FORD MOTOR CO. EMISSION SYSTEMS

DESCRIPTION

Several systems are used to control emission of pollutants. System usage depends on model, engine, and transmission combinations. Each system is designed to control a particular vehicle emission. In addition, specially calibrated carburetors, distributors, and modified combustion chambers are used with these systems.

Air Injection – Air injection system consists of an air pump, diverter valve, check valve, and various air distribution lines necessary to inject fresh air adjacent to exhaust valves. Injection of fresh air adjacent to exhaust valves creates an afterburn which further consumes unburned material in engine's exhaust.

EGR – Exhaust gas recirculation system uses a vacuum operated EGR valve to introduce metered amounts of exhaust gas into engine's combustion chambers. This introduction of inert exhaust gas lowers peak combustion temperatures and lowers NOx formations.

Electric Assist Choke – This unit is supplied power from a stator terminal on alternator. Contained in choke cap is an electric heating element. At any underhood temperature above 60°F choke mechanism heats up causing a more rapid choke opening time, thus helping to lean mixtures much sooner. Below 60°F normal choking operation occurs.

Staged Choke Pull-Down – This unit is a vacuum operated unit, using a hydraulic fluid to dampen operation. When underhood temperature is above 60°F, vacuum is applied to pull-down unit. Vacuum, dampened by hydraulic fluid, pulls choke open shortly after engine start-up. Below 60°F, normal choking action occurs.

Distributor Modulator System – Distributor modulator system consists of a speed sensor, a thermal switch, electronic control module, and a ported vacuum switch. This system controls distributor vacuum advance. Vehicles equipped with this system obtain vacuum advance at speeds above 23 miles per hour. Ported vacuum switch and thermal switch, override the system under certain temperature conditions.

Dual Diaphragm Distributor Unit – Distributor vacuum advance unit consists of two independently operating diaphragms. One for spark retard, controlled by intake manifold vacuum; and the other for spark advance, controlled by carburetor vacuum.

Ported Vacuum Switch – This switch is installed in coolant outlet elbow, and acts to prevent engine overheating during periods of prolonged idle by applying direct intake manifold vacuum to distributor; in so doing, PVS overrides emission control systems. This high intake manifold vacuum speeds up engine idle and promotes better cooling.

Spark Delay Valve – Spark delay valve is installed in distributor vacuum line to the advance diaphragm. This plastic valve delays spark advance during periods of acceleration by slowing of vacuum flow.

Transmission Regulated Spark – This system consists of a solenoid vacuum valve, an ambient temperature switch, and a transmission switch. System acts to retard timing in lower gears, but allows full vacuum advance in high gear.

Decel Valve – This unit is used to control vacuum that is applied to distributor vacuum advance mechanism. During acceleration, decel valve applies carburetor vacuum to distributor, but during deceleration decel valve applies intake manifold vacuum to distributor. By applying intake manifold vacuum during deceleration timing is advanced sufficiently to prevent backfiring in exhaust system.

Thermostatic Air Cleaner – Regardless of type of thermostatic air cleaner used; air valve or thermostat, function is the same, and that is to provide hot air from exhaust manifold shroud to carburetor during warm up conditions.

Evaporative Emission Control – Fuel evaporative control system consists of a special fuel tank, a liquid/vapor separator, a non-vented filler cap, a charcoal filled storage canister located in engine compartment, and plumbing necessary to direct fuel vapors to charcoal canister for storage. With this system fuel vapors are not allowed to evaporate from carburetor or fuel tank, instead they are routed to charcoal canister for storage. Carburetor vacuum later purges canister of stored fuel vapors.

Positive Crankcase Ventilation – Positive crankcase ventilation system is used to control crankcase blow-by gases. This system takes blow-by gases from crankcase and recirculates them back into combustion chamber for reburning. Key device in PCV system is vacuum controlled PCV valve.

SERVICE PROCEDURES

IGNITION TIMING

See appropriate article in TUNE-UP Section.

CARBURETION

Carburetor Models

Application	Model
6-Cyl. Engines	
170″ (1965-67)	Ford 1100 1-Bbl.
170″ (1968-72)	Carter YF 1-Bbl.
200″ (1965)	Ford 1101 1-Bbl.
200″ (1973-74)	Carter YF 1-Bbl.
240″ (1965-69)	Ford 1101 1-Bbl.
240″ (1968-74)	Carter YF 1-Bbl.
300″ (1965-69)	Ford 1101 1-Bbl.
300″ (1969-74)	Carter YF 1-Bbl.
V8 Engines	
289″ (1966-68)	Ford 2100 2-Bbl.
302″ (1969-74)	Ford 2100 2-Bbl.
352″ (1965-67)	Ford 2100 2-Bbl.
360″ (1968-74)	Ford 2100 2-Bbl.
390″ (1968-74)	Ford 2100 2-Bbl.
460″ (1973-74)	Ford 4300 4-Bbl.
460″ (1974)	Holley 4150 4-Bbl.

IDLE SPEED & MIXTURE

See appropriate article in TUNE-UP Section.

Copyright (c) 2001 Mitchell Repair Information Company