SERVICE MANUAL

Service Manual

MODEL
L20A, L24 SERIES
ENGINE

nick's

NISSAN

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

P/N 99999-20015

SERVICE MANUAL

MODEL
L20A, L24 SERIES
ENGINES

NISSAN

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

QUICK REFERENCE INDEX

ENGINE GENERAL ..... EG
ENGINE TUNE-UP ..... ET
ENGINE MECHANICAL ..... EM
ENGINE LUBRICATION SYSTEM ..... EL
COOLING SYSTEM ..... CO
FUEL SYSTEM ..... EF
EMISSION CONTROL SYSTEM ..... EC
ENGINE ELECTRICAL SYSTEM ..... EE
SERVICE EQUIPMENT ..... SE

FOREWORD

This service manual has been prepared for the purpose of assisting service personnel of our distributors and dealers for effective service and maintenance of model L20A, L24 series engines.

Since proper maintenance and service are most essential to satisfy our customers by keeping their cars in the best condition, this manual should be read carefully The followings should be noted for effective utilization of this manual.

1. *Please for complete detail of the car refer to this and DATSUN 240Z SPORTS SERVICE MANUAL, DATSUN 2000 SERVICE MANUAL, NISSAN GLORIA SERVICE MANUAL because this manual describes information concerning the engine.*

2. *All part name in this manual conform to DATSUN 240Z SPORTS PARTS CATALOG, DATSUN 2000 and 2400 PART CATALOG and NISSAN GLORIA PARTS CATALOG, and only the genuine service parts listed in these parts catalogs should be used for replacement.*

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

4. *It is emphasised that those who use this manual revise the contents according to the SERVICE JOURNAL and SERVICE DATA AND SPECIFICATIONS issued by the factory, which carry the latest factory approved servicing method.*

5. *Rights for alternation in specifications and others at any time are reserved.*

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SERVICE MANUAL

MODEL
L20A, L24 SERIES
ENGINE

NISSAN

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION EG

ENGINE GENERAL

EG

EXTERNAL VIEW OF ENGINE ..... EG- 1
MAIN SPECIFICATIONS ..... EG- 4
VEHICLE REFERENCE ..... EG- 4
RECOMMENDED LUBRICANTS, GASOLINE AND COOLANT ..... EG- 5
UNIT SERIAL NUMBER LOCATION ..... EG- 6
PERIODICAL INSPECTION AND MAINTENANCE ..... EG- 7
SPECIAL MAINTENANCE FOR EMISSION CONTROL SYSTEM ..... EG- 8

EXTERNAL VIEW OF ENGINE

External view of model L24 engine (SU carburetor)

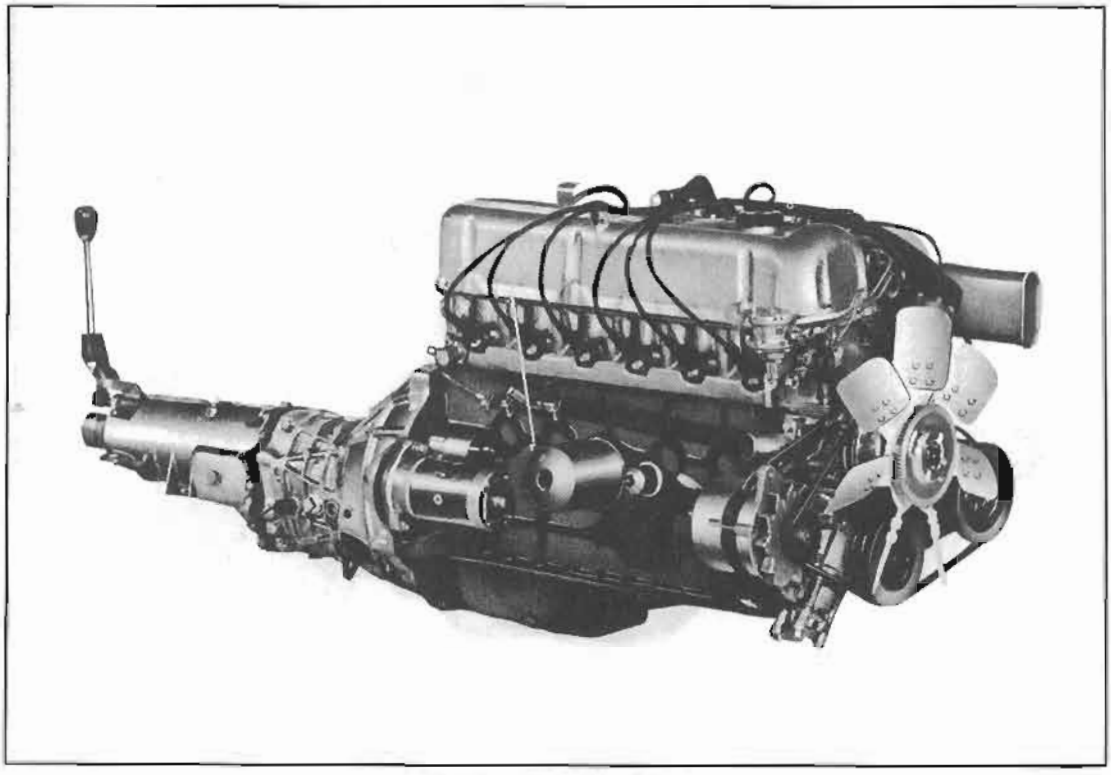


Fig. EG-1 Right hand side

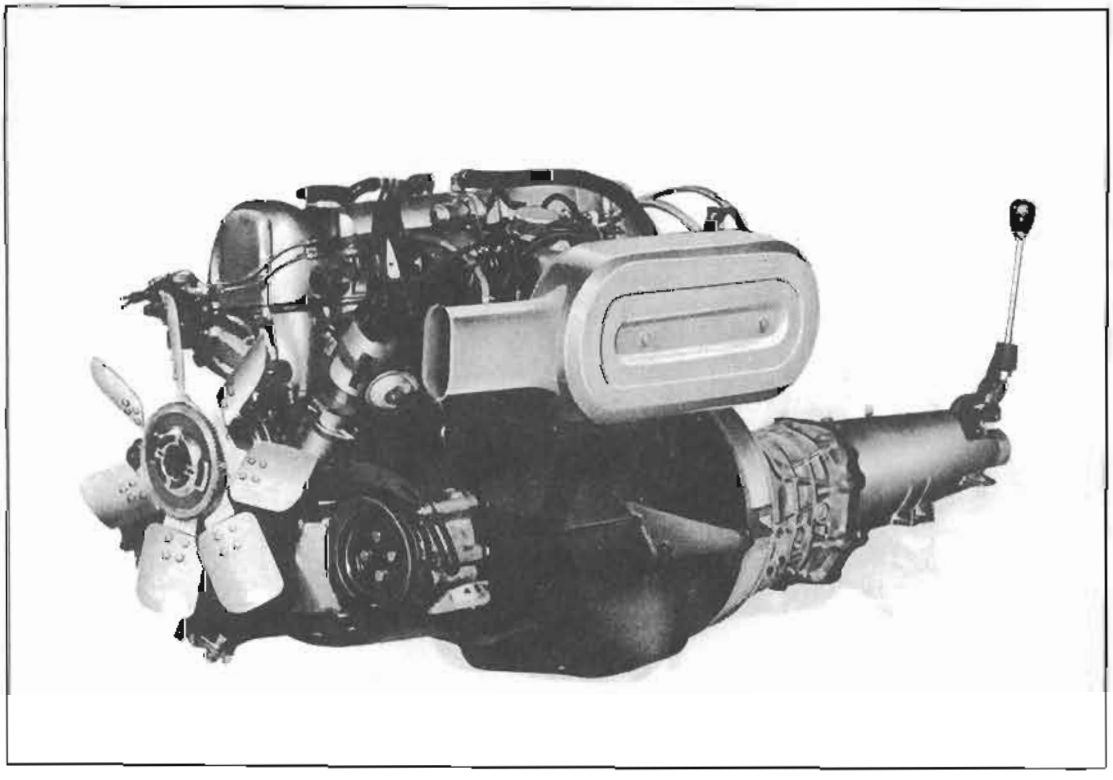


Fig. EG-2 Left hand side

External view of model L24 engine

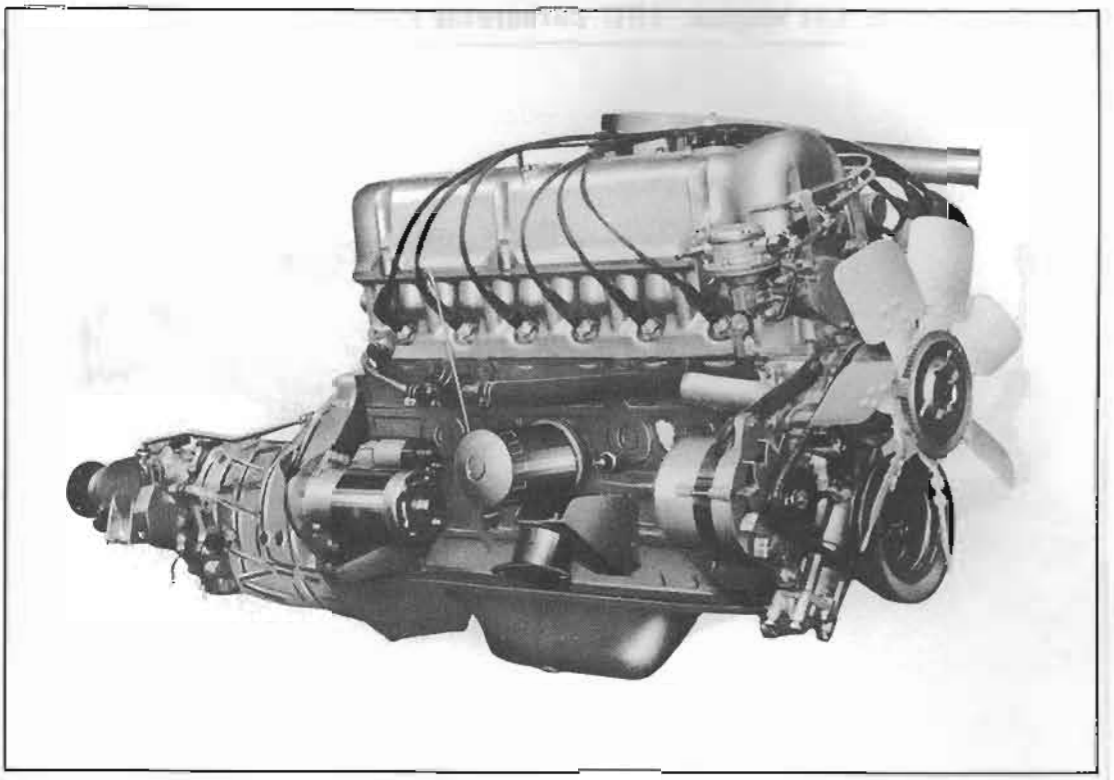


Fig. EG-3 Right hand side

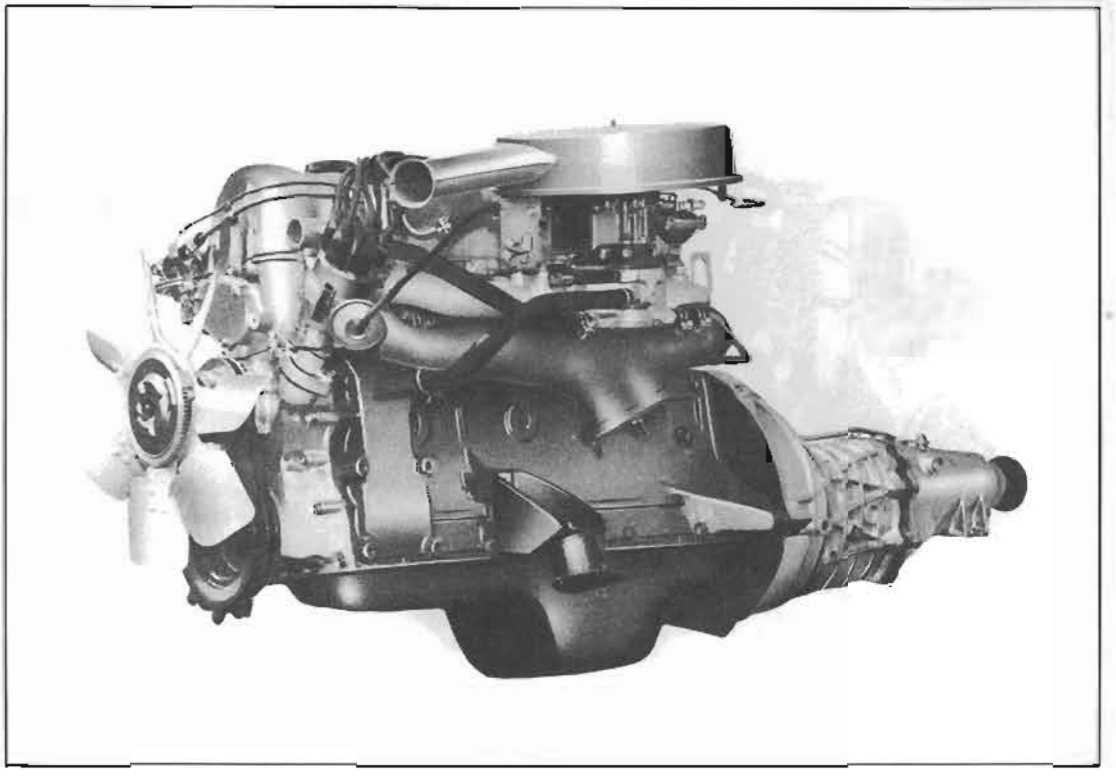


Fig. EG-4 Left hand side

External view of model L20A engine

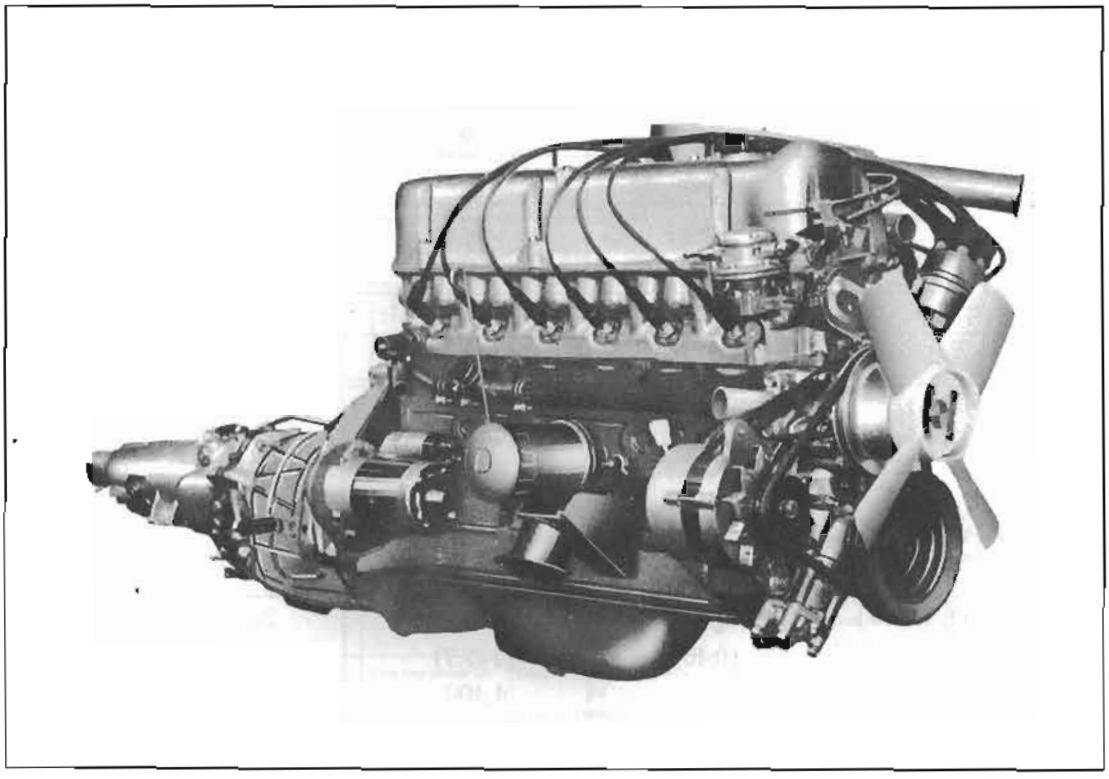


Fig. EG-5 Right hand side

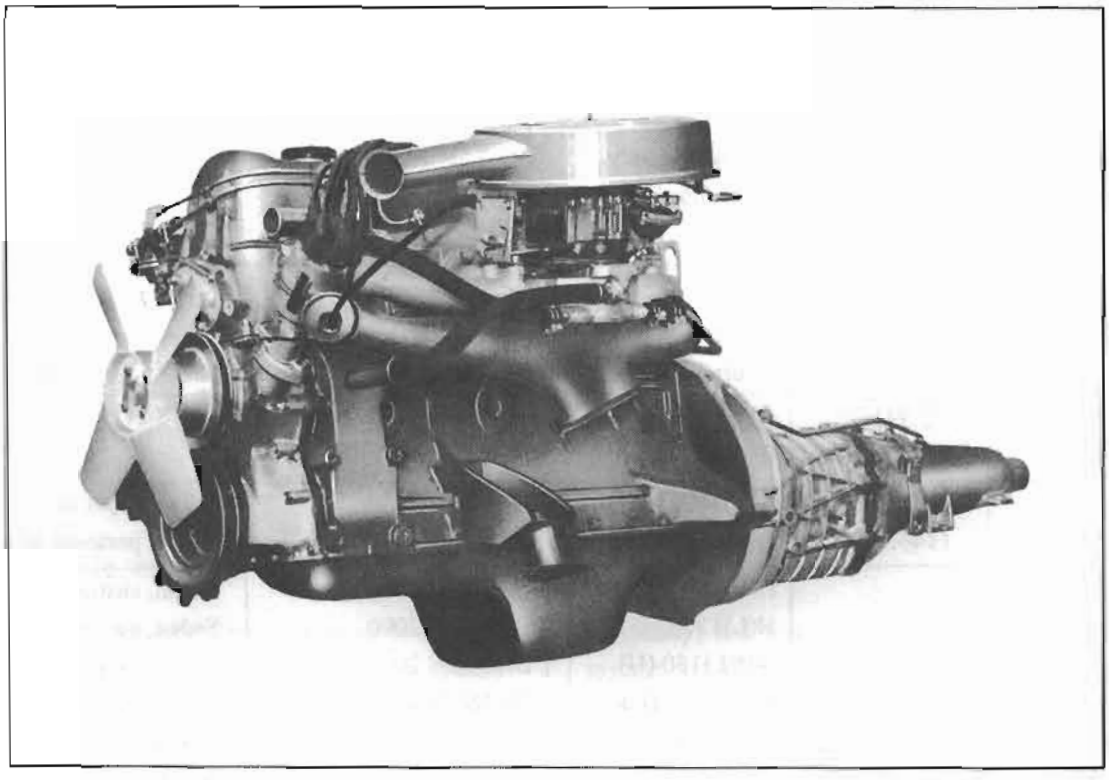


Fig. EG-6 Left hand side

MAIN SPECIFICATIONS

Engine model		L24 (SU carb.)	L24	L20A
Number of cylinders, in line		6	6	6
Valve arrangement		OHC	OHC	OHC
Bore	mm (in)	83 (3.268)	83 (3.268)	78 (3.071)
Stroke	mm (in)	73.7 (2.902)	73.7 (2.902)	69.7 (2.744)
Displacement	cc (cu in)	2,393 (146.0)	2,393 (146.0)	1,998 (121.9)
Compression ratio		9.0 : 1	8.5 : 1	8.6 : 1
Maximum power, SAE (NEW)	HP at rpm	151 5,600	130 5,600	115 5,600
Maximum torque, SAE (NEW)	kg-m (ft-lb) at rpm	20.1 (145.7) 4,400	20.0 (144.9) 3,600	16.6 (120.0) 4,000
Capacity Oil pan (*) US qts/UK qts	ℓ	4.1 (8.7/7.2)	4.1 (8.7/7.2)	4.1 (8.7/7.2)

(*)The table specifies volume of oil required for periodic oil replacement, when oil filter is not replaced. Should also the filter be replaced, the total quantity is about 5.0 ℓ (5.3 US qts/4.4 UK qts).

VEHICLE REFERENCE

Information described herein is about engines only. Please, refer to both this and each manual for chassis and body for complete details of the car.

The vehicles on which L24 and L20A engines are mounted are as follows:

Engine		Vehicle		
Model	Displacement	Current model	Vehicle name	Remarks
L24 (SU carb.)	2,393 cc (146.0 cu in)	HLS30-U H(L)S30-(U)	DATSUN 240Z SPORTS	
L24	2,393 cc (146.0 cu in)	G(L)130-(U) G(L)130-Q(U)	DATSUN 2400 DATSUN 2400	Sedan, super six Sedan, personal deluxe six
L20A	1,998 cc (121.9 cu in)	H(L)130-V(U) H(L)130-Q(U) WH(L)130-(U) VH(L)130-(U)	DATSUN 2000 DATSUN 2000 DATSUN 2000 DATSUN 2000	Sedan, custom six Sedan, personal deluxe six Wagon, wagon six Van, van deluxe six
		H(L)A30-(U) H(L)A30-Q(U) WH(L)A30-(U)	NISSAN GLORIA NISSAN GLORIA NISSAN GLORIA	Sedan, standard Sedan, deluxe Wagon

RECOMMENDED LUBRICANTS, GASOLINE AND COOLANT

Use the following grades of oil, gasoline and coolant.

Temperature	°F	-13° to 32°	5° to 68°	14° to 86°	32° to 104°	50° to 122°	Over 68°
	°C	-25° to 0°	-15° to 20°	-10° to 30°	0° to 40°	10° to 50°	Over 20°
Engine Oil (MS)		SAE 10W	SAE 20W	SAE 20	SAE 30	SAE 40	SAE 50

Recommended lubricants

			TEXACO	CHEVRON	CALTEX	CASTROL	BP	ESSO (ENCO)	MOBIL	SHELL
ENGINE OIL	Gasoline	Multi grade MIL-L-2104B API MS	Havoline Motor Oil 10W-30 20W-40	RPM Supreme Motor Oil 10W-30 20W-40	Custom Five Star Motor Oil 10W-30 20W-40	Castrolite 10W-30 Castrol XL20W-40 Castrol GTX20W-50*	BP Super V Viscostatic 5W-20 10W-30 20W-50*	Esso (Enco) Uniflo 5W-30 10W-40* Esso (Enco) Extra Motor Oil 10W-30 20W-40	Mobiloil Special 10W-30 Mobiloil Super 10W-40*	Shell X100 10W-30 20W-40
		Regular MIL-L-2104B API MS	Havoline Motor Oil 10W 20W-20 30 40	RPM Special Motor Oil 10W 20W-20 30 40	Five Star Motor Oil 10W 20W-20 30 40	Castrol HD 5W 10W 20W-20 30 40 50	BP Energol HD 10W 20W 30 40 50	ESSO (Enco) Motor Oil 10W 20W-20 30 40 50	Mobiloil 10W 20W-20 30 40 50	Shell X100 10W 20W 30 40 50
Multi-purpose Grease MIL-G-2108, MIL-G-10924			Marfak Multi-purpose* Marfak All Purpose*	RPM Multi-motive Grease*	Marfak Multi-purpose* Marfak All Purpose*	Castrol LM *	BP Energrease 12 *	Esso (Enco) Multi-purpose grease H *	Mobil grease MP *	Shell Retinax A

* Should the above brand of oils not be available, it is permissible to use oils marked *

Engine model	Compression ratio	Octane No. of gasoline
L24 (SU carb.)	9.0 : 1	more than 95
L24	8.5 : 1	more than 95
L20A	8.6 : 1	more than 95
		more than 85*

* Optional distributor for lower octane gasoline

Nissan long life coolant (L. L. C.)

This L.L.C. is an ethylene glycol base product containing chemical inhibitors to protect the cooling system against rusting and corrosion. L.L.C. does not contain any glycerine, ethyl or methyl alcohol. It will not evaporate or boil away and can be used with either high or low temperature thermostats. It flows freely, transfers heat efficiently, and will not clog the passages in the cooling system. L.L.C. must not be mixed with other product. This coolant can be used through out the seasons of the year and exchange period is two years or total running mileage of 40,000 km (24,000 miles).

Percent concentration	Boiling point		Freeze protection
	Sea level	0.9 kg/cm^2 cooling system pressure	
30%	106°C (221°F)	124°C (255°F)	-15°C (5°F)
50%	109°C (228°F)	127°C (261°F)	-35°C (-31°F)

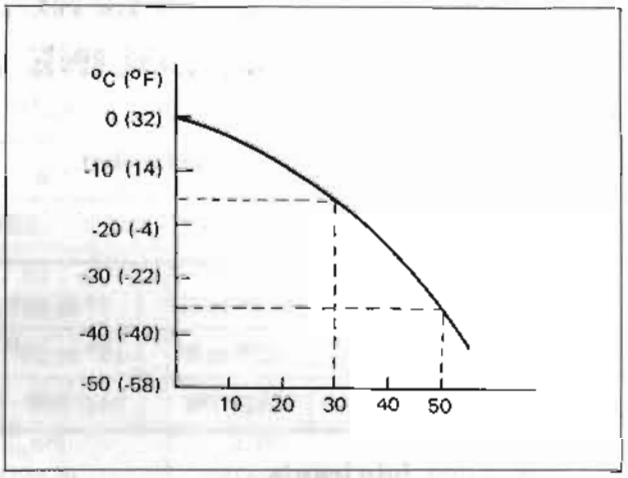


Fig. EG-7 Protection concentration

UNIT SERIAL NUMBER LOCATION

There are two serial numbers for unit identification: the engine number and the chassis number. These numbers are repeated in the car identification plate, which is located in an easy-to-read position.

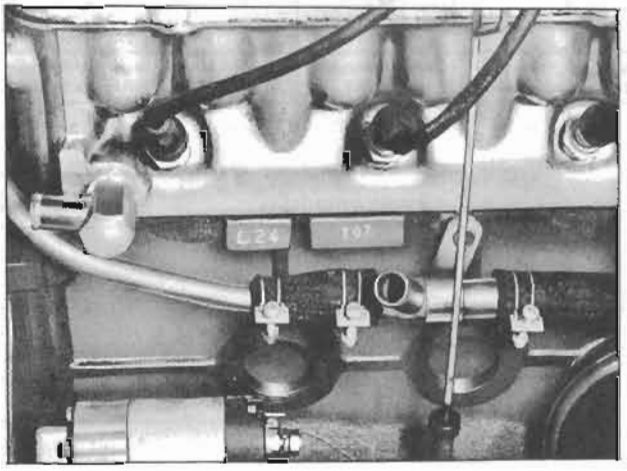
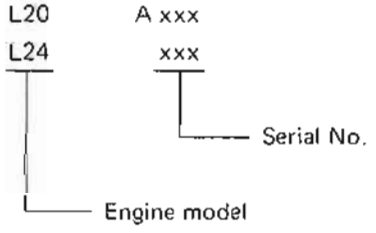


Fig. EG-8 Engine serial number

Engine Serial Number

The engine serial number is stamped in the rear right side of cylinder block, at cylinder head contact surface. The number is preceded by engine model, L20 or L24.



PERIODICAL INSPECTION AND MAINTENANCE

MAINTENANCE FREQUENCY EVERY 40,000 km (24,000 miles)	20,000 km (12,000 miles)	10,000 km (6,000 miles)	5,000 km (3,000 miles)	LUBRICATION AND CHECKING POINTS (ENGINE)	MAINTENANCE PERIODS 1,000 km (600 miles)	3,000 km (2,000 miles)	6,000 km (4,000 miles)	10,000 km (6,000 miles)	15,000 km (9,000 miles)	20,000 km (12,000 miles)	25,000 km (15,000 miles)	30,000 km (18,000 miles)	35,000 km (21,000 miles)	40,000 km (24,000 miles)	45,000 km (27,000 miles)	50,000 km (30,000 miles)
			●	Change engine oil	●	●	●	●	●	●	●	●	●	●	●	●
		○		Grease distributor shaft & cam heel				○		○		○		○		○
●				Change cooling water (L.L.C.)										●		
		○		Adjust valve clearance.	○			○		○		○		○		○
		○		Check ignition timing (adjust if necessary).	○			○		○		○		○		○
		○		Check fan belt tension.	○			○		○		○		○		○
○				Measure compression pressure.										○		
●				Change air cleaner element (Viscous type).										●		
○				Check fuel line for leak.		○								○		
●				Change cartridge type fuel strainer.										●		
○				Check fuel pump for proper function.										○		
				Retighten carburetor & fitting parts.		○										
○				Overhaul carburetor.										○		
		●		Change oil filter.		●		●		●		●		●		●
	○			Check battery for specific gravity of electrolyte.	○					○				○		
	●	○		Check or change spark plugs.		○		○		●		○		●		○
			○	Check distributor breaker point.		○	○	○	○	○	○	○	○	○	○	○
○				Check condenser for proper function.										○		
	○			Check alternator, regulator for proper function.						○				○		
	○			Check alternator brushing.						○				○		
	○			Check starter for proper function.						○				○		
		○		Check engine for oil and water leaks.	○			○		○		○		○		○
	○			Retighten cylinder head, manifolds & exhaust pipe flange.	○					○				○		
○				Check engine for weak or faulty mounting										○		
		○		Adjust idling speed.		○		○		○		○		○		○
		○		Check engine starting condition for abnormal noise and exhaust color		○		○		○		○		○		○
		○		Check high tension cable				○		○		○		○		○
		○		Clean ignition coil, distributor and battery				○		○		○		○		○
	○			Check crankcase ventilation control valve for proper function						○				○		

○ = Check, clean, adjust or supply ● = Change

SPECIAL MAINTENANCE FOR EMISSION CONTROL SYSTEM

MAINTENANCE FREQUENCY EVERY					CHECKING POINTS		MAINTENANCE PERIODS									
	40,000 km (24,000 miles)	20,000 km (12,000 miles)	10,000 km (6,000 miles)	5,000 km (3,000 miles)	Engines equipped with emission control system		1,000 km (600 miles)	3,000 km (2,000 miles)	6,000 km (4,000 miles)	10,000 km (6,000 miles)	15,000 km (9,000 miles)	20,000 km (12,000 miles)	25,000 km (15,000 miles)	30,000 km (18,000 miles)	35,000 km (21,000 miles)	40,000 km (24,000 miles)
				○	Engine	Check ignition timing.	○	○	○	○	○	○	○	○	○	○
				○		Check engine idling.	○	○	○	○	○	○	○	○	○	○
		○				Engine major tune-up.						○				○
		●		○		Check or replace spark plugs.		○	○	○	○	●	○	○	○	●
		●		○		Check or replace distributor breaker points.		○	○	○	○	●	○	○	○	●
		○				Check high tension cable.						○				○
		○				Apply grease to distributor rotor shaft, cam, and wick.						○				○
		○				Replace carburetor air cleaner element.						○				○
		○			Crank-case emission	Check for leaks of hoses and hose connections.						○				○
		○				Check for proper function of crankcase ventilation control valve.						○				○
		○			Exhaust emission	Check for proper function of air pump.						○				○
		○				Check for proper function of relief valve.						○				○
		○				Check for proper function of check valve.						○				○
		○				Check for proper function of anti-backfire valve.						○				○
		○				Check for leaks of air gallery and nozzle connections.						○				○
		○				Check for leaks of hoses and lose connections.						○				○
				○		Check air pump belt tension.	○	○	○	○	○	○	○	○	○	○
		○				Check operating negative pressure of throttle control valve, adjust if necessary.						○				○
		○			Evapo-rative emission	Check hoses, hose connectors and piping for leaks.						○				○
		○				Check for proper function of flow guide valve.						○				○

○ = Clean, check, adjust or supply ● = Change

AFTER FIRST 1,000 KM (600 MILES)

Changing engine oil

Second replacement	at 3,000 km (2,000 miles)
Third replacement	at 6,000 km (4,000 miles)
Forth replacement	at 10,000 km (6,000 miles)
Fifth and thereafter	every 5,000 km (3,000 miles)

Draining is best done after a good run, when the oil, being throughly warm, will flow readily and freely and any foreign matter will be held in suspension.

Place a large bowl or other shallow container under the engine. Then remove the oil pan drain plug. Do this carefully, as the oil will be hot and it will spurt out with some force. After compeltely draining the dirty oil off securely replace the oil drain plug and finally refill the engine in the usual way up to the "H" mark on the dipstick. Make sure that the car is on a level surface while draining and filling the engine.

Oil capacity

L24 (SU carb.)	5.0ℓ(1.3 US gal)
L24	5.0ℓ(1.3 US gal)
L20A	5.0ℓ(1.3 US gal)

Fan belt tension

Second replacement	at 10,000 km (6,000 miles)
Third and thereafter	every 10,000 km (6,000 miles)

Incidentally, we call it the fan belt, but also it drives the water pump and alternator. It is advised, however, to check the tension regularly, so that when the need for adjustment does arise, it is not overlooked. With the engine switched off and the bonnet up, push the belt gently downward. You should be able to depress it about 10 mm (1/2 in). If the fan belt has become slack through wear, loosen the fixing and adjusting bolts, and move the alternator away from the engine. This will eliminate the slack. Tighten the bolts again, and make sure that the belt has been tightened correctly. If tightened excessively it will wear rapidly and also overload the water pump and alternator bearings.

AFTER FIRST 3,000 KM (2,000 MILES)

Replacing oil filter

Second and thereafter	every 10,000 km (6,000 miles)

The oil filter is of a full-flow cartridge type. The element of oil filter is sealed in the container as a unit. It can be easily removed by hand. Be careful not to lose the rubber sealing ring. When assembling oil the seal lightly, and when the seal is contacted, tighten by hand further, rotating it about 1/3 of one full turn.

EVERY 10,000 KM (6,000 MILES)

Changing cooling water

Scale or sediment accumulated in water jacket or radiator harms heat radiation. Thoroughly flush the system after opening two drain plugs, (one at the bottom of the radiator and the other at the left side of the cylinder block,) until clean water comes out.

Always use clean mild water for filling the radiator. When cold season arrives, the cooling system should be protected against frost with a high quality anti-freeze solution such as a NISSAN LONG LIFE COOLANT. Do not overfill the system. This coolant (L.L.C.) may be changed every 40,000 km (24,000 miles).

EVERY 40,000 KM (24,000 MILES)

Replacing air cleaner element (wet paper type)

The air cleaner uses a wet paper type cleaner element (viscous type). As this element has been manufactured under special treatment, there is no need of cleaning until it is replaced with a new one. Although the cleaner element looks dirty, do not intend to clean. The cleaning performance in constantly maintained although it looks contaminated. Care must be taken not to injure cleaner element.

SERVICE JOURNAL OR BULLETIN REFERENCE

DATE	JOURNAL or BULLETIN No.	PAGE No.	SUBJECT