SERVICE MANUAL (Vol. 1 of 2)

LANOS

FOREWORD

This manual includes procedure for maintenance, adjustment, service operation and removal and installation of components.

All information, illustrations and specifications contained in this manual are based on the latest product information available at the time of manual approval.

The right is reserved to make changes at any time without notice.

DAEWOO MOTOR CO., LTD.
INCHON, KOREA

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9 m (16 ft) Performance - Automatic Transaxle Application Maximum Speed Gradeability Minimum Turning Radius 1.3L SOHC 1.5L SOHC 161 km/h (100.0 mph) 0.59 (tan j) 4.9 m (16 ft) 1.6L DOHC 173 km/h (107.5 mph) 0.59 (tan j) 4.9 m (16 ft) %û 2 :$ /7 2 (' 0B - 2 GENERAL INFORMATION Engine Application Engine Type Bore Stroke Total Displacement Compression Ratio Maximum Power Maximum Torque 1.

3L SOHC Manual Overhead Cam L 4 76.5 mm (3.01 in.) 73.4 mm (2.89 in.) 1 349 cm3 (82.3 in3) 9.5:1 55 kw (74 bhp) (at 5,400 rpm) 115 NSm (85 lb ft) (at 3,400 rpm) 1.5L SOHC Manual and Automatic Overhead Cam L 4 76.
5 mm (3.01 in.) 81.5 mm (3.21 in.
) 1 498 cm3 (91.4 in3) 9.5:1 63 kw (84 bhp) (at 5,800 rpm) 130 NSm (96 lb ft) (at 3,400 rpm) 1.6L DOHC Manual and Automatic Overhead Cam L 4 79.0 mm (3.
11 in.) 81.5 mm (3.21 in.) 1 598 cm3 (97.5 in3) 9.5:1 77.8 kw (104 bhp) (at 6,000 rpm) 145.3 NSm (107.17 lb ft) (at 3,400 rpm) Ignition System Application Ignition Type Ignition Timing Ignition Sequence Spark Plug Gap Spark Plug Maker Spark Plug Type 1.

3L SOHC Manual Direct Ignition System 10_ (BTDC) 1 4 3 2 0.70 0.80 mm (0.028 0.031 in.) Champion / Woojin RN9YC / BPR6ES 1.5L SOHC Manual and Automatic Direct Ignition System 10_ (BTDC) 1 4 3 2 0.70 0.80 mm (0.028 0.
031 in.) Champion / Woojin RN9YC / BPR6ES 1.6L DOHC Manual and Automatic Direct Ignition System 10_ (BTDC) 1 4 3 2 1.00 1.10 mm (0.
039 0.043 in.) Woojin BKR6E 11 Clutch - Manual Transaxle Application Type Outside Diameter Inside Diameter Thickness Fluid 1.3L SOHC Single Dry Plate 184 mm (7.2 in.
) 127 mm (5.0 in.) 7.65 mm (0.301 in.) Common Use; Brake Fluid 1.5L SOHC Single Dry Plate 200 mm (7.9 in.) 134 mm (5.3 in.

) 7.65 mm (0.301 in.) Common Use; Brake Fluid 1.6L DOHC Single Dry Plate 215 mm (8.5 in.) 145 mm (5.7 in.) 7.65 mm (0.
301 in.) Common Use; Brake Fluid Manual Transaxle Application Maker Type or Model Gear Ratio: 1st 2nd 3rd 4th 5th Reverse Final Drive Ratio Oil Capacity 1.3L SOHC Wide Ratio DWMC D 16 3.545:1 1.952:1 1.
276:1 0.892:1 0.707:1 3.333:1 3.944:1 1.
8L (2 qt) 1.5L SOHC Medium Ratio DWMC D 16 3.545:1 2.048:1 1.346:1 0.971:1 0.763:1 3.333:1 4.176:1 1.8L (2 qt) 1.

6L DOHC Close Ratio DWMC D 16 3.545:1 2.158:1 1.478:1 1.129:1 0.886:1 3.333:1 3.722:1 1.8L (2 qt) DAEWOO T BL3 100 GENERAL INFORMATION 0B - 3 Automatic Transaxle Application Maker Type or Model Gear Ratio: 1st 2nd 3rd 4th Reverse Final Drive Ratio Oil Capacity 1.3L SOHC 1.
5L SOHC General Motors 4T40E 2.957:1 1.623:1 1.000:1 0.682:1 2.
143:1 3.91:1 11.5L (12 qt) 1.6L DOHC General Motors 4T40E 2.957:1 1.
623:1 1.000:1 0.682:1 2.143:1 3.91:1 11.5L (12 qt) Brake Application Booster Size Master Cylinder Diameter Booster Ratio Front Brake: Disc Type Rear Brake: Drum Inside Diameter Wheel Cylinder Diameter Fluid Capacity 1.3L SOHC Manual Transaxle 228.6 mm (9.00 in.) 20.

64 mm (0.813 in.) 5.0:1 Ventilated 200 mm (7.9 in.) 17.46 mm (0.687 in.) 0.5L (0.
5 qt) 1.5L SOHC Manual and Automatic 228.6 mm (9.00 in.) 20.
64 mm (0.813 in.) 5.0:1 Ventilated 200 mm (7.9 in.
) 17.46 mm (0.687 in.) 0.5L (0.5 qt) 1.6L DOHC Manual and Automatic 228.6 mm (9.00 in.) 22.

22 mm (0.875 in.) 5.0:1 Ventilated 200 mm (7.9 in.) 19.05 mm (0.750 in.) 0.5L (0.
5 qt) Tire and Wheel Application Tire Size Standard Wheel Size Optional Wheel Size Inflation Pressure at Full Load: 155/80R13 175/70R13 185/60R14 1.3L SOHC Manual 155/80R13 175/70R13 5J X 13 (Steel) 35 psi 32 psi 1.5L SOHC Manual and Automatic 175/70R13 5J X 13 (Steel) 32 psi 1.6L DOHC Manual and Automatic 185/60R14 5.5J X 14 (Steel) 5.
5J X 14 (Aluminum) 32 psi DAEWOO T BL3 100 0B - 4 GENERAL INFORMATION Steering System Application Gear Type Overall Gear Ratio Manual Steering Power Steering Wheel Diameter Wheel Alignment: Front: Toe In Caster: Manual Steering Power Steering Camber Rear: Toe In Camber Oil Capacity 1.3L SOHC Manual Power/Manual Rack and Pinion 24.5:1 16.12:1 380 mm (15.0 in.
) 1.5L SOHC Manual and Automatic Power/Manual Rack and Pinion 16.12:1 380 mm (15.0 in.) 1.6L DOHC Manual and Automatic Power/Manual Rack and Pinion 16.12:1 380 mm (15.0 in.) - 10i 10i (- 1 1 mm) + + (- 0.04 0.

04 in.) + 30i 2_30i 1_45i 3_45i - 1_10i 20i + - 10i 40i (- 1 4 mm) + + (- 0.04 0.16 in.) + - 2_10i- 1_10i 1.0L (1 qt) - 10i 10i (- 1 1 mm) + + (- 0.04 0.04 in.) + 1_45i 3_45i - 1_10i 20i + - 10i 40i (- 1 4 mm) + + (- 0.04 0.
16 in.) + - 2_10i- 1_10i 1.0L (1 qt) - 10i 10i (- 1 1 mm) + + (- 0.04 0.04 in.
) + 1_45i 3_45i - 1_10i 20i + - 10i 40i (- 1 4 mm) + + (- 0.04 0.16 in.) + - 2_10i- 1_10i 1.0L (1 qt) Suspension Application Front type Rear type 1.
3L SOHC Manual MacPherson Strut Compound Link 1.5L SOHC Manual and Automatic MacPherson Strut Compound Link 1.6L DOHC Manual and Automatic MacPherson Strut Compound Link Fuel System Application Fuel Delivery Fuel Pump Type Fuel Filter Type Fuel Capacity 1.3L SOHC Manual MPI Electric Motor Pump Cartridge 48L (12.7 gal) 1.5L SOHC Manual and Automatic MPI Electric Motor Pump Cartridge 48L (12.7 gal) 1.6L DOHC Manual and Automatic MPI Electric Motor Pump Cartridge 48L (12.7 gal) Lubricating System Application Lubricating Type Oil Pump Type Oil Filter Type Oil Pan Capacity Including Oil Filter 1.3L SOHC Manual Forced Feed Duocentric Rotor Cartridge (Full Flow) 3.

75L (4 qt) 1.5L SOHC Manual and Automatic Forced Feed Duocentric Rotor Cartridge (Full Flow) 3.75L (4 qt) 1.6L DOHC Manual and Automatic Forced

Feed Duocentric Rotor Cartridge (Full Flow) 3.75L (4 qt) DAEWOO T BL3 100 GENERAL INFORMATION 0B - 5 Cooling System Application Cooling Type Radiator Type Water Pump Type Thermostat Type Coolant Capacity: Standard Heavy Duty 1.3L SOHC Manual Forced Water Circulation Cross flow Centrifugal Pellet Type 7.0L (7 qt) 7.0L (7 qt) 1.5L SOHC 1.6L DOHC Manual and Automatic Manual and Automatic Forced Water Circulation Cross flow Centrifugal Pellet Type 7.

0L (7 qt) 7.0L (7 qt) Forced Water Circulation Cross flow Centrifugal Pellet Type 7.0L (7 qt) 7.0L (7 qt) Electric System Application Battery General Area Some Countries Only Alternator Starter (No Load Test Current Draw)) General Area Hot Area Only 0.8 (kW) 1.
3L SOHC Manual 550 Cold Cranking Amps 430 Cold Cranking Amps 85 Amps 95 Amps Maximum 53 (Amps) (at 11.5 Volts) Minimum 40 Amps Maximum 90 (Amps) (at 12.2 Volts) 1.5L SOHC Manual and Automatic 550 Cold Cranking Amps 430 Cold Cranking Amps 85 Amps 95 Amps Maximum 53 (Amps) (at 11.5 Volts) Minimum 40 Amps Maximum 90 (Amps) (at 12.
2 Volts) 1.6L DOHC Manual and Automatic 550 Cold Cranking Amps 430 Cold Cranking Amps 85 Amps 95 Amps Maximum 53 (Amps) (at 11.5 Volts) Minimum 40 Amps Maximum 90 (Amps) (at 12.2 Volts) 1.4 (kW) DAEWOO T BL3 100 0B - 6 GENERAL INFORMATION - VEHICLE DIMENSIONS AND WEIGHTS Vehicle Dimensions - Manual and Automatic Application Overall Length: 3 Door 4 Door 5 Door Overhang: Front: 3 Door 4 Door 5 Door Rear: 3 Door 4 Door 5 Door Overall Width Overall Height Minimum Ground Clearance Wheel Base Tread: Front Rear 1.3L SOHC 4 074 mm (160.4 in.) 4 237 mm (166.8 in.) 4 074 mm (160.

4 in.) 1.5L SOHC 4 074 mm (160.4 in.) 4 237 mm (166.8 in.) 4 074 mm (160.4 in.) 1.6L SOHC 4 074 mm (160.
4 in.) 4 237 mm (166.8 in.) 4 074 mm (160.4 in.
) 838 mm (33.0 in.) 838 mm (33.0 in.) 838 mm (33.
0 in.) 716 mm (28.2 in.) 879 mm (34.6 in.) 716 mm (28.2 in.) 1 678 mm (66.1 in.) 1 432 mm (56.

4 in.) 160 mm (6.3 in.) 2 520 mm (99.2 in.) 1 405 mm (55.3 in.) 1 425 mm (56.1 in.) 838 mm (33.
0 in.) 838 mm (33.0 in.) 838 mm (33.0 in.
) 716 mm (28.2 in.) 879 mm (34.6 in.) 716 mm (28.
2 in.) 1 678 mm (66.1 in.) 1 432 mm (56.4 in.) 160 mm (6.3 in.) 2 520 mm (99.2 in.) 1 405 mm (55.

3 in.) 1 425 mm (56.1 in.) 838 mm (33.0 in.) 838 mm (33.0 in.) 838 mm (33.0 in.) 716 mm (28.
2 in.) 879 mm (34.6 in.) 716 mm (28.2 in.
) 1 678 mm (66.1 in.) 1 432 mm (56.4 in.) 160 mm (6.
3 in.) 2 520 mm (99.2 in.) 1 405 mm (55.3 in.) 1 425 mm (56.1 in.) Vehicle Weights - 3 Dsh panel near the brake booster. Air Cleaner Element Replacement Replace the air cleaner element every 40,000 km (24,000 miles). @@When the following maintenance services are performed, make sure all the parts are re placed and all the necessary repairs are done before driving the vehicle.

Always use the proper fluid and lubri cants. Throttle Body Mounting Bolt Torque Check the torque of the mounting bolts. Tighten the throttle body mounting bolts to 17 NSm (12 lb if necessary. ft) Spark Plug Replacement Replace spark plugs with same type. Type: AC Type RN9YC (SOHC) BPR6ES (SOHC) BKR6E (DOHC) 11 Gap 0.7 mm (SOHC) 0.8 1.0 mm (DOHC) 1.1 Drive Belt Inspection When a separate belt drives the power steering pump, the air conditioning compressor and the generator, in spect it for cracks, fraying, wear and proper tension. Ad just or replace the belt as needed.
Engine Oil and Oil Filter Change Always use above the API SH grade or ACEA A1/A2/A3 engine oil. The SH designation may be shown alone or in combination with other designations such as SH/CC, SH/CD etc. Spark Plug Wire Replacement Clean wires and inspect them for burns, cracks or other damage. Check the wire boot fit at the DIS module and at the spark plugs. Replace the wires as needed.
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 Brake System Service Check the disc brake pads or the drum brake linings ev ery 10,000 km (6,000 miles) or 12 months. Check the pad and the lining thickness carefully. If the pads or the linings are not expected to last another 10,000 km (6,000 miles), 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. DAEWOO T BL3 100 0B - 10 GENERAL INFORMATION Transaxle Service The manual transaxle fluid does not require changing. For automatic transaxles, refer to Scheduled Mainte nance Charts" in this section. Tire Rotation Tire and Wheel Inspection and Rotation Check the tires for abnormal wear or damage. To equal ize 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. `A1010009 DAEWOO T BL3 100 GENERAL INFORMATION 0B - 11 - SCHEDULED MAINTENANCE CHARTS Engine Maintenance Item Kilometers x 1000 MIles x 1000 Months Drive belts (alternator, power steering) Engine oil and oil filter1, 3 Cooling system and hose connections Engine coolant3 Fuel filter Fuel line and connections Air cleaner element2 Ignition timing Spark plugs DIS Module Charcoal canister and vapor lines PCV system Camshaft belt I I I I I I R I I I I I 0.6 -- I I 10 6 6 I R I I 20 12 12 I R I I 30 18 18 I R I I Maintenance Interval Kilometers (miles) or time in months, whichever comes first 40 24 24 I R I R R I R I R I I I I I I I I I R I I I 50 30 30 I R I I 60 36 36 R R I 70 42 42 I R I I 80 48 48 I R I R R I R I R I I I R I I I I I R I 90 54 54 I R I I 100 60 60 I R I I Chart Symbols: I - Inspect and, if necessary, correct, clean, replenish or adjust.

*R - Replace or change. 1 If the vehicle is operated under severe conditions, such as short distance driving, extensive idling, or driving in dusty conditions, change the engine oil and the filter every 5,000 km (3,000 miles) or 3 months, whichever comes first. 2 More frequently if driving in dusty conditions. 3 Refer to Recommended Fluids And Lubricants" in this section. DAEWOO T BL3 100 0B - 12 GENERAL INFORMATION Chassis and Body Maintenance Item Kilometers x 1000 MIles x 1000 Months Exhaust pipe and mountings Brake/Clutch fluid1, 5 Rear brake drums Front brake pads Parking brake Brake line and connections (in cluding booster) Rear hub bearing and clearance Manual transaxle oil1 I Clutch and brake pedal free play Automatic transaxle fluid*1, 4 Tighten chassis and underbody bolts and nuts Tire condition and inflation pressure Wheel alignment2 Steering wheel and linkage Power steering fluid and lines*1 Drive shaft boots Seat belts, buckles and anchors Lubricate locks, hinges and hood latch I I I I I I I I I I I I and linings3 I and discs3 I I 0.6 -- 10 6 6 I I I I I I I I I I I I 20 12 12 I I I I I I I I I I I I 30 18 18 I R I I I I I I I I I I I I I I I I Maintenance Interval Kilometers (miles) or time in months, whichever comes first 40 24 24 I I I I I I I I I I I I I I I I I I 50 30 30 I I I I I I I I I I I I I I I I I I 60 36 36 I R I I I I I I I I I I I I I I I I 70 42 42 I I I I I I I I I I I I I I I I I I 80 48 48 I I I I I I I I I I I I I I I I 90 54 54 I R I I I I I I I I I I I I I I I I 100 60 60 I I I I I I I I I I I I I I I I I I Inspect when abnormal condition is noted Chart Symbols: I - Inspect and, if necessary, correct, clean, replenish, or adjust.*

R - Replace or change. 1 Refer to Recommended Fluids And Lubricants" in this section. 2 And, if necessary, rotate and balance the wheels. 3 More frequently if operated under severe conditions which include the following: short distance driving, extensive idling, frequent low speed operation in stop and traffic, or driving in dusty conditions.

go 4 The automatic transaxle fluid and filter do not require changing, unless operated under any of these conditions: heavy city driving where the temperature regularly reaches 32_C (90_F) or higher, hilly terrain, frequent trailer tow ing, or taxi, police or delivery service driving. If operated under any of these conditions, change the fluid and the filter every 75,000 km (45,000 miles). 5 Change the brake/clutch fluid every 15,000 km (9,000 miles) if the vehicle is mainly driven under the following se vere conditions: driving in hilly or mountainous terrain, or towing a trailer/caravan frequently. DAEWOO T BL3 100 GENERAL INFORMATION 0B - 13 - OWNER INSPECTIONS AND SERVICES WHILE OPERATING THE VEHICLE Horn Operation Blow the horn occasionally to make sure it works. Check all the button locations.

6. Push the indicator all the way back down into the en gine 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. 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. Windshield Washer Fluid Level Check the washer fluid level in the reservoir. Add fluid if necessary. 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 in spected and repaired immediately. 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 in the glove box. 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 pres sure adjustment or a wheel alignment. Light Operation Check the operation of the license plate light, the head lights (including the high beams), the parking lights, the fog lights, the taillight, the brake lights, the turn signals, the backup lights and the hazard warning flasher. 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. 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 condition ing system after use is normal. If you notice fuel leaks or fumes, find the cause and correct it at once. Headlight Aim Take note of the light pattern occasionally. Adjust the headlights 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. 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 5A, Power Steering System. 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 (dip stick). 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 en gine damage. DAEWOO T BL3 100 Brake Master Cylinder Reservoir Level Check the fluid and keep it at the proper level. A low fluid level can indicate worn disc brake pads which may need to be serviced. Check the breather hole in the reservoir cover to be free from dirt and check for an open pas sage. Clutch Pedal Free Travel Check clutch pedal free travel and adjust as necessary every 10,000 km (6,000 miles). 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 0B - 14 GENERAL INFORMATION clutch pedal fully depressed. The difference between the two values must be greater than 130 mm (5.19 inch es).

Hood Latch Operation When opening the hood, note the operation of the sec ondary latch. It should keep the hood from opening all the way when the primary latch is released. The hood must close firmly. Weather-Strip Lubrication Apply a thin film silicone grease using a clean cloth. EACH TIME THE OIL IS CHANGED Automatic Transaxle Fluid Refer to 4T40E fluid level service procedure of Section 3A, 4T40E Automatic Transaxle.

AT LEAST ANNUALLY Lap and Shoulder Belts Condition and Operation Inspect the belt system including: the webbing, the buckles, the latch plates, the retractor, the guide loops and the anchors. Manual Transaxle Check the fluid level and add fluid as required. Refer to Section 3B, Five Speed Manual Transaxle. Movable Head Restraint Operation On vehicles with movable head restraints, the restraints must stay in the desired position. Brake System Inspection This inspection should be done when the wheels are re moved for rotation.

Inspect the lines and the hoses for proper hookup, binding, leaks, cracks, chafing, etc. In spect the disc brake pads for wear. Inspect the rotors for surface condition. Also inspect the drum brake linings for wear and cracks. Inspect other brake parts, including the drums, the wheels cylinders, the parking brake, etc., at the same time. Check the parking brake adjustment. Inspect the brakes more often if habit or conditions re sult in frequent braking. 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 se curely 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. 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, 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 ex haust system. Look for broken, damaged, missing, or out position parts as well as open seams, holes, of 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. Transaxle Neutral Switch Operation on Automatic Transaxle Caution: Take the following precautions because the vehicle could move without warning and possi bly cause personal injury or property damage: D Firmly apply the parking brake and the regular brakes. D Do not use the accelerator pedal. D 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) or N (Neutral).

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 movements. Engine Drive Belts Inspect all belts for cracks, fraying, wear and proper ten sion. Adjust or replace the belts as needed. Parking Brake and Transaxle P (Park) Mechanism Operation Caution: In order to reducetheriskof personal inju ry 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 move ment in the downhill direction. To check the parking DAEWOO T BL3 100 GENERAL INFORMATION 0B - 15 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 trans axle to P (Park). 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 en sure proper operation. Underbody Flushing Flushing the underbody will remove any corrosive mate rials 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. RECOMMENDED FLUIDS AND LUBRICANTS Usage Engine Oil Capacity 3.75L Fluid/Lubricant API SH grade or ACEA A1/A2/A3 SAE 5W SAE 10W 30, 30, SAE 10W SAE 15W 40, 40 (Cold area: SAE 5W 30 Hot area: SAE 15W 40) Mixture of water and good quality ethylene glycol base antifreeze (year round coolant) DOT or DOT 3 4 DEXRONR III DEXRONR III Manual Transaxle Fluid (B0400075, SAE80 or equivalent) Multipurpose type grease meeting requirements NLGI No. 1 or 2 Silicone lubricant Engine oil Engine oil Engine oil a.

Engine oil b. Multipurpose type grease meeting requirements NLGI No. 1 or 2 As required Engine oil Engine Coolant M/T (1.3L and 1.5L SOHC, 1. 6L DOHC) - 7.0L A/T 1.5L SOHC and 1.6L DOHC) - 7.0L 0.

5L (0.53 qt) 1.0L (1.06 qt) 11.5L (12.15 qt) 1.8L (1.90 qt) As required As required As required As required As required As required Brake Fluid and Clutch Fluid Power Steering System Automatic Transaxle Manual Transaxle Manual Transaxle Shift Linkage Key Lock Cylinders Automatic Transaxle Shift Linkage Clutch Linkage Pivot Points Floor Shift Linkage Points Hood Latch Assembly a. Pivots and Spring Anchor b. Release Pawl Hood and door hinges Fuel door hinge Rear compartment lid hinges Weatherstrips As required Silicone grease DAEWOO T BL3 100 0B - 16 GENERAL INFORMATION - GENERAL DESCRIPTION AND SYSTEM OPERATION GENERAL REPAIR INSTRUCTIONS D If a floor jack is used, the following precautions are recommended.

D 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. D Before performing the service operation, disconnect the negative battery cable in order to reduce the chance of cable damage and burning due to short cir cuiting. D Use a cover on the body, the seats and the floor to protect them against damage and contamination. D Handle brake fluid and antifreeze solution with care as they can cause paint damage. D The use of proper tools, and the recommended es sential and available tools where specified, are impor tant for efficient and reliable performance of the service repairs. D Use genuine DAEWOO parts. D Discard used cotter pins, gaskets, O rings, oil seals, lock washers and self locking nuts. Prepare new ones for installation. Normal function of these parts cannot be maintained if these parts are reused. D Keep the disassembled parts neatly in groups to facil itate proper and smooth reassembly.

D Keep attaching bolts and nuts separated, as they vary in hardness and design depending on the posi tion of the installation. D Clean the parts before inspection or reassembly. D Also clean the oil parts, etc. Use compressed air to make certain they are free of restrictions. D Lubricate rotating and sliding faces of parts with oil or grease before installation.

D When necessary, use a sealer on gaskets to prevent leakage. D Carefully observe all specifications for bolt and nut torques. D When service operation is completed, make a final check to be sure service was done properly and the problem was corrected. DAEWOO T BL3 100 GENERAL INFORMATION 0B - 17 - GENERAL DESCRIPTION VEHICLE AND COMPONENT IDENTIFICATION Passenger Car Vehicle Identification Number A3010001 DAEWOO T BL3 100 0B - 18 GENERAL INFORMATION VIN Plate Engraved VIN Location (Left-Hand Drive Shown, Right-Hand Drive Similar) }- 1 - }- 2 }- 3 }- 4 }- 5 }- 6 - A1010002 1 2 3 4 5 6 Manufacturer Vehicle Identification Number Blank Vehicle Model Engine Type Body Color A3010006 The vehicle identification number (VIN) is engraved in the top of the bulkhead, next to the ABS module.

VIN Plate Location (Left-Hand Drive Shown, Right-Hand Drive Similar) Engine Number Location - SOHC A3010007 A3010005 The engine number is stamped on the cylinder block un der the No.
4 exhaust manifold of the engine. The vehicle identification number (VIN) plate is attached to the top of the bulkhead, next to the wiper motor. DAEWOO T BL3 100 GENERAL INFORMATION 0B - 19 Engine Number A3010003 DAEWOO T BL3 100 0B - 20 GENERAL INFORMATION Engine Number Location - DOHC Body Identification Number Plate Location (Left-Hand Drive Shown, Right-Hand Drive Similar) A3010008 The engine number is stamped on the cylinder block un der the No. 4 exhaust manifold of the engine. A3010009 The body identification number plate is attached to the top of the front panel support. Body Identification Number Plate Manual Transmission Identification Number Plate A2010004 A3010004 1 2 3 4 5 6 7 P/O Number Check Digit Drive Body Type P/O Date Sequential Number Exterior Color 1 Identification Code 2 Sequential Number Identification Code VG MA BS Engine 1.3L SOHC 1.5L SOHC 1.6L DOHC Gear Ratio 3.944 W/R 4.

176 M/R 3.722 C/R DAEWOO T BL3 100 GENERAL INFORMATION 0B - 21 Manual Tranaaxle Identification Number Plate Location (Left-Hand Drive Shown, Right-Hand Drive Similar) Automatic Transaxle Identification Number Plate Location A3010011 A3010010 The manual transaxle identification number is attached to the top of the transmission case near the engine. The automatic transaxle identification number plate is at tached on the rear side of the transmission near the bulk head. Automatic Transmission Identification Number Plate 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 vehicle body de formation. Many dealer service facilities and service sta tions 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. A2010006 1 2 3 4 5 6 7 8 Assembly Plant (Windsor, Canada) Model Year (1996) Broadcast Code Model Name (4T40E) Update Level Sequential Number Manufacturer Part Number DAEWOO T BL3 100 0B - 22 GENERAL INFORMATION Vehicle Lifting Points A1010007 DAEWOO T BL3 100 GENERAL INFORMATION 0B - 23 Vehicle Lifting Points A1010008 DAEWOO T BL3 100 SECTION 1 ENGINE SECTION 1A GENERAL ENGINE INFORMATION TABLE OF CONTENTS Diagnosis . . .

. . . . . 1A-11 DIAGNOSIS COMPRESSION TEST Important: Disconnect the Crankshaft Position Sensor (CPS) connector to disable the fuel and the ignition systems. Test the compression pressure for each cylinder. Low compression pressure may be the fault of the valves or the pistons. The following conditions should be considered when you check the cylinder compression: D The engine should be at normal operating temperature. D The throttle must be wide open.

D All the spark plugs should be removed. D The battery must be at or near full charge. 1. Place approximately three squirts of oil from a plunger type oiler into each spark plug port. 2. Insert the engine compression gauge into each spark plug port. 3. Crank test each cylinder with four to five compression strokes using the starter motor. 4. The lowest reading should not be less than 70% of the highest reading.
The compression gauge reading should not be less than 689 kPa (100 psi) for any of the cylinders. 5. Examine the gauge readings obtained after the four `puffs" per cylinder are obtained from cranking the starter motor. The readings are explained in the following descriptions: D Normal Condition - Compression builds up quickly and evenly to specified compression on each cylinder. D Piston Rings Faulty - Compression is low on the first stroke and tends

to build up on following strokes, but the compression pressure does not reach normal.
The compression pressure improves considerably with the addition of oil into the cylinder. D Valves Faulty - Low compression pressure on the first stroke. The compression pressure does not tend to build up on the following strokes. The compression pressure does not improve much with the addition of oil into the cylinder. DAEWOO T-100 BL3 1A - 2 GENERAL ENGINE INFORMATION OIL PRESSURE TEST Step 1 2 3 4 5 6 7 8 9 10 Action Is low or no oil pressure indicated? Check the oil level in the crankcase.
Is the level low? Add oil so that the oil level is up to the full mark on the indicator. Is the repair complete? Check the idle speed. Is the idle speed below the value specified? Increase the idle speed. Is the speed increased? Inspect the oil pressure switch. Is the oil pressure switch incorrect or malfunctioning? Install a new oil pressure switch. Is the repair complete? Inspect the oil pressure gauge. Is the oil pressure gauge incorrect or malfunctioning? Install a new oil pressure gauge. Is the repair complete? Inspect the engine oil. Is the engine oil in the crankcase diluted or of the improper viscosity? Install new engine oil of the proper viscosity for the expected temperatures. Is the repair complete? Inspect the oil pump.

Is the pump worn or dirty? Replace the oil pump. Is the repair complete? Inspect the oil filter. Is the oil filter plugged? Install a new oil filter. Is the repair complete? Inspect the oil pickup screen. Is the oil pickup screen loose or plugged? Tighten or replace the oil pickup screen as necessary. Is the repair complete? Inspect the oil pickup tube. Are there any holes in the oil pickup tube? Replace the oil pickup tube. Is the repair complete? Value(s) Yes Go to Step 2 Go to Step 3 No System OK Go to Step 4 - Go to Step 1 Go to Step 5 Go to Step 1 825 rpm - Go to Step 6 - Go to Step 7 Go to Step 1 Go to Step 8 - - Go to Step 9 Go to Step 1 Go to Step 10 - - Go to Step 11 Go to Step 12 - 11 12 13 14 15 16 17 18 19 - Go to Step 1 Go to Step 13 Go to Step 1 Go to Step 15 Go to Step 1 Go to Step 17 - Go to Step 14 Go to Step 16 Go to Step 18 - Go to Step 1 Go to Step 19 Go to Step 1 - Go to Step 20 - DAEWOO T-100 BL3 GENERAL ENGINE INFORMATION 1A - 3 - OIL PRESSURE TEST (CONT'D) Step Action Inspect the bearing clearances. Are the bearing clearances more than the values specified? 20 Value(s) Crankshaft 0.005 mm (0.
002 in.) Connecting Rod 0.019 X 0.070 mm (0.0007 X 0.
0027 in.) Yes No Go to Step 21 Go to Step 1 Go to Step 23 Go to Step 1 Go to Step 22 Go to Step 24 - 21 22 23 24 25 26 27 Replace the bearing if necessary.

Is the repair complete? Inspect the oil galleries. Are the oil galleries cracked, porous or plugged? Repair or replace the engine block. Is the repair complete? Inspect the gallery plugs.

Are any of the gallery plugs missing or not installed properly? Install plugs or repair as necessary. Is the repair complete? Inspect the camshaft. Is the camshaft worn or is there evidence of poor machining? Replace the camshaft. Is the repair complete? Go to Step 25 Go to Step 1 Go to Step 26 - - Go to Step 27 Go to Step 1 System OK - - OIL LEAK DIAGNOSIS Most fluid oil leaks are easily located and repaired by visually finding the leak and replacing or repairing the necessary parts. On some occasions a fluid leak may be difficult to locate or repair. The following procedures may help you in locating and repairing most leaks. Finding the Leak 1. Identify the fluid. Determine whether it is engine oil, automatic transmission fluid, power steering fluid, etc. 2.

Identify where the fluid is leaking from. 2.1. After running the vehicle at normal operating temperature, park the vehicle over a large sheet of paper. 2.2. Wait a few minutes. 2.3. You should be able to find the approximate location of the leak by the drippings on the paper.

3. Visually check around the suspected component. Check around all the gasket mating surfaces for leaks. A mirror is useful for finding leaks in areas that are hard to reach. 4.

If the leak still cannot be found, it may be necessary to clean the suspected area with a degreaser, steam or spray solvent. DAEWOO T-100 BL3 4.1. Clean the area well. 4.

2. Dry the area. 4.3. Operate the vehicle for several miles at normal operating temperature and varying speeds. 4.4. After operating the vehicle, visually check the suspected component. 4.5.

If you still cannot locate the leak, try using the powder or black light and dye method. Powder Method 1. Clean the suspected area. 2. Apply an aerosol-type powder (such as foot powder) to the suspected area. 3. Operate the vehicle under normal operating conditions. 4. Visually inspect the suspected component. You should be able to trace the leak path over the white powder surface to the source.

Black Light and Dye Method A dye and light kit is available for finding leaks. Refer to the manufacturer's directions when using the kit. 1. Pour the specified amount of dye into the engine oil fill tube. 2.

Operate the vehicle under normal operating conditions as directed in the kit. 1A - 4 GENERAL ENGINE INFORMATION 3. Direct the light toward the suspected area. The dyed fluid will appear as a yellow path leading to the source. D The flanges or the sealing surface is warped.

D There are scratches, burrs or other damage to the sealing surface. D The gasket is damaged or worn. D There is cracking or porosity of the component. D An improper seal was used (where applicable). Repairing the Leak Once the origin of the leak has been pinpointed and traced back to its source, the cause of the leak must be determined in order for it to be repaired properly. If a gasket is replaced, but the sealing flange is bent, the new gasket will not repair the leak. The bent flange must be repaired also. Before attempting to repair a leak, check for the following conditions and correct them as they may cause a leak. Seals D The fluid level/pressure is too high. D The crankcase ventilation system is malfunctioning.

D The seal bore is damaged (scratched, burred or nicked). D The seal is damaged or worn. D Improper installation is evident. D There are cracks in the component. D The shaft surface is scratched, nicked or damaged. D A loose or worn bearing is causing excess seal wear. Gaskets D The fluid level/pressure is too high. D The crankcase ventilation system is malfunctioning. D The fasteners are tightened improperly or the threads are dirty or damaged. KNOCK DIAGNOSIS Definition for Knock Engine knock refers to various types of engine noise.

Heavy knock is usually very loud and the result of broken or excessively worn internal engine components. Light knock is a noticeable noise, but not as loud. Light knock can be caused by worn internal engine components. Loose or broken external engine components can also cause heavy or light knock. Engine Knocks Cold and Continues for Two-Three Minutes and/or Knock Increases with Engine Torque Step 1 2 3 4 5 6 7 8 9 Action Does the engine knock when it is cold and continue for two to three minutes or does the knock increase with torque? Inspect the flywheel.

Is the flywheel contacting the splash shield? Reposition the splash shield. Is the repair complete? Inspect the balancer and the drive pulleys. Is either the balancer or the drive pulleys loose or broken? Tighten or replace the balancer or the drive pulleys. Is the repair complete? Inspect the piston-to-bore clearance. Is the clearance more than the value specified? 1.

Rebore the cylinder and hone to size. 2. Replace the piston. Is the repair complete? Inspect the connecting rod. Is the connecting rod bent? Replace the connecting rod. Is the repair complete? Value(s) Yes No Go to Step 2 Go to Step 3 Go to Step 1 System OK Go to Step 4 - - Go to Step 5 Go to Step 1 Go to Step 7 Go to Step 6 Go to Step 8 - 0.030 mm (0.001 in.) - Go to Step 1 Go to Step 9 System OK Go to Step 1 * Cold engine piston knock usually disappears when the cylinder is grounded out. Cold engine piston knock, which disappears in about 1.*

5 minutes, is considered acceptable. DAEWOO T-100 BL3 GENERAL ENGINE INFORMATION 1A - 5 Heavy Knock Hot with Torque Applied Step 1 2 3 4 5 6 7 8 9 10 11 12 13 Action Is there a heavy knock when the engine is hot and torque is applied? Inspect the balancer and pulley hub. Is the balancer or pulley hub broken? Replace the broken balancer or pulley hub. Is the repair complete? Inspect the torque converter bolts. Are the bolts tightened to the value specified? Tighten the torque converter bolts. Is the repair complete? Inspect the accessory belts. Are the belts too tight or nicked? Replace and/or tension the belts to specifications as necessary. Is the repair complete? Inspect the exhaust system. Is the system grounded? Reposition the system as necessary. Is the repair complete? Inspect the flywheel.

Is the flywheel cracked? Replace the flywheel. Is the repair complete? Inspect the main bearing clearance. Is the clearance more than the value specified? Replace the main bearings as necessary. Is the repair complete? Inspect the rod bearing clearance. Is the clearance more than the value specified? Replace the rod bearings as necessary.

Is the repair complete? Value(s) 45 NSm (33 lb ft) Go to Step 1 0.050 mm (0.002 in.) 0.019 X 0.

070 mm (0.0007 X 0.0028 in.) Go to Step 9 Go to Step 1 Go to Step 11 Go to Step 1 Go to Step 13 Go to Step 1 Go to Step 10 Go to Step 12 Go to Step 14 Yes Go to Step 2 Go to Step 3 Go to Step 1 Go to Step 5 Go to Step 1 Go to Step 7 No System OK Go to Step 4 Go to Step 6 Go to Step 8 - 14 Go to Step 15 Go to Step 1 System OK - 15 DAEWOO T-100 BL3 1A - 6 GENERAL ENGINE INFORMATION Light Knock Hot Step 1 2 3 4 5 6 7 Action Is there a light knock when the engine is hot? Is detonation or spark knock evident? Check the engine timing and the fuel quality.

Was the problem found? Inspect the torque converter bolts. Are the bolts tightened to the value specified? Tighten the torque converter bolts. Is the repair complete? Inspect the manifold. Is there an exhaust leak at the manifold? Tighten the bolts or replace the gasket. Is the repair complete? Check the rod bearing clearance. Is the clearance within the value specified? Replace the rod bearings as necessary.

Is the repair complete? Value(s) 45 NSm (33 lb ft) 0.019 X 0.070 mm (0.0007 X 0.0028 in.) Yes Go to Step 2 Go to Step 3 Go to Step 1 Go to Step 5 Go to Step 1 Go to Step 7 Go to Step 1 No System OK Go to Step 4 Go to Step 6 Go to Step 8 - 8 Go to Step 9 Go to Step 1 System OK - 9 Knocks During Initial Start-Up But Lasts Only a Few Seconds Step 1 2 3 4 5 6 7 8 9 Action Does the engine knock during initial start-up but last only a few seconds? Check the engine oil. Is the proper viscosity oil used in the crankcase? Install oil of the proper viscosity for the expected seasonal temperatures. Is the repair complete? Inspect the hydraulic lifters. Is there evidence of hydraulic lifter bleed-down? Clean, test and replace the lifters as necessary. Is the repair complete? Inspect the crankshaft end clearance.*
Is the clearance more than value specified? Replace the crankshaft thrust bearing. Is the repair complete? Inspect the front main bearing clearance. Is the clearance more than the value specified? Value(s) Go to Step 1 0.1 mm (0.0039 in.
*) 0.005 mm (0.0001 in.) Go to Step 5 Go to Step 1 Go to Step 7 Go to Step 1 Go to Step 9 Go to Step 6 Go to Step 8 System OK Yes Go to Step 2 Go to Step 4 No System OK Go to Step 3 - Replace the worn parts of the front main bearing. Is the repair complete? Go to Step 1 * When the engine is stopped, some valves will be open.*
Spring pressure against the lifters will tend to bleed lifter down. Attempts to repair this should be made only if the problem is consistent. An engine that is operated for only short periods between start-ups may have lifter noise that lasts for a few minutes. This is a normal condition. DAEWOO T-100 BL3 GENERAL ENGINE INFORMATION 1A - 7 Knocks at Idle Hot Step 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 Action Does the engine knock at idle when hot? Inspect the drive belts. Are the belts loose or worn? Tension or replace the belts as necessary. Is the repair complete? Inspect the A/C compressor and the generator. Is either the compressor or the generator faulty? Replace the faulty A/C compressor or the generator. Is the repair complete? Inspect the valve train. Are valve train components faulty? Replace faulty valve train components.

Is the repair complete? Check the engine oil. Is the proper viscosity oil used in the crankcase? Install oil of the proper viscosity for the expected seasonal temperatures. Is the repair complete? Inspect the piston pin clearance. Is the clearance more than the value specified? Replace the piston and the pin. Is the repair complete? Check the connecting rod alignment. Is the alignment faulty? Check and replace rods as necessary. Is the repair complete? Inspect the piston-to-bore clearance. Is the clearance within the value specified? Hone the bore and fit a new piston. Is the repair complete? Inspect the crankshaft balancer. Is the balancer loose? Torque or replace worn parts.
Is the repair complete? Check the piston pin offset. Is the offset at the value specified? Value(s) Yes Go to Step 2 Go to Step 3 Go to Step 1 Go to Step 5 Go to Step 1 Go to Step 7 Go to Step 1 Go to Step 10 0.020 mm (0.0008 in.) 0.
030 mm (0.0012 in.) 0.5 X 0.7 mm (0.
020 X 0.028 in.) Toward Thrust Side No System OK Go to Step 4 Go to Step 6 Go to Step 8 Go to Step 9 - Go to Step 1 Go to Step 11 Go to Step 1 Go to Step 13 Go to Step 1 Go to Step 16 Go to Step 1 Go to Step 17 Go to Step 1 Go to Step 12 Go to Step 14 Go to Step 15 Go to Step 18 - 18 Go to Step 19 Go to Step 1 System OK - 19 Install the correct piston. Is the repair complete? DAEWOO T-100 BL3 1A - 8 GENERAL ENGINE INFORMATION NOISE DIAGNOSIS Main Bearing Noise Step 1 2 Action Are dull thuds or knocks heard with every engine revolution? Check the oil pump pressure. Is the oil pump pressure low? Inspect the crankshaft end play. Does the crankshaft end play exceed the value specified? Inspect the crankshaft journals. Are the crankshaft journals out-of-round? Inspect the belt tension. Does the belt tension exceed the value specified? Inspect the crankshaft pulley. Is the crankshaft pulley loose? Value(s) Yes Go to Step 2 Go to Oil Pressure Test Go to Crankshaft Replacement Procedure Go to Crankshaft Replacement Procedure Go to Timing Belt Replacement Procedure Go to Crankshaft Replacement Procedure No System OK Go to Step 3 3 0.1 mm (0.

0039 in.) 0.004 mm (0.0002 in.) max. - Go to Step 4 4 Go to Step 5 5 Go to Step 6 6 - System OK Connecting Rod Bearing Noise Symptom Step 1 2 Action Is a knock noise heard under all engine speeds? Inspect the crankshaft connecting rod journal. Is the crankshaft connecting rod journal worn? Check the oil pump pressure. Is the oil pump pressure low? Inspect the crankshaft connecting rod journals. Are the journals out of round? Inspect the connecting rods. Is there a misaligned connecting rod? Inspect the connecting rod bolts.
Are the connecting rod bolts torqued properly? Value(s) Yes Go to Step 2 Go to Crankshaft Replacement Procedure Go to Oil Pressure Test Go to Crankshaft Replacement Procedure Go to Pistons and Rods Replacement Procedure No System OK - Go to Step 3 Go to Step 4 3 4 - Go to Step 5 5 - Go to Step 6 Go to Pistons and Rods Replacement Procedure 6 - System OK DAEWOO T-100 BL3 GENERAL ENGINE INFORMATION 1A - 9 Piston Noises Step 1 Action Are any of the following noises heard: a sharp double knock when the engine is idling, a light ticking with no load on the engine or a `slapping" noise when the engine is cold? Inspect the piston pin and bushing. Is the piston pin or the bushing worn or loose? Inspect the piston. Is the piston broken or cracked? Inspect the connecting rods. Is there a misaligned connecting rod? Inspect the piston position. Is the piston 180_ out of position? Value(s) Yes No - Go to Step 2 Go to Pistons and Rods Replacement Procedure Go to Pistons and Rods Replacement Procedure Go to Pistons and Rods Replacement Procedure Go to Pistons and Rods Replacement Procedure System OK 2 - Go to Step 3 3 - Go to Step 4 4 - Go to Step 5 5 - System OK DAEWOO T-100 BL3 1A - 10 GENERAL ENGINE INFORMATION Valve Mechanism or Valve Train Noises Step 1 Action Is a light tapping sound heard from the engine? Inspect the valve springs.
Are the springs weak or broken? 2 Value(s) Yes Go to Step 2 Go to Cylinder Head and Valve Train Components Replacement Procedure Go to Cylinder Head and Valve Train Components Replacement Procedure Go to Cylinder Head and Valve Train Components Replacement Procedure Go to Camshaft Replacement Procedure Go to Cylinder Head and Valve Train Components Replacement Procedure Go to Cylinder Head and Valve Train Components Replacement Procedure Go to Cylinder Head and Valve Train Components Replacement Procedure No System OK - Go to Step 3 Inspect the valves.

Are the valves sticking or warped? 3 - Go to Step 4 Inspect the valve lifters. Are the valve lifters dirty, stuck or worn? 4 - Go to Step 5 5 Inspect the camshaft lobes. Are the camshaft lobes damaged or improperly machined? Check the oil supply to the valve train. Is the oil supply insufficient or poor? - Go to Step 6 6 - Go to Step 7 Inspect the valve guides.

Are the valve guides worn? 7 - Go to Step 8 Inspect the valve spring seat. Is the valve spring seat incorrect? 8 - System OK DAEWOO T-100 BL3 GENERAL ENGINE INFORMATION 1A - 11 - GENERAL INFORMATION CLEANLINESS AND CARE An automobile engine is a combination of many machined, honed, polished and lapped surfaces with tolerances that are measured in the ten-thousandths of an inch. When any internal engine parts are serviced, care and cleanliness are important. A liberal coating of engine oil should be applied to friction areas during assembly, to protect and lubricate the surfaces on initial operation. Proper cleaning and protection of machined surfaces and friction areas is part of the repair procedure. This is considered standard shop practice even if not specifically stated. Whenever valve train components are removed for service, they should be kept in order. They should be installed in the same locations, and with the same mating surfaces, as when they were removed. Battery cables should be disconnected before any major work is performed on the engine. Failure to disconnect cables may result in damage to wire harness or other electrical parts.

ON-ENGINE SERVICE C aution: D isconnect thenegativebattery cablebe fore rem oving or installing any electrical unit, or whenatool orequipm entcouldeasilycom eincon tact with exposedelectrical term inals. D isconnect ingthiscablewill helpprevent personal injuryand dam agetothevehicle. Theignitionm alsobein ust LO Kunlessotherwisenoted. C Notice: Any time the air cleaner is removed, the intake opening should be covered. This will protect against accidental entrance of foreign material, which could follow the intake passage into the cylinder and cause extensive damage when the engine is started. DAEWOO T-100 BL3 SECTION 1B SOHC ENGINE MECHANICAL CUIO:Dcnetth ea ebtteycb e r e oin rinta gaye cicluito hna AT N isonc engtiv a r alebfoer mv go s llin n letr a n rwe tolo qip etcu ailycm otatw xoe e cicltema .Dcnetin iscb o reu m oldes o eincn c ithepsd letr a r inls isonc gth ale n w e r vn esnlin r n a aetoth eic .Teigitio uta ob OKules illhlppeetpr oa juyaddm g evh le h n nms ls einL C n s o ewente. thr is o d TABLE OF CONTENTS

5 mm (3.01 in. X 3.21 in.) 9.
5 $ 0.2:1 1- 3- 4- 2 76.5 mm (3.01 in.) 0.0065 mm (0.00025 in.) 0 0.0065 mm (0.00025 in.

) 76.470 mm (3.01 in.) 0.030 mm (0.0012 in.) 0.3 mm (0.019 in.) 0.
3 mm (0.019 in.) 0.02 mm (0.0008 in) 0.
02 mm (0.0008 in.) 18.000 mm (0.708 in.
) 0.5X 0.7 mm (0.019X 0.027 in.) SOHC ENGINE MECHANICAL 1B - 3 ENGINE SPECIFICATIONS (Cont'd) Application Bearing OD: No. 1 No. 2 No. 3 No. 4 No.

5 Crankshaft: Main Journal: Diameter (All) Taper (Maximum) Out of Round (Maximum) Main Bearing Clearance (All) Crankshaft End Play Connecting Rod Journal: Diameter (All) Taper (Maximum) Out of Round (Maximum) Rod Bearing Clearance (All) Rod Side Clearance Valve System: Valve Lash Compensators Face Angle (All) Seat Angle (All) Seat Runout (Maximum, All) Face Runout (Maximum, All) Seat Width: Intake Exhaust Valve Guide Inside Diameter (All) Valve Stem Diameter (All) Valve Diameter (All): Intake Exhaust Valve Spring Loads: Valve Open Valve Closed Oil Pump: Gap Between Oil Pump Body and Out Rotor Out Rotor Side Clearance Inner Rotor Side Clearance Relief Valve Spring Free Length 0.400X 0.484 mm (0.0157X 0.0191 in.)
0.045X 0.100 mm (0.0018X 0.0039 in.
) 0.035X 0.085 mm (0.0014X 0.0033 in.
) 81 mm (3.2 in.) Hydraulic 46_ 46_ 0.03 mm (0.019 in.
) 0.03 mm (0.019 in.) 1.3X 1.5 mm (0.051X 0.059 in.) 1.6X 1.

8 mm (0.063X 0.071 in.) 7.030X 7.050 mm (0.276X 0.277 in.) 7 mm (0.275 in.
) 38.0" 0.15 mm (1.49" 0.0059 in.
) 31.0" 0.15 mm (1.22" 0.0059 in.
) 625" 25 N (461" 18 lbs) @ 21.5 mm (0.846 in.) 275" 15 N (202" 11 lbs) @ 31.5 mm (1.240 in.) 54.982X 54.994 mm (2.164X 2.

165 in.) 0.005 mm (0.0001 in.

*) 0.004 mm (0.0001 in.) 0.005 mm (0.0001 in.
) 0.1 mm (0.003 in.) 42.971X 42.
987 mm (1.691X 1.692 in.) 0.005 mm (0.
0001 in.) 0.004 mm (0.0001 in.) 0.019X 0.070 mm (0.0007X 0.0027 in.) 0.*

*070X 0.242 mm (0.0027X 0.009 in.) Description (Manual and Automatic) 39.500 mm (1.555 in.) 39.750 mm (1.564 in.
) 40.000 mm (1.574 in.) 40.250 mm (1.
584 in.) 40.500 mm (1.594 in.) DAEWOO T-100 BL3 1B - 4 SOHC ENGINE MECHANICAL - FASTENER TIGHTENING SPECIFICATIONS Application A/C Compressor Hose Assembly Retaining Bolt A/C Compressor Mounting Bolts A/C Compressor Mounting Bracket Bolts Air Filter Housing Bolts Alternator Adjusting Bolt Alternator Adjusting Bracket Retaining Bolt Camshaft Gear Bolt Camshaft Pressure Plate Bolts Connecting Rod Bearing Cap Bolts Coolant Pump Retaining Bolts Coolant Temperature Sensor Crankshaft Bearing Cap Bolts Crankshaft Pulley Bolt Crankshaft Position Sensor Retaining Bolt Cylinder Head Bolts (Camshaft Support Housing & Cylinder Head Mounting Bolts) DIS Ignition Coil Mounting Bolts DIS Ignition Coil Mounting Plate Bolts Engine Lift Bracket Bolt Engine Mount Attaching Nuts Engine Mount Bracket Retaining Bolts Engine Mount Bracket-to-Engine Mount Retaining Bolts Exhaust Flex Pipe Bracket Bolts Exhaust Flex Pipe-to-Catalytic Converter or Connecting Pipe Retaining Nuts Exhaust Flex Pipe-to-Exhaust Manifold Retaining Nuts Exhaust Manifold Heat Shield Bolts Exhaust Manifold Nuts Flexible Plate Bolts Flexible Plate Inspection Cover Bolts Flywheel Bolts Flywheel Inspection Cover Bolts Fuel Rail Retaining Bolts Intake Manifold Retaining Nuts Intake Manifold Support Bracket Retaining Bolts Lower Timing Belt Cover Bolts NSm 33 27 50 12 20 20 45 10 25 +30_ +15_ 10 20 50 +45_ +15_ 95 +30_ +15_ 10 25 +60_ +60_ +60_+10_ 10 10 25 40 60 60 40 30 40 15 25 60 10 35 +30_ +15_ 12 25 25 22 10 Lb-Ft 24 20 36 15 15 33 18 +30_ +15_ 15 37 +45_ +15_ 70 +30_ +15_ 18 +60_ +60_ +60_+10_ 18 30 44 44 30 22 30 11 18 44 25 +30_ +15_ 18 18 16 Lb-In 106 89 89 89 89 89 89 106 89 DAEWOO T-100 BL3 SOHC ENGINE MECHANICAL 1B - 5 FASTENER TIGHTENING SPECIFICATIONS (Cont'd) Application Oil Pan Retaining Bolts Oil Pan Drain Plug Oil Pressure Switch Oil Pump Retaining Bolts Oil Pump/Pickup Tube and Support Bracket Bolts Oil Pump Safety Relief Valve Oil Pump Rear Cover Bolts Power Steering Pump Mounting Bolts Power Steering Pump Pulley Bolts Rear Timing Belt Cover Bolts Right Transaxle Brace Bolts Spark Plugs Thermostat Housing Mounting Bolts Throttle Cable Bracket Bolts Timing Belt Automatic Tensioner Bolt Transaxle Bell Housing Bolts Transaxle Torque Converter Bolts Upper Timing Belt Cover Bolts Valve Cover Bolts NSm 10 55 40 10 10 30 6 25 25 10 60 25 20 8 20 75 45 10 10 Lb-Ft 41 30 22 18 18 45 18 15 15 55 33 Lb-In 89 89 89 53 89 71 89 89 SPECIAL TOOLS SPECIAL TOOLS TABLE KM-565-A Valve Spring Compressor J-42492 Timing Belt Adjuster A102B150 A102B151 DAEWOO T-100 BL3 1B - 6 SOHC ENGINE MECHANICAL - SPECIAL TOOLS TABLE (Cont'd) J-28467-B Engine Assembly Support Fixture KM-254 Valve Guide Reamer A102B152 A102B155 KM-427 Piston Pin Service Set KM-255 Valve Guide Reamer A102B153 A102B155 MKM-571-B Gauge KM-340-0 Cutter Set Includes: KM-340-7 Includes: KM-340-13 Includes: KM-340-26 A102B156 A102B154 KM-253 Valve Guide Reamer KM-348 Valve Spring Compressor A102B155 A102B157 DAEWOO T-100 BL3 SOHC ENGINE MECHANICAL 1B - 7 SPECIAL TOOLS TABLE (Cont'd) KM-419 Distance Gauge KM-470-B Angular Torque Gauge A102B158 A102B161 KM-635 Crankshaft Rear Oil Seal Installer J-36972 Crankshaft Rear Oil Seal Installer A102B160 A102C155 MKM-412 Engine Overhaul Stand KM-135 Adapter A102B159 B102C044 KM-498-B Pressure Gauge A202B005 DAEWOO T-100 BL3 1B - 8 SOHC ENGINE MECHANICAL - COMPONENT LOCATOR UPPER END A202B007 DAEWOO T-100 BL3 SOHC ENGINE MECHANICAL 1B - 9 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 Wiring Bracket Bolt Bolt Cap, Bayonet Joint Seal, Bayonet Cap Valve Cover Bolt Throttle Position Sensor Idle Air Control Valve Throttle Body Throttle Body Gasket Nut Engine Coolant Temperature Sensor Intake Manifold Vacuum Tube EGR Valve Bolt EGR Gasket Shaft Seal Ring Camshaft Support Valve Cover Gasket Tube Cylinder Head Bolt Washer Camshaft Camshaft Pressure Plate Bolt Bolt-Stud Intake Manifold Gasket Bolt-Stud Valve Thrust Piece 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 Valve Key Valve Spring Plate Valve Spring Valve Stem Seal Exhaust Valve Spring Seat Valve Guide Cam Follower Cam Follower Lifter Intake Valve Spring Seat Bolt Thermostat Housing Thermostat Housing Seal Ring Thermostat Screw Plug Oil Duct Cap Oil Duct Cap Adapter Coolant Temperature Sensor Exhaust Valve Intake Valve Cylinder Head Oil Duct Sleeve Bolt-Stud Exhaust Manifold Gasket Cylinder Head Gasket Exhaust Manifold Nut Exhaust Oxygen Sensor Exhaust Manifold Heat Shield Bolt EGR Solenoid Bracket DAEWOO T-100 BL3 1B - 10 SOHC ENGINE MECHANICAL - LOWER END A202B006 DAEWOO T-100 BL3 SOHC ENGINE MECHANICAL 1B - 11 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 Piston Ring Seat Piston Piston Pin Connecting Rod Connecting Rod Bearing Set Connecting Rod Bolt Oil Level Gauge Stick Gauge Stick Tube Connecting Piece Oil Filter Camshaft Pulley Bolt Washer Camshaft Gear Rear Cover Bolt Rear Timing Belt Cover Bolt Coolant Pump Oil Pump Seal Ring Oil Pump Body Gasket Engine Block Bolt Auto Tensioner Bolt Crankshaft Gear Pressure Relief Valve Plunger Spring Oil Pump Seal Ring Bolt Plug Crankshaft Bearing Set Crankshaft Shaft Seal Ring 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 Flywheel (Manual Transaxle) Bolt (Manual Transaxle) Bolt (Automatic Transaxle) Flex Plate (Automatic Transaxle) Bolt Threaded Ring Drain Plug Bolt Oil Pan Main Bearing Cap Bolt Main Bearing Bolt Bracket Oil Pickup Tube Timing Belt Upper Timing Belt Front Cover Bolt Lower Timing Belt Front Cover Crankshaft Pulley Washer Bolt Bolt Bolt Crankshaft Position Sensor Bracket Gear Gear Cover Bolt Seal Knock Sensor DAEWOO T-100 BL3 1B - 12 SOHC ENGINE MECHANICAL - MAINTENANCE AND REPAIR ON-VEHICLE SERVICE VALVE COVER Removal Procedure 1.*
Disconnect the negative battery cable. 2. Disconnect the breather tube from the valve cover. A102B011 3. 4. 5. 6. Remove the eight bolts from the valve cover. Remove the valve cover. Remove the valve cover gasket.

*Clean the sealing surfaces of the valve cover and the camshaft housing. A102B010 Installation Procedure 1. Install the new valve cover gasket and the valve cover. 2. Install the eight bolts to the valve cover. Tighten Tighten the valve cover bolts to 10 NSm (89 lb-in). A102B010 DAEWOO T-100 BL3 SOHC ENGINE MECHANICAL 1B - 13 3. Connect the breather tube to the valve cover. 4. Connect the negative battery cable.
A102B011 CYLINDER HEAD AND GASKET (Left-Hand Drive Shown, Right Hand Drive Similar) Tools Required J-42492 Timing Belt Adjuster KM-470-B Angular Torque Gauge Removal Procedure 1.*