

46–412 Removal and installation of powersteering

Data

Part No.	Steering version	Steering worm		Ratio in center position i	Total ratio in center position i
		Threads	Pitch		
114 460 17 01 116 460 08 01 114 460 21 01 ¹⁾ 107 460 17 01 ¹⁾	lefthand steering	right-hand	10.5	13.92	15.73
114 460 18 01 116 460 09 01 114 460 22 01 ¹⁾ 107 460 18 01 ¹⁾	righthand steering	left-hand			

¹⁾ This steering is marked with code No. "1" on steering housing adjacent to closing cover for control valve. (Reaction piston 11 mm or 11.5 mm dia.)

Oil grades/filling capacity and oil level checkup

approved oil or transmission oil refer to Specifications for service products page 236.1, 236.2 refer to Specification for service products page 237

Filling capacity approx. 1.5 liter

Oil level checkup With the oil at operating temperature (approx. 80 °C), the oil level in supply tank should reach up to punched-in mark (approx. 20 mm below edge of tank). With the engine cold and at ambient temperature, oil level 6–8 mm below mark. For filling up, use perfectly clean oil only, since even the smallest particle of dirt may cause trouble in hydraulic system.

Tightening torques	Nm	(kpm)
Locking screws for fastening steering to side member of frame	70–80	(7–8)
Pitman arm on pitman shaft	160–200	(16–20)
Hex socket screws on steering coupling	25	(2.5)
Castle nut to track rod and drag link	35	(3.5)

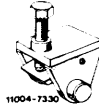
Special tools

Puller for ball joints of track rod on pitman arm, intermediate steering arm and steering knuckle arm



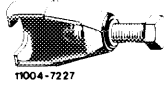
136 589 12 33 00 or
186 589 10 33 00

Puller for ball joints of drag link on pitman arm and intermediate steering arm



111 589 08 33 00

Puller for pitman arm



100 589 04 33 00

Check screw for center position of steering



116 589 06 21 00

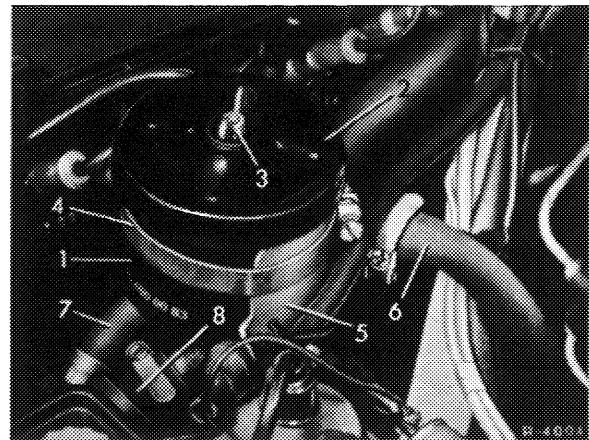
Self-made tool

Assembly pin

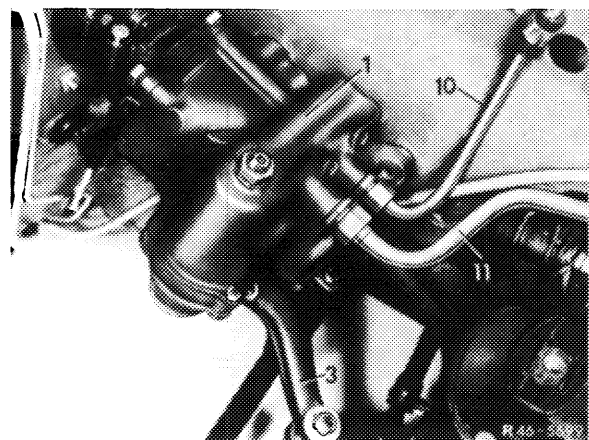
refer to illustration item 20, note

Removal

1 Drain oil from supply tank (1) of powersteering pump with syringe.

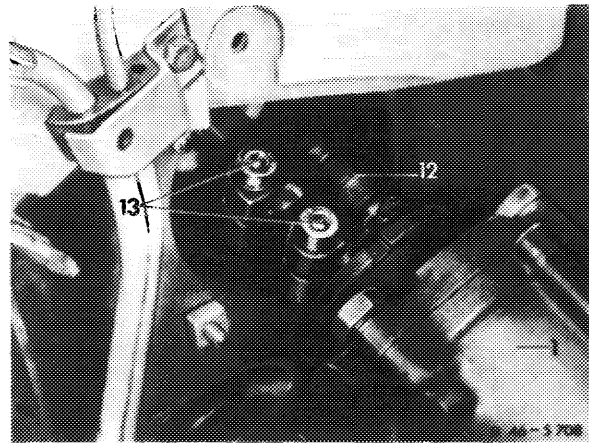


2 Loosen high-pressure expanding hose (10) and connecting pipe for return line (11) on steering, while applying counterhold to connections on steering.



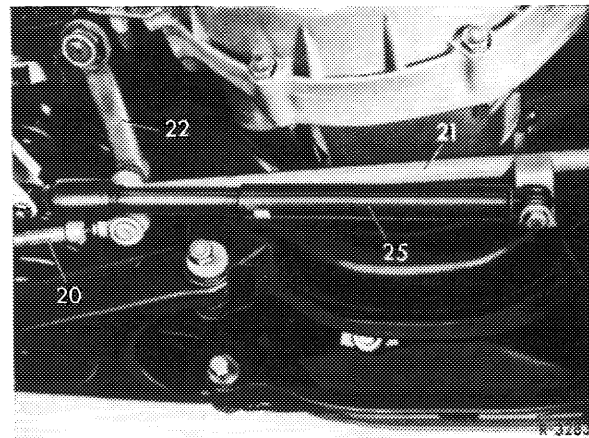
3 Close oil hoses and connections on steering with blind plugs.

4 Unscrew lower hex socket screw (13) from steering coupling (12).

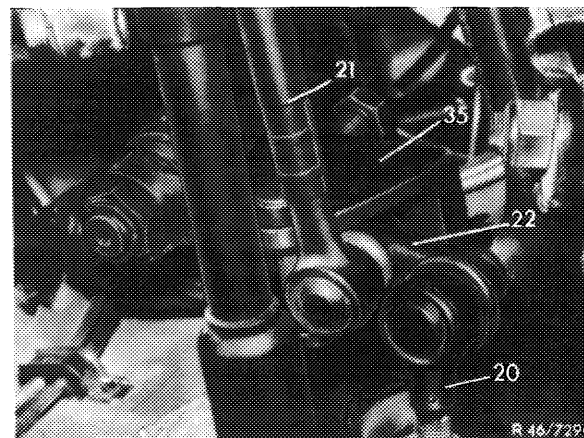


5 Uncotter castle nut of drag link and track rod and unscrew castle nut.

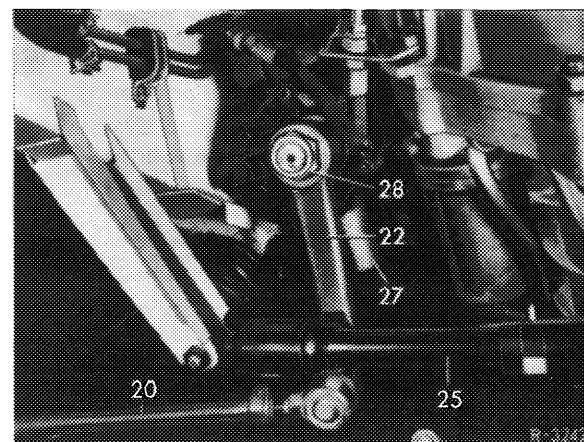
Note: When the steering is exchanged and the pitman arm is not replaced, the drag link and the track rod need not be released on steering arm.



6 Force drag link and track rod from pitman arm by means of puller.

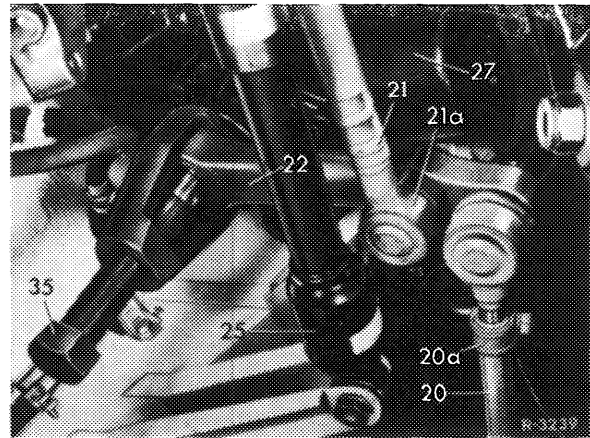


7 Unscrew self-locking hex nut (28) from pitman shaft.



8 Pull pitman arm (22) from pitman shaft by means of puller (35).

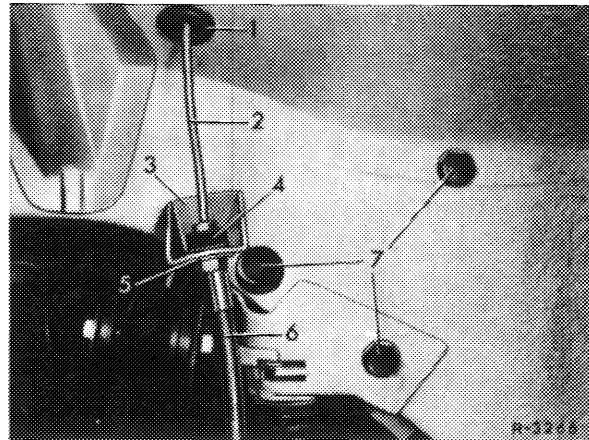
9 Remove steering shaft (46-630, item 2 to 5). However, pull steering shaft in upward direction only until steering coupling no longer engages in steering worm.



10 Unscrew locking screws (7) attaching steering to side member of frame. Then remove steering in downward direction.

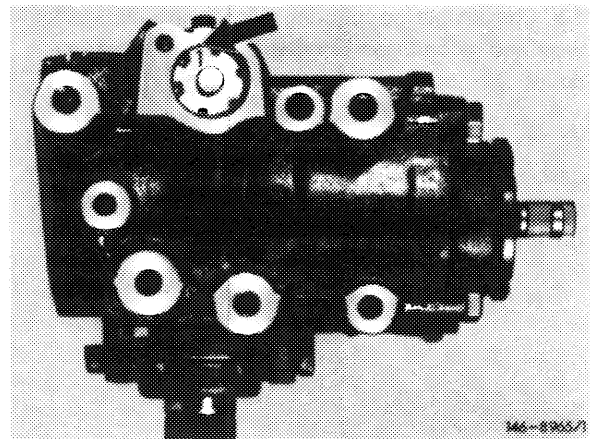
11 Upon removal of steering, drain oil from steering housing while turning steering worm completely to the left and right.

12 Remove steering coupling from steering spindle.



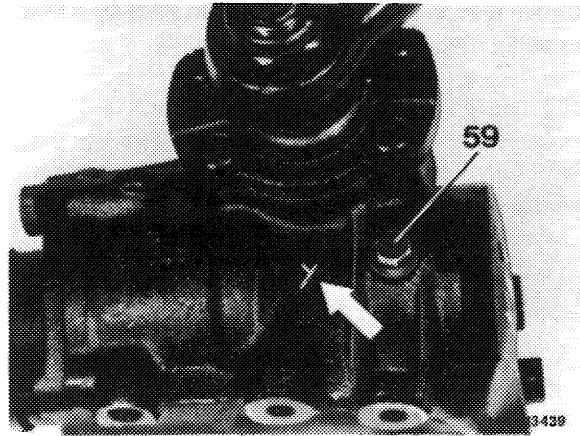
Installation

Note: Following repairs as a result of an accident, when one of the side members or the front end have been straightened or replaced, or when the jacket tube has been removed, check alignment between steering shaft and steering worm. For this purpose, install steering and complete jacket tube **without steering coupling**. A vertical and lateral offset of 2 mm between steering shaft and steering worm is permitted. Alignment may be corrected by displacing jacket tube at cross member or cover plate on front end. Attention should be paid to perfect location of steering lock cap in cutout of instrument panel.

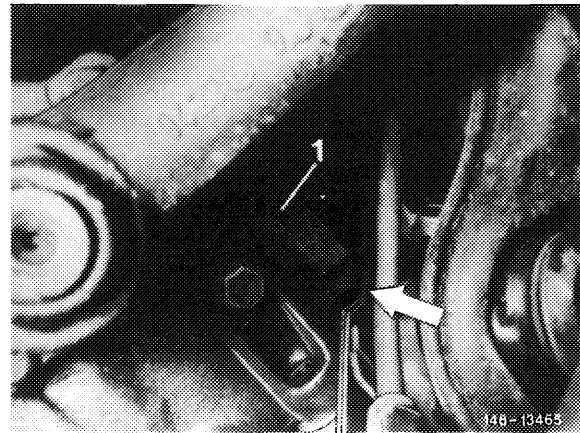


When a new steering is installed, make sure that only a type of steering may be installed on which the code number "1" (arrow) is marked on closing cover for control valve.

If an exchange steering gear or a new steering gear is installed and identified on steering gear housing by means of a "Y" (arrow), proceed as follows:

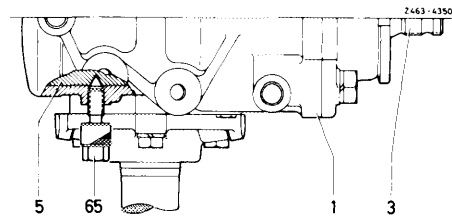


The steering gear housing should not rest against, cutout of frame side member (arrow). If required refinish cutout.



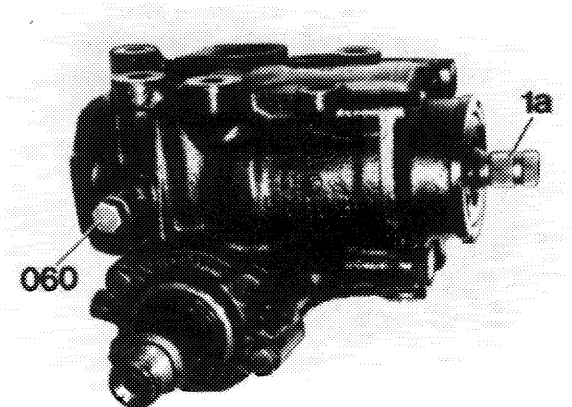
Steering gear housings which are **not** identified, or identified by means of two "YY", cannot rest against frame side member.

13 Check steering coupling prior to installation for wear and recondition or replace, then slip steering coupling on steering shaft.



14 Turn steering to center position. For this purpose, unscrew closing plug from steering gear housing, turn steering worm (3) until center point in power piston (5) is accurately under threaded bore.

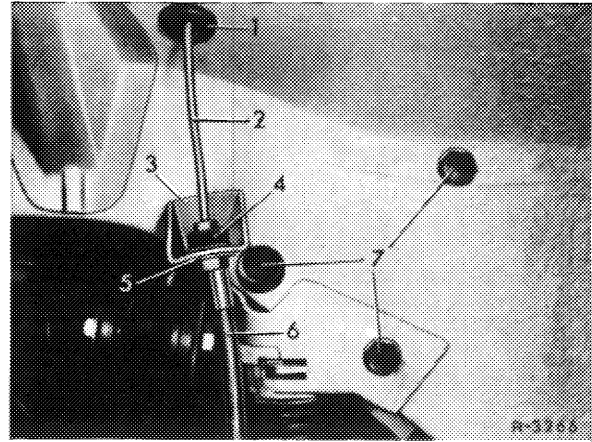
15 Screw center position check screw (060) into steering gear housing and locate power piston.



16 Attach steering to side member of frame with three new locking screws (7). Tightening torque 70–80 Nm (7–8 kpm).

Attention!

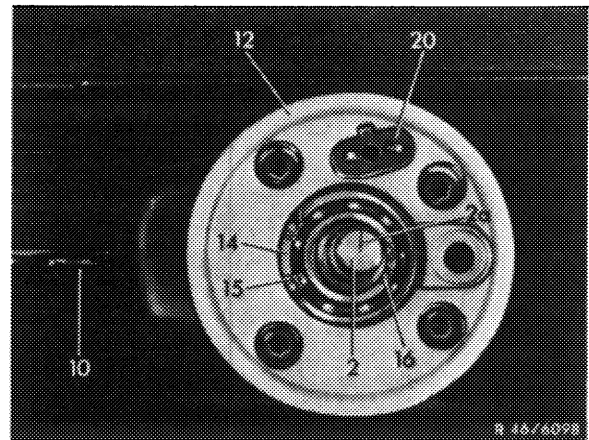
Be sure to use new locking screws each time.



17 Turn steering shaft until return cam for combination switch is in center of cutout in jacket tube and mark (2a) on steering shaft points upwards. Then introduce steering coupling into splining of steering worm.

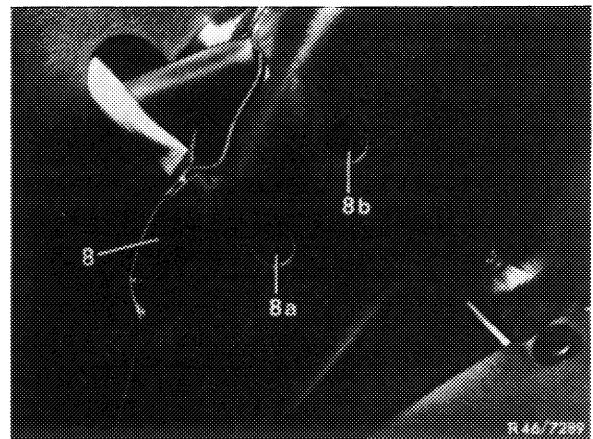
18 Attach bearing body (12) to jacket tube. Install combination switch (10).

19 Install steering wheel (46–610).



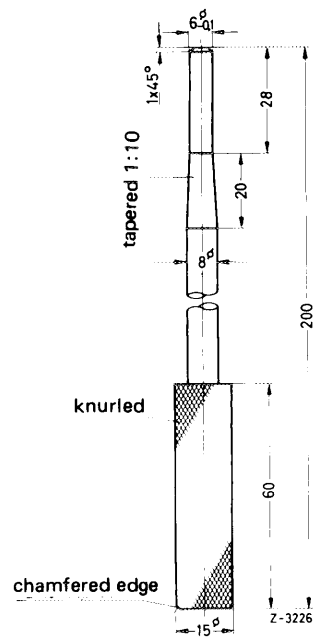
20 Check longitudinal adjustment of steering shaft, through bore in jacket tube (5). For this purpose, insert assembly pin (25) into check bore of steering shaft.

Note: During installation, the steering shaft should not be axially displaced in relation to steering coupling.



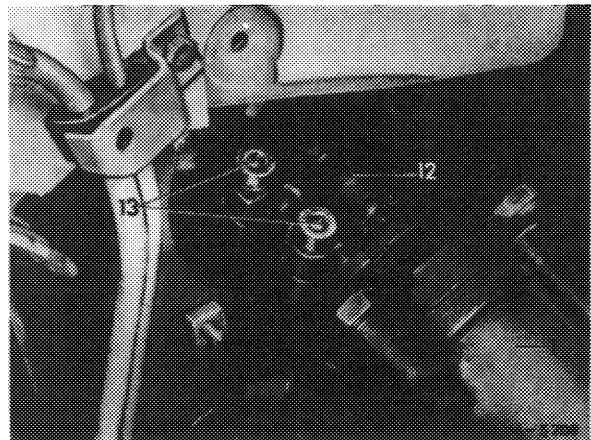
- 8 a = Check bore manual steering L 1 Z and power steering LS 75
- 8 b = Check bore power steering LS 90

Note: The assembly pin is self-made according to dimension shown in illustration.

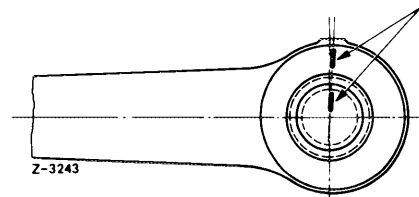


21 Unscrew center position check screw, screw closing plug into steering gear housing while using a new copper sealing ring. Remove assembly pin from steering shaft.

22 Screw hex. socket screws (13) into flange of steering coupling (12) and tighten. Tightening torque 25 Nm (2.5 kpm) reference value.



23 Slide pitman arm on splining of pitman shaft, while paying attention to markings (arrow) on lever and on pitman shaft.



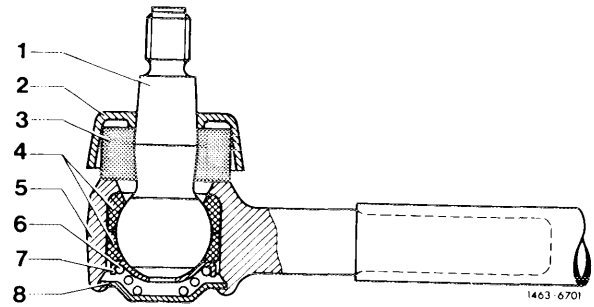
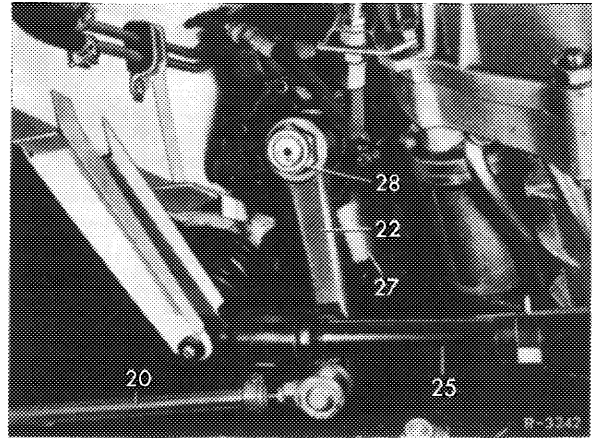
24 Attach pitman arm with a new self-locking hex. nut (28). Tighten hex. nut to 160–200 Nm (16–20 kpm).

Attention!

Be sure to replace self-locking hex. nut on principle.

25 Check rubber sleeve on joint of track rod (20). If the sleeve is damaged, check joint for wear and replace, if required (46–540). Attach track rod to pitman arm. Tightening torque of castle nut 35 Nm (3.5 kpm) reference value. Cotter castle nut.

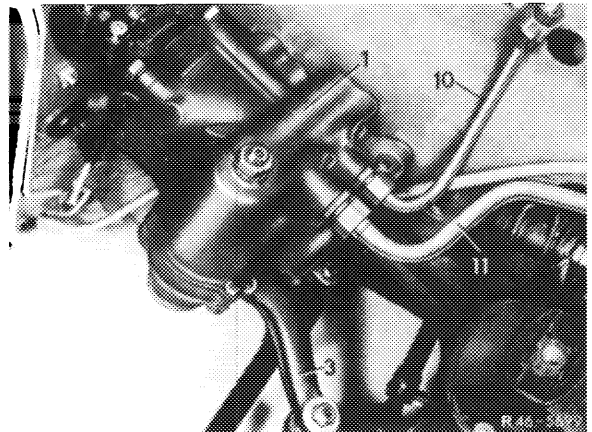
26 Place sealing ring (3) and plastic cover (1) on ball pin of drag link and attach drag link to pitman arm. Tightening torque of castle nut 35 Nm (3.5 kpm) reference value. Cotter castle nut.



27 Remove blind plug. Connect high pressure expanding hose and connecting pipe for return flow hose.

Attention!

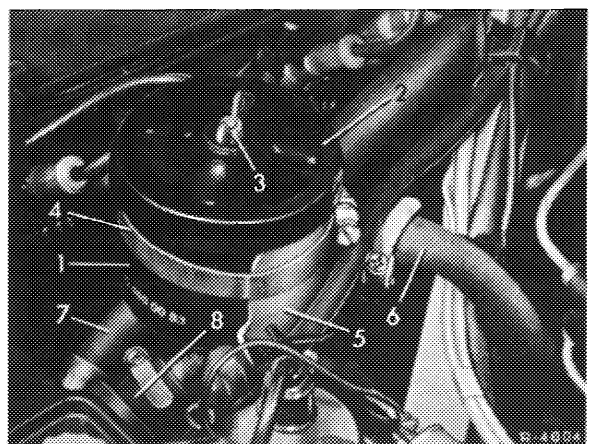
Make sure of perfect installation of hoses. Even minor chafing marks may quickly result in oil losses and subsequent failure of hydraulic support.



28 Fill supply tank of high pressure oil pump with specified oil grade (refer to specifications for service products).

29 Run engine and turn steering several times to the left and right while adding oil.

Note: The steering system is self-venting.



30 Turn steering completely to the left and right while checking whether steering knuckle arm (8) rests each time against stop (16) of lower control arm.

Note: Steering lock should terminate at steering knuckle arm. If not, the causes may be a wrongly mounted pitman arm or one-sided toe-in. It is therefore important to set the track from center position of steering in such a manner that the toe-in is uniformly distributed to the lefthand and righthand wheel.

31 Check wheel adjusting values on front axle (40.1–320).

