

## SUSPENSION

A McPherson strut-type suspension has been used at the front, and a trailing arm type multi-link suspension has been used at the rear.

### FEATURES

#### High Steering Stability

1. Suspension geometry optimized by linearisation of toe change, etc.
2. Wider tread
3. Lower front roll centre
4. Stroke at extending side of suspension increased
5. Rigidity improved by flat design of crossmember
6. Damping forces of front struts and rear shock absorbers as well as their coil springs' characteristics optimized

#### Enhanced Riding Comfort

1. Stroke at extending side of suspension increased
2. Damping forces of front struts and rear shock absorbers as well as their coil springs' characteristics optimized
3. Spring characteristics of bump rubber optimized
4. Characteristics of suspension bushings optimized

#### Reduced road noise

1. Optimized suspension bushings
2. The adoption of input separation type strut insulator as the front strut

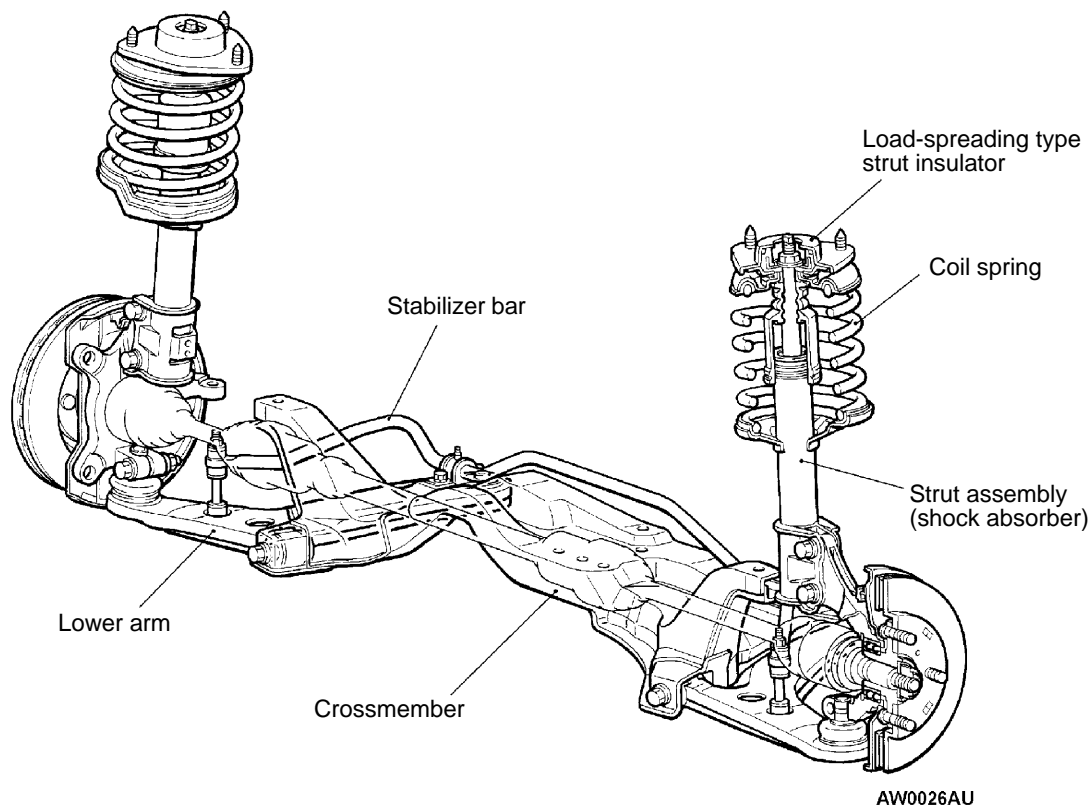
## FRONT SUSPENSION

### FEATURES

A McPherson strut independent suspension-type suspension has been adopted as the front suspension. This suspension is basically the same as that of the 2000 model year LANCER except for the followings:

- Individual geometries such as tread expansion, linearisation of toe change optimized for improvement of driving stability and ride feeling
- Roll centre height lowered for improvement of driving stability and ride feeling
- Suspension installation strength by flat design of crossmember reinforced for improvement of driving stability and straight stability. In addition, crossmember brace installed at lower arm mounting section for reduction of vibration and road noise.
- Stroke at suspension extending side increased for improvement of ride feeling and grounding property
- Suspension bushings optimized for improvement of ride feeling and road noise
- The input separation type strut insulator adopted as strut for reduction of road noise. In addition, damping force and spring constant of coil spring optimized for improvement driving stability and ride feeling.

## CONSTRUCTION DIAGRAM



## SPECIFICATIONS SUSPENSION SYSTEM

Item	Specification
Suspension method	McPherson strut with coil springs

## WHEEL ALIGNMENT

Items		2001MY		2000MY
		Standard suspension	High-ground suspension	
Camber		0°00'	0°10'	0°00'
Caster		2°50'	2°40'	2°51'
Kingpin inclination		12°35'	12°20'	12°52'
Toe-in	At the centre of tyre tread mm	1	1	0
	Toe-angle (per wheel)	0°03'	0°03'	0°00'
Toe-out angle on turns (inner wheel when outer wheel at 20°)		21°42'	21°36'	21°48'

## COIL SPRING

### <L.H. drive vehicles>

Item	2001MY		2000MY	
	M/T, A/T <Vehicles except for GCC>	CVT, A/T <Vehicles for GCC>	Carburettor	MPI
Wire diameter × average diameter × free length mm	12 × 138 × 335	12 × 138 × 344	12 × 138 × 340	12 × 138 × 350

### <R.H. drive vehicles except for Hong Kong and Singapore>

Item	2001MY		2000MY	
	Carburettor, 1300MPI, 1600MPI <M/T>	CVT	Carburettor, 1300MPI	1600MPI
Wire diameter × average diameter × free length mm	12 × 138 × 335	12 × 138 × 344	12 × 138 × 340	12 × 138 × 350

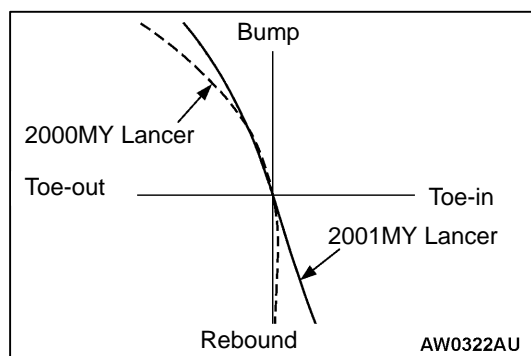
### <Vehicles for Hong Kong and Singapore>

Item	2001MY		2000MY		
	1600MPI*1, 1500GDI	1800GDI	1300MPI	1500MPI	1600MIVEC
Wire diameter × average diameter × free length mm	12 × 138 × 344	12 × 138 × 353 14 × 160 × 363*2	12 × 138 × 340	12 × 138 × 350	13 × 160 × 333

#### NOTE

\*1: Vehicles for Singapore

\*2: Vehicles with front stabilizer bar



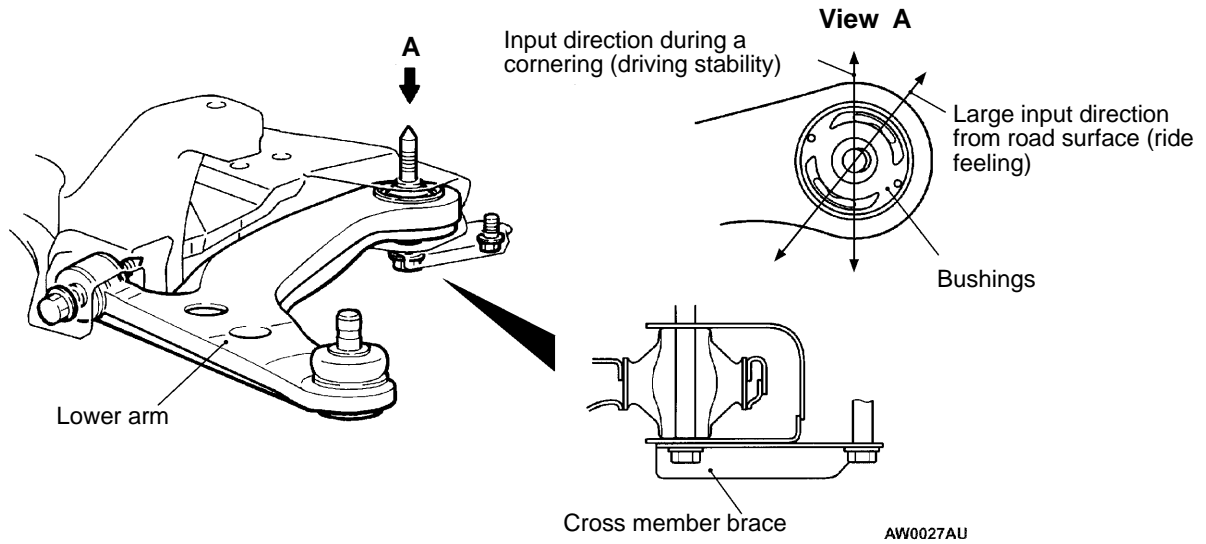
## LINEARISATION OF TOE CHANGE

Toe change from bump and rebound is linearized for improvement of driving stability and ride feeling.

## LOWER ARM

Enlarging the size of mounting bolts at the front and rear sides of crossmember mounting section on lower arm has increased reliability. In addition, bushings with soft spring characteristic at the rear side for the large input direction from road surface and with hard spring characteristics for the input direction during a

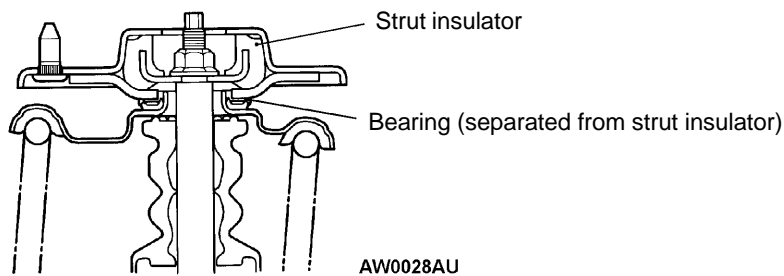
cornering are used to achieve both driving stability and ride feeling. Lowered ball joint friction torque has been established to enhance driving stability and ride feeling. Crossmember brace installed at lower arm mounting section on crossmember has reduced road noise.



## STRUT INSULATOR

The input separation type of strut insulator has been adopted to reduce road noise. This insulator has a structure to transfer coil spring

input through bearing to strut mounting section, and transfer shock absorber input through strut insulator to strut mounting section.



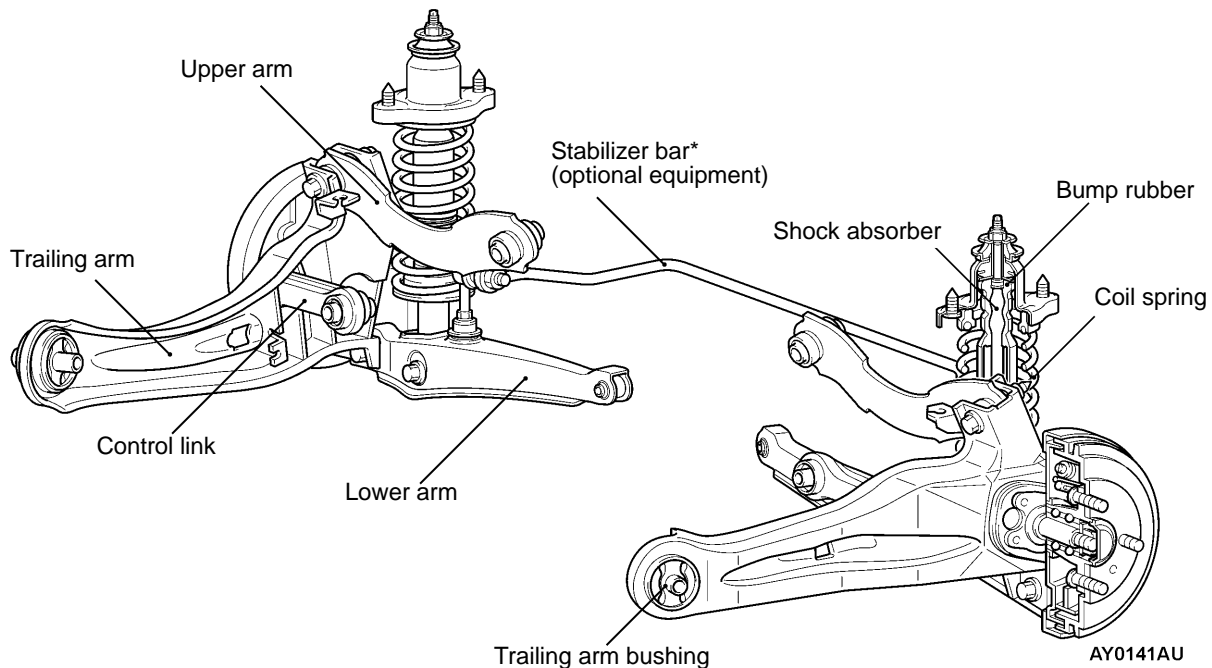
## REAR SUSPENSION

### FEATURES

A trailing arm type multi-link suspension has been adopted as the rear suspension. This suspension is basically the same as that of the 2000 model year LANCER except for the followings:

- Individual geometries such as tread expansion, linearisation of toe change optimized for improvement of driving stability and ride feeling
- Outside diameter of trailing arm bushing increased (70 mm to 81 mm) to reduce road noise
- Spring and shock absorber stored in wheel house to secure large interior space
- Damping force of shock absorber and spring constant of coil spring optimized for improvement of driving stability and ride feeling
- Stroke at suspension extending side increased for improvement of ride feeling and road stability.
- Suspension bushings optimized for improvement of ride feeling and road noise
- Spring characteristics of bump rubber optimized for improvement of driving stability and ride feeling

### CONSTRUCTION DIAGRAM



#### NOTE

\*: Vehicles for Hong Kong and Singapore (1800)

## SPECIFICATIONS SUSPENSION SYSTEM

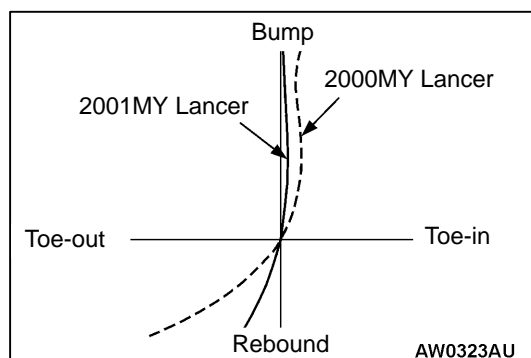
Item	Specification
Suspension method	Trailing arm type multi-link

## WHEEL ALIGNMENT

Items		2001MY	2000MY
Camber		-0°40'	-0°40'
Toe-in	At the centre of tyre tread mm	3	3
	Toe-angle (per wheel)	0°09'	1°00'

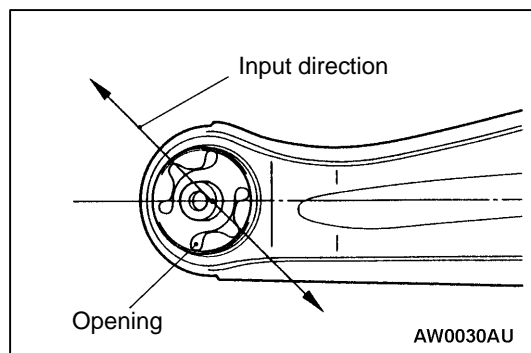
## COIL SPRING

Item	2001MY	2000MY	
		Vehicles for Hong Kong (1600MIVEC)	Other models
Wire diameter × average diameter × free length mm	10 × 90 × 360	9 × 86 × 379	9 × 86 × 369



## LINEARISATION OF TOE CHANGE

Toe change from bump and rebound is linearized for improvement of driving stability and ride feeling.



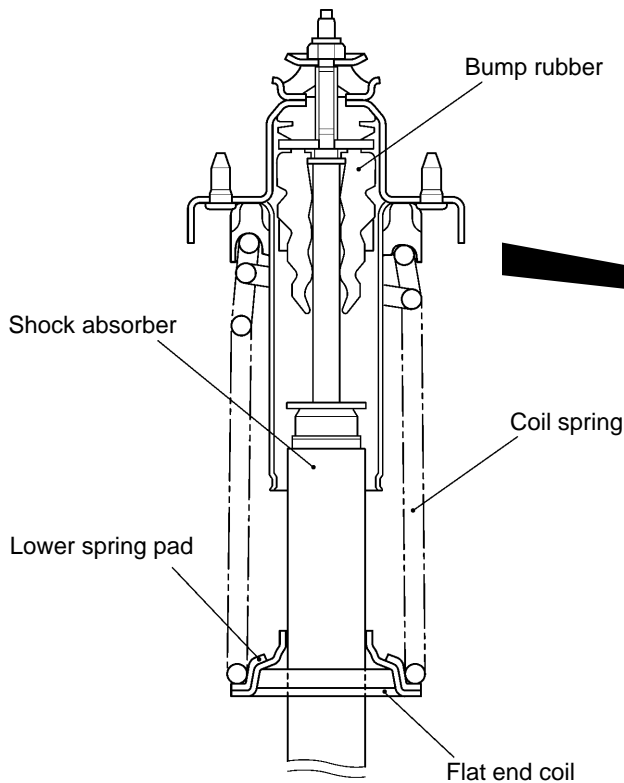
## TRAILING ARM

Trailing arm bushing is installed with opening shape optimized and opening direction matched in the direction of road surface vibration input to improve ride feeling and reduce road noise without driving stability affected.

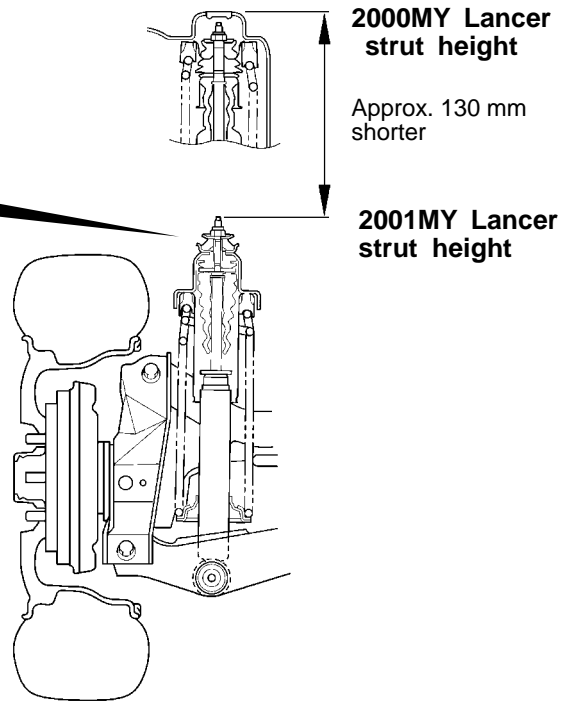
### SPRING AND SHOCK ABSORBER

Compared with 2000 model year Lancer, shorter shock absorber allows storage in wheel house for large interior space.  
Flat design of spring lower end coil prevents occurrence of line noise.

On bump rubber, high-energy absorption urethane foam is used for improvement of ride feeling by smooth spring characteristics.  
Addition of lower spring pad to coil spring lower end coil reduces vibration and noise, etc.



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## WHEEL AND TYRE

The wheels and tyres of the following specifications have been established.

### SPECIFICATIONS

#### <1300>

Items		2001MY			2000MY
		EL	GL	GLX	
Wheel (ground wheel and spare wheel)	Type	Steel type	Steel type Steel or aluminium type*	Steel type Aluminium type*	Steel type or Aluminium type
	Size	14 × 5 1/2JJ	14 × 5 1/2JJ	14 × 5 1/2JJ	13 × 5.00B or 13 × 5JJ
	Amount of wheel offset mm	46	46	46	46
	Pitch circle diameter (P.C.D.) mm	100	100	100	100
Tyre (ground tyre and spare tyre)	Size	165/70R14 81S	165/70R14 81S 175/70R14 84S*	175/70R14 84S	155SR13 or 175/70R13 82H

#### NOTE

\*: Optional items

#### <1600>

Items		2001MY		2000MY
		Carburettor	MPI	
Wheel (ground wheel and spare wheel)	Type	Steel type Aluminium type* <sup>1</sup>	Steel type Aluminium type* <sup>1</sup>	Steel type or Aluminium type
	Size	14 × 5 1/2JJ	14 × 5 1/2JJ	13 × 5.00B, 13 × 5JJ, 14 × 5 1/2JJ, 15 × 6JJ, 15 × 4.0T* <sup>2</sup> , or 16 × 4.0T* <sup>3</sup>
	Amount of wheel offset mm	46	46	46
	Pitch circle diameter (P.C.D.) mm	100	100	100
Tyre (ground tyre and spare tyre)	Size	175/70R14 84S 185/65R14 86S* <sup>1</sup>	185/65R14 86S	175/70R13 82H, 185/65R14 86H, 195/55R15 84V, T125/70D15* <sup>2</sup> (High pressure), or T125/70D16* <sup>3</sup> (High pressure)

#### NOTE

\*<sup>1</sup>: Optional items

\*<sup>2</sup>: Spare wheel/tyre for Brazil

\*<sup>3</sup>: Spare wheel/tyre for Hong Kong (1600MIVEC)



## DRIVE-CONTROL COMPONENTS – Wheel and Tyre

<1500GDI and 1800GDI (Vehicles for Hong Kong and Singapore)>

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[Group  
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Items		2001MY	
		1500GDI	1800GDI
Wheel	Type	Steel type Aluminium type*	Steel type Aluminium type*
	Size	14 × 5 1/2JJ	14 × 5 1/2JJ 15 × 6JJ*
	Amount of wheel offset mm	46	46
	Pitch circle diameter (P.C.D.) mm	100	100
Tyre	Size	175/70R14 84S 185/65R14 86S*	185/65R14 86S 195/55R15 84V*
Spare wheel	Type	Steel type	Steel type
	Size	15 × 4.0T	15 × 4.0T
	Amount of wheel offset mm	46	46
	Pitch circle diameter (P.C.D.) mm	100	100
Spare tyre	Size	T125/70D15 (High pressure)	T125/70D15 (High pressure)

NOTE

\*: Optional items

## POWER STEERING

### FEATURES

Power steering has been adopted in all vehicles to make the steering system easier to handle.

- A 2-spoke or 4-spoke steering wheel has been adopted.
- A steering column with a shock absorbing mechanism and a tilt steering mechanism has been adopted.
- Integral-type rack and pinion gear with high rigidity and excellent response has been adopted.

- A variable capacity pump has been adopted to reduce power losses and improve fuel consumption. When the engine speed increases, the pump chamber capacity is reduced proportionally so that only the necessary amount of power steering fluid is discharged.
- The separate plastic resin reservoir tank structure is adopted to reduce weight and to make the fluid level check easy.

### SPECIFICATIONS

Item			2001MY		2000MY
Steering wheel	Type		2-spoke type	4-spoke type	3-spoke type
	Outside diameter mm		370	380	
	Maximum number of turns		3.1		3.60 <sup>*1</sup> , 3.20 <sup>*2</sup> , 2.81 <sup>*3</sup>
STEERING COLUMN	Column mechanism		Tilt steering		
Power steering type			Integral type		
Oil pump	Type		Variable capacity type (vane pump)		
	Basic discharge amount cm <sup>3</sup> /rev.		7.2		
	Relief pressure MPa		9.5		
	Reservoir type		Separate type (plastic)		
	Pressure switch	Vehicles with MPI, GDI	Equipped		
Vehicles with Carburetor		Not equipped			
Steering gear and linkage	Type		Rack and pinion		
	Stroke ratio (Rack stroke/Steering wheel Maximum turning radius)		45.74		35.61 <sup>*1</sup> , 40.02 <sup>*</sup> , 45.74 <sup>*3</sup>
	Rack stroke mm		146		128
Steering angle	Inner wheel		41°		37°
	Outer wheel		33°		31°
Power steering fluid	Specified lubricants		Automatic transmission fluid DEXRON II		
	Quantity dm <sup>3</sup>		Approximately 0.6		

NOTE:

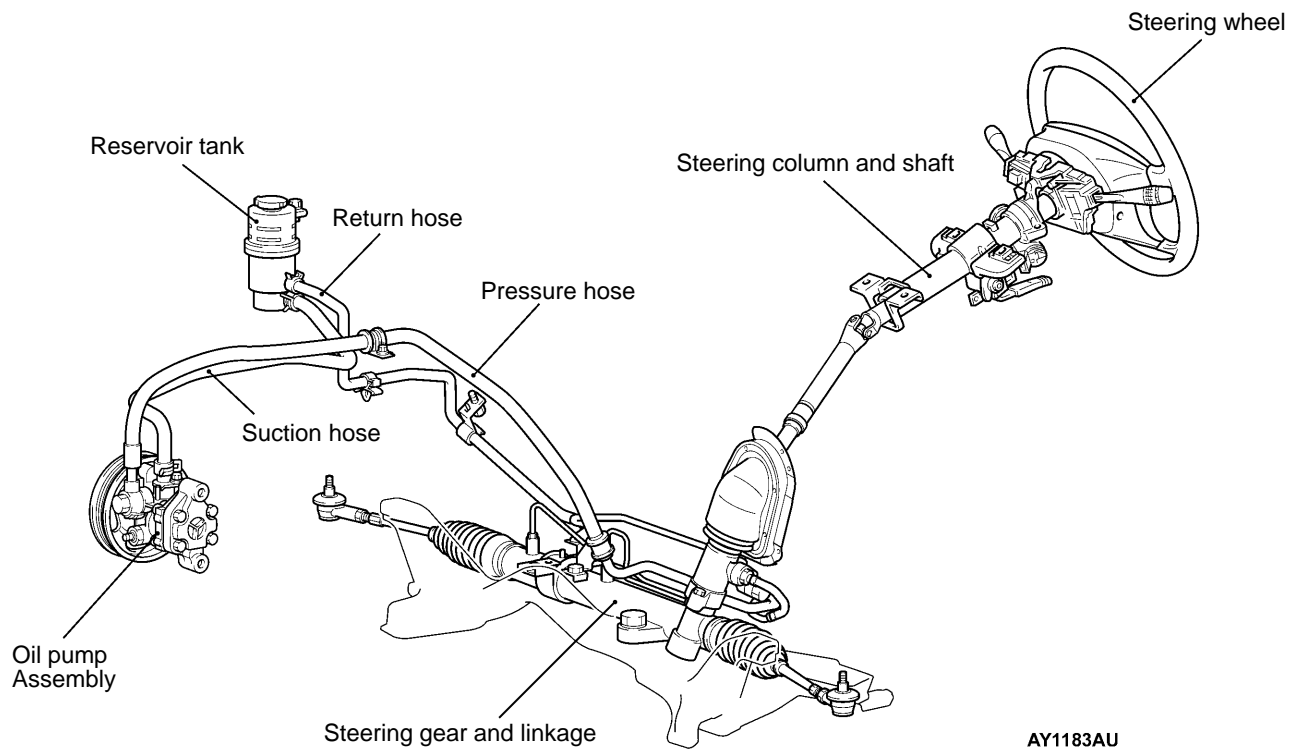
\*1: 4G13, 4G15

\*2: 4G92-L.H.D

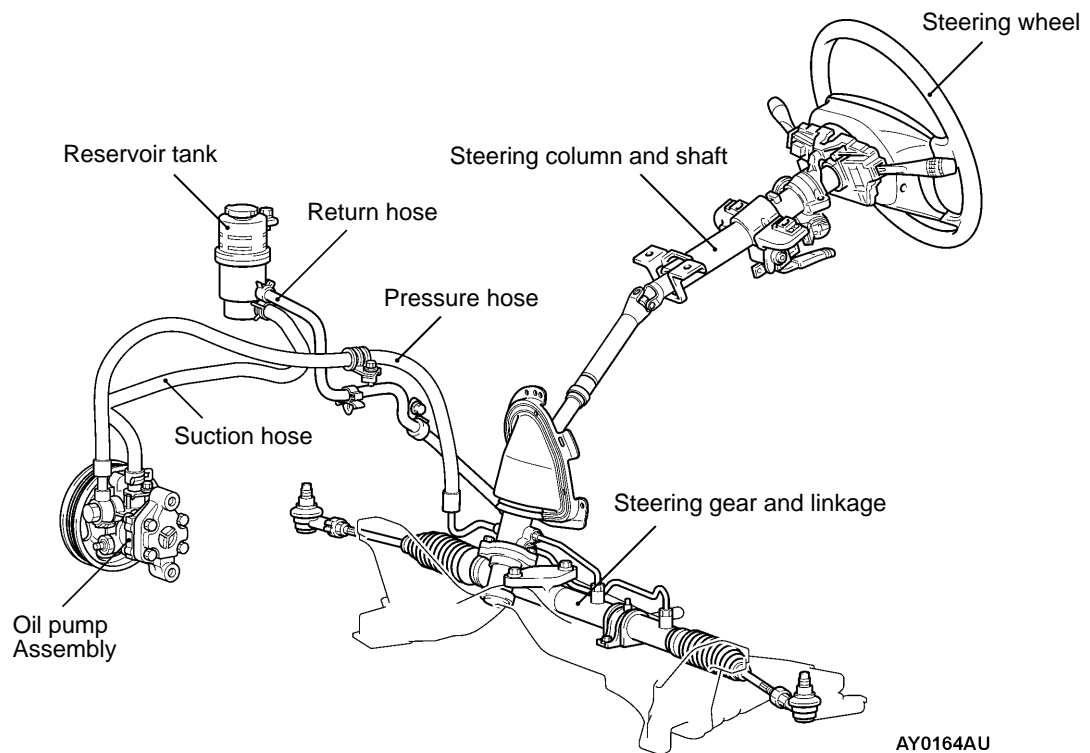
\*3: 4G92-R.H.D

## CONSTRUCTION DIAGRAM

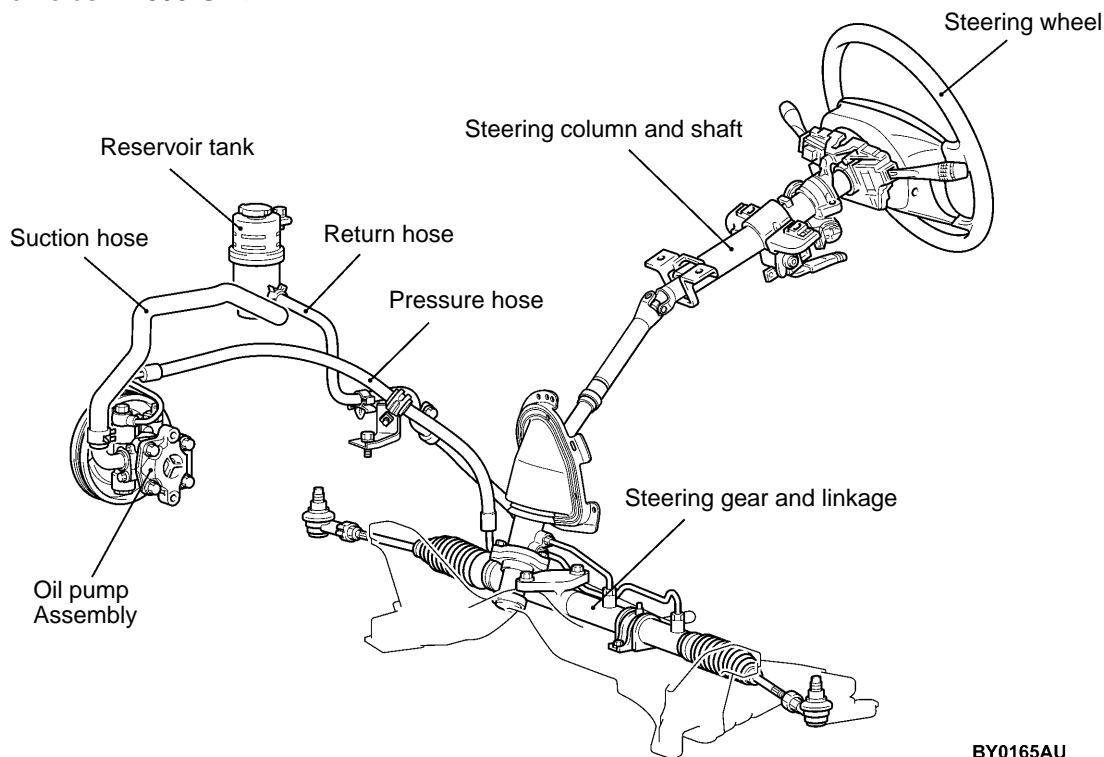
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<R.H. drive vehicles – except 1800-GDI>



<R.H. drive vehicles – 1800-GDI>



## STEERING WHEEL

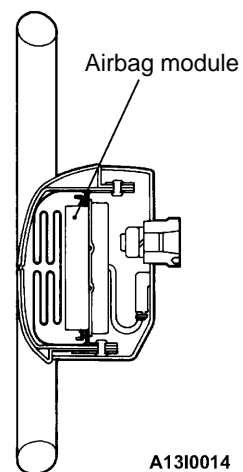
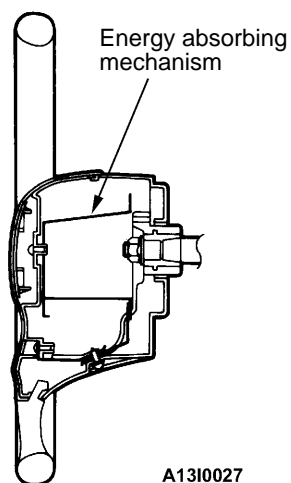
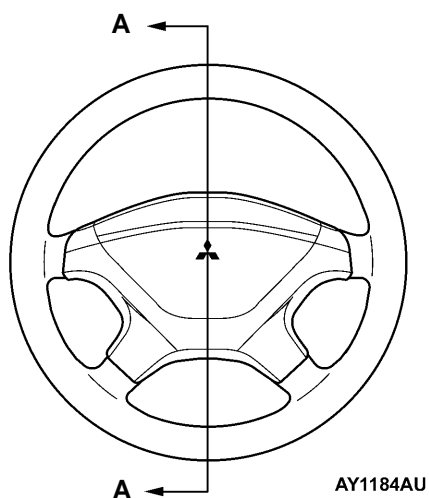
The steering wheel, constructed for ease of operation and high level of safety, offers the following features.

- A 2-spoke or 4-spoke type steering wheel has been mounted.
- On the vehicles without an SRS, energy absorbing mechanism which absorbs impact in the event of a collision has been incorporated in the steering wheel to protect the driver.
- On the SRS equipped vehicles, the airbag module has been built into the steering wheel.

### Section A – A

<Vehicles without SRS>

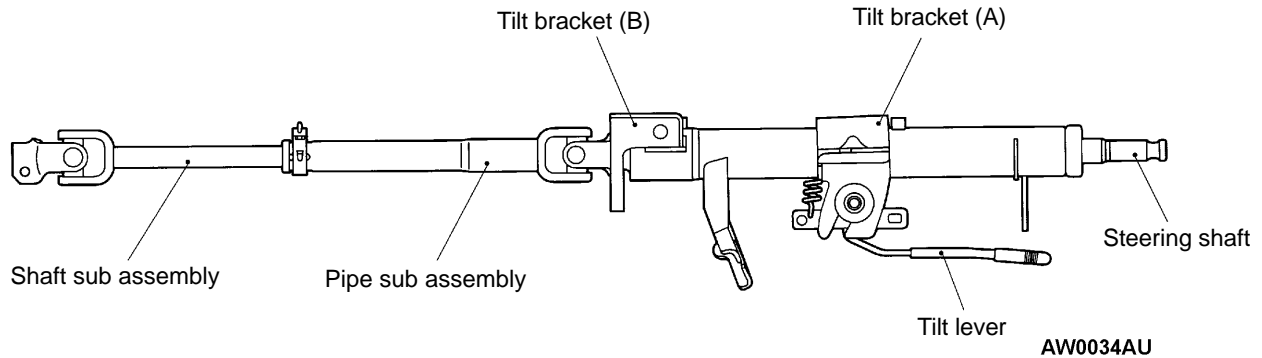
<Vehicles with SRS>



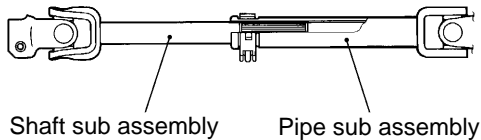
### STEERING SHAFT AND COLUMN

For the steering column, an impact absorbing mechanism which absorbs impact energy in the event of a collision as well as a tilt steering mechanism which enables the driver to obtain an optimum driving position have been adopted.

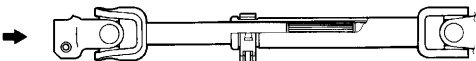
The tilt steering mechanism is essentially the same as the conventional one.



#### BEFORE COLLISION



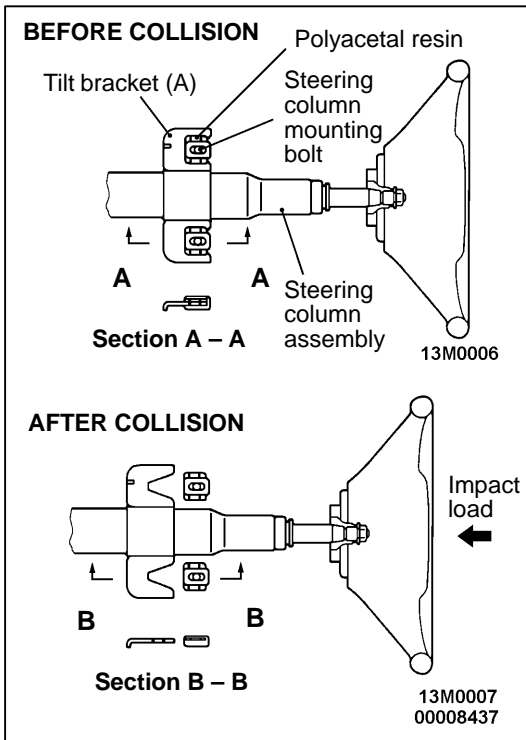
#### AFTER COLLISION



### SHOCK ABSORBING MECHANISM

#### 1. Primary impact

When the vehicle collides with something and there is a load added to the shaft sub assembly from the gearbox, the shaft sub assembly slides above the pipe sub assembly to absorb the shock load. This prevents the steering column from moving backwards during the impact.



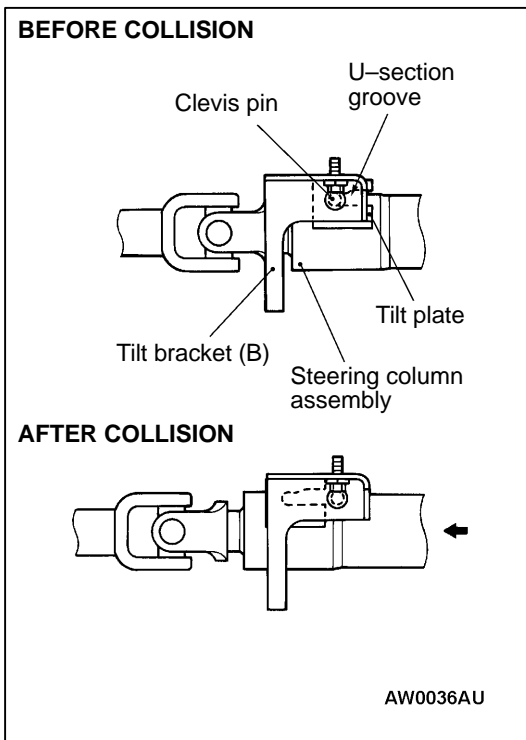
## 2. Secondary impact

### (1) <Vehicles without SRS>

When the driver's body collides against the steering wheel, the tilt bracket (A) moves forwards by crushing the polyacetal resin, causing the steering column assembly to move into the engine compartment.

### <Vehicles with SRS>

When the driver's body falls against the developed air bag, the tilt bracket (A) moves forwards by crushing the polyacetal resin, causing the steering column assembly to move into the engine compartment.



- (2) As the tilt bracket breaks free, the clevis pin comes out of the U-section groove in the tilt plate, allowing the steering column assembly to move forward.

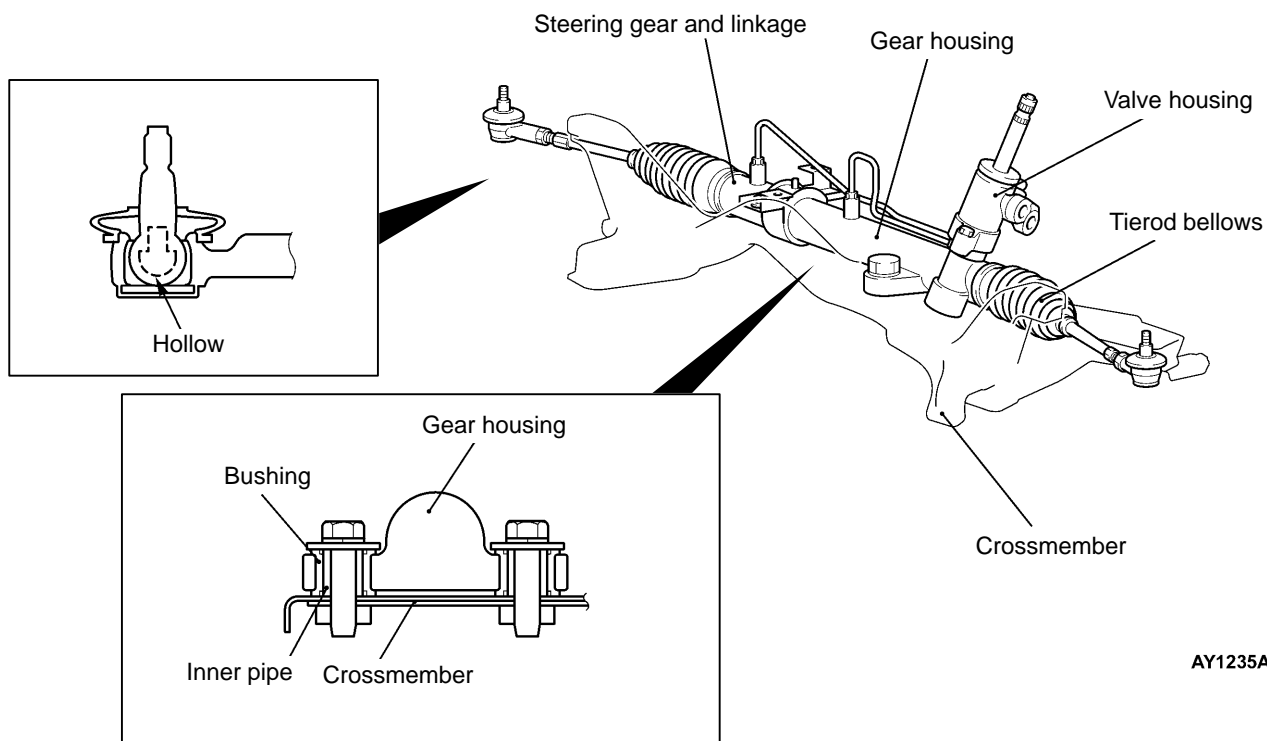
### OIL PUMP

The oil pump is a vane type with a fluid flow control system which functions so that the steering wheel turning effort will be reduced at low engine speeds and it will be appropriately increased at higher speeds.

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

### STEERING GEAR

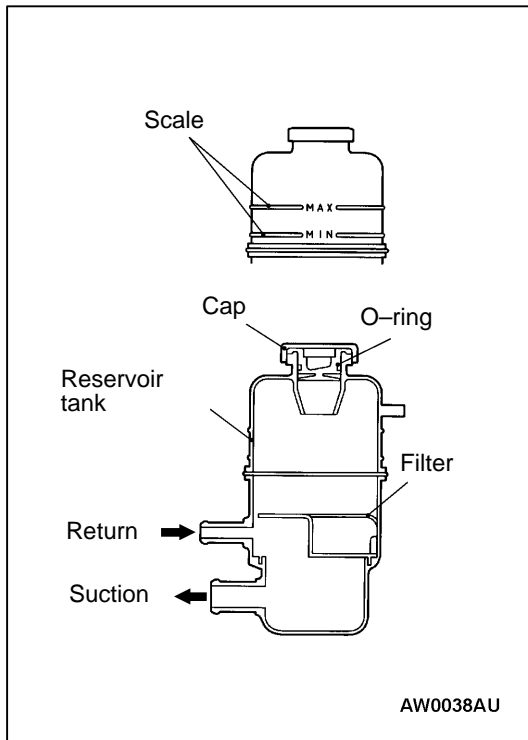
- Using the following parts have contributed to save weight; an aluminium steering gear and linkage valve housing, a plastic tie-rod bellows, and the hollow-type tie-rod stud.
- The installation accuracy, rigidity and steering stability have been improved by using an eye bushing, which secures the steering gear to the crossmember.



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### RESERVOIR TANK

A plastic reservoir tank has been adopted to reduce weight. It also allows the tank itself to be semi-transparent, and it has a scale (MAX and MIN lines) which lets you check the fluid level visually, making inspection much easier.





## BRAKES

The brake system has been designed to give greater reliability and durability and to provide excellent braking performance.

### FEATURES

Improved braking performance

1. A 10-inch brake booster has been adopted to provide large braking force with a small pedal depression force.
2. 14-inch front ventilate disc brakes have been adopted to provide stable braking force and improved braking feel.
3. 8-inch leading trailing-type rear drum brakes have been adopted.

Improved stability

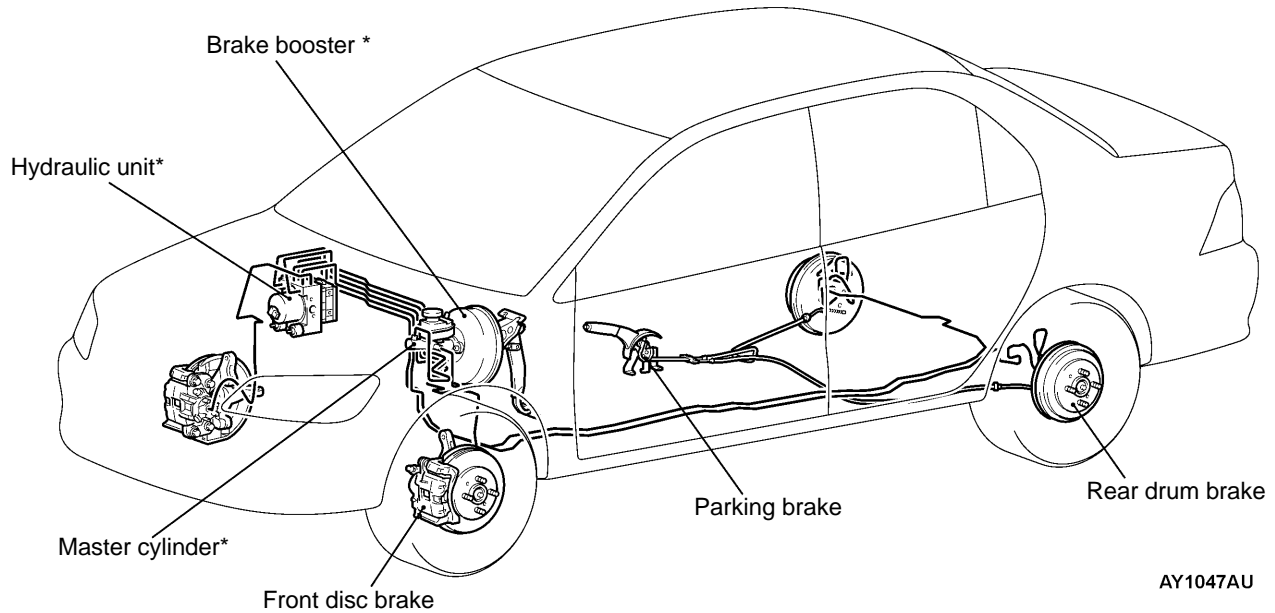
1. A 4-wheel anti-skid braking system (4ABS) has been adopted to prevent slipping caused by the vehicle wheels locking up in order to maintain an appropriate braking distance, and also to maintain a stable vehicle posture and steering performance. <Vehicles with ABS>
2. Adoption of an electronic brake-force distribution (EBD) which makes it possible to maintain the maximum amount of braking force even when the vehicle's load is unevenly distributed. <Vehicles with ABS>
3. A rear wheel early lock-prevention proportioning valve has been adopted. <Vehicles without ABS>
4. Front- and rear-wheel X-type brake line layout has been adopted.
5. Ventilated discs have been adopted for front brakes in order to improve anti-fading performance.

Improved serviceability

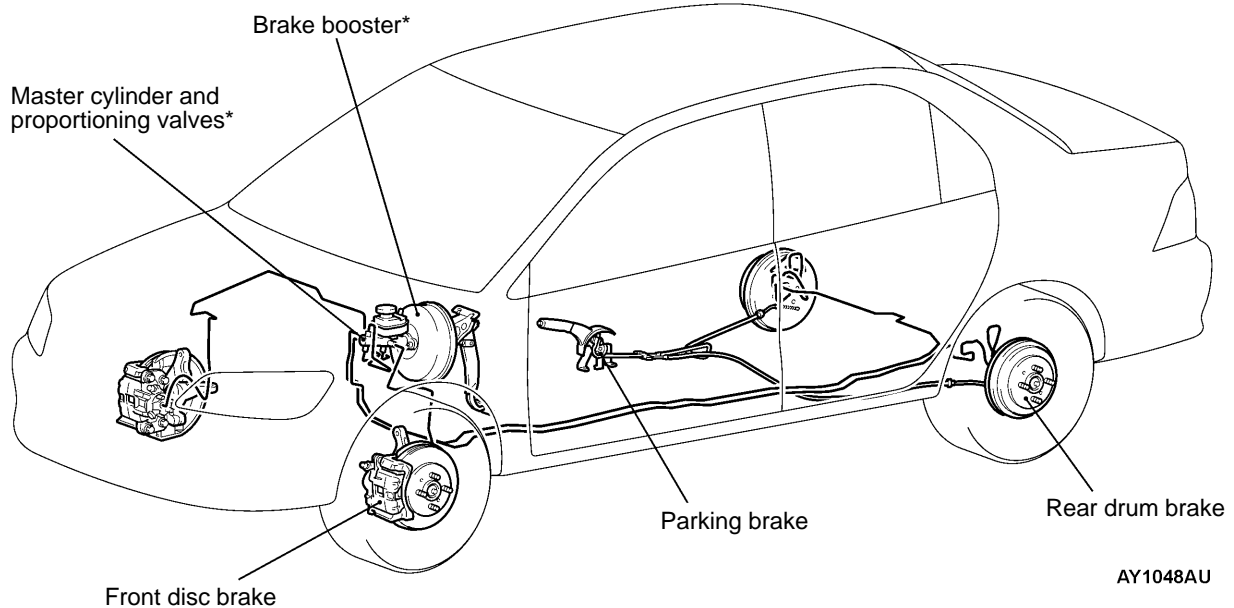
1. A diagnosis function has been adopted for the ABS system in order to make inspection easier. <Vehicles with ABS>
2. For the front disc brakes, an outer disc method separated hub and rotor has been adopted to make removal and installation easier.
3. The master cylinder reservoir tank cap has been coloured white to make identification easier.
4. The ABS-ECU and hydraulic unit have been integrated to make them more compact and lightweight.

## CONSTRUCTION DIAGRAM

### <Vehicles with ABS>



### <Vehicles without ABS>



### NOTE

For R.H. drive vehicles, only the position indicated by the \* is symmetrical.

## SERVICE BRAKES

### SPECIFICATIONS

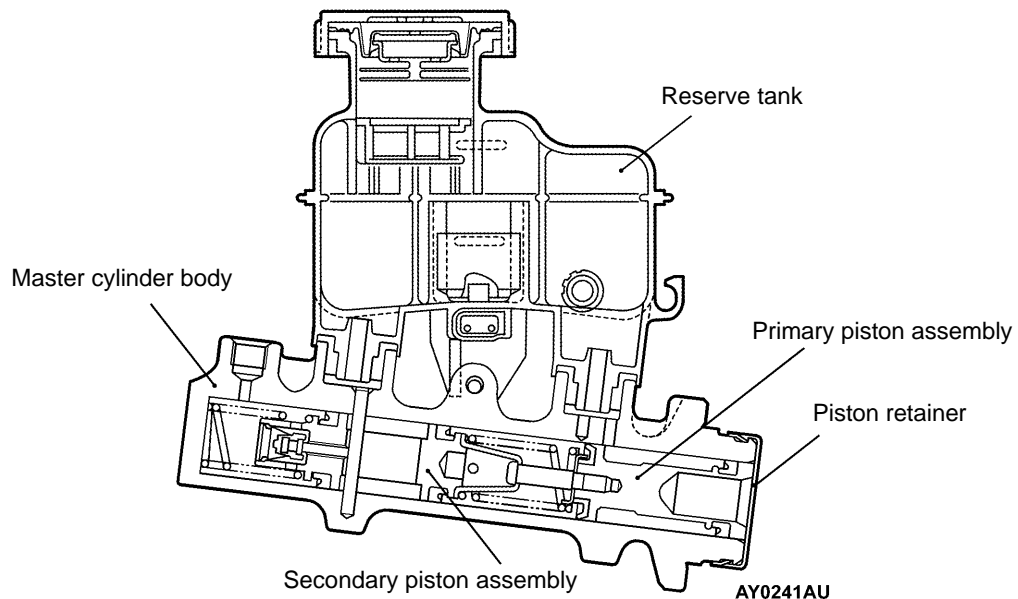
Items		2001MY	2000MY*
Master cylinder	Type	Tandem type	Tandem type
	I.D. mm	22.2	22.2
Brake booster	Type	Vacuum type, single	Vacuum type, single
	Effective dia. of power cylinder mm	255	230
	Boosting ratio	5.0 (Pedal depressing force: 163 N) <Carburettor, MPI> 5.0 (Pedal depressing force: 163 N), 7.0 (Pedal depressing force: 216 N) <GDI>	5.0 (Pedal depressing force: 163 N)
Rear wheel hydraulic control method		Electronic brake-force distribution (EBD) <Vehicles with ABS> Proportioning valves <Vehicles without ABS>	Proportioning valves
Front brakes	Type	Floating caliper, 1 piston, ventilated disc	Floating caliper, 1 piston, ventilated disc
	Disc effective dia. × thickness mm	207 × 24	184 × 18
	Wheel cylinder I.D. mm	54.0	54.0
	Pad thickness mm	10.0	10.0
	Clearance adjustment	Automatic	Automatic
Rear drum brakes	Type	Leading trailing	Leading trailing
	Drum I.D. mm	203	180 <Vehicles without ABS> 203 <Vehicles with ABS>
	Wheel cylinder I.D. mm	19.0	19.0 <Vehicles without ABS> 17.4 <Vehicles with ABS>
	Lining thickness mm	4.3	4.3
	Clearance adjustment	Automatic	Automatic
Brake fluid		DOT3 or DOT4	DOT3 or DOT4

#### NOTE

\*: is not applicable for 1600 MIVEC engine for Kong Kong.

### MASTER CYLINDER

The master cylinder is a tandem-type, with a structure that emphasises safety.



## BRAKE BOOSTER

A 10-inch single-type brake booster has been adopted. In addition, the model with GDI engine is equipped with the brake booster with variable multiplier

### Variable Multiplier Mechanism<GDI>

Variable multiplier mechanism consists of valve plunger and valve body with groove. By changing reaction force applied on valve plunger in the

multiplier mechanism for increasing amplification factor, which allows large braking force by small pedal force.

event of brake assist operation, brake booster input/output characteristics are varied to 2 stages.

#### <In Initial Assist Operation>

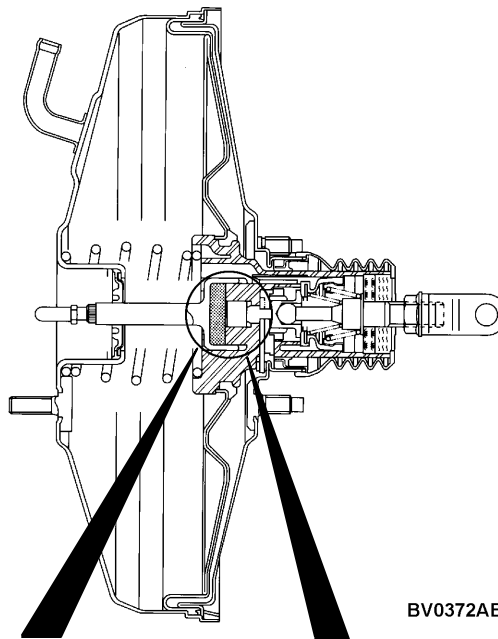
In initial assist operation, rubber section of reaction disc receiving reaction force from master cylinder is not contacted on the step at the groove of valve body. At this time, reaction force area of valve plunger is equal to intermediate diameter

section (A as shown in the illustration) at the step. As this reaction force area is equal to the conventional valve plunger area, brake booster input/output characteristics in the initial assist operation remains unchanged as same as before.

#### <In Assist Rate Increase>

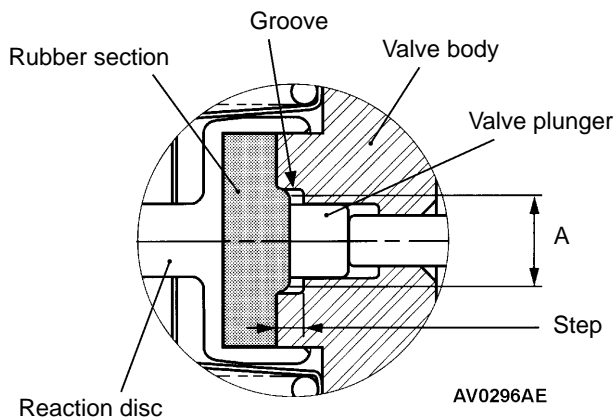
The more input from brake pedal is increased, the more reaction force from master cylinder is increased. The groove of valve body is filled with transformed rubber of reaction disc. From this

point, the area of valve plunger bore (B in right figure) is a reaction force area, and brake booster input/output characteristics are changing.



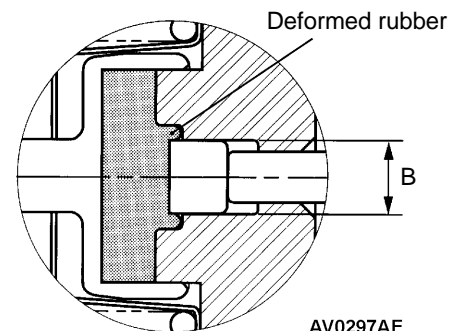
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#### <In Initial Assist Operation>



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#### <In Assist Rate Increase>

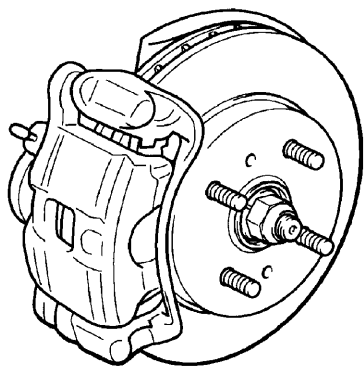


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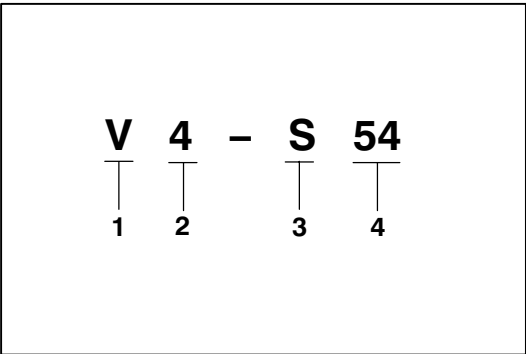
FRONT BRAKES

Brakes with the following specifications have been adopted for the front brakes.

- V4-S54 1-piston ventilate discs
- An outer disc method in which the wheels and discs are tightened together has been adopted to improve the ease of brake disc removal and installation.
- The brake pads are equipped with mechanical-type audible wear indicators to notify the driver when the usage limit (2 mm) has been reached.
- Split fins adopted as the disc fins to improve cooling performance



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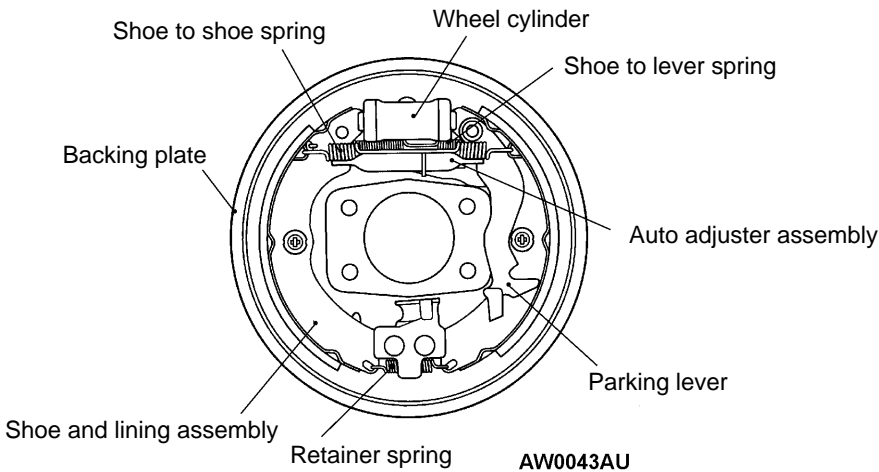
DISC BRAKE NOMENCLATURE

No.	Item	Contents
1	Brake disc type	V: Ventilated
2	Brake size (Minimum applicable disc wheel)	4: 14-inch
3	No. of pistons	S: 1 piston (floating type)
4	Piston size (rounded to nearest integer)	54: $\phi 54$ mm

REAR BRAKES

8-inch leading trailing-type drum brakes have been adopted for the rear brakes in order to pro-

vide stable braking force at all times both when moving forward and reversing.



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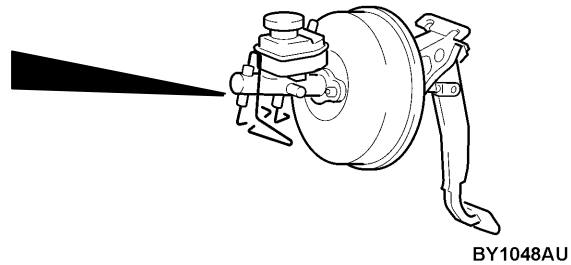
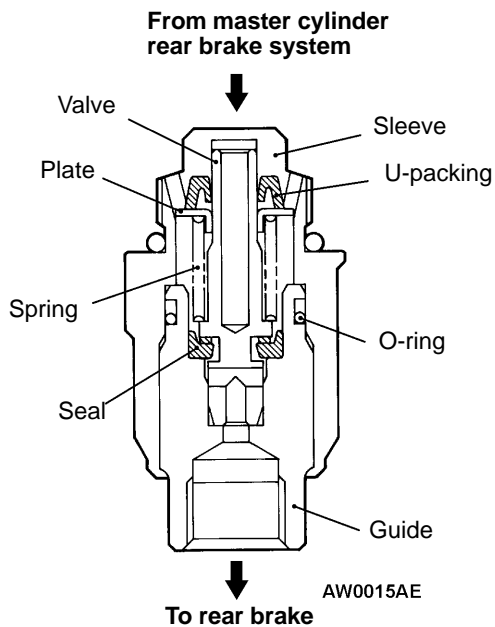
### BRAKE LINE

#### PROPORTIONING VALVE <Vehicles without ABS>

A proportioning valve has been adopted to prevent early locking of the rear wheels, in order to provide improved stability during braking.

#### NOTE

In terms of structure and operation, the proportioning valve is basically the same as that of the 1999 SPACE WAGON.



## 4-WHEEL ANTI-SKID BRAKE SYSTEM (4ABS)

### FEATURES

ABS has been adopted as standard or optional equipment in vehicles with MPI and GDI engine to maintain directional stability and steering performance during sudden braking.

The ABS control method used is a 4-sensor, 4-channel method which provides independent control for all wheels. The system has the following features.

- EBD (Electronic Brake-force Distribution system) control has been added to provide the ideal braking force for the rear wheels.
- Fail-safe function which ensures that safety is maintained
- Diagnosis function which provides improved serviceability

### EBD CONTROL

In ABS, electronic control method is used whereby the rear wheel brake hydraulic pressure during braking is regulated by rear wheel control solenoid valves in accordance with the vehicle's rate of deceleration and the front and rear wheel slippage which are calculated from the signals received from the various wheel sensors. EBD control is a control system which provides a high level of control for both vehicle braking force and vehicle stability. The system has the following features:

- Because the system provides the optimum rear wheel braking force regardless of the vehicle

laden condition and the condition of the road surface, the system reduces the required pedal depression force, particularly when the vehicle is heavily laden or driving on road surfaces with high frictional coefficients.

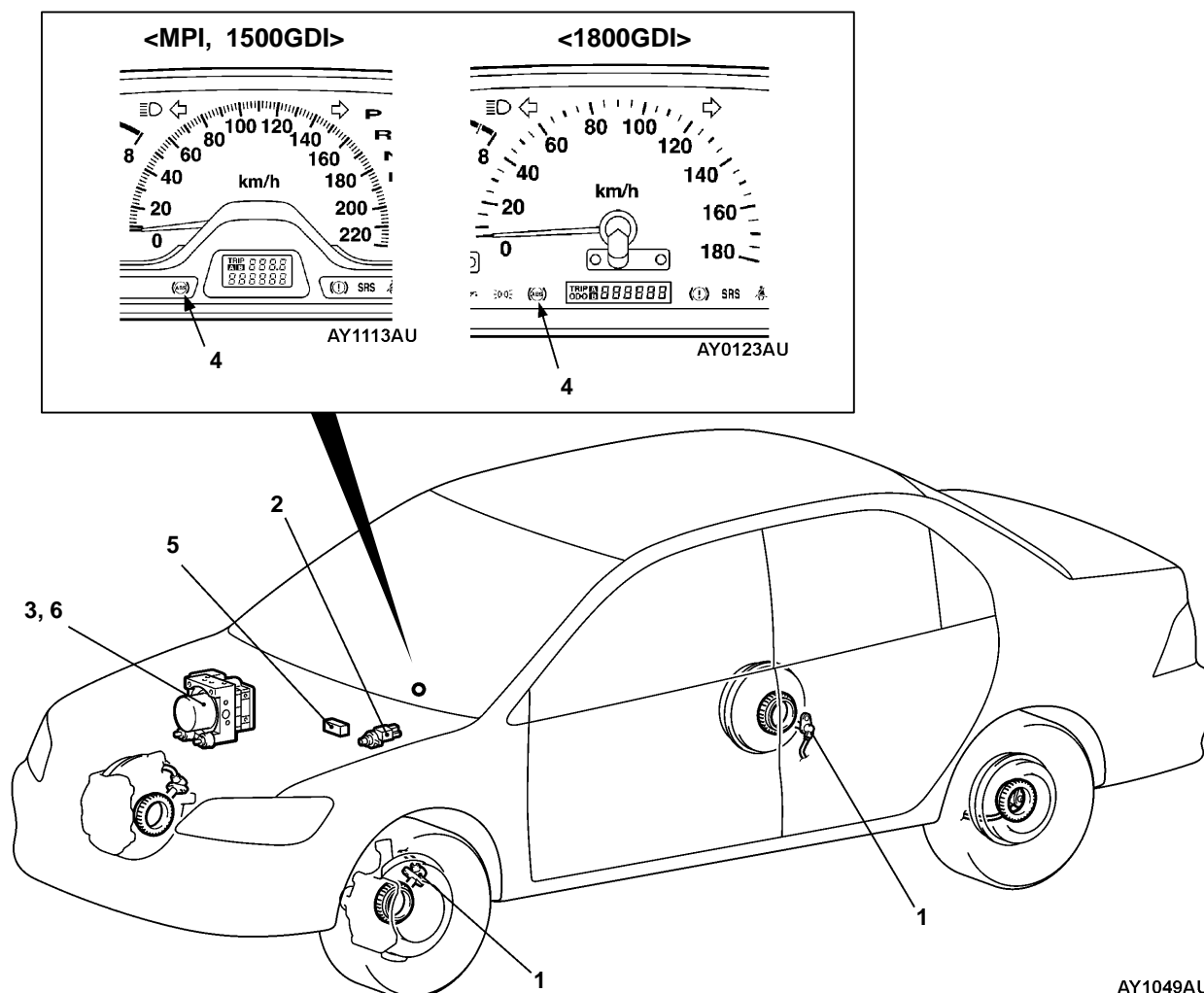
- Because the duty placed on the front brakes has been reduced, the increases in pad temperature can be controlled during front brakes applying to improve the wear resistance characteristics of the pad.
- Control valves such as the proportioning valve are no longer required.

### SPECIFICATIONS

Item		2001MY	2000MY
ABS control method		4-sensor, 4-channel	4-sensor, 4-channel
No. of ABS rotor teeth	Front	43	43
	Rear	43	43
ABS speed sensor	Type	Magnet coil type	Magnet coil type
	Gap between sensor and rotor mm	0.85 <front (non-adjustable type)> 0.89 <rear (non-adjustable type)>	0.9 <front (non-adjustable type)> 0.9 <rear (non-adjustable type)> <Vehicles for Hong Kong with MIVEC engine> 1.8 <rear (adjustable type)> <Vehicles except for Hong Kong with MIVEC engine>



## CONSTRUCTION DIAGRAM



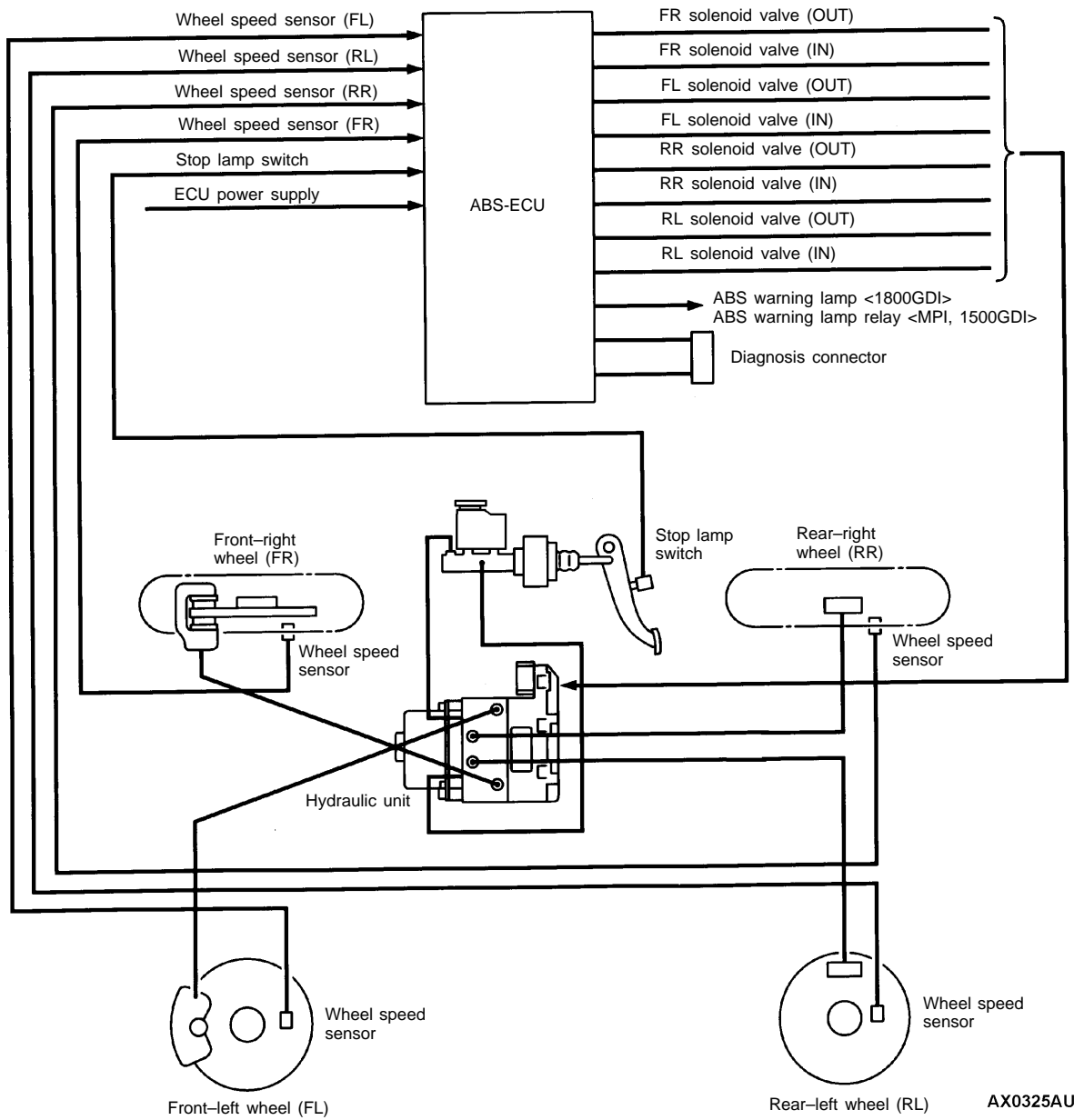
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Name of part		Number	Outline of functions
Sensor	Wheel speed sensor	1	Send alternating current signals at frequencies which are proportional to the rotation speeds of each wheel to the ABS-ECU.
	Stop lamp switch	2	Sends a signal to the ABS-ECU to indicate whether the brake pedal is depressed or not.
Actuator	Hydraulic unit	3	Drives the solenoid valves according to signals from the ABS-ECU in order to control the brake hydraulic pressure for each wheel.
	ABS warning lamp	4	Illuminates in response to signals from the ABS-ECU when a problem develops in the system.
Diagnosis connector		5	Outputs the diagnosis codes and allows communication with the MUT-II.
ABS control unit (ABS-ECU)		6	Controls actuators (described above) based on the signals coming from each sensor.
			Controls the self-diagnosis and fail-safe functions.
			Controls the diagnosis function (MUT-II compatible).

## SYSTEM CONFIGURATION DIAGRAM

Main  
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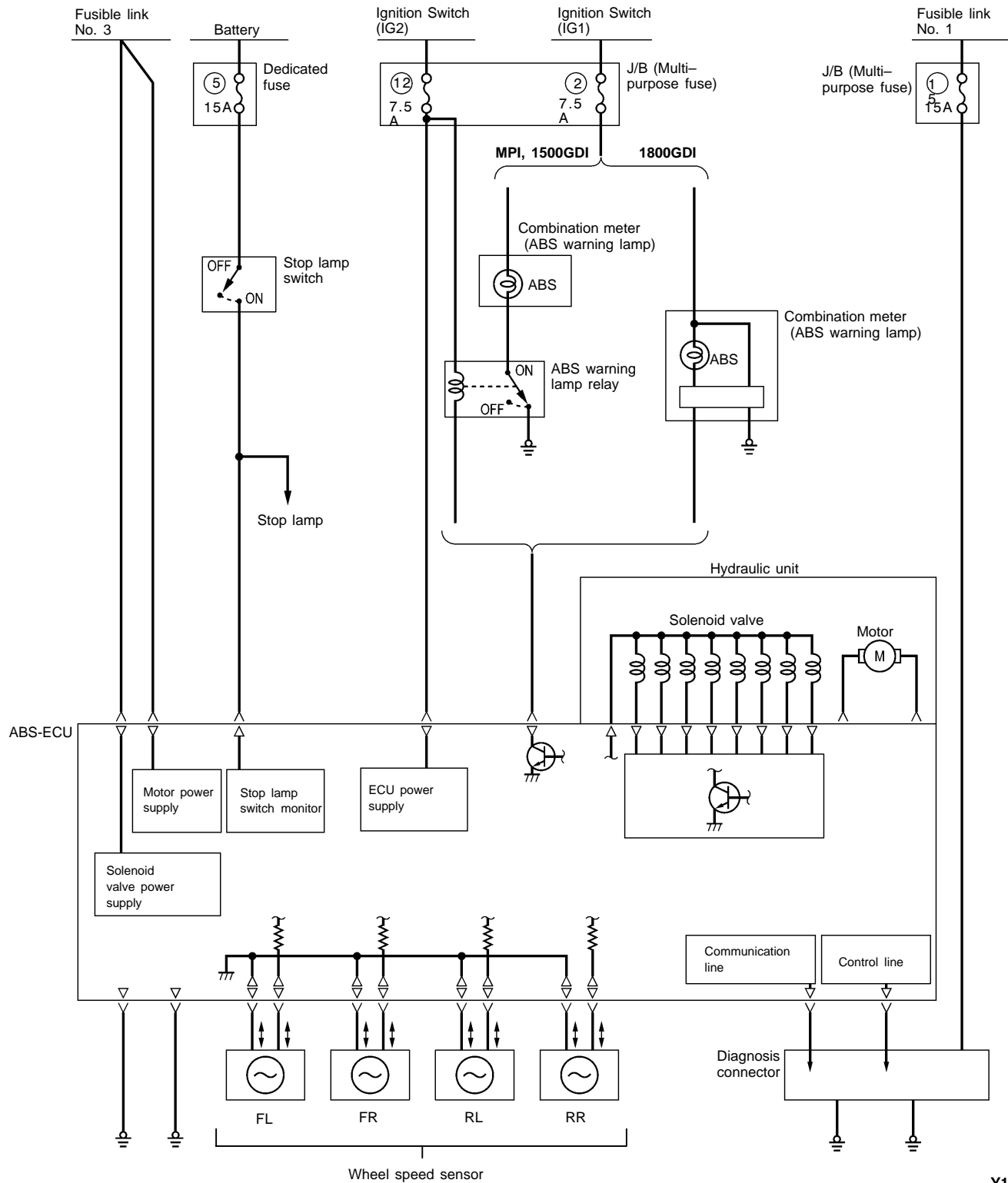
Group  
TOC



## ABS ELECTRICAL CIRCUIT DIAGRAM

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## SENSORS

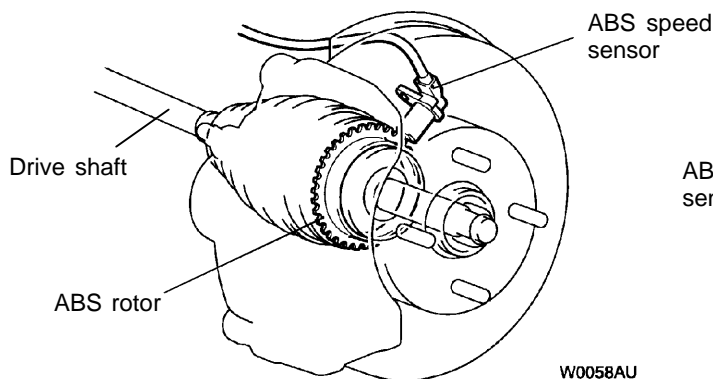
### WHEEL SPEED SENSOR

The wheel speed sensors consist of fixed ABS speed sensors and the ABS rotors that rotate at the same speed as the wheels, and output alternating current signals at frequencies which are proportional to the wheel speed.

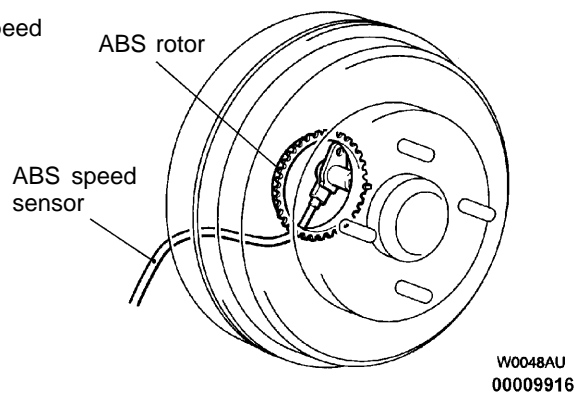
- For front wheels, the ABS rotors (43 teeth) are installed to the drive shafts, and the ABS speed sensors are installed to knuckles.

- For rear wheels, the ABS rotors (43 teeth) are installed to the rear hubs, and the ABS speed sensors are installed to rear suspension trailing arms.
- The gap between the ABS rotors and the ABS speed sensors are non-adjustable at both the front and rear to improve serviceability.

Front



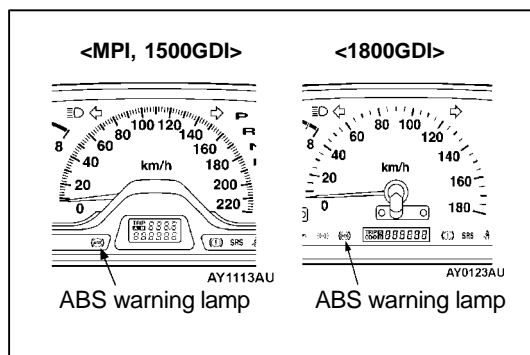
Rear



### STOP LAMP SWITCH

This switch turns on when the brake pedal is depressed, and turns off when the brake pedal is released. The ABS-ECU detects whether the stop lamp switch is on or off by means of fluctuations in voltage

(ON: system voltage; OFF: Approximately 0 V). This data is used for ABS-ECU fail-safe/diagnosis function.



## ACTUATORS

### ABS WARNING LAMP

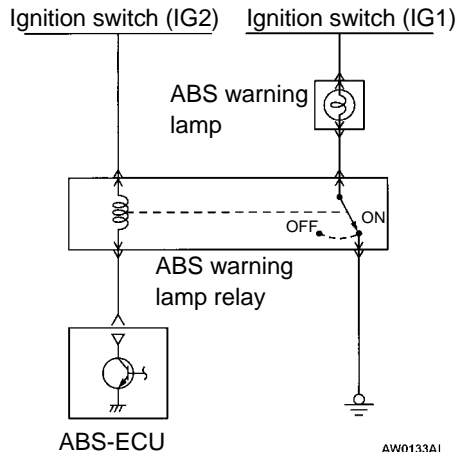
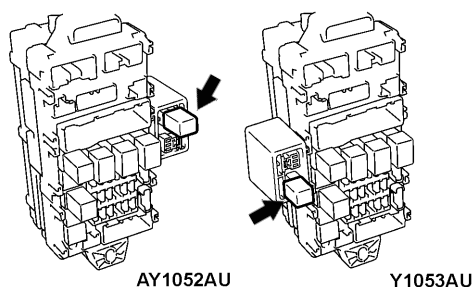
The ABS-ECU controls the power transistor in ABS-ECU to turn on and causes the ABS warning lamp to illuminate in the following cases:

- During initial check when the ignition switch is at the "ON" position (for approximately 3 minutes)
- When a problem develops in the ABS/EBD system
- Poor ABS-ECU connector connection

### ABS WARNING LAMP RELAY

<L.H. drive vehicles>

<R.H. drive vehicles>



### ABS WARNING LAMP RELAY <MPI, 1500GDI>

The ABS warning lamp relay is located at the junction block inside the driver's side instrument panel under cover. The relay is a normally-closed type, and is controlled by the ABS-ECU. When the transistor inside the ABS-ECU turns off, the ABS warning lamp relay turns on and the ABS warning lamp illuminates.

## HYDRAULIC UNIT

The hydraulic unit is basically the same as that of the 1999 PAJERO io.

## ABS-ECU

The ABS-ECU is basically the same as that of the 1999 PAJERO io except for the following:

### FAIL-SAFE FUNCTION

Diagnosis code No.	Item	Action during fail-safe operation		
		ABS control	EBD control	ABS warning lamp
11	Open circuit or short-circuit in wheel speed sensor (FR)	If faulty wheels include two rear wheels: Control stopped in all wheels Other than the above: Control stopped in faulty wheels	If faulty wheels include two rear wheels: Control stopped Other than the above: Control carried out	Illuminated
12	Open circuit or short-circuit in wheel speed sensor (FL)			
13	Open circuit or short-circuit in wheel speed sensor (RR)			
14	Open circuit or short-circuit in wheel speed sensor (RL)			
15	Problem with any one of the four wheel speed sensors			
16	Abnormal drop or rise in ABS-ECU power supply voltage	Control stopped	Control stopped	Illuminated
21	Wheel speed sensor (FR) system	If faulty wheels include two rear wheels: Control stopped in all wheels Other than the above: Control stopped in faulty wheels	If faulty wheels include two rear wheels: Control stopped Other than the above: Control carried out	Illuminated
22	Wheel speed sensor (FL) system			
23	Wheel speed sensor (RR) system			
24	Wheel speed sensor (RL) system			
41	Solenoid valve (FR) system	System interrupted	System interrupted	Illuminated
42	Solenoid valve (FL) system			
43	Solenoid valve (RR) system			
44	Solenoid valve (RL) system			
51	Valve relay ON problem	Control stopped	Control carried out	Illuminated
52	Valve relay OFF problem	System interrupted	System interrupted	Illuminated
53	Motor relay OFF problem	Control stopped	Control carried out	Illuminated
54	Motor relay ON problem	System interrupted	Control carried out	Illuminated
55	Motor system	Control stopped	Control carried out	Illuminated
63	ABS-ECU abnormality	System interrupted	System interrupted	Illuminated

### NOTE

Control stopped: Control is not carried out until the ignition switch is turned to the “LOCK” (OFF) position. However, if the problem returns to normal, control is carried out again.

System interrupted: Control is not carried out until the ignition switch is turned to the “LOCK” (OFF) position.

## SYSTEM OPERATION

In terms of operation, the system is basically the same as that of the 1996 Colt/Lancer.

# PARKING BRAKE

## FEATURES

The parking brakes are a mechanical rear wheel brake design and controlled by a lever.

## CONSTRUCTION DIAGRAM

