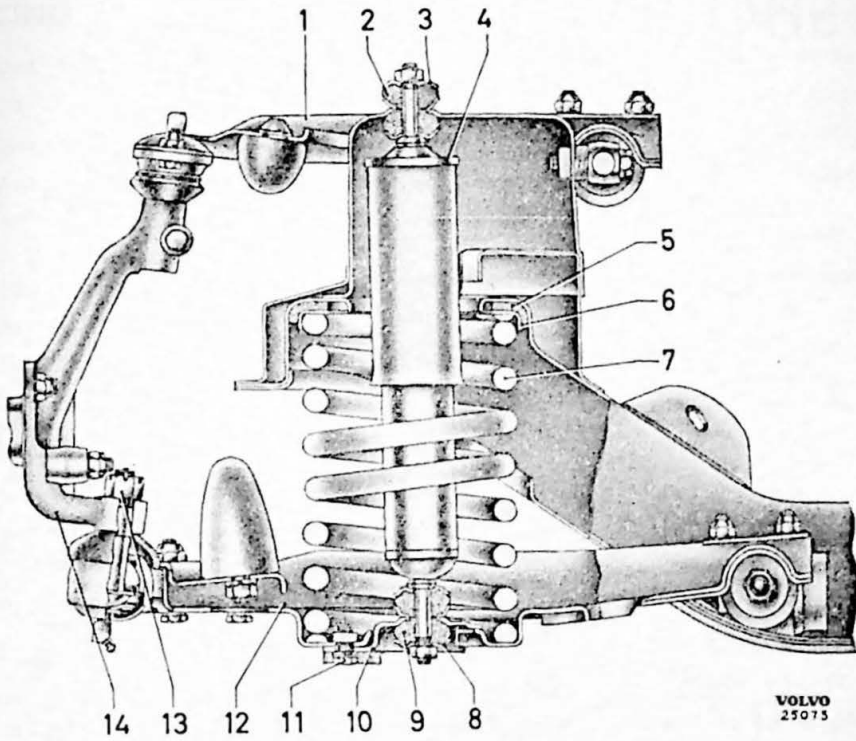


Fig. 9-4. Front spring and shock absorber

1. Upper control arm
2. Rubber bushing
3. Washer
4. Shock absorber
5. Rubber spacer
6. Washer
7. Spring
8. Washer
9. Rubber bushing
10. Attaching plate
11. Bolt
12. Lower control arm
13. Nut
14. Steering knuckle

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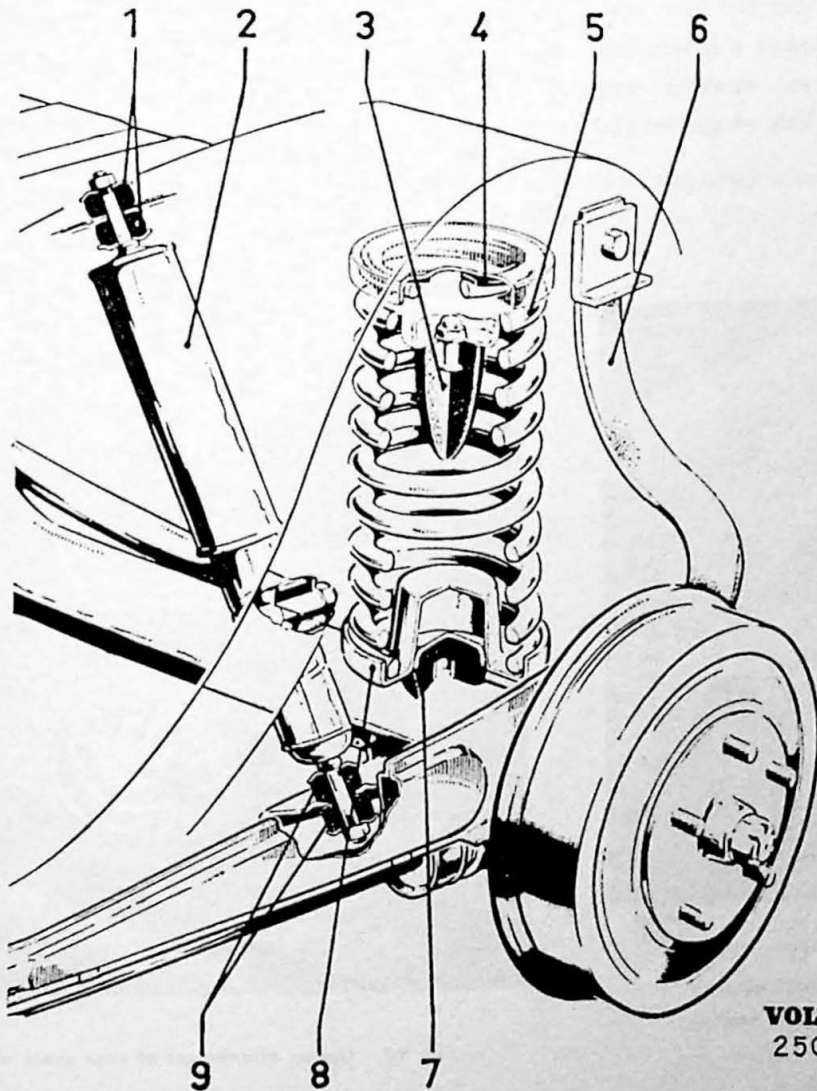


Fig. 9-5. Rear spring and shock absorber

1. Rubber bushings for upper shock absorber attachment
2. Shock absorber
3. Rubber bumper
4. Rubber spacer
5. Spring
6. Shock absorber band
7. Rubber pad
8. Spring retainer
9. Rubber bushings for lower shock absorber attachment

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SHOCK ABSORBERS

DESCRIPTION

The shock absorbers are of the double-acting telescopic type. They require no maintenance and cannot be disassembled.

Shock absorber bands (3, Fig. 9-3) are fitted between

each support arm and the body. These prevent damage to the rear shock absorbers by limiting wheel movement downwards. Wheel movement upwards is limited by the rubber buffers.

REPAIR INSTRUCTIONS

CHECKING THE SHOCK ABSORBERS

A simple way of checking the condition of the shock absorbers is to rock the car up and down then to release it so that the damping effect of the shock absorbers can be observed. Testing can also be carried out by driving the car on a bumpy road surface. If the shock absorber has been removed from the car, the lower attachment should be tightly clamped in a position similar to that when it is fitted on the car. If it is quickly pulled out and then compressed, it is possible to judge whether it is functioning properly. The damping effect can, however, only be determined definitely with the help of special test devices.

Shock absorbers that do not function properly in both directions should be replaced. Worn or damaged rubber bushings should be replaced.

REPLACING A FRONT SHOCK ABSORBER

1. Remove the upper attaching nut, the washer (see Fig. 9-1) and rubber bushing (3).
2. Remove the lower attaching nut, washers, and rubber bushing. See Fig. 9-2.
3. Remove the bolt (4, Fig. 9-2) for the attaching plate (3) in the lower control arm and pull out the attaching plate and shock absorber.
4. Fitting is carried out in the reverse order to that used when removing. Place the washers as shown in Fig. 9-4. Tighten the nuts until $1/8"$ (3 mm) of the threaded end of the attaching bolt protrudes outside the nut.

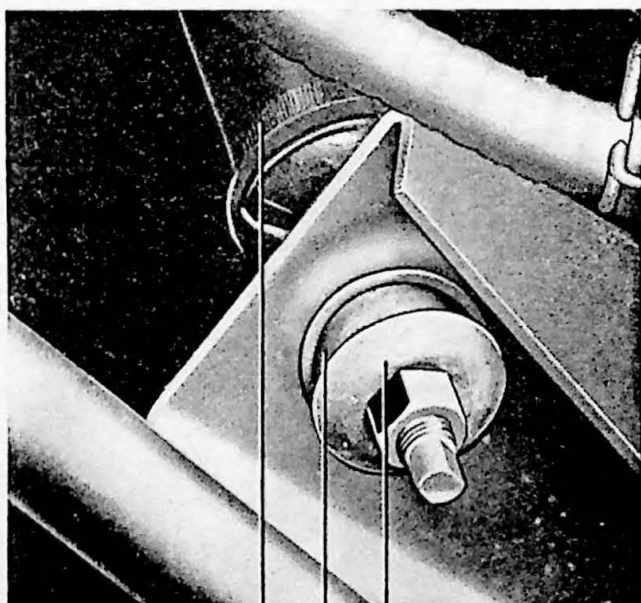


Fig. 9-6. Lower attachment of rear shock absorber
1. Shock absorber 2. Lower rubber bushing
3. Lower washer

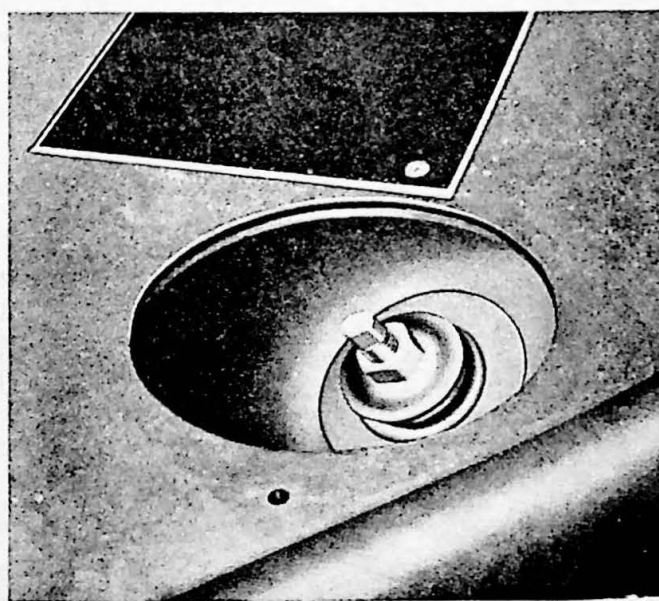


Fig. 9-7. Upper attachment of rear shock absorber

REPLACING A REAR SHOCK ABSORBER

1. Remove the upper attaching, nut, washer and rubber bushing through the hole in the rear window shelf. See Fig. 9-7.
2. Remove the lower attaching nut, washers, and rubber bushing. Remove the shock absorber.
3. Fitting is carried out in the reverse order to that used when removing. See Fig. 9-5. Fit the washer with the larger hole on the inside of the lower rubber bushing. Tighten the nuts until $1/8"$ (3 mm) of the threaded end of the attaching bolt protrudes.

SPECIFICATIONS

FRONT SPRINGS

Type	Coil springs
Material thickness	0.55—0.563" (14.1—14.3 mm)
Outer diameter of spring	4.76—4.82" (121—122.5 mm)
Total number of coils	8.7
Test values:	
Loading required to compress the spring $25/64"$ (10 mm) (measured within a spring length range of $6\ 3/4$ — $8\ 1/2"$ = 175—215 mm)	105 1/2—114 1/2 lb. (47.8—51.8 kg)
Loading for a spring length of 7.68" (195 mm):	
Yellow marking	1062—1082 lb. (481—491 kg)
Blue marking	1082—1104 lb. (491—501 kg)
Red marking	1104—1126 lb. (501—511 kg)

REAR SPRINGS

Type	Coil springs
Material thickness	0.441—0.449" (11.2—11.4 mm)
Outer diameter of spring	4.57—4.63" (116—117.5 mm)
Total number of coils	10.7
Test values:	
Loading required to compress the spring $25/64"$ (10 mm) (measured within a spring length range of $8\ 3/4$ — $10\ 1/2"$ = 225—265 mm)	35.5—38.9 lb (16.1—17.7 kg)
Length when fully compressed	4.65" (118 mm)
Loading for a spring length of 9.64" (245 mm):	
Yellow marking	504—515 lb (229—234 kg)
Blue marking	515—526 lb (234—239 kg)
Red marking	526—537 lb (239—244 kg)

SHOCK ABSORBERS

Make	Delco Fren
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