

46—412 Removal and installation of power steering

Data

Steering	Part no.	Steering version	Ball circuit pitch	Ratio in center position $i =$	Total ratio in center position $i =$	Remarks
765.701	107 460 1701	LL	10.5	13.92	14.20	Model 123.1, 123.02, 123.03 1st version without stop in steering housing
	107 460 1801	RL				
765.704	123 460 4702	LL	9	16.23	16.55	Model 123.1, 123.02, 123.03 2nd version with stop in steering housing
	123 460 4801	RL				
765.704	123 460 5801	LL	9	16.23	16.55	Model 123.04, 123.05, 1st version and 123.1, 123.02, 123.03, 123.2, 3rd version with stop in steering housing
	123 460 5902	RL				

Oil grades/filling capacity and oil level checkup

ATF (automatic transmission fluid) or gear oil refer to specifications for service products page 236.2 refer to specifications for service products page 237

Filling capacity approx. 1.4 litres

Oil level checkup With the oil at operating temperature (approx. 80 °C) the oil level in supply tank should reach up to cast-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 particles of dirt may cause trouble in hydraulic system.

Tightening torques

Nm

Locking screws for fastening steering to side member of frame floor

70–80

Self-locking hex. nut to pitman shaft

160–200

Hex. socket screws to steering coupling

25

Castle nut or self-locking hex. nut on track rod and drag link

35

HP expanding hose to steering

25–30

Return flow pipe to steering

35–40

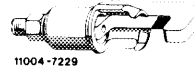
Special tools

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



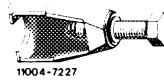
186 589 10 33 00

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



123 589 09 33 00

Puller for pitman arm



100 589 04 33 00

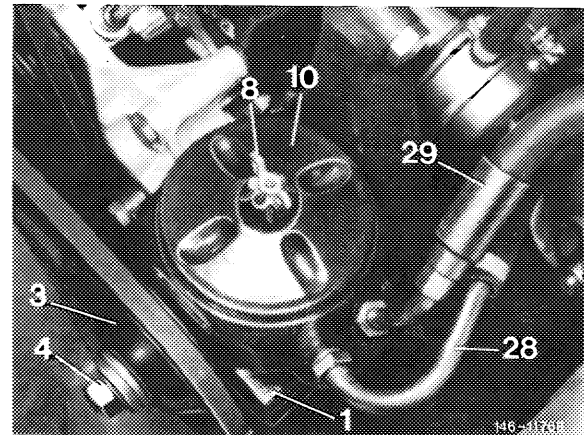
Check screw for center position of steering



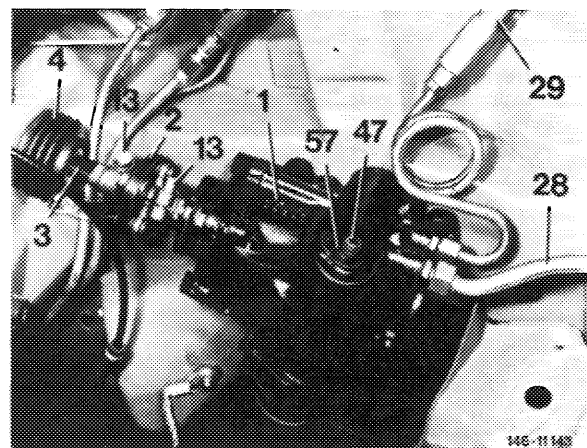
116 589 06 21 00

Removal

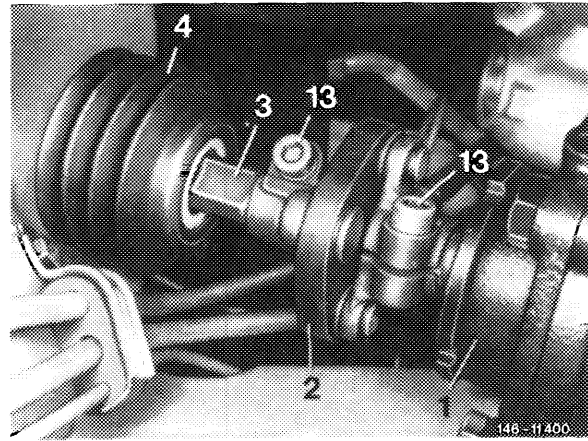
1 Draw oil from supply tank of power steering pump (1) with a syringe.



2 Loosen high-pressure expanding hose (29) on connecting pipe and return line (28) on connecting pipe while applying counterhold to connections. Close oil hoses and connections on steering with blind plugs.

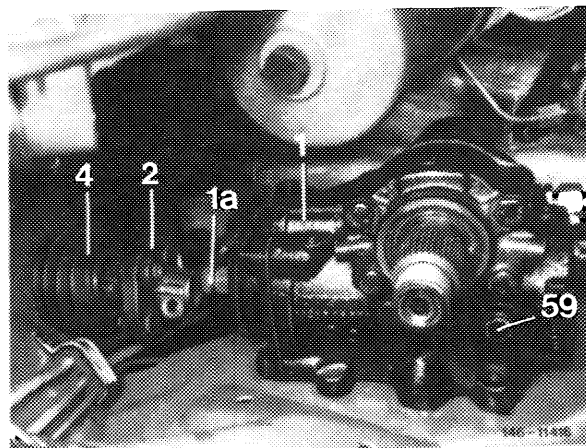


3 Unscrew both hex socket screws (13) from steering coupling (2).



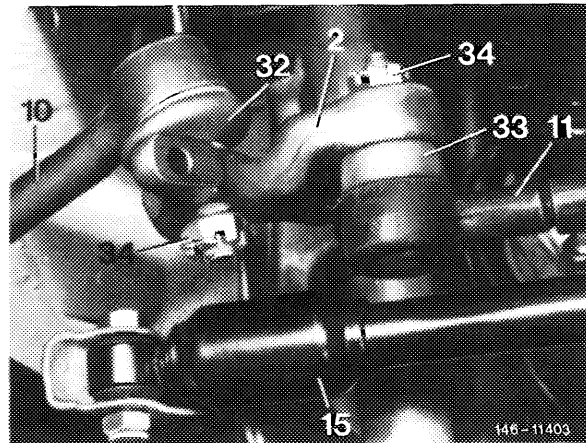
4 Slip steering coupling (2) on profile of lower steering shaft (corrugated tubing) upwards until coupling is no longer in splining of steering worm (1a).

Note: Do not use force. If steering coupling is hard to move, push parting joint slightly apart with a screw driver.

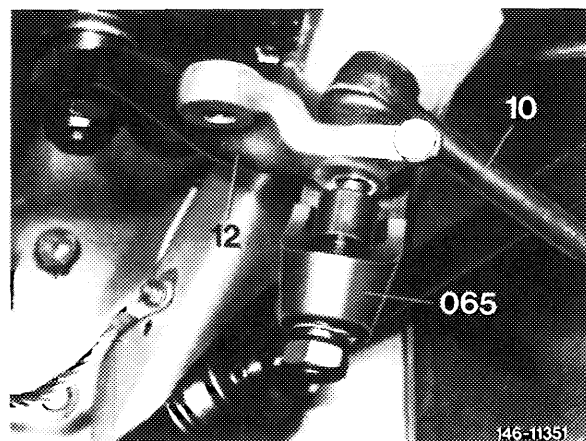


5 Uncotter castle nut of drag link and track rod. Unscrew castle nut or self-locking hex. nut.

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



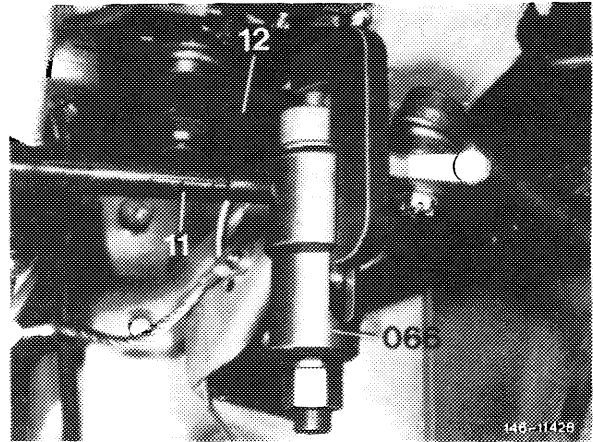
6 Force ball joint of track rod (10) from pitman arm by means of puller (065).



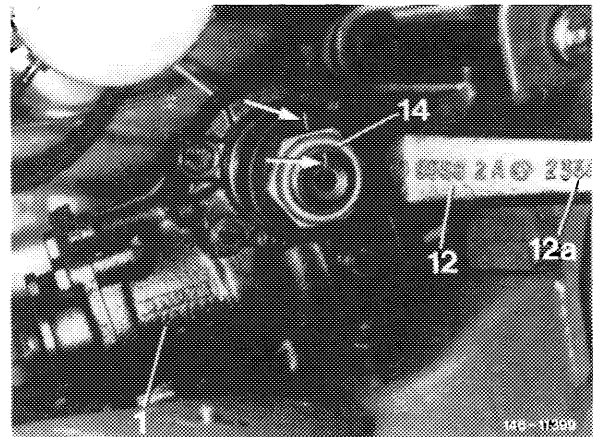
7 Force ball joint of drag link (11) from pitman arm by means of puller (066), while paying attention to sealing ring and plastic cover.

Note: To prevent damaging rubber sleeve on drag link 2nd version, remove drag link only with modified puller 123 589 09 33 00.

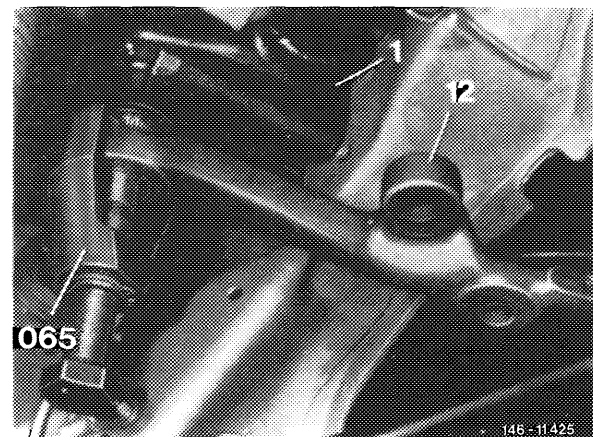
Use puller 123 589 00 33 00 only if the puller bell has been refinished.



8 Unscrew self-locking hex nut (14) from pitman shaft.

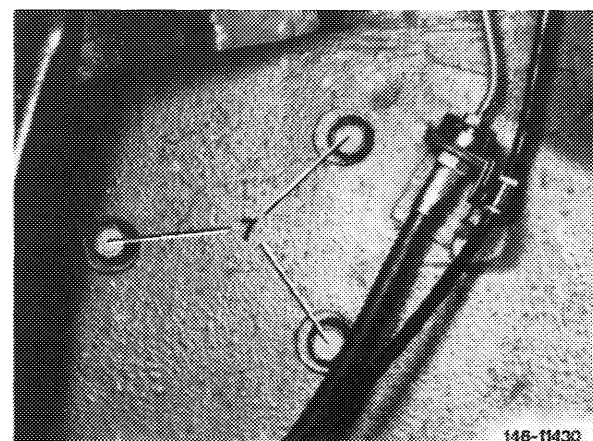


9 Pull pitman arm from pitman shaft by means of puller (065).



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

Note: Loosen steering only when the steering coupling is no longer in steering worm, since otherwise the lower steering shaft (corrugated tube) will be damaged.



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

12 Remove steering coupling from steering shaft, check for wear and replace, if required.

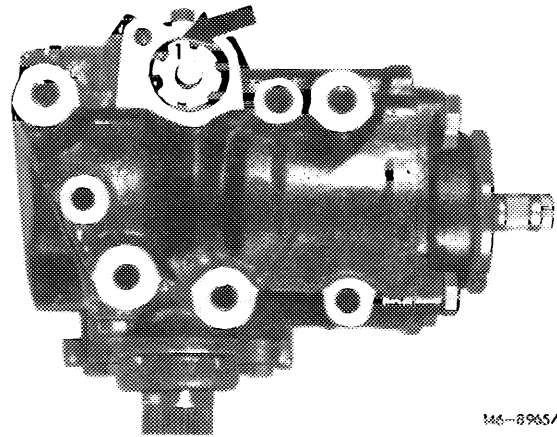
Installation

13 Slip steering coupling completely on flats of lower steering shaft.

Attention!

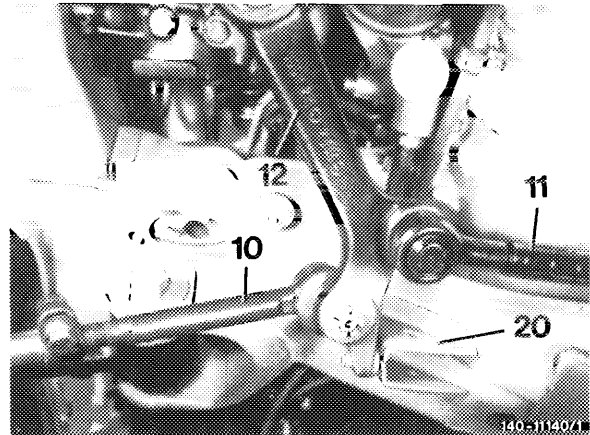
a) If a new steering is installed, make sure to install only steering identified with code number "1" (arrow) on steering valve closing cover.

Code number "1" indicates diameter of reaction piston = 11.5 mm.



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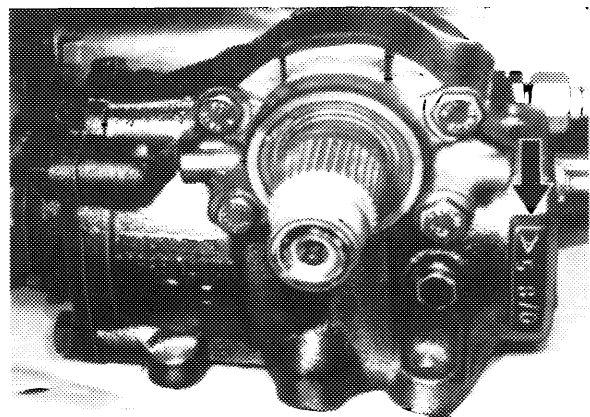
b) In addition, pay attention to steering locks. On power steering 1st version, the steering locks are on steering arms or on frame cross member.



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c) On 2nd version, the locks are in steering housing. The steering is marked by means of an "A".

Never install 1st version of power steering instead of 2nd version.



146-13331

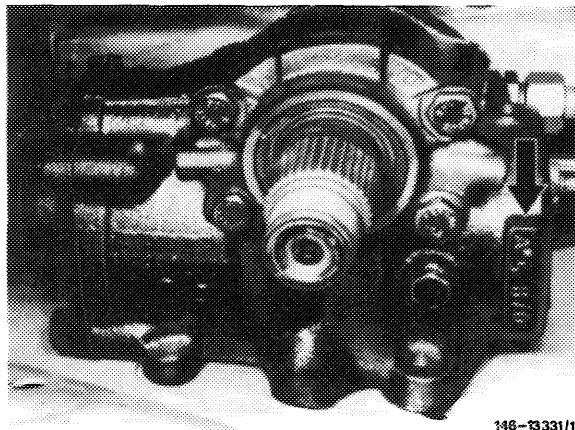
d) The 3rd version of the power steering has a more indirect ratio. The steering stops are also in steering housing.

Identification of steering

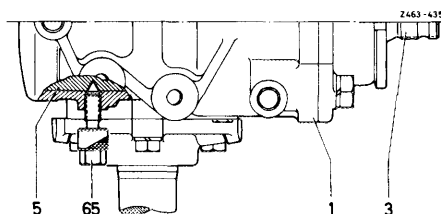
Code letter "A" = steering with stop and 10.5 mm pitch.

Code letter "A" with star = steering with stop and 9 mm pitch.

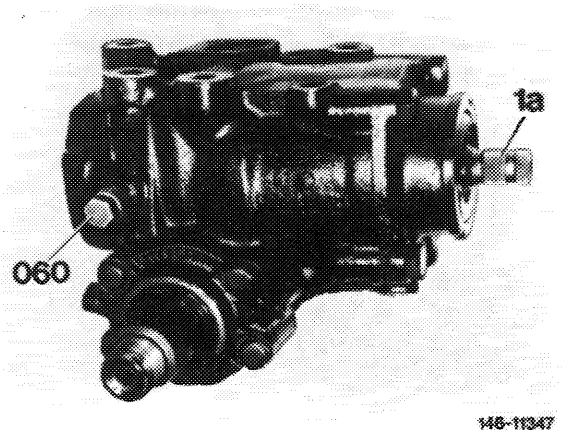
Code letters "AK" = steering with stop, 9 mm pitch and modification on ball guide tube.



14 Unscrew closing plug from steering housing. Turn steering worm (3) until center in power piston (5) is accurately under threaded bore.



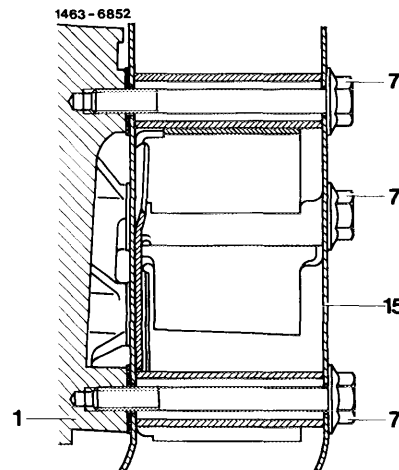
15 Screw center position check screw (060) into steering housing and locate power piston.



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

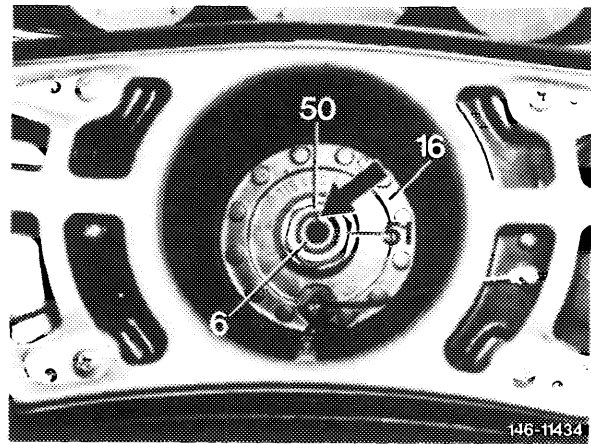
Attention!

Replace locking screws on principle.



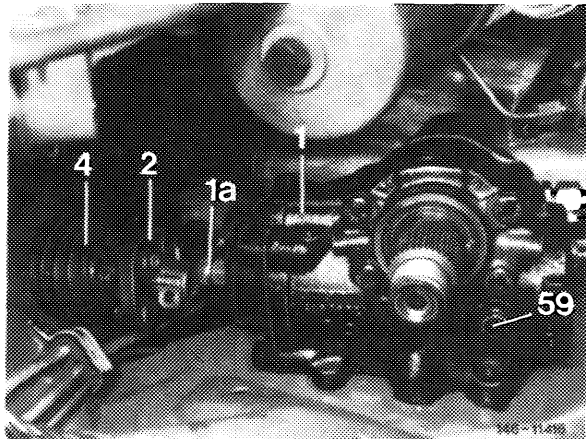
17 On vehicles with steering wheel 1st version (fastened with hex. nut) remove pad from steering wheel. Turn steering shaft in such a manner that the restoring cam for the combination switch is in center of cutout of jacket tube lining, with mark (arrow) on steering shaft (6) pointing in upward direction.

Note: On vehicles provided with restraining system (airbag and belt tensioner), pay attention to 46–610, section B.

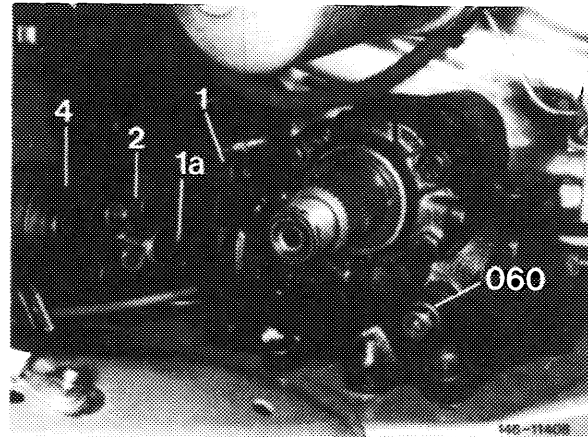


18 Slip steering coupling (2) on splining of steering worm (1a).

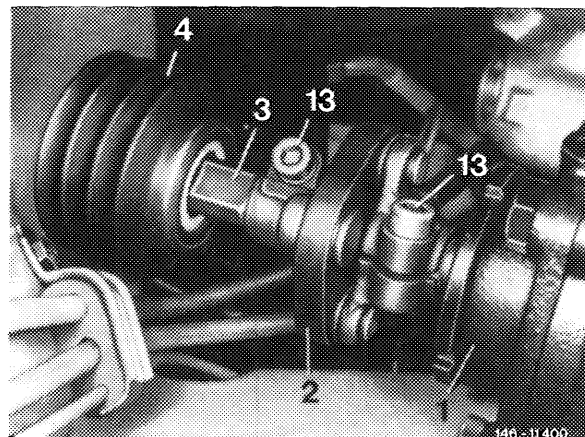
Note: Do not use force. Due to its structural design, the corrugated tube of the lower steering shaft is relatively sensitive against lateral forces.



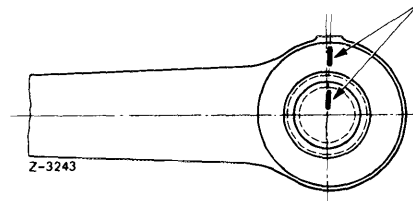
19 Unscrew center position check screw (060). Screw closing plug with new copper sealing ring into steering housing.



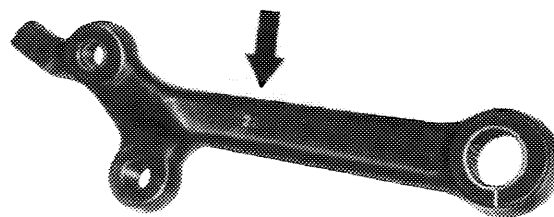
20 Screw both hex socket screws (13) into steering coupling (2) and tighten to 25 Nm.



21 Slip pitman arm on splining of pitman shaft, paying attention to markings (arrow) on lever and on pitman shaft.



Note: The pitman shaft should carry the correct code number (arrow):



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For power steering 1st version (stop on steering arms and on frame side member)

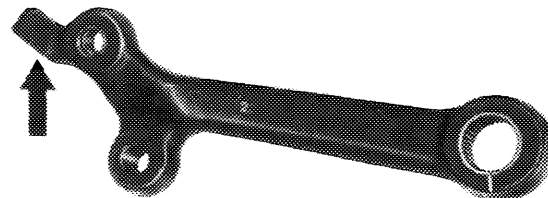
2344 LL (lefthand steering) with stop lug (arrow)

2345 RL (righthand steering) with stop lug (arrow)

For power steering 2nd and 3rd version (stop in steering housing and additional stop on steering arms)

2355 LL lefthand steering with stop lug (arrow) and modified ball point position

2356 RL righthand steering with stop lug (arrow) and modified ball point position

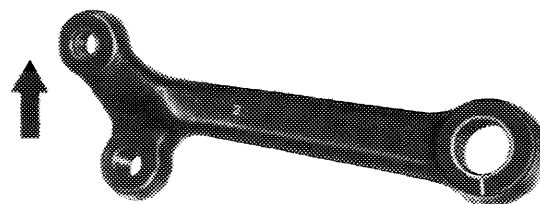


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For power steering 2nd and 3rd version (stop in steering housing)

2350 LL (lefthand steering) without stop lug (arrow) and changed ball point location

2351 RL (righthand steering) without stop lug (arrow) and changed ball point location

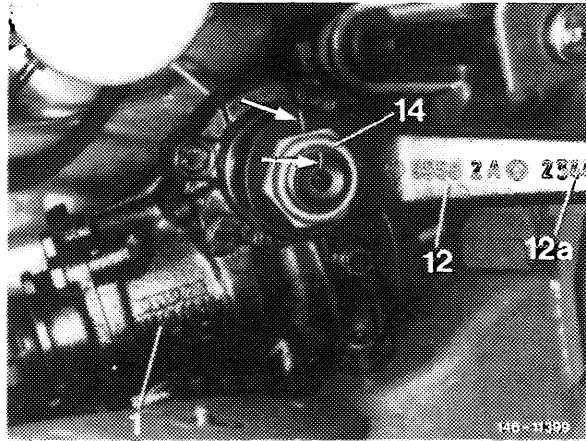


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22 Attach pitman arm with a new self-locking hex. nut. Tighten hex. nut to 160–200 Nm.

Attention!

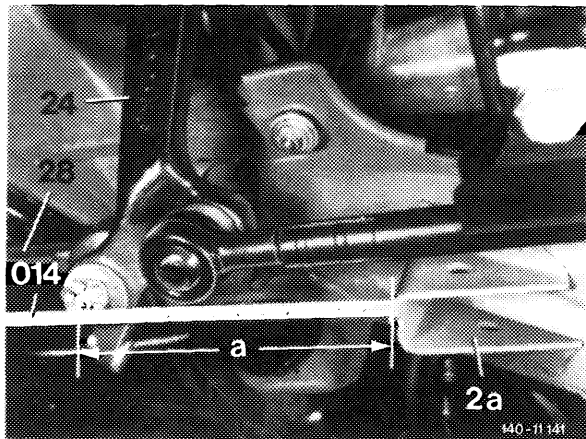
Replace locking screws on principle.



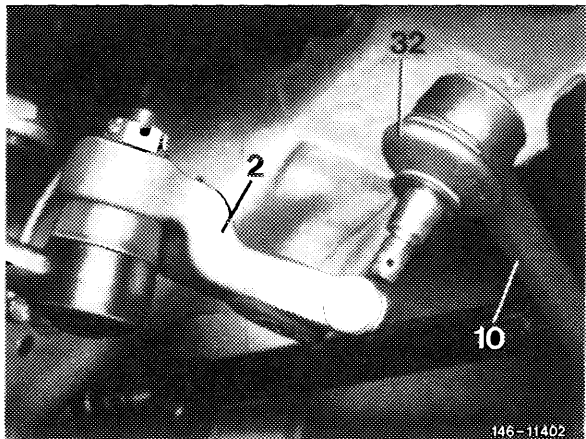
23 On vehicles with power steering 1st version, check permissible steering lock, while measuring reference dimension between pitman arm or intermediate steering arm and stop bracket of frame cross member (40–320).

Note: On vehicles with power steering 1st version the steering stops (steering lock) are on pitman arm and intermediate steering arm. At max. steering lock the respective lever should rest against stop bracket (2a) of frame cross member.

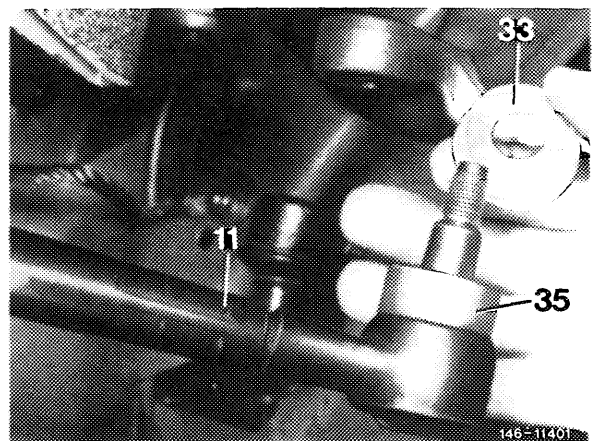
On vehicles with power steering 2nd and 3rd version the steering locks are in steering case.



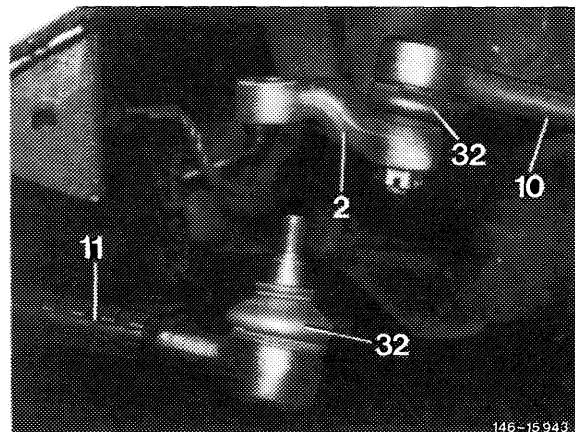
24 Check rubber sleeve (32) on joint of track rod (10). If the sleeve is damaged, check joint for wear and replace, if required (46–540).



25 On drag link 1st version, check joint of drag link for wear and replace drag link, if required. Place sealing ring (35) and plastic cover (33) on ball joint.



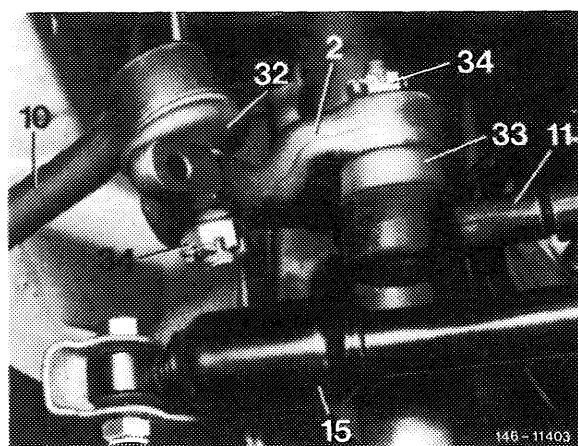
26 On drag link 2nd version, check rubber sleeve (32) on joint. If sleeve is damaged, check joint for wear and replace drag link, if required (46–550).



27 Attach drag link and drag rod to pitman arm. Tightening torque 35 Nm — reference value.

Note: The track rod 1st and 2nd version is fastened to pitman arm by means of a castle nut and secured by means of a cotter pin. The 3rd version is fastened by means of a self-locking hex. nut.

The self-locking hex. nut must be replaced on principle.

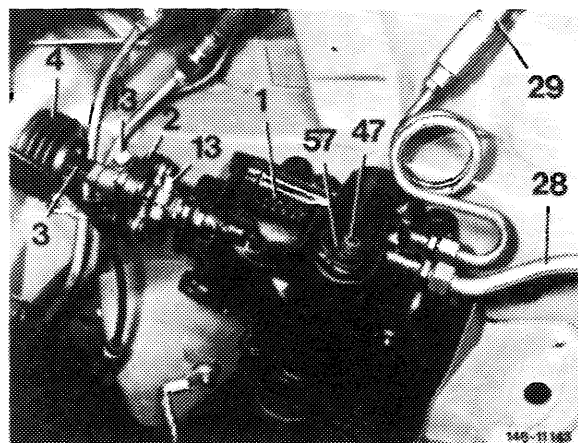


28 Remove blind plug. Connect high-pressure expanding hose (29) and connecting hose (28) for return hose.

Attention!

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

29 Fill supply tank of power steering pump with specified oil grade.



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

Note: The steering is self-venting.

31 Fasten pad, if previously removed, to horn carrier of steering wheel.

32 Check wheel adjustment on front axle (40–320).