Figure G3-5

Purge control system – fault diagnosis chart

(Naturally aspirated engines)

Check the purge flow rate

Ignition off.
Working under the front left-hand wing remove the rear section (4 door cars) or front section (2 door cars) of the underwing sheet. This will reveal the canister assembly.
Detach the hose from the bottom of the solenoid.
Fit an additional length of hose to the base of the solenoid.
Can you blow down the hose and through the solenoid?

NO → Investigate and rectify blocked hoses to the throttle body or renew the control solenoid (see item 7)

YES

Ignition on
Can you blow down the hose and through the solenoid?

YES → Measure the voltage on the white/purple cable at the solenoid plug and socket (see item B and 6)
Is it 12 volts?

NO → Check a. Throttle position swi
circuit
b. Temperature switch

YES → Disconnect the solenoid plug
Check the black cable to earth
Is it continuous?

NO

Disconnect the throttle position switch at the plug and socket (see item C and 9)
Ignition on
Can you blow down the hose and through the solenoid?

YES → **Check the temperature switch circuit**
Leave the throttle position switch disconnected.
Disconnect the temperature switch plug (see item D and 3).
Bridge the cables in the plug.
Ignition on
Can you blow down the hose and through the solenoid?

YES → Unbridge the temperature swi
Measure the voltage on the w
temperature switch plug.
Is it 12 volts?

NO → Replace the temperature switch

NO

Detach the temperature switch plug (see item D and 3)
Ignition on
Can you blow down the hose and through the solenoid?

YES → **Check the throttle switch circuit**
leave the temperature switch plug disconnected.
Measure the voltage on the white cable at the throttle position switch plug and socket (see item C and 9).
Is it 12 volts?

NO → Refer to TSD 4848
Check the ignition feed white
on fuseboard 1

YES → Ensure that the throttles are
Measure the voltage on the b
at the throttle position switch
Is it 12 volts?

NO

Detach the temperature switch plug (see item D and 3)
Ignition on
Partially open the throttles
Can you blow down the hose and through the solenoid?

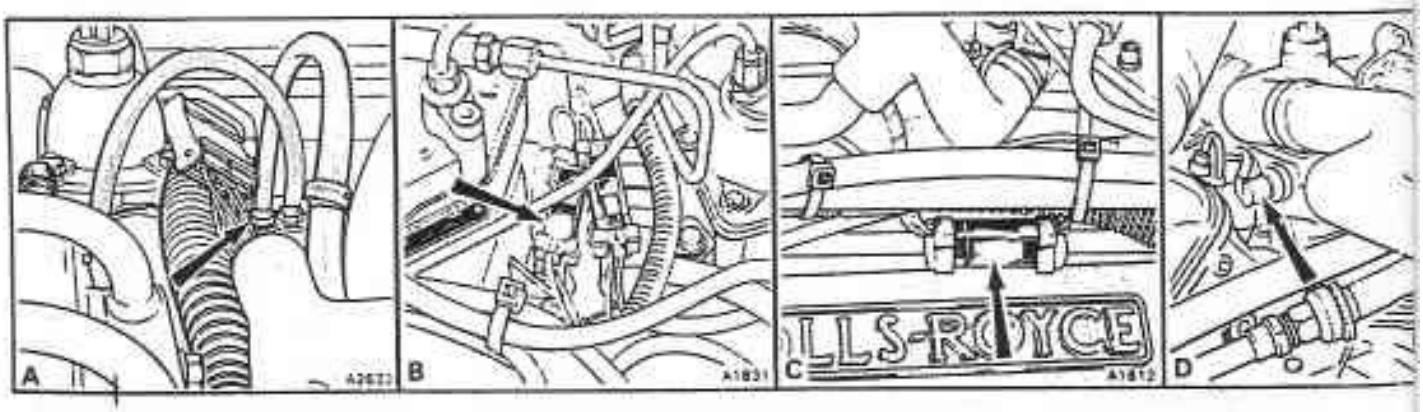
NO → (see above)

YES → Control systems function satisfactorily

Cars produced to a Middle East and Taiwan specification do not have a temperature switch

Replace the throttle position

Important
Before carrying out a test ensu
following conditions apply.
1. **The battery is fully charged**
2. **The engine is cold**
3. **Use a multimeter to carry**
4. **The ignition is switched off**
disconnecting or connectin
connections
5. **Always remake any connec**
immediately a test is comp
6. **Ensure that fuse B3 on fus**
intact
7. **Visually inspect the hoses**



re that the

ut the tests
when either
g electrical

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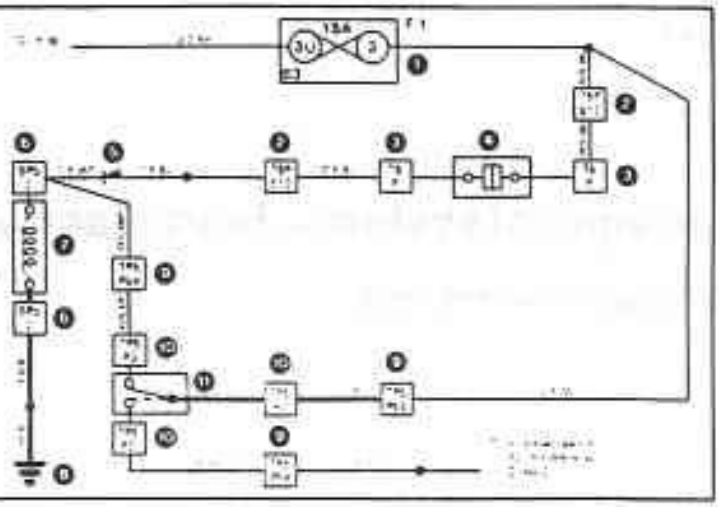
eted
eboard 1 is

or deterioration

ch and

nd circuit

Key
1 Fuse
2 Temperature switch plug and socket (12 way)
3 Temperature switch plug
4 Temperature switch
5 Diode
6 Solenoid plug and socket (2 way)
7 Solenoid valve
8 Engine earth point
9 Throttle position switch plug and socket (4 way)
10 Throttle position switch plug
11 Throttle position switch
● Splice



nd socket
for continuity.

YES → Replace the solenoid

NO → Rectify the fault on the black earth cable

ch plug
ite cable in the

YES → Measure the voltage on the slate/blue cable as it enters the diode (see item F and 5)
Is it 12 volts?

NO → Check for continuity of the slate/blue cable from the diode to the temperature switch plug (see item D and 5).
This will include the 12 way connector (see item E and 2)

YES → Measure the voltage on the white/purple cable as it exits from the diode
Is it 12 volts?

NO → Replace the diode

YES → Measure the voltage on the white/purple cable at the solenoid plug and socket (see item B and 6)
Is it 12 volts?

NO → Check for continuity of the white/purple cable from the control solenoid plug and socket (see item B and 6) to either
Temperature switch circuit – The diode (see item F and 5)
The throttle switch circuit – The switch plug and socket (see item C and 9)

cable to fuse B3

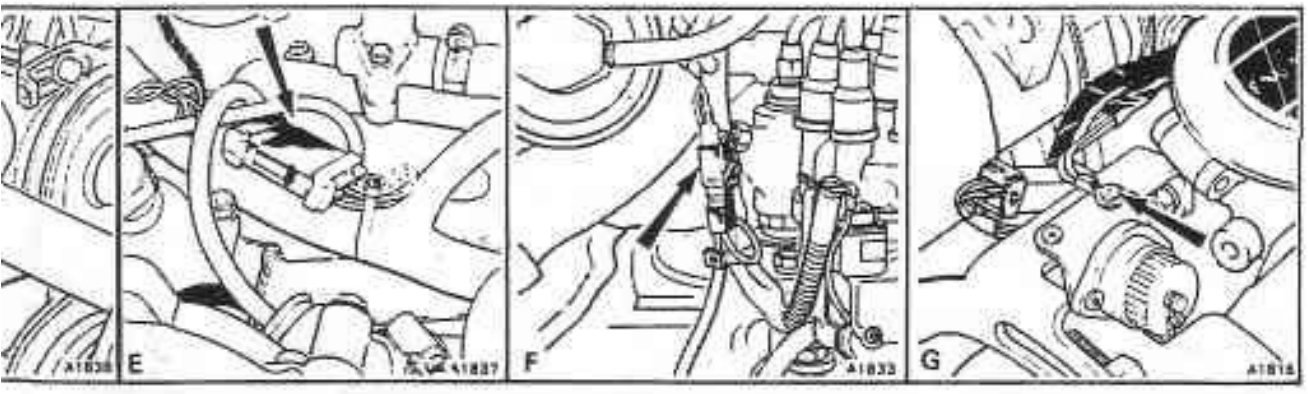
osed.
ue/purple cable
plug and socket

YES → Disconnect the solenoid plug and socket. Check for continuity on the black cable from this plug to the engine earth point (see item G and 8)
Is it continuous?

NO → Rectify the fault on the black earth cable

YES → Replace the solenoid

witch



Check the purge flow rate (see page G3-12)
Does this operate correctly?
YES → Purge control system functioning satisfactorily
NO

Working under the front left-hand wing remove the rear section of the under-wing sheet. This will reveal the canister assembly. Detach the hose from the bottom of the solenoid (see item A). Fit an additional length of hose to the base of the solenoid.
Can you blow down the hose and through the solenoid?
NO → Change solenoid
YES

Switch on the ignition.
Ensure that the engine is cold
Can you blow down the hose and through the solenoid?
YES → Check the 15 amp fuse B3 on fuseboard 1
Is it intact?
YES → Check the voltage on the pink/
the purge control solenoid 2 w
socket (see item B)
Is it 12 volts?
NO

NO → Rectify faulty fuse

NO → Check the voltage on the pink/
the engine/valance 12 way plu
(see item D).
Is it 12 volts?
YES

Detach the plug from the temperature switch in the thermostat housing (see item C).
Switch on the ignition
On cars conforming to a Middle East and Taiwan specification, partially open the throttles
Can you blow down the hose and through the solenoid?
NO → Change the solenoid
YES

YES → Rectify fault in the pink/white
the purge control solenoid 2 w
socket and the engine/valance
and socket

Detach the throttle position switch 4 way plug and socket (see item E)
With the switch in the idle position check for continuity at the plug between the blue/purple cable and the black/pink cable
Are they continuous?
NO → Remove the throttle position switch and link loom.
Check for continuity of the cables individually
Are they continuous?
YES → Fit a new switch
YES
NO

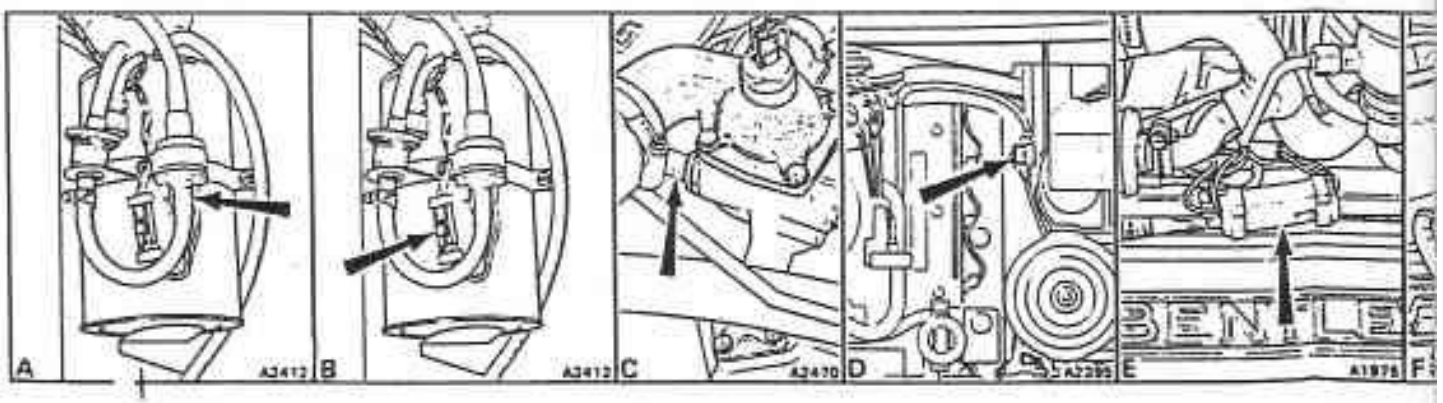
NO → Rectify faulty cables

Leave conditions as in previous test.
Open throttles
Does the wiring through the switch go 'open circuit'?
YES → Disconnect the throttle position switch 4 way plug and socket.
Disconnect the K-Motronic ECU multi-plug.
Check the voltage on the blue/purple cable in the throttle position switch plug (see item E)
Is it 12 volts?
YES → Leave condition as in previous
Check the voltage on the blue/
the back of the multi-plug (see
Is it 12 volts?
NO
NO

Investigate faulty switch or link loom

NO → Check for continuity of the cables between the engine/valance 12 way plug and socket, and the throttle position switch 4 way plug and socket.
Rectify as necessary

NO → Check for continuity of the cabl
the engine/valance 12 way plu
and the multi-plug.
Rectify as necessary



hite cable at
plug and

YES

Check the voltage on the black/yellow cable at the purge control solenoid 2 way plug and socket (see item B)
Is it 12 volts?

YES

Check the voltage on the black/yellow cable at the engine/valance 12 way plug and socket (see item D)
Is it 12 volts?

YES

NO

Check continuity of the black/yellow cable

NO

Disconnect the solenoid 2 way plug and socket and check for continuity through the solenoid
Is it continuous?

NO

Replace solenoid

YES

Remake the 2 way plug and socket and ensure that it is a good connection

hite cable at
and socket

NO

Check the pink/white cable and the pink cable to the fuse

ible between
plug and
2 way plug

est.
urple cable in
tem F)

YES

Disconnect the electrical plug from the duty cycle valve and check for continuity across the valve
Is it continuous?

YES

Leave the plug disconnected.
Check the voltage on the pink/white cable in the plug
Is it 12 volts?

YES

NO

Fit a new duty cycle valve

NO

Rectify faulty pink/white cable between the solenoid and the duty cycle plug

s between
and socket

Figure G3-6

Purge control system – fault diagnosis chart (Turbocharged engines) Sheet 2 of 2

Check the voltage on the yellow/black cable at thermostat/engine 12 way plug and socket
Is it 12 volts?

YES → Check the voltage on the blue cable in the thermostat/engine 12 way plug and socket
Is it 12 volts?

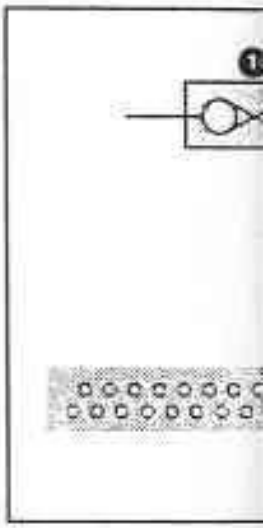
NO → Withdraw the plug from housing temperature swi
Bridge the plug contacts
check the voltage on the
thermostat/engine 12 w
Is it 12 volts?

YE

Replace thermostat hous

NO → Check for continuity of the yellow/black and the black/yellow cable between the engine/valance 12 way plug and socket, and the thermostat/engine 12 way plug and socket.
Rectify the faulty cable(s) and diode as necessary.

YES → Check the black earth cable for continuity and rectify as necessary



Disconnect the K-Motronic ECU multi-plug.
Disconnect the plug from the duty cycle valve.
Check for continuity of the white/blue cable between the duty cycle valve plug through the engine/valance 12 way plug and socket to terminal 15 in the back of the ECU multi-plug
Is it continuous?

YES → Position the multi-meter in the white/blue cable line from the duty cycle valve to the K-Motronic ECU.
Disconnect the plug from the temperature in the thermostat housing.
Start and run the engine above idle speed.
Check to ensure that the reading on the multi-meter indicates that the ECU is operating the duty cycle valve approximately in accordance with the phases quoted in Purge flow rate – To check
Does this happen?

YES → System is functioning s

NO → Rectify faulty cables or connections as necessary

NO → Replace the ECU

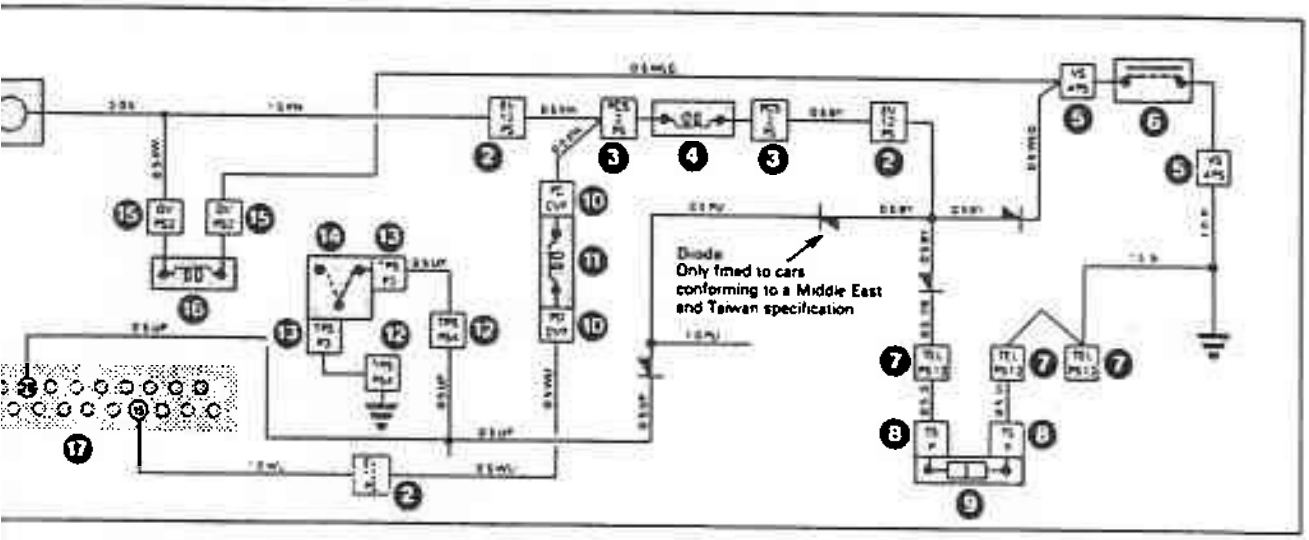
Important
Before carrying out a tes
following conditions app
1. The battery is fully ch
2. The engine is cold
3. Use a multi-meter to
4. The ignition is switch
disconnecting or conn
connections
5. Always remake any c
immediately a test is
6. Visually inspect the s
deterioration
7. Ensure fuse B3 on fu

e thermostat
th.
nd then again
lue cable in the
plug and socket

NO

Check continuity of the slate and the blue cables between the thermostat/engine 12 way plug and socket, and the thermostat switch plug

g switch



1 Fuse 15 amp B3 F1
2 Engine/Valance 12 way plug and socket
3 Purge cut-off solenoid 2 way plug and socket
4 Purge cut-off solenoid valve
5 Vacuum switch 4 way plug and socket
6 Dump valve vacuum switch
7 Thermostat/Engine loom plug and socket 12 way
8 Temperature switch plug
9 Temperature switch
10 Purge duty cycle control valve plug
11 Purge duty cycle control valve
12 Throttle position switch plug and socket 4 way
13 Throttle position switch plug 3 way
14 Throttle position switch
15 Dump valve plug and socket 2 way
16 Dump valve solenoid
17 K-Motronic ECU

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l off when either
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mpleted
lem hoses for

board 1 is intact

collects the stored fuel vapours. This mixture then passes along a hose from the purge connection on the canister via a cut-off solenoid and restrictor (naturally aspirated cars) or duty cycle purge control valve (turbocharged cars) into the induction manifold.

Operation of the purge system is controlled by the solenoid valve that cuts out the purge flow until a predetermined coolant temperature is reached. On turbocharged cars the solenoid also cuts out the purge flow under boost operating conditions. On naturally aspirated cars and turbocharged cars (without catalytic converters) the solenoid also cuts out the purge flow at idle.

Emission control canister (see fig. G3-3)
The evaporative emission control canister is mounted under the left-hand front wing.

The canister is a cylindrical container filled with activated carbon granules. The top of the canister incorporates a tube, open to atmosphere to admit purge air, together with fuel tank vent and purge connection pipes.

At the mileage specified in the service schedules, remove the control canister and fit a new assembly.

Emission control canister – To remove and fit

1. Locate the emission control canister by removing the appropriate underwing sheet, as follows.

4 door cars – The canister is located behind the front left-hand wheel. Remove the rear section of the underwing sheet.

2 door cars – The canister is located in front of the front left-hand wheel. Remove the forward section of the underwing sheet.

2. The underwing sheet can be withdrawn once the self-tapping screws, situated around the edge of the sheet have been removed.
3. Detach the hoses arrowed in figure G3-3. Label each hose to facilitate identification.
4. On turbocharged cars, disconnect the electrical plug to the duty cycle purge valve.
5. Disconnect the 2-way electrical plug and socket to the solenoid valve.
6. Note the position of the canister and its connections in relation to the various hoses, brackets, and clamping ring.
7. Unscrew the mounting clamp ring securing screw and carefully manoeuvre the canister from its position.
8. Fit the canister to the vehicle by reversing the procedure given for removal.

Fuel tank vent
The fuel tank is vented to the filler neck via two connections. This allows adequate venting of the tank during filling.

A separate vapour line from the centre of the tank (the rollover tube) almost encircles the tank before passing via the vent line and fuel tank pressure control valve to the evaporative loss control canister.

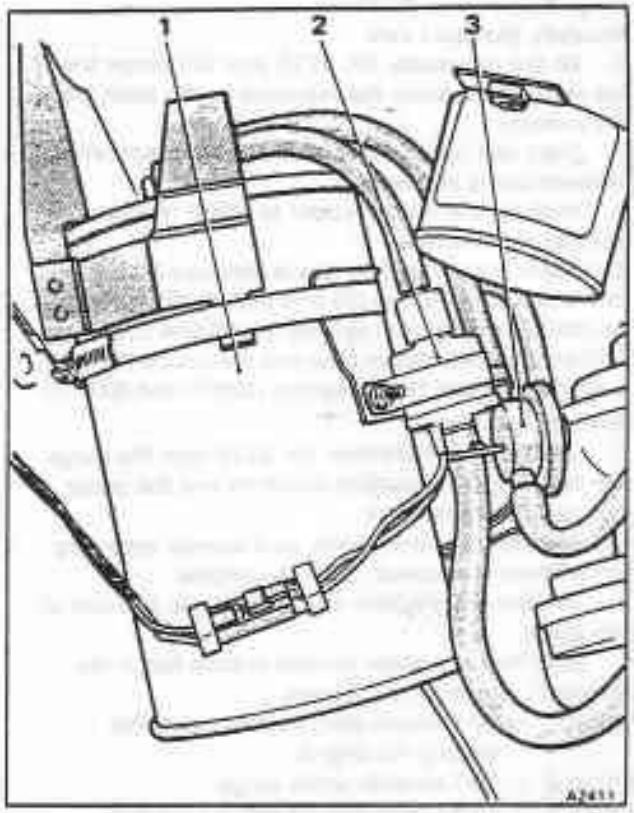

Fig. G3-7 Canister installation – 2 door cars
1 Canister
2 Cut-off solenoid
3 Pressure control valve – fuel tank vent

The vent line is situated under the floor of the car on the left-hand side as shown in figure G3-1. It includes a restrictor at its highest point and passes around the tank to prevent liquid fuel from entering the vent line during harsh manoeuvres or in the event of vehicle inversion.

In the event of a blockage in the vapour line to the control canister, a combined pressure and vacuum relief valve is incorporated into the fuel filler cap. The valve prevents an excessive pressure build-up in the fuel tank caused by fuel vaporization or vacuum as the fuel is consumed.

The fuel tank pressure control valve regulates the release of fuel vapour from the tank vent line to the canister. The valve only opens to allow vapour to pass when the pressure in the tank exceeds the valve setting.

For all other details of the fuel tank refer to Chapter C, Fuel system.

On naturally aspirated cars the flow rate is controlled by a restrictor but on turbocharged cars it is controlled by a purge control valve. This valve regulates the purge flow rate depending upon the engine operating conditions. It receives a duty cycle signal from the engine management system ECU which is programmed with purge control characteristic data.

Purge flow rate – To check

Naturally aspirated cars

1. Fit the flowmeter RH 8725 into the purge line at the restrictor, leaving the restrictor in the hose from the canister.
2. Start and run the engine until normal operating temperature is attained.
3. Increase the engine speed to 2500 rev/min by opening the throttles.
4. Check the purge flow rate is between 26,0 litres/min and 33,0 litres/min (55 ft^3/h and 70 ft^3/h), except on 1987/88 model year cars for the Middle East or Taiwan when the purge flow rate should be between 9,4 litres/min and 18,8 litres/min (20ft^3/h and 40 ft^3/h).

Turbocharged cars

1. Connect the flowmeter RH 8725 into the purge line between the induction manifold and the purge control duty cycle valve.
2. Start and run the engine until normal operating temperature is attained. Stop the engine.
3. To carry out the test start the engine and run at idle speed.
4. Note that the purge control system has three phases of operation, as follows.

Phase 1 – 90 seconds delay before purge after starting the engine.
Phase 2 – 150 seconds active purge.
Phase 3 – 15 seconds interval with no purge to allow the lambda pre-control system (if fitted) to learn previous purge/driving cycles.

Continued engine operation results in alternating Phases of 150 seconds active purge and 105 seconds no purge (phases 1 and 3 = 90 seconds + 15 seconds).

Note Operation 4 does not apply to turbocharged cars fitted with a fuel evaporative emission control system that are produced to a Middle East or Taiwan specification.

5. Increase the engine speed to 2000 ± 50 rev/min by opening the throttles.
6. Check that the purge flow rate is between 53 ft/h and 106 ft^3/h (25 litres/min and 50 litres/min), in the 150 seconds active purge phase (refer to Operation 4).

All cars

If the flow is less than the minimum, check for the following.

1. Leak in hoses/pipes.
2. Blockage in hoses/pipes.
3. Control system malfunction.

If the flow is in excess of the maximum, check for the following.

1. Excessively lean mixture strength.
2. Air leak between the throttle body and the induction manifold.