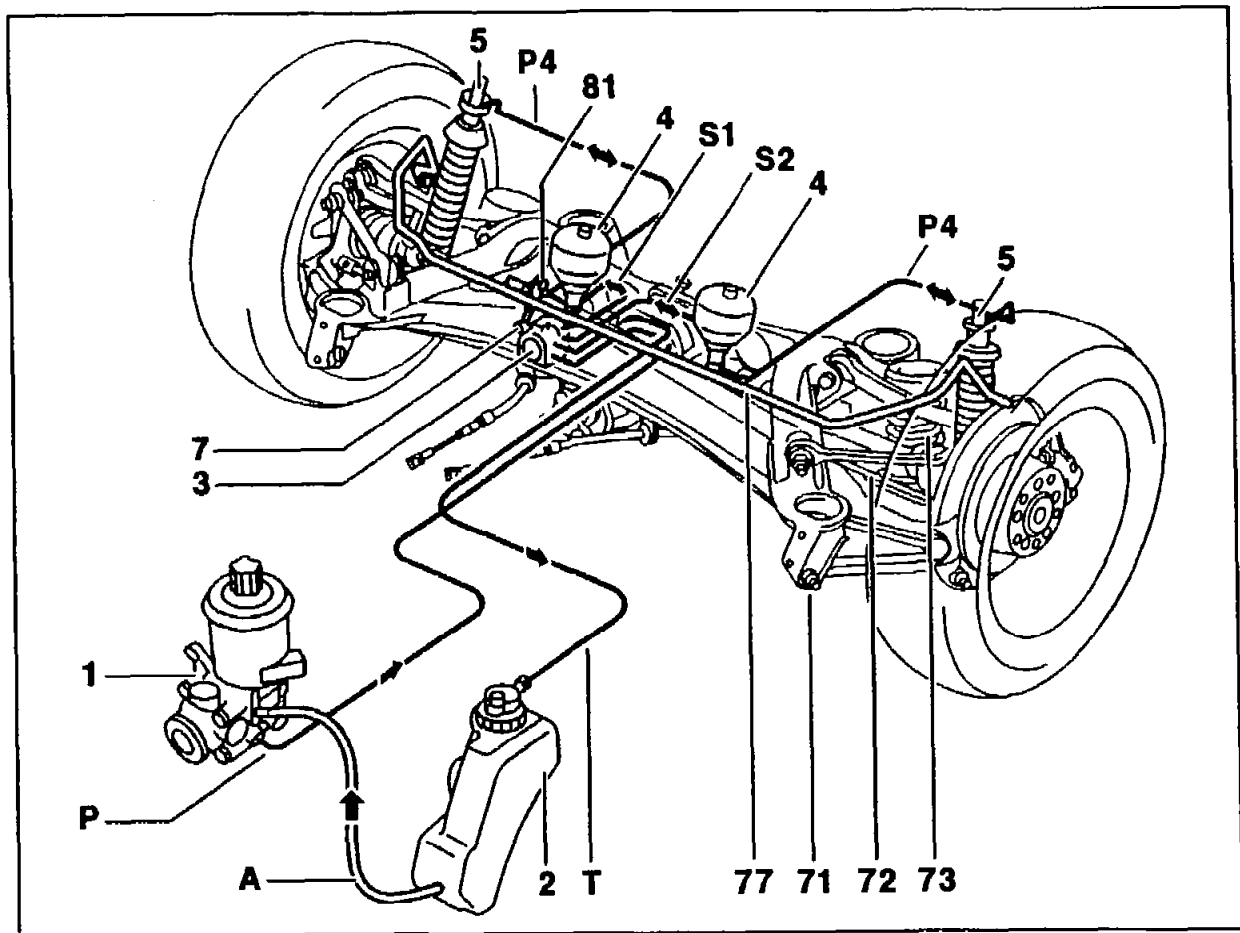


A. Level control on rear axle (models 124 and 201)



P32-5783-57

Diagram of rear axle level control system, model 124 T-model

1	Pressure oil pump	77	Torsion bar
2	Oil reservoir	81	Lever on torsion bar
3	Level controller	A	Suction line, oil reservoir - pressure oil pump
4	Spring actuator	P	Pressure line, pressure oil pump - level controller
5	Spring strut	P4	Pressure line, spring actuator - spring strut
7	Connecting rod	S1	Pressure line, level controller - spring actuator, right
71	Rear axle carrier	S2	Pressure line, level controller - spring actuator, left
72	Spring link	T	Return line, level controller - oil reservoir
73	Rear spring		

a) General function

The level control system on the rear axle comprises a hydropneumatic auxiliary suspension, which is automatically engaged at a given spring compression. On T-models, for example, level control cuts in approximately at loads of upwards of two persons on the front seats and about 40 kg of luggage in the trunk. The control point selected for the laden vehicle is the level which corresponds to the designed level of the relevant vehicle model with the appropriate suspension version.

The level control system on the rear axle operates hydropneumatically and essentially comprises the following three main parts:

1. The suspension elements, comprising the spring struts (5) and the spring actuators (4).
2. The pressure oil system, comprising the pressure oil pump (1) and the oil reservoir (2).
3. The control equipment, comprising the level controller (3) with its operating linkage.

On vehicles with the level control system on the rear axle, the spring struts (4) form a semi-supporting suspension system, i.e. they are used in addition to the rear springs to support the rear end of the vehicle. The spring struts are installed instead of rear shock absorbers and are each connected to a gas-filled spring actuator (4). They simultaneously act as shock absorbers in addition to their supporting function. (For further details refer to Section b "Suspension elements".)

When the engine is running, the pressure oil pump (1) draws hydraulic oil from the oil reservoir (2) via a suction line (A) for delivery to the level controller (3) via the pressure oil line (P).

The level controller is connected with the torsion bar (77) on the rear axle via a lever-type linkage and allows the delivered oil to flow back unpressurized into the oil reservoir in the "neutral" or "discharge" positions. The circulation of hydraulic oil is interrupted when the rear end of the vehicle drops below a given vehicle level (control point), because the control disc of the level controller has now closed the return flow duct to the oil reservoir, which in turn has moved the level controller into the "filling" position. (For further details refer to Section d "Control equipment".)

The delivered oil, subject now to the relevant pressure, will flow through the check valve in the level controller and through the pressure oil lines (S1, S2 and P4) into the spring actuators (4) and spring struts (5). The oil quantity fed in under pressure will lift the rear end of the vehicle until the specified vehicle level is attained. The level controller will simultaneously switch over to the "neutral" position and re-establish the conditions of pressureless circulation described above.

When the vehicle is unloaded or its rear end is lifted above the level position, the level controller is set to "discharge". In such a case, in addition to the oil delivered by the pressure oil pump, the oil initially required for lifting the lowered rear end of the vehicle will flow from the pressure actuators and spring struts back to the oil reservoir.

The oil discharge allows the vehicle level to drop until the level controller has again attained the "neutral" position.

To ensure that the spring struts will be able to perform their additional function as shock absorbers independent of the position of the level controller, the oil pressure in the spring struts must not drop below a given basic pressure.

The basic pressure is guaranteed by the fact that below a given pressure the discharge valve in the level controller is pushed out of reach of the control disc by a compression spring.

To protect the system against overloads, the level controller is also provided with a pressure-relief valve which, when there is excessive pressure in the spring elements, allows the oil delivered by the pressure oil pump to flow back into the oil reservoir even when the level controller is in the "filling" position.

An oil drain plug integrated into the level controller is used to release the basic pressure which is present independent of the position of the level controller.

Note

Correct adjustment of the vehicle level in accordance with the specifications, both in ready-to-drive condition as well as under load, is a prerequisite for proper functioning of the level control system and for providing a comfortable ride and optimum driving characteristics.

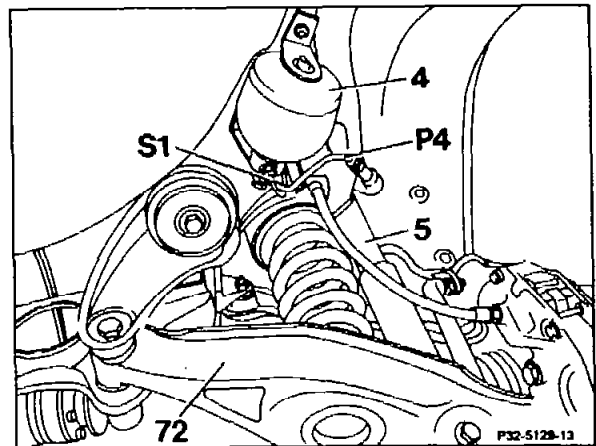
In the ready-to-drive condition, the rear end of the vehicle is supported only by the rear springs and the basic pressure in the suspension elements. The basic pressure is maintained by the drain valve in the level controller, independent of the position of the lever. A rear end which is too low in the ready-to-drive position should never be set higher by adjusting the connecting rod of the level controller. This would merely result in too high a level being built up under load. This in turn would produce poor driving characteristics, oil-flow noise and knocking under spring compression, and an excessively high ball head when operating a trailer. Under high loads as well as during acceleration, this would also lead to maximum pressure in the spring elements (limited by the level controller) being reached, so that under such driving conditions the opening of the pressure-relief valve would be audible as a whistling and knocking noise.

For this reason, the correction must be made on the rear springs when the ready-to-drive level is too low. However, the ready-to-drive level can only be estimated when the specified basic pressure is present in the suspension elements.

Therefore, prior to measuring the vehicle level in the ready-to-drive condition, the level controller, with the connecting rod disengaged and the engine running, must be moved first upwards for a short time into the "filling" position, and then downwards into the "emptying" position ("Testing vehicle level", refer to 40-0300).

b) Suspension elements

The spring strut (5) is attached to the spring link (72) below and to the dome of the frame floor above. The spring strut (5) is connected via the pressure line (P4) attached to the top of the housing to the spring actuator (4) attached to the frame floor.



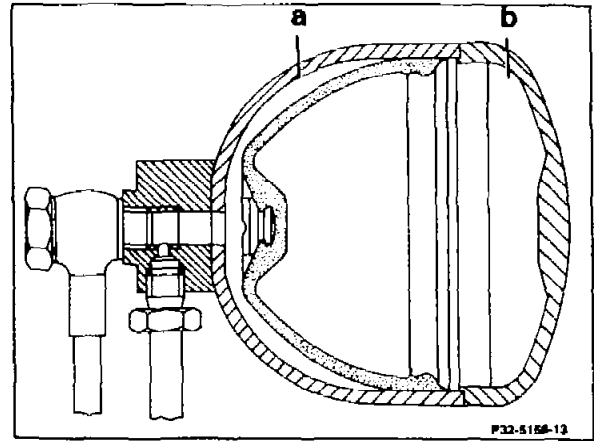
Arrangement on model 201

The spring actuator is in turn connected to the level controller by the pressure line (S1). Lifting of the lowered rear end of the vehicle is achieved by increasing the oil quantity in the oil chamber of the spring strut, which causes the piston rod to extend. The mechanical layout of the spring strut (5) resembles that of a conventional shock absorber.

Spring actuator

The spring actuator installed is spherical. The oil chamber (a) and gas chamber (b) of the actuator are separated by a diaphragm.

The gas chamber is pre-filled to a specified pressure.



Under the influence of constantly changing oil pressure in the system during operation of the vehicle, e.g. during spring compression and rebound, the diaphragm adapts itself to the resulting oil volume in the chamber. The diaphragm changes its shape inside the spherical housing of the spring actuator.

The spring actuator can therefore only fulfill its proper function if the gas pressure in the new actuator measures 23 ± 1 bar, or if it does not drop below a minimum pressure of 15 bar.

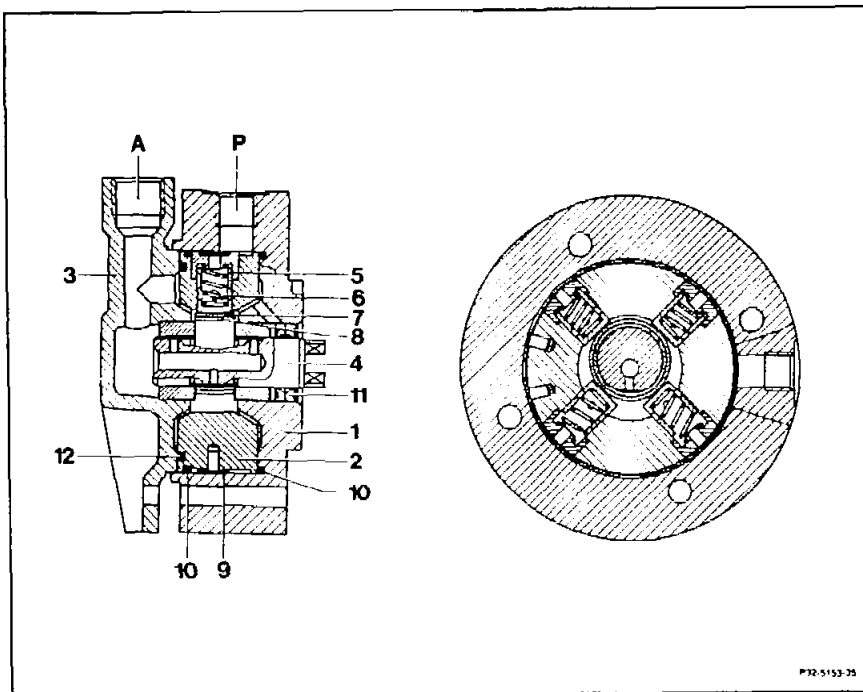
c) Pressure oil system

The pressure oil pumps installed are radial piston pumps with four pistons located radially to the pump shaft.

1. Pressure oil pump driven by the camshaft
2. Tandem pump driven by the single-belt drive

The pumps are designed so that they can raise the rear end of the vehicle relatively quickly after loading and require very little power for pressureless delivery around the oil circuit.

1. Pressure oil pump

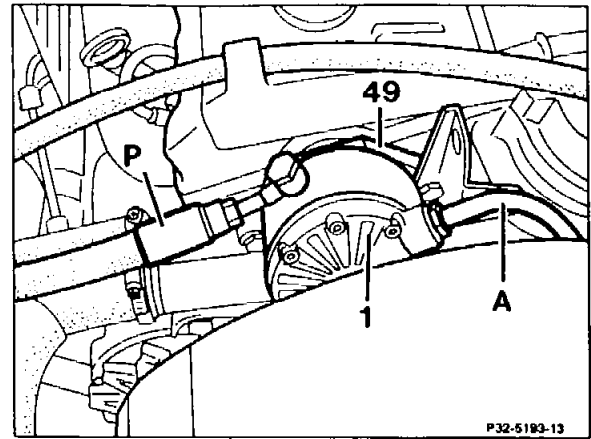


1	Housing	8	Inner race
2	Center piece	9	Return stroke sealing strip
3	Bearing cap	10	O-ring
4	Eccentric shaft	11	Radial sealing ring
5	Piston	12	O-ring
6	Compression spring	A	Suction line, oil reservoir - pressure oil pump
7	Outer race	P	Pressure line, pressure oil pump - level controller

Engine 102

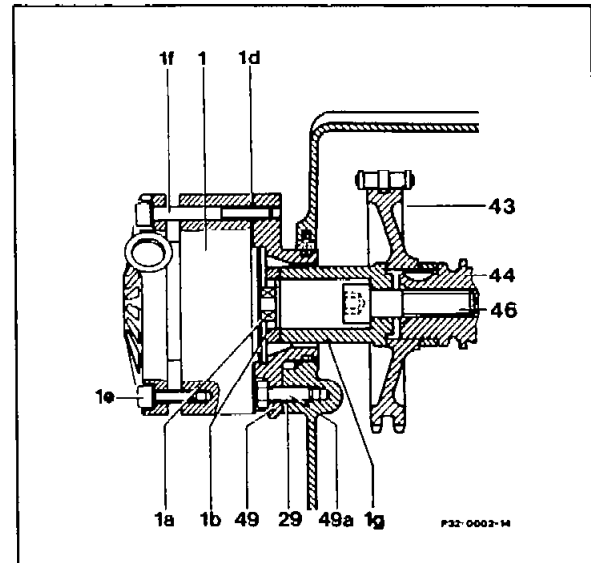
The pressure oil pump (1) is driven directly by the camshaft and is attached to the cylinder head by means of a flange (49).

- 1 Pressure oil pump
- 49 Flange
- A Suction line, oil reservoir - pressure oil pump
- P Pressure line, pressure oil pump - level controller



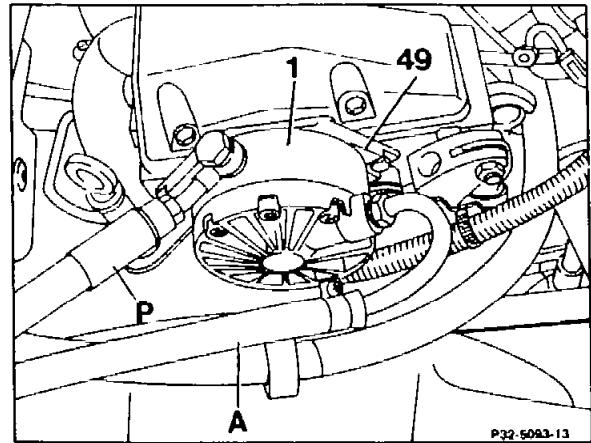
The pressure oil pump is driven by the camshaft (44) via the driver sleeve (1g) and driver (1b).

- 1 Pressure oil pump
- 1a Eccentric shaft
- 1b Driver
- 1d Sealing washer
- 1e Hexagon socket bolts
- 1f Hexagon socket bolts
- 1g Driver sleeve
- 43 Camshaft sprocket
- 44 Camshaft
- 46 Hexagon socket bolt
- 49 Flange
- 49a Hexagon head bolt

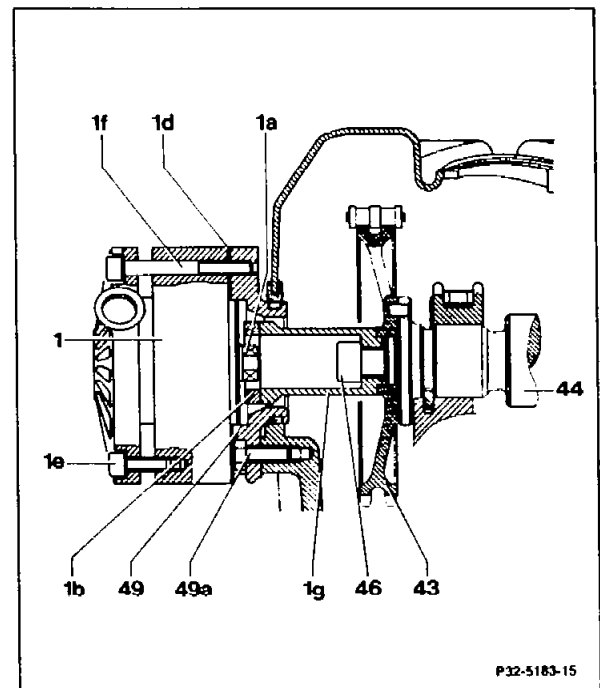


Engines 601, 602 and 603

- 1 Pressure oil pump
- 49 Flange
- A Suction line, oil reservoir - pressure oil pump
- P Pressure line, pressure oil pump - level controller



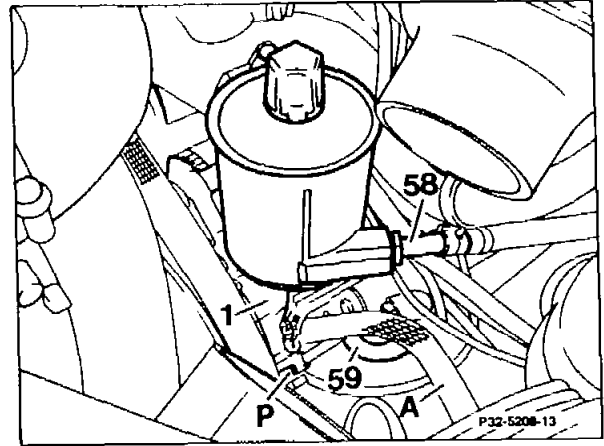
- 1 Pressure oil pump
- 1a Eccentric shaft
- 1b Driver
- 1d Sealing washer
- 1e Hexagon socket bolts
- 1f Hexagon socket bolts
- 1g Driver sleeve
- 43 Camshaft sprocket
- 44 Camshaft
- 46 Hexagon socket bolt
- 49 Flange
- 49a Hexagon head bolt



2. Tandem pump

Engines 103, 104, 111, 604, 605 and 606

The pressure oil pump and the power steering pump together make up the tandem pump unit. The tandem pump consists of the radial piston pump for the level control system and the vane-type pump for the power steering. The tandem pump is attached to the engine with a support and is driven by a single-belt drive.



1 Pressure oil pump (tandem pump)

Power steering:

58 Return hose

59 High-pressure expanding hose

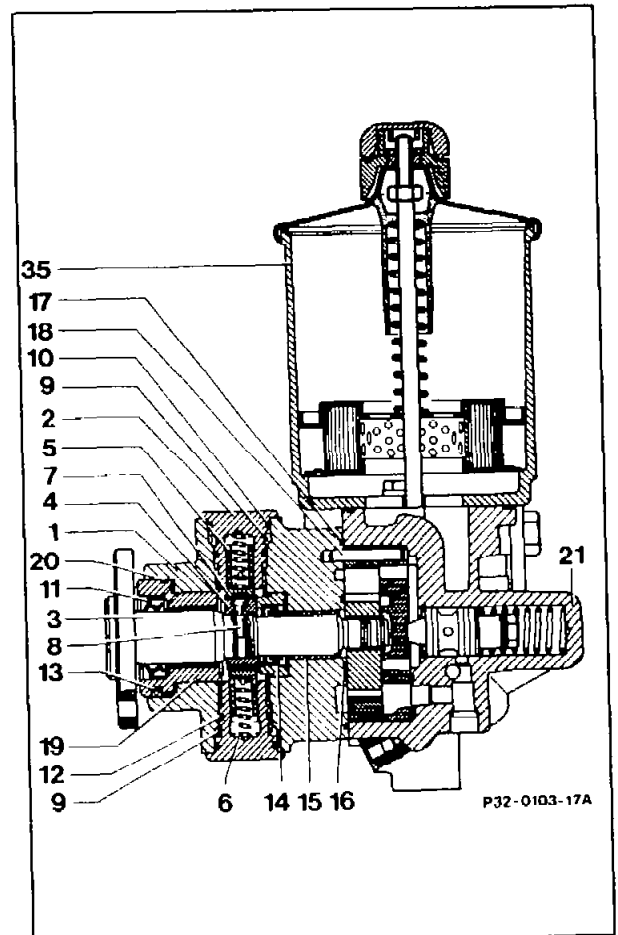
Level control:

A Suction line, oil reservoir - pressure oil pump

P Pressure line, pressure oil pump - level controller

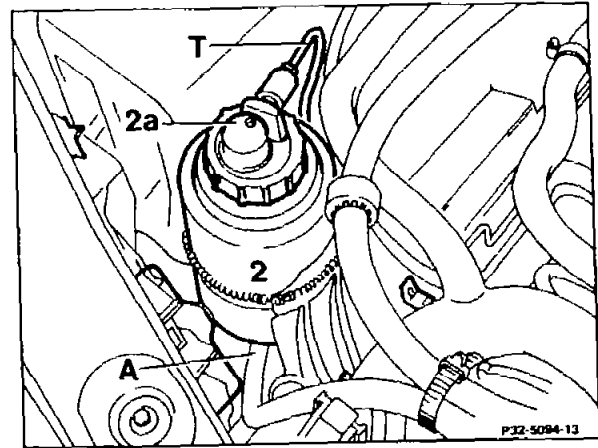
As before, the pumps operate with ATF fluid for the power steering and hydraulic oil for the level control system. Both pumps are driven by one shaft. The cam (4) of the radial piston pump is connected to the drive shaft (3) of the vane-type pump via the shear pin (8), which shears off in the event of overload. In such cases the vane-type pump for the power steering remains fully operative.

- 1 Housing
- 2 Piston liners
- 3 Drive shaft
- 4 Cam
- 5 Piston
- 6 Compression spring
- 7 Race
- 8 Shear pin
- 9 Return stroke sealing strip
- 10 O-ring
- 11 Radial sealing ring
- 12 O-ring
- 13 Positioning pin
- 14 Sealing ring carrier with radial sealing ring
- 15 Bearing
- 16 O-ring
- 17 O-ring
- 18 Fitted pin
- 19 Bearing bush with plain bearing
- 20 O-ring
- 21 Power steering pump
- 35 Reservoir for power steering



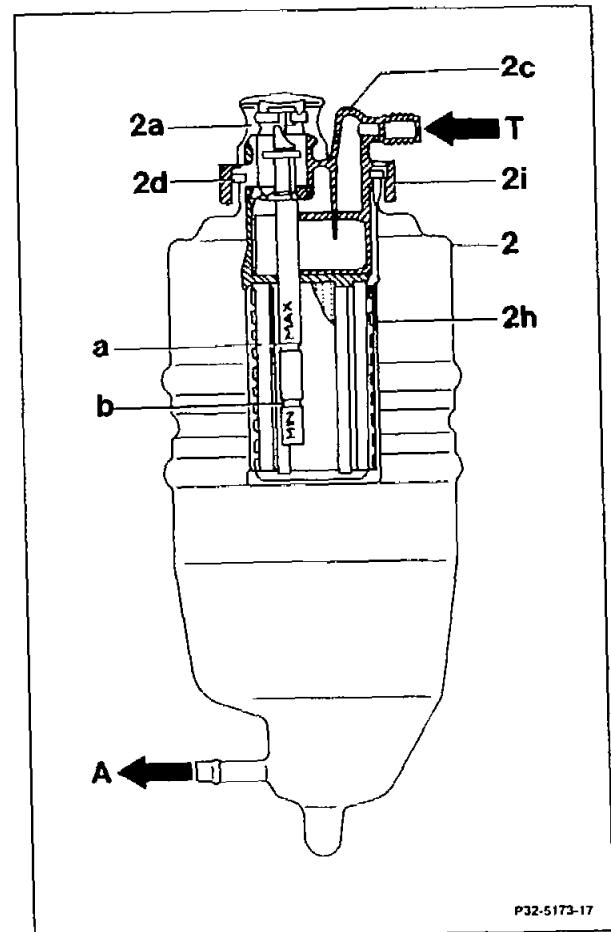
Oil reservoir, model 124 version without ASD up to 12/87 and model 201

The oil reservoir (2) is located at the front of the engine compartment. It is connected to the pressure oil pump by the suction line (A) and to the level controller by the return line (T).



The filter element (2h) in the oil reservoir is removable.

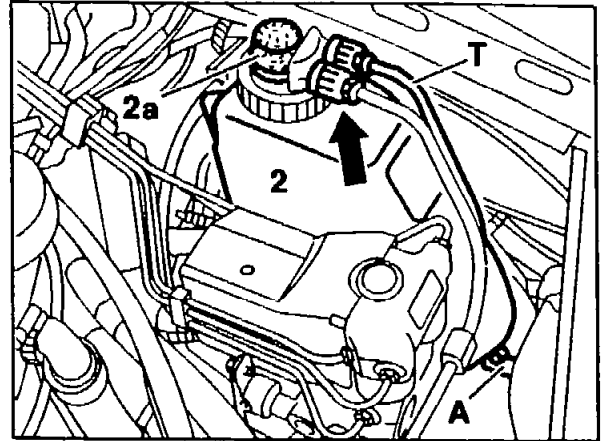
This type of oil reservoir has a capacity of 1.0 liters up to the minimum mark and 1.2 liters up to the maximum mark.



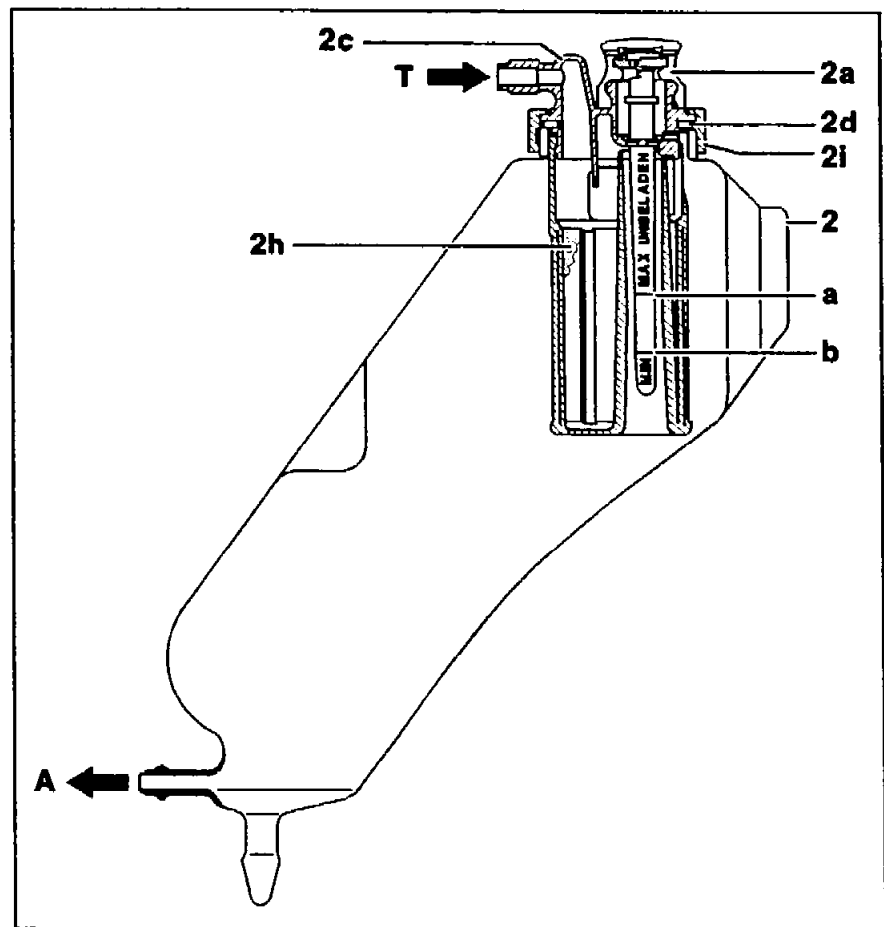
- 2a Cap with oil dipstick
- 2c Cover with connection
- 2d Rubber sealing ring
- 2h Filter element
- 2i Lock nut
- a Maximum mark
- b Minimum mark
- A Suction line, oil reservoir - pressure oil pump
- T Return line, level controller - oil reservoir

Model 124 version with ASD as of 01/88, for all model 124s as of 12/89

The plastic oil reservoir (arrow) is located at the front left of the engine compartment.



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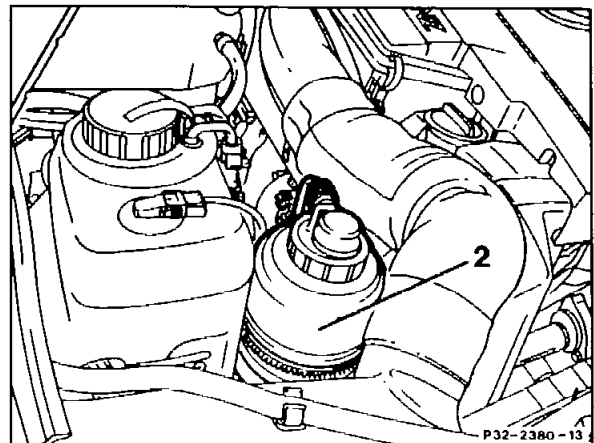


- 2 Oil reservoir
- 2a Cap with oil dipstick
- 2c Cover with connection
- 2d Rubber sealing ring
- 2h Filter element
- 2i Lock nut
- a Maximum mark
- b Minimum mark
- A Suction line, oil reservoir - pressure oil pump
- T Return line, level controller - oil reservoir (on ASD vehicles: ASD valve control unit - oil reservoir)

P32-5785-37

Model 124.036 (500E)

The plastic oil reservoir (2) is located at the front right of the engine compartment.



P32-2380-13

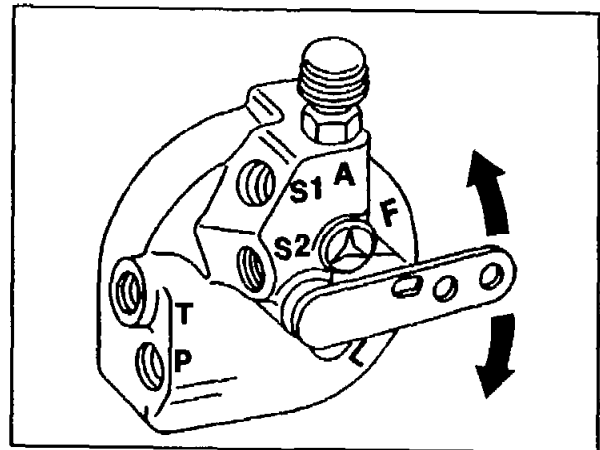
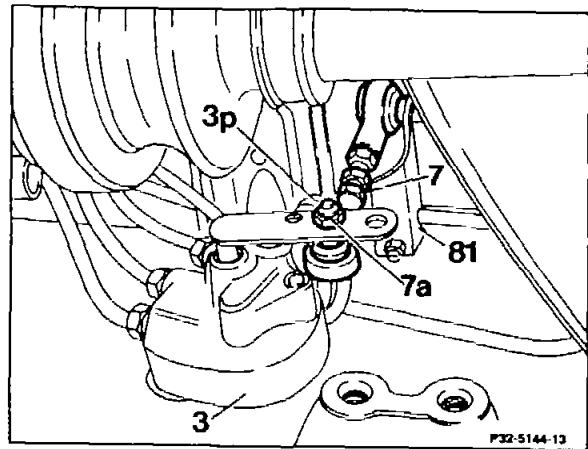
d) Control equipment

Level controller

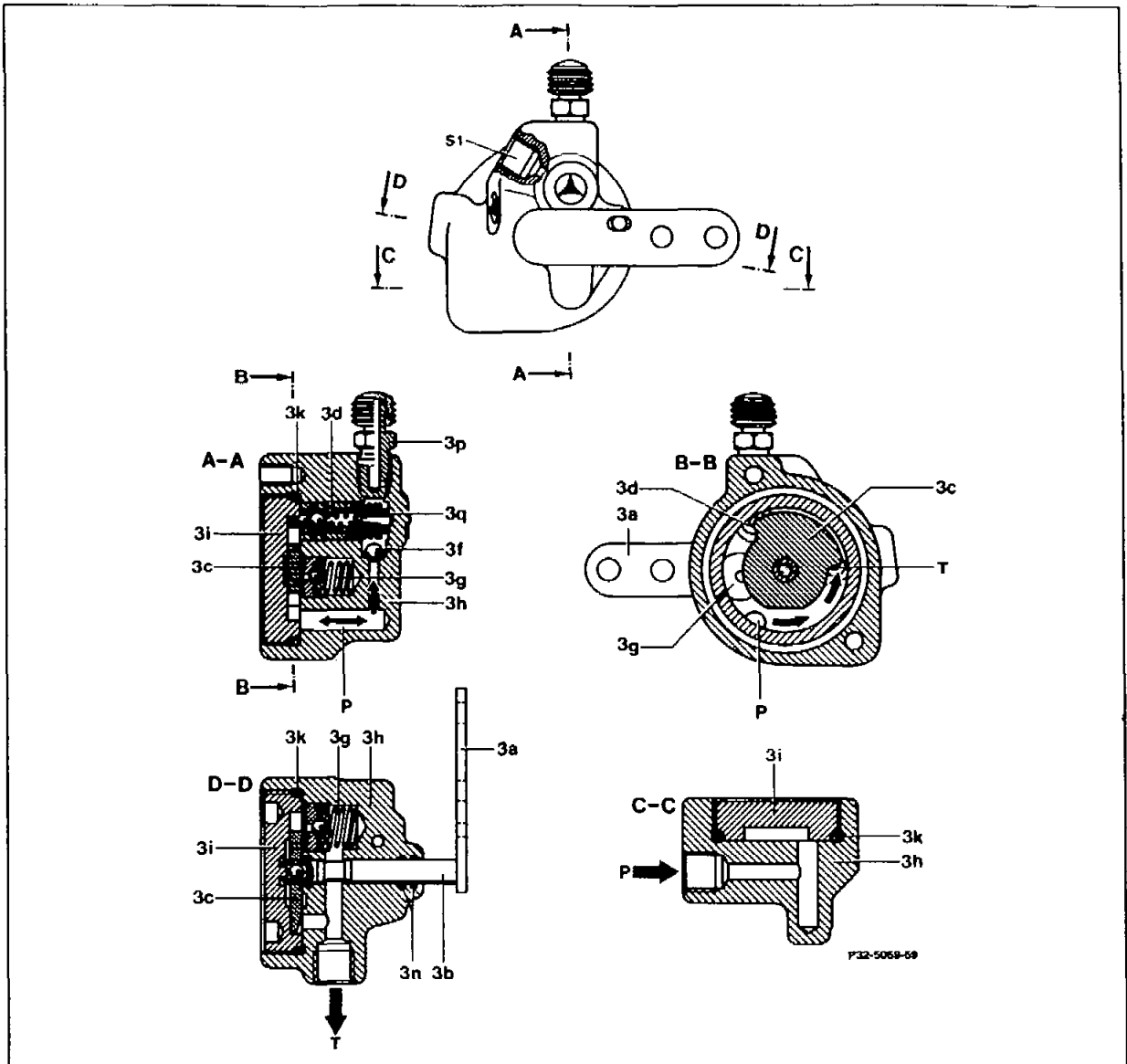
The level controller is attached to the frame floor by a bracket and is connected to the lever (81) on the torsion bar by means of a connecting rod (7).

The oil drain plug (3p) in the level controller serves for releasing the pressure in the system for repairs and test work.

Arrangement on model 201



Markings on level controller

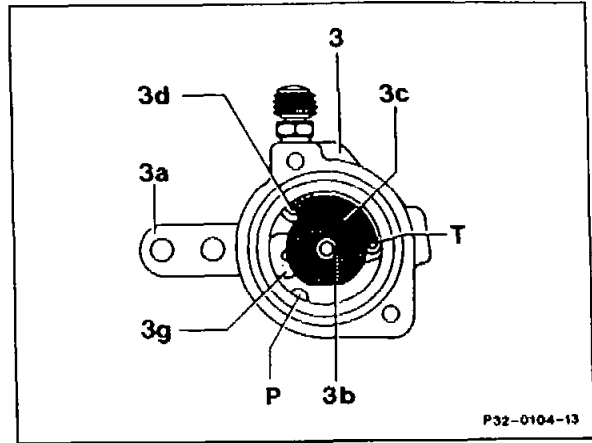


3a	Lever	3i	Cover
3b	Control shaft	3k	O-ring cover
3c	Control disc	3n	O-ring control shaft
3d	Discharge valve	3p	Oil drain plug
3f	Non-return valve	3q	Sintered filter
3g	Pressure-relief valve	P	Pressure duct from pressure oil pump
3h	Housing	S1	Pressure duct to suspension elements
		T	Return duct to oil reservoir

"Neutral" position

The vehicle is in the level position and the lever (3a) is in the center position.

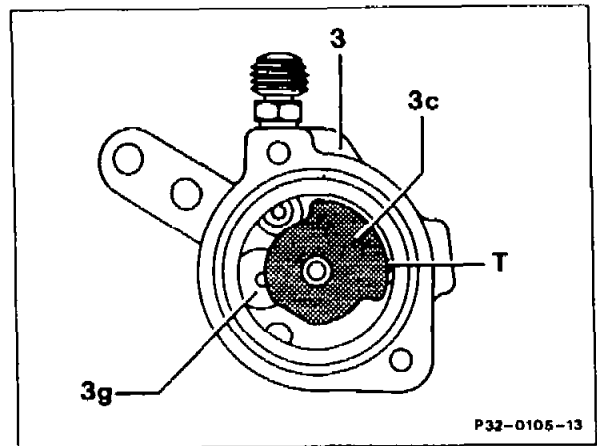
Oil entering via the supply duct (P) is returned unpressurized to the oil reservoir via the return flow duct (T) and the return line. The discharge valve (3d) remains closed.



"Filling" position

The rear end of the vehicle has lowered after loading and the lever is above the center position.

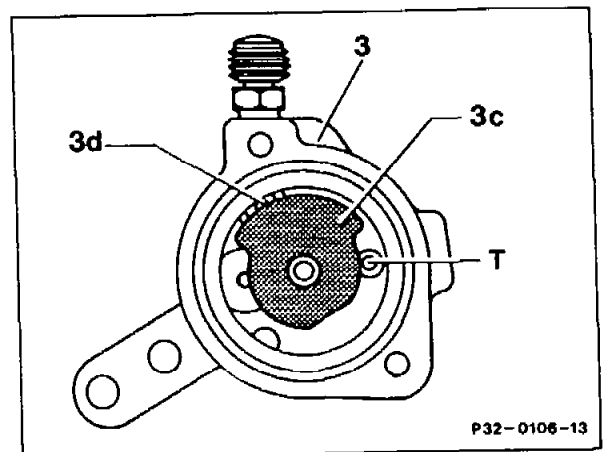
The control disc (3c) has closed the return flow duct (T). When sufficient pressure has built up, the oil is fed into the suspension elements via the springless ball check valve and the pressure duct. The rear end of the vehicle is raised until it returns to the "neutral" position. The system is protected against overload by the pressure-relief valve (3g) which opens when the maximum permissible pressure is reached.



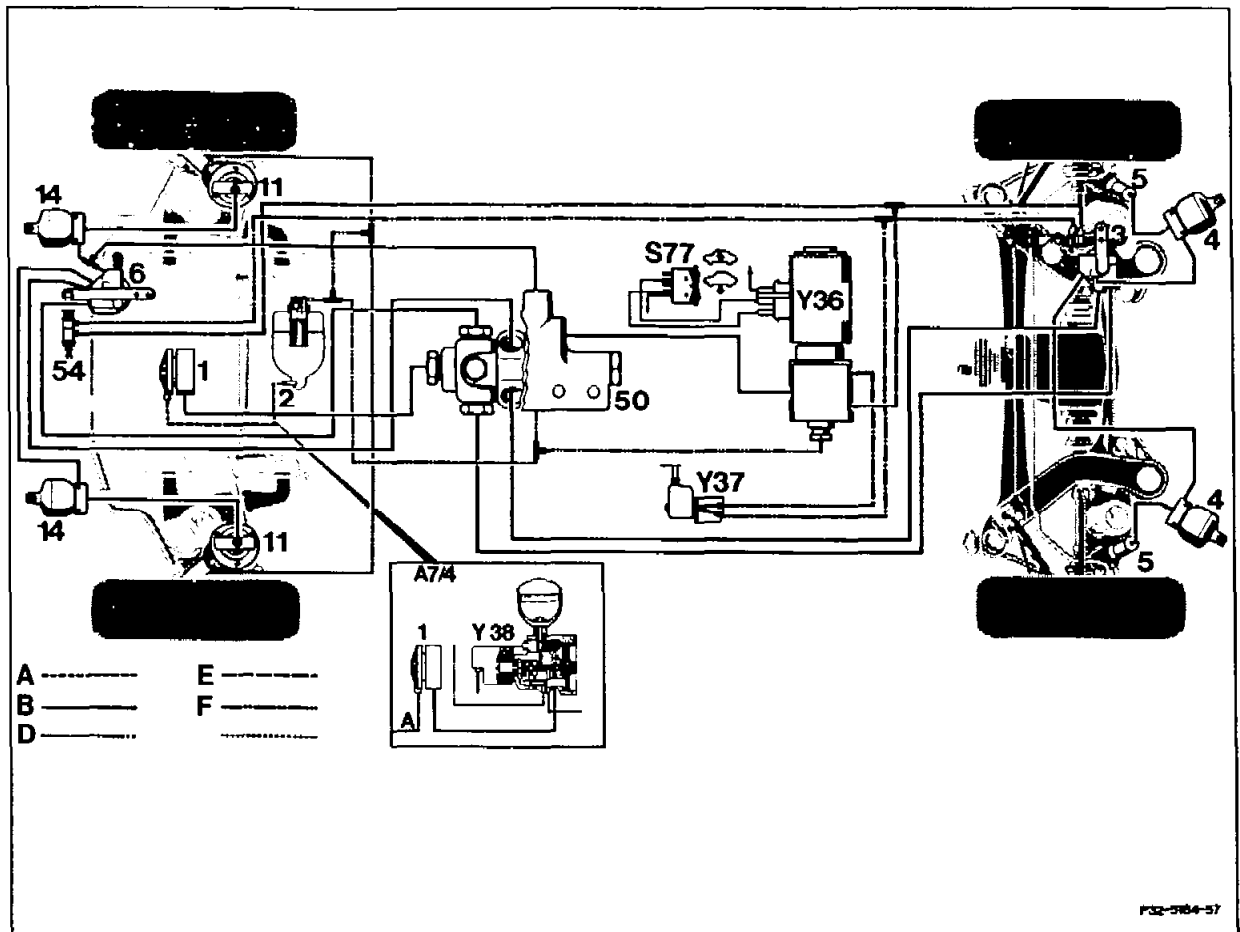
"Emptying" position

The rear end of the vehicle has risen after unloading and the lever is below the center position.

The control disc (3c) has opened the discharge valve (3d). This lowers the pressure prevailing in the suspension elements. The oil flows back to the oil reservoir through the opened discharge valve and the fully opened return flow duct (T) together with the oil delivered by the pump. When the vehicle has returned to the level position, the control disc closes the discharge valve (3d). The basic pressure required for operation of the spring struts as shock absorbers is assured, independent of the position of the controller, by the fact that any lowering of the pressure in the suspension elements below a given value will cause the outer compression spring of the discharge valve (3d) to push this valve out of range of the control disc so that the pressure can drop no further.



**B. Level control with level adjustment on front and rear axles
(models 201.034/035/036)**



- | | | | |
|---|-----------------------------|------|--------------------------------|
| A | Suction line | 6 | Level controller, front axle |
| B | Pressure line | 11 | Spring strut, front axle |
| D | Control line, raise level | 14 | Spring actuator, front axle |
| E | Control line, lower level | 50 | Distributor valve |
| F | Return line | 54 | Control rod, front axle |
| | Leak oil line | 55 | Control rod, rear axle |
| 1 | Pressure oil pump | A7/4 | ASD hydraulic unit |
| 2 | Oil reservoir | S77 | Level adjustment switch |
| 3 | Level controller, rear axle | Y36 | Level adjustment control valve |
| 4 | Spring actuator, rear axle | Y37 | Level adjustment check valve |
| 5 | Spring strut, rear axle | Y38 | ASD solenoid valve |

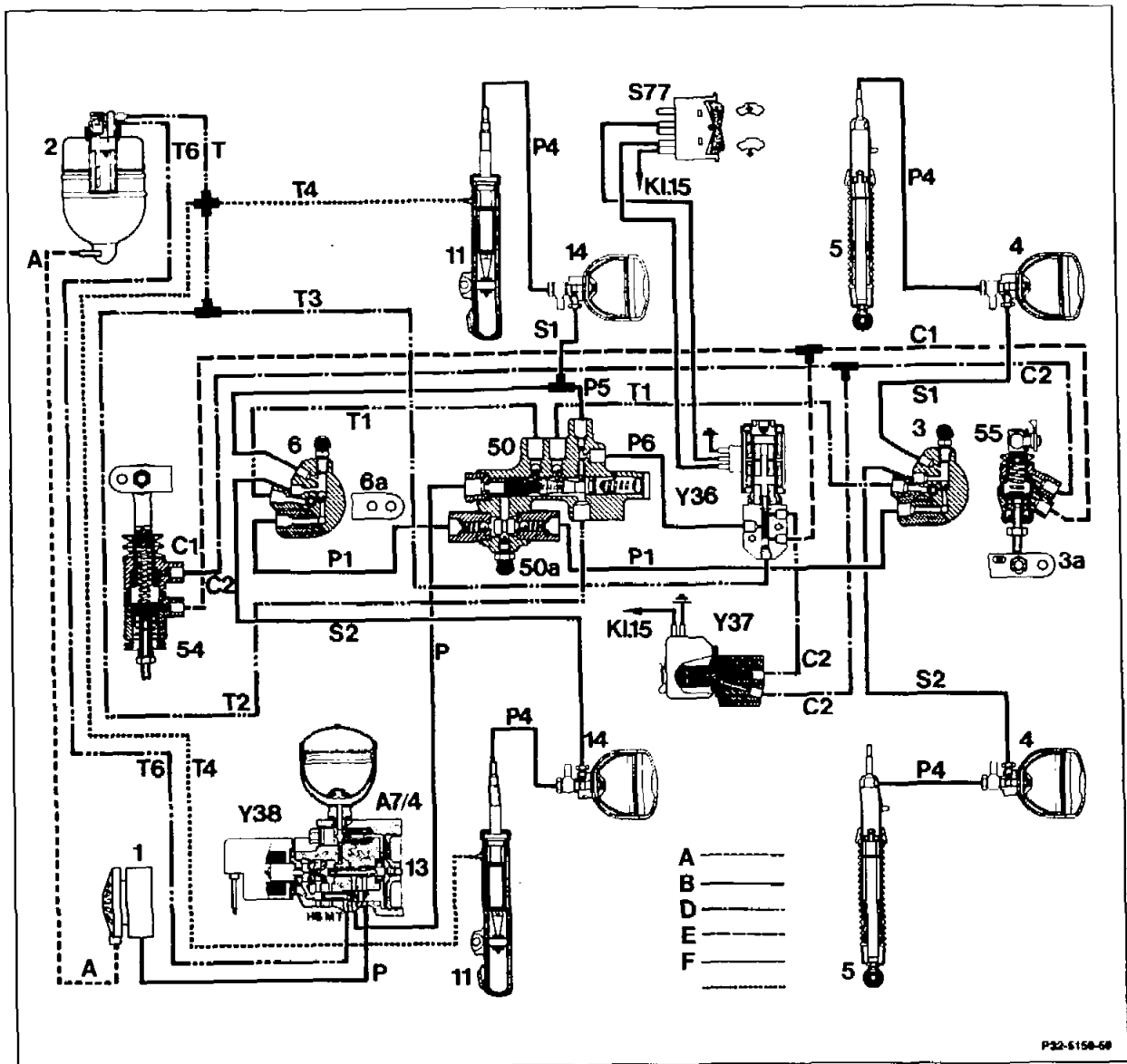


Diagram of level control system with level adjustment on front and rear axles

- | | | | |
|----|------------------------------|------|--|
| 1 | Pressure oil pump | 50 | Distributor valve |
| 2 | Oil reservoir | 50a | Switch for simultaneous pressure supply to level controllers |
| 3 | Level controller, rear axle | 54 | Control rod, front axle |
| 3a | Level controller lever | 55 | Control rod, rear axle |
| 4 | Spring actuator, rear axle | A7/4 | ASD hydraulic unit |
| 5 | Spring strut, rear axle | S77 | Level adjustment switch |
| 6 | Level controller, front axle | Y36 | Level adjustment control valve |
| 6a | Level controller lever | Y37 | Level adjustment check valve |
| 11 | Spring strut, front axle | Y38 | ASD solenoid valve |
| 14 | Spring actuator, front axle | | |

A		E	
A	Suction line	C1	Control pressure line, control valve - control rods (lowering level)
B		F	
S1	Pressure line, level controller - right spring actuator	T	Return line, distributor fitting - oil reservoir
S2	Pressure line, level controller - left spring actuator	T1	Return line, level controller - distributor valve
P		T2	Return line, distributor valve - oil reservoir
P	Pressure line, pressure oil pump - distributor valve	T3	Return line, control valve - oil reservoir/distributor fitting
P1	Pressure line, distributor valve - level controller	T4	Return line, leak oil spring struts - oil reservoir
P4	Pressure line, spring actuator - spring strut	T6	Return line, ASD hydraulic unit
P5	Pressure line, right front axle spring actuator - distributor valve/level controller		
P6	Pressure line, distributor valve - control valve		
D			
C2	Control pressure line, control valve - control rods (raising level)		

ii) General function

The level control system with level adjustment on the front and rear axles is a semi-supporting hydro-pneumatic suspension system. In contrast to the normal level control system on the rear axle, which only operates at a given spring compression, the preselected level is regulated in all load conditions by the level adjustment system. The level can be lowered from the normal position by approx. 15 mm or raised by approx. 30 mm as required via the level adjustment switch on the instrument panel.

The level can be changed either when the vehicle is moving or with the vehicle stationary and the engine running. Since, in comparison with the normal level control system, the hydraulic system carries a significantly higher share of the load, the springs are of a suitably weaker design.

The level control system with level adjustment on the front and rear axles essentially comprises the following four main parts:

1. The suspension elements, consisting of the spring actuators (4 and 14) and the spring struts (5 and 11).
2. The pressure oil system, consisting of the pressure oil pump (1), the oil reservoir (2), the ASD hydraulic unit and the distributor valve (50).
3. The control equipment, consisting of the level controllers (6 and 3) on the front and rear axles.
4. The level adjustment system, consisting of the level adjustment switch (S17), the level adjustment control valve (136), the level adjustment check valve (137) and the control rods (54 and 55).

On vehicles with level control and level adjustment on front and rear axles, the spring struts form a semi-supporting suspension system, i.e. they are used in addition to the front and rear springs to support the vehicle body. The spring struts are each connected to a gas-filled spring actuator (4 and 14). They simultaneously act as shock absorbers in addition to their supporting function. (For further details refer to Section b "Suspension elements")

When the engine is running, the pressure oil pump (1) draws hydraulic oil from the oil reservoir (2) via a suction line (A), which is fed to the distributor valve through the ASD hydraulic unit via the pressure line (P). The oil proceeds from there to the level controllers on the front and rear axles via the pressure lines (S1 and S2). For the oil supply to the specific level controllers, the job of the distributor valve (50) is to control the oil flow so that the specific level controller and thus the axle with the largest pressure requirement has priority.

When the vehicle is unloaded, the quantity of oil flowing from the level controllers (3 and 6) via the return line (T1) is controlled at the distributor valve. The result is that the stationary vehicle (engine switched off) cannot lower too much after the load is removed. The returning oil is fed from the distributor valve (50) to the oil reservoir (2) via the return lines (T2 and T). The spring actuators (4 and 14) and spring struts (5 and 11) on the front and rear axles are supplied via the pressure lines (S1, S2 and P4). The level adjustment control valve (Y36) receives the necessary control pressure via the pressure line (P6).

When the engine is switched off the non-return valve shuts off the pressure line connection (P5) in the distributor valve. The control pressure lines (C1 and C2) of the level adjustment system lead from the level adjustment control valve (Y36) to the control rods (54 and 55) on the front and rear axles.

The length of control rods (54 and 55) for actuating the level controllers can be extended by the control pressure. The control rods can be lengthened via the level adjustment switch (S77) and the level adjustment control valve (Y36) thus lowering the vehicle level via the level controllers. A reduction in the length of the control rods results in a rise in the vehicle level via the level controllers.

Since the control valve operates with a control slide, it is unable to maintain the control pressure when the engine is switched off (control valve de-energized). To prevent the increased level from dropping to the normal level, the level adjustment check valve (Y37) prevents the oil return in the control line (C2) when the ignition is switched off.

A pressure-relief valve is integrated in the distributor valve (50) to protect the entire system. This opens at a pressure of above 160 bar, thereby allowing the oil delivered to return to the oil reservoir (2) via the return line (T2).

An oil drain plug integrated in the level controller serves to reduce the basic pressure, irrespective of the position of the level controller.

Note

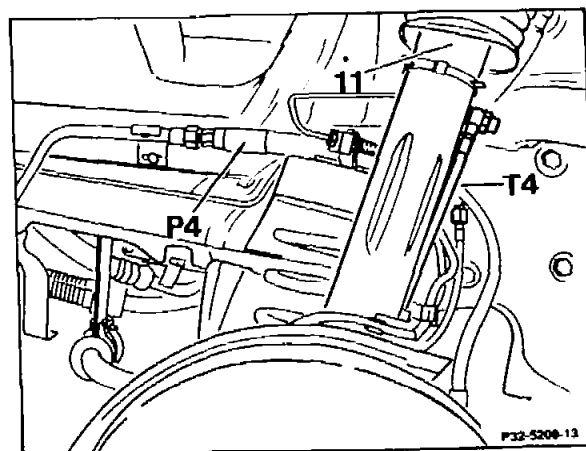
Correct adjustment of the vehicle level in accordance with the specifications is a prerequisite for proper functioning of the level control system and for providing a comfortable ride and optimum driving characteristics ("Testing and adjusting vehicle level with level control on front and rear axles", see 40-0302).

b) Suspension elements

Spring strut on front axle

The spring strut (11) is attached to the steering knuckle below and to the dome of the frame floor above. The spring strut (11) is connected via the pressure line (P4) to the spring actuator (14) attached to the frame floor, and via the return line (T4) to the oil reservoir (2).

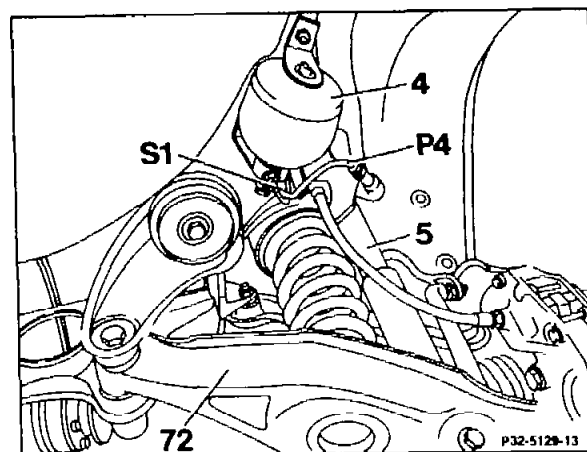
The spring actuator is in turn connected to the level controller by the pressure lines (S1 and S2). Lifting/lowering the vehicle is achieved by increasing/reducing the oil quantity in the oil chamber of the spring strut, which causes the piston rod to extend/retract. The mechanical layout of the spring strut resembles that of a conventional shock absorber.



Spring strut on rear axle

The spring strut (5) is attached to the spring link (72) below and to the dome of the frame floor above. The spring strut is connected via the pressure line (P4) attached to the top of the housing to the spring actuator (4) attached to the frame floor.

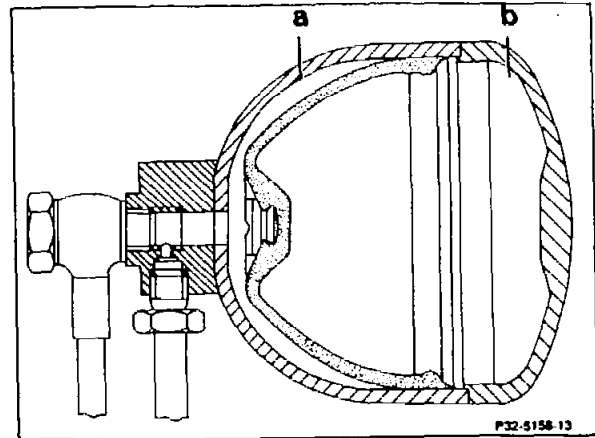
The spring actuator is in turn connected to the level controller by the pressure lines (S1 and S2). Lifting of the lowered rear end of the vehicle is achieved by increasing the oil quantity in the oil chamber of the spring strut, which causes the piston rod to extend. The mechanical layout of the spring strut (5) resembles that of a conventional shock absorber.



Spring actuator

The spring actuator installed is spherical. The oil chamber (a) and gas chamber (b) of the actuator are separated by a diaphragm.

The gas chamber is pre-filled to a specified pressure.



Under the influence of constantly changing oil pressure in the system during operation of the vehicle, e.g. during spring compression and rebound, the diaphragm adapts itself to the required oil volume in the chamber. The diaphragm changes its shape inside the spherical housing of the spring actuator.

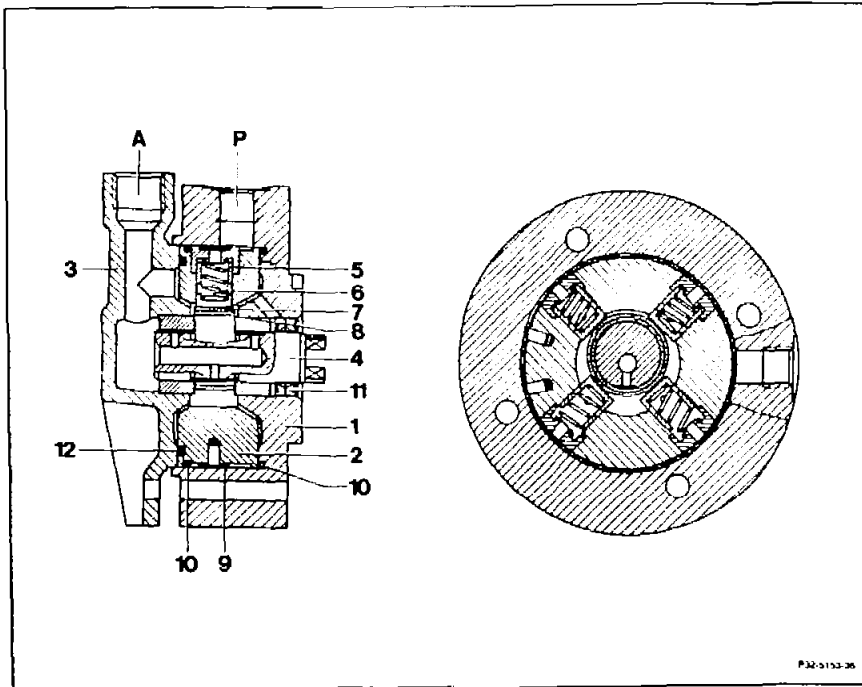
The spring actuator can therefore only fulfill its proper function if the gas pressure in the new actuator measures 23 ± 1 bar, or if it does not drop below a minimum pressure of 15 bar.

c) Pressure oil system

Pressure oil pump

The pressure oil pump installed is a radial piston pump with four pistons located radially to the pump shaft.

The pressure oil pump is designed so that it can raise the rear end of the vehicle relatively quickly after loading and requires very little power for pressureless delivery around the oil circuit.

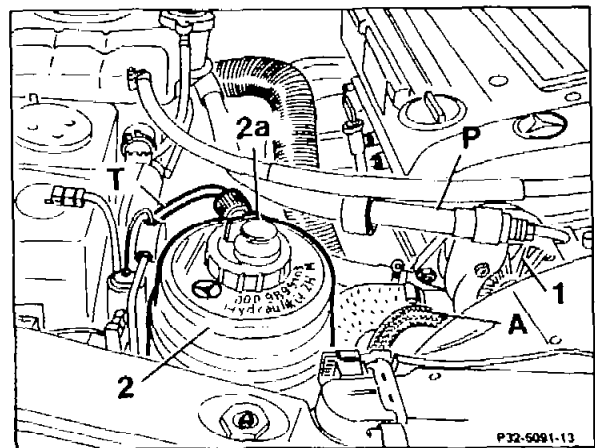


Pressure oil pump

- | | | | |
|---|--------------------|----|---|
| 1 | Housing | 8 | Inner race |
| 2 | Center piece | 9 | Return stroke sealing strip |
| 3 | Bearing cap | 10 | O-ring |
| 4 | Eccentric shaft | 11 | Radial sealing ring |
| 5 | Piston | 12 | O-ring |
| 6 | Compression spring | A | Suction line, oil reservoir - pressure oil pump |
| 7 | Outer race | P | Pressure line, pressure oil pump - level controller |

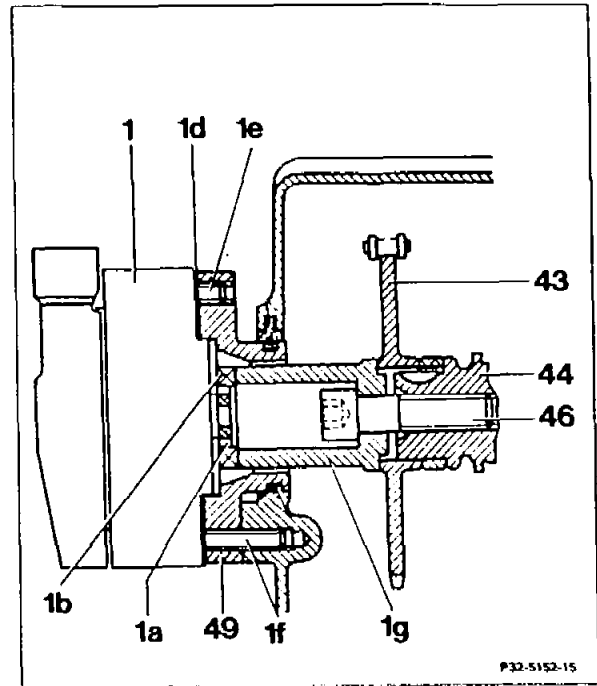
The pressure oil pump (1) is driven directly by the camshaft and is attached to the cylinder head by means of a flange.

- | | |
|----|---|
| 1 | Pressure oil pump |
| 2 | Oil reservoir |
| 2a | Cap with oil dipstick |
| A | Suction line, oil reservoir - pressure oil pump |
| P | Pressure line, pressure oil pump - ASD hydraulic unit - distributor valve |
| T | Return line, distributor fitting - oil reservoir |



The pressure oil pump is driven by the camshaft (44) via the driver sleeve (1g) and driver (1b).

- 1 Pressure oil pump
- 1a Eccentric shaft
- 1b Driver
- 1d Sealing washer
- 1e Hexagon socket bolts
- 1f Hexagon socket bolts
- 1g Driver sleeve
- 43 Camshaft sprocket
- 44 Camshaft
- 46 Hexagon socket bolt
- 49 Flange



Oil reservoir

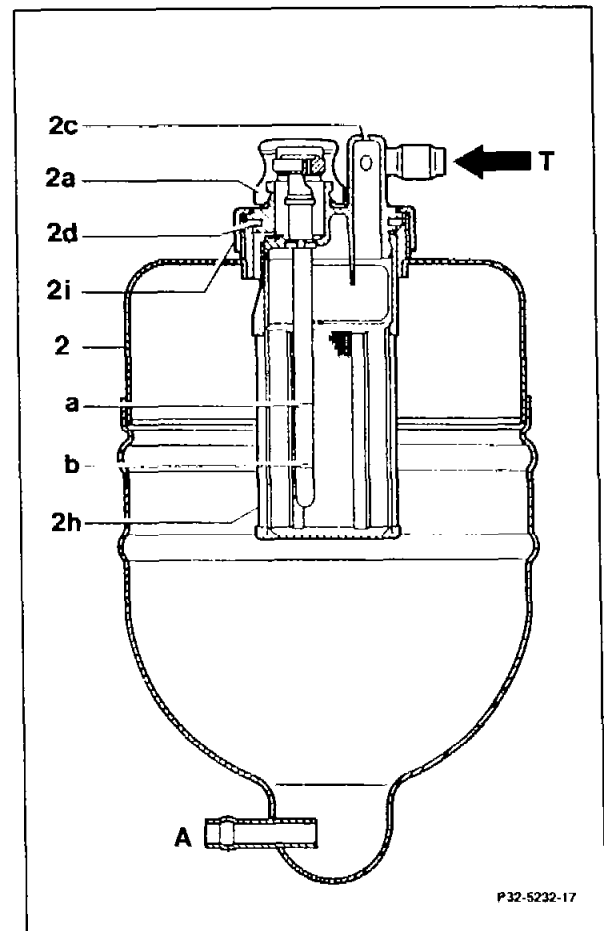
The oil reservoir is made of light alloy and has a capacity of 1.2 liters up to the minimum mark (b) and 1.8 liters up to the maximum mark (a). The complete level control system has a total capacity of approx. 3.5 liters of hydraulic oil.



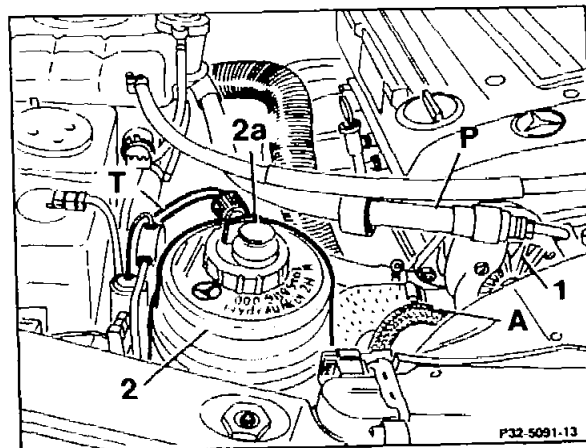
Only fill with the hydraulic oil specified on the information plate (MB Specifications for Service Products, sheet 343).

The oil level should only be checked when the vehicle is unladen.

- 2 Oil reservoir
- 2a Cap with oil dipstick
- 2c Cover with connection
- 2d Rubber sealing ring
- 2h Filter element
- 2i Lock nut
- a Maximum mark
- b Minimum mark
- A Suction line, oil reservoir - pressure oil pump
- T Return line, level controller - oil reservoir



- 1 Pressure oil pump
- 2 Oil reservoir
- 2a Cap with oil dipstick
- A Suction line, oil reservoir - pressure oil pump
- P Pressure line, pressure oil pump - ASD hydraulic unit - distributor valve
- T Return line, distributor fitting - oil reservoir



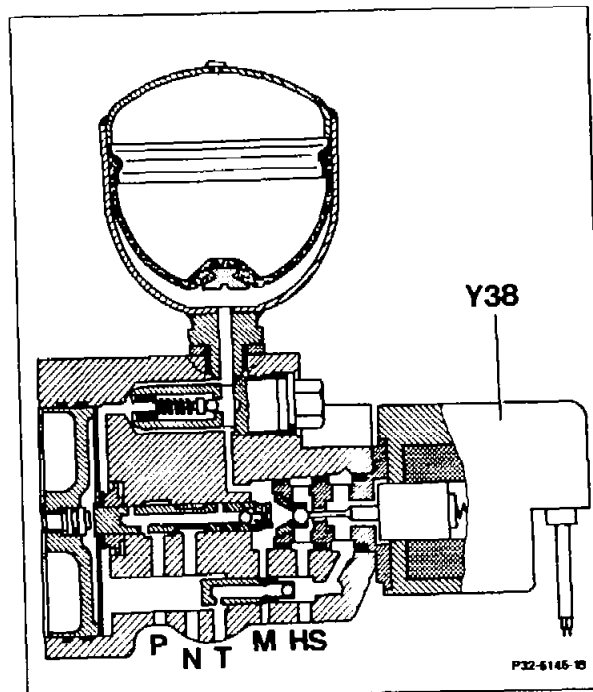
ASD hydraulic unit

The ASD hydraulic unit is supplied with pressure from the pressure oil pump via connection "P" on the actuator charging valve.

The actuator charging valve of the ASD hydraulic unit regulates the pressure in the pressure reservoir between 27 and 33 bar. After reaching the maximum pressure of 33 bar, the control slide of the actuator charging valve switches over and the oil flows to the distributor valve via the connection (N) and the pressure line (P).

(Figure illustrates ASD hydraulic unit version up to 5/92. Versions as of 6/92 have no pressure reservoir.)

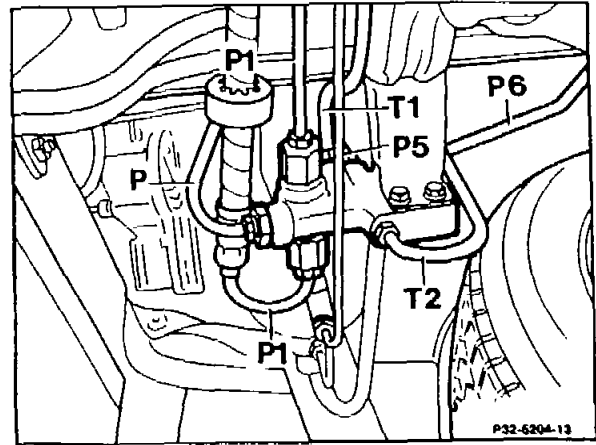
- Y38 ASD solenoid valve
- P/N/T/HS Line connections
- M Test connection



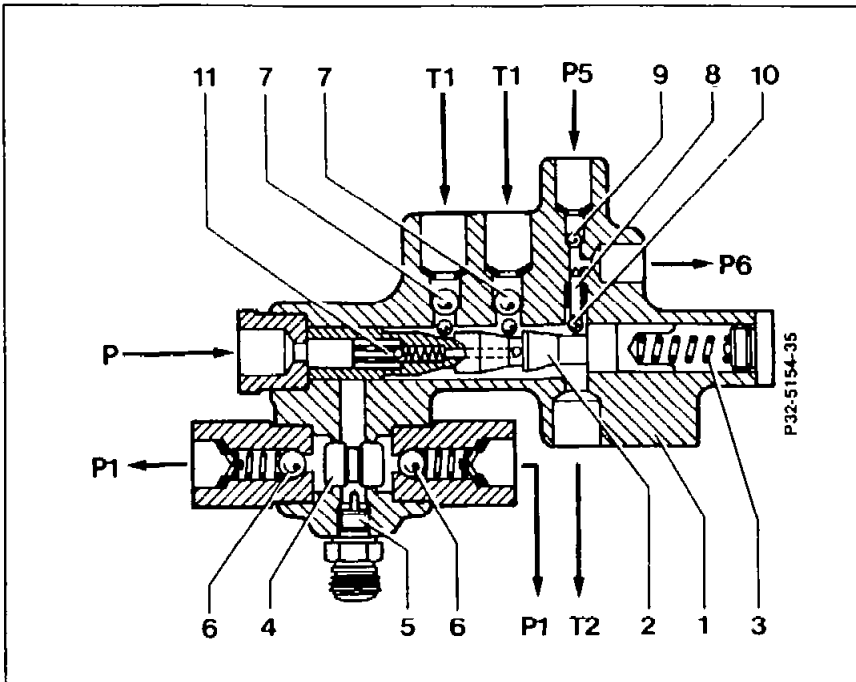
Distributor valve

The distributor valve is located on the frame side member in the front right wheelhouse.

The distributor valve controls the oil feed and return to the level controllers. A pressure-relief valve in the distributor valve protects the system from excessive pressures. When the engine is switched off, the distributor valve blocks the return flow from the level controllers to prevent the vehicle from lowering. The oil supply for level adjustment is controlled via the distributor valve. When the engine is running, the oil is supplied to the level adjustment control valve. The flow is interrupted when the engine is switched off.



- P Pressure line, pressure oil pump - ASD hydraulic unit - distributor valve
- P1 Pressure line, distributor valve - level controller
- P5 Pressure line, right front axle spring actuator - distributor valve
- P6 Pressure line, distributor valve - level adjustment control valve
- T1 Return line, level controller - distributor valve
- T2 Return line, distributor valve - oil reservoir/distributor fitting



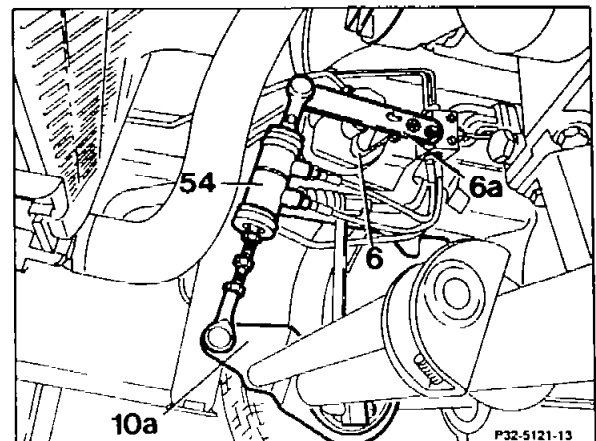
Distributor valve

1	Housing	P	Pressure line, pressure oil pump - ASD hydraulic unit - distributor valve
2	Control side	P1	Pressure line, distributor valve - level controller
3	Compression spring	P5	Pressure line, right front axle spring actuator - distributor valve/level controller
4	Control piston	P6	Pressure line, distributor valve - level adjustment control valve
5	Switch	T1	Return line, level controller - distributor valve
6	Non-return valves (pressure)	T2	Return line, distributor valve - oil reservoir/distributor fitting
7	Non-return valves (return flow)		
8	Piston		
9	Non-return valve (control pressure)		
10	Pressure balls for non-return valves		
11	Pressure-relief valve		

d) Control equipment

Level controller

The level controller for the front axle (6) is attached to the right frame side member and is connected to the lever (10a) of the torsion bar via the control rod (54).

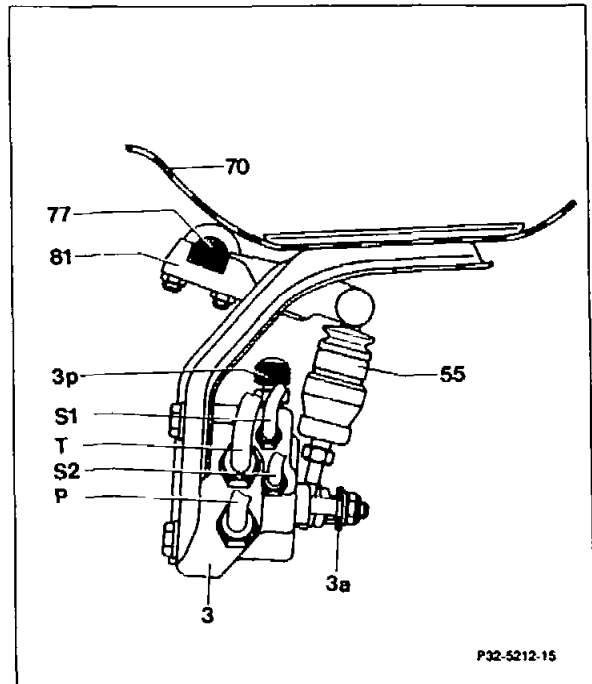


The level controller for the rear axle (3) is attached to the frame floor by the bracket and is connected to the lever (81) of the torsion bar (77) by the control rod (55).

The oil drain plug (3p) in the level controller serves for releasing the pressure in the system for repairs and test work.

Note

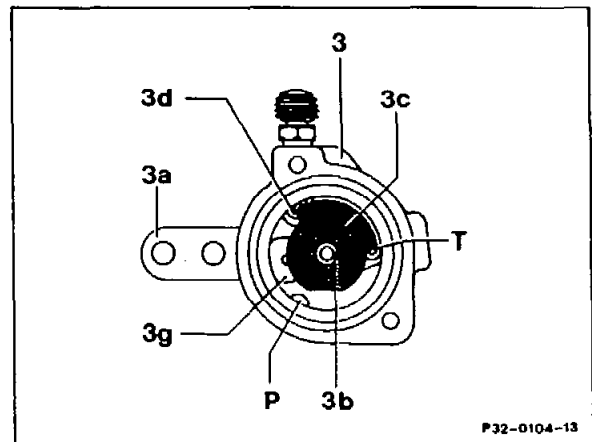
The front axle level controller (6) and the rear axle level controller (3) are identical in design.



"Neutral" position

The vehicle is in the level position and the lever (3a) is in the center position.

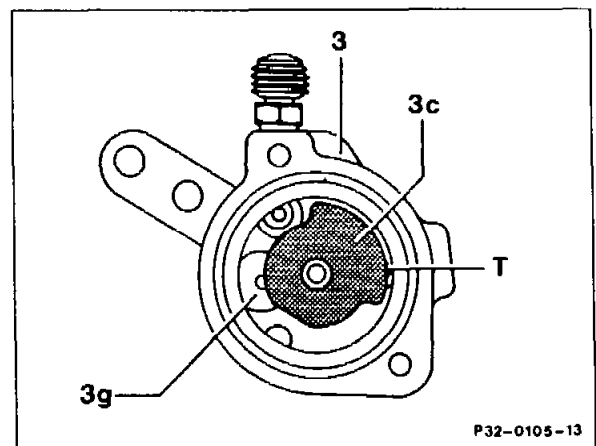
Oil entering via the supply duct (P) is returned unpressurized to the oil reservoir via the return flow duct (T) and the return line. The discharge valve (3d) remains closed.



"Filling" position

The rear end of the vehicle has lowered after loading and the lever is above the center position.

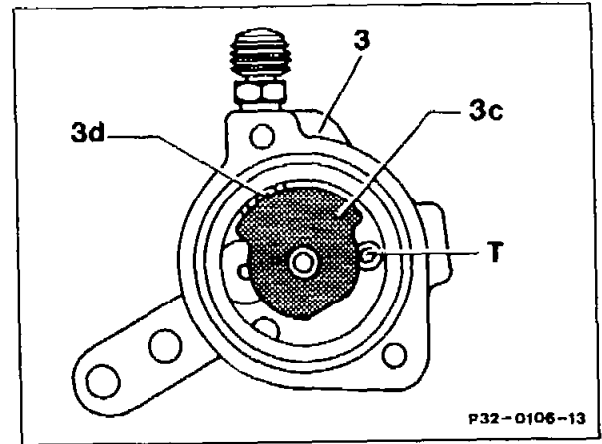
The control disc (3c) has closed the return flow duct (T). When sufficient pressure has built up, the oil is fed into the suspension elements via the springless ball check valve and the pressure duct. The rear end of the vehicle is raised until it returns to the "neutral" position. The system is protected against overload by the pressure-relief valve (3g) which opens when the maximum permissible pressure is reached.



"Emptying" position

The rear end of the vehicle has risen after unloading and the lever is below the center position.

The control disc (3c) has opened the discharge valve (3d). This lowers the pressure prevailing in the suspension elements. The oil flows back to the oil reservoir through the opened discharge valve and the fully opened return flow duct (T) together with the oil delivered by the pump. When the vehicle has returned to the level position, the control disc closes the discharge valve (3d). The basic pressure required for operation of the spring struts as shock absorbers is assured, independent of the position of the controller, by the fact that any lowering of the pressure in the suspension elements below a given value will cause the outer compression spring of the discharge valve (3d) to push this valve out of range of the control disc so that the pressure can drop no further.



e) Level adjustment

Level adjustment switch

The level adjustment switch (S77) is installed on the left-hand side of the instrument panel beside the rotary exterior lamp switch.

Switch positions:

Switch in center position: Vehicle level for general driving.

Press top of switch: Level rises.

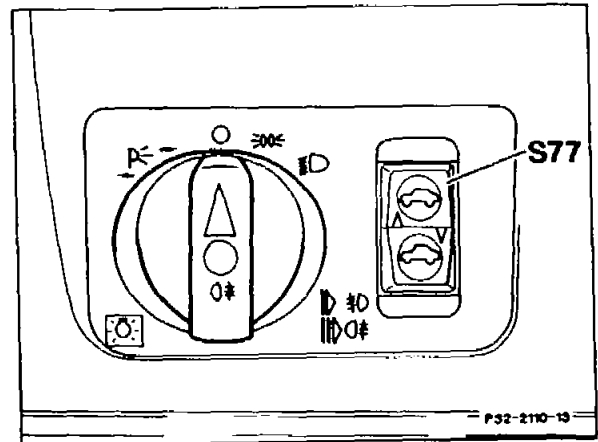
The left-hand indicator lamp in the switch lights up. After a short distance the ground clearance of the vehicle increases by approx. 30 mm. In poor road conditions or on uneven ground, switch promptly to this position and drive at moderate speed.

Press bottom of switch: Level drops.

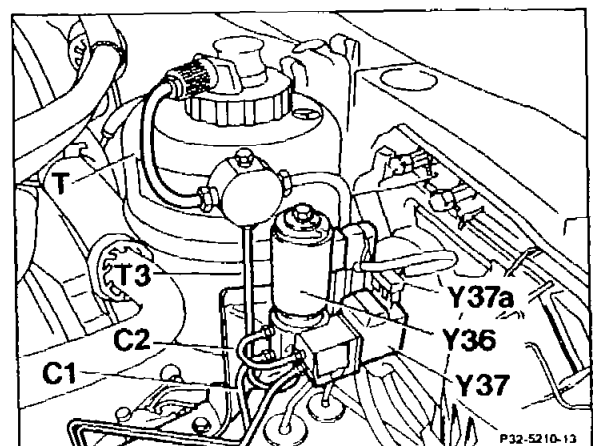
The right-hand indicator lamp in the switch lights up. After a short distance the ground clearance of the vehicle decreases by approx. 15 mm. Only switch to this mode in good road conditions!

Level adjustment control valve

The level adjustment control valve (Y36) is attached to the oil reservoir bracket. The cable from the level adjustment switch leads to the level adjustment control valve.



- C1 Control pressure line for "lower level", control valve - control rods
- C2 Control pressure line for "raise level", control valve - control rods
- T3 Return line, control valve - oil reservoir/distributor fitting
- T Return line, distributor fitting - oil reservoir
- Y36 Level adjustment control valve
- Y37 Level adjustment check valve
- Y37a Electrical connection, check valve



Level adjustment switch in center position:

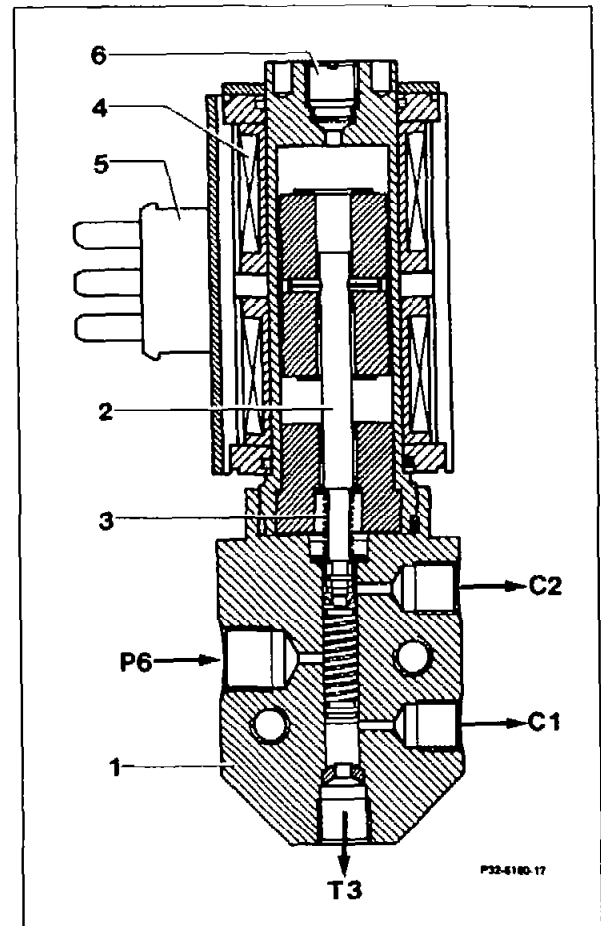
In this position the level adjustment control valve is de-energized and the control slide (2) blocks the control pressure in the pressure line (P6).

Level adjustment switch in "raise level" position:

In this position the control slide is displaced by the double lifting solenoid so that the control pressure from the pressure line (P6) applies pressure to the control rods via the control pressure line (C2).

Level adjustment switch in "lower level" position:

In this position the double lifting solenoid changes the position of the control slide so that the control pressure from the pressure line (P6) reaches the control rods via the control pressure line (C1). The return line (T3) is routed to the oil reservoir via the distributor fitting and the return line (T).



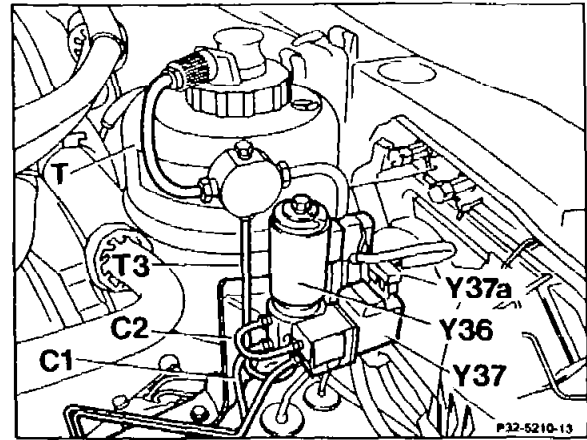
- 1 Housing (hydraulic part)
- 2 Control slide
- 3 Compression spring
- 4 Double lifting solenoid
- 5 Electrical connection, control valve
- 6 Screw plugs (version as of 7/88)
- C1 Control pressure line, control valve - control rods
- C2 Control pressure line, control valve - control rods
- P6 Pressure line, distributor valve - control valve
- T3 Return line, control valve - oil reservoir/distributor fitting

Level adjustment check valve

The level adjustment check valve (Y37) is screwed onto the level adjustment control valve (Y36).

It is activated by the ignition (terminal 15). When the level adjustment switch is in the "raise level" position and the engine is running, the control pressure is fed to the control rods via the control pressure line (C2).

If the engine is switched off in this position, the level adjustment check valve (Y37) blocks the control pressure so that the control rods remain supplied with pressure. The result is that the de-energizing level adjustment control valve does not reduce the control pressure via the control pressure line (C2) and the return line (T3). The vehicle level is thus retained.

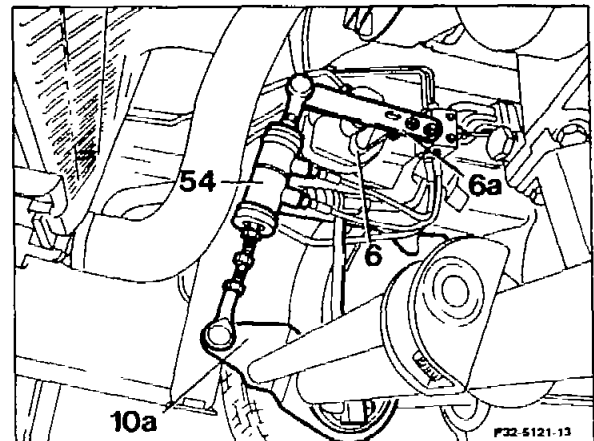


- C1 Control pressure line for "lower level", control valve - control rods
- C2 Control pressure line for "raise level", control valve - control rods
- T3 Return line, control valve - oil reservoir/distributor fitting
- T Return line, distributor fitting - oil reservoir
- Y36 Level adjustment control valve
- Y37 Level adjustment check valve
- Y37a Electrical connection, check valve

There is one control rod (54) on each of the front and rear axles. It is installed between the lever of the level controller (6a) and the lever of the torsion bar (10a).

The control rod transfers the change in vehicle level from the torsion bar to the level controller. The vehicle is raised or lowered due to the change in length of the control rod which occurs hydraulically.

Arrangement of control rod on front axle



Control rod on front axle

Level adjustment switch in "raise level" position.

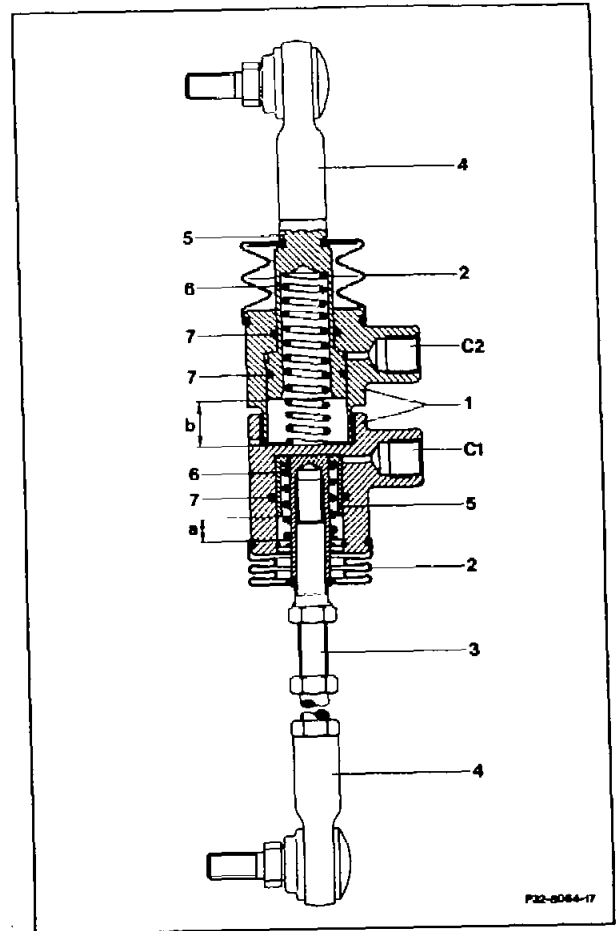
In this position, the control pressure acts on the piston (5) via the control pressure line (C2) and shortens the control rods. This causes the level controller lever to be brought into the "filling" position until the level controller lever again assumes the "neutral" position by the raising of the vehicle. The ground clearance is increased by approx. 30 mm.

If another vehicle level is selected, the control pressure line (C2) is depressurized and the compression spring (6) forces the piston back into its initial position.

Level adjustment switch in "lower level" position.

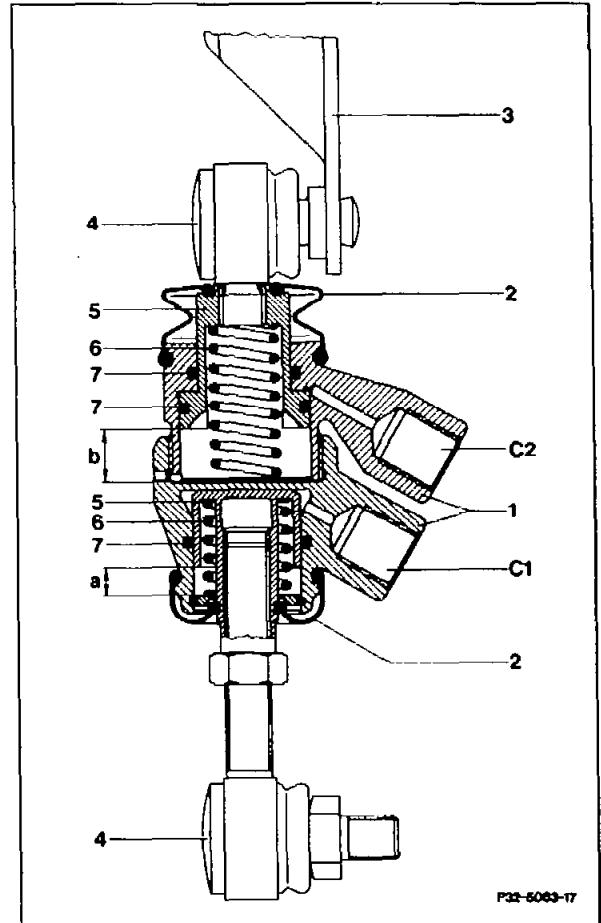
In this position, the control pressure, operating via the control pressure line (C1), presses the piston (5) against the compression springs (6), increasing the length of the control rod. The level controller lever is held in this "discharge" position until the level controller lever again assumes the "neutral" position by the lowering of the vehicle. The vehicle level is lowered by approx. 15 mm.

If a new vehicle level is now selected, the control pressure line (C1) is depressurized and the piston (5) is again pressed back by the compression spring.



- 1 Housing
- 2 Bellows
- 3 Threaded rod with adjusting nut
- 4 Angle joint
- 5 Piston
- 6 Compression spring
- 7 O-ring
- C1 Control pressure line for "lower level"
- C2 Control pressure line for "raise level"
- a Distance (approx. 5 mm) for lowering level
- b Distance (approx. 10 mm) for raising level

Control rod on rear axle



- 1 Housing
- 2 Bellows
- 3 Angled lever
- 4 Angle joint
- 5 Piston
- 6 Compression spring
- 7 O-ring
- C1 Control pressure line for "lower level"
- C2 Control pressure line for "raise level"
- a Distance (approx. 3.5 mm) for lowering level
- b Distance (approx. 7 mm) for raising level

The vehicle level is adjusted by the change in length of the control rod at the thread of the angle joint (4).