

# 1975-79 EXHAUST EMISSION SYSTEMS

## General Motors Systems & Service Procedures

### DESCRIPTION

Several systems are used to control exhaust emissions. System usage depends on model, engine and transmission combination. Each system is designed to control a particular vehicle emission.

**NOTE:** There are 2 Light Duty truck emission control standard classifications: Light Duty and Heavy Duty. Light Duty refers to vehicles up through 8500 lbs. GVW; Heavy Duty refers to vehicles over 8500 lbs. GVW.

### EXHAUST EMISSION SYSTEMS

**Exhaust Gas Recirculation (EGR)** – Exhaust gas recirculation system uses a vacuum operated EGR valve to introduce metered amounts of exhaust gas into engine's combustion chambers. This recirculation of exhaust gas lowers peak combustion temperatures and lowers oxides of nitrogen (NOx) emissions.

**Throttle Return Control (TRC)** – Used on all Heavy Duty emissions models. System opens throttle slightly on deceleration, reducing hydrocarbon emissions.

**Early Fuel Evaporation (EFE)** – This vacuum operated valve directs exhaust gases through a passage in intake manifold to heat carburetor base to prevent carburetor icing and warm automatic choke thermostatic spring.

**Vacuum Advance Spark Control** – Used on all models, this system provides increased spark advance during cold engine operation. When engine coolant temperature is below 100°F, the Thermal Vacuum Switch (TVS) closes and manifold vacuum is supplied to distributor through a delay valve which holds vacuum at high levels during acceleration. Above 100°F, TVS opens, causing manifold vacuum to by-pass delay valve.

**Air Injection Reactor (AIR)** – This system uses an air pump to supply additional fresh air to exhaust ports, further burning exhaust gases before they reach exhaust system. This reduces hydrocarbon (HC) and carbon monoxide (CO) emissions.

**Pulse Air Injection Reactor (PAIR)** – This system, used on 250" 6-cylinder models, allows additional fresh air into exhaust system without using an air pump. A special set of check valves is used to respond to exhaust system pulses and draw in fresh air. As with the AIR system, HC and CO emissions are reduced.

**Catalytic Converter** – Catalytic converter reduces exhaust emissions by continuing the burning process of exhaust gasses. As the partially burned and unburned exhaust gasses enter the converter, a combustion type reaction takes place. This provides a more complete burn, lowering emissions. Vehicles equipped with catalytic converters must use unleaded fuel only.

**Thermac Air Cleaner (TAC)** – Used on all models, this unit is designed to aid engine in more complete burning of air/fuel mixture and smoother operation by controlling temperature of intake air. Heated or cooled portions of air are fed into air cleaner assembly as temperature sensor regulators air cleaner air door.

**Positive Crankcase Ventilation (PCV)** – System removes engine crankcase vapors which result from normal combustions. Vapors are drawn through a metered PCV valve and routed back to intake manifold where they are reburned in the combustion chamber.

**Fuel Evaporative 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 routed to charcoal canister for storage. Engine vacuum later purges canister of stored fuel vapors.

### SERVICE PROCEDURES

#### EXHAUST EMISSION SYSTEMS

See appropriate articles in this section.

#### TUNE-UP

See appropriate article in TUNE-UP PROCEDURES section.