DATSUN 280ZX

Model S130 Series



SECTION



ET

ENGINE TUNE-UP

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		L WWW	

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(36 to 43 ft-lb)

Automatic transmission

X

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Boost controlled discussion devicely to taked
Exhaust gas recirculation (2000) as alatin

Note: When turning custinglishwith intro-mitted furtion starter, remove high transfer cable from ignition coil, then term it.

Remarks:// X: Asidfable —: Not available

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EMISSION CONTROL DEVICES

	Engine Model	W.C		L	28			
		U.S.A.						
System name	Destination	Non-Ca	Non-California		California		Canada	
	Device Transmission	M/T	A/T	M/T	A/T	M/T	A/7	
Engine Proper	Cylinder head exhaust port liner	х	x	Х	х	x	х	
- 10-11	With altitude corrector	patrina.	Day	X	х	N- X		
D.C.D.D.	Without altitude corrector	х	X	_		х	X	
B.C.D.D.	Inhibitor switch	h (20 M	x	-	X	-	X	
	Speed detecting switch	Х	\$81	X	V738	X	O. H	
01-13	IC Ignition Unit, Distributor (Pick-up coil type)	x	x	X	x	x	x	
	V.D.V. (Vacuum delay valve – Spark timing)	E 113	-	х	X	x	X	
II-Tal	E.G.R. control valve	X.	х	Х	X	X	Х	
11-73	B.P.T. valve	X	x	Х	x	SNOLL	100	
E.G.R. System	T.V.V. (Thermal vacuum valve-E.G.R.)	x	x	X	x	х	x	
ET-12	V.D.V. (Vacuum delay valve - E.G.R.)	8.79	_101	X	X	NIL AIL	A DM	
Catalytic Converter System	Catalytic converter	770		X	x	BR OV	- BM	
11 1	Dash pot	х	HON	X	MILLER	DITTOR	DE	
67-35, 91-20	Carbon canister	X	Х	Х	X	х	Х	
Others	Fuel check valve (with vacuum relief valve)	x	х	х	x	x	x	
	P.C.V. valve	Х	х	х	х	X	X	

Remarks:

X : Available M/T : Manual transmission

- : Not available A/T : Automatic transmission

B.C.D.D. : Boost controlled deceleration device

E.G.R.: Exhaust gas recirculation
B.P.T.: Back pressure transducer
P.C.V.: Positive crankcase ventilation

of sintiffeeds to water

BASIC MECHANICAL SYSTEM

ADJUSTING INTAKE AND EXHAUST VALVE CLEARANCE

Note: Valve clearance adjustment cannot be made while engine is in operation.

- 1. Start engine and warm up engine until water temperature indicator points to the middle of gauge, then stop engine.
- Remove valve rocker cover.
- Loosen pivot lock nut, using Pivot Adjuster ST10640001, and turn valve rocker pivot until specified value is obtained.

Tighten pivot lock nut securely after adjustment, and recheck clearance.

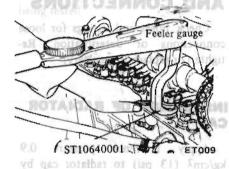


Fig. ET-1 Adjusting Valve Clearance

satisfactory. Replace cap assemb

Valve clearance

Unit: mm (in)

A	Intake	0.25 (0.010)
Hot	Exhaust	0.30 (0.012)

Tightening torque:
Pivot lock nut

(36 to 43 ft-lb)

Order of valve clearance adjustments is as follows:

COOLING SYSTEM

Note: When turning crankshaft with starter, remove high tension cable from ignition coil, then turn it.

- (1) Set so that high point of No. 1 cam lobe points above. See Fig. ET-2.
- Exhaust valve 1 of No. 1 cylinder
- Intake valve 3 of No. 2 cylinder
- Exhaust valve 7 and intake valve
 8 of No. 4 cylinder
- Exhaust valve (9) of No. 5 cylinder
- Intake valve (1) of No. 6 cylinder

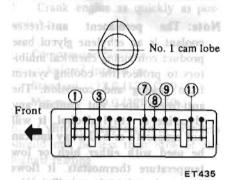


Fig. ET-2 Sequence of Adjusting Valve Clearance

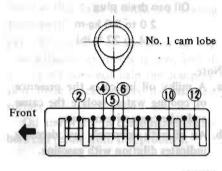
(2) Set so that high point of No. 1 cam lobe points down. See Fig. ET-3.

must not be mixed with other

- Intake valve 2 of No. 1 cylinder
- Exhaust valve 4 of No. 2 cylinder
- Intake valve (5) and exhaust valve
 (6) of No. 3 cylinder

- Intake valve (1) of No. 5 cylinder
- Exhaust valve 12 of No. 6 cylinder

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Fig. ET-3 Sequence of Adjusting Valve Clearance

Engine oil capacity:

CHECKING AND ADJUSTING DRIVE BELTS

- 1. Check for cracks or damage. Replace if necessary.
- 2. Normal drive belt deflection is shown in figure below, when moderate force is applied midway between pulleys.

Force: 10 kg (22 lb)

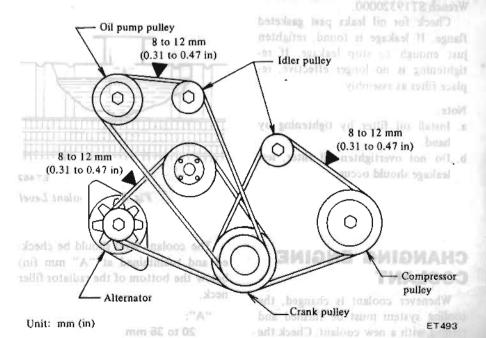


Fig. ET-4 Checking Drive Belt for Deflection

(0.79 to 1.38 in)

CHANGING ENGINE

- Check if oil is diluted with water or gasoline. Drain and refill oil if necessary.
- Tightening torque:

Oil pan drain plug 2.0 to 3.0 kg-m (14 to 22 ft-lb)

Note:

- a. A milky oil indicates the presence of cooling water. Isolate the cause and take corrective measure.
- b. 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:
With oil filter
4.5 liters
(4% US qt, 4 Imp qt)
Without oil filter
4.0 liters
(4% US qt, 3½ Imp qt)

REPLACING OIL FILTER

The oil filter is a cartridge type and can be removed using Oil Filter Wrench ST19320000.

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

Note:

- a. Install oil filter by tightening by hand.
- b. Do not overtighten oil filter, lest leakage should occur,

CHANGING ENGINE COOLANT

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

See instructions attached to the anti-freeze container for mixing ratio of anti-freeze to water.

Cooling water capacity

Unit: & (US qt, Imp qt)

With coolant	10.5
reservoir	(11½,9¼)
Without coolant reservoir	9.7 (10¼, 8½)

Note: The permanent anti-freeze coolant is an ethylene glycol base product containing chemical inhibitors to protect the cooling system from rusting and corrosion. The anti-freeze 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 anti-freeze must not be mixed with other product. This coolant can be used throughout the seasons of the year.

COOLANT LEVEL

Without coolant reservoir.

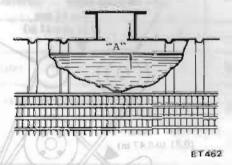


Fig. ET-5 Coolant Level

The coolant level should be checked and maintained at "A" mm (in) below the bottom of the radiator filler neck.

"A":

20 to 35 mm (0.79 to 1.38 in) With coolant reservoir.

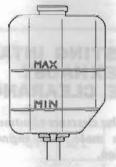


Fig. ET-6 Coolant Level

FT463

Check the amount of coolant in the reservoir tank. If the coolant level is below the MIN, level, remove the reservoir tank filler cap and add enough coolant to reach MAX, level.

CHECKING COOLING SYSTEM, HOSES AND CONNECTIONS

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

INSPECTION OF RADIATOR

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.



Fig. ET-7 Testing Radiator Cap

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.

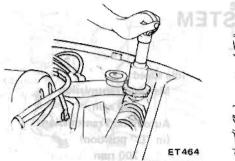


Fig. ET-8 Cooling System Pressure
Test

CHECKING ENGINE COMPRESSION

- 1. Warm up engine until water temperature indicator points to the middle of gauge.
- 2. Disconnect all spark plugs.
- 3. Disconnect cold start valve and all injector connectors.
- 4. Properly attach a compression tester to spark plug hole in cylinder being tested.

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Manual Treatment of the Care o

Automatic Transmission
(in "D" position)

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Fig. 53-78 Species Teming Indicator

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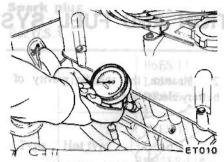


Fig. ET-9 Testing Compression Pressure

5. Crank engine as quickly as possible.

Compression pressure: kg/cm² (psi)/at rpm Standard 12.0 (171)/350 Minimum 9.0 (128)/350

 Cylinder compression in cylinders should not be less than 80% of the highest reading.

If cylinder compression in one or more cylinders is low, pour a small

CHECKING AND ADJUSTING TIMING

On air conditioner equipped modern that inspections should be carried out while the air conditioner in OFF.

 Off automotive results are conditioner in the Or automotive results are carried out inspections, should be carried out.

CHECKING IGNITION

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I. Warm up engine until water temperertire intilization podret to the middle
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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 problem.

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CAUTION:

a. If it becomes necessary to start the
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working must not axceed 12 volts,
out the control ent of the lust
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unescoon exten and other electric

components will be demand and the first he bettery cables are duconnected, they should be tightly clamped to the bettery terminals to
secure a good contact or aright.

IGNITION AND FUEL SYSTEM

CHECKING BATTERY

 Remove six vent plugs and check electrolyte level in each battery cell. If necessary, pour distilled water.

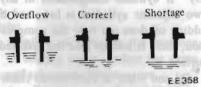


Fig. ET-10 Checking Electrolyte

2. Measure the specific gravity of battery electrolyte.

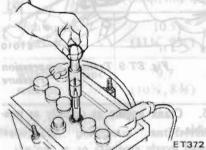


Fig. ET-11 Checking Gravity of Battery Electrolyte

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

Note:

- a. 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.
- b. 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.

CAUTION:

- a. If it becomes necessary to start the engine with a booster battery and jumper cables, the booster battery voltage must not exceed 12 volts, or the control unit of the fuel injection system and other electric components will be damaged.
- b. If the battery cables are disconnected, they should be tightly clamped to the battery terminals to secure a good contact.

CHECKING AND ADJUSTING IGNITION TIMING

Note:

- a. On air conditioner equipped models, inspections should be carried out while the air conditioner is "OFF"
- b. On automatic transmission models, inspections should be carried out while shift lever is in "D" position.

WARNING:

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

- Warm up engine until water temperature indicator points to the middle of gauge.
- Race engine two or three times under no-load, then run engine for one minute at idling.
- 3. Check idle speed.

Idle speed: Manual Transmission 800 rpm

Automatic Transmission (in "D" position) 700 rpm

If necessary, adjust idle speed to the specified rpm by turning idle speed adjusting screw attached to throttle chamber.

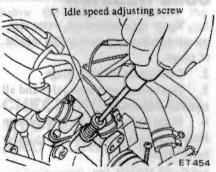


Fig. ET-12 Adjusting Idle RPM

4. Check ignition timing with a timing light.

Ignition timing:

Manual Transmission

10° B.T.D.C./800 rpm

Automatic Transmission

(in "D" position)

10° B.T.D.C./700 rpm

This operation need not be carried out at 1,000 km (600 mile) service.



ET240

Fig. ET-13 Ignition Timing Indicator

If necessary, adjust ignition timing by turning distributor after loosening bolt which secures distributor.

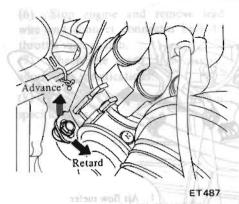


Fig. ET-14 Adjusting Ignition Timing

CHECKING AND REPLACING SPARK PLUGS

Commerces of involling valve

- 1. Clean plugs in a sand blast cleaner. Inspect each spark plug. Make sure that they are of the specified heat range and type.
- Inspect insulator for cracks or chips. Check both center and ground electrodes.
- 3. If they are excessively worn, replace with new spark plugs.
- 4. Check spark plug gap with plug gap gauge. If not specified value, adjust by bending the ground electrode.

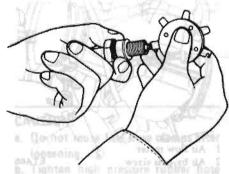


Fig. ET-15 Checking Spark Plug Gap

Tightening torquesmanikipasifrakaca

art Turin implication for locate increasing

Turning gloddeister Richtfall T

on air flow meter.

h. When adjusting "CO E comove

blind plus feost, six by pass screw

After edjustment, install the plus

Spark plug

For U.S.A.

Chell ry rote cons	Standard	B6ES-11 L45W-11 BR6ES-11*
Туре	Hot type	B5ES-11 L46W-11 BR5ES-11*
1	Cold type	B7ES-11 L44W-11 BR7ES-11*
Plug gap mm (in)		1.0 to 1.1 (0.039 to 0.043)

*: Option

For Canada

nismy	Standard	BR6ES-11
Туре	Hot type	BR5ES-11
one son variation	Cold type	BR7ES-11
Plug ga	ap mm (in)	1.0 to 1.1 (0.039 to 0.043)

Tightening torque: Spark plug

1.5 to 2.0 kg-m (11 to 14 ft-lb)

in) wide [0.8 mill (0.031 ingthick

CHECKING IGNITION WIRING

insulation tope around soldered

Use an ohmmeter to check resistance on high tension cables.

 Disconnect high tension cables from spark plugs and remove distributor cap.

Note: Do not remove cables from cap.

- Connect the ohmmeter between cable terminal on the spark plug side and the corresponding electrode inside cap.
- 3. 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.

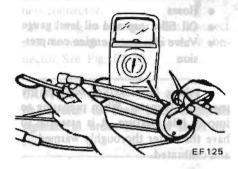


Fig. ET-16 Checking High Tension Cable

engine is not appealigably recognitive

CHECKING AND ADJUSTING IDLE RPM AND MIXTURE RATIO

WARNING:

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

CAUTION: " buil securing feel filler to

Before disconnecting and connecting EFI component parts harness connectors, ensure that ignition switch is in "OFF" position.

Note: Military DO slbt hoffback 11

- a. On air conditioner equipped models, inspection should be carried out while air conditioner is "OFF".
- b. When checking idle mixture ratio (CO percentage), make sure that the following parts are in good order.

 - Ignition system
 - Engine oil and coolant levels

- Fuses
- EFI component parts
- EFI harness connectors
- Hoses
- · Oil filler cap and oil level gauge
- Valve clearance, engine compression

Checking idle mixture requires the use of a CO-meter. When preparing to inspect idle mixture, it is essential to have the meter thoroughly warmed up and calibrated.

- 1. Warm up engine until water temperature indicator points to the middle of gauge. The procedure to warm up engine is not specifically recommended. Either driving car or operating engine at no load will be good.
- 2. Make sure that water temperature indicator points to the middle. Further keep engine running at about 2,000 rpm for about 2 minutes without applying load to engine in order to stabilize engine condition. Engine hood should be open.
- Run engine for about 5 minutes at idling speed.
- During this 5 minutes, adjust idle speed and ignition timing, referring to Checking and Adjusting Ignition Timing.
- At about 5 minutes after engine is run, check CO percentage with CO meter.

Idle "CO" %:
California models
0.5% or lower
Non-California models
1.0% or lower

6. If specified idle CO percentage is not obtained, repeat procedures as described in steps 2, 3 and 4 above. Checking idle CO in step 5 can be carried out right after step 4.

If specified idle CO percentage is not obtained, adjust it as described below in the last resort.

- Turn ignition switch to "OFF" position.
- (2) Disconnect throttle valve switch harness connector.
- (3) Connect a lead wire, shown in Fig. ET-17, between terminals No. 24 and No. 30 of throttle valve switch harness connector.

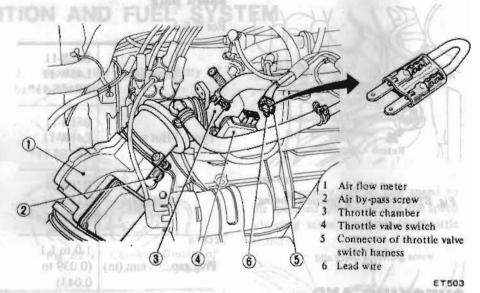


Fig. ET-17 Idle Mixture Ratio Adjustment

Note:

- a. The idle mixture ratio of EFI car is set so lean that "CO"% remains almost unchanged when adjustment is made under normal condition. Therefore, when adjusting idle mixture ratio, to distinguish variation in "CO"%, a full enrichment must be temporarily given to idle mixture setting to make it richer.
- b. Make lead wire as follows:

 Use flat plate terminals 3 mm (0.12 in) wide, 0.8 mm (0.031 in) thick as male terminals. Place flat plate terminals parallel with each other and keep distance between inside faces 2 mm (0.08 in). Solder lead wire to each terminal and wrap insulation tape around soldered portion.
- (4) Warm up engine sufficiently, race engine two on three times under no-load, then run engine for one minute at idling speed.
- (5) Adjust "CO"% to altitude at measured point by turning air by-pass screw on air flow meter.

Acted Congress use changelet between

cable terminal on the spark plug add

Altitude (full enrichment)

0 to 600 m
(0 to 2,000 ft)

600 to 1,200 m
(2,000 to 4,000 ft)

1,200 to 1,800 m
(4,000 to 6,000 ft)

Above 1,800 m
(6,000 ft)

6.7%

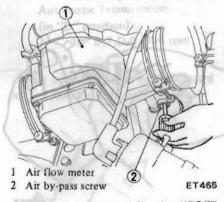


Fig. ET-18 Adjusting "CO"%

Note:

- a. Air by-pass screw:
 Turning counterclockwise Leaner
 Turning clockwise Richer
- When adjusting "CO"%, remove blind plug from air by-pass screw.
 After adjustment, install the plug on air flow meter.

If the resistance assistings than

- (6) Stop engine and remove lead wire and connect connector back to throttle valve switch.
- (7) Check idle speed. If necessary, adjust it to specifications.
- (8) Check "CO%" if it is within specifications. variety of the optimum fuel qu

CHECKING FUEL LINES

Check fuel line for leaks, particularly around connection of fuel pipe and fuel hose.

Retighten loose connections and replace any damaged or deformed parts of of notmerts attention to horse

- 1 Fuel pump

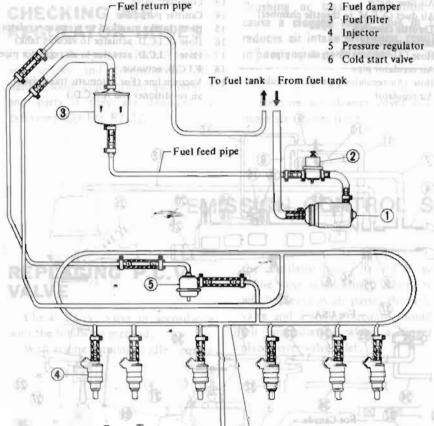


Fig. ET-19 Fuel Line

EF450A

CAUTION:

- a. Do not reuse fuel hose clamps after loosening.
- b. Tighten high pressure rubber hose clamp so that clamp end is 3 mm (0.12 in) from hose end or screw position (wider than other portions of clamp) is flush with hose end.

Tightening torque specifications are the same for all rubber hose clamps.

Tightening torque of fuel hose clamps:

> 0.10 to 0.15 kg-m (0.7 to 1.1 ft-lb)

REPLACING FUEL FILTER

The fuel filter is designed especially for use with the EFI system. It should be replaced as an assembly.

Follow the procedure below to decrease fuel pressure to zero. 43 Hose (Dis

CAUTION:

Fuel pipe

Before disconnecting fuel hose, release fuel pressure from fuel line to avoid danger.

- Disconnect ground cable from (1) battery.
- (2) Disconnect cold start valve harness connector.
- (3) Using two jumper wires, connect each terminal to cold start valve connector. See Fig. ET-20.

CAUTION: date double factories has an

Be careful to keep both terminals separate in order to avoid short circuit.

Release pressure in fuel system by connecting other terminals of jumper wires to battery positive and negative terminals for a few seconds.

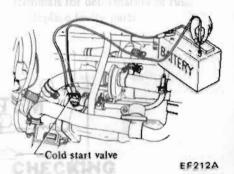


Fig. ET-20 Releasing Pressure in Fuel System

Unfasten clamps securing fuel hoses to the outlet and inlet sides of fuel filter, and disconnect fuel hoses.

Note: Be careful not to spill fuel over engine compartment. Place a rag to absorb fuel.

Loosen bolt securing fuel filter to bracket, and remove fuel filter.

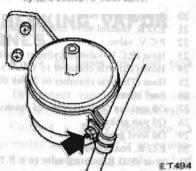


Fig. ET-21 Fuel Filter

4. To install fuel filter, reverse the order of removal.

CAUTION:

- a. Do not reuse fuel hose clamps after loosening.
- b. Tighten high pressure rubber hose clamp so that clamp end is 3 mm (0.12 in) from hose end or screw position (wider than other portions of clamp) is flush with hose end. Tightening torque specifications are the same for all rubber hose clamps.

Tightening torque of fuel hose clamps:

> 0.10 to 0.15 kg-m (0.7 to 1.1 ft-lb)

CHECKING AIR LEAKAGE IN AIR INTAKE SYSTEM

Make sure that even a slight air leak does not occur.

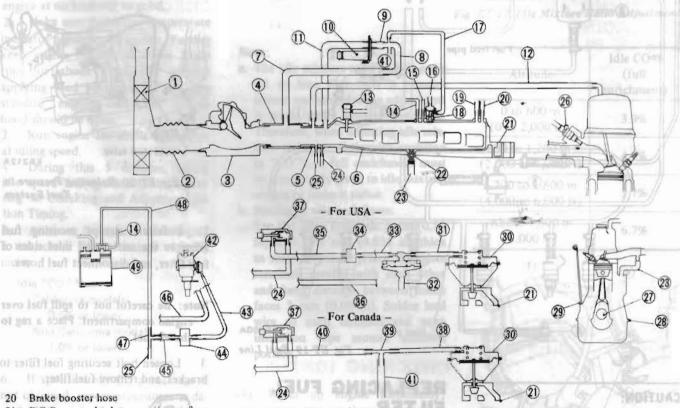
When inspecting the EFI system, pay particular attention to hose con-

- Air cleaner filter L
- Air duct (Air cleaner to A.F.M.) 2
- Air flow meter 3
- Air duct (A.F.M. to throttle chamber)
- 5 Throttle chamber
- Intake manifold 6
- Hose (Air duct to air regulator pipe) 7
- 8 Air regulator pipe
- 9 Hose (Air regulator pipe to air regulator)
- 10 Air regulator

nections, dipstick, oil filler cap, etc. for any indication of air leaks,

Note: The air flow meter used in the EFI system directly measures the quantity of intake air to permit the supply of the optimum fuel quantity for each cylinder.

- Hose (Air regulator to throttle chamber)
- 12 Hose (Throttle chamber to rocker cover)
- Cold start valve 13
- Canister purge line 14
- 15 Hose (Intake manifold to pressure regulator)
- Hose (F.I.C.D. actuator to vacuum tank)
- Hose (F.I.C.D. actuator to air regulator pipe) 17
- F.I.C.D. actuator 18
- Vacuum line (For automatic transmission, 19 air conditioner and A.S.C.D.)



- Brake booster hose
- 21 E.G.R. control valve mounting surface
- P.C.V. valve 22
- Hose (P.C.V. valve to cylinder block) 23
- 24 Hose (Throttle chamber to T.V.V.)
- Hose (Throttle chamber to 3-way connector) 25
- Fuel injector
- 27 Oil seal (on front and rear of crankshaft)
- 28 Oil pan gasket
- 29 Oil level gauge
- 30 E.G.R. control valve
- Hose (E.G.R. control valve to B.P.T. valve 31
- B.P.T. valve 32
- 33 Hose (B.P.T. valve to V.D.V.)
- 34
- Hose (V.D.V. to T.V.V.) 35
- Hose (B.P.T. valve to T.V.V.) Non-California models except Canada
- Thermal vacuum valve

- Willer of Designed expension 18 Hose (E.G.R. control valve to 3-way with the EFT system it should connector
 - violence no 39 3-way connector
 - Hose (3-way connector to T.V.V.)
 - Hose (3-way connector to air regulator pipe)
 - 1010X OT 9111122-10 1-42 Distributor
 - Hose (Distributor to V.D.V.)

 - Hose (V.D.V. to 3-way connector)
 - Hose (Distributor to 3-way connector) -
 - 3-way connector
 - 48 Hose (3-way connector to canister)
- array of sail leaf man 49 Canister

Non-California models except

Canada

Canada models

California and

Canada models

After The T.T. or T.W. Fig. ET-22 Checking Air Leakage in Air Intake System

di-ta cr.D of Gr

For U.S.A.

California models

CHECKING VACUUM FITTING TUBES AND CONNECTIONS

Check fittings and hoses for loose connections or damage. Retighten loose parts or replace parts that are not suitable for further use. See Fig. ET-22.

CHECKING AIR REGULATOR HOSES

Check air regulator hoses for leakage, cracks and deterioration. Retighten loose connections and replace any parts if they are demaged or deformed. See Fig. ET-22.

Sentint has been applied to contact surface of capistur, and canister-tage. When responding canistee tray, pull it

relant/to contact surface of sunigter

REPLACING AIR CLEANER FILTER

Note: The viscous paper type air cleaner filter does not require any cleaning operation between renewals.

ly made, thus queting insufficient de-

livery of fuel to engine or vapor lock. It must, therefore, be repained as, re-

CAUTION:

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

Remove air cleaner cover and remove air cleaner filter.

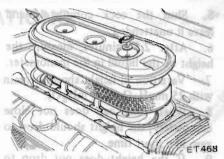


Fig. ET-23 Air Cleaner Filter

CHECKING CABLE HARNESS AND CONNECTORS

Check harness connectors for correct insertion and harness connector terminals for deformation or rust.

Replace faulty parts.

EMISSION CONTROL SYSTEM

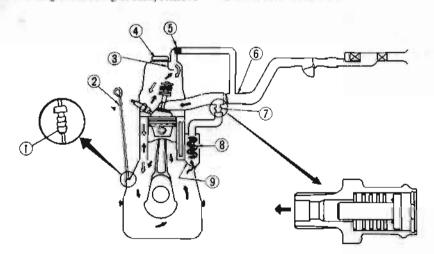
Fig ET-25 Checking Eugporative Emission Control System

REPLACING 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.



- ⇒ Frestrair
- Blow-by gas
- 1 Seal rubber
- 6 Throttle chamber
- 2 Oil level gauge
- 7 P.C.V. valve
- 3 Baffle plate
- 8 Steel met
- 4 Of filler cap
- 9 Bafile plate

5 Flame arrester

ET469

Fig. ET-24 Crankcase Emission Control System

CHECKING VENTILATION HOSES

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

If any hose cannot be free of obstructions, replace.

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

CHECKING VAPOR LINES

- 1. Check all hoses and fuel tank filler cap.
- 2. Disconnect vapor vent line connecting carbon canister to check valve.
- 3. Connect a 3-way connector, a manometer and a cock (or an equivalent 3-way charge cock) to the end of the vent line.
- 4. Supply fresh air into the vapor vent line through the cock little by little until pressure becomes 400 mmH₂O (15.75 inH₂O).

- Shut the cock completely and leave it unattended.
- After 2.5 minutes, measure the height of the liquid in the manometer.
- 7. Variation in height should remain with 25 mmH2O (0.98 inH2O).
- When filler cap does not close completely, the height should drop to zero in a short time.
- 9. If the height does not drop to zero in a short time when filler cap is

removed, it is the cause of a stuffy

Note: Don too high

In case the vent line is stuffy, the breathing in fuel tank is not thoroughly made, thus causing insufficient delivery of fuel to engine or vapor lock, It must, therefore, be repaired or replaced.

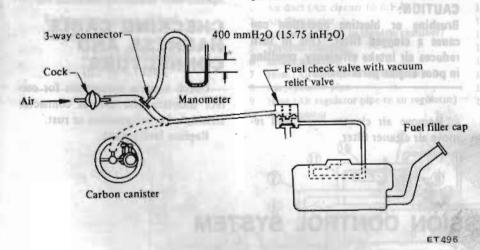


Fig. ET-25 Checking Evaporative Emission Control System

REPLACING CARBON CANISTER FILTER

Check for a contaminated filter. Remove canister tray and remove filter at bottom of canister.

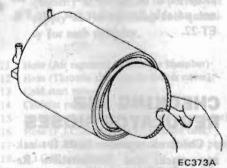


Fig. ET-26 Replacing Carbon Canister Filter

Sealant has been applied to contact surface of canister and canister tray. When removing canister tray, pull it off while twisting.

When reinstalling canister tray, apply sealant to contact surface of canister and canister tray.

> Offices Ed. M. valve bearing the following method:

ments and muning at title comone

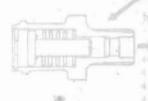
Disconnect all hoses and clean Jehr Dessessamopolitik All may liber cannot be free of obstituctions, replace, plantiberand pajer cover.

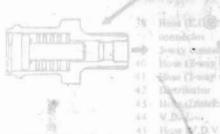
ENTILATION HOSES

Check, all hoses and fuel tank necting carboni canister to check valve 3 Curinet a 3-way combettor manometer and August (at ar-equipment left? 3 way charge nock) to the end to verse-fine through the cock little up

distance until presume decomment distance

must O (15.784nHeB) in terrent? - EC





If the valve of section

1= 9=2.10(f) HO Flame arrester

Management of to V. The totale by

Fast ET Classificate Smithian Control System

SERVICE DATA AND SPECIFICATIONS

Battery electrolyte gravey at 20°C (68°P)

t treck distributes pick up coil operation.

Check IC spection system?

Priett Climates

INSPECTION AND ADJUSTMENT

BASIC MECHANICAL SYSTEM	(BY 1711		Alegaria salas		Spark plug and
Valve clearance		jAbe	Regions		
Hot Intake Exhaust	mm (in) mm (in)			0.25 (0.010	2) 2)
Drive belt deflection	sideput npg	BSES-11	BoES LL Corner		.A.Z.U re
Fan, Air conditioner compressor, and Power steering oil pump	mm (in) .	BRSES-11450	Requisease	8 to 12 (0	
Applied pressed force			LLEHARR	10 (22)	or Canada
Engine oil capacity	tire you wall		no	HeO's	
With oil filter		t, Imp qt)		4.5 (4 3/4 ,	4)
		t, Imp qt)	beed	4.0 (4 34 ,	3 12) northing.
Cooling water capacity With coolant reservoir	liters (US a	t, Imp qt)	nos	10.5 (11 1/2	9%)
Without coolant reservoir		t, Imp qt)			
Radiator cap relief pressure	kg/cm ² (ps	i) k water same	netween batte	0.9 (13)	Mana A
Cooling system leakage testing pressure	kg/cm ² (ps	i)		1.6 (23)	Non-Cal
Compression pressure	kg/cm ² (ps	i)/rpm	THE RESIDENCE OF THE PARTY OF T	-	
Standard				12.0 (171)/	350
Minimum		ini (H-lb) itt-jjä - kulelti (H-lb) ini		9.0 (128)/3	350

Note: Fuel hose clamping position traces in countries

Processors bade remove cable from one spack plug viid how in

IGNITION AND FUEL SYSTEM

Battery electrolyte gravity at 20°C (68°F)

Spark plug

	it should drop to by it	Туре	fficient de- vapor loch.	Discourse Grand Wiley
	Standard	Hot type	Cold type	Plug gap mm (in)
For U.S.A.	B6ES-11 L45W-11 BR6ES-11*	B5ES-11 L46W-11 BR5ES-11*	B7ES-11 L44W-11 BR7ES-11*	1.0 to 1.1 (0.039 to 0.043)
For Canada	BR6ES-11	BR5ES-11	(dl) BR7ES-11	- porol bearing belief A

*Option

Ignition timing and idling speed

Manual transmission degree/rpm 10° B.T.D.C./800

Automatic transmission (in "D" position) degree/rpm 10° B.T.D.C./700

Brens (US qr. Imp ql.)

liters (US qt. Imp qt) ...

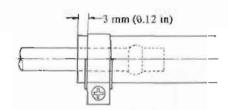
Tay cm 2 (pai)/ipm

"CO" % at idling speed

TIGHTENING TORQUE

Pivot lock nut	kg-m (ft-lb) 5.0 to 6.0 (36 to 43)
Spark plug	kg-m (ft-lb) 1.5 to 2.0 (11 to 14)
Fuel hose clamp	kg-m (ft-lb) 0.10 to 0.15 (0.7 to 1.1)

Note: Fuel hose clamping position



With oil filter

Compression measure

EF336A

TROUBLE DIAGNOSES AND CORRECTIONS

Condition landau	Probable cause 110 mm 10 mm	Corrective action
CANNOT CRANK ENGINE OR SLOW CRANKING	Improper grade oil. Partially discharged battery.	Replace with proper grade oil. Charge battery.
Camponi	Malfunctioning battery. Loose fan belt.	Replace.
g gap or replace	Trouble in charging system. Wiring connection trouble in starting circuit.	Inspect,
	Malfunctioning ignition switch. Malfunctioning starting motor.	Repair or replace. Repair or replace.
Switch on	the starting motor with head lights "ON".	Loose coningtho primary circuit. Irregular revolution
When h	lead lights go off or dim considerably,	
	b. Check connection and c c. Check starting motor.	ENGINE CRANKS NORMALLY BUT Juniba
When h	a. Check wiring connection motor. b. Check ignition switch. c. Check starting motor.	on between battery and starting

ENGINE WILL CRANK NORMALLY BUT WILL NOT START

In this case, the following trouble causes may exist, but in many cases ignition system or fuel system is in trouble.

Seized injector (Laten to operating sound).

Damaged Water ferup, ad

Malfunctioning pressure regulator

Ignition system in trouble
Fuel system in trouble
Valve mechanism does not work properly
Low compression

(Trouble-shooting procedure)

Check spark plug firstly by following procedure.

Disconnect high tension cable from one spark plug and hold it about 10 mm (0.39 in) from the engine metal part and crank the engine.

Good spark occurs.

Replace valve springs

Regulact, with proper grade organization a spine

- a. Check spark plug.
- b. Check ignition timing.

it at cylinder head grakelession

plus tightening or damaged

- c. Check fuel system.
- d. Check revolution trigger signal.

valve springs.

e. Check cylinder compression.

No spark occurs. Very high current.

Check the current flow in primary circuit.

Low compression

Inspect primary circuit for short.

Check distributor pick-up coil operation.

Check IC ignition system.

Engine Tune-up

Condition	Probable cause	Corrective action
Petrive action	Low or no current, sldado	Check for loose terminal or disconnection in primary circuit.
er grade oil, goig king?	il. Replace with pro-	Check for burned points.
Ignition system in	Malfunctioning distributor pick-up coil.	Replace.
trouble	Improper air gap.	Adjust.
	Leak at rotor cap and rotor.	Clean or replace.
	Malfunctioning spark plug.	Clean, adjust plug gap or replace.
	Improper ignition timing.	Adjust.
	Malfunctioning ignition coil.	Adjust. Replace.
	Disconnection of high tension cable.	Replace.
*(Loose connection or disconnection in	Repair or replace.
	Irregular revolution trigger pulse.	Replace IC ignition unit.
	Malfunctioning IC ignition unit.	Replace.
ENGINE CRANKS NORMALLY BUT WILL NOT START	b. Check connection and cubie, c. Checketerlingulator.	When Sead lights stay brig
Fuel system	Lack of fuel.	Supply.
malfunction	Damaged electronic fuel injection harness or relay.	Replace.
IGHTEMING	Malfunctioning fuel pump (Listen to opera-	Replace.
Paret lack	ting sound).	For inspection procedures for
Spolitydegal el meteys	Damaged control unit.	Replace. electronic fuel injection sys-
Brief bloc slower	Seized injector (Listen to operating sound).	Replace. tem components, refer to Engine Fuel section.
	Seized cold start valve.	Replace.
	Malfunctioning air flow meter.	Replace.
	Damaged water temp. sensor.	Replace. John regino 1 463
	Malfunctioning pressure regulator.	Replace.
	Dirty fuel filter.	Danlaga
	Dirty or clogged fuel pipe. Tage and mort aides	eClean, dgirl reaconnect ligh .neal?n
	Clogged fuel tank breather pipe. The order of the order	Repair and clean.
Low compression	Incorrect spark plug tightening or damaged gasket.	Tighten to normal torque or replace gaske
	Improper grade engine oil or low viscosity.	Replace with proper grade oil.
	Incorrect valve clearance.	Adjust.
	Compression leak from valve sest.	Lap valves.
flow in primary circuit.		Correct or replace valve and valve guide.
Stock to High	Weak or damaged valve springs.	Replace valve springs.
pick-up coil operation.		Replace gasket.

Condition	Probable cause secret aid	Corrective action	
Low compression	Sticking or defective piston ring. Worn piston ring or cylinder.	Overhaul engine.	NIGH ENGINE
	shooting procedure)	optiephdewaltropff	
	engine oil from plug hole, and then measure compression.	Adjust	ENGINE POWER
Comp	ression increases.	Trouble in cylinder or pist	ton ring." 9U TOV
	ression does not change.	Compression leaks from v	alve, cylinder head
NOISY ENGINE	Previously mentioner	or head gasket.	Low compression
UNSTABLE	Over Land Heighter again	Incorregitigation in the	Ignition system in
ENGINE IDLING		and Melfunktioning Special	plouost
Ignition system	Incorrect idle adjustment Malfunctioning ignition system (spark plug,	Adjust. Replace.	
For inspection	high tension cable, distributor, IC ignition unit, ignition coil, etc.)	the contributation for	ENGINE POWER BELOW NORMAL
procedures for electronic fuel	Incorrect basic ignition timing.	Adjust.	Puel system
Engine mechanical	Loose manifold and cylinder head bolts.	Retighten bolts.	neironutiem
system in trouble	Incorrect valve clearance.	A COST OF AMERICAN PORT AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF THE PERSON ADDRESS OF	
Fuel system	Clogged air cleaner filter.	Danlaga Class	nokshaffi, Rénéw nge emnkihati
maitunction	Damaged manifold gaskets.	Replace gasket.	
dator if necessary	Intake air leakage at following points: Dipstick	Repair or replace.	
to array knowled a	Oil filler cap	Fuel pump will not	matrye odatni piA
	Damaged electronic fuel injection harness.	Replace.). notranuftsm
	Seized injector (Listen to operating sound).	The state of the s	For inspection
Paranasa selmite	Malfunctioning air regulator (During warm-	Replace.	
	Damaged control unit.	The second secon	tem compo
	Damaged water and air temp. sensor.	Replace.	nents, refer t
	Malfunctioning throttle valve switch.	Repair or replace.	Engine Fue
	Irregular fuel pressure.	Replace pressure regulator	r. Section.
Others	Malfunctioning E.G.R. control system.		
HIGH ENGINE	Dragged accelerator linkage.	Theck and correct accelerator linkage. If engine idling speed rises above 1,800 to 2,000 rpm, the cause may be a malfunctioning B.C.D.D. system. Check B.C.D.D. system. Repair or replace if necessary.	
IDLE SPEED	Malfunctioning B.C.D.D. system.		
	An emproper adjust most of belleviles anne. Redighten each part. Notice of through them.		
lio abirig	Malfunctioning air regulator.	For inspection procedures for air regulator	
	mal vacuum valve (for Replace.	refer to Engine Fuel section	on,

Engine Tune-up

Condition	Probable cause	Corrective action	
HIGH ENGINE IDLE SPEED	Incorrect adjustment of idle speed adjusting screw. Throttle valve is opened excessively at idle. Malfunctioning F.I.C.D.	Correct. Replace throttle chamber. Replace.	
ENGINE POWER NOT UP TO HOME TO	Trouble in cylinder Trouble in cylinder Trouble in cylinder Compression leaks Eventually and Alexandry and Alexand	Previously mentioned.	
Ignition system in trouble	Incorrect ignition timing. Malfunctioning spark plugs. Malfunctioning distributor pick-up coil.	Adjust. Clean, adjust or replace plugs. Replace.	
ENGINE POWER BELOW NORMAL	primary aucust nothing OI constitutes Irregular revolution trigger pulse. (2)	For inspection procedures for	
Fuel system malfunction	Throttle valve does not open fully. Damaged electronic fuel injection harness.	Adjust. electronic fuel	
WILL VOT START	Seized injector (Listen to operating sound). Malfunctioning air flow meter. Malfunctioning throttle valve switch.	Replace. Replace. Replace. Replace. Replace. Section.	
	Irregular fuel pressure. Clogged fuel pipe. Dirty or clogged fuel filter.	Replace pressure regulator if necessary. Replace if necessary. Replace.	
	Fuel pump will not work properly.	stockers for more than the relation to	
For inspection procedures to electromic fue injection sys	Clogged air cleaner filter. Air leaking from manifold gasket. Intake air leakage at following points: Dipstick Oil filler cap Blow-by hoses Intake air duct—air flow meter to throttle	Repair or replace.	
Overheating	Dieto de alemand fuel prov	Replenish.	
Low management	Loose fan belt. Worn or damaged fan belt.	Adjust fan belt. Replace.	
coelerator linkage sed rises above 1,800 to crose may be a	Malfunctioning thermostat. Malfunctioning water pump. Clogged or leaky radiator.	Flush, repair or replace.	
D.D. system lein, necessary	Malfunctioning radiator filler cap. Air in cooling system. Improper engine oil grade. Incorrect ignition timing.	Replace. Retighten each part of cooling system. Replace with proper grade oil. Adjust.	
codures for all regulator, section	Malfunctioning thermal vacuum valve (for E.G.R. system).	Replace.	

Condition	Probable cause study slide	Corrective action Online	
Overcooling consumption Others Thirls avails taught	Malfunctioning thermostat. Improper octane fuel. Improper tire pressure. Dragging brake.	Replace with specified octane fuel. Inflate to specified pressure. Adjust.	
	Clutch slipping.	Adjust.	
NOISY ENGINE	With address to 1	ABNORMAL COMBUSTION SAME AND	
Car knocking	Overloaded engine.	Use right gear in driving. will ralls sufficient	
ertones.	Carbon knocking.	Disassemble cylinder head and remove	
POICE FOR	Timing knocking.	Adjust ignition timing.	
stand	Fuel knocking.	Use specified octane fuel.	
	Preignition (misusing of spark plug).	Use specified spark plug.	
Mechanical knocking		mathinetion Dipstick Oil filles cap Blow by lioses	
Crankshaft bearing knocking.	noise. Souldest T. His	This is caused by worn or damaged bearings or unevenly worn crankshaft. Renev bearings and adjust or change crankshaft. Check lubrication system.	
Connecting rod 2 land bearing knocking.	This is a little higher-pitched noise than the crankshaft knocking, and also increases when engine is accelerated. Cause a misfire on each cylinder and if the noise diminishes almost completely, this crankshaft bearing generates the noise.	Same as the case of crankshaft bearings.	
Piston and cylinder noise.	When you hear an overlapping metallic noise which increases its magnitude with the revolution of engine and which decreases as engine is warmed up, this noise is caused by piston and cylinder. To locate the place, cause a misfire on each cylinder.	This may cause an abnormal wearing of cylinder and lower compression which in turn will cause a lower out-put power and excessive consumption of oil. Overhaul engine.	
Piston pin noise.	This noise is heared at each highest and lowest dead end of piston. To locate the place, cause a misfire on each cylinder.	This may cause a wear on piston pin, o piston pin hole. Renew piston and piston pin assembly.	
Water pump noise.	This noise may be caused by worn or damaged bearings, or by the uneven surface of sliding parts.	Replace water pump with a new one.	
tighten it (but not too	ocker cover susket Renew walkits or		
Others.	An improper adjustment of valve clearance.	Adjust the tension of chain.	
ighten it with the proper	Noise of timing chain. An excessive end-play on crankshaft.	Disassemble engine and renew main bearing	

Condition of the section of the sect	Probable cause supposid	Corrective action	
Others.	Note: This noise will be heared when clutch is disengaged.	Overcouling Malfunctioning the	
ed octane fuel. pressure.	Wear on clutch pilot bushing.	Renew bushing and adjust drive shaft.	
WEINE POWER	Note: This noise will be heard when clutch is disengaged.	Drugging brake. Clutch slipping.	
ABNORMAL COMBUSTION		Noise Engine America	
(backfire, after fire run-on etc.)	third rangingly salf timing.	Car knocking Overloaded unglife.	
Improper ignition	Improper ignition timing.	Adjust ignition timing.	
timing POWER	Improper heat range of spark plugs.	Use specified spark plugs.	
Fuel stem malfunction	Intake air leakage at following points: Dipstick Oil filler cap	TO SECOND	
nin or damaged bearings to crankshaft. Renev or change crankshaft.	Blow-by hoses Intake air duct—air flow meter to throttle chamber	Crankakasi beasing This strong Bill no knocking	
rstein.	Damaged electronic fuel injection harness. Damaged control unit. Malfunctioning air flow meter.	Replace electronic fuel injection sys-	
crankshaft bearings.	Damaged water temp. sensor.	Replace. Engine Fuel Section.	
Defective cylinder head, etc.	Improperly adjusted valve clearance. Excess carbon in combustion chamber. Damaged valve spring (backfire, after fire).	Adjust. Remove head and get rid of carbon. Replace it with a new one.	
n shnormal wearing of Others we wearing of Others we power and power and on of Others	Malfunctioning E.G.R. control system.	necessary.	
EXCESSIVE OIL CONSUMPTION	Insufficient coolens	Piston pin noise Cause a pustine un o Cause a pustine un o Piston pin noise is bean	
Oil leakage	Loose oil drain plug.	Tighten it.	
iston pin assembly.	Loose or damaged oil pan gasket.	Renew gasket or tighten it.	
a with a new one.	Loose or damaged chain cover gasket. Damaged oil seal in front and rear of crankshaft.	Renew gasket or tighten it. Renew oil seal.	
	Loose or damaged rocker cover gasket.	Renew gasket or tighten it (but not to-	
if chain: and sense main bearing	Improper tightening of oil filter.	Renew gasket and tighten it with the prope	
	Loose or damaged oil pressure switch.	Renew oil pressure switch or tighten it.	

Condition	Probable cause	Corrective action Albano	
Excessive oil consumption	Cylinder and piston wear. Improper location of piston ring or reversely assembled piston ring.	Overhaul cylinder and renew piston. Remount piston rings.	
ann w	Damaged piston rings. Worn piston ring groove and ring. Fatigue of valve oil seal lip. Worn valve stem.	Renew rings. Repair or renew piston and cylinder. Renew piston and piston ring. Replace seal lip with a new one. Renew valve or guide.	
Others (a)	Inadequate quality of engine oil. Engine overheat.	Use the designated oil. Previously mentioned.	
POOR FUEL ECONOMY	DEVINE THE SONTENIS OF THE PART OF THE PAR	conting of sliding No. 22 1 1255	
Ignition system		Processo feets/feets	
See the explanation of the power decrease	Property mention REAL TRY SE Check trefue gra-	Overheat:	
Others	Exceeding idling revolution.	Adjust it to the designated rpm.	
	E CATIL	Repair or tighten the connection of fue pipes.	
Emission control system	Malfunctioning E.G.R. control system.	Replace.	
Fuel system	Fuel leakage.	Repair or replace.	
malfunction	Damaged electronic fuel injection harness. Damaged control unit. Malfunctioning air flow meter. Damaged air temperature sensor.	Replace. For inspection procedures for electronic fuel injection system components, refer to Engine Fuel Section.	
Kanti-Minte	Malfunctioning throttle valve switch.	Replace.	
Page or Page 19	Fuel leakage at injector or cold start valve. Fuel leakage at rubber fuel hose.	Replace damaged part. Repair or replace.	
125864	Irregular fuel pressure.	Replace pressure regulator if necessary.	
TROUBLE IN OTHER FUNCTIONS Decreased oil pressure	l nadequate oil quality.	Use the designated oil.	
	Overheat.	Previously mentioned.	
	Malfunctioning oil pump regulator valve. Functional deterioration of oil pump.	Disassemble oil pump and repair or renew it Repair or replace it with a new one.	
	Blocked oil filter.	Renew in.	

Engine Tune-up

Condition older will	Probable cause	Corrective action
Decreased oil pressure	Increased clearance in various sliding parts.	Disassemble and replace the worn parts with new ones.
	Blocked oil strainer.	Clean it.
	Malfunctioning oil gauge pressure switch.	Replace it with a new one.
Excessive wear on the		P ssly mentioned.
sliding parts AMAGRAMAL SHO WER ET COMMENSTRON (Dackfire, after fire (mison etc.)	Damaged quality or contamination of the parties	the selection oil with proper one and element.
	Air leakage from air intake duc	or replace.
	Damaged air cleaner.	Giange element.
	Overheat or overcool.	Previously mentioned.
Liming	Improper fuel mixture.	Check the fuel system.
Scuffing of sliding parts	Decrease of oil pressure.	Previously mentioned.
	Insufficient clearances. Readjust to the designated clearance	
	Overheat.	Previously mentioned.
	Improper fuel mixture, Check the fuel system.	

SPECIAL SERVICE TOOLS

Damages management that have the property of the property of the same of the s

Halfunctioning E.G.R. control system.

recitaruttem

The said out a Demaged control will

Adjust it to the designated rpm

Replace.

Replace	Kent-Moore No.	Maifunctioning throstic valve swite	Kent-Moore No
Tool number & tool name an english	Reference page or Fig. No.	Tool number & tool name	Reference page or Fig. No.
ST10640001 Pivot adjuster	J 25615-01	ST19320000 Oil filter wrench	J 25664
	Fig. ET-1		HTO M Days ET 4
Disassemble oil part to the the term of th	syles syles gul outiliter q	Marine in the control of the pure	en it de verter