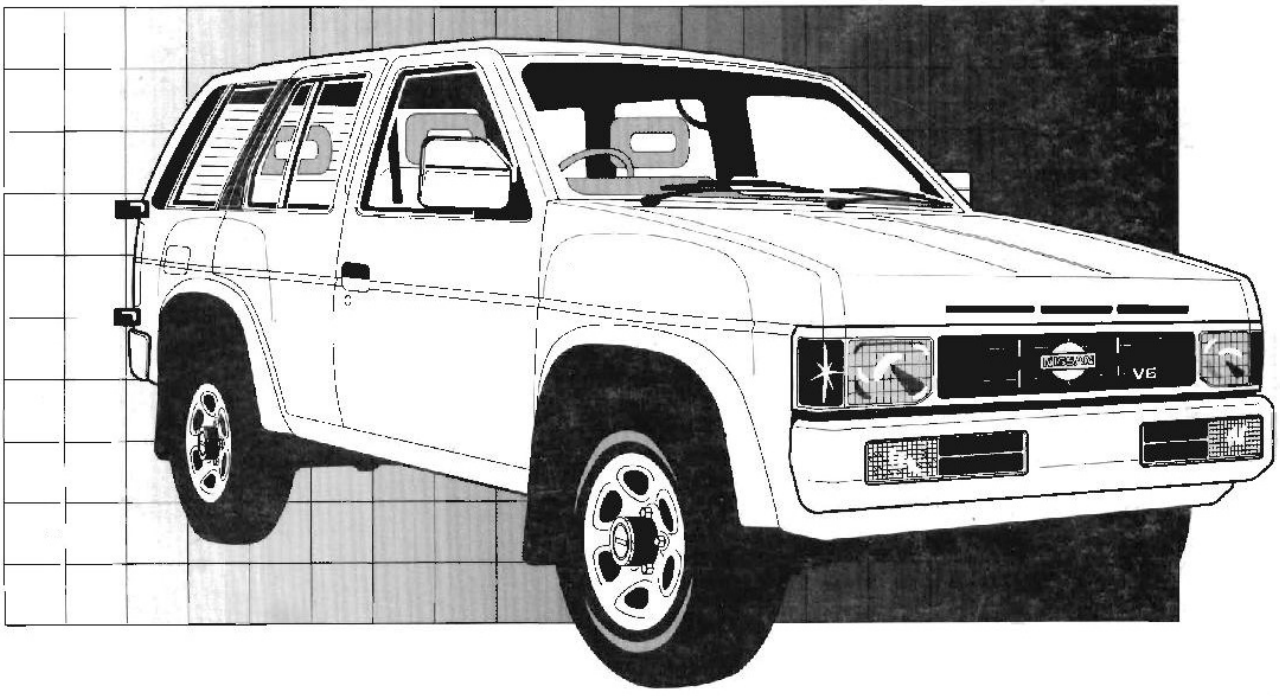
TRAINING MANUAL

WD21 PATHFINDER



Vol. 6/92

This manual has been prepared to assist Nissan and Dealer Personnel in the care and maintenance of the Nissan Pathfinder WD21 Model.

Rights for alteration to data and specifications, at any time, are reserved. Any such alterations will be advised by the Technical Service Department through Technical Bulletins.

CONTENTS

INTRODUCTION

The development targets for the 1992 Pathfinder where to enhance its recreational vehicle image by improvements to interior luxury, toughness, safety and power. The model range features two variants, the ST and Ti. Additionally the Ti is available with a leather trim option.

The following features are included in the face-lift series:

1. Both variants fitted with VG30E engine as standard.

2. The 5 speed manual transmission features double baulk ring synchronizers on 2nd and 3rd gears and a reverse gear synchronizer.

3. The 4 speed automatic transmission features electronic control with lock-up converter and Power/ Auto shift pattern control.

4. Limited slip rear differential is standard on both models.

5. Auto Free-wheeling hubs and adjustable shock absorbers fitted to Ti variants as standard.

6. 4 door body allowing easier access to rear seats on both models.

7. Sun roof and leather seat trim fitted to Ti "Pack" new model.

8. 8 speaker AM/FM Radio Cassette fitted as standard to Ti model.

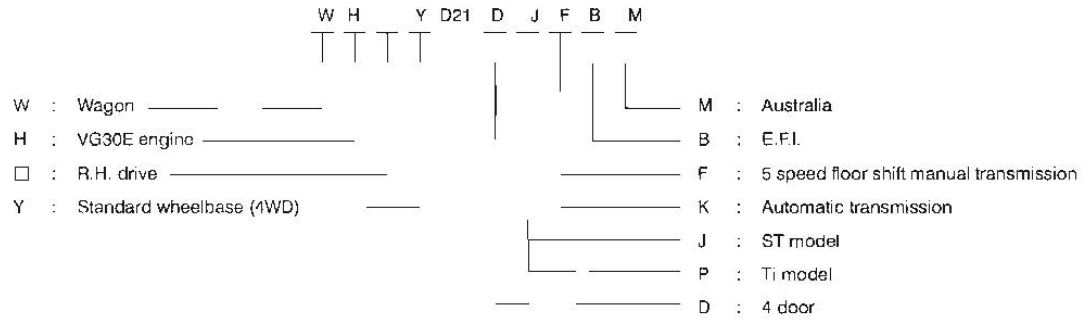
9. Roll over valve fitted to evaporative system for safety.

10. Cruise control and semi auto air conditioning fitted standard to all Ti variants.

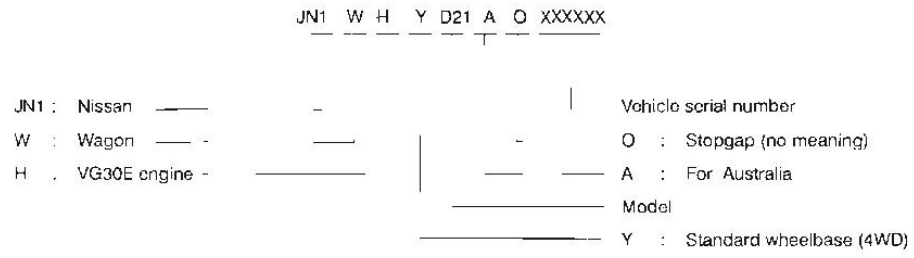
MODEL RANGE

GRADE	ENGINE	TRANSMISSION	PRODUCTION MODEL CODE	SALES MODEL CODE
ST	VG30E	Manual	WHYD21DJFBMY	PFINDERSTM
		Auto	WHYD21DJKBMY	PFINDERSTA
Ti	VG30E	Manual	WHYD21DPFBMX72	PFINDERTIM
		Auto	WHYD21DPKBMX72	PFINDERTIA
Ti (Leather)	VG30E	Manual	WHYD21DPFBMX76	PFINDERTILM
		Auto	WHYD21DPKBMX76	PFINDERTILA

Model Codes

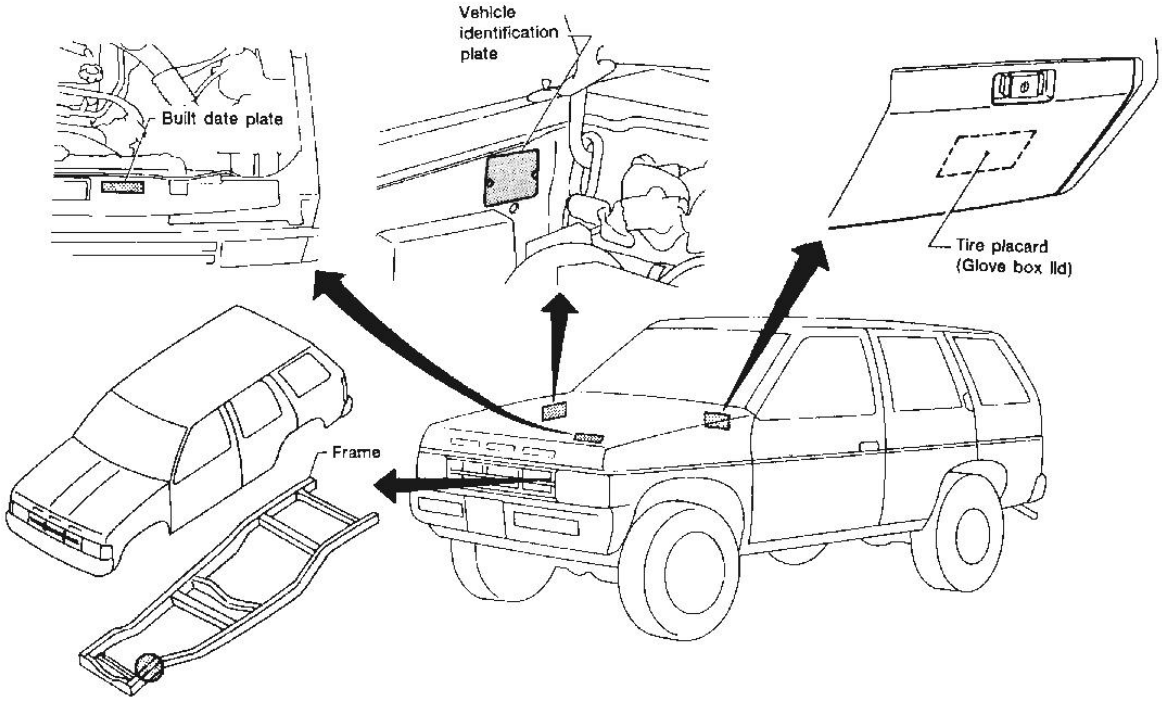


Vehicle Identification Number (V.I.N.)

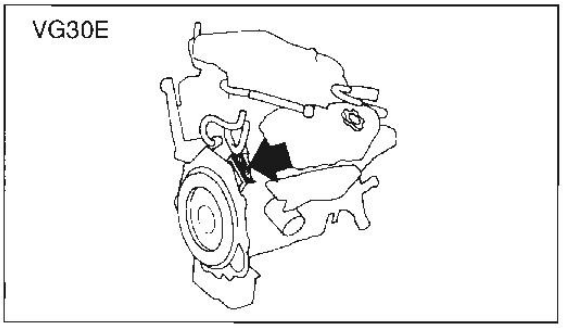


SERIAL NUMBER LOCATIONS

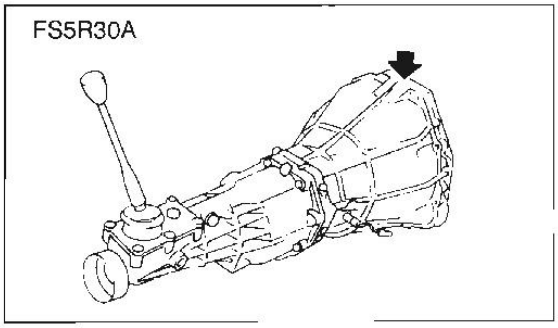
Identification Number



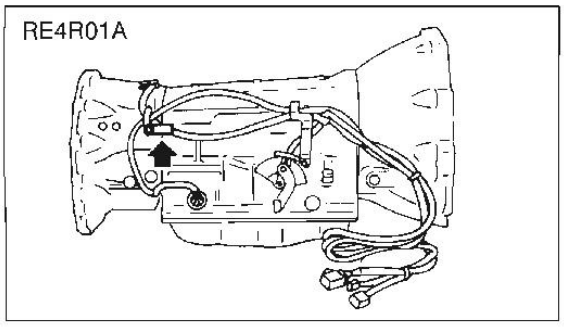
Engine Serial Number



Manual Transmission Number



Automatic Transmission Number



GENERAL SPECIFICATIONS

Vehicle Dimensions

Dimensions			ST	Ti
Overall Length		mm	4365	
Overall Width		mm	1730	
Overall Height		mm	1685	
Wheelbase		mm	2650	
Track	– Front	mm	1445	
	– Rear	mm	1430	
Kerb Weight	– Manual	kg	1755	1770
	– Automatic	kg	1785	1800
Axle Capacity	– Front	kg	M/T 1085	A/T 1090
	– Rear	kg	M/T 1250	A/T 1245
G.V.M.		kg	2335	
Towing Capacity	– With Brake	kg	1500	
	– Without Brake	kg	750	
Ground Clearance		mm	200	

Engine Specifications

Engine Type			VG30E
Cylinders			V6
Displacement		cc	2960
Bore x Stroke		mm	87.0 x 83.0
Compression Ratio		:1	9.0
Firing Order			1–2–3–4–5–6
Max Power		kW/rpm	113/4800
Max Torque		Nm/rpm	248/4000
Idling speed	– M/T	rpm	750 ± 50
	– A/T		750 ± 50
Ignition Timing	– M/T	B.T.D.C.	15° ± 2
	– A/T		15° ± 2
Spark Plugs			BKR6EY
Plug Gap		mm	0.8 – 0.9

Manual Transmission (FS5R30A)

Type		FS5R30A
Number of speed		5
Ratios		
1st		4.061
2nd		2.357
3rd		1.490
4th		1.000
5th		0.862
Reverse		4.125
Final Drive		4.375
Oil Capacity	Litres	3.6
Remarks –Reverse Synchronizer		Yes
–Double Baulk Ring Synchronizer		2nd & 3rd Gear

Automatic Transmission (RE4R01A)

Type		RE4R01A
Control Type		Electronic
Transmission code		45X24, 45X63
Ratios		
1st		3.027
2nd		1.619
3rd		1.000
4th		0.694
Reverse		2.272
Final Drive		4.625
Stall Torque Ratio		2.0 : 1
Recommended oil		Nissan Matic D
Oil Capacity	Litres	8.5

Differentials

Application	Type
Front	R200A
Rear	H233B Limited Slip

Wheels

Wheels	Tyres
6JJ X 15	215R15/100S

Brakes

Front Disc	CL28VD
Rear Drum	LT26

Wheel Alignment

Toe-in	Camber	Caster	'H' Dimension
3 ± 1 (mm)	36' ± 30'	1° 37' ± 30'	54 ± 2 (mm)

Recommended Fuel and Lubricants

Lubricant		Specifications	Capacity
Engine oil (with filter)		API SE, SF or SG 20W - 40	3.4 Litres approx.
Gear Oil Manual transmission		API GL-4	4.0 Litres approx.
Differential carrier gear oil	Front	API GL-5	1.5 Litres approx.
	Rear	Gear oil Hypoid L.S.D. or equivalent.*	2.8 Litres approx.
Transfer case – TX10A		Nissan Matic D	2.2 Litres approx.
Power steering – PB59K		Nissan Matic D	1.0 Litre approx.
Automatic transmission RE4R01A		Nissan Matic D	8.5 litres
Multi-purpose grease		NLGI No. 2 (Lithium soap base)	–
Brake and clutch fluid		DOT 3 (US FMVSS No. 116)	–
Cooling system		Ethylene glycol base – LLC (30% – 50%)	11.7 litres
Free running hub grease		Nissan genuine grease (Part No. KRC19-00025) or equivalent.	–

*: API GL-5, SAE 140 and 10% volume of L.S.D. Friction Modifier (Part No. 38469-C6000) is an equivalent.

PERIODIC MAINTENANCE

The following tables show the normal maintenance schedule. Depending upon weather and atmospheric conditions, varying road surfaces, individual driving habits and vehicle usage, additional or more frequent maintenance may be required.

Periodic maintenance beyond the last period shown on the tables requires similar maintenance.

MAINTENANCE OPERATION		MAINTENANCE INTERVAL								
Perform on a 6 monthly basis, but on a mileage basis if you drive 10,000 km within 6 months.	Months	–	6	12	18	24	30	36	42	48
	km x 1,000	1	10	20	30	40	50	60	70	80
ENGINE AND EMISSION CONTROL MAINTENANCE	**Under bonnet and under vehicle**									
Drive belt for cracks, fraying, wear & tension						I				I
Engine anti-freeze coolant (Ethylene glycol base, L.L.C.)						R				R
Cooling system				I		I		I		I
Fuel lines						I				I
Air cleaner filter ★						R				R
Engine oil (Use API SE, SF or SG oil) & oil filter ★			R	R	R	R	R	R	R	R
Fuel filter ★						R				R
Spark plugs						R				R
Ignition timing				I		I		I		I
Ignition wires						I				I
Vapour lines						I				I
Exhaust gas sensor						I				I
Replace timing belt						Every 100,000 km				
CHASSIS AND BODY MAINTENANCE	**Under bonnet**									
Brake, clutch, automatic transmission & steering gear fluid or oil level & for leaks ★			I	I	I	I	I	I	I	I
Brake fluid ★						R				R
Brake booster vacuum hose, connections & check valve						I				I
Power steering fluid & lines			I	I	I	I	I	I	I	I
	Under vehicle									
Brake, clutch, exhaust systems for proper attachment, leaks, cracks, chafing, abrasion, deterioration etc.			I	I	I	I	I	I	I	I
In manual transmission, transfer & differential gear			I	I	I	R	I	I	I	R
Steering gear box & linkage, axle & suspension parts, propeller shaft & front drive shaft for damaged, loose, missing parts & lubrication ★		I	I	I	I	I	I	I	I	I
Steering damper				I		I		I		I
Body mountings		T		T		T		T		T
	Outside and Inside									
Wheel alignment. If necessary, rotate & balance wheels				I		I		I		I
Brake pads, discs & other brake components for wear, deterioration & leaks ★			I	I	I	I	I	I	I	I
Brake linings, drums & other brake components for wear, deterioration & leaks ★				I		I		I		I
Front wheel bearing grease				I		L		I		L
Locks, hinges & bonnet catch ★			L	L	L	L	L	L	L	L
Seat belts, buckles, retractors, anchors & adjuster				I		I		I		I
Foot brake, parking brake & clutch for free play, stroke & operation			I	I	I	I	I	I	I	I

NOTE: (1) Maintenance items with "★" should be performed more frequently according to "Maintenance under Severe Driving Conditions".

R = Replace

I = Inspect and correct or replace as required

L = Lubricate

T = Tighten

MAINTENANCE UNDER SEVERE DRIVING CONDITIONS

The maintenance intervals shown on the preceding pages are for normal operating conditions. If the vehicle is mainly operated under severe conditions as shown below, more frequent maintenance must be performed on the following items as shown in the table.

Severe driving conditions

A – Driving under dusty conditions
B – Driving repeatedly short distances
C – Towing a trailer
D – Extensive idling
E – Driving in extremely adverse weather conditions or in areas where ambient temperatures are either extremely low or extremely high
F – Driving in high humidity areas or in mountainous areas
G – Driving in areas using salt or other corrosive materials
H – Driving on rough and/or muddy roads or in the desert
I – Frequent driving in water

Driving condition									Maintenance item	Maintenance operation	Maintenance interval
A									Air cleaner filter	Replace	More frequently
A	B	C	D						Engine oil	Replace	Every 5,000 km or 3 months
A	B	C	D						Engine oil filter	Replace	
A				E					Fuel filter	Replace	Every 20,000 km or 12 months
					F				Brake fluid	Replace	
		C					H		Automatic transmission fluid	Replace	Every 40,000 km or 24 months
						G	H		Steering gear & linkage axle & suspension parts, propeller shafts & front drive shafts	Inspect	Every 5,000 km or 3 months
A	B	C				G	H		Brake pads, discs & other brake comonents	Inspect	
A	B	C				G	H		Brake linings, drums & other brake components	Inspect	Every 10,000 km or 6 months
						G			Locks, hinges & bonnet catch	Lubricate	Every 5,000 km or 3 months
								I	Front wheel bearing grease & free-running hub grease	Inspect	

Maintenance for off-road driving

Whenever you drive off-road through sand, mud or water as deep as the wheel hub, more frequent maintenance may be required of the following items:

- Brake pads and discs
- Brake linings and drums
- Brake lines and hoses
- Wheel bearing grease and free-running hub grease
- Differential, transmission and transfer oil
- Steering linkage
- Propeller shafts and front drive shafts
- Air cleaner filter
- Clutch housing (Check water entry)

ENGINE MECHANICAL

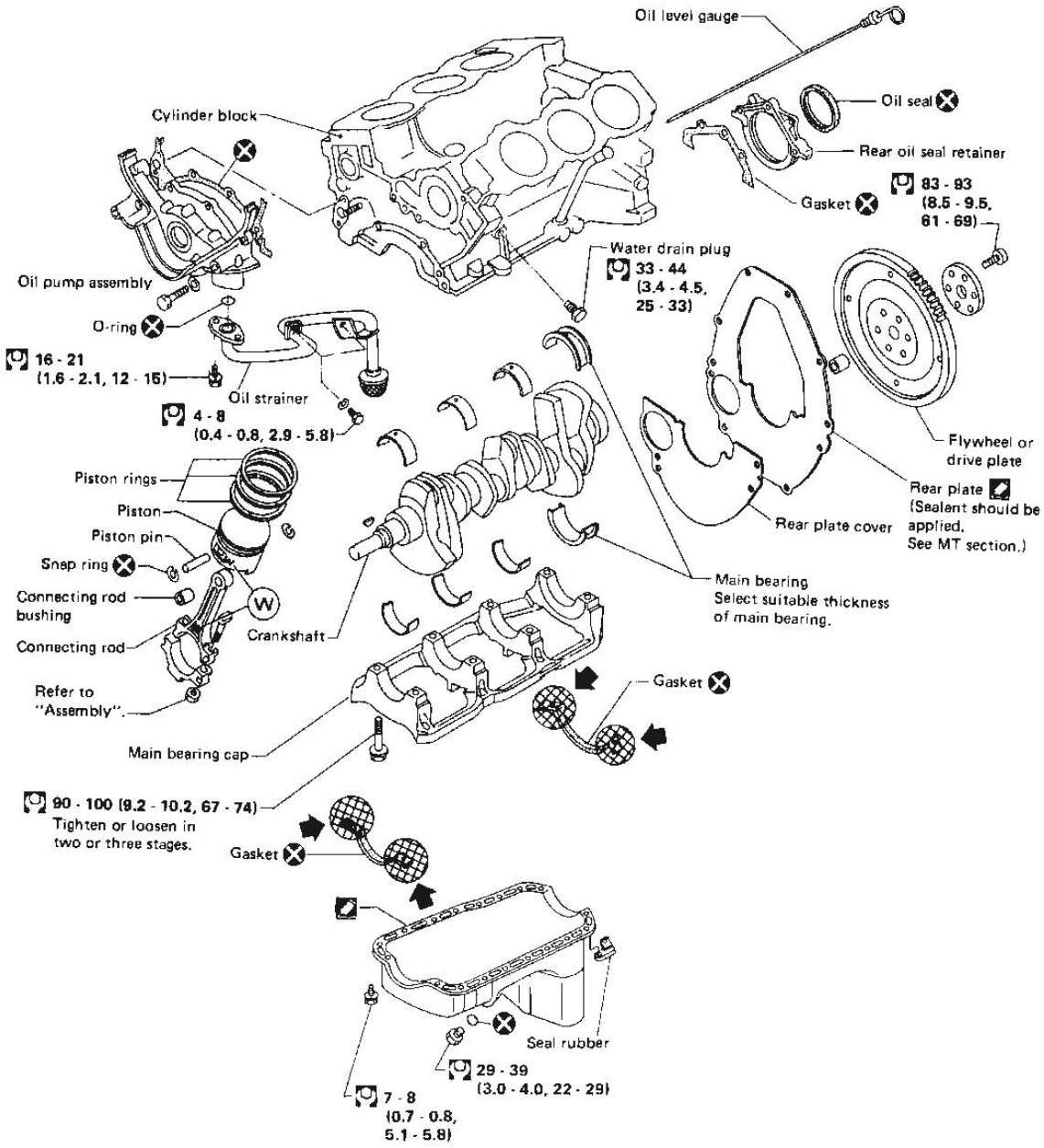
The face-lift Pathfinder is available with the VG30E engine only. This engine is the same that is used in the J30 Maxima and more recently the D21 Navara 4X2 series. The following points are worth noting regarding this unit.

1. Engine management is via an E.C.C.S. system and is not consult compatible.
2. As its engine is in a North/South configuration. The engine mounts and intake and exhaust systems are the same as are used on Navara.
3. The power valve system used on the J30 Maxima has been deleted.
4. Hydraulic tappets have been retained.

Engine		VG30E
Cylinder arrangement		V6
Displacement	(mm)	2960
Bore x Stroke	(mm)	87.0 x 83.0
Compression ratio	:1	9.0
Firing order		1–2–3–4–5–6
Max. power	(kW/rpm)	113 @ 4800
Max. torque	(Nm/rpm)	248 @ 4000
TUNING SPECIFICATION		
Idling speed	(rpm)	Computer Speed
M/T		750 ± 50 Not base
A/T		750 ± 50
IGNITION TIMING		
B.T.D.C.		
M/T		15° ± 2
A/T		15° ± 2
SPARK PLUGS		
NGK		BKR6EY
Gap	(mm)	0.8 – 0.9

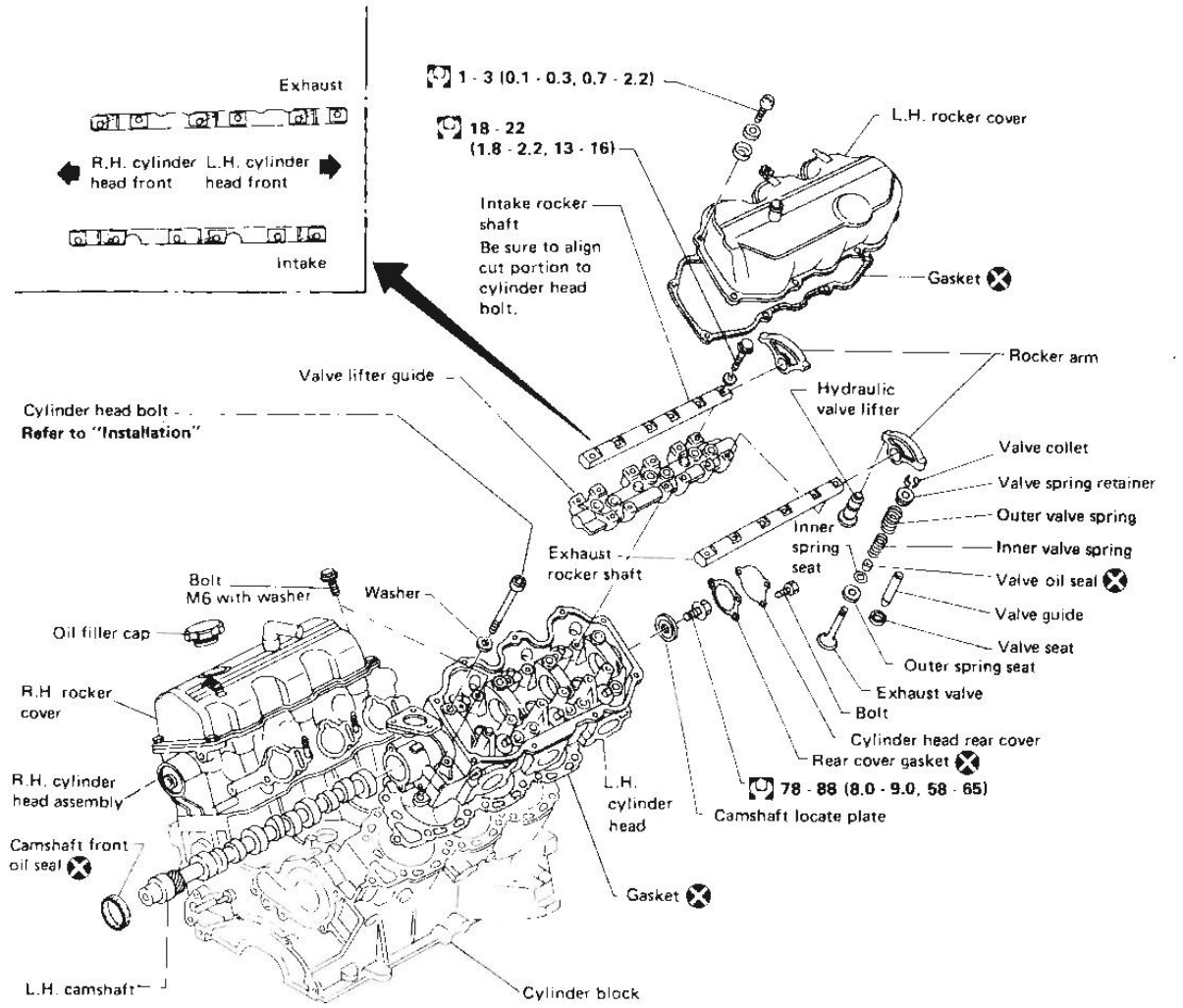
ENGINE MECHANICAL

Cylinder Block



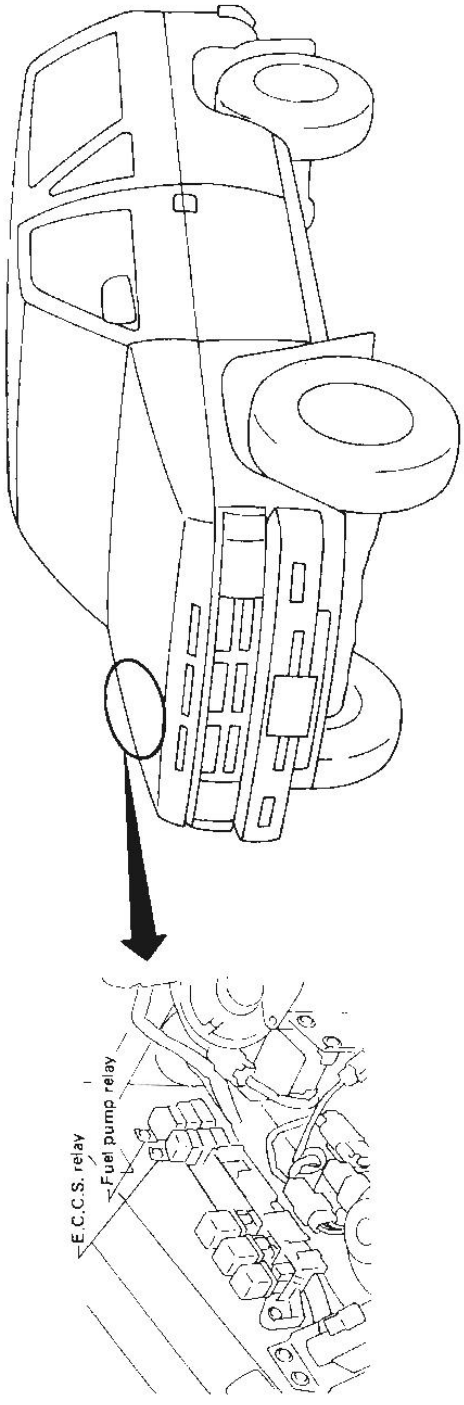
⬅ : Apply sealant.
: N·m (kg-m, ft-lb)

Cylinder Head

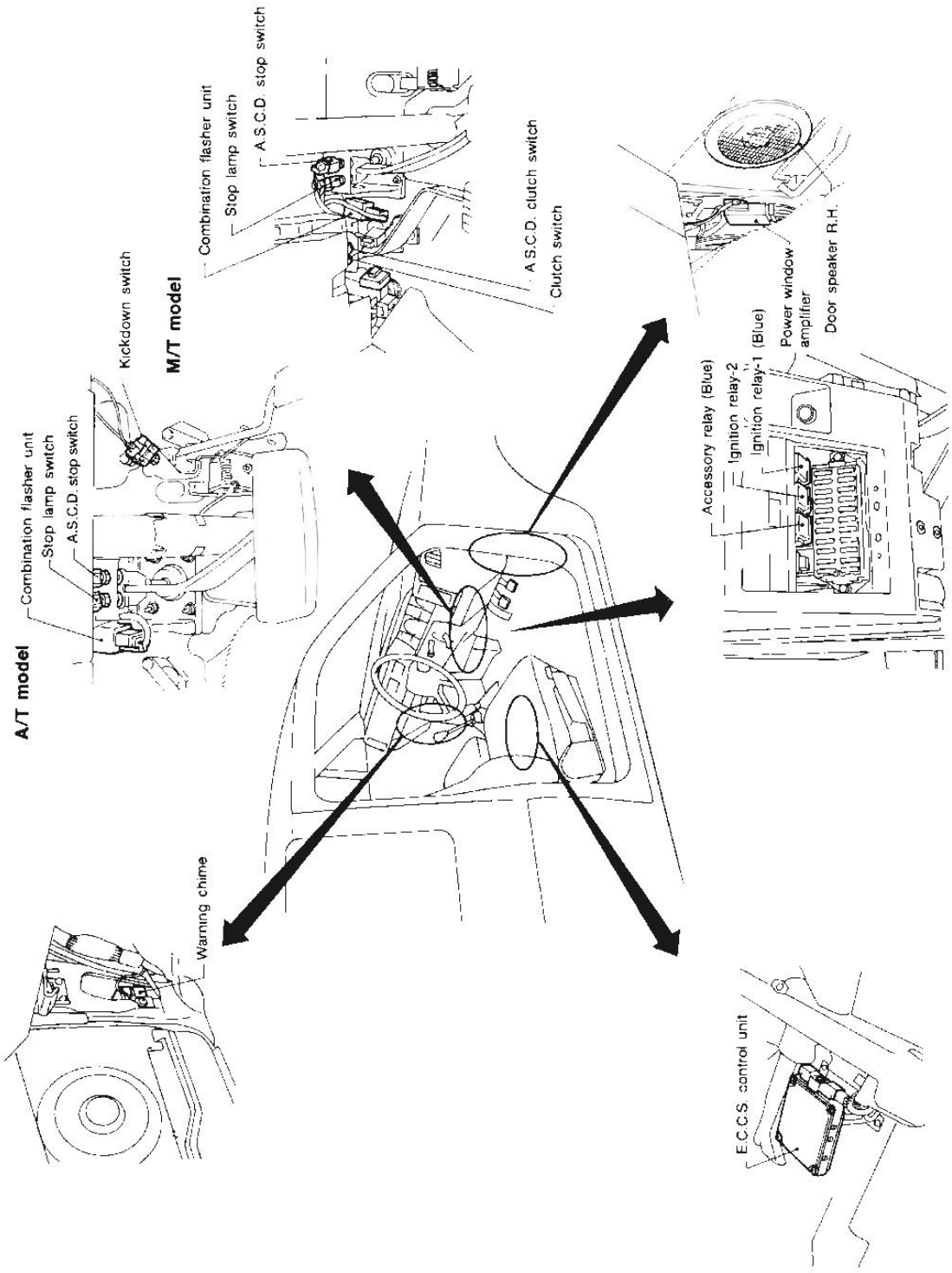


LOCATION OF ELECTRICAL UNITS

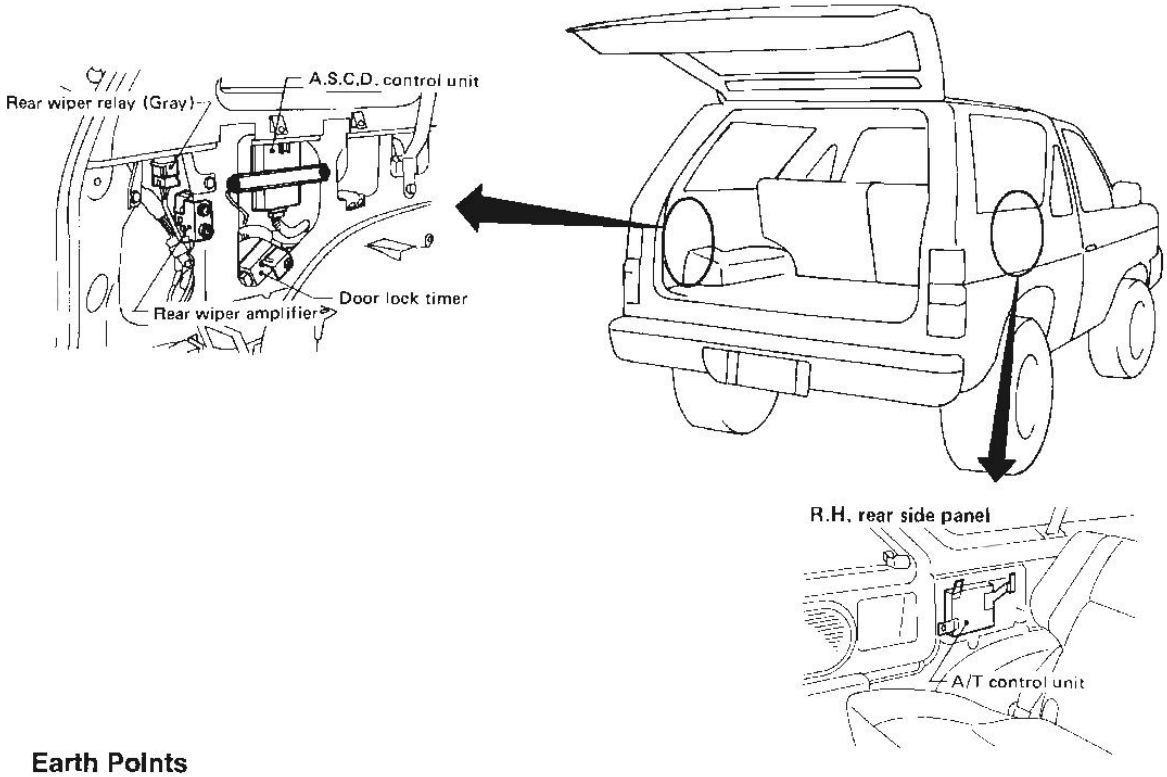
Engine Compartment



Passenger compartment



Luggage Compartment



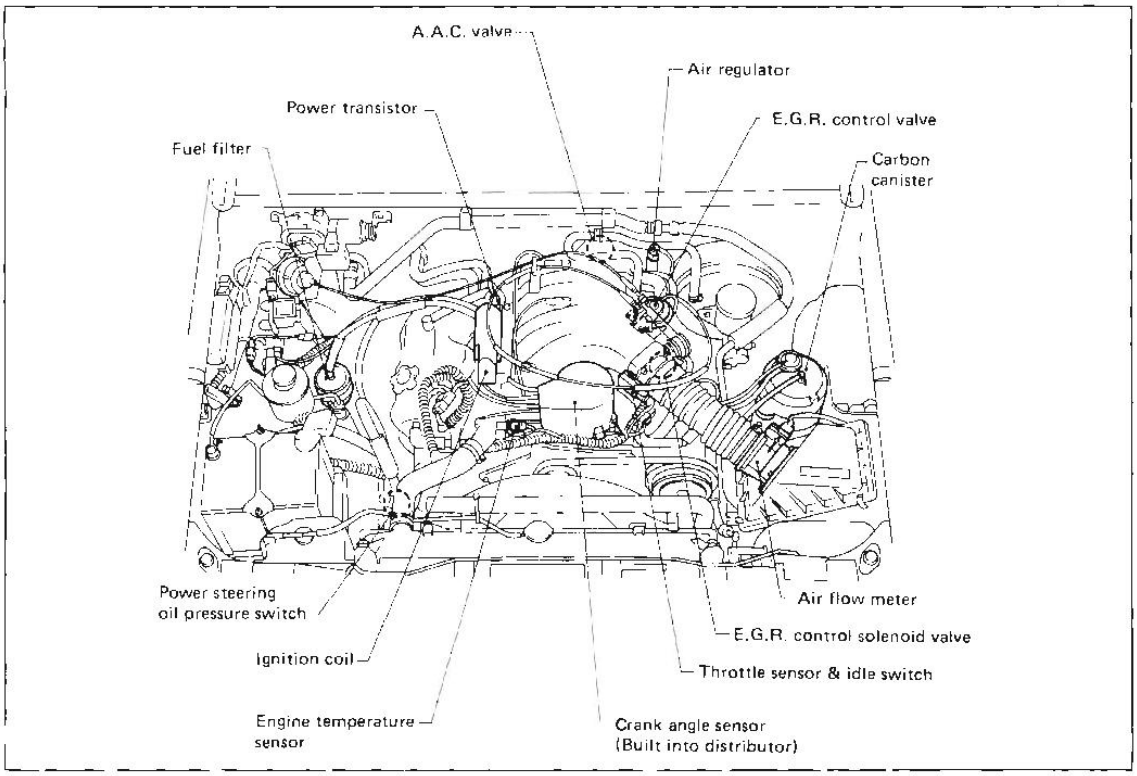
Earth Points

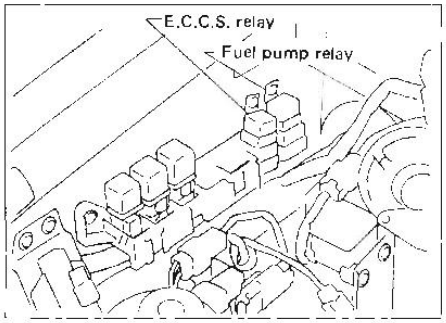
The following lists the earth points for the various electrical components as fitted to the Pathfinder.

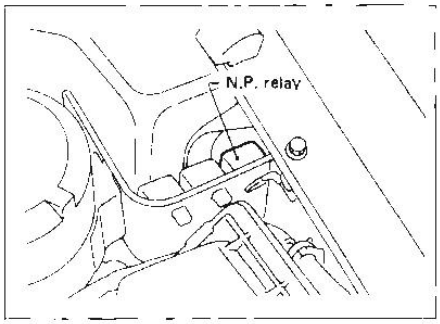
Location	Harness I.D.	Associated components
Inlet manifold	586M 587M	Shield earth C.A.S., A.F.M. , Power transistor, O_2 Sensor, Detonation sensor T.P.S. Automatic control unit case earth. Earth for C.A.S. , Air regulator, Ignition relay, Accessory relay.
N/S/F Kick Panel	620M	Power steering, Vehicle speed sensor.
O/S/F Kick panel	661M	Vehicle speed sensor (meter), Neutral/Inhibitor switch.
N/S/R inner ground	6B	Fuel pump.

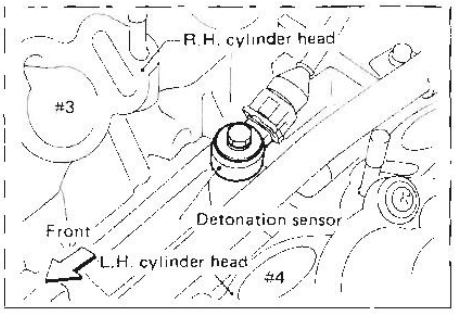
ENGINE AND EMISSION CONTROL SYSTEM

E.C.C.S. Component Parts Location







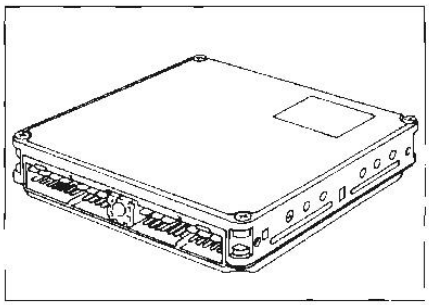


E.C.C.S. Part Description

E.C.C.S. Control Unit (E.C.U.)

The E.C.U. consists of a microcomputer, inspection lamps, a diagnostic mode selector, and connectors for signal input and output and for power supply. The unit controls the actuators for various modes of engine operation.

Inspection lamps – 1 x Red L.E.D.
– 1 x Green L.E.D.

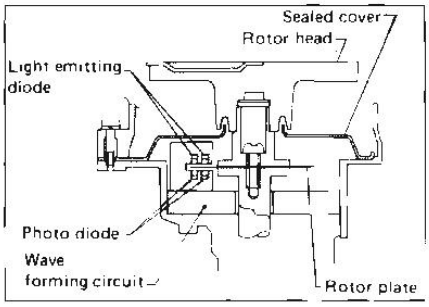


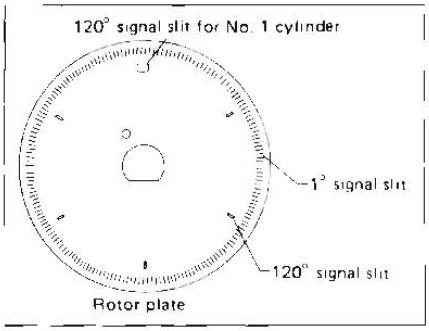
Crank Angle Sensor

The crank angle sensor is a basic component of the entire E.C.C.S. It monitors engine speed and piston position, and sends signals to the E.C.U. to control fuel injection, ignition timing and other functions.

The crank angle sensor has a rotor plate and a wave-forming circuit. The rotor plate has 360 slits for 1° signal and 6 slits for the 120° piston signal. Light Emitting Diodes (L.E.D.) and photo diodes are built into the wave-forming circuit.

When the rotor plate passes between the L.E.D. and the photo diode, the slits in the rotor plate continually cut the light being transmitted to the photo diode from the L.E.D. This generates rough-shaped pulses which are converted into on-off pulses by the wave-forming circuit, and sent to the E.C.U.



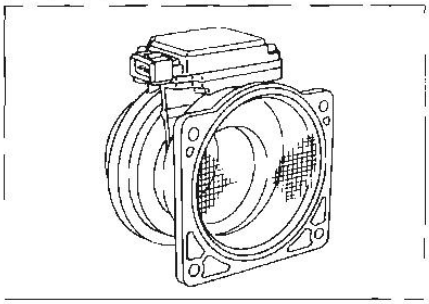


Air Flow Meter

The air flow meter measures the intake air flow rate by taking a part of the entire flow. Measurements are made in such a manner that the E.C.U. receives electrical output signals varied by the amount of heat dissipated from the hot film placed in the stream of the intake air.

When intake air flows into the intake manifold through a route around the hot film, the heat generated from the hot film is taken away by the air. The amount of heat generated depends on the air flow. On the other hand, the temperature of the hot film is automatically controlled to a certain number of degrees.

Therefore, it is necessary to supply the hot film with more electric current in order to maintain its temperature. The E.C.U. knows the air flow by means of this electric current charge.



Engine Temperature Sensor

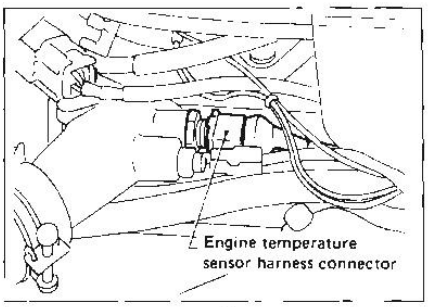
The engine temperature sensor, located on the water outlet housing, detects engine coolant temperature and transmits a signal to the E.C.U.

The temperature sensing unit employs a thermistor which is sensitive to the change in temperature. Electrical resistance of the thermistor decreases in response to temperature rise.

20°C – 2.1 to 2.9 kΩ

50°C – 0.68 to 1.0 kΩ

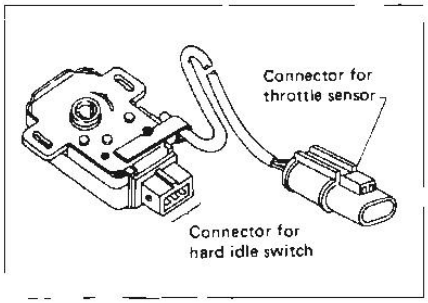
80°C – 0.3 to 0.33 kΩ

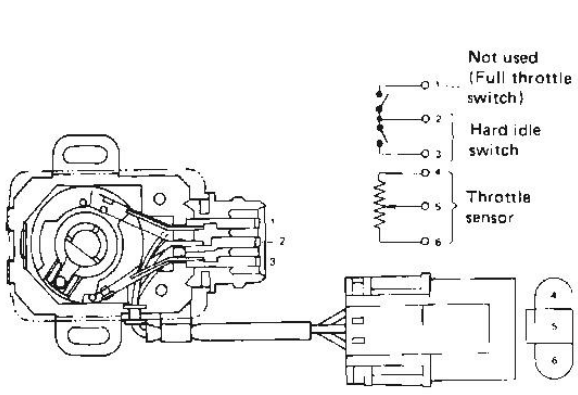


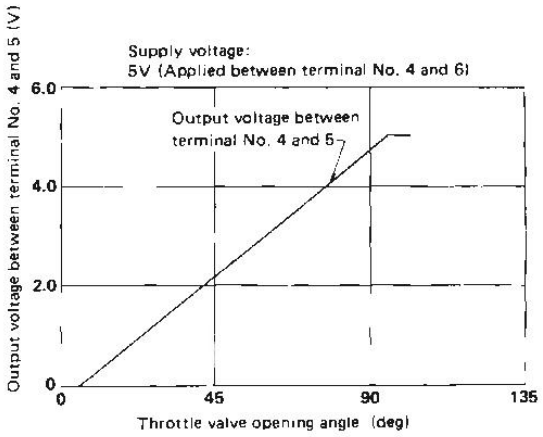
Throttle Sensor & Soft/Hard Idle Switch (T.P.S.)

The throttle sensor responds to the accelerator pedal movement.It is a potentiometer which transforms the throttle valve position into output voltage and emits the voltage signal to the E.C.U. In addition, the sensor detects the opening and closing speed of the throttle valve and feeds the voltage signal to the E.C.U.

Idle position of the throttle valve is determined by the E.C.U. receiving the signal from the throttle sensor. This is called the "Soft idle system" and controls engine operation such as fuel cut. The "Hard Idle and Full Throttle Contacts" built into the throttle sensor unit are used for fail-safe in the case of T.P.S. malfunction and automatic transmission operation.

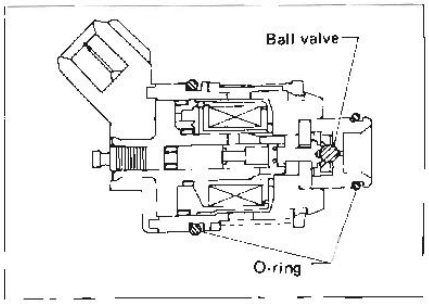






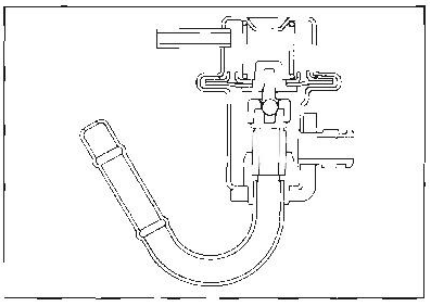
Fuel Injector

The fuel injector is a small, elaborate solenoid valve. As the E.C.U. sends injection signals to the injector, the coil in the injector pulls the ball valve back and fuel is released into the intake manifold through the nozzle. the injected fuel is controlled by the E.C.U. in terms of injection pulse duration.



Pressure Regulator

The pressure regulator maintains the fuel pressure at approximately 299.1 kPa (43.4 psi) above inlet manifold pressure. Since the injected fuel amount depends on injection pulse duration, it is necessary to maintain the pressure at the above value.

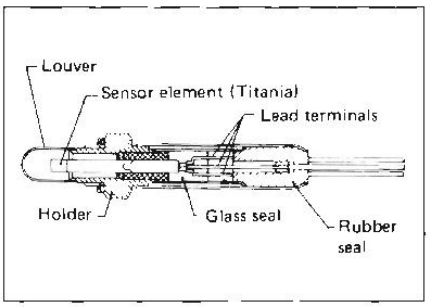


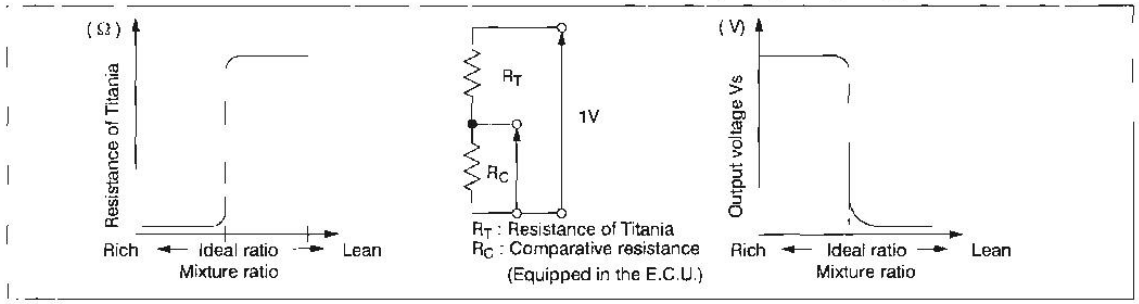
Exhaust Gas Sensor

The exhaust gas sensor, located in the exhaust tube, monitors the oxygen level in the exhaust gas.

This sensor is made of ceramic titania, the electric resistance of which drastically charges at the ideal air-fuel ratio.

The E.C.U. supplies the sensor with approximately 1V and then measures the output voltage depending on its resistance. In order to activate the sensor element, it is equipped with a heater.

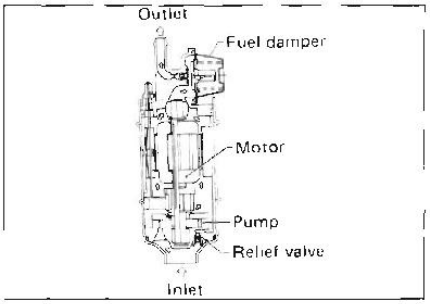




Fuel Pump

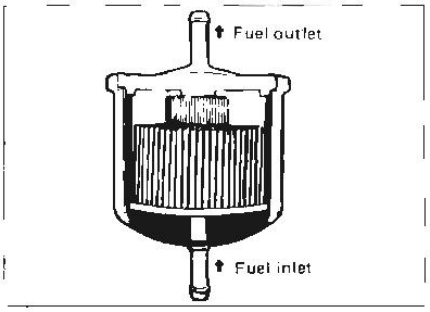
The fuel pump with a fuel damper is an in-tank type. That is the pump and damper are located in the fuel tank.

The vane rollers are directly coupled to a motor which is cooled by the fuel.



Fuel Filter

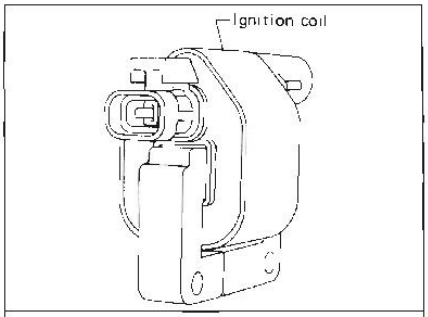
The specially designed fuel filter has a metal case in order to withstand high fuel pressure.

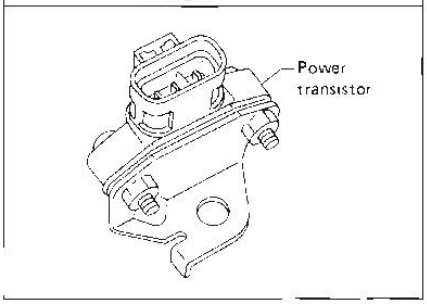


Power Transistor & Ignition Coil

The ignition signal from the E.C.U. is amplified by the power transistor, which turns the ignition coil primary circuit on and off, inducing the high voltage in the secondary circuit. The ignition coil is a small, moulded type.

For tachometer pick-up, use Tool No. E7118 – 1.

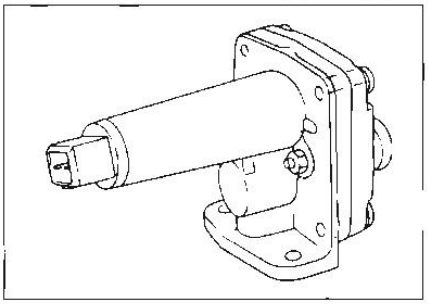




Air Regulator

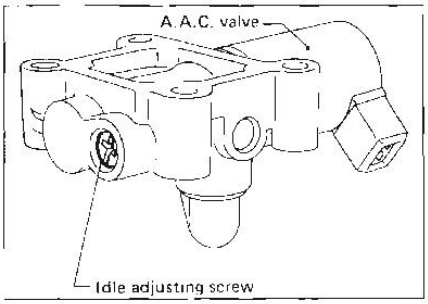
The air regulator provides an air by-pass when the engine is cold for a fast idle during warm-up.

A bi-metal strip and rotary shutter are built into the air regulator. When the bi-metal strip temperature is low, the air by-pass port opens. As the engine starts and electric current flows through a heater, the bi-metal strip begins to turn the shutter to close the by-pass port. The air passage remains closed until the engine stops and the bi-metal strip temperature drops.



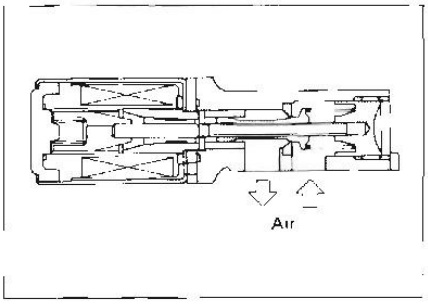
Idle Air Adjusting (I.A.A.) Unit

The I.A.A. unit is made up of the A.A.C. valve and idle adjusting screw. It receives the signal from the E.C.U. and controls the idle speed at the preset value.



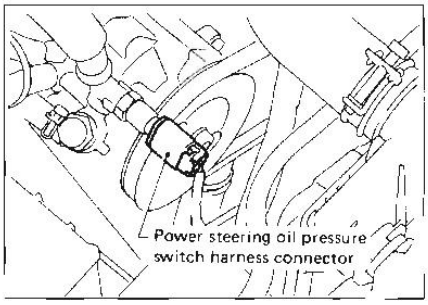
Auxiliary Air Control (A. A. C.)

The E.C.U. actuates the A.A.C. valve by an ON/OFF pulse. The longer that ON duty is left on, the larger the amount of air that will flow through the A.A.C. valve.



Power Steering Oil Pressure Switch

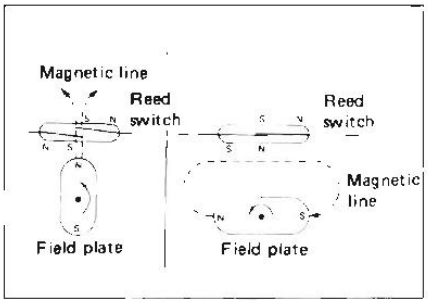
The power steering oil pressure switch is attached to the power steering high-pressure tube and detects the power steering load, sending the load signal to the E.C.U. The E.C.U. then sends the idle-up signal to the A.A.C. valve.



Vehicle Speed Sensor

The vehicle speed sensor provides a vehicle speed signal to the E.C.U.

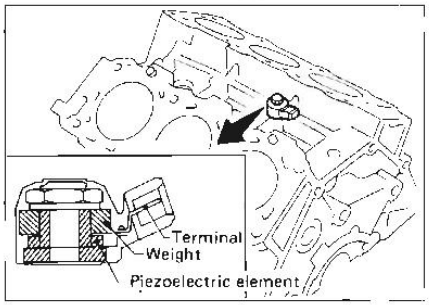
The speed sensor consists of a reed switch, which is installed in the speedometer unit and transforms vehicle speed into a pulse signal.



Detonation Sensor

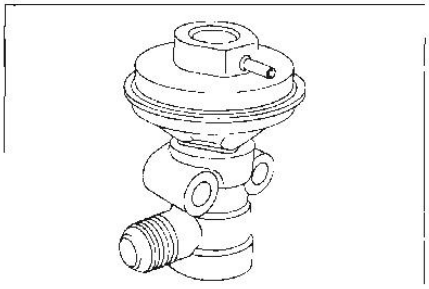
The detonation sensor is attached to the cylinder block and senses engine knocking conditions.

A knocking vibration from the cylinder block is applied as pressure to the piezoelectric element. This vibrational pressure is then converted into a voltage signal which is sent to the E.C.U. and retards the ignition timing accordingly.



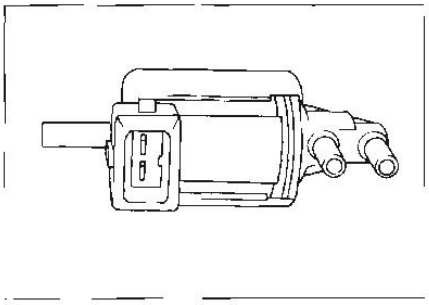
E.G.R. Control Valve

The E.G.R. control valve controls the quantity of exhaust gas to be led to the intake manifold through vertical movement of the taper valve connected to the diaphragm, to which vacuum is applied in response to the opening of the throttle valve.

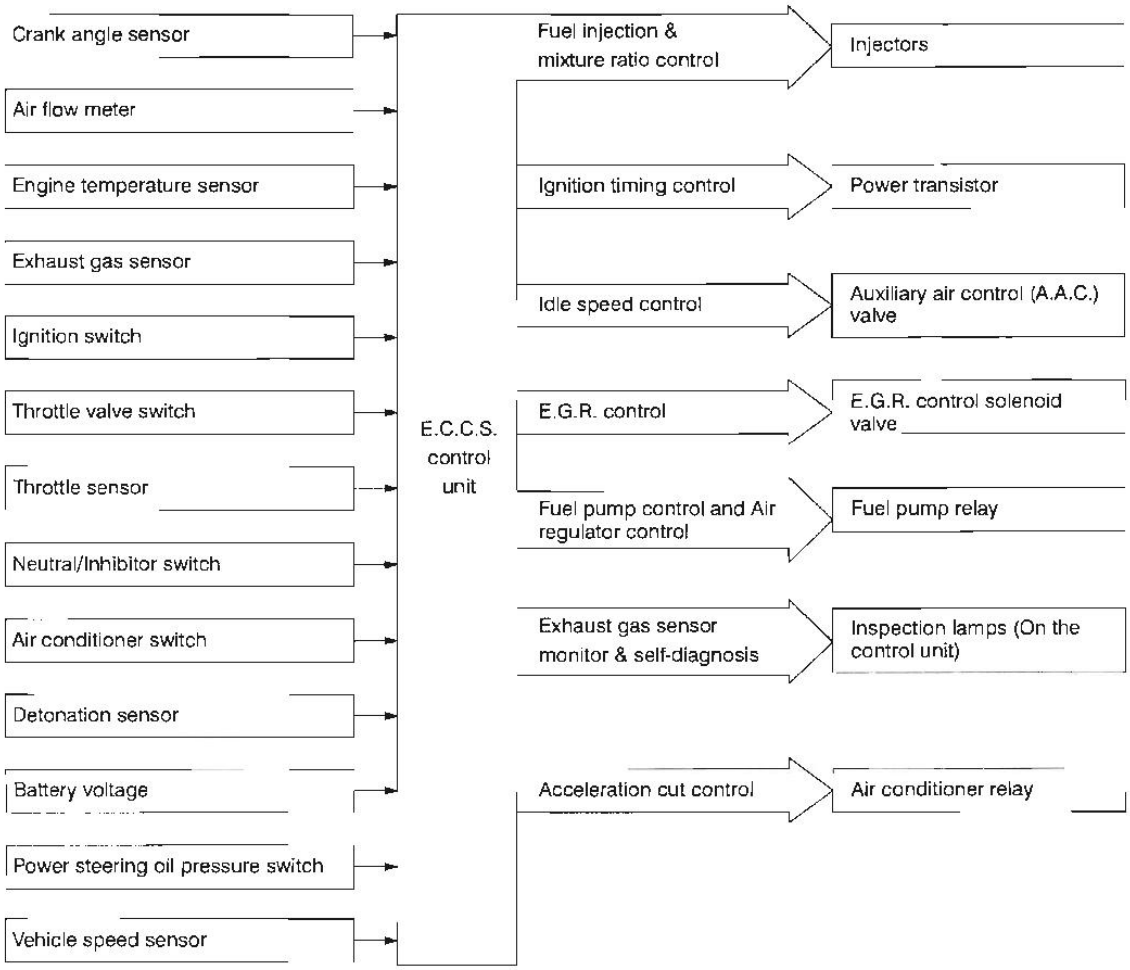


E.G.R. Control Solenoid Valve

The E.G.R. system is controlled only by the E.C.U. At both low and high rpm, the solenoid valve turns on and according the E.G.R. valve cuts the exhaust gas leading to the intake manifold.



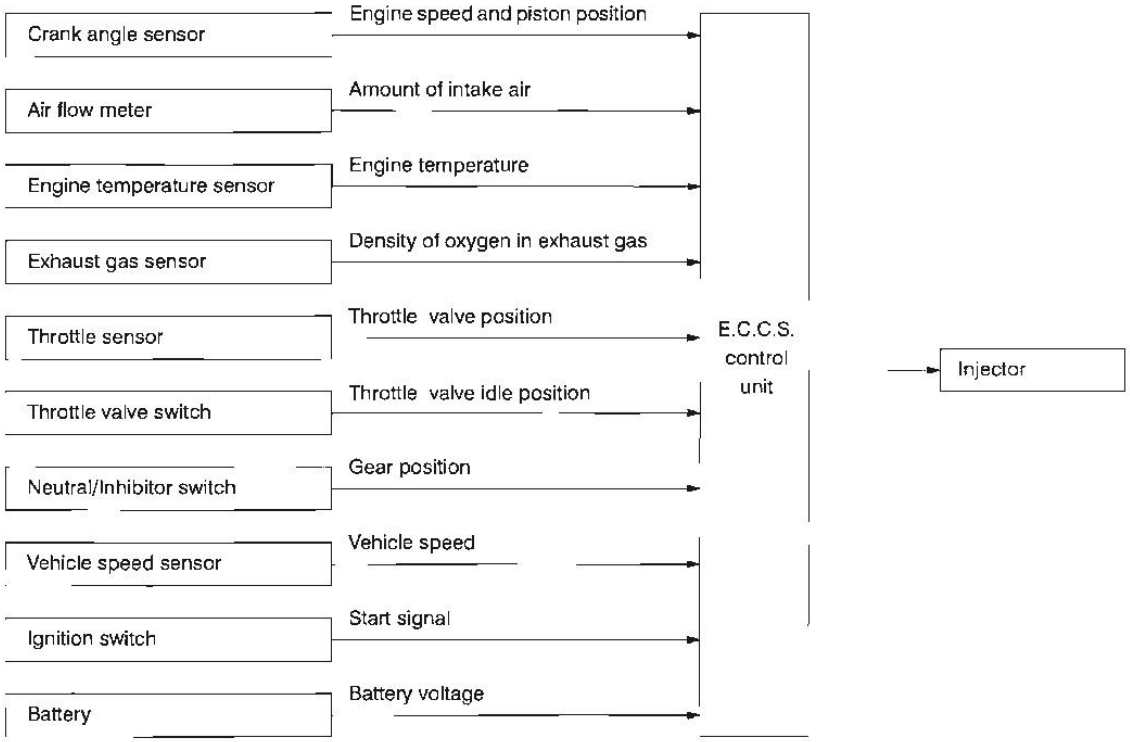
System Chart



SYSTEM CONTROL

Fuel Injection Control

Input/Output Signal Line



Basic Fuel Injection Control

The amount injected from the fuel injector, or the length of time the valve remains open, is determined by the E.C.U. The basic amount of fuel injected is a program value mapped in the E.C.U. ROM memory. In other words, the program value is preset by engine operating conditions determined by input signals (for engine rpm and air intake) from both the crank angle sensor and the air flow meter.

Various Fuel Injection Increase/Decrease Compensation

In addition, the amount of fuel injection is compensated for to improve engine performance under various operating conditions as listed below:

Fuel increase

1) During warm-up
2) When starting the engine
3) During acceleration

Fuel decrease

1) During deceleration

Mixture Ratio Feedback Control

The mixture ratio feedback system is designed to precisely control the mixture ratio to the stoichiometric point so that the three way catalyst can reduce CO, HC and NO_X emissions. This system uses an exhaust gas sensor in the exhaust manifold to check the air-fuel ratio. The control unit adjusts the injection pulse width according to the sensor voltage so the mixture ratio will be within the range of the stoichiometric air-fuel ratio.

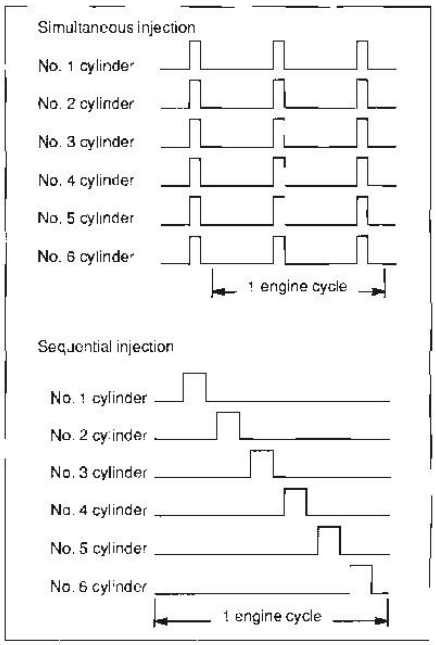
This is referred to as the closed-loop control condition. The open-loop control condition is that in which the E.C.U. detects any of the following conditions and feedback control stops in order to maintain stabilised fuel combustion.

1) Deceleration
2) High-load operation
3) Engine idling
4) Malfunction of exhaust gas sensor or its circuit
5) Insufficient activation of exhaust gas sensor at low engine temperature
6) Engine starting
7) When all of the following conditions are met:
   - Ignition switch "ON".
   - Soft idle switch "ON".
   - Neutral switch "OFF".
   - Engine running at idle speed.
   - Vehicle running at slow speed.

Mixture ratio Self-Learning Control

The mixture ratio feedback control system monitors the mixture ratio signal transmitted from the exhaust gas sensor. This feedback signal is then sent to the E.C.U. to control the amount of fuel injection to provided a basic mixture ratio as close to the theoretical mixture ratio as possible. However, the basic mixture ratio is not necessarily controlled as originally designed. This is due to manufacturing errors (e.g., air flow meter hot film) and changes during operation (injector clogging, etc.) of E.C.C.S. parts which directly affect the mixture ratio.

Accordingly, a difference between the basic and theoretical mixture ratios is quantitatively monitored in this system. It is then computed in terms of "fuel injection duration" to automatically compensate for the difference between the two ratios.



Fuel Injection Timing

Two types of fuel injection systems are used: Simultaneous injection and sequential injection.

Simultaneous Injection

Fuel is injected into all four cylinders simultaneously twice each engine cycle. In other words, pulse signals of the same width are simultaneously transmitted from the E.C.U. to the six injectors two times for each engine cycle. (When the engine is being started and/or if the fail-safe system (C.P.U. of E.C.U.) is operating, simultaneous fuel injection is used.)

Sequential Injection

In the sequential injection system, fuel is injected into each cylinder during each engine cycle according to the firing order. (When the engine is running sequential fuel injection is used.)

Fuel Shut-off

Fuel to each cylinder is cut off during deceleration or high speed operation (6200 rpm).

Ignition Timing Control

System Description

The ignition timing is controlled by the E.C.U. in order to maintain the best air-fuel ratio in response to every running condition of the engine.

The ignition timing data is stored in the ROM located in the E.C.U., in the form of the map shown below.

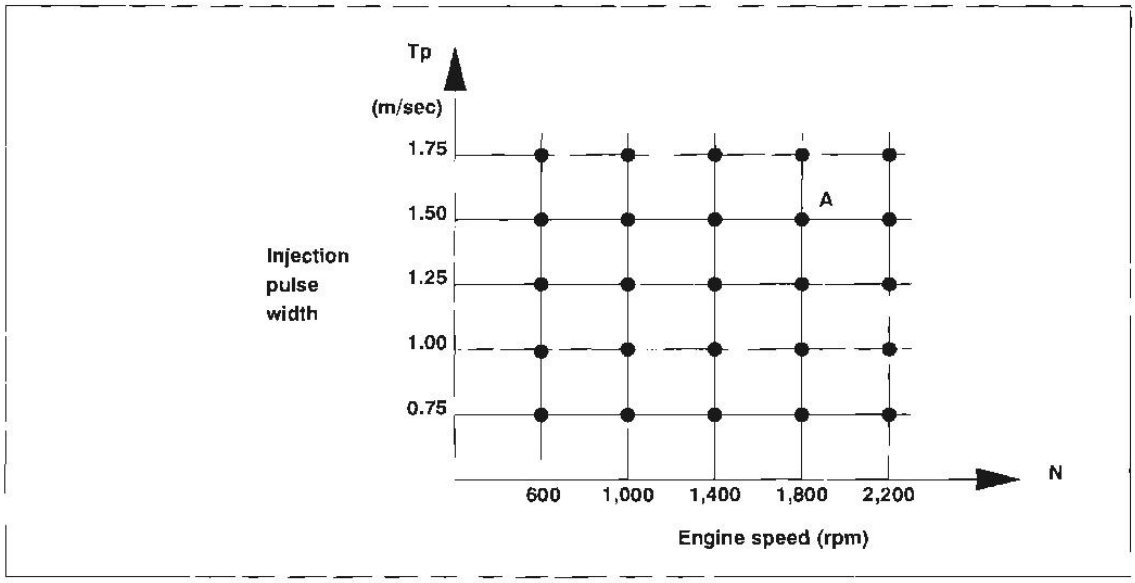
The E.C.U. detects information such as the injection pulse width and crank angle sensor signal which varies every moment. Then responding to this information, ignition signals are transmitted to the power transistor.

e.g. N: 1,800 rpm, Tp: 1.50 m/sec
A ° B.T.D.C.

In addition to this,

1. At starting
2. During warm-up
3. At idle
4. At low battery voltage

The ignition timing is revised by the E.C.U. according to the other data stored in the ROM.



The retard system controlled by the detonation sensor is designed only for emergencies. The basic ignition timing is pre-programmed within the anti-knocking zone, even if recommended fuel is used under high ambient temperatures. Consequently, the retard system does not operate under normal driving conditions.

However, if engine knocking occurs, the detonation sensor monitors the condition and the signal is transmitted to the E.C.C.S. control unit. After receiving it, the control unit retards the ignition timing to avoid a knocking condition.

Idle Speed Control

System Description

This system automatically controls engine idle speed to a specified level. Idle speed is controlled through fine adjustment of the amount of air which by-passes the throttle valve via the A.A.C. valve. The A.A.C. valve repeats ON/OFF operation according to the signal sent from the E.C.U. The crank angle sensor detects the actual engine speed and sends a signal to the E.C.U. The E.C.U. then controls the ON/OFF time of the A.A.C. valve so that engine speed coincides with the target value memorised in ROM. The target engine speed is the lowest at which the engine can operate steadily. The optimum value stored in the ROM is determined by taking into consideration various engine conditions, such as warming up during deceleration, fuel consumption, and engine load (electrical load).

E.G.R. (Exhaust Gas Recirculation) Control

System Description

A system is provided which precisely cuts and controls port vacuum applied to the E.G.R. valve to suit engine operating conditions. This cut-and-control operation is accomplished through the E.C.U. When the E.C.U. detects any of the following conditions, current flows through the solenoid valve in the E.G.R. control vacuum line.

This causes the port vacuum to be discharged into the atmosphere so that the E.G.R. control valve remains closed.

1. Low engine temperature
2. Engine start and high speed engine operation
3. Engine idling
4. Excessively high engine temperature
5. C.P.U. malfunction of E.C.U. and crank angle sensor malfunction

Fuel Pump Control

System Description

To reduce power consumption, fuel pump relay ON-OFF operation controls the fuel pump as follows:

Fuel pump ON-OFF control

Ignition switch position	Engine condition	Fuel pump relay	Fuel pump operation
ON	Stopped	ON → OFF	Operates for a few seconds after ignition switch turns to "ON"
	Starting	ON	Operates
	Running	ON	Operates

Acceleration Cut Control

System Description

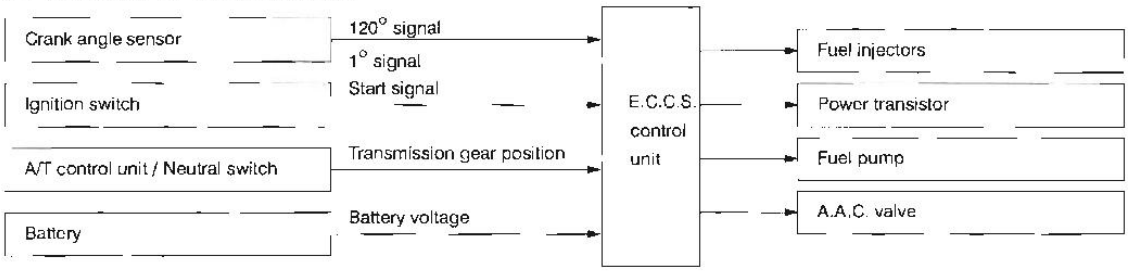
The air conditioner is turned off for a few seconds during accelerating condition.

This system improves acceleration when air conditioner is used.

FAIL-SAFE SYSTEM

C.P.U. Malfunction of E.C.U. and Crank Angle Sensor Malfunction

INPUT/OUTPUT SIGNAL LINE



Outline

The fail-safe system makes engine starting possible if there is something malfunctioning in the E.C.U.'s C.P.U. circuit, or if there is a disconnection or short/open circuit in the crank angle sensor circuit. In former models, engine starting was impossible under the conditions mentioned above. But with the provisions provided in this back-up system, it is possible to start the engine.

When the fail-safe system activates; i.e. if the E.C.U. detects a malfunction condition in the C.P.U. of E.C.U. or crank angle sensor circuit, the CHECK ENGINE LIGHT on the instrument panel lights to warn the driver. When the crank angle sensor fails, a diagnostic code is lodged in the computer memory.

Fail-safe system activating condition when crank angle sensor is malfunctioning

The fail-safe mode operation starts immediately after all of the following conditions have been satisfied for several seconds.

1. No pulse of 120° signal (reference signal) detected for several seconds, or 1° signal (position signal) is equivalent to 0 rpm.
2. Ignition switch to START
3. Battery voltage is greater than 10 volts with ignition switch ON.
4. The neutral switch is ON, or the inhibitor switch is in the "P" or "N" position.
5. When ignition switch is in START position battery voltage is at least 1 volt lower than when ignition switch is ON.

Fail-safe system activating condition when E.C.U. is malfunctioning

When the computing function of the E.C.U. is judged to be malfunctioning, the fail-safe system activates.

Engine control, with fail–safe system, operates when E.C.U. or crank angle sensor is malfunctioning

When the fail–safe system is operating, fuel injection, ignition timing/ fuel pump operation and engine idle speed are controlled under certain limitations. The fuel injection timing is simultaneous when the crank angle sensor is malfunctioning.

The E.C.U. determines the fuel injection pulse timing from 4 sensors:

1. Ignition switch
2. Coolant temperature
3. Air flow meter
4. Throttle sensor

The ignition timing is determined by signals from the ignition switch, throttle sensor and air flow meter.

Cancellation of fail–safe system when E.C.U. or crank angle sensor is malfunctioning

The fail–safe system is cancelled each time the ignition switch is turned OFF. The system is reactivated if all of the above–mentioned activating conditions are satisfied after turning the ignition switch from OFF to ON.

Sensor Malfunctions

Air Flow Meter

If the air flow meter output voltage is above or below the specified value, the E.C.U. senses an air flow meter malfunction. The throttle sensor then substitutes the signal for the air flow meter.

Though the air flow meter is malfunctioning, it is possible to start and drive the vehicle. However, engine speed will not rise more than 3000 rpm in order to inform the driver of fail–safe system operation.

Operation

Engine condition	Starter switch	Fail-safe system	Fail-safe functioning
Stopped	ANY	Does not operate	–
Cranking	ON	Operates	Engine will be started by a pre-determined injection pulse by the E.C.U.
Running	OFF		Engine speed will not rise above 3000 rpm injection pulse is sequential.

Engine Temperature Sensor

When engine temperature sensor output voltage is below or above the specified value, water temperature is fixed at the preset value as follows:

Operation

Condition	Engine temperature decided
Just as ignition switch is turned ON or Start	20°C
More than 6 minutes after ignition On or Start	80°C
Except as shown above	20°C - 80°C (Depends on the time)

Throttle Sensor

When throttle sensor output voltage is below or above the specified value, throttle sensor output is fixed at the preset value.

Detonation Sensor

When the output signal of the detonation sensor is abnormal, the E.C.U. judges it to be malfunctioning. When the detonation sensor is malfunctioning, ignition timing will retard according to operating conditions.

Idle Speed/Ignition Timing and Mixture Ratio/Inspection

Preparation

1. Make sure that the following parts are in good order.
- Battery
- Ignition system
- Engine oil and coolant levels
- Fuses
- E.C.U. S.M.J. harness connector
- Vacuum hoses
- Air intake system
  (Oil filler cap, oil level gauge, etc.)
- Fuel pressure
- Engine compression
- E.G.R. control valve operation
- Throttle valve

2. On air conditioner equipped models, checks should be carried out while the air conditioner is "OFF".

3. On automatic transmission equipped models, idle rpm, ignition timing and mixture ratio checks should be carried out while shift lever is in "N" position.

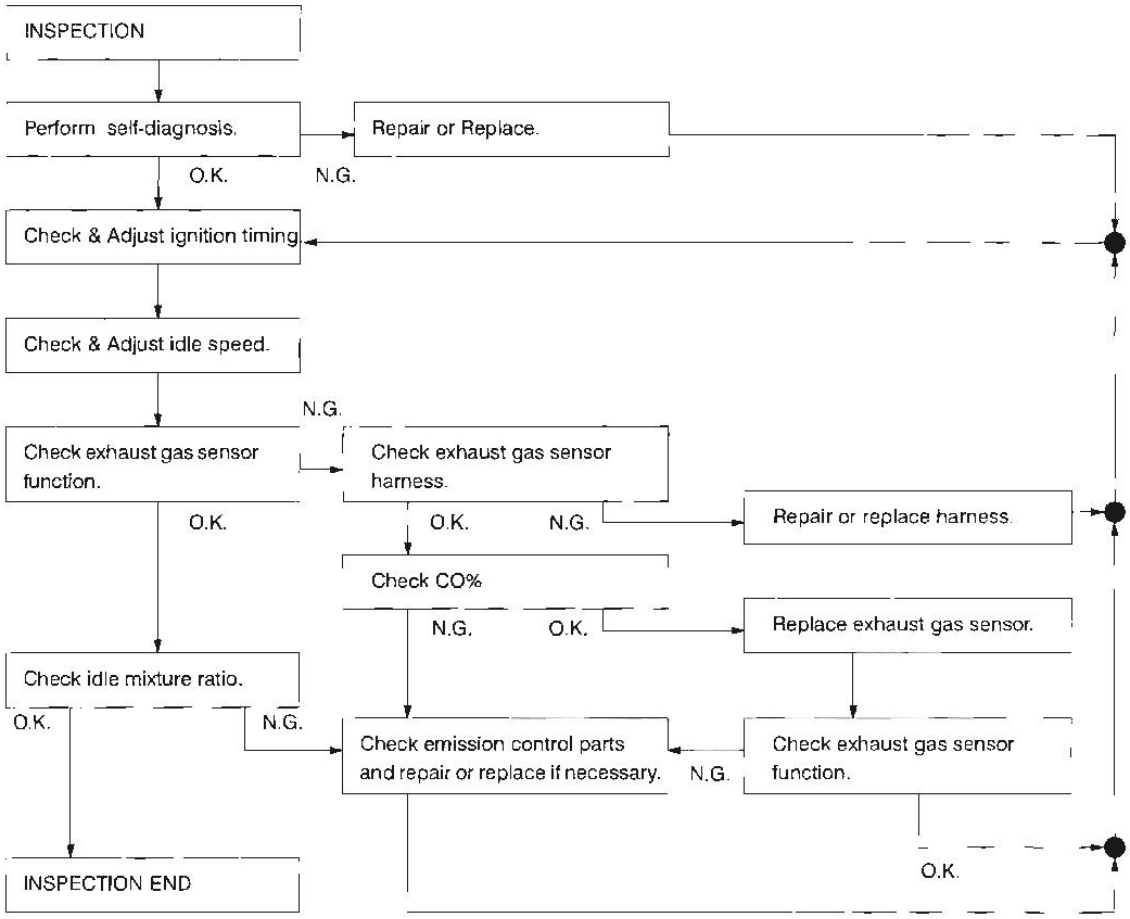
4. When measuring "CO" percentage, insert probe more than 40 cm into tail pipe.

5. Turn off headlamps, heater blower, rear defogger.

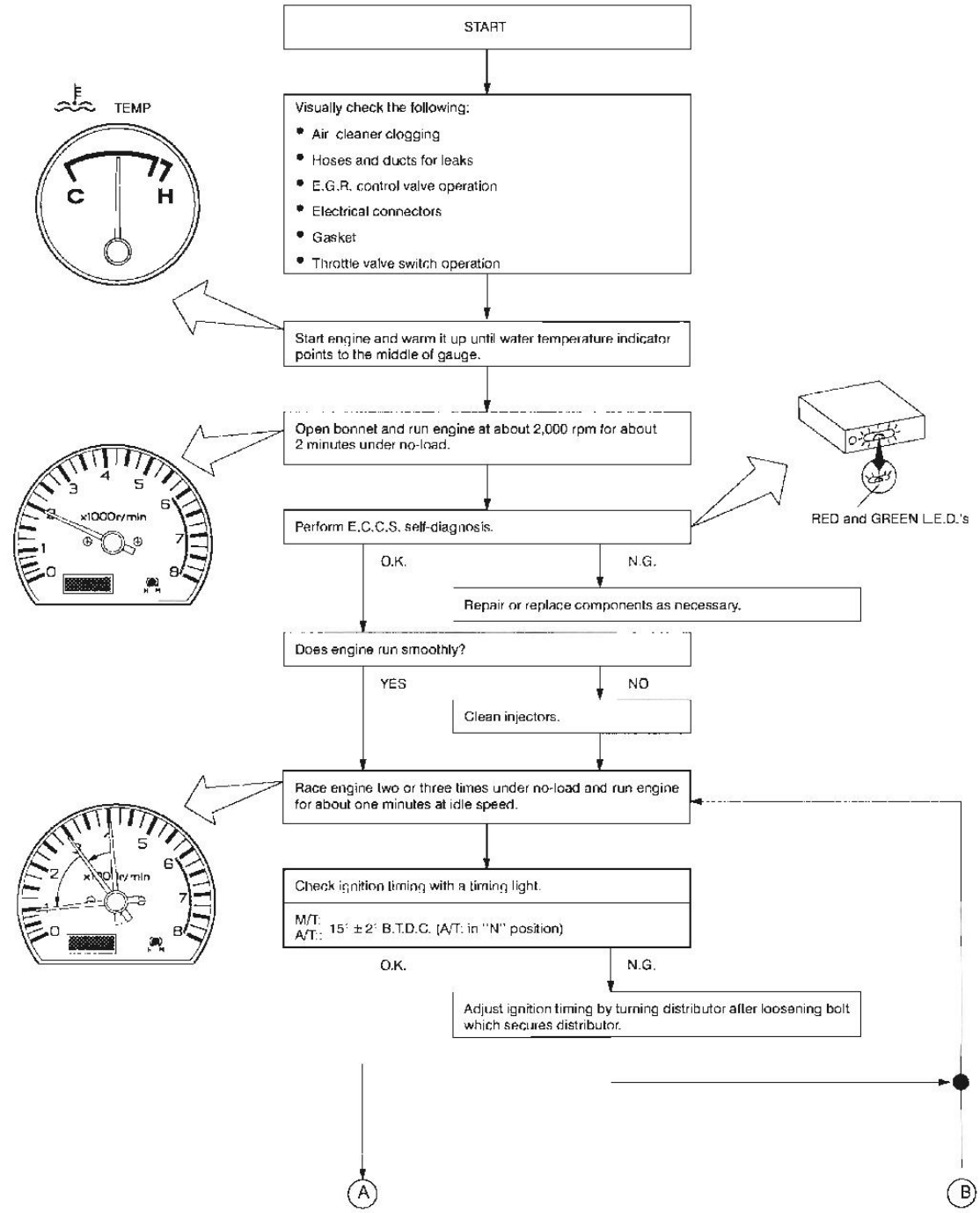
6. Keep front wheels pointed straight ahead.

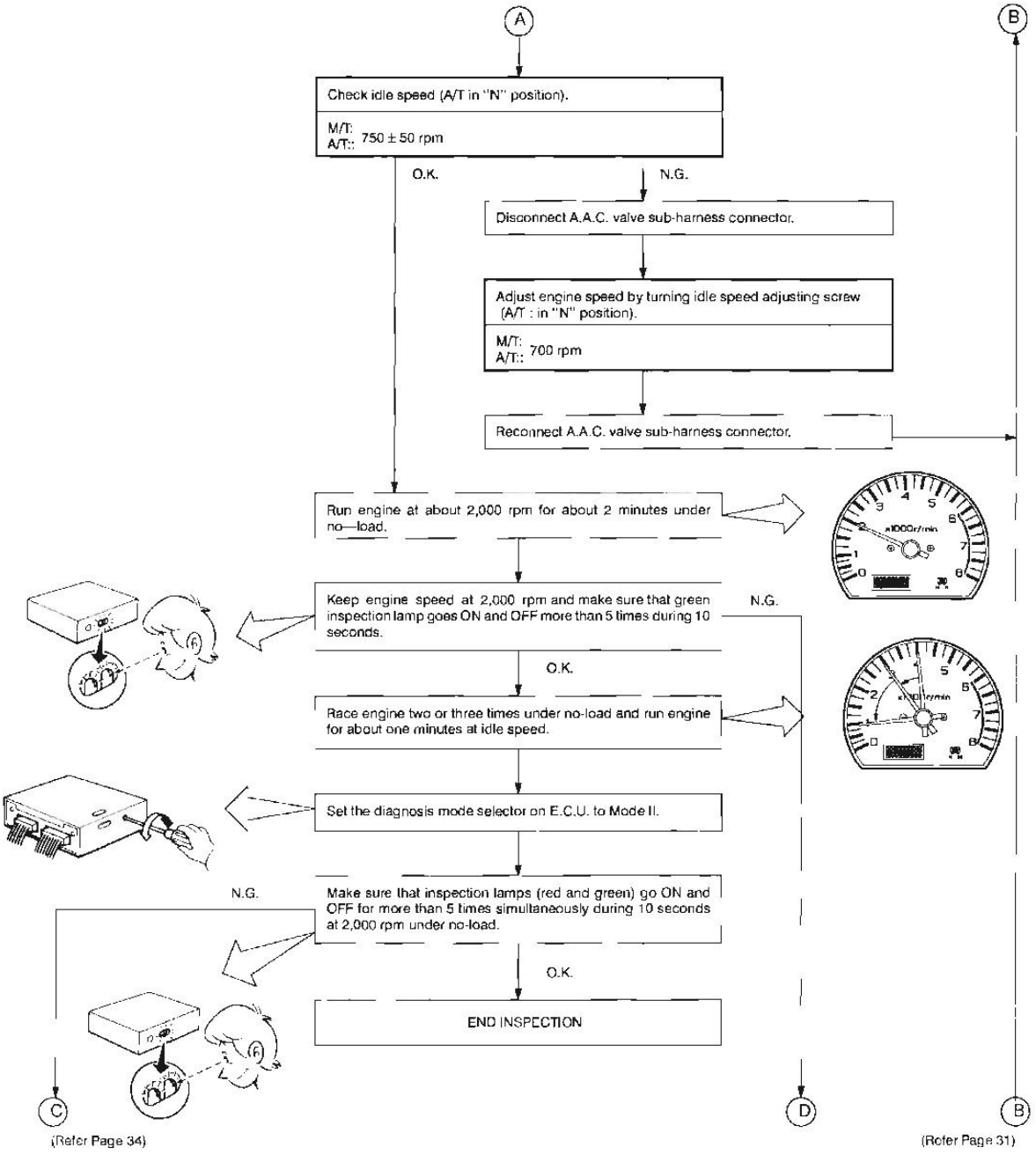
7. Make idle checks after the radiator fan has stopped.

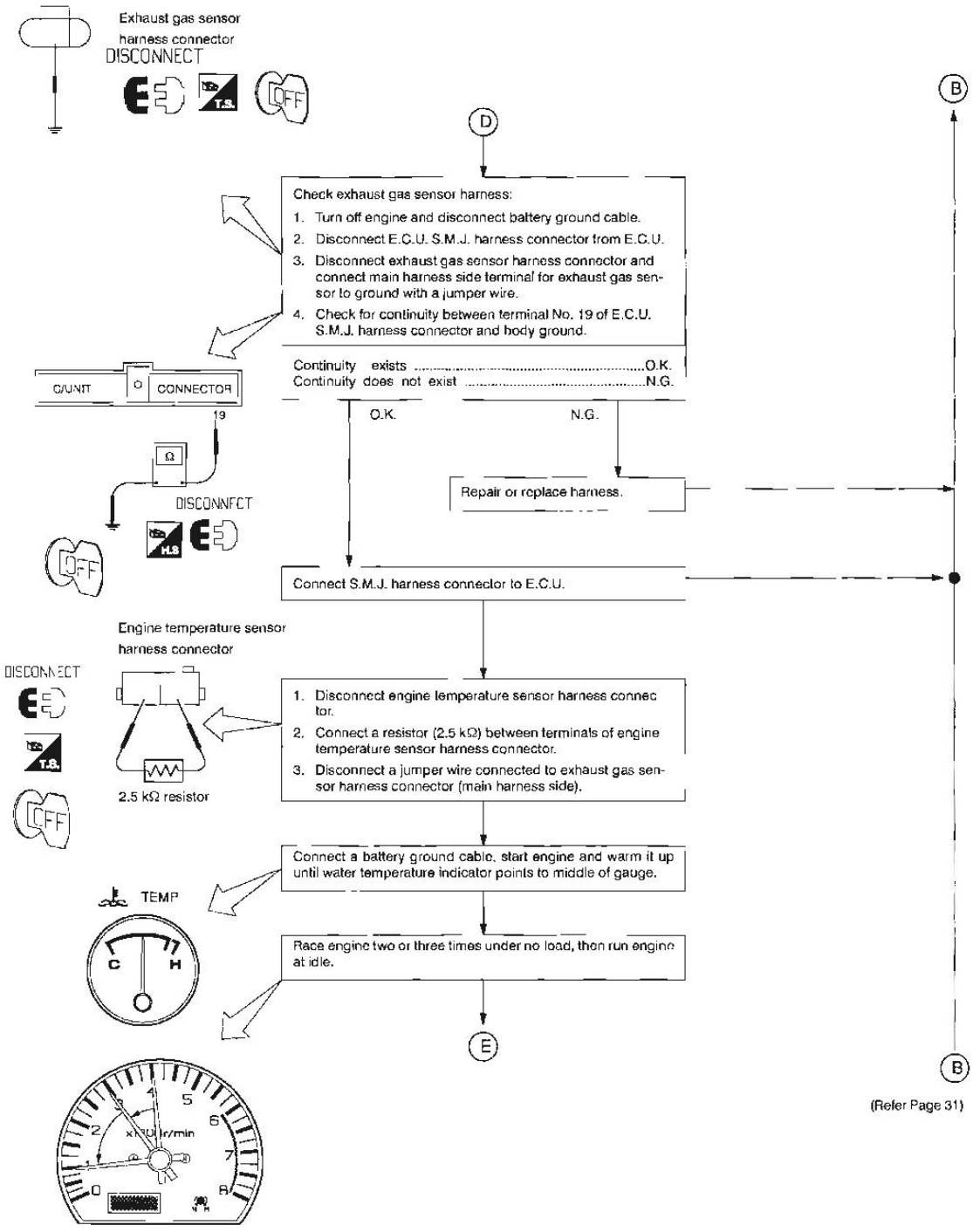
Overall Inspection Sequence



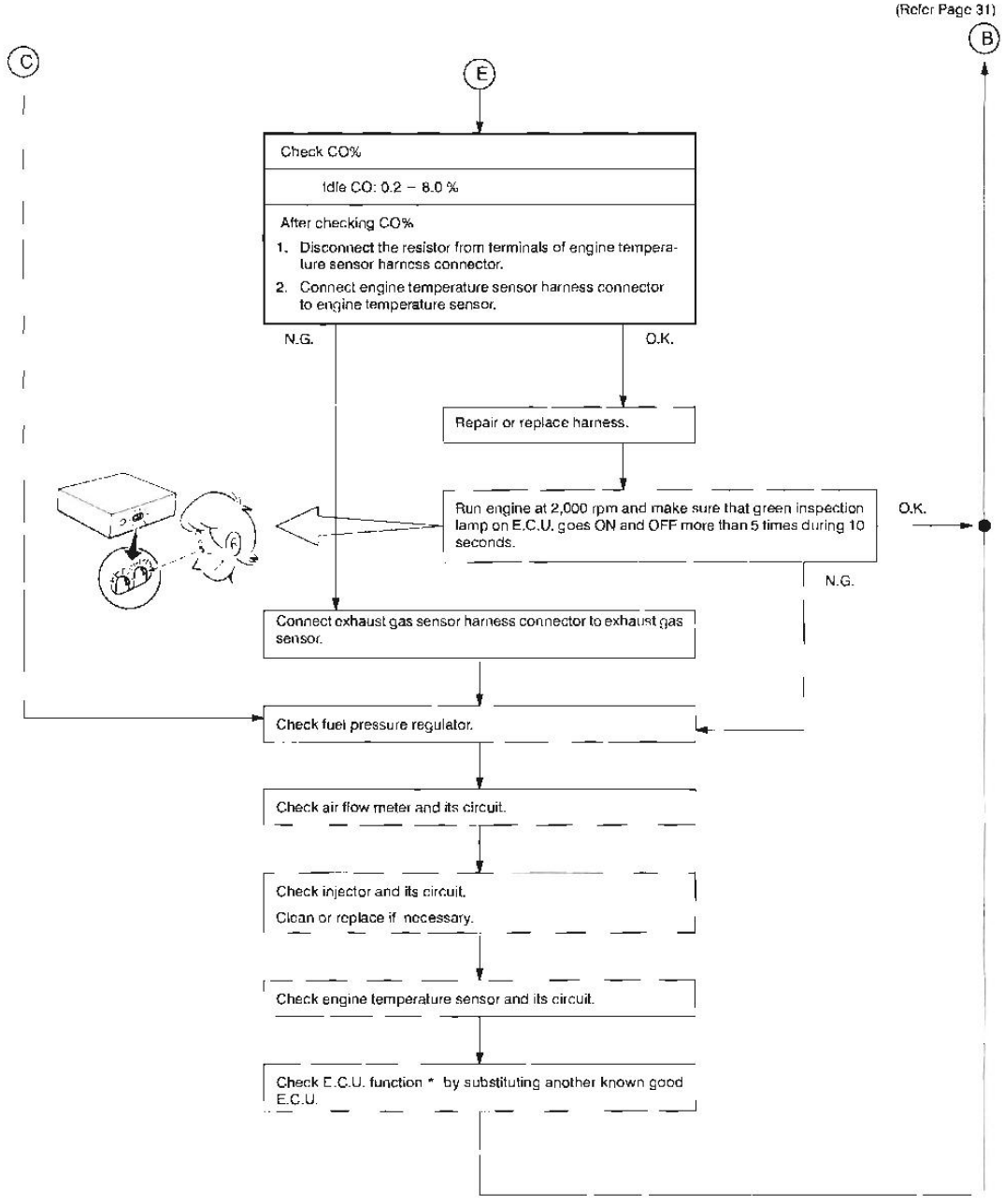
Idle Speed/Timing and Mixture Ratio Checking Procedure




A
B
Check idle speed (A/T in "N" position).
M/T: 750 ± 50 rpm
A/T:
O.K.
N.G.
Disconnect A.A.C. valve sub-harness connector.
Adjust engine speed by turning idle speed adjusting screw (A/T : in "N" position).
M/T: 700 rpm
A/T:
Reconnect A.A.C. valve sub-harness connector.
Run engine at about 2,000 rpm for about 2 minutes under no—load.
Keep engine speed at 2,000 rpm and make sure that green inspection lamp goes ON and OFF more than 5 times during 10 seconds.
N.G.
O.K.
Race engine two or three times under no-load and run engine for about one minutes at idle speed.
Set the diagnosis mode selector on E.C.U. to Mode II.
N.G.
Make sure that inspection lamps (red and green) go ON and OFF for more than 5 times simultaneously during 10 seconds at 2,000 rpm under no-load.
O.K.
END INSPECTION
C
D
B
(Refer Page 34)
(Refer Page 31)


Exhaust gas sensor harness connector
DISCONNECT
T.S.
OFF
D
Check exhaust gas sensor harness:
1. Turn off engine and disconnect battery ground cable.
2. Disconnect E.C.U. S.M.J. harness connector from E.C.U.
3. Disconnect exhaust gas sensor harness connector and connect main harness side terminal for exhaust gas sensor to ground with a jumper wire.
4. Check for continuity between terminal No. 19 of E.C.U. S.M.J. harness connector and body ground.
Continuity exists .....O.K.
Continuity does not exist .....N.G.
O.K.
N.G.
C/UNIT
CONNECTOR
19
Ω
DISCONNECT
H.S.
OFF
Repair or replace harness.
Connect S.M.J. harness connector to E.C.U.
B
Engine temperature sensor harness connector
DISCONNECT
T.S.
OFF
2.5 kΩ resistor
1. Disconnect engine temperature sensor harness connector.
2. Connect a resistor (2.5 kΩ) between terminals of engine temperature sensor harness connector.
3. Disconnect a jumper wire connected to exhaust gas sensor harness connector (main harness side).
Connect a battery ground cable, start engine and warm it up until water temperature indicator points to middle of gauge.
TEMP
C
H
Race engine two or three times under no load, then run engine at idle.
E
B
x1000 r/min
(Refer Page 31)

(Refer Page 31)



*: E.C.U. may be the cause of a problem, but this is rarely the case.

SELF-DIAGNOSIS – DESCRIPTION

The self-diagnosis is useful to diagnose malfunctions in major sensors and actuators of the E.C.C.S. system. There are 5 modes in the self-diagnosis system.

1. **Mode I (Exhaust gas sensor monitor)**

- During closed-loop operation:
  The green inspection lamp turns ON when a lean condition is detected and goes OFF under rich condition.
- During open-loop operation:
  The green inspection lamp remains OFF or ON.

2. **Mode II (Mixture ratio feedback control monitor)**

   The green inspection lamp function is the same as Mode I.

- During Closed-loop operation:
  The red inspection lamp turns ON and OFF simultaneously with the green inspection lamp when the mixture ratio is controlled within the specified value.
- During open-loop operation:
  The red inspection lamp remains ON or OFF.

3. **Mode III (Self–diagnosis system)**

   During this mode the number of both green and red L.E.D.'s flashes indicated the group to which the malfunctioning part belongs.

4. **Mode IV (Switches ON/OFF diagnostic system)**

   During this mode, the inspection lamps monitor the switch ON-OFF condition.

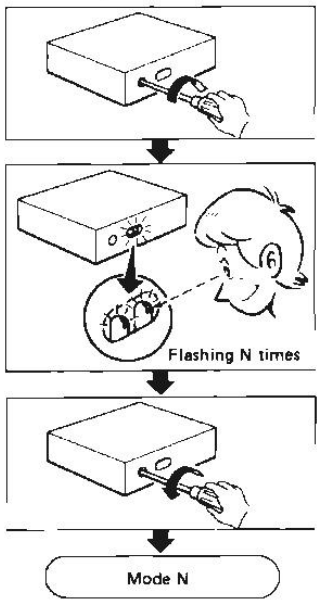
- Soft idle switch
- Start signal
- Vehicle speed sensor

5. **Mode V (Real-time diagnostic system)**

   If a malfunction is detected, the code will be displayed immediately. That is, the condition at which the malfunction occurs can be found by observing the inspection lamps during driving test.

How To Switch The Diagnostic Modes

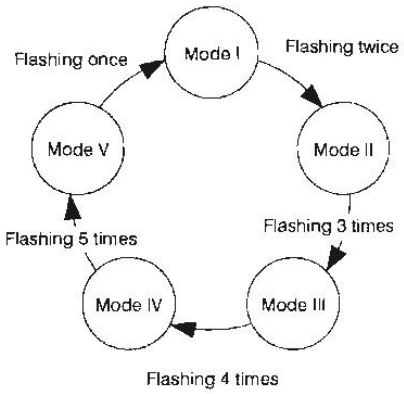
1. Turn the ignition switch "ON".
2. Turn diagnostic mode selector to E.C.U. (fully clockwise) and wait for inspection lamps to flash.
3. Count the number of flashes, and after the inspection lamps have flashed the number of the required mode, immediately turn diagnostic mode selector fully counter-clockwise.



Memory Erasure

1. When the ignition switch is turned off during diagnosis in any mode and then turned on again (after power to the E.C.U. has dropped completely), the diagnosis will automatically return to Mode I.
2. If the battery terminal is disconnected, the self-diagnosis memory is erased.
3. After selecting Mode III, Mode IV is selected. However, if the diagnostic mode selector is kept turned fully clockwise, it will continue to change in the order of Mode I, II, III, IV, V, ...etc and in this state the stored memory will not be erased.

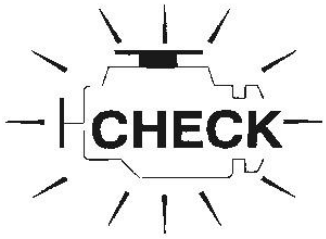
   This unit serves as an idle rpm feedback control. When the diagnostic mode selector is turned within the "diagnostic mode OFF" range, a target engine speed can be selected. Mark the original position of the selector before conducting self-diagnosis. Upon completion of self-diagnosis, return the selector to the previous position. Otherwise engine speed may change before and after conducting self-diagnosis.



Check Engine Light

This vehicle has a check engine light on the instrument panel. This light comes "ON" under the following conditions:

- When ignition switch is turned "ON" (for bulb check).
  This check engine light always illuminates synchronously with red L.E.D.



Mode I – Exhaust Sensor

This mode checks the exhaust gas sensor for proper functioning. The operation of the E.C.U. L.E.D. in this mode differs with mixture ratio control conditions as follows:

Mode	L.E.D.	Engine stopped (Ignition switch "ON")	Engine running	
			Open loop condition	Closed loop condition
Mode I	Green	ON	*Remains ON or OFF	Blink
	Red	ON	• "ON" When the CHECK ENGINE LIGHT ITEMS are stored in in the E.C.U. • "OFF" Except for the above conditions	

*: Maintains conditions just before switching to open loop

Exhaust Gas Sensor Function Check

If the number of L.E.D. blinks is less than that specified, replace the exhaust gas sensor.

If the L.E.D. does not blink, check exhaust gas sensor circuit.

Mode II – Mixture ratio feedback control monitor

This mode checks, through the E.C.U. L.E.D., optimum control of the mixture ratio. The operation of the L.E.D., as shown below, differs with the control conditions of the mixture ratio (for example, richer or leaner mixture ratios, etc., which are controlled by the E.C.U.).

Mode	L.E.D.	Engine stopped (Ignition switch "ON")	Engine running			
			Open loop condition	Closed loop condition		
Mode II	Green	ON	*Remain ON or OFF	Blinks		
	Red	OFF	*Remains ON or OFF (synchronised with green L.E.D.)	Compensating mixture ratio		
				More than 5% rich	Between 5% lean and 5% rich	More than 5% lean
				OFF	Synchronised with green L.E.D.	Remains ON

*: Maintains conditions just before switching to open loop

Mode III – Self–diagnostic system

The E.C.U. constantly monitors the function of the sensors and actuators, regardless of ignition key position. If a malfunction occurs, the information is stored in the E.C.U. and can be retrieved from the memory by turning on the diagnostic mode selector, located on the side of the E.C.U. When activated, the malfunction is indicated by flashing a red and a green L.E.D. (Light Emitting Diode), also located on the E.C.U. Since all the self–diagnostic results are stored in the E.C.U.'s memory even intermittent malfunctions can be diagnosed.

A malfunction is indicated by the number of both red and green L.E.D. flashes. First, the red L.E.D. flashes and the green flashes follow. The red L.E.D. corresponds to units of ten and the green L.E.D. corresponds to units of one. For example, when the red L.E.D. flashes once and the green L.E.D. flashes twice, this signifies the number "12", showing that the air flow meter signal is malfunctioning. All problems are classified by code number in this way.

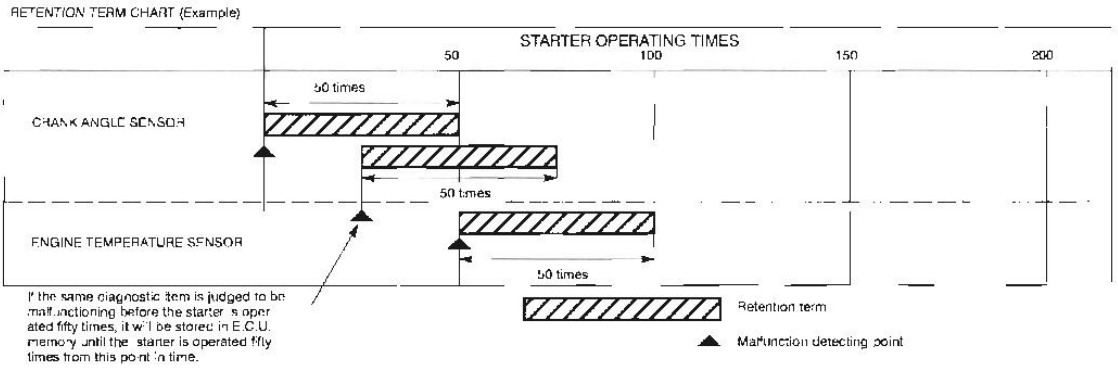
- **When the engine fails to start, crank it two or more seconds before beginning self–diagnosis.**
- **Read out self–diagnostic results first and then erase the malfunction records which are stored in the E.C.U. memory. If it is erased, the self–diagnosis function for intermittent malfunctions will be lost.**

Code No.	Detected items
11	Crank angle sensor circuit
12	Air flow meter circuit
13	Engine temperature sensor circuit
14	Vehicle Speed Sensor
21	Ignition signal missing in primary coil
31	E.C.U.
33	Exhaust Gas Sensor
34	Detonation Sensor
43	Throttle sensor circuit
55	No malfunction in the above circuits

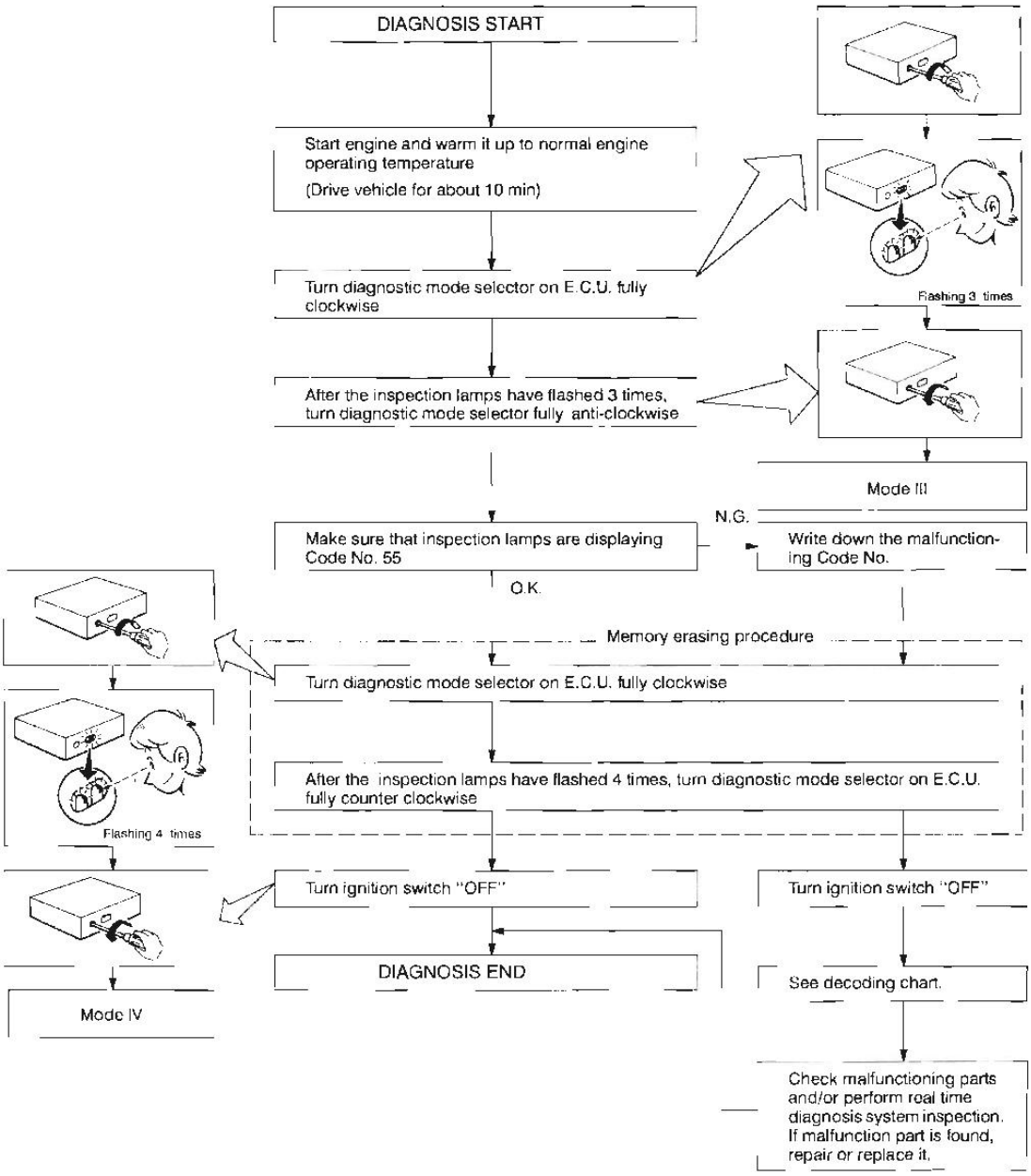
Any code No. except those mentioned above does not indicate a result of a self–diagnostic system.

Retention of Diagnostic Results

The diagnostic results will remain in E.C.U. memory until the starter is operated fifty times after a diagnostic item has been judged to be malfunctioning. The diagnostic result will then be cancelled automatically. If a diagnostic item which has been judged to be malfunctioning and stored in memory is again judged to be malfunctioning before the starter is operated fifty times, the second result will replace the previous one. It will be stored in E.C.U. memory until the starter is operated fifty times more.



Self-Diagnostic Procedure



CAUTION:

- **During display of a code number in self-diagnosis mode (Mode III), if another diagnostic mode is to be performed, be sure to note the malfunction code number before turning diagnostic mode selector on E.C.U. fully clockwise. When selecting an alternative, select the diagnosis mode after turning switch "OFF". Otherwise, self-diagnosis information in the E.C.U. memory will be lost.**

  Return the DIAGNOSTIC MODE selector to the previous position.

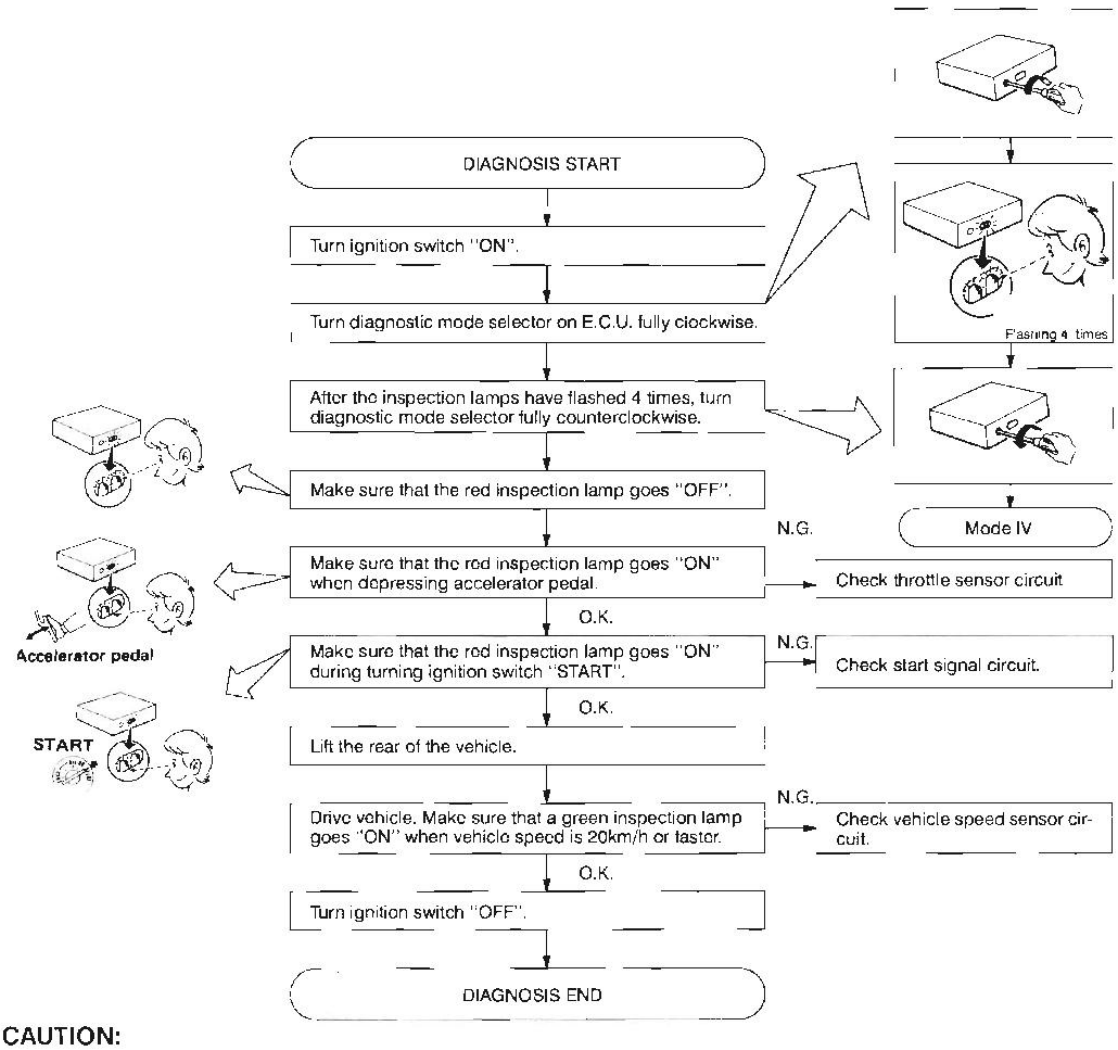
Mode IV – Switches ON/OFF diagnostic system

In switches ON/OFF diagnosis, ON/OFF operation of the following switches can be detected continuously.

- **Soft idle switch**
- **Start signal**
- **Vehicle speed sensor**

1. **Soft idle switch & Starter signal**
   The switches ON/OFF status in mode IV is monitored by E.C.U. memory. When either switch is turned from "ON" to "OFF" or "OFF" to "ON", the red L.E.D. on E.C.U. alternately comes on and goes off each time switching is performed.
2. **Vehicle speed sensor**
   The switches ON/OFF status in mode IV is monitored by E.C.U. memory. The green L.E.D. on E.C.U. remains off when vehicle speed is 20 km/h or below, and comes ON at higher speeds.

Procedure



CAUTION:

- **For safety, do not drive rear wheels at higher speed than required.**

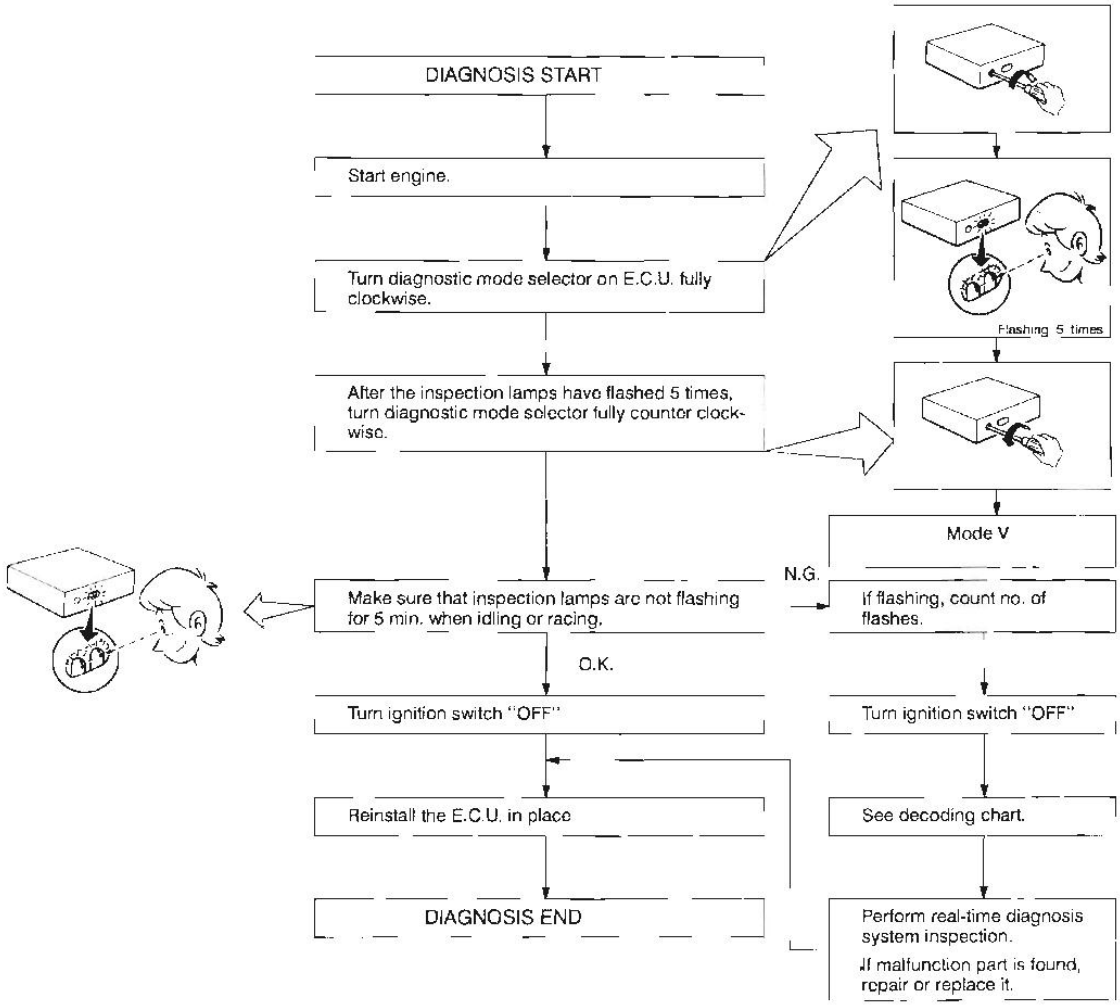
Mode V – Real–time diagnostic system

In real-time diagnosis, if the following items are judged to be working incorrectly, a malfunction will be indicated immediately.

- **Crank angle sensor (120° signal and 1° signal) output signal.**
- **Ignition signal**
- **Air flow meter output signal**

  Consequently, this diagnosis very effectively determines whether the above systems cause the malfunction, during the driving test. Compared with self-diagnosis, real-time diagnosis is very sensitive and can detect malfunctions instantly. However, items regarded as malfunctions in this diagnosis are not stored in E.C.U. memory.

Procedure

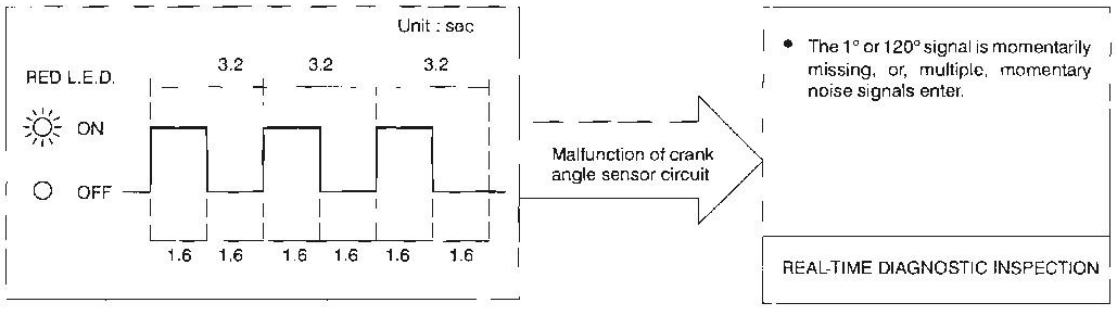


CAUTION:

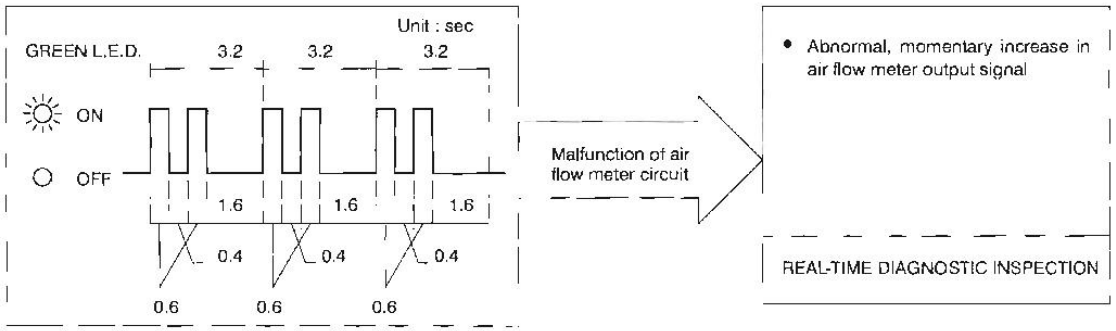
In real-time diagnosis, pay attention to inspection lamp flashing, E.C.U. displays the *malfunction codes only* once and does not memorise the inspection.

Mode V – Real-time diagnostic system

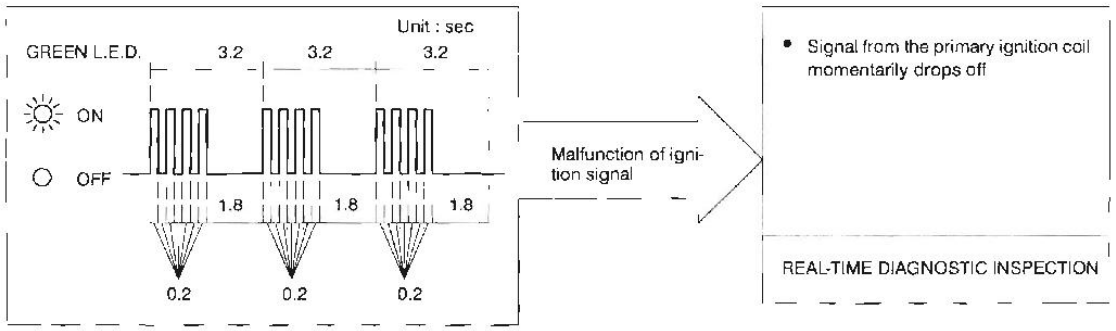
CRANK ANGLE SENSOR



AIR FLOW METER



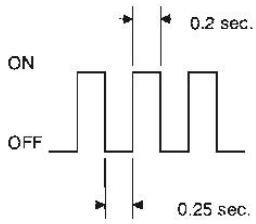
IGNITION SIGNAL



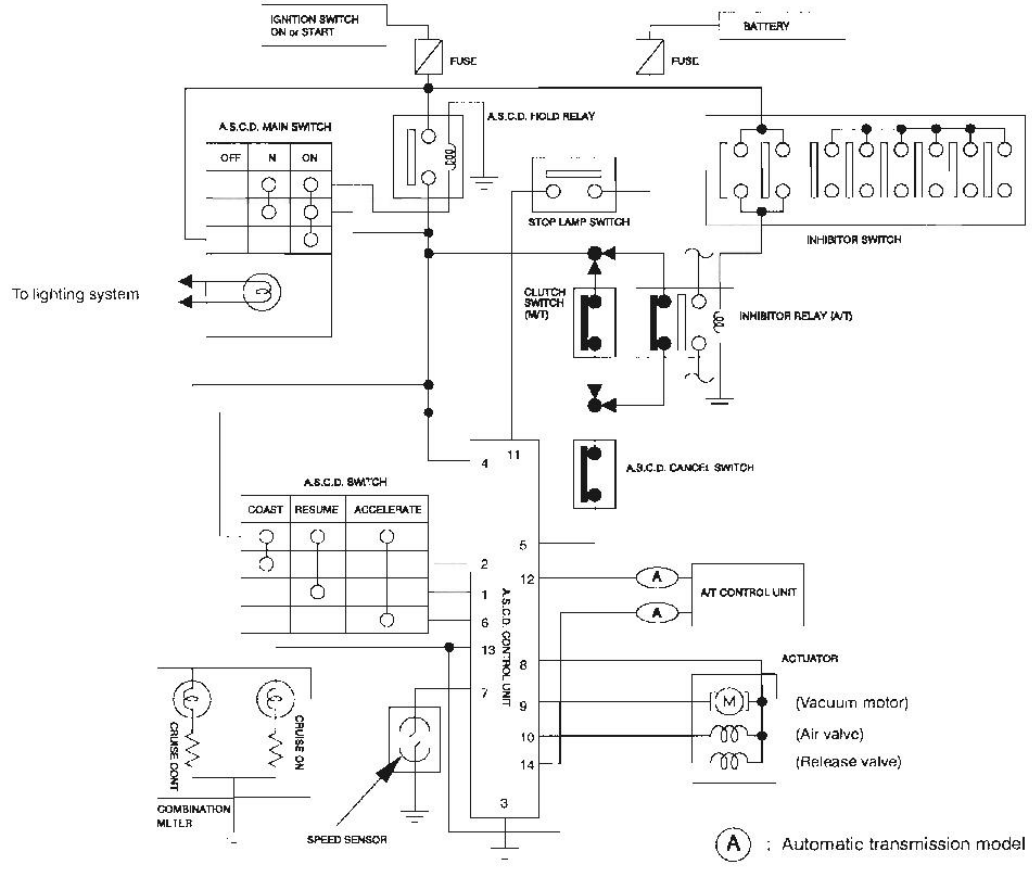
AUTOMATIC SPEED CONTROL DEVICE (A.S.C.D.)

Self Warning Function

If an open or short circuit occurs in the A.S.C.D. circuit, the "CRUISE" lamp will automatically blink as described below.

Cause	System operation	Warning lamp "CRUISE"	
		Indication	How to cancel the indication
Open or short circuit in the vacuum motor, release valve or air valve.	The A.S.C.D. system will be inoperative. The memorized vehicle speed will be canceled		Turn off the key switch or the A.S.C.D. main switch.
Open or short circuit in the A.S.C.D. control unit.			
The A.S.C.D. main switch turned ON with the A.S.C.D. switch ON [Incorrect operation, the A.S.C.D. switch inoperative (always ON)]			Turn off the A.S.C.D. main switch.
Failure of the A.S.C.D. cancel switch or the stop lamp switch to operate.	The A.S.C.D. system will be inoperative. the memorized vehicle speed will remain.		Turn off the A.S.C.D. cancel switch.

Schematic Diagram



MANUAL TRANSMISSION – FS5R30A

Major Features

1. This transmission features double baulk ring synchronizers on 2nd and 3rd gears to reduce shift control force.
2. A reverse synchronizer assembly has also been incorporated to prevent reverse gear from grating upon selection.

Gear ratio		Number of teeth	
		Main shaft	Counter shaft
1st	4.061	32	13
2nd	2.357	30	21
3rd	1.490	28	31
4th	1.000	–	–
O.D.	0.862	23	44
Reverse	4.125	30	12
Drive	–	20	33

Service Notes:

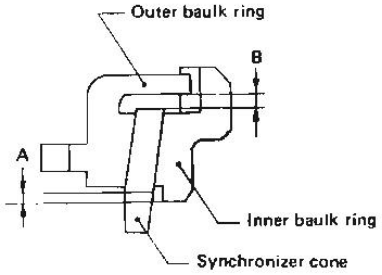
- Ensure the procedure on transmission installation regarding tension and sealing are adhered to as per the Workshop Manual.
- Oil change intervals are recommended every 40,000 km/2 years (max.)

  Clutch pedal free play 1 – 1.5 mm

  Clutch pedal free height 203 – 213 mm

Baulk Ring Clearances

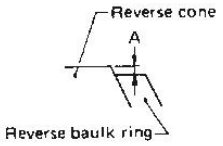
2nd and 3rd baulk ring



Dimension	Standard	Wear limit
A	0.6 – 1.1	0.2
B	0.7 – 0.9	

Distance between rear surface of reverse cone and reverse baulk ring

Unit: mm



	Standard	Wear limit
Dimension "A"	−0.1 tp 0.35	0.7

AUTOMATIC TRANSMISSION – RE4R01A

Major Features

1. Electronically controlled shift pattern.
2. Self diagnosis available.
3. Two drive modes available.
4. Lock-up available on D_3 (O/D cancel) and D_4.
5. Requires "Nissan Matic D" transmission fluid for correct operation.
6. No periodic maintenance is required.

Electronic Operation

The RE series transmission features 5 solenoids to control all forward gear change points, lock–up torque converter operation, overrun clutch operation and line pressure.

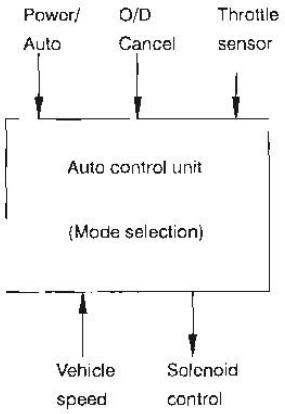
There are two driving modes available via selection of a dash mounted switch:

Auto Mode – shift points occur at lower vehicle speeds and smaller throttle opening. Most effective use is on highway (cruising).

Power Mode – shift points occur at higher vehicle speeds and wider throttle openings. Most effective for towing, quick acceleration and uphill driving, etc.

Note: – In this mode the "Power" light will illuminate.

– D_4 is still available if required.

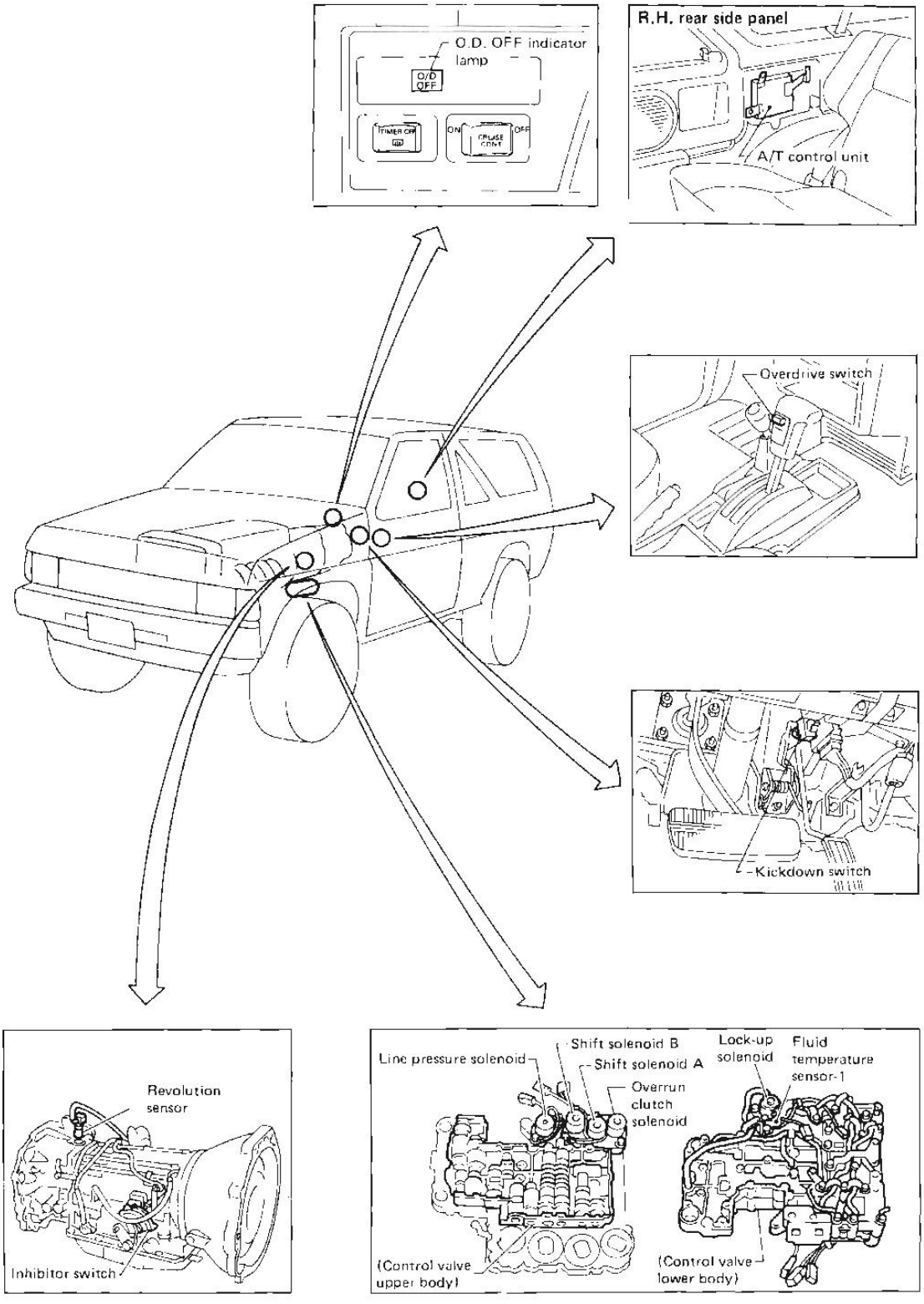


Together with the above, an overdrive cancel switch enables the driver to prevent D_4 operation whatever mode is selected. Lock–up is then available in D_3.

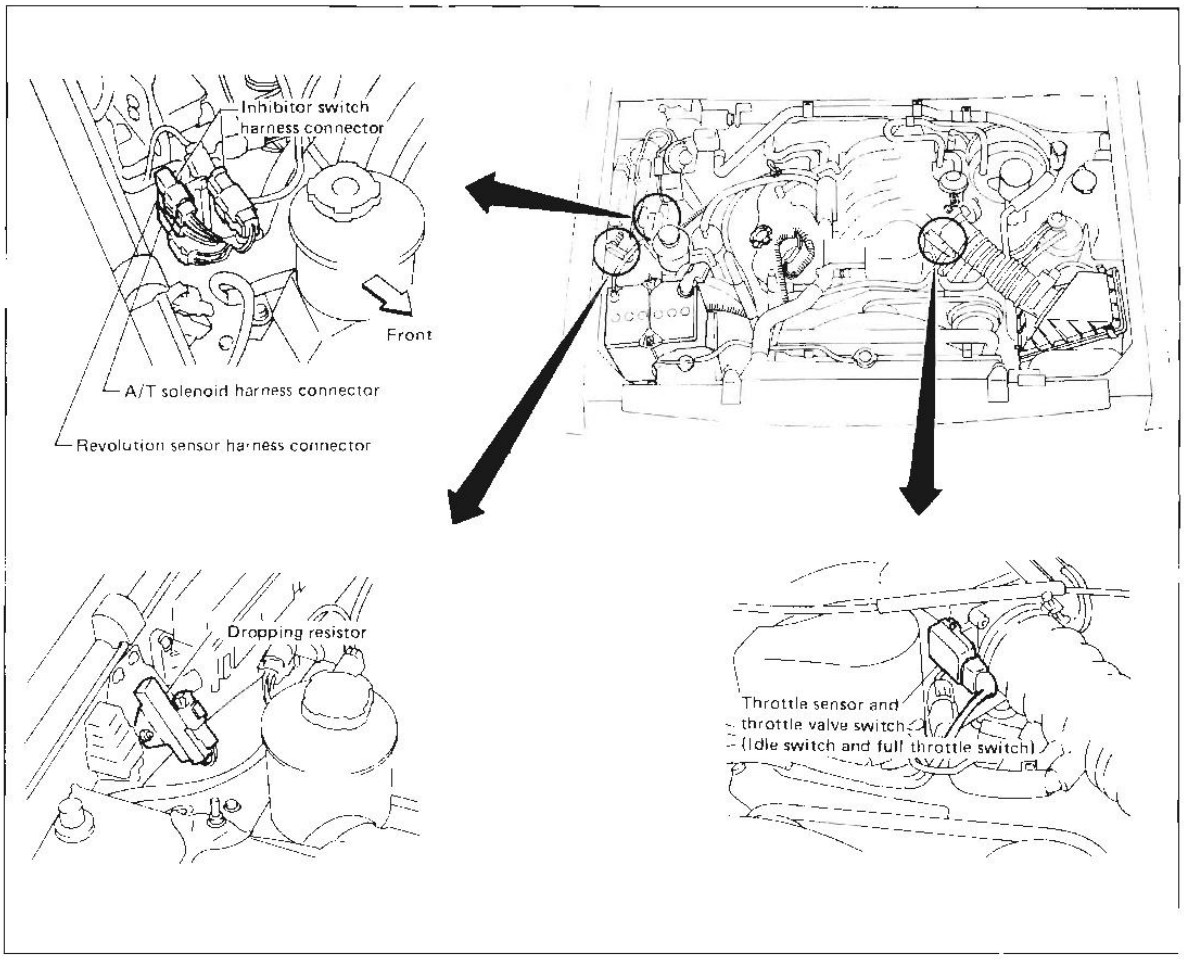
Vehicle speed when performing and releasing lock-up

Throttle position	O.D. switch (Shift range)	Vehicle speed km/h	
		Lock-up "ON"	Lock-up "OFF"
Full throttle	ON [D_4]	150 - 160	145 - 155
	OFF [D_3]	93 - 101	86 - 94
Half throttle	ON [D_4]	97 - 107	83 - 91
	OFF [D_3]	76 - 84	71 - 79

A/T Electrical Parts Location



A/T Electrical Parts Location – Engine Compartment



SELF DIAGNOSIS

A self diagnostic procedure has been incorporated within the E.C.U. to enable technicians easier diagnosis/repair of the automatic electronic system.

Due to the reliance on electronics for transmission operation a fail–safe system is also incorporates within the control unit. This system allows for limited operation of the transmission while enabling the vehicle to be driven safely. The power shift indicator lamp will indicate whether an electrical malfunction has been recorded.

FAIL–SAFE CONTROL

Shift Solenoids "A" and "B"

If a malfunction occurs in either solenoid circuit, (as solenoid switching is performed by the control unit, the solenoid will turn "off" due to a circuit failure), the control unit will turn the other solenoid off.

Under this condition with both solenoids off, and the selector lever in the "D" or 2 range, the transmission is locked in 3rd gear. Additionally, when the selector lever is in the 1 range, the transmission will be locked in 2nd gear.

Line Pressure Solenoid

If a malfunction occurs in the line pressure solenoid circuit, the solenoid drain will remain closed, this causing line pressure to increase to maximum.

Lock–up Solenoid

If a malfunction occurs in the lock–up solenoid circuit, the solenoid drain will remain closed preventing torque converter lock–up operation.

Overrun Clutch Solenoid

If a malfunction occurs in the overrun clutch solenoid, the solenoid drain will remain open, thus activating overrun clutch operation.

Note: This will allow engine braking on deceleration in all gears.

Vehicle Speed Sensor and/or Revolution Sensor

The vehicle speed sensor and revolution sensor inputs are used in parallel. Should one sensor fail, correct operation will still be maintained from the other sensor information.

If, however, both sensors fail, the transmission will not shift out of first gear. An exception of this is, if both sensors fail whilst driving in other that 1st gear. Under this condition, the transmission will shift to 3rd gear and stay there until such time that the ignition is switched off. When the vehicle is subsequently operated again, it will not shift out of 1st gear as above.

Throttle Sensor

The control unit substitutes information from the throttle switch idle and full throttle contacts and the kickdown switch to perform the following control functions.

- When the idle contacts are closed, line pressure is reduced to a minimum.
- When the full throttle contacts are closed, line pressure is increased to a maximum.
- When the kickdown switch contacts are closed, the control unit judges the throttle to be wide open.

Inhibitor Switch

If two or more inhibitor switch signals are received by the control unit at any one time, the control unit will assume the selector lever to be positioned in the following order of priority, reading from the left:

D > N > R > 2 > 1

> = Priority Over

e.g. 1) If D and R signals are received, the control unit will assume D position.

2) If R and 2 are received, the control unit will assume R position.

TRANSFER UNIT

Specifications

Transfer model			TX10A
Gear ratio	High		1.000
	Low		2.020
Number of teeth	Main gear		29
	Low gear		37
	Counter gear	High	38
		Low	24
	Front drive sprocket		41
	Front drive shaft		41
Oil capacity		Litres	2.2

Service Notes

- The Morse chain requires no periodic retensioning.
- Oil change is recommended every 40,000 km/2 years (Max.).
- Oil specification is Nissan Matic D. If unavailable the use of an appropriate gear oil will not cause adverse driveability problems.

DIFFERENTIALS

- Front differential – R200A.
- Rear differential – H233B.

Service Notes

- Oil change recommended at 40,000 km/2 Years (Max.).
- Ensure rear differential topped/refilled with a compatible L.S.D. oil.

BRAKE SYSTEM

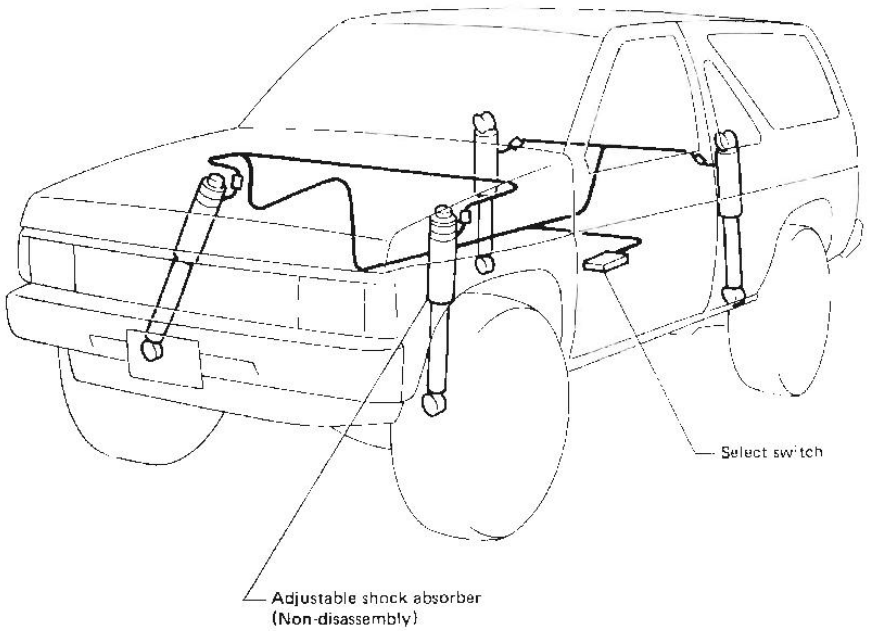
1. Front rotor size – ∅ 277x26 (mm)
2. Dual piston callipers used – CL28VD
3. Vacuum booster
   Upgraded from 9" normal to 7" & 8" tandem
   Upgraded from 5 X pedal effort to 8 X pedal effort
4. Rear drum brakes and handbrake remain unchanged

Service Notes

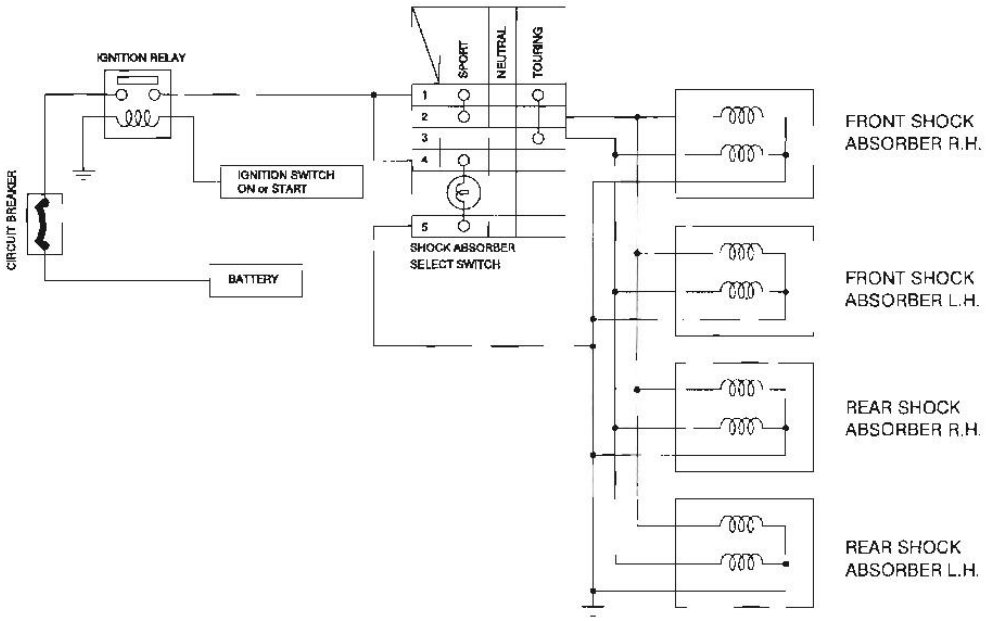
- Min. recommended brake fluid DOT 3
- Recommended brake fluid change – 40,000 km/2Years (Max.)
- Handbrake adjustment : 7 – 9 notches
- Number of notches when warning light switch comes on : 2 notches

ADJUSTABLE SHOCK ABSORBERS

The Ti Pathfinder is fitted with adjustable shock absorbers. Depending on road conditions the driver may select via a switch between SPORT or TOURING. This will vary the orifice size of the valving within the shock absorber, thereby increasing or decreasing its dampening action.



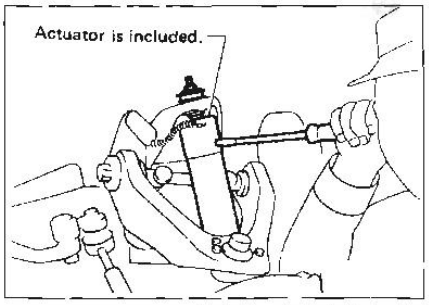
Schematic Diagram



Shock Absorber Check

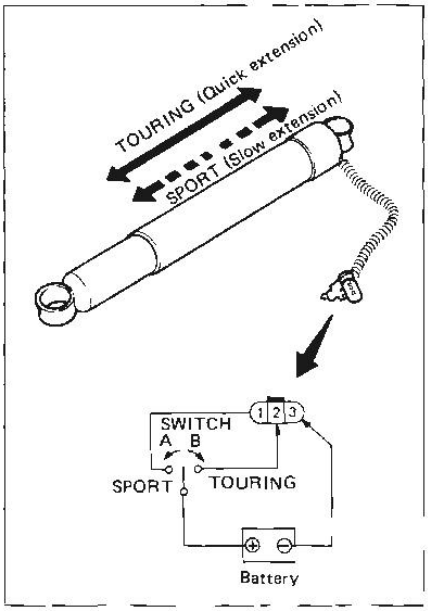
[Method A]

Attach a suitable tool to the shock absorber. Check operating sound of the actuator when the select switch is moved from one position (SPORT) to the other (TOURING) and vice versa.



[Method B]

1. Compress the shock absorber as much as possible.
2. Apply battery voltage across terminals (3 and ⊖ , 3 and 2) of the shock absorber.
3. Check if speed varies with expansion of the shock absorber when switching to A side and B side.
   If speed changes, the actuator is functioning properly. (In other words, oil passages in the shock absorber are properly switched by the actuator.)



Specifications

Applied model		Wagon	
		TI for Australia	
Shock absorber type	Standard	Adjustable	
Damping force [At 0.3 m/sec.] N (lb)		Touring	Sport
Expansion	2,501 – 3,285 (562 – 739)	2,491 – 3,295 (560 – 741)	2,972 – 3,933 (668 – 884)
Compression	883 – 1,275 (198 – 287)	716 – 1,069 (161 – 240)	1,334 – 1,903 (300 – 428)

NOTES