BRITISH LEYLAND CARBURETED MODELS
AIR INJECTION SYSTEM

MGB
Spitfire
TR7
TR8

DESCRIPTION

The Air Injection system reduces exhaust emissions by injecting fresh air into the exhaust gas stream as it leaves the combustion chambers. The oxygen in the fresh air, plus the heat of the exhaust gases, causes further oxidation (burning) of the exhaust gases, reducing emissions. The system consists of a belt driven air pump, check valve(s), a pressure relief valve (relief/diverter valve on TR8), and a gulp valve (MGB and Spitfire only).

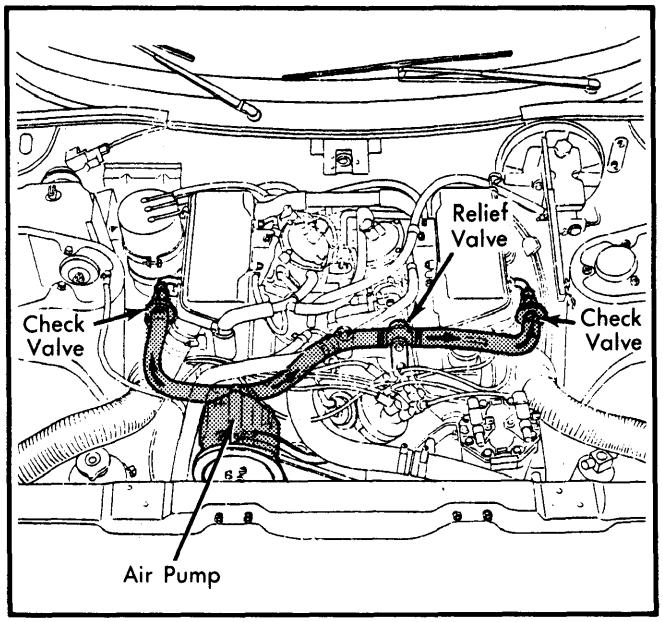

Fig. 1 Triumph TR8 Air Injection System

OPERATION

The belt-driven air pump supplies air under pressure through the one-way check valve through an air manifold to the exhaust ports just above the exhaust valves. The air combines with exhaust gases to continue the oxidation process in the exhaust system. The check valve prevents reverse flow in the air injection manifold when exhaust gas pressure exceeds air pump pressure. A pressure relief valve, built into the pump, controls maximum pump output. The pressure relief/diverter valve also dumps air when the engine decelerates, to reduce backfiring.

The gulp valve provides a quantity of air to the intake manifold under high manifold vacuum, such as sudden throttle closure. This additional air compensates for a temporary over-rich mixture caused by evaporation of the residual fuel on the intake manifold walls to form a leaner mixture that will burn in the cylinders.

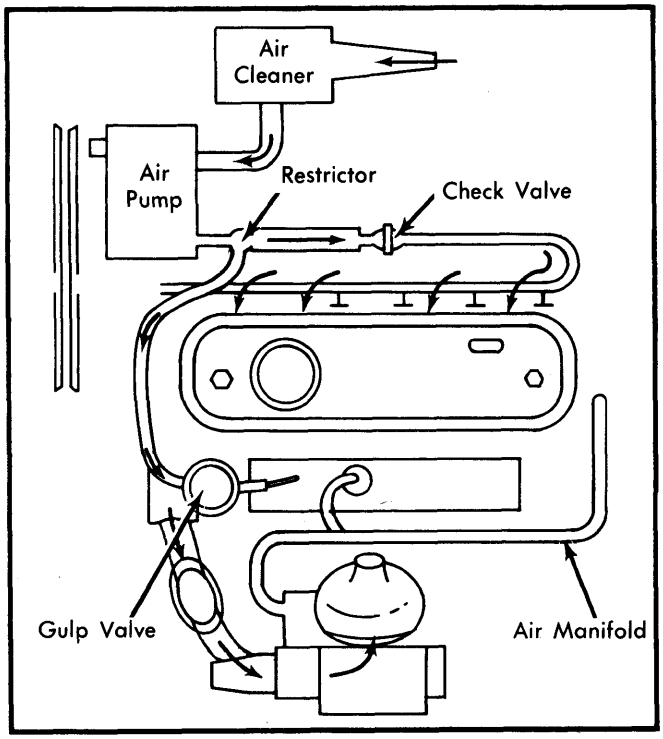

Fig. 2 MGB Air Injection System

TESTING

AIR PUMP & RELIEF VALVE

NOTE — *A faulty air injection pump is usually indicated by excessive air pump noise.*

1) Check air pump drive belt adjustment. Belt is adjusted properly if it can be deflected 3/4-1" midway on its longest run.

2) Disconnect air pump output hose and connect a pressure gauge to hose. Start and idle engine at 850 RPM and check pressure gauge reading.

3) Air pump pressure should be at least 1.0-1.5 psi (.07-.11 kg/cm²). If not, pump is defective and must be replaced.

4) Next, increase engine speed and note the pressure at which pressure relief valve relieves excess pump pressure. Valve should relieve pressure at high engine speeds on Spitfire, and at specifications shown in table for other models.

Air Pump Relief Valve Pressure

Application	Psi(kg/cm²)
MGB	4.5-6.5 (.32-.45)
TR7	8.2-10.5 (.57-.74)
TR8	4.0 (.28)

CHECK VALVE

Remove check valve. Blow air through check valve. Air should flow through valve in one direction only. If not, replace check valve.

BRITISH LEYLAND CARBURETED MODELS
AIR INJECTION SYSTEM (Cont.)

GULP VALVE

1) Disconnect air supply hose to gulp valve at the air pump. Connect a vacuum gauge, using a "T" fitting, to the disconnected end of hose.

2) Start and idle engine. Temporarily block off open end of "T" fitting and check that vacuum gauge reads zero for approximately 15 seconds. If vacuum is registered, replace gulp valve.

NOTE – *Engine speed must not increase above idle speed during this test.*

3) With open end of "T" still blocked off, quickly open, then close throttle. Vacuum gauge should indicate vacuum. Repeat this several times, unblocking "T" after each time to allow vacuum to escape. If gauge fails to register vacuum, replace gulp valve.

DIVERTER VALVE

Check for air being dumped on deceleration by disconnecting air outlet pipe at diverter valve. Open and close throttle quickly and check for valve operation.

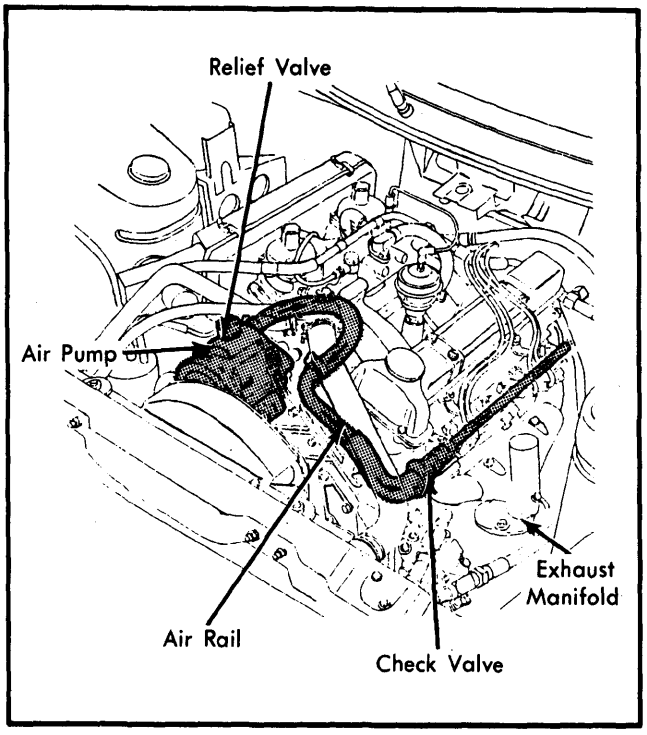

Fig. 3 Triumph TR7 Air Injection System

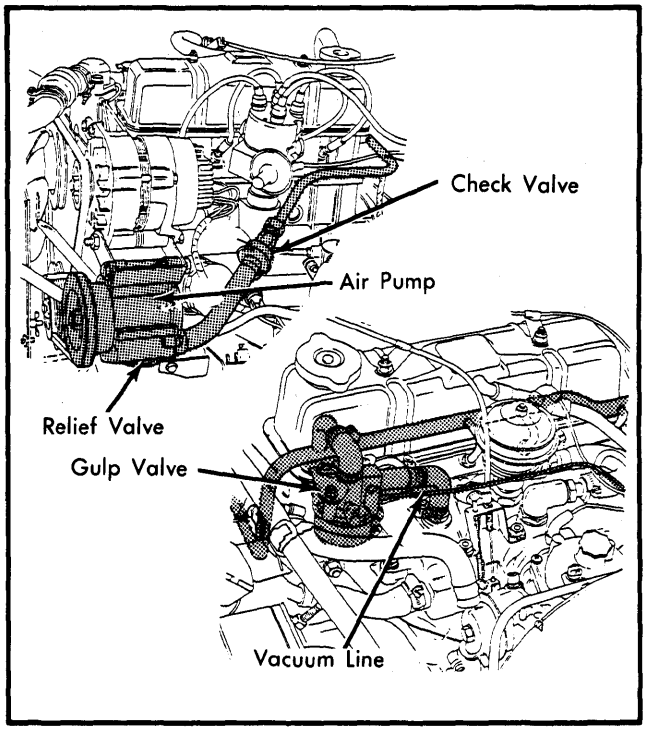

Fig. 4 Triumph Spitfire Air Injection System