SERVICE PROCEDURES AND SPECIFICATIONS

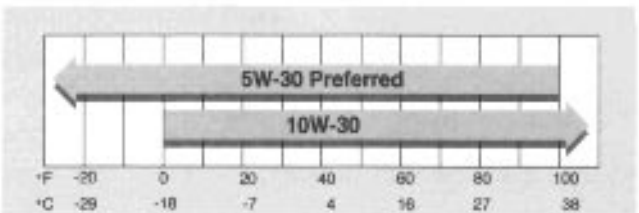
Engine

SPECIFICATIONS

– GENERAL

Model	1UZ–FE
Type	8 cylinder V type, 4 cycle, gasoline
Bore and stroke	87.5 X 82.5 mm (3.44 X 3.25 in.)
Displacement	3969 cm^3 (242.1 cu.in.)
Valve clearance (engine cold)	
Intake	0.15 – 0.25 mm (0.006 – 0.010 in.)
Exhaust	0.25 – 0.35 mm (0.010 – 0.014 in.)
Drive belt tension	Automatic adjustment

– LUBRICATION SYSTEM

Oil capacity	
Drain and refill	
with filter	5.1 L (5.4 qt., 4.5 Imp. qt.)
without filter	4.8 L (5.1 qt., 4.2 Imp. qt.)
Oil grade	API SH, Energy–Conserving II multigrade engine oil or ILSAC multigrade engine oil
Recommended oil viscosity (SAE):	

Temperature range anticipated before next oil change

– COOLING SYSTEM

Capacity	11.0 L (11.6 qt., 9.7 Imp. qt.)
Coolant type	Ethylene – glycol coolant (Do not use alcohol type.)

– FUEL

Fuel type	Only UNLEADED
Research octane number	96 (Octane Rating 91) or higher

– IGNITION SYSTEM

Spark plug	– Make	NIPPONDENSO	PK20R11
		NGK	BKR6EP11
	– Gap		1.1 mm (0.043 in.)

– ELECTRICAL SYSTEM

Battery	– Maintenance type battery		
	Specific gravity reading at 20°C (68°F):		1.260 Fully charged
			1.160 Half charged
			1.060 Discharged
	Charging rates	Quick charge	15A max.
		Slow charge	5A max.
	– Non–maintenance battery		
	Open voltage at 20°C (68°F):		12.7V Fully charged
			12.3V Half charged
			11.9V Discharged
			[Voltage that is checked 20 minutes after the key is removed with all the lights turned off]
	Charging rates		5A max.

FUEL

Fuel type

Your vehicle must use only unleaded gasoline.

To help prevent gas station mixups, your Lexus has a smaller fuel tank opening. The special nozzle on pumps with unleaded fuel will fit it, but the larger nozzle on pumps with leaded gas will not.

NOTICE

Do not use leaded gasoline. Use of leaded gasoline will cause the three–way catalytic converter to lose its effectiveness and the emission control system to function improperly. Also, this can increase maintenance costs.

Octane number

Select premium unleaded gasoline with a Research Octane Number of 96 (Octane Rating 91) or higher for optimum engine performance. However, if such premium type cannot be obtained, you may temporarily use unleaded gasoline with an octane number as low as 91.

Use of unleaded fuel with an octane number or rating lower than stated above will cause persistent heavy knocking. If severe, this will lead to engine damage.

If your engine knocks ...

If you detect heavy knocking even when using the recommended fuel, or if you hear steady knocking while holding a steady speed on level roads, consult your Lexus dealer.

However, now and then, you may notice light knocking for a short time while accelerating or driving up hills. This is no cause for concern.

Gasolines containing detergent additives

Lexus recommends use of gasolines that contain detergent additives to avoid build–up of engine deposits.

For further details, ask your Lexus dealer or a local gasoline retailer.

Gasolines containing MTBE

Gasolines that contain MTBE (Methyl Tertiary–Butyl Ether) are available in the market. If you use a gasoline mixed with MTBE, make certain that it does not contain more than 15% of MTBE.

If the use of gasolines containing MTBE causes poor driveability and/or poor fuel economy, you should stop using them.

Gasolines containing alcohol

Gasohol is a mixture of gasoline and ethanol. If you use gasohol in your Lexus, be sure that it is unleaded, has an octane rating no lower than 87 and does not contain more than 10% ethanol. Lexus does not recommend the use of gasolines containing methanol.

If you use gasoline containing methanol, use only gasoline meeting the requirements above and also containing less than 5% methanol with cosolvents and corrosion inhibitors for methanol.

NOTICE

- ***Do not use gasohol other than stated above. It will cause fuel system damage or vehicle performance problems.***
- ***If driveability problems are encountered (poor hot starting, vaporizing, engine knock, etc.), discontinue its use.***
- ***Take care not to spill gasohol during refueling. Gasohol may cause paint damage.***

Fuel tank capacity

85 L (22.5 gal., 18.7 Imp. gal.)

FACTS ABOUT ENGINE OIL CONSUMPTION

Functions of engine oil

Engine oil has the primary function of lubricating and cooling the inside of the engine, and plays a major role in maintaining the engine in proper working order.

Engine oil consumption

It is normal that an engine should consume some engine oil during normal engine operation. The causes of oil consumption in a normal engine are as follows.

- Oil is used to lubricate pistons, piston rings and cylinders. A thin film of oil is left on the cylinder wall when a piston moves downwards in the cylinder. High negative pressure generated when the vehicle is decelerating sucks some of this oil into the combustion chamber. This oil as well as some part of the oil film left on the cylinder wall is burned by the high temperature combustion gases during the combustion process.
- Oil is also used to lubricate the stems of the intake valves. Some of this oil is sucked into the combustion chamber together with the intake air and is burned along with the fuel. High temperature exhaust gases also burn the oil used to lubricate the exhaust valve stems.

The amount of engine oil consumed depends on the viscosity of the oil, the quality of the oil and the way the vehicle is driven.

More oil is consumed by high–speed driving and frequent acceleration and deceleration.

A new engine consumes more oil, since its pistons, piston rings and cylinder walls have not become conditioned.

When judging the amount of oil consumption, keep in mind that the oil may have become diluted, making it difficult to judge the true level accurately.

For example, if a vehicle is used for repeated short trips and consumes a normal amount of oil, the dipstick may not show any drop in the oil level at all, even after 1000 km (600 miles) or more. This is because the oil is gradually becoming diluted with fuel or moisture, making it appear that the oil level has not changed.

The diluting ingredients evaporate out when the vehicle is then driven at high speeds, as on an expressway, making it appear that oil is excessively consumed after driving at high speeds.

Importance of engine oil level check

One of the most important points in proper vehicle maintenance is to keep the engine oil at the optimum level so that oil function will not be impaired. Therefore, it is essential that the oil level be checked regularly. Lexus recommends that the oil level be checked every time you refuel the vehicle.

NOTICE

Failure to check the oil level regularly could lead to serious engine trouble due to insufficient oil.

For detailed information on oil level check, see “Checking the engine oil level” on page 195.

USED ENGINE OIL

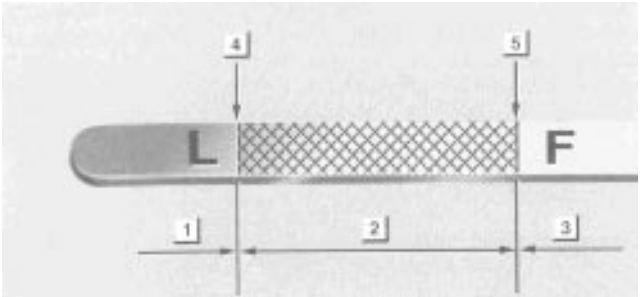
CAUTION

- **Used engine oil contains potentially harmful contaminants which may cause skin disorders such as inflammation or skin cancer, so care should be taken to avoid prolonged and repeated contact with it. To remove used engine oil from your skin, wash thoroughly with soap and water.**
- **Do not leave used oil within the reach of children.**
- **Dispose of used oil and used oil filters only in a safe and acceptable manner. Do not dispose of used oil and used oil filters in household trash, in sewers or onto the ground. Call your Lexus dealer or a service station for information concerning recycling or disposal.**

CHECKING THE ENGINE OIL LEVEL

With the engine at operating temperature and turned off, check the oil level on the dipstick.

1. To get a true reading, the vehicle should be on a level spot. After turning off the engine, wait a few minutes for the oil to drain back into the bottom of the engine.
2. Pull out the dipstick, and wipe it clean with a rag.
3. Reinsert the dipstick and push it in as far as it will go, or the reading will not be correct.



▶ 1 ***Add oil*** 2 ***O.K.*** 3 ***Too full***

4. Pull the dipstick out and look at the oil level on the end. If it is between the full line (5) and the low line (4), it is O.K.

If the oil level is below or only slightly above the low line, add engine oil of the same type as already in the engine.

Remove the oil filler cap and add engine oil a little at a time, checking the dipstick. The approximate quantity of oil needed to fill between the low line and the full line on the dipstick is indicated below for reference.

When the level reaches within the correct range, return the filler cap and turn the cap clockwise until you hear a click.

Oil quantity. L (qt., Imp. qt.) 1.5 (1.6, 1.3)

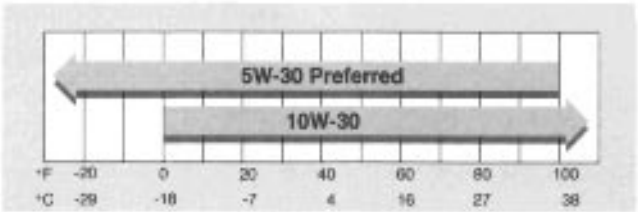
NOTICE

Avoid overfilling, or the engine could be damaged. Check the oil level on the dipstick once again after adding the oil.

Engine oil selection

Use API SH, Energy–Conserving II multigrade engine oil or ILSAC multigrade engine oil.

Recommended viscosity (SAE):



Temperature range anticipated before next oil change

SAE 5W–30 is the best choice for your vehicle, for good fuel economy, and good starting in cold weather.

If you use SAE 10W–30 engine oil in extremely low temperatures, the engine may become difficult to start, so SAE 5W–30 engine oil is recommended.

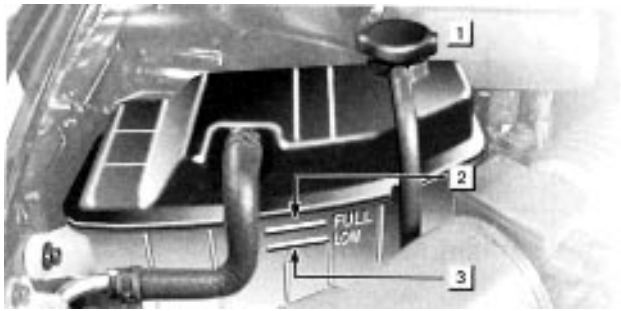
Oil identification marks

▶ ***API Service Symbol*** ▶ ***ILSAC Certification Mark***

Either or both API registered marks are added to some oil containers to help you select the oil you should use.

- The API Service Symbol is located anywhere on the outside of the container.
  The top portion of the label shows the oil quality by API (American Petroleum Institute) designation such as SH. The center portion of the label shows the SAE viscosity grade such as SAE 5W–30. "Energy–Conserving II", shown in the lower portion, indicates that the oil has fuel–saving capabilities. Oils marked "Energy–Conserving II" will have higher fuel–saving capabilities than oils marked "Energy–Conserving".
- The ILSAC (International Lubricant Standardization and Approval Committee) Certification Mark is displayed on the front of the container.

CHECKING THE ENGINE COOLANT LEVEL



▶ 1 ***Reservoir cap*** 2 ***Upper line*** 3 ***Lower line***

Park the vehicle at a level spot and look at the see–through coolant reservoir when the engine is cool. The coolant level is satisfactory if it is between the upper and lower lines on the tank. If the level is low, add ethylene–glycol type coolant.

The coolant level in the reservoir will vary with engine coolant temperature. However, if the level is on or below the lower line, add coolant to bring the level up to the upper line.

Use only ethylene–glycol type coolant. It will prevent freezing and corrosion. Neither supplemental inhibitors nor additives are needed nor recommended. (For information on ethylene–glycol coolant, see also "Engine coolant selection" described below.)

If the coolant level drops within a short time after replenishing, there may be a leak in the system. Visually check the radiator, hoses, reservoir cap, drain cock and water pump.

If you can find no leak, have your Lexus dealer test the cap pressure and check for leaks in the cooling system.

CAUTION

To prevent burning yourself, do not remove the reservoir cap when the engine is hot.

Engine coolant selection

Your coolant must contain ethylene–glycol antifreeze. In addition to preventing freezing and subsequent damage to the engine, this will also prevent corrosion. Further supplemental inhibitors or additives are neither needed nor recommended.

Read the antifreeze container for information on freeze protection. Follow the manufacturer's directions for how much to mix with water. The total capacity of the cooling system is given on page 191. We recommend 50% solution be used for your Lexus, or a sufficient quantity to provide protection to about –35°C (–31°F).

NOTICE

Do not use alcohol type antifreeze or plain water alone.