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SPRINGS

DESCRIPTION

The Volvo P 1200 is fitted with coil springs front and rear. There is individual front 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 cross-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.

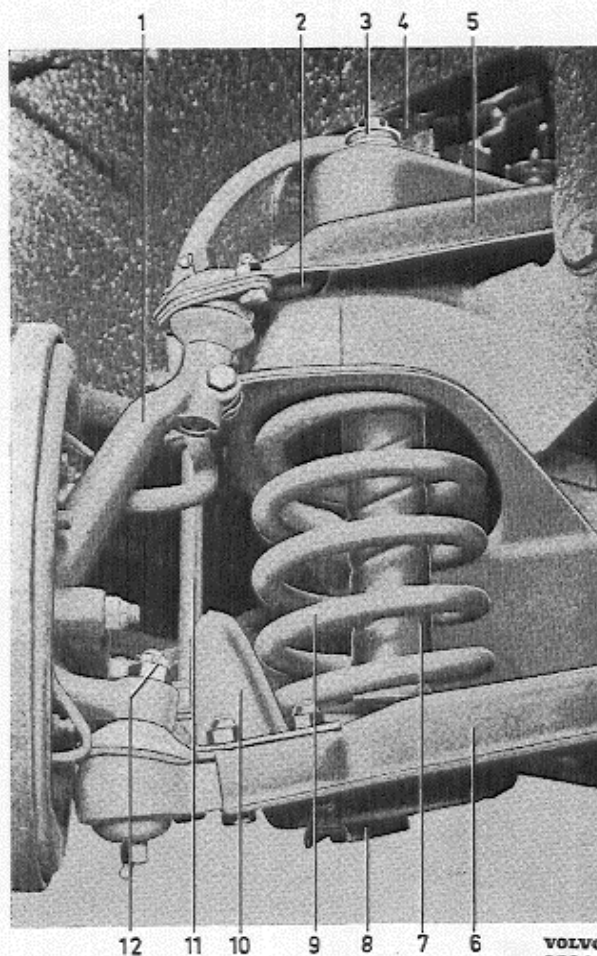
REPAIR INSTRUCTIONS

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. 1 and 1, Fig. 2). Remove the bolt (4, Fig. 2) for the attaching plate (3) and pull this together with the shock absorber downwards.
5. Place a jack under the lower control arm right 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. 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 too SVO 2281.

Fig. 1. Front spring and shock absorber.

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



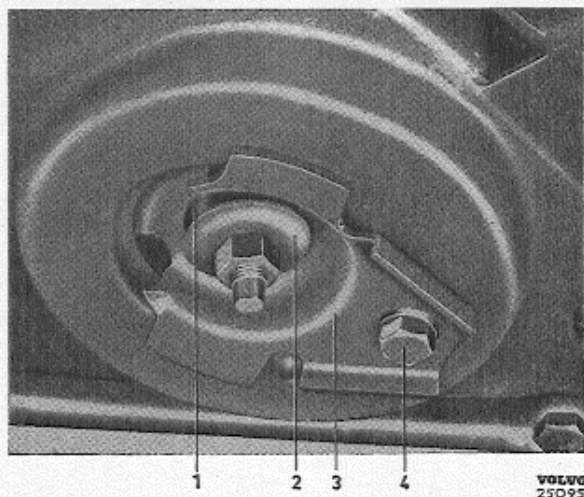


Fig. 2. Lower attachment of front shock absorber.

1. Rubber bushing
2. Washer for rubber bushing
3. Attaching plate
4. Bolt

Check measurements

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

Fitting

Place the rubber spacer (5, Fig. 4) and the washer (6) in position in the spring housing in the member and fit the spring in the reverse order to 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 band slackens.
4. Loosen the lower shock absorber attachment (Fig. 7) and the upper attachment for the shock absorber band (4, Fig. 3) on both sides.

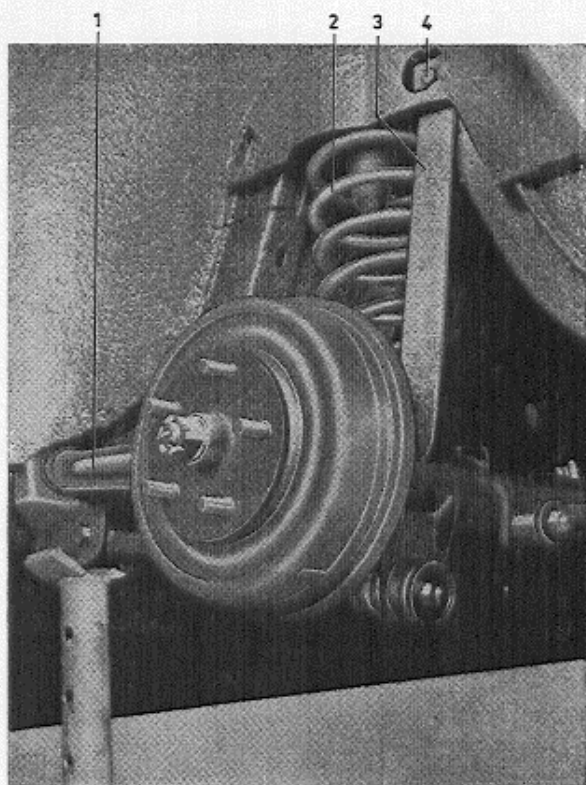


Fig. 3. Rear spring.

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

Slacken the front support arm attachments slightly.

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

Check measurements

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

Fitting

Fitting is carried out in the reverse order to that used when removing. Make sure that the rubber pad (7, Fig. 5) comes into its correct position on the rear axle.

On late production cars there is also an upper rubber spacer (4, Fig. 5).

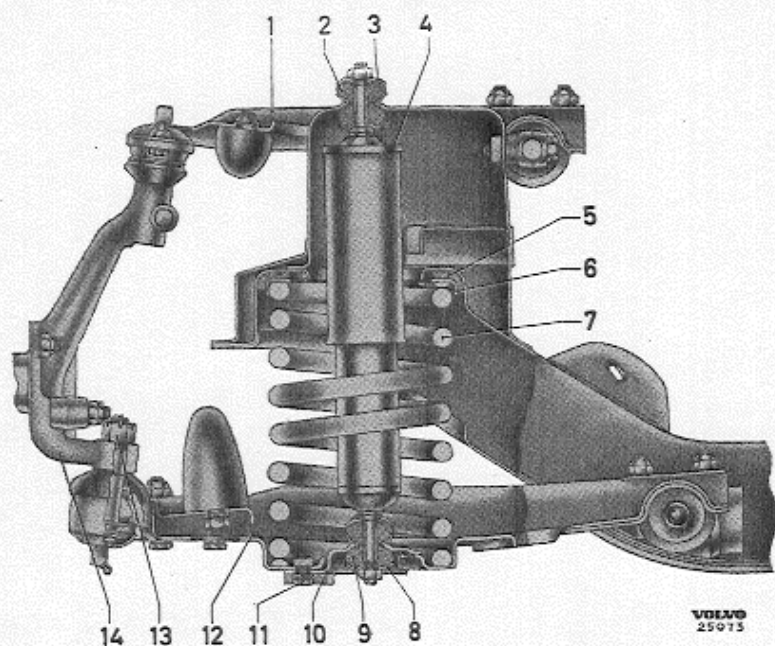


Fig. 4. Front spring and shock absorber.

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

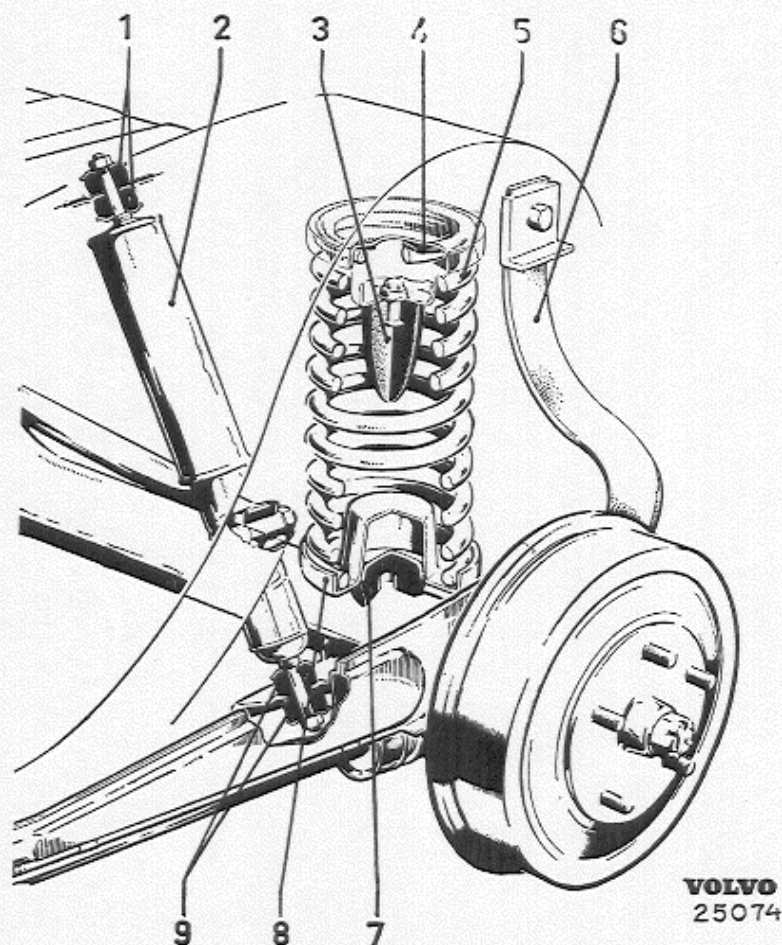


Fig. 5. Rear spring and shock absorber.

1. Rubber bushings for upper shock absorber attachment
2. Shock absorber
3. Rubber buffer
4. Rubber spacer
5. Spring
6. Shock absorber band
7. Rubber pad
8. Lower spring clamp
9. Rubber bushing for lower shock absorber attachment

SHOCK ABSORBERS

DESCRIPTION

The shock absorbers on the Volvo P 1200 are hydraulic, double-acting of the telescopic type. They require no maintenance and cannot be disassembled. The rear shock absorbers are inclined inwards towards the centre of the body.

Shock absorber bands (3, Fig. 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 rubber buffers.

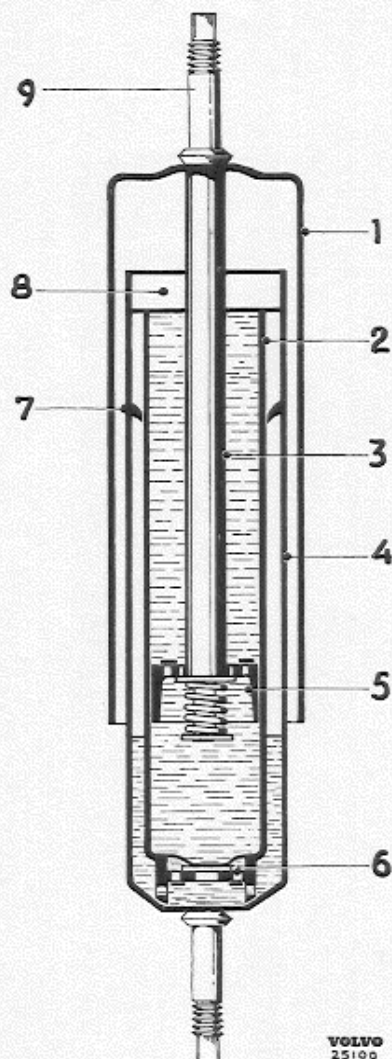


Fig. 6. Shock absorber.

1. Dust shield
2. Working cylinder
3. Piston rod
4. Reservoir
5. Piston
6. Valve
7. Splash plate
8. Seal
9. Upper attachment

Design

The design of the shock absorbers is shown in Fig. 6. The outer cylinder (1) is a dust shield. The two inner cylinders (2) and (4) are concentrically arranged, one inside the other. The narrower of these two is the actual working cylinder (2) and is fitted with a valve (6) at its lower end. Inside this cylinder there is a piston (5) in which holes are drilled, passage through these holes being controlled by valves.

The piston is attached to a piston rod (3), the upper end of which is in the form of a body

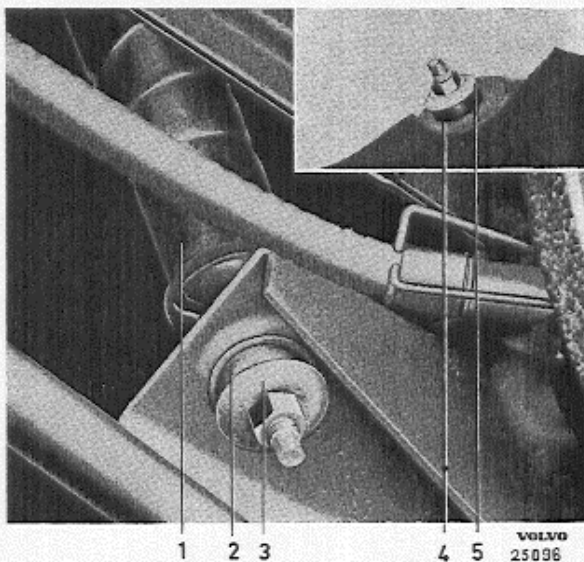


Fig. 7. Attachment of rear shock absorber.

1. Shock absorber
 2. Lower rubber bushing
 3. Lower washer
 4. Upper rubber bushing
 5. Upper washer
- 4 and 5 are accessible from the luggage compartment

attachment. At the lower end of the shock absorber a similar screw attachment is fitted to the cylinder (4). The space between cylinders (2) and (4) serves as a reservoir and is only partially filled with fluid. The inner cylinder (2) is completely filled with fluid on both sides of the piston (5). The cap (8) acts as a seal and a guide for the piston rod. The ring (7) acts as a splash plate for the fluid.

How the shock absorber works

When the shock absorber is telescoped by the movement of the car, the piston (5) is moved in the inner cylinder (2). Fluid then flows through the valve-controlled holes in the piston. The speed with which the piston moves is determined by the rate at which the fluid passes through the holes from

one side of the piston to the other. Since the drilled holes are very narrow, the fluid can only pass through slowly thus braking the movement of the piston. If the shock absorber is suddenly telescoped or extended, a further braking effect is caused by turbulence in the fluid streaming through the holes in the piston. This dampens any rolling tendency on the part of the car and ensures smoother riding.

When the shock absorber is telescoped or extended, the volume on each side of the piston is not altered by the same amount since the piston rod occupies a certain space. When the shock absorber is telescoped, therefore, some of the fluid passes out through the valve (6) into the reservoir and when the shock absorber is extended, fluid is again sucked into the cylinder (2) below the piston.

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 and then releasing it, whereby 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 then quickly pulled out and compressed, it is possible to judge whether it is operating properly. The damping effect, however, can only definitely be decided 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 (4, Fig. 1) and the rubber bushing (3).

2. Remove the lower attaching nut, washers, attaching plate and rubber bushing. See Fig. 2.
3. Remove the bolt (4, Fig. 2) for the attaching plate (3) in the lower control arm and pull out the attaching plate and the shock absorber.
4. Fitting is carried out in the reverse order to that used when removing. Replace the washers and attaching plate as shown in Fig. 6. Tighten the nuts until $\frac{1}{8}$ " (3 mm) of the threaded end of the attachments is outside the nut.

Replacing a rear shock absorber

1. Remove the upper attaching nut, washer and rubber bushing from the luggage compartment. See Fig. 5.
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. 5. Fit the washer with the larger hole on the inside of the lower rubber bushing. Tighten the nuts until $\frac{1}{8}$ " (3mm) of the threaded end of the attachment is outside the nut.

