

Star Motors

Specializing in 300 SEL 6.3's, 450 SEL 6.9's &
600 Limousines



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Air Suspension - Trouble Shooting Guide

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This “Schwarz” black 6.3 was one of the first off the production line in 1968.



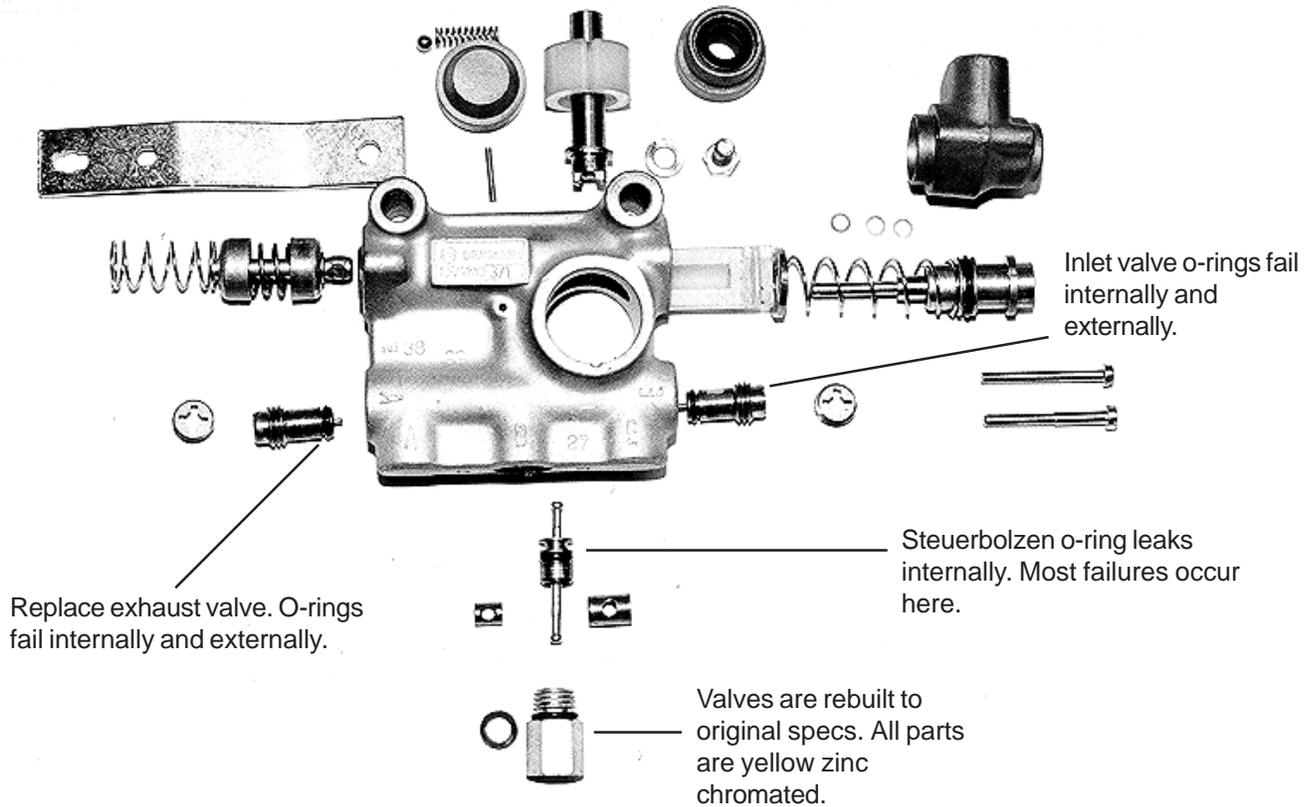
This “Astralsilber” silver 6.3 represents the most frequently requested exterior color. Interestingly, it is also associated with the renowned Mercedes-Benz racing team.

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TROUBLE SHOOTING THE AIR SUSPENSION

Most air suspension problems are directly related to the leveling valves and main valve. Generally, most of the other components rarely fail. This trouble-shooting guide is comprehensive in its approach to trouble shooting. Please follow the procedures to diagnose the problems in conjunction with the Mercedes-Benz workshop manuals and figures provided with this guide.



Exploded view of leveling valve.

Leak Checking Procedures

Air suspension lines rarely leak unless they are rusted. Air bags rarely leak unless the cord is showing and they are in poor physical condition. Ninety-five percent of the leaks are in the leveling valves and main valve. The non-return valve is another area of concern. It should be replaced if the leveling valves are replaced. Valves are made with internal rubber parts of 70 durometer buna nitrile composition. Most of the leveling valves failure occur in the center region of the 2 mm pin holding the internal part called the steuerbolzen (*German*). A quick leak test can be made by placing soapy water around this area and watching the air escape (sometimes the leak may be infinitesimal and may not be detected). If this leaking occurs, the valve must be replaced because pressurized air is escaping to atmospheric air. Soapy water can be used to check the non-return valve once the valve has been disconnected from the high-pressure compressor line. Just add the water to the valve and see if any bubbles form. None should be present. See the attachment for a general description of the air suspension system.

PROBLEM	CAUSE	REMEDY
White or red warning lamp lights up and never goes away, but car does not lose air in 24-hour period (even after valves have been replaced).	Push pull button or lever not in correct position.	Adjust cable or push lever or button in correct position.
	Electric pressure indicator on main valve defective or leaking.	Replace switch.
	Leaking air line	Replace line and check for leaks.
	Air compressor is defective and not reaching the minimum pressure of 105 psi to shut-off the electric switch.	Drain reservoir tank and see if excessive condensate is present of oil and water. Then place car into high level position. If the car fails to go up to correct height replace unit with rebuilt compressor because the rings are worn.
White or red warning light appears over a short period (1 hour or more) when car is not running.	Supply tank leak or valves leaking.	Check for leaks in the supply system as discussed in the work shop manual. Replace level valves and main valve. Replace drain valve. Replace filling valve. Check fittings going to main valve. Replace non-return valve.
Car level too low in front on both sides.	Serious leak in both front suspension valves.	Replace both front and right leveling valves.
	The car continues to drop after replacing valves and the main valve does not leak.	Screw in pressure reducing screw on main valve 2 turns clockwise to see if car raises up with increased supply pressure. If it does not raise up, replace the main valve unit because the diaphragm ring has a slow leak or the one-way feed valve is defective internally (assuming the supply pressure in the tank is at least 150 psi or more).
Car level low on either left or right side, but not on both sides.	This definitely indicates a defective leveling valve.	Replace leveling valve.
Car level in front but low in rear.	Defective rear valve.	Replace rear valve.
Car is too low in front and rear.	All leveling valves are defective	Replace level valves and main valve as a set.
Car appears to be tilted in the rear.	Front valve is leaking with the left or right causing the rear suspension to compensate.	Replace front valves.
Car level is too low in front on both sides.	Serious leak at main valve. Because the main valve supplies regulated front valve air pressure though the pressure reducing valve at 140 psi to 195 psi, the pressure is below minimum.	This problem rarely occurs. Increase the main valve regulating pressure by screwing set screw 2 full revolutions. If nothing happens, reset to original position and replace main valve and front leveling valves.
Hissing noise from the main valve after driving the care.	Air is exhausting from the system.	This is a normal function of self leveling.
Car fails to reach high level after the pull knob or lever is moved into the high position.	Low supply pressure due to weak compressor rings or cracked valve	Replace compressor.

IMPORTANT NOTE TO OWNERS OF 300SE EARLY STYLE AIR SUSPENSION CARS. In order to ensure proper longevity and warranty for the air suspension valves of the LF/VNB type, the following must be done: (Please reference the air suspension diagrams that follow.)

Do not let the valve become covered with oil, because this will deteriorate the rubber center pieces.

The main valve (Part # LF/EVA1A1) and the supply tank holding valve, located on the air suspension supply tank in the left inner fender well, should be checked for leaks. Leaks may cause the supply pressure to drop and the car to lose front or rear pressure. This will put undue stress on the center rubber pieces of the leveling valves. The best measure to prevent this is to replace the supply check valve and the main valve.

The air suspension supply tank should be checked for oil condensate build up. No oil should be displaced when draining the tank. Since the 300SE type is fuel injected, gas may enter into the oil through a leaky injection pump and condense in the supply tank if the rings on the air compressor are worn. This will accelerate the wear of the air valve. Also check the air compressor air cleaner to determine if it is properly mounted and does not inhale engine fumes (A modification was made at the factory for this.)

In cold climates the ethyl alcohol chamber must be full to assure that the valves do not freeze and become inoperative.

It is not uncommon for the rubber center pieces to leak slightly. Mercedes-Benz allows a 1 ATM (14.7 psi) pressure loss over a 24-hour period.

If all the suspension items are OK, you should experience trouble-free maintenance for years to come.

AN IMPORTANT NOTE TO OWNERS OF 300SEL LATE STYLE AIR SUSPENSION CARS. In order to ensure proper longevity and warranty for the air suspension valves of the LF/VNC type the following must be done: (Please reference the air suspension diagram included on Pneumatic Cushioning, Type 300SEL.)

Your air suspension is made of 100's of individual rubber\brass\stainless steel components. In order for you to insure years of trouble free performance please review the checklist.

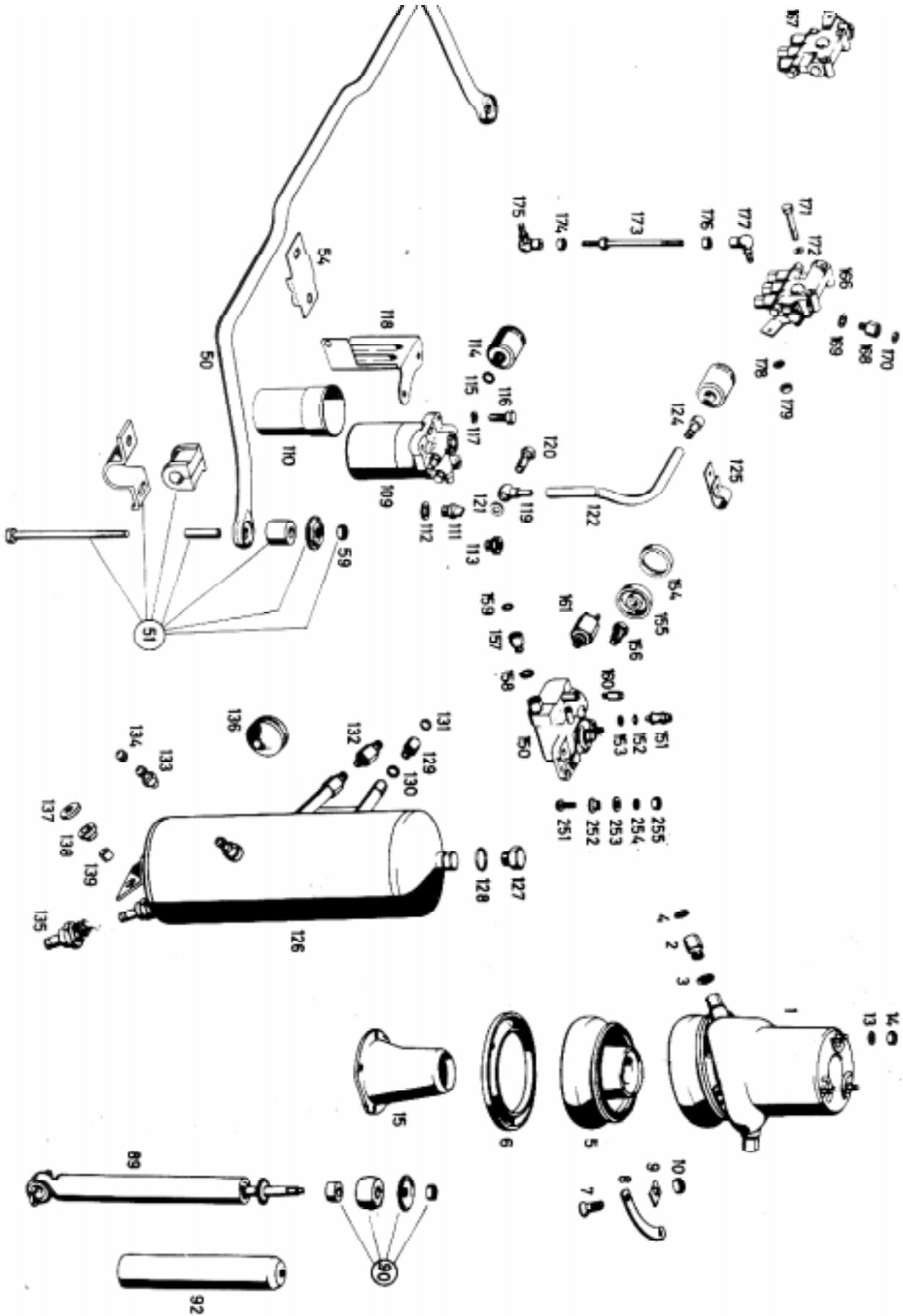
The main valve, p.n. LF/EVA1A1,2,3,4,5, 0501001004 AND 005, should be checked for leaks if you have not already replaced this valve. The air suspension supply tank in the left inner fender (ITEM 33 in diagram) should be checked, since it is quite common for this valve to fail. If leaks are apparent this may cause the supply pressure to drop and the car to lose front or rear pressure (the warning light will come on when pressures below 7 ATM).

The best measure to prevent this is to replace the supply check valve (ITEM 33) and the main valve. Air lines and fittings rarely leak, the soap bubble test is not of significance in most cases. External air leaks can generally be heard by the human ear. The main supply tank also has a filling valve and drain valve. These must be checked for leaks when installing a new valve set. These valves rarely leak, but in the events of complaints please check these for leaks.

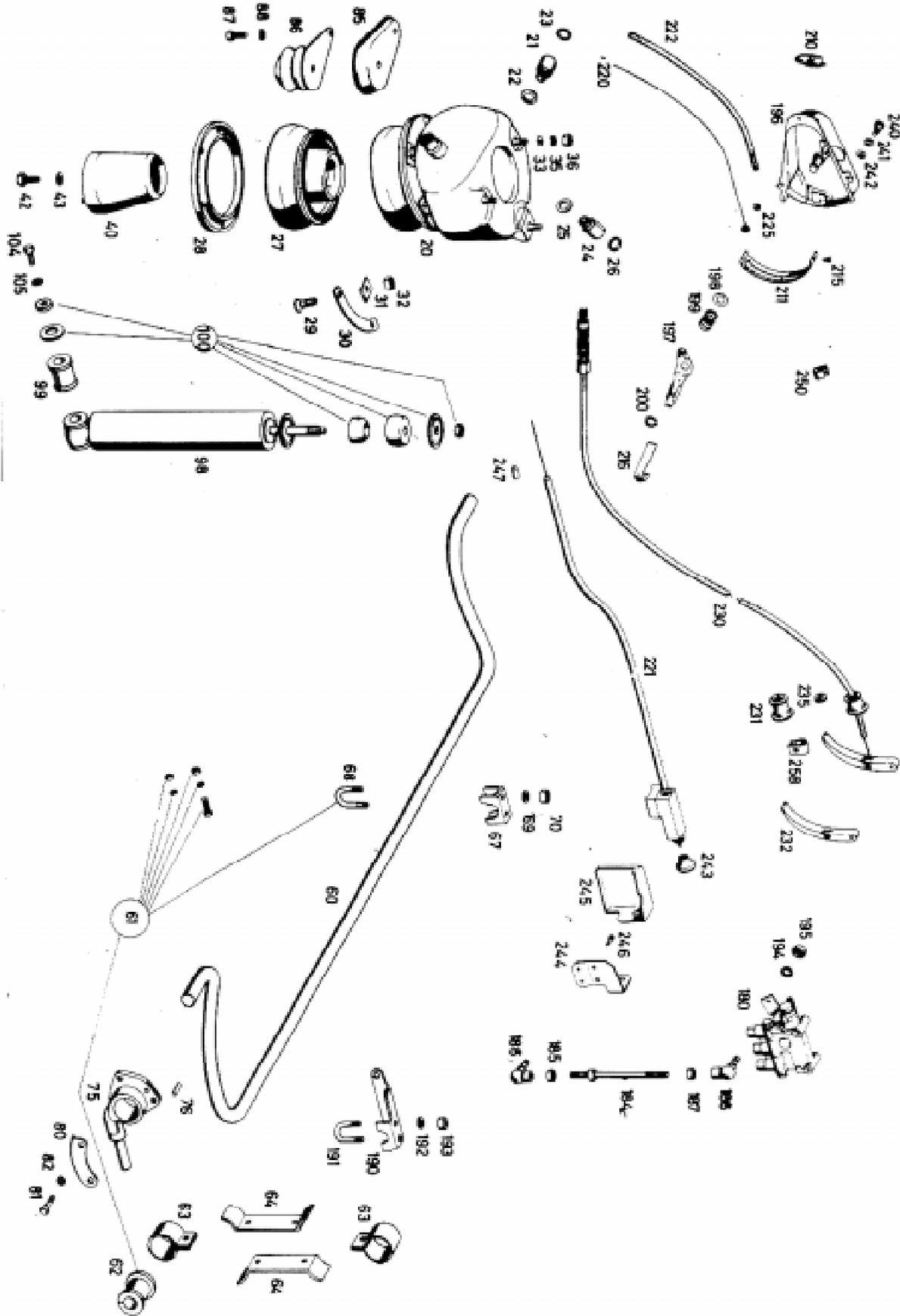
Another area for leaks to occur is the pressure switch on the main valve. These rarely leak but in the event of a complaint, please check the switch for cracks.

The air suspension supply tank should be checked for oil condensate build up, no oil should be displaced when draining the tank. Since the 300SEL type is fuel injected, gas may enter into the oil through a leaky injection pump and condense in the supply tank if the rings on the air compressor are worn. This will accelerate the wear of the air valve.

Front Air Suspension Parts, Late-Style Valves



Rear Air Suspension Parts, Late-Style Valves



Front and Rear Suspension Parts, Late-Style Valves

