

DATSUN 280Z

SERVICE MANUAL

MODEL
130 SERIES



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32

NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

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FOREWORD

This service manual has been prepared for the purpose of assisting service personnel of authorized NISSAN/DATSUN dealers in providing effective service and maintenance of the 1975 Datsun280Z.

Since proper maintenance and service are absolutely essential in satisfying the Datsun owners, this manual should be kept in a handy place for ready reference and should be carefully studied.

This manual includes procedures for maintenance adjustments, minor service operations, removal and installation, and for disassembly and assembly of components.

Some of these service operations require the use of Special Tools especially designed for effective performance of service operations.

The special tools are presented in the "SE" section.

As you read through the maintenance procedures in this service manual, you will occasionally come across paragraphs headed NOTE or CAUTION. A NOTE is supplemental information that is important to a particular procedure. CAUTION warns of steps that must be followed to prevent personal injury and/or damage to some part of your DATSUN.

The Quick Reference Index on the first page enables the user to quickly locate the desired section. At the beginning of each individual section is a table of contents, which gives the page number on which each major subject begins. An index is placed at the beginning of each major subject within the section.

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

Rights for alteration at any time of specifications and methods are reserved.

Liability for any personal injury or property damage occasioned by the use of this service manual in effecting maintenance or repair of your Datsun is in no way assumed by Nissan Motor Co., Ltd.

Accordingly, anyone using a service procedure or tool which is not specifically recommended by Nissan must first completely satisfy himself that neither his safety nor the car's safety will be jeopardized by the service method selected.

NISSAN MOTOR CO., LTD
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SERVICE MANUAL

DATSUN 280Z
MODEL S30 SERIES



ISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION GI

C

GENERAL INFORMATION

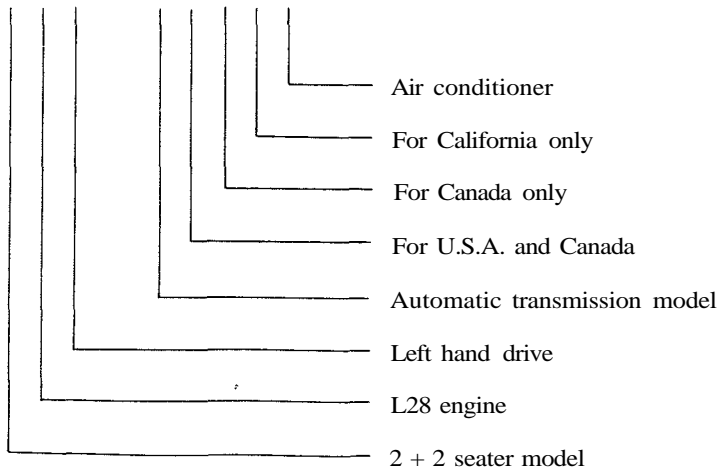
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MODEL VARIATION

Destination	Class	Model	Engine	Transmission model	Tire size	Differential gear carrier		
						Model	Gear ratio	
U.S.A.	All areas except California	2-seater	L28	HLS30U	F4W71B	175HR-14 195/70HR 14*	R200	3.545
				HLS30AU	3N71B			
		2 + 2-seater		GHLS30U	F4W71B			
				GHLS30AU	3N71B			
	California	2-seater		HLS30UV	F4W71B			
				HLS30AUV	3N71B			
		2 + 2-seater		GHLS30UV	F4W71B			
				GHLS30AUV	3N71B			
Canada	2-seater	HLS30UN	F4W71B					
		HLS30AUN	3N71B					
	2 + 2-seater	GHLS30UN	F4W71B					
		GHLS30AUN	3N71B					

Items with an asterisk "*": Optional equipment

G H L S 3 0 A U N V C



IDENTIFICATION NUMBERS

The unit and car numbers are stamped and registered at the factory.

The engine and car identification numbers are used on legal documents.

These numbers are used for factory communication such as Technical Report, Warranty Claim, Service Journal and other information.

CAR IDENTIFICATION PLATE

The car identification plate is located on the left hoodledge panel at the back of strut housing.

The plate contains the car type, engine capacity, maximum horsepower, wheelbase and engine and car serial numbers.

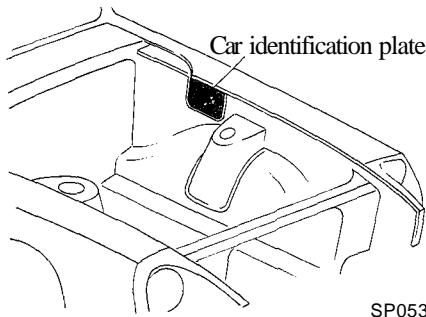
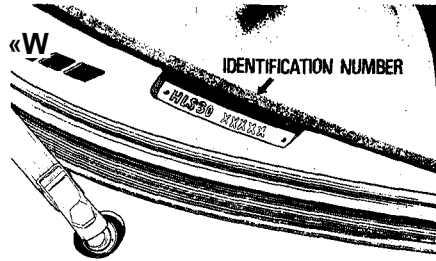


Fig. GI-1 Car identification plate location

CAR SERIAL NUMBER

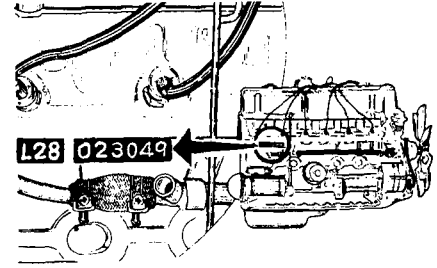
The car serial number is stamped on the instrument panel and can be seen from outside. The car number consists of the car model and the serial number.

(HLS30-XXXXX)



GI198

Fig. GI-2 Car serial number location

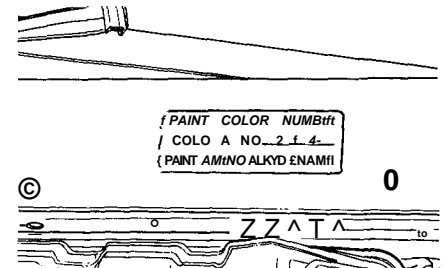


GI199

Fig. GI-3 Engine serial number location

COLOR CODE NUMBER LABEL

The body color number plate is attached on the top face of radiator core support.



GI200

Fig. GI-4 Body color number location

ENGINE SERIAL NUMBER

The engine serial number is stamped on the right side of the cylinder block.

The number is broken down as shown in the following Figure GI-3.

BODY AND UPHOLSTERY COLORS

Body color number	Body color	Upholstery color
1. 110*	Red	Black, Beige
2. 214	Brown Metallic	Black, Coffee Brown
3. 301	Bronze Metallic	Black, Coffee Brown
4. 302	Leaf Green Metallic	Black, Beige, Coffee Brown
5. 303	Green Metallic	Black, Beige, Coffee Brown
6. 304	Gold Metallic	Black, Beige, Coffee Brown
7. 305	Light Blue Metallic	Black, Beige
8. 306	Silver Metallic	Black
9. 307	Blue Metallic	Black, Beige
10. 904*	White	Black

Notes: a. Paint finish consists of two coats and one bake except for those marked with an asterisk, which indicates one coat and one bake.

b. The black-cloth upholstery color is optionally available for all body colors on Canada models.

APPROXIMATE REFILL CAPACITIES

		Liters	U.S. measure	Imper. measure
Fuel tank		65	17 X gal.	14 Yi gal.
Engine cooling system (with heater)	^	8.6 (9.4)	9 X qt. (10 qt.)	7 % qt. (8 yk qt.)
Engine crankcase	*2	4.7	5 qt.	4>£qt.
Transmission case	Manual	1.5	3 Kpt.	2 Kpt.
	Automatic	5.5	5 Kqt.	4Kqt.
Differential case		1.3	2 yk pt.	2 Kpt.

*1 Includes 0.8 liter @4 U.S.gal., H Imper. gal.) required for heater.

*2 Includes 0.7 liter (1 % U.S.pt., 1 1/4 Imper. pt.) required for oil filter replacement.

RECOMMENDED PETROL (Fuel)

Use an unleaded or low-lead gasoline with a minimum octane rating of 91 RON (Research Octane

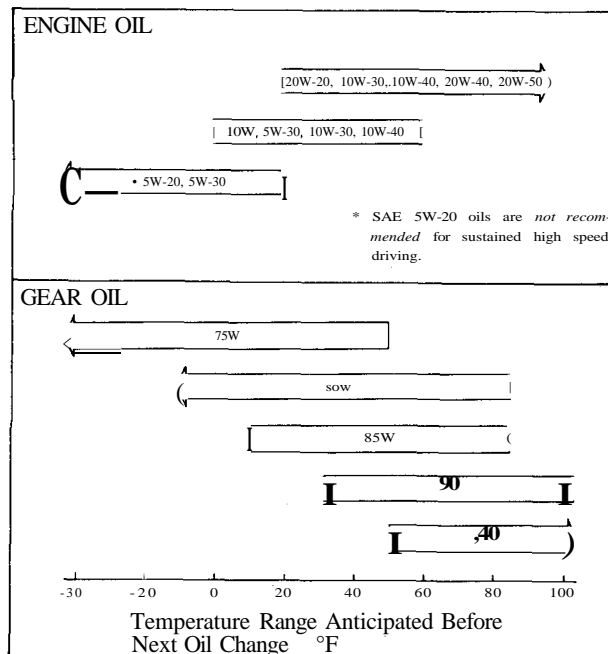
Number).

For cars which meet the California regulations (California Models), use

only unleaded gasoline to protect the catalytic converter from contamination.

RECOMMENDED LUBRICANTS

RECOMMENDED SAE VISCOSITY NUMBER



LUBRICANT SPECIFICATION

(For U.S.A. and Canada) from June 1, 1972.

Item		Specifications	Remarks
Gasoline engine oil		SAE Classification SD or SE	Furthermore refer to SAE recommended viscosity table. See Page 4.
Gear oil	Transmission and steering	API GL-4	_____
	Differential	API GL-5	_____
Automatic T/M fluid		Type DEXRON	_____
Multipurpose grease		NLGI2	Lithium soap base
Brake and clutch fluid		DOT 3	_____
Antifreeze		_____	Permanent anti-freeze (Ethylene glycol base)

LIFTING POINTS AND TOWING

JACK UP

PANTOGRAPH JACK

Place a jack under the position where sill flange is cut for identification. Do not jack up other positions.

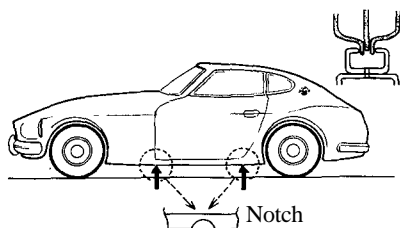


Fig. GI-5 Jacking point

GARAGE JACK

The front jacking point is center of front suspension member and rear is differential gear carrier.

Do not place a jack on the center portion of front suspension transverse link.

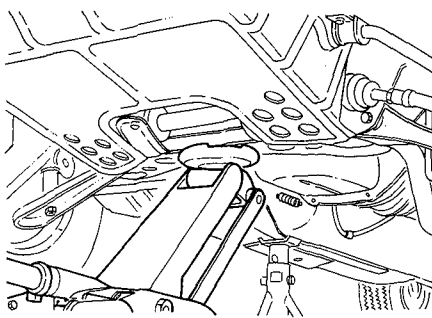


Fig. GI-6 Front jacking point

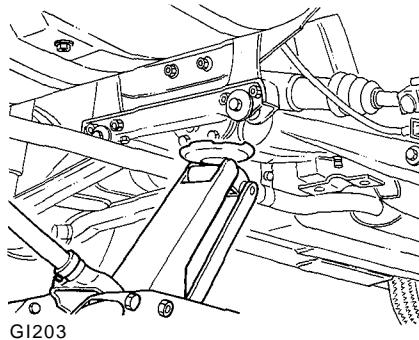


Fig. GI-7 Rear jacking point

supportable points are on both sides of front differential mounting cross-member.

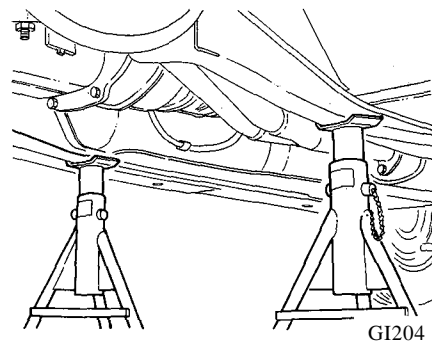


Fig. GI-8 Front supportable point

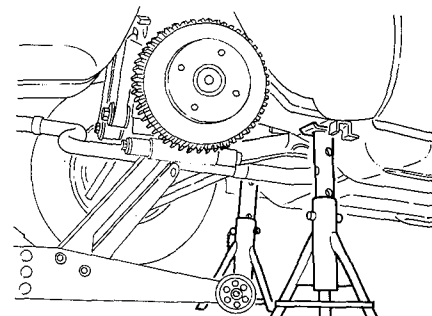


Fig. GI-9 Rear supportable point

SUPPORTABLE POINT

Front supportable points for stand are both front side members. Rear

TOWING

WARNING

Only front hooks may be used for towing purposes. When front hooks are used for towing, remove front apron and front fender front to prevent possible interference with towing rope.

Do not use rear hooks for towing, as these have been designed as tie-down hooks and are not strong enough to stand up to towing.

Be sure to remove rear hooks before delivery of car. If rear hooks are not removed, they may cause interference with rear safety bumper and spoil its rear end collision safety performance.

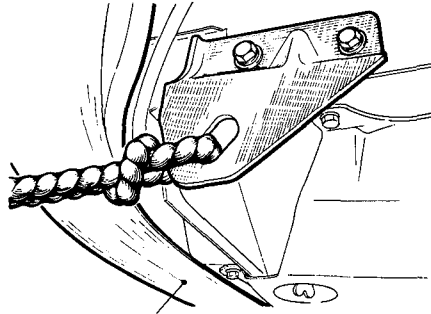
MANUAL TRANSMISSION MODEL

When car is to be towed forward, connect a rope securely to hook attached to front side member.

Before towing, make sure parking brake is released and transmission is in Neutral. See Figure GI-10.

Caution: Always pull the rope in a straight direction with respect to hook.

Do not apply force to hook in side directions.



Removing front apron and front fender front

WH163

Fig. GI-10 Front towing point

AUTOMATIC TRANSMISSION MODEL

Car may be towed safely on its rear wheels on the ground with select lever in "N" (Neutral) position of at speeds of less than 20 MPH (32 km/h). However, propeller shaft must be disconnected or car must be towed on its front wheels on the ground under the following conditions:

1. Tow speed of more than 20 MPH (32 km/h).
2. Car must be towed for a long distance (over 6 miles or 10 km).
3. Transmission is not operating properly.

If car is towed on its front wheels on the ground, steering wheel should be secured to maintain a straight ahead position.

TIE-DOWN HOOK

There are four tie-down hooks. Two of them are located on front side members, and the other two on rear panel.

Front tie-down hook attached to either side member is also used as a towing hook.

Note: When fastening chains to rear transverse link, wrap them around link to avoid interfering with any adjacent parts.

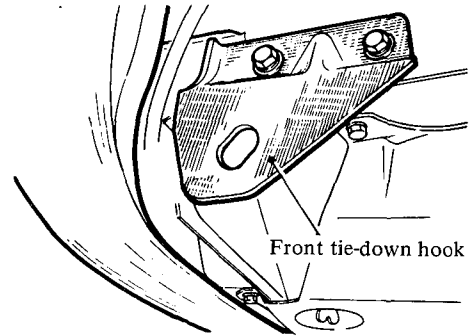


Fig. GI-11 Front tie-down hook

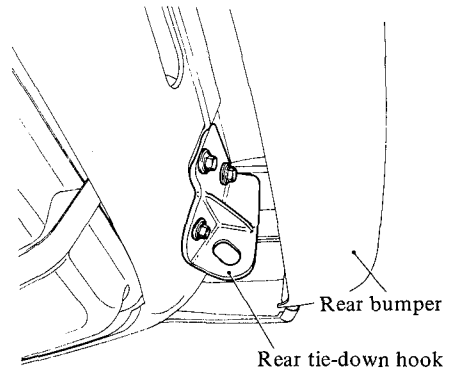


Fig. GI-12 Rear tie-down hook



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MODEL S30 SERIES**



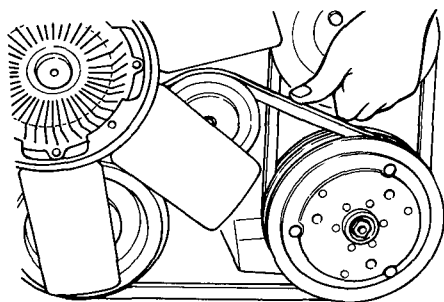
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SECTION ET

ET

**ENGINE
TUNE-UP**

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 TROUBLE DIAGNOSES AND FT gn
 CORRECTIONS LI, JU



ET194

Fig. ET-4 Cooler compressor belt tension

RETIGHTENING CYLINDER HEAD BOLTS, MANIFOLD NUTS AND CARBURETOR SECURING NUTS

Tightening torque:

Cylinder head bolts

1st turn:

4.0 kg-m (29 ft-lb)

2nd turn:

6.0 kg-m (43 ft-lb)

3rd turn:

6.5 to 8.5 kg-m

(47 to 61 ft-lb)

Manifold nuts

8 mm (0.315 in) dia. bolt

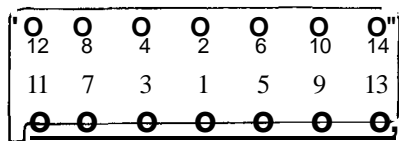
1.4 to 1.8 kg-m

(10.1 to 13.0 ft-lb)

10 mm (0.394 in) dia. bolt

4.5 to 5.5 kg-m

(32.5 to 39.8 ft-lb)



EM269

Fig. ET-5 Tightening sequence of cylinder head bolts

CHANGING ENGINE OIL

1. Check if oil is diluted with water or gasoline. Drain and refill oil if necessary.

Notes:

- A milky oil indicates the presence of cooling water. Isolate the cause and take corrective measure.
- An oil with extremely low viscosity indicates dilution with gasoline.

2. Check oil level. If below the specified level, raise it up to the H level.

Engine oil capacity

(including oil filter):

Maximum (H level)

4.7 (5 US qt, 4 Imp qt)

Minimum (L level)

3.7 (3 USqt, 3 Imp qt)

REPLACING OIL FILTER

Oil filter is of a cartridge type, and can be removed with Oil Filter Wrench ST19320000.

1. Check for oil leaks past gasketed flange. If any leakage is found, retighten just enough to stop leakage. If re tightening is no longer effective, replace filter as an assembly.

2. When installing oil filter, tighten by hand.

Note: Do not overtighten oil filter, lest leakage should occur.

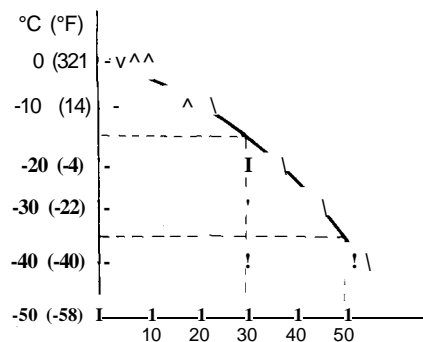
CHANGING ENGINE COOLANT

NISSAN LONG LIFE COOLANT (L.L.C.)

The L.L.C. is an ethylene glycol

base product containing chemical inhibitors to protect the cooling system from rusting and corrosion. The L.L.C. does not contain any glycerine or ethyl 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. The L.L.C. must not be mixed with other product. This coolant can be used throughout the seasons of the year.

Whenever coolant is changed, the cooling system must be flushed and refilled with a new coolant. Check the coolant level.



EG001

Fig. ET-6 Protection concentration

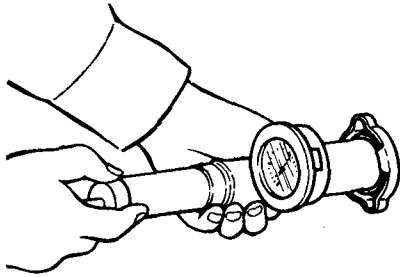
Percent concentration	Boiling point		Freeze protection
	Sea level	0.9 kg/cm ² (13 psi) cooling system pressure	
30%	106°C (221°F)	124°C(255°F)	-15°C(5°F)
50%	109°C (228°F)	127°C(261°F)	-35°C(-31°F)

CHECKING COOLING SYSTEM HOSES AND CONNECTIONS

Check hoses and fittings for loose connections or deterioration. Retighten or replace if necessary.

INSPECTION OF RADIATOR CAP

Apply reference pressure [0.9 kg/cm² (13 psi)] to radiator cap by means of a cap tester to see if it is satisfactory. Replace cap assembly if necessary.

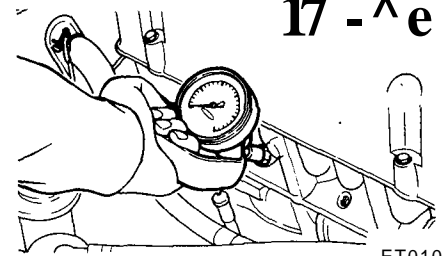


ET012

Fig. ET-7 Testing radiator cap

CHECKING VACUUM FITTINGS, HOSES, AND CONNECTIONS

Check fittings and hoses for loose connections or damage. Re tighten loose parts or replace parts that are not suitable for further use.



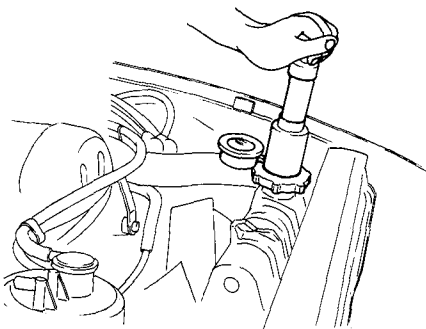
ET010

Fig. ET-9 Testing compression pressure

COOLING SYSTEM PRESSURE TEST

"With radiator cap removed, apply reference pressure [1.6 kg/cm² (23 psi)] to the cooling system by means of a tester to detect any leakage.

Water capacity (with heater):
9.4 (10 US gal, 8 Imp gal)



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Fig. ET-8 Cooling system pressure test

CHECKING ENGINE COMPRESSION

To check cylinder compression, it is essential to remove all spark plugs. The purpose of this test is to determine whether there is excessive leakage past piston rings, head gasket, etc. To test, engine should be heated to the operating temperature and throttle and choke valves opened.

Cylinder compression in cylinders should not be less than 80% of the highest reading. Different compression in two or more cylinder usually indicates an improperly seated valve or broken piston ring.

Low compression in cylinders can result from worn piston rings. This trouble may usually be accompanied by excessive fuel consumption.

TESTING RESULT

If cylinder compression in one or more cylinders is low, pour a small quantity of engine oil into cylinders through the spark plug holes and retest compression.

1. If adding oil helps the compression pressure, the chances are that piston rings are worn or damaged.
2. If pressure stays low, the likelihood is that valve is sticking or seating improperly.
3. If cylinder compression in any two adjacent cylinders is low, and if adding oil does not help the compression, there is leakage past the gasketed surface.

Oil and water in combustion chambers can result from this trouble.

Compression pressure kg/cm² (psi)/at rpm:

11.5 to 12.5 (164 to 178)

IGNITION AND FUEL SYSTEM

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CHECKING BATTERY

Check electrolyte level in each battery cell.

1. Unscrew each filler cap and inspect fluid level. If the level is low, add distilled water to bring the level up approximately 10 to 20 mm (0.39 to 0.79 in) above plates. Do not overfill.
2. Measure the specific gravity of battery electrolyte.

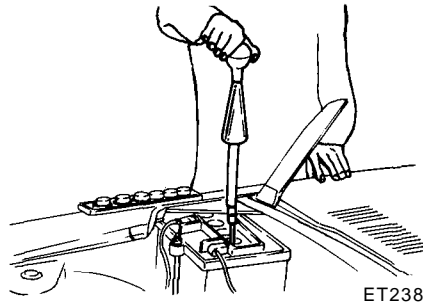


Fig. ET-10 Checking specific gravity of battery electrolyte

	Permissible value	Full charge value [at 20°C (68°F)]
Frigid climates	Over 1.22	1.28
Tropical climates	Over 1.18	1.23
Other climates	Over 1.20	1.26

Clean top of battery and terminals with a solution of baking soda and water. Rinse off and dry with compressed air. Top of battery must be clean to prevent current leakage between terminals and from positive terminal to hold-down clamp.

In addition to current leakage, prolonged accumulation of acid and dirt on top of battery may cause blistering of the material covering connector straps and corrosion of straps. After tightening terminals, coat them with petrolatum (vaseline) to protect them from corrosion.

CHECKING AND ADJUSTING IGNITION TIMING

1. Check spark plugs and distributor breaker points for condition.
2. Thoroughly remove dirt and dust

from crank pulley at timing mark location and front cover at timing indicator.

3. Warm up engine sufficiently.
4. Connect engine tachometer and timing light in their proper positions.
5. Adjust idling speed to 800 rpm by turning idle speed adjusting screw on manual transmission models.

On automatic transmission models, adjust it to about 700 rpm with selector lever in "D" range.

Caution: When selector lever is shifted to "D" range, apply parking brake and block both front and rear wheels with chocks.

6. Check ignition timing with a timing light to ensure that it is adjusted to specifications indicated in the chart below.

	Ignition timing	
	Non-California model	California model
Manual transmission	7° B.T.D.C/800 rpm (Retarded) 13° B.T.D.C/800 rpm (Advanced) *	10° B.T.D.C/800 rpm
Automatic transmission (in "D" range)	7° B.T.D.C/700 rpm (Retarded) 13° B.T.D.C/700 rpm (Advanced)	10° B.T.D.C/700 rpm

*: After engine warming up, ignition timing is retarded. Advanced ignition timing adjustment is necessary only when adjusting phase difference.

- If necessary, adjust it as follows.
- (1) Loosen set screw until distributor can be moved by hand.
 - (2) Adjust ignition timing to specifications.
 - (3) Lock distributor set screw, and make sure that timing is correct.

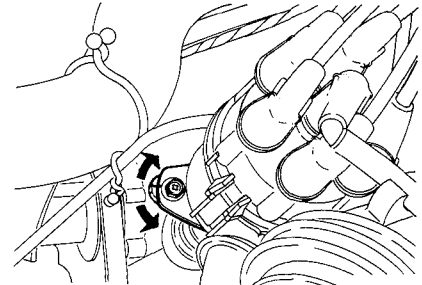
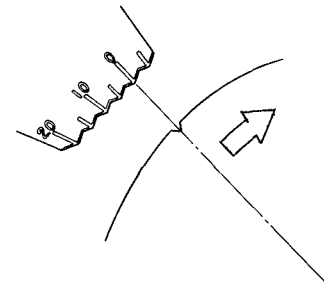


Fig. ET-11 Adjusting ignition timing

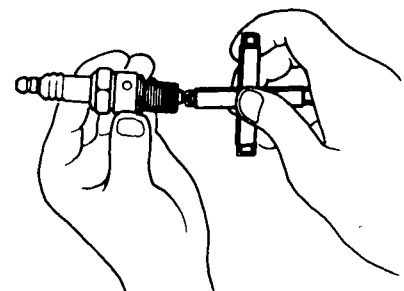


ET240

Fig. ET-12 Ignition timing indicator

CHECKING AND REPLACING SPARK PLUGS

Remove and clean plugs in a sand blast cleaner. Inspect each spark plug. Make sure that they are of the specified heat range. Inspect insulator for cracks or chips. Check both center and ground electrodes. If they are excessively worn, replace with new spark plugs. File center electrode flat. Set the gap to 0.8 to 0.9 mm (0.031 to 0.035 in) using the proper adjusting tool. Tighten plugs to 1.5 to 2.0kg-m (11 to 14 ft-lb) torque.



EE080

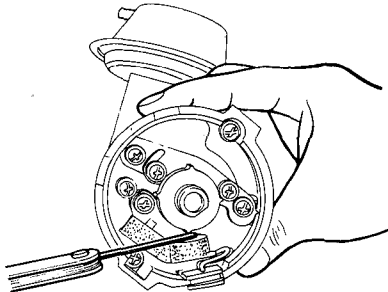
Fig. ET-13 Checking spark plug gap

CHECKING OPERATING PARTS OF DISTRIBUTOR AND IGNITION WIRING AIR GAP

Standard air gap is 0.2 to 0.4 mm (0.008 to 0.016 in) (both single gap and dual gap distributors).

If the gap is off the standard, adjustment should be made by loosening pick-up coil screws. Gap gauge is required for adjustment.

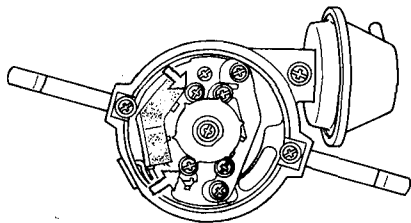
Air gap:
0.2 to 0.4 mm
(0.008 to 0.016 in)



ET241

Fig. ET-14 Measuring air gap

Remove rubber cap from tip end of rotor shaft. Check grease and, if necessary, add. To remove pick-up coil, remove two pick-up coil assembly securing screws and core screws clamping primary lead wire. Install new pick-up coil assembly in reverse sequence of removal.



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Fig. ET-15 Removing pick-up coil

DISTRIBUTOR

Check the centrifugal mechanical parts for loose connection, sticking of spring, or excessive or local wear.

If found to be in good condition, then check advance characteristics using a distributor tester. For test procedure and reference data, refer to Distributor in Section EE.

If vacuum advance unit fails to operate properly, check the following items and correct as necessary:

1. Check vacuum inlet for leakage at connection. If necessary, retighten or replace.
2. Check vacuum diaphragm for air leak.

If leak is found, replace diaphragm.

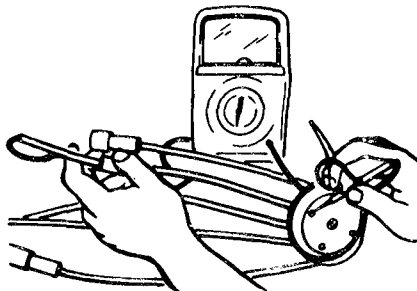
3. Inspect breaker plate for smooth operation.

If plate does not move smoothly, this may be caused by sticky steel balls or pivot. Apply grease to steel balls or, if necessary, replace breaker plate as an assembly. Refer to Section EE, Distributor, as regards vacuum advance characteristics.

HIGH TENSION CABLE

Use an ohmmeter to check resistance on high tension cables. Disconnect cables from spark plugs and remove distributor together with high tension cables. Do not remove cables from cap. Connect the ohmmeter between cable terminal on the spark plug side and the corresponding electrode inside cap.

If the resistance is more than 30,000 ohms, remove cable from cap and check the cable resistance only. If resistance is still more than 30,000 ohms, replace cable assembly.



EF125

Fig. ET-16 Checking high tension cable

CHECKING DISTRIBUTOR CAP ROTOR

Note: This operation is to be performed while checking distributor points. Inspect distributor cap for cracks and flash over.

External surfaces of all parts of secondary system must be cleaned to reduce possibility of voltage loss. All wires should be removed from distributor cap and coil so that terminals can be inspected and cleaned. Burned or corroded terminals indicate that wires are not fully seated, which causes arcing between end of wire and terminal. When replacing wires at terminal, be sure they are fully seated before pushing rubber nipple down over tower. Check distributor rotor for damage, and distributor cap for cracks.

Apply grease through the top of distributor shaft.

ADJUSTING ENGINE IDLE RPM

As the electronic fuel injection system is used in the engine, air-fuel mixture ratio adjustment cannot be made. Consequently, measurement of CO percentage is not necessary when making idle adjustment.

Cautions:

- a. On automatic transmission models, checks should be performed with the lever shifted to the "D" range. Be sure to engage parking brake and to lock both front and rear wheels with wheel chocks.
- b. Depress brake pedal while accelerating the engine to prevent forward surge of car.
- c. After idle adjustment has been made, shift the lever to the "N" or "P" range and remove wheel chocks.

1. Warm-up engine sufficiently.
2. Adjust idle speed adjusting screw until specified engine speed is reached as follows:

Engine Tune-up

Engine speed:

Manual transmission:

800 rpm

Automatic transmission
(in "D" range):

700 rpm

3. Check ignition timing. If necessary, adjust it to specifications.

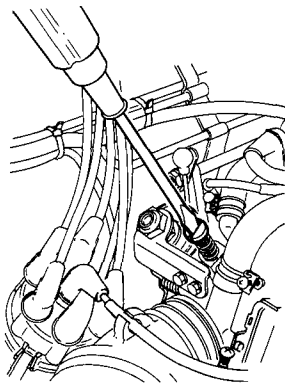


Fig. ET-17 Adjusting idling speed

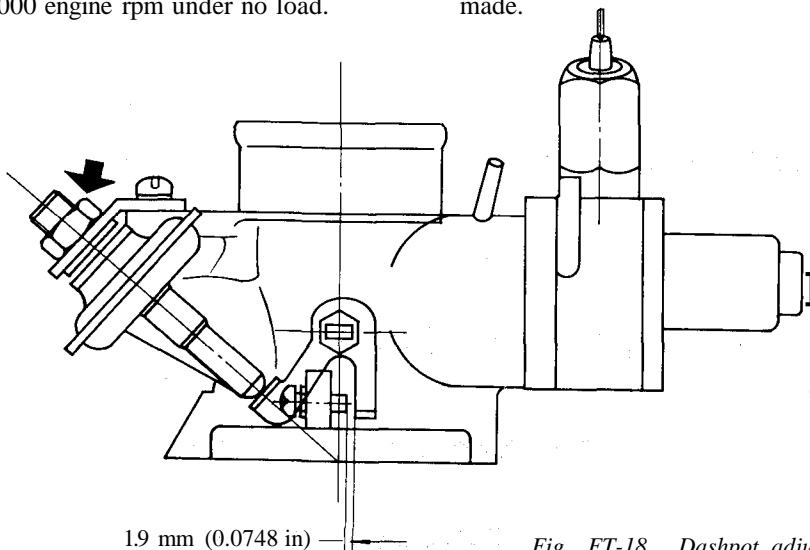
	Ignition timing	
	Non-California model	California model
Manual transmission	7° B.T.D.C/800 rpm (Retarded) 13° B.T.D.C/800 rpm (Advanced) *	10° B.T.D.C/800 rpm
Automatic transmission (in "D" range)	7° B.T.D.C/700 rpm (Retarded) 13° B.T.D.C/700 rpm (Advanced) *	10° B.T.D.C/700 rpm

*: After engine warming up, ignition timing is retarded. Advanced ignition timing adjustment is necessary only when adjusting phase difference.

Dashpot adjustment

Make sure that the clearance between idle setscrew (preset at the factory) and throttle lever is 1.9 mm (0.0748 in). Use shim(s) or suitable gauge to measure the clearance. A clearance of 1.9 mm (0.0748 in) between these two points corresponds to 2,000 engine rpm under no load.

Check that the dashpot rod end closely touches throttle lever when dashpot rod is fully extended (or when no back pressure is present at diaphragm). If necessary, loosen nut (shown by an arrow) and turn dashpot assembly until correct adjustment is made.



ET425

Fig. ET-18 Dashpot adjustment

ET-8

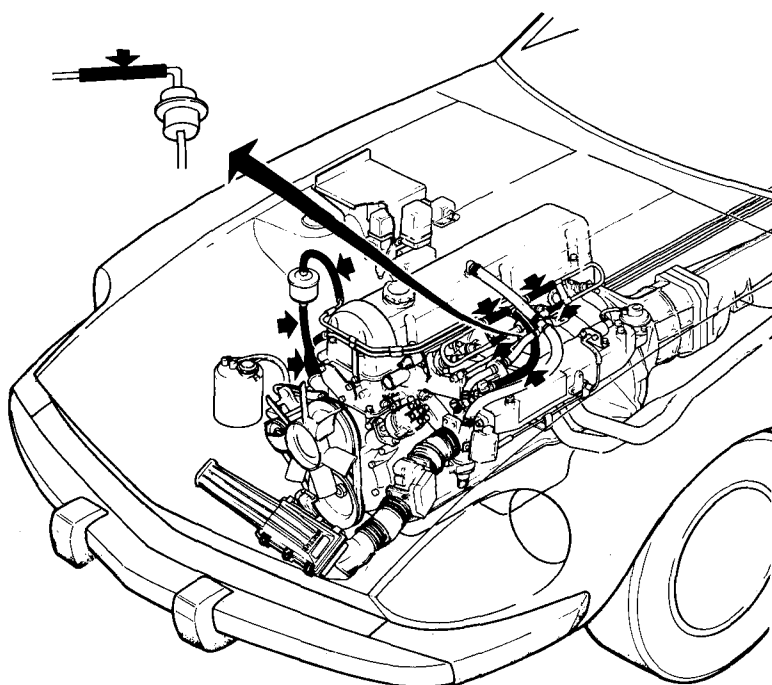
CHECKING FUEL LINES (HOSES, PIPING CONNECTIONS, ETC.)

Check fuel hoses for leakage, loose connections, cracks or deterioration.

Retighten loose connections and replace any damaged or deformed parts. Replace any rubber fuel hose whose inner surface is deformed, scratched or chafed.

REPLACING RUBBER FUEL HOSES IN ENGINE COMPARTMENT

The rubber fuel hoses in the engine compartment which are shown by arrows in Figure ET-19, should be replaced every 40,000 km (25,000 miles).



Rubber fuel hoses in the engine compartment which require periodic replacement are shown in the illustration below.

Fig. ET-19 Fuel rubber hoses in engine compartment

<i>Rubber Hose Name</i>	Length mm (in)	Number
Rubber Hose - Fuel Tube to Fuel Filter	180 (7.09)	1
Rubber Hose - Fuel Filter to Fuel Pipe A	240 (9.45)	1
Rubber Hose - 4 Way Connector to Fuel Pipe B	95 (3.740)	1
Rubber Hose - Fuel Pipe B to Pressure Regulator	45 (1.772)	1
Rubber Hose - 4 Way Connector to Fuel Pipe C	95 (3.740)	1
Rubber Hose - Fuel Pipe C to Pressure Regulator	45 (1.772)	1
Rubber Hose - Pressure Regulator to Fuel Return Pipe	95 (3.740)	1
Rubber Hose - Fuel Return Pipe to Fuel Tank	500(19.69)	1
Rubber Hose - 4 Way Connector to Cold Start Valve	275(10.83)	1
Rubber Hose - Fuel Pipe B to Injector	38 (1.496)	3
Rubber Hose - Fuel Pipe C to Injector	38 (1.496)	3

Replacing injector hose

When replacing injector hoses (as recommended in the Periodical Maintenance), proceed as follows:

1. Remove injector as outlined in Steps 1 through 14 under heading "Removal and Installation".
2. Cut metal band caulking injector hose to injector with a grinding wheel or file.

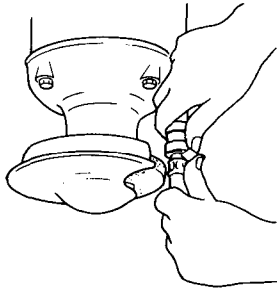


Fig. ET-20 Cutting metal band caulking injector hose to injector

Cautions:

- a. Be careful not to scratch any adjacent parts.
- b. Place a clean rag over injector to prevent metal chips from contacting injector nozzle.
- c. Hold injector when filing it. Never place it in a vice.
- d. If a grinding wheel is used in place of file, be careful not to allow injector becoming too hot as this can damage internal coil.

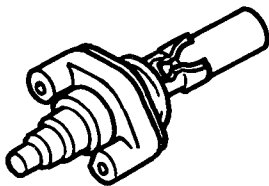


Fig. ET-21 Cutting metal band

3. Remove metal band with a pair of pliers.
4. Disconnect injector hose.
5. Install new injector hose, and secure with hose clamp designed for the purpose. Install clamp as close to injector as possible so that hose clamp screw is positioned with respect to electric connector as shown in Figure EF-140.

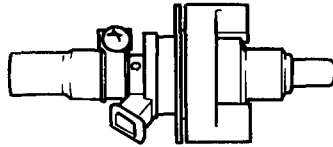


Fig. ET-22 Installing injector hose

Hose clamp tightening torque:
0.1 to 0.15 kg-cm
(1.4 to 2.1 in-oz)

Cautions:

- a. Do not reuse injector gasket and O-rings after removal.
- b. Do not reuse fuel hose clamps after loosening.
- c. Before assembling parts, remove dust and dirt with compressed air.
- d. Be sure to install 13.5 mm (0.531 in) hose clamps on the injector and fuel pipe side. Each clamp has a size mark on it.
- e. Replace hoses which have been scratched or deformed.
- f. After inserting fuel hose into fuel pipe securely, clamp at a position 10 mm (0.394 in) from the hose end.

REPLACING FUEL FILTER

The fuel filter is designed especially for use with the electronic fuel injection system. It should be replaced as an assembly every 40,000 km (25,000 miles).

For removal and installation procedures, refer to section "Engine Fuel".

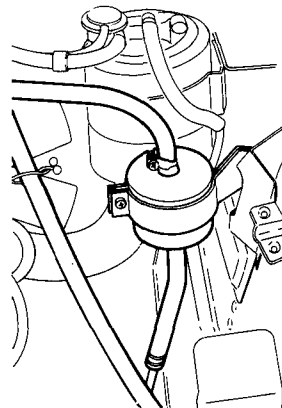


Fig. ET-23 Fuel filter

ET-10

CHECKING AIR REGULATOR HOSES

Check air regulator hoses for leakage, cracks and deterioration.

Retighten loose connections and replace any parts if they are damaged or deformed.

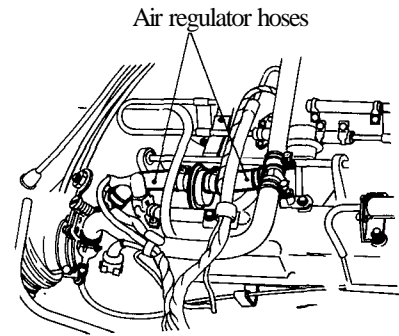


Fig. ET-24 Air regulator hoses

REPLACING AIR CLEANER ELEMENT

The viscous paper type air cleaner element does not require any cleaning operation between renewals.

Brushing or blasting operation can cause a clogged element. This in turn reduces air intake efficiency, resulting in poor engine performance.

For replacement intervals of air cleaner element, refer to "Maintenance Schedule".

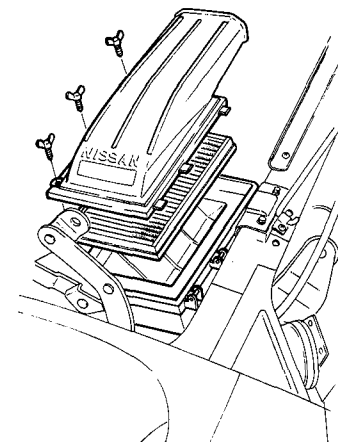


Fig. ET-25 Air cleaner element

EMISSION CONTROL SYSTEM

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CHECKING CRANKCASE EMISSION CONTROL SYSTEM

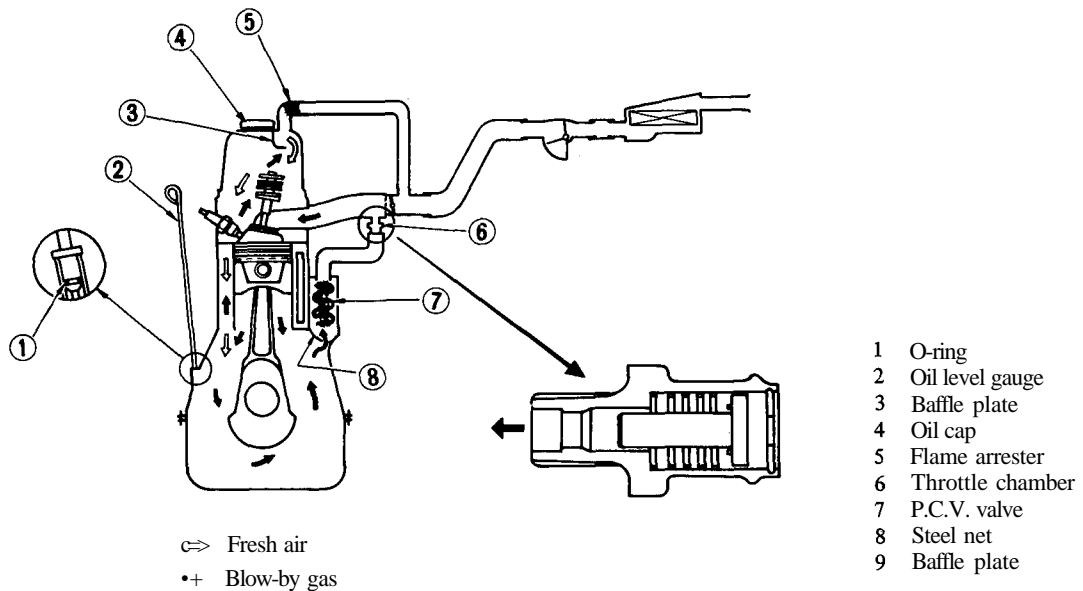


Fig. ET-26 Crankcase emission control system

Engine Tune-up

P.C.V. VALVE

Check P.C.V. valve in accordance with the following method.

With engine running at idle, remove the ventilator hose from P.C.V. valve. If the valve is working, a hissing noise will be heard as air passes through the valve and a strong vacuum should be felt immediately when a finger is placed over valve inlet.

Replace P.C.V. valve in accordance with the maintenance schedule.

VENTILATION HOSE

1. Check hoses and hose connections for leaks.
2. Disconnect all hoses and clean with compressed air.

If any hose cannot be freed of obstructions, replace.

Ensure that flame arrester is surely inserted in hose between throttle chamber and rocker cover.

ADJUSTMENT OPERATING PRESSURE OF BOOST CONTROLLED DECELERATION DEVICE (B.C.D.D.)

CHECKING B.C.D.D. CIRCUIT WITH FUNCTION TEST CONNECTOR

Caution: Do not attach test leads of a circuit tester to those other than designated.

Manual transmission models

1. Check for continuity between A and B when car is brought to a complete stop. Refer to Figure ET-25.
- B.C.D.D. circuit is functioning properly if continuity exists and voltmeter reading is 0 volts (d-c) in step 2 below.

If continuity does not exist, check for disconnected connector and/or faulty amplifier, speed detecting switch or B.C.D.D. solenoid valve.

2. Check for presence of voltage across A and B [at a speed of more than 16 km/h* (10 MPH)]. Refer to Figure ET-25.

* Conduct this test by one of the following two methods.

- 1) Raising up rear axle housing with stand.
- 2) Chassis dynamometer test

- If voltmeter reading is 0 volt at a speed of more than 16 km/h (10 MPH), circuit is functioning properly.
- If voltmeter reading is not 0 volt, check for disconnected connector, burned fuse, faulty amplifier, B.C.D.D. solenoid valve or speed detecting switch.

3. If, by above checks, faulty part or unit is located, it should be removed and tested again. If necessary, replace.

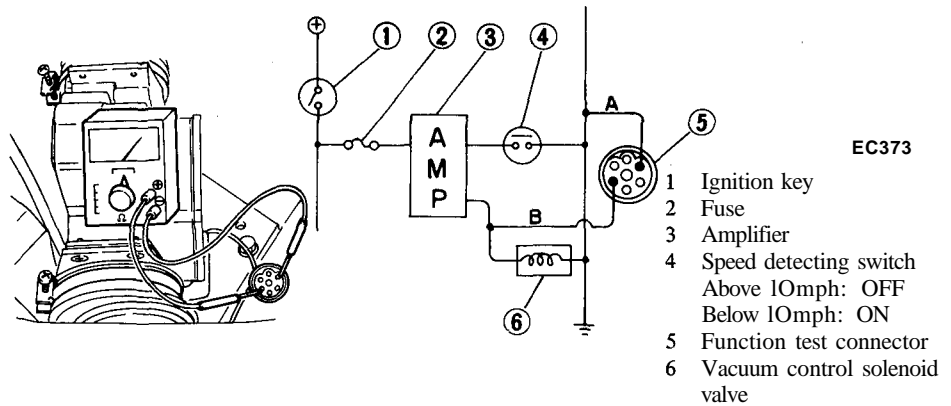


Fig. ET-27 Checking B.C.D.D. circuit with function test connector (for manual transmission)

Automatic transmission models

1. Turn ignition key to "ON" position.
2. With inhibitor switch "ON" ("N" or "P" range), check for presence of voltage across A and B. Refer to Figure ET-25.

- If voltmeter reading is 12 volts (d-c), B.C.D.D. circuit is functioning properly.
 - If voltmeter reading is zero, check for disconnected connector, faulty solenoid valve or inhibitor switch.
3. With inhibitor switch "OFF"

("1", "2", "D" or "R" range), check for resistance between A and B. Refer to Figure ET-25.

- If ohmmeter reading is 15 to 28 ohms, circuit is functioning properly.
 - If ohmmeter reading is not above, check for poor connection of connector, faulty B.C.D.D. solenoid valve or inhibitor switch.
4. If, by above checks, faulty part or unit is located, it should be removed and tested again. If necessary, replace.

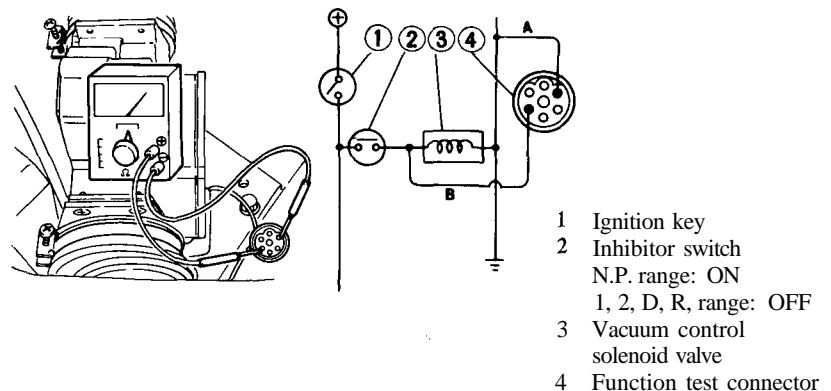


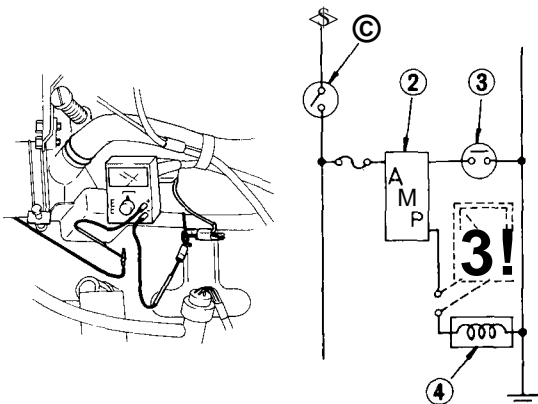
Fig. ET-28 Checking B.C.D.D. circuit with function test connector

Checking vacuum control solenoid valve

1. Turn on engine key. (Do not start engine.)
2. Ensure that solenoid valve clicks when intermittently electrified as shown in Figure ET-28.
3. If a click is heard, solenoid valve is normal.
4. If a click is not heard at all, check for continuity with a circuit tester. If discontinuity is detected, replace solenoid valve.

Checking amplifier (Manual transmission models)

The amplifier is installed at the rear



- 1 Ignition key
- 2 Amplifier
- 3 Speed detecting switch
Above 10 mph : OFF
Below 10 mph : ON
- 4 B.C.D.D. solenoid valve

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Fig. ET-29 Checking amplifier

Checking inhibitor switch (Automatic transmission models)

Refer to the TM section.

Adjustment of set pressure of B.C.D.D.

Generally, it is unnecessary to adjust the B.C.D.D., however, if it should become necessary to adjust it, the procedure is as follows:

Prepare the following tools

1. Tachometer to measure the engine speed while idling, and a screwdriver.
2. A vacuum gauge and connecting pipe.

Note: A quick-response type boost

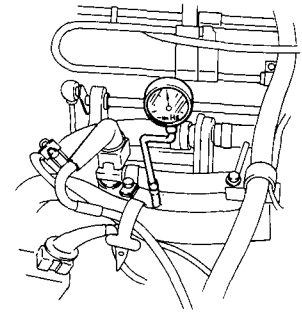
of the speedometer. To check, proceed as follows:

1. Set circuit tester in d-c ampere range (1A min, full scale), connect test probes of tester as shown in Figure ET-29.

Do not confuse positive line with negative line.

2. Turn ignition key to "ON" position.
3. Ensure that tester pointer deflects when ignition key is turned on.
4. If tester pointer does not deflect when solenoid valve and speed detecting switch circuits are functioning properly, amplifier is faulty.

2. Connect rubber hose between vacuum gauge and intake manifold as shown in Figure ET-33.



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Fig. ET-31 Connecting vacuum gauge

3. Warm up the engine until it is heated to operating temperature.

Then adjust the engine at normal idling setting. (Refer to the item "Idling Adjustment" in page ET-7.)

Idling engine speed

Manual transmission

800 rpm

Automatic transmission

(in "D" position)

700 rpm

4. Run the engine under no load. Increase engine speed to 3,000 to 3,500 rpm, then quickly close throttle valve.

5. At that time, the manifold vacuum pressure increases abruptly to -600 mmHg (-23.62 inHg) or above and then gradually decreases to the level set at idling.

6. Check that the B.C.D.D. set pressure is within the specified pressure.

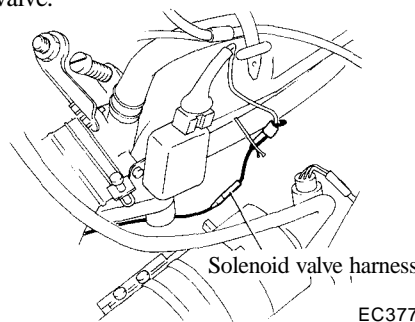
Specified pressure (0 m, sea level and 760 mmHg (30 inHg) atmospheric pressure)

Manual transmission:

-460 to -480 mmHg
(-18.1 to -18.9 inHg)

Automatic transmission:

-460 to -480 mmHg
(-18.1 to -18.9 inHg)



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Fig. ET-30 Removing harness of solenoid valve

Notes:

- a. When atmospheric pressure is known, operating pressure will be found by tracing the arrow line "A". See Figure ET-34. When altitude is known, operating pressure will be found by tracing the arrow line "B". See Figure ET-34.

Engine Tune-up

b. When checking the set pressure of B.C.D.D., find the specified set pressure in Figure ET-32 from the atmospheric pressure and altitude of the given location.

For example, if the car is located at an altitude of 1,400 m (4,600 ft), the specified set pressure for B.C.D.D. is 396 mmHg (15.6 inHg).

8. Race the engine and check for adjustment.

9. If it is lower than the set level, turn the adjusting screw clockwise until correct adjustment is made.

10. Race the engine and check for adjustment.

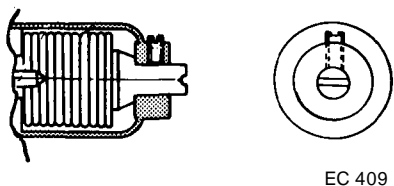
If engine speed cannot be decreased to idling when checking B.C.D.D. set pressure, proceed as follows:

When the engine speed does not fall to idling speed, it is necessary to reduce the negative idling pressure of the manifold to lower than the set pressure of the B.C.D.D. (The engine speed will not drop to idling speed when the negative idling pressure is higher than the set pressure of the B.C.D.D.).

In this case, the engine must be labored by (1) road test or (2) chassis

dynamometer or (3) by raising up rear suspension member on a stand, accelerating the car to 64 to 80 km/h (40 to 50 MPH) in top gear (manual transmission) or in "D" range (automatic transmission), and then releasing the accelerator pedal and letting the car decelerate. After doing this, check whether the B.C.D.D. set pressure is at the predetermined value or not.

7. If it is higher than the set level, turn the adjusting screw counterclockwise until correct adjustment is made.



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Fig. ET-32 Adjusting set pressure

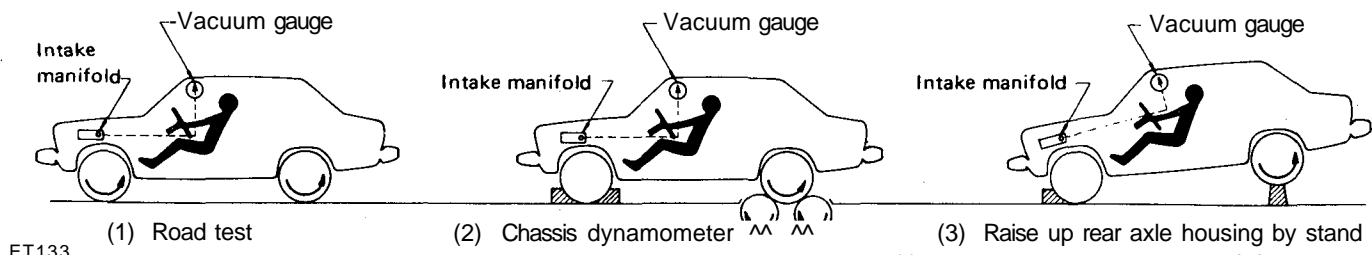
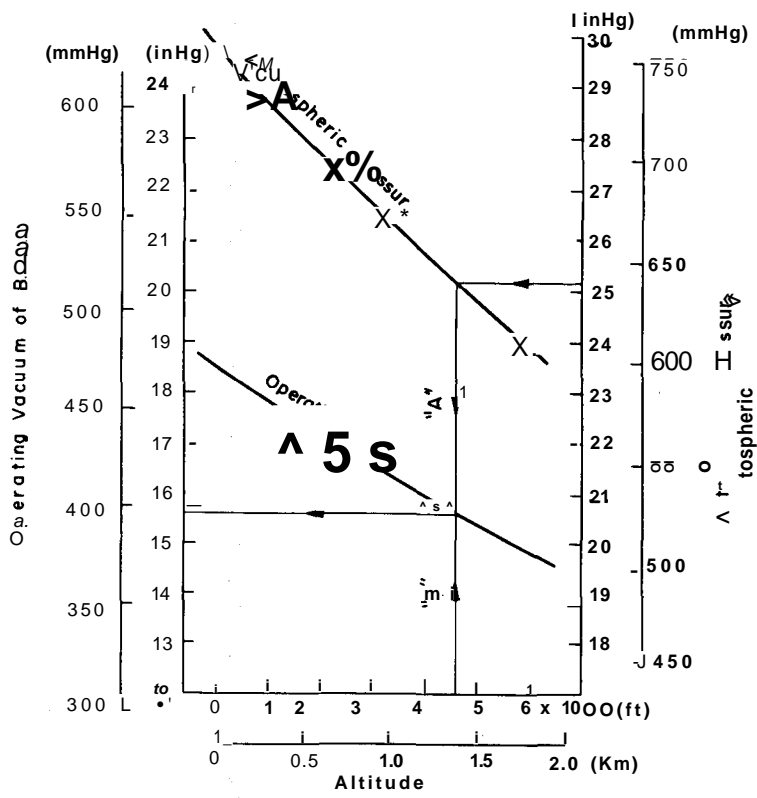


Fig. ET-33 Testing operating pressure of the B. C.D.D.



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Fig. ET-34 Changes in operating pressure versus changes in atmospheric pressure altitude