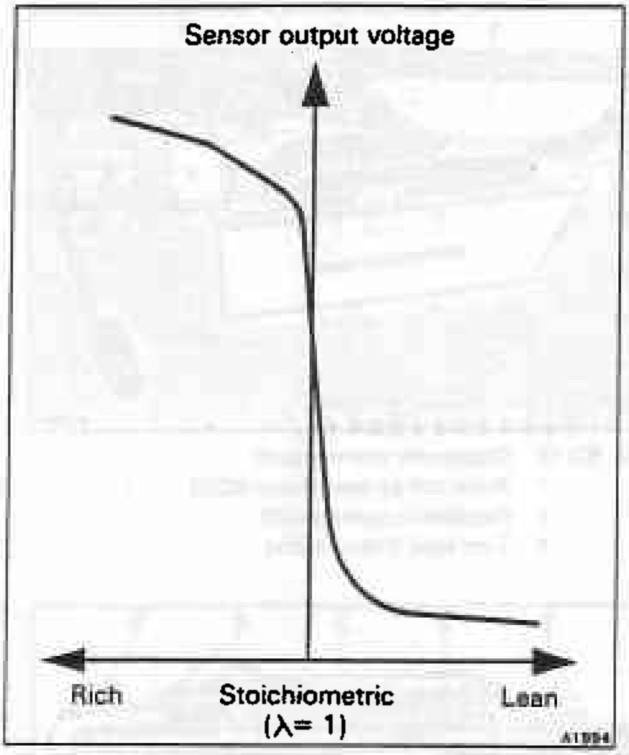



**Fig. B2-15 Typical sensor output signal**

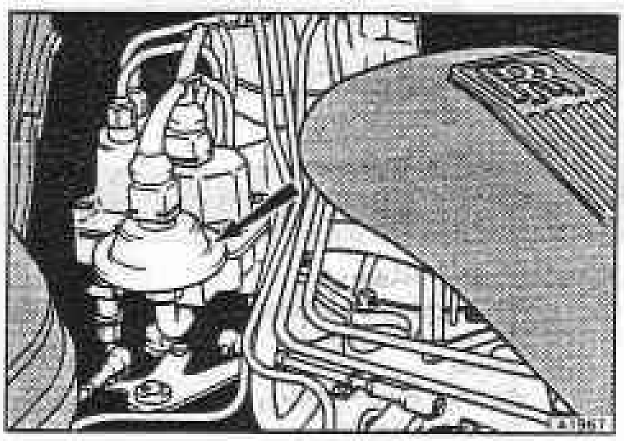


**Fig. B2-16 Acceleration enrichment switch**

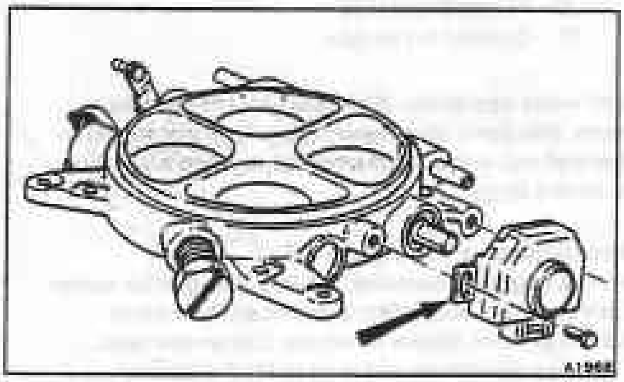


**Fig. B2-17 Throttle position switch**

To prevent this, a valve is fitted inside the fuel distributor between the primary circuit and the return line.

During all modes of operation, primary circuit pressure holds the valve closed. However, after the engine has been switched off the primary circuit pressure drops and the spring loaded anti-suction valve opens to allow fuel to flow from the return line into the primary circuit. This prevents a depression forming above the control piston.

**Acceleration enrichment switch** (see fig. B2-16)
Fitted to cars with a lambda control system.

During rapid acceleration, when the engine is cold an extra rich air/fuel mixture is required to preserve good driveability and safety when overtaking.

These requirements are fulfilled by an acceleration enrichment switch that is connected electrically to the ECU (via a thermal switch mounted in the thermostat housing) and by a vacuum hose to the induction manifold.

Inside the acceleration enrichment switch are two electrical contacts. One of the contacts is attached to a spring loaded diaphragm that has a small bleed hole.

Under normal driving conditions the induction manifold vacuum signal acts on the diaphragm, overcomes the spring and breaks the electrical signals.

If the throttles are opened quickly, the induction manifold signal decreases rapidly, the spring returns the diaphragm and makes the electrical contacts.

The electrical signal is conveyed to the ECU which then switches to provide the necessary rich mixture.

Acceleration enrichment is no longer required once the engine has warmed-up. Therefore, at a predetermined coolant temperature the thermal switch contacts break to inhibit the system.

**Throttle position switch** (see fig. B2-17)
This switch is situated on the side of the throttle body.

The primary throttle spindle activates the switch and changes the fuel injection system from the 'closed loop' operating mode when the throttle is opened wide.

**Warm-up regulator** (see fig. B2-18)
The purpose of the warm-up regulator is to increase the control pressure as the engine warms-up so that at normal operating temperature full control pressure is exerted on the end of the control piston.

The unit is operated by a bi-metal strip which in cold conditions acts against the delivery valve spring and so determines the control pressure. When the engine is started, this bi-metal strip is electrically heated and releases the delivery valve spring which in turn allows the spring pressure to close the fuel passage and increase the control pressure.

On cars fitted with a lambda control system the warm-up regulator assembly also incorporates an aneroid cell which slightly adjusts the control pressure for mixture compensation at high altitudes.

The warm-up regulator is located so that it will assume the temperature of the engine, this ensures that the mixture is not over enriched when starting a partially warmed-up engine.

**Auxiliary air valve (see fig. B2-19)**
When the engine is cold the auxiliary air valve supplies a larger volume of air to the engine than is dictated by the position of the throttle butterfly valve. The air passes through a hole in a pivoted blocking plate situated between the inlet and outlet connections. The movement of the blocking plate is dependent upon an electrically heated bi-metal strip.

When starting a cold engine the blocking plate is in the open position. However, as the bi-metal strip warms-up it progressively relaxes its force on the plate, allowing the return spring to pull the plate to the closed position. This reduces the engine speed to the normal idle speed setting.

**Thermal time switch (see fig. B2-20)**
The thermal time switch limits the length of time that the cold start injector remains open. During engine cranking the heating coil inside the switch causes the bi-metal contact to open which in turn, switches off the cold start injector.

The switch is mounted in the thermostat housing and inhibits operation of the cold start injector above a predetermined coolant temperature.

## Electrical circuit and System warning device

**Electrical circuit (see figs. B2-21 and B2-22)**
The electrical components associated with the fuel injection system comprise the following main circuits.
Engine running sensor and fuel pump inhibit.
Cold start injector and thermal time switch.
Pressure control valve, auxiliary air valve, and warm-up regulator.
Electronic control unit and oxygen sensor.

**Engine running sensor and fuel pump inhibit (see figs. B2-21 and B2-22)**
The engine running sensor is located adjacent to the fuel injection system electronic control unit under the facia.

The purpose of the engine running sensor is to inhibit the supply of power to the fuel pump unless the engine is running. There is however, one by-pass to the circuit which allows the fuel pump to operate when the engine is being 'cranked' by the starter motor. A relay within the engine running sensor assembly provides the means of switching on or off the power supply to the fuel pump.

The supply to the fuel pump is along the pink cable from the fuel injection system fuse to the 'engine running' sensor and then out to the pump via the white/pink cable. The engine running sensor circuit is fed via the ignition fuse and the white cable. It is earthed through the black cable. When the engine is being cranked, a 12 volt feed on the brown/black cable causes the relay in the sensor to be 'pulled in' and thus the fuel pump is switched on. Once the engine is running the ignition pulses from the coil primary are fed to the engine running sensor through the white/black wire and the pump relay remains energized.

If the engine speed falls below 150 rev/min the time between the ignition pulses is too long to hold the relay in the energized state and therefore, the power to the fuel pump is switched off.

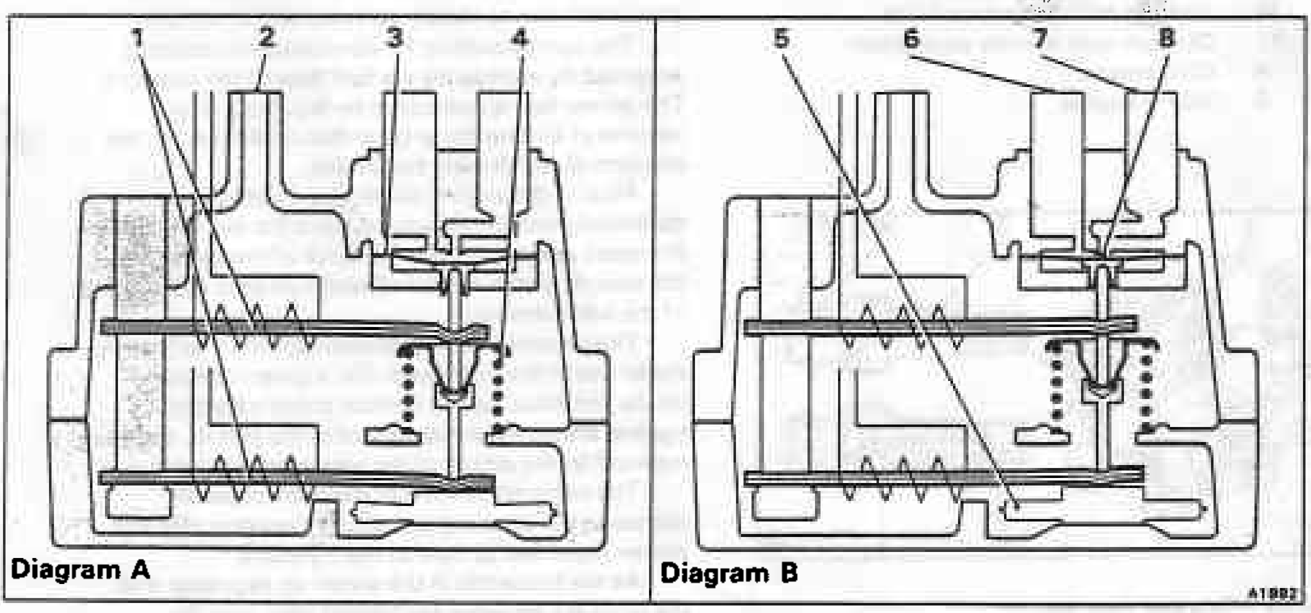



**Fig. B2-18 Warm-up regulator**
1 Bi-metal strip with heater elements
2 Vent to atmosphere
3 Diaphragm
4 Return spring
5 Aneroid cell
6 Fuel inlet connection
7 Fuel outlet connection
8 Bleed orifice
A Cold engine
B Warm engine

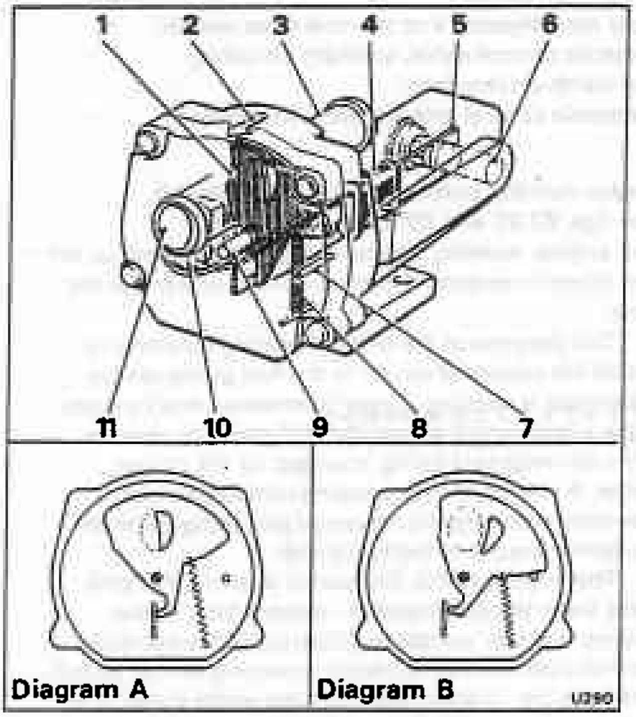



**Fig. B2-19 Auxiliary air valve**

1 Blocking plate
2 Airflow direction
3 Upstream throttle connection
4 Heating coil
5 Bi-metallic strip
6 Clamping pin
7 Blocking plate limit stop
8 Return spring
9 Pivot pin
10 Heating coil connection block
11 Downstream throttle connection
A Cold engine
B Warm engine

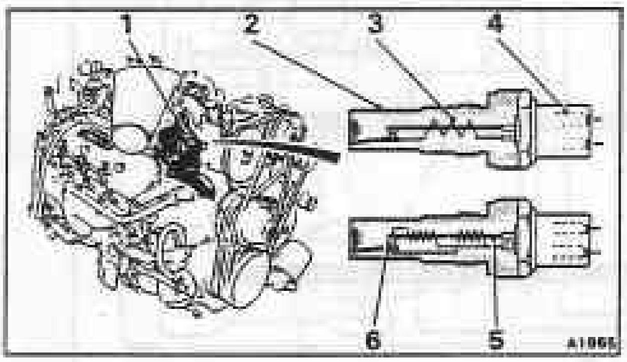



**Fig. B2-20 Thermal time switch**

1 Thermostat housing
2 Housing
3 Heating coil(s)
4 Plug connector
5 Bi-metallic strip
6 Contacts

**Cold start injector and thermal time switch (see figs. B2-21 and B2-22)**

When the engine is being 'cranked' (i.e. the key in the switchbox is held in the START position) power will be supplied via the white/red cable from the starter relay to the thermal time switch, situated in the thermostat housing and the cold start injector. The injector will therefore, operate whenever the engine is being 'cranked', unless the earth is interrupted by the thermal time switch due to either the temperature of engine coolant or the length of operating time.

**System warning device (see fig. B2-22)**

Fitted to cars with a lambda control system (except cars produced to the Japanese specification).

Failure of the oxygen sensor is detected by the electronic control unit which relies upon the output of the sensor for 'closed loop control'. Failure will cause the system to change to the 'open loop control' and in addition, illuminate the warning lamp bulb on the facia to indicate the need for maintenance.

The warning lamp may illuminate when the engine is being cranked but should extinguish soon after the engine starts. **The lamp will however, remain illuminated until the oxygen sensor reaches it normal operating temperature.**

## Modes of operation

**Engine warm-up**

During the warm-up period two basic compensations are necessary.

The first compensation is for fuel condensation losses on the cold walls of the combustion chamber and inlet manifold. The second compensation is for power lost due to increased mechanical friction.

The compensation for condensation losses is achieved by increasing the fuel flow to the injectors. The power lost is overcome by feeding a larger volume of air into the engine than is dictated by the position of the throttle butterflies.

Prior to the engine starting the control piston is in its lowest position. However, once the air sensor plate is moved downwards by the force of the intake air, the control piston will be moved upwards in the barrel of the fuel distributor.

The control piston is allowed to move further up the barrel of the distributor (for a given volume of intake air), because the control pressure acting against the upward movement of the piston, has been reduced by the action of the warm-up regulator.

The extra movement of the control piston increases the opening at the fuel metering slits and allows more fuel to flow to the injectors.

As the bi-metals in the warm-up regulator and the auxiliary air valve are heated they alter the characteristics of their respective components. The warm-up regulator gradually closes the return line to the fuel tank which therefore, increases control pressure and restricts the movement of the control piston in the fuel distributor. This action limits the opening of the fuel metering slits, reduces the fuel flowing to the injectors, and weakens the mixture.

The bi-metal of the auxiliary air valve progressively relaxes its force on the blocking plate, allowing the return spring to pull the plate to its closed position. This reduces the engine idling speed to its normal setting.

**Engine idle speed**

When the engine attains normal operating temperature it will adopt its normal idle speed. This is initially set during the manufacture of the vehicle by adjusting screws that act directly on the throttle mechanism. The screws are then made tamperproof to prevent further adjustment.

After the engine has settled or 'run-in' minor corrections to the idle speed setting can be achieved by bleeding air around the throttle butterflies, using the bleed screw situated on the side of the throttle body. This bleed screw has a limited range of adjustment.

The idle mixture is controlled by an adjusting screw which acts directly onto the air sensor plate lever, altering its position relative to the control piston. Turning the screw will either raise or lower the control piston for a given idle speed position of the air sensor plate, this will either richen or weaken the idle mixture.

**Note** The idle mixture is pre-set at the factory and sealed. No further adjustment should be necessary.

When the transmission selector is moved from the neutral position, the additional load of the transmission would normally reduce the idle speed. This is overcome by the idle speed control solenoid. This solenoid allows air to by-pass the throttle plates, thereby restoring the idle speed to the optimum setting.

**Engine part load operation**

As the engine speed and load are increased the air

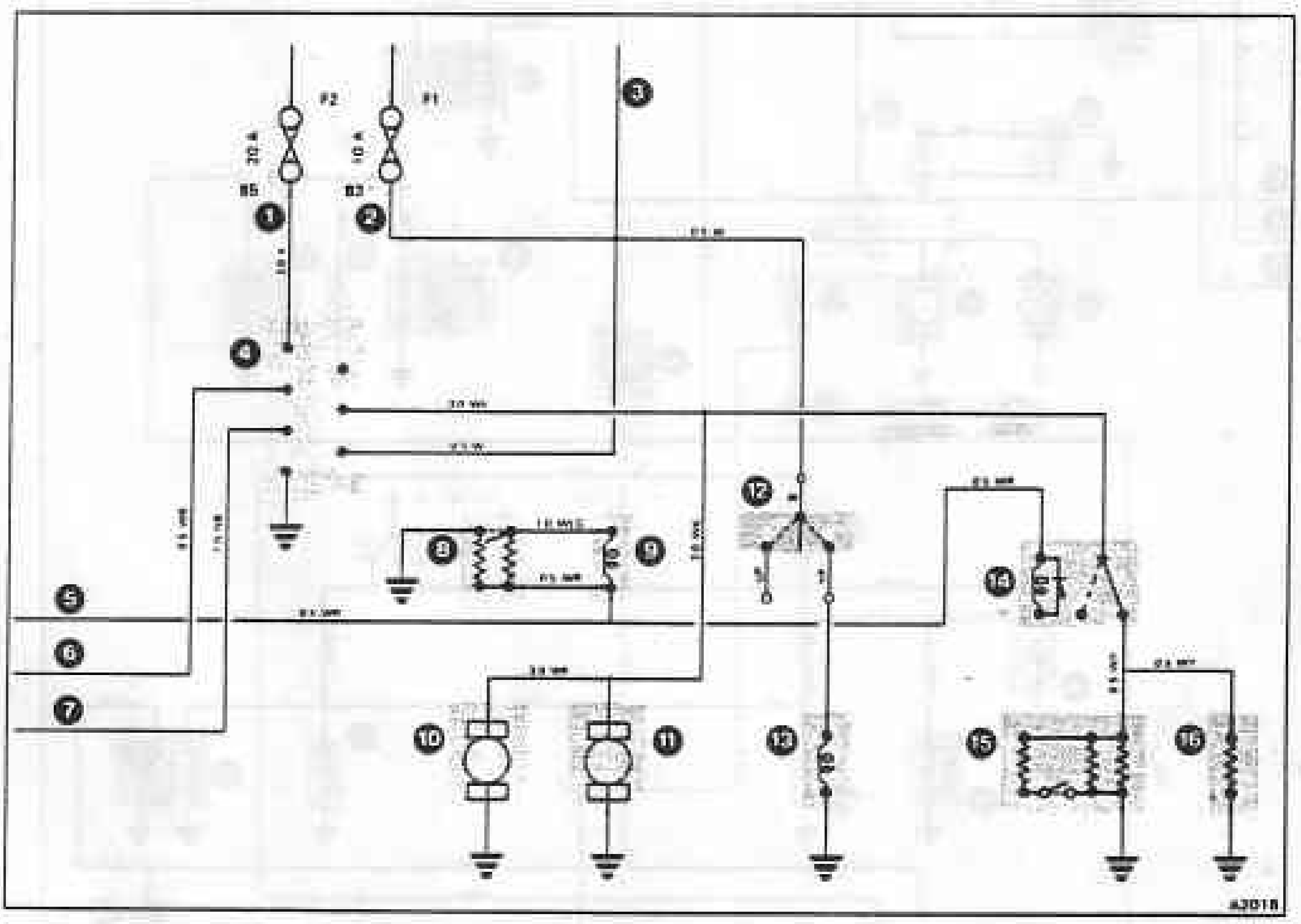


**Fig. B2-21 Theoretical wiring diagram (cars not fitted with a catalytic converter)**

1 Fuel injection system fuse
2 Ignition, starter, and fuel pump fuse
3 To alternator
4 Engine running sensor
5 From starter relay
6 From ignition coil
7 From starter
8 Thermal time switch
9 Cold start injector
10 Fuel pump
11 Fuel pre-pump
12 Throttle position switch
13 Kick-down solenoid
14 Heaters inhibit relay
15 Warm-up regulator
16 Auxiliary air valve

sensor plate is progressively forced downwards by the increased flow of intake air.

The downward movement of the sensor plate is transmitted via the sensor lever, to the control piston. The control piston is raised accordingly in the barrel of the fuel distributor, allowing additional fuel to pass through the metering slits.

The diaphragm in each of the differential pressure valves responds to this additional fuel flow by deflecting further away from the injection line outlet. This allows more fuel to flow to the injectors.

**Engine full load operation**

Under full load conditions the air sensor plate exhibits maximum deflection and the control piston is at its highest position in the barrel of the fuel distributor. This gives the largest openings of the metering slits.

The diaphragm in each differential pressure valve is deflected to its furthest point away from the outlet tube to the injectors, allowing maximum fuel flow.

Due to the action of a throttle position switch actuated by the primary throttle spindle, the electronic control unit changes to the internal mode, thus

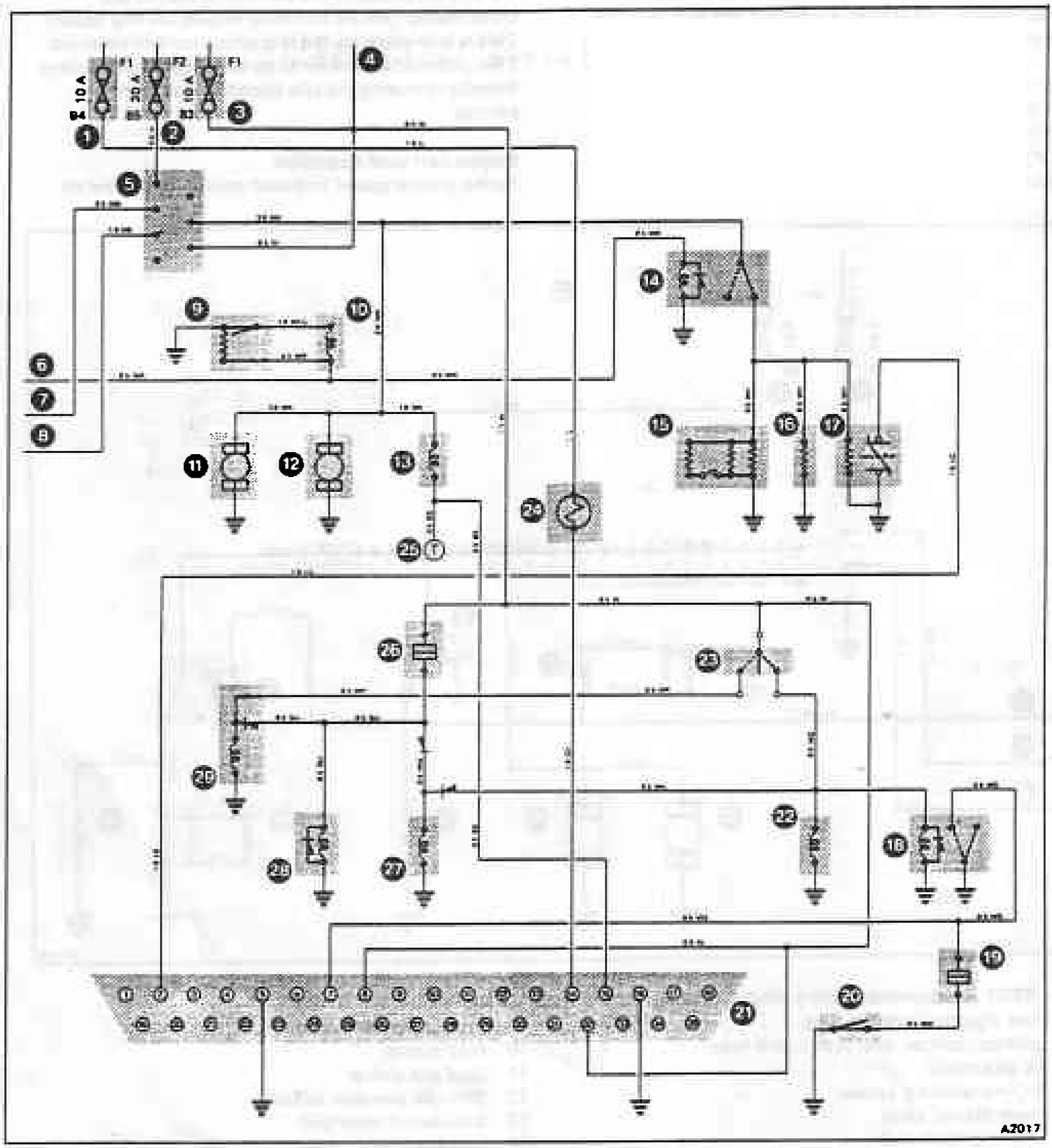



**Fig. B2-22 Theoretical wiring diagram (cars fitted with a catalytic converter)**

**Key to fig. B2-22 Theoretical wiring diagram (cars fitted with a catalytic converter)**

1 Instruments and warning lamps fuse
2 Fuel injection system fuse
3 Ignition, starter, and fuel pump fuse
4 To alternator
5 Engine running sensor
6 From starter relay
7 From ignition coil
8 From starter
9 Thermal time switch
10 Cold start injector
11 Fuel pump
12 Fuel pre-pump
13 Pressure control valve
14 Heaters inhibit relay
15 Warm-up regulator
16 Auxiliary air valve
17 Oxygen sensor and heater
18 Kick-down relay
19 Acceleration enrichment temperature switch
20 Acceleration enrichment switch
21 Fuel injection electronic control unit
22 Kick-down solenoid
23 Throttle position switch
24 Oxygen sensor warning lamp (other than Japan)
25 Test connection
26 Emission control temperature switch
27 Exhaust gas recirculation solenoid
28 Air diverter valve
29 Evaporative loss control solenoid

blocking the 'closed loop' system and providing additional enrichment by modifying the fixed signal to the pressure control valve.

## Workshop safety precautions

### General

Always ensure that the vehicle parking brake is firmly applied, the gear range selector lever is in the park position and the gearbox isolator fuse is removed from the fuseboard.

A number of the nuts, bolts, and setscrews used in the fuel injection system are dimensioned to the metric system, it is important therefore, that when new parts become necessary the correct replacements are obtained and fitted.

### Fire

Fuel is highly flammable, therefore great care must be exercised whenever the fuel system is opened (i.e. pipes or unions disturbed) or the fuel is drained. Always ensure that 'no smoking' signs and foam, dry powder, or $CO_2$ (carbon dioxide) fire extinguishers are placed in the vicinity of the vehicle.

Always ensure that the battery is disconnected before opening any fuel lines.

If the fuel is to be drained from the tank, ensure that it is siphoned into a suitable covered container.

### Fuel pressure

The fuel injection system contains fuel that may be under high pressure approximately 5,2 bar to 5,8 bar (75.4 lbf/in² to 84.1 lbf/in²). Therefore, to reduce the risk of possible injury and fire, always ensure that the system is depressurized by one of the following methods before commencing any work that will entail opening the system.

1. Clean the inlet connection to the fuel filter. Wrap an absorbent cloth around the joint and carefully slacken the pipe nut to release any pressurized fuel from the system. Tighten the pipe nut.
2. Allow the pressure to fall naturally by switching off the engine and allowing the vehicle to stand for four hours before opening the system.

### Health risk

Fuel may contain up to 5% of benzene as an anti-knock additive. Benzene is extremely injurious to health (being carcinogenic) therefore, **all contact should be kept to an absolute minimum, particularly inhalation.**

Fuel has a sufficient high vapour pressure to allow a hazardous build-up of vapour in poorly ventilated areas. Fuel vapour is an irritant to the eyes and lungs, if high concentrations are inhaled it may cause nausea, headache, and depression. Liquid fuel is an irritant to the eyes and skin and may cause dermatitis following prolonged or repeated contact.

When it becomes necessary to carry out work involving the risk of contact with fuel, particularly for prolonged periods, it is advisable to wear protective clothing including safety goggles, gloves, and aprons. Any work should be carried out in a well ventilated area.

If there is contact with fuel the following emergency treatment is advised.

Ingestion (swallowing)

**Do not** induce vomiting. Give the patient milk to drink (if none is available water can be given). The main hazard after swallowing fuel is that some of the liquid may get into the lungs. Send the patient to hospital immediately.

Eyes

Wash with a good supply of clean water for at least 10 minutes.

Skin contact

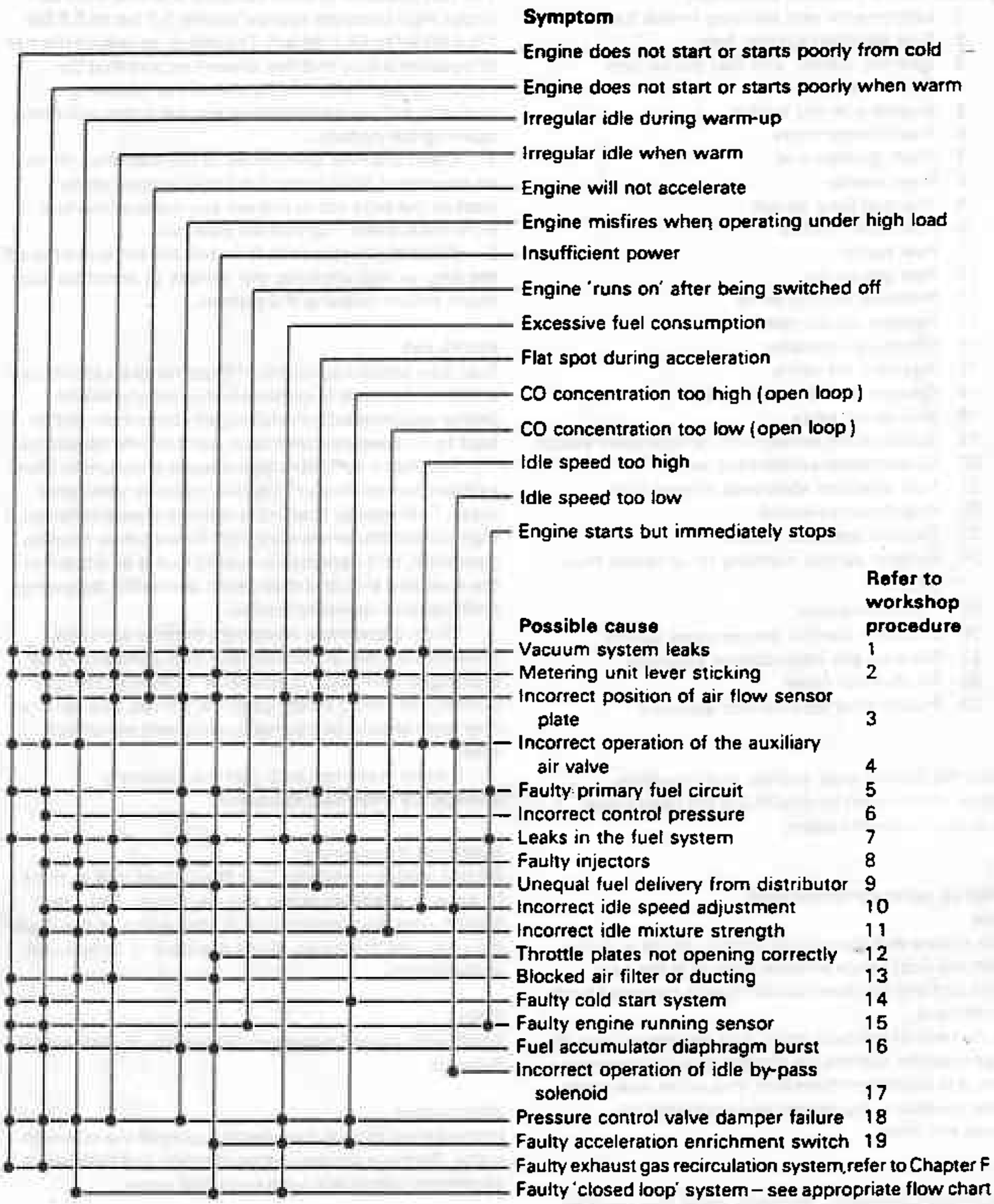
Immediately drench the effected parts of the skin with water. Remove contaminated clothing and then wash all contaminated skin with soap and water.

Inhalation (breathing in vapour)

Move the patient into the fresh air. Keep the patient warm and at rest. If there is loss of consciousness give artificial respiration. Send the patient to hospital.

### Cleanliness

It is extremely important to ensure maximum cleanliness whenever work is carried out on the system. The following points should always be observed.




Workshop procedures 1 to 17 inclusive apply to all cars. A combination of the remainder also apply to cars produced to an Australian, Japanese, or North America specification.

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**Fig. B2-23 Basic K-Jetronic fault diagnosis chart**

Figure B2-24

# 'Closed loop' system – fault diagnosis chart

## Sheet 1 of 2

**Important**
Before commencing work, run the engine for three minutes, switch off the ignition and allow to cool.

**Ensure that**
1. The test meter is connected (see illustrations)
2. The starter relay has been removed
3. The electrical feed to the cold start injector has been disconnected
4. The ignition is switched on

**Hold the ignition key in the crank position for all the following operations**

Can the vibration of the pressure control valve be heard?

NO

YES

Check the supply to the electronic control unit pin 8 and continuity from pin 16 to earth. Are these satisfactory?

NO

YES

Faulty wiring loom or

Does the pressure control valve now work?

NO

YES

Test meter reads 45% to 55%

NO

YES

Test meter reads 0%

N

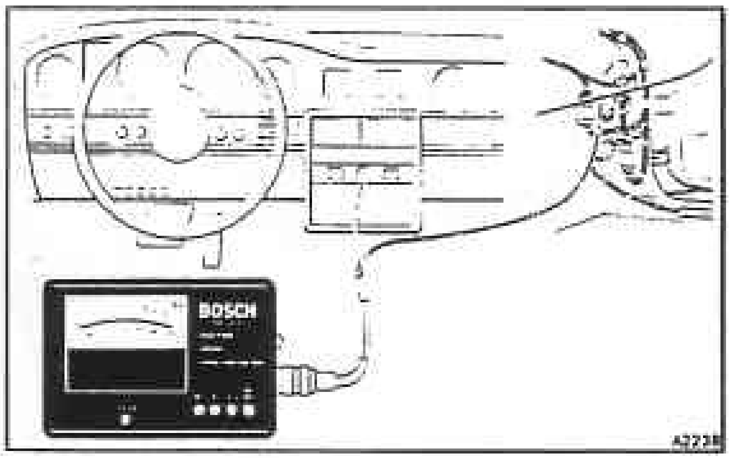
Check the test meter c
reads 45% to 55%

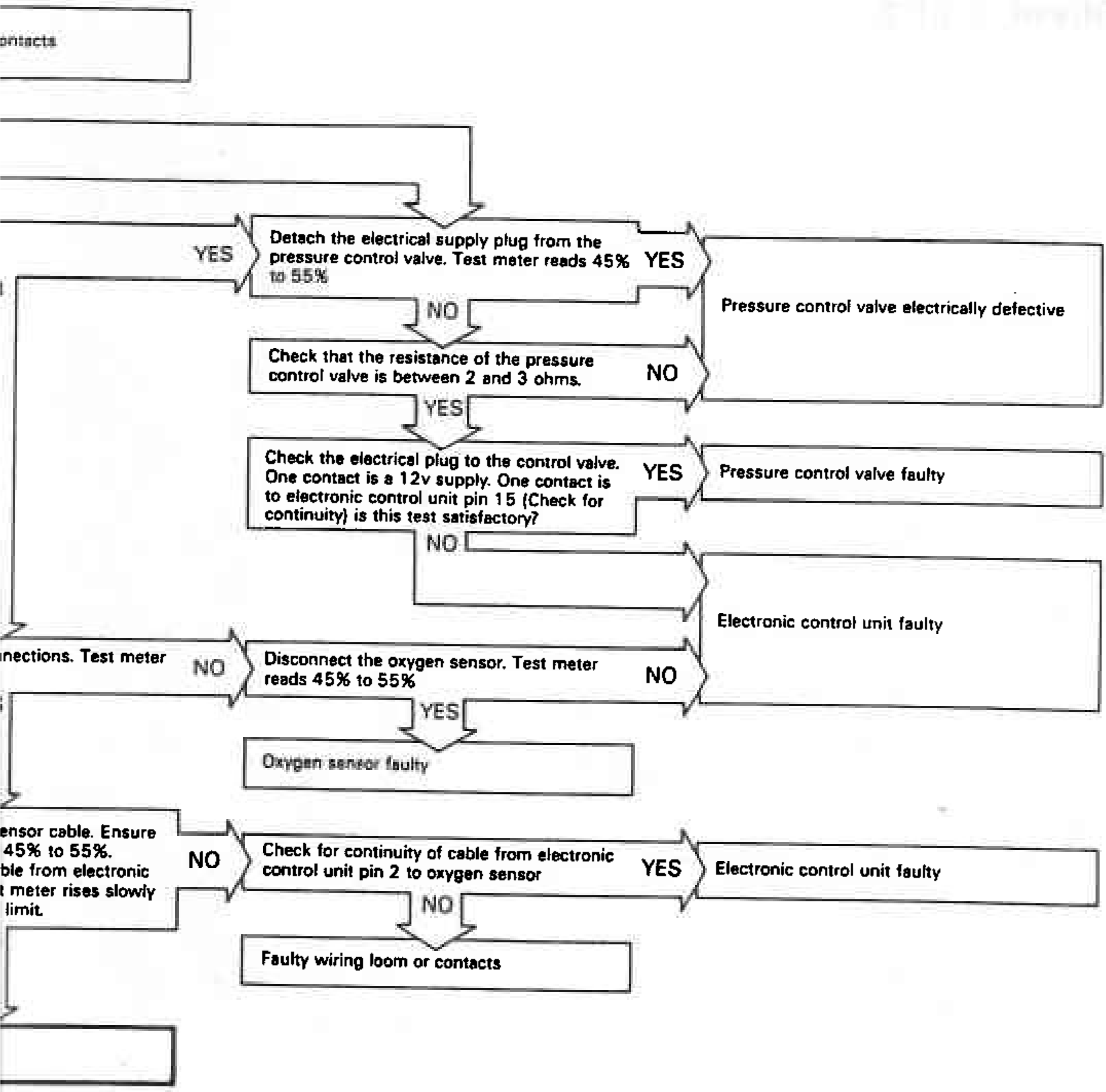
YI

Disconnect the oxygen
that the meter still rea
Connect green sensor
control unit to earth. T
to 88% minimum of r

Y

Continued on sheet

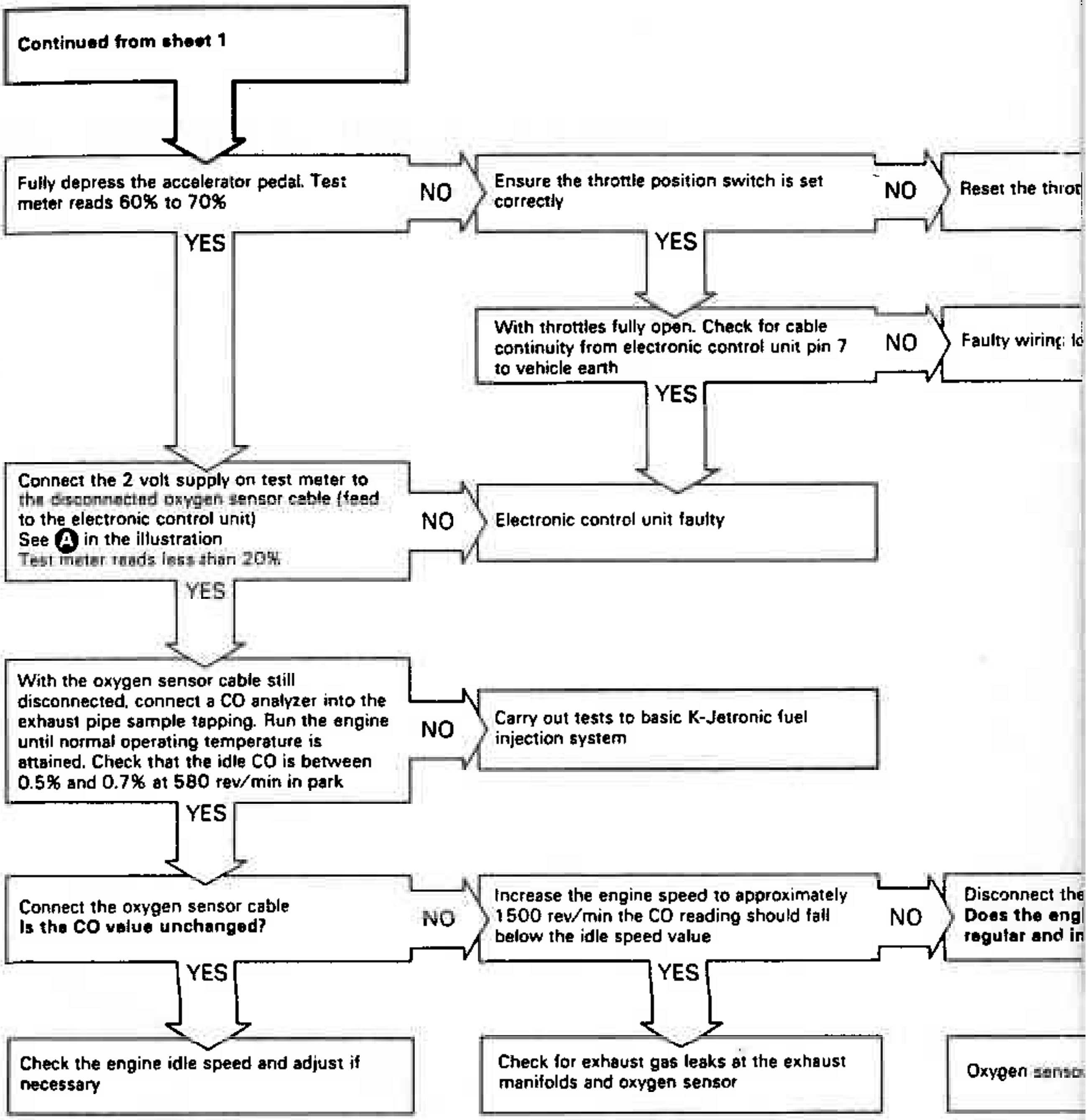




ontacts
YES
Detach the electrical supply plug from the pressure control valve. Test meter reads 45% to 55%
YES
Pressure control valve electrically defective
NO
Check that the resistance of the pressure control valve is between 2 and 3 ohms.
NO
YES
Check the electrical plug to the control valve. One contact is a 12v supply. One contact is to electronic control unit pin 15 (Check for continuity) is this test satisfactory?
YES
Pressure control valve faulty
NO
Electronic control unit faulty
nections. Test meter
NO
Disconnect the oxygen sensor. Test meter reads 45% to 55%
NO
YES
Oxygen sensor faulty
ensor cable. Ensure
45% to 55%.
ble from electronic
t meter rises slowly
limit
NO
Check for continuity of cable from electronic control unit pin 2 to oxygen sensor
YES
Electronic control unit faulty
NO
Faulty wiring loom or contacts

Figure B2-24

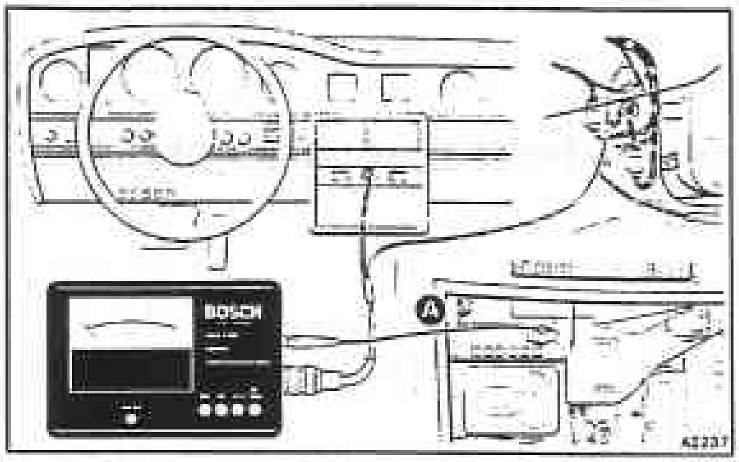
# 'Closed loop' system – fault diagnosis chart
# Sheet 2 of 2



Continued from sheet 1
Fully depress the accelerator pedal. Test meter reads 60% to 70%
NO
Ensure the throttle position switch is set correctly
NO
Reset the throt
YES
YES
With throttles fully open. Check for cable continuity from electronic control unit pin 7 to vehicle earth
NO
Faulty wiring lo
YES
Connect the 2 volt supply on test meter to the disconnected oxygen sensor cable (feed to the electronic control unit)
See A in the illustration
Test meter reads less than 20%
NO
Electronic control unit faulty
YES
With the oxygen sensor cable still disconnected, connect a CO analyzer into the exhaust pipe sample tapping. Run the engine until normal operating temperature is attained. Check that the idle CO is between 0.5% and 0.7% at 580 rev/min in park
NO
Carry out tests to basic K-Jetronic fuel injection system
YES
Connect the oxygen sensor cable
Is the CO value unchanged?
NO
Increase the engine speed to approximately 1500 rev/min the CO reading should fall below the idle speed value
NO
Disconnect the
Does the engi
regular and in
YES
Check the engine idle speed and adjust if necessary
YES
Check for exhaust gas leaks at the exhaust manifolds and oxygen sensor
Oxygen senso

le position switch

om or contacts




oxygen sensor cable
**ne idle speed become**
**crease?**

NO

Pressure control valve has failed mechanically

YES

s faulty

1. To prevent the ingress of dirt, always clean the area around a connection before dismantling a joint.
2. Having disconnected a joint (either fuel or air) always blank off any open connections as soon as possible.
3. Any components that require cleaning should be washed in clean fuel and dried, using compressed air.
4. If it is necessary to use a cloth when working on the system, ensure that it is lint-free.

## Fault diagnosis

This fault diagnosis section includes.
**Basic system test procedure.**
**Electrical and Electronic components fault diagnosis.**
**Mechanical components fault diagnosis.**

It is important that fault finding is carried out in the sequence given. Electrical and electronic faults can exhibit symptoms similar to mechanical faults. Therefore an incorrect diagnosis may be made which could result in both lengthy and costly repairs.

Often, a mechanical fault has sufficiently well defined symptoms to enable a very rapid diagnosis to be made.

The **basic fault finding procedure** is as follows, noting that any faults found in one system should be rectified before moving on to the next stage of the procedure.

1. Carry out a compression test on the engine cylinders (to inhibit the operation of the system during this test, remove the fuel injection fuse).
2. Check that the ignition system is operating satisfactorily (refer to Chapter E).
3. Ensure that the vacuum system is free from leaks (see fig. B2-23).
4. Ensure that the E.G.R. system is free from leaks (refer to Chapter F).
5. Ensure that all auxiliary air hoses and crankcase breather system hoses are free from leaks.
6. Check that the solenoid valves and their thermal switches are working correctly.
7. Test the basic K-Jetronic system for correct operation (see fig. B2-23).
8. Test the 'closed loop' system for correct operation (refer to Fault diagnosis flow chart).

**Note** Procedures 1, 2, 3, 5, and 7 apply to all cars. In addition, a combination of procedures 4, 6, and 8 also apply to cars produced to an Australian, Japanese, or North American specification.

Before commencing any fault diagnosis or work on the fuel injection system ensure that the workshop safety precautions are fully understood.

**During manufacture, the components of the fuel injection system are precisely adjusted in order to comply with the relevant emission control regulations. Therefore, alterations to any of the settings should not normally be necessary.**

**Diagnosing and correcting faults**
The workshop procedure number refers to the fault diagnosis chart for the basic K-Jetronic system given in figure B2-23.

**Before carrying out any tests, ensure that the battery is in a fully charged condition.**

**It should be noted that all components of the system (except the injectors) can be tested on the vehicle.**

**Procedure 1 Induction system air leaks**
Visually check all vacuum hoses, pipes, and clips for damage or looseness that may allow an air leak into the induction system.

Check the entire induction system for air leaks with the engine running. Use a suitable length of rubber hose as a listening aid. The leak will often be heard as a high pitched hiss or whistle.

**Procedure 2 Metering control unit lever sticking**
1. Ensure that the engine temperature is above 20°C (68°F).
2. Remove the air intake elbow from the inlet to the control unit.
3. Apply control pressure to the control piston in the fuel distributor for approximately 10 seconds (refer to page B2-32).
4. Press the air sensor plate slowly downwards to its maximum open position. The resistance to this movement should be uniform over the whole range of travel. Allow the air sensor plate to return to its rest position and repeat the operation.

If the resistance to the air sensor plate movement is uniform over the whole range of travel, the metering unit is not sticking.

**Note** Whenever the airflow sensor plate is depressed fuel will be sprayed into the engine. Therefore, the sensor plate should only be depressed the minimum number of times to carry out this operation.

5. Should the resistance to air sensor plate movement be greater in the rest position, it could be due to the plate being either out of position or bent.
6. If the condition described in Operation 5 is confirmed, depressurize the fuel system (refer to page B2-15). Then, press the plate fully downwards and allow it to spring back to the rest position. It should return freely and bounce downwards slightly from the spring loaded stop at least once.
7. Should a resistance be confirmed in Operation 6, remove the air sensor plate and repeat the operation. If this alleviates the resistance, the air sensor plate is fouling the sides of the air funnel and should be centralized (refer to Procedure 3) or the air funnel may be deformed.
8. If there is still a resistance to the movement of the lever, it could be due to contamination within the fuel distributor barrel or occasional binding in the lever mechanism.
9. Contamination within the fuel distributor can be checked by separating the fuel distributor from the control unit and withdrawing the control piston for inspection.

Remove the screws situated on top of the fuel distributor. Lift off the fuel distributor (resistance will be felt due to the rubber sealing ring), bend back the piston retaining tabs and withdraw the piston.

**Handle the control piston with care to ensure that it does not become damaged.**

**Do not handle the control piston on its working surfaces.**

10. Thoroughly clean the control piston in clean fuel.
11. Fit the control piston to the fuel distributor. Ensure that the spring is fitted above the piston.

Bend the retaining tabs so that the piston cannot fall out. Ensure that the rubber sealing ring situated between the fuel distributor and the mixture control unit is in good condition. Lubricate the rubber sealing ring with suitable grease and fit the distributor,

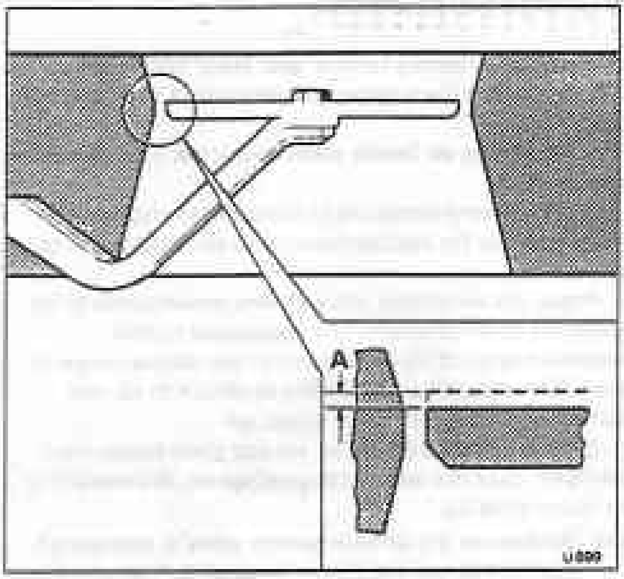



**Fig. B2-25 Checking the height of the air flow sensor plate**
A 0,5 mm (0.020 in)

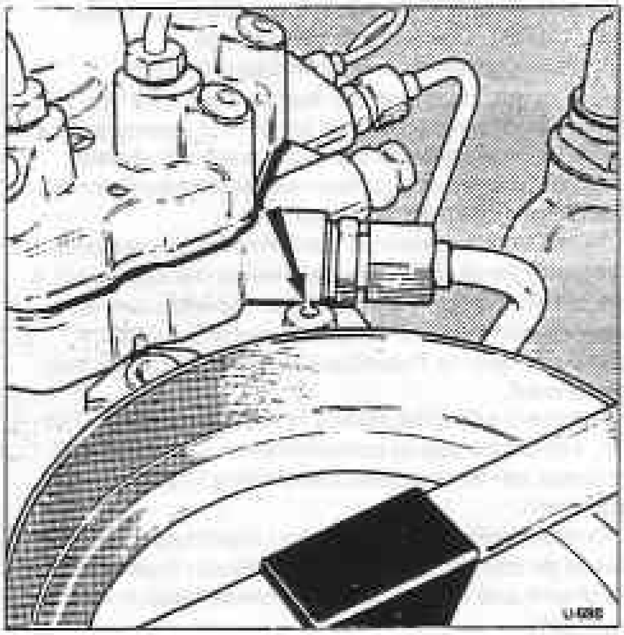


**Fig. B2-26 Height adjustment for the air flow sensor plate**

ensuring that the retaining screws are evenly tightened.

If a resistance is still noticeable, a new fuel distributor assembly should be fitted to the mixture control unit.

12. After fitting the fuel distributor check the idle mixture strength.

**Procedure 3 Positioning the air flow sensor plate**

1. Remove the air inlet elbow from above the air sensor plate.
2. Check that the sensor plate is flat and that it will pass through the narrowest part of the air funnel without fouling.
3. If necessary, loosen the plate securing screw.
4. Insert the guide ring RH 9609 whilst retaining the sensor plate in the zero movement position. This will prevent the sensor plate from being forced downwards as the centring guide ring is being installed.
5. With the centring guide ring in position, tighten the retaining screw. Carefully remove the centring guide ring.
6. Apply control pressure to the control piston in the fuel distributor for approximately 10 seconds (refer to page B2-32).
7. The upper edge of the sensor plate adjacent to the fuel distributor, should be flush with the beginning of the upper cone as shown in figure B2-25.

**Note** It is permissible to leave the top edge of the air sensor plate protruding into the upper cone by a maximum of 0,5 mm (0.020 in). The lower edge of the plate (which is chamfered) must not project upwards outside the short cylindrical part of the air funnel, at any point on its circumference.

8. If the air sensor plate is positioned too high, remove the fuel distributor and carefully tap the guide pin lower using a mandrel and a small hammer (see fig. B2-26).

**Note** This adjustment must be made very carefully, ensuring that the guide pin is not driven too low. Repeated adjustment can loosen the guide pin. Serious damage to the engine could result if the pin should fall out.

**Procedure 4 Checking the operation of the auxiliary air valve**

1. Ensure that the engine is cold.
2. Disconnect the electrical plug at the auxiliary air valve.
3. Disconnect the inlet and outlet rubber hoses from the auxiliary air valve.
4. Using a flashlight and mirror, observe the position of the hole in the blocking plate (see fig. B2-27). It should be partially uncovered. If the blocking plate completely closes the air passage, fit a new auxiliary air valve.
5. If the air passage way is open, connect the electrical plug to the auxiliary air valve.
6. Apply electrical power to the heater in the auxiliary air valve (refer to page B2-33).
7. The air passage through the valve should be completely closed within four to five minutes.