

## GROUP 37

# POWER STEERING

## CONTENTS

|                                |      |
|--------------------------------|------|
| GENERAL INFORMATION.....       | 37-2 |
| STEERING WHEEL.....            | 37-3 |
| STEERING SHAFT AND COLUMN..... | 37-4 |
| OIL PUMP.....                  | 37-6 |
| STEERING GEAR.....             | 37-7 |
| OIL RESERVOIR.....             | 37-8 |

## GENERAL INFORMATION

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## FEATURES

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

This steering system offers the following features:

- The support method of the steering gear to the crossmember is realized by the left and right internal bushings with inner cylinders. This support method achieves higher rigidity of the steering gear and improves the steering feeling.
- Configuring the optimum flow characteristics and gear valve feature improves the handling stability.
- Appropriate application of friction to the steering gear cuts off the disturbance from the road surface

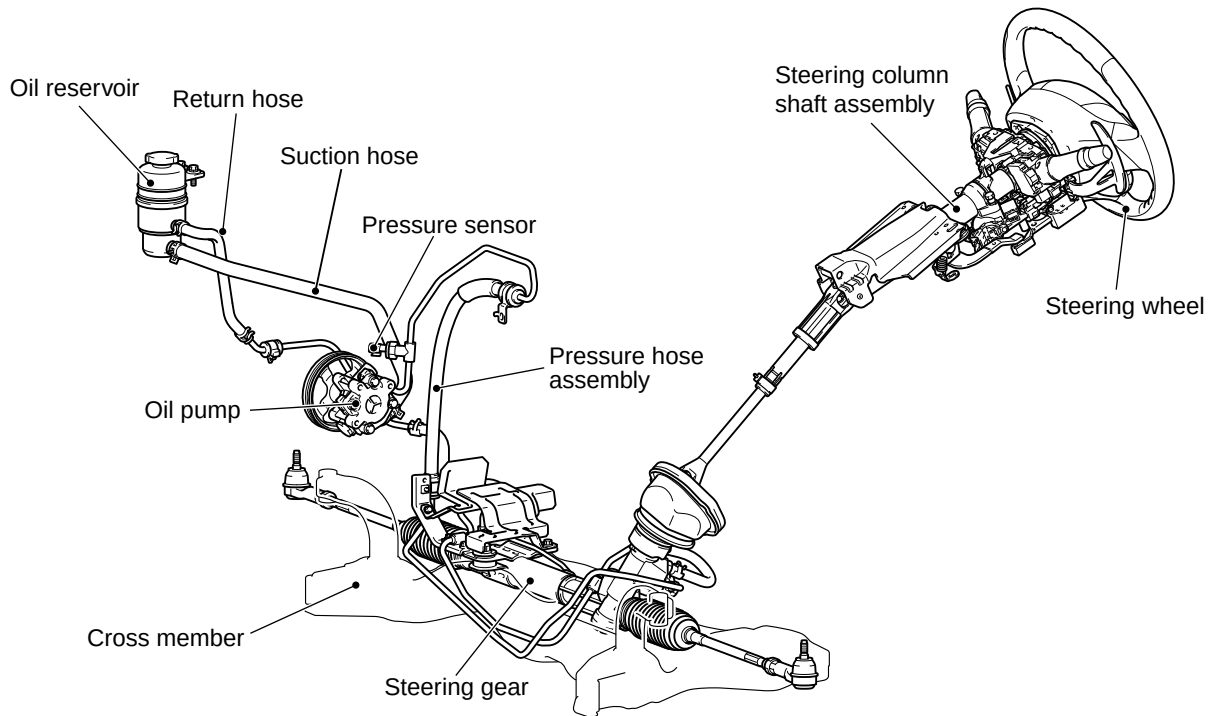
and improves the stability during the straight-ahead driving.

- One-way check valve for the power steering fluid has been added in the steering gear. By reducing the kickback due to the disturbance from the uneven road surface, the handling stability has been improved.
- As the pressure sensor for increasing the engine idling speed during power steering operation, the sensor which can precisely detect the pressure in the power steering system.
- Optimization of the flexible tube in the high pressure hose reduces the pump noise.

## SPECIFICATIONS

| Items                |                                                                                  | Specifications                                        |
|----------------------|----------------------------------------------------------------------------------|-------------------------------------------------------|
| Steering wheel       | Type                                                                             | Three-spoke type                                      |
|                      | Outside diameter mm (in)                                                         | 380 (14.9)                                            |
|                      | Maximum number of turns                                                          | 3.1                                                   |
| Steering column      | Column mechanism                                                                 | Shock absorbing mechanism and Tilt steering mechanism |
| Power steering type  |                                                                                  | Integral type (Engine speed-dependent type)           |
| Oil pump             | Type                                                                             | Vane type with fluid flow amount control system       |
|                      | Basic discharge amount cm <sup>3</sup> /rev. (cu in/rev)                         | 8.1 (0.49)                                            |
|                      | Relief pressure MPa (psi)                                                        | 8.8 (1,276)                                           |
|                      | Reservoir type                                                                   | Separate type (Resin made)                            |
|                      | Pressure sensor                                                                  | Equipped                                              |
| Steering gear        | Type                                                                             | Rack and pinion type                                  |
|                      | Stroke ratio (Rack stroke/Steering wheel Maximum turning radius) mm/rev (in/rev) | 45.6 (1.8)                                            |
|                      | Rack stroke mm (in)                                                              | 144 (5.7)                                             |
| Steering angle       | Inner wheel                                                                      | 39°                                                   |
|                      | Outer wheel                                                                      | 32°                                                   |
| Power steering fluid | Specified lubricants                                                             | GENUINE MITSUBISHI POWER STEERING FLUID               |
|                      | Quantity dm <sup>3</sup> (qt)                                                    | Approximately 1.0 (1.06)                              |

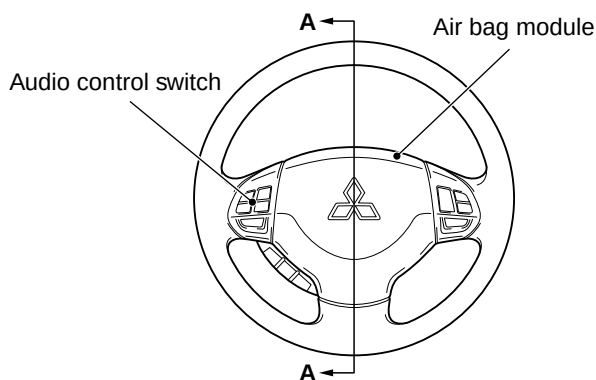
## CONSTRUCTION DIAGRAM



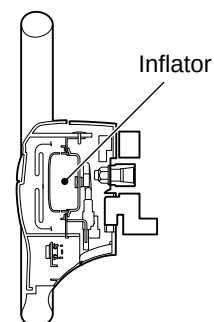
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## STEERING WHEEL

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### Section A - A



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

- Newly designed three-spoke type has been adopted. For LS models, the steering wheel is made of urethane. For XLS models, the steering wheel is made of genuine leather.
- Remote steering wheel audio control switches are available on same models.

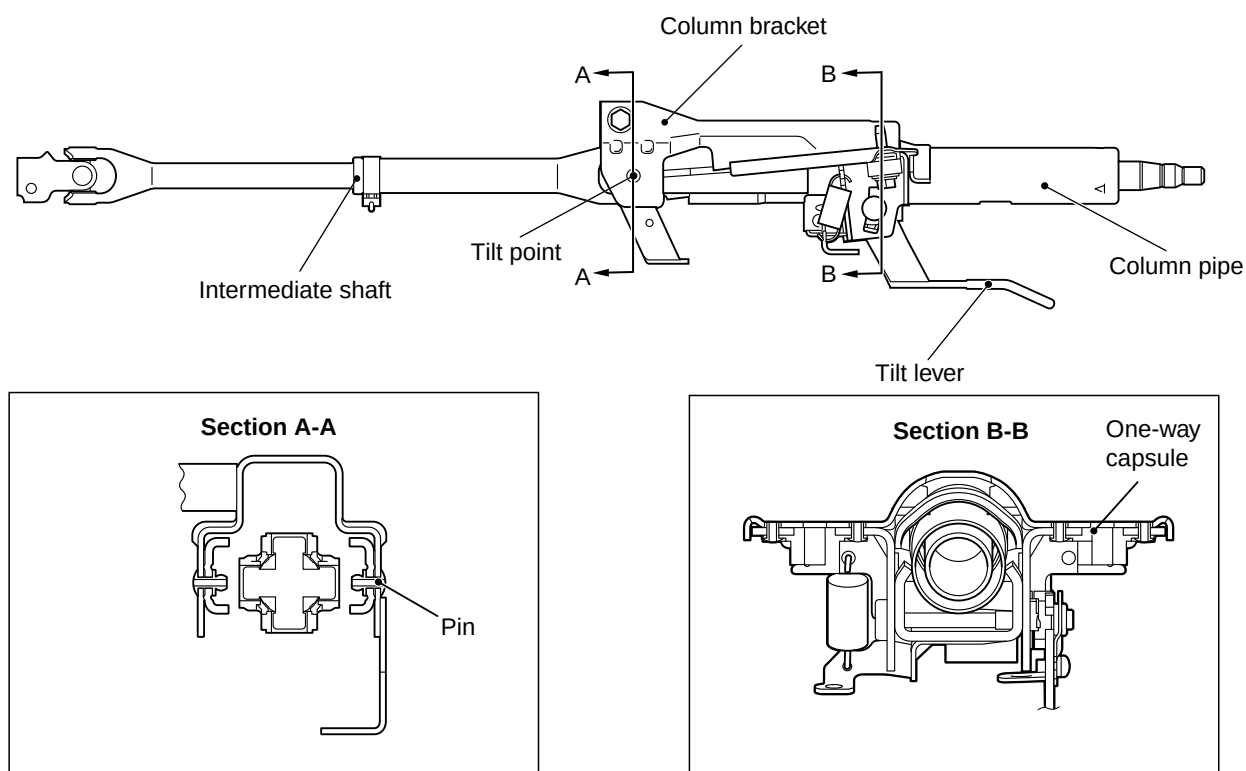
- Sporty and thick type grip shape has been adopted.
- Rigid core metal reduces the steering wheel vibration.
- It incorporates an SRS airbag to protect the driver in the event of a frontal collision.
- The airbag module is equipped with an inflator that does not contain sodium azide.
- Optimization of the airbag specifications reduces the risk of injury to the passengers in a collision.

## STEERING SHAFT AND COLUMN

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

- To improve the feeling of steering (reduction of torque fluctuation) covering the whole tilting range, the steering column layout has been optimized by focusing the tilting function.
- Tilt steering mechanism has been employed on all models (Tilt-up amount: 20mm/Tilt-down amount: 25mm).
- Collapsible steering column has been employed. During a collision, the steering wheel moves forward.
- To reduce the separation load during a collision, the sliding resistance reduction member has been installed to the column bracket.

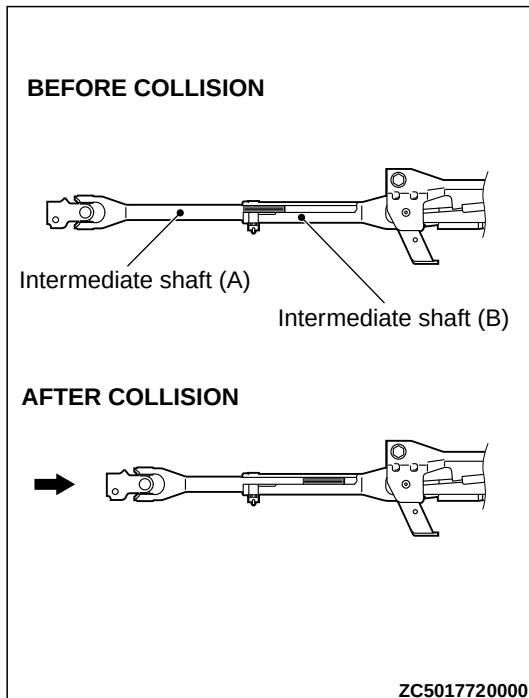


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## IMPACT-ABSORBING MECHANISM

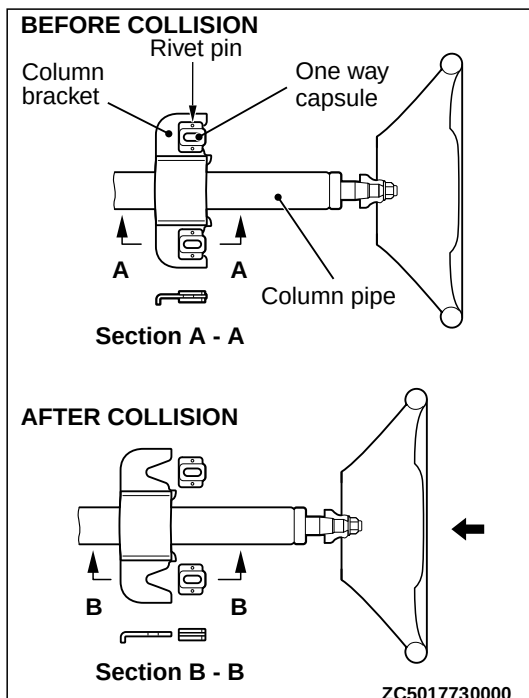
### Primary collision

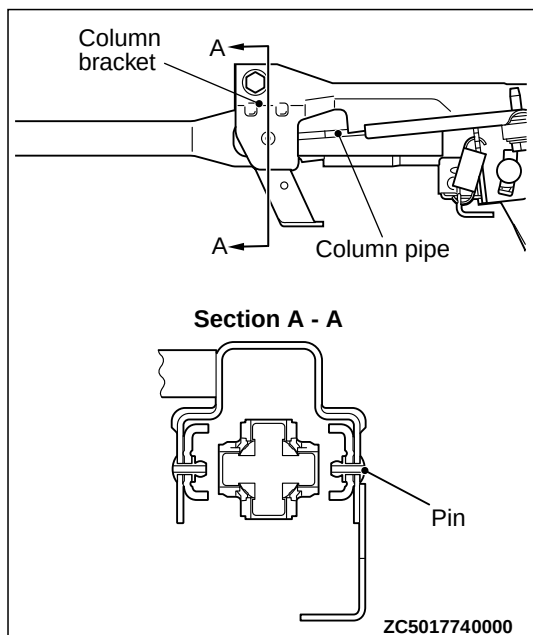
If the vehicle is involved in a crash and impact energy is transmitted to the lower shaft from the gearbox side, the intermediate shaft (A) will be pushed into intermediate shaft (B) to absorb impact energy. Thus, the steering column will not be projected into the passenger compartment.



### Secondary collision

When the driver's body falls against the steering wheel via the deployed air bag, the column bracket moves forward by deforming the rivet pin of the one-way capsule, and simultaneously the steering column assembly frees from the pin of column bracket to move forward and downward.





## OIL PUMP

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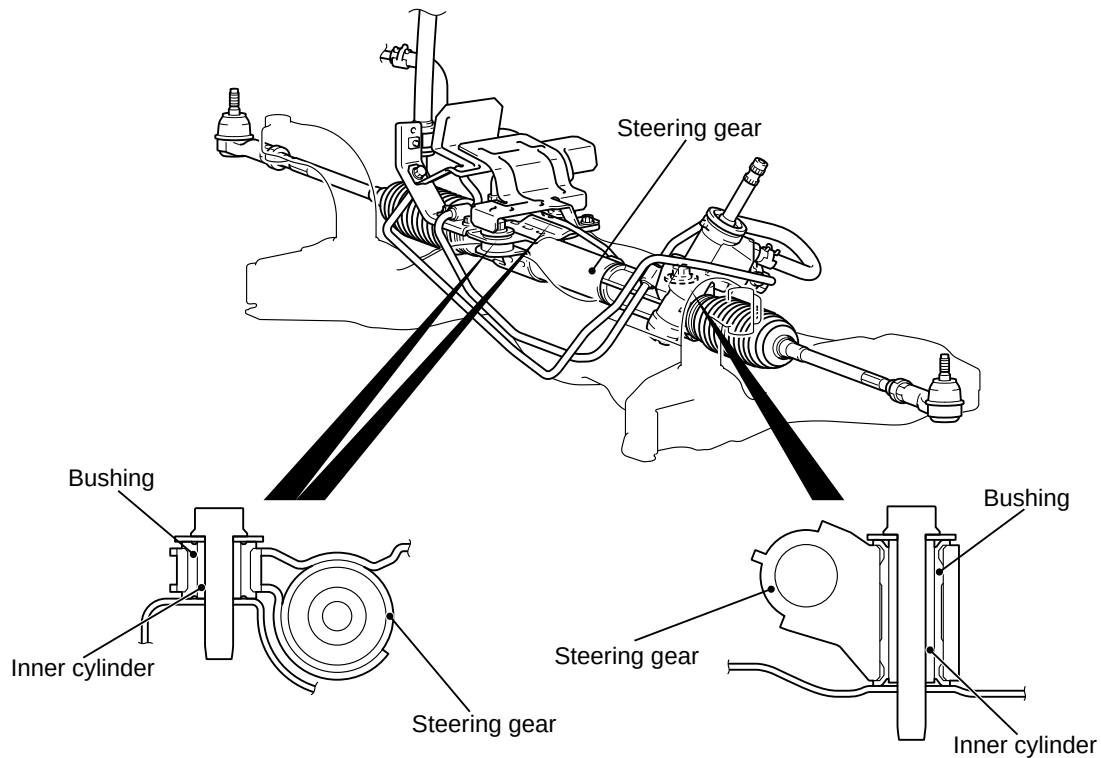
The oil pump is a vane type with a fluid flow control system in which the steering wheel turning effort will

be reduced at low engine speeds and is increased at higher speeds.

The oil pump is essentially the same as the conventional one in construction.

## STEERING GEAR

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- The steering gear and linkage is mounted on the suspension crossmember via three bushings with inner cylinders. The inner bushing with inner cylinder supports the steering gear and linkage in the vertical and fore-and-aft direction with high rigidity, and improves the steering feel.
- 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 sends the signal to the engine control module. The engine control module uses this signal to perform idle-up control according to the power steering load. The method offers the following features:

- Improvement of fuel efficiency: Minimal drop in engine idle speed when the steering wheel is turned to lock.
- Improvement of driveability: Excessive engine revving is inhibited when the steering wheel is turned at low speeds.

**OIL RESERVOIR**

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The resin oil reservoir is adopted to reduce weight. The oil reservoir is translucent and has fluid level marks (MAX and MIN lines), for ease of inspection.

