Speed control system

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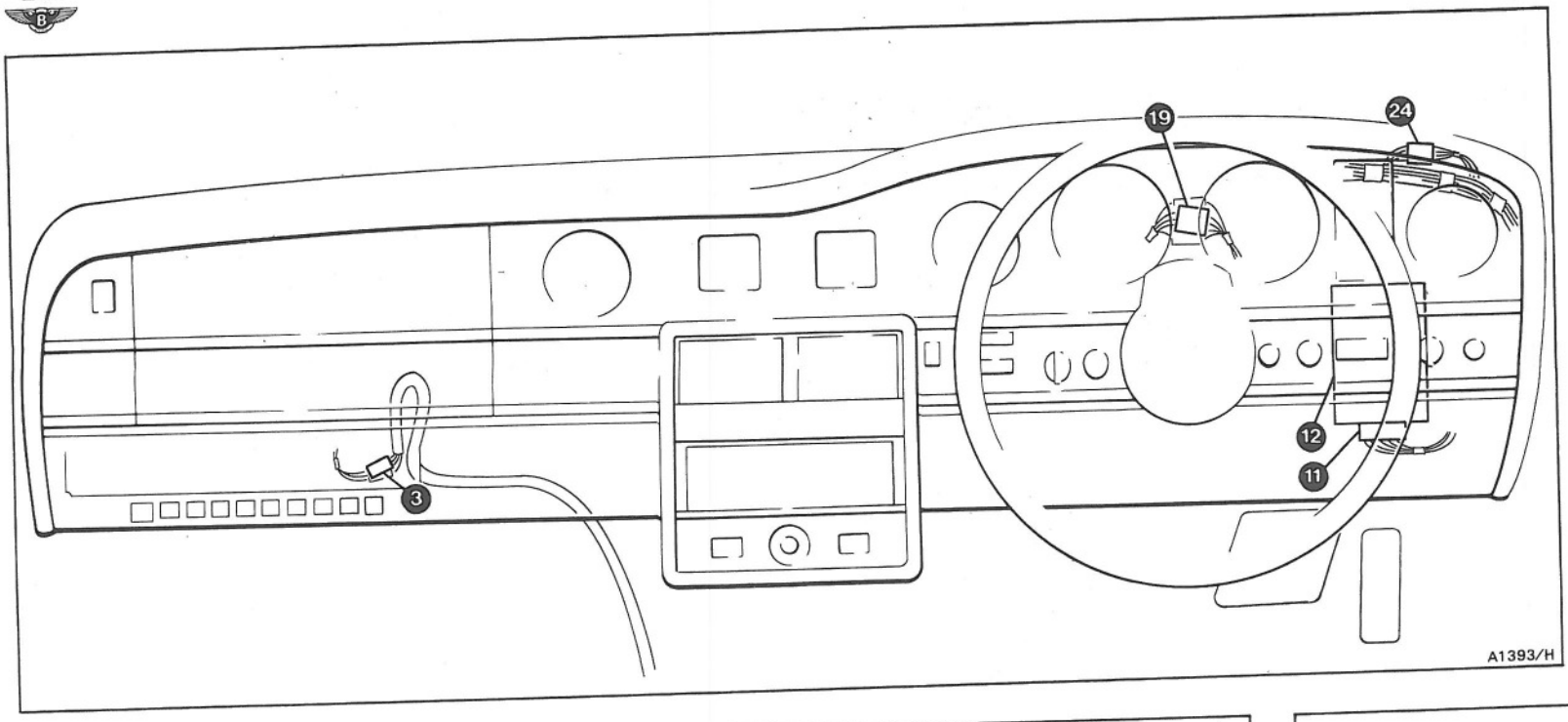
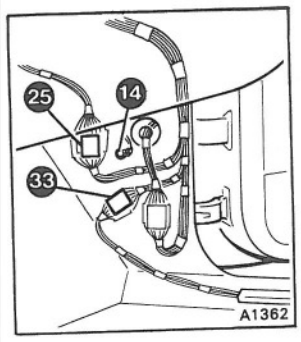
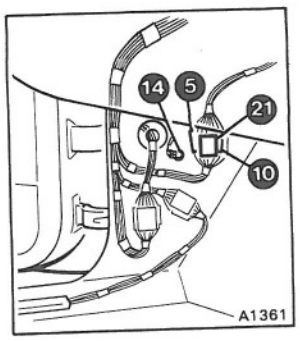
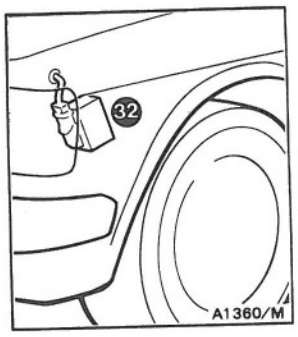
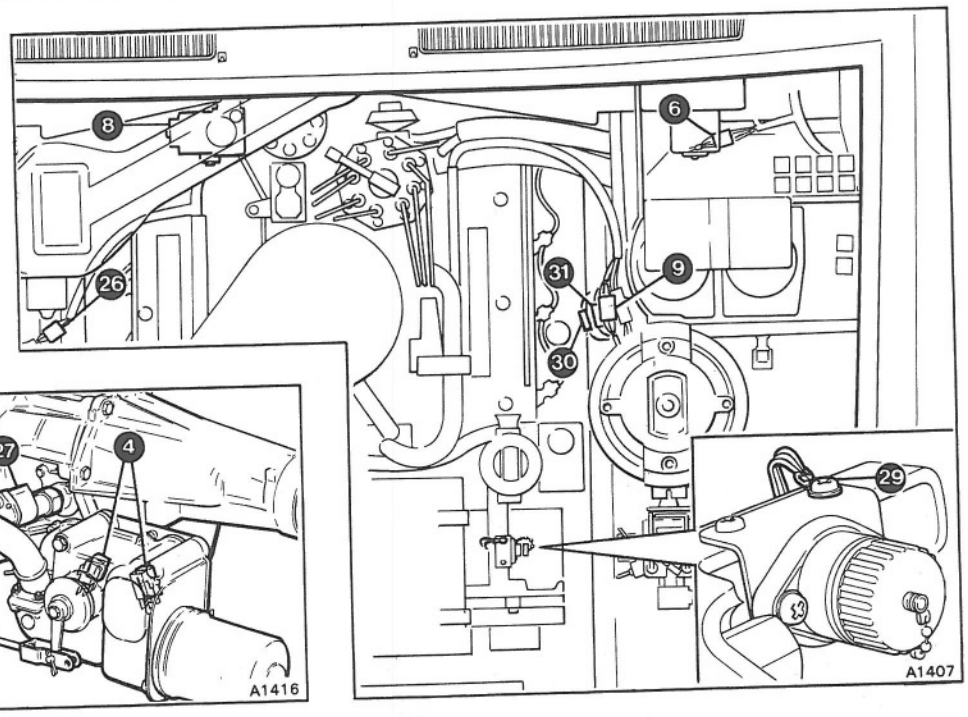
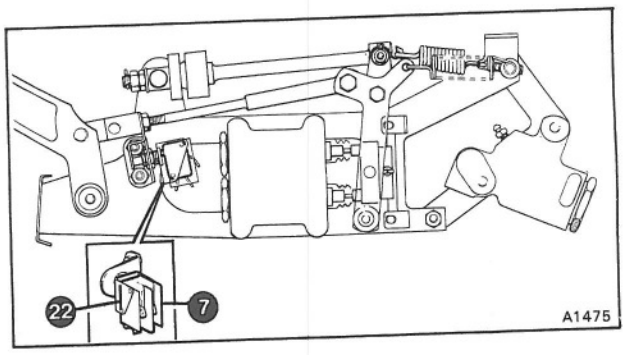


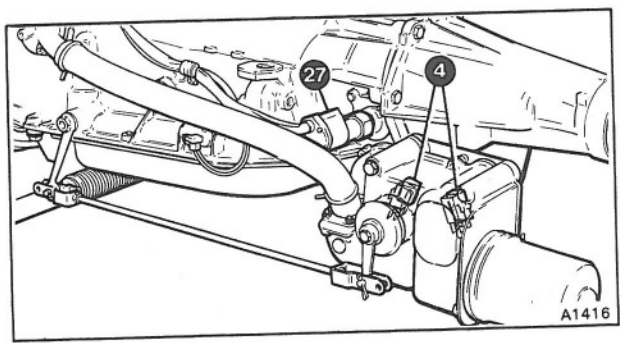


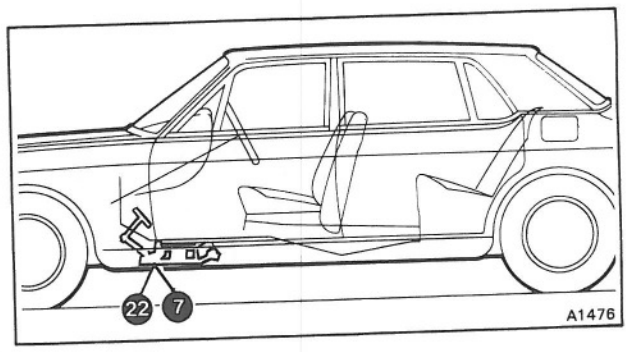








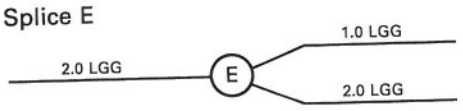




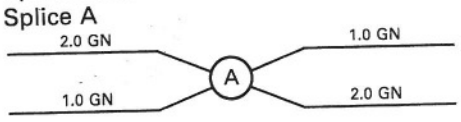
Key to 24-3

1 Fuseboard F2, fuse B3, 20 Amp

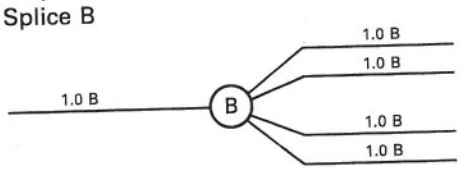
2 Splice E



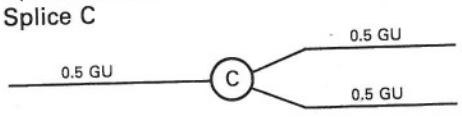
3 Gearchange actuator plug and socket 6-way
4 Gearchange actuator micro-switches
5 Left-hand main to valance loom plug and socket 7-way
6 Brake switch loom plug and socket
7 Stop lamps switch
8 Speed control actuator
9 Left-hand valance to engine loom plug and socket 7-way
10 Left-hand main to valance loom plug and socket 6-way
11 Speed control electronic control unit plug
12 Speed control electronic control unit
13 Splice A



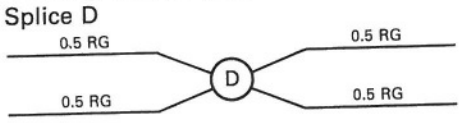
14 'A' post earth points
15 Splice B



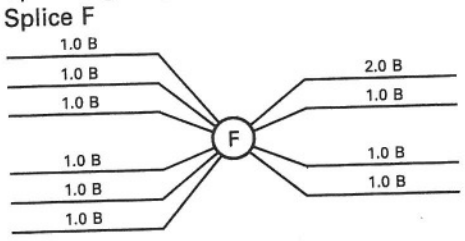
16 Fuseboard F1, fuse B3, 10 Amp
17 Speedometer
18 Splice C



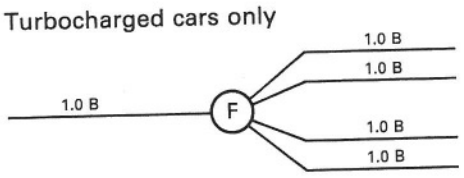
19 Steering column plug and socket 6-way
20 Splice D



21 Left-hand main to valance loom plug and socket 12-way
22 Brake switch
23 Speed control switch (column)
24 'Other than Europe' plug and socket
25 Right-hand main to valance loom plug and socket 12-way
26 Right-hand valance to engine loom plug and socket 9-way
27 Speed signal generator
28 Splice F

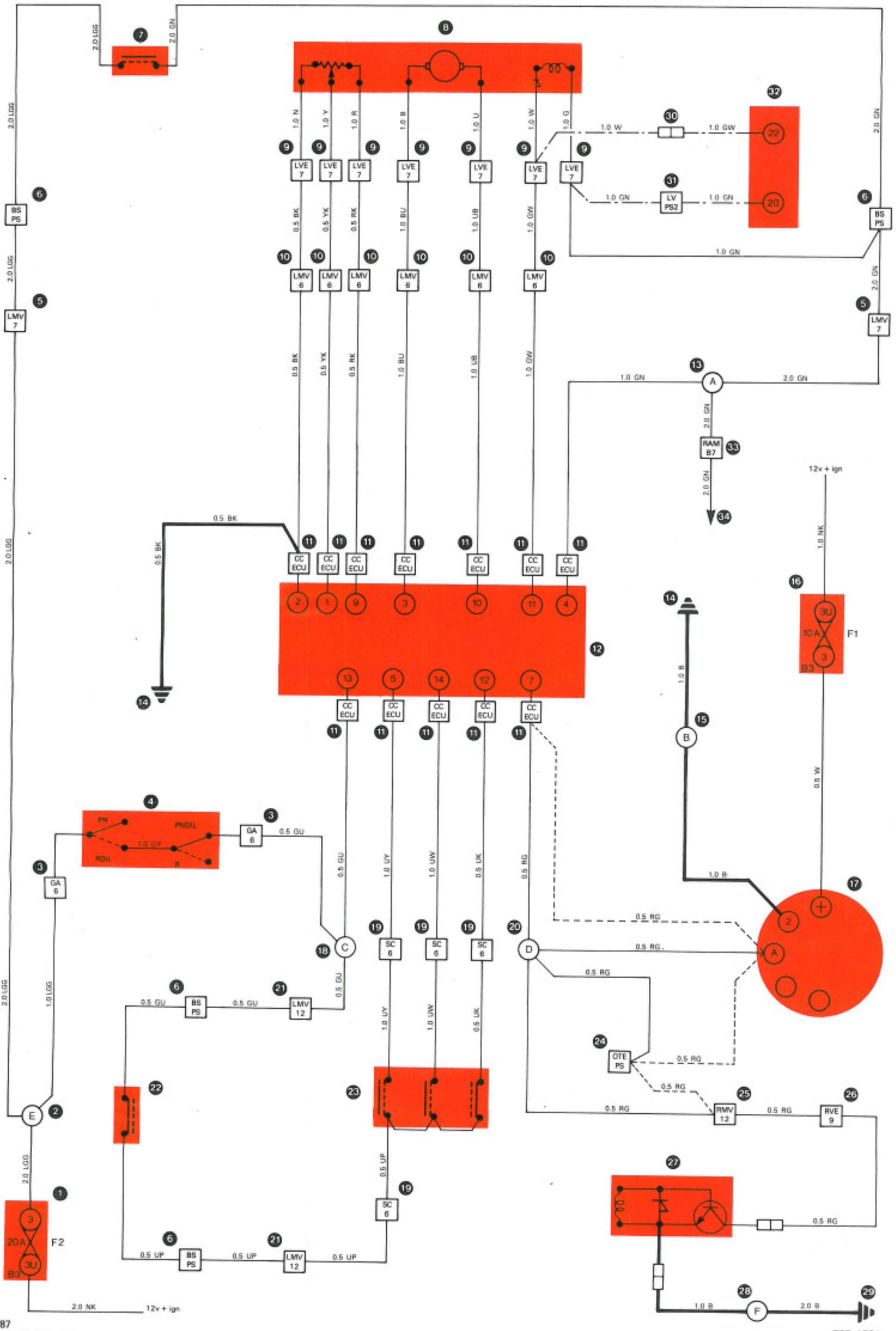


Turbocharged cars only



29 Engine earth point
30 Left-hand valance connection
31 Left-hand valance plug and socket 2-way
32 Knock sensor electronic control unit
33 Right-hand 'A' post main to body loom plug and socket 7-way
34 To stop lamp failure amplifier (refer to Section 13)

Note —·—·— Only applicable to Turbocharged cars



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Speed control system

Introduction

It is the purpose of the automatic speed control system to maintain, within close limits, a set cruising speed selected by the driver.

The speed control system will be energized when the ignition is switched on and will operate in any forward gear.

The controls for the system are mounted on the gear range selector lever and are marked CANCEL, RESUME, and SET.

Any cruising speed from 48 km/h (30 mile/h) up to speeds in excess of 161 km/h (100 mile/h) may be selected to give satisfactory operation of the system.

Warning Always ensure that the legal maximum speed limits are not exceeded.

It is not intended that the system be used below 48 km/h (30 mile/h) and at approximately 40 km/h (25 mile/h) it automatically disengages, although the memory function incorporated into the system remains active.

A safety feature incorporated into the system, is that immediately the footbrake is applied the system becomes disengaged.

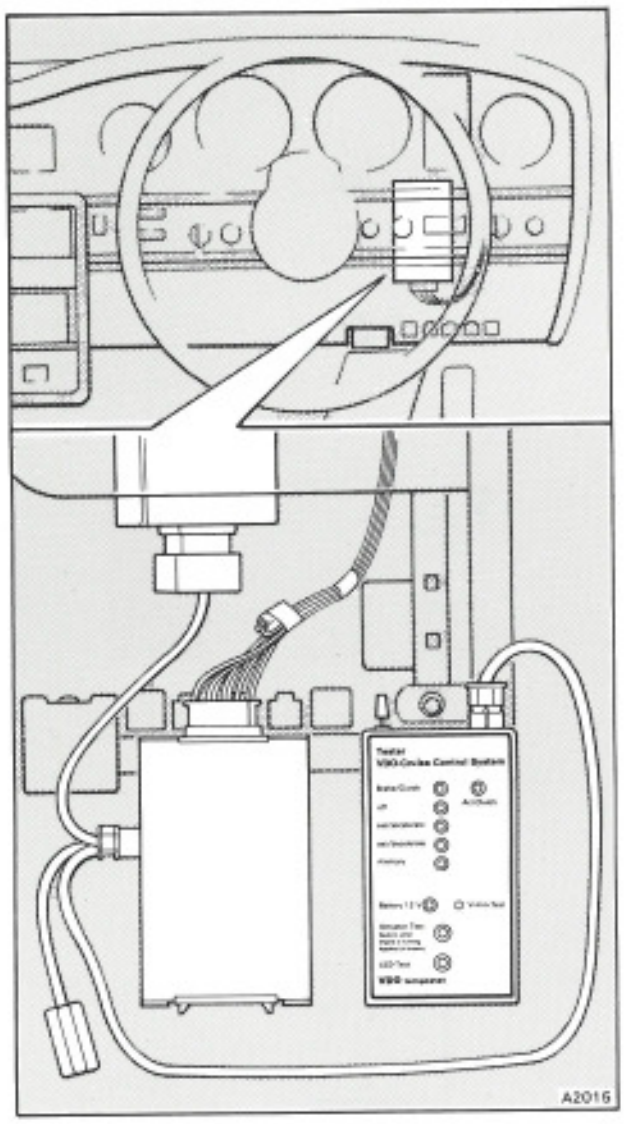

Fig. 24-1 Connecting the text box

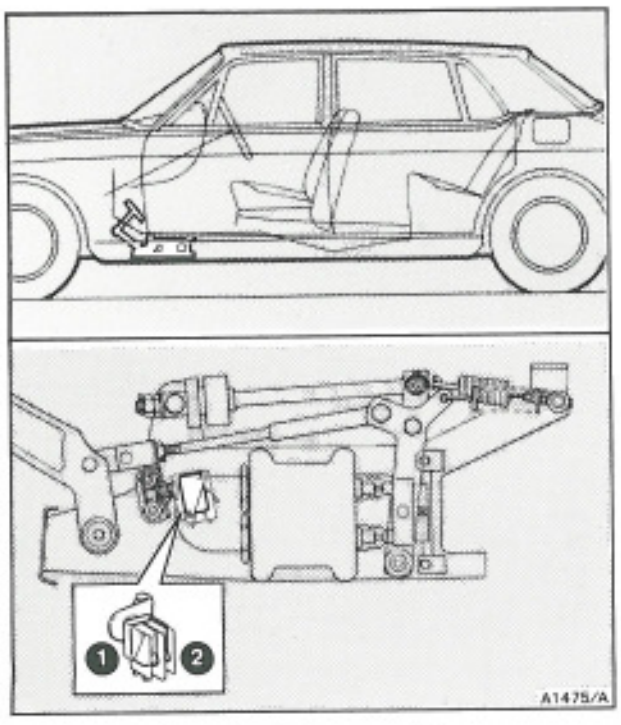

Fig. 24-2 Brake and stop lamps switches
1 Brake switch
2 Stop lamps switch

Operation of the automatic speed control system

To use the system proceed as follows.

Move the gear range selector lever to the D range position and accelerate the car until the desired cruising speed is indicated on the speedometer. Then, engage the speed control by briefly depressing the switch marked SET. The accelerator pedal can then be released and the car will maintain the selected cruising speed under all road conditions within the limits of the engine performance.

Adjustment of the selected cruising speed can be accomplished as follows.

To cruise at a higher speed than the one already selected, depress the switch marked SET. Whilst the switch is depressed the car's speed will gradually increase. When the desired cruising speed is attained, release the SET switch. The car may slightly exceed the selected speed when the switch is released but will quickly settle down to the set cruising speed. Should a small increase in speed be required, this can be achieved by tapping the SET switch. The speed of the car will increase by approximately 1 km/h (0.5 mile/h) each time the switch is tapped.

Alternatively, a higher cruising speed can be achieved by accelerating the car until the required speed is attained, then briefly depressing the SET switch.

To reduce the set cruising speed, decrease the car's speed by means of the footbrake and when the desired cruising speed is reached, briefly depress the SET switch.

To regain the set cruising speed after application of the footbrake pedal has disengaged the system, press the switch marked RESUME. This memory of the last set speed remains at all times in the unit, despite temporary disengagement by operation of the footbrake pedal, until the gear lever is moved out of a forward drive position or the ignition is switched off.

To disengage the system without using the footbrake pedal, press the switch marked CANCEL.

To resume cruising at the previously selected speed, press the RESUME switch. Should the speed of the car have fallen below 40 km/h (25 mile/h) during the period of disengagement, it will be necessary to accelerate the car to a speed in excess of 40 km/h (25 mile/h) before pressing the RESUME switch to engage the system.

The speed control system may be overridden by the accelerator pedal, for example when overtaking, but will automatically return to the originally selected speed once the pedal is released. On downhill gradients, the selected cruising speed could be exceeded as there would be no automatic selection of a lower gear ratio to give engine braking.

Test procedures

If a fault is reported in the operation of the speed control system, it is recommended that before carrying out the fault finding procedure using test box RH 9883, two facts are established.

First, ensure that the speedometer is operating correctly.

Second, ensure that the stop lamps switch is operating/functioning satisfactorily i.e. stop lamp bulbs illuminate, then extinguish when the brake pedal is depressed and released.

On completion of this fault finding procedure it is recommended that the car is road tested to ensure satisfactory operation of the system.

Connecting the test box (see fig. 24-1)

1. Ensure that the parking brake is firmly applied.
2. Remove the interior lamps fuse B5 at main fuseboard F1.
3. Ensure that fuse B3 at main fuseboard F1 is intact.
4. Ensure that fuse B3 at main fuseboard F2 is intact.
5. Remove the starter relay (refer to Section 4).
6. Remove the driver's lower trim panel (refer to Workshop Manual TSD 4700, Chapter S).
7. Disconnect the speed control loom plug from the car's electronic control unit and connect it to the electronic control unit of the speed control test box.

Fault finding procedure

Observe all workshop safety precautions in addition to the special precautions detailed in Section 2.

It is essential that the electrical system of the car is capable of providing 12.5 volts throughout the test procedure. To achieve this the car battery must be in a fully charged condition and connected to a **low current** type battery charger.

Throughout this fault finding procedure it is necessary to check voltage. When doing so a multi-meter must be connected in accordance with the manufacturer's instructions.

1. With the gear range selector lever in the park position, switch on the ignition.
   Are all lamps on the test box extinguished?
   - NO → The gearchange actuator micro-switches are faulty, or the green/blue cable at pin 13 of the test box electronic control unit is picking up a 12v+ supply. Ensure that there is zero volts at pin 13.
   - YES

2. Move the gear range selector lever to the D range position.
   Does the Battery 12v lamp on the test box illuminate?
   - NO → Ensure that there is a minimum of 10.8v+ on the green/blue cable at pin 13 of the test box electronic control unit.
   - YES

3. Depress the LED-Test button on the test box.
   With the exception of the lamp marked Act. Clutch, do all lamps on the test box illuminate?
   - NO → The test equipment is faulty. Replace equipment and return to Operation 1.
   - YES

4. Depress the CANCEL switch situated on the gear range selector lever.
   Does the off lamp on the test box illuminate?
   - NO → The CANCEL switch or associated wiring is faulty. Ensure that this switch is open circuit and that there is zero volts on the blue/pink cable at pin 12 of the test box electronic control unit.
   - YES

5. Depress the SET switch situated on the gear range selector lever.
   Does the set/accelerate lamp on the test box illuminate?
   - NO → The SET switch, brake switch, or associated wiring is faulty. Ensure that there is 12v+ on the blue/white cable at pin 14 of the test box electronic control unit.
   - YES

6. Depress the RESUME switch situated on the gear range selector lever.
   Does the memory lamp on the test box illuminate?
   - NO → The RESUME switch or associated wiring is faulty. Ensure that there is 12v+ on the blue/yellow cable at pin 5 of the test box electronic control unit.
   - YES

7. Slowly depress the car's footbrake pedal.
   Does the Brake/Clutch lamp illuminate and does the off lamp illuminate on the test box?
   The Brake/Clutch lamp should illuminate before the off lamp (see fig. 24-2).
   - NO → The stop lamp failure amplifier unit or associated wiring is faulty.
     Note The speed control circuit which is interconnected with the stop lamps circuit via the electronic control unit, receives an earth path through the stop lamp bulbs when the brake pedal is depressed.
   - YES

8. Depress the Actuator Test button on the test box.
   Does the Act. Clutch lamp illuminate and does the accelerator pedal move from the idle position towards full throttle and quickly return from approximately 10% to 20% before full throttle?
   - NO
   - YES

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NO

The speed control actuator or associated wiring is faulty.

YES

9. Switch off the ignition and connect the test box 15-way plug to the car's electronic control unit (see fig. 24-1). Switch on the ignition and rotate the test box potentiometer until a reading of 80 km/h (50 mile/h) on the speedometer is attained.

Can this reading be attained?

NO

The car's electronic control unit is faulty.

YES

10. Briefly depress the SET switch, the set/accelerate lamp will briefly illuminate, the Act. Clutch lamp will illuminate and remain illuminated.

Rotate the potentiometer slowly to reduce the speedometer reading.

Does the accelerator pedal move down (if yes note the amount of travel) and does the speedometer reading decrease?

NO

The car's electronic control unit is faulty.

YES

11. Depress the footbrake pedal, the Brake/Clutch and cancel lamps will illuminate, the Act. Clutch lamp will extinguish.

Does the accelerator pedal quickly return to the idle position?

NO

The car's electronic control unit is faulty.

YES

12. Briefly depress the RESUME switch, the resume lamp will briefly illuminate, the Act. Clutch lamp will illuminate and remain illuminated.

Does the accelerator pedal move to the position achieved in Operation 10?

NO

The car's electronic control unit is faulty.

YES

13. Briefly depress the CANCEL switch, the cancel lamp will briefly illuminate, the Act. Clutch lamp will extinguish.

Does the accelerator pedal slowly return to the idle position?

NO

The car's electronic control unit is faulty.

YES

14. Rotate the potentiometer until a reading of 80 km/h (50 mile/h) on the speedometer is attained.

Briefly depress the SET switch, the set/accelerate lamp will briefly illuminate, the Act. Clutch lamp will illuminate and remain illuminated.

Rotate the potentiometer slowly to reduce the speedometer reading.

Does the accelerator pedal move down?

NO

The car's electronic control unit is faulty.

YES

15. Briefly depress the V-min-test button situated on the test box.

Does the accelerator pedal quickly return to the idle position and does the Act. Clutch lamp extinguish?

NO

The car's electronic control unit is faulty.

YES

16. Briefly depress the SET switch, the set/accelerate lamp will briefly illuminate, the Act. Clutch lamp will illuminate and remain illuminated.

Rotate the potentiometer slowly to reduce the speedometer reading.

Does the accelerator pedal move down? (If yes note amount of travel).

NO

The car's electronic control unit is faulty.

YES

17. Move the gear range selector lever from the D range position to the L range position.

Does the speed control system remain in operation? i.e. accelerator pedal remains at the position achieved in Operation 16.

NO

The micro-switch in the gearchange actuator, or associated wiring is faulty.

YES

18. Rotate the potentiometer slowly to achieve a speedometer reading below 40 km/h (25 mile/h).

Does the speed control system disengage? i.e. accelerator pedal quickly returns to the idle position.

NO

If disengagement does not occur, or varies considerably from 40 km/h (25 mile/h). The Low Speed Lock Out (LSLO) function within the car's electronic control unit is faulty.

YES

19. Rotate the potentiometer slowly until a speedometer reading of 60 km/h (35 mile/h) is indicated.

Briefly depress the RESUME switch, the resume lamp will briefly illuminate, the Act. Clutch lamp will illuminate and remain illuminated.

Does the accelerator pedal move to the position achieved in Operation 16?

NO

The car's electronic control unit is faulty.

YES

20. Briefly depress the CANCEL switch, the cancel lamp will briefly illuminate, the Act. Clutch lamp will extinguish.

Does the accelerator pedal slowly return to the idle position?

NO

The car's electronic control unit is faulty.

YES

21. Rotate the potentiometer slowly until a speedometer reading of 70 km/h (45 mile/h) is indicated.

Briefly depress the SET switch.

Does the set/accelerate lamp briefly illuminate and does the Act. Clutch lamp illuminate and remain illuminated?

NO

The car's electronic control unit is faulty.

YES

22. Rotate the potentiometer slowly to increase the speedometer reading.

Does the speed control system disengage (audible 'click' from the speed control actuator) at approximately 80 km/h (50 mile/h) and does the Act. Clutch lamp extinguish?

NO

The car's electronic control unit is faulty.

YES

23. Rotate the potentiometer slowly to reduce the speedometer reading.

Does the speed control system engage (audible 'click' from the speed control actuator) at approximately 80 km/h (50 mile/h) and does the Act. Clutch lamp illuminate?

NO

The car's electronic control unit is faulty.

YES

24. Rotate the potentiometer to reduce the speedometer reading, the Act. Clutch lamp will remain illuminated.

Does the speedometer reading decrease and does the accelerator pedal move down?

NO

The car's electronic control unit is faulty.

YES

25. Switch the ignition off and then on again.

Briefly depress the RESUME switch, the resume lamp will briefly illuminate.

Does the accelerator pedal remain at the idle position?

NO

The memory erase function within the car's electronic control unit is faulty.

YES

26. Switch off the ignition. Remove the test box and re-connect the speed control wiring.

Fit the driver's lower trim panel (refer to Workshop Manual TSD 4700, Chapter S).

Road test the car as described under the heading Road test procedure.

Road test procedure

The following road test procedure is recommended to enable both safety and functional checks of the speed control system to be carried out. When carrying out this test procedure select a traffic free length of road and ensure that the road is free from any potential hazards.

1. Ensure that the throttle linkage is correctly set (refer to Workshop Manual TSD 4737, Engine Management Systems, Chapter K).
2. Ensure that there is between 0.254 mm and 1.27 mm (0.010 in and 0.050 in) of free play at the speed control actuator linkage (see fig. 24-3). Adjust if necessary.
3. Operate the accelerator pedal to ensure that the operation of the throttle linkage and actuator linkage is not obstructed.
4. Apply the parking brake, then apply the footbrake and start the engine. Move the gear range selector lever to the D range position.

   Ensure that the engine speed does not increase.
5. Accelerate the car to 70 km/h (45 mile/h). Holding this speed steady for three to four seconds, briefly depress the SET switch.

   Ensure that the car cruises at a constant speed of 70 km/h±3 km/h (45 mile/h±2 mile/h).
6. Briefly apply the footbrake pedal.

   Ensure that the car decelerates.
7. Briefly depress the RESUME switch. The memory within the electronic control unit should automatically function to return the speed of the car to 70 km/h (45 mile/h).
8. Briefly depress the CANCEL switch.

   Ensure that the car decelerates.
9. Briefly depress the RESUME switch. The memory within the electronic control unit should automatically function to return the speed of the car to that set in Operation 5.
10. Tap the SET switch four to five times.

    Ensure the speed of the car increases by approximately 1 km/h (0.5 mile/h) per tap.
11. Briefly depress the CANCEL switch.

    Ensure that the car decelerates.
12. Accelerate the car to 50 km/h (30 mile/h). Holding this speed steady for three to four seconds, briefly depress the SET switch.

    Ensure that the car cruises at a constant speed of 50 km/h±3 km/h (30 mile/h±2 mile/h).
13. Accelerate the car to 80 km/h (50 mile/h). Holding this speed steady for three to four seconds, briefly depress the SET switch.

    Ensure that the car cruises at a constant speed of 80 km/h±3 km/h (50 mile/h±2 mile/h).
14. Increase the speed of the car by depressing the SET switch. Release the switch when a speed of 100 km/h (60 mile/h) is reached.

    Ensure that the car cruises at a constant speed of 100 km/h±3 km/h (60 mile/h±2 mile/h).

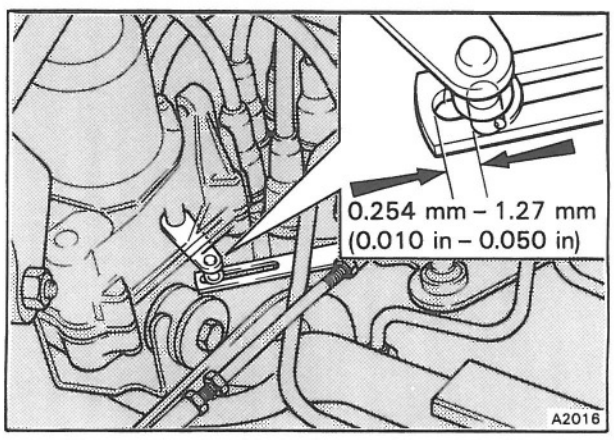

Fig. 24-3 Speed control actuator rod setting

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15. Reduce the speed of the car by application of the footbrake pedal to approximately 80 km/h (50 mile/h). Then, briefly depress the RESUME switch. The memory within the electronic control unit should automatically function to return the speed of the car to that set in Operation 14.
16. Briefly depress the CANCEL switch.
    Ensure that the car decelerates.
17. Briefly depress the RESUME switch. The memory within the electronic control unit should automatically function to return the speed of the car to that set in Operation 14.
18. Reduce the speed of the car by application of the footbrake pedal to 25 km/h (15 mile/h). Then, briefly depress the RESUME switch.
    Ensure that the system does not engage.
19. Bring the car to a halt and move the selector lever to the park position.
20. Move the selector lever to the D range position. Then, accelerate the car to 60 km/h (35 mile/h) and depress the RESUME switch.
    Ensure that the system does not engage.
21. Accelerate the car to 80 km/h (50 mile/h). Holding this speed steady for three to four seconds, briefly depress the SET switch.
    Ensure that the car cruises at 80 km/h±3 km/h (50 mile/h±2 mile/h).
22. Reduce the speed of the car by application of the footbrake pedal to approximately 65 km/h (40 mile/h). Then, briefly depress the RESUME switch. The memory within the electronic control unit should automatically function to return the speed of the car to that set in Operation 21.
23. Tap the SET switch four to five times.
    Ensure that the speed of the car increases by approximately 1 km/h (0.5 mile/h) per tap.
24. To conclude the test procedure, briefly depress the CANCEL switch.
    Ensure that the car decelerates.