1974-79 EXHAUST EMISSION SYSTEMS
Saab Exhaust Gas Recirculation

All Models

DESCRIPTION

On 1975-77 models, the Exhaust Gas Recirculation (EGR) system consists of an EGR valve, a Ported Vacuum Switch (PVS), exhaust gas crosspipe, vacuum amplifier, vacuum reservoir, and various connecting lines. *See Fig. 1.*

On 1978-79 models, the EGR system is a two-port system, being vacuum-controlled by two connections on the throttle valve housing. System operates to control formation of NOx emissions. This is accomplished through recycling exhaust gas from the exhaust manifold back into the combustion chamber. System consists of an EGR valve, ported vacuum switch, vacuum holding valve, vacuum release valve, EGR crosspipe, and vacuum tubing.

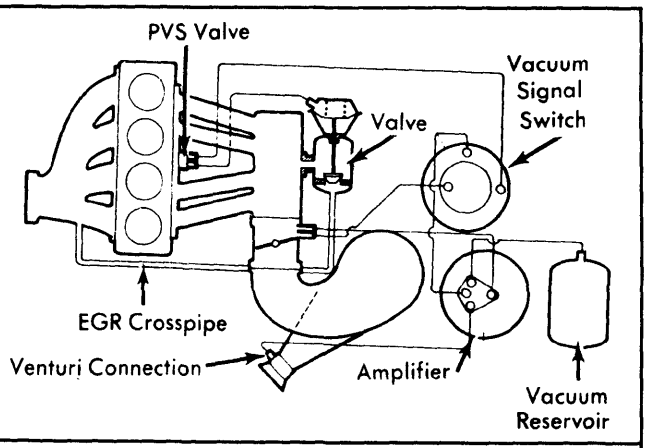

Fig. 1: 1975-77 Exhaust Gas Recirculation System

OPERATION

On 1975-77 models, the EGR valve is controlled by vacuum. When valve opens, a small quantity of exhaust gases flow through crosspipe and EGR valve into intake manifold. When intake air passes through venturi, a vacuum signal, which is proportional to total air flow, is obtained. This vacuum signal is transmitted to vacuum amplifier which amplifies signal by drawing vacuum from vacuum reservoir.

The amplified signal then goes to EGR valve through the vacuum signal switch and PVS valve. Vacuum signal switch cuts out EGR vacuum signal at engine speeds below 2000-3000 RPM. The PVS also senses coolant temperature and cuts out EGR vacuum signal at coolant temperatures lower than 100°F (38°C). At wide open throttle the EGR valve is closed.

On 1978-79 models, the EGR valve is controlled by vacuum. When valve opens, a small quantity of exhaust gases flow through crosspipe and EGR valve into intake manifold. As throttle valve opens slightly and passes the two vacuum ports, a gradual increase in vacuum occurs, which opens the EGR valve. However, at wide open throttle, the vacuum decreases, but normal vacuum level is maintained for 6 seconds by the holding valve.

As throttle valve closes, the EGR valve must also close to prevent rough idle. The release valve bleeds off vacuum so that EGR valve closes. *See Fig. 2.* Below 104°F (40°C) coolant temperature, the PVS will shut off vacuum to the EGR valve to maintain driveability while engine is cold.

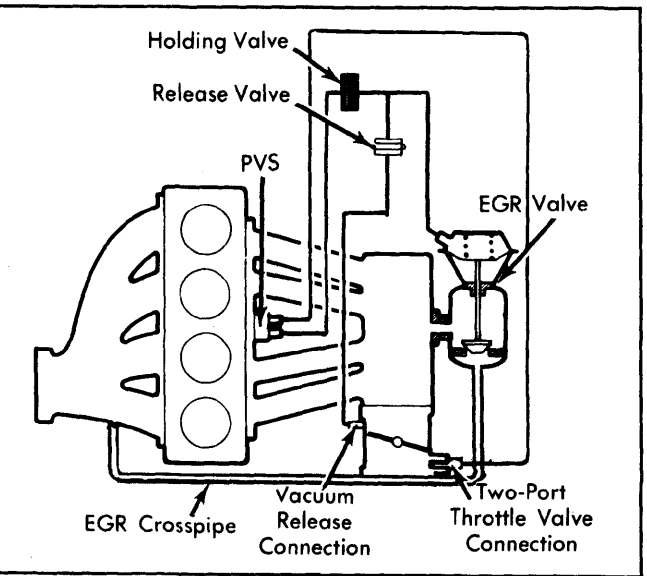

Fig. 2: 1978-79 Exhaust Gas Recirculation System

TESTING

EGR VALVE

1) Remove vacuum hose connecting EGR valve to PVS valve. Apply a vacuum of at least 4 in. Hg to EGR valve, then release vacuum. Valve should close. If not, remove valve for inspection. Faulty EGR valves should be replaced.

2) Connect a vacuum pump and gauge to EGR valve. Check reading at which valve starts to open (valve stem is visible in opening between diaphragm housing and valve body). Valve should start to open at 2.2-2.6 in. Hg.

MAINTENANCE

EGR SYSTEM

1) Remove throttle valve housing, EGR crosspipe and EGR valve every 15,000 miles. Clean calibrated hole in exhaust manifold by using a 0.20" drill bit (0.39" on automatic transmission and 1975-77 models). Flush crosspipe with trichloroethylene and blow out with compressed air.

2) Clean inlet and outlet of EGR valve by using a rotary wire brush. Take care not to damage valve stem during cleaning. Flush out valve with trichloroethylene. Using a vacuum tester, create a vacuum to open valve. At same time, blow compressed air through valve.

3) Check opening and closing of valve by using vacuum tester. Clean hole in intake manifold using a .39" (10 mm) drill and remove any deposits which may have formed inside manifold. Reinstall all components using a new gasket on EGR valve and throttle valve housing. Start engine and make sure that system does not leak.

RESETTING EGR WARNING LIGHT COUNTER

1977-79 Models - Remove left side screen below instrument panel. Remove cover on counter, located at rear of speedometer. Push reset button. *See Fig. 3.* Replace cover and screen.

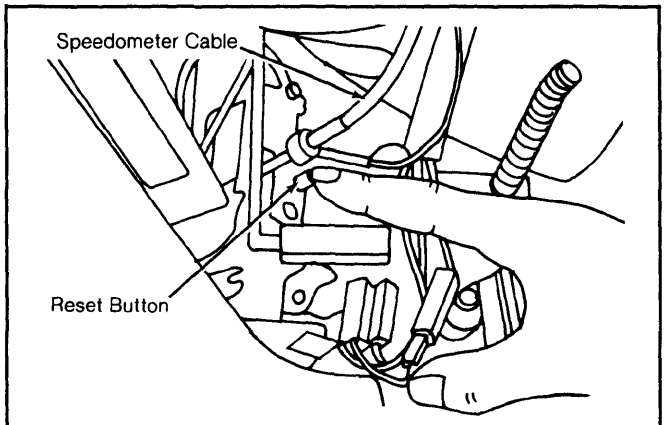

Fig. 3: Resetting EGR Warning Light Counter