0. INTRODUCTION

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0. GENERAL PRECAUTIONS

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1. Periodic maintenance should always be performed on all service items, thoroughly and properly. It should be understood that the emission control systems will directly have adverse effect on the exhaust gases unless the engine is in properly maintained state.

2. Maintenance should be performed only after gaining thorough understanding of the various systems. Have good knowledge of the working procedures and perform reliable work efficiently.

3. All parts should be handled with care.
   (1) Water should not be allowed to get on the electrical parts.
   (2) Parts should not be subjected to excessive shocks.
      - Impact wrench must not be used in removing or installing thermo switches and thermo sensors.
      - A part that has been subjected to shock by accidentally dropping it on the floor or other hard surface must not be used.
   (3) In unplugging the connectors, pull it out by holding the connector and not the wiring.

4. The cause for the largest number of troubles in the various systems is faulty connection of the wiring or hoses. Therefore, the wiring connectors and hose connections should be carefully checked. Also check for possible incorrect connections, as well as making certain that all clamps are tight.

5. It should be made a practics to ask the customer in detail what the trouble is, and then make proper decision.

Precation on Handling Vehicles Equipped with Catalytic Converter

1. Only unleaded gasoline must be used in the vehicle equipped with catalytic converter.

2. The fast idle speed should be reduced by depressing the accelerator pedal once, when the needle of the coolant temperature gauge registers near 120°F during warming up the engine.
   Avoid continuous engine running at fast idle speed for more than 10 minutes and at idle speed for more than 20 minutes respectively.

3. The plug cord must not be removed to make spark inspection.
   If it is necessary to check the spark condition by spark jumping, either carry out the checking for a short period as much as posible with the engine operating at idle speed or crank the starter motor.
   Never race the engine when checking.

4. The engine compression measurement must be made in a short time as possible.

5. The engine must not be turned when the fuel supply is nearly gone.

6. Avoid coasting with the ignition turned off or severely engine braking.

7. In case a tachometer is to be connected to the system, connect the tachometer (+) terminal to the ignition coil (–) terminal. Do not connect the tachometer (+) terminal to the distributor.

8. Do not throw away the used catalyst in the same place, where the parts adhered with gasoline or oil are disposed.

PRECAUTIONS ON SERVICING WHEN ENGINE IS COLD

In inspecting the systems that use thermo switch or thermo sensor which operate at low temperature (from 40° to 45°F), there are times when, due to the high atmospheric temperature, the coolant temperature or the carburetor temperature will not drop below the operating temperature despite parking the vehicle in the shade for long time. In such case, checking of the system at cold engine condition cannot be performed in accordance with the inspection procedures. At such time, ground the thermo switch wiring terminal, or in 2F engine, unplug the carburetor thermo sensor wiring connector so as to forcibly assume cold engine condition. This will allow checking the various systems as cold engine condition signals will then be transmitted to the computer. Unit test of the thermo switch or thermo sensor have to be made later. (Refer to P.1-5, 1-6)

Thermo Switch and Thermo Sensor Operating at Low Temperature

Engine	Part Name	Installed Location	Mark	Color
2T-C	Thermo switch	Radiator	13–105	White
20R	Thermo switch	Water outlet	13–105	White
4M	Thermo switch	Water outlet	13–105	White
2F	Thermo sensor	Carburetor	None	Black

Note:
In this manual, thermo sensor of thermo ferrite type is described with THERMO SWITCH and thermo sensor of thermistor type is described with THERMO SENSOR.

ABBREVIATIONS

T/M	Transmission	VSV	Vacuum Switching Valve
M/T	Manual Transmission	TVSV	Thermostatic Vacuum Switching Valve
A/T	Automatic Transmission	ABV	Air By-pass Valve
W/	With	ASV	Air Switching Valve
W/O	Without		
S/W	Switch		

Note:
For system abbreviation, refer to section index.

EMISSION CONTROL DEVICES

SYSTEM \ VEHICLE MODELS	TE		RA		RT		RN		MX		FJ
	USA	Calif.	USA	Calif.	USA	Calif.	USA	Calif.	USA	Calif.	USA
POSITIVE CRANKCASE VENTILATION (PCV) SYSTEM	O	O	O	O	O	O	O	O	O	O	O
FUEL EVAPORATIVE EMISSION CONTROL (EVAP) SYSTEM	O	O	O	O	O	O	O	O	O	O	O
THROTTLE POSITIONER (TP) SYSTEM	O	O	O	O	O	O	O	O	O	O	O
SPARK DELAY SYSTEM	O										
TRANSMISSION CONTROLLED SPARK (TCS) SYSTEM		O	O	O	O	O	O	O	O	O	O
EXHAUST GAS RECIRCULATION (EGR) SYSTEM			O	O	O	O	O	O	O	O	O
MANIFOLD AIR INJECTION (AI) SYSTEM	O	O	O	O	O	O	O	O	O	O	O
CATALYTIC CONVERTER (CCo) SYSTEM		O		O		O			O	O	
CHOKE OPENER SYSTEM		O	O	O	O	O	O	O	O	O	
AUXILIARY ACCELERATION PUMP (AAP) SYSTEM	O	O	O	O	O	O	O	O	O	O	O
POWER VALVE CONTROL SYSTEM											O
AUTOMATIC HOT AIR INTAKE (HAI) SYSTEM	O	O	O	O	O	O	O	O	O	O	O
AUTOMATIC CHOKE SYSTEM	O	O	O	O	O	O	O	O	O	O	
TRANSISTORIZED IGNITION SYSTEM	O	O	O	O	O	O	O	O	O	O	O
DUAL POINT DISTRIBUTOR SYSTEM (Option)	O										
HEAT CONTROL VALVE SYSTEM											O