

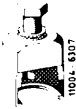
46–710 Removal and installation of power steering pump

Installation survey of power steering pumps

Pump version	Opening pressure of pressure relief valve in bar gauge pressure	Color of type plate	Installed in model	Remarks
Vickers VT 27	65 ± 5	black	116.020, 116.024 116.025 1st version	with separate supply tank
	82 ± 5	blue	116.028, 116.029 116.032, 116.033 1st version and 116.020 USA 2nd version	
Vickers VT 49 and ZF	65 ± 5	black	116.020, 116.024 116.025 2nd version	with cast-on supply tank
	82 ± 5	blue	116.120, 116.036 1st version 116.028, 116.029 116.032, 116.033 2nd version 116.020, 116.024 116.025 3rd version	
	90 ± 5	blue	116.036 2nd version	

Oil types/filling capacities and oil level checkup

Automatic transmission fluid (ATF) or transmission oil	refer to specifications for service products page 236.2 refer to specifications 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 cast-in mark (approx. 20 mm below rim of tank). For cold oil and at ambient temperature, oil level is 6–8 mm below mark. For filling-up, use only perfectly clean oil, since even minor particles of dirt may cause trouble in the hydraulic system.

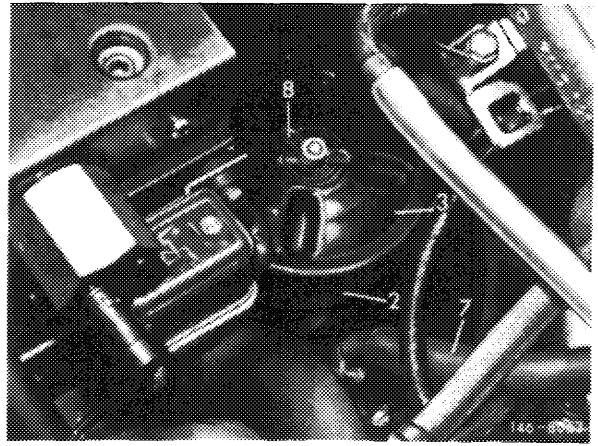
Tightening torques	Nm	
Hex. nut to input shaft	50	
High-pressure expanding hose and connecting pipe for return hose	45–50	
Hex. screws for fastening pump to carrier	25	
Special tool		
Puller for pulley		108 589 02 33 00

Removal

All models

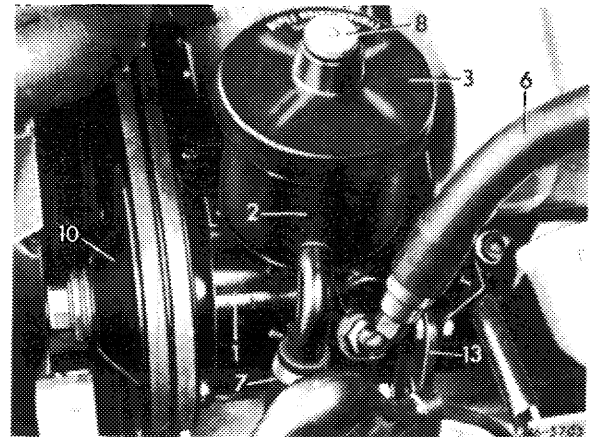
1 Unscrew knurled or wing nut (8) on supply tank (2) and remove closing cover (3). Draw oil from supply tank by means of a syringe.

Layout of Vickers power steering pump VT 27 on models 116.020 and 116.024/025.

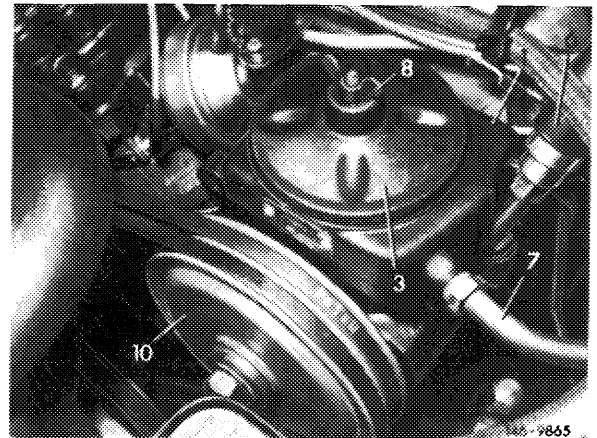


2 Loosen high-pressure expanding hose (6) and return hose (7) on power steering pump, close connections on pump and on hoses with blind plug.

Layout of Vickers power steering pump VT 27 on models 116.028/029 and 116.032/033.



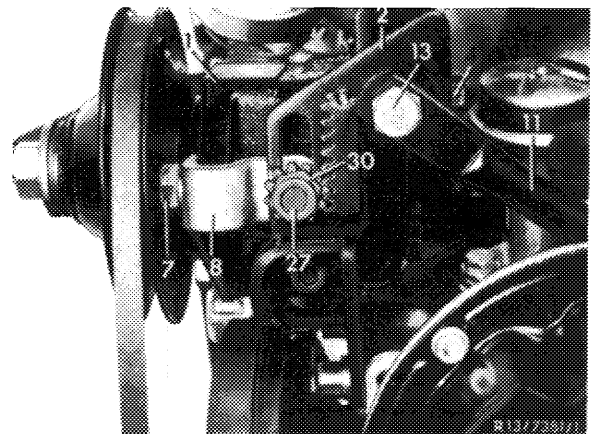
Layout of ZF and Vickers VT 49 power steering pump on models 116.028/29 and 116.032/033.



Models 116.020 and 116.024/25

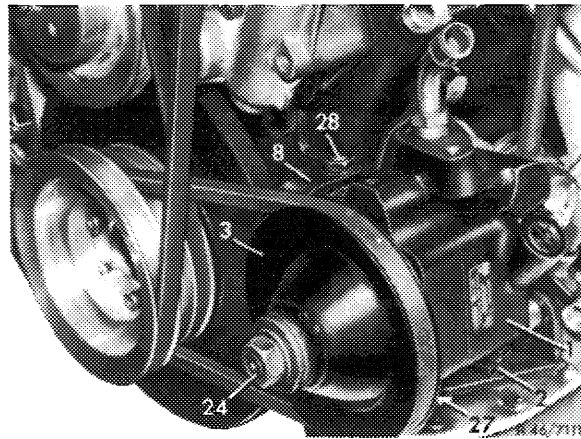
3 Loosen radiator shell.

4 Loosen hex. socket screw (27) as well as hex. screw (4).

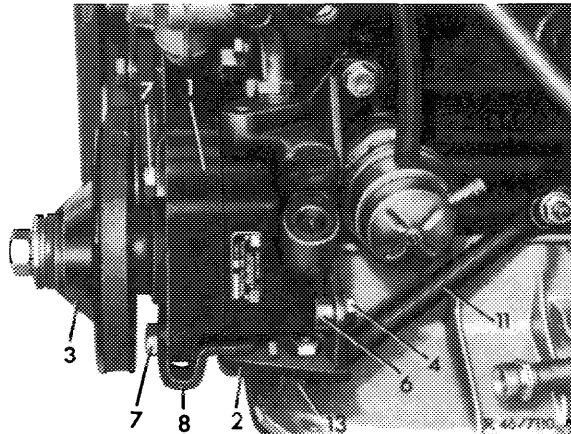


5 Loosen hex. socket screw (28).

6 Unscrew hex. nut (24) from input shaft and remove pulley with puller. Push power steering pump toward cylinder crankcase by turning gear wheel.



7 Unscrew hex. screws (4) and (7) and remove power steering pump.



Model 116.020 (USA)

8 Loosen radiator shell.

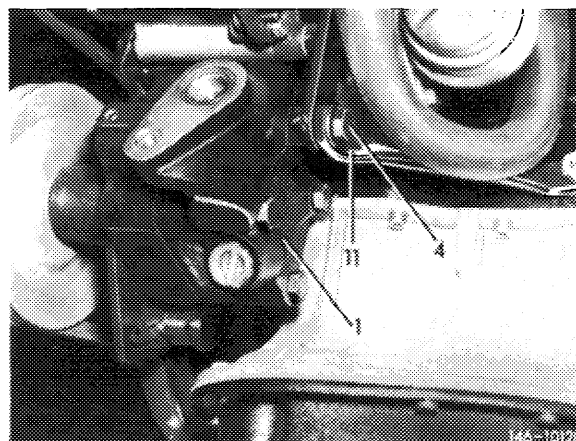
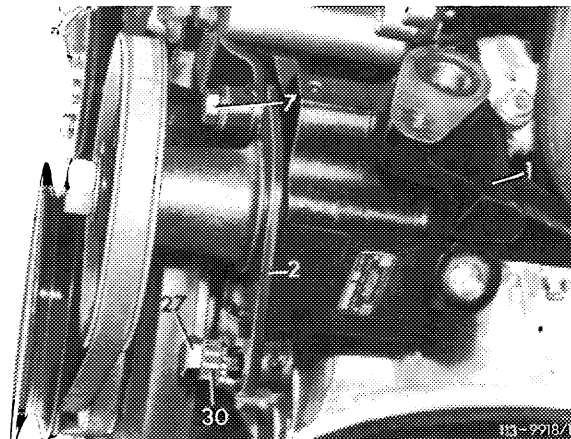
9 Loosen hex. screw (7) and (27) as well as hex. socket screw and in addition hex. screw (4) at back of power steering pump.

Turn power steering pump with gear wheel (30) toward cylinder crankcase and remove V-belt.

Note: Hex. screws (4) and (7) are provided with inch threads.

10 Unscrew hex. nut from input shaft and remove pulley with puller.

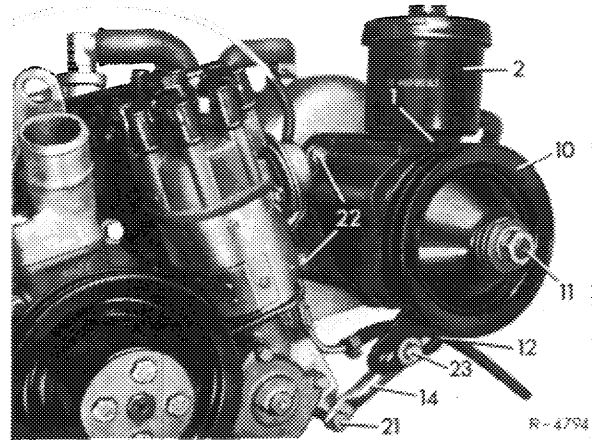
11 Unscrew hex. screws (4) and (7) as well as hex. socket screw and remove power steering pump.



Models 116.028/029 and 116.032/033 with Vickers power steering pump VT 27

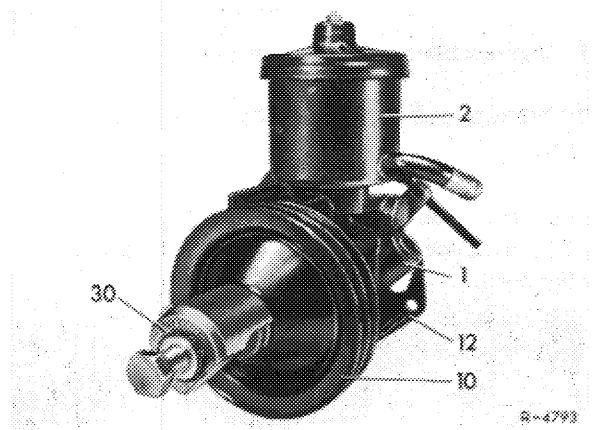
12 Loosen hex. nuts (22) on fastening plate and hex. screw (23) on support (14), push power steering pump toward engine and remove both V-belts from pulley (10).

13 Unscrew hex. screws and nuts and remove power steering pump including carrier.

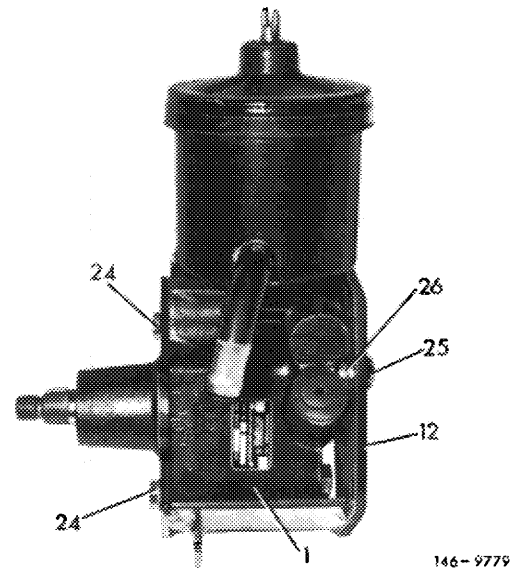


14 Unscrew hex. nut from input shaft while applying counter-hold to pulley at flats (36 mm).

15 Pull pulley (10) from input shaft by means of puller (30).



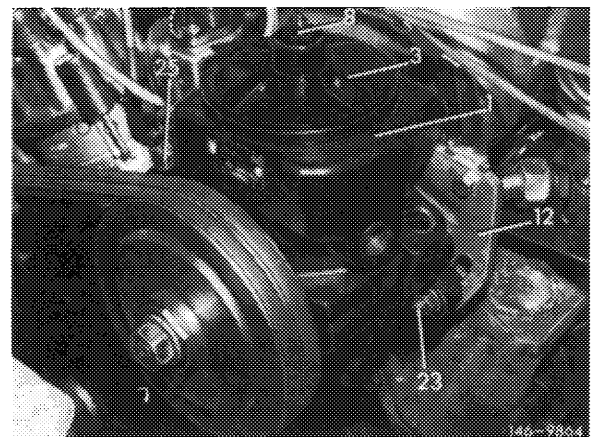
16 Unscrew hex. socket screws (24) (7 mm hex. socket) and hex. screw (25) (inch threads) and remove power steering pump from carrier (12), while paying attention to spacing sleeve (26).



Models 116.028/029 and 116.032/033 with Vickers VT 49 and ZF power steering pump

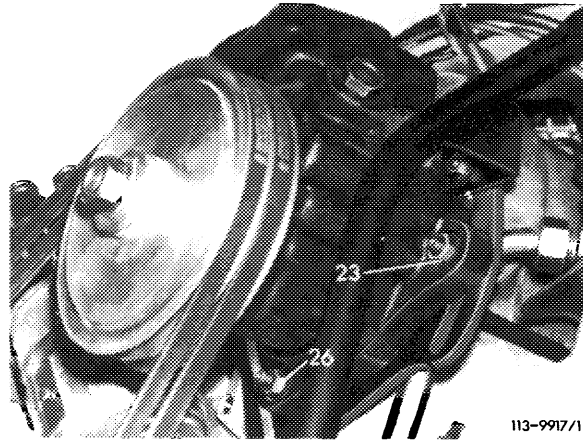
17 Loosen radiator shell.

18 Loosen hex. nut (23 and 25).



19 Loosen hex. nut (26), push power steering pump toward engine and remove V-belt from pulley.

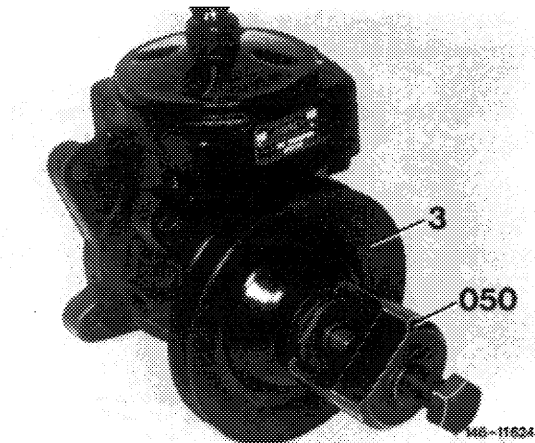
20 Unscrew hex. nut (23 and 26) and remove power steering pump.



21 Unscrew hex. nut from input shaft.

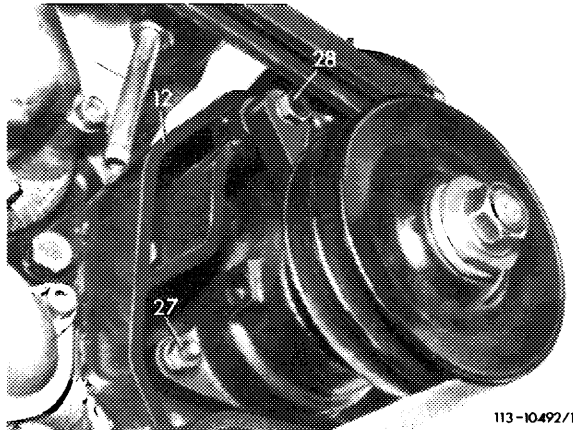
22 Pull pulley (3) from input shaft by means of puller.

Note: Remove pulley with puller part No. 108 580 02 33 00 only, since otherwise the steering pump will be damaged.



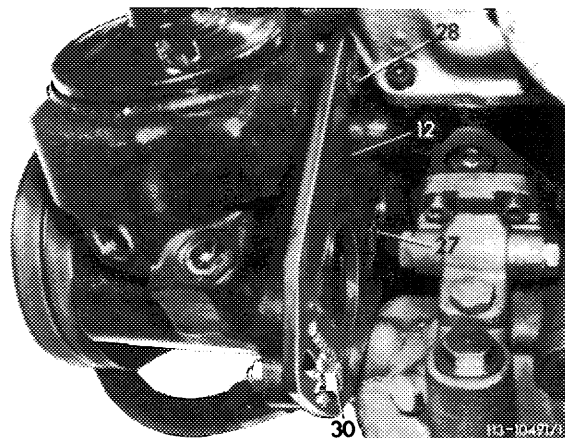
Model 116.036

23 Loosen hex. nut or hex. screws (27 and 28).



24 Loosen hex. nut on adjusting screw (30).

25 Swivel power steering pump toward engine by means of adjusting screw and remove both V-belts.

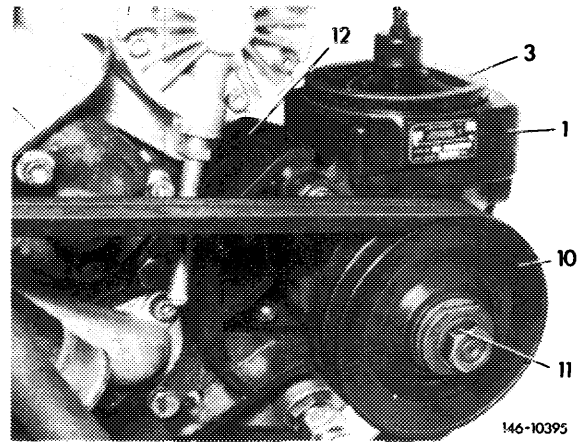


26 Unscrew hex. nut (27 and 28) as well as hex. nut from adjusting screw. Remove power steering pump.

27 Unscrew hex. nut from drive shaft.

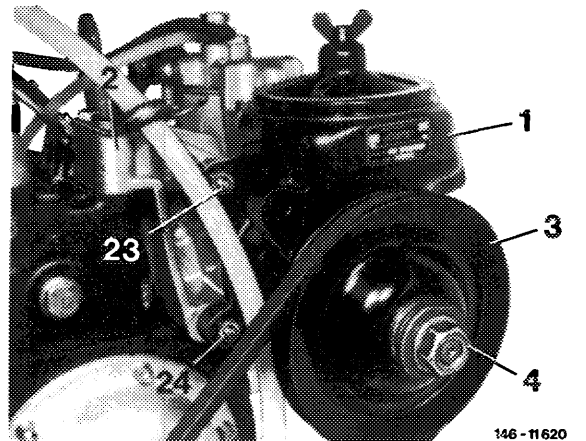
28 Remove pulley from drive shaft with puller.

Note: Remove pulley only with puller part No. 108 589 02 33 00, since otherwise power steering pump will suffer damage.



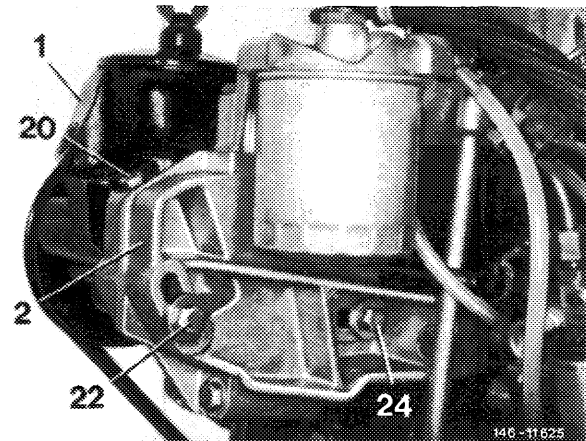
Model 116.120

29 Loosen hex. screws or hex. nuts (23) and (24).

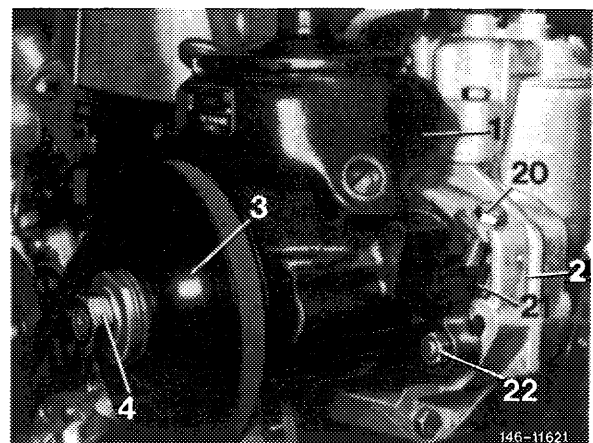


30 Loosen hex. screw (22), then turn tensioning screw (20) to the left and slacken V-belt, remove V-belt.

31 Unscrew all hex. screws, while paying attention to washers under hex. screws (22), (23) and (24).



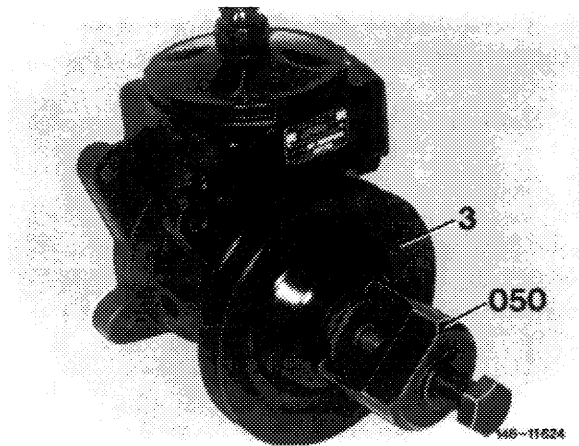
32 Remove power steering pump, while paying attention to tensioning member (21).



33 Unscrew hex. nut from input shaft.

34 Pull pulley from input shaft by means of puller.

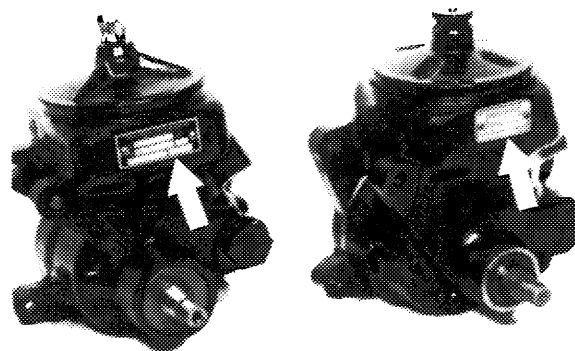
Note: Pull off pulley with puller part No. 108 589 02 33 00 only, since otherwise the power steering pump will be damaged.



Installation

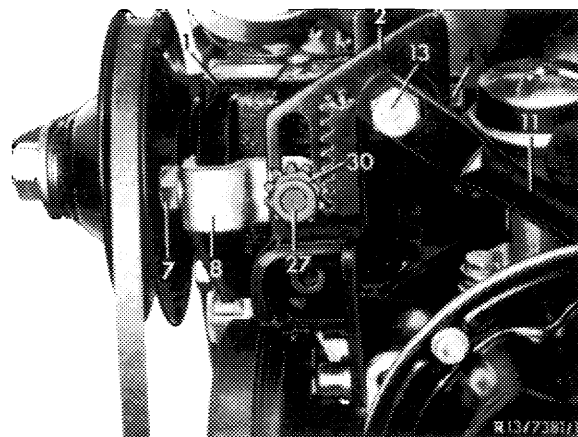
Note: Make sure that the power steering pump valid for each model is installed. The opening pressure of the pressure relief valve is punched-in on type rating plate of pump. In addition, the basic color of the type rating plate indicates the opening pressure:

Basic color black = 65 bar (atü)
Basic color blue = 82 or 90 bar (atü)



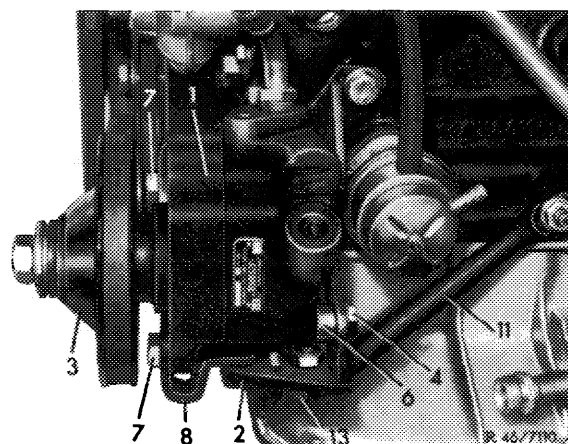
Models 116.020 and 116.024/025 with Vickers power steering pump VT 27

35 Screw hex. screws (7) into pump housing and tighten to 65 to 70 Nm.

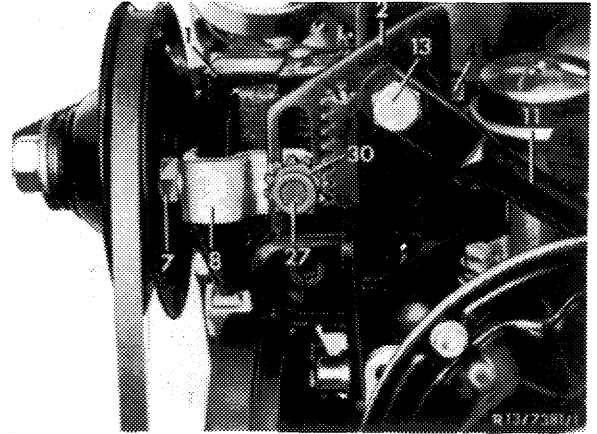


36 Place spacing sleeve (6) between pump and carrier and screw-in hex. screw (4), but do not yet tighten.

37 Attach pulley to drive shaft and tighten hex. nut to 50 Nm (5 kpm) while applying counterhold to pulley at flats.



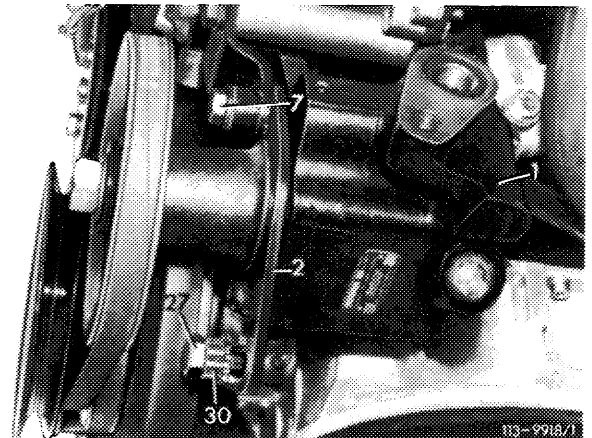
32 Mount V-belt. Push power steering pump away from cylinder crankcase with gear wheel (30) until the correct belt tension is attained. Then tighten hex. socket screws as well as hex. screw (4).



Model 116.020 (USA)

39 Screw hex. screw (7) and hex. socket screw from face end into power steering pump and tighten.

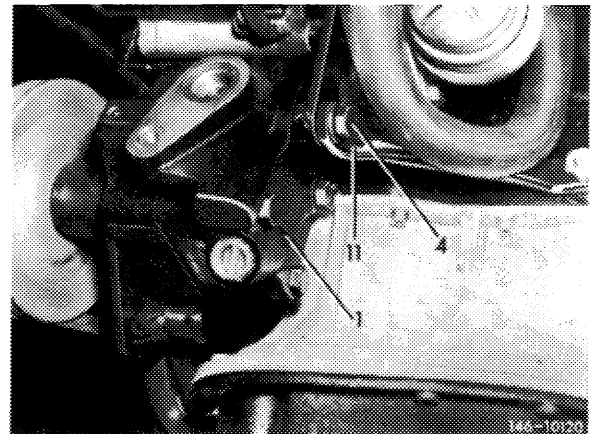
Note: Hex. screw has inch threads.



40 Screw hex. screw (4) from the rear into pump housing and tighten.

Note: Hex. screw has inch threads.

41 Attach pulley to drive shaft, mount V-belt and tension V-belt with gear wheel. Then tighten hex. screw (27) (refer to Fig. item 33).

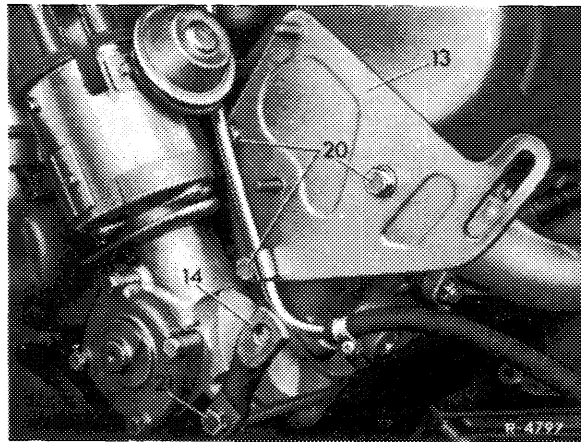
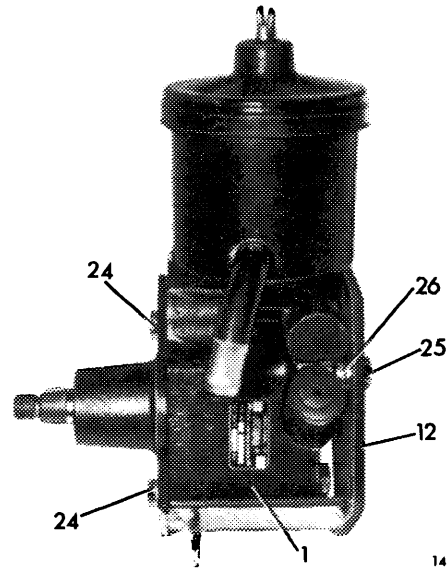


Models 116.028/029 and 116.032/033 with Vickers power steering pump VT 27

42 Place power steering pump into carrier (12) and attach with hex. screws. Rear screw (25) has inch threads.

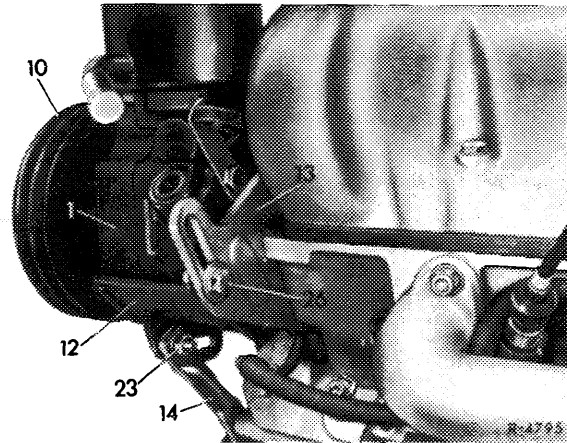
43 Attach pulley to drive shaft making sure that cone of drive shaft and flange on pulley are free of grease. Tighten hex. nut to 50 Nm (5 kpm).

44 Tighten hex. screws (20) for attaching plate (13) to cylinder head.



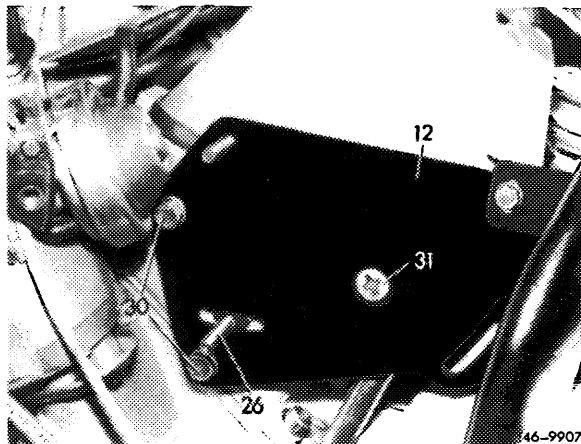
45 Attach power steering pump and carrier (12) to fastening plate (13) and to support. Do not yet tighten hex. screws or nuts.

Place both V-belts on pulley (10). Tension V-belt and tighten hex. screws or nuts.

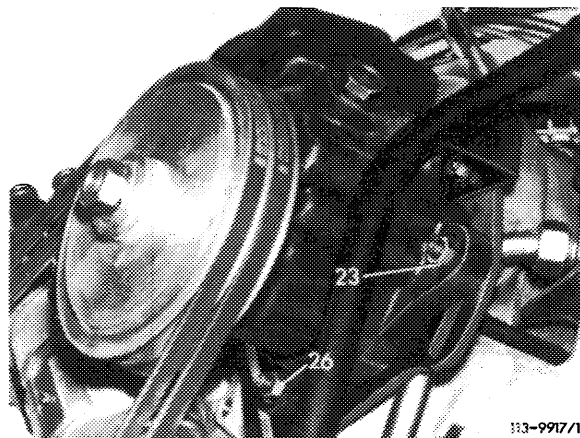


Model 116.028/029 and 116.032/033 with Vickers VT 49 and ZF power steering pump

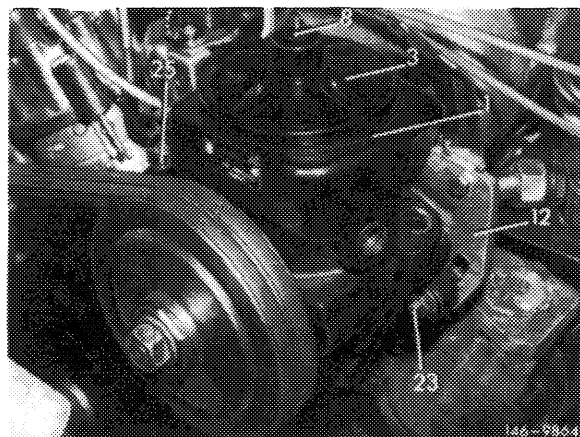
46 Tighten hex. screws (30) and Phillips head screw (31) for attaching plate (12) to cylinder head.



47 Attach power steering pump with hex. nuts and hex. screws (23, 25 and 26) to fastening plate, but do not yet tighten hex. nuts and hex. screws.



48 Attach pulley to drive shaft. Mount V-belt and tension. Tighten hex. nuts.



Model 116.036

Note: When installing a new power steering pump, check that only the approved type of pump for this model is installed which carries the designation "90 bar" on type rating plate.

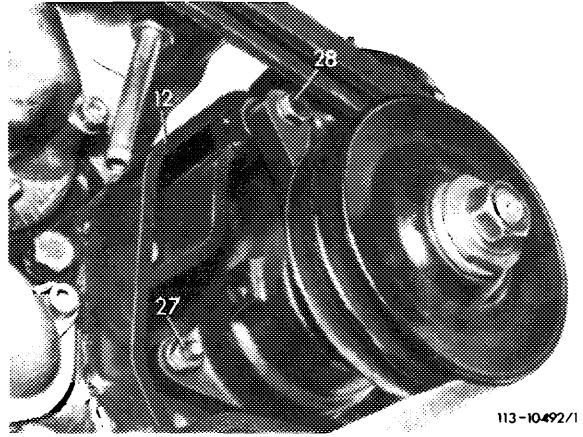
Vickers power steering pump



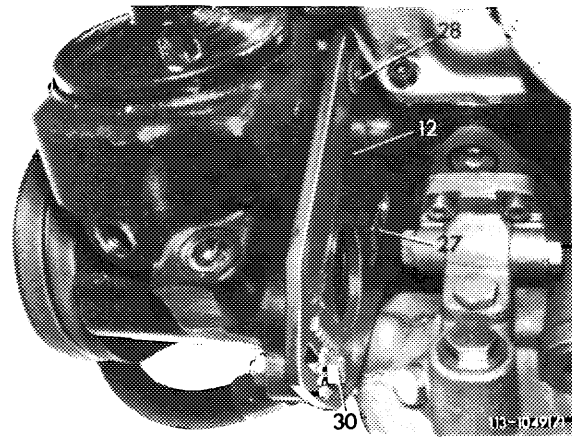
ZF power steering pump



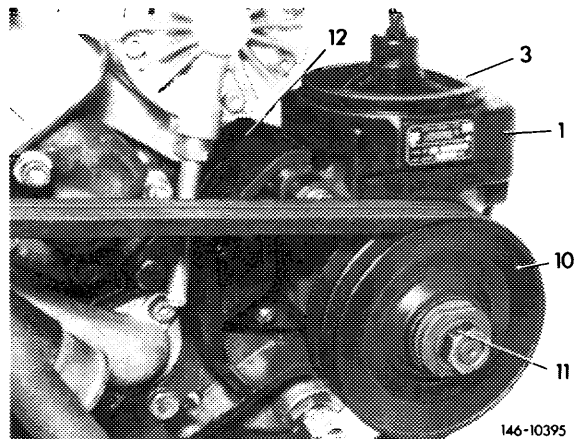
49 Attach power steering pump with hex. nuts and hex. screws (27 and 28) to carrier, but do not yet tighten hex. nuts and hex. screws.



50 Attach power steering pump to carrier by means of adjusting screw (30), but do not yet tighten hex. nut.



51 Attach pulley to input shaft, mount V-belt and tension. Tighten hex. nuts.

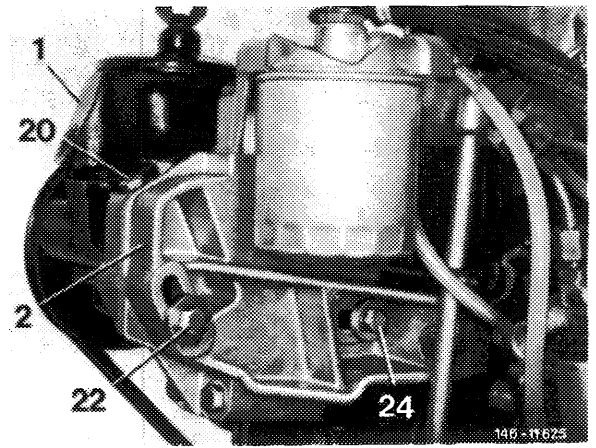


Model 116.120

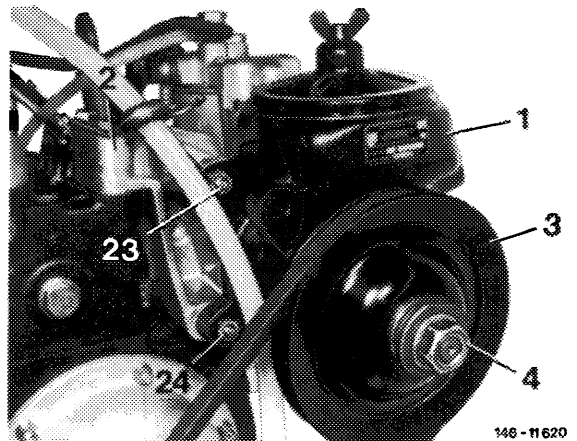
52 Insert tensioning member with cut threads in upward direction into blind hole of power steering pump.



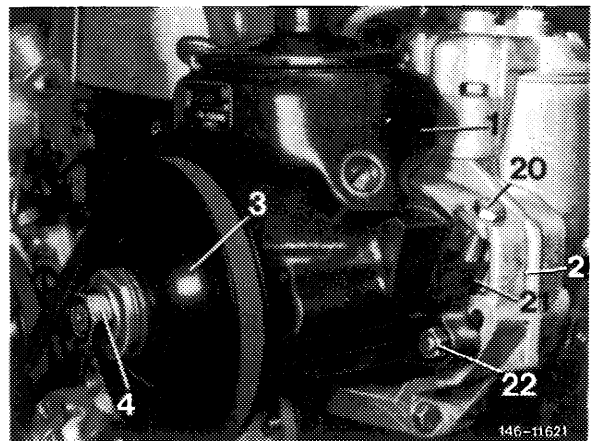
53 Insert power steering pump into mounting bracket, screw hex. screw (20) into clamping member, attach pump with hex. screws (22) and (24), but do not yet tighten hex. nuts.



54 Attach power steering pump to mounting bracket with hex. screw (23) (do not forget washer 5 mm thick), but do not yet tighten hex. nuts.



55 Attach pulley to input shaft. Mount V-belt and tension V-belt with hex. screw (20). Then tighten all hex. screws and hex. nuts.



All models

56 Connect return hose to supply tank or to power steering pump.

57 Connect high-pressure expanding hose. Tightening torque of cap screw 45 to 50 Nm.
— reference value.

58 Fill supply tank with specified oil. Run engine while adding oil.

59 Check system for leaks.

