

46-310 Removal and installation of manual steering

Data

Part No.	Steering version	Steering worm		Ratio in center position i	Total ratio in center position i	Remarks
		Threads	Gradient			
115 460 19 01 LL	righthand	9	19.57	22.7	1st version pitman arm required: 115 463 0701 LL 115 463 0801 RL	
115 460 20 01 RL	lefthand					
115 460 21 01 LL	righthand	10	19.8	22.77	2nd version pitman arm required: 115 463 12 01 LL 115 463 13 01 RL	
115 460 22 01 RL	lefthand					

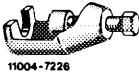

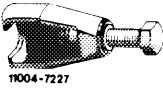

Oil grade/filling capacity

Transmission oil	refer to Specifications for service products page 235	350 cc
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Tightening torques

	Nm	(kpm)
Locking screw for attaching steering to side member of frame	70-80	(7-8)
Pitman arm on pitman shaft	140-180	(14-18)
Hex-socket screw to 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		115 589 10 23 00

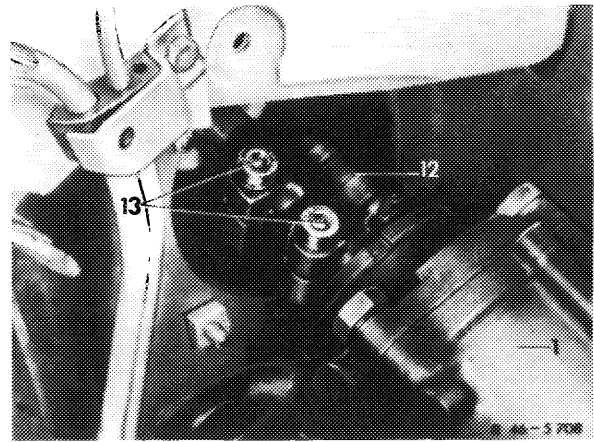
Self-made tool

Assembly pin

refer to illustration
item 14, note

Removal

1 Screw out hex socket screw on upper flange of steering coupling.

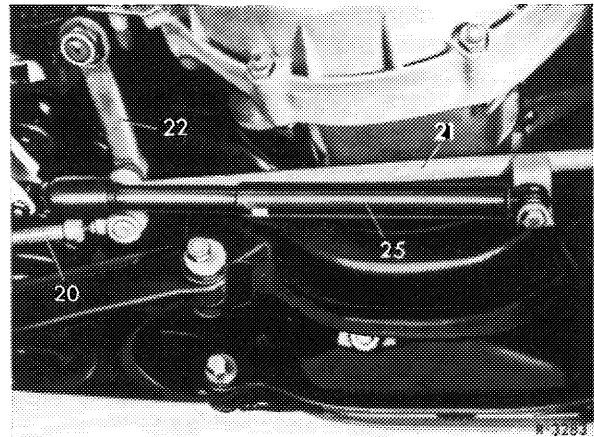


2 Uncotter castle nut of drag link and track rod and unscrew castle nut.

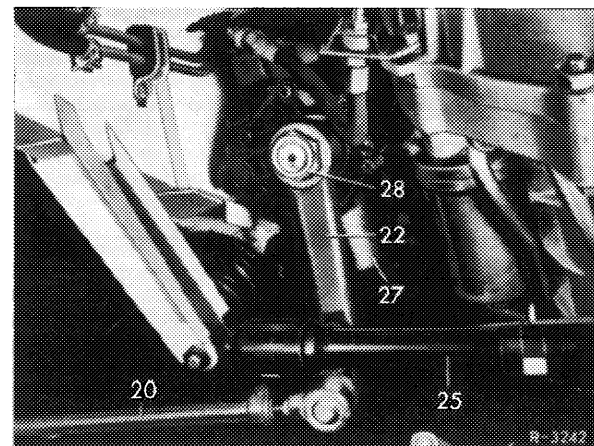
Note: If steering is exchanged without removing pitman arm, drag link and track rod need not be released on steering arm.

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

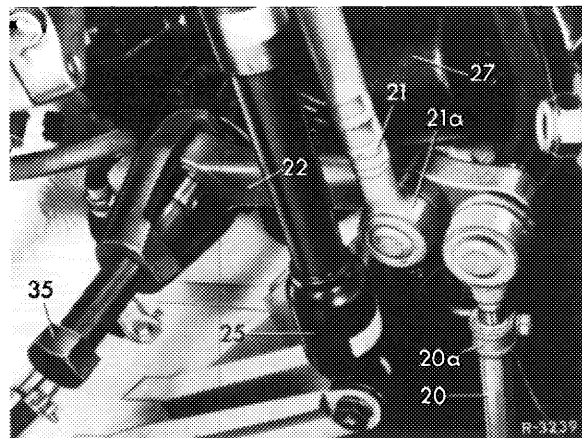
4 Loosen steering shock absorber on holder of frame body.



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

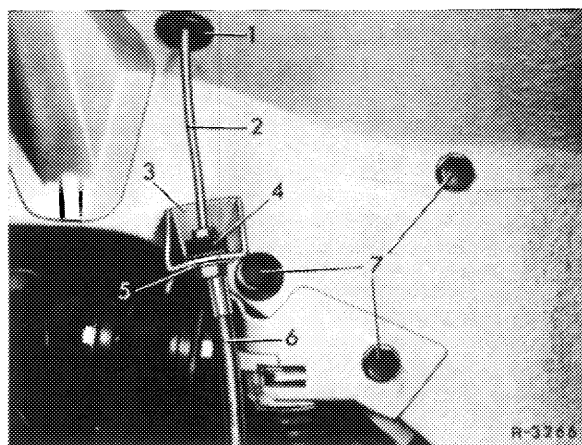


6 Pull pitman arm from pitman shaft by means of puller (35).



7 Unscrew the three locking screws (7) for steering on side member. Then force steering from steering coupling and remove in downward direction.

8 Check steering coupling, remove and repair coupling, or renew, if required.



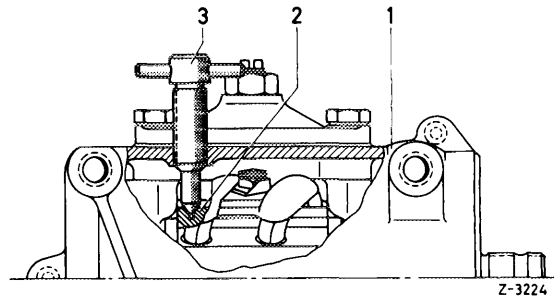
Installation

Note: a) 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.

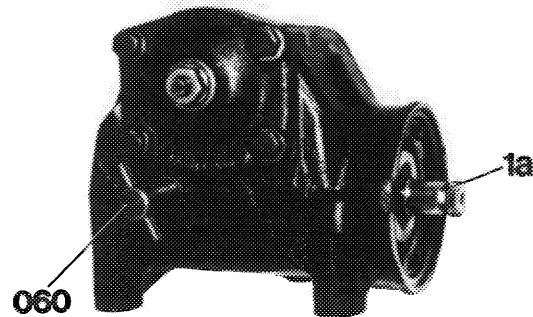
b) When a new steering is installed, make sure that steering 2nd version is supplied together with pitman arm only.

9 Unscrew closing plug from housing cover, check oil level and fill specified oil into steering, if required.

10 Turn steering into center position. For this purpose, turn steering worm until center point in steering nut (2) is accurately underneath threaded bore in housing cover.

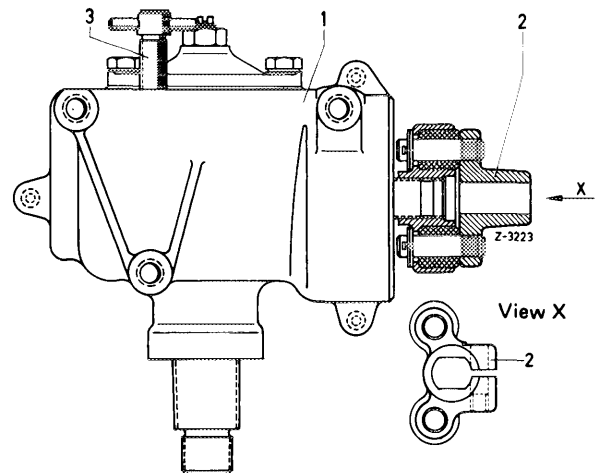


11 Screw center position-check screw (060) into housing cover and locate steering nut.



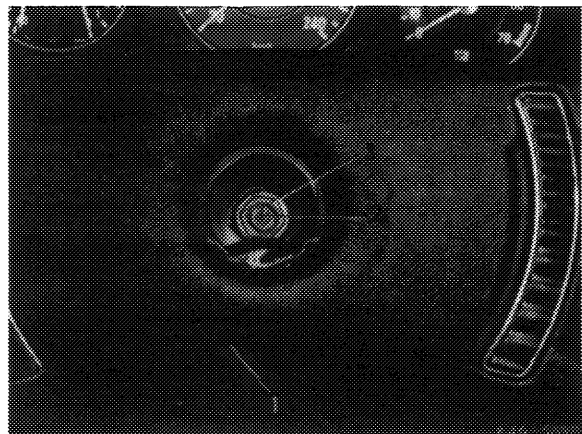
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12 Attach steering coupling (2) to steering worm in such a manner that with the steering in vertical position the flats in steering coupling are exactly horizontal.



13 Turn steering shaft to center position. If steering wheel has not been removed, turn steering wheel until spokes are accurately horizontal. To check, remove company symbol to see whether notch on steering shaft points upwards.

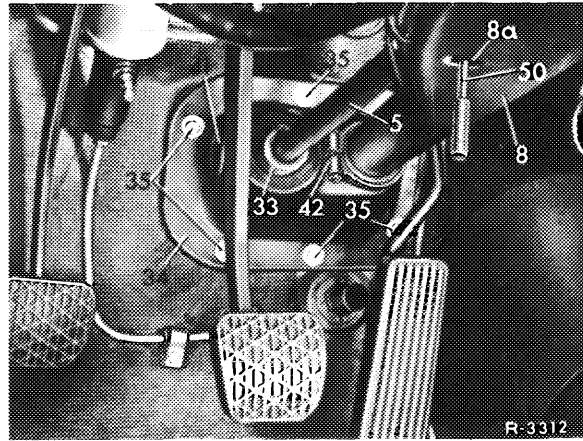
With steering wheel having been removed, make sure that restoring cam for turn-signal switch (blinker switch) is located on steering shaft in center of cutout of jacket tube.



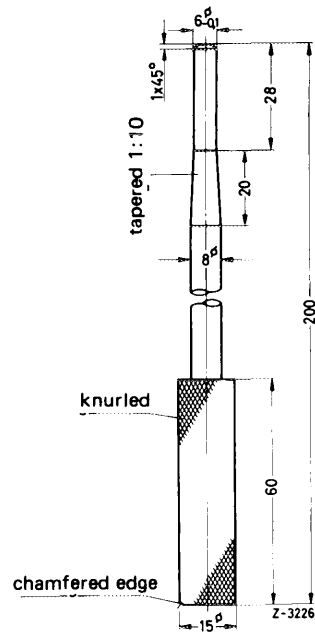
14 Tighten steering worm (5) in jacket tube (8) through check bore (8a) by means of assembly pin.

Attention!

The steering shaft must be held in place with assembly pin, since otherwise the shaft may be displaced axially when installing the steering.



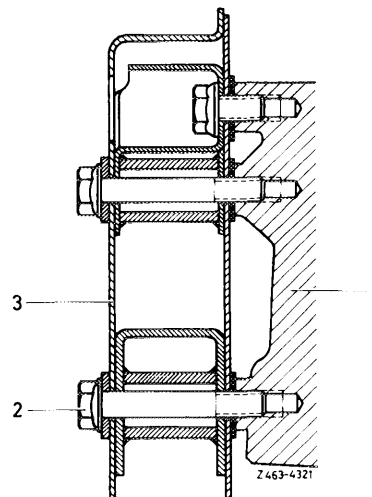
Note: Make assembly pin yourself according to specified dimensions.



15 Install steering from below, attach on side member with new locking screws (2) and tighten to 70–80 Nm (7–8 kpm).

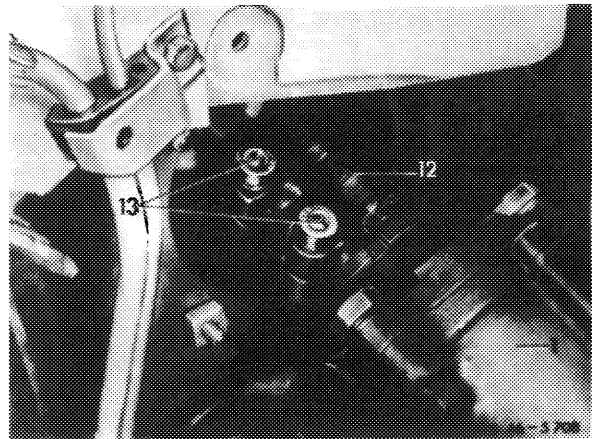
Attention!

Be sure to replace locking screws, on principle.

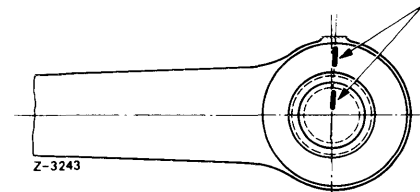


16 Unscrew center position-check screw, screw closing screw into steering housing. Remove assembly pin (50) from steering shaft.

Screw hex socket screw into upper flange of steering coupling and tighten. Tightening torque 25 Nm (2.5 kpm) – reference value.



17 Slide pitman arm on splining of pitman shaft, watching out for marks (arrow) on holder and pitman shaft.

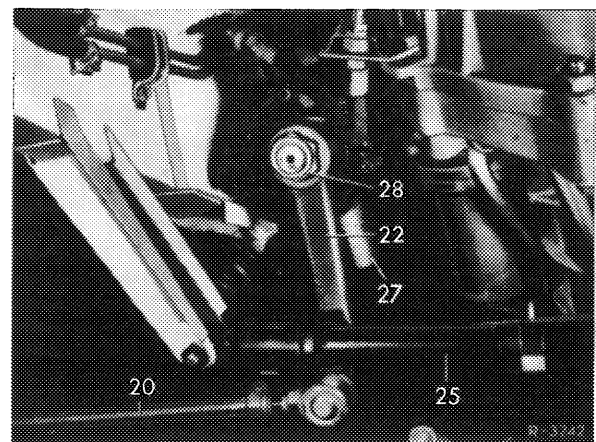


18 Fasten pitman arm with a new self-locking hex nut (28). Tighten hex nut to 140–180 Nm (14–18 kpm).

Attention!

Be sure to renew self-locking nut, in principle.

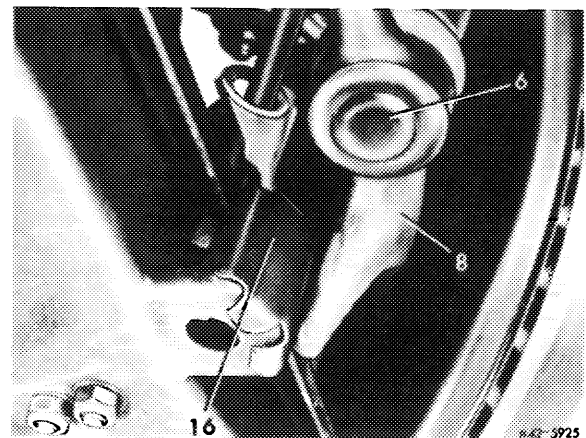
19 Fasten drag link and track rod to pitman arm, tighten castle nuts to 35 Nm (3.5 kpm) – reference value. Cotter castle nuts.



20 Attach steering shock absorber to holder of frame body.

21 Turn steering completely to the left and right and check whether steering knuckle arm (8) of steering knuckle rests against stop (16).

Note: The steering lock should be restricted at steering knuckle arm. If not, the fault may be caused by a wrongly mounted pitman arm or a one-sided setting of toe-in. For this reason, it is important to set the track from the center position of the steering in such a manner that the toe-in is uniformly distributed to the lefthand an righthand wheel.



22 Check wheel adjustment on front axle.

23 During trial run, check position of steering wheel. In straight-ahead position of wheels, steering wheel should also be in center position. Steering wheel may be displaced in splining of steering shaft (max. 2 teeth), if required.

24 Check automatic return of turn-signal switch (blinker switch) for function.