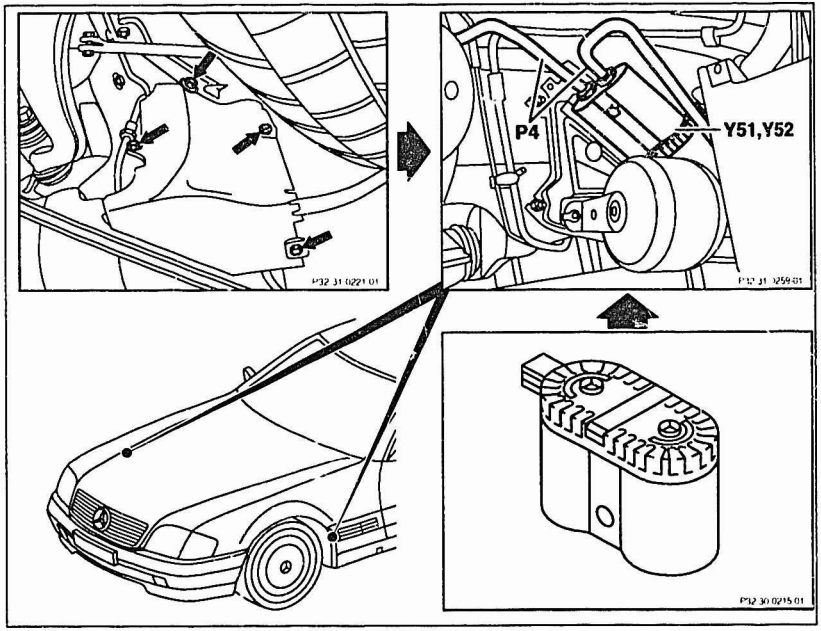
3 2

B1	AR32.31-P-0685A	Removing and installing front axle damper valves	30.3.95

MODEL 129 with CODE (216c) Adaptive damping system (ADS II) with electronic level control



P32 31-0211-06

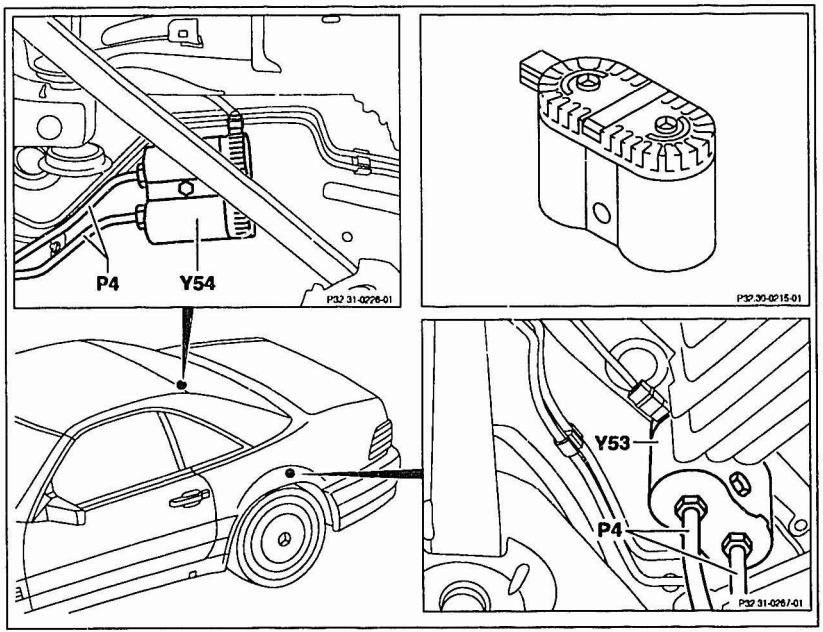
Illustration item, etc.	Operating notes		
⚠ Danger!	**Risk of injury** to skin or eyes due to hydraulic fluid spraying out under high pressure. **Risk of poisoning** due to consuming hydraulic fluid.	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	A500 00-Z-0013-01A **J17**
Ⓘ Installation	Replace self-locking screws and nuts		
i	Emptying, filling pressure oil system at front axle		AR32 31-P-0630A **M1**
	Detach, attach front wheels		AP40.10-P-4050Z
	Detach, attach cover (arrows) in wheel box		
P4	Pressure lines	Disconnect at the damper valves (Y53, Y54). Nm	BA32.31-P-1001-08A
Y51, Y52	Damper valve	Detach at bracket, disconnect electrical connector. Nm Nm	BA32.31-P-1002-08A BA32.31-P-1003-08A

Nm Front axle level control damper valve

Number	Designation			Model 129 with electronic level control / ADS II
BA32.31-P-1001-08A	ADS pressure line to damper valve (reference value)	M16×1.5	Nm	30
		M18×1.5	Nm	44
BA32.31-P-1002-08A	Self-locking bolt of left damper valve to bracket	M8	Nm	24
BA32.31-P-1003-08A	Self-locking nut of right damper valve to bracket	M8	Nm	14

N3 AR32 31-P-0680A	Removing and installing rear axle damper valve	30.3.95

MODEL 129 with CODE (216c) Adaptive damping system (ADS II) with electronic level control



P32 31-0210-06

Illustration item., etc.	Operating notes		
⚠ Danger!	**Risk of injury** to skin or eyes due to hydraulic fluid spraying out under high pressure. **Risk of poisoning** due to consuming hydraulic fluid.	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	A500.00-Z-0013-01A **J17**
(12) *Installation*	Replace self-locking screws and nuts		
i	Empty, fill pressure oil system of rear axle		AR32.31-P-0630A **M1**
P4	Pressure lines	Disconnect at the damper valves (Y53, Y54). Nm	BA32.31-P-1001-07A
Y51, Y52	Damper valve	Detach at bracket, disconnect electrical connector. Nm Nm	BA32.31-P-1002-07A BA32.31-P-1003-07A

Nm **Rear axle level control damper valve**

Number	Designation			Model 129 with electronic level control / ADS II
BA32.31-P-1001-07A	ADS pressure line to damper valve (reference value)	M16×1.5	Nm	30
		M18×1.5	Nm	44

Nm Rear axle level control damper valve

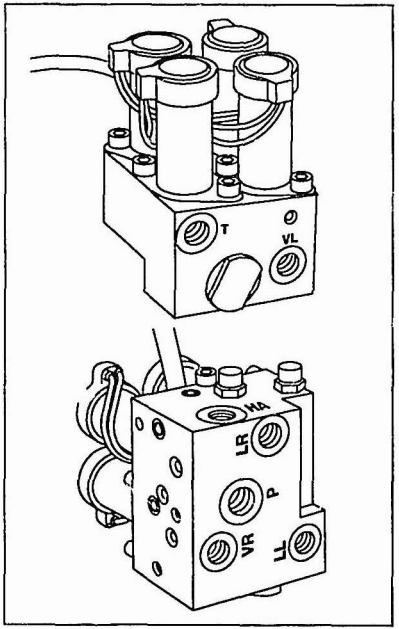
Number	Designation			Model 129 with electronic level control / ADS II
BA32.31-P-1002-07A	Self-locking bolt of left damper valve on bracket	M8	Nm	24
BA32.31-P-1003-07A	Self-locking nut of right damper valve on bracket	M8	Nm	14

A4 AR32.31-P-0650A	Removing and installing level control valve unit	24.3.95

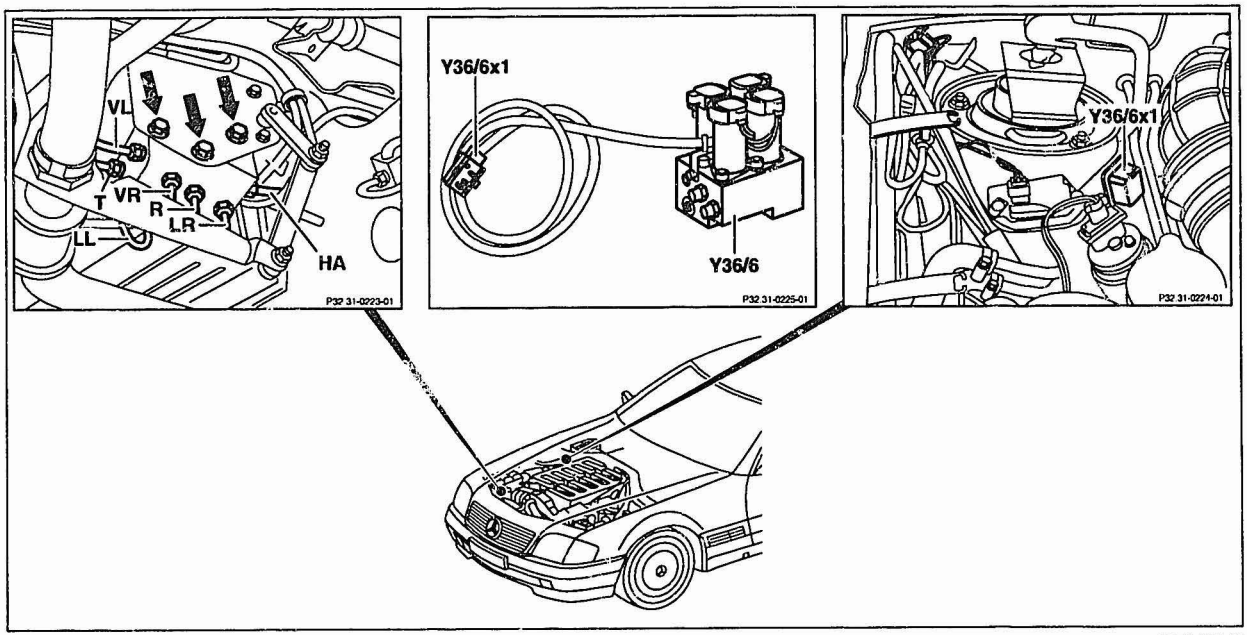
MODEL 129 with CODE (216c) Adaptive damping system (ADS II) with electronic level control

Connections of valve unit Y36/6

HA to rear axle spring actuator
VL to left front axle spring actuator
VR to right front axle spring actuators
LL from left spring strut leak oil line
LR from right spring strut leak oil line
P from pressure oil pump
T to oil reservoir



P32.31-0222-03



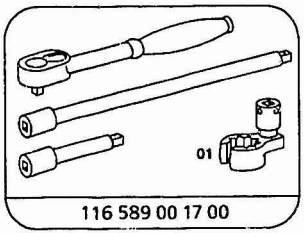
Modification notes

30.9.97	High-pressure stretch hose in oil circuit	Work step 2	BT32.32-P-0001-01A

	Removing, installing		
⚠ **Danger!**	Risk of injury<f> to skin or eyes due to hydraulic fluid spraying out under high pressure. <f>Risk of poisoning<f> due to consuming hydraulic fluid.	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	AS00 00-Z-0013-01A **J17**
Installation	Replace self-locking bolts and nuts		
1	Empty pressure oil system at front and rear axles	**Installation:** Fill pressure oil system at front and rear axles.	AR32.31-P-0630A **M1**
2	Disconnect pressure lines (HA, VR, VL, LL, LR, P, T) at rear axle height reduction valve (Y36/6)	Nm	BA32.31-P-1001-06A
		S	116 589 00 17 00
BT	High-pressure stretch hose installed in oil circuit (ADS)		BT32.32-P-0001-01A **B18**
3	Disconnect electric cable (Y36/6x1) in right of engine compartment		
4	Unscrew bolts (arrows) from bracket	Nm	BA32.31-P-1002-06A
5	Install in reverse order		

Level control valve unit

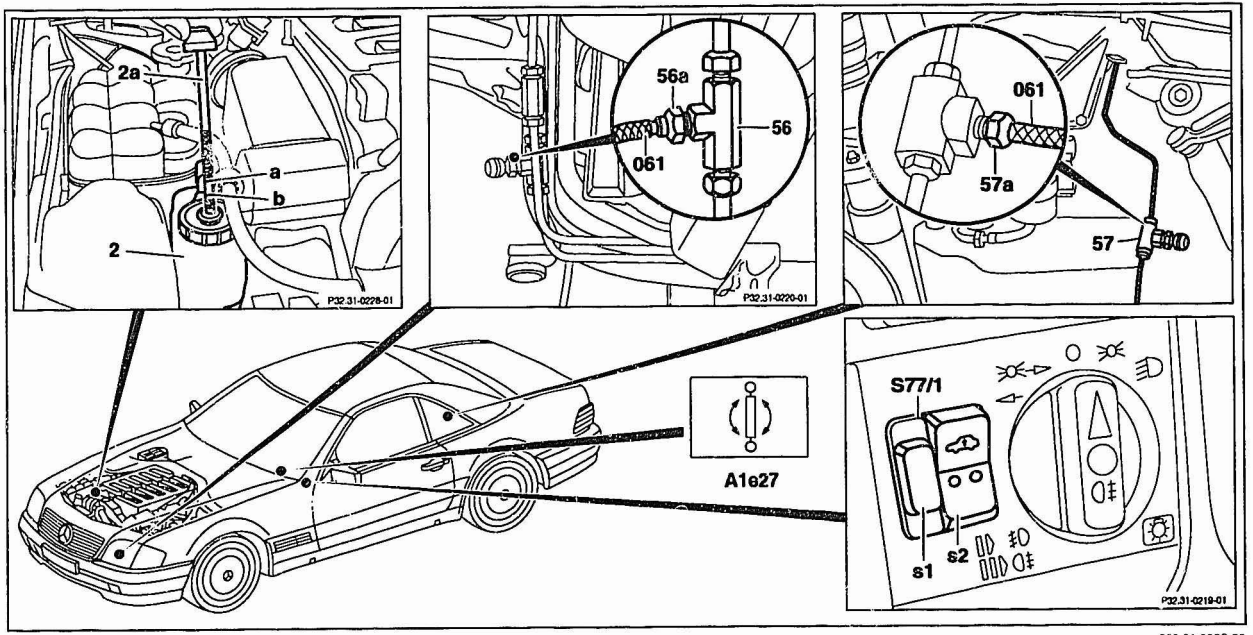
Number	Designation			Model 129 with electronic level control / ADS II
BA32.31-P-1001-06A	Pressure line level control on valve unit (reference value)	M10×1	Nm	14
		M12×1	Nm	20
BA32.31-P-1002-06A	Bolts for attaching valve unit to bracket (reference value)		Nm	10



Box wrench

E4	AR32.31-P-0630A	Draining and filling pressure oil system at front and rear axle	22.3.95

MODEL 129 with CODE (216c) adaptive damping system (ADS II) with electronic level control



P32.31-0208-09

2a Oil dipstick

a Maximum mark

b Minimum mark

	Emptying		
	General notes for working on vehicles with level control/ADS	All models with code 216b, 216c, 217a, 480	AH32.00-P-0002-01A **P17**
1	Press level adjustment switch (S77/1) into the "lock out" position	ADS suspension MIL (A1e27) illuminated.	
2	Raise vehicle	Engine must be switched off.	
		Only empty, fill pressure oil system on front and rear axle when "removing, installing valve unit". Otherwise only empty, fill the pressure oil system on the front or rear axle depending on the extent of the work.	
3	**Front axle:** Put oil drain hose (061) on oil drain screw (56a) on distributor fitting (56).	Lower engine cover removed	
4	**Rear axle:** Put oil drain hose (061) on oil drain screw (57a) on distributor fitting (57).	Cover in the area of the fuel pump assembly/rear axle removed.	
⚠ **Danger!**	**Risk of injury** to skin or eyes due to hydraulic fluid spraying out under high pressure. **Risk of poisoning** due to consuming hydraulic fluid.	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	AS00.00-Z-0013-01A **J17**
5	Slowly open oil drain screw (56a or 57a) and collect oil in a clean container.	The oil collected can be re-used.	

6	Close oil drain screw (56a or 57a) again.	Nm Nm	BA32.31-P-1002-01A BA32.31-P-1001-01A
	Filling		
7	Lower vehicle or vehicle must be on its wheels	At front axle: Position wheels straightahead	
8	Pour oil into the oil reservoir (2)	Only re-use clean oil Funnel 	 126 589 12 63 00 BF32.30-P-1001-01A
	The ignition must have been switched off for at least 60 seconds	Otherwise fault display in ADS system	
Danger!	**Risk of accident** due to vehicle starting off automatically when engine is running. **Risk of injury** due to being trapped and burns when intervening while starting the engine or when the engine is running	Secure vehicle to prevent it from starting off automatically. Wear close-fitting, tight clothing Do not touch hot or rotating parts.	AS00.00-Z-0005-01A **K17**
9	Start engine and allow to run for approx. 2 minutes at moderate speed.	The system bleeds itself automatically. Ensure that there is sufficient oil in the oil reservoir. The pump must not suck in air under any circumstances.	

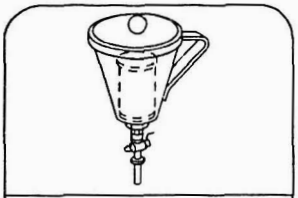
10	Switch off level adjustment switch (S77/1) "lock out" position	The ADS suspension MIL (A1e27) goes out. If the filling operation takes longer than 5 minutes, the control module switches off the valves for 5 minutes (overload protection).	
11	Switch off engine		
12	Check, correct oil level in oil reservoir	 Level adjustment switch (S77/1) is in the "normal level" position (indicator lamp in switch: **OFF**). Oil level between the "min" and "max" marks. The vehicle must be unladen.	AP32.30-P-3211BA
13	Carry out road test	After completing the filling operation, a test trip should be made on a level road to completely bleed the hydraulic system. In the process carry out the level adjustment **high level stage 1** and **high level stage 2**. Then check the oil level again at the "normal level".	

Distributor fitting

Number	Designation			Model 129 with electronic level control / ADS II
BA32 31-P-1001-01A	Oil drain screw in rear axle distributor fitting (reference value)	M10×1	Nm	14
BA32 31-P-1002-01A	Oil drain screw in front axle distributor fitting (reference value)	M10×1	Nm	14

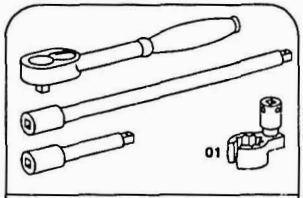
Level control

Number	Designation			Model 129 with ADS and level control/ASD
BF32 30-P-1001-01A	Filling quantities	Level control when the system is refilled	liters	approx. 4-4.5
		Specifications for Service Products, sheet	sheet	BB00.40-P-0343-00A
			sheet	–



126 589 12 63 00

Funnel

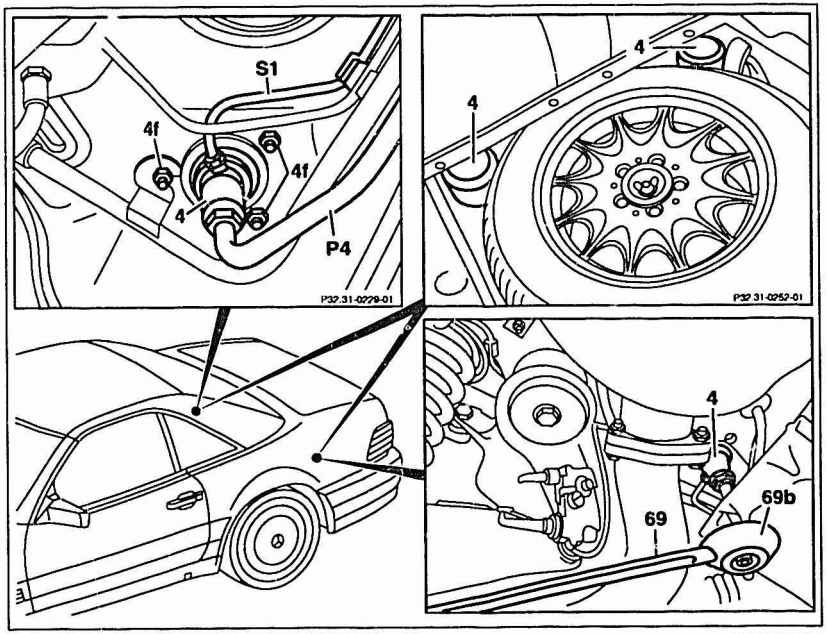


116 589 00 17 00

Box wrench

L4 AR32 31-P-0620A	Removing and installing rear axle spring actuator	22.3.95

MODEL 129 with CODE (216c) Adaptive damping system (ADS II) with electronic level control



P32 31-0207-06

	Removing, installing		
⚠ **Danger!**	**Risk of injury** to skin or eyes due to hydraulic fluid spraying out under high pressure. **Risk of poisoning** due to consuming hydraulic fluid.	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	AS00 00-Z-0013-01A **J17**
1	Empty pressure oil system at rear axle	i **Installation:** Fill pressure oil system at front and rear axle	AR32 31 P-0630A **M1**
2	Loosen left cross brace (69) on vehicle floor.	i When removing the left spring actuator Nm Bolt (69b)	BA61.10-P-1001-01A
3	Detach exhaust system from the mounts on the vehicle floor and secure with a hook to prevent it from tipping over	i When removing the left spring actuator	
4	Disconnect pressure lines (S1, P4) at spring actuator (4)	Nm S	BA32.31-P-1001-05A 116 589 00 17 00
5	Unscrew nuts (4f) on spring actuator (4)	Nm	BA32.31-P-1002-05A
6	Remove spare wheel	i Remove the spring actuator through the trunk	
7	Install in reverse order	**Installation:** Replace self-locking nuts and bolts	
⚠ **Danger!**	**Risk of injury** from drilling gas-filled units or components (gas fill is not inflammable)	Wear safety glasses and safety mask	AS00 00-Z-0006-01A **M17**

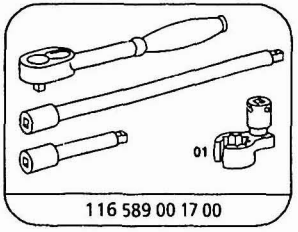
8	Dispose of spring actuator	Model 129 with code 216c Models 140, 210 with code 217a, 480 Model 202 with code 480	OS32 30-P-0620-01A	E18

Nm **Rear axle level control spring actuator**

Number	Designation			Model 129 with electronic level control / ADS II
BA32.31-P-1001-05A	Pressure line of level control/ADS to spring actuator (reference value)	M10×1	Nm	14
		M16×1.5	Nm	30
BA32.31-P-1002-05A	Nut for attaching spring actuator to bracket		Nm	10

Nm **Frame floor**

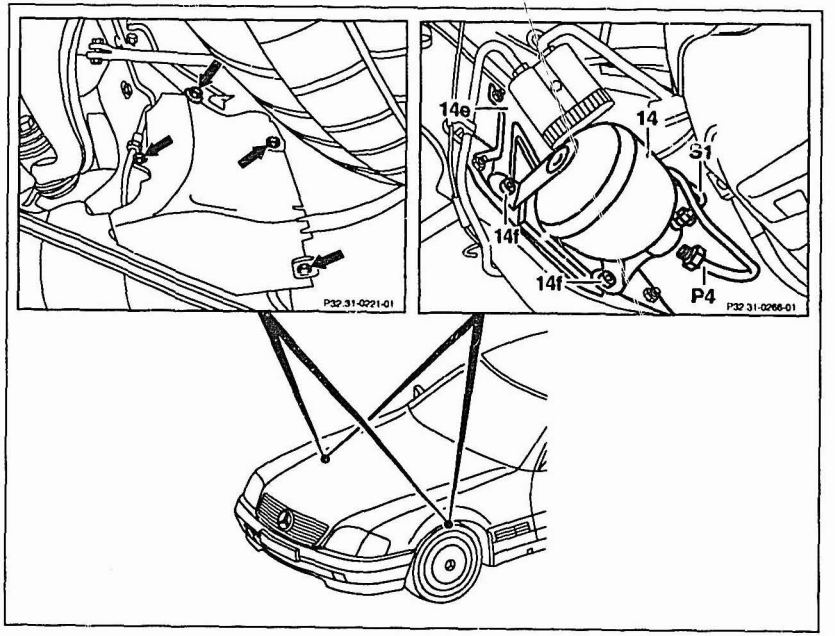
Number	Designation		Model 129
BA61.10-P-1001-01A	Self-locking bolt of rear cross brace to frame floor	Nm	120



Box wrench

P4 AR32 31-P-0615A	Removing and installing rear axle spring actuator	21.3.95

MODEL 129 with CODE (216c) Adaptive damping system (ADS II) with electronic level control

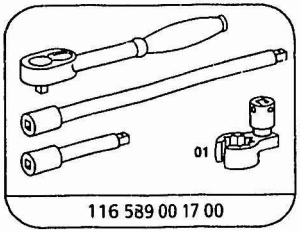


P32 31-0206-06

	Removing, installing		
⚠ **Danger!**	**Risk of injury** to skin or eyes due to hydraulic fluid spraying out under high pressure. **Risk of poisoning** due to consuming hydraulic fluid.	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	AS00.00-Z-0013-01A **J17**
1	Detach front wheels		AP40.10-P-4050Z
2	Remove cover in wheel house (arrows).		
3	Empty pressure oil system at front axle	**Installation:** Fill pressure oil system at front and rear axles.	AR32.31-P-0630A **M1**
4	Disconnect pressure lines (S1, P4) at spring actuator (14)	Nm Nm SW	BA32.31-P-1001-04A BA32.31-P-1002-04A 116 589 00 17 00
5	Unscrew nuts (14f) and remove spring actuator (14) from bracket (14e).		
6	Install in reverse order.	**Installation** Replace self-locking nuts.	
⚠ **Danger!**	**Risk of injury** from drilling gas-filled units or components (gas fill is not inflammable)	Wear safety glasses and safety mask.	AS00.00-Z-0006-01A **M17**
7	Federspeicher entsorgen	Model 129 with code 216c Models 140, 210 with code 217a, 480 Model 202 with code 480	OS32.30-P-0620-01A **E18**

Nm **Front axle level control spring actuator**

Number	Designation			Model 129 with electronic level control / ADS III
BA32.31-P-1001-04A	Pressure line of level control/ADS on spring actuator (reference value)	M10×1	Nm	14
		M16×1.5	Nm	30
BA32.31-P-1002-04A	Nut for attaching spring actuator to bracket		Nm	20

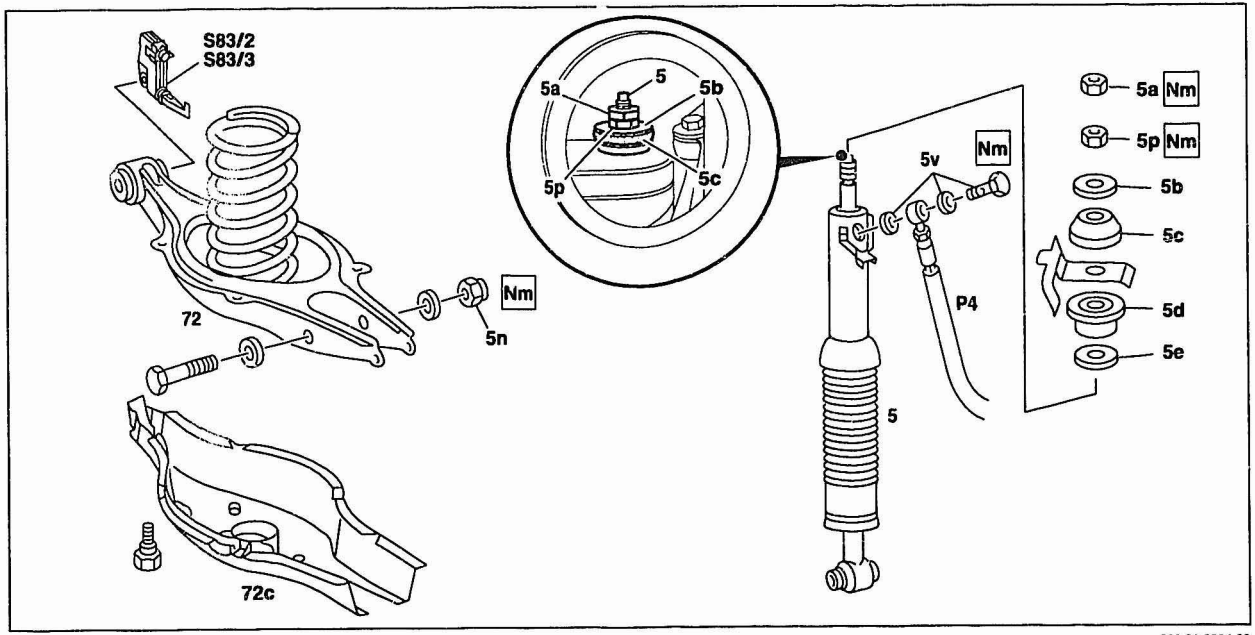


116 589 00 17 00

Box wrench

C5 AR32 31-P-0610A	Removing and installing rear axle spring strut	21.3.95

MODEL 1 29 with CODE (216c) Adaptive damping system (ADS II) with electronic level control



P32.31-0204-09

Modification notes

30.9.97	Control module and rear axle switch (roll bar) discontinued	Work step 7	BT91.59-P-0001-01A

	Removing, installing		
1	Detach upper spring strut fixing.	The vehicle must be on its wheels for removing the upper spring strut fixing. Steady spring strut (5) in wheel house. Nut (5p) Nut (5a)	 BA32.31-P-1001-03A BA32.31-P-1002-03A
2	Remove washer (5b) and rubber mound (5c).		
3	Raise vehicle.		
4	Remove rear wheels.		AP40.10-P-4050Z
Danger!	**Risk of injury** to skin or eyes due to hydraulic fluid spraying out under high pressure. **Risk of poisoning** due to consuming hydraulic fluid.	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	AS00 00-Z-0013-01A **J17**
5	Empty pressure oil system at rear axle	**Installation:** Fill pressure oil system at front and rear axles.	AR32 31-P-0630A **M1**
6	Disconnect pressure line (P4) from spring strut.		BA32.31-P-1004-03A

		Installation: Replace copper sealing rings on banjo bolt (5v) Before tightening pressure line on spring strut ↓ Check and set distance between rear axle spring strut and wheel house	AR32 31-P-0610-G.A **A17**
7 BT	Remove left and right rear axle switch (roll bar) (S83/2 or S83/3). Discontinuation of control module and rear axle switch (roll bar)		ra91001240860x RA91-860 BT91 59-P-0001-01A **C18**
8	Detach spring link cover (72c).		
9	Detach and remove spring strut (5) at spring link (72).	**Installation:** Extend spring strut so that spring strut mount contacts dome. Replace self-locking nut (5n). Nm	BA32.31-P-1003-03A
	Checking		
10	Check rubber mounts (5c, 5d), plate (5e), spring strut mount and rubber boot for damage and cracks. Check ball joint for wear		
11	Check spring strut for leaks	Slight oil mist is permissible. If the joint eye is moistened with oil ↓ Replace spring strut	

12	Install in reverse order		
13	Check distance between spring strut and wheel house in the ready-to-drive condition	If necessary, loosen upper spring strut fixing and align spring strut.	AR32.31-P-0610-01A **A17**
14	Check function of roll bar system.		ra91001240860x RA91-860
⚠ **Danger!** 18	**Risk of injury** from drilling gas-filled units or components (gas fill is not inflammable) Dispose of shock-absorber strut	Wear safety glasses and safety mask	A500.00-Z-0006-01A **M17** OS32 25-P-0120-01A **F18**

Test values for rear axle spring strut

Number	Designation				Model 129 with electronic level control/ADS II
BE32.31-P-1001-01A	Distance between pressure hose bracket on spring strut tube and wheel house	at rebound	left	mm	11–14
			right	mm	11–14
			refer to figure		AR32.31-0610-01A
BE32.31-P-1002-01A	Distance between pressure hose bracket on spring strut tube and wheel house	ready-to-drive (vehicle on its wheels)	left	mm	16–19
			right	mm	16–19
			refer to figure		AR32.31-0610-01A

Nm Rear axle spring strut level control

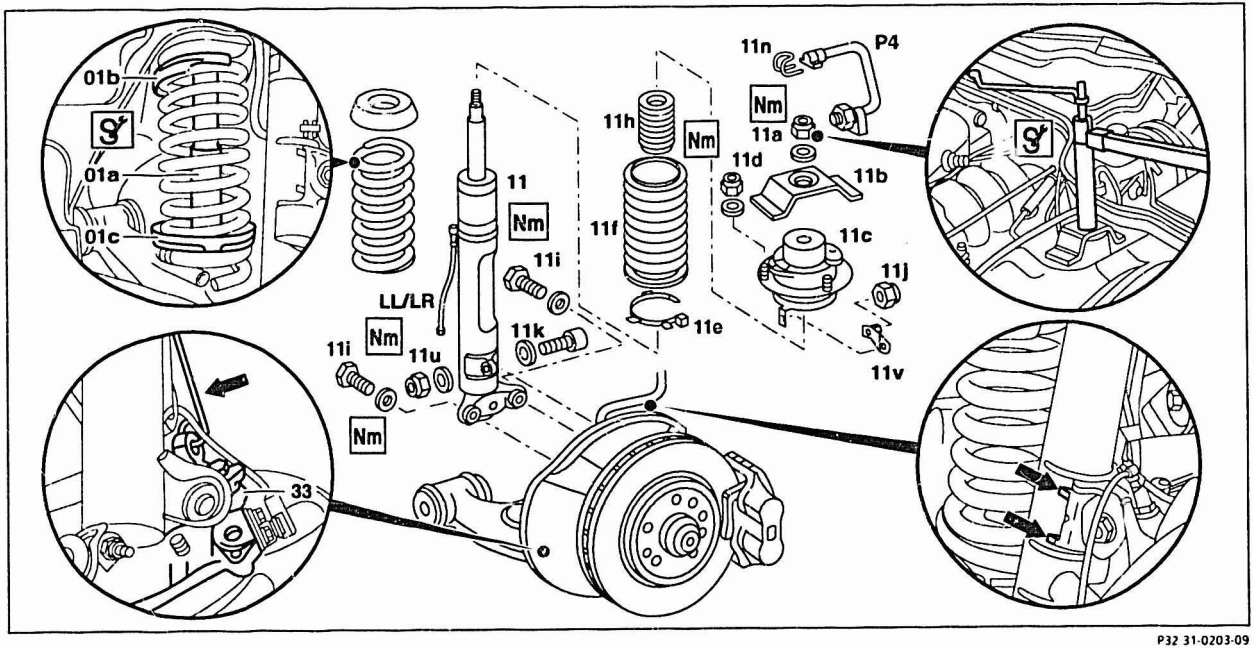
Number	Designation		Model 129 with electronic level control/ADS II
BA32.31-P-1001-03A	Nut of spring strut, level control on frame floor (reference value)	Nm	15–18

Nm **Rear axle spring strut level control**

Number	Designation		Model 129 with electronic level control/ADS II
BA32.31-P-1002-03A	Lock nut of spring strut, level control on frame floor (reference value)	Nm	30
BA32.31-P-1003-03A	Self-locking nut of spring strut, level control on spring link	Nm	55
BA32.31-P-1004-03A	Banjo bolt of pressure line, level control on spring strut	Nm	25

H5 AR32 31-P-0605A	Removing and installing front axle spring strut	13.3.95

MODEL 129 with CODE (216c) adaptive damping system (ADS II) with electronic level control



⊠ ⊠	**Removing, installing**		
(i) **Installation**	Replace self-locking bolts and nuts.		
1	Remove front wheels		AP40.10-P-4050Z
2	Install clamping plates (01b, 01c) and clamping device (01a)	☑	202 589 13 63 00
		☑	202 589 01 31 00
⚠ **Danger!**	**Risk of injury** from being **trapped or crushed** when working on preloaded springs or spring bodies	Only use approved clamping devices and if appropriate also screen off the danger area. Check special tools for damage and function, (visual inspection). Wear safety gloves.	AS00 00-Z-0001-01A **N17**
3	Clamp front spring	(i) Do not use a impact wrench i Clamp spring until the wishbone is relieved of load	AR32 20-P-0200-01A **C17**
⚠ **Danger!**	<f>Risk of injury<f> to skin or eyes due to hydraulic fluid spraying out under high pressure. <f>Risk of poisoning<f> due to consuming hydraulic fluid.	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	AS00 00-Z-0013-01A **J17**
4	Empty pressure oil system at front axle	i **Installation:** Fill pressure oil system at front and rear axles.	AR32 31-P-0630A **M1**
(i)	General notes for working on vehicles with level control/ADS	All models with code 216b, 216c, 217a, 480	AH32 00-P-0002-01A **P17**

5	Remove bracket (11n) of pressure line (P4) at spring strut/piston rod.		
6	Unscrew nuts (11j) and remove bracket (11v).		
7	Pull pressure line (P4) off spring strut/piston rod.	**Installation:** Ensure correct routing of pressure line (P4).	
8	Detach nut (11a) with washer and rebound stop (11b) of upper spring strut fixing.	Nm Nut (11a)	124 589 00 09 00 BA32.31-P-1001-02A
9	Disconnect leak oil line (LL/LR) from the steel line connection	Nm **Installation:** Ensure correct routing of leak oil line (LL/LR).	BA32.31-P-1001-09A
10	Unclip bracket for lines from spring strut (arrows).		
11	Unscrew spring strut (11) from steering knuckle (33) and remove.	**Installation:** Nm Replace bolts (11i) and self-locking nut (11u). Nm Fit upper bolt (11k) and tighten slightly until the surface of the steering knuckle abuts the spring strut on the inside. Tighten bolts (11i) and then tighten upper bolt (11k).	BA32.31-P-1002-02A BA32.31-P-1003-02A
12	Secure steering knuckle (33) with a suitable hook (arrow) to prevent it from tilting away.	Do not tension brake hose and electric cables	

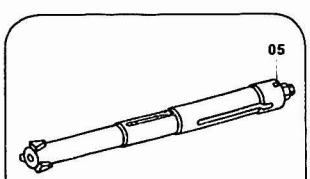
13	If necessary, remove rubber mount (11c).	According to the scope of repairs determined, e.g. for accident repair. (!) **Installation:** Replace nut (11d). Nm	BA32.31-P-1004-02A
◁	**Checking**		
14	Check bump stop (11h), retaining strap (11e), cup seal (11f) for damage and cracks.	i **Installation:** Attach cup seal (11f) to rubber mount (11c).	
15	Check spring strut for leaks.	i Slight oil mist is permissible. If the spring strut tube is moistened with oil ↓ Replace spring strut.	
16	Install in reverse order		
17	Carry out chassis alignment check.		AR40.20-P-0200A
⚠ **Danger !** 18	**Risk of injury** from drilling gas-filled units or components (gas fill is not inflammable) Dispose of shock-absorber strut	Wear safety glasses and safety mask.	AS00 00-Z-0006-01A **M17** OS32 25-P-0120-01A **F18**

Front axle spring strut level control

Number	Designation			Model 129 with electronic level control/ADS II
BA32.31-P-1001-02A	Self-locking nuts for attaching spring strut to front end		Nm	80
BA32.31-P-1002-02A	Self-locking bolts for attaching spring strut to steering knuckle		Nm	110
BA32.31-P-1003-02A	Self-locking nuts of clamping connection of spring strut/steering knuckle		Nm	200
BA32.31-P-1004-02A	Self-locking nuts for attaching spring strut rubber mount to front end		Nm	20

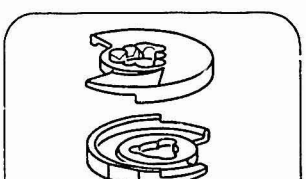
Front axle spring strut pressure oil lines

Number	Designation			Model 129 with electronic level control/ADS II
BA32.31-P-1001-09A	Leak oil line (LL/LR) to the steel line connection	M10×1	Nm	14



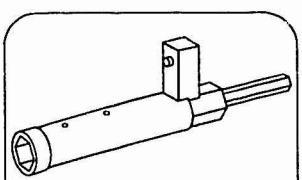
202 589 01 31 00

Clamping unit



202 589 13 63 00

Clamping plates

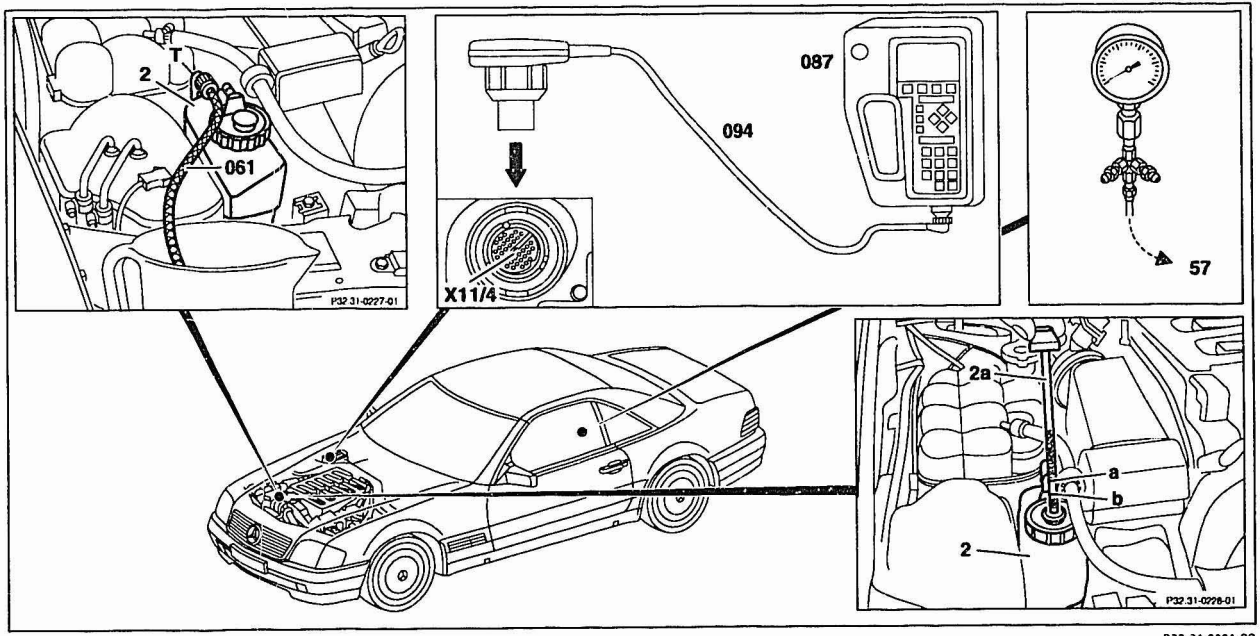


124 589 00 09 00

Socket wrench

O5 AR32 31-P-0510A	Checking level control pressure oil pump	27.3.95

MODEL 129 with CODE (216c) Adaptive damping system (ADS II) with electronic level control



P32 31-0201-09

	Removal		
⚠ **Danger!**	**Risk of injury** to skin or eyes due to hydraulic fluid spraying out under high pressure. **Risk of poisoning** due to consuming hydraulic fluid.	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	AS00 00-Z-0013-01A **J17**
1 **Testing**	Empty pressure oil system at rear axle		AR32 31-P-0630A **M1**
2	Connect tester to rear axle connecting piece (57)	⚠ Danger due to oil spraying out!	AR32 31-P-0510-01A **F17**
3	Pour oil into oil reservoir (2)	For testing, increase the quantity of oil to approx. 0.5 liters above the "max." marking (a) on the oil dipstick (2a). Funnel Oil in accordance with Specifications for Service Products, sheet 343	126 589 12 63 00
4	Disconnect return (flow) line (T) at oil reservoir (2), connect oil drain hose (061) to the return (flow) line (T) and guide into oil reservoir (2)	To measure the delivery rate of the pressure oil pump. Pay attention to secure hose routing. When the pressure relief valve in the valve unit opens, the oil pressure in the return (flow) line increases to approx. 2 bar.	
5	Connect Hand-Held Tester (089) with test cable (094) to data link connector (X11/4)	Refer to DM Chassis, Volume 1, Index 0	dh0000p000003x

⚠ **Danger!** 6	**Risk of accident** due to vehicle starting off automatically when engine is running. **Risk of injury** due to being trapped and burns when intervening while starting the engine or when the engine is running. Start engine and allow to idle.	Secure vehicle to prevent it from starting off automatically. Wear close-fitting, tight clothing Do not touch hot or rotating parts.	AS00 00-Z-0005-01A **K17**
7	Hand-Held Tester (089) in "lift" position		
8	**Checking output of pressure oil pump**	ⓑ Only carry out the test briefly due to the high pressures. ⓘ The delivery pressure of the pressure oil pump is limited by the bypass valve in the valve unit. Opening pressure of bypass valve if the opening pressure of the pressure relief valve is clearly not achieved ? ↓ and output at idle speed Replace pressure oil pump/tandem pump Insufficient pressure at optimum delivery rate ? ↓ Replace valve unit	 BE32.31-P-1001-02A BE32.30-P-1002-02A AR46.30-P-0500A AR32 31 P-0650A **H1**
9	**Checking delivery rate of pressure oil pump** Connect oil drain hose (061) to the return (flow) line (T) in a measuring vessel	ⓑ Ensure that there is sufficient oil in the oil reservoir. The pump must not draw in air under any circumstances. When the delivery rate is not achieved ? ↓	BE32.30-P-1002-02A

		Replace pressure oil pump/tandem pump When the delivery rate is exceeded ? ↓ and output is not achieved at idle speed ? ↓ Replace valve unit	AR46.30-P-0500A BE32.30-P-1002-02A AR32 31-P-0650A **H1**
10	Switch off engine		
	Installation		
11	Disconnect Hand-Held Tester with test cable	Refer to DM Chassis, Volume 1, Index 0	dh0000p000003x
⚠ **Danger!**	**Risk of injury** to skin or eyes due to hydraulic fluid spraying out under high pressure. **Risk of poisoning** due to consuming hydraulic fluid.	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	AS00 00-Z-0013-01A **J17**
12	Disconnect tester on distributor fitting (57)	Nm	AR32 31-P-0510-01A **F17** BA32.31-P-1001-01A
13	Connect return (flow) line (T) to oil reservoir (2)		
14	Fill pressure oil system at front and rear axle	The front axle is also filled at the same time	AR32 31-P-0630A **M1**

Test values for pressure oil pump

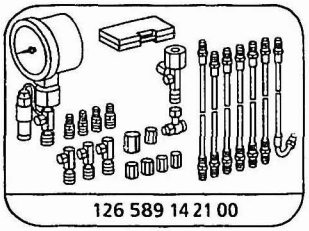
Number	Designation		Model 129 with electronic level control/ADS II
BE32.30-P-1002-02A	Output at idle speed	Liters/min	> 0.2

Test values for valve unit

Number	Designation		Model 129 with electronic level control/ADS II
BE32.31-P-1001-02A	Opening pressure of bypass valve	bar	180-190

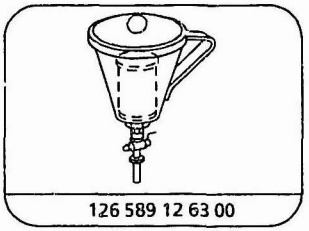
Nm Distributor fitting

Number	Designation			Model 129 with electronic level control/ADS II
BA32.31-P-1001-01A	Oil drain plug on rear axle distributor fitting (reference value)	M10×1	Nm	14



126 589 14 21 00

Tester



126 589 12 63 00

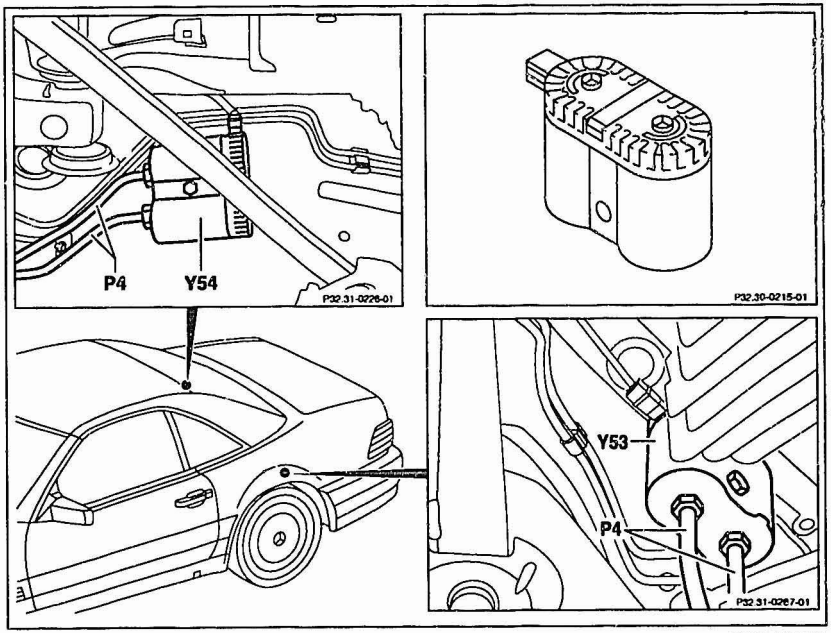
Funnel

Workshop equipment/MB testers (refer to workshop equipment manual)

WE58.40-Z-1001-06A	Hand-Held Tester (HHT), order number 6511 0001 99
WE58.40-Z-1002-06A	Test cable (Multiplexer)

AR32.31-P-0680A	Removing and installing rear axle damper valve	30.3.95

MODEL 129 with CODE (216c) Adaptive damping system (ADS II) with electronic level control



P32.31-0210-06

Illustration item., etc.	Operating notes		
⚠ Danger!	Risk of injury to skin or eyes due to hydraulic fluid spraying out under high pressure. Risk of poisoning due to consuming hydraulic fluid.	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	AS00.00-Z-0013-01A
(!) Installation	Replace self-locking screws and nuts		
i	Empty, fill pressure oil system of rear axle		AR32.31-P-0630A
P4	Pressure lines	Disconnect at the damper valves (Y53, Y54). Nm	 BA32.31-P-1001-07A
Y51, Y52	Damper valve	Detach at bracket, disconnect electrical connector. Nm Nm	 BA32.31-P-1002-07A BA32.31-P-1003-07A

Nm **Rear axle level control damper valve**

Number	Designation			Model 129 with electronic level control / ADS II
BA32.31-P-1001-07A	ADS pressure line to damper valve (reference value)	M16×1.5	Nm	30
		M18×1.5	Nm	44

Nm Rear axle level control damper valve

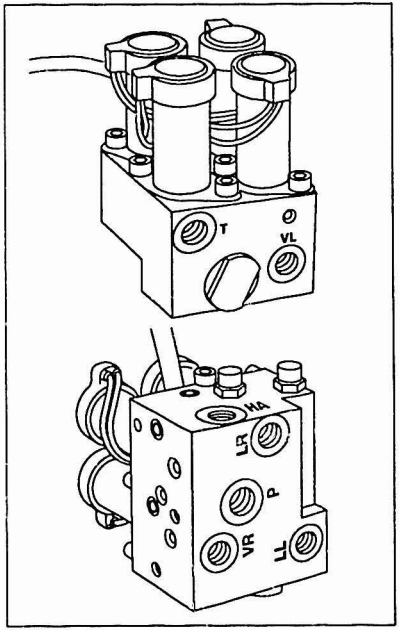
Number	Designation			Model 129 with electronic level control / ADS II
BA32.31-P-1002-07A	Self-locking bolt of left damper valve on bracket	M8	Nm	24
BA32.31-P-1003-07A	Self-locking nut of right damper valve on bracket	M8	Nm	14

AR32.31-P-0650A	Removing and installing level control valve unit	24.3.95

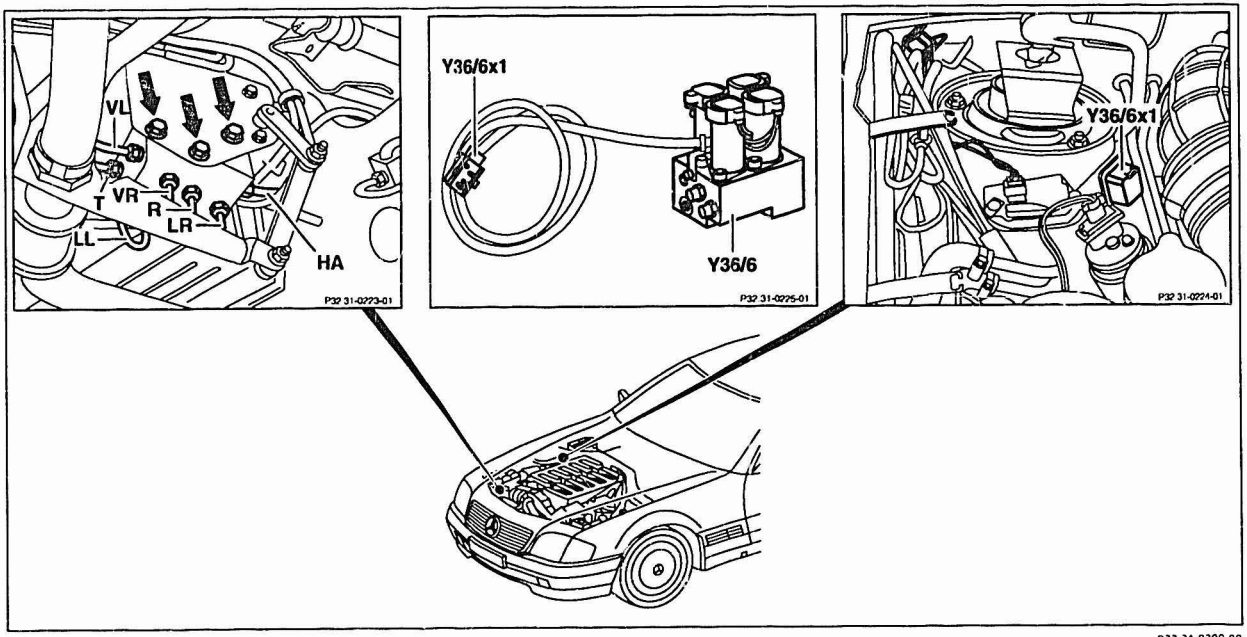
MODEL 129 with CODE (216c) Adaptive damping system (ADS II) with electronic level control

Connections of valve unit Y36/6

HA to rear axle spring actuator
VL to left front axle spring actuator
VR to right front axle spring actuators
LL from left spring strut leak oil line
LR from right spring strut leak oil line
P from pressure oil pump
T to oil reservoir



F32 31-0222-03



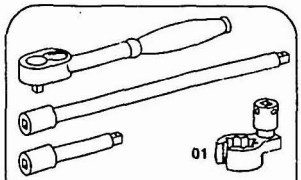
Modification notes

30.9.97	High-pressure stretch hose in oil circuit	Work step 2	BT32.32-P-0001-01A

	Removing, installing		
⚠ **Danger!**	Risk of injury<f> to skin or eyes due to hydraulic fluid spraying out under high pressure. <f>Risk of poisoning<f> due to consuming hydraulic fluid.	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	AS00.00-Z-0013-01A
Installation	Replace self-locking bolts and nuts		
1	Empty pressure oil system at front and rear axles	**Installation:** Fill pressure oil system at front and rear axles.	AR32.31-P-0630A
2	Disconnect pressure lines (HA, VR, VL, LL, LR, P, T) at rear axle height reduction valve (Y36/6)	Nm	BA32.31-P-1001-06A
			116 589 00 17 00
BT	High-pressure stretch hose installed in oil circuit (ADS)		BT32.32-P-0001-01A
3	Disconnect electric cable (Y36/6x1) in right of engine compartment		
4	Unscrew bolts (arrows) from bracket	Nm	BA32.31-P-1002-06A
5	Install in reverse order		

Nm Level control valve unit

Number	Designation			Model 129 with electronic level control / ADS II
BA32 31-P-1001-06A	Pressure line level control on valve unit (reference value)	M10×1	Nm	14
		M12×1	Nm	20
BA32.31-P-1002-06A	Bolts for attaching valve unit to bracket (reference value)		Nm	10

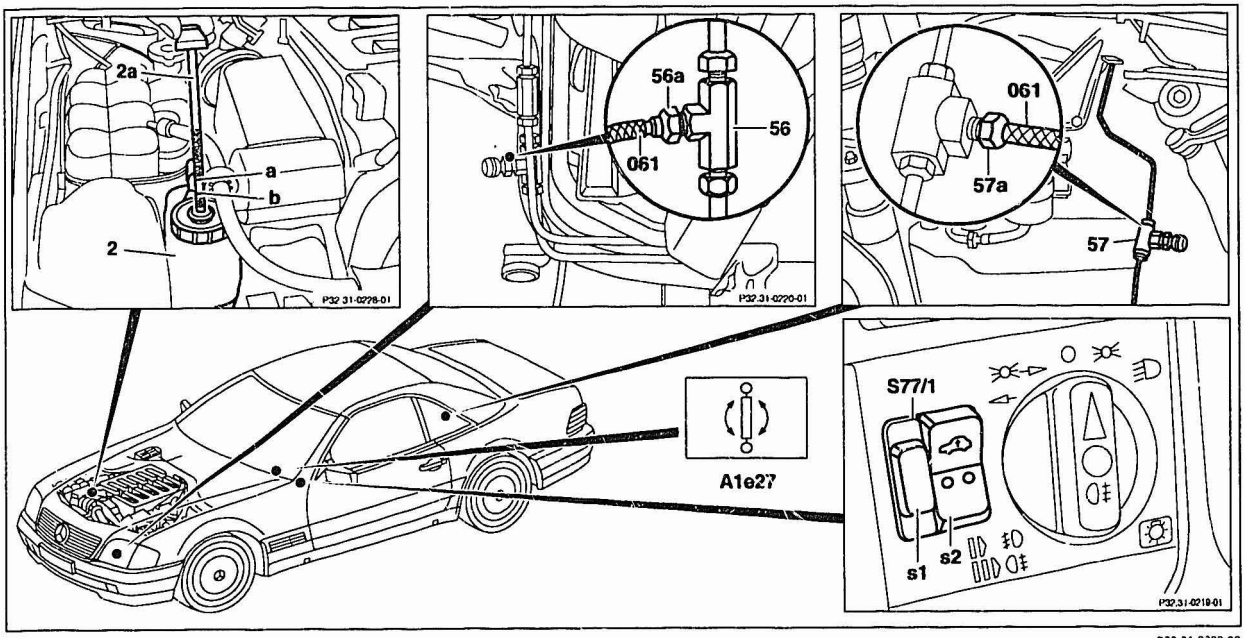


116 589 00 17 00

Box wrench

AR32.31-P-0630A	Draining and filling pressure oil system at front and rear axle	22.3.95

MODEL 129 with CODE (216c) adaptive damping system (ADS II) with electronic level control



P32 31-0208-09

2a Oil dipstick *a Maximum mark* *b Minimum mark*

	Emptying		
	General notes for working on vehicles with level control/ADS	All models with code 216b, 216c, 217a, 480	AH32.00-P-0002-01A
1	Press level adjustment switch (S77/1) into the "lock out" position	ADS suspension MIL (A1e27) illuminated.	
2	Raise vehicle	Engine must be switched off.	
		Only empty, fill pressure oil system on front and rear axle when "removing, installing valve unit". Otherwise only empty, fill the pressure oil system on the front or rear axle depending on the extent of the work.	
3	**Front axle:** Put oil drain hose (061) on oil drain screw (56a) on distributor fitting (56).	Lower engine cover removed	
4	**Rear axle:** Put oil drain hose (061) on oil drain screw (57a) on distributor fitting (57).	Cover in the area of the fuel pump assembly/rear axle removed.	
Danger!	**Risk of injury** to skin or eyes due to hydraulic fluid spraying out under high pressure. **Risk of poisoning** due to consuming hydraulic fluid.	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	AS00.00-Z-0013-01A
5	Slowly open oil drain screw (56a or 57a) and collect oil in a clean container.	The oil collected can be re-used.	

6	Close oil drain screw (56a or 57a) again.	Nm Nm	BA32.31-P-1002-01A BA32.31-P-1001-01A
	Filling		
7	Lower vehicle or vehicle must be on its wheels	At front axle: Position wheels straightahead	
8	Pour oil into the oil reservoir (2)	Only re-use clean oil Funnel 	 126 589 12 63 00 BF32.30-P-1001-01A
	The ignition must have been switched off for at least 60 seconds	Otherwise fault display in ADS system	
Danger!	**Risk of accident** due to vehicle starting off automatically when engine is running. **Risk of injury** due to being trapped and burns when intervening while starting the engine or when the engine is running	Secure vehicle to prevent it from starting off automatically. Wear close-fitting, tight clothing Do not touch hot or rotating parts.	AS00.00-Z-0005-01A
9	Start engine and allow to run for approx. 2 minutes at moderate speed.	The system bleeds itself automatically. Ensure that there is sufficient oil in the oil reservoir. The pump must not suck in air under any circumstances.	

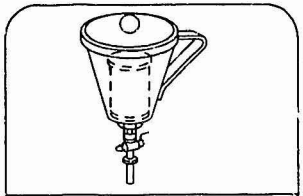
10	Switch off level adjustment switch (S77/1) "lock out" position	The ADS suspension MIL (A1e27) goes out. If the filling operation takes longer than 5 minutes, the control module switches off the valves for 5 minutes (overload protection).	
11	Switch off engine		
12	Check, correct oil level in oil reservoir	Level adjustment switch (S77/1) is in the "normal level" position (indicator lamp in switch: **OFF**). Oil level between the "min" anu "max" marks. The vehicle must be unladen.	AP32.30-P-3211BA
13	Carry out road test	After completing the filling operation, a test trip should be made on a level road to completely bleed the hydraulic system. In the process carry out the level adjustment **high level stage 1** and **high level stage 2**. Then check the oil level again at the "normal level".	

Nm Distributor fitting

Number	Designation			Model 129 with electronic level control / ADS II
BA32.31-P-1001-01A	Oil drain screw in rear axle distributor fitting (reference value)	M10×1	Nm	14
BA32.31-P-1002-01A	Oil drain screw in front axle distributor fitting (reference value)	M10×1	Nm	14

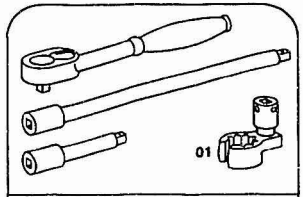
Level control

Number	Designation			Model 129 with ADS and level control/ASD
BF32.30-P-1001-01A	Filling quantities	Level control when the system is refilled	liters	approx. 4-4.5
		Specifications for Service Products, sheet	sheet	343.0
			sheet	–



126 589 12 63 00

Funnel

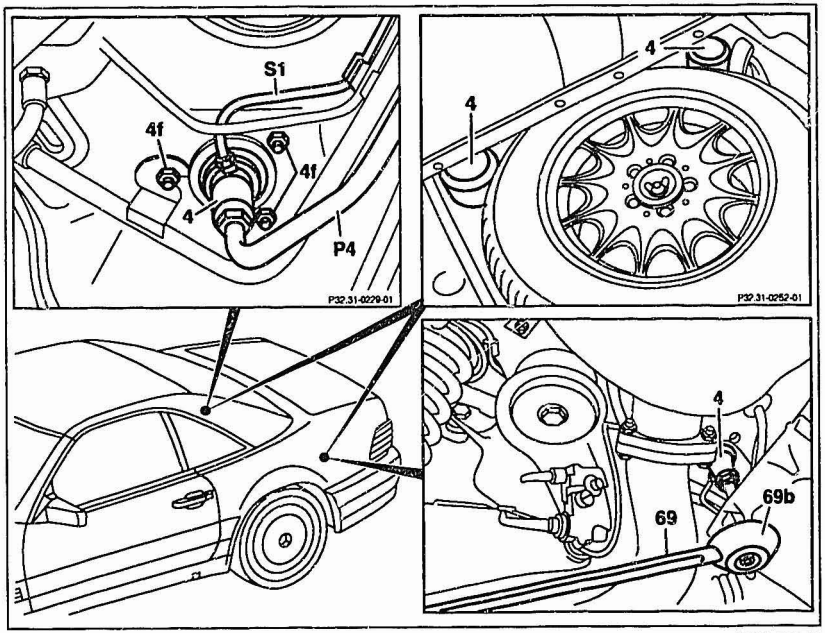


116 589 00 17 00

Box wrench

AR32.31-P-0620A	Removing and installing rear axle spring actuator	22.3.95

MODEL 129 with CODE (216c) Adaptive damping system (ADS II) with electronic level control



P32.31-0207-06

	Removing, installing		
⚠ **Danger!**	**Risk of injury** to skin or eyes due to hydraulic fluid spraying out under high pressure. **Risk of poisoning** due to consuming hydraulic fluid.	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	AS00.00-Z-0013-01A
1	Empty pressure oil system at rear axle	**Installation:** Fill pressure oil system at front and rear axle	AR32.31-P-0630A
2	Loosen left cross brace (69) on vehicle floor.	When removing the left spring actuator Nm Bolt (69b)	 BA61.10-P-1001-01A
3	Detach exhaust system from the mounts on the vehicle floor and secure with a hook to prevent it from tipping over	When removing the left spring actuator	
4	Disconnect pressure lines (S1, P4) at spring actuator (4)	Nm S	BA32.31-P-1001-05A 116 589 00 17 00
5	Unscrew nuts (4f) on spring actuator (4)	Nm	BA32.31-P-1002-05A
6	Remove spare wheel	Remove the spring actuator through the trunk	
7	Install in reverse order	**Installation:** Replace self-locking nuts and bolts	
⚠ **Danger!**	**Risk of injury** from drilling gas-filled units or components (gas fill is not inflammable)	Wear safety glasses and safety mask.	AS00.00-Z-0006-01A

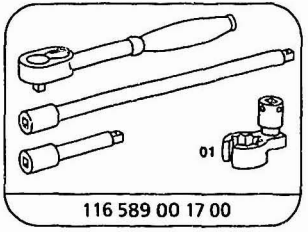
8	Dispose of spring actuator	Model 129 with code 216c Models 140, 210 with code 217a, 480 Model 202 with code 480	OS32.30-P-0620-01A

Nm Rear axle level control spring actuator

Number	Designation			Model 129 with electronic level control / ADS II
BA32.31-P-1001-05A	Pressure line of level control/ADS to spring actuator (reference value)	M10×1	Nm	14
		M16×1.5	Nm	30
BA32.31-P-1002-05A	Nut for attaching spring actuator to bracket		Nm	10

Nm Frame floor

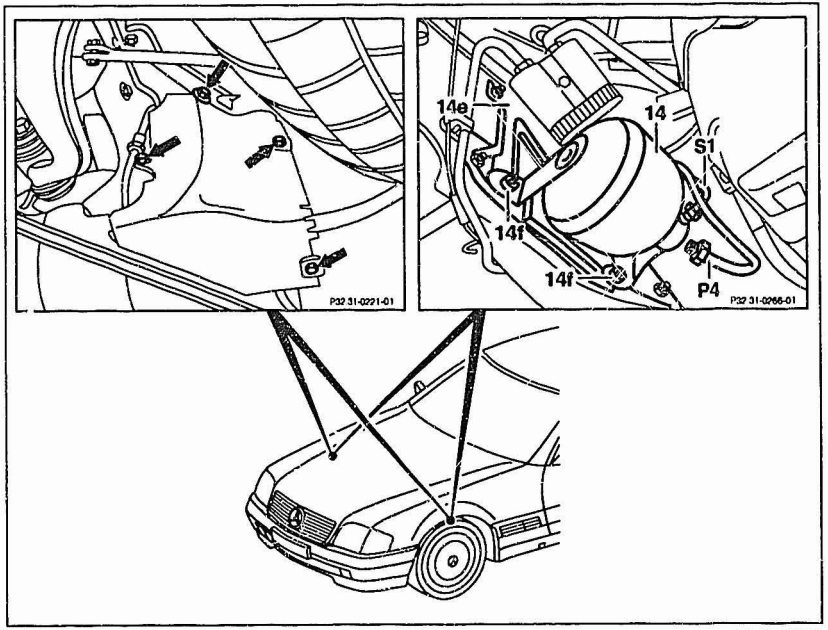
Number	Designation		Model 129
BA61.10-P-1001-01A	Self-locking bolt of rear cross brace to frame floor	Nm	120



Box wrench

AR32.31-P-0615A	Removing and installing rear axle spring actuator	21.3.95

MODEL 129 with CODE (216c) Adaptive damping system (ADS II) with electronic level control

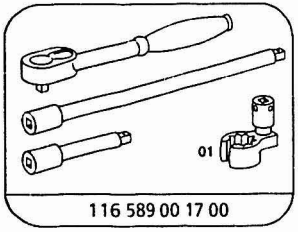


P32.31-0206-06

	Removing, installing		
⚠ **Danger!**	**Risk of injury** to skin or eyes due to hydraulic fluid spraying out under high pressure. **Risk of poisoning** due to consuming hydraulic fluid.	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	AS00.00-Z-0013-01A
1	Detach front wheels		AP40.10-P-4050Z
2	Remove cover in wheel house (arrows).		
3	Empty pressure oil system at front axle	**Installation:** Fill pressure oil system at front and rear axles.	AR32.31-P-0630A
4	Disconnect pressure lines (51, P4) at spring actuator (14)	Nm	BA32.31-P-1001-04A
		Nm	BA32.31-P-1002-04A
			116 589 00 17 00
5	Unscrew nuts (14f) and remove spring actuator (14) from bracket (14e).		
6	Install in reverse order.	**Installation** Replace self-locking nuts.	
⚠ **Danger!**	**Risk of injury** from drilling gas-filled units or components (gas fill is not inflammable)	Wear safety glasses and safety mask.	AS00.00-Z-0006-01A
7	Disposal of spring actuator	Model 129 with code 216c Models 140, 210 with code 217a, 480 Model 202 with code 480	OS32.30-P-0620-01A

Front axle level control spring actuator

Number	Designation			Model 129 with electronic level control / ADS III
BA32 31-P-1001-04A	Pressure line of level control/ADS on spring actuator (reference value)	M10×1	Nm	14
		M16×1.5	Nm	30
BA32 31-P-1002-04A	Nut for attaching spring actuator to bracket		Nm	20

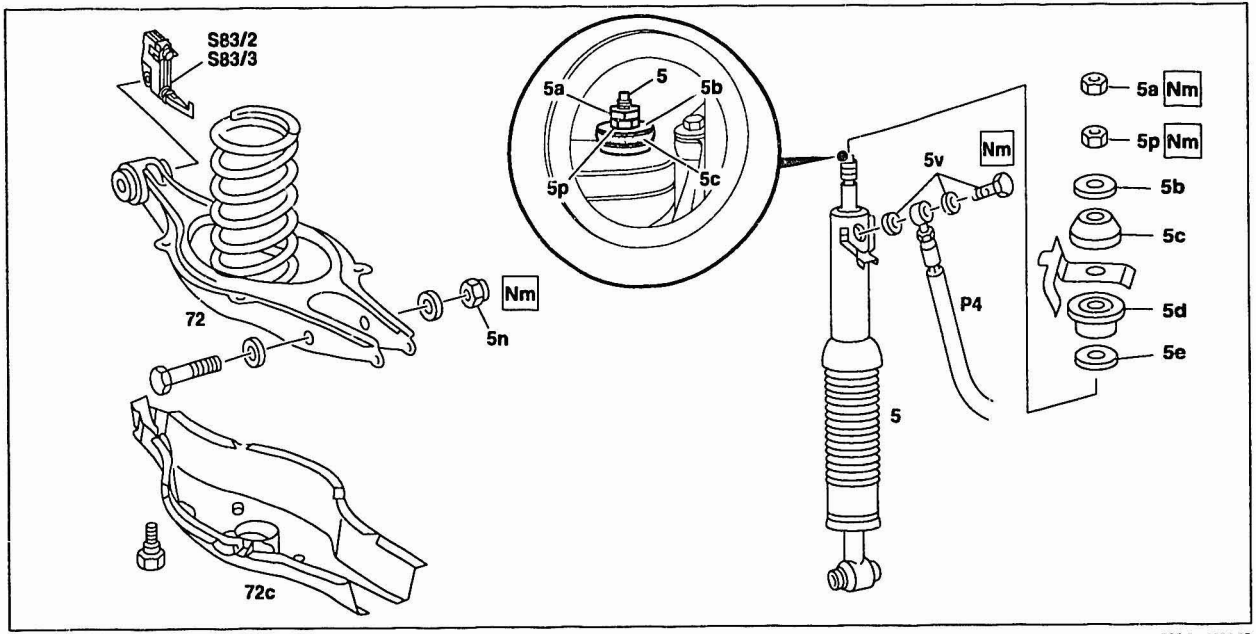


116 589 00 17 00

Box wrench

AR32.31-P-0610A	Removing and installing rear axle spring strut	21.3.95

MODEL 1 29 with CODE (216c) Adaptive damping system (ADS II) with electronic level control



P32 31-0204-09

Modification notes

30.9.97	Control module and rear axle switch (roll bar) discontinued	Work step 7	BT91.59-P-0001-01A

	Removing, installing		
1	Detach upper spring strut fixing.	The vehicle must be on its wheels for removing the upper spring strut fixing. Steady spring strut (5) in wheel house. Nut (5p) Nut (5a)	 BA32.31-P-1001-03A BA32.31-P-1002-03A
2	Remove washer (5b) and rubber mound (5c).		
3	Raise vehicle.		
4	Remove rear wheels.		AP40.10-P-4050Z
⚠ **Danger!**	**Risk of injury** to skin or eyes due to hydraulic fluid spraying out under high pressure. ***Risk of poisoning*** due to consuming hydraulic fluid.	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	AS00.00-Z-0013-01A
5	Empty pressure oil system at rear axle	**Installation:** Fill pressure oil system at front and rear axles.	AR32.31-P-0630A
6	Disconnect pressure line (P4) from spring strut.		BA32.31-P-1004-03A

		Ⓑ **Installation:** Replace copper sealing rings on banjo bolt (5v) Before tightening pressure line on spring strut ↓ Check and set distance between rear axle spring strut and wheel house	 AR32.31-P-0610-01A
7 BT	Remove left and right rear axle switch (roll bar) (S83/2 or S83/3). Discontinuation of control module and rear axle switch (roll bar)		RA91-860 BT91.59-P-0001-01A
8	Detach spring link cover (72c).		
9	Detach and remove spring strut (5) at spring link (72).	ⓘ **Installation:** Extend spring strut so that spring strut mount contacts dome. Replace self-locking nut (5n). Nm	 BA32.31-P-1003-03A
◁	**Checking**		
10	Check rubber mounts (5c, 5d), plate (5e), spring strut mount and rubber boot for damage and cracks. Check ball joint for wear		
11	Check spring strut for leaks	ⓘ Slight oil mist is permissible. If the joint eye is moistened with oil ↓ Replace spring strut	

12	Install in reverse order		
13	Check distance between spring strut and wheel house in the ready-to-drive condition	If necessary, loosen upper spring strut fixing and align spring strut.	AR32.31-P-0610-01A
14	Check function of roll bar system.		RA91-860
⚠ **Danger!**	**Risk of injury** from drilling gas-filled units or components (gas fill is not inflammable)	Wear safety glasses and safety mask	AS00.00-Z-0006-01A
18	Dispose of shock-absorber strut		OS32.25-P-0120-01A

Test values for rear axle spring strut

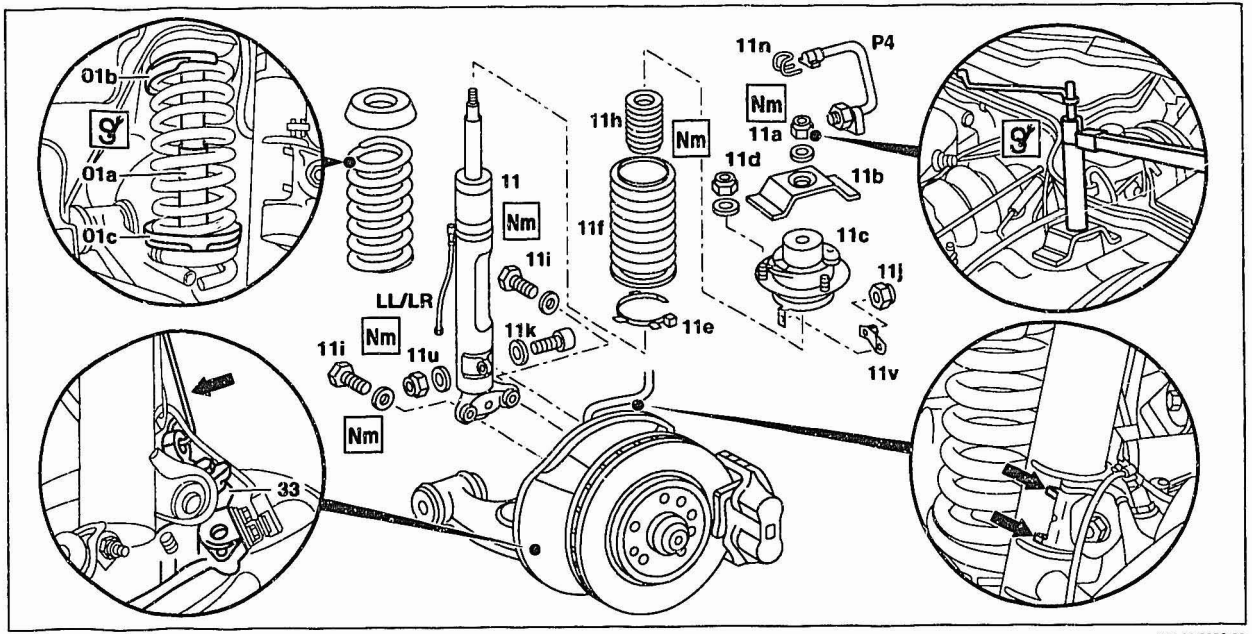
Number	Designation				Model 129 with electronic level control/ADS II
BE32 31-P-1001-01A	Distance between pressure hose bracket on spring strut tube and wheel house	at rebound	left	mm	11–14
			right	mm	11–14
			refer to figure		AR32.31-0610-01A
BE32.31-P-1002-01A	Distance between pressure hose bracket on spring strut tube and wheel house	ready-to-drive (vehicle on its wheels)	left	mm	16–19
			right	mm	16–19
			refer to figure		AR32.31-0610-01A

Nm **Rear axle spring strut level control**

Number	Designation		Model 129 with electronic level control/ADS II
BA32.31-P-1001-03A	Nut of spring strut, level control on frame floor (reference value)	Nm	15–18
BA32.31-P-1002-03A	Lock nut of spring strut, level control on frame floor (reference value)	Nm	30
BA32.31-P-1003-03A	Self-locking nut of spring strut, level control on spring link	Nm	55
BA32.31-P-1004-03A	Banjo bolt of pressure line, level control on spring strut	Nm	25

AR32.31-P-0605A	Removing and installing front axle spring strut	13.3.95

MODEL 129 with CODE (216c) adaptive damping system (ADS II) with electronic level control



P32 31-0203-09

	Removing, installing		
Installation	Replace self-locking bolts and nuts.		
1	Remove front wheels		AP40.10-P-4050Z
2	Install clamping plates (01b, 01c) and clamping device (01a).		202 589 13 63 00 202 589 01 31 00
Danger!	**Risk of injury** from being **trapped or crushed** when working on preloaded springs or spring bodies	Only use approved clamping devices and if appropriate also screen off the danger area. Check special tools for damage and function, (visual inspection). Wear safety gloves.	AS00.00-Z-0001-01A
3	Clamp front spring	Do not use a impact wrench Clamp spring until the wishbone is relieved of load	AR32.20-P-0200-01A
Danger!	<f>Risk of injury<f> to skin or eyes due to hydraulic fluid spraying out under high pressure. <f>Risk of poisoning<f> due to consuming hydraulic fluid.	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	AS00.00-Z-0013-01A
4	Empty pressure oil system at front axle	**Installation:** Fill pressure oil system at front and rear axles.	AR32.31-P-0630A
	General notes for working on vehicles with level control/ADS	All models with code 216b, 216c, 217a, 480	AH32.00-P-0002-01A

5	Remove bracket (11n) of pressure line (P4) at spring strut/piston rod.		
6	Unscrew nuts (11j) and remove bracket (11v).		
7	Pull pressure line (P4) off spring strut/piston rod.	**Installation:** Ensure correct routing of pressure line (P4).	
8	Detach nut (11a) with washer and rebound stop (11b) of upper spring strut fixing.	Nm Nut (11a)	124 589 00 09 00 BA32.31-P-1001-02A
9	Disconnect leak oil line (LL/LR) from the steel line connection	Nm **Installation:** Ensure correct routing of leak oil line (LL/LR).	BA32.31-P-1001-09A
10	Unclip bracket for lines from spring strut (arrows).		
11	Unscrew spring strut (11) from steering knuckle (33) and remove.	**Installation:** Nm Replace bolts (11i) and self-locking nut (11u). Nm Fit upper bolt (11k) and tighten slightly until the surface of the steering knuckle abuts the spring strut on the inside. Tighten bolts (11i) and then tighten upper bolt (11k).	BA32.31-P-1002-02A BA32.31-P-1003-02A
12	Secure steering knuckle (33) with a suitable hook (arrow) to prevent it from tilting away.	Do not tension brake hose and electric cables	

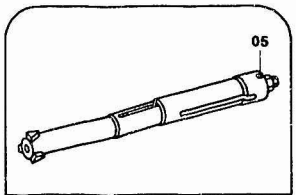
13	If necessary, remove rubber mount (11c).	According to the scope of repairs determined, e.g. for accident repair. Ⓘ **Installation:** Replace nut (11d). Nm	BA32.31-P-1004-02A
◁	**Checking**		
14	Check bump stop (11h), retaining strap (11e), cup seal (11f) for damage and cracks.	ⓘ **Installation:** Attach cup seal (11f) to rubber mount (11c).	
15	Check spring strut for leaks.	ⓘ Slight oil mist is permissible. If the spring strut tube is moistened with oil ↓ Replace spring strut.	
16	Install in reverse order		
17	Carry out chassis alignment check.		AR40.20-P-0200A
⚠ **Danger !** 18	**Risk of injury** from drilling gas-filled units or components (gas fill is not inflammable) Dispose of shock-absorber strut	Wear safety glasses and safety mask.	AS00.00-Z-0006-01A OS32.25-P-0120-01A

Nm **Front axle spring strut level control**

Number	Designation			Model 129 with electronic level control/ADS II
BA32.31-P-1001-02A	Self-locking nuts for attaching spring strut to front end		Nm	80
BA32.31-P-1002-02A	Self-locking bolts for attaching spring strut to steering knuckle		Nm	110
BA32.31-P-1003-02A	Self-locking nuts of clamping connection of spring strut/steering knuckle		Nm	200
BA32.31-P-1004-02A	Self-locking nuts for attaching spring strut rubber mount to front end		Nm	20

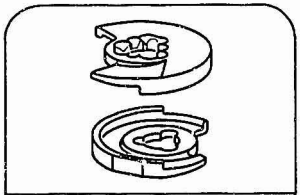
Nm **Front axle spring strut pressure oil lines**

Number	Designation			Model 129 with electronic level control/ADS II
BA32.31-P-1001-09A	Leak oil line (LL/LR) to the steel line connection	M10×1	Nm	14



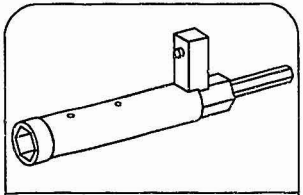
202 589 01 31 00

Clamping unit



202 589 13 63 00

Clamping plates

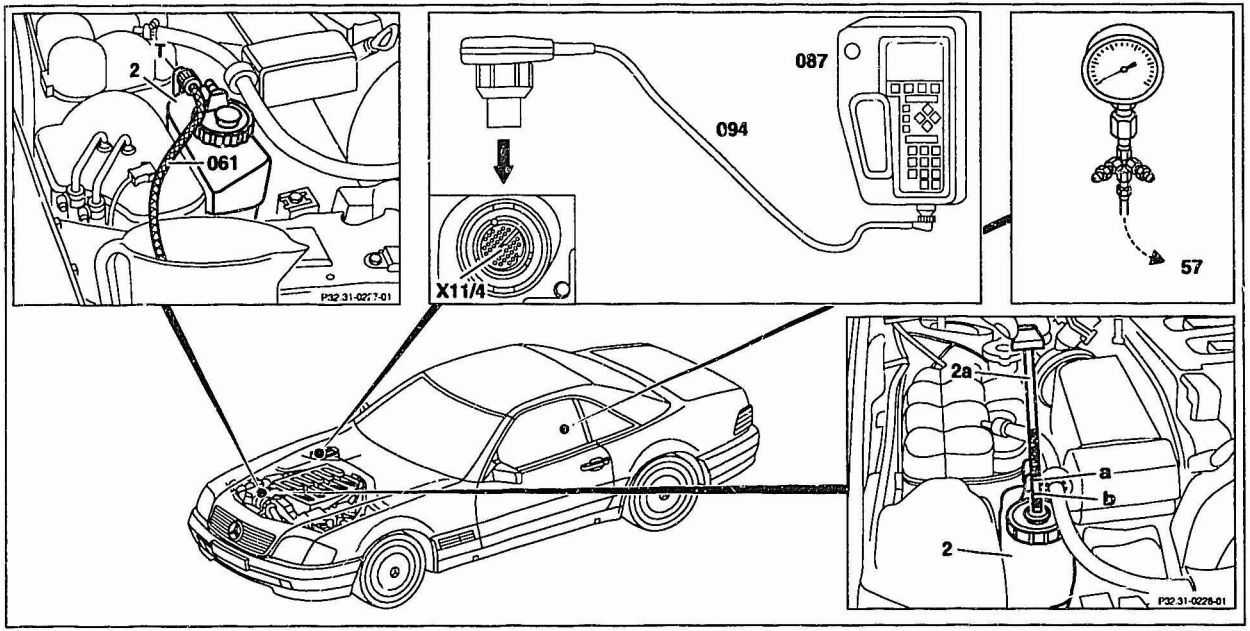


124 589 00 09 00

Socket wrench

AR32.31-P-0510A	Checking level control pressure oil pump	27.3.95

MODEL 129 with CODE (216c) Adaptive damping system (ADS II) with electronic level control



	Removal		
⚠ **Danger!**	**Risk of injury** to skin or eyes due to hydraulic fluid spraying out under high pressure. **Risk of poisoning** due to consuming hydraulic fluid.	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	AS00.00-Z-0013-01A
1 ◁	Empty pressure oil system at rear axle Testing		AR32.31-P-0630A
2	Connect tester to rear axle connecting piece (57)	⚠ Danger due to oil spraying out!	AR32.31-P-0510-01A
3	Pour oil into oil reservoir (2)	For testing, increase the quantity of oil to approx. 0.5 liters above the "max." marking (a) on the oil dipstick (2a). Funnel Oil in accordance with Specifications for Service Products, sheet 343	126 589 12 63 00
4	Disconnect return (flow) line (T) at oil reservoir (2), connect oil drain hose (061) to the return (flow) line (T) and guide into oil reservoir (2)	To measure the delivery rate of the pressure oil pump. Pay attention to secure hose routing. When the pressure relief valve in the valve unit opens, the oil pressure in the return (flow) line increases to approx. 2 bar.	
5	Connect Hand-Held Tester (089) with test cable (094) to data link connector (X11/4)	Refer to DM Chassis, Volume 1, Index 0	

⚠ **Danger!** 6	**Risk of accident** due to vehicle starting off automatically when engine is running. **Risk of injury** due to being trapped and burns when intervening while starting the engine or when the engine is running. Start engine and allow to idle.	Secure vehicle to prevent it from starting off automatically. Wear close-fitting, tight clothing Do not touch hot or rotating parts.	AS00.00-Z-0005-01A
7	Hand-Held Tester (089) in "lift" position		
8	**Checking output of pressure oil pump**	(!) Only carry out the test briefly due to the high pressures. i The delivery pressure of the pressure oil pump is limited by the bypass valve in the valve unit. Opening pressure of bypass valve if the opening pressure of the pressure relief valve is clearly not achieved ? ↓ and output at idle speed Replace pressure oil pump/tandem pump Insufficient pressure at optimum delivery rate ? ↓ Replace valve unit	 BE32.31-P-1001-02A BE32.30-P-1002-02A AR46.30-P-0500A AR32.31-P-0650A
9	**Checking delivery rate of pressure oil pump** Connect oil drain hose (061) to the return (flow) line (T) in a measuring vessel	(!) Ensure that there is sufficient oil in the oil reservoir. The pump must not draw in air under any circumstances. When the delivery rate is not achieved ? ↓	BE32.30-P-1002-02A

		Replace pressure oil pump/tandem pump When the delivery rate is exceeded ? ↓ and output is not achieved at idle speed ? ↓ Replace valve unit	AR46.30-P-0500A BE32.30-P-1002-02A AR32.31-P-0650A
10	Switch off engine		
	Installation		
11	Disconnect Hand-Held Tester with test cable	Refer to DM Chassis, Volume 1, Index 0	
⚠ **Danger!**	**Risk of injury** to skin or eyes due to hydraulic fluid spraying out under high pressure. **Risk of poisoning** due to consuming hydraulic fluid.	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	AS00.00-Z-0013-01A
12	Disconnect tester on distributor fitting (57)	Nm	AR32.31-P-0510-01A BA32.31-P-1001-01A
13	Connect return (flow) line (T) to oil reservoir (2)		
14	Fill pressure oil system at front and rear axle	The front axle is also filled at the same time	AR32.31-P-0630A

Test values for pressure oil pump

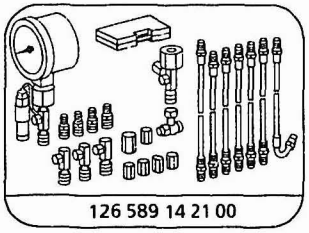
Number	Designation		Model 129 with electronic level control/ADS II
BE32.30-P-1002-02A	Output at idle speed	Liters/min	> 0.2

Test values for valve unit

Number	Designation		Model 129 with electronic level control/ADS II
BE32 31-P-1001-02A	Opening pressure of bypass valve	bar	180-190

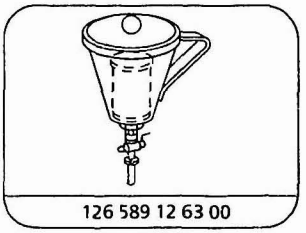
Nm Distributor fitting

Number	Designation			Model 129 with electronic level control/ADS II
BA32 31-P-1001-01A	Oil drain plug on rear axle distributor fitting (reference value)	M10×1	Nm	14



126 589 14 21 00

Tester



126 589 12 63 00

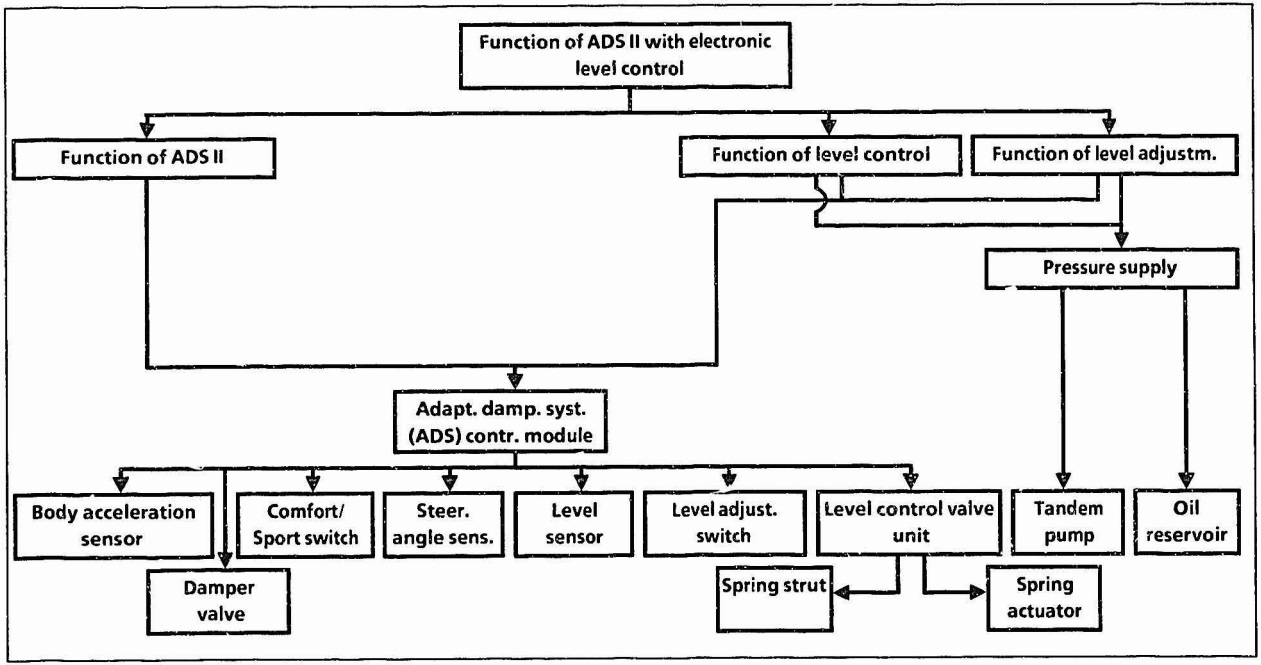
Funnel

Workshop equipment/MB testers (refer to workshop equipment manual)

WE58.40-Z-1001-06A	Hand-Held Tester (HHT), order number 6511 0001 99
WE58.40-Z-1002-06A	Test cable (Multiplexer)

E6 GF32 31-P-1000A	Function of ADS II with electronic level control	23.5.95

MODEL 129 as of 1.9.95 with CODE (216c) Adaptive damping system (ADS II) with electronic level control



	Task and benefits of ADS II with electronic level control		GF32 31-P-1000-02A	G6
	Driver information on ADS II with electronic level control		GF32 31-P-1000-03A	H6
	Function survey of ADS II with electronic level control		GF32 31-P-1000-04A	O6
	Location of hydraulic components of ADS II with electronic level control		GF32 31-P-1000-06A	L6
	Location of electrical/electronic components of ADS II with electronic level control		GF32 31-P-1000-07A	N6
	Notes on towing, test and repair work		GF32 31-P-1000-05A	M6
	Function of ADS II		GF32 31-P-2000A	A7
	Function of level control		GF32 31-P-3000A	D7
	Function of level adjustment		GF32 31-P-3500A	E7

G6 GF32 31-P-1000-02A	Task and benefits of ADS II with electronic level control		

The task of **electronic level control** is to control the vehicle level and keep it constant at the front and rear axle corresponding to the driving and load condition in each case.
It is a partially supporting suspension system with a combination of spring actuators, spring struts and steel springs on the front and rear axle.
It also contains a level adjustor which automatically ensures speed-dependent as well as manual raising/lowering of the vehicle level.

The "**A**daptive **D**amping **S**ystem" (ADS) adapts the damping forces to the road quality and the driving style. The road quality is determined by vertical acceleration sensors on the body. The driving style (horizontal acceleration) is calculated from the vehicle speed and the steering angle.

Advantages

- Increased driving safety and driving comfort due to:
  - Adaptation of damping to the road quality and driving style.
  - Lower center of gravity.
  - Lower air resistance.
  - Less lift at the front axle.

- Individual adaptation due to:
  - Raising the vehicle level in two stages for poor road conditions or garage entrances.
  - Facility for adjusting two damping characteristics for a hard/soft ride.

- Driver information by means of:
  - Display of the higher vehicle level stages and the sport damping stage via warning lamps in the switches.

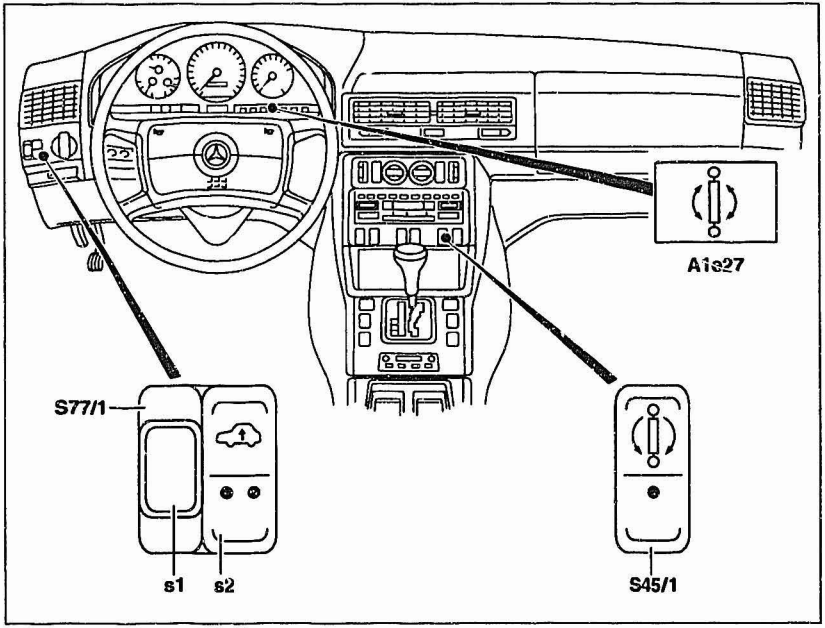
H6 GF32 31-P-1000-03A	Driver information on ADS II with electronic level control		

The adaptive damping system (ADS) malfunction indicator lamp (A1e27) for ADS II and the suspension is located in the instrument cluster.

Switching on the ignition and starting the engine

When the ignition is switched on (ignition/starter switch in position "2"), the malfunction indicator lamp in the instrument cluster lights up (bulb check) and goes out when the engine is running. The indicator lamps in the level control and comfort/sport switches also light up and display the setting previously selected when the engine is running.

A1e27 *Adaptive damping system (ADS) malfunction indicator*
S45/1 *Adaptive damping system (ADS) comfort/sport switch*
S77/1 *Level adjustment switch*
S77/1s1 *Level adjustment lock-out switch*
S77/1s2 *Level adjustment switch (high/normal)*



P32 31-0235-06

Malfunction indicator lamp evaluation
The adaptive damping system (ADS) malfunction indicator lamp (A1E27) lights up when the engine is running if there are electrical faults in the ADS/suspension system.
The fault is stored in the adaptive damping system (ADS) control module and can be read out with the Hand-Held Tester (refer to Diagnosis Manual).
The lamp also lights up if the vehicle level at the front axle is more than 45 mm below the normal level. The light goes out again if the level is raised again to 35 mm below the normal level.

Emergency running
A fault causes the ADS to be switched off, the damping is switched to the hardest stage. At the same time, depending on the type of fault, either the level control is brought to the normal vehicle level or kept at the adjusted level. Manual and automatic level adjustment is no longer possible.

Adaptive damping system (ADS) comfort/sport switch (S45/1)
A selection can be made between two damping characteristics using the adaptive damping system (ADS) comfort/sport switch.
The red indicator lamp (LED) lights up in the switch (S45/1) in the comfort/sport switch position.

Level adjustment switch (S77/1)(S77/1)
2 switches are contained in this switch unit:

Level adjustment switch (high/normal) (S77/1s2)
The vehicle level can be raised in two stages by 35 mm or 60 mm (Ⓙ Ⓤ 15 mm or 30 mm) using the switch. The high level switch position is displayed by the red indicator lamps (LEDs) in the switch (s2).
⚠
If one or both indicator lamps in the switch flash, the required vehicle level is still not reached.

Level adjustment lock-out switch (S77/1s1)
Before raising the vehicle (wheel changing, hoist), the lock-out switch (s1) must be operated when the engine is running. The vehicle level which has just been adjusted is retained. This is signalled by a red switch illumination and the adaptive damping system (ADS) malfunction indicator lamp (A1e27) which is switched on. The engine can be switched off again after the switch (s1) is operated.

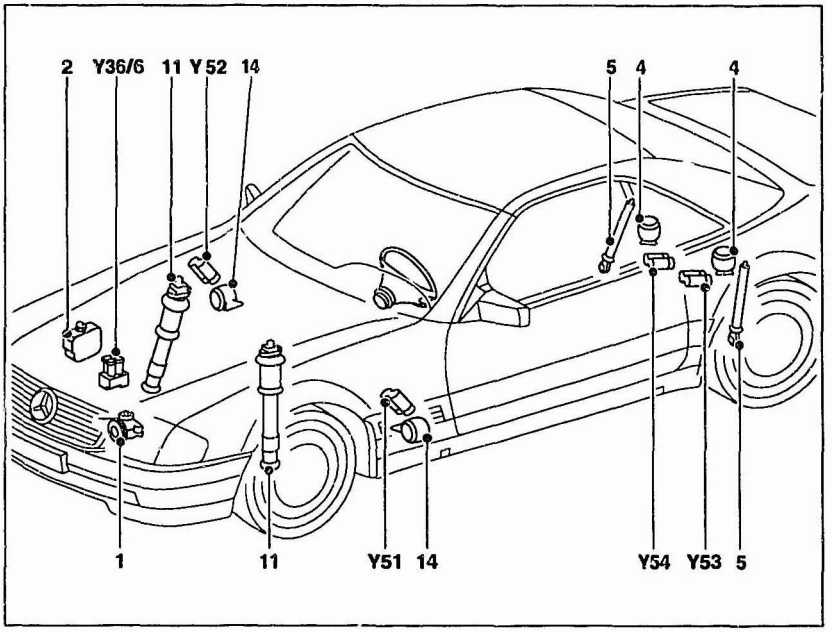
Display of LEDs in level adjustment switch (high/normal) (S77/1s2) when button is operated

Actual vehicle level is	Required vehicle level	Operation (press)	Half of button	Display if level still not reached	Display if level is reached
Normal	Raised 35 mm1)	Once	Upper	1 LED flashes	1 LED steady light
Normal	Raised 60 mm2)	Twice	Upper	2 LEDs flash	2 LEDs steady light
Raised 35 mm	Raised 60 mm2)	Once	Upper	2 LEDs flash	2 LEDs steady light
Raised 60 mm	Raised 35 mm1)	Once	Lower	1 LED steady light	1 LED steady light
Raised 60 mm	Normal	Twice	Lower	–	–
Raised 35 mm	Normal	Once	Lower	–	–

1) (J) (USA) 15 mm
2) (J) (USA) 30 mm

L6	GF32 31-P-1000-06A	Location of ADS II hydraulic components with electronic level control		

Y36/6 *Level control valve unit*
Y51 *Left front axle damper valve*
Y52 *Right front axle damper valve*
Y53 *Left rear axle damper valve*
Y54 *Right rear axle damper valve*
1 *Pressure oil pump*
2 *Oil reservoir*
4 *Rear spring actuator*
5 *Rear spring strut*
11 *Front spring strut*
14 *Front spring actuator*



P32 31-0238-06

M6 GF32 31-P-1000-05A	Notes on towing, test and repair work		

- If the battery has been disconnected or the power supply to the steering angle sensor (N49) has been interrupted, the adaptive damping system (ADS) control module switches to fault. This means the adaptive damping system (ADS) malfunction indicator lamp (A1e27) does not go out after the engine has started. The steering angle sensor (N49) is to be initialized after the voltage supply has been restored. The steering wheel must be turned from stop to stop with the ignition switched on.

  Before work involving detaching a pressure line for the hydraulic system or the suspension components, the system is to be depressurized (refer to Repair Instructions).

- On vehicles with ESP, the steering angle sensor is initialized automatically if the vehicle has once exceeded a speed of 20 km/h once.

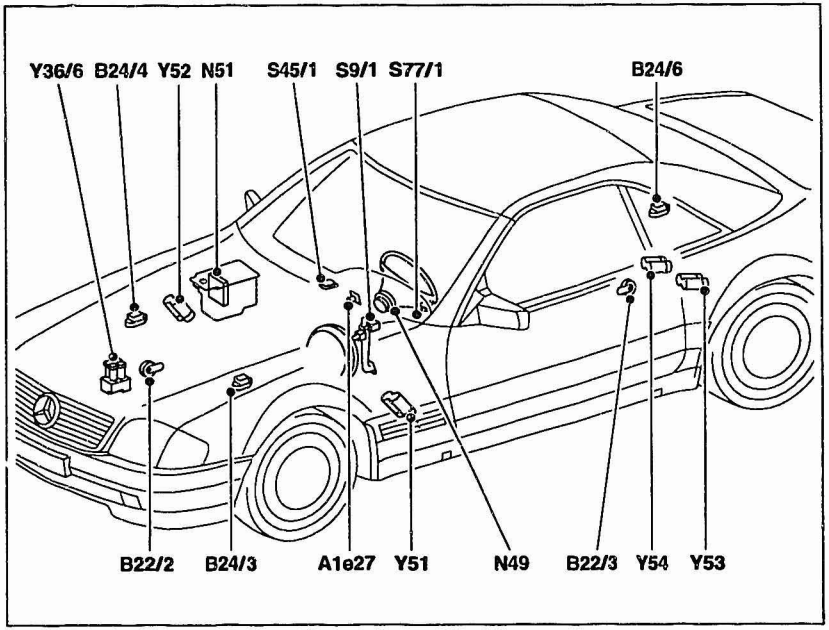
- Before work involving raising the vehicle (also when towing away), the level adjustment lock-out switch is to be operated when the engine is running. The engine can then be switched off again.

- All electrical and hydraulic test work is described in the Diagnosis Manual, Chassis, Volume 1 and must be carried out using the Hand-Held Tester.

- At the express wish of the customer, the adaptive damping system (ADS) control module can be reprogrammed (refer to HHT menu "programming"), so that the higher vehicle level stage 1 can also always be adjusted after dropping below a speed of 58 km/h, apart from when the driver erases this himself. In this case the control module is to be identified by a red dot.

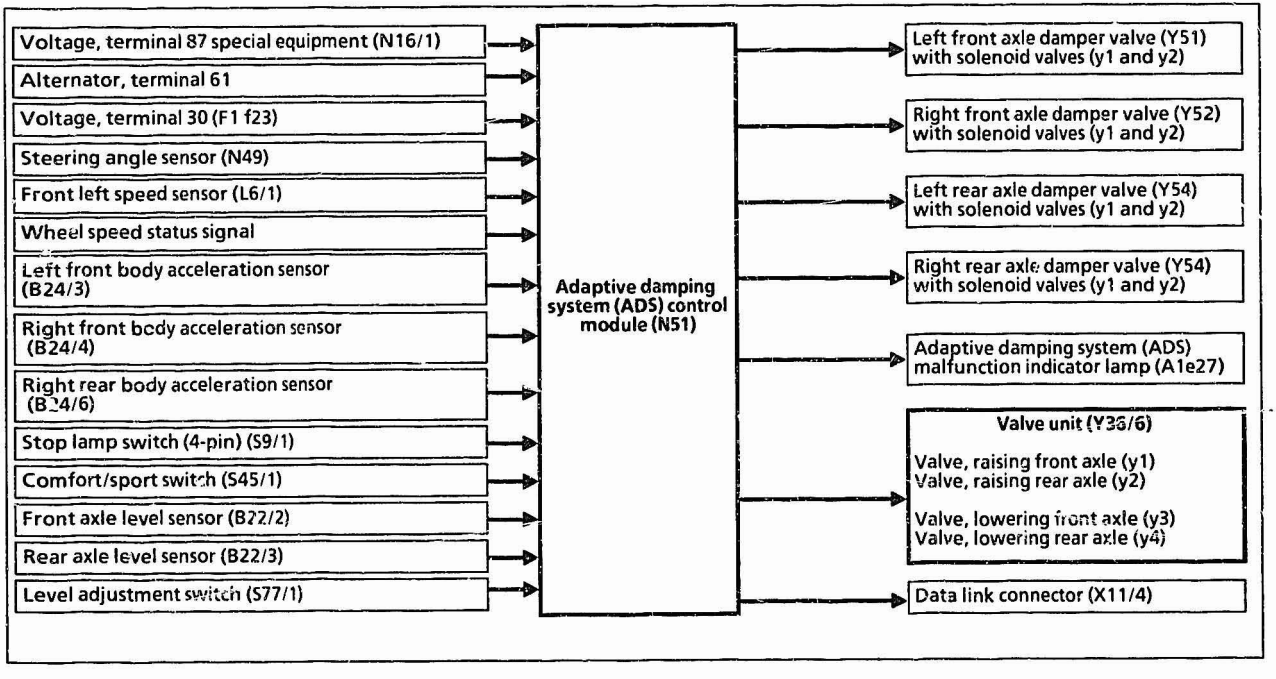
N6 GF32 31-P-1000-07A	Location of electric/electronic components of ADS II with electronic level control		

A1e27 *Adaptive damping system (ADS) malfunction indicator*
B22/2 *Front axle level sensor*
B22/3 *Rear axle level sensor*
B24/3 *Left front body acceleration sensor*
B24/4 *Right front body acceleration sensor*
B24/6 *Right rear body acceleration sensor*
N49 *Steering angle sensor*
N51 *Adaptive damping system (ADS) control module*
S9/1 *Stop lamp switch (4-pin)*
S45/1 *Comfort/sport switch*
S77/1 *Level adjustment switch*
Y36/6 *Level control valve unit*
Y51 *Left front axle damper valve*
Y52 *Right front axle damper valve*
Y53 *Left rear axle damper valve*
Y54 *Right rear axle damper valve*



P32 31-0237-06

O6 GF32 31-P-1000-04A	Function survey of ADS II with electronic level control		



The corresponding functions of the hydraulic control circuit are controlled with the electrical/electronic components.

The adaptive damping system (ADS) control module receives input signals from the following components:

- Wheel speed signal from ETS, ASR or ESP control module
- Speed signal status from ETS, ASR or ESP control module
- Steering angle sensor
- 3 body acceleration sensors
- 2 level sensors
- Stop lamp switch
- Level adjustment
- Comfort/sport switch

The input signals are conditioned in the adaptive damping system (ADS) control module into output signals for the following components:

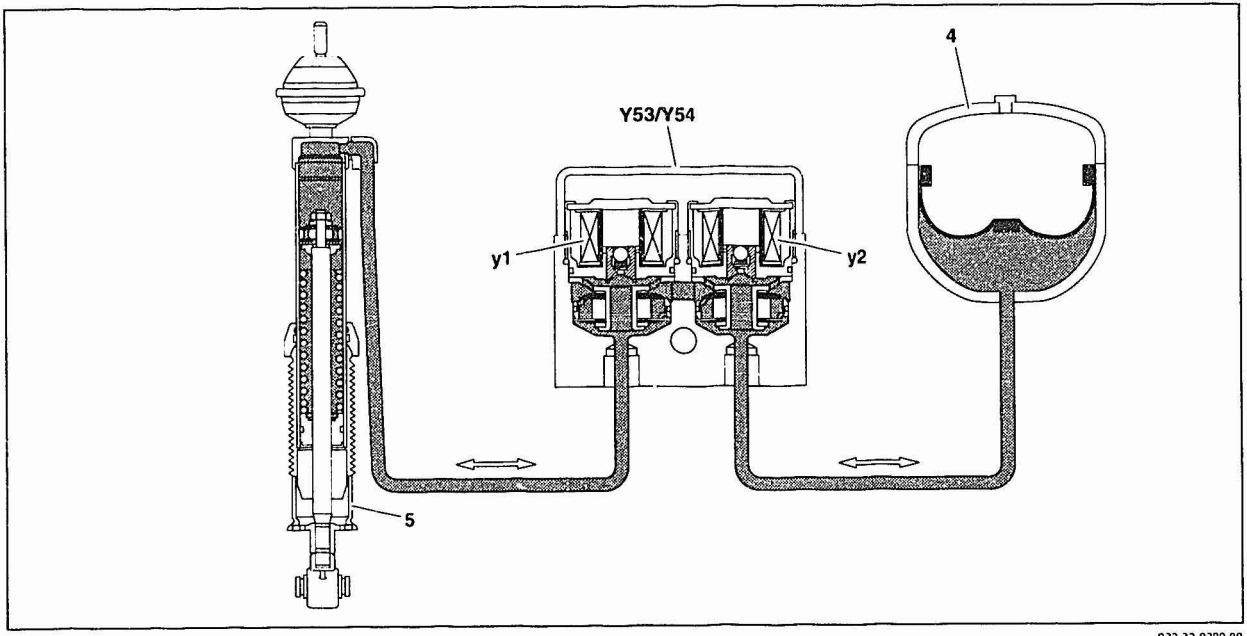
- 4 raising/lowering solenoid valves
- 4 ADS damper valves
- Adaptive damping system (ADS) malfunction indicator lamp
- Indicator lamps in the switches: ADS comfort/sport, level adjustment raising/lowering, level control lock-out.

The adaptive damping system (ADS) control module decides which of the 3 control functions must be controlled on the basis of the input signals:

- Level control
- Level adjustment
- ADS

A7 GF32 31-P-2000A	Funktion ADS II	23.5.95

MODEL 129 as of 1.9.95,
140 as of 1.6.94,
210
with CODE (216c) Adaptive damping system (ADS II) with electronic level control
with CODE (217a) level control on rear axle with ADS



P32 32-0209-09

Shown on rear axle as an example

The damping force adjustm. is controlled in damper valves (Y53, Y54). A damper valve is installed betw. the spring strut (5) and its spring actuator (4) at each wheel. Each damper valve has two electromagnetic valves (y1, y2) which enable four different damping force stages via the adaptive damping system (ADS) control module, depending on the actuation. The extremely short adjustm. time (in the millisecond range) causes an opt. damping force stage to be available almost instantly in the event of sudden changes in the vehicle state, such as a swerving manoeuvre.

	Adaptive damping system (ADS) control module	Model 129	GF32.31-P-4000A	H7

D7 GF32 31-P-3000A	Function of level control	23.5.95

MODEL 129 as of 1.9.95 with CODE (216c) Adaptive damping system (ADS II) with electronic level control

The level control at the front and rear axle is a partially supporting suspension system. It keeps the vehicle level constant when the engine is running irrespective of the load. At the same time the hydraulic oil from the pressure oil pump is delivered to the suspension components via the valve unit until the vehicle level has been adjusted. As a result the steel springs have only a partially supporting function. The vehicle level at the front and rear axle is recorded by a redundant level sensor at each point and is transmitted to the adaptive damping system (ADS) control module. The level control at the front and rear axle is achieved by four level valves in the valve unit.

When the vehicle is loaded, the lowering of the vehicle level is recognized by the control module via the level sensor. By actuating the solenoid valves, pressure oil is delivered into the spring actuator and spring struts of the axle concerned until the vehicle level has reached its specified value.
The same process takes place in the opposite sense when unloading the vehicle.

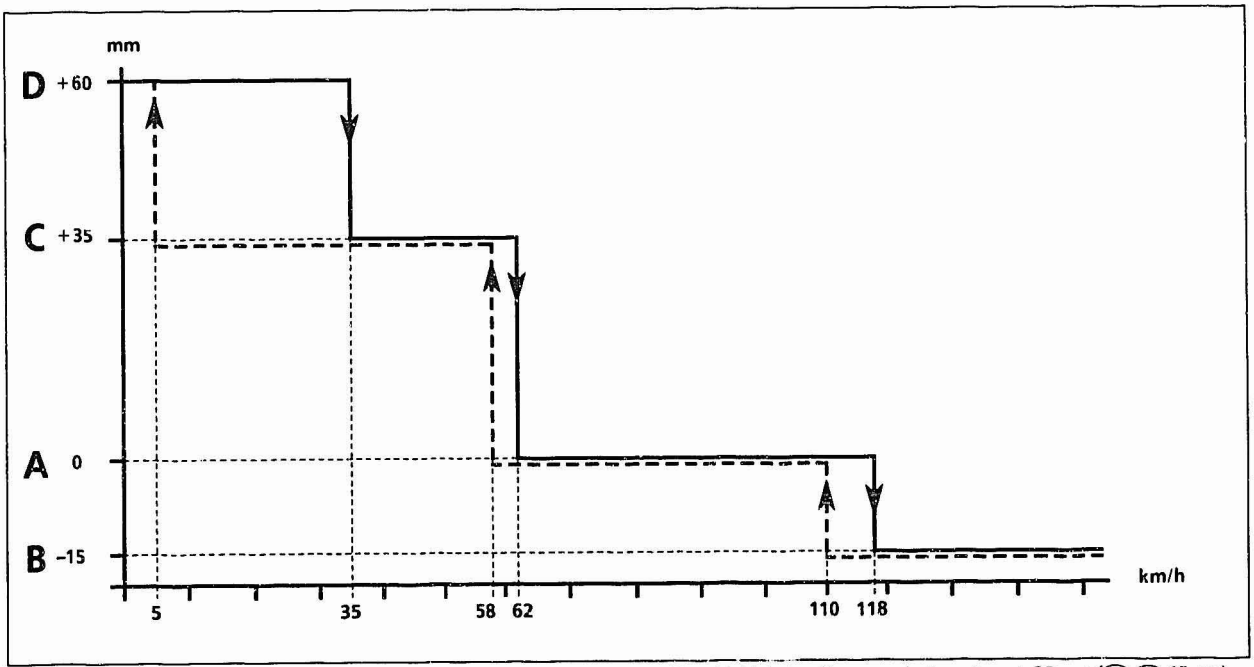
After-running function

The control module still takes in level changes for 1 min. after "ignition OFF" in order to be able to re-adjust (lower) the vehicle level in the event of any unloading.

	Adaptive damping system (ADS) control module		GF32 31-P-4000A	H7
	Pressure supply		GF46 20-P-2000A	L9

E7 GF32 31-P-3500A	Function of level adjustment	23.5.95

MODEL 129 as of 1.9.95 with CODE (216c) Adaptive damping system (ADS II) with electronic level control



A Vehicle level normal = 0 mm

B Vehicle level lowered = -15 mm

C Vehicle level increased, stage 1 = +35 mm (J) (USA) 15mm)

D , Vehicle level increased, stage 2 = +60 mm (J) (USA) 30mm)

The vehicle is lowered or raised depending on the vehicle speed and the setting of the level adjustment switch (high/normal) (S77/1s2). There are 4 alternative vehicle level stages:

i The switch position operated by the driver also remains stored after "ignition OFF" until it is changed manually or erased once a particular speed is exceeded.

⚠ Values altered (J) (USA): **C** = + 15 mm, **D** = + 30 mm

Level adjustment switch (S77/1s2) not operated

- Engine running.
- Vehicle is at the normal level **A** (0 mm).
- At V > 118 km/h, vehicle level is lowered to **B** (–15 mm).
- At V < 110 km/h, reset to normal level **A** (0 mm).

Level adjustment switch (S77/1s2) operated in stage 1.

- Engine running.
- Vehicle is at the normal level **A** (0 mm).
- Shortly after the switch has been operated once, the higher vehicle level stage 1 **C** (+ 35 mm) is adjusted.
- At V > 62 km/h, lowered to normal level **A** (0 mm).
- At V > 118 km/h, vehicle level lowered to B **B** (–15 mm). The switch position "higher vehicle level stage 1" is erased..
- At V < 110 km/h, reset to normal level **A** (0 mm).

Only if a speed of 118 km/h has not been exceeded:

- At V < 58 km/h, an increase to the higher vehicle level stage 1 **C** (+ 35 mm) takes place.

Level adjustment switch (S77/1s2) operated in stage 2.

- Engine running.
- The vehicle is at normal level **A** (0 mm).
- Shortly after the switch has been operated twice, the higher vehicle level stage 1 **C** (+ 35 mm) is adjusted.
- Shortly after this the higher vehicle level stage 2 **D** (+ 60 mm) is adjusted.
- At V > 25 km/h, lowered to higher vehicle level stage 1 **C** (+ 35 mm).
- At V > 62 km/h, lowered to normal level **A** (–15 mm). Switch position " "higher vehicle level stage 2" is erased.
- At V > 118 km/h, lowering of the vehicle level to **B** (-15 mm). Switch position "higher vehicle level stage 1" is erased.
- At V < 110 km/h, reset to normal level **A** (0 mm).

Only if a speed of 118 km/h was not exceeded:

- At V < 58 km/h, an increase to the higher vehicle level stage **1C** (+ 35 mm) occurs again.

Only if a speed of 118 km/h was not exceeded:

- When vehicle is stationary (V = < 5 km/h) an increase to the higher vehicle level stage **D** (+ 60 mm) occurs again.

Special functions of level adjustment

For customers with sharp bends to negotiate into garage entrances or those who make frequent trips on poor road surfaces, the adaptive damping system (ADS) control module can be reprogrammed as expressly required (refer to HHT menu "programming").

The higher vehicle level stage 1 (+ 35 mm) is then always adjusted when the switch is operated after dropping below a speed of 58 km/h, apart from when the driver erases it himself.

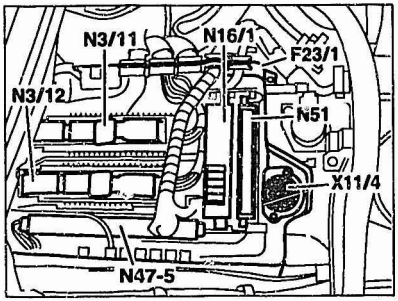
In this case the control module is to be identified with a red dot. The higher vehicle level stage 2 is not affected by this programming. It is erased in each case when a speed of 62 km/h is exceeded.

	Adaptive damping system (ADS) control module		GF32 31-P-4000A	**H7**
	Pressure supply		GF46 20-P-2000A	**L9**

H7 GF32 31-P-4000A	Adaptive damping system (ADS) control module	23.5.95

MODEL 129 as of 1.9.95 with CODE (216c) Adaptive damping system (ADS II) with electronic level control

F23/ SControl module box
N51 Adaptive damping system (ADS) control module

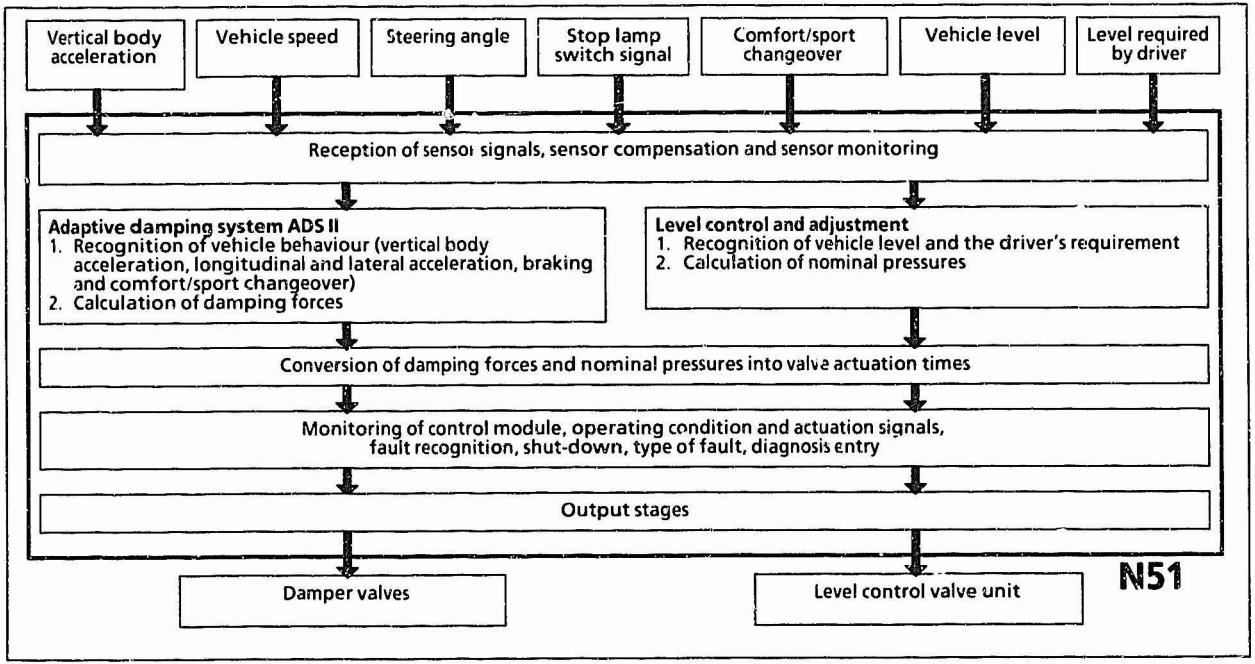


P42 45-0243-01

	Task	Perform all control functions of ADS and electronic level control.		
	Function of adaptive damping system (ADS) control module		GF32 31-P-4000-01A	K7
	Location	in the control module box (F23/1).		
	Steering angle sensor		GF42 45-P-4600A	F9
	Body acceleration sensor		GF32 31-P-4100A	O7
	Level sensor		GF32 31-P-4400A	G8

	Level control valve unit		GF32 31-P-4500A	H8
	Damper valve		GF32 31-P-4300A	B8
	Comfort/sport switch		GF32 31-P-4200A	A8
	Level adjustment switch		GF32 31-P-4600A	M8

K7 GF32 31-P-4000-01A	Function of adaptive damping system (ADS) control module		



The adaptive damping system (ADS) control module is broken down into the following functions:

- Signal conditioning
- Function logic section
- Safety circuit

Signal conditioning

The following input signals are processed by the function logic section for calculation or information purposes:

- Calculation of vertical body accelerations
  - Body acceleration sensors signal
- Calculation of vehicle speed
  - Wheel speed signal
  - Speed status signal
- Calculation of longitudinal and lateral acceleration
  - Wheel speed signal
  - Steering angle sensor signal
- Calculation of vehicle level
  - Level sensors signal
- Information signals (operation)
  - Stop lamp switch signal
  - Comfort/sport switch signal
  - Level control switch signal

Function logic section

The conditioned input signals are processed in the logic section and converted into output signals.

- Body acceleration sensors signal (B24/3, B24/4, B24/6):

The following are determined by the ETS, ASR or ESP control module by means of the wheel speed signal:

- Wheel speed signal:

The vertical acceleration of the vehicle is calculated from the signals from the body acceleration sensors.

- Vehicle speed
- Longitudinal acceleration

- Speed status signal:

This signal comes from the ETS, ASR or ESP control module and is used as a plausibility check of the wheel speed signal. A distinction is made between a vehicle which is driving and one which is stationary. A defective wheel speed signal is also recognized.

- Steering angle sensor (N49) signal:

The lateral acceleration of the vehicle is calculated via the steering angle sensor signal and the wheel speed signal.

- Level sensors signal (B22/2, B22/3):

The level sensors of the front and rear axle each provide two signals which determine the distance between the center of the wheel and the body (mean value from the right and left wheel).

- Stop lamp switch (S9/1) signal:

When the brake is operated a signal is recognized by the ADS logic section and the damping set to "sport" on all wheels. As a result the pitch motion of the vehicle can be reduced during braking.

- Comfort/sport switch (S45/1) signal:

The signal from the comfort/sport switch provides information on the selection between a comfort-orientated and a sport map. The driver's requirement remains stored until it is revised again by the driver (even with ignition OFF).

- Level adjustment switch (S77/1) signal:

The control module recognizes the driver's requirement for vehicle level by means of the signal from the level adjustment switch:

- Normal level
- Higher level stage 1
- Higher level stage 2
- Lock-out position

- ADS II

The control module determines the optimum damping stage in each case from the vertical body accelerations determined and the longitudinal and lateral acceleration of the vehicle and the vehicle speed.
The 4 different damping force stages can be adjusted at each wheel by actuating the damper valves which are assigned to the wheels.

- Level control and adjustment

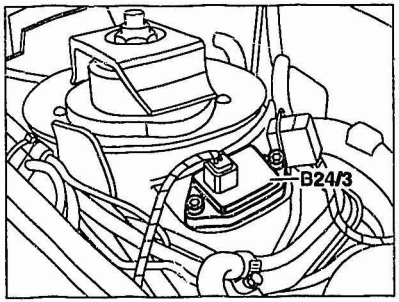
The control module adjusts the correct vehicle level from the driver's required setting on the level adjustment switch and from the vehicle speed via the respective level valves depending on the load.

Safety circuit

The adaptive damping system (ADS) control module monitors all the important components of the system after switching on and during operation. The task of the safety circuit is to recognize defective signals from sensors, faults in the control module and in the electrical wiring system. If a fault if recognized the system is then switched off and this is displayed to the driver by the adaptive damping system (ADS) malfunction indicator lamp (A1e27) lighting up. The damper valves are no longer actuated and are in the sport damping stage (safe driving stage). A fault code is also stored in the control module.
Depending on the fault, the level control is only partially switched off.
The safety circuit also constantly monitors battery voltage. If the voltage of 10.5 V is not achieved or 17.5 V is exceeded, the system is also switched off until the voltage is within the specified range again.

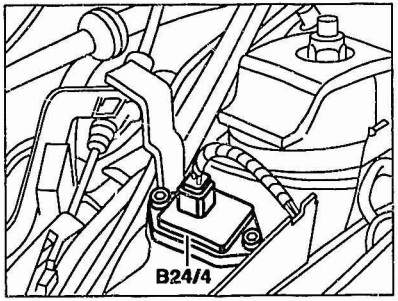
07 GF32 31-P-4100A	Body acceleration sensor	23.5.95

MODEL 129 with CODE (216c) adaptive damping system (ADS II) with electronic level control



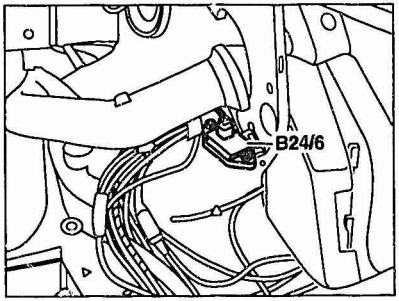
P32 31-0231-01

B24/3 Left front body acceleration sensor



P32 31-0234-01

B24/4 Right front body acceleration sensor



P32 31-0230-01

B24/6 Right rear body acceleration sensor

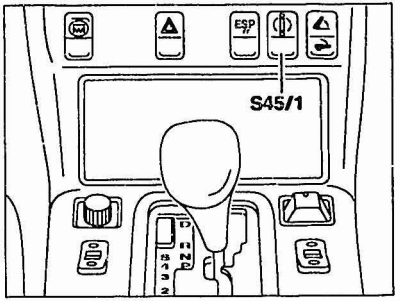
	Task	Three acceleration sensors are used to measure the vertical acceleration of the vehicle body.	
	Design and function	The body acceleration sensors consist of an electronic vibrating module (the principle of operation is a spring/mass system). They record the vertical body acceleration and transmit signals to the adaptive damping system (ADS) control module.	

	Location	Screwed onto the body at the front left and right wheel house and on the rear right spring dome.	

A8 GF32 31-P-4200A	Adaptive damping system (ADS) comfort/sport switch	23.5.95

MODEL 129 as of 1.9.95 with CODE (216c) adaptive damping system (ADS II) with electronic level control

S45/1 Adaptive damping system (ADS) comfort/sport switch

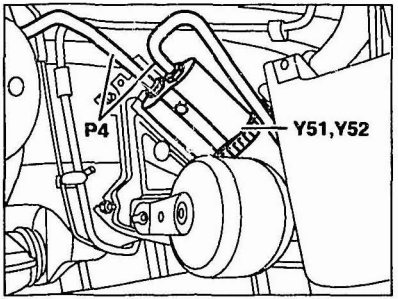


P32 31-0233-01

	Task	It is possible to choose a comfort or sport damping program using the adaptive damping system (ADS) comfort/sport switch (S45/1).	
	Location	Center console.	

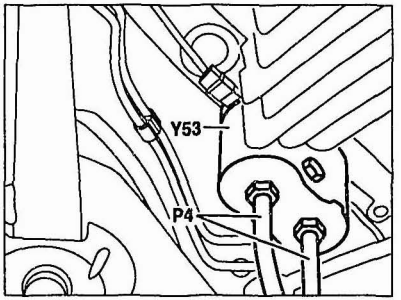
B8 GF32 31-P-4300A	Damper valve	23.5.95

MODEL 129 as of 1.9.95 with CODE (216c) Adaptive damping system (ADS II) with electronic level control



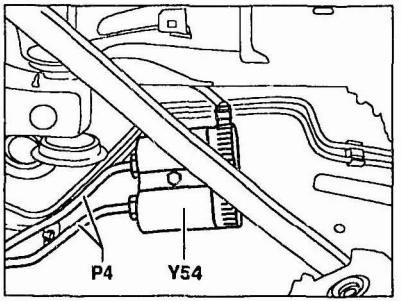
P32 31-0259-01

Y51 Left front axle damper valve
Y52 dRight front axle MPdamper valve



P32 31-0267-01

Y53 Left rear axle damper valve



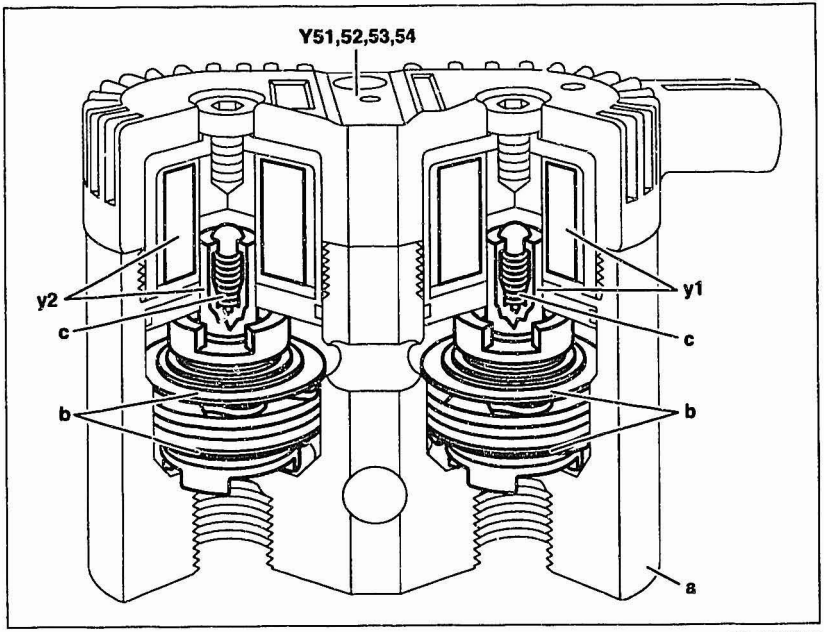
P32 31-0226-01

Y54 Right rear axle damper valve

	Task	Adapt damping force to road surface quality and driving style.		
	Design of ADS damper valve		GF32 31-P-4300-01A	C8
	Function of ADS damper valve		GF32 31-P-4300-02A	E8
	Location	Between spring strut and spring actuator		

C8	GF32 31-P-4300-01A	Design of damper valve		

Y51 *Left front axle damper valve*
Y52 *Right front axle damper valve*
Y53 *Left rear axle damper valve*
Y54 *Right rear axle damper valve*
y1 *Front axle or rear axle 1 solenoid valve*
y2 *Front axle or rear axle 2 solenoid valve*
a *Housing*
b *Piston/reed valve package*
c *Spring*



P32 31-0265-06

The damper valve (Y51, Y52, Y53, Y54) consists of the housing (a) and the 2-piston/reed valve packages (b). The spring-loaded (c) solenoid valve pistons and the solenoids in the upper section of the housing are located above these. The valve pistons and solenoids form the solenoid valve units (y1, y2).

If the solenoid valve coils (y1, y2) are not actuated, the spring-loaded solenoid valve pistons (y1, y2) keep the bores under them closed. The oil is displaced via the reed valve package (b) and the transverse oil gallery in the housing (a).

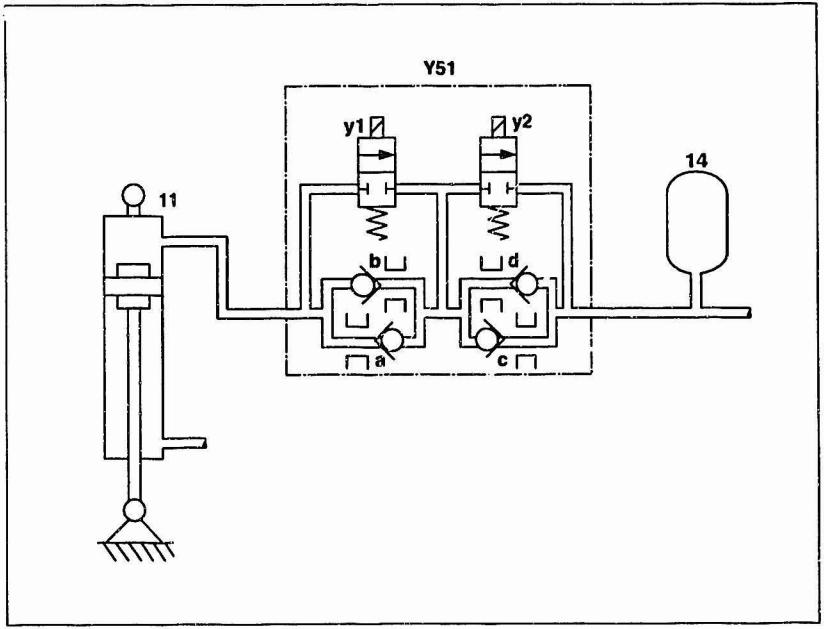
If, for example, a solenoid valve coil (y1) is actuated, the solenoid valve piston (y1) leaves the bore open and the oil can flow over it. The oil is only slightly throttled via the piston/reed valve package (b). The damping force steps are achieved by means of the different arrangements of reed valve packages and the actuation of the solenoid valves.

E8 GF32 31-P-4300-02A	Function of damper valve		

Diagrammatic view

The reed valves (a, b, c, d) each form one unit with a ball valve and throttle.

Y51 Damper valve
y1 Solenoid valve 1
y2 Solenoid valve 2
a Hard pressure stage valve
b Soft tension stage valve
c Hard tension stage valve
d Soft pressure stage valve
11 Spring strut
14 Spring actuator



P32 31-0268-06

Four damping force stages can be achieved via the actuation of the adaptive damping system (ADS) control module.

Damping force stage 1
For a soft ride with small body movements and slight longitudinal and lateral acceleration. In damping force stage 1 both solenoid valves y1 and y2 are opened, which means the highest proportion of oil can bypass the reed valves. The **soft** tension and pressure stage are achieved as a result.

Damping force stage 2
This is achieved by the reed valves in the valve piston. If the body moves downwards, the solenoid valve y2 is opened and the solenoid valve y1 is closed. The reed valves (a = hard pressure and b = soft tension) in the solenoid valve piston y1 cause a **hard** pressure stage and a **soft** tension stage.

Damping force stage 3
This is achieved by the reed valves in the valve piston. If the body moves upwards, the solenoid valve y1 is opened and the solenoid valve y2 is closed. The reed valves (c = hard tension and d = soft pressure) in the solenoid valve piston y2 cause a **hard** tension stage and a **soft** pressure stage.

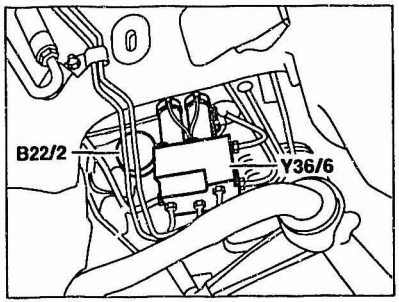
Damping force stage 4 (safe driving stage)
For increased safe driving with high longitudinal and lateral accelerations of the vehicle. Both solenoid valves y1 and y2 are closed, the reed valves (a = hard pressure and c = hard tension) cause a **hard** pressure and tension stage.
This damping force stage is also switched on in the event of ADS system faults and is displayed by means of the adaptive damping system (ADS) malfunction indicator lamp (A1e27) in the instrument cluster.

Switching conditions of damping force stages

Damping force stage	Damper valves (Y51 - Y54)		Valve control	
	Tension stage	Pressure stage	Solenoid valve (y1)	Solenoid valve (y2)
1	Comfort	Comfort	Open	Open
2	Soft	Hard	Closed	Open
3	Hard	Soft	Open	Closed
4	Hard	Hard	Closed	Closed

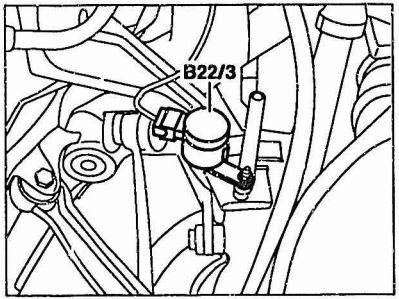
G8 GF32 31-P-4400A	Level sensor	23.5.95

MODEL 129 as of 1.9.95 with CODE (216c) Adaptive damping system (ADS II) with electronic level control



P32 31-0255-01

B22/2 Front axle level sensor



P32 31-0256-01

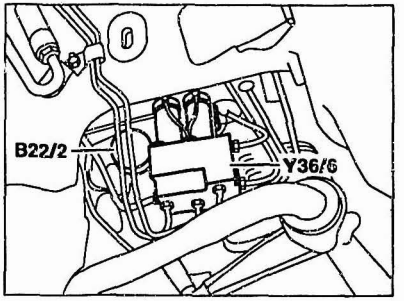
B22/3 Rear axle level sensor

	Task	Determines the vehicle level via the torsion bar connecting rod and transmits the values to the adaptive damping system (ADS) control module.	
	Design	2 hall sensors in one housing (redundant design).	
	Location	On the front right longitudinal member (bracket of the level control valve unit) Rear body, center area of the torsion bar.	

H8 GF32 31-P-4500A	Level control valve unit	23.5.95

MODEL 129 as of 1.9.95 with CODE (216c) Adaptive damping system (ADS II) with electronic level control

Y36/6 Level control valve unit



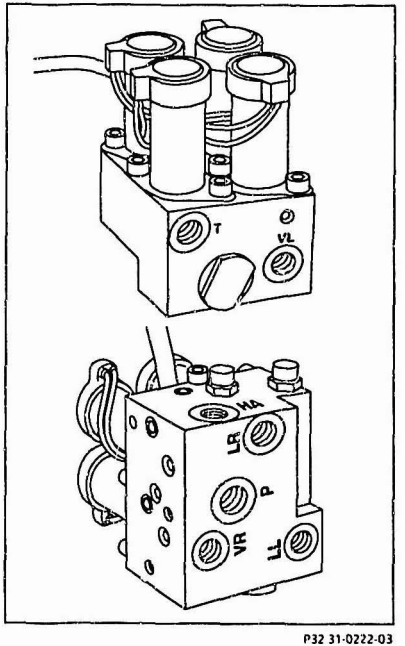
P32 31-0255-01

	Task	The valve unit Y36/6 is the central control module for the level control.	
	Design and function of level control valve unit		GF32 31-P-4500-01A **J8**
	Location	On front right longitudinal member	

J8	GF32 31-P-4500-01A	Design and function of level control valve unit		

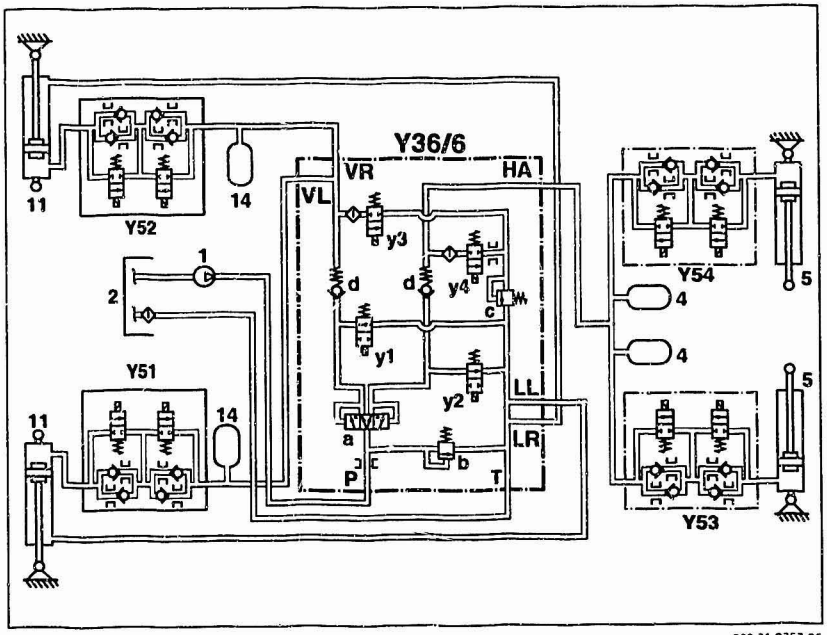
Connections of valve unit Y36/6

HA *Pressure line to rear axle spring actuators*
VL *Pressure line to left front axle spring actuator*
VR *Pressure line to right front axle spring actuator*
LL *Leak oil line from front left spring strut*
LR *Leak oil line from front right spring strut*
P *Pressure line from pressure oil pump*
T *Return (flow) line to oil reservoir*



P32 31-0222-03

Y36/6	*Level control valve unit*
y1	*Raising front axle valve*
y2	*Raising rear axle valve*
y3	*Lowering front axle valve*
y4	*Lowering rear axle valve*
a	*Distributor valve*
b	*Pressure relief valve*
c	*Discharge valve*
d	*Non-return valve*
Y51	*Left front axle damper valve*
Y52	*Right front axle damper valve*
Y53	*Left rear axle damper valve*
Y54	*Right rear axle damper valve*
1	*Pressure oil pump*
2	*Oil reservoir*
4	*Rear spring actuator*
5	*Rear spring strut*
11	*Front spring strut*
14	*Front spring actuator*



P32 31-0257-06

Design
The valve unit Y36/6 contains a distributor valve (a) for pressure oil control of the front and rear axle to suit requirements. The pressure relief valve (b) with an opening pressure of approx. 180 bar is used to limit pressure. The solenoid valves (Y36/6y1, y2, y3 and y4) control the raising and lowering of the vehicle. The discharge valve (c) limits the quantity of oil flowing to the oil reservoir (2). It is designed as a basic pressure valve and closes at a basic pressure of approx. 33 bar. The non-return valves (d) lock the pressure channels to the distributor valve (a) during the discharge process.

Function
When the engine is running the pressure oil pump (1) sucks oil out of the oil reservoir (2) and delivers the pressure oil to the distributor valve (a). If no adjustment of the vehicle level is required, the evenly distributed pressure oil flows back to the oil reservoir (2) via the distributor valve (a) and via the open valves (y1, y2) in the return line (T). The non-return valves (d) secure the oil pressure in the suspension components of the front and rear axle.

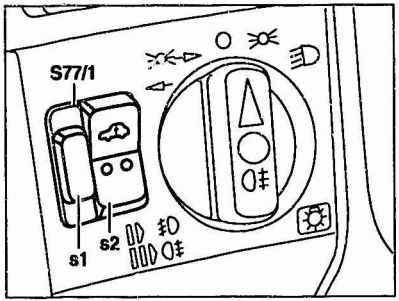
Raising the vehicle
The solenoid valves (y1, y2) "raising" the front and rear axle are closed and the pressure oil flows from the distributor valve (a) to the suspension components via the non-return valves (d). The solenoid valves (y3, y4) "lowering" the front and rear axle are located in the basic position and are closed.

Lowering the vehicle
The solenoid valves (y3, y4) "lowering" the front and rear axle are opened and the pressure oil flowing at > 33 bar is led back to the oil reservoir via the discharge valve (c) and return line (T).
The non-return valves (d) are closed and the pressure oil supplied by the pressure oil pump (1) flows back into the oil reservoir (2) via the distributor valve (a) and the solenoid valves (y1, y2) which are opened in the basic position.

M8 GF32 31-P-4600A	Level adjustment switch	23.5.95

MODEL 129 as of 1.9.95 with CODE (216c) Adaptive damping system (ADS II) with electronic level control

S77/1 Level adjustment switch
S77/1s1 Level adjustment lock-out switch
S77/1s2 Level adjustment switch (high/normal)

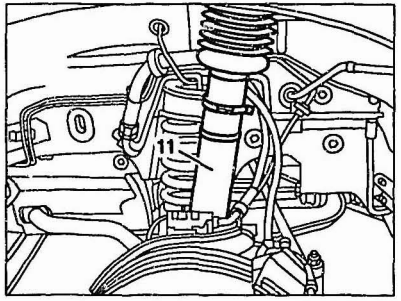


P32 31-0219-01

	Task	The adjusted vehicle level can be locked out using the level adjustment lock-out switch (S77/1s1) (e.g. for raising onto the hoist). The vehicle level can be raised in two stages by 35 mm or 60 mm (J) (USA): 15 mm or 30 mm) above the normal level using the level adjustment switch (high/normal) (S77/1s2)	
	Location	Left instrument panel	

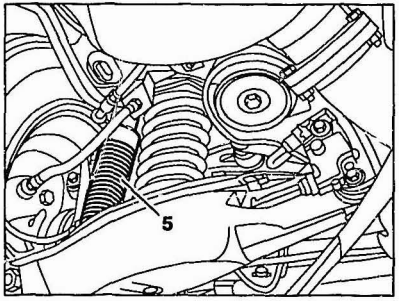
N8 GF32 31-P-4700A	Spring strut	23.5.95

MODEL 129 as of 1.9.95 with CODE (216c) Adaptive damping system (ADS II) with electronic level control



P32 31-0251-01

11 *Front spring strut* *5* *Rear spring strut*

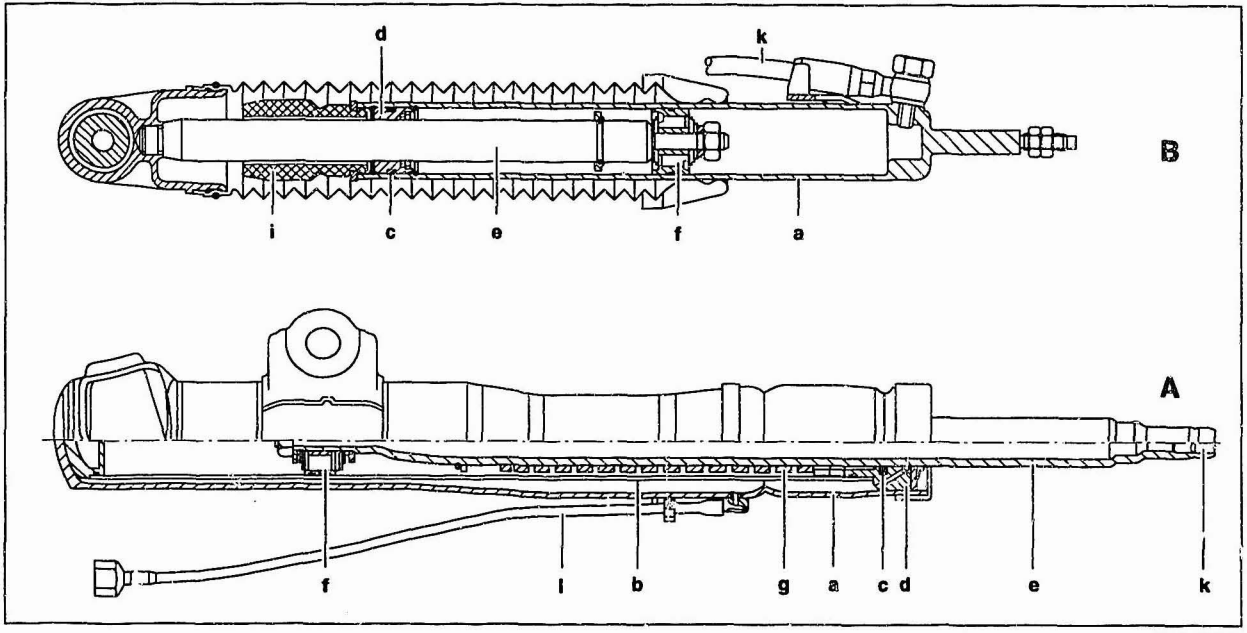


P32.31-0249-01

	Task	The spring strut is a partially supporting suspension component and ensures the level control of the vehicle hydraulically. It raises the vehicle and lowers it. It also performs the damper function together with the spring actuator.	
	Design and function		GF32 31-P-4700-01A **P8**

	Location	On the front axle the bottom of the spring strut (11) is secured to the steering knuckle and the top of the spring strut is secured to the spring dome of the frame floor. On the rear axle the bottom of the spring strut (5) is secured to the spring link and the top of the spring strut is secured to the spring dome of the frame floor.	

P8 GF32 31-P-4700-01A	Design and function of spring strut		



P32 31-0263-09

A Front axle
B Rear axle
a Spring strut tube
b Cylinder tube
c Piston rod seal
d Piston rod guide
e Piston rod
f Power piston with spring washers
g Tension stop spring
i Stop buffer
k Pressure line (connection P4)
l Leak oil line (connection LL, LR)

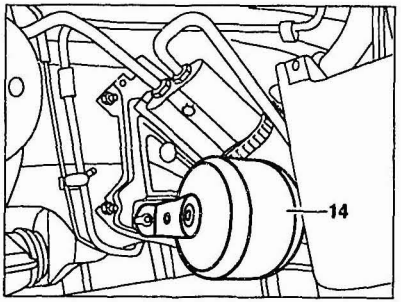
Function

The vehicle level is raised/lowered by the oil quantity control in the oil chamber of the spring components which shortens/extends the spring struts.

As the spring strut/front axle (A) is also used as a wheel location system part, additional guide friction occurs in the spring strut seal in addition to the sealing friction. In order to minimize the sealing friction, the sealing of the spring strut is divided up into a high-pressure and low-pressure seal. The quantity of leakage oil flowing through the high-pressure seal is led back to the oil reservoir via the leak oil/return line (LL).

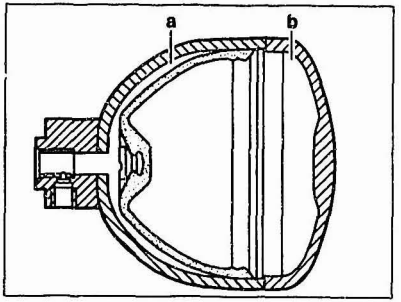
B9 GF32 31-P 4800A	Spring actuator	23.5.95

MODEL 129 as of 1.9.95 with CODE (216c) Adaptive damping system (ADS II) with electronic level control



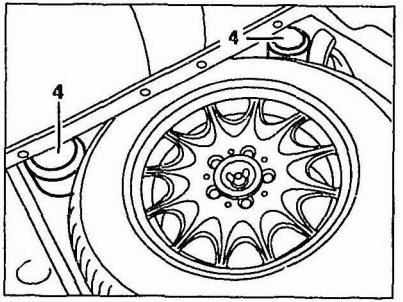
P32 31-0248-01

14 Front spring actuator



P32 31-0264-01

a Oil compartment
b Gas chamber



P32 31-0252-01

4 Rear spring actuator

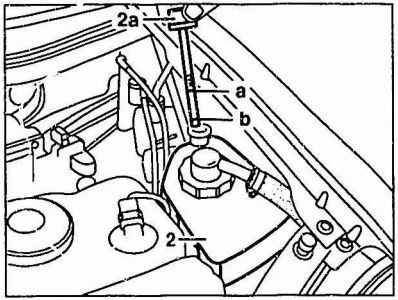
	Task	Used to compensate for the constantly changing oil pressure during spring deflection and rebound movements of the suspension.	
	Design	Spherical steel reservoir with oil chamber (a) and gas chamber (b), separated by a diaphragm. The gas chamber is filled to a specific pressure.	

	Function	Due to the constantly changing oil pressure in the system while driving, e.g. during spring deflection and rebound movements of the suspension, the diaphragm adapts itself to the required chamber volume of the oil in each case. In this process the diaphragm deforms in the spherical housing of the spring actuator.	
	Location	Rigidly screwed to the body close to the respective spring strut.	
	Spring strut		GF32.31-P-4700A **N8**

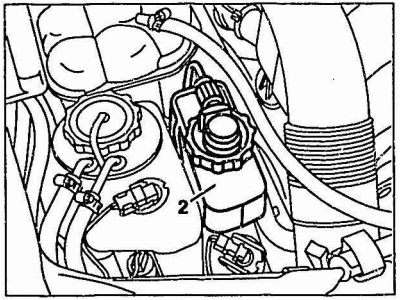
D9 GF32 31-P-4900A	Oil reservoir for level control, ADS, steering location/task/design	23.5.95

MODEL 129 as of 1.9.95 with CODE (216c) Adaptive damping system (ADS II) with electronic level control
MODEL 140, 210 with CODE (217a) Self-levelling suspension on rear axle with ADS
MODEL 202, 208 with CODE (480) Level control system at rear

2 Oil reservoir



P32 30-0232-01



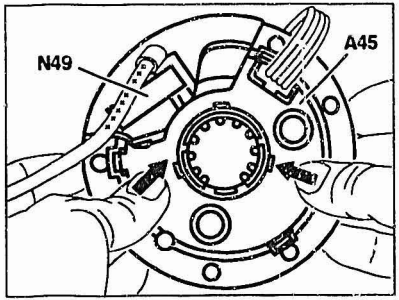
P32 31-0250-01

	Task	Oil reservoir for compensating for the different oil volumes between the highest and lowest level.	
	Design	Plastic reservoir with oil dipstick.	
	Location	In engine compartment on left or right wheel house	

4 2

F9	GF42.45-P-4500A	Location/task/design/function of steering angle sensor	6.12.94

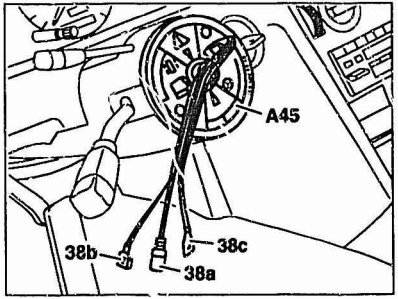
MODEL 129, 140, 168, 202, 208, 210
with CODE (472a) Electronic stability program (ESP)
with CODE (216c) Adaptive damping system (ADS II) with electronic level control
with CODE (217a) Level control on rear axle with ADS



P46 10-0226-01

N4 Steering angle sensor

A45 Contact spiral



P46 10-0209-01

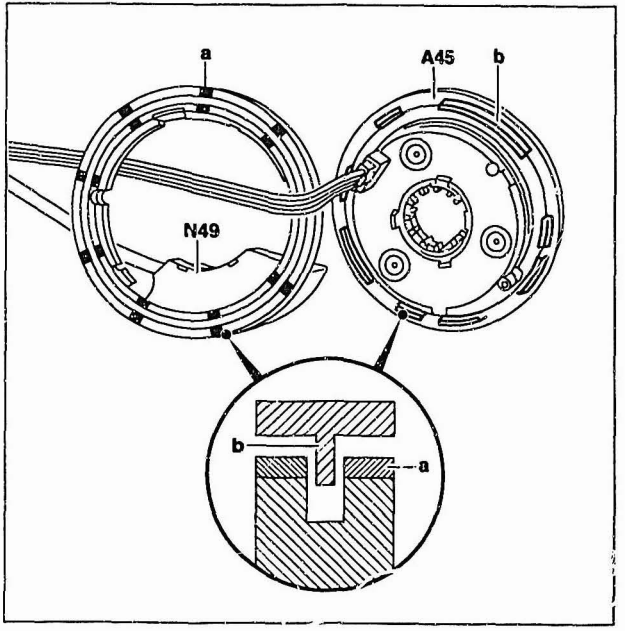
	Location	The steering angle sensor (N49) is secured on the jacket tube interlocking with the contact spiral (A45).	
	Task	The task of the steering angle sensor (N49) which works on an optical basis is to record the steering angle specified by the driver and transmit it to the connected systems.	

GF	Design/function of steering angle sensor		GF42.45-P-4600.01A	H9

H9 GF42 45-P-4600-01A	Design/function of steering angle sensor		GF

Design

Digital sensor with 9 light-emitting diodes (a) for photoelectric barrier measurement. The steering angle sensor consists of two microcomputers which form a unit with a signal measuring ring. 9 light-emitting diodes (a) are equi-spaced on the signal measuring ring. They are located in a photoelectric barrier channel which 8 apertures (b) of different lengths pass through. The photoelectric barriers are located in the upper section of the contact spiral (A45) and only form the complete functional unit of the optical steering angle sensor (N49) by assembling (clipping together) both components.



A45 Contact spiral
N49 Steering angle sensor
a Light-emitting diode of photoelectric barrier
b Aperture

P42 45-0240-82

Function

In the center position of the steering the 8 apertures (b) assume a defined position relative to the 9 light-emitting diodes (a). This center position is recorded by the computer in the steering angle sensor. When the steering wheel is turned the position of the apertures changes relative to the light-emitting diodes (light/dark). A quite specific signal pattern for calculating the respective steering wheel position results due to the different length apertures and aperture spacings. Angle values are calculated with the aid of the signal patterns and converted into serial information for the control modules connected. The signals are recorded by light-emitting diodes and photoelectric barriers in 2.5° steps. The signal recording system is designed for a steering angle of ± 720° (4 steering wheel revolutions).

Voltage is supplied via terminal 30 so that the steering angle is also recorded after "ignition OFF".

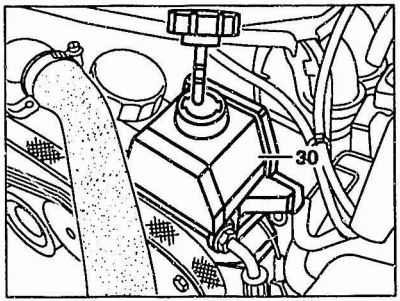
The steering angle sensor must be re-initialized after the voltage is interrupted (terminal 30). This is achieved by turning the steering wheel from stop to stop.

4 6

L9	GF46.20-P-2000A	Pressure supply	

MODEL 129, 140, 202, 210

The steering is supplied with pressure via the power steering pump (30). This is driven directly by the engine via a single belt drive.

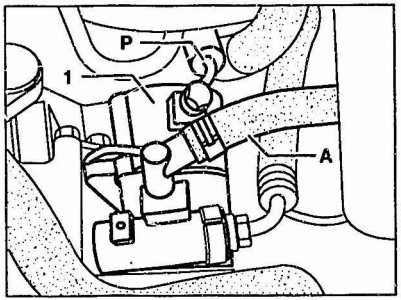


P46.30-0221-01

i

Manufacturer's identification of power steering pump: LF 30 = LUK, FP 42 = ZF

The level control and ADS systems are supplied with pressure via the radial-piston pump (1). This is flange-mounted upstream or downstream of the power steering pump depending on the tandem pump version.



P46.30-0220-01

i

Manufacturer's identification of tandem pump: LFR30 = LUK, FPR 42 = ZF

	Power steering pump		GF46.30-P-2100A
	Tandem pump		GF46.30-P-2200A
	Oil reservoir	With level control	GF32 31-P-4900A D9

A17 AR32 31 P 0610 01A	Checking and setting distance between rear axle spring strut and wheel house		

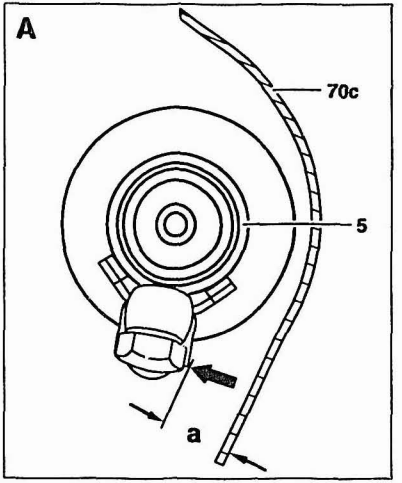
Test values for rear axle spring strut

Number	Designation				Model 129 with electronic level control/ADS II
BE32 31-P-1001-01A	Distance between pressure hose bracket on spring strut tube and wheel house	at rebound	left	mm	11–14
			right	mm	11–14
			refer to figure		AR32 31-0610-01A
BE32 31-P-1002-01A	Distance between pressure hose bracket on spring strut tube and wheel house	ready-to-drive (vehicle on its wheels)	left	mm	16–19
			right	mm	16–19
			refer to figure		AR32 31-0610-01A

When installing the spring strut (5), check distance "a" between the pressure hose bracket on the spring strut tube (arrow) and the wheel house (70c).

Setting spring strut

Only set the spring strut when the screwed connection of the pressure hose is released. Ensure that the gaiter on the spring strut is not installed twisted.



P32 31-0205-02

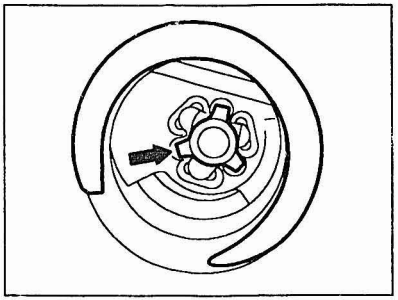
A *Location of left spring strut*
(Location of right spring strut is a mirror image)

C17 AR32 20-P 0200-01A	Tensioning and untensioning spring	202 589 02 31 00 Clamp 202 589 14 63 00 Clamping plates 202 589 01 31 00 Clamp 202 589 13 63 00 Clamping plates	
⚠ **Danger!**	**Risk of injury** from being **trapped or crushed** when working on preloaded springs or spring bodies	Only use approved clamping devices and if appropriate also screen off the danger area. Check special tools for damage and function, (visual inspection). Wear safety gloves.	AS00.00-Z-0001-01A

Assignment of clamping device/clamping plates to specific models:

Front spring clamping device	
models 129, 140, 170, 202, 210	202 589 01 31 00
Fr. spring clamp. plates mod. 129, 170, 202. 210	202 589 13 63 00
Fr. spring clamp. plates mod. 140	202 589 14 63 00
Rear spring clamping device	
models 129, 140, 170, 202, 210	202 589 02 31 00
Rr. spring clamp. plates mod. 140 up to 12.94	202 589 14 63 00
Rr. spring clamp. plates mod. 140 as of 01.95	202 589 13 63 00
Rr. spring clamp. plates mod. 129, 170, 202, 210	202 589 13 63 00

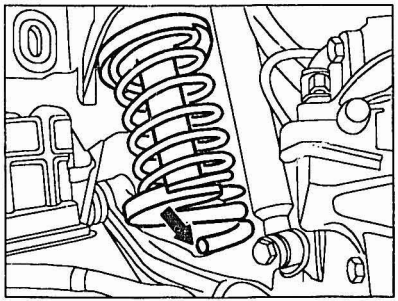
1 Insert clamping plates at top and bottom of spring.
i Insert clamping plates so that as many spring coils as possible are preloaded (front spring 7-8 spring coils, rear spring 4-5 spring coils).
2 Turn clamping plate recesses towards the inside of the vehicle.
3 Insert clamping device in the clamping plates and lock in the upper clamping plate.
(!) The retaining lugs (arrow) must engage in the recesses in the upper clamping plate.
4 Tension spring.
(!) Do not use an impact wrench
5 Mark position of clamping plates relative to the spring coil with oil-based chalk
6 Untension spring.



P32 20-0200-01

(!) Front spring

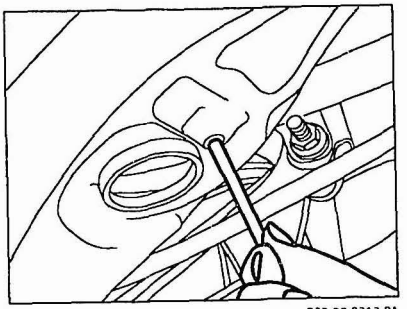
Ensure that the rubber mount fits correctly in the front end and that the spring coil fits correctly in the impression of the wishbone (arrow).



P32 20-0212-01

⑫ **Rear spring**

The bore in the impression of the spring link must be exposed after the spring is released.
To check, probe the end of the spring with a 3 mm dia. wire.



P32 20-0213-01

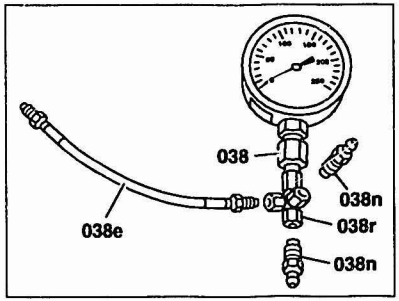
F17 AR32.31-P-0510-01A	Connecting and disconnecting tester at rear axle distributor fitting	Nm 126 589 14 21 00 Tester	
⚠ **Danger!**	**Risk of injury** to skin or eyes due to hydraulic fluid spraying out under high pressure. **Risk of poisoning** due to consuming hydraulic fluid.	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	AS00.00-Z-0013-01A

Nm **Distributor fitting**

Number	Designation			Model 129 with electronic level control/ADS II
BA32.31-P-1001-01A	Oil drain plug on rear axle distributor fitting (reference value)	M10×1	Nm	14

Connecting tester

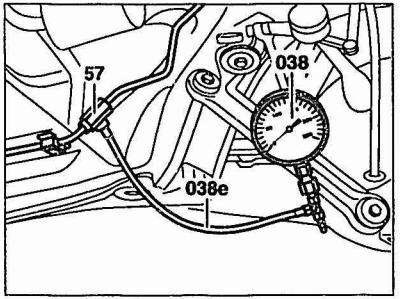
1 Mount test hose (038e) and bleed screws (038n) on distributor (038r) of tester (038).



P32.30-0220-01

2 Unscrew oil drain plug on distributor fitting (57) at rear axle (cover for fuel pump assembly in the area of the rear axle removed).

3 Connect tester (038) with test hose (038e) in place of the oil drain plug on distributor fitting (57).



P32 31-0202-01

Disconnecting tester

⚠ Danger due to oil spraying out !

4 Connect oil drain hose to bleed screw (038n) on tester (038).

5 Open bleed screw (038n) slowly and collect the oil in a clean container.
i The oil collected can be re-used.

6 Close bleed screw (038n) again.

7 Disconnect tester (038) with test hose.

8 Screw oil drain plug onto distributor fitting (57), observe tightening torque.

H17 AS00 00-X-1000Z	Special tools	13.1.98

AS00.00-Z-0013-01A	Risk of injury to skin or eyes from pressurized hydraulic fluid spraying out. Risk of poisoning from swallowing hydraulic fluid	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	J17
AS00.00-Z-0005-01A	**Risk of accident** as a result of vehicle starting off when engine running. **Risk of injury** as a result of bruises and burns if you insert your hands into engine when it is being started or when it is running.	Secure vehicle to prevent it moving off Wear closed and close-fitting work clothes. Do not grasp hot or rotating parts.	K17
AS00.00-Z-0006-01A	Risk of injury from drilling gas-filled subassemblies or components (gas filling cannot ignite)	Wear safety glasses and face mask.	M17
AS00.00-Z-0001-01A	Risk of injury from fingers being pinched or jammed when working on springs or sprung bodies which are tensioned	Only use approved clamping devices; provide additional shielding for danger area if appropriate. Check special tools for damage and malfunction (visual check); wear protective gloves.	N17

J17 AS00 00-Z-0013-01A	Risk of injury to skin or eyes from pressurized hydraulic fluid spraying out. Risk of poisoning from swallowing hydraulic fluid	Before starting work on the hydraulic system, depressurize the system. Wear protective clothing and safety glasses.	⚠ **Danger!**

Potential danger

Risk of injury
Serious injuries can be caused to the skin or eyes when loosening hydraulic lines without depressurizing the system beforehand, due to the very high pressures (above 200 bar). Damage to the skin may be caused if unprotected skin comes into contact with hydraulic fluid, particularly central hydraulic fluid (this is especially harmful to health).

Risk of poisoning
Anyone who swallows hydraulic fluid can expect to suffer symptoms of poisoning including headaches, dizziness, stomach ache, vomiting, diarrhoea, cramps and unconsciousness

Safety measures/operating instructions
- Before starting work on hydraulic systems they should be depressurized and the system must be emptied if necessary.
- Do not pour hydraulic fluid into drinking containers.
- Ensure adequate ventilation, particularly in the case of central hydraulic fluid.
- Ensure only authorized persons have access to hydraulic fluid.
- Seal disconnected lines and hoses and connections on the subassemblies immediately with blind plugs.
- Wear safety gloves, protective clothing and safety glasses.

If it is not possible to wear safety gloves, the following points are to be observed:
- Only allow hydraulic fluid to come into contact with the skin for as short a time as possible, wash fluid off skin with soap and water.
- Change wet clothing as quickly as possible

First aid
- Have the casualty drink plenty of water with activated charcoal additive.
- After swallowing larger quantities ,consult a doctor.
- If hydraulic fluid gets into the eyes, rinse out the eyes immediately with plenty of clean water/using a eye rinsing glass.
- In the event of injuries to skin or eyes from a jet of hydraulic fluid, consult a doctor immediately.

K17 AS00 00-Z-0005-01A	**Risk of accident** as a result of vehicle starting off when engine running. **Risk of injury** as a result of bruises and burns if you insert your hands into engine when it is being started or when it is running.	Secure vehicle to prevent it moving off. Wear closed and close-fitting work clothes. Do not grasp hot or rotating parts.	⚠ **Danger!**

Possible dangers

Risk of accident
from vehicle starting off during starting operation (e.g. when testing compression pressure) **as a result of gear engaged** or when engine running and vehicles with automatic transmission **as a result of selector lever position "P" or "N" not engaged** (with the exception of vehicles which do not have any selector lever position "P").

Risk of injury
Severe injuries may be caused by freely rotating parts in the area of the running engine. The heat produced by the engine when it is operating can result in severe burns if contact is made with individual, unshielded parts.

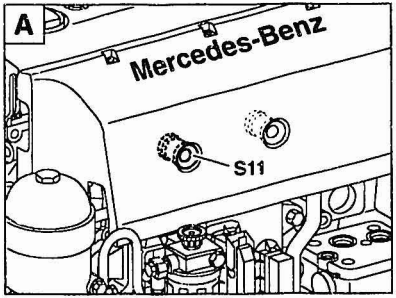
Rules of conduct / Protective measures
- As a general rule, carry out work on the running engine only if this is absolutely essential.
- Before starting the engine, **apply parking brake.**
- On models with manual transmission, **move gearshift lever into Neutral position.**
- On models with automatic transmission, **move selector lever into position "P" or "N"** (with the exception of vehicles which do not have any selector lever position "P").
- On models which **do not have selector lever position "P", secure selector lever to prevent it being operated unintentionally.**
- Wear closed and close-fitting work clothes.
- Take off any jewelry, such as chains, rings etc.
- If you have long hair, wear a suitable head cover.
- Before commencing work on the running engine, check to obtain a general picture of the positioning of parts which may be hot.
- When carrying out work when starting the engine or when engine is running, **do not touch any hot and rotating parts.**

Vehicles with Stop switch:
Before commencing work on the running engine, check to obtain a general picture of the positioning of the Stop switch.
If a danger exists, switch off engine with the Stop switch (S11).
(On engine 904, 906, 541, 542)

First aid measures in the event of burns

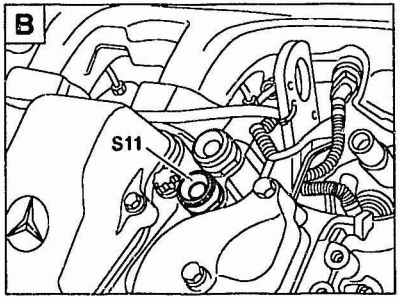
- Do not rub the part of the skin affected, pour plenty of cold water over the burn and cover over with sterile bandages.
- Contact a doctor immediately.

Fig. A engine 904, 906
S11 Stop switch



W01.00-0005-01

Fig. B engine 541, 542
S11 Stop switch



W01.00-0006-01

M17 A500 00-Z-0006-01A	Risk of injury from drilling gas-filled subassemblies or components (gas filling cannot ignite)	Wear safety glasses and face mask.	⚠ **Danger!**

Risk of injury when drilling

There is an increased risk of injury to the skin and eyes due to drilling chips blown up when drilling gas-filled subassemblies. The drilling chips are carried along due to the pressure of the gases escaping and accelerated to a greater or lesser extent depending on the pressure. The extent of injury increases as the pressure. The pressures involved may be 75 bar and above.

Operating instructions/safety measures

- Wear safety glasses and face mask

First aid

- Do not rub part of skin affected as there is the risk that the drilling chip will break off and part of it remains.
- If necessary, consult a doctor.

N17 AS00 00-Z-0001-01A	Risk of injury from fingers being pinched or jammed when working on springs or sprung bodies which are tensioned	Only use approved clamping devices; provide additional shielding for danger area if appropriate. Check special tools for damage and malfunction (visual check); wear protective gloves.	⚠ **Danger!**

Risk of fingers etc. being jammed or crushed when working on parts which are under tension.
When releasing or removing parts which are under great tension, the use of **non-approved** clamping devices may result in **severe injury**.

Instructions/precautions
Only use approved clamping devices for repair work on springs, sprung bodies, spring actuators and other parts under tension.

Spring clamps
On no account use an impact wrench for tensioning and releasing operations.
Checking clamping devices
- The pressing screw must move easily and be undamaged.
- Clamping plates must not be warped.
- Ensure that the right clamping plates are used with the right springs.

i The coil diameter of the springs must correspond to the groove in the clamping plate.

Wear protective gloves for all work operations.

017 AH00 00-X-1000Z	General notes	13.1.98

AH32.00-P-0002-01A	General notes on working on vehicles with level control/ADS	All models with code 216b, 216c, 217a, 480 116 589 00 17 00 Box wrench	P17

P17 AH32 00-P-0002-01A	General notes on working on vehicles with level control/ADS	All models with code 216b, 216c, 217a, 480 116 589 00 17 00 Box wrench	(!)

The following instructions should be followed when disconnecting and connecting pressure lines:

(!) Clean contaminated line connections before disconnecting them. Seal disconnected lines and hoses and connections to components immediately with blind plugs.
Only use open box wrench and special tool when loosening and tightening pressure lines to avoid damage to the line connections.

i Check the component concerned and line connections for leaks after assembly work on the suspension system.

A18 BT00.00-X-1000Z	Technical modifications	13.1.98

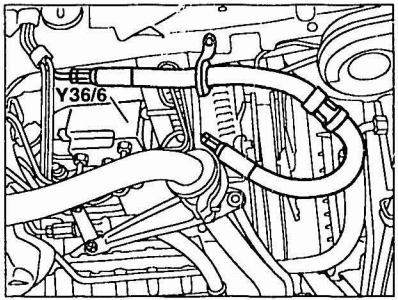
BT32.32-P-0001-01A	High-pressure stretch hose installed in oil circuit (ADS)	Model 129	B18
BT91.59-P-0001-01A	Discontinuation of control module and rear axle switch (roll bar)	Model 129	C18

B18 BT32 32 P 0001 01A	High-pressure stretch hose installed in oil circuit (ADS)	Model 129	BT

MODEL 129 as of 1.12.96 with CODE (216c) adaptive damping system (ADSII) with electronic level control

Since 12/96 a high-pressure stretch hose has been installed in the oil circuit of the rear axle level control in order to dampen pressure peaks.

Y36/6 Rear axle height reduction valve



P32.32-0254-01

C18 BT91 59-P-0001-01A	Discontinuation of control module and rear axle switch (roll bar)	Model 129	BT

MODEL 129

The following components are discontinued

- RB control module (crash deployment) (N53)
- Left rear axle switch (roll bar) (S83/2)
- Right rear axle switch (roll bar) (S83/3)

The function of the former RB control module (crash deployment) (N53) are integrated in the power soft top control module (N52). Rear axle switches (roll bar) (S83/2) and (S83/3) are replaced by a tilting cone sensor (52°) integrated in the power soft top control module (N52).

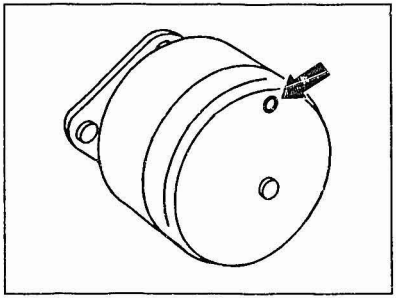
D18 OS00 00-X-1000Z	Special waste disposal	13.1.98

OS32.30-P-0620-01A	Disposal of spring actuator	Model 129 with code 216c Models 140, 210 with code 217a, 480 Models 202, 208 with code 480	E18
OS32.25-P-0120-01A	Disposing of damper strut		F18

E18 OS32 30-P-0620-01A	Disposal of spring actuator	Model 129 with code 216c Models 140, 210 with code 217a, 480 Models 202, 208 with code 480	
⚠ **Danger!**	**Risk of injury** from drilling gas-filled subassemblies or components (gas filling cannot ignite)	Wear safety glasses and face mask	AS00.00-Z-0006-01A

1 Drill into spring actuator on domed side (arrow) with a 3 mm drill until the gas escapes.

2 Dispose of spring actuator (old part) with the metal scrap.



P32 32-0206-01

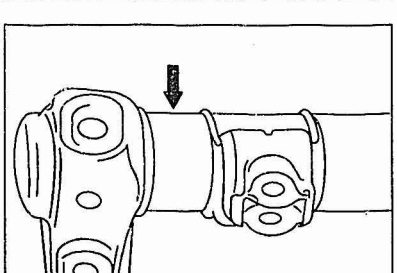
F18 OS32 25-P-0120-01A ⚠ **Danger!**	Disposing of damper strut **Risk of injury** from drilling gas-filled subassemblies or components (gas filling cannot ignite)	Wear safety glasses and face mask	AS00.00-Z-0006-01A

1 Drill damper strut in the area of the arrow with a 0.5 mm drill.

2 Pump the damper strut empty by pressing the piston rod in several times. The quantity of oil is 250–500 cm³ depending on the version.

ⓘ Comply with regulations governing disposal of hydraulic oil

3 Dispose of damper strut (old part).



P32 25-0206-01

G18 AH00 00-X-1000Z	Modification note	13.1.98

This microfiche replaces microfiche no. Z1 0442 01 01 .

The previous microfiche is no longer valid and should be destroyed.

Newly included

Revisions

H18	Contents ADS II with electronic level control	13.1.98

AR32.31-P-0605A	Removing and installing front axle spring strut	MODEL 129 with CODE (216c) adaptive damping system (ADS II) with electronic level control	H5
AR32.31-P-0510A	Checking level control pressure oil pump	MODEL 129 with CODE (216c) Adaptive damping system (ADS II) with electronic level control	05
AR32.31-P-0680A	Removing and installing rear axle damper valve	MODEL 129 with CODE (216c) Adaptive damping system (ADS II) with electronic level control	
AR32.31-P-0650A	Removing and installing level control valve unit	MODEL 129 with CODE (216c) Adaptive damping system (ADS II) with electronic level control	
AR32.31-P-0630A	Draining and filling pressure oil system at front and rear axle	MODEL 129 with CODE (216c) adaptive damping system (ADS II) with electronic level control	
AR32.31-P-0620A	Removing and installing rear axle spring actuator	MODEL 129 with CODE (216c) Adaptive damping system (ADS II) with electronic level control	
AR32.31-P-0615A	Removing and installing rear axle spring actuator	MODEL 129 with CODE (216c) Adaptive damping system (ADS II) with electronic level control	
AR32.31-P-0610A	Removing and installing rear axle spring strut	MODEL 129 with CODE (216c) Adaptive damping system (ADS II) with electronic level control	

AR32.31-P-0605A	Removing and installing front axle spring strut	MODEL 129 with CODE (216c) adaptive damping system (ADS II) with electronic level control	
AR32.31-P-0510A	Checking level control pressure oil pump	MODEL 129 with CODE (216c) Adaptive damping system (ADS II) with electronic level control	
GF32.31-P-1000A	Function of ADS II with electronic level control	MODEL 129 as of 1.9.95 with CODE (216c) Adaptive damping system (ADS II) with electronic level control	**E6**
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GF32.31-P-3000A	Function of level control	MODEL 129 as of 1.9.95 with CODE (216c) Adaptive damping system (ADS II) with electronic level control	**D7**
GF32.31-P-3500A	Function of level adjustment	MODEL 129 as of 1.9.95 with CODE (216c) Adaptive damping system (ADS II) with electronic level control	**E7**

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GF32.31-P-4100A	Body acceleration sensor	MODEL 129 with CODE (216c) adaptive damping system (ADS II) with electronic level control	O7
GF32.31-P-4200A	Adaptive damping system (ADS) comfort/sport switch	MODEL 129 as of 1.9.95 with CODE (216c) adaptive damping system (ADS II) with electronic level control	A8
GF32.31-P-4300A	Damper valve	MODEL 129 as of 1.9.95 with CODE (216c) Adaptive damping system (ADS II) with electronic level control	B8
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GF32.31-P-4500A	Level control valve unit	MODEL 129 as of 1.9.95 with CODE (216c) Adaptive damping system (ADS II) with electronic level control	H8
GF32.31-P-4600A	Level adjustment switch	MODEL 129 as of 1.9.95 with CODE (216c) Adaptive damping system (ADS II) with electronic level control	M8
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Foreword

This ***documentation*** contains instructions on how to carry out maintenance and repair operations on Mercedes-Benz vehicles. It is intended exclusively for workshops belonging to the Mercedes-Benz Organization.

The instructions provide a basis for correct and expert maintenance and repair work. The content of the work operations described presupposes the level of training of a qualified mechanic with good product knowledge. This degree of knowledge is essential for the performance of the work described.

Safety instructions (dangerous situations for persons) and warnings (quality of work, damage to objects).
The instructions and warnings are marked by the following symbols (logos):

⚠ **Danger stands for safety instructions (dangerous situations for persons).**

(!) **stands for warnings (quality of work, damage to objects).**

These instructions and warnings must be read carefully and observed in full in order to avoid injury as well as any damage to the vehicle or any negative effect on its reliability and safety as a result of incorrect work.

The nature of things makes it impossible for Daimler-Benz AG to cover all situations in which work on the vehicle might involve a risk of injury to the person performing that work. It is therefore essential for all those who carry out repairs on Mercedes-Benz vehicles to apply their specialist knowledge to ensure that their own safety is not at risk and that the method of repair chosen does not have any negative effect, particularly with regard to safety.

For this reason we specifically drawn your attention to the fact that all the operations in the work described must only be performed in compliance with the applicable guidelines and regulations of the local authorities as well as those pertaining to health, accident prevention and the protection of the environment.

Further information on the topics below can be found on the microfilm "Notes on maintenance, care and repair":

- Using the microfilm system
- Arrangement and structure of the operation descriptions
- Meanings of symbols (logos) used

The validity status of the information in these repair instructions is given on the contents page (header, right-hand column).

Constant further development and improvement of our vehicles may result in discrepancies between the actual technical state of the vehicles and the operation descriptions. The current state of the operation descriptions is shown in the Workshop Information System (WIS).

Daimler-Benz AG reserves the right to make changes at any time and without prior notification.

In the event of any unanswered questions on repair procedures, please contact the person responsible in the Mercedes-Benz organization of the country concerned (for MBVD, refer to the appropriate Service Information bulletin, group 99).

Should you have any suggestions for improvement or have discovered any irregularities, please inform the person or persons below.

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