

## Models covered

■ 220 GTi 16V	1991-
■ 220 GTi Turbo	1992-
■ 420i	1992-
■ 420i Turbo	1992-

## Engine code

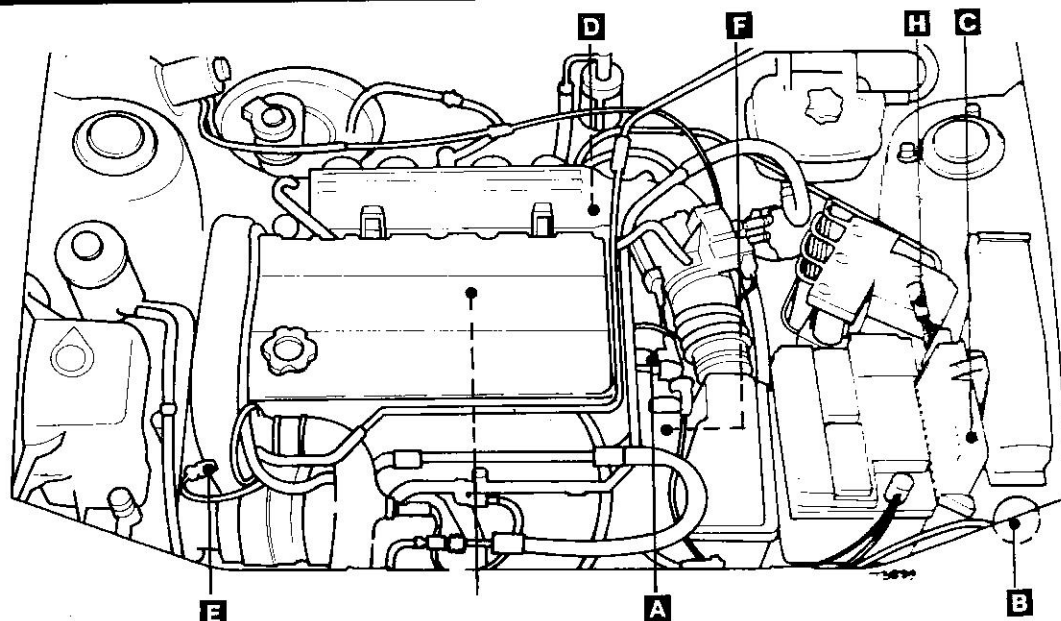
20M4, T16

## Ignition system

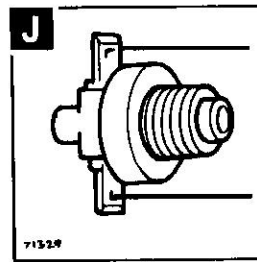
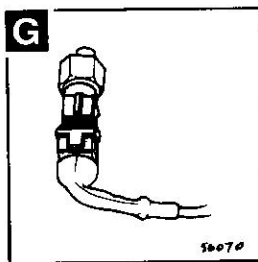
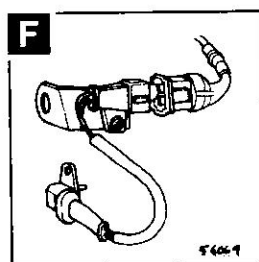
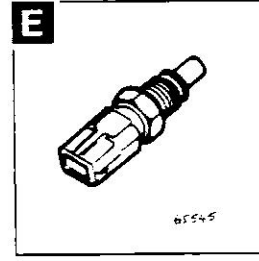
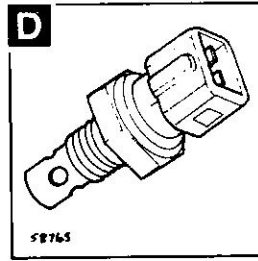
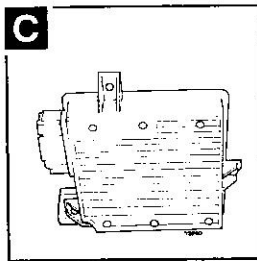
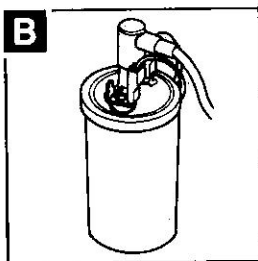
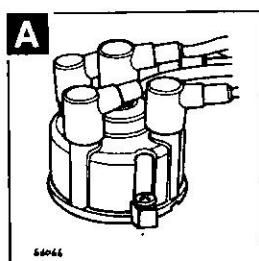
Rover M.E.M.S MPI

Type	Constant energy
Distributor	HT only
Pick-up type	Multiple sensors
Amplifier	In fuel ECU
Timing control	Engine management
Timing adjustment	Not adjustable
Self-diagnosis	Dedicated tester

## Ignition system layout and components



- A Distributor
- B Ignition coil
- C Electronic control unit (ECU)
- D Air temperature sensor
- E Coolant temperature sensor
- F Crank angle sensor
- G Knock sensor
- H Diagnostic socket
- J Throttle pedal switch (20M4 only)



<input type="checkbox"/> 220 GTi 16V	1991-
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## System checks

### Preparatory conditions

- ☐ Battery fully charged.
- ☐ All fuses in good condition and making good contact.
- ☐ All electrical connections clean, dry and secure.
- ☐ All HT leads in good condition.
- ☐ All ancillary electrical equipment, including AC, switched OFF.

### 1.1 HT spark

#### Checking - 1

- Ensure ignition switched OFF.
- Disconnect one spark plug HT lead.
- Connect test spark plug to lead.
- Using pair of insulated pliers, hold spark plug against suitable earth.
- Briefly crank engine with starter.
- Check for strong blue spark.
- If spark visible, reconnect plug lead and carry out Test 1.2.
- If no spark visible - see HT Circuit & Component Checks at front of manual.

### 1.2 Ignition timing & firing order

#### Technical Data

BTDC/ATDC	BTDC
With vacuum/vacuum disconnected	Not applicable
Basic timing - °/rpm	12±5/875±50
Firing order	1-3-4-2
Distributor rotation	Anti-clockwise

#### Checking - 2

- Check distributor rotation and firing order.
- Ignition timing controlled by ECU.
- Ignition timing fluctuates at idle speed and can only be checked using Rover COBEST or MICROCHECK diagnostic units.

### 1.3 Ignition coil

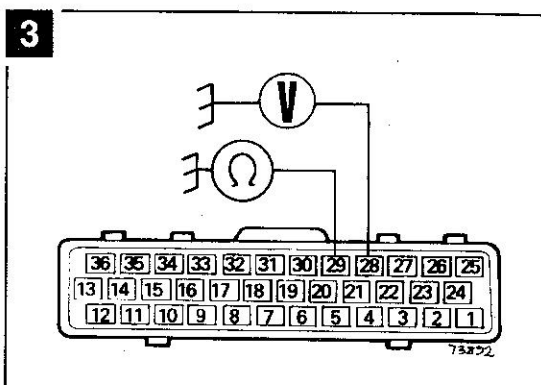
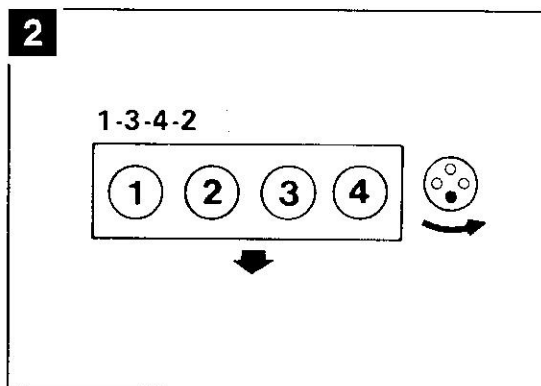
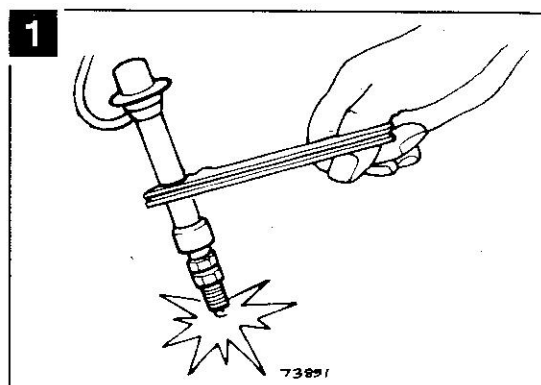
#### Checking supply

- Ensure ignition switched OFF.
- Connect voltmeter between coil positive (+) terminal (brown/pink wire) & earth.
- Switch ignition ON.
- Meter should indicate battery voltage.
- If no voltage indicated, check wiring between ignition coil and main relay.

### 1.4 Electronic control unit (ECU)

#### Checking supply - 3

- Ensure ignition switched OFF.
- Disconnect ECU multi-plug.
- Connect voltmeter between ECU terminal No.28 (brown/pink wire) & earth.
- Switch ignition ON.
- Meter should indicate battery voltage.



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**Checking earth - 3**

- Ensure ignition switched OFF.
- Disconnect ECU multi-plug.
- Connect ohmmeter between ECU terminal No.29 (black wire) & earth.
- Meter should indicate zero (continuity).
- If continuity not indicated, check wiring between ECU multi-plug terminal 29 & earth.

**Component checks****2.1 Ignition coil****Technical Data**

Primary resistance	0,71-0,81 ohms
Secondary resistance	approx. 7500 ohms

**Checking primary resistance - 4**

- Ensure ignition switched OFF.
- Disconnect coil LT connections.
- Disconnect HT lead from ignition coil.
- Connect ohmmeter between coil positive (+) and negative (-) terminals.
- Compare resistance indicated with that specified.

**Checking secondary resistance - 5**

- Ensure ignition switched OFF.
- Disconnect coil LT connections.
- Disconnect HT lead from ignition coil.
- Connect ohmmeter between one LT terminal and HT terminal.
- Compare resistance indicated with that specified.

**2.2 Crank angle sensor****Technical Data**

Resistance between terminals	1260-1540 ohms
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**Checking - 6**

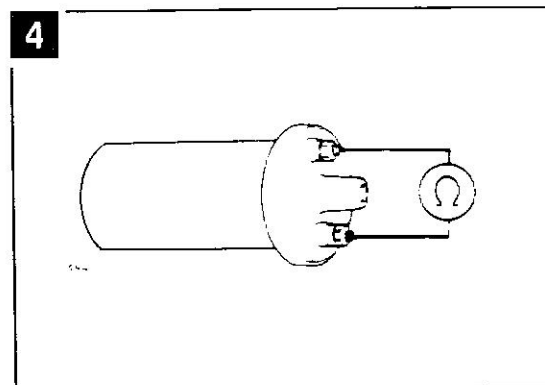
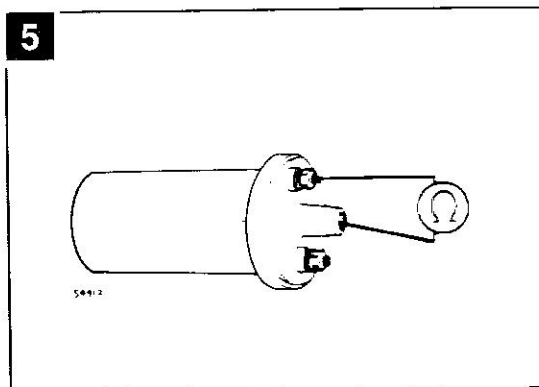
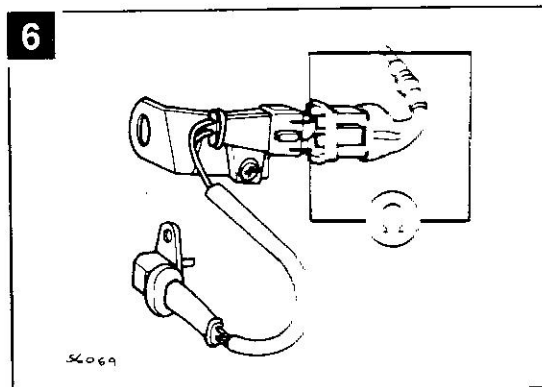
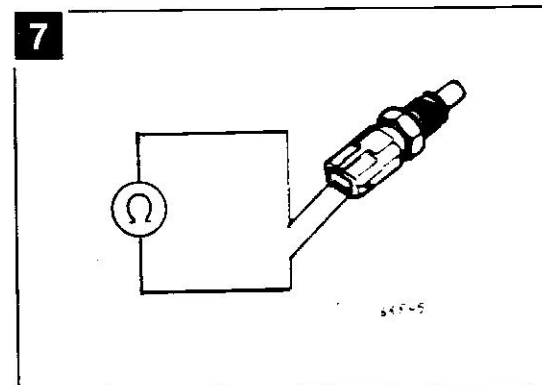
- Ensure ignition switched OFF.
- Disconnect sensor multi-plug connector.
- Connect ohmmeter between sensor connector terminals.
- Compare resistance indicated with that specified.

**2.3 Coolant temperature sensor****Technical Data**

Temperature - °C	Resistance - ohms
20	2500
40	1005
80	330

**Checking - 7**

- Ensure ignition switched OFF.
- Release cooling system pressure.
- Disconnect sensor multi-plug.
- Remove sensor.
- Connect ohmmeter between sensor terminals.
- Immerse sensor probe in coolant of specified temperature.
- Compare resistance indicated with that specified.

**4****5****6****7**

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## 2.4 Air intake temperature sensor

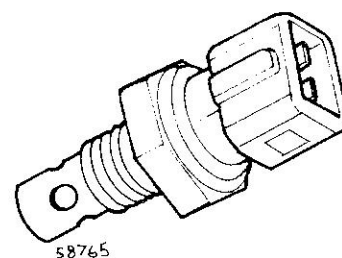
### Technical Data

Temperature - °C	Resistance - ohms
20	2500
40	1005
60	330

### Checking - 8

- Ensure ignition switched OFF.
- Disconnect sensor multi-plug.
- Remove sensor from inlet manifold.
- Connect ohmmeter between sensor terminals.
- Using thermometer, check ambient air temperature.
- Compare resistance indicated with that specified.

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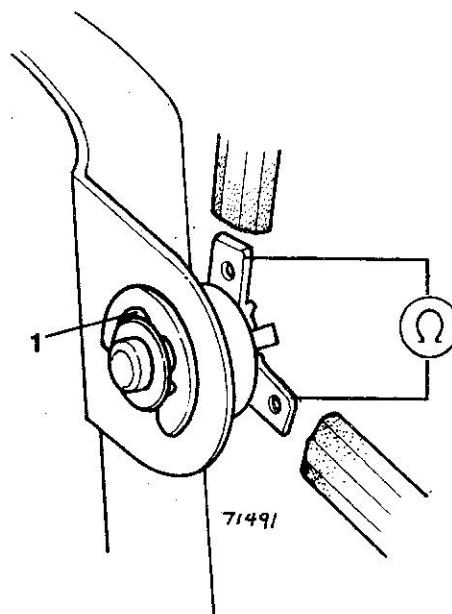


## 2.5 Throttle pedal switch

### Checking - 9

- Ensure ignition switched OFF.
- Disconnect switch wiring connectors.
- Connect ohmmeter between switch terminals.
- Ensure throttle closed.
- Meter should indicate zero (continuity).
- Open throttle.
- Meter should indicate infinity (open circuit).

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## Component replacement

### 3.1 Crank angle sensor

#### Replacement - 6

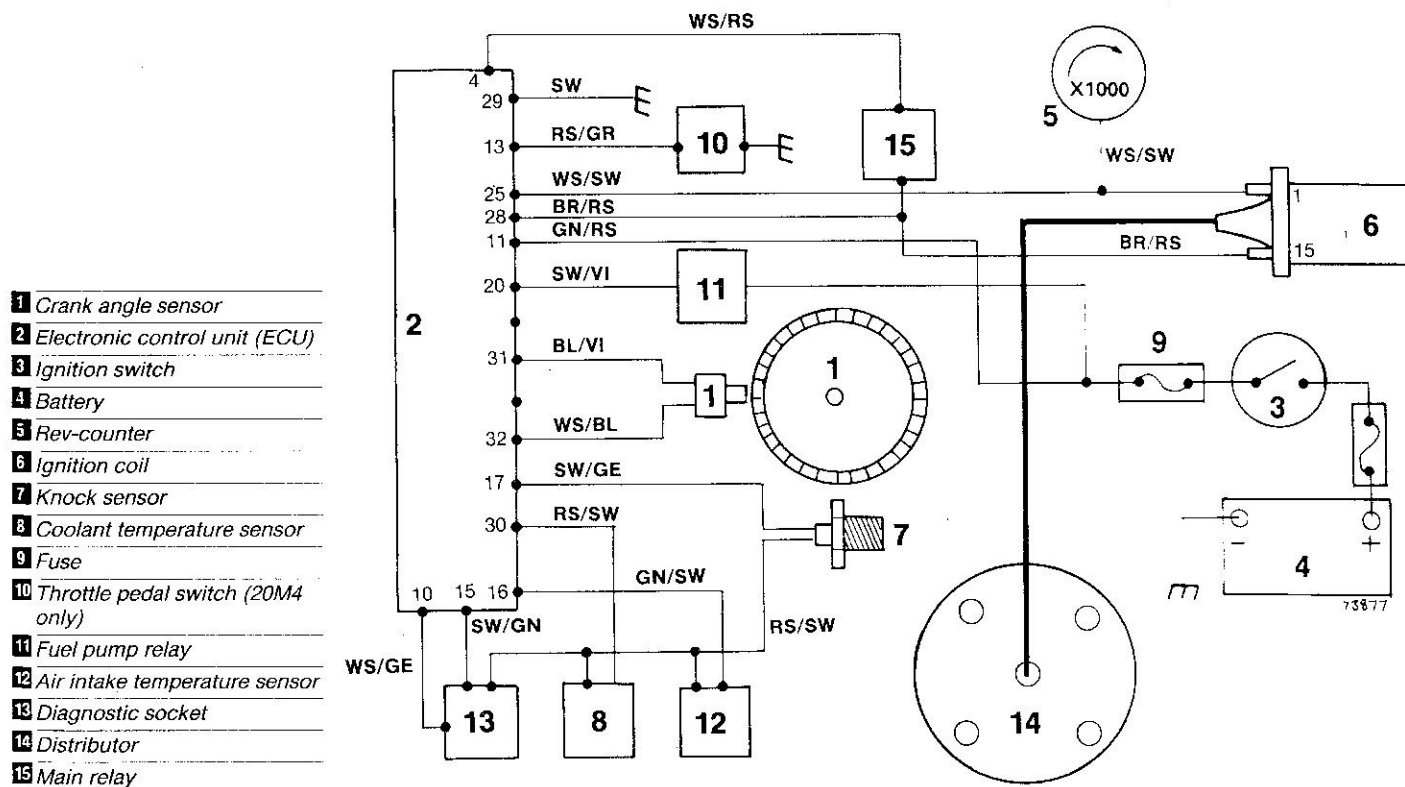
- Disconnect battery earth lead.
- Disconnect sensor multi-plug.
- Remove multi-plug retaining bolt.
- Remove sensor retaining bolt(s).
- Withdraw sensor and spacer.
- Install sensor in reverse order of removal.
- Tighten sensor retaining bolt(s) to 6 Nm.

## Self-diagnosis

- ECU incorporates self-diagnosis function.
- Faults detected are held in ECU memory.
- Faults may be accessed using Rover Cobest or Fastcheck units, or other specialist test equipment.
- Refer to Self-diagnosis section.

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### Ignition system schematic diagram



### ECU Multi-plug

