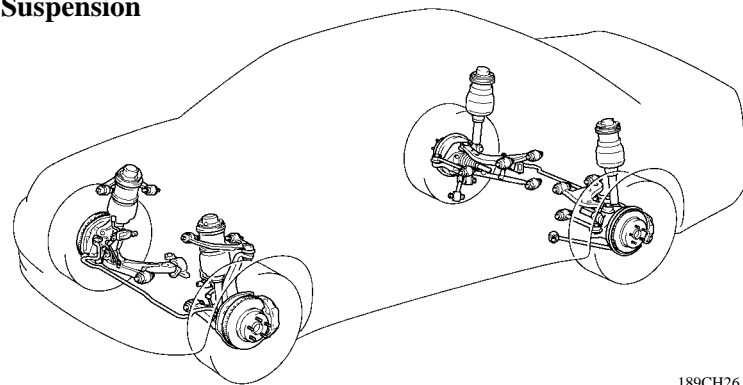
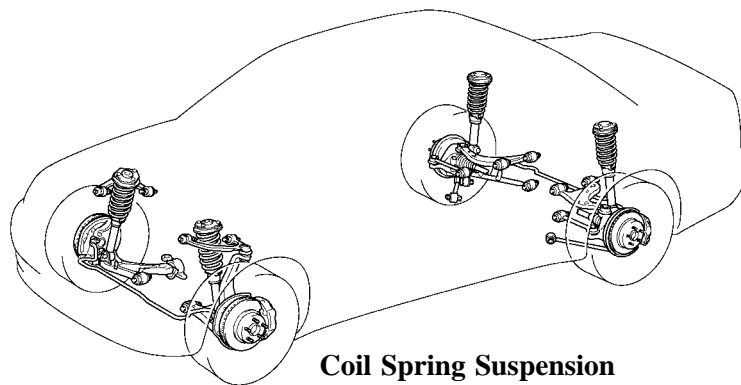


SUSPENSION AND AXLE

■ SUSPENSION

1. General

A newly designed double wishbone type suspension is used for both the front and rear to provide a high level of controllability and riding comfort. In addition to the standard coil spring suspension, an electronically modulated air suspension which uses compressed air to act as a spring is optional equipment.



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► Specifications ◀

Item	'01 LS430				'00 LS400				
	Front		Rear		Front		Rear		
	Coil	Air	Coil	Air	Coil	Air	Coil	Air	
Tread	mm (in.)	1571 (61.8)	1573 (61.9)	1566 (61.7) 1565 (61.6)*2	1575 (62.0)	1570 (61.8)	1574 (62.0)	1568 (61.7)	1574 (62.0)
Caster*1	degrees	6°45' 6°40'*2	7°15'	—	—	7°00'	7°25'	—	—
Camber*1	degrees	-0°05'	-0°15'	-1°00'	-1°35'	0°20'	0°05'	-0°50'	-1°25'
Toe-In*1	mm (in.)	1 (0.04)	←	3 (0.12)	←	3 (0.12)	1 (0.04)	2 (0.08)	3 (0.12)
King Pin Inclination*1	degrees	9°00' 9°05'*2	9°15'	—	—	8°25'	8°40'	—	—

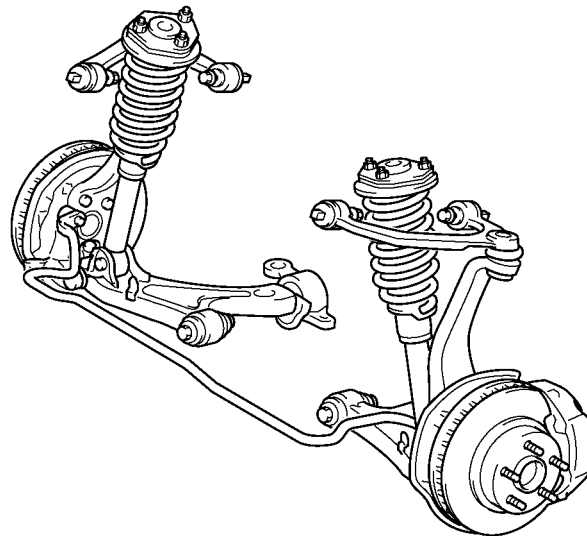
*1 : Unloaded Vehicle Condition

*2: Sports Package

2. Front Suspension

General

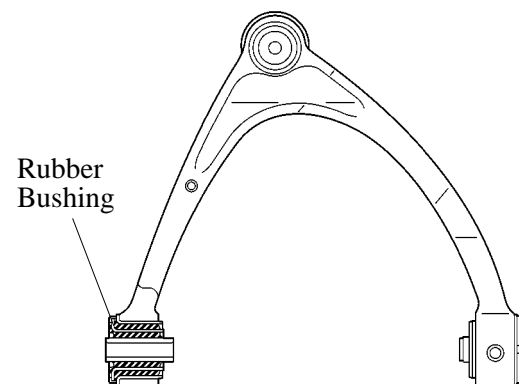
- As in the previous model, a double wishbone type independent suspension is used on the new model.
- The upper arm and steering knuckle made of forged aluminum have been adopted to realize lightweight.
- The power steering gear box has been located forward of the axle so that the wheels can be toe-out in accordance with the lateral force that is applied to the steering during cornering, thus realizing a milder steering response.
- Low-pressure (N₂) gas sealed front shock absorbers with a linear control valve and built-in rebound spring have been adopted to realize both driving stability and riding comfort.
- The suspension geometry suitable to new model has been provided to realize excellent stability, controllability, and riding comfort.



189CH27

Upper Arm

- The upper arm made of forged aluminum has been adopted to realize lightweight.
- The upper arm bushing has been changed from pillow ball bushing to rubber bushing.



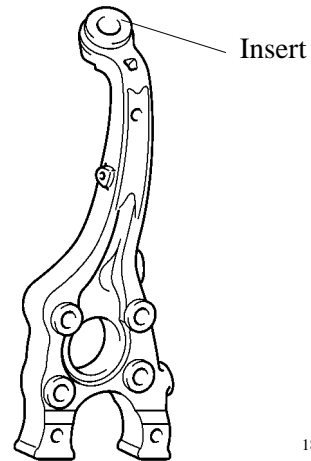
189CH28

Steering Knuckle

The steering knuckle made of stamp-forged aluminum has been adopted to realize lightweight.

Service Tip

Make sure not to allow the insert to slip out when removing the upper arm and the steering knuckle. For details, refer to the 2001 LEXUS LS430 Repair Manual (Pub. No. RM812U).

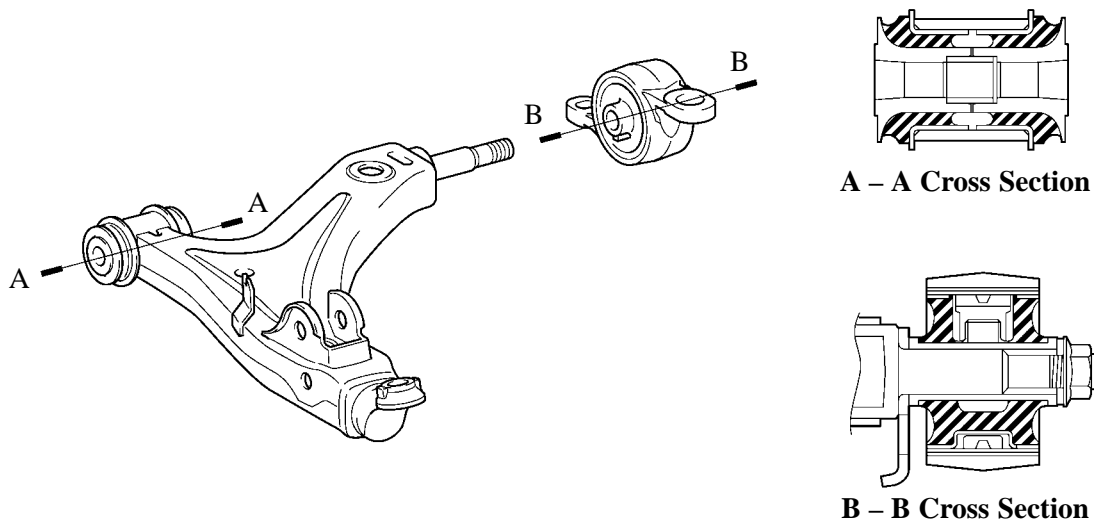


189CH29

Lower Arm

The shape of the lower arm No. 1 bushing and the lower arm bracket bushing has been optimized to improve ride comfort.

Also, lower arm bracket bushing has been adopted the liquid-filled compound bushing.



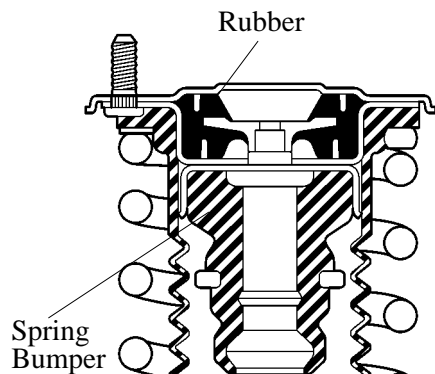
189CH30

Suspension Upper Support and Bound Stopper

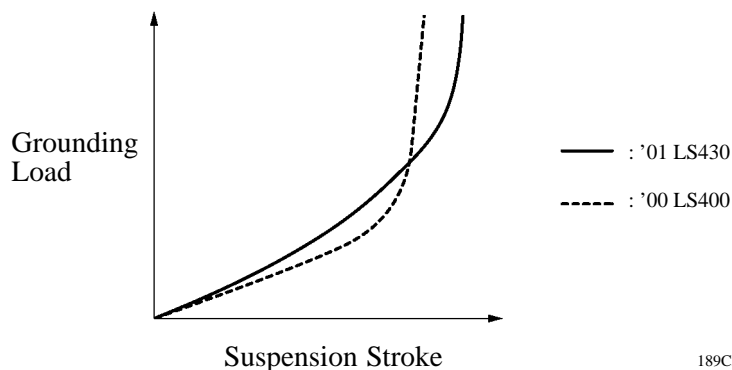
As in the previous model, the rubber content of the suspension upper support has been adopted to improve stability, controllability, and riding comfort, to reduce noise and vibration.

Also, the spring bumper has been changed from rubber to urethane to improve ride comfort.

► Characteristics of Grounding Load ◀



189CH31

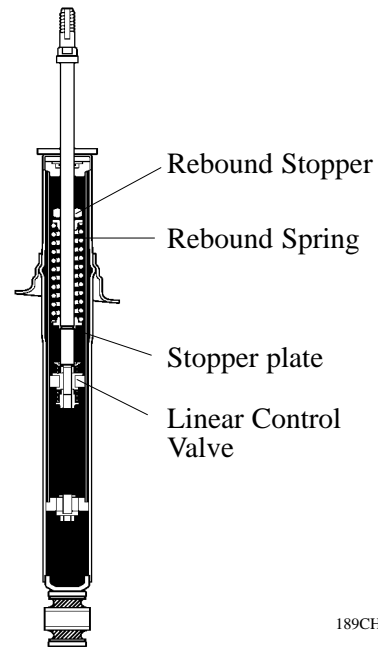


189CH32

Shock Absorber (for Coil Spring Suspension)

1) General

Low-Pressure (N₂) gas sealed front shock absorbers with a linear control valve and built-in rebound spring have been adopted to realize both driving stability and riding comfort.



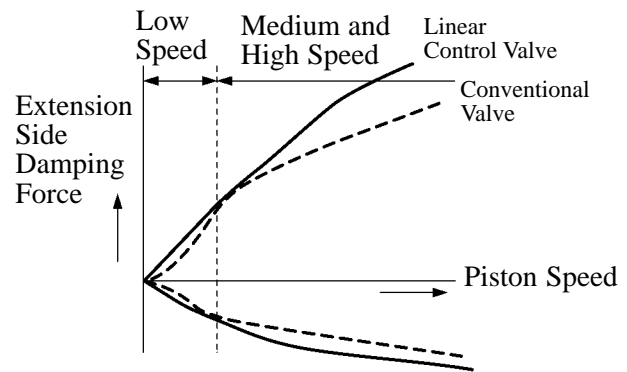
189CH33

2) Linear Control Valve

The linear control valve consists of a C-valve, a cutout valve and a leaf valve.

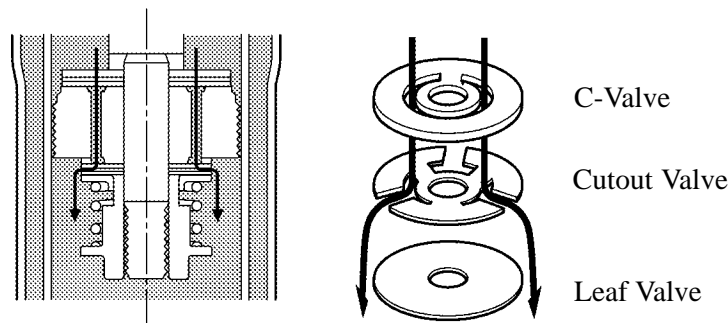
These valves adopt a laminate construction and form orifice. At low piston speeds, the oil flows through the cutouts of the valves to achieve a linear damping force.

Through the adoption of the linear control valve, the changes in the damping force are made constant at low piston speeds, thus making the vehicle behave more smoothly in relation to the steering operation.



Damping Force Characteristics

189CH95

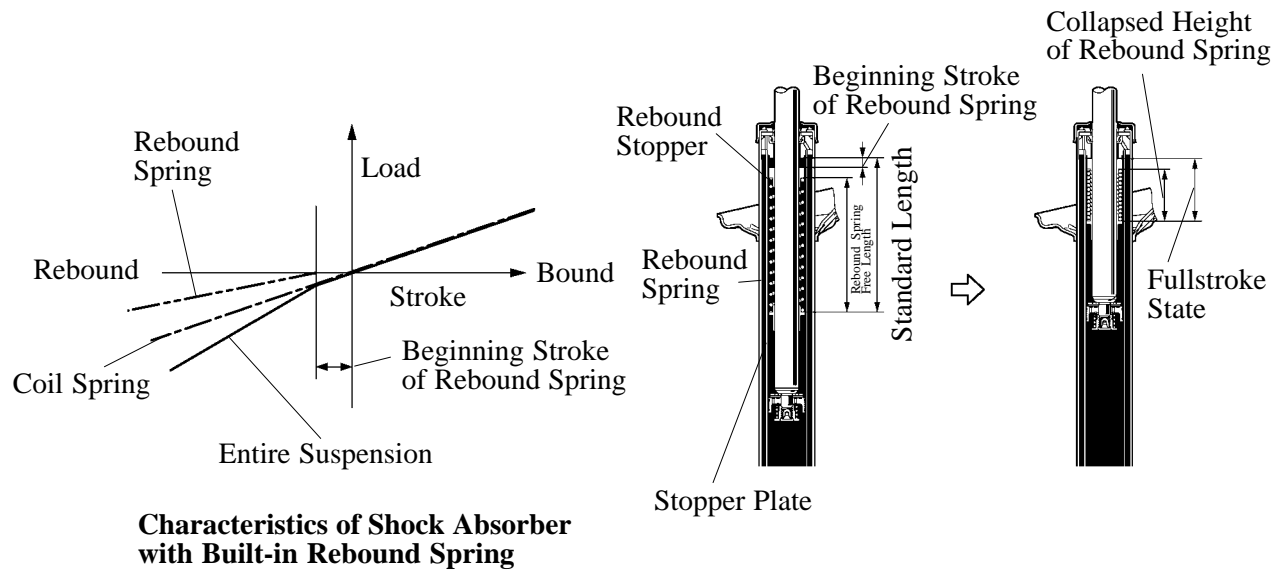


Low Speeds

189CH96

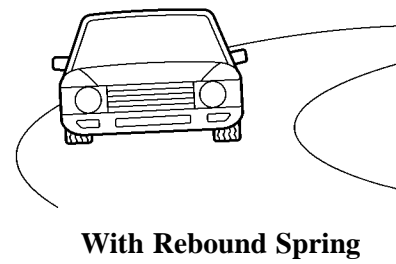
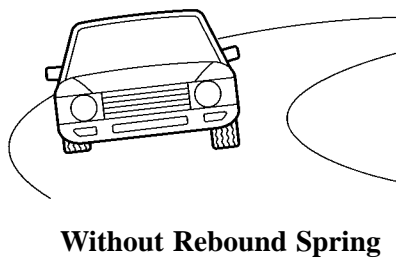
3) Rebound Spring

In the front shock absorber with a built in rebound spring, the function of the rebound spring that is provided in the shock absorber case combines with the function of the coil spring in order to restrain the elongation of the entire suspension during rebounds. Consequently, only the function of the coil spring is applied when the suspension stroke is small during normal driving, in order to realize a soft and comfortable ride. However, when the inner wheel makes large rebounds, such as when the vehicle is cornering, the functions of both the rebound spring and the coil spring are combined in order to reduce the elongation of the entire suspension. As a result, the vehicle's excellent maneuverability and stability have been realized.



185CH16

185CH17

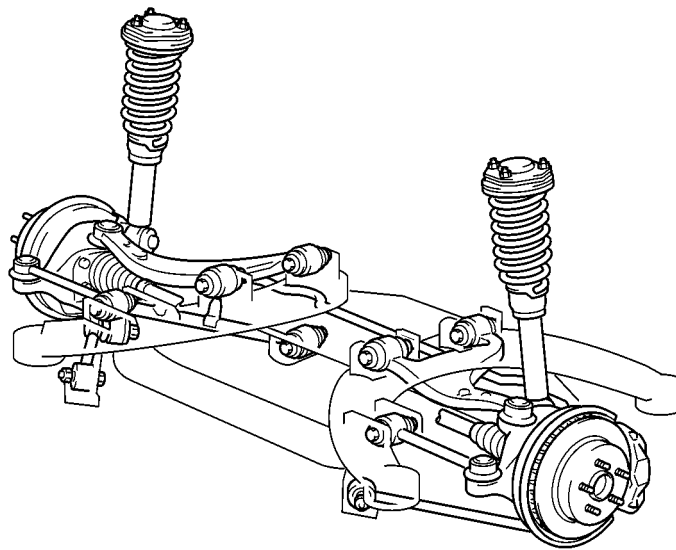


187CH10

3. Rear Suspension

General

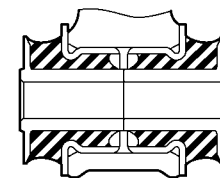
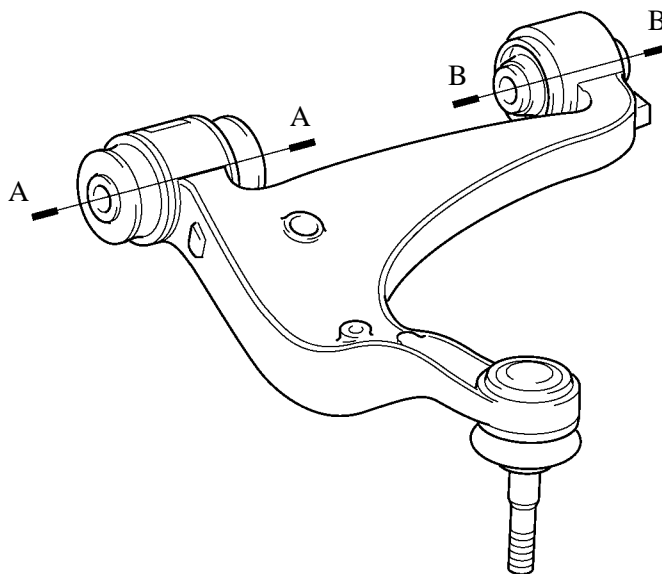
- As in the previous model, a double wishbone type independent suspension is used on the new model.
- The upper arm made of forged aluminum and the axle carrier made of aluminum cast have been adopted to realize lightweight.
- The suspension geometry suitable to new model has been provided to realize excellent stability, controllability, and riding comfort.



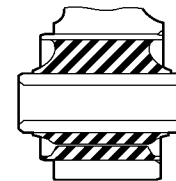
189CH34

Upper Arm

- The upper arm made of forged aluminum has been adopted to realize lightweight.
- The upper arm bushing has been optimized to realize excellent stability, controllability, and ride comfort.



A – A Cross Section



B – B Cross Section

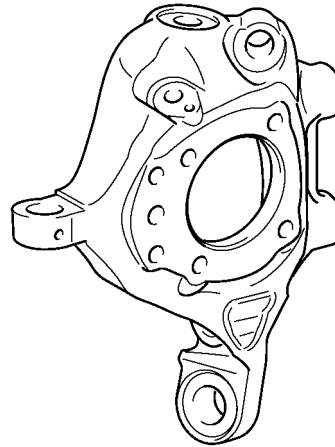
189CH35

Axle Carrier

- The axle carrier made of aluminum cast has been adopted to realize lightweight.
- The axle carrier and the arms are joined with ball joints to realize excellent stability, controllability, and ride comfort.

Service Tip

As with the front steering knuckle, make sure that the insert does not slip out when removing the axle carrier and the arms. For details, refer to the 2001 LEXUS LS430 Repair Manual (Pub. No. RM812U).



189CH36

4. Electronically Modulated Air Suspension

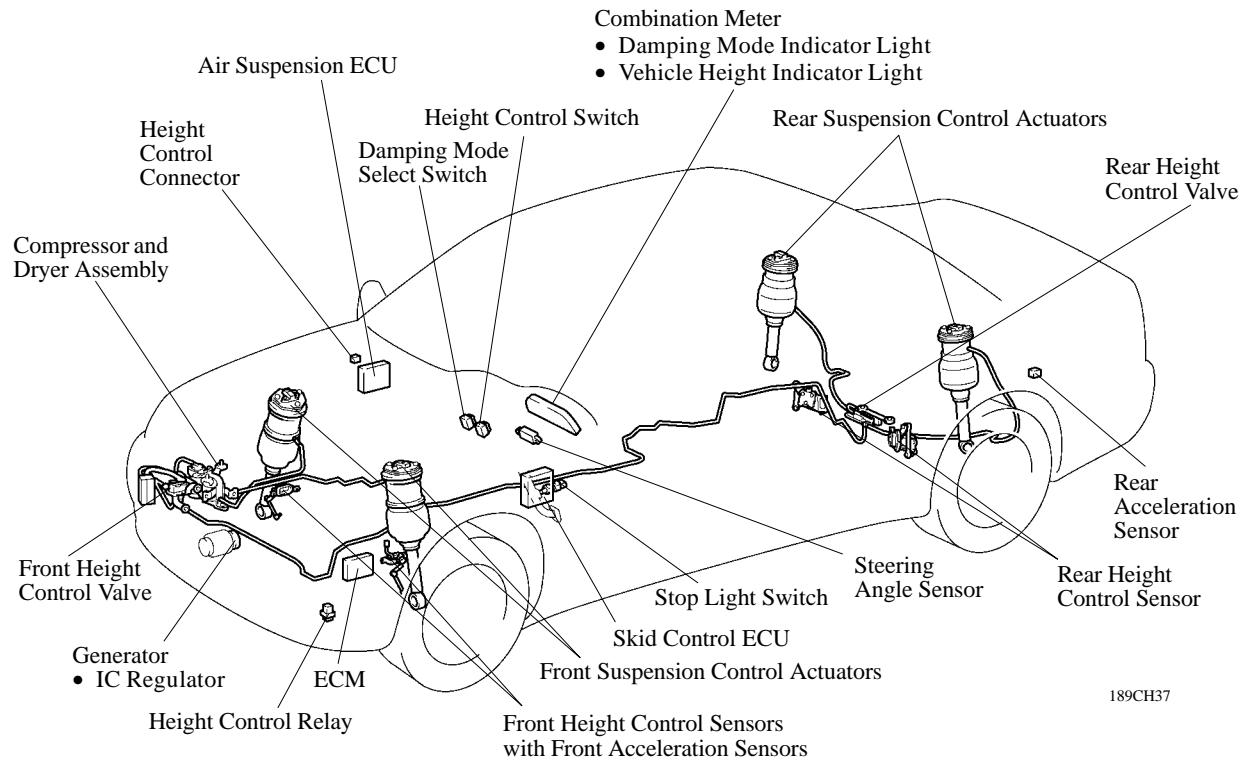
General

- The electronically modulated air suspension system of the '01 LS430 is an advancement of the system of the '00 LS400. While its basic construction and operation remain the same as that of the '00 LS400, it offers the improvements described below. As a result, the effect of the road bumps on the vehicle in various and driving conditions has been minimized and a stable vehicle posture is maintained.
- The semi-active control of the damping force control has been changed from sky-hook control to non-linear H^∞ control in order to effect 4-wheel independent control that constantly achieves an optimal damping force in relation to the bumpiness of the road surface. As a result, excellent ride comfort has been realized.
- Imaginary roll damper control has been adopted for the damping force control to optimize the vehicle roll attitude during cornering. As a result, excellent cornering stability and controllability have been realized.
- Speed sensitive control has been adopted to automatically lower the vehicle height when the vehicle is driven at a prescribed speed or higher, in order to provide the aerodynamics and excellent stability at high speeds.
- The damping mode select switch that selects the shock absorber damping force (“normal” or “sport”) has been newly adopted.
- The construction of the pneumatic cylinder has been optimized to realize excellent stability, controllability, and ride comfort.
- The compressor motor of the height control compressor has been made more compact, and the air filter, which was provided separately on the '00 LS400, has also been made more compact and it is now enclosed in the compressor. Furthermore, on the '01 LS430, a relief valve mechanism has been added to the exhaust valve that is provided on the compressor. As a result, the relief valve that was enclosed in the rear height control valve on the '00 LS400 has been discontinued.
- The connector of the air suspension tube has been changed from the clip-and-grommet type that is used on the '00 LS400 to the checker type quick joint. As a result, the ease of operation and service has been improved.

Service Tip

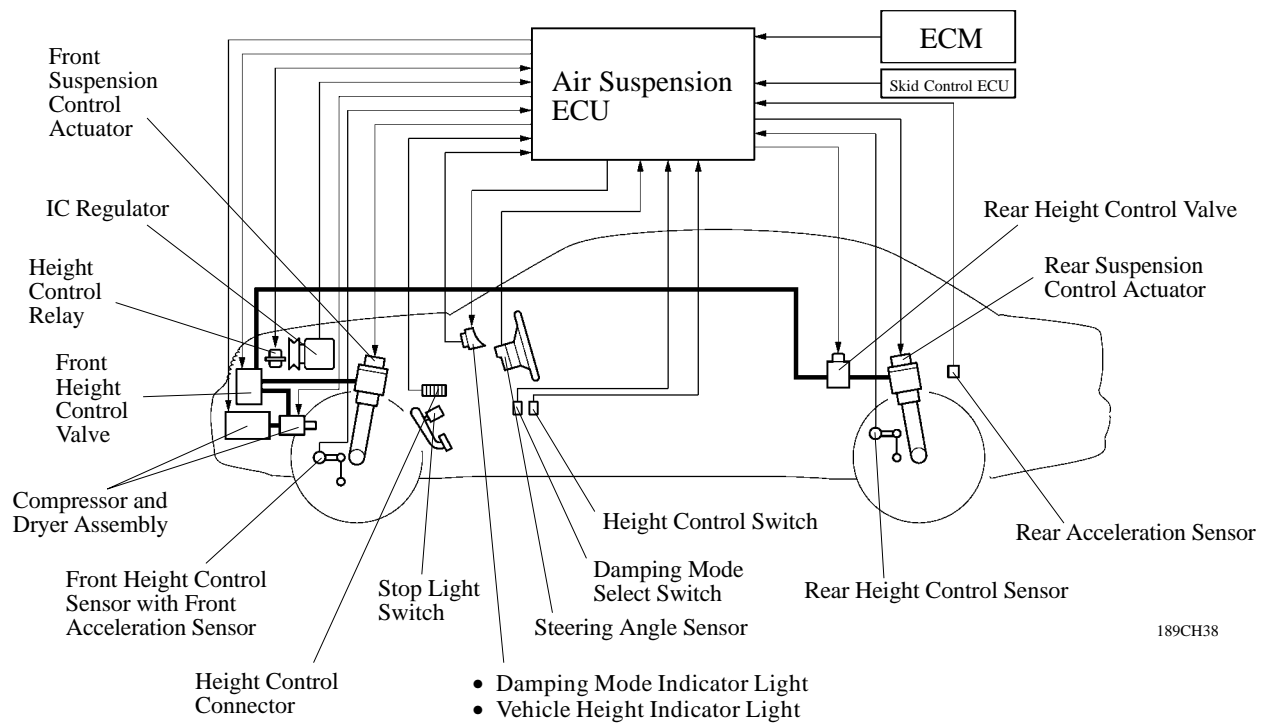
Before jacking up the vehicle or raising it on a hoist, make sure that the ignition switch is turned OFF. If the vehicle must be raised with its engine running, jump terminals OPB and SIL of the DLC3 (Data Link Connector 3) to stop the vehicle height control operation of the air suspension ECU.

Layout of Components



189CH37

System Diagram



189CH38

Wiring Diagram

