
DRIVE-CONTROL COMPONENTS

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FRONT SUSPENSION

<EVOLUTION-IV>

To ensure the lateral rigidity and roll stiffness required by a high-performance vehicle and expand the suspension system's performance envelope, the following revisions have been made:

- The lower arm arrangement has been revised to optimize the front roll center height.
- The coil springs and shock absorbers have been optimally tuned.
- The stabilizer bar's diameter has been increased ($\phi 16$ mm on non-EVOLUTION LANCER $\rightarrow \phi 23$ mm on EVOLUTION), and the stabilizer link mounting position has been revised (strut assembly \rightarrow lower arm), resulting in an improved steering feeling.
- Forged lower arms have been adopted for greater rigidity.
- Thicker wall pipe has been utilized to increase the No. 2 cross member's rigidity.
- A strut tower bar has been adopted <standard on RS; optional on GSR>.
- Unit ball bearings have been adopted to increase the wheel bearings' rigidity.

NOTE

For information on the unit ball bearings, refer to "Front Axle" in Group 2.

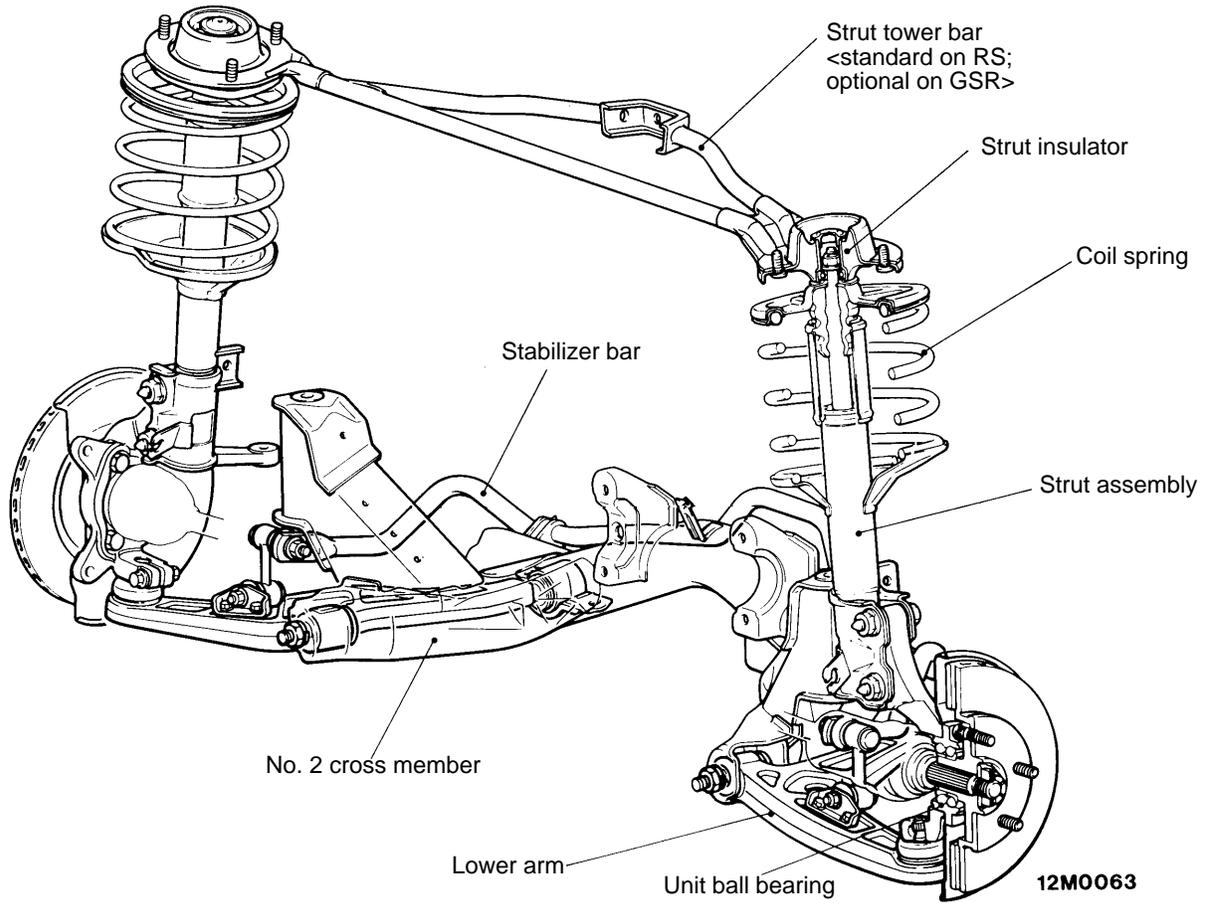
<EVOLUTION-V>

The front suspension has been revised as follows:

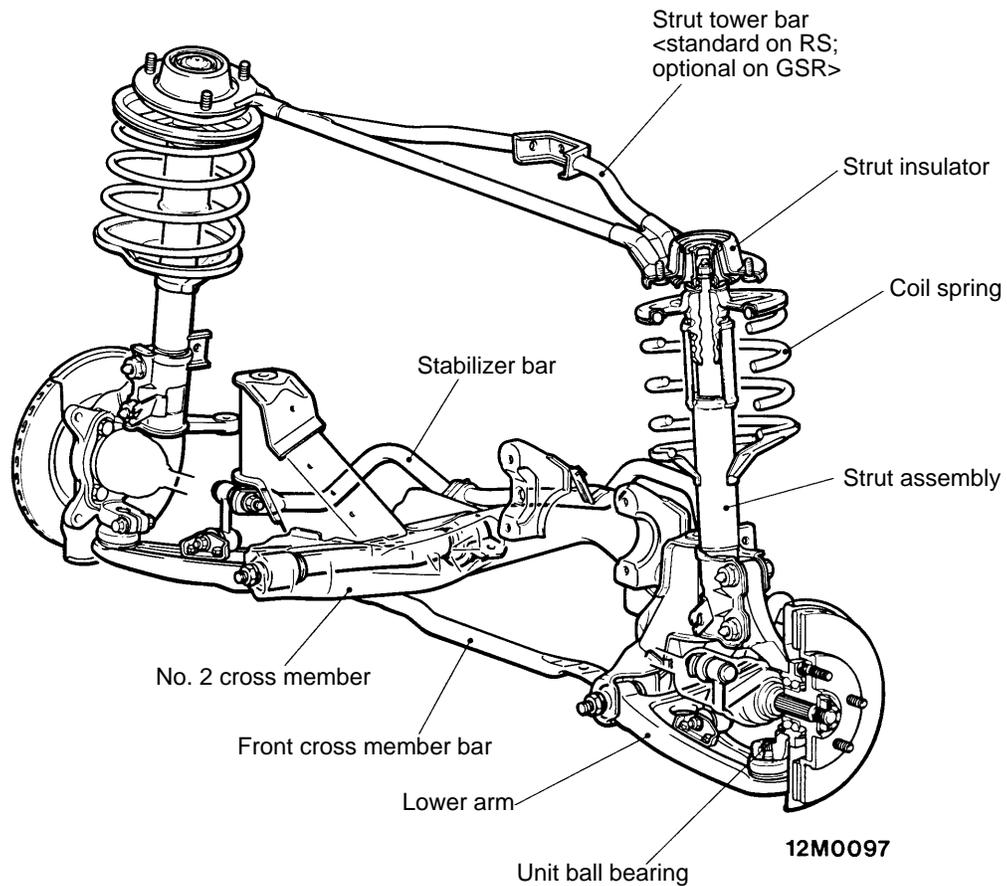
- Inverted front struts have been adopted for greater camber stiffness.
- A revised structure permits either of two camber angles to be selected in accordance with operating conditions.
- A front cross member bar has been added for greater cross-member lateral rigidity <vehicles with 17-inch wheels>.
- Aluminum lower arms have been adopted for lightness.
- The lower arms have been lengthened in accordance with the wider tread.

Construction Diagram

<EVOLUTION-IV>



<EVOLUTION-V>

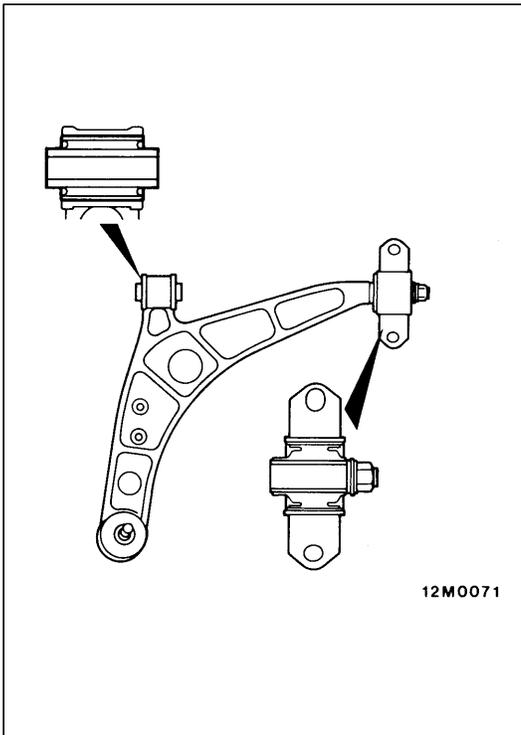


Specifications

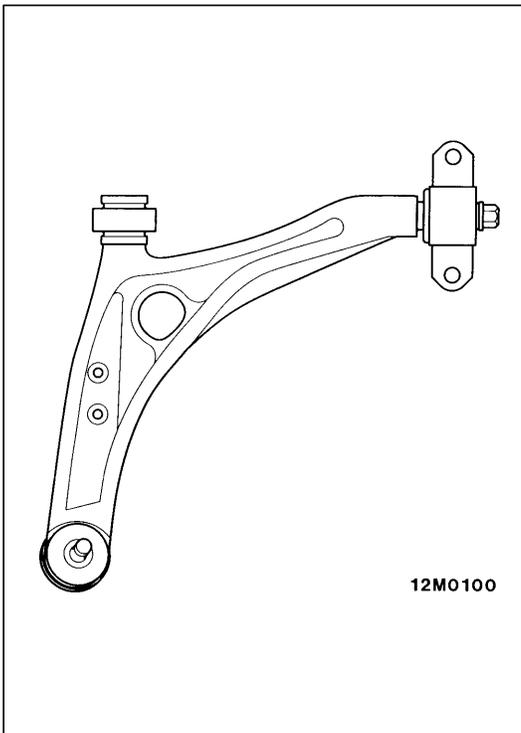
Item		EVOLUTION-IV	EVOLUTION-V
Type		MacPherson strut	
Wheel alignment	Camber	-1°00'	-1°00' or -2°00'
	Caster	3°54'	
	Kingpin inclination	13°18'	14°18'
	Toe-in (mm)	0	
Coil springs	Wire diameter (mm)	14	
	Average diameter (mm)	155	
	Free length (mm)	RS: 302, GSR: 308	302
Stabilizer bar		Provided	
Strut tower bar		Provided <standard on RS; maker option on GSR>	

LOWER ARMS**<EVOLUTION-IV>**

- (1) The lower arms are forged for greater rigidity, and they are fitted with bushings that have inside and outside tubes for improved steering characteristics.
- (2) The lower arms' mounting positions have been revised to alter the wheel alignment for improved handling stability.

**<EVOLUTION-V>**

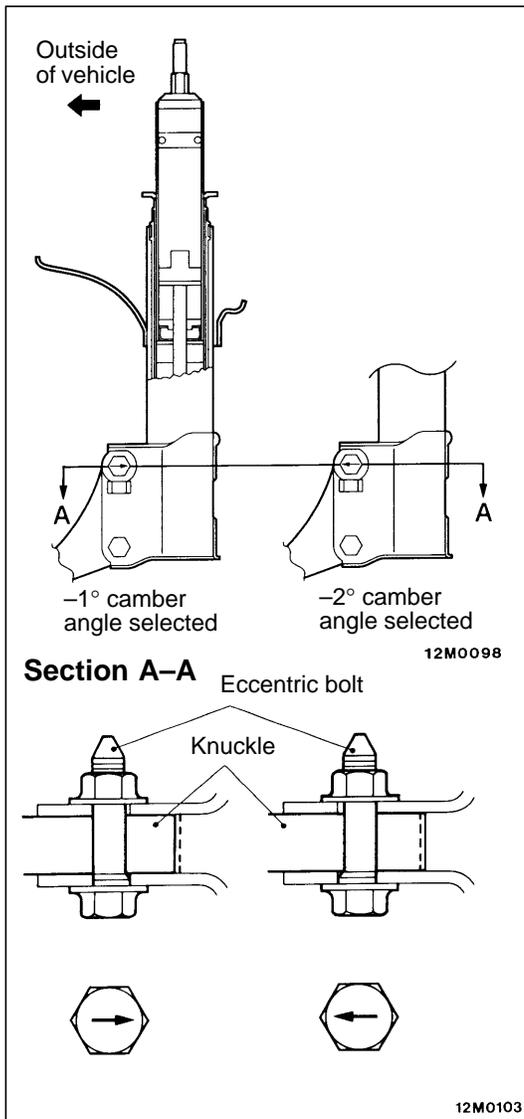
The lower arms' shape has been revised in accordance with the wider tread, and aluminum has been adopted for lightness.



STRUT ASSEMBLIES

<EVOLUTION-V>

An inverted strut layout (with the cylinder at the top and the piston at the bottom) has been adopted. This layout offers superior rigidity and consequent improved camber stiffness. Further, either of two camber angles can be selected in accordance with operating conditions. The camber angle is determined by the alignment of an eccentric bolt at the top of the joint between the strut assembly and knuckle. Vehicles leave the factory with a camber angle of -1° selected. (An arrow on the eccentric bolt is pointing toward the inside of the vehicle.) For a camber angle of -2° , the bolt must be fitted with its arrow pointing toward the outside of the vehicle.



REAR SUSPENSION

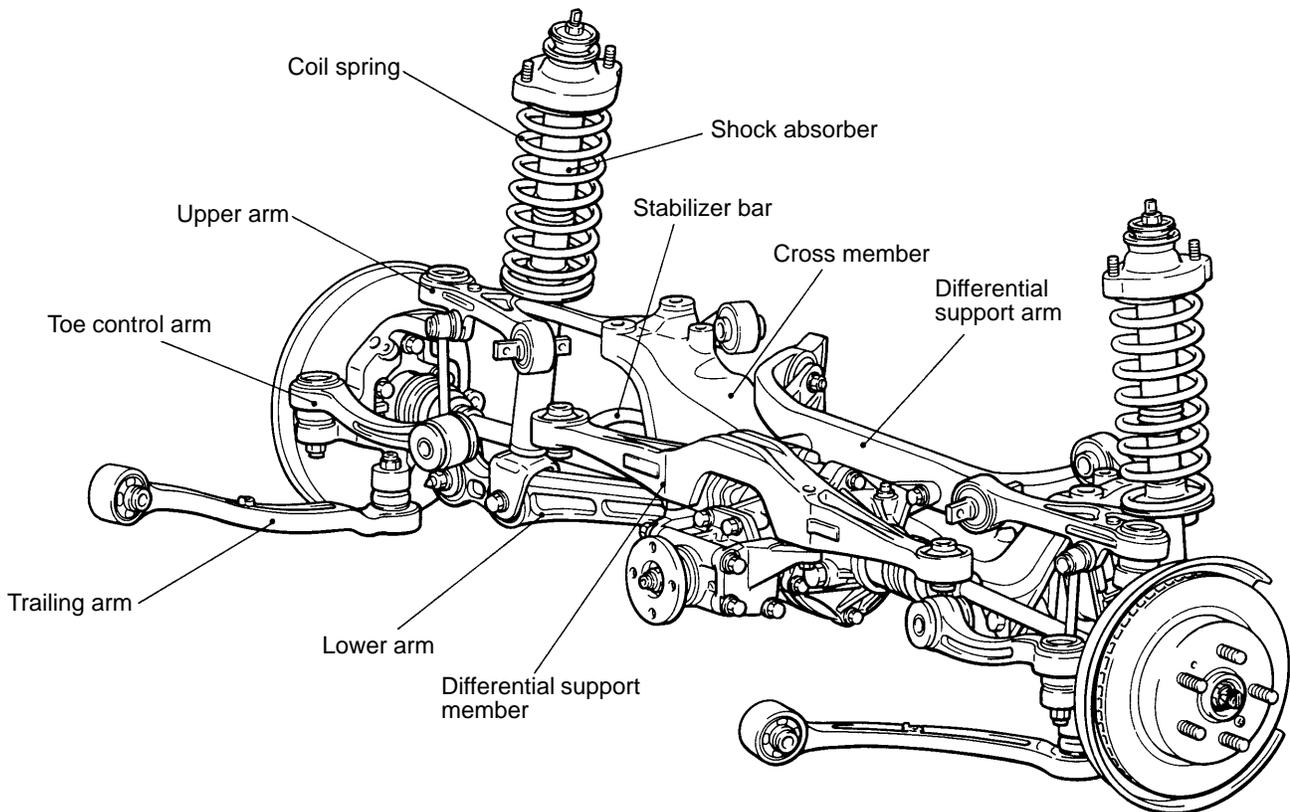
<EVOLUTION-IV>

For enhanced performance in competitions, the rear suspension mechanism has a new multi-link design that is based on a double-wishbone arrangement. Compared with the EVOLUTION-III's multi-link mechanism, which is based on a trailing-arm arrangement, the new mechanism is significantly different in terms of structure and geometry and offers higher rigidity and lower friction. The overall benefit is improved handling on various road surfaces.

Structure

Each knuckle is supported by an A-section upper arm (this is located on the inside of the wheel) and by three I-section members (a longitudinally aligned trailing arm, a laterally aligned lower arm, and a laterally aligned toe control arm). Each arm has a ball joint or pillow-ball bushing at its knuckle end and a rubber bushing or slide bushing at its body end. The arms are joined to the body via the cross member.

Construction Diagram



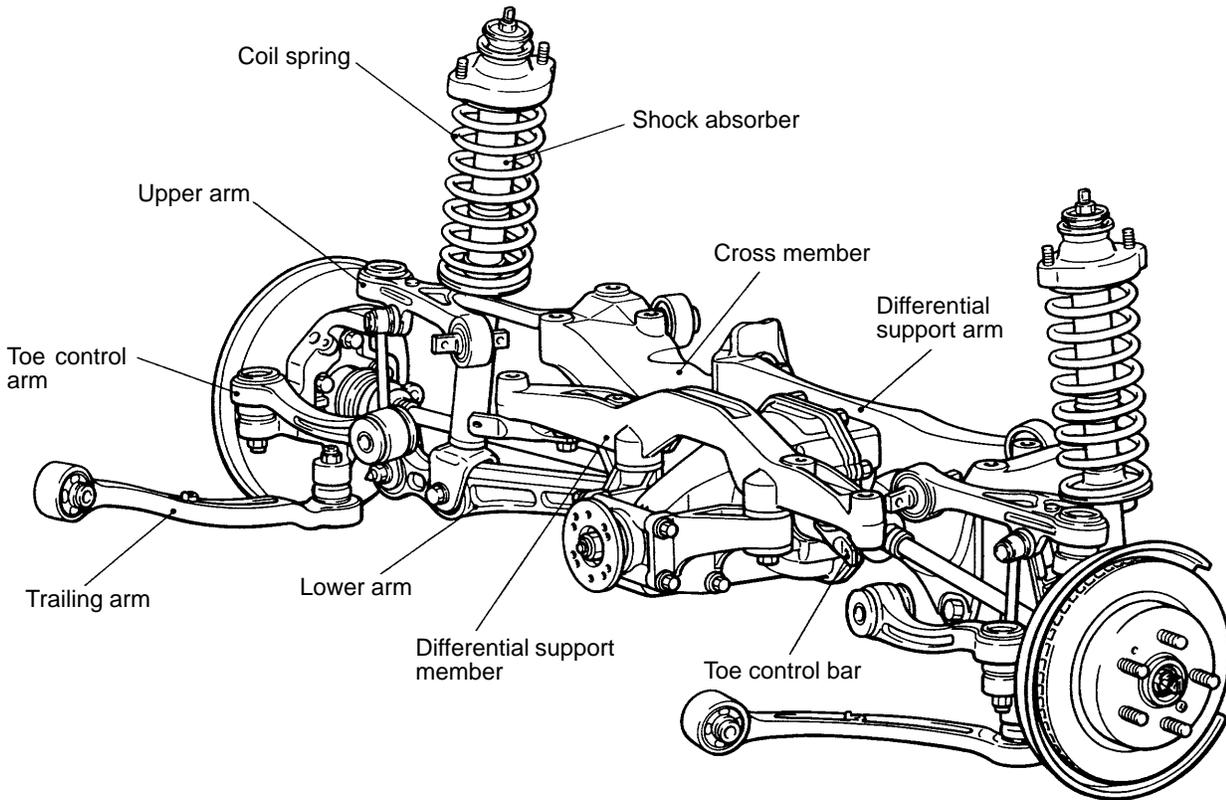
12M0061

<EVOLUTION-V>

The rear suspension mechanism has been revised as follows:

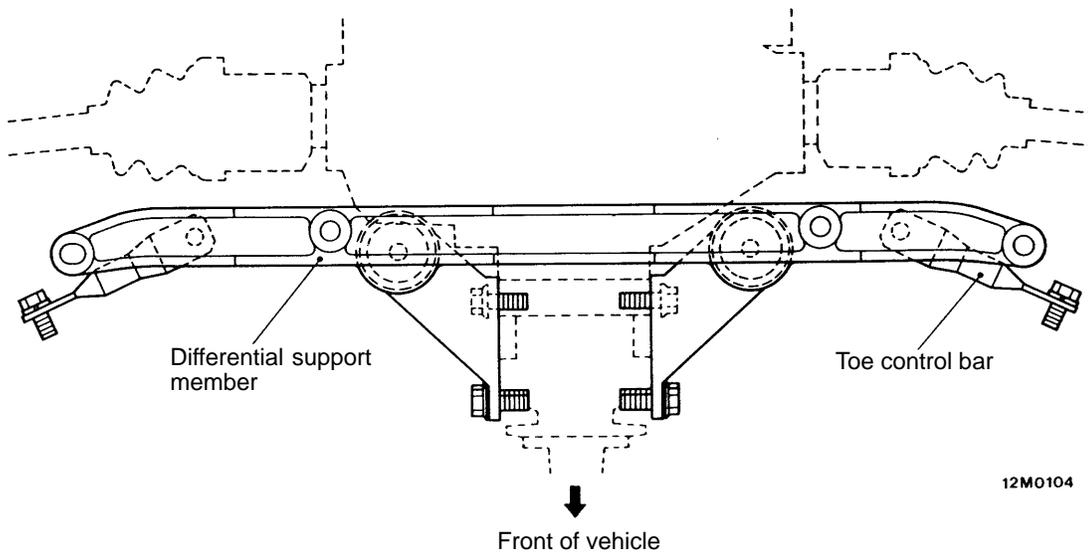
- All body- and wheel-side suspension mounting points have been revised. The resulting geometry enhances toe stiffness and camber stiffness.
- The rear roll center has been lowered.
- Toe control bars, which link the toe control arms' body-side mounting brackets to the differential support member, have been added for greater lateral rigidity <RS>.

Construction Diagram



12M0101

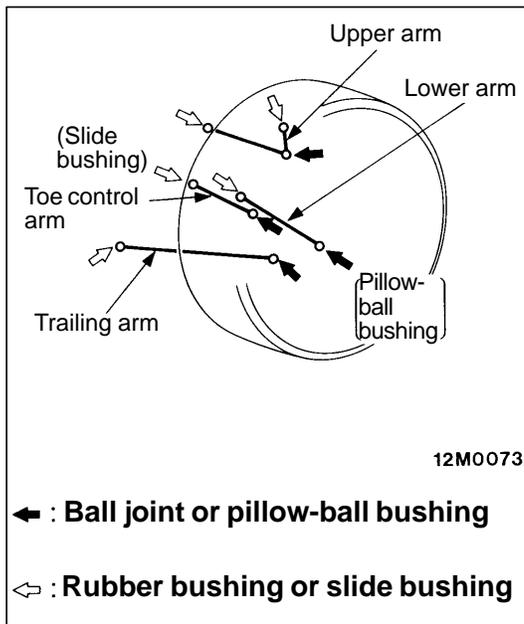
Top view



12M0104

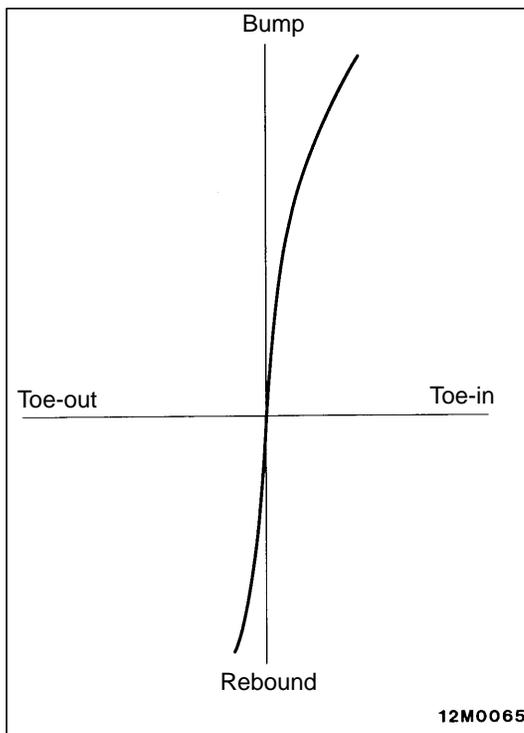
Specifications

Item		EVOLUTION-IV, V	Non-EVOLUTION LANCER (reference)
Type		Multi-link	Multi-link (trailing-arm type)
Wheel alignment	Camber	-1°00'	0°40'
	Toe-in (mm)	3	
Coil spring	Wire diameter (mm)	11	
	Average diameter (mm)	79 – 87	88
	Free length (mm)	281 – 289	374
Stabilizer bar		Provided	



**■ STRUCTURE
 IMPROVED ROADHOLDING**

The change in suspension type and adoption of pillow-ball bushings and other features ensure rigidity while reducing suspension friction during up/down strokes and improving the movement following characteristics of unsprung components.



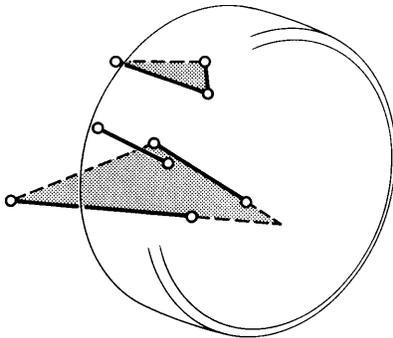
OPTIMIZED TOE CONTROL

The rear suspension mechanism provides linear toe-change characteristics that are largely unaffected by external forces. As a result, the vehicle's stability is improved during cornering maneuvers and changes in vehicle attitude.

REDUCED CAMBER VARIATIONS

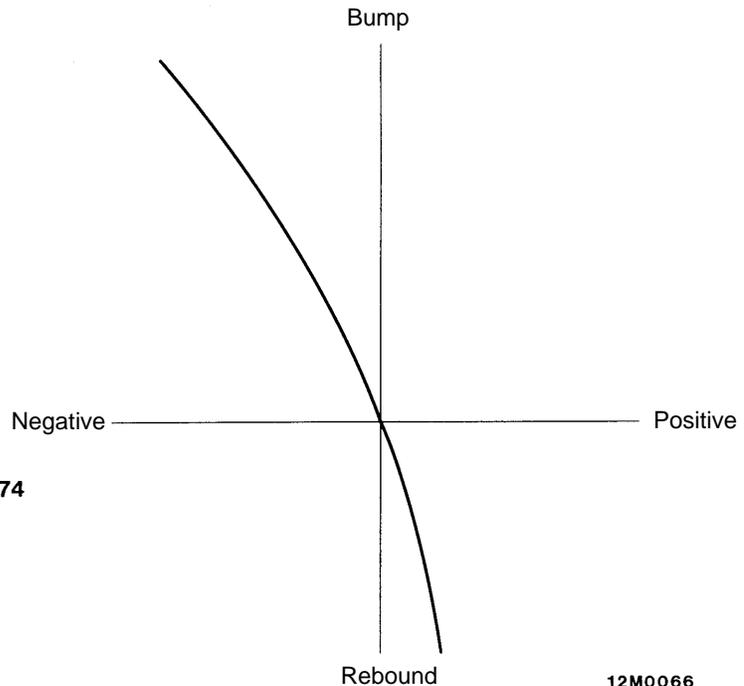
The upper arm, lower arm, and trailing arm form a double-wishbone arrangement. The arms' layout has been optimized to minimize camber variations on long strokes during cornering maneuvers, resulting in an expanded cornering performance envelope.

Double-Wishbone Arrangement Formed by Arms



12M0074

Camber Variations on Up/Down Stroke



12M0066

ANTI-SQUAT GEOMETRY

The upper and trailing arms are arranged such that squat is suppressed during acceleration. The vehicle's stability is consequently superior.

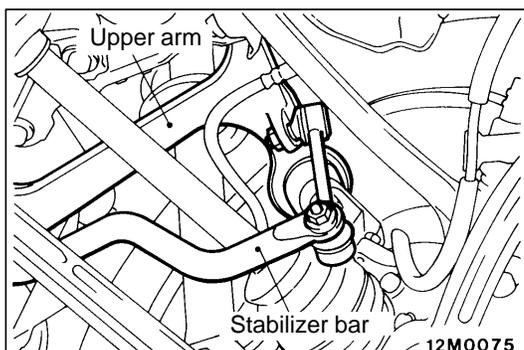
SUSPENSION COMPONENTS

Coil Springs and Shock Absorbers

Given that the vehicle is intended for use in competitions, the shock absorbers' damping characteristics during low-speed operation and the spring constant have been optimized to provide enhanced suspension performance over the entire operating range.

Stabilizer Bar

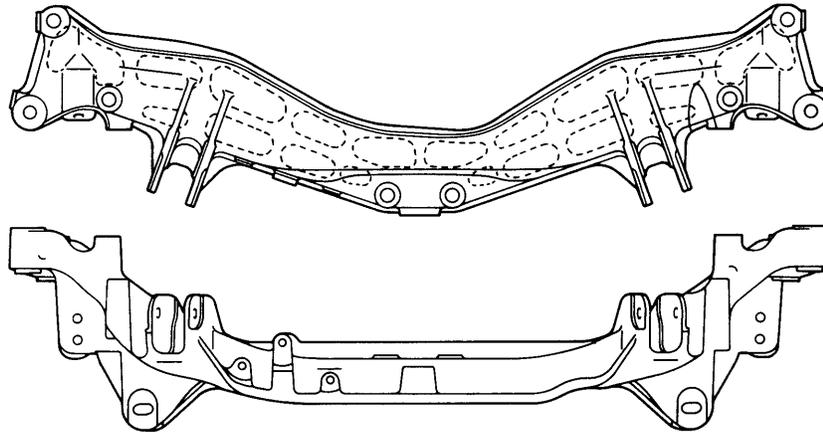
The stabilizer bar's mounting points have been moved from the lower arms to the upper arms, and the bar's specifications have been revised, resulting in optimized roll stiffness. Stability in the vehicle's attitude and behavior during cornering maneuvers is consequently superior.



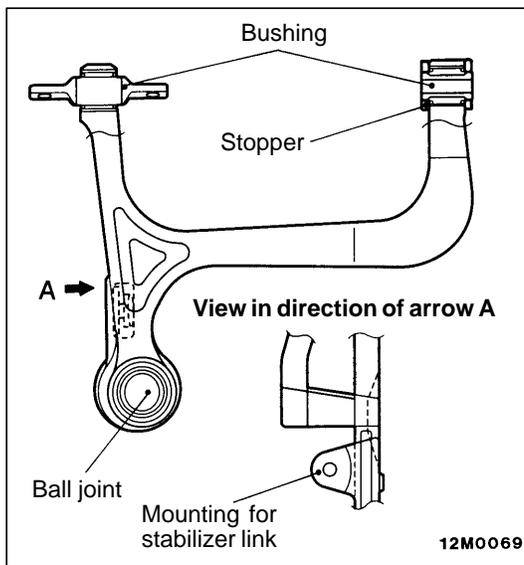
12M0075

Cross Member

The use of cast aluminum for the cross member has realized a reduction in weight while ensuring sufficient rigidity.

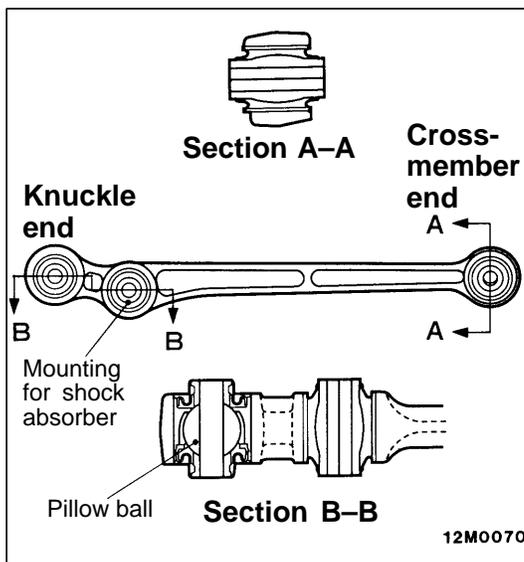


12M0072



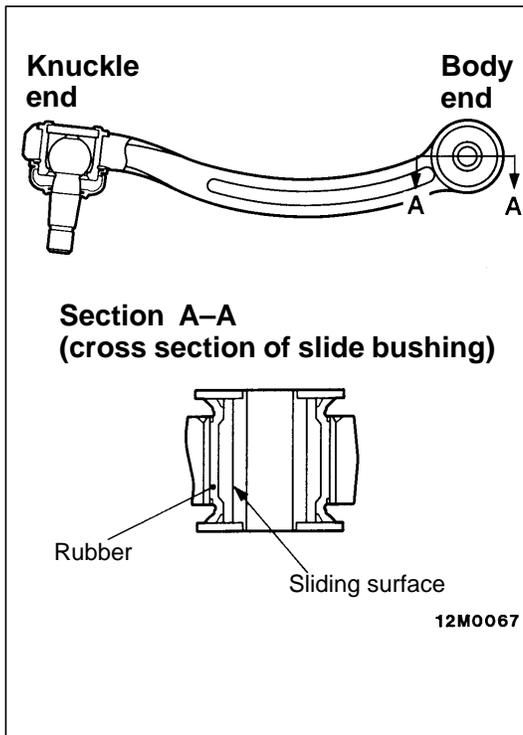
Upper Arms

The use of forged aluminum for the upper arms has realized a reduction in weight while ensuring sufficient rigidity. Each arm is attached to the knuckle via a ball joint and to the body and cross member by rubber bushings. The bushing toward the rear is provided with a stopper for improved support rigidity. Further, each upper arm is provided with a mounting for the stabilizer link.



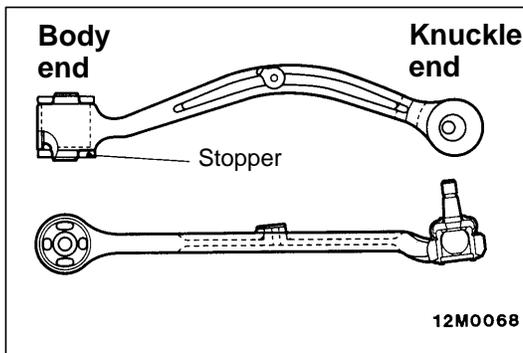
Lower Arms

The lower arms are forged for greater rigidity. They have pillow balls at their knuckle ends and rubber bushings at their cross-member ends.



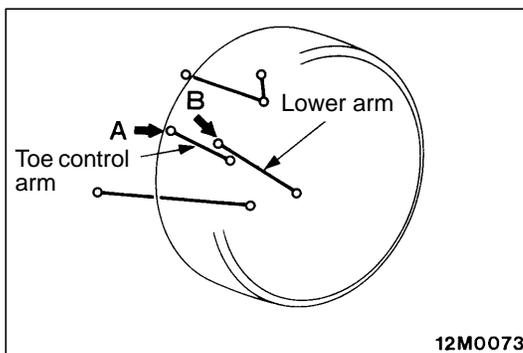
Toe Control Arms

The toe control arms are forged for greater rigidity. They have ball joints at their knuckle ends and slide bushings at their body ends. This arrangement maximizes rigidity and reduces friction during suspension strokes.



Trailing Arms

The trailing arms are forged for greater rigidity. They have ball joints at their knuckle ends and rubber bushings at their body ends.



Adjustment of Alignment

As with the EVOLUTION-III, the toe and camber angles can be adjusted. Adjustment of the toe angle is performed at the toe control arm's body-end mounting point (labeled "A" in the drawing), and adjustment of the camber angle is performed at the lower arm's cross-member-end mounting point (labeled "B" in the drawing).

EVOLUTION 16-inch aluminum wheel



11M0061

WHEELS AND TIRES

<EVOLUTION-IV>

- (1) Sixteen-inch tires have been adopted to complement the vehicle's improved handling stability and larger brakes <standard on GSR; optional on RS>.
- (2) Sixteen-inch aluminum wheels have been introduced specifically for EVOLUTION models <standard on GSR; optional on RS>.

NOTE

For the wheels' and tires' specifications, refer to "Major Accessories" in Group 8.

<EVOLUTION-V>

225/45 R17 tires and 7.5J J X 17 aluminum wheels are fitted on the GSR as standard and as a maker option on the RS.

NOTE

The Brembo front brakes of vehicles with 17-inch wheels are designed specifically for use with 17-inch wheels. Consequently, the 16-inch spare wheel cannot be fitted at the front.

STEERING SYSTEM

To improve the steering system's rigidity and responsiveness and enhance the steering feeling, the following revisions have been made:

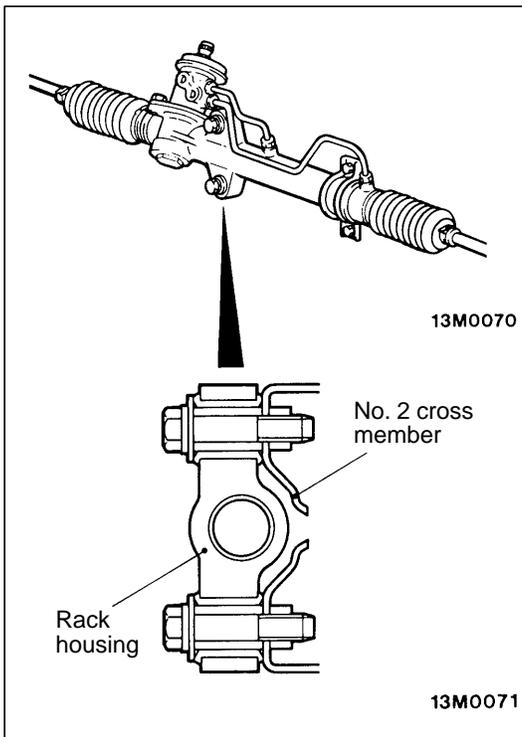
- A Momo leather-covered steering wheel has been adopted <incorporates airbag on GSR>.
- The gear ratio of the steering gearbox has been increased.
- The steering gearbox's mounting bracket has been incorporated into the housing.
- The power steering fluid pump's basic delivery rate and other specifications have been revised.
- A power steering fluid cooler has been adopted.

<EVOLUTION-V>

- The steering gearbox's mounting position has been lowered for increased handling stability.
- A variable-capacity power steering fluid pump has been adopted, and the fluid cooler has been eliminated as a result.
- A proven, low-loss-design has been adopted for the power steering fluid pump to improve fuel efficiency.

Specifications

Item		Non-EVOLUTION LANCER (reference)	EVOLUTION-IV RS	EVOLUTION-IV GSR	EVOLUTION-V RS	EVOLUTION-V GSR
Steering wheel	Type	Momo three-spoke (leather-covered with built-in airbag)	Momo three-spoke (leather-covered)	Momo three-spoke (leather-covered with built-in airbag)	Momo three-spoke (leather-covered)	Momo three-spoke (leather-covered with built-in airbag)
	Outside diameter (mm)	380	365	380	365	380
	Max. turns	2.7	2.1	2.3	2.1	2.3
Steering column	Tilt adjustment mechanism	Provided				
Power steering type		Integral (engine-speed-sensitive)				
Steering gearbox and linkages	Gearbox type	Rack and pinion				
	Gear ratio	45.74	62.89	57.18	62.89	57.18
	Rack stroke (mm)	124	136			
Fluid pump	Type	Vane type with fluid flow rate control system			Vane type (variable capacity) with fluid flow rate control system	
	Basic delivery rate (cm ³ /rev. {cc/rev.})	7.2 {7.2}	9.6 {9.6}		7.2 {7.2}	
	Relief pressure setting (MPa {kg/cm ² })	8.8 {90}				
	Pressure switch	Provided				
Steering angle	Inside wheel	33°	33°20'		33°10'	
	Outside wheel	29°	28°20'		28°10'	
Fluid cooler		Not provided	Provided		Not provided	



STEERING GEARBOX

The gear ratio has been increased to improve steering responsiveness. Also, the following revisions have been made to increase rigidity:

- The pinion-shaft-side mounting bracket of the steering gearbox has been incorporated into the rack housing.
- The rack's diameter has been increased.

POWER STEERING FLUID COOLER

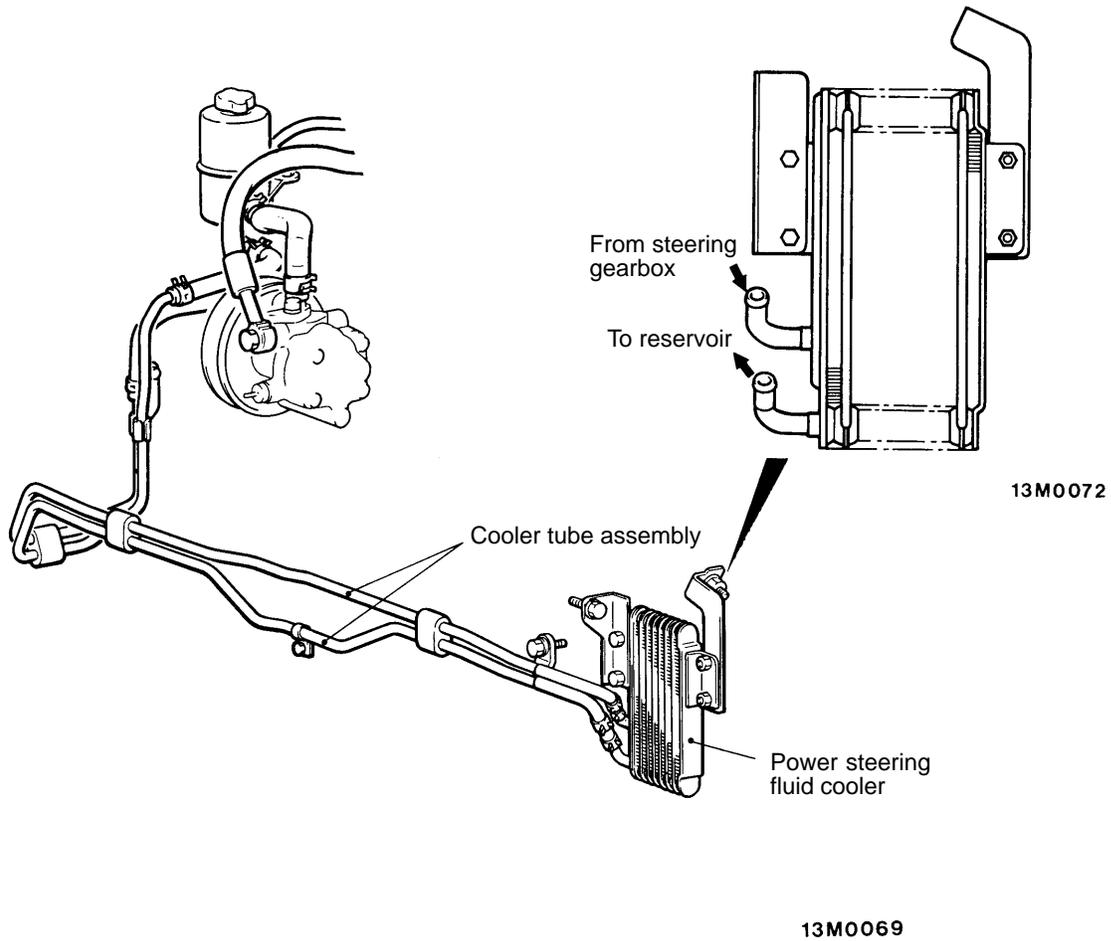
<EVOLUTION-IV>

An air-cooled power steering fluid cooler is fitted behind the front bumper on the left-hand side. This arrangement improves fluid cooling performance.

Specifications

Item		Specification
Power steering fluid cooler	Type	Drawn cup
	Capacity (dm ³ {ℓ})	0.15 {0.15}

Construction Diagram



SERVICE BRAKES

<EVOLUTION-IV>

To match the high-performance engine, the service brake system has been revised as follows:

- The front wheels are equipped with 16- or 15-inch, 2-piston, ventilated disc brakes. (Sixteen-inch brakes are standard on the GSR and optional on the RS. Fifteen-inch brakes are standard on the RS.)
- The rear wheels are equipped with 15-inch ventilated disc brakes with built-in parking-brake drums.
- The master cylinder's diameter has been increased ($\phi 23.8$ mm on non-EVOLUTION LANCER $\rightarrow \phi 25.4$ mm on EVOLUTION).
- A 7+8-inch tandem brake booster has been adopted.
- An ABS is fitted as standard <GSR>.

<EVOLUTION-V>

The service brake system has the following features:

- The front ventilated disc brakes, manufactured by Brembo, have four-opposed-piston calipers whose leading- and trailing-side pistons have different diameters <standard on GSR; maker option on RS>.
- The rear ventilated disc brakes, also manufactured by Brembo, have two-opposed-piston calipers <standard on GSR; standard on RS>.
- On vehicles with Brembo brakes, the master cylinder diameter has been increased from 25.4 mm to 26.9 mm).

Specifications

Item		Non-EVOLUTION LANCER (reference)	EVOLUTION-IV RS	EVOLUTION-IV GSR	EVOLUTION-V	
					RS: Standard equipment	GSR RS: Maker option
Master cylinder	Type	Tandem				
	Inside diameter (mm)	23.8	25.4		26.9	
Brake booster	Type (size)	Vacuum servo (7+8-inch)				
	Power cylinder effective diameter (mm)	180+205				
	Boost rate	6.0	4.5			
Fluid pressure control valve type		Proportioning valve				
Front brakes	Type	Floating caliper; one piston; ventilated disc (V4-S54)	Floating caliper; two pistons; ventilated disc (V5-W43 [V6-W43])	Floating caliper; two pistons; ventilated disc (V6-W43)	Floating caliper; two pistons; ventilated disc (V5-W43)	Brembo; four opposed pistons; ventilated disc (V7-Z4046)
	Disc dimensions (effective diameter × thickness) (mm)	204 × 24	227 × 24 [246 × 24]	246 × 24	227 × 24	263 × 32
	Wheel cylinder diameter (mm)	53.9	42.9 × 2		40.0 × 2, 46.0 × 2	
	Pad thickness (mm)	10.0				
	Clearance adjustment	Automatic				
Rear brakes	Type	Floating caliper; one piston; solid disc (S4-S30P)	Floating caliper; one piston; ventilated disc (V5-S35)		Floating caliper; one piston; ventilated disc (V5-S35)	Brembo; two opposed pistons; ventilated disc (V6-X40)
	Disc dimensions (effective diameter × thickness) (mm)	224 × 10	237 × 20		252 × 22	
	Wheel cylinder diameter (mm)	30.1	34.9		40.0 × 2	
	Pad thickness (mm)	9.5	10.0			
	Clearance adjustment	Automatic				

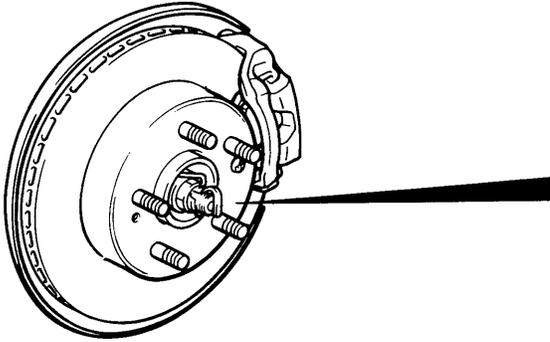
NOTE

Figures in brackets [] apply to vehicles with optional 16-inch wheels.

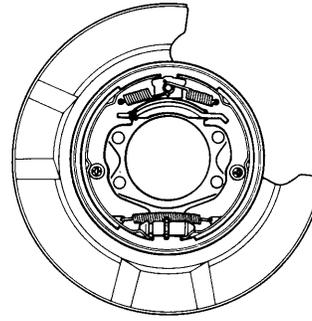
REAR DISC BRAKES <EVOLUTION-IV>

The rear wheels are equipped with V5-S35 one-piston ventilated disc brakes. These brakes are a drum-in-disc type; each incorporates a drum brake that forms part of the parking brake mechanism. The brake pad on the inside of the left wheel has an audible wear indicator.

**Drum brake used by
parking brake mechanism**



14M0098

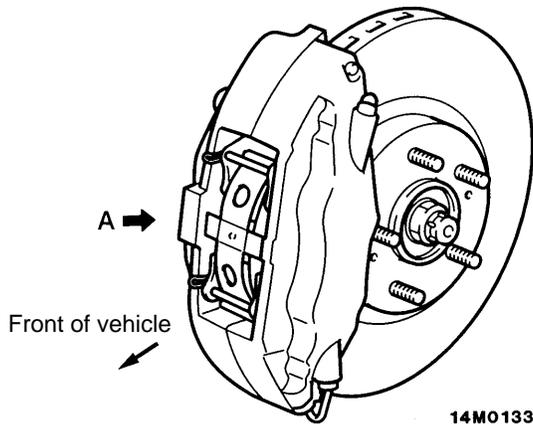


14M0097

DISC BRAKES <EVOLUTION-V>

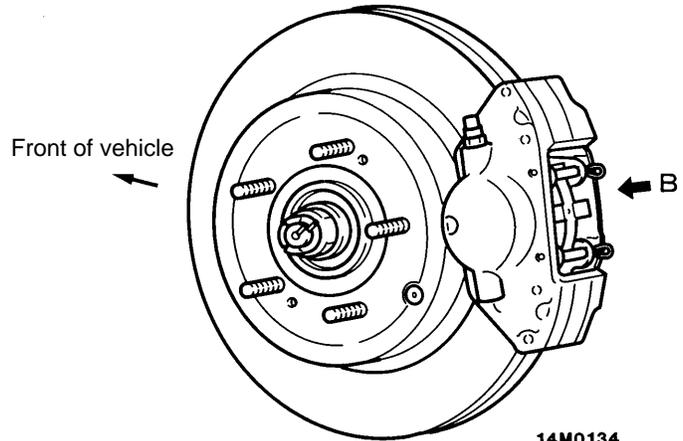
The front wheels are equipped with Brembo V7-Z4046 four-opposed-piston ventilated disc brakes, and the rear wheels are equipped with Brembo V6-X40 two-opposed-piston ventilated disc brakes <standard on GSR; maker option on RS>.

<Front>

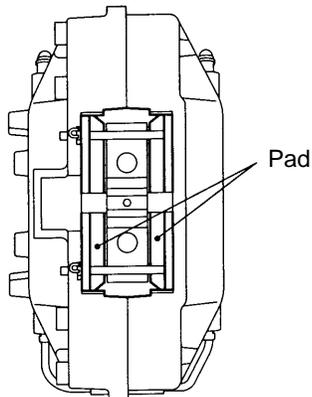


14M0133

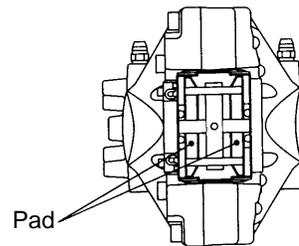
<Rear>



14M0134

View in direction
of arrow A

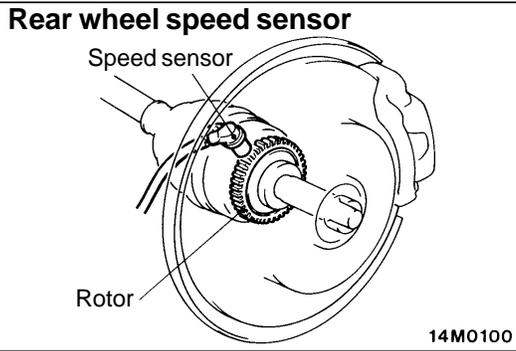
14M0131

View in direction
of arrow B

14M0132

NOTE

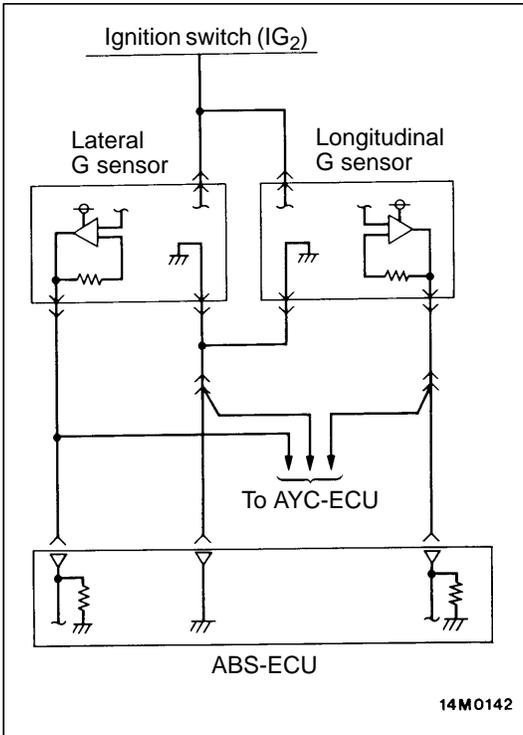
Brembo is an Italian component maker whose name and products are well known in the motorsports world. The Brembo logo is attached to the vehicle's body below the rear-left combination lamp.



ABS

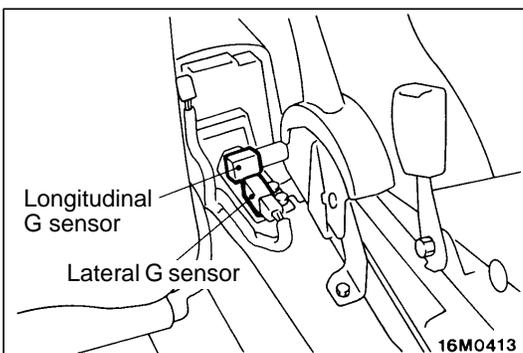
WHEEL SPEED SENSORS

At each rear wheel, the speed sensor is attached to the knuckle and the rotor is attached to the drive shaft. The sensor-to-rotor clearance cannot be adjusted.



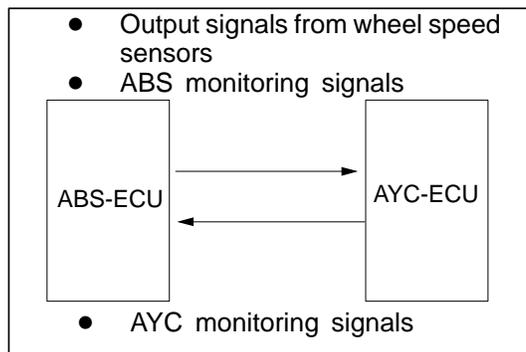
<EVOLUTION-V GSR>

Inputs provided to the ABS-ECU have been supplemented by data from the AYC system's lateral G sensor to enable better control during cornering maneuvers.



LATERAL G SENSOR <EVOLUTION-V>

The lateral G sensor, which is shared by the AYC system and 4ABS, is physically identical to the longitudinal G sensor. It is mounted at 90° to the longitudinal G sensor to enable sensing of lateral acceleration.

**ABS-ECU****<EVOLUTION-IV GSR>**

Owing to the incorporation of the AYC system, data necessary for control are transmitted between the ABS-ECU and AYC-ECU.

Transmitted Data

- (1) Data provided to AYC-ECU:
- Output signals from wheel speed sensors
 - ABS monitoring signals
- (2) Data issued by AYC-ECU:
- AYC monitoring signals

Diagnosis Function

Certain diagnosis and data list items have been revised as shown below.

Diagnosis Items

Diagnosis No.	ABS
	Meaning
27	AYC monitor signal abnormality

Data List Items

No.	ABS	
	Service data item	AYC monitoring signal
27	Indication	ON/OFF

<EVOLUTION-V>

Owing to the addition of the lateral G sensor as an input sensor, certain diagnosis and service data items have been revised as shown below. The ECU connector's terminal layout has been revised accordingly.

Diagnosis Items

Diagnosis code No.	Meaning
71	Open/short circuit in lateral G sensor's signal wiring; or abnormality in signals from sensor

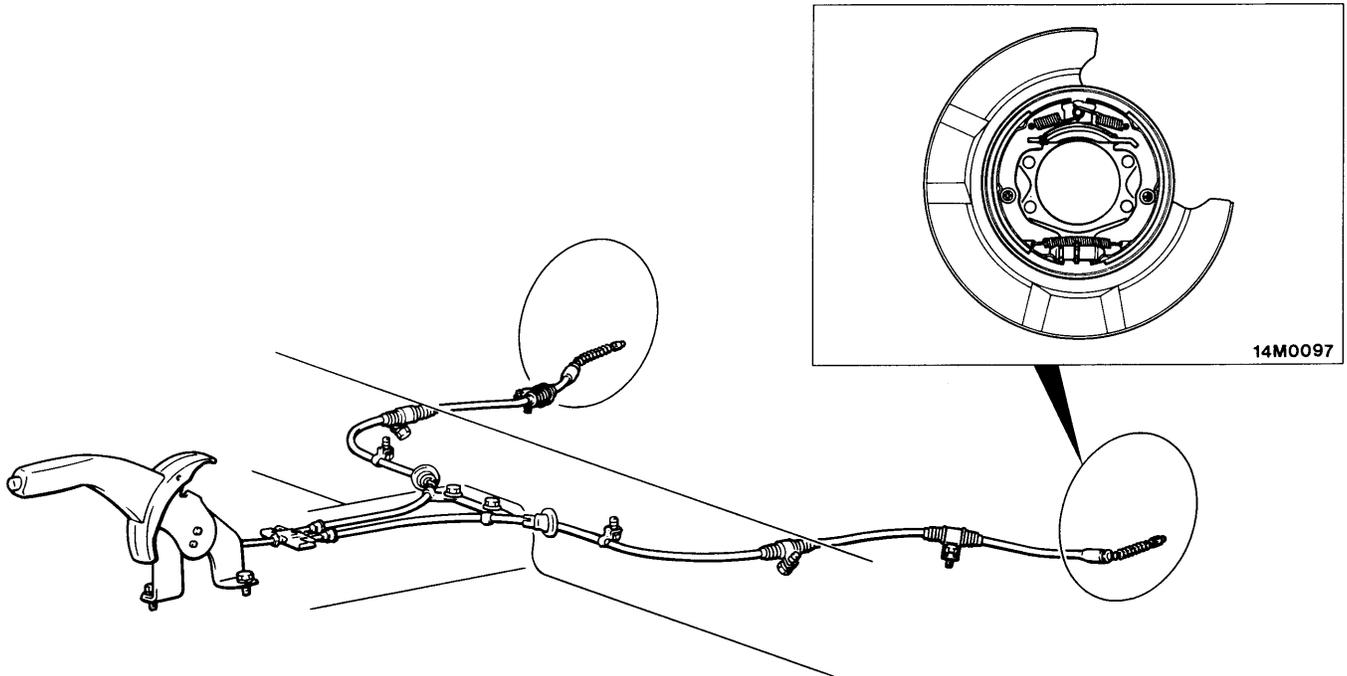
Service Data Items

Item No. 71 has been added, and item No. 27 (AYC monitoring signal) has been eliminated.

Item No.	Service data item	Lateral G sensor output voltage
71	Indication unit	V

PARKING BRAKE MECHANISM

For improved parking brake performance, mechanically activated drum-in-disc brakes are utilized on the rear wheels.



14M0096