

# **LEGANZA (MY2000)**

## **Service Manual**

### **FOREWORD**

This manual includes procedures for maintenance, adjustment, service operations, and removal and installation of components for the LEGANZA vehicle.

When reference is made in this manual to a brand name, number, or specific tool, an equivalent product may be used in place of the recommended item.

All information, illustrations and specifications contained in this manual are based on the latest product information available at the time of publication approval. The right is reserved to make changes at any time without notice.

Daewoo Motor Company, Limited  
Overseas Technical Service Department  
391-9 Chong Chon- Dong, Pu Pyung-Gu,  
Inchon, Korea  
Tel: 82-32-509-4150 ~ 4159, 4170  
Fax: 82-32-509-4160 / 4169  
E-mail: m8610452@dwmc.co.kr  
m9310883@dwmc.co.kr

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## SECTION 0B

# GENERAL INFORMATION

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## SPECIFICATIONS

### TECHNICAL DATA

#### Performance - Manual Transaxle

Application	2.0L SOHC	2.0L DOHC	2.2L DOHC
Maximum Speed (km/h)	188	206	TBD
Gradeability (tan $\emptyset$ )	0.54	0.57	TBD
Minimum Turning Radius (m)	5.5	5.5	TBD

#### Performance - Automatic Transaxle

Application	2.0L SOHC	2.0L DOHC	2.2L DOHC
Maximum Speed (km/h)	187	192	TBD
Gradeability (tan $\emptyset$ )	0.62	0.65	TBD
Minimum Turning Radius (m)	5.5	5.5	TBD

**Engine**

Application	2.0L SOHC	2.0L DOHC	2.2L DOHC
Engine Type	Overhead Cam L-4	Dual Overhead Cam L-4	Dual Overhead Cam L-4
Bore (mm)	86	86	86
Stroke (mm)	86	86	94.6
Total Displacement (cm <sup>3</sup> )	1,998	1,998	2,198
Compression Ratio	9.2:1	9.6:1	9.6:1
Maximum Power (kw/rpm)	78 (at 5,000)	98 (at 5,400)	TBD
Maximum Torque (N•m/rpm)	178.5 (at 4,000)	184 (at 4,600)	TBD

**Ignition System**

Application	2.0L SOHC	2.0L DOHC	2.2L DOHC
Ignition Type	Direct Ignition System	Direct Ignition System	Direct Ignition System
Ignition Timing (° BTDC)	8	5	6
Ignition Sequence	1-3-4-2	1-3-4-2	1-3-4-2
Spark Plug Gap (mm)	0.9	0.8	0.8 / 1.0
Spark Plug Maker	Bosch	Bosch	Bosch
Spark Plug Type	WR8DC	FR8LDC4	FR8LDC4 / FLR8LDCU

**Clutch - Manual Transaxle**

Application	2.0L SOHC	2.0L DOHC	2.2L DOHC
Type	Single Dry Plate	Single Dry Plate	Single Dry Plate
Outside Diameter (mm)	215	225	225
Inside Diameter (mm)	145	150	150
Thickness (mm)	3.4	3.4	3.4
Fluid Capacity	Common Use; Brake Fluid	Common Use; Brake Fluid	Common Use; Brake Fluid

**Manual Transaxle**

Application	2.0L SOHC	2.0L DOHC	2.2L DOHC
Maker	DWMC	DWMC	DWMC
Type or Model	D-16	D-20	D-20
Gear Ratio:	-	-	-
1st	3.545:1	3.545:1	3.545:1
2nd	2.048:1	2.158:1	2.158:1
3rd	1.346:1	1.478:1	1.478:1
4th	0.971:1	1.129:1	1.129:1
5th	0.763:1	0.886:1	0.886:1
Reverse	3.333:1	3.333:1	3.333:1
Final Drive Ratio	3.944:1	3.722:1	3.722:1
Oil Capacity (L)	1.8	1.8	1.8

**Automatic Transaxle**

<b>Application</b>	<b>2.0L SOHC</b>	<b>2.0L DOHC</b>	<b>2.2L DOHC</b>
Maker	ZF	ZF	AISIN
Type or Model	4HP14	4HP14	50-40LE
Gear Ratio:	-	-	-
1st	2.412:1	2.412:1	3.900:1
2nd	1.369:1	1.369:1	2.228:1
3rd	1.000:1	1.000:1	1.477:1
4th	0.739:1	0.739:1	1.062:1
Reverse	2.828:1	2.828:1	4.271:1
Final Drive Ratio	4.225:1	3.979:1	2.654:1
Oil Capacity for Replacement (L)	2.5	2.5	6.5~7.0

**Brake**

<b>Application</b>	<b>2.0L SOHC</b>	<b>2.0L DOHC</b>	<b>2.2L DOHC</b>
Booster Size:	-	-	-
Booster 1 (in.)	7	7	7
Booster 2 (in.)	8	8	8
Master Cylinder Diameter (mm)	23.8	23.8	23.8
Booster Ratio	5.0:1	5.0:1	5.0:1
Front Brake:	-	-	-
Disc Type	Ventilated	Ventilated	Ventilated
Rear Brake:	-	-	-
Disc Type	Solid	Solid	Solid
Fluid Capacity (L)	0.5	0.5	0.5

**Tire and Wheel**

<b>Application</b>	<b>2.0L SOHC</b>	<b>2.0L DOHC</b>	<b>2.2L DOHC</b>
Standard Tire Size	195/70R14	205/60R15	205/60R15
Standard Wheel Size	5.5JX14	6.0JX15	6.0JX15
Inflation Pressure at Full Load:	-	-	-
195/70R14:	-	-	-
Front	29	-	-
Rear	29	-	-
205/60R15:	-	-	-
Front	-	29	29
Rear	-	29	29

### Steering System

Application	2.0L SOHC	2.0L DOHC	2.2L DOHC
Gear Type	Power Rack and Pinion	Power Rack and Pinion	Power Rack and Pinion
Wheel Alignment:	-	-	-
Front:	-	-	-
Toe-In at Each wheel ( °/mm)	-0.1 ± 0.08 (-0.6 ± 0.5)	-0.1 ± 0.08 (-0.6 ± 0.5)	-0.1 ± 0.08 (-0.6 ± 0.5)
Caster ( °)	3 ± 1	3 ± 1	3 ± 1
Camber ( °)	-0.2 ± 1	-0.2 ± 1	-0.2 ± 1
Rear:	-	-	-
Toe-In at Each wheel ( °/mm)	0.16 ± 0.08 (1 ± 0.5)	0.16 ± 0.08 (1 ± 0.5)	0.16 ± 0.08 (1 ± 0.5)
Camber ( °)	-0.8 ± 1	-0.8 ± 1	-0.8 ± 1
Oil Capacity (L)	1.0	1.0	1.0

### Suspension

Application	2.0L SOHC	2.0L DOHC	2.2L DOHC
Front Type	MacPherson Strut	MacPherson Strut	MacPherson Strut
Rear Type	Dual Link Strut	Dual Link Strut	Dual Link Strut

### Fuel System

Application	2.0L SOHC	2.0L DOHC	2.2L DOHC
Fuel Delivery	MPI	MPI	MPI
Fuel Pump Type	Electric Motor Pump	Electric Motor Pump	Electric Motor Pump
Fuel Filter Type	Cartridge	Cartridge	Cartridge
Fuel Capacity (L)	65	65	65

### Lubricating System

Application	2.0L SOHC	2.0L DOHC	2.2L DOHC
Lubricating Type	Forced Feed	Forced Feed	Forced Feed
Oil Pump Type	Duocentric Rotor	Duocentric Rotor	Duocentric Rotor
Oil Filter Type	Cartridge (Full Flow)	Cartridge (Full Flow)	Cartridge (Full Flow)
Oil Pan Capacity Including Oil Filter (L)	4.0	4.0	4.0

### Cooling System

Application	2.0L SOHC	2.0L DOHC	2.2L DOHC
Cooling Type	Forced Water Circulation	Forced Water Circulation	Forced Water Circulation
Radiator Type	Cross-flow	Cross-flow	Cross-flow
Water Pump Type	Centrifugal	Centrifugal	Centrifugal
Thermostat Type	Pellet Type	Pellet Type	Pellet Type
Coolant Capacity (L)	7.0	7.0	7.0

**Electric System**

<b>Application</b>	<b>2.0L SOHC</b>	<b>2.0L DOHC</b>	<b>2.2L DOHC</b>
Battery (Amps)	550 Cold Cranking 610 Cold Cranking	550 Cold Cranking 610 Cold Cranking	550 Cold Cranking 610 Cold Cranking
Alternator (Amps)	95	95	95
Starter (No-Load Test Current Draw):	-	-	-
1.4 kW (Amps/Volts)	Minimum 80 Maximum 120 (at 10)	Minimum 80 Maximum 120 (at 10)	Minimum 80 Maximum 120 (at 10)

**VEHICLE DIMENSIONS AND WEIGHTS****Vehicle Dimensions - Manual and Automatic**

<b>Application</b>	<b>2.0L SOHC</b>	<b>2.0L DOHC</b>	<b>2.2L DOHC</b>
Overall Length (mm)	4,671	4,671	4,671
Overall Width (mm)	1,779	1,779	1,779
Overall Height (mm)	1,437	1,437	1,437
Minimum Ground Clearance (mm)	167	167	167
Wheel Base (mm)	2,670	2,670	2,670
Tread:	-	-	-
Front (mm)	1,515	1,515	1,515
Rear (mm)	1,507	1,507	1,507

**Vehicle Weights - 4 Door Notchback**

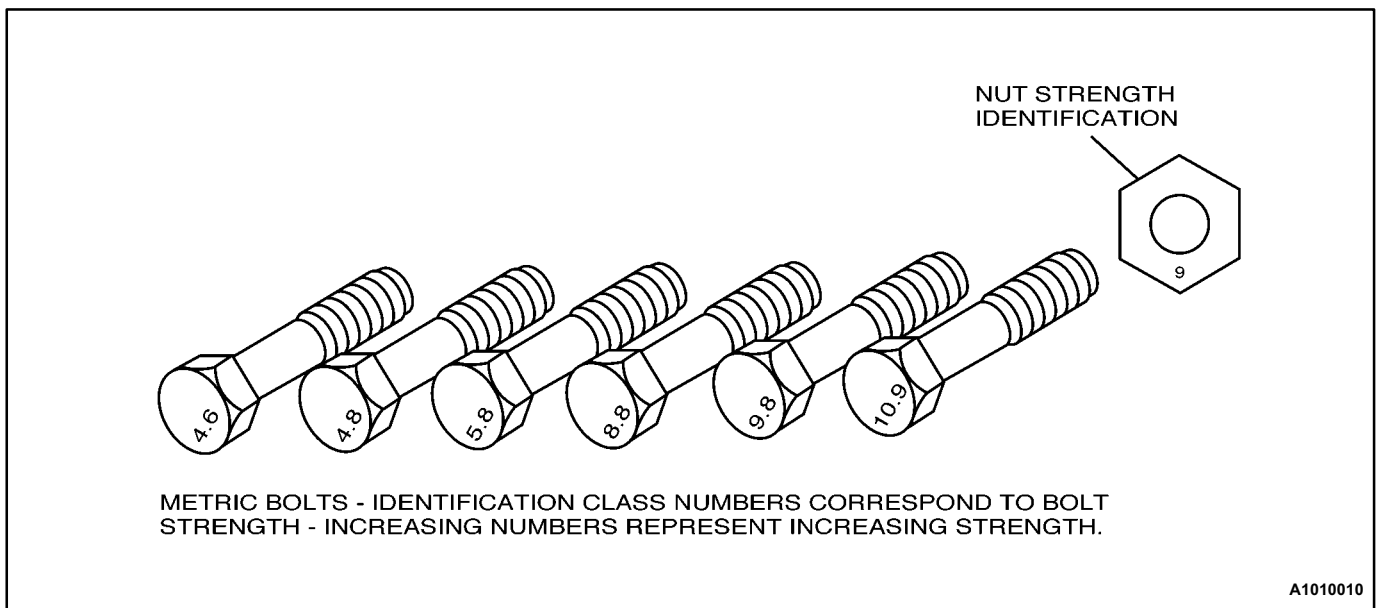
<b>Application</b>	<b>2.0L SOHC</b>	<b>2.0L DOHC</b>	<b>2.2L DOHC</b>
Manual:	-	-	-
Curb Weight (kg)	1,295 - 1,320	1,325 - 1,365	TBD
Gross Vehicle Weight (kg)	1,830	1,830	TBD
Automatic:	-	-	-
Curb Weight: (kg)	1,305 - 1,330	1,336 - 1,376	TBD
Gross Vehicle Weight (kg)	1,830	1,830	TBD
Passenger Capacity	5	5	TBD



## STANDARD BOLT SPECIFICATIONS

Bolt*	4T - Low Carbon Steel	7T - High Carbon Steel	7T - Alloy Steel
M6 X 1.0	4.1-8.1 N•m (36-72 lb•in)	4.1-9.5 N•m (48-84 lb•in)	-
M8 X 1.25	8.1-17.6 N•m (72-156 lb•in)	12.2-23.0 N•m (108-204 lb•in)	16-30 N•m (12-22 lb•ft)
M10 X 1.25	20-34 N•m (15-25 lb•ft)	27-46 N•m (20-34 lb•ft)	37-62 N•m (27-46 lb•ft)
M10 X 1.5	19-34 N•m (14-25 lb•ft)	27-45 N•m (20-33 lb•ft)	37-60 N•m (27-44 lb•ft)
M12 X 1.25	49-73 N•m (36-54 lb•ft)	61-91 N•m (45-67 lb•ft)	76-114 N•m (56-84 lb•ft)
M12 X 1.75	45-69 N•m (33-51 lb•ft)	57-84 N•m (42-62 lb•ft)	72-107 N•m (53-79 lb•ft)
M14 X 1.5	76-115 N•m (56-85 lb•ft)	94-140 N•m (69-103 lb•ft)	114-171 N•m (84-126 lb•ft)
M14 X 2.0	72-107 N•m (53-79 lb•ft)	88-132 N•m (65-97 lb•ft)	107-160 N•m (79-118 lb•ft)
M16 X 1.5	104-157 N•m (77-116 lb•ft)	136-203 N•m (100-150 lb•ft)	160-240 N•m (118-177 lb•ft)
M16 X 2.0	100-149 N•m (74-110 lb•ft)	129-194 N•m (95-143 lb•ft)	153-229 N•m (113-169 lb•ft)
M18 X 1.5	151-225 N•m (111-166 lb•ft)	195-293 N•m (144-216 lb•ft)	229-346 N•m (169-255 lb•ft)
M20 X 1.5	206-311 N•m (152-229 lb•ft)	270-405 N•m (199-299 lb•ft)	317-476 N•m (234-351 lb•ft)
M22 X 1.5	251-414 N•m (185-305 lb•ft)	363-544 N•m (268-401 lb•ft)	424-636 N•m (313-469 lb•ft)
M24 X 2.0	359-540 N•m (265-398 lb•ft)	431-710 N•m (318-524 lb•ft)	555-831 N•m (409-613 lb•ft)

\* Diameter X pitch in millimeters



# MAINTENANCE AND REPAIR

## MAINTENANCE AND LUBRICATION

### NORMAL VEHICLE USE

The maintenance instructions contained in the maintenance schedule are based on the assumption that the vehicle will be used for the following reasons:

- To carry passengers and cargo within the limitation indicated on the Tire Placard located on the edge of the driver's door.
- To be driven on reasonable road surfaces and within legal operating limits.

### EXPLANATION OF SCHEDULED MAINTENANCE SERVICES

The services listed in the maintenance schedule are further explained below. When the following maintenance services are performed, make sure all the parts are replaced and all the necessary repairs are done before driving the vehicle. Always use the proper fluid and lubricants.

#### Drive Belt Inspection

When a separate belt drives the power steering pump, the air conditioning compressor and the generator, inspect it for cracks, fraying, wear, and proper tension. Adjust or replace the belt as needed.

#### Engine Oil and Oil Filter Change

Always use above the SJ grade engine oil. The SJ designation may be shown alone or in combination with other designations such as SJ/CC, etc.

#### Engine Oil Viscosity

Engine oil viscosity (thickness) has an effect on fuel economy and cold weather operation. Lower viscosity engine oils can provide better fuel economy and cold weather performance; however, higher temperature weather conditions require higher viscosity engine oils for satisfactory lubrication. Using oils of any viscosity other than those viscosities recommended could result in engine damage.

#### Cooling System Service

Drain, flush and refill the system with new coolant. Refer to „Recommended Fluids and Lubricants” in this section.

#### Fuel Micro-Filter Replacement

Replace the engine fuel filter every 45 000 km (27,000 miles).

The engine fuel filter is located on the center dash panel near the brake booster.

### Air Cleaner Element Replacement

Replace the air cleaner element every 45 000 km (27,000 miles).

Replace the air cleaner more often under dusty conditions.

### Throttle Body Mounting Bolt Torque

Check the torque of the throttle body mounting bolts.

Tighten the throttle body mounting nuts to 9 N•m (80 lbf•in) (DOHC), 15 N•m (11 lbf•ft) (SOHC), if necessary.

### Spark Plug Replacement

Replace spark plugs with the same type.

	SOHC	DOHC	
Maker	Bosch	Bosch	
Type	WR8DC	FR8LDC4	FLR8LDCU
Gap	0.9mm	0.8mm	1.0mm

### Spark Plug Wire Replacement

Clean the wires and inspect them for burns, cracks, or other damage. Check the wire boot fit at the direct ignition system (DIS) module and at the spark plugs. Replace the wires as needed.

### Brake System Service

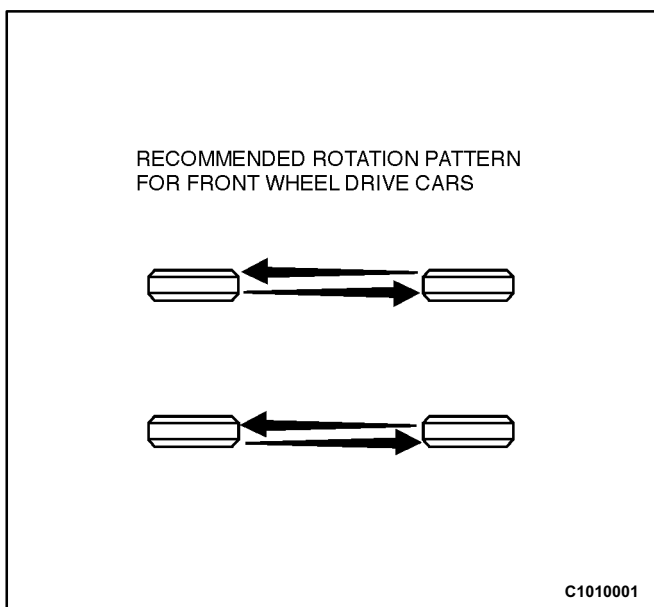
Check the disc brake pads every 15,000 km or 12 months. Check the pad and the lining thickness carefully. If the pads or the linings are not expected to last another 15,000 km, replace the pads or the linings. Check the breather hole in the brake fluid reservoir cap to be sure it is free from dirt and the passage is open.

### Transaxle Service

The manual transaxle oil does not require changing. The automatic transaxle fluid should be changed every 30,000 km for ZF 14HP and every 90,000 km for AISIN 50-40LE.

### Tire and Wheel Inspection and Rotation

Check the tires for abnormal wear or damage. To equalize wear and obtain maximum tire life, rotate the tires. If irregular or premature wear exists, check the wheel alignment and check for damaged wheels. While the tires and wheels are removed, inspect the brakes. Refer to „Each Time The Oil Is Changed” in this section.



## SCHEDULED MAINTENANCE CHARTS

### Engine

Maintenance Item	Maintenance Interval								
	Kilometers (miles) or time in months, whichever comes first								
Kilometers x 1 000	1	15	30	45	60	75	90	105	120
Miles x 1 000	.6	9	18	27	36	45	54	63	72
Months	-	12	24	36	48	60	72	84	96
Drive belts (alternator, power steering)			I		I		I		I
DOHC			I		I		I		I
Engine oil and oil filter <sup>1, 3</sup>	I	R	R	R	R	R	R	R	R
Cooling system and hose connection		I	I	I	I	I	I	I	I
Engine coolant <sup>3</sup>	I	I	I	R	I	I	R	I	I
Fuel filter				R			R		
Fuel line and connections		I	I	I	I	I	I	I	I
Air cleaner element <sup>2</sup>		I	I	R	I	I	R	I	I
Ignition timing		I	I	I	I	I	I	I	I
Spark plugs			I		R		I		R
DIS Module			I		I		I		I
Charcoal canister and vapor lines				I			I		
PCV System			I		I		I		I
Timing belt (camshaft belt)					I		R		I
Air condition filter*	I	R	R	R	R	R	R	R	R

**Chart Symbols:**

I - Inspect, and if necessary correct, clean, replenish or adjust.

R - Replace or change:

<sup>1</sup> If the vehicle is operated under severe conditions: short distance driving, extensive idling or driving in dusty conditions, change the engine oil and the filter every 7 500 km (4,500 miles) or six months, whichever comes first.

<sup>2</sup> More frequently if driving in dusty conditions.

<sup>3</sup> Refer to „Recommended Fluids and Lubricants.”

### Chassis and Body

Maintenance Item	Maintenance Interval								
	Kilometers (miles) or time in months, whichever comes first								
Kilometers x 1 000	1	15	30	45	60	75	90	105	120
Miles x 1 000	6	9	18	27	36	48	54	63	72
Months	-	12	24	36	48	60	72	84	96
Brake and clutch fluid <sup>1, 4</sup>	I	I	R	I	R	I	R	I	R
Brake pads and discs <sup>3</sup>		I	I	I	I	I	I	I	I
Parking brake		I	I	I	I	I	I	I	I
Brake line and connections (including booster)		I	I	I	I	I	I	I	I
Rear hub bearing and clearance		I	I	I	I	I	I	I	I
Manual transaxle oil <sup>1</sup>		I	I	I	I	I	I	I	I
Clutch and brake pedal free play		I	I	I	I	I	I	I	I
Automatic transaxle fluid <sup>1</sup> (ZF 14HP)	I	I	R	I	R	I	R	I	R
Automatic transaxle fluid <sup>1</sup> (AISIN 50-40LE)	I	I	I	I	I	I	R	I	I
Tighten chassis and underbody bolts and nuts		I	I	I	I	I	I	I	I
Tire condition and inflation pressure	I	I	I	I	I	I	I	I	I
Wheel alignment <sup>2</sup>	Inspect when abnormal condition is noted								
Steering wheel and linkage		I	I	I	I	I	I	I	I
Power steering fluid and lines <sup>1</sup>	I	I	I	I	I	I	I	I	I
Drive shaft boots		I	I	I	I	I	I	I	I
Seat belts, buckles and anchors		I	I	I	I	I	I	I	I
Lubricate locks, hinges and hood latch		I	I	I	I	I	I	I	I

**Chart Symbols:**

I - Inspect, and if necessary correct, clean, replenish or adjust.

R - Replace or change:

<sup>1</sup> Refer to „Recommended Fluids And Lubricants.”

<sup>2</sup> And if necessary, rotate and balance wheels.

<sup>3</sup> More frequently if operated under severe conditions: short distance driving, extensive idling, frequent low-speed operation in stop and go traffic, or driving in dusty conditions.

<sup>4</sup> Change the brake/clutch fluid every 15 000 km (9,000 miles) if the vehicle is mainly driven under severe conditions:  
 - driving in hilly or mountainous terrain, or  
 - towing a trailer/caravan frequently.

# OWNER INSPECTIONS AND SERVICES

## WHILE OPERATING THE VEHICLE

### Horn Operation

Blow the horn occasionally to make sure it works. Check all the button locations.

### Brake System Operation

Be alert for abnormal sounds, increased brake pedal travel, or repeated pulling to one side when braking. Also, if the brake warning light goes on or flashes, something may be wrong with part of the brake system.

### Exhaust System Operation

Be alert to any changes in the sound of the system or the smell of the fumes. These are signs that the system may be leaking or overheating. Have the system inspected and repaired immediately.

### Tires, Wheels and Alignment Operation

Be alert to any vibration of the steering wheel or the seats at normal highway speeds. This may mean a wheel needs to be balanced. Also, a pull right or left on a straight, level road may show the need for a tire pressure adjustment or a wheel alignment.

### Steering System Operation

Be alert to changes in the steering action. An inspection is needed when the steering wheel is hard to turn or has too much free play, or if unusual sounds are noticed when turning or parking.

### Headlamp Aim

Take note of the light pattern occasionally. Adjust the headlamps if the beams seem improperly aimed.

## AT EACH FUEL FILL

A fluid loss in any (except windshield washer) system may indicate a problem. Have the system inspected and repaired immediately.

### Engine Oil Level

Check the oil level and add oil if necessary. The best time to check the engine oil level is when the oil is warm.

1. After stopping the engine, wait a few minutes for the oil to drain back to the oil pan.
2. Pull out the oil level indicator (dipstick).
3. Wipe it clean, and push the oil level indicator back down all the way.
4. Pull out the oil level indicator and look at the oil level on it.
5. Add oil, if needed, to keep the oil level above the MIN line and within the area labeled „Operating Range.” Avoid overfilling the engine, since this may cause engine damage.

6. Push the indicator all the way back down into the engine after taking the reading.

If you check the oil level when the oil is cold, do not run the engine first. The cold oil will not drain back to the pan fast enough to give a true oil level reading.

### **Engine Coolant Level and Condition**

Check the coolant level in the coolant reservoir tank and add coolant if necessary. Inspect the coolant. Replace dirty or rusty coolant.

### **Windshield Washer Fluid Level**

Check the washer fluid level in the reservoir. Add fluid if necessary.

## **AT LEAST MONTHLY**

### **Tire and Wheel Inspection and Pressure Check**

Check the tires for abnormal wear or damage. Also check for damaged wheels. Check the tire pressure when the tires are cold (check the spare also, unless it is a stowaway). Maintain the recommended pressures that are on the tire placard that is on the driver's door.

### **Lamp Operation**

Check the operation of the license plate lamp, the headlamps (including the high beams), the parking lamps, the fog lamps, the taillamp, the brake lamps, the turn signals, the backup lamps, and the hazard warning flasher.

### **Fluid Leak Check**

Periodically inspect the surface beneath the vehicle for water, oil, fuel or other fluids, after the vehicle has been parked for a while. Water dripping from the air conditioning system after use is normal. If you notice fuel leaks or fumes, find the cause and correct it at once.

## **AT LEAST TWICE A YEAR**

### **Power Steering System Reservoir Level**

Check the power steering fluid level. Keep the power steering fluid at the proper level. Refer to *Section 6A, Power Steering System*.

### **Brake Master Cylinder Reservoir Level**

Check the fluid and keep it at the proper level. Refer to *Section 4B, Master Cylinder*. A low fluid level can indicate worn disc brake pads may need to be serviced. Check the breather hole in the reservoir cover to be free from dirt and check for an open passage.

**Clutch Pedal Free Travel**

Check clutch pedal free travel and adjust as necessary every 10 000 km. Measure the distance from the center of the clutch pedal to the outer edge of the steering wheel with the clutch pedal not depressed. Then measure the distance from the center of the clutch pedal to the outer edge of the steering wheel with the clutch pedal fully depressed. The difference between the two values must be greater than 140 mm.

**Weatherstrip Lubrication**

Apply a thin film of silicone grease using a clean cloth.

**EACH TIME THE OIL IS CHANGED****Automatic Transaxle Fluid**

Refer to *Section 5A, ZF 4HP14 Automatic Transaxle*.

**Manual Transaxle**

Check the oil level and add oil as required. Refer to *Section 5B, Five-Speed Manual Transaxle*.

**Brake System Inspection**

This inspection should be done when the wheels are removed for rotation. Inspect the lines and the hoses for proper hookup, binding, leaks, cracks, chafing, etc. Inspect the disc brake pads for wear. Inspect the rotors for surface condition. Inspect other brake parts, including the parking brake, etc., at the same time. Check the parking brake adjustment. Inspect the brakes more often if habit or conditions result in frequent braking.

**Steering, Suspension and Front Drive Axle Boot and Seal Inspection**

Inspect the front and rear suspension and the steering system for damaged, loose, or missing parts; signs of wear; or lack of lubrication. Inspect the power steering lines and the hoses for proper hookup, binding, leaks, cracks and chafing, etc. Clean and inspect the drive axle boot and seals for damage, tears, or leakage. Replace the seals if necessary.

**Exhaust System Inspection**

Inspect the complete system (including the catalytic converter, if equipped). Inspect the body near the exhaust system. Look for broken, damaged, missing, or outofposition parts, as well as open seams, holes, loose connections, or other conditions which could cause heat buildup in the floor pan or could let exhaust fumes seep into the trunk or passenger compartment.

**Throttle Linkage Inspection**

Inspect the throttle linkage for interference or binding, damaged, or missing parts. Lubricate all linkage joints and throttle cable joints, the intermediate throttle shaft bearing, the return spring at throttle valve assembly, and the accelerator pedal sliding face with suitable grease. Check the throttle cable for free movement.



### **Engine Drive Belts**

Inspect all belts for cracks, fraying, wear, and proper tension. Adjust or replace the belts as needed.

### **Hood Latch Operation**

When opening the hood, note the operation of the secondary latch. It should keep the hood from opening all the way when the primary latch is released. The hood must close firmly.

## **AT LEAST ANNUALLY**

### **Lap and Shoulder Belt Condition and Operation**

Inspect the belt system, including the webbing, the buckles, the latch plates, the retractor, the guide loops and the anchors.

### **Movable Head Restraint Operation**

On vehicles with movable head restraints, the restraints must stay in the desired position.

### **Spare Tire and Jack Storage**

Be alert to rattles in the rear of the vehicle. The spare tire, all the jacking equipment, and the tools must be securely stowed at all times. Oil the jack ratchet or the screw mechanism after each use.

### **Key Lock Service**

Lubricate the key lock cylinder.

### **Body Lubrication Service**

Lubricate all the body door hinges including the hood, the fuel door, the rear compartment hinges and the latches, the glove box and the console doors, and any folding seat hardware.

### **Transaxle Neutral Switch Operation on Automatic Transaxle**

***Caution: Take the following precautions because the vehicle could move without warning and possibly cause personal injury or property damage:***

- ***Firmly apply the parking brake and the regular brakes.***
- ***Do not use the accelerator pedal.***
- ***Be ready to promptly turn off the ignition if the vehicle starts.***

On automatic transaxle vehicles, try to start the engine in each gear. The starter should crank only in P (PARK) and in N (NEUTRAL).

### **Parking Brake and Transaxle P (PARK) Mechanism Operation**

***Caution: In order to reduce the risk of personal injury or property damage, be prepared to apply the regular brakes promptly if the vehicle begins to move.***

Park on a fairly steep hill with enough room for movement in the downhill direction. To check the parking brake, with the engine running and the transaxle in N (NEUTRAL), slowly remove foot pressure from the regular brake pedal (until only the parking brake is holding the vehicle).

To check the automatic transaxle P (PARK) mechanism's holding ability, release all brakes after shifting the transaxle to P (PARK).

### Underbody Flushing

Flushing the underbody will remove any corrosive materials used for ice and snow removal and dust control. At least every spring, clean the underbody. First, loosen the sediment packed in closed areas of the vehicle. Then flush the underbody with plain water.

### Engine Cooling System

Inspect the coolant and freeze protection fluid. If the fluid is dirty or rusty, drain, flush and refill the engine cooling system with new coolant. Keep the coolant at the proper mixture in order to ensure proper freeze protection, corrosion protection and engine operating temperature. Inspect the hoses. Replace the cracked, swollen, or deteriorated hoses. Tighten the clamps. Clean the outside of the radiator and the air conditioning condenser. Wash the filler cap and the neck. Pressure test the cooling system and the cap in order to help ensure proper operation.

## RECOMMENDED FLUIDS AND LUBRICANTS

USAGE	CAPACITY	FLUID/LUBRICANT
Engine Oil	4.0L	SOHC - SAE 10W/30, API SJ DOHC - SAE 5W/30, API SJ
Engine Coolant	7.0L	Mixture of water and good quality silicatebase antifreeze (year-round coolant)
Brake and Clutch Fluid	0.5L	SSK221 (DOT-3 Fluid)
Power Steering System Fluid	1.0L	DEXRON® II or III
Automatic Transaxle Fluid (ZF 14HP)	2.5L (when overhaul 6.2L)	DEXRON® II, III or Mercon®M, see Recommended Auto Transaxle Fluids
Automatic Transaxle Fluid (AISIN 50-40LE)	2.5L - 3.0L (when overhaul 6.5 - 7.0L)	TOTAL FLUID HX
Manual Transaxle Fluid	1.8L	CASTROL 80W
Manual Transaxle Shift Linkage	As needed	Grease (M-8122)
Key Lock Cylinders	As needed	Grease (M-8104)
Automatic Transaxle Shift Linkage	As needed	Grease
Clutch Linkage Pivot Points	As needed	Grease
Floor Shift Linkage Points	As needed	Grease
Hood Latch Assembly 1. Pivots and Spring Anchor	As needed	Grease (M-8105)
Hood and door hinges Fuel door hinge Rear compartment lid hinges	As needed	Spray Grease (M-8149) Oil (M-8030)
Weatherstrips	As needed	Wetting Agent (M-8128)

## RECOMMENDED AUTOMATIC TRANSAXLE FLUIDS (ZF 14HP)

Manufacturer	Trade name	Manufacturer	Trade name
ADDINOL MINERALÖL GMBH, KRUMPA/D	ADDINOL ATF D III	KUWAIT PETROLEUM, HOOGVLIET/NL	Q8 AUTO 14 (II D-21883)
AGIP PETROLI SPA, ROM/I	AGIP ATF II D	KUWAIT PETROLEUM, HOOGVLIET/NL	Q8 AUTO 14 (II D-21677)
AGIP PETROLI SPA, ROM/I	AGIP DEXRON III	LEPRINCE+SIVEKE GMBH, HERFORD/D	LEPRINXOL FLUID CN
AGIP PETROLI SPA, ROM/I	AGIP ATF D 309	LIQUIMOLY / MEGUIN, ULM/D	MEGOL ATF II D
AGIP SCHMIERTECHNIK, WÜRZBURG/D	AUTOL GETRIEBEÖL ATF III D	MAURAN SA, ODARS/F	INTER OIL INTER MATIC ATF D2
AGIP SCHMIERTECHNIK, WÜRZBURG/D	AUTOL GETRIEBEÖL ATF-D	MIN.ÖL-RAFFIN, DOLLBERGEN, UETZE/D	PENNASOL FLUID-GETR. ÖL TYP PCN
ARAL AG, BOCHUM/D	ARAL GETR ÖL ATF 55 F-30589	MOBIL OIL, WEDEL/D	MOBIL ATF 220 D21412 / D22187
ARAL AG, BOCHUM/D	ARAL GETRIEBEÖL ATF 22	MOBIL OIL, WEDEL/D	MOBIL ATF 220 D20104 / D21685
AVIA MINERALÖL-AG, MÜNCHEN/D	AVIA FLUID ATF 86	MOL HUNGARIAN OIL, KOMARON/H	CARRIER ATF
BLASER SWISSLUBE, HASLE-RÜEGSAU/CH	BLASOL 229	MORRIS LUBRICANTS, SHREWSBURY/GB	LIQUIMATIC D II
BP OIL DEUTSCHLAND, HAMBURG/D	FRONTOL UNIVERSAL-ATF 100	NAFTEC, ALGIER/DZ	TASSILIA
BP OIL INTERNATIONAL, LONDON/GB	AUTRAN MBX	NANHAI SUPERIOR LUB-OIL, CHINA	NANHAI ATF (D2)
BUCHER+CIE AG, LANGENTHAL/CH	MOTOREX ATF SUPER D-22656	NIS-RAFINERIJA NAFTE BEOGRAD/YU	GALAX MATIC DAC
BUCHER+CIE AG, LANGENTHAL/CH	MOTOREX ATF DEXRON III MC	OEST G. MIN. ÖLWERK, FREUDENSTADT/D	ATF T 4011
C.J.DIEDERICHS SÖHNE, WUPPERTAL/D	CIDISOL-HYDR.-FLUID DEXRON II D	OMV AG, SCHWECHAT/A	OMV ATF D II (D22427)
CALPAM GMBH, ASCHAFFENBURG/D	PAMATIC FLUID 289	OMV AG, SCHWECHAT/A	OMV ATF III (F-30580)
CALPAM GMBH, ASCHAFFENBURG/D	CALPAMATIC FLUID III F	OPTIMOL ÖLWERKE, HAMBURG/D	OPTIMOL ATF T 4011
CALTEX PETROLEUM CORP., LONDON/GB	CALTEX ATF-HDA	OSWALD KLUTH, BARGFELD-STEGEN/D	UNIVERSAL ATF-D
CASTROL LTD. SWINDON/GB	CASTROL TQ-D (22765)	PAKELO MOTOR OIL, SAN BONIFACIO/I	MULTIPURPOSE TRANSM. FLUID II D
CASTROL LTD. SWINDON/GB	CASTROL TRANSMAX Z	PANOLIN AG, MADETSWIL/CH	PANOLIN ATF MULTI 21996
CASTROL LTD. SWINDON/GB	CASTROL TQ-D (21289)	PRINZ-SCHULTE, FRECHEN/D	AERO-LINE ATF-D
CASTROL LTD. SWINDON/GB	CASTROL ATF 21293	PRINZ-SCHULTE, FRECHEN/D	AERO-LINE ATF-2
CASTROL LTD. SWINDON/GB	CASTROL TQ DEXRON III F-30520	REPSOL DISTRUBCION SA, MADRID/E	REPSOL MATIC ATF
CEPSA, MADRID/E	CEPSA ATF-70	S.A.E.L, ALCOBENDAS/E	GULF ATF D II D-22233
DE OLIEBRON B.V., ZWIJNDRECHT/NL	ATF DMM	SCHMIERSTOFFRAFFINERIE SALZBERGEN/D	WINTERSHALL ATF D
DE OLIEBRON B.V., ZWIJNDRECHT/NL	ATF 289	SHELL ASEOL AG, BERN/CH	ASEOL ATF DB UNIVERSAL
DEA MINERALÖL AG, HAMBURG/D	DEAFLUID 3003	SHELL INTERNATIONAL, LONDON/GB	SHELL DONAX TA (D-21666)
DEA MINERALÖL AG, HAMBURG/D	DEAFLUID 4011	SLOVNAFT JS CO, BRATISLAVA/SLO	MADIT AUTOMATIC
DEA MINERALÖL AG, HAMBURG/D	DEAMATIC	SONOL ISRAEL LTD, HAIFA/IL	DEXRON 2 D
DEUTSCHE SHELL AG, HAMBURG/D	MAC ATF D-21666	SOPROGRASA SA, MADRID/E	SOPRAL 164
DUCKHAMS OIL, BROMLEY/GB	UNIMATIC	STL TECNOL ESCALQUENS/F	TECNOL TECMATIC D2
ELF LUBRIFIANTS, PARIS/F	TRANSANTAR DF2	SUN OIL COMPANY, AARTSELAAR/B	SUNAMATIC 149
ELF LUBRIFIANTS, PARIS/F	ELFMATIC G3	SUN OIL COMPANY, AARTSELAAR/B	SUNAMATIC 153
ELF LUBRIFIANTS, PARIS/F	TRANSANTAR DF3	SVENSKA STATOIL AB, NYNÄSHAMM/S	TRANSWAY DX III (F-30373)
ELF LUBRIFIANTS, PARIS/F	ELFMATIC G2 22329	TAMOIL LUBES, GENEVA/CH	TAMOIL ATF II D
ELF LUBRIFIANTS, PARIS/F	HUILE RENAULT DIESEL STARMATIC	TEXACO LUBRICANTS COMP., BEACON/USA	ATF MERCON / DEXRON III
ELF LUBRIFIANTS, PARIS/F	ANTAR 22329	TEXACO SERVICES LTD, BRÜSSEL/B	TEXAMATIC 9226
ELLER-MONTAN-COMP., DUISBURG/D	ELLMO-AUTOMATIK-FLUID 22233	TEXACO SERVICES LTD, BRÜSSEL/B	TEXAMATIC 4291
ERTOIL SA, MADRID/E	TRANSMISIONES AUTOMATICAS D2	TEXACO SERVICES LTD, BRÜSSEL/B	TEXAMATIC 4011
ESSO AG, JAMBURG/D	ESSO ATF D (21065)	TEXACO SERVICES LTD, BRÜSSEL/B	TEXAMATIC 4261
ESSO AG, JAMBURG/D	ESSO ATF D (21611)	TEXACO SERVICES LTD, BRÜSSEL/B	TEXAMATIC 7080
ESSO AG, JAMBURG/D	ESSO ATF F-30320	TOTAL RAFFINAGE DISTR., PARIS/F	TOTAL FLUIDE AT 42
FINA EUROPE SA, BRÜSSEL/B	FINAMATIC II-D	TOTAL RAFFINAGE DISTR., PARIS/F	TOTAL FLUIDE II D
FUCHS LUBRICANTS (UK), DERBY/GB	SILKTRAN MP-ATF	TOTAL RAFFINAGE DISTR., PARIS/F	TOTAL FLUIDE ATX
FUCHS MINERALÖL WERKE, MANNHEIM/D	TITAN ATF 4000	TOTAL SOUTH AFRICA, JOHANNESBURG/ZA	TOTAL FLUIDE ATD
GINOUVES GEORGES SA, LA FARLEDE/F	YORK LT 785	TURBOTANK BÖSCHE+BÖDEKER, BREMEN/D	TURBO UNIV. ATF MERCON 4011
GULF OIL (GB) LTD, CHELTENHAM/GB	ATF 2	UFANEFTTECHIM REFINERY, UFA/RUS	UFALUB ATF
HANDEL-MIJNOVIOL B.V., NIJMEGEN/NL	KENDALL ATF DEXRON II D	UNIL DEUTSCHLAND GMBH, BREMEN/D	UNIL MATIC CN T 4011
HOMBERG GMBH+CO KG, WUPPERTAL/D	HOMBERG-GETRIEBE-FLUID D	VOLVOLUME INC., LEXINGTON/USA	VALVOLUME MULTI-PURPOSE ATF
IGOL FRANCE, PARIS/F	IGOL ATF 420	VALVOLUME INTERNAT., DORDRECHT/NL	VALVOLUME ATF TYPE D
INA D.D. RAFINERIJA ZAGREB/YU	INA-ATF SUPER	VEBA OEL AG, GELSENKIRCHEN/D	MOVARA ATF-GETRIEBEÖL DIID
ITALIANA PETROLI, GENOVA/I	TRANSMISSION FLUID DX	VEEDOL INTERNATIONAL, SWINDON/GB	VEEDOL ATF-M (22764)
KÄPPLER K., STUTTGART/D	SELECTOL FLUID GETR. ÖL II D 23	VEEDOL INTERNATIONAL, SWINDON/GB	VEEDOL UNITRANS Z
KLÖCKNER ENERGIEHANDEL GMBH, KÖLN/D	DEUTZ OEL ATF-D	VEEDOL INTERNATIONAL, SWINDON/GB	VEEDOL ATF DEXRON III F-30521
KROON OIL BV, ALMELO/NL	ATF DEXRON II D	YACCO SA, PIERRE-LÈS-ELBEUF/F	YACCO ATF D
KROON OIL BV, ALMELO/NL	ALMIROL ATF	ZELLER+GMELIN GMBH & CO, EISLINGEN/D	DIVINOL FLUID 666
KUWAIT PETROLEUM, HOOGVLIET/NL	Q8 AUTO 15	ZF FRIEDRICHSHAFEN AG/D	ZF ECOFLUID □A□

# GENERAL DESCRIPTION AND SYSTEM OPERATION

## GENERAL REPAIR INSTRUCTIONS

If a floor jack is used, the following precautions are recommended:

- Park the vehicle on level ground, „block” the front or rear wheels, set the jack against the frame, raise the vehicle and support it with chassis stands, and then perform the service operation.
- Before performing the service operation, disconnect the negative battery cable in order to reduce the chance of cable damage and burning due to shortcircuiting.
- Use a cover on the body, the seats and the floor to protect them against damage and contamination.
- Handle brake fluid and antifreeze solution with care as they can cause paint damage.
- The use of proper tools, and the required special tools where specified, are important for efficient and reliable performance of the service repairs.
- Use genuine DAEWOO parts.
- Discard used cotter pins, gaskets, Orings, oil seals, lock washers and selflocking nuts. Prepare new ones for installation. Normal functioning of the vehicle's components cannot be maintained if these fasteners and seals are reused.

- Keep the disassembled parts in order to assist in reassembly.
- Keep attaching bolts and nuts separated, as they vary in hardness and design depending on the position of the installation.
- Clean the parts before inspection or reassembly.
- Also clean the oil parts, etc. Use compressed air to make certain they are free of restrictions.
- Lubricate rotating and sliding faces of parts with oil or grease before installation.
- When necessary, use a sealer on gaskets to prevent leakage.
- Carefully observe all specifications for bolt and nut torques.

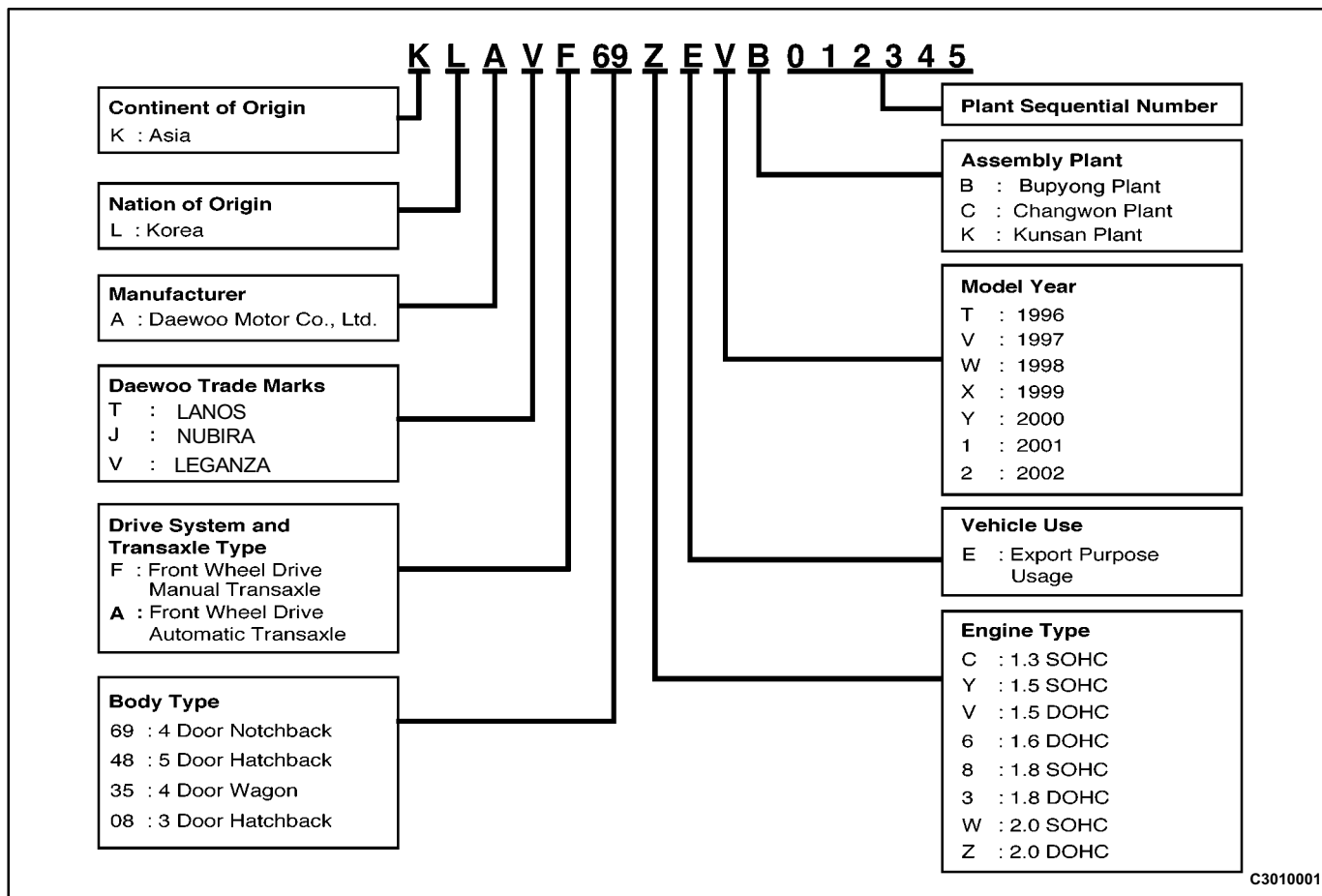
When service operation is complete, make a final check to be sure service was done properly and the problem was corrected.

## GENERAL DESCRIPTION

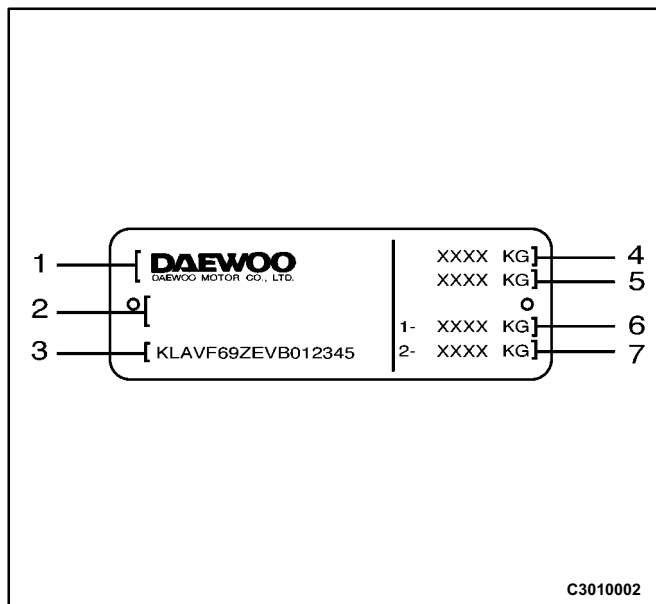
### VEHICLE IDENTIFICATIONS

The vehicle identification number (VIN) plate is attached to the top right side of the front panel support. The VIN is also engraved in the top right side of the bulkhead.

### Passenger Car VIN



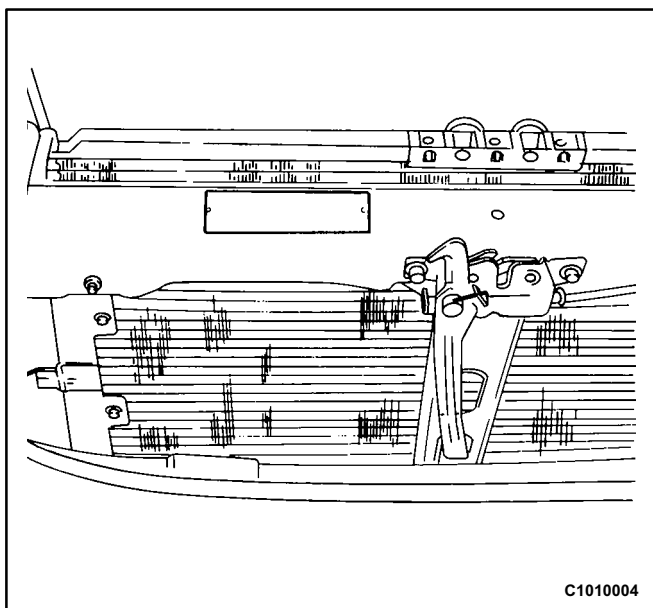
### VIN Plate



- 1 Manufacturer's Name
- 2 NTA Number or WVTA Number
- 3 Vehicle Identification Number
- 4 Gross Vehicle Weight
- 5 Combination Weight
- 6 Front Axle Weight
- 7 Rear Axle Weight

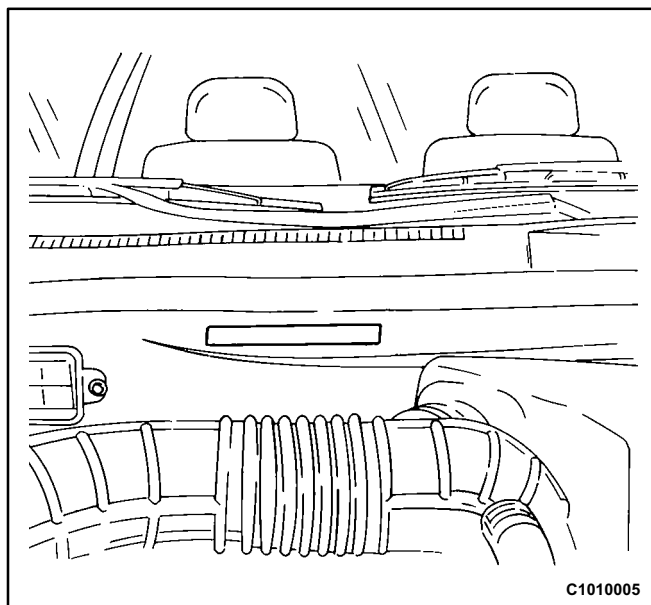
### VIN Plate Location

The VIN plate is attached to the top right side of the front panel support.

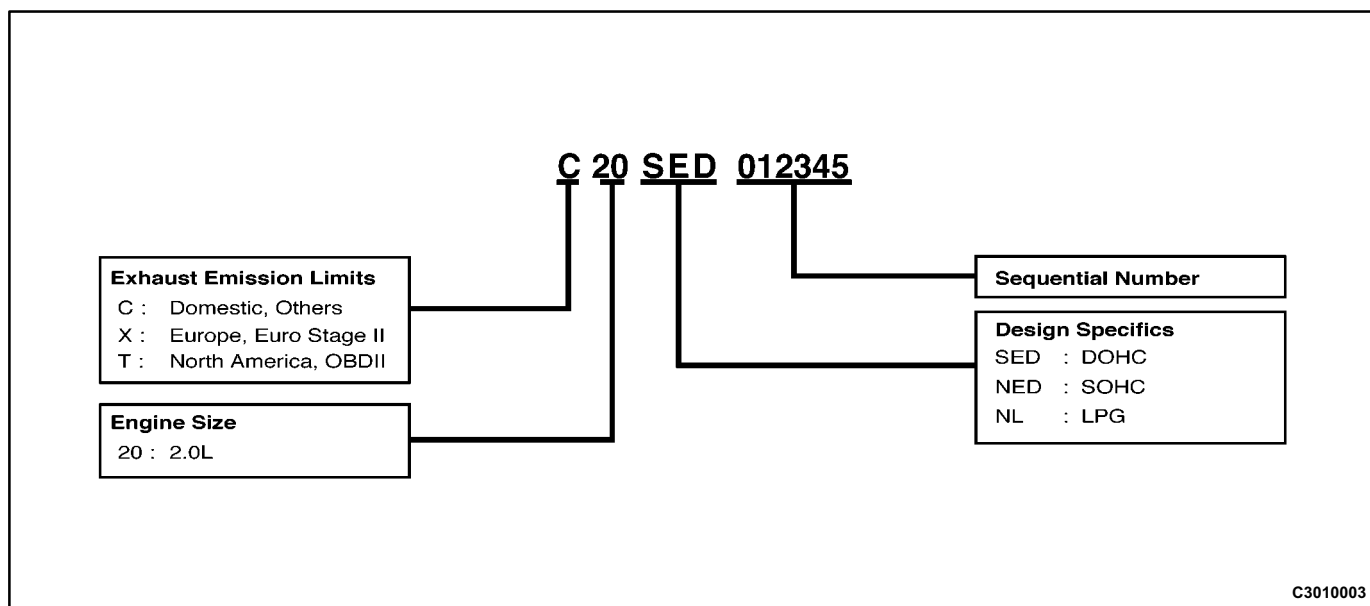


### Engraved VIN Location

The engraved VIN is located on the top right side of the bulkhead.

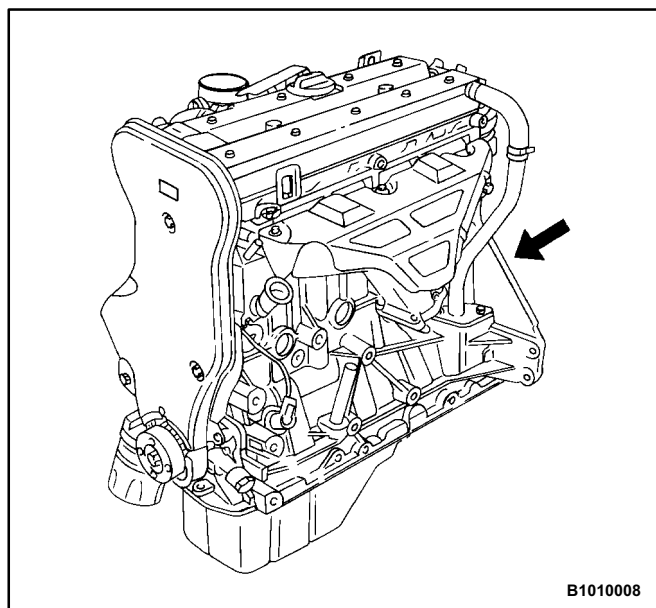


### Engine Number



### Engraved Engine Number Location

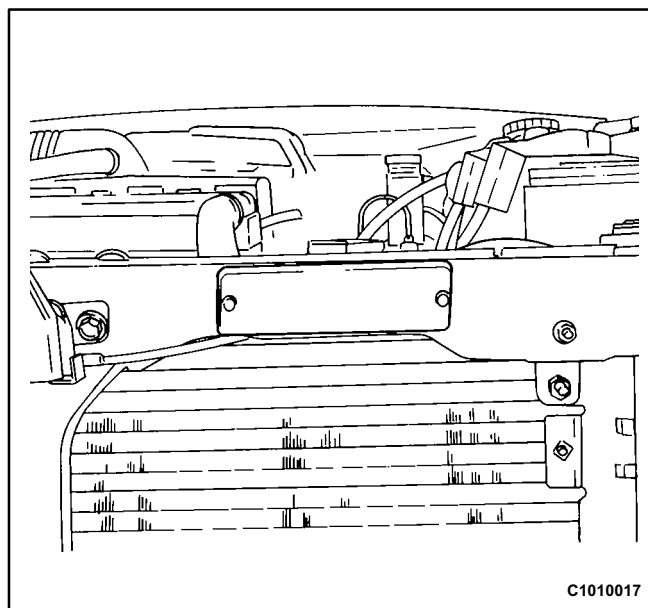
The engraved engine number is located on the engine block beneath the No. 4 exhaust manifold.



B1010008

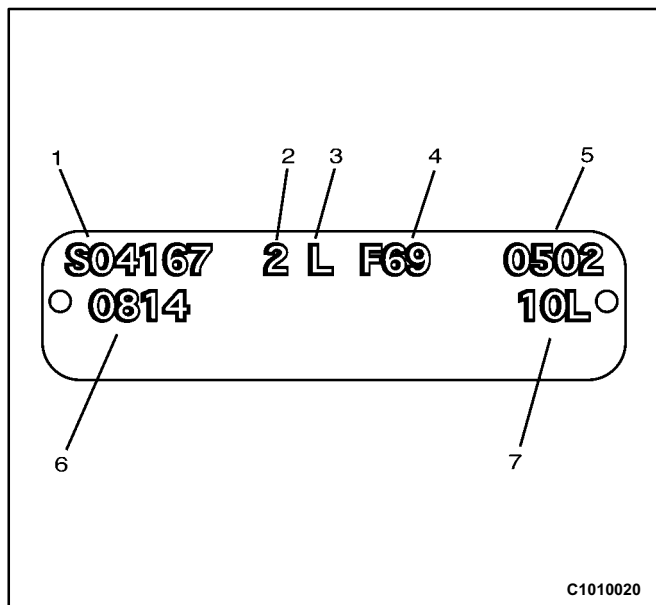
### Body Identification Number Plate Location

The body identification number plate is attached to the top left side of the front panel support.



C1010017

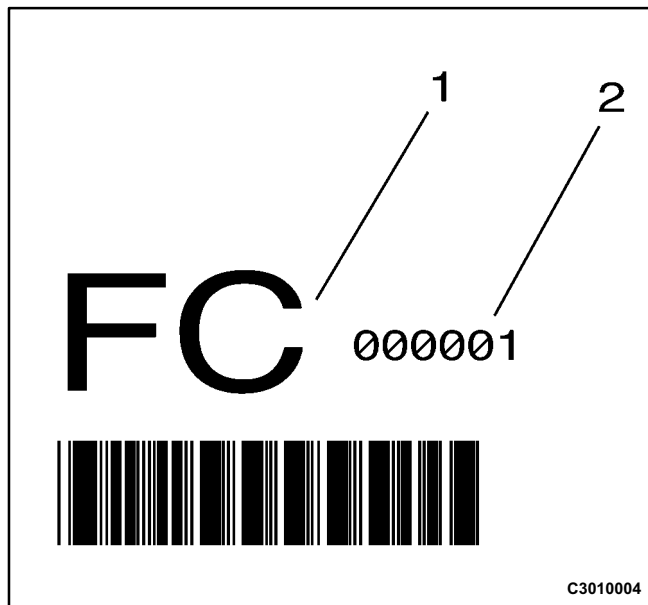
### Body Identification Number Plate



C1010020

- 1 P/O Number
- 2 Check Digit
- 3 Drive
- 4 Body Type
- 5 P/O Date
- 6 Sequential Number
- 7 Exterior Color

### Manual Transaxle Identification Number Plate



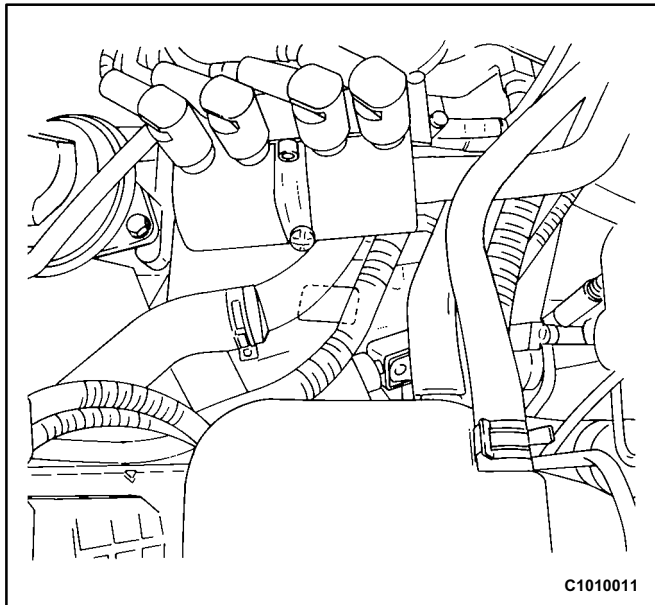
C3010004

- 1 Identification Code
- 2 Sequential Number

Identification Code	Engine	Gear Ratio
MF	2.0L SOHC	3.944 M/R
FC	2.0L DOHC	3.722 CR

### Manual Transaxle Identification Number Plate Location

The manual transaxle identification number plate is attached to the top of the transaxle case near the engine.

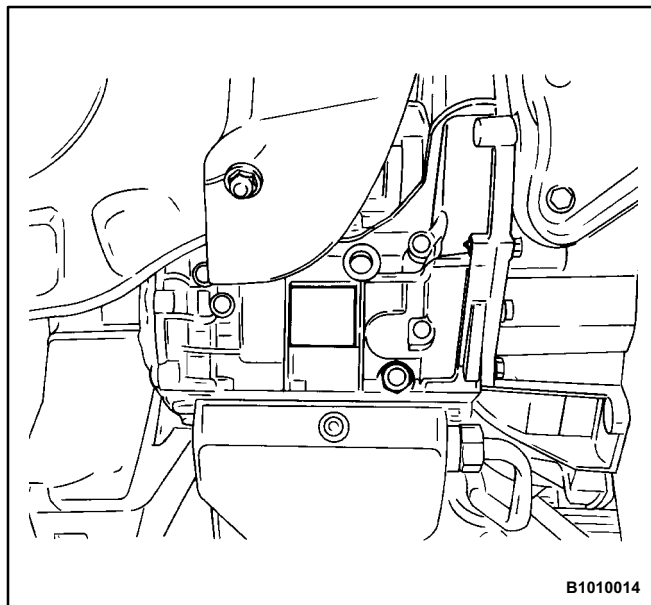


- 1 Manufacturer's Logo
- 2 Identification Code
- 3 Model Name (4HP14)
- 4 Manufacturer
- 5 Part Number
- 6 Sequential Number

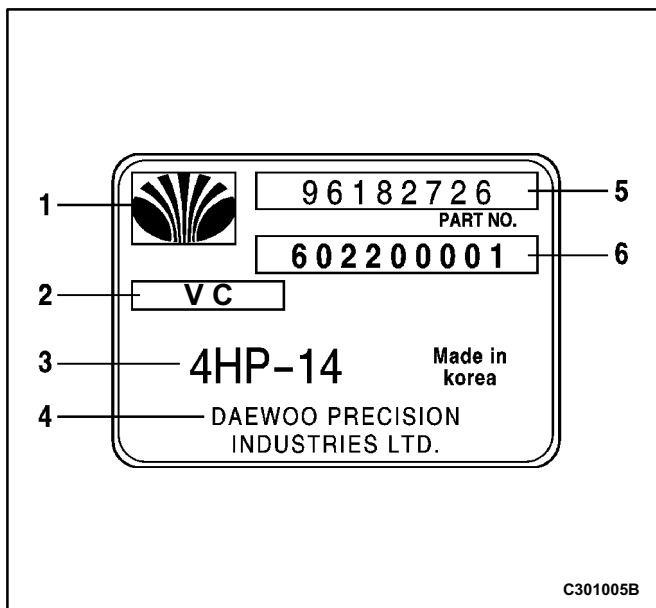
Identification Code	Engine
VB	2.0L SOHC
VC	2.0L DOHC

### Automatic Transaxle Identification Number Plate Location (ZF 14 HP)

The automatic transaxle identification number plate is attached on the rear bottom side of the transaxle case near the bulkhead.

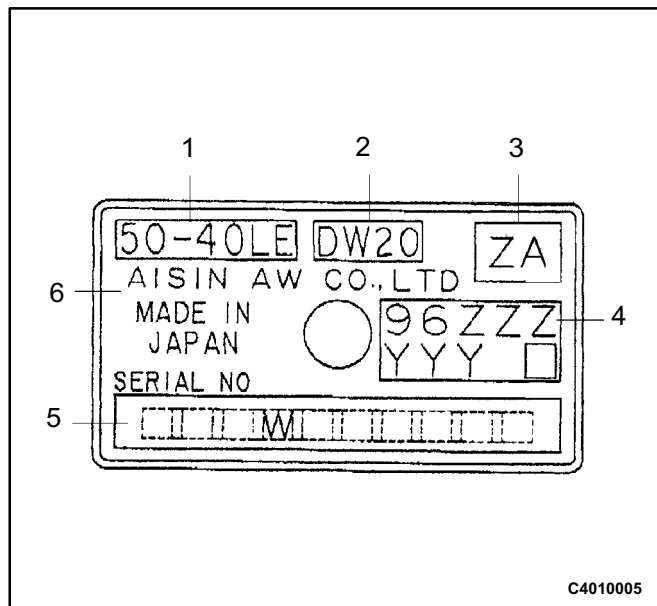


### Automatic Transaxle Identification Number Plate (ZF 14 HP)





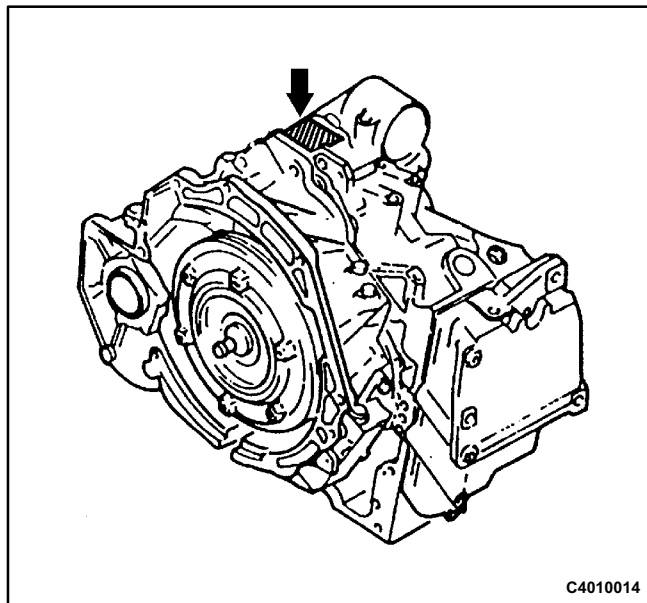
### Automatic Transaxle Identification Number Plate (AISIN 50-40LE)



- |                     |                     |
|---------------------|---------------------|
| 1 Model Number      | 4 DWMC Part Number  |
| 2 DWMC Model Number | 5 T/M Serial Number |
| 3 ID Code           | 6 Manufacturer      |

### Automatic Transaxle Identification Number Plate Location

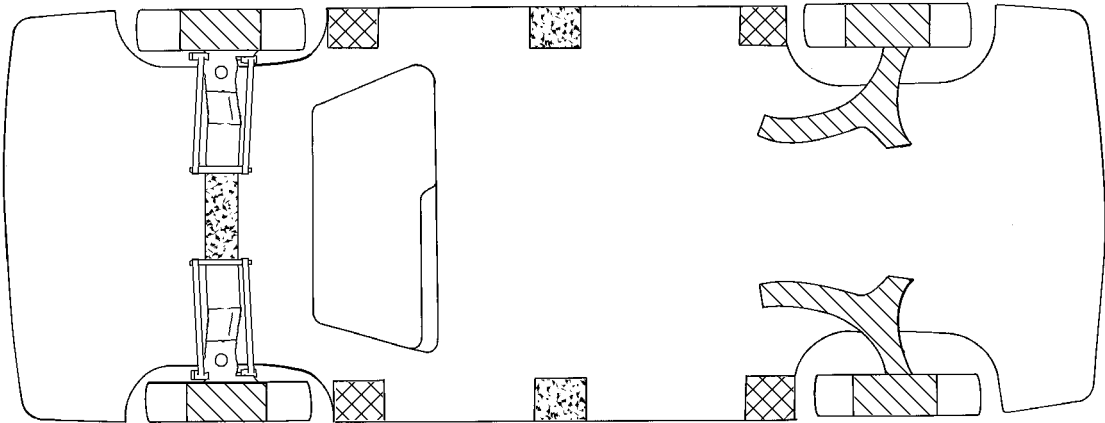
The automatic transaxle identification number plate is attached on the rear bottom side of the transaxle case near the bulkhead.



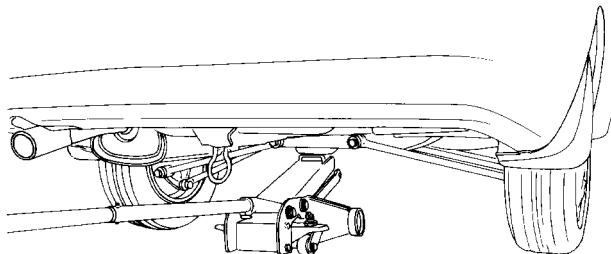
Identification Code	Engine
ZA	2.2 DOHC

### VEHICLE LIFTING PROCEDURES

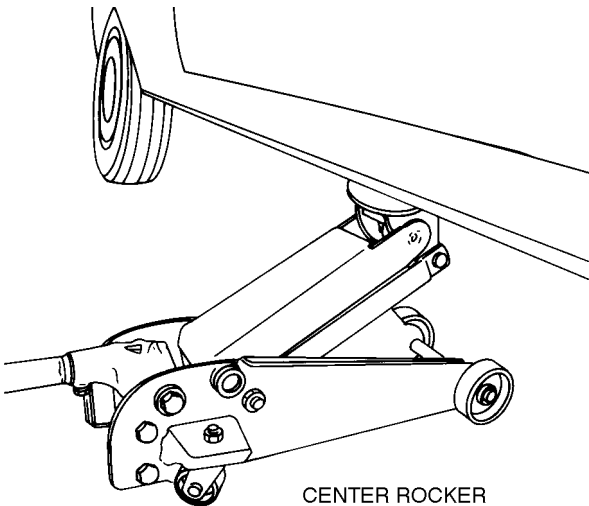
**Notice:** To raise the vehicle, place the lifting equipment only at the points indicated. Failure to use these precise positions may result in permanent body deformation. Many dealer service facilities and service stations are equipped with automotive hoists that bear upon some parts of the frame in order to lift the vehicle. If any other hoist method is used, use special care to avoid damaging the fuel tank, the filler neck, the exhaust system, or the underbody.



☒ FRAME CONTACT HOIST    ☑ SUSPENSION CONTACT HOIST    ▨ FLOOR JACK



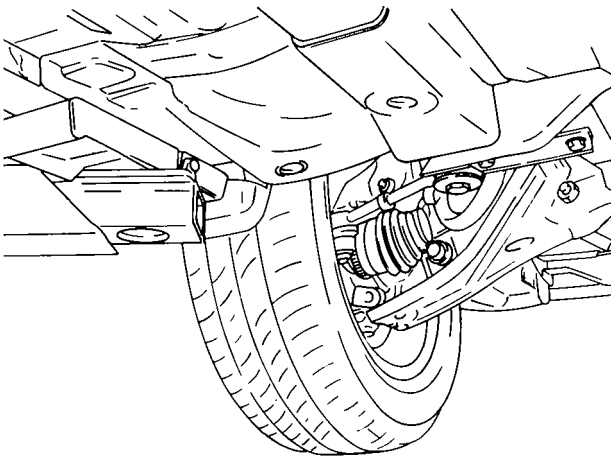
REAR SUSPENSION  
AXLE LIFT POINT



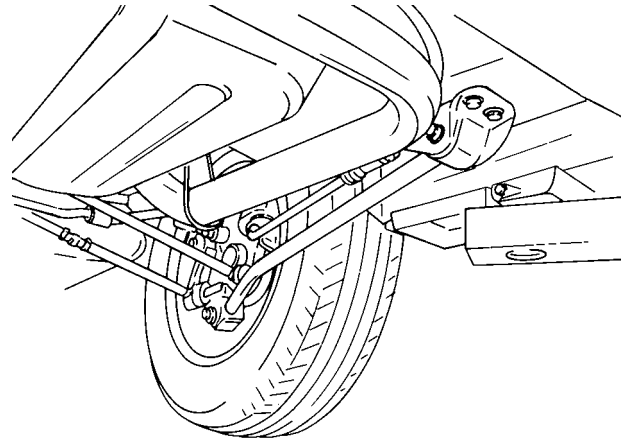
CENTER ROCKER  
LIFT POINT (LH/RH)

B1010017

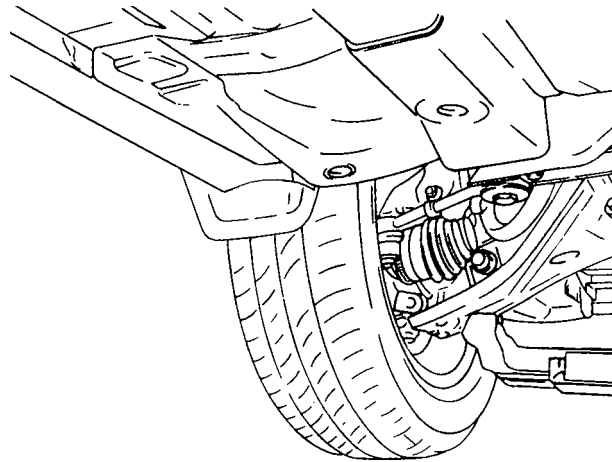
### Vehicle Lifting Points



FRAME CONTACT HOIST  
REARWARD OF FRONT TIRE



FRAME CONTACT HOIST  
FORWARD OF REAR WHEEL



SUSPENSION CONTACT HOIST  
UNDER FRONT LOWER CONTROL ARM

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