
GROUP 37

POWER STEERING

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GENERAL INFORMATION

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A hydraulic power steering system has been adopted to all models.

FEATURES

- An elastic mounting structure for the steering gear has improved steering stability significantly.
- The hydraulic characteristics and the friction characteristics of the steering gear have been optimised to improve steering ability and to reduce shimmy sensitivity.
- The oil pump is of a non-return control valve, and improves steering feeling.
- The pressure hoses are of a high-expansion ratio type and reduce vibration and noise.
- The oil pressure sensor allows the system to perform idle-up control linearly and without delay as the power steering fluid pressure deviates.
- A class-top minimum steering radius (5.5 m) has been established due to larger wheel steering angle. <Except vehicles with 17-inch wheels* (For reference, the steering radius is 5.8 m.) >

*NOTE: *: 17-inch wheels have been adopted in the vehicles for Hong Kong, Singapore, Australia and New Zealand (option).*

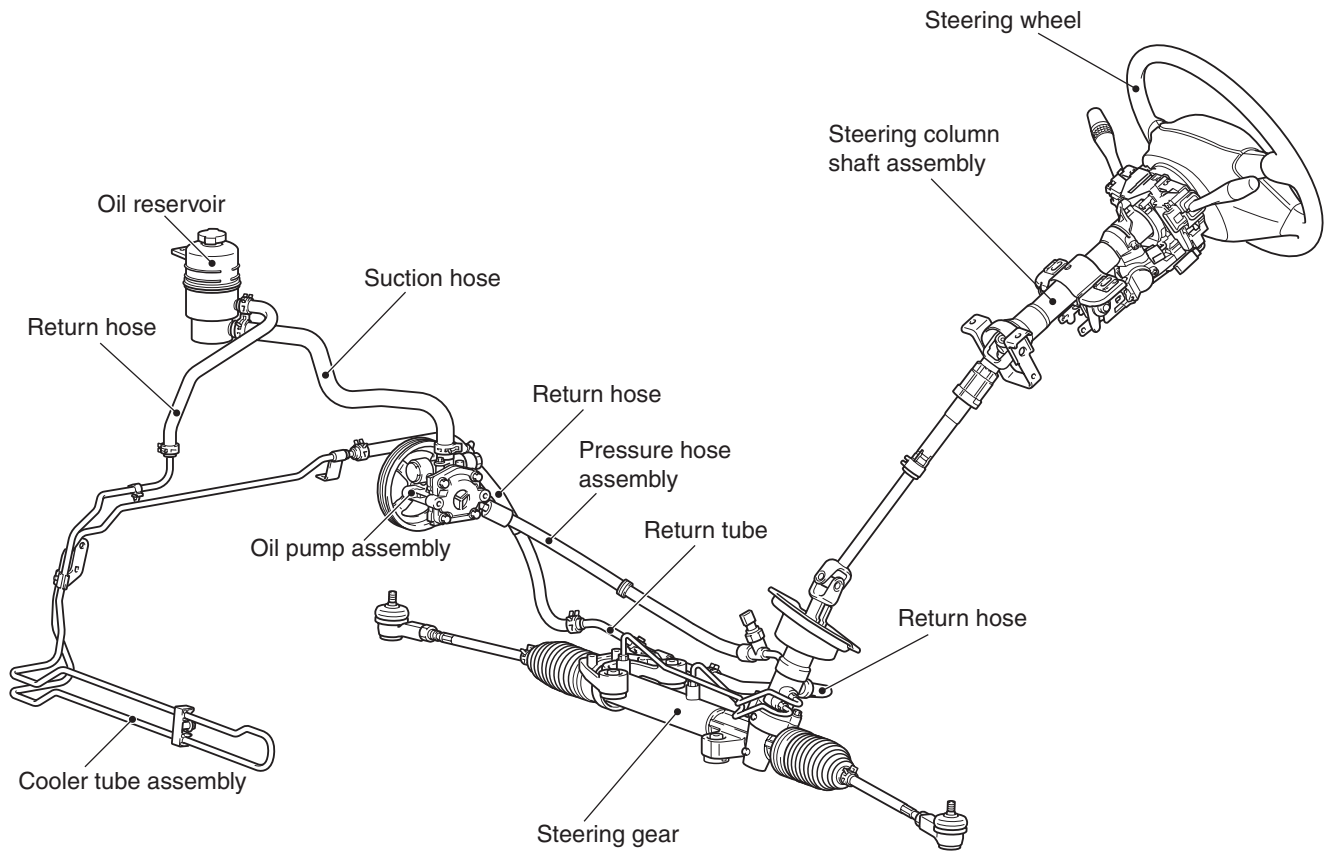
SPECIFICATIONS

Item		Vehicles with 16-inch wheels	Vehicles with 17-inch wheels *
Steering wheel	Type	4-spoke type	
	Outside diameter mm	380	
	Maximum number of turns	3.3 <LH drive vehicles> 3.4 <RH drive vehicles>	3.2
Steering column	Column mechanism	Shock absorbing mechanism and tilt steering mechanism	
Power steering type		Integral type	
Oil pump	Type	Vane pump	
	Basic delivery rate cm ³ /rev.	9.6	
	Relief pressure MPa	9.8	
	Reservoir type	Separate type (plastic)	
	Pressure switch	Equipped	
Steering gear	Type	Rack and pinion	
	Stroke ratio (Rack stroke/Steering wheel maximum turning radius)	44.1 <RH drive vehicles> 45.74 <LH drive vehicles>	
	Rack stroke mm	152	144
Steering angle	Inner wheel	39°	36°
	Outer wheel	32°	30°
Power steering fluid	Specified lubricants	ATF DEXRON III or DEXRON II	
	Quantity L	Approximately 1.0	

*NOTE: *: 17-inch wheels have been adopted in the vehicles for Hong Kong, Singapore, Australia and New Zealand (option).*

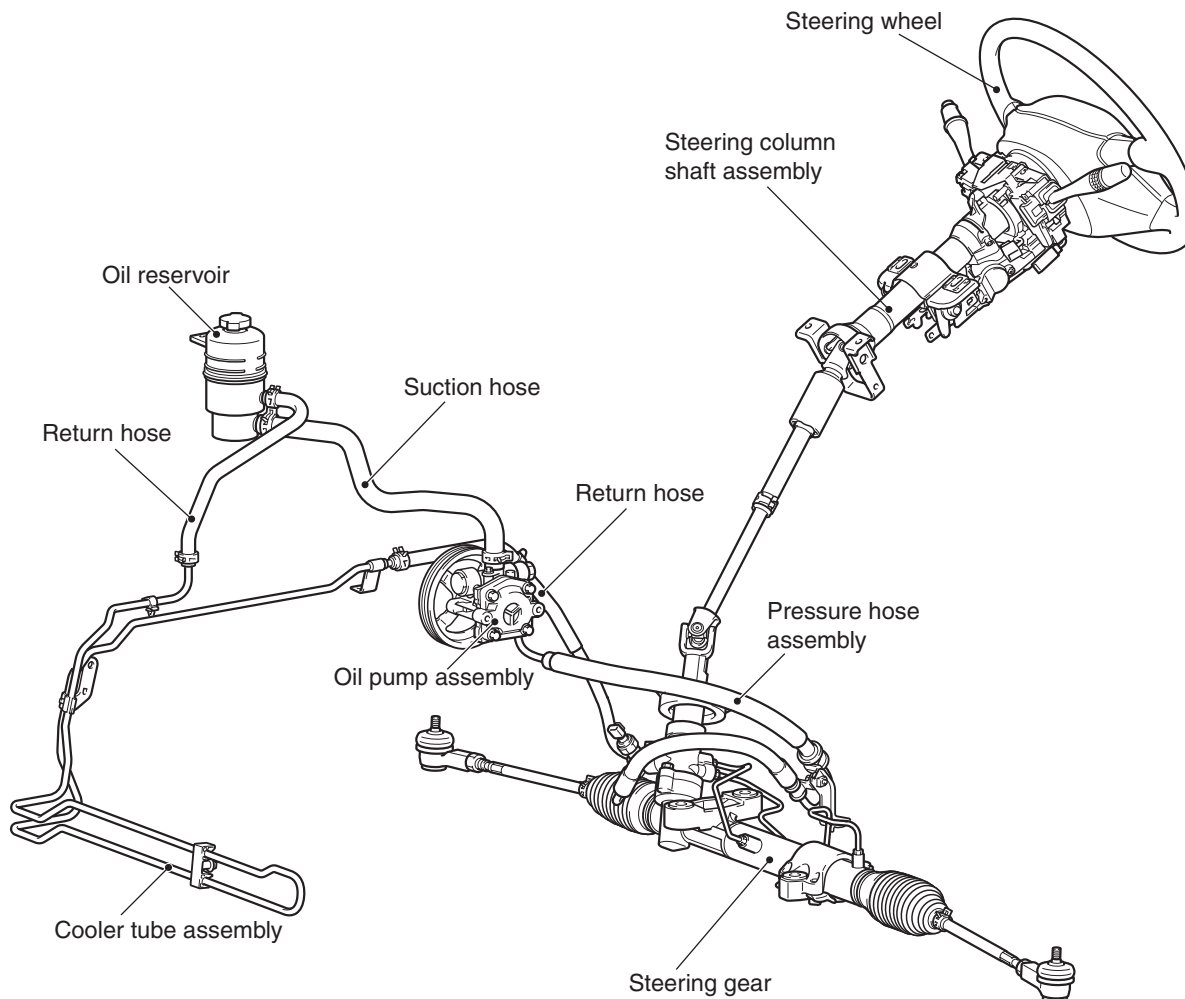
CONSTRUCTION DIAGRAM

LH drive vehicles



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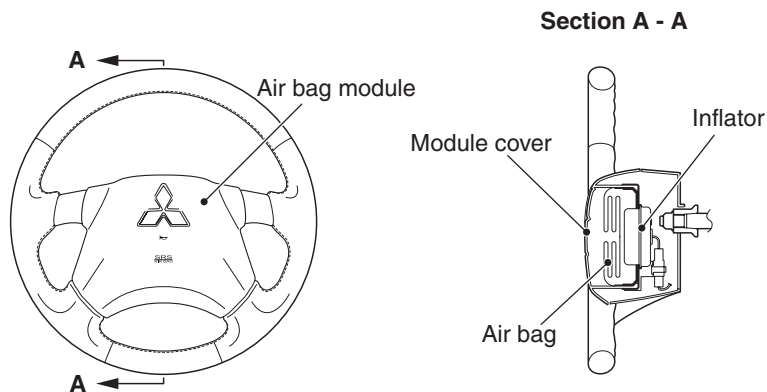
RH drive vehicles



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STEERING WHEEL

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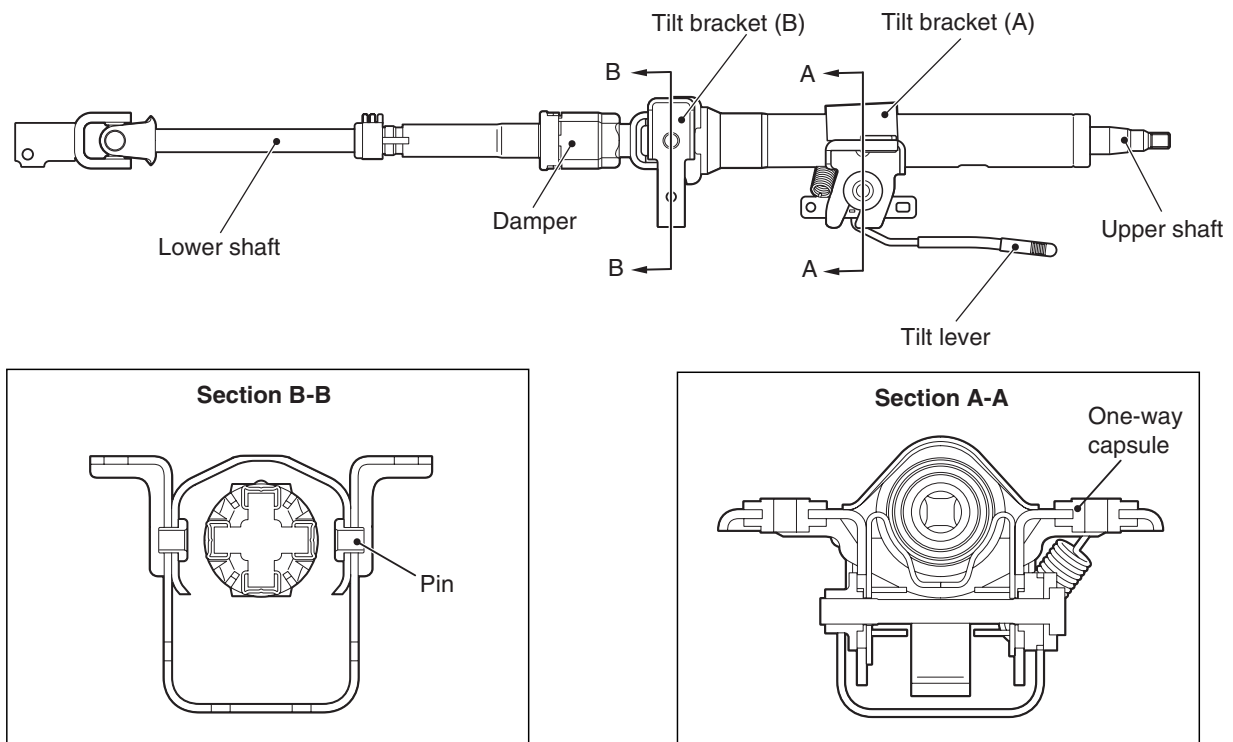
The steering wheel is designed to improve operability, safety and maintainability and has the following features:

- It has four spokes with a new design and comes in three types: urethane, genuine leather, or genuine leather and wood. The steering wheel with genuine leather and the steering wheel with genuine leather and wood are optionally equipped on all models.
- It incorporates an SRS air bag to protect the driver in the event of a frontal collision. The air bag module is equipped with an inflator that does not contain sodium azide.
- For vehicles for Hong Kong, Singapore, Australia and New Zealand, the SRS air bag is of a dual-stage type. The air bag will be deployed in two stages (low output and high output) according to impact severity and the driver's seat position, thus improving restraint performance.
- Apply pad floating type to horn switch system. In addition, realize more excellent operation feeling by tuning pad operating sound at operation.

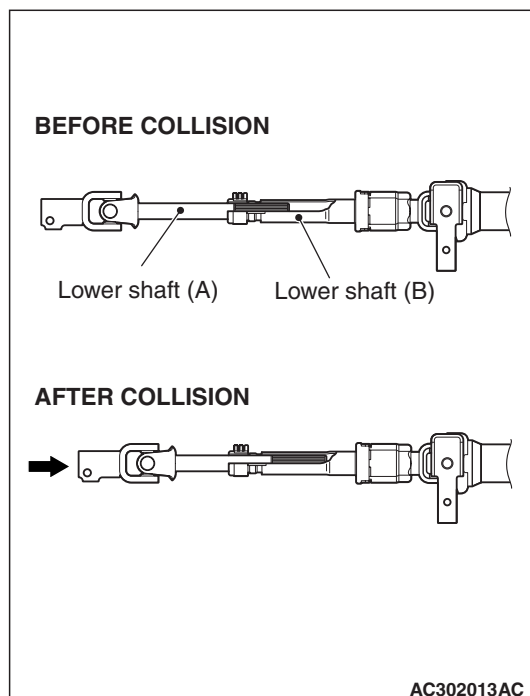
STEERING SHAFT AND COLUMN

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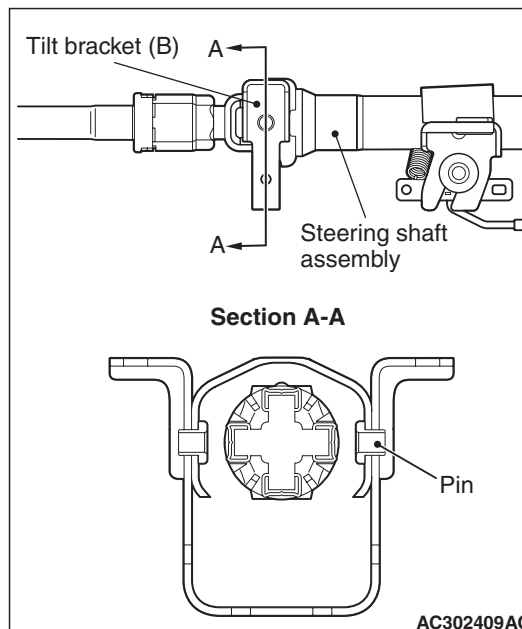
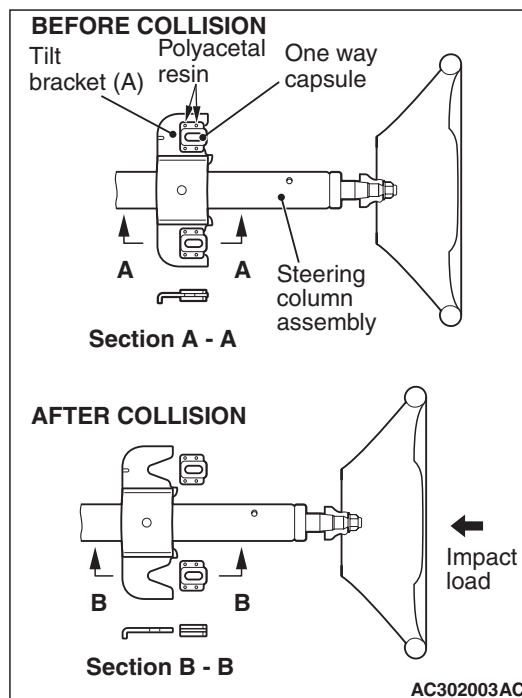
The steering wheel tilt mechanism has been adopted to all vehicles. This mechanism allows the driver to sit in his/her preferred driving position (tilt up: 20 mm, tilt down: 20 mm). For the steering column, shock absorbing mechanism has been adopted to absorb impact and protect the driver in the event of a collision. Moreover, a damper has been used to reduce vibration such as shimmy.



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**SHOCK ABSORBING MECHANISM
PRIMARY IMPACT**

If the vehicle is involved in crash and impact energy is transmitted to the lower shaft, lower shaft (A) will be pushed into lower shaft (B) to absorb impact energy. Thus, the steering column will not be projected into the passenger compartment to reduce possible chest injuries.

SECONDARY IMPACT

When the driver's body falls against the steering wheel via the deployed air bag, tilt bracket (A) moves forwards by crushing the plastic pin of the one-way capsule, and simultaneously the steering column assembly frees from the pin of tilt bracket (B) to move forwards.

OIL PUMP

The oil pump is of a vane type with fluid flow rate control mechanism, which adjusts the steering force according to engine speed. The oil pump is of a

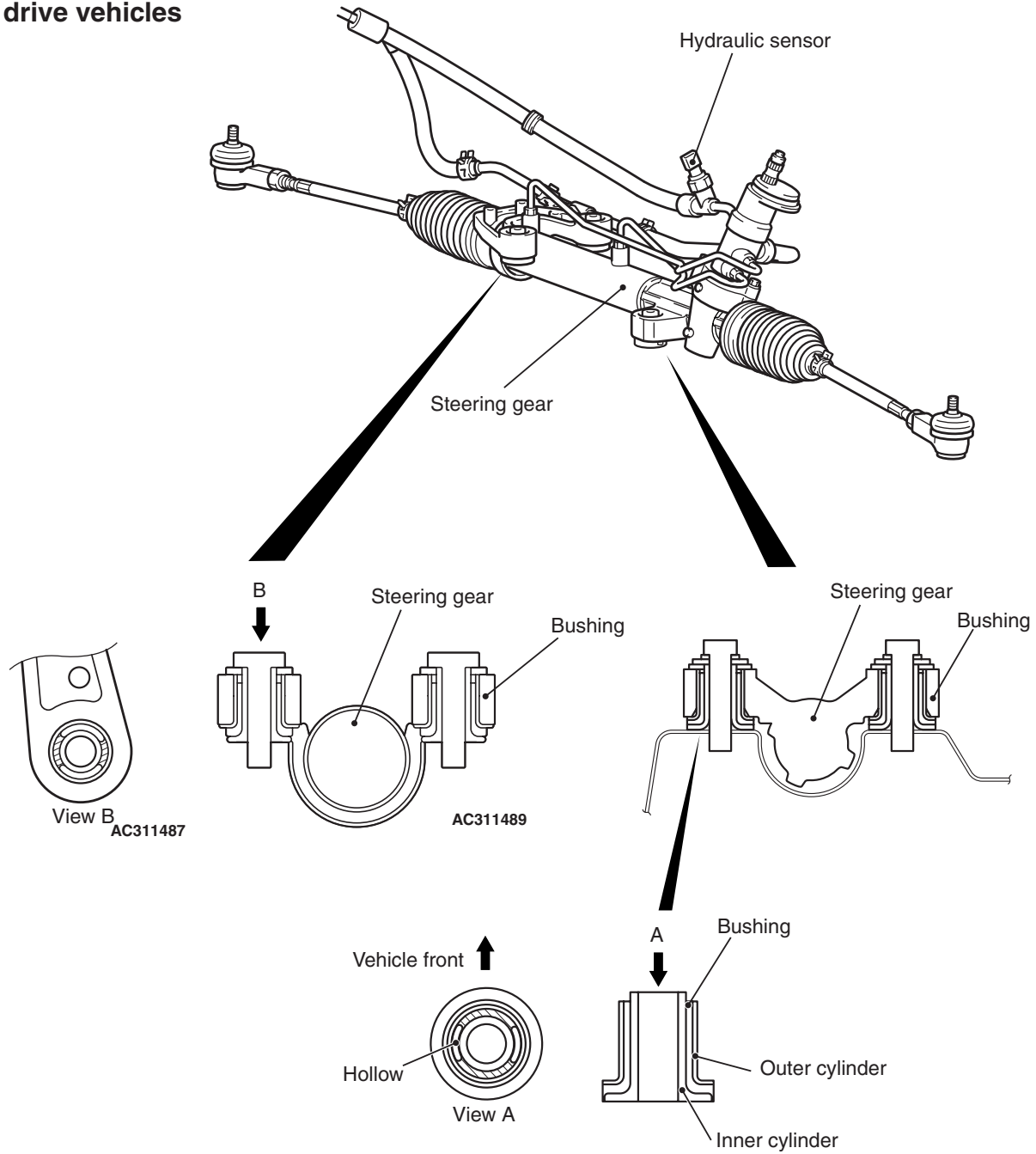
non-return control valve, and improves steering feeling.

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STEERING GEAR

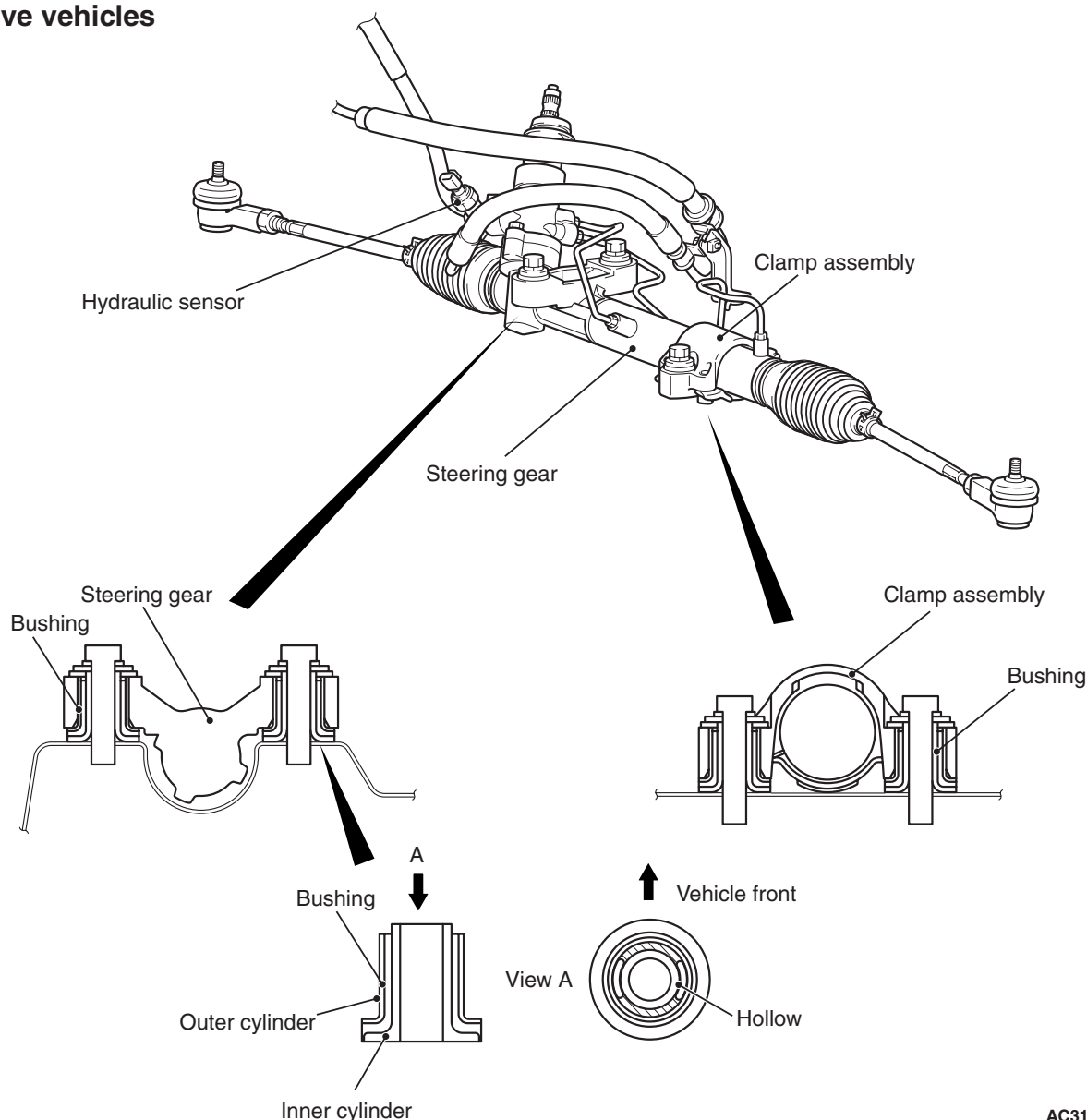
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LH drive vehicles



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RH drive vehicles



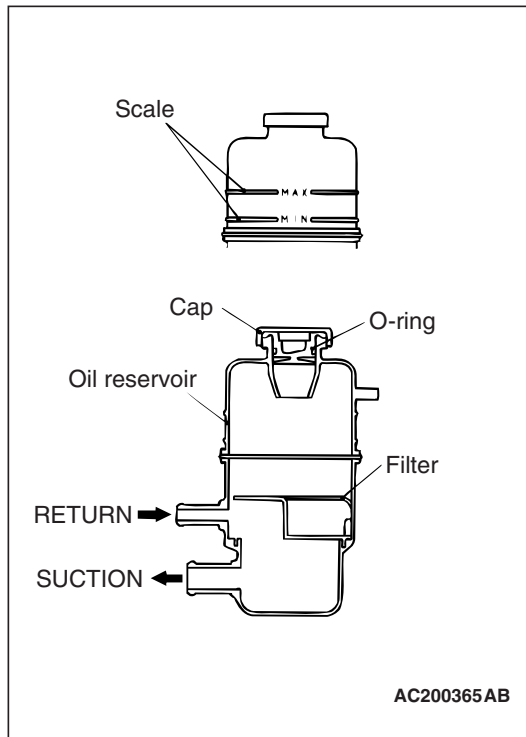
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- The steering gear and linkage is mounted on the suspension crossmember via four bushings with inner and outer cylinders.
- The bushings with inner and outer cylinders support the steering gear and linkage with secure rigidity vertically and longitudinally. Meanwhile, hollow portions are provided laterally in the bushings to maintain adequate elasticity and to improve steering feeling significantly.
- The oil pressure sensor allows the system to perform idle-up control linearly and without delay as the power steering fluid pressure deviates. The hydraulic sensor detects the power steering fluid pressure and informs the engine-ECU of it. The engine-ECU uses this signal to perform idle-up control according to the power steering load. The method offers the following advantages.
 - Improvement of fuel efficiency: The engine idle speed does not drop much when turned the steering wheel to lock. Because of this, the curb idle speed can be reduced.
 - Improvement of driveability: Excessive engine racing is inhibited when turned the steering wheel at low speed.

OIL RESERVOIR

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The reservoir tank is of a plastic type to reduce weight. The tank is translucent and has fluid level marks (MAX and MIN lines), thus facilitating inspection.



NOTES