Monitor your engine with a vacuum gauge

A vacuum gauge measures the depression (suction) in the engine's inlet manifold. The readings on the dial allow you to pinpoint faults in the engine and judge how economically you are driving.

Two scales

There are two types of vacuum gauge. The true engine performance gauge has a full scale running over about two-thirds of the dial. The face may have numbers or coloured sectors or both to indicate how the engine is responding.

The second type of gauge is more of an economy meter (and is now fitted as standard on more and more new cars). The dial face is marked with 'poor' at one side and 'good' at the other and the needle swings between the two. By keeping the needle in the 'good' range you get the best fuel economy.

Of the two the engine performance gauge is the more useful because it shows you instantly any drop in engine performance, as well as acting as a fuel economy gauge. For maximum fuel economy you simply keep the needle as high as possible on the gauge scale.

Connect to engine

Being a mechanical gauge, fitting it to your car involves very little wiring. You just connect it into the panel light circuit.

Connecting the gauge to the engine can be easy or complex, depending on the car. If your car has a brake servo, you can plumb the gauge's piping into the flexible hose that connects to the inlet manifold, using the T-piece that is often provided with the gauge.

If that is not possible, buy a special sandwich adapter plate. This fits between the carburettor and inlet manifold, and has a take-off stub for the gauge piping.

The final, and most difficult, method of connecting to the inlet manifold is to drill a hole in the manifold, cut a screw thread and screw in a small brass adapter stub. The piping for the gauge is then attached to the stub.

intermediate

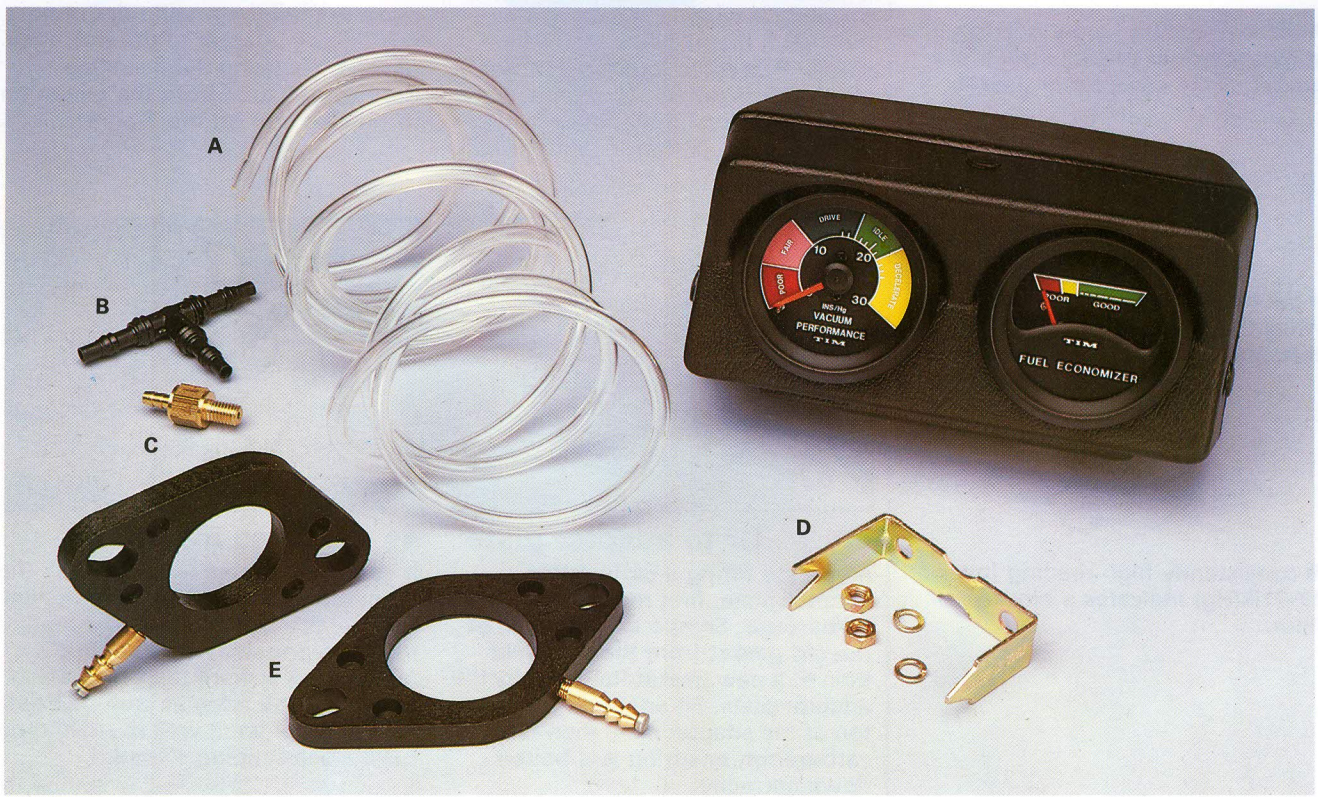
Tools and materials

- ☐ Vacuum gauge
- ☐ Pod or bracket (if required)
- ☐ Sharp knife or hacksaw
- ☐ Spanners and pliers
- ☐ Scotchlok connector
- ☐ Carburettor adapter plate, if needed
- ☐ Drill and drill bits, if needed

Two gauges

The two types of vacuum gauge are fitted here into a pod (not supplied with the kit). The engine performance gauge has a full scale and is marked in mercury inches (in/Hg) and coloured segments. The fuel economizer gauge has a simple 'poor-good' scale.

Included in the kit are a length of vacuum tubing (**A**), a T-piece (**B**) and manifold adapter (**C**), and mounting brackets and nuts (**D**). If you do not want to use the adapters supplied, an alternative is to use the carburettor adapter plate with a vacuum take-off (**E**).



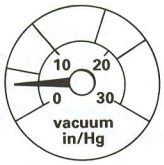
⚠ Drilling manifolds

If you intend to drill the manifold to connect the gauge, there are a couple of points to watch. First the manifold must be removed from the car. If you try to drill into the manifold with it still on the car, shavings of metal from the drilling will fall inside. When you start the car they will be sucked into the engine, with possibly disastrous results.

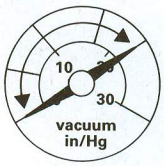
Note also that you can't drill into a water-heated inlet manifold. If you did, you would ruin it. So ask your dealer where you can safely drill.

Reading a vacuum gauge

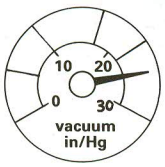
An engine performance gauge can tell you a lot about the condition of your car's engine. The dials below reveal some common faults.



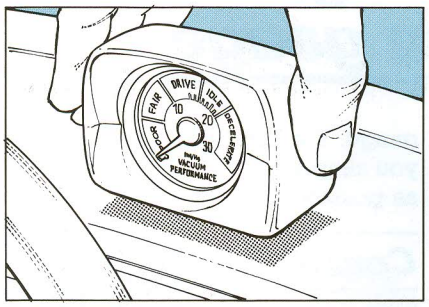
A steady reading below 5in/Hg shows a leak at the inlet manifold gasket or the carburettor gasket.



If the reading goes up to 20in/Hg while revving but drops back to zero, the piston rings are worn.

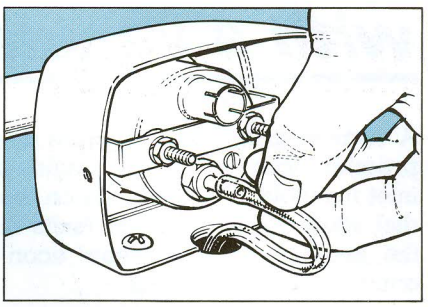


A consistently high reading (over 17-21in/Hg) indicates a blocked air filter.



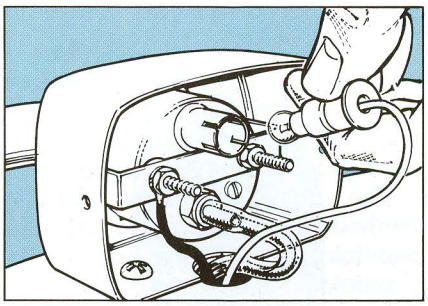
1 Fit the gauge

Decide where to fit the gauge so that you can read it easily. Bear in mind that you will have to feed the tube through to the engine bay, so site it for ease of running the tube through. Now fit the gauge into a pod or bracket or into the dash as shown in *Projects 12.*



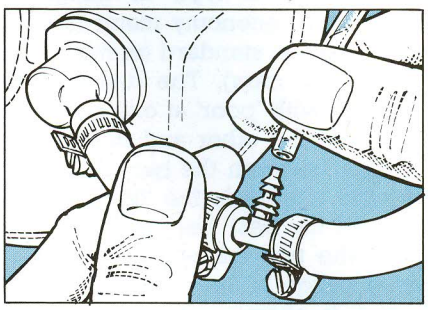
2 Run the tube

Attach the tube to the rear of the gauge. It may be a push-fit or you may have to tighten a union on to the gauge. Now run the tube to the bulkhead. You may be able to run it through an existing grommet but, if not, drill a new hole, fit a grommet and feed the tube through into the engine bay.



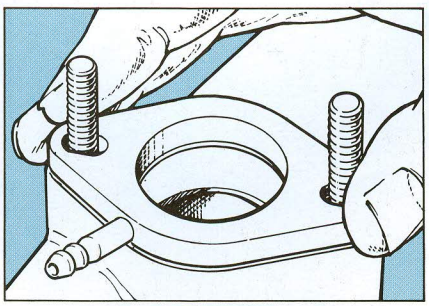
3 Wire illumination

Fit the bulbholder into the rear of the gauge, then run the wire up to the panel light wires. On a car with individual instruments, you can simply Scotchlok into the light for another instrument. Where they are in a cluster, you may prefer to wire up at the back of the sidelight switch.



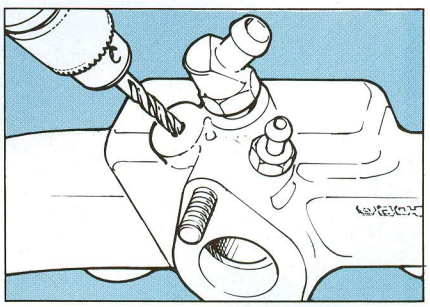
4a Connect to servo . . .

If your car has a brake servo, cut the brake servo at a convenient point close to the inlet manifold. Connect the T-piece adapter to the two ends of the hose using Jubilee clips. Connect the tube from the gauge on to the last arm on the T-piece.



4b . . . Or to adapter plate

If you are fitting a carburettor adapter plate, first remove the carburettor. Scrape off all traces of the old gasket from the manifold then fit a new gasket followed by the adapter plate. Fit another gasket on top of the adapter plate then refit the carburettor, ensuring it is bolted down correctly.



4c . . . Or to manifold

If your only option is to drill into the manifold to connect the gauge, first remove the carburettor and manifold from the engine. Then drill the manifold at a point near to the centre. Fit the adapter stub into the hole and tighten it well in – it should have a self-tapping thread.