

Data

Pressure regulator of valve unit and electric pressure switch for warning lamp

Operating pressure of pressure oil system or pressure in center reservoir (controlled by pressure regulator)	between 149 and 199 bar ^{1) 2)}
Cut-in pressure	149 to 162 bar ^{1) 2)}
Cut-out pressure	178 to 199 bar ^{1) 2)}
Switching period (Difference between cut-in pressure and cut-out pressure)	29 to 36 bar ^{1) 2)}
Time for pressure increase from cut-in pressure to cut-out pressure (switching period)	max. 10 s at 3250–3500/min of engine
Adjustment of pressure relief valve (safety valve)	approx. 250 bar ³⁾
Adjustment of electric pressure switch for warning lamp (cut-in point at decreasing pressure)	80 ± 5 bar ⁴⁾ 100 ± bar ⁵⁾
Pressure drop and duration of checkup when checking for inner leaks of pressure regulator within 30 minutes	max. 15 bar

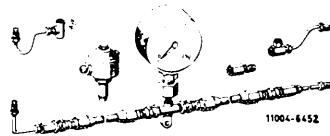
- 1) Pressure gauge deviation inaccurate readout not taken into consideration.
 2) The specified values apply for new pressure regulators only. For used units the following lower values can be accepted, as long as no functional troubles are occurring. Cut-in pressure 140 bar, cut-out pressure 165 bar, switching period 20 bar.
 3) Checking of opening pressure for pressure relief valve not required.
 4) Models 126.033, 126.037
 5) Model 116.036

Central reservoir

Part number	116 320 16 15 or 126 320 03 15	
Color code	red dot	
Gas filling pressure	when new	75 ± 2 bar
	minimum value	60 bar
Tightening torque	Nm	
Line connections M 10 x 1	11	

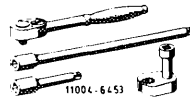
Special tools

Tester for level controller and hydropneumatic suspension



126 589 02 21 00

Box wrench element open 11 mm 1/4" square complete with change-over ratchet and 2 extensions for pressure oil line



116 589 00 17 00

Note

The checkup includes:

a) Checking adjusting switch for function

The checkup is required if in position "H" = higher level the level is not rising. If in position "S" = detent position the vehicle level is lowering upon relief (e.g. after jacking-up) or if after switching from position "H" to position "N" = normal level the latter is no longer attained.

b) Checking pressure regulator for function

The checkup is required whenever the switching noise of the pressure regulator is heard at short intervals while driving.

c) Checking valve unit for internal leaks

The checkup is required if an internal leak of the valve unit results in a pressure drop in suspension system and in lighting-up of warning lamp.

d) Checking electric pressure switch for warning lamp for function

The checkup is required if warning lamp is constantly lighting up or not at all.

e) Checking central reservoir for gas filling pressure

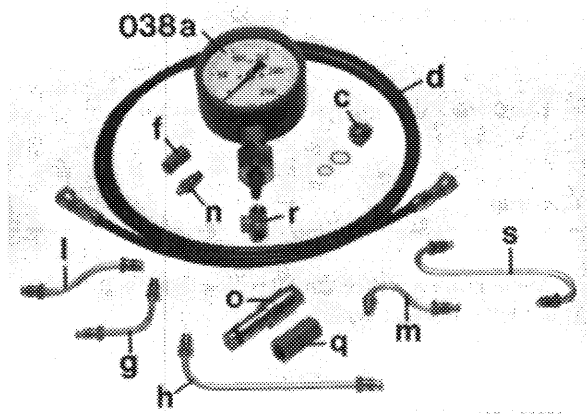
The checkup is required if warning lamp lights up continuously after engine has been stopped with the ignition switched on.

Attention!

During extended inoperative periods, particularly at low outside temperatures, lighting up of the warning lamp and even a lowering of the vehicle level at one or both axles is normal.

Use pressure tester (038) for checkup and assemble, as shown in next illustration.

- 038a Pressure gauge 0–250 bar gauge pressure with connection, coupling nut and sealing ring
 c Adapter
 d Pressure testing hose
 f Coupling
 g Pressure testing line
 h Pressure testing line
 l Pressure testing line
 m Pressure testing line
 n Vent screw
 o Pump test valve
 q Coupling
 r Distributor
 s Pressure testing line
 Sealing rings C 14 x 18
 Sealing rings C 10 x 13.5

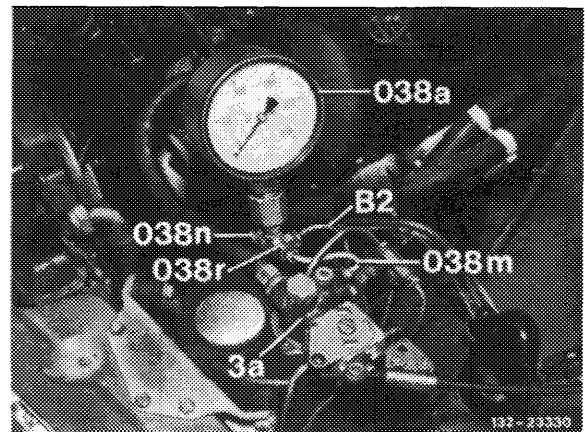


132 - 20261

Make pressure oil system pressureless (32–600).

Connection of pressure tester on model 116.036

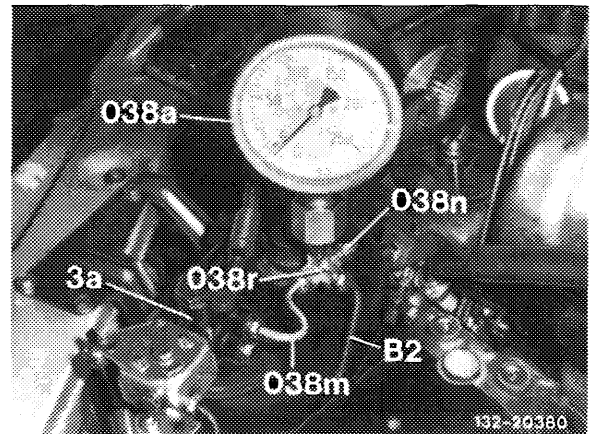
- 3a Pressure regulator
 038a Pressure gauge 0–250 with connection, coupling nut and sealing ring
 038n Vent screw
 038m Pressure testing line
 038r Distributor
 B2 Pressure line pressure regulator-central reservoir



132 - 20250

Connection of pressure tester models 126.033, 126.037

- 3a Pressure regulator
 038a Pressure gauge 0–250 bar with connection, coupling nut and sealing ring
 038n Vent screw
 038m Pressure testing line
 038r Distributor
 B2 Pressure line pressure regulator-central reservoir



132 - 20360

A. Model 116.036

a) Checking adjusting switch for function

Checkup

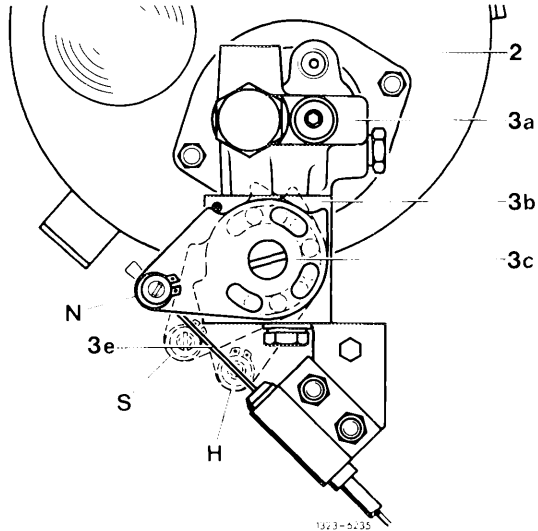
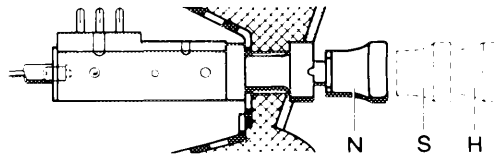
1 Move pulling switch on instrument panel into position "N" = normal level.

- 2 Oil supply tank
- 3a Pressure regulator of valve unit
- 3b Adjusting switch of valve unit
- 3c Control disk
- 3e Puller for adjusting switch

Positions of adjusting switch:

- N = normal level
switch pushed down or control disk against stop at front
- S = detent position
switch locked in center position or control disk pulled into 1st detent
- H = higher level
switch fully pulled or control disk pulled into 2nd detent

Note: In positions "H" and "S" warning lamp (23) at right in instrument cluster is lighting up (red with vehicle symbol).

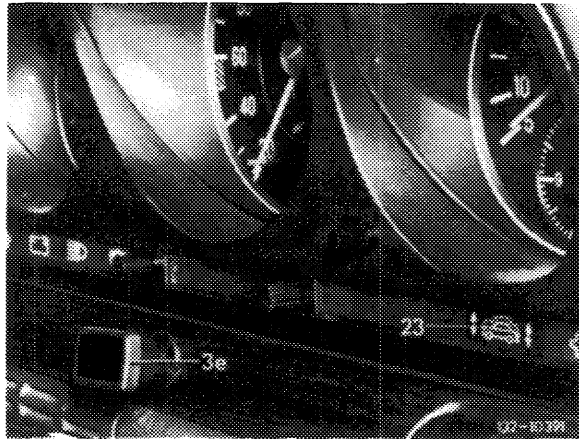


2 Keep engine running. Warning lamp (32) in instrument cluster should extinguish at the latest after 20 seconds at an engine speed of approx. 2500/min.

3 Move pulling switch into position "S" = detent position. Warning lamp should light up.

4 Move pulling switch into position "H" = higher level. Warning lamp should light up. Vehicle level increases by approx. 40 mm.

5 Move pulling switch into position "N" = normal level. Warning lamp should extinguish. Vehicle will drop to normal level. Stop engine.



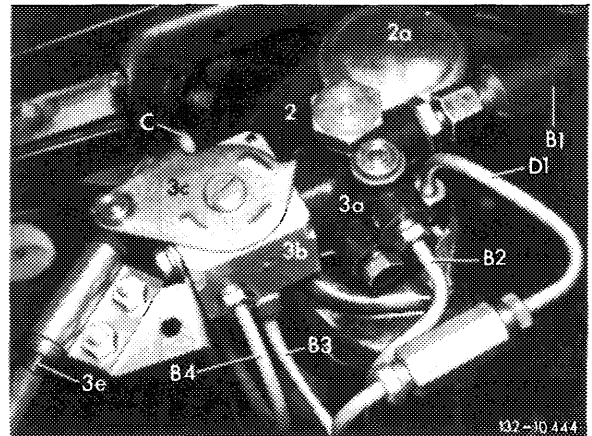
b) Checking pressure regulator for function

Checkup

1 Make pressure oil system pressureless (32–600).

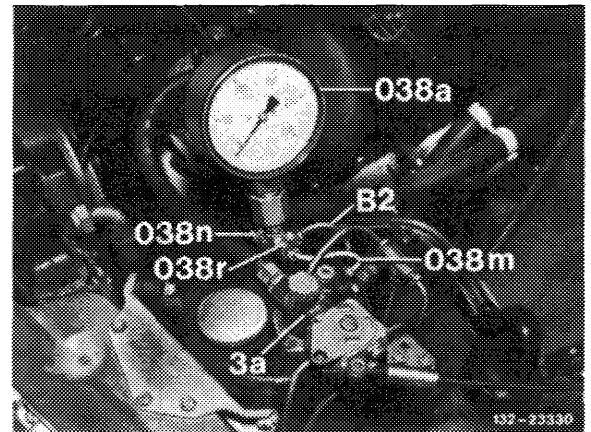
2 Disconnect pressure line (B2) on pressure regulator (3a).

- 2 Oil supply tank
- 2a Closing cap with oil dipstick
- 3a Pressure regulator of valve unit
- 3b Adjusting switch of valve unit
- 3c Control disk
- 3e Puller for adjusting switch
- B1 Pressure line pressure oil pump – pressure regulator
- B2 Pressure line pressure regulator – central reservoir
- B3 Pressure line central reservoir – adjusting switch of valve unit
- B4 Pressure line adjusting switch – level controller
- C Control pressure line "higher level" adjusting switch – level controller
- D1 Return line level controller – pressure regulator



3 Connect pressure gauge (038a) with distributor (038r), pressure test line (038m) and vent screw (038n) between pressure regulator (3a) and pressure line (B2).

- 3a Pressure regulator
- 038a Pressure gauge
- 038n Vent screw
- 038m Pressure test line
- 038r Distributor
- B2 Pressure line pressure regulator – central reservoir



4 Move control disk of adjusting switch into position "N" = normal level.

5 Run engine at approx. 3500/min and watch pressure gauge. Write down cut-out pressure of pressure regulator.

6 With engine running, load vehicle on front axle in such a manner that the level controller is set to position "F" (filling), while also watching pressure gauge. The cut-in pressure is indicated by a sudden increase of the previously dropped pressure.

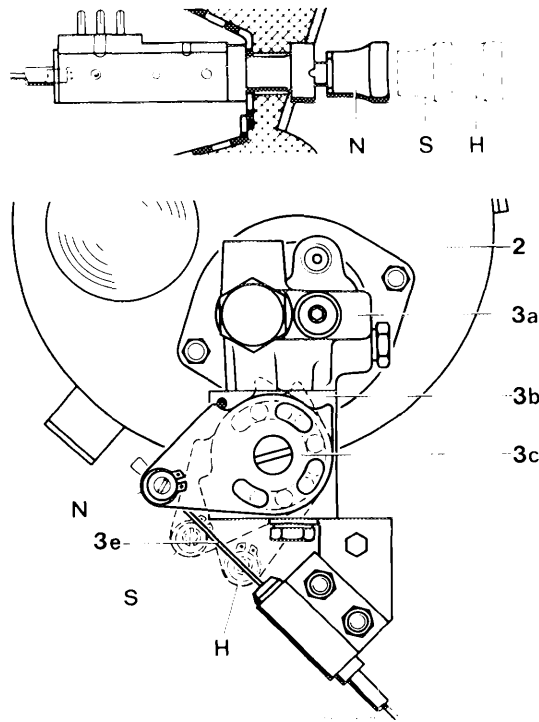
7 Determine switching period (difference between cut-in pressure and cut-out pressure), as well as time for pressure increase from cut-in pressure to cut-out pressure at 3250–3500/min.

For evaluating correct functioning of pressure regulator it is important that the pressure values for the switching period are not less or more than specified within permissible pressure values.

Note: A reliable diagnosis requires repeating measurements several times.

- 2 Oil reservoir
- 3a Pressure regulator of valve unit
- 3b Adjusting switch of valve unit
- 3c Control disk
- 3e Puller for adjusting switch

Positions of adjusting switch:
 N = normal level
 switch pushed down or control disk against stop at front



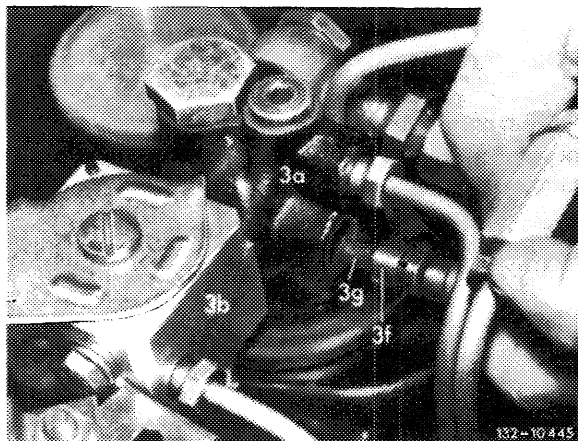
8 If no pressure is established in pressure regulator (3a), contamination in filter of throttle screw may be the cause.

To check, unscrew throttle screw (3f) and renew filter (3g), clean if required and check for passage.

9 If the specified function of pressure regulator is not attained, check pressure oil pump (32–530), as well as valve unit for leaks (refer to section "c").

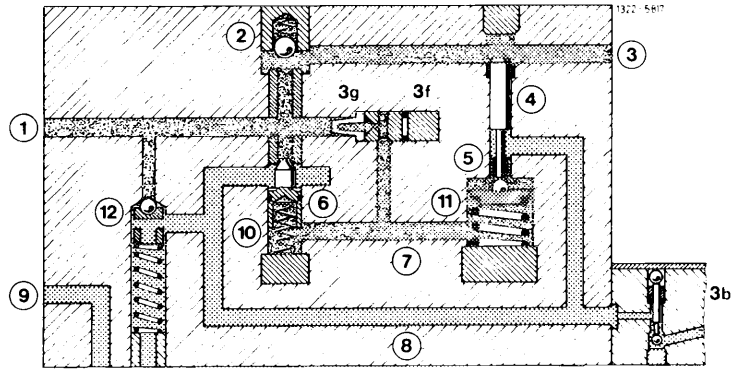
10 Exhaust pressure in pressure oil system with adjusting switch in position "M".

11 Disconnect pressure tester.



Cross section pressure regulator

- 3b Adjusting switch of valve unit
- 3f Throttle screw
- 3g Filter element for throttle screw
- 1 Pressure channel for connection of pressure line (B1) of pressure oil pump
- 2 Check valve
- 3 Pressure channel for connection of pressure line (B2) to central reservoir
- 4 Regulating piston
- 5 Control valve
- 6 Return valve
- 7 Regulating channel
- 8 Return channel with pressure regulator
- 9 Return channel for connection of return line (D1)
- 10 Spring of return valve
- 11 Spring of control valve
- 12 Pressure relief valve



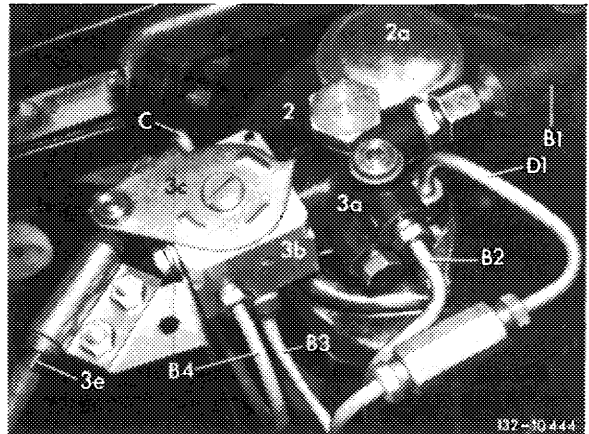
c) Checking valve unit for leaks

Checkup

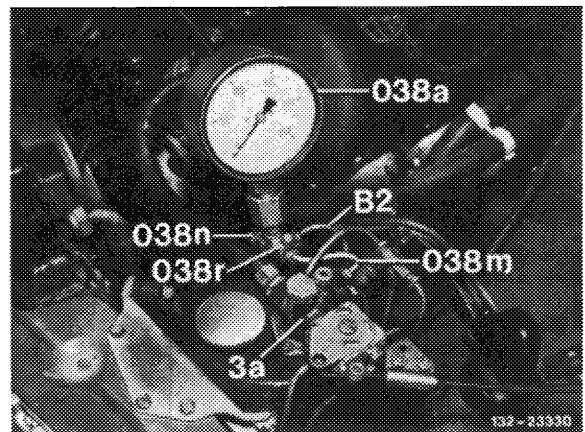
- 1 Make pressure oil system pressureless (32–600).

- 2 Disconnect pressure line (B2) on pressure regulator (3a).

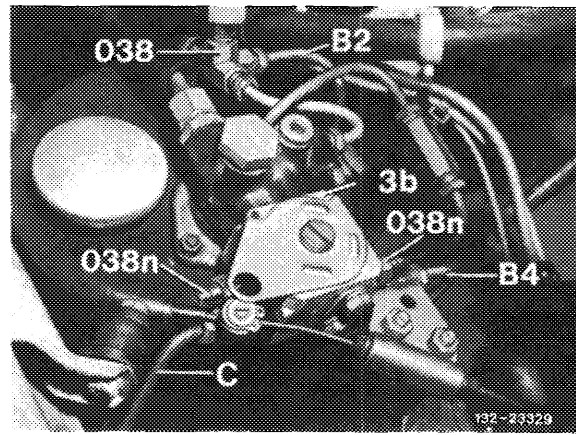
- 2 Oil supply tank
- 2a Closing cap with oil dipstick
- 3a Pressure regulator of valve unit
- 3b Adjusting switch of valve unit
- 3c Control disk
- 3e Puller for adjusting switch
- B1 Pressure line pressure oil pump – pressure regulator
- B2 Pressure line pressure regulator – central reservoir
- B3 Pressure line central reservoir – adjusting switch of valve unit
- B4 Pressure line adjusting switch – level controller
- C Control pressure line “higher level” adjusting switch – level controller
- D1 Return line level controller – pressure regulator



- 3 Connect pressure gauge (038a) with distributor (038r), pressure test line (038m) and vent screw (038n) between pressure regulator (3a) and pressure line (B2).

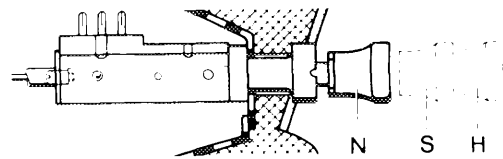


4 Disconnect pressure line (B4) adjusting switch – level controller and control pressure line (C) on adjusting switch (3b) and close with vent screw (038n) at adjusting switch.



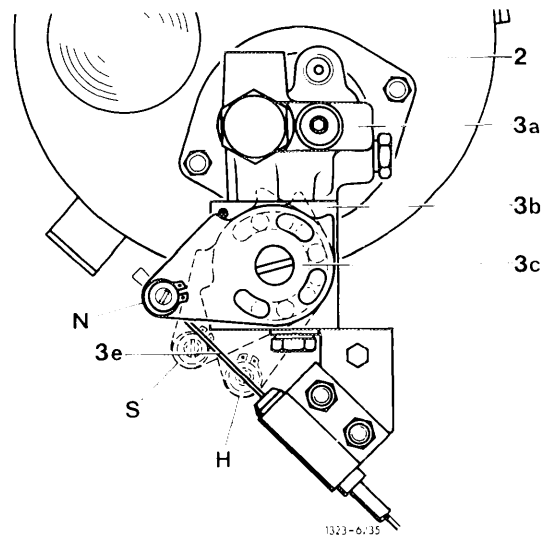
038 Pressure tester
B2 Pressure line pressure regulator – central reservoir

5 Move control disk (3c) of adjusting switch (3b) into position "N" = normal level (pushed completely forward).

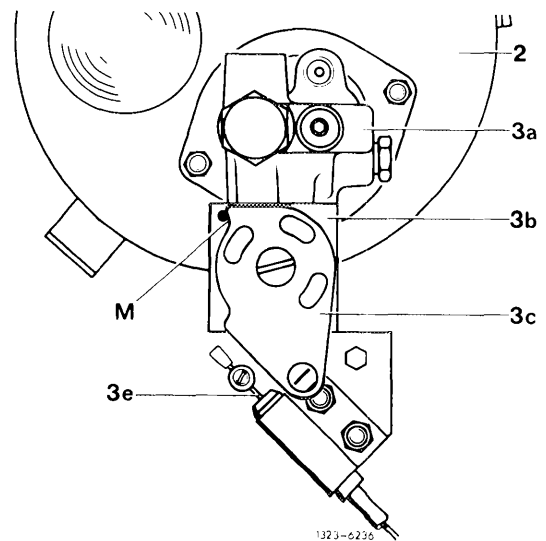


6 Run engine in position "N" = normal level of adjusting switch until cut-out pressure of pressure regulator is attained. Watch pressure gauge after engine stops.

Pressure drop within duration of checkup of approx. 30 minutes should not exceed 15 bar.

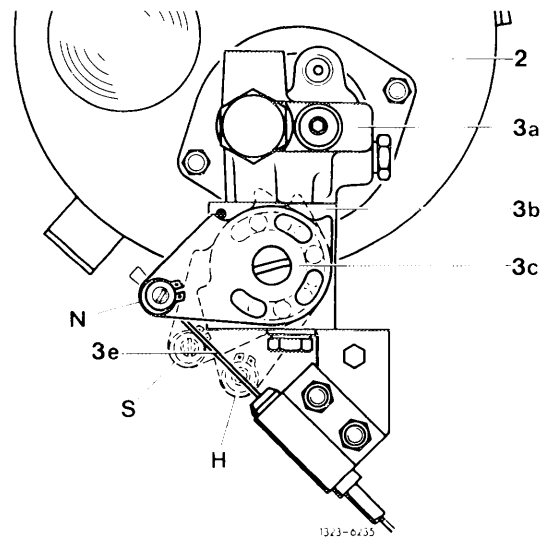


Note: To stabilize pressure in system, filling several times up to cut-out pressure is required in most cases. For this purpose, move adjusting switch for a short moment into position "M" = assembly after stopping engine and repeat filling procedure each time according to item 6.



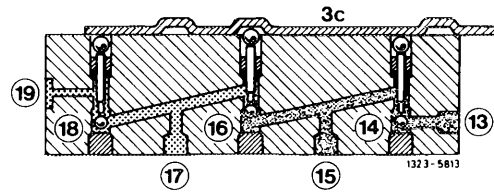
7 Evaluation of leak test of valve unit:

- a) **No** non-permissible pressure drop in positions "N", "S" and "H" = pressure regulator and adjusting switch sealtight.
- b) Non-permissible pressure drop in **all three** positions = pressure regulator leaking.
- c) Non-permissible pressure drop in **one or two** positions = adjusting switch leaking.

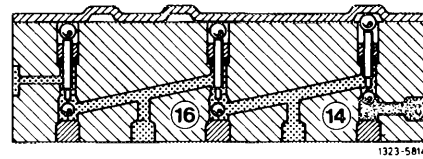


8 Perform leak test in positions "S" = detent position, as well as "H" = higher level also as described in item 6.

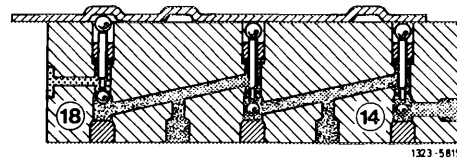
N = normal level



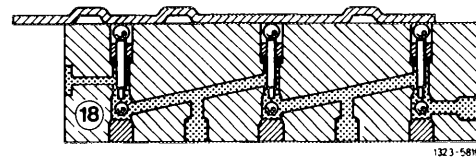
S = detent position



H = higher level



M = assembly



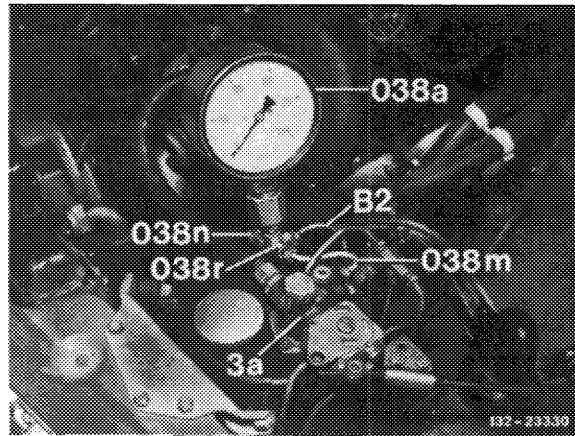
Sectional view of adjusting switch

- 3c Control disk
- 13 Connection for pressure line (B3) of central reservoir
- 14 Control valve
- 15 Connection for pressure line (B4) to level controller
- 16 Control valve
- 17 Connection for control pressure line (C)
- 18 Control valve
- 19 Return channel

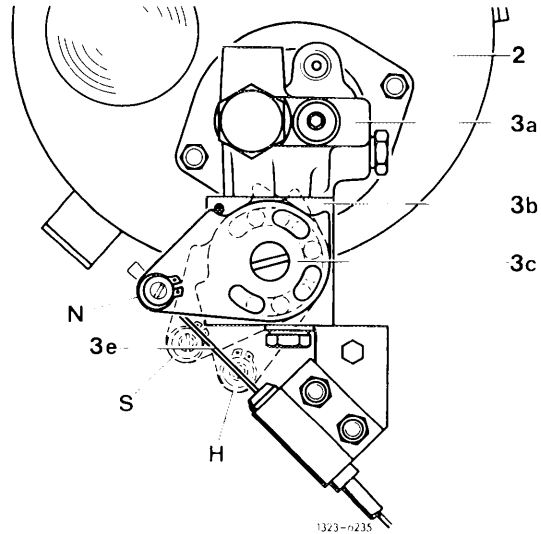
d) Checking electric pressure switch for warning lamp for function

Checkup

1 Connect pressure gauge (038a) similarly as for checking pressure regulator section "b", items 1–3.

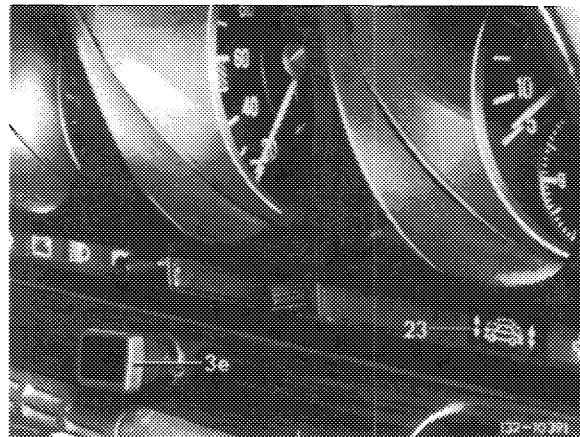


2 Move control disk (3c) of adjusting switch (3b) to position "N" = normal level.



- N = Normal level
switch pushed down or control disk against stop at front
- S = detent position
switch locked in center position or control disk pulled into 1st detent
- H = higher level
switch completely pulled or control disk pulled into 2nd detent.

3 Switch on ignition and check whether warning lamp (23) in instrument cluster lights up when system is pressureless.



Pull switch (3a) on instrument panel for puller to adjusting switch must be in position "N" = normal level (completely pulled down) (item 2).

Note: In position "S" and "H" the warning lamp lights up when pull switch in instrument cluster is pulled.

4 Fill central reservoir up to approx. 120 bar by running engine, then stop engine.

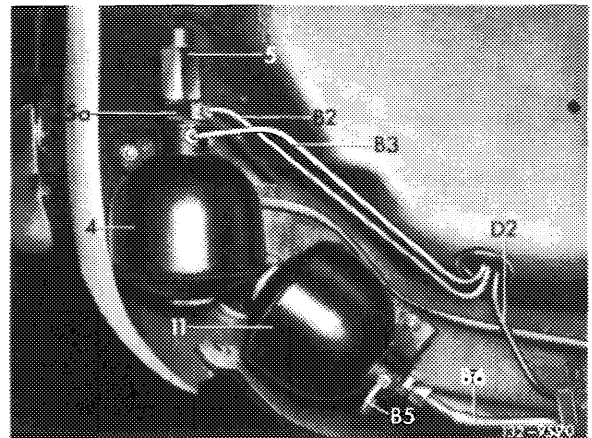
Slowly open vent screw of pressure tester, while letting a second person watch warning lamp in instrument cluster.

The cut-in point of electric pressure switch under influence of **falling pressure** is indicated by lighting up of warning lamp.

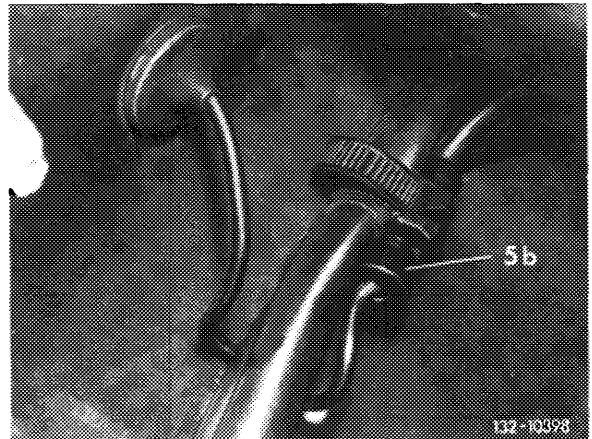
5 If function of electric pressure switch is not in order, a defect of electric pressure switch, of cable, as well as of plug connection may be responsible.

Pressure reservoir for front axle left at front in wheel house

- 4 Central reservoir
- 5 Electric pressure switch for warning lamp
- 5a Annular fitting
- 11 Pressure reservoir for front axle left
- B2 Pressure line pressure regulator of valve unit – central reservoir
- B3 Pressure line central reservoir – adjusting switch of valve unit
- B5 Pressure line level controller – pressure reservoir
- B6 Pressure line pressure reservoir – tube shock
- D2 Return line for leak oil of tube shock

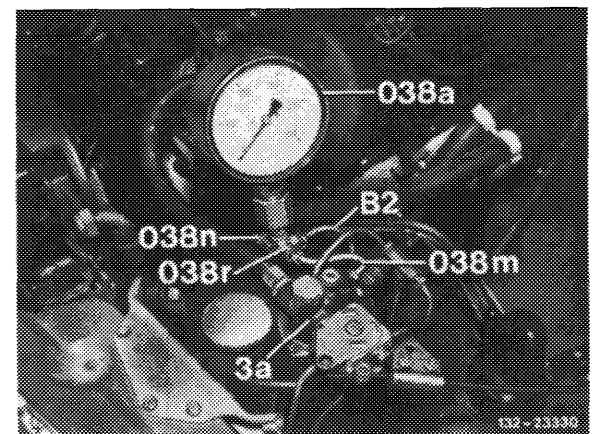


6 For function test of electrical pressure switch (grounding switch) separate plug connection (5b) of cable on wheel house. Clamp a test lamp to positive pole of battery and connect with cable of pressure switch. The electric contact must be closed below cut-out pressure for switch.

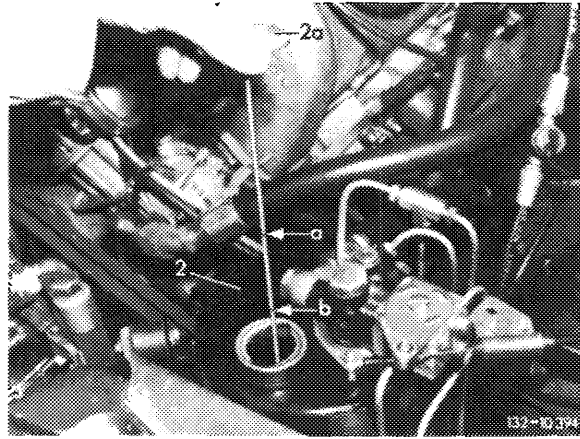


7 Reduced pressure in pressure oil system with adjusting switch in position "M".

8 Disconnect pressure tester (038).



9 Check oil level in reservoir and correct, if required.
Check line connections for leaks (32–600).

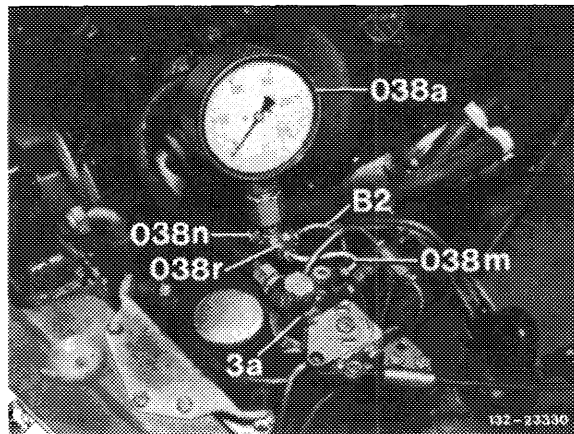


- 2 Oil supply tank
- 2a Closing cap with oil dipstick
- a Max. mark
- b Min. mark

e) Checking central reservoir for gas filling pressure

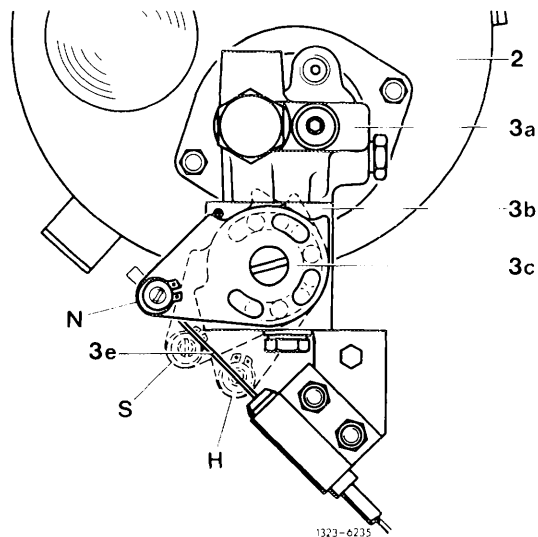
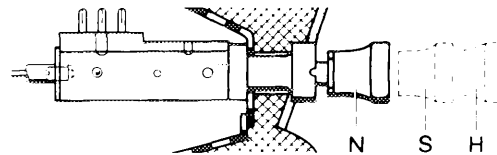
Checkup

1 Connect pressure gauge (038a) similar to pressure regulator section "b" items 1–3.



- 3a Pressure regulator
- 038a Pressure gauge
- 038n Vent screw
- 038m Pressure testing line
- 038r Distributor
- B2 Pressure line pressure regulator-central reservoir

2 Move control disk (3c) of adjusting switch (3b) into position "N" = normal level.



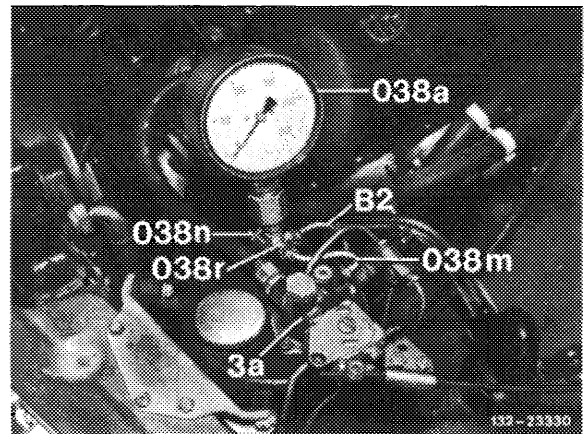
3 Run engine, slightly increase engine speed and watch pressure gauge.

The gas filling pressure of the central reservoir is indicated when the needle of the pressure gauge rises spontaneously to a pressure value. This sudden rise is effected by the oil pressure, whenever the latter exceeds the gas pressure.

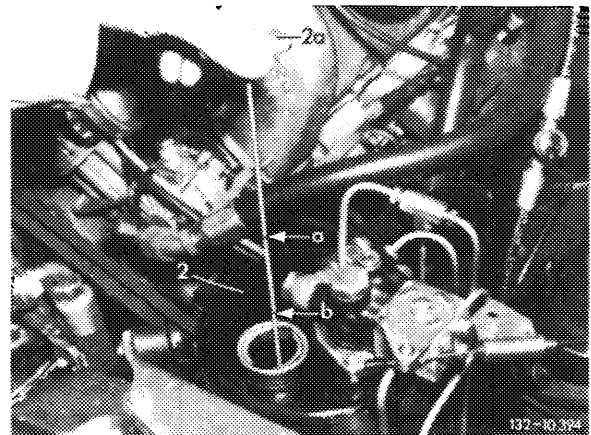
4 Stop engine.

5 Decrease pressure in pressure system with adjusting switch in position "M" = assembly.

6 Disconnect pressure tester (038).



7 Check oil level in supply tank and correct. Check line connections for leaks (32-600).



- 2 Oil supply tank
- 2a Closing cap with oil dipstick
- a Max. mark
- b Min. mark