



SERVICE MANUAL

VOLVO 164 1971

GROUP 62

FRONT END

DESCRIPTION

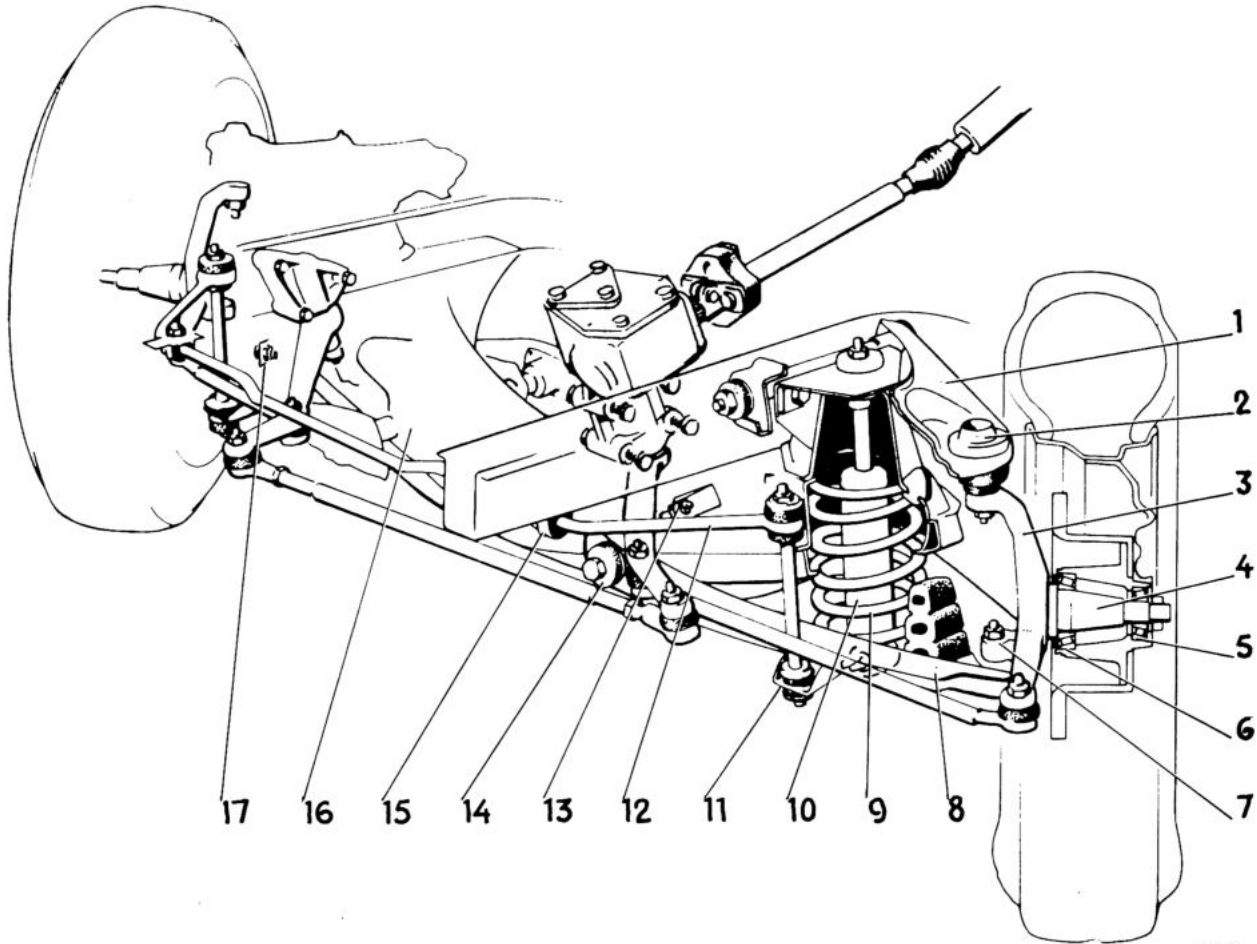


Fig. 6-12. Front axle

VOLVO
103128

- | | |
|------------------------------|-------------------------------------|
| 1. Upper wishbone | 10. Shock absorber |
| 2. Upper wishbone ball joint | 11. Stabilizer anchorage |
| 3. Steering knuckle | 12. Stabilizer |
| 4. Stub axle | 13. Stop bolt, max. wheel lock |
| 5. Outer wheel bearing | 14. Lower wishbone bush |
| 6. Inner wheel bearing | 15. Frame attachment for stabilizer |
| 7. Lower wishbone ball joint | 16. Front axle member |
| 8. Lower wishbone | 17. Stop bolt, max. wheel lock |
| 9. Spring | |

The vehicle has independent front wheel suspension. This means that there is no actual front axle, this being replaced by a strong box-section front axle member. This member is bolted to the self-supporting body and the front wheel suspension and springs are fitted at the ends of the member. The construction is illustrated in Fig. 6-12.

The steering knuckle is pivoted on the upper and lower wishbones by means of ball joints (2 and 7), which are pressed into wishbones. The wishbone shafts are carried in rubber bushes, which are journalled in the wishbones. Camber and caster are adjusted by means of shims between the upper wishbone shaft and its attachment in the front axle member (see Fig. 6-8).

The front wheels are carried in taper roller bearings (5 and 6, Fig. 6-12). The front spring assembly consists of coil springs (9) inside which telescopic shock absorbers (10) are fitted. In order to increase its anti-rolling properties, the car is equipped with a stabilizer (12), which is anchored partly to the lower wishbones (11) and partly to the body (15).

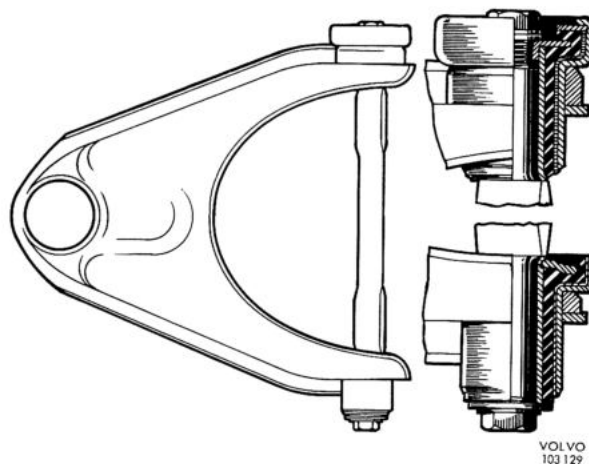


Fig. 6-13. Upper wishbone

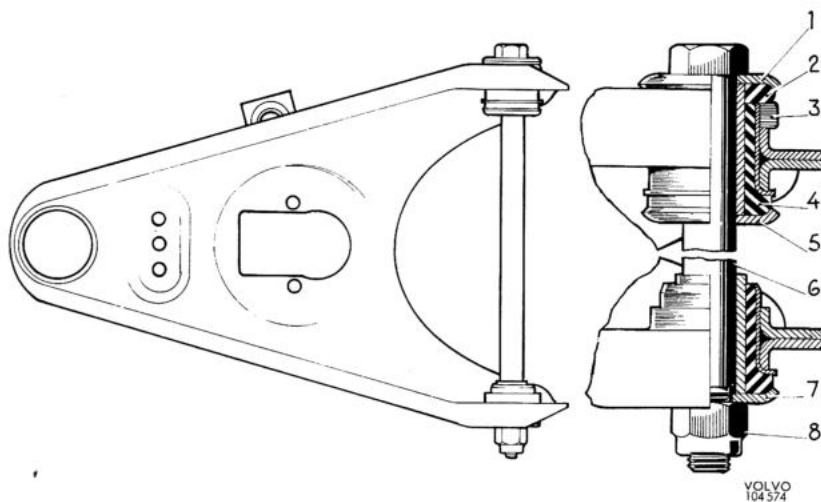


Fig. 6-14. Lower wishbone

- | | |
|----------------|-------------------|
| 1. Washer | 5. Washer |
| 2. Rubber ring | 6. Wishbone shaft |
| 3. Spacer ring | 7. Washer |
| 4. Bush | 8. Nut |

REPAIR INSTRUCTIONS

GENERAL

The ball joints require no lubrication and are, therefore, not fitted with lubricating nipples. However, the rubber seals should be inspected every 10000 km (6000 miles) and if necessary replaced when adding grease. The wishbones may only be straightened to a minor extent and then only in a cold condition. If the old wishbone deviates to any great extent when compared to a new one, it should be replaced.

No straightening whatsoever is permitted for stub axles and steering knuckles.

The instructions given below indicate certain tightening torques. Otherwise see the standard torque for the respective bolting in question.

FRONT END COMPLETE

REMOVING

1. Install the lifting plate SVO 2811 on the engine and also lifting tool SVO 2727 together with the extension rod SVO 2821, see Fig. 6-15. Raise the engine until the weight is taken off the front engine mounting. Temporarily block the vent-hole in the brake fluid container cover to reduce leakage. Remove the hub caps and loosen the nuts for the front wheels a couple of turns.
2. Jack up the vehicle under the front jack attachments. Remove the front wheels.
3. Disconnect the steering rods from the steering arms with tool SVO 2294 according to Fig. 6-19.
4. Remove the stabilizer attaching bolts.
5. Loosen the brake hoses from the bracket at the support member.
6. Remove the lower nuts for the front engine mountings.

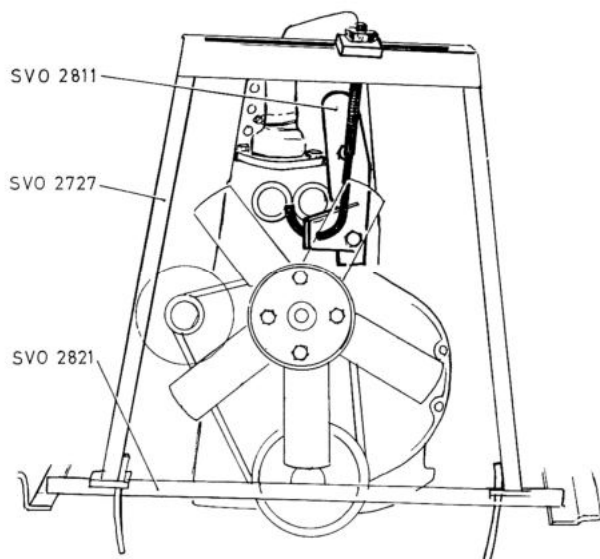


Fig. 6-15. Tool for lifting engine

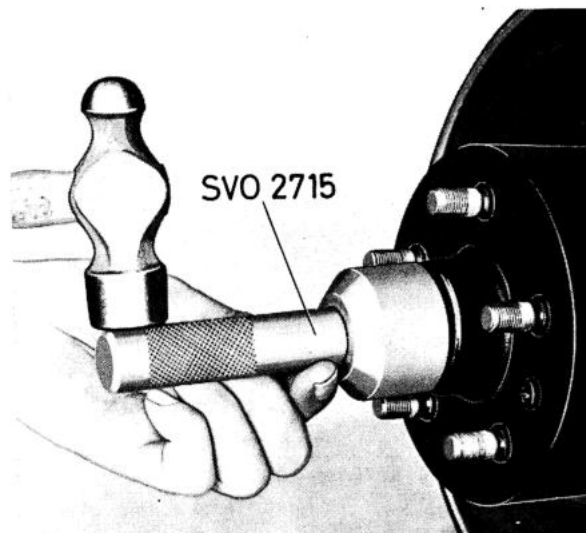


Fig. 6-16. Removing the grease cap

7. Remove the front axle member attaching bolts, lower and remove the front end.

DISMANTLING AND ASSEMBLING

See under the headings "Removing" and "Fitting" for the various components.

FITTING

1. Fit the guide pins in the front holes for the front axle member.
2. Place a jack under the front end and raise the front end so that it comes into position. Fit rear bolts provided with plastic plugs. Remove the guide pins and fit the front bolts (also those with plastic plug).
3. Tighten the engine mounting bolts to a torque of 2.1—2.5 kpm (15—18 lb.ft.).
4. Fit the attaching bolts for the stabilizer. Connect the brake hoses, see Fig. 5—19, Part 5. Carefully check the location of the hoses and adjust if necessary.
5. Fit the steering rods.
6. Bleed the brakes according to the instructions in Part 5. Remove the temporary seal from the brake fluid container cap.
7. Fit the wheels and wheel nuts. Lower the vehicle and tighten the wheel nuts to a torque of 10—14 kpm (70—100 lb.ft.). Fit the hub cap. Remove the lifting tool.

STUB AXLE

REMOVING

1. Remove the front brake caliper according to the instructions given in Part 5.

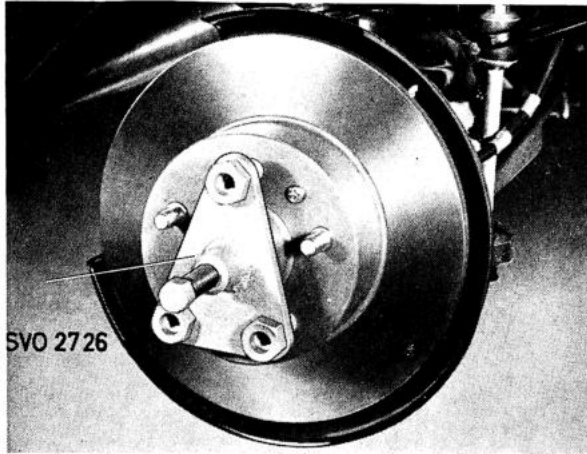


Fig. 6-17. Removing the front wheel hub

2. Remove the grease cap with tool SVO 2715, see Fig. 6-16. Remove the split pin and castle nut. Pull off the hub with puller SVO 2726, see Fig. 6-17. If necessary pull off the inner bearing from the stub axle with tool SVO 2722, see Fig. 6-18.
3. Remove the steering rod from the steering arm with tool SVO 2294, see Fig. 6-19.
4. Slacken but do not remove the nuts for the ball joints, knock on the axle with a hammer until the ball joint pins loosen. Raise the lower wishbone a little with the jack. Remove the nuts for the ball joints and then the stub axle.

EXAMINING THE BEARING COMPONENTS

Clean the hub and grease cap thoroughly. Make sure that all the old grease, even inside the hub, is removed. Compressed air can suitably be used for a

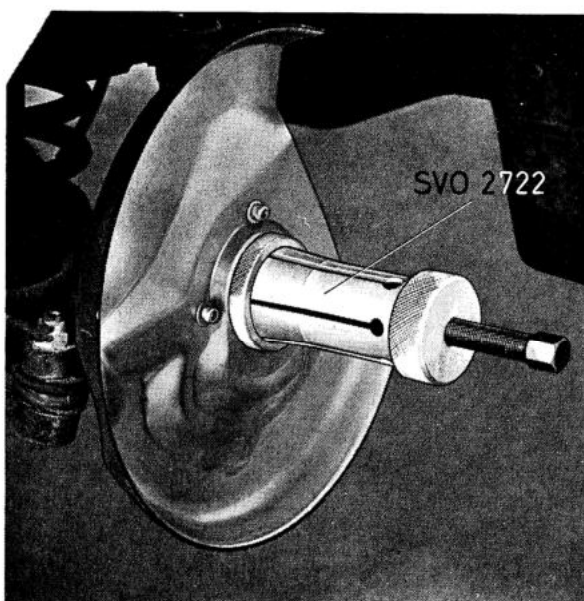


Fig. 6-18. Removing the inner bearing

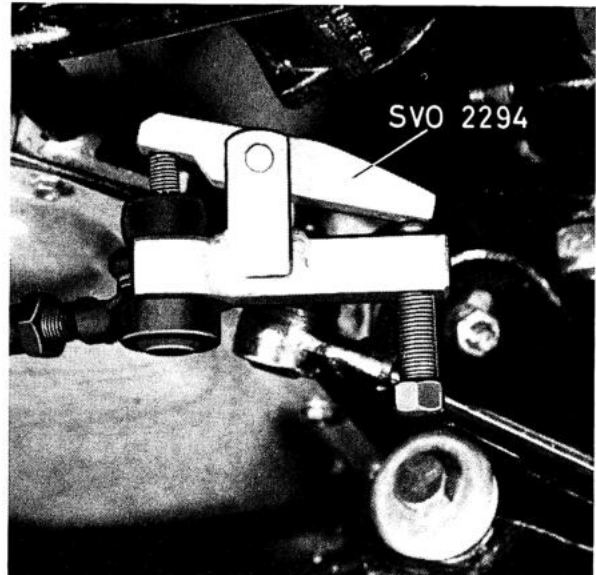


Fig. 6-19. Removing the steering rod

comprehensive cleaning of the bearings. Then wash the bearing components in white spirit and allow them to dry. Drying by means of compressed air should be avoided since the air often contains water and dust particles. Accessible bearing components are dried with cotton or cloth rags (but not waste). The bearing surfaces must be dry of cleaning fluid in order not to reduce the adhesion of the grease which is applied later. A new bearing taken directly from its packing container should not be cleaned.

After the cleaning, inspect the parts. If the bearing races or rollers are damaged, rusted or are blued, replace the bearing. If the outer or inner ring is loose in its seating, try a new ring. The sealing rings should be replaced if they are worn or damaged.

For lubrication of the wheel bearings, use only a high-class, durable grease for wheel bearings. Pack the bearings manually with as much grease as possible between the roller retainers and the inner race. Grease also on the outside of the rollers and container. The intermediate spaces in the hub between the outer and inner bearing should be filled with grease, see Groups 46 and 77. Before being fitted, the wheel hub felt rings should be oiled generously with, for example, light engine oil.

Cleanliness of the bearings is of major importance for their lifetime. For this reason, do not let ungreased bearings remain unprotected. Observe the greatest cleanliness when fitting them.

FITTING

1. Place the inner bearing in position in the hub and press in the oil seal with tool SVO 2723 and standard handle tool SVO 1801. See Fig. 6-20.

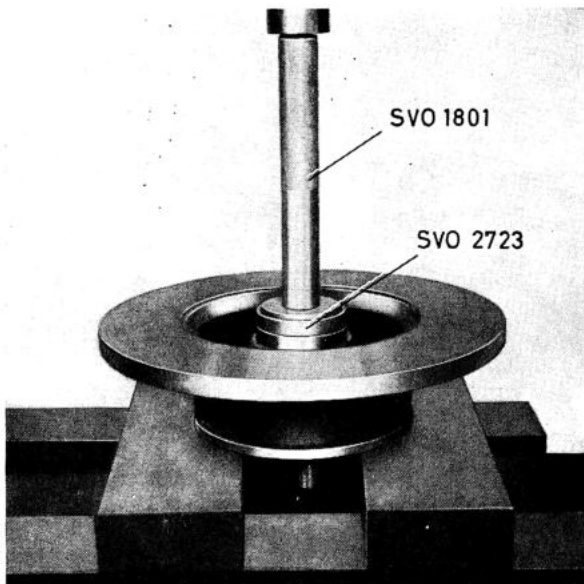


Fig. 6-20. Fitting the oil seal

Lubricate the felt ring with plenty of, for example, light engine oil.

2. Place the stub axle in position and tighten the ball joint nuts. If the ball joint twists, hold it firmly in position with a screw vise, see Fig. 6-24. Fit the steering rod on to the steering arm.
3. Place the hub on the axle, fit the outer bearing, washer and castle nut.
4. Adjust the front wheel bearings by tightening the nut with a torque wrench to a torque of 7 kpm (50 lb.ft.) while the wheel is rotated. Then slacken the nut one third of a turn. If the slot in the nut does not coincide with the split pin hole in the stub axle, slacken the nut further until the split

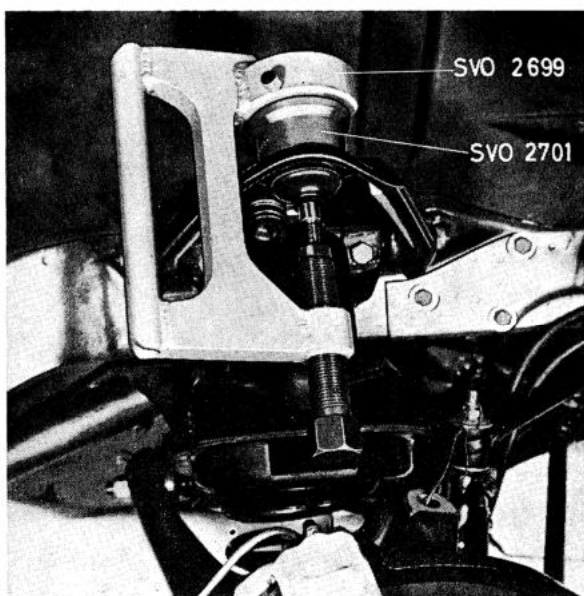


Fig. 6-21. Removing the upper ball joint

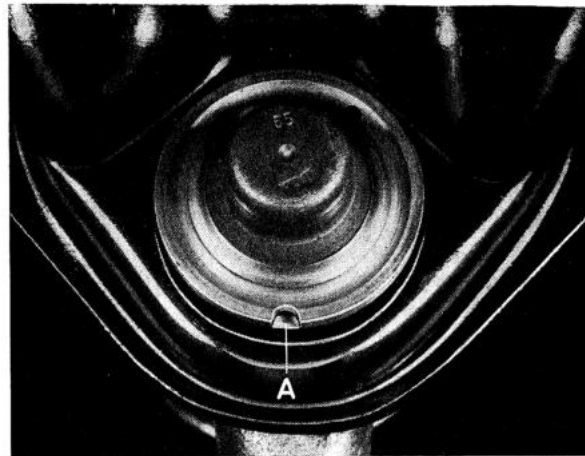


Fig. 6-22. Location of ball joint in upper wishbone

pin can be fitted. Check that the wheel rotates easily but without any play.

5. Fill the grease cap half full of grease and fit it with tool SVO 2715.
6. Fit the front wheel brake unit and wheel according to Part 5 "Fitting the front wheel brake unit".

UPPER BALL JOINT

REMOVING

1. Remove the hub cap and slacken the wheel nuts slightly.
2. Jack up the front end of the vehicle under the front jack attachments. Remove the wheel.
3. Slacken but do not remove the nut for the upper ball joint. Tap with a hammer on the steering knuckle round the ball joint pin until it loosens from the axle. Remove the nut and suspend the upper end of the knuckle with a wire to avoid straining the brake hoses, see Fig. 6-21.
4. Slacken the nuts for the wishbone shaft a 1/2 turn. Lift up the wishbone slightly and press out the ball joint with press tool SVO 2699 and sleeve SVO 2701, see Fig. 6-21.

FITTING

1. Before fitting the ball joint, check that the rubber seal is filled with grease. Bend the pin end over the slot (A, Fig. 6-22) and check that the grease forces its way out. If necessary, top up with multi-purpose grease.
2. Press the ball joint into the wishbone with press tool SVO 2699, sleeve 2701 and drift 2704, see Fig. 6-23. Make sure that the ball joint recess coincides with the longitudinal shaft of the wishbone either externally or internally (Fig. 6-22) as the pin has maximum movement along this line. Should the ball joint be incorrectly fitted when being pressed in, turn the tool SVO 2699 half a turn and then press the ball joint into the correct position. The

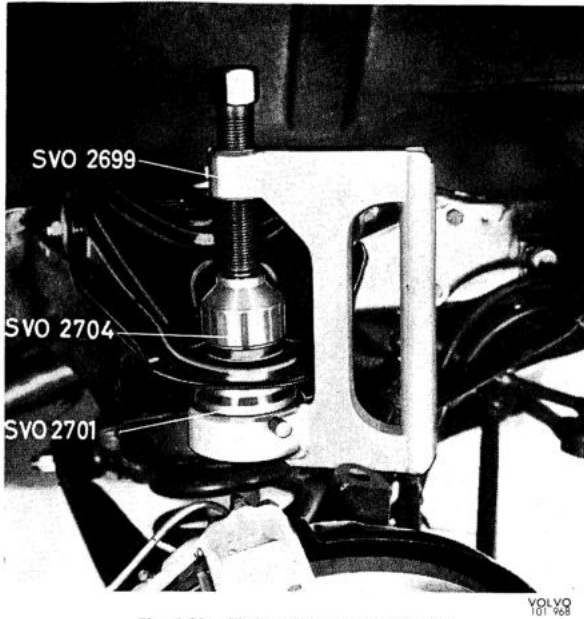


Fig. 6-23. Fitting the upper ball joint

ball joint must not be loose in the wishbone. Turn down the wishbone and tighten the nuts for the wishbone shaft. Tighten the ball joint against the steering knuckle. If the pin rotates, hold it firmly with a screw vise.

4. Fit the wheel and wheel nuts. Lower the vehicle and tighten the wheel nuts to a torque of 10–14 kpm (70–100 lb.ft.). Fit the hub cap.

LOWER BALL JOINT

REMOVING

1. Remove the hub cap and slacken the wheel nuts slightly.
2. Jack up the vehicle under the front jack attachments. Take off the wheel.

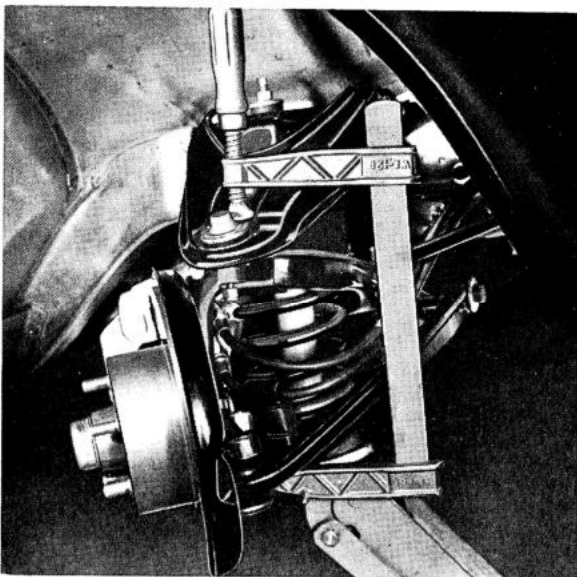


Fig. 6-24. Upper ball joint securely held by vise

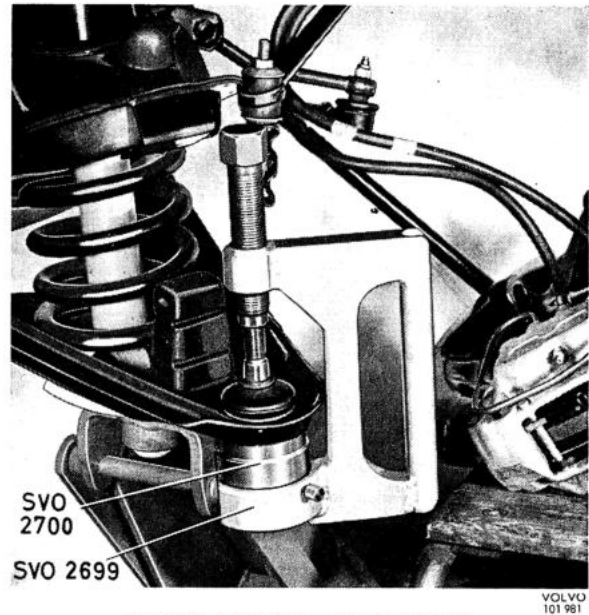


Fig. 6-25. Removing the lower ball joint

Disconnect the steering rod from the steering arm with tool SVO 2294, see Fig. 6-19, and remove the brake lines from the stabilizer bolt.

3. Slacken the nuts for the upper and lower ball joints, but do not remove them. Tap with a hammer until the ball joints loosen from the axle. Raise the lower wishbone with the jack. Remove the nuts.
4. Remove the steering knuckle with hub and the front wheel brake unit, and place them on a stand or similar.
5. Press the ball joint out of the lower wishbone with press tool SVO 2699 and sleeve SVO 2700, see Fig. 6-25.

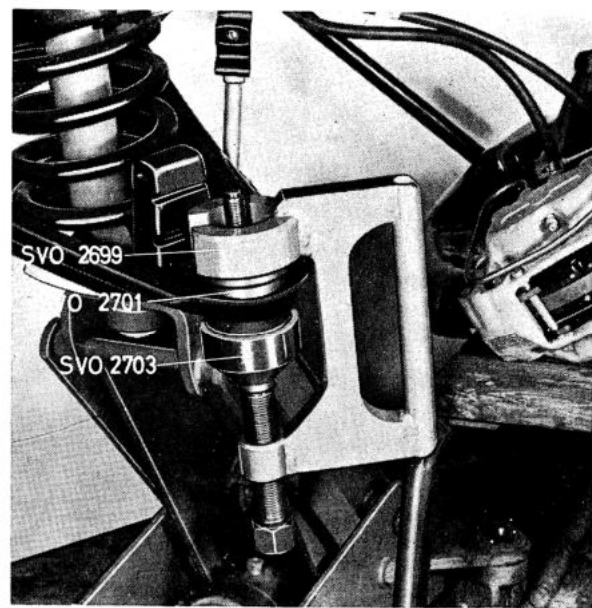


Fig. 6-26. Fitting the lower ball joint

FITTING

1. Check that the rubber seal is filled with grease by breaking the pin to the side so that grease is forced out. If this does not happen, then fill the seal with grease. Before fitting, remove any grease that has squeezed out on to the ball pin taper.
2. Press the ball joints in the wishbone with tools SVO 2699+2701+2703, see Fig. 6-25. If the ball joint is fitted at a slant turn the tool 180° and press the ball joint in correctly. The joint must not be loose in the wishbone.
3. Fit the steering knuckle and tighten the nuts of the upper and lower ball joints. If the pins rotate, fix them securely with a screw vise.
4. Fit the steering rod and lower the jack in order to take the load off the wishbones. Point the wheels straight forwards and fasten the brake hoses to the stabilizer bolt.
5. Fit the wheel and wheel nuts. Lower the vehicle and tighten the wheel nuts to a torque of 10—14 kgm (70—100 lb.ft.). Fit the hub cap.

UPPER WISHBONE

The bushes in the upper wishbone are not replaceable. If the link arm or bushes become damaged, replace the link arm complete together with the bushes and ball joint.

REMOVING

1. Remove the hub cap and slacken the wheel nuts slightly.
2. Jack up the front end of the vehicle under the front jack attachments. Remove the wheel.

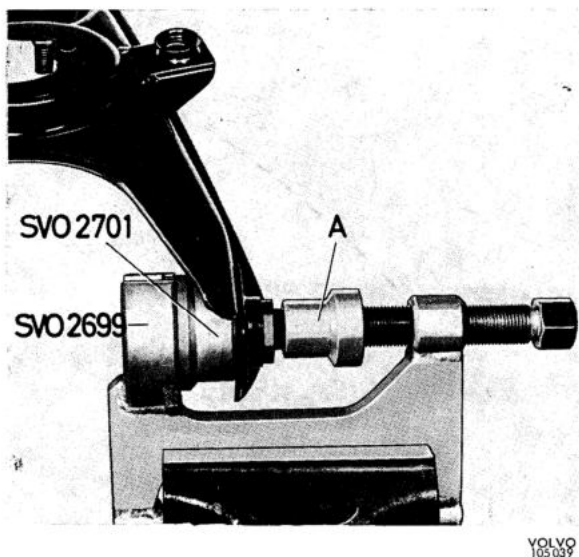


Fig. 6-27. Removing the rubber bush, lower wishbone
A = SVO 2904 for bushes intended for diagonal tyres and SVO 2905 for radial tyres

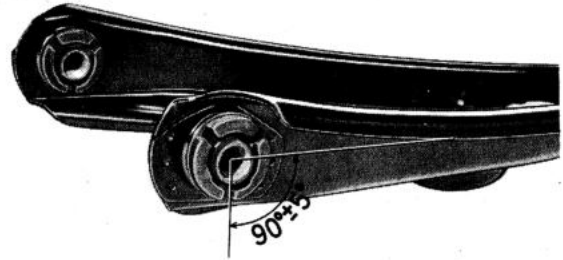


Fig. 6-28. Bushes for radial tyres

3. Slacken but do not remove the nut for the upper ball joint. Knock with a hammer on the steering knuckle round the ball joint pin until it loosens from the axle. Remove the nut and suspend the upper end of the knuckle with a wire to avoid straining the brake hoses, see Fig. 6-21.
4. Remove the bolts for the wishbone shaft with tool SVO 2713, see Fig. 6—8.
N.B. Take care of the shims. Lift off the wishbone.

FITTING

N.B. The wishbone shaft is fixed with a special bolt containing a nylon plug.

1. Place the wishbone in position and fit the bolts by hand. Fit the shims in the position they occupied previously. Tighten the bolts with tool SVO 2713. Tighten the nuts for the wishbone shaft to a torque of 5.5—6.2 kpm (40—45 lb.ft.).
2. Fit the upper ball joint in the steering knuckle and tighten the nut.
3. Fit the wheel and wheel nuts. Lower the vehicle and tighten the wheel nuts to a torque of 10—14 kpm (70—100 lb.ft.). Fit the hub cap.

LOWER WISHBONE

REMOVING

1. Remove the hub cap and loosen the wheel nuts a couple of turns.
2. Jack up the vehicle at the front jack attachments. Remove the wheel.
3. Remove the shock absorber, see Part 7, "Removing the shock absorber".
4. Disconnect the steering rod from the steering arm with tool SVO 2294, see Fig. 6-19. Loosen the clamp for the brake hoses. Remove the bolt for the stabilizer.

5. Place the jack under the lower wishbone. Slacken the nuts for the ball joints, and knock with the hammer until the ball joints loosen from the steering knuckle. Remove the nuts and lower the jack. Take off the knuckle with the front wheel brake unit and place it on a stand or similar.
6. Lower the jack and remove the spring.
7. Take off the nut and remove the wishbone shaft. Turn the relay arm with the tie rod so that the wishbone shaft is free and thus can be removed. Take off the wishbone.

REPLACING THE BUSHES

Note that there are special bushes intended for radial tyres. When about to replace the bushes, bear in mind if the vehicle is fitted with radial or diagonal tyres.

1. Tension the press tool SVO 2699 in the vice. Remove the washer (1, Fig. 6-14), the rubber ring (2) and the spacing ring (3). Press the bushes out with counterhold SVO 2701. Use drift SVO 2904 for bushes where diagonal tyres are fitted and SVO 2905 for radial tyres. The tools are placed as shown in Fig. 6-27. The bushes are, of course, pressed out in the direction towards their flanges.

2. Press in the bushes with the wishbone and drift (A, Fig. 6-27) facing in the opposite direction.

Note! Both the bushes should be faced with the flange towards the rear in the vehicle, see Fig. 6-14. If it concerns a bush for radial tyres, its recess must also be turned downwards at right angles to the longitudinal direction of the wishbone, see Fig. 6-28.

FITTING

1. Supplement the wishbone with a spacer ring (3, Fig. 6-14), rubber ring (2) and washers (1, 5 and 7). Place the wishbone in position and fit the wishbone shaft (6). Hold the wishbone roughly horizontal and tighten the nut (8) to a torque of 14—18 kpm (100—130 lb.ft.).
2. Fit the spring. Raise the jack and fit the steering knuckle. Tighten the nuts for the ball joints. If the pins rotate, hold them securely with a vice.
3. Fit the shock absorber according to the instructions given in Part 7.
4. Fit the wheel and wheel nuts. Lower the vehicle and tighten the wheel nuts to a torque of 10—14 kpm (70—100 lb.ft.). Fit the hub cap.