

Pneumatic Suspension

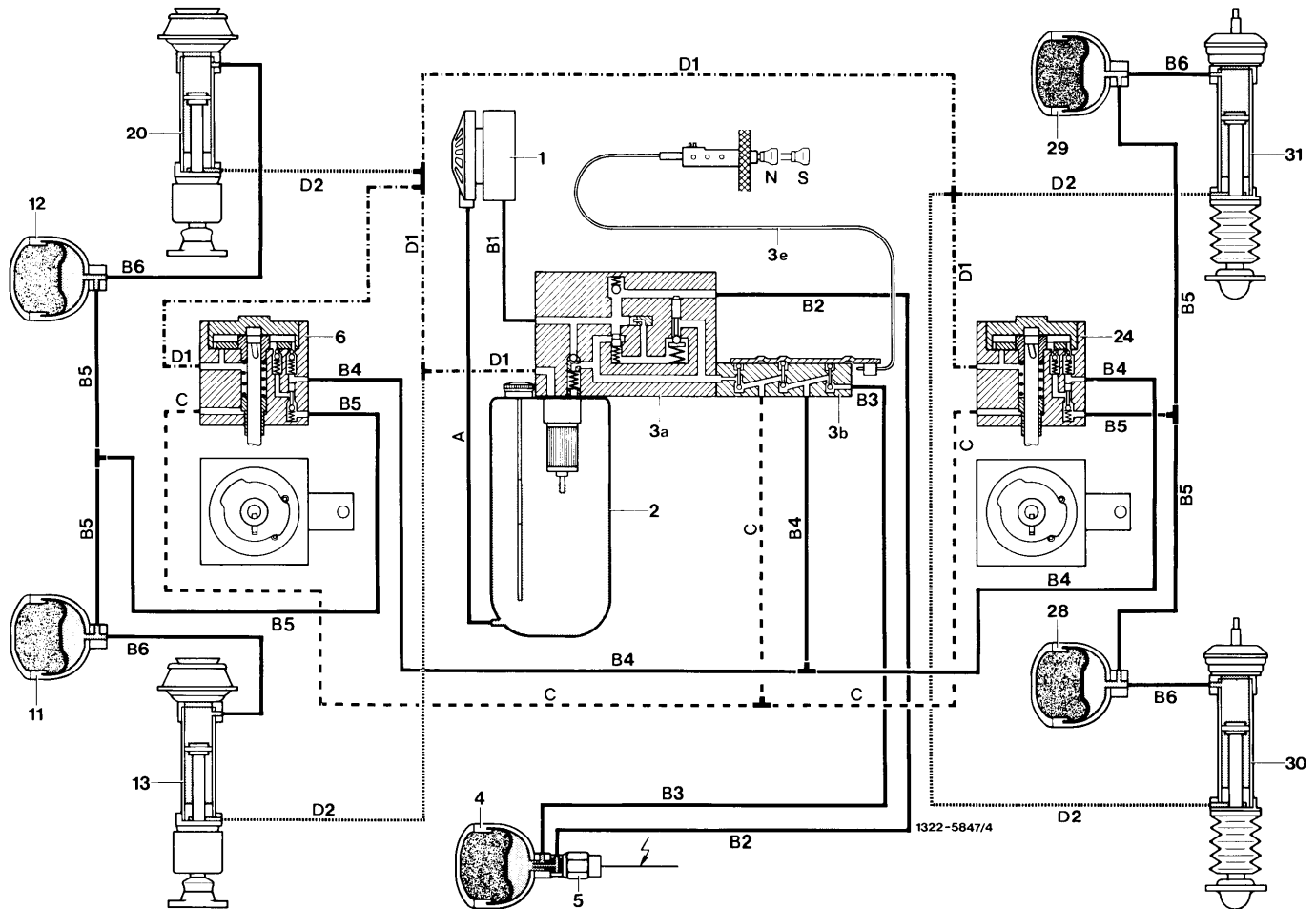
MERCEDES-BENZ 6.9

DESCRIPTION

The hydropneumatic suspension is a gas pressure suspension system with hydraulic level control. The vehicle load is supported by four struts, which also serve as shock absorbers. Suspension is accomplished by the compression and decompression of the gas cushion in the pressure reservoirs. To regulate the vehicle level, the oil volume in the suspension struts is increased or reduced by means of a hydraulic system. The hydraulic system is comprised of; oil pump, pressure regulator, main pressure reservoir and oil reservoir. The pressure regulator and level selector valve are combined into one valve unit.

OPERATION

The hydraulic oil pump delivers oil from the oil reservoir to the main pressure reservoir via pressure regulator of valve unit. When the maximum oil pressure is reached, the pressure regulator reverses the oil flow. If the main oil pressure drops to the minimum, pressure regulator will reverse the flow and oil will be pumped into the main pressure reservoir until maximum pressure is again reached. If vehicle level drops due to increased load, levelling valve will open. Oil flowing into suspension struts will lift vehicle until normal level is reached. If load is reduced, levelling valve will permit oil to flow from suspension



- 1 - Hydraulic Oil Pump
- 2 - Hydraulic Oil Reservoir
- 3 - Valve Unit
- 3a - Pressure Regulator of Valve Unit
- 3b - Level Selector Valve of Valve Unit
- 3e - Control Knob
- 4 - Main Pressure Reservoir
- 5 - Electric Pressure Switch
- 6 - Levelling Valve, Front Axle
- 11 - Pressure Reservoir, Left Front
- 12 - Pressure Reservoir, Right Front
- 13 - Suspension Strut, Left Front
- 20 - Suspension Strut, Right Front
- 23 - Warning Light
- 24 - Levelling Valve, Rear

- 28 - Pressure Reservoir, Left Rear
- 29 - Pressure Reservoir, Right Rear
- 30 - Suspension Strut, Left Rear
- 31 - Suspension Strut, Right Rear
- A - Suction Line
- B1 - Pressure Line
- B2 - Pressure Line, Regulator Valve to Main Pressure Reservoir
- B3 - Pressure Line, Main Pressure to Selector Valve
- B4 - Pressure Line, Selector Valve to Levelling Valve
- B5 - Pressure Line, Levelling Valve to Pressure Reservoir
- B6 - Pressure Line, Pressure Reservoir to Suspension Struts
- C - Control Pressure Line
- D1 - Return Line, Levelling Valve to Pressure Regulator
- D2 - Return Line

Fig. 1 Mercedes-Benz Hydropneumatic Suspension System

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struts until vehicle is back to normal level. The oil flowing from struts, is returned to oil reservoir after going through a filter.

REMOVAL & INSTALLATION

FRONT SHOCK ABSORBERS

Removal – Move switch on instrument panel to the normal position. Jack up front of vehicle and remove front wheel. Separate high-pressure hose and leak hose from lines in wheel housing. Loosen upper shock attaching bolt. Remove lower attaching bolt and remove shock.

Inspection – Check high-pressure hose, leak oil hose rubber mount and ball joint. Replace if required.

Installation – Install in reverse of removal procedure.

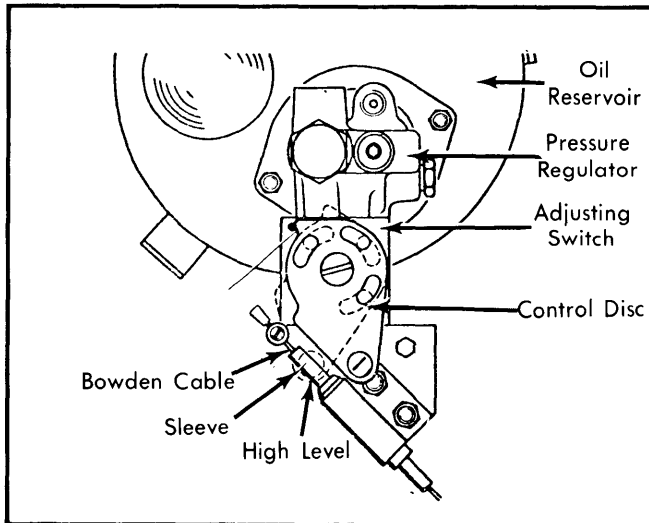


Fig. 2 Adjusting Switch for Valve Unit

REAR SHOCK ABSORBERS

Removal – Remove rear seat and back rest, remove rear trunk cover. Loosen nut on upper shock mount, remove washer and rubber ring. Jack up rear of vehicle. Remove high-pressure hose on reservoir and disconnect leak oil hose from line. Loosen lower attaching bolt and remove rear shock.

Inspection – Check high-pressure hose, leak oil hose rubber mount and ball joint. Replace if required.

Installation – 1) Insert shock into dome on frame floor. Mount lower attaching bolt, install upper attaching bolt, do not tighten. Align high-pressure hose and leak hose, by turning shock.

2) Lower vehicle, tighten upper attaching bolt and replace cover. Install rear seat and back rest. Check oil level in system and correct.

FRONT PRESSURE RESERVOIR

Removal – 1) Move switch on instrument panel to normal position. Jack up front of vehicle. Remove left wheel, disconnect pressure lines on pressure reservoir. Loosen pressure reservoir and remove.

2) Remove battery and battery frame, from right side of vehicle. Disconnect pressure line from pressure reservoir. Remove reservoir.

Installation – Install in reverse of removal procedure.

NOTE – When vehicle is lowered, the lever of the level controller will move into "filling position". Since the capacity of the central reservoir is not enough for filling the suspension components, keep the engine operating.

REAR PRESSURE RESERVOIR

Removal – With switch in normal position, jack up rear of vehicle. Disconnect pressure lines from reservoir. Remove reservoir.

Installation – Install in reverse of removal procedure.

CENTRAL RESERVOIR

Removal – 1) Disconnect puller for adjusting switch upon removal of locking ring and move disc of adjusting switch into assembly position. Jack up vehicle at front and remove left front wheel.

2) Disconnect pressure lines from central reservoir. Disconnect cable plug connection on front end. Pull cable with plug and rubber sleeve into wheel house. Loosen reservoir at front end and remove. Unscrew electrical pressure switch from central reservoir, while marking position of ring fitting.

Installation – Install in reverse of removal procedure.

OIL PUMP

Removal – Disconnect suction and pressure lines from pump. Loosen attaching bolts and remove pump.

Inspection – Check driver and clutch components replace as required.

Installation – Install in reverse of removal procedure.

VALVE UNIT

Removal – Disconnect puller for adjusting switch. Move control disc into position M (assembly). Loosen clip for puller, while applying counterhold at holder by using a hex socket wrench. Disconnect pressure lines from valve unit. Loosen attaching bolts of pressure regulator to oil reservoir and remove valve unit.

Installation – Install in reverse of removal procedure, noting the following: Install new sealing rings for sealing pressure regulator to oil reservoir.