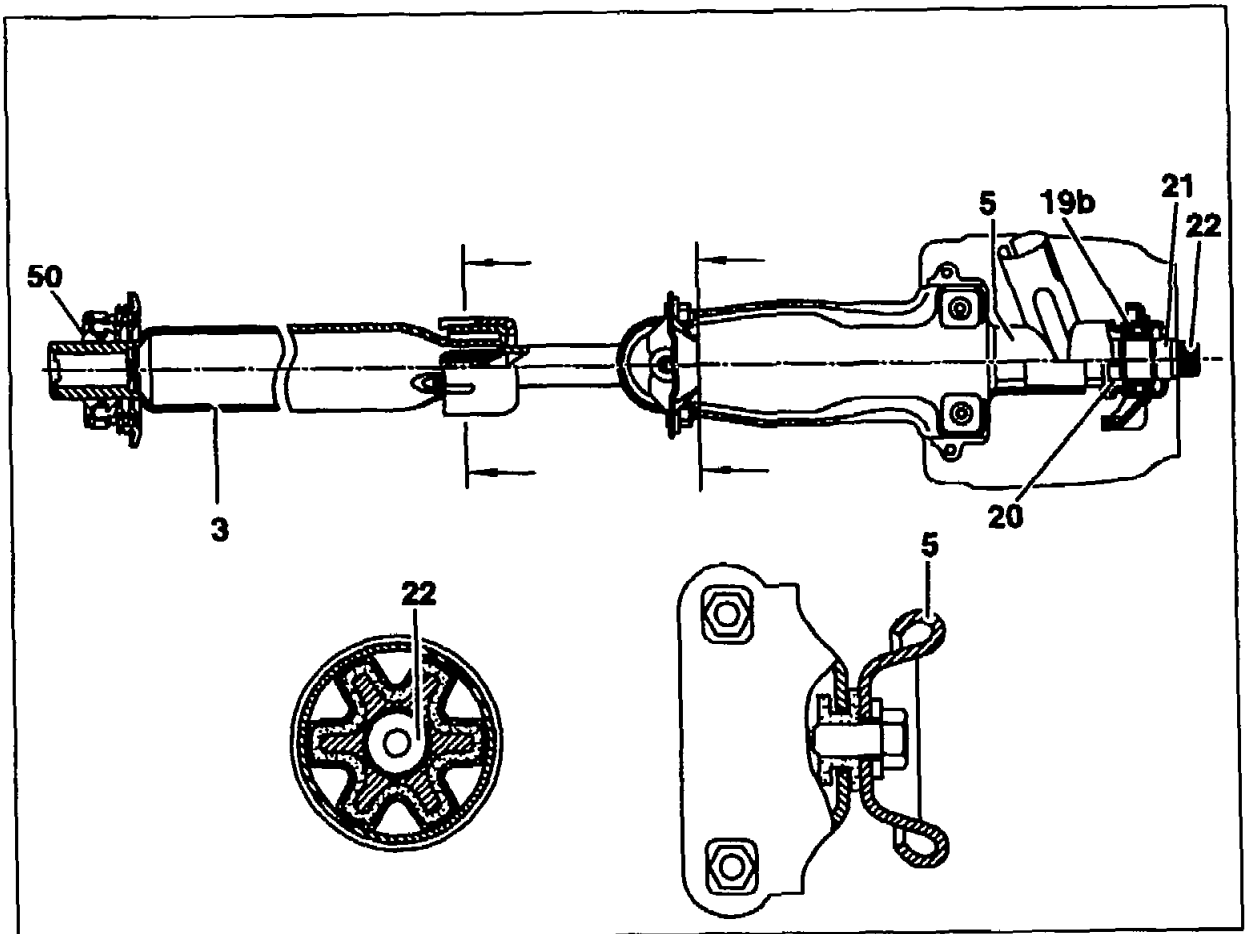


46-7740 Dismantling and assembling jacket tube

Preceding work:
Jacket tube removed and checked (46-7700).

A. Model 201 up to 04/84



P46-5228-57

Locking ring (21)	Remove, install.
Upper steering shaft (22)	Remove downwards, out of the jacket tube (5), push in
Thrust ring (20)	Remove, install.
Lower steering shaft (3)	Mark in relation to upper steering shaft (22) and press off. When installing, observe marking, length "a" = 731 ± 2 mm.
Slide ring (50)	Remove, install and check.

Lubricants

Multipurpose grease

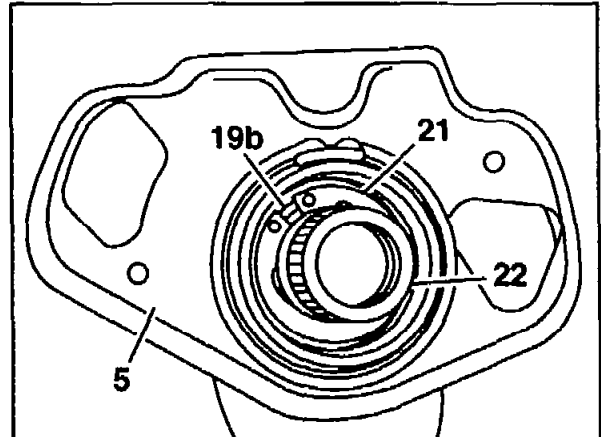
refer to Specifications for Service Products,
sheet 267

Dismantling, assembling

1 Remove, install locking ring (21). Remove upper steering shaft (22) downwards.

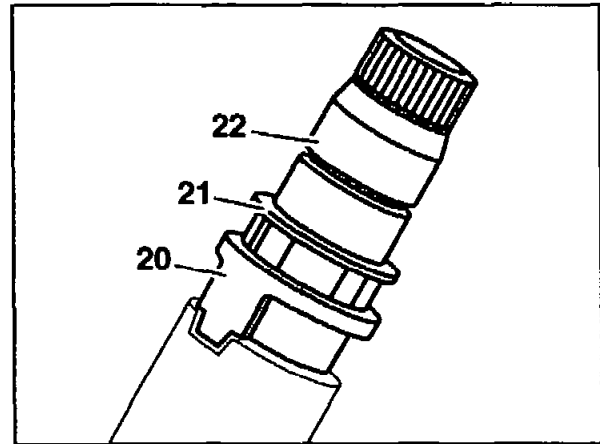
Note

The ball bearing (19b) cannot be removed from the jacket tube (5). If the ball bearing (19b) is damaged, replace jacket tube (5).



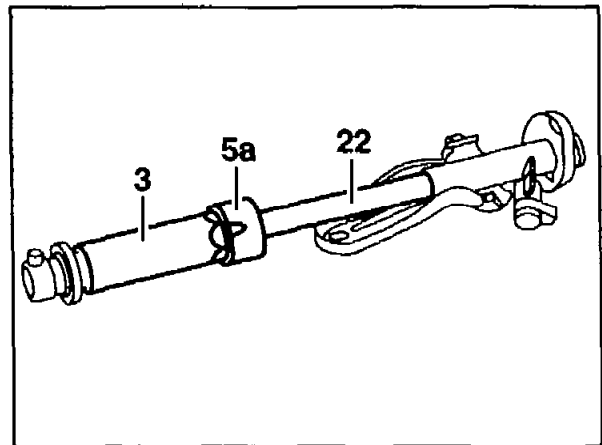
P46-2273-13

2 Remove locking ring (21) and thrust ring (20) from upper steering shaft (22).



P46-5299-13

3 Press the lower steering shaft (3) off the upper steering shaft (22) and remove cover (5a).



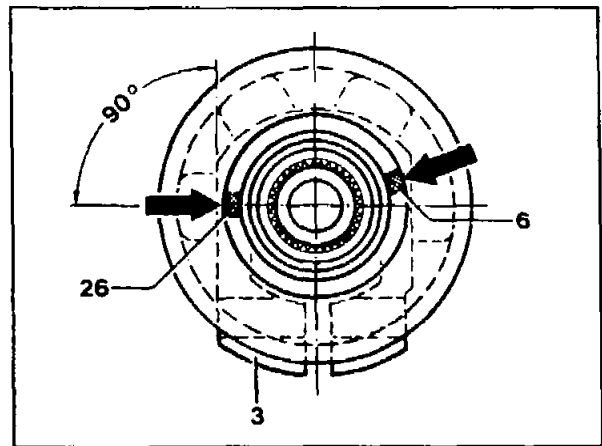
P46-5300-13

Installation note

- Mark position of both steering shafts in relation to each other.

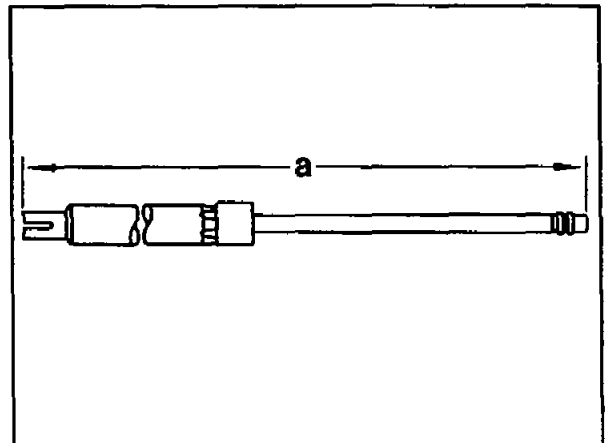
Left-hand steering vehicles: Cam (26) on shift segment to the left. Double section in lower steering shaft (3) at an angle of 90° to the cam of the shift segment. Thread for hexagon socket bolt downwards. Oblong hole in retaining ring of upper steering shaft (22) approx. 17° upwards to the right.

Right-hand steering vehicles: Cam (6) on shift segment to the right. Double section in lower steering shaft (3) at an angle of 90° to the cam of the shift segment. Thread for hexagon socket bolt upwards. Oblong hole in retaining ring of upper steering shaft approx. 17° upwards to the left.



P46-0081-13

- Coat end fitting with multipurpose grease.
- Overall length of both steering shafts
 $a = 731 \pm 2 \text{ mm}$.



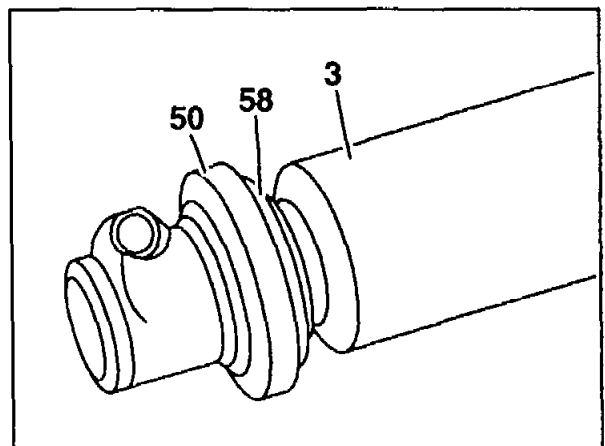
P46-0080-13

- 4 Remove slide ring (50) and sealing ring (58) from lower steering shaft (3).

Installation note

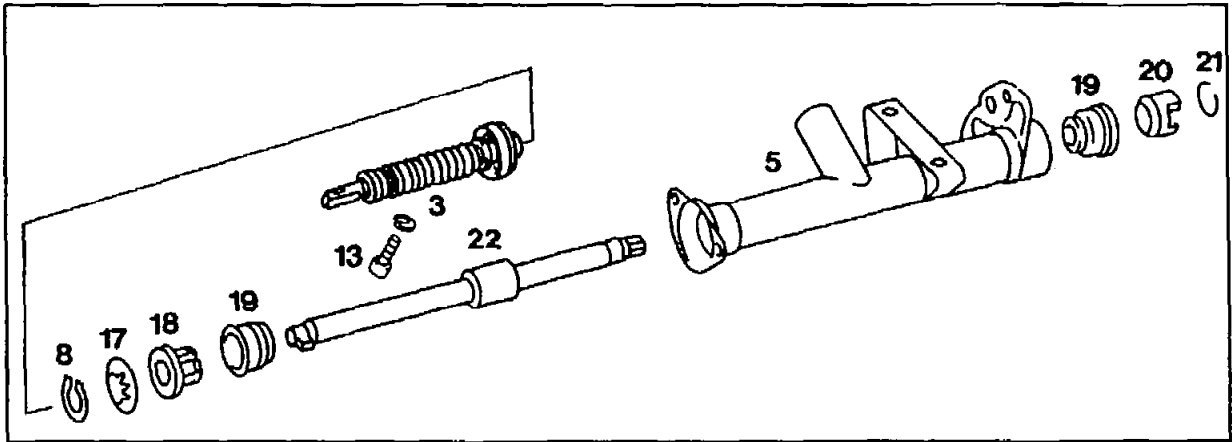
The raised part of the sealing ring (58) must engage in the parting line of the lower steering shaft (3).

Coat sealing ring or slide ring with multipurpose grease.



P46-2520-13

B. Model 124, 201 as of 04.84



P46-0004-53

Hexagon socket bolt (13)	Unscrew, screw on, 25 Nm.
Lower steering shaft (3)	Remove, install and check for concentricity.
Retaining ring (8), disk spring (17) and thrust ring (18)	Remove, install. When installing, press on retaining ring (8) with pressing-on mandrel (072) so that the disk spring (17) is fully preloaded.
Locking ring (21) and thrust ring (20)	Remove, push on.
Ball bearing (19b)	Press off with thrust piece (070) and check. When installing, use assembly sleeve (071).
Upper steering shaft (22)	Remove from jacket tube (5), press out ball bearing (19a) with thrust piece (070).

Lubricants

Multipurpose grease

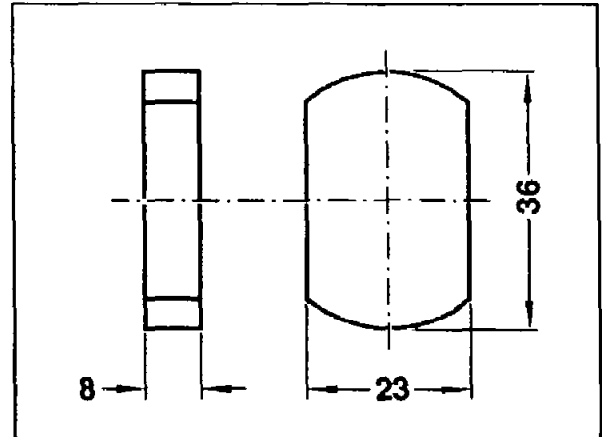
refer to Specifications for Service Products, sheet 267

Lubricating grease

Part no. 001 989 37 51

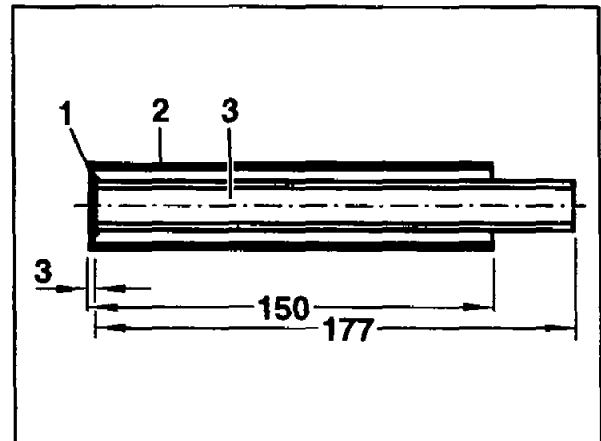
Shop-made tools

Thrust piece (070)



P00-5535-13

Pressing-on mandrel (072)



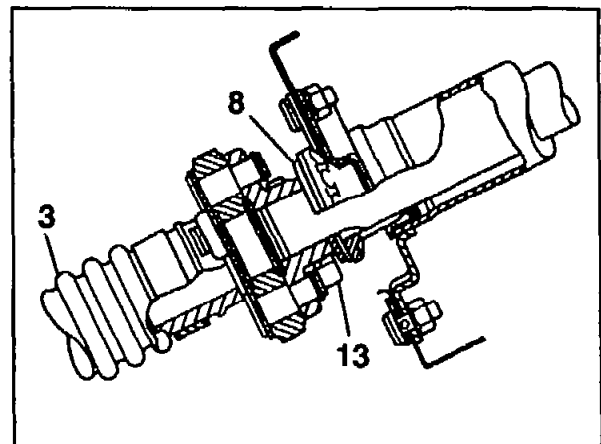
P00-5534-13

Dismantling, assembling

1 Unscrew hexagon socket bolt (13) and remove lower steering shaft (3), check lower steering shaft for concentricity (max. lateral runout 2 mm).

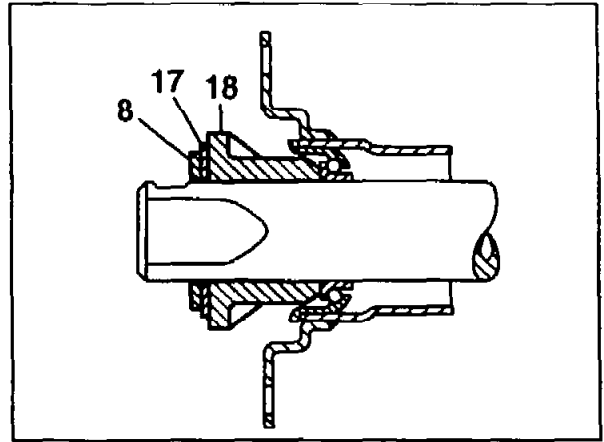
Installation note

Push on lower steering shaft (3) up to the retaining ring (8) of the upper steering shaft. Tightening torque 25 Nm.



P46-0002-13

2 Remove retaining ring (8), disk spring (17) and thrust ring (18) from the upper steering shaft.

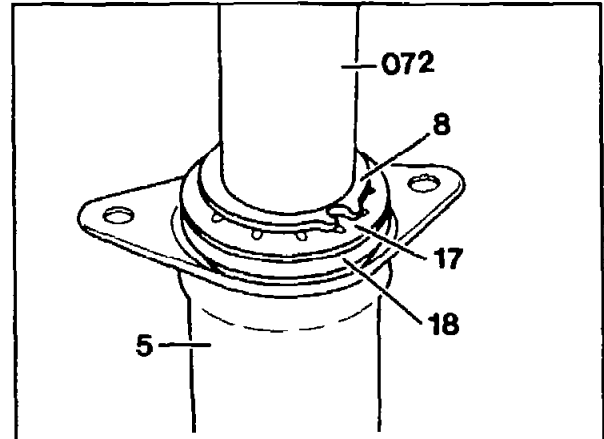


P46-5302-13

Installation note

Mount thrust ring (18) and disk spring (17) and place retaining ring (8) on the upper steering shaft.

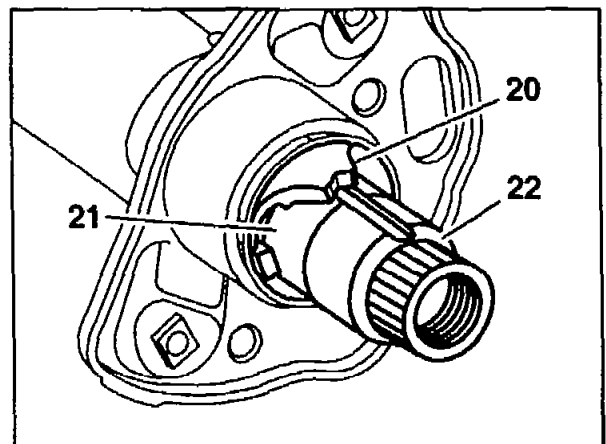
The chamfer on the retaining ring (8) must point towards the disk spring. Using the shop-made pressing-on mandrel (072), press retaining ring (8) onto the upper steering shaft until the disk spring (17) is fully preloaded.



P46-2060-13

3 Push the upper steering shaft (22) upwards slightly. Press the thrust ring (20) down on the upper steering shaft (22) and remove locking ring (21).

4 Remove thrust ring (20).

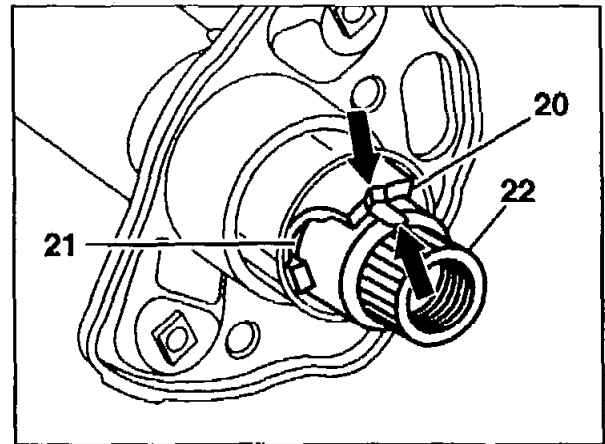


P46-2059-13

Installation note

Push thrust ring (20) together with locking ring (21) onto the upper steering shaft (22). The lug of the thrust ring (20) must engage in the groove of the upper steering shaft (22) (arrow).

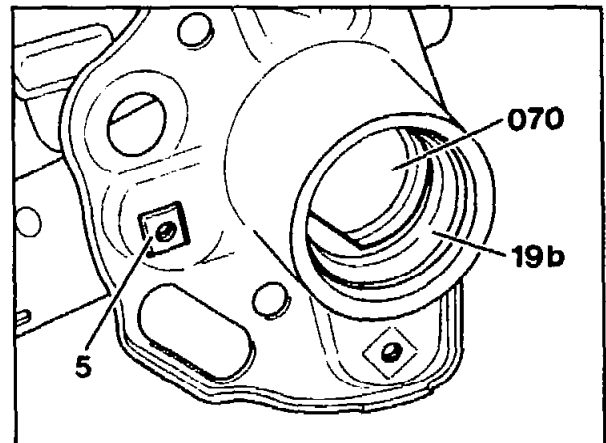
A second locking ring is also installed on model 124 with contact spiral (as of 07/93).



P46-2062-13

5 Insert thrust piece (070) into jacket tube (5) and drive out upper ball bearing (19b) from jacket tube (5) using the upper steering shaft.

6 Remove upper steering shaft from jacket tube (5). Then drive out the lower ball bearing from the jacket tube (5) as well, using the thrust piece (070) and the upper steering shaft .

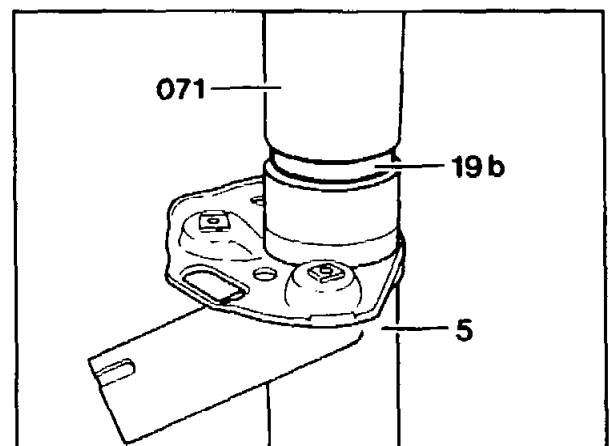


P46-2061-13

Installation note

Check ball bearing for wear and any indentations and replace, if necessary. Press lower ball bearing into jacket tube (5) using the assembly sleeve (071). Install the upper steering shaft upwards in the jacket tube and press in upper ball bearing (19b).

Lubricate ball bearing with multipurpose grease.

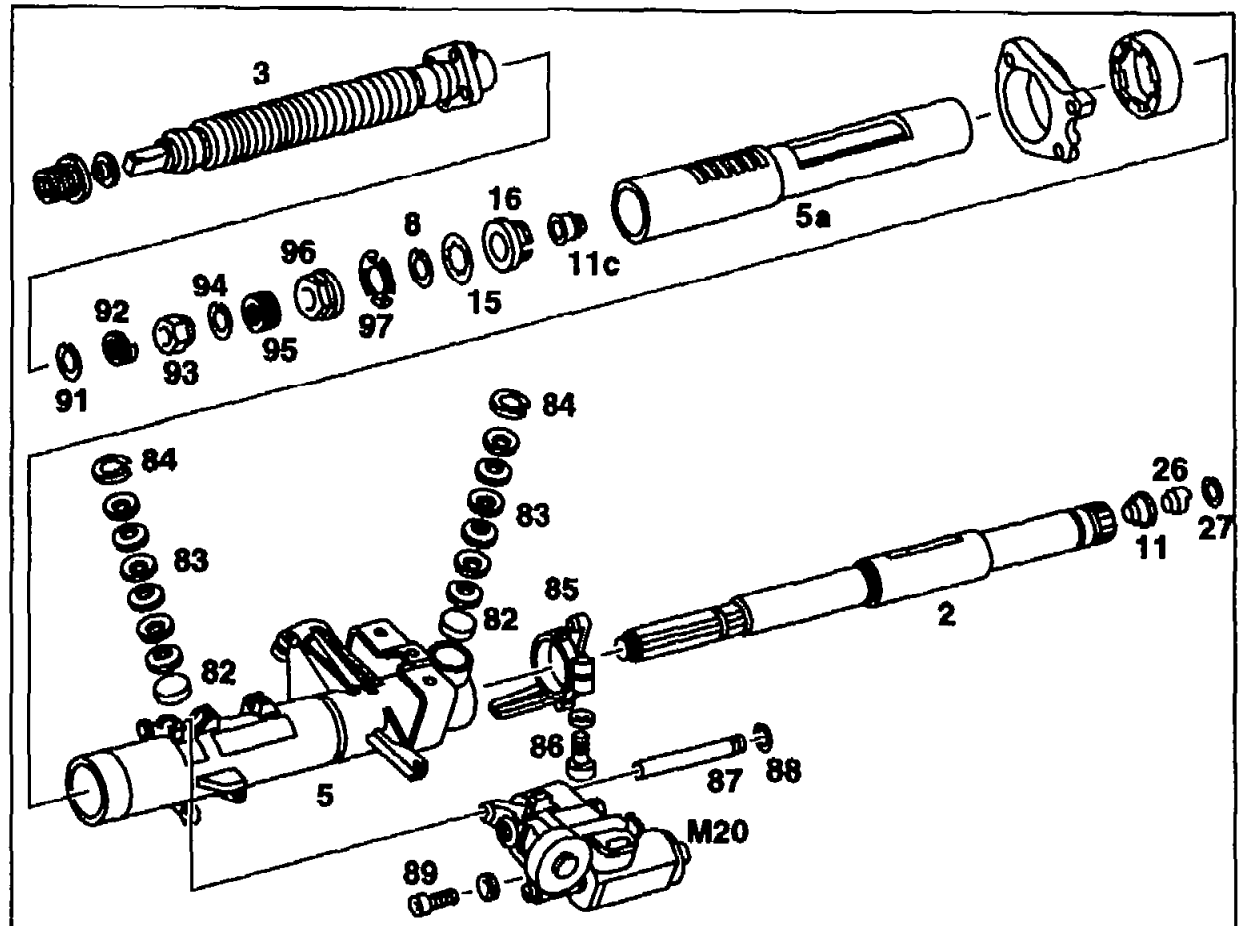


P46-2063-13

C. Electrically adjustable jacket tube


Preceding work:

Jacket tube removed and checked (46-7700).

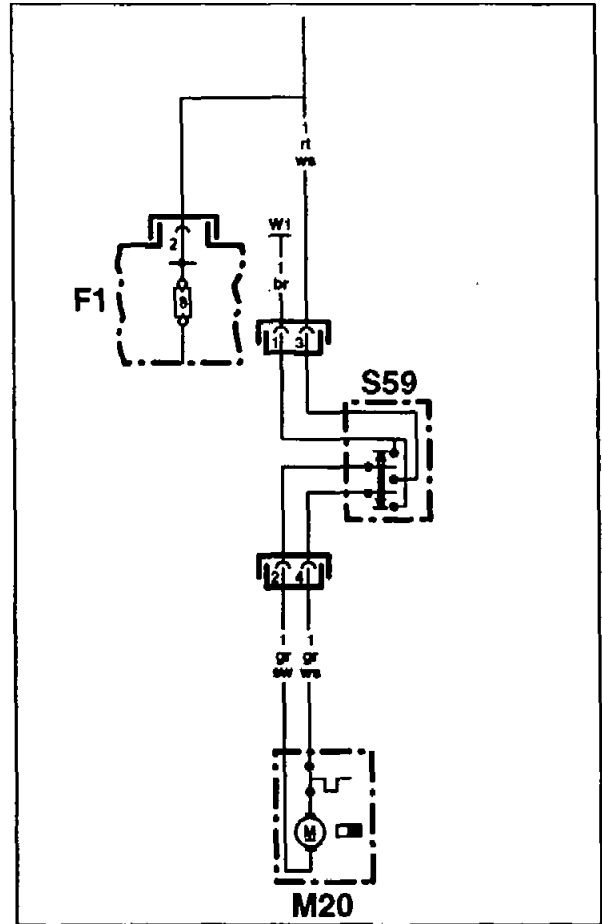


P46-5048-57

- | | |
|--------------------------------|---|
| <p>Locking ring (91)</p> | <p>Remove, from the upper steering shaft (2) and insert, and pull off and push on lower steering shaft (3). Replace locking ring. Observe installed position (number 2).</p> |
| <p>Clamping nut (93)</p> | <p>Unscrew and screw on and press off and install torsion spring (92). Distance between upper edge of flange and clamping nut $2.8 + 1 \text{ mm}$ (number 3).</p> |

Hexagon socket bolts (89)	Unscrew, screw in, 20 Nm.
Adjustable steering column motor (M20)	Tilt. Remove, install locking device (88) at pin (87). Remove motor. Adjust jacket tube play 0.25-0.3 mm by turning the motor (number 5).
Disk springs (83)	Remove, install locking rings (84) and thrust pieces (82). Install thrust pieces with Molykote Longterm 2 Plus. Install disk springs coated alternately. Replace locking rings (84).
Bolt (86)	Loosen, tighten. Remove, install bracket (85). Adjust dimension "a" = 21 mm (number 7).
Pull out, push in inner jacket tube (5a)	By unscrewing, screwing on cap screw, 10 Nm. Before pushing in the inner jacket tube, coat with Molykote Longterm 2 Plus. Observe guide groove in inner jacket tube (5a).
Locking ring (94), clamping nut (96), ring nut (95) and locking ring (97)	remove from steering shaft (2). Screw ring nut in flush with the clamping nut.
Retaining ring (8), disk spring (15) and thrust ring (16)	Remove, push on at upper steering shaft (2). Replace retaining ring and disk spring. Preload disk spring fully (Number 10).
	 The upper steering shaft must not have any axial play in the inner jacket tube and must be able to turn without binding.
Locking ring (27) and thrust ring (26)	Remove, install.
Ball bearing (11, 11c)	Remove, install, check and replace, if necessary. Use thrust piece.

Wiring diagram - electrically adjustable steering column



- F1 Fuse and relay box
- M20 Adjustable steering column motor
- S59 Adjustable steering column switch

P46-5055-17

Lubricants

Molykote Longterm 2 Plus

refer to Specifications for Service Products, sheet 266.2

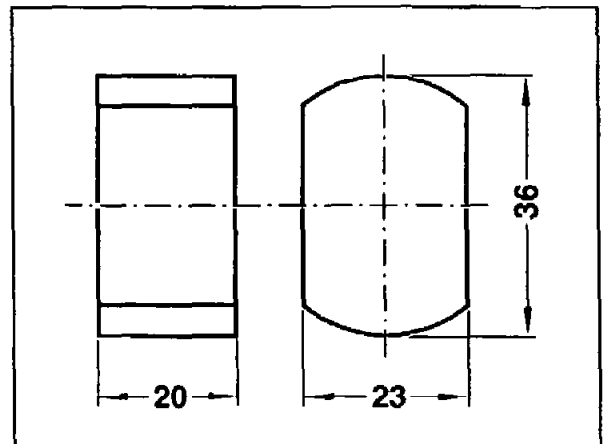
Commercially available tool

Dial gauge A1 DIN 878

e.g. made by Mahr,
D-73734 Esslingen
Order no. 311 000

Shop-made tools

Thrust piece (070)

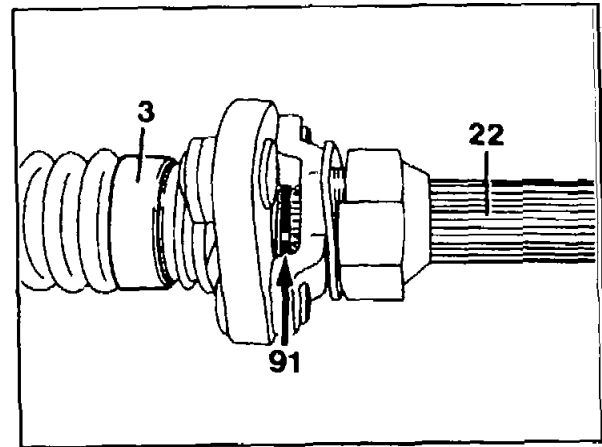


P00-5536-13

Dismantling and assembling

1 Pull lower steering shaft (3) off the splines of the upper steering shaft (2) until it contacts the locking ring (91).

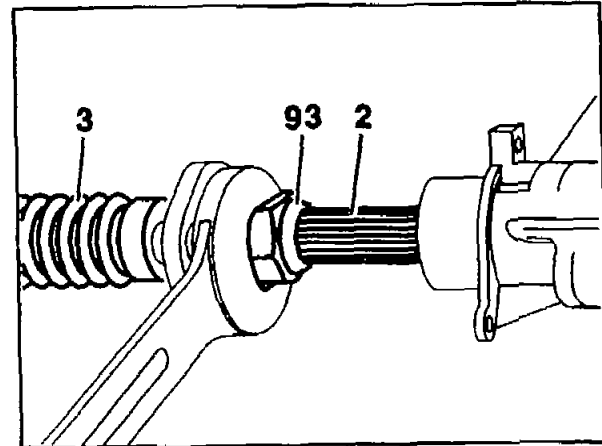
2 Remove locking ring (91) from upper steering shaft (2). Pull lower steering shaft (3) off upper steering shaft (2).



P46-2078-13

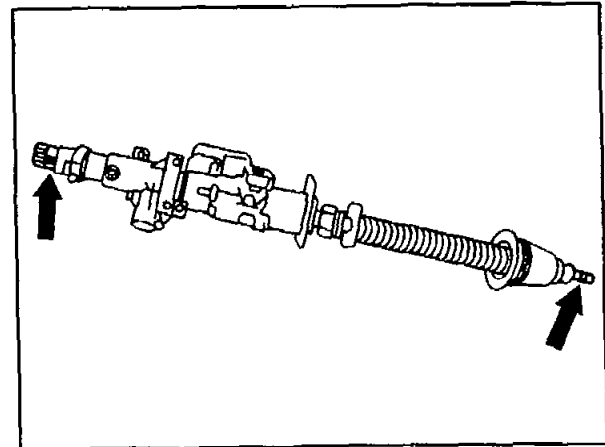
Installation note

Connect lower steering shaft (3) with upper steering shaft (2) by turning the clamping nut (93) anti-clockwise against the spring force of the torsion spring until the upper steering shaft (2) can be pushed on.



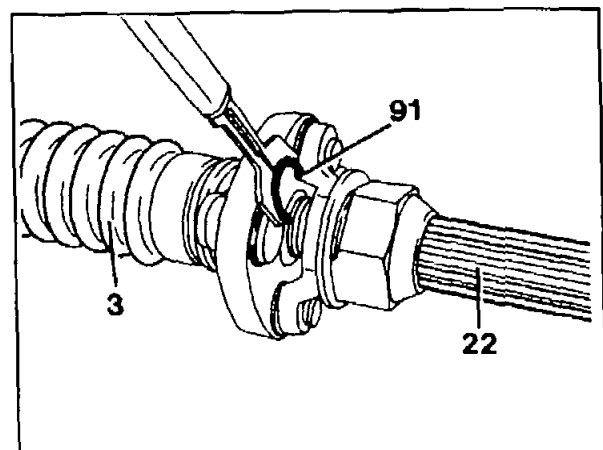
P46-2075-13A

The lug (arrow) on the upper thrust ring (reset cam for the combination switch) and the milled slot (arrow) for the fixing bolt of the steering coupling on the lower steering shaft must be in line.



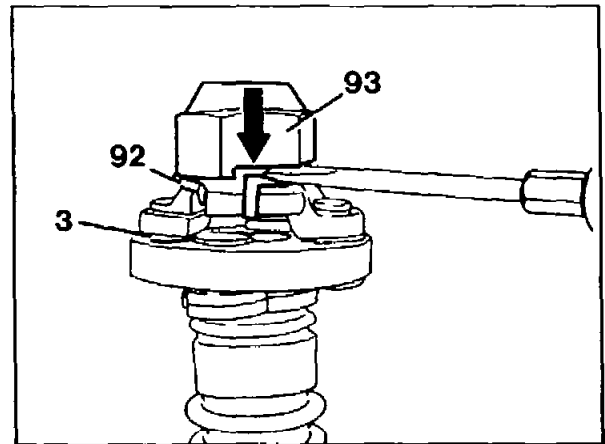
P46-2276-13

Push steering shaft (3) onto the splines of the upper steering shaft (2) so that the locking ring (91) between the flange of the steering coupling and the flexible disk can be installed in the groove of the upper steering shaft (2). Ensure correct seating of locking ring .



P46-2079-13

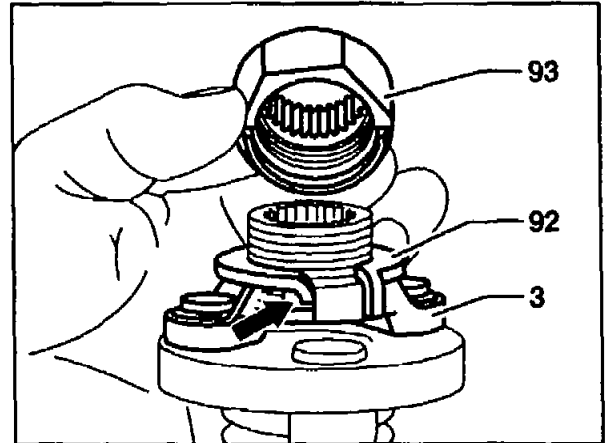
3 Unscrew clamping nut (93) from the flange of the steering coupling while pressing the shank (arrow) of the torsion spring (92) off the clamping nut using a screwdriver.



P46-2077-13

Installation note

Install torsion spring (92) with the angled end of the coil in the flange (arrow). Screw the clamping nut (93) onto the flange until there is a distance of $2.8 + 1$ mm between the upper edge of the flange and the clamping nut.

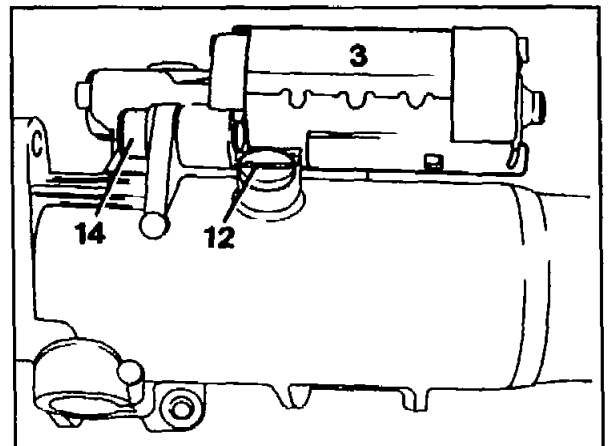


P46-2076-13

4 Unscrew hexagon socket bolt (89), tilt adjustable steering column motor (M20) upwards.

Installation note

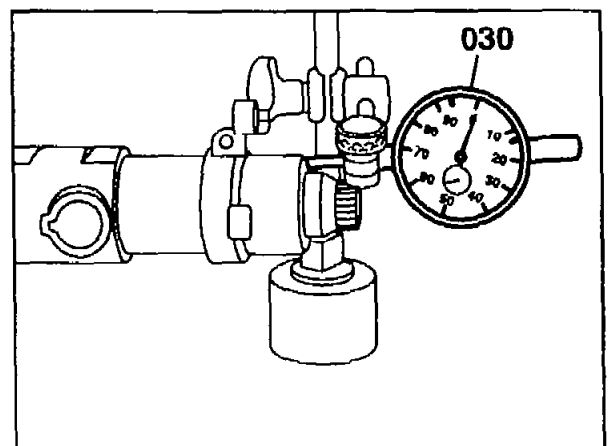
Set an inner jacket tube play of 0.25-0.30 mm by moving the bolt (89) in the oblong hole. Tightening torque 20 Nm.



P46-2480-13

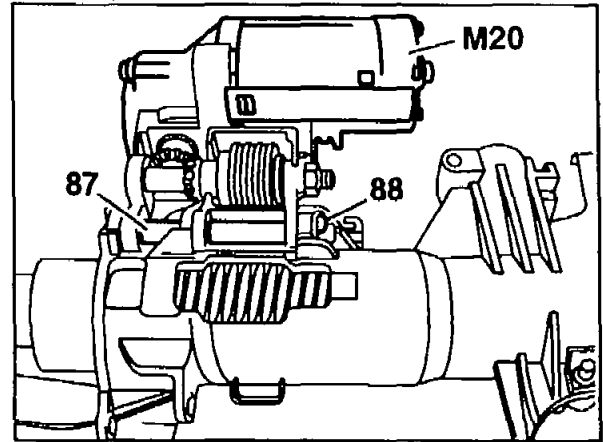
Note

Use dial gauge (030) to measure the jacket tube play.



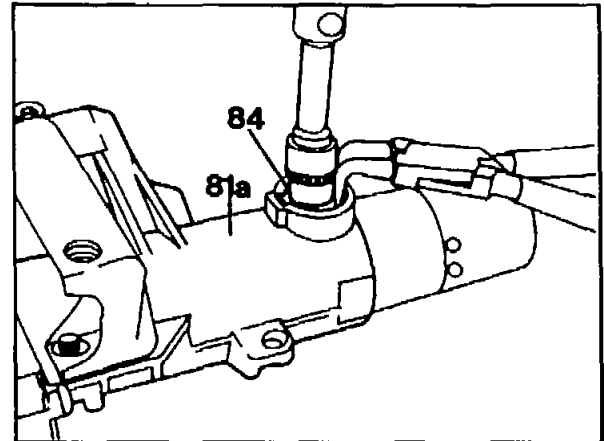
P46-2094-13

5 Remove locking device (88) from pin (87). Remove pin (87) from the jacket tube and remove the adjustable steering column motor (M20).



P46-2569-13

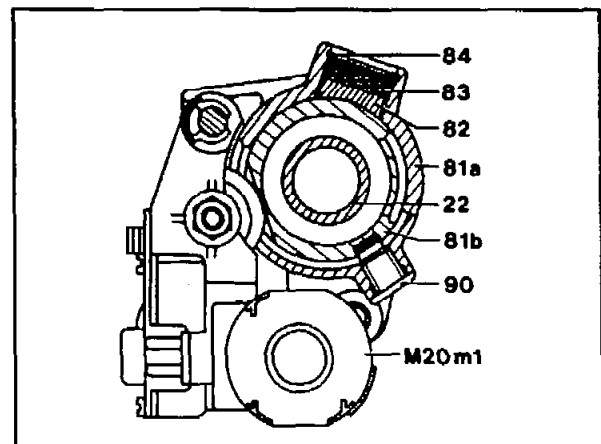
6 Using a hand press, slightly compress the disk springs in the outer jacket tube (5). Remove locking ring (84), disk springs and thrust piece.



P46-2278-13

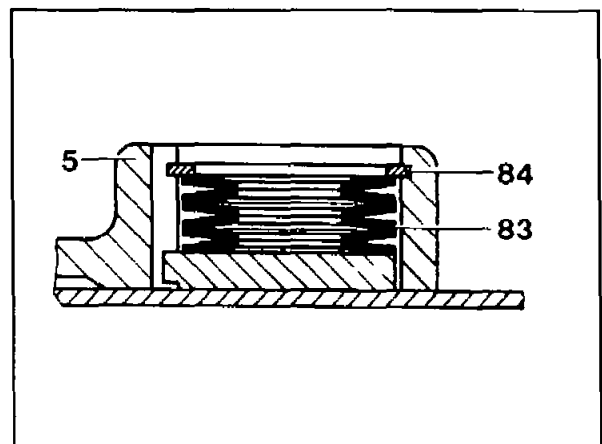
Installation note

- Install thrust pieces (82) into outer jacket tube (5) with "Molykote Longterm 2 Plus".
- The outer jacket tube (5) is equipped with 2 spring packs.



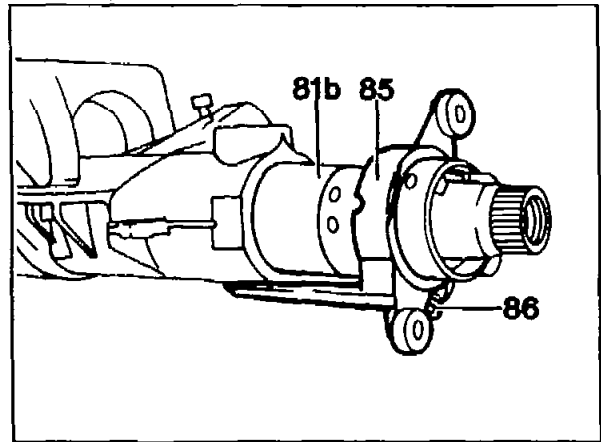
P46-0015-13

- Install disk springs (83) (2 × 6 pieces) coated alternately into the outer jacket tube (5). Replace locking rings (84) and insert after preloading the disk springs (83).



P46-0014-13A

7 Loosen bolt (86) and remove bracket (85) from inner jacket tube (5a).

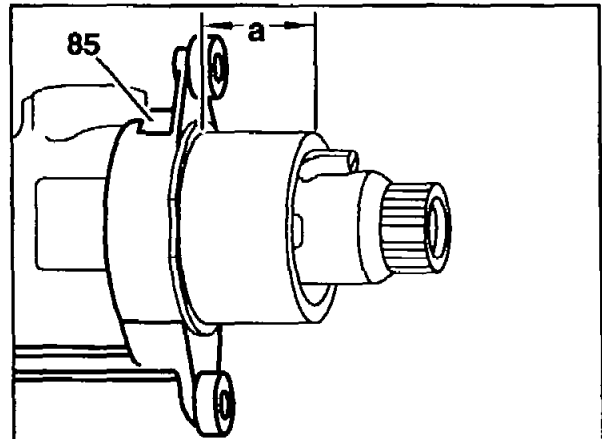


P46-2279-13

Installation note

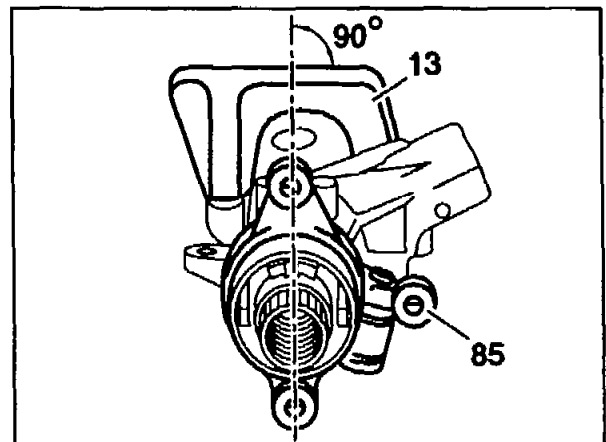
Ensure correct installed position of bracket (85).
Tightening torque 5 Nm.

a) Distance "a" = 21 ± 0.5 mm.



P46-2280-13

b) Turn bracket (85) so that the two fixing holes form an angle of 90° to the sheet metal bracket (13).



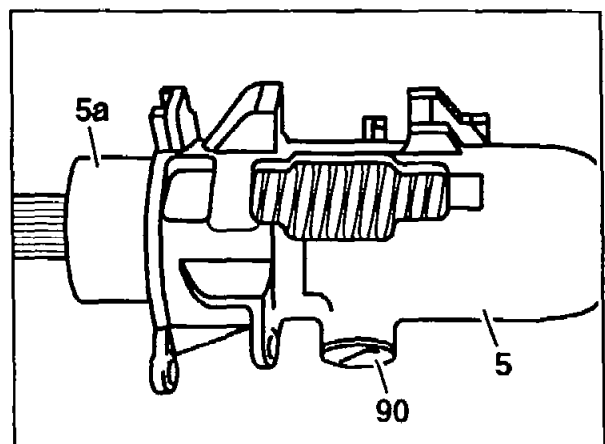
P46-2281-13

8 Unscrew cap screw (90) and withdraw inner jacket tube (5a) downwards out of the outer jacket tube (5).

Installation note

Coat inner jacket tube (5a) with "Molykote Longterm 2 Plus" and push into the outer jacket tube (5) from below.

Tightening torque 10 Nm.

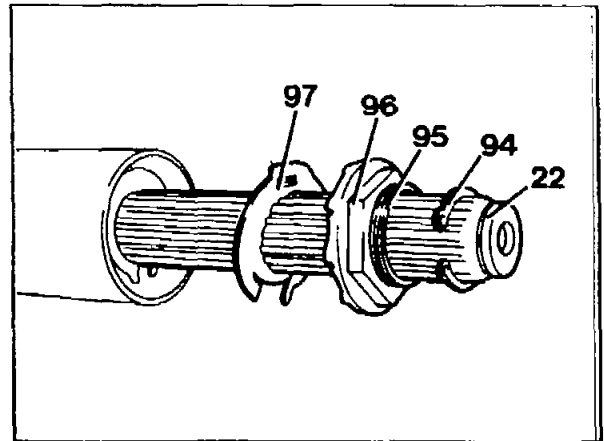


P46-2282-13

9 Remove locking ring (94), clamping nut (96) with ring nut (95) and locking ring (97) from upper steering shaft (2).

Installation note

Mount locking ring (97), push clamping nut (96) together with ring nut (95) onto the upper steering shaft (2). Install locking ring (94). The ring nut (95) must be screwed in flush with the clamping nut (96).

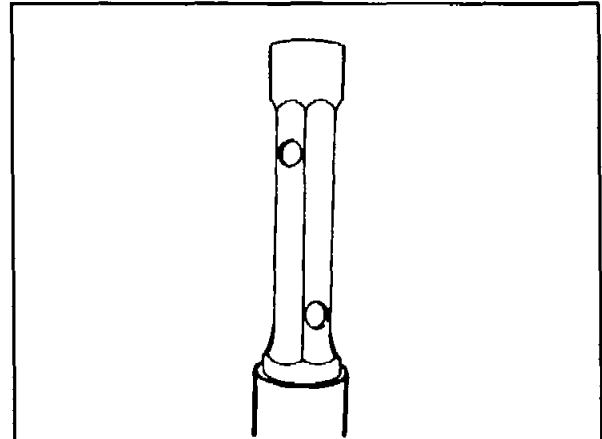


P46-2081-13

Using a socket wrench, tighten the clamping nut slightly by hand.

Note

The clamping nut prevents the retaining ring moving axially.



P46-2083-13A

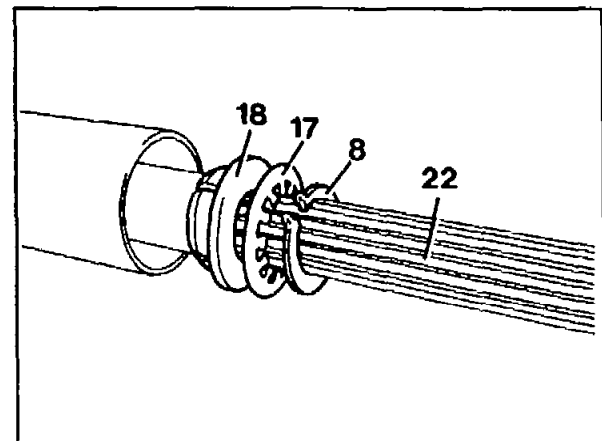
10 Loosen retaining ring (8) using circlip pliers, then remove disk spring (15) and thrust ring (16) from the upper steering shaft (2).



The upper steering shaft must not have any axial play in the inner jacket tube and must be able to turn without binding.

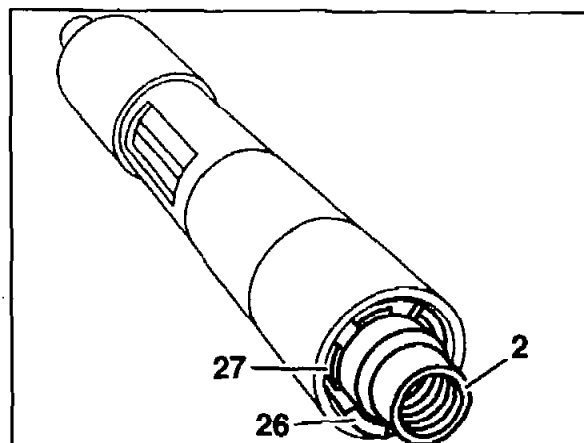
Installation note

Replace retaining ring (8) and disk spring (15). Push thrust ring (16) and disk spring (15) onto upper steering shaft (2). Press retaining ring (8) onto the upper steering shaft with the chamfer pointing towards the disk spring until the disk spring is fully preloaded.



P46-2082-13

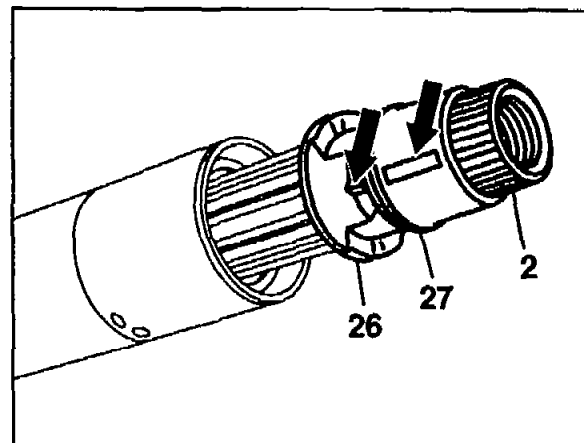
11 Push upper steering shaft (2) upwards and loosen thrust ring (26) from locking ring (27). Remove locking ring (27) and thrust ring (26) in sequence.



P46-2096-13

Installation note

Push thrust ring (26) onto the upper steering shaft (2) and install locking ring (27). Ensure that the lug of the thrust ring (26) engages in the groove (arrows) of the upper steering shaft (2) and the locking ring (27) sits correctly in the groove.

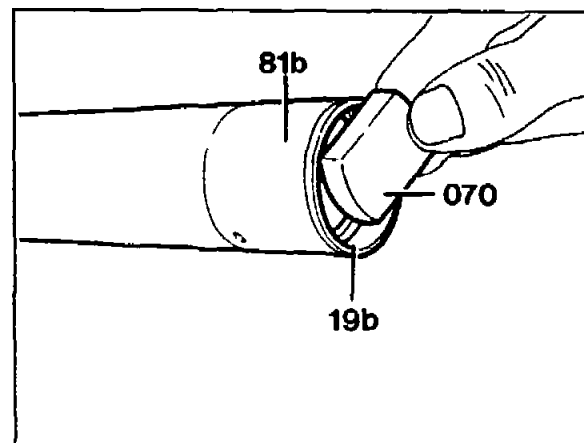


P46-2084-13

12 Insert shop-made thrust piece (070) into the inner jacket tube (5a) and first of all drive out the upper ball bearing (11) from the jacket tube using the steering shaft. Then drive out the lower ball bearing from the jacket tube as well, using the thrust piece.

Installation note

Check ball bearing for re-usability. First press the lower ball bearing into the inner jacket tube, then install the steering shaft and press in the upper ball bearing.



P46-2080-13