SECTION 6

ENGINE GENERAL INFORMATION

CONTENTS

ALL NEW GENERAL MOTORS VEHICLES ARE CERTIFIED BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY AS CONFORMING TO THE REQUIREMENTS OF THE REGULATIONS FOR THE CONTROL OF AIR POLLUTION FROM NEW MOTOR VEHICLES. THIS CERTIFICATION IS CONTINGENT ON CERTAIN ADJUSTMENTS BEING SET TO FACTORY STANDARDS. IN MOST CASES, THESE ADJUSTMENT POINTS EITHER HAVE BEEN PERMANENTLY SEALED AND/OR MADE INACCESSIBLE TO PREVENT INDISCRIMINATE OR ROUTINE ADJUSTMENT IN THE FIELD. FOR THIS REASON, THE FACTORY PROCEDURE FOR TEMPORARILY REMOVING PLUGS, CAPS, ETC., FOR PURPOSES OF SERVICING THE PRODUCT MUST BE STRICTLY FOLLOWED AND, WHEREVER PRACTICABLE, RETURNED TO THE ORIGINAL INTENT OF THE DESIGN.

DESCRIPTION OF SECTION 6

SECTION 6A - ENGINE MECHANICAL

This section general contains information on the mechanical parts of the engine, such as block, crankshaft, pistons, valve train, and camshaft, that are common to most engines. Overhaul procedures, removal and replacement procedures, and specifications are also covered. Subsections furnish detailed information on each specific engine. Service information is also given that relates to that engine's use in each Carline. Specific subsections are:

6A2 - 2.8L V-6 Engine

6A3 - 5.0L V-8 Engine

SECTION 6B - ENGINE COOLING

Engine cooling system components such as radiator, water pump, thermostat, and cooling fan, are covered in this section. Accessory drive belts are also covered, along with cooling system capacities.

SECTION 6C - FUEL SYSTEM

This section contains information on all the parts of the fuel system **except** the carburetor, or Throttle Body Injection unit (TBI) itself. Items covered are fuel tank, fuel pump, and fuel lines. Specific subsections are used for each carburetor. TBI units are described in Section 6E.

SECTION 6D - ENGINE ELECTRICAL

Items covered in this section are battery, generator, starter, primary and secondary ignition, engine wire harness, spark plugs and wires, and ignition switch.

SECTION 6E - DRIVEABILITY AND EMISSIONS

This section covers emission control systems general information, and diagnostic procedures which will lead to repairing performance and driveability related problems for gasoline engine equipped vehicles. All emission components are covered, as well as all removal and replacement procedures. Instructions on use of special tools are also given. Specific sections are:

6E - Driveability and Emissions

6E2 - Fuel Injection (TBI)

- Section 6E2 - Fuel Injection (TBI)
- Section 6E3 - Fuel Injection (Ported)

ENGINE MECHANICAL DIAGNOSIS

The following diagnostic information covers common problems and possible causes. When the proper diagnosis is made, the problem should be corrected by adjustment, repair or part replacement as required. Refer to the appropriate section of the manual for these procedures.

EXCESSIVE OIL LOSS

- External oil leaks. Tighten bolts and/or replace gaskets and seals as necessary.
- Improper reading of dipstick. Check oil with car on a level surface and allow adequate drain-down time.
- Improper oil viscosity. Use recommended S.A.E. viscosity for prevailing temperatures. See Owner's Manual for proper specifications.
- Continuous high speed driving, and/or severe usage such as trailer hauling, will normally cause decreased oil mileage.
- PCV system malfunctioning.
- Valve guides and/or valve stem seals worn, or seals omitted. Ream guides and install oversize service valves and/or new valve stem seals.
- Piston rings broken, worn, or not seated. Allow adequate time for rings to seat. Replace broken or worn rings, as necessary.
- Piston improperly installed or misfitted.

LOW OIL PRESSURE

- Slow idle speed. Set idle speed to correct specification, if not ECM controlled.
- Incorrect, or malfunctioning, oil pressure switch.
- Incorrect, or malfunctioning, oil pressure gage. Replace with proper gage.
- Improper oil viscosity, or diluted oil. Install oil of proper viscosity for expected temperature, or install new oil if diluted with moisture or unburned fuel mixtures.
- Oil pump worn or dirty.
- Plugged oil filter.
- Oil pickup screen loose or plugged.
- Hole in oil pickup tube.
- Excessive bearing clearance. Replace if necessary.
- Cracked, porous or plugged oil galleys. Repair or replace block.
- Galley plugs missing or misinstalled. Install plugs, or repair as necessary.

VALVE TRAIN NOISE

- Low oil pressure. Repair as necessary. (See preceding diagnosis for low oil pressure.)
- Loose rocker arm attachments. Inspect and repair as necessary.
- Worn rocker arm and/or pushrod.
- Broken valve spring.
- Sticking valves.
- Lifters worn, dirty, or defective. Clean, inspect, test and replace as necessary.
- Camshaft worn, or poor machining. Replace camshaft.
- Worn valve guides.

ENGINE KNOCK DIAGNOSIS

KNOCKS COLD AND CONTINUES FOR TWO TO THREE MINUTES

INCREASES WITH TORQUE

- Vacuum operated EFE engines may have valve knock. Replace EFE valve.
- Flywheel contacting splash shield. Reposition splash shield.
- Loose or broken balancer or drive pulleys. Tighten, or replace as necessary.
- Excessive piston to bore clearance. Replace piston.

  Cold engine piston knock usually disappears when the cylinder is grounded out. Cold engine piston knock which disappears in 1.5 minutes should be considered acceptable.