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**RECOMMENDED LUBRICANTS AND FLUIDS -
USA VEHICLES**

COMPONENT	SPECIFICATION	VISCOSITY	AMBIENT TEMPERATURE °C									
			-30	-20	-10	0	10	20	30	40	50	
Engine	Use oils to API service level S G	5W/20)										
		5W/30)	_____									
		5W/40)										
		10W/30		_____								
		10W/40) 10W/50)			_____							
		15W/40) 15W/50)			_____							
		20W/40) 20W/50)				_____						
Automatic gearbox	ATF Dexron IID		_____	_____	_____	_____	_____	_____	_____	_____	_____	
Final drive units Swivel pin housings	API GL4 or GL5 MIL - L - 2105 or MIL - L - 21-05B	90 EP		_____	_____	_____	_____	_____	_____	_____	_____	
		80W EP	_____	_____	_____	_____	_____	_____	_____	_____	_____	
Power steering	ATF Dexron IID		_____	_____	_____	_____	_____	_____	_____	_____	_____	
Borg Warner transfer gearbox	ATF Dexron IID ATF M2C 33G ATF Texaco 4291A Universal		_____	_____	_____	_____	_____	_____	_____	_____	_____	
Brake reservoir	Brake fluid must have a minimum boiling point of 260°C (500°F) and comply with FMVSS/116/DOT 4		_____	_____	_____	_____	_____	_____	_____	_____	_____	
Lubrication nipples (hubs, ball joints, etc.)	NLGI-2 multipurpose lithium based grease		_____	_____	_____	_____	_____	_____	_____	_____	_____	

See table on page 3 for remaining vehicle components



Oils for emergency use only if the SHPD oils are not available. They can be used for topping up without detriment, but if used for engine oil changing, they are limited to a maximum of 5,000 km (3,000 miles) between oil and filter changes. (See previous page).

Propeller shaft front and rear Lubrication nipples (hubs, ball joints etc.) Seat slides Door lock striker	NLGI - 2 Multi-purpose Lithium based GREASE
Brake and clutch reservoirs	Brake fluids having a minimum boiling point of 260°C (500°F) and complying with FMVSS 116 DOT4
Engine cooling system	Use an ethylene glycol based anti-freeze (containing no methanol) with non-phosphate corrosion inhibitors suitable for use in aluminium engines to ensure the protection of the cooling system against frost and corrosion in all seasons. Use one part anti-freeze to one part water for protection down to -36°C (-33°F). IMPORTANT: Coolant solution must not fall below proportions one part anti-freeze to three parts water, i.e. minimum 25% anti-freeze in coolant otherwise damage to engine is liable to occur.
Battery lugs, Earthing surfaces where paint has been removed	Petroleum jelly. NOTE: Do not use Silicone Grease
Air conditioning system refrigerant	METHYLCHLORIDE REFRIGERANTS MUST NOT BE USED Use only with refrigerant 12. This includes 'Freon 12' and 'Arcton 12'
Compressor oil	Shell Clavus 68 BP Energol LPT68 Sunisco 4GS Texaco Capella E Wax/Free 68. Castrol Icematic 99
ABS Sensor bush-rear	Silicone grease: Staborags NBU - Wabco 830 502,0634 Wacker chemie 704 - Wabco 830 502,0164 Kluber GL301

LUBRICATION PRACTICE

The engine is filled with special oil to protect it during the running-in-period. The engine must be drained after 1600 km (1,000 miles) and refilled with an appropriate lubricant.

Use a high quality oil of the correct viscosity range and service classification in the engine during maintenance and when topping up. The use of oil not to the correct specification can lead to high oil and fuel consumption and ultimately to damaged components.

Oil to the correct specification contains additives which disperse the corrosive acids formed by combustion and prevent the formation of sludge which can block the oilways. Additional oil additives should not be used. Always adhere to the recommended servicing intervals.



WARNING: Many liquids and other substances used in motor vehicles are poisonous. They must not be consumed and must be kept away from open wounds. These substances, among others, include anti-freeze, windscreen washer additives, lubricants and various adhesives.

CAPACITIES

The following capacity figures are approximate and provided as a guide only. All oil levels must be set using dipstick or filler plugs as applicable. Refer to Section 10 for correct checking procedure for oil levels.

Capacities (approx.)*	Litres	Imperial unit	US unit
Engine sump and filter from dry			
- petrol	6.66	11.7 pints	14.2 pints
- diesel - Tdi	7.00	12 pints	-
- diesel - VM	8.00	14 pints	-
Manual gearbox	2.67	4.7 pints	5.6 pints
Automatic gearbox	9.10	16 pints	20 pints
Transfer gearbox from dry	1.70	3.0 pints	3.6 pints
Front axle from dry	1.70	3.0 pints	3.6 pints
Front axle swivel pin housing (each)	0.35	0.6 pints	0.7 pints
Rear axle from dry	1.70	3.0 pints	3.6 pints
Power steering box and reservoir	2.90	5.0 pints	6.0 pints
Cooling system	11.40	20 pints	24 pints
Fuel tank	76.40	16.8 gallons	20 gallons
Fuel tank (91 model year onwards)	81.80	18 gallons	21.4 gallons

 **NOTE: * All levels must be checked by dipstick or level plugs as applicable.**

When draining oil from the ZF automatic gearbox, oil will remain in the torque converter, refill to high level on dipstick only.

ANTI-FREEZE

ENGINE TYPE	MIXTURE STRENGTH	PERCENTAGE CONCENTRATION	PROTECTION LOWER TEMPERATURE LIMIT
V8 Engine VM Diesel Tdi Diesel	One part anti-freeze One part water	50%	
Complete protection Vehicle may be driven away immediately from cold			- 33°F - 36°C
Safe limit protection Coolant in mushy state. Engine may be started and driven away after warm-up period			- 41°C - 42°F
Lower protection Prevents frost damage to cylinder head, block and radiator. Thaw out before starting engine			- 47°C - 53°F



FUEL REQUIREMENTS

Catalyst vehicles

Vehicles equipped with catalytic converter are designed to use **ONLY** unleaded fuel. Unleaded fuel must be used for the emission control system to operate properly. Its use will also reduce spark plug fouling, exhaust system corrosion and engine oil deterioration.

Using fuel that contains lead will result in damage to the emission control system and could result in loss of warranty coverage. The effectiveness of the catalysts in the catalytic converters will be seriously impaired if leaded fuel is used. The vehicle is equipped with an electronic fuel injection system, which includes two oxygen sensors. Leaded fuel will damage the sensors, and will deteriorate the emission control system.

Regulations require that pumps delivering unleaded fuel be labelled **UNLEADED**. Only these pumps have nozzles which fit the filler neck of the vehicle fuel tank.

RECOMMENDED FUEL

Petrol engines

- with catalytic converter..... unleaded only, 95 RON (USA 90 CLC or AKI)
- non catalytic, 9.35:1 compression ratio..... leaded 97 RON/unleaded 95 RON
- non catalytic, 8.13:1 compression ratio..... leaded 90 RON/unleaded 95 RON
- Australia minimum 91 RON unleaded

Diesel engines

- 22,5:1 and 19,5:1 compression ratio..... Diesel fuel oil, distillate, diesel fuel, automotive gas or Derv to British standard 2869, (1983) class A1 or A2.

Using fuel with an octane rating lower than stated above could seriously impair vehicle performance.



CAUTION: Do not use oxygenated fuels such as blends of methanol/ gasoline or ethanol/gasoline (e.g. 'Gasohol'). Take care not to spill fuel during refuelling.