

SERVICE MANUAL

CARS AND VANS

PV 544, 444

Part 9

SPRINGS AND SHOCK ABSORBERS

Export Service Department

AKTIEBOLAGET

VOLVO

GÖTEBORG . SWEDEN

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SPRINGS DESCRIPTION

The PV 544, 444 is fitted with coil springs both front and rear. The front-wheel suspension is independent.

The front springs extend from a housing on the front-axle member at the top to a control

arm fitted to the front axle member and the lower end of the steering knuckle support.

The rear spring upper ends are fitted to the body with the aid of washers, bolts and rubber spacers. The lower ends are fitted to the rear axle support arms with washers and bolts.

REPAIR INSTRUCTIONS

Removing the front springs

1. Raise the front of the car until the wheels are about 15 cm (6") above floor level and block up the frame.
2. Disconnect the stabilizer.
3. Place a jack under the lower control arm and unscrew the four nuts on the front axle support member bracket. Fig. 1.
4. Lower the jack slowly and remove the spring when the lower control arms is sufficiently released.

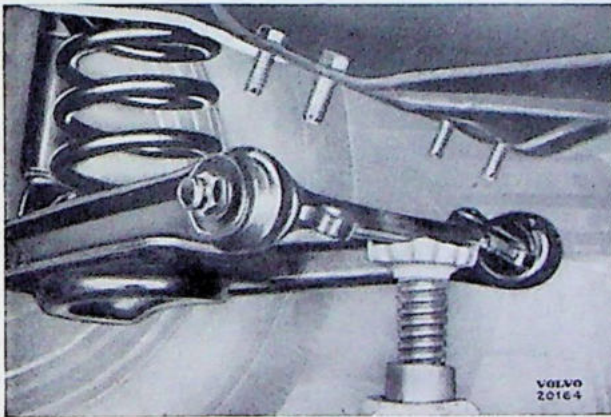


Fig. 1. Removing front springs.

Checking the front springs

Springs must be checked before fitting. Measure the compressed and extended length of the springs. These measurements are listed in the Specifications. Check the general condition of the springs. "Tired" or damaged springs must be replaced.

Fitting the front springs

1. Place the spring in the attachment on the control arm. The straight end of the spring (A Fig. 2) must face downwards.
2. Lift up the control arm until the spring rests with the upper end in the seat on the front axle support member, then place a jack under the control arm Fig. 1.

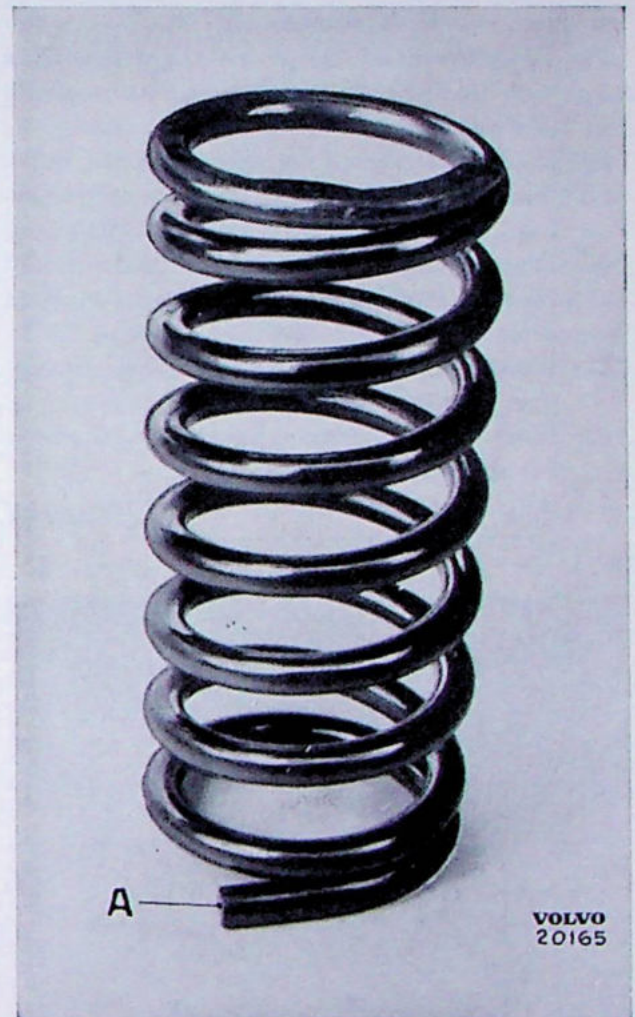


Fig. 2. Front spring.

3. Make sure that the spring is correctly in position. The straight end should rest in the recess in the lower spring attachment. Raise the lower control arm by means of the jack and tighten the four nuts on the bolts in the front axle support member. Lock the nuts with cotter pins. Connect the stabilizer.

N.B. Check, and if necessary, adjust the front wheel alignment as instructed in Part 6.

Removing the rear springs

1. Release the handbrake.
2. Raise the rear end of the car with a jack and block up the frame. Chocks must be placed under the front wheels.
3. Disconnect the shock absorbers (5 Fig. 3) from the attachment in the rear axle housing.
4. Disconnect the shock absorber band (7) from its attachment (8) on the axle support arm.
5. Disconnect the spring from the axle support arm (screw 10).
6. Lower the rear axle housing sufficiently for the spring to be loosened.
7. Disconnect the spring from the body (screw) and remove the spring.

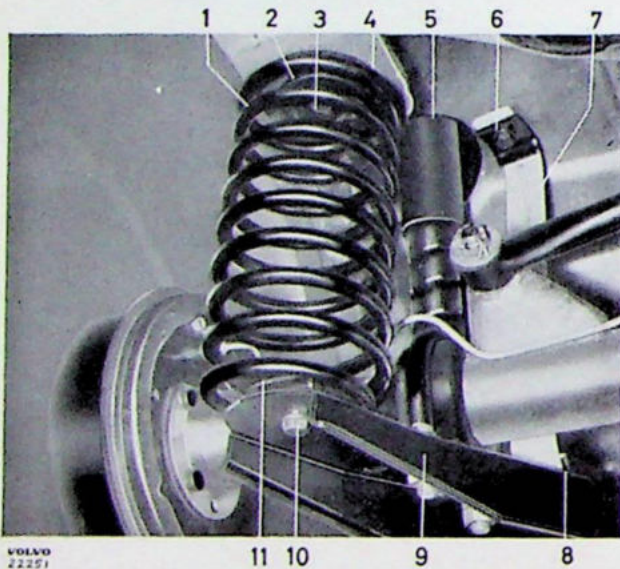


Fig. 3. Rear spring fitted.

- | | |
|-------------------|---|
| 1. Rear spring | 6. Lower attachment for shock absorber band |
| 2. Upper washer | 7. Shock absorber band |
| 3. Bolt | 8. Axle support arm |
| 4. Rubber spacer | 9. Bolt |
| 5. Shock absorber | 10. Lower washer |

Checking the rear springs

The springs must be checked before fitting. Measure the compressed and extended length of the springs. These measurements are listed in the Specifications. Check the general condition of the spring. "Tired" or damaged springs must be replaced.

Fitting the rear springs

1. Place the spring and the rubber spacer (4) into position and attach the spring to the body. The straight part of the spring (A Fig. 4) must face diagonally inwards.
2. Raise the rear axle housing with the jack and attach the spring to the support arm. Attach the shock absorber band (7) to the rear axle support arm.
3. Connect the shock absorber (5) to the rear axle housing.

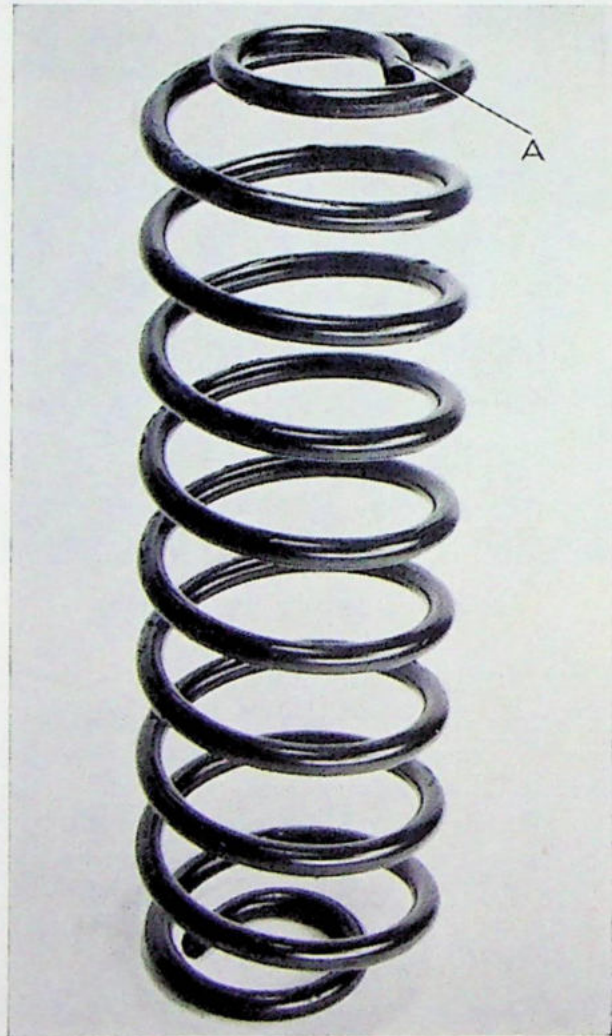


Fig. 4. Rear spring. VOLVO 20257

REPAIR INSTRUCTIONS

Fitting the shock absorbers

Before fitting, air-vent the shock absorber by holding it in an upright position with the dust

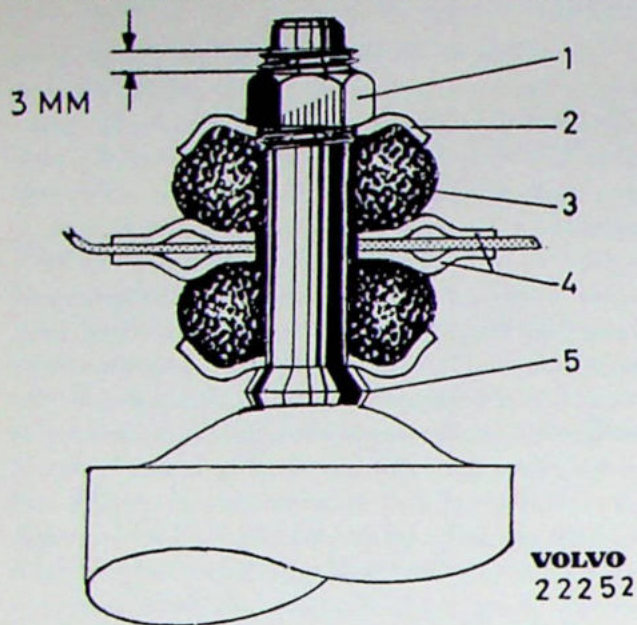


Fig. 6. Upper, rear shock absorber attachment.

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|-------------------|----------------------------------|
| 1. Nut | 4. Washers welded in body plate |
| 2. Washer | 5. Shock absorber attaching bolt |
| 3. Rubber bushing | |

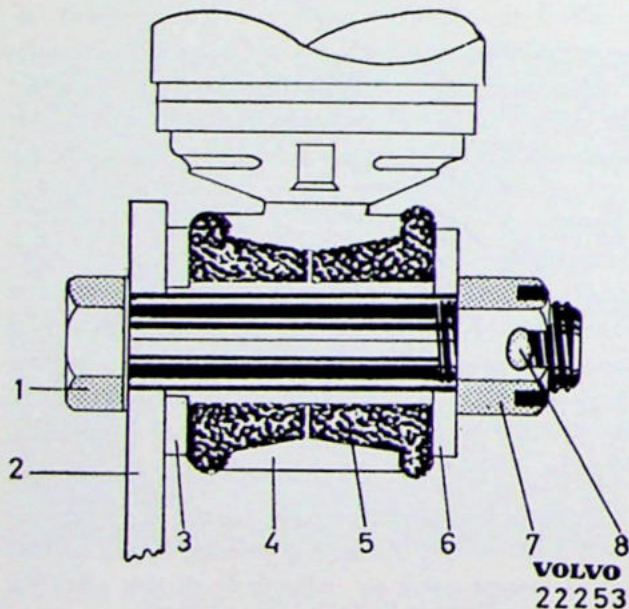


Fig. 7. Lower, rear shock absorber attachment. (Late production).

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|------------------------------------|-------------------|
| 1. Bearing bolt | 5. Rubber bushing |
| 2. Bracket | 6. Washer |
| 3. Washer with spacer sleeve | 7. Nut |
| 4. Shock absorber attaching eyelet | 8. Cotter pin |

cover uppermost and work the unit up and down four or five complete strokes or until one feels the shock absorber resisting in both directions. Fit in the reverse order to that used when removing. The shock absorber attachment are assembled as shown in Figs. 6—9.

The rear shock absorber should be fitted with their respective plates on the lower parts facing inwards towards the frame centre line.

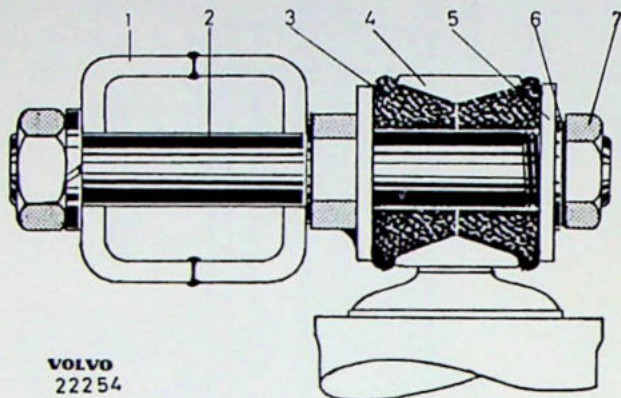


Fig. 8. Upper, front shock absorber attachment.

- | | |
|------------------------------------|----------------|
| 1. Upper control arm | 5. Washer |
| 2. Bearing bolt | 6. Lock washer |
| 3. Rubber bushing | 7. Nut |
| 4. Shock absorber attaching eyelet | |

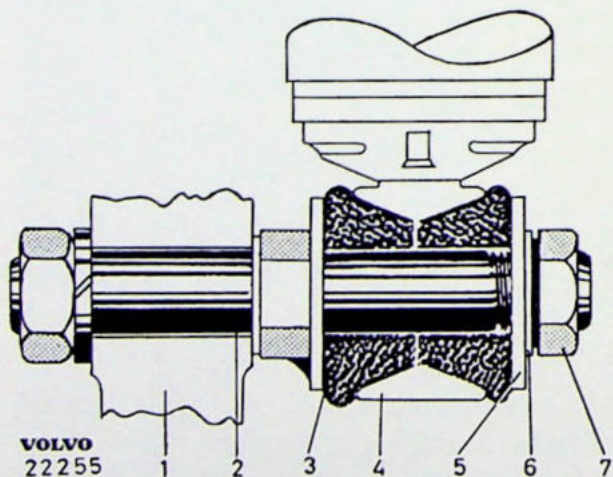


Fig. 9. Lower, front shock absorber attachment.

- | | |
|------------------------------------|----------------|
| 1. Steering knuckle support | 5. Washer |
| 2. Bearing bolt | 6. Lock washer |
| 3. Rubber bushing | 7. Nut |
| 4. Shock absorber attaching eyelet | |

TRACING FAULTS

The damping properties of a shock absorber cannot definitely be determined without using special instruments. In most cases, however, a fairly accurate idea of the state of the shock absorbers can be determined in the following way.

Test the shock absorber by working it up and down several times. There should be equal resistance in both directions. The shock absorber should be in an upright position with the dust cover uppermost when testing.

A preliminary investigation can be carried out by swaying the car before removing the shock absorbers. A strong damping effect should be noticeable.

Noise

Noise may be caused by worn rubber bushings on the shock absorbers eyes, insufficient fluid or damaged integral parts. Worn or damaged parts must be replaced with new.

SPECIFICATIONS

Front springs

Type	Coil springs
Material thickness	13.5—13.7 mm (0.531"—0.539")
Outer diameter	109—111 mm (4.29"—4.37")
Unloaded length (new spring)	approx. 255 mm (10")
Total number of turns	8

Test values:

Length, loaded with 435±12 kg (959±26.½ lb)	177 mm (6.97")
Length, totally compressed	max. 113 mm (4.45")
Loading required to compress spring 1 cm (²⁵ / ₆₄ ").	
This is measured within spring length limits 155—200 mm (6.1"—7.87")	59±2 kg (130±4.½ lb)

Rear springs

Type	Coil springs
Material thickness	11.7—11.9 mm (0.460"—0.468")
Outer diameter	125.5—127.5 mm (4.94"—5.02")
Unloaded length (new spring)	approx. 390 mm (15.3")
Total number of turns	9

Test values:

Length loaded with 215±8 kg (474±17.½ lb)	242 mm (9.52")
Length, totally compressed	max. 114 mm (4.49")
Loading required to compress spring 1 cm (²⁵ / ₆₄ ").	
This is measured within spring length limits 190—290 mm (74.8"—11.4")	14.5±0.5 kg (32±1 lb)

Shock absorbers

Length between eyelet centres:

Front shock absorbers, compressed	approx. 200 mm (8")
" " " extended	approx. 290 mm (11.½")
Rear shock absorbers, compressed	approx. 300 mm (11.¾")
" " " extended	approx. 485 mm (19")

