



# **TSD 5000/5500 Workshop Manuals and Parts List Supplement**

## **Rolls-Royce Motor Cars**

**Applicable to Bentley Turbo S**

**Motor cars built from vehicle  
identification number (VIN)**

**\*SCBZT05C8SCH56801\***

**and Bentley Continental S**

**Motor cars built from vehicle  
identification number (VIN)**

**\*SCBZB05C1SCX52332\***

**TSD 5601**

**October 1994**



**Printed and published by  
Rolls-Royce Motor Cars Limited  
Crewe  
Cheshire  
CW1 3PL  
England**

The information in this document is correct at the time of going to print but in view of the Company's continuing efforts to develop and improve its products it may have become out of date by the time you read it and you should, therefore, refer to publication TSD 4736 Product Support Information.

The information given here must not be taken as forming part of or establishing any contractual or other commitment by Rolls-Royce Motor Cars Limited and no warranty or representation concerning the information is given.

© Rolls-Royce Motor Cars Limited 1994



# Introduction

This supplementary manual is written specifically for skilled service personnel who should use the information in conjunction with Workshop Manual TSD 5000, and Workshop Manual Electrical TSD 5500. When using this supplement it is assumed that the workshop safety and repair procedures generally accepted by the motor trade are appreciated, understood, and carried out.

Service personnel at Rolls-Royce Motor Cars Limited are always prepared to answer queries or give advice on individual servicing problems. When making an enquiry it is essential that the full vehicle identification number (VIN) is quoted.

This document is applicable to Bentley Turbo S motor cars from vehicle identification number \*SCBZT05C8SCH56801\*, and Bentley Continental S motor cars from vehicle identification number \*SCBZB05C1SCX52332\*.



## Communications

All communication should be addressed to one of the following depending upon the car's domicile.

### **Registered Office, Factory, and Service Centre**

Crewe Cheshire CW1 3PL England  
Telephone: 0270 255155 Administration  
Telephone: 0270 535000 Service reception  
Fax: 0270 586548

### **European Operations**

Crewe Cheshire CW1 3PL England  
Telephone: 0270 255155 Administration  
Fax: 0270 586548

### **Rolls-Royce Motor Cars International SA**

Au Glapin 1162 St-Prex  
Switzerland  
Telephone: 021 806 2731  
Telex: 454216  
Fax: 021 806 2729

### **Rolls-Royce Motor Cars Inc.**

PO Box 476 Lyndhurst  
New Jersey 07071 USA  
Telephone: 201 460 9600  
Fax: 201 460 9392



# General information and Parts list

Contents	Pages
Introduction	7
General information	
Workshop safety	7
Final drive (limited slip differential) unit	
Final drive – To remove	7
Final drive – To dismantle	7
Crown wheel and differential assembly – To dismantle	7
Crown wheel and differential assembly – To assemble	8
Final drive – To assemble	8
Final drive – To fit	8
Chargecooler system	
Chargecooler system – To drain	8
Chargecooler system – To fill	9
Chargecooler system – To top-up	9
Chargecooler – To remove and fit	9
Electric water pump – To remove and fit	10
Radiator/fan assembly – To remove and fit	10
Wheels and tyres	
Spare wheel – To remove	10
Spare wheel – To fit	10
Recommended tyres and tyre pressures	10
Engine Management System	
Introduction	12
Diagnostic trouble codes	13
Connecting the test equipment	15
Manifold absolute pressure sensor – To remove and fit	15
Cruise control module (CC) – To remove and fit	16
Engine Management System Theoretical Wiring Diagram	
Introduction	17
Keys	18
Wiring diagram	19
Body and Coachwork	
Introduction	21



<b>Contents</b>	<b>Pages</b>
Bumpers	21
Front bumper assembly – To remove and fit	22
Front bumper – To renew mounting brackets	22
Front bumper assembly – To dismantle	22
Front bumper assembly – To assemble	22
Rear bumper assembly – To remove and fit	23
Rear bumper – To renew mounting brackets	24
Rear bumper assembly – To dismantle and assemble	24
Headlamp power wash jets – To remove and fit	24
Headlamp power wash jets – To adjust	24
Spare wheel stowage	24
Spare wheel stowage – To renew	24
Safety procedures	25
Preheating the adhesive	25
Spare wheel moulding – To remove	26
Spare wheel moulding – To fit	26
Parts list	
Introduction	27
Workshop tools	31
Additional information	
Transmission Control Module (TCM)	33



# Bentley Turbo S and Bentley Continental S

## Introduction

This information covers the removal and fitting procedures for the special features fitted to these cars.

This information should be read in conjunction with the standard Bentley Turbo R and Bentley

Continental R procedures in TSD 5000 Workshop Manual, TSD 5500 Workshop Manual Electrical, and TSD 5504 illustrated Parts List.

It should be noted that the number of special features fitted to these particular cars may vary depending on the specification.

## General information

Capacities	Bentley Turbo S	Bentley Continental S
Chargecooler system	3,75 litres (6.6 pt)	as Turbo S
Headlamp power wash	Two single jet modules mounted in bumper	as Continental R
Cooling system		
Chargecooler system – Type	Pressurized system	as Turbo S
Pump type	Electric	as Turbo S
Radiator matrix type	Aluminium tube and fin construction	as Turbo S
System pressure	0,5 bar (7 lbf/in <sup>2</sup> )	as Turbo S
Cooling fan	Electric, mounted behind radiator	Electric, mounted forward of radiator
Fuel injection system 98 RON Super unleaded	Eight solenoid operated injectors. Fuel injection and ignition systems controlled together. Collectively known as Zytec Engine Management system	as Turbo S
Wheels		
Type	Aluminium alloy	as Turbo S
Size	7 <sup>1</sup> / <sub>2</sub> J x 17	as Turbo S
Tyres	255/55 R17 Uni-directional	as Turbo S

## Workshop safety

In addition to carrying out the usual workshop safety precautions, note the following.

Never work beneath the car if it is only supported on a jack. Always ensure that car stands or blocks are used as a safety precaution.

If it is necessary to raise and support the complete car, reference **must be** made to the information given in TSD 5000 Workshop Manual, Chapter A.

## Final drive (limited slip differential) unit

The limited slip differential is a device designed to prevent uncontrolled wheelspin under environmental and adverse driving conditions.

The final drive assembly comprises a non-standard central gear case which houses the revised hypoid crown wheel and pinion and also the limited slip differential assembly.

The pinion nose bearing and support plate have been deleted.

The differential clutch arrangement comprises a series of plates which are alternately coupled to the left and right-hand output shafts within the final drive. These plates are suspended within a viscous silicone fluid.

The alternate plate packs, which do not touch each other, are able to transfer torque via the viscous friction effects of the fluid. The amount of torque transfer is dependent on the relative speed of the two alternate packs.

Power is transferred to the drive-shafts via the output shafts which are of differing lengths.

## Final drive – To remove

Refer to TSD 5000 Workshop Manual, Chapter J.

## Final drive unit – To dismantle

Refer to TSD 5000 Workshop Manual, Chapter J.

## Crown wheel and differential assembly – To dismantle

1. Remove the two bearing outer races.

2. Remove the capscrews securing the crown wheel to the limited slip differential housing assembly. Remove the crown wheel.
3. The limited slip differential assembly is only available as a service exchange unit.

**Crown wheel and differential assembly – To assemble**

1. If new taper roller bearings are to be fitted they must be pressed squarely onto their diameters on the limited slip differential housing.
2. Fit the crown wheel to the housing and torque tighten the capscrews to between 57 Nm and 61 Nm (5,9 kgf m and 6,2 kgf m; 42 lbf ft and 45 lbf ft).
3. Check the crown wheel for axial run-out (refer to TSD 5000 Workshop Manual, Chapter J – Section J2).

**Final drive unit – To assemble**

Refer to TSD 5000 Workshop Manual, Chapter J.

**Final drive – To fit**

Refer to TSD 5000 Workshop Manual, Chapter J.

**Note** After fitting a new or reconditioned final drive unit, always fill with a recommended oil and then run the car between 40–48 kilometres (25–30 miles). Then, drain and refill with new oil.

**Chargecooler system (see fig. 1)**

A chargecooler system is fitted which lowers the

temperature of the air entering the engine, allowing higher boost pressures to be tolerated without detonation.

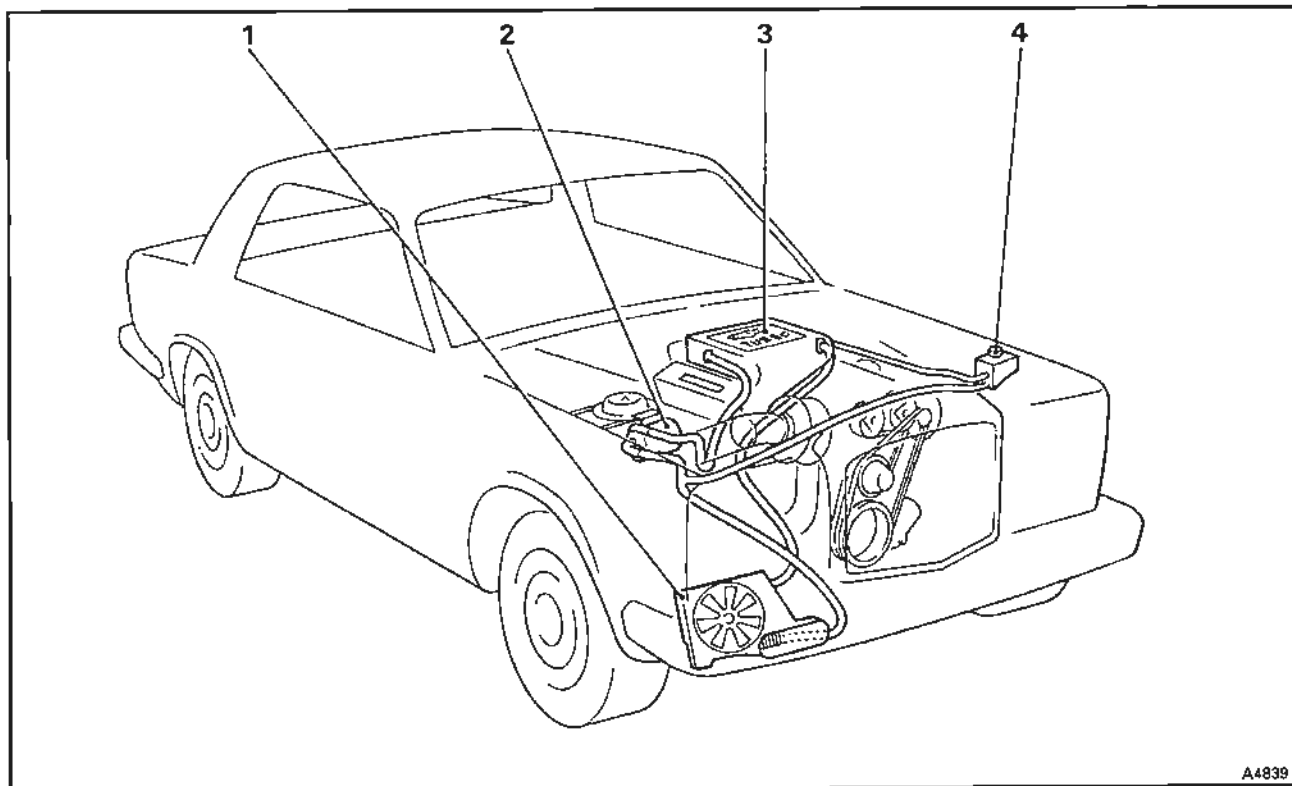
Inlet air enters through a standard air cleaner box and then passes through the turbo intake housing which has been re-orientated to align with the water-air chargecooler. From the chargecooler it passes through the air intake adapter for induction into the engine. A dump valve diverts compressed air back to the compressor inlet (if the throttles are closed suddenly), in the same manner as the standard turbocharged engine.

Inlet air is cooled by passing coolant across the chargecooler matrix. The coolant is circulated by an electric water pump mounted adjacent to the right-hand spring pot. Air is ducted from an aperture in the air dam, through the radiator and exits via a louvred outlet panel (snow excluder) in the wheel arch.

Filling and topping-up the coolant system is through an expansion tank, pressurized at approximately 0,5 bar (7 lbf/in<sup>2</sup>), situated in the front left-hand corner of the engine compartment. The system is filled with coolant to the same specification as the engine and has a capacity of 3,75 litres (6.6 pt).

**Chargecooler system – To drain**

1. Place the car on a ramp.
2. Allow the system to cool prior to removing the expansion tank pressure cap.



A4839

**Fig. 1 Chargecooler system**

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1 Radiator/duct assembly</li> <li>2 Water pump</li> </ol> | <ol style="list-style-type: none"> <li>3 Chargecooler</li> <li>4 Expansion tank</li> </ol> |
|--|--|



3. Place a container beneath the lower hose outlet on the chargecooler radiator. Slacken and remove the bottom hose.
4. Drain the coolant into the container.
5. Fit the bottom hose.

#### Chargecooler system – To fill

1. Remove the filler plug in the top of the chargecooler.
  2. Disconnect the chargecooler to header tank hose at the adapter located centrally in the length of hose. Fit a hose clamp to seal off the header tank hose.
  3. Fill the system with coolant through the filler hole. Replace the filler plug and tighten when the system is full.
  4. Remove the header tank filler cap and half fill the tank with coolant.
  5. Reconnect the chargecooler to header tank hose at the adapter and tighten the hose clips. Remove the hose clamp.
  6. Replace the filler cap on the header tank.
  7. Remove the pump relay (grey) between the right-hand side spring pot brackets. Using a link wire (see fig. 2), bridge the contacts for ten seconds to operate the electric water pump. Remove the link wire and replace the pump relay.
- Note** The ignition switch does not need to be on during the above operation.
8. Remove the filler cap from the header tank and top-up to approximately 5 mm (0.197 in) below the bottom of the filler neck.
  9. Fit the pressure cap.

#### Chargecooler system – To top-up

1. Allow the system to cool and then remove the pressure cap from the expansion tank.
2. Top-up with coolant to approximately 5 mm (0.197 in) below the bottom of the filler neck.
3. Fit the pressure cap.

#### Chargecooler – To remove and fit

1. Drain the coolant (see Chargecooler system – To drain).
2. Disconnect the electrical connections from the idle speed actuator and the air temperature thermistor at the rear of the chargecooler. Slacken the wormdrive clips securing the idle speed actuator and pivot it clear of the chargecooler.
3. Remove the coil covers. Then, disconnect the electrical connections from the coils.
4. Remove the setscrews from the coil racks, to allow the coil assemblies to be moved slightly away from the chargecooler.
5. Slacken the chargecooler to throttle body and chargecooler to turbocharger connecting collar wormdrive clips. Then, ease both collars away from the chargecooler.
6. Remove all the hoses connecting the front of the chargecooler to the turbocharger. Remove the

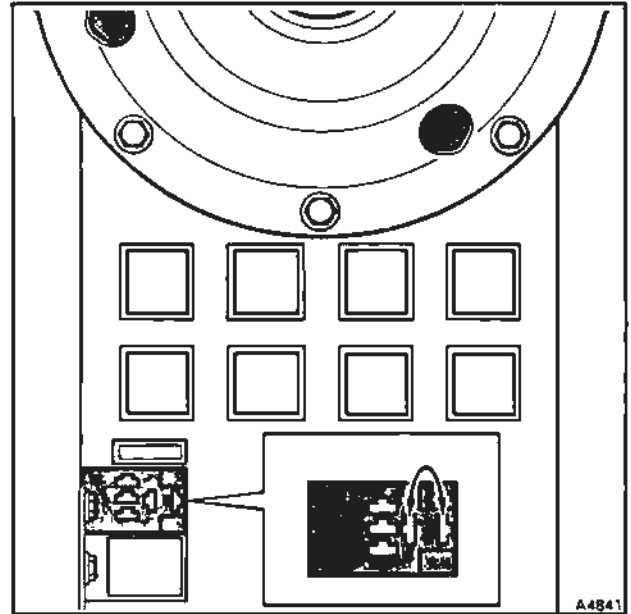


Fig. 2 Bridging the relay base

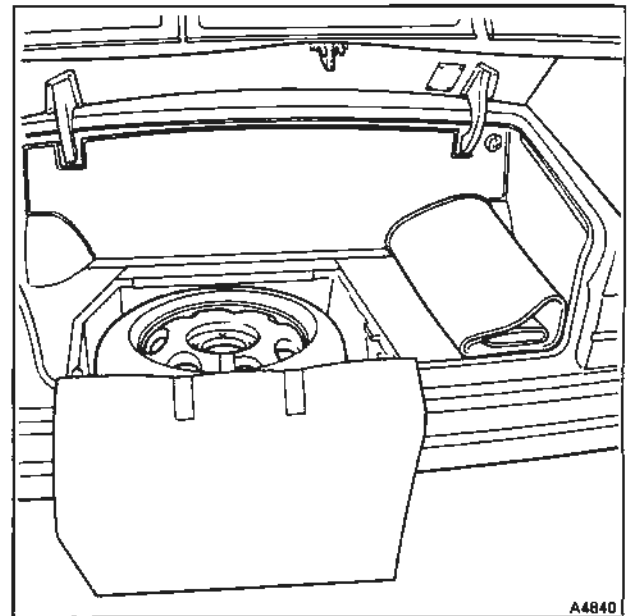


Fig. 3 Spare wheel location (Bentley Turbo S)

- coolant return hose from the chargecooler. Then, remove the feed hose to the chargecooler.
7. Remove the header tank to chargecooler hose.
  8. Remove the nuts securing the chargecooler to the four mounts.
  9. Carefully ease the chargecooler up and away from the engine, ensuring all pipes, electrical connections, etc., have been removed.
- Drain any remaining coolant into the container used for draining the system.
10. Fit the chargecooler by reversing the removal procedure.

### Electric water pump – To remove and fit

1. Drain sufficient coolant to ensure that the level is below the water pump (refer to Chargecooler system – To drain).
2. Disconnect the electrical plug adjacent to the water pump assembly.
3. Slacken and remove the coolant hoses from the water pump.
4. Remove the two setscrews securing the pump assembly to the right-hand spring pot. Lift the assembly clear.
5. To fit the water pump, reverse the removal procedure noting that the securing bolts should be torque tightened in accordance with the figures quoted in Chapter P.

### Radiator/fan assembly – To remove and fit

1. Remove the front bumper assembly (refer to Chapter S).
2. Remove the snow excluder from the right-hand wheel arch.
3. Drain the coolant (see Chargecooler system – To drain).
4. Disconnect the top hose from the radiator stub pipe.
5. Disconnect the fan assembly electrical plug and socket, situated at the rear of the headlamp units.
6. Remove the nuts and washers securing the assembly to the three rubber mounts.
7. Withdraw the radiator/duct assembly complete.
8. Dismantle the radiator from the assembly.
9. To fit the radiator, reverse the removal procedure.

### Wheels and tyres

#### Spare wheel – To remove (Bentley Turbo S)

1. Lift the luggage compartment lid.
2. Fold the luggage compartment floor carpet from left to right (see fig. 3), to reveal the soundproofing

mat, fold back the soundproofing mat to protect the bodywork and bumper from damage when lifting the spare wheel from the luggage compartment.

3. Remove the panel protecting the spare wheel by turning the location screws anti-clockwise half a turn either by hand or with a suitable screwdriver.
4. Lift the panel and pull rearwards to remove.
5. Using the lifting strap, remove the spare wheel (complete with cover) from the luggage compartment.

**Note** The wheel cover is provided to ease the removal procedure and should not be discarded.

#### Spare wheel – To fit (Bentley Turbo S)

Reverse the procedure given for removal noting the following.

1. Ensure that the lifting strap and spare wheel cover are attached to the wheel.

**Note** Tyres fitted to Bentley Turbo S and Bentley Continental S are uni-directional, fitting procedures and precautionary notes for these tyres are described in TSD 5000 Workshop Manual, Chapter R.

#### Recommended tyres and tyre pressures

This section refers to the recommended tyres and tyre pressures for the Bentley Turbo S and Bentley Continental S.

The removal, balancing, and fitting procedures of the wheel and tyre assemblies, are described in TSD 5000 Workshop Manual, Chapter R.

Bentley Turbo S and Bentley Continental S motor cars are fitted with 7½ J x 17 aluminium alloy wheels.

To ensure the designed handling characteristics of the car are achieved, it is important to maintain the differential in tyre pressures between the front and rear wheels.

#### Recommended tyres and tyre pressures (Turbo S)

Tyre manufacturer /Construction	Size	Load/Speed rating	Sidewall markings	Loading conditions	Tyre pressures
Avon/Radial ply steel	255/55 R17	102W	Avon Turbospeed CR228D 255/55 R17	Up to four occupants and 22 kg (50 lb) of luggage	Speeds up to 160 km/h (100 mile/h) Front 1,95 bar (195 kPa, 28 lbf/in <sup>2</sup> ) Rear 2,50 bar (250 kPa, 36 lbf/in <sup>2</sup> ) Sustained speeds in excess of 160 km/h (100 mile/h) Front 2,20 bar (220 kPa, 32 lbf/in <sup>2</sup> ) Rear 2,60 bar (260 kPa, 38 lbf/in <sup>2</sup> )
				Up to maximum vehicle capacity weight	Speeds up to 160 km/h (100 mile/h) Front 2,20 bar (220 kPa, 32 lbf/in <sup>2</sup> ) Rear 2,75 bar (275 kPa, 40 lbf/in <sup>2</sup> ) Sustained speeds in excess of 160 km/h (100 mile/h) Front 2,30 bar (230 kPa, 33 lbf/in <sup>2</sup> ) Rear 3,20 bar (320 kPa, 46 lbf/in <sup>2</sup> )

**Recommended tyres and tyre pressures (Continental S)**

<b>Tyre manufacturer /Construction</b>	<b>Size</b>	<b>Load/ Speed rating</b>	<b>Sidewall markings</b>	<b>Loading conditions</b>	<b>Tyre pressures</b>
Avon/Radial ply steel	255/55 R17	102W	Avon Turbospeed CR228D 255/55 R17	Up to four occupants and 22 kg (50 lb) of luggage	Speeds up to 160 km/h (100 mile/h) Front 1,95 bar (195 kPa, 28 lbf/in <sup>2</sup> ) Rear 2,50 bar (250 kPa, 36 lbf/in <sup>2</sup> ) Sustained speeds in excess of 160 km/h (100 mile/h) Front 2,20 bar (220 kPa, 32 lbf/in <sup>2</sup> ) Rear 2,90 bar (290 kPa, 42 lbf/in <sup>2</sup> )
				Up to maximum vehicle capacity weight	Speeds up to 160 km/h (100 mile/h) Front 2,20 bar (220 kPa, 32 lbf/in <sup>2</sup> ) Rear 2,75 bar (275 kPa, 40 lbf/in <sup>2</sup> ) Sustained speeds in excess of 160 km/h (100 mile/h) Front 2,30 bar (230 kPa, 33 lbf/in <sup>2</sup> ) Rear 3,0 bar (300 kPa, 44 lbf/in <sup>2</sup> )

When checking tyre pressures ensure that the tyres are cold.

After checking the tyre pressures, ensure that the valve caps are fitted. The valve caps protect the valve from the ingress of water and provide a secondary air seal. Always ensure that a valve cap of the same metal as the valve stem is fitted. The fitting of a different metal cap will result in corrosion and prevent subsequent cap removal.

## Engine Management System

### Introduction

The following changes have been made to the engine management system compared to 1994 model year cars.

Replaced parts	New parts
Bosch ECM, Bosch M3.3 Motronic, Engine run timer, Luxor boost and Avant transient boost control modules.	Zytek ECM (plus new cooling enclosure). Air intake temperature sensor. Fuel temperature sensor.
Auxiliary air solenoid valve (Tecalemit).	Boost control valve
Bosch air meter.	Manifold absolute pressure (MAP) sensor.
Camshaft sensor.	'Hall' effect sensor (plus new timing disc on camshaft).
Loom changes.	Engine, right and left-hand valance, main distribution, gearbox and chargecooler looms.
Diagnostics (Blink codes).	Mastercheck engine/transmission data card.

The engine management system is now controlled by a Zytek engine control module (ECM) mounted in the same position as the replaced Bosch ECM. The Zytek control module (and additional internal software) is capable of coping with many more features than the Bosch system. The Zytek system incorporates boost and transient boost features.

Additional sensors (see fig. 4) which feed information to the Zytek system are:

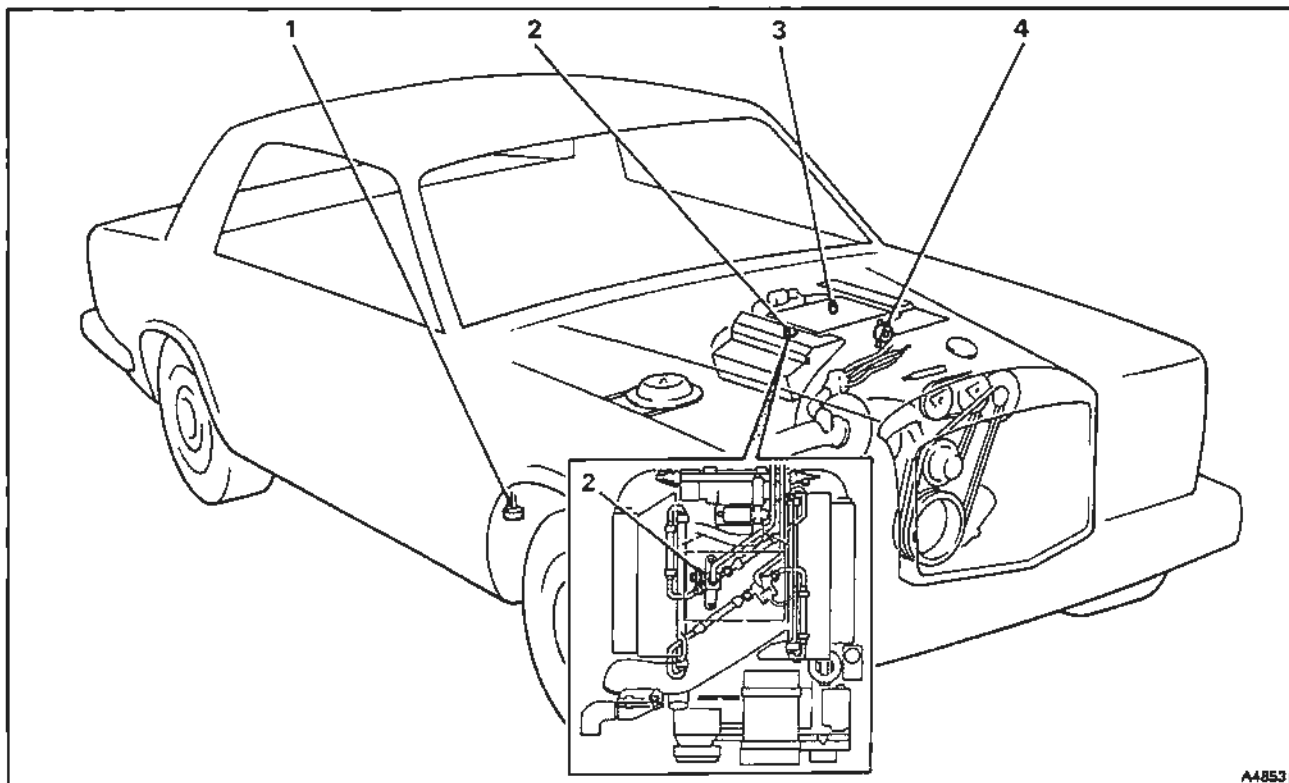
- (i) air intake temperature sensor, mounted on the outlet side of the chargecooler.
- (ii) fuel temperature sensor, mounted beneath the chargecooler.

The auxiliary air valve (Tecalemit) has been replaced by an additional boost control valve which is mounted at the front end of the chargecooler.

The load sensing medium has also changed from an air flow to a pressure based system. This system is measured by a manifold absolute pressure (MAP) sensor mounted under the right-hand front wing.

The camshaft signal is now fed from a 'Hall' effect sensor which necessitates a new timing disc. This timing disc is a single tooth gear fitted to the camshaft as the previous type.

Loom changes have been made to the engine, right and left-hand valance, main distribution,



**Fig. 4 Engine management system – new component locations**

- |   |                                       |
|---|---------------------------------------|
| 1 Manifold absolute pressure (MAP) sensor | 3 Air intake temperature sensor (IAT) |
| 2 Fuel temperature sensor                 | 4 Boost control valve                 |

gearbox and chargecooler systems.

Finally, the diagnostics procedure (Blink codes) has been replaced by a Mastercheck card from

Omitec which permits the new engine management and gearbox systems, etc., to be interrogated via a new connector.

#### Diagnostic trouble codes

Engine codes	
Code	Description
P0105	Manifold absolute pressure/barometric pressure circuit malfunction
P0106	Manifold absolute pressure/barometric pressure circuit range/performance malfunction
P0110	Intake air temperature circuit malfunction
P0115	Engine coolant temperature circuit malfunction
P0116	Engine coolant temperature circuit range/performance problem
P0120	Throttle/pedal position sensor A circuit malfunction
P0121	Throttle/pedal position sensor A circuit range/performance malfunction
P0125	Insufficient coolant temperature for closed loop fuel control
P0130	O <sub>2</sub> sensor circuit malfunction ('A' bank, sensor 1)
P0131	O <sub>2</sub> sensor circuit low voltage ('A' bank, sensor 1)
P0132	O <sub>2</sub> sensor circuit high voltage ('A' bank, sensor 1)
P0133	O <sub>2</sub> sensor circuit slow response ('A' bank, sensor 1)
P0135	O <sub>2</sub> sensor heater circuit malfunction ('A' bank, sensor 1)
P0171	System too lean
P0172	System too rich
P0180	Fuel temperature sensor A circuit malfunction
P0201	Injector circuit malfunction - Cylinder A1
P0202	Injector circuit malfunction - Cylinder A3
P0203	Injector circuit malfunction - Cylinder B3
P0204	Injector circuit malfunction - Cylinder A2
P0205	Injector circuit malfunction - Cylinder B2
P0206	Injector circuit malfunction - Cylinder B1
P0207	Injector circuit malfunction - Cylinder A4
P0208	Injector circuit malfunction - Cylinder B4
P0230	Fuel pump primary circuit malfunction
P0243	Turbocharger wastegate solenoid A malfunction
P0247	Turbocharger wastegate solenoid B malfunction
P0300	Random/multiple cylinder misfire detected
P0301	Cylinder A1 misfire detected
P0302	Cylinder A3 misfire detected
P0303	Cylinder B3 misfire detected
P0304	Cylinder A2 misfire detected
P0305	Cylinder B2 misfire detected
P0306	Cylinder B1 misfire detected
P0307	Cylinder A4 misfire detected
P0308	Cylinder B4 misfire detected
P0325	Knock sensor 1 circuit malfunction ('A' bank)
P0330	Knock sensor 2 circuit malfunction ('B' bank)

<b>Code</b>	<b>Description</b>
P0335	Crankshaft position sensor circuit malfunction
P0340	Camshaft position sensor circuit malfunction
P0351	Ignition coil A1 primary/secondary circuit malfunction
P0352	Ignition coil A3 primary/secondary circuit malfunction
P0353	Ignition coil B3 primary/secondary circuit malfunction
P0354	Ignition coil A2 primary/secondary circuit malfunction
P0355	Ignition coil B2 primary/secondary circuit malfunction
P0356	Ignition coil B1 primary/secondary circuit malfunction
P0357	Ignition coil A4 primary/secondary circuit malfunction
P0358	Ignition coil B4 primary/secondary circuit malfunction
P0410	Secondary air injection system malfunction
P0411	Secondary air injection system incorrect flow detected
P0443	Evaporative emission control system purge control valve circuit malfunction
P0460	Fuel level sensor circuit malfunction
P0500	Vehicle speed sensor malfunction
P0505	Idle control system malfunction
P0506	Idle control system rpm lower than expected
P0507	Idle control system rpm higher than expected
P0601	Internal control module memory checksum error
P1000	Air conditioning relay
P1001	Charge cooler pump relay
P1002	Charge cooler fan relay
P1003	Charge cooler thermistor
P1004	Run timer relay
P1005	Catalyst temperature thermocouple (if fitted)
P1006	TCM induced MIL
P1007	ECM internal barometer circuit malfunction
P1008	ECM internal temperature sensor circuit malfunction
P1009	Excessive ECM internal temperature
P1340	After start camshaft position sensor circuit fault
P1344	Camshaft position sensor circuit intermittent
<b>Transmission codes – TCM Inputs</b>	
P0107	Barometric pressure sensor signal low
P0108	Barometric pressure sensor signal high
P0122	Throttle position sensor signal low
P0123	Throttle position sensor signal high
P0237	Turbo boost sensor signal low
P0238	Turbo boost sensor signal high
P0703	Brake switch input malfunction
P0706	Transmission range sensor circuit range/performance
P0712	Transmission fluid temperature sensor circuit low input
P0713	Transmission fluid temperature sensor circuit high input
P0715	Turbine/input speed sensor circuit malfunction

Code	Description
P0716	Turbine/input speed sensor range/performance
P0720	Output speed sensor circuit malfunction
P0721	Output speed sensor circuit range/performance
P0726	Engine speed input circuit range/performance
P0727	Engine speed input circuit no signal
P1780	Torque reduction signal malfunction
P1783	Transmission fluid over-temperature condition
P1794	System voltage malfunction
P1897	Warm-up signal circuit malfunction
P1898	Manual mode circuit malfunction
P1899	Sport mode circuit malfunction
<b>Transmission codes – TCM Outputs</b>	
P0605	TCM PROM checksum error
P0730	Incorrect gear ratio
P0741	Torque converter clutch system stuck off
P0742	Torque converter clutch system stuck on
P0743	Torque converter clutch pulse width modulated solenoid system electrical
P0748	Pressure control solenoid circuit electrical
P0751	Shift solenoid 'A' performance
P0753	Shift solenoid 'A' electrical
P0756	Shift solenoid 'B' performance
P0758	Shift solenoid 'B' electrical
P0780	Shift malfunction (Maximum adapt/Long shift)
P1739	Transmission component slipping

### Connecting the test equipment

1. Carry out the usual workshop safety precautions, including fitting the car protection kit and wing covers.

Isolate the transmission in park and remove the gearchange isolating fuse from the main fuseboard.

2. Connect the Mastercheck diagnostic system equipment (excluding the printer) to the car via the 48-way diagnostic socket at the inboard end of the lower fascia stowage compartment.

3. Insert the relevant engine/transmission data card (printed side uppermost) into the back of the keypad unit.

4. Depress the F2 button on the keypad unit. This will activate the system and the keypad unit text screen will then operate.

One of five possible modes of operation can then be accessed, i.e. P CODE DISPLAY, P CODE CLEAR, THROTTLE SET, FUEL TRIM, and LIVE DATA ECM.

5. The P CODE DISPLAY mode will show any trouble codes.

Proceed as directed on the keypad unit screen.

6. Continue through each question until the test is complete.

7. A print out of the test results can be made when the print symbol appears on the text screen. The operator will be prompted to plug the printer into the socket on the power harness after the print key has been depressed.

**Note** The printer should be disconnected from the system when it is not being used.

### Manifold absolute pressure sensor – To remove and fit (see fig. 4)

1. Carry out the usual workshop safety precautions.

2. Fit the car protection kit and wing covers.

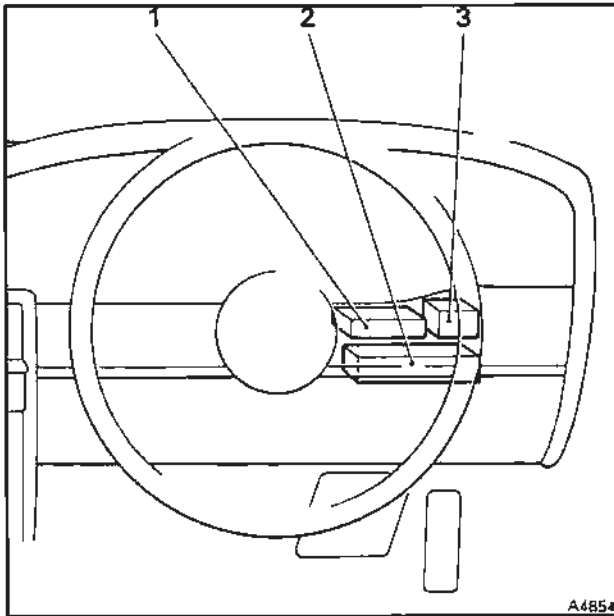
3. Chock the rear road wheels.

4. Remove the gearchange isolating fuse from the main fuseboard. Then, either turn the battery master switch (if fitted) to the OFF position or disconnect the battery leads.

5. Raise the front of the car and remove the right-hand road wheel.

6. Remove the rear section of the underwing sheet (see TSD 5000 Workshop Manual, Chapter S).

7. Detach the electrical plug from the manifold absolute pressure sensor.



**Fig. 5 Cruise control module location**

- 1 Cruise control module
- 2 Transmission control module
- 3 Wash/wipe control module

- 8. Remove the hose connection from the sensor.
- 9. Remove the setscrews securing the sensor in position and withdraw the sensor.
- 10. To fit the sensor reverse the removal procedure, noting the following.
- 11. Ensure that the vacuum hose is free from kinks and restrictions.
- 12. Start and run the engine. Then, check that no diagnostic trouble codes have been recorded by the engine control module, prior to fitting the underwing sheet.

**Cruise control module(CC) – To remove and fit**

The cruise control module is located behind the fascia on the driver's side of the car, directly above the transmission control module (TCM) (see fig. 5).

- 1. Carry out the usual workshop safety precautions.
- 2. Turn the battery master switch (if fitted) to the OFF position or disconnect the battery leads.
- 3. Remove the top roll, demister panel, and lower trim panel (see TSD 5000 Workshop Manual, Chapter 5).
- 4. Detach the electrical plug from the cruise control module.
- 5. Remove the screws securing the control module to the mounting bracket. Withdraw the control module.
- 6. To fit the control module, reverse the removal procedure.





**Figure 6**

## **Engine Management System Theoretical Wiring Diagram**

### **Introduction**

The information contained on pages 18 and 19 are intended to supplement that contained within TSD 5500 Workshop Manual Electrical.

Identification of components, cable routes, and connections can be made using the wiring diagram and component locations within this section.

## Key to fig. 6

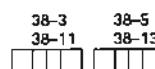
011 Cruise control actuator  
011a Position potentiometer  
011b Motor  
011c Clutch  
013a Gearchange actuator micro-switches  
014 Idle speed actuator  
020 Alternator  
022 Battery  
032 Air injection pump clutch. Cars fitted with catalytic converters  
035 Anti-lock braking system control module  
035a Wheel speed sensor outputs  
044 Cruise control control module  
047 Transmission control module  
050 Engine control module  
058 Fusible link  
131 Automatic air conditioning unit fan – left-hand  
132 Automatic air conditioning unit fan – right-hand  
135 Fuel pump  
147 Starter motor  
147a Starter solenoid  
174a Throttle position potentiometer – engine  
201 Accessories relay  
202 Automatic air conditioning unit control relay  
205 Compressor relay  
218 Fuel pump relay  
224 Ignition relay 1  
225 Ignition relay 2  
243 Starter motor solenoid relay  
244 Starter motor inhibit relay  
245 Stop lamps relay – green casing  
246 Stop lamp failure relay  
259 Fans speed resistor block  
263 Anti-lock braking system wheel speed sensor – left-hand front  
264 Anti-lock braking system wheel speed sensor – left-hand rear  
265 Anti-lock braking system wheel speed sensor – right-hand front  
266 Anti-lock braking system wheel speed sensor – right-hand rear  
272 Coolant temperature sensor  
278 Knock sensor 'A' bank  
279 Knock sensor 'B' bank  
280 Camshaft sensor  
284 Crankshaft sensor  
286 Boost control solenoid  
293 Purge control valve and diode. Cars fitted with a fuel evaporative emission control system  
295 Water tap solenoid  
296 Sparking plugs  
299 Battery master switch. *Cars other than those conforming to a German specification*  
313 Cruise control switches  
331 Fuel/oil level change-over switch  
332 Fuel pump cut-off switch  
351 Neutral start switch – gearchange actuator  
352 Neutral start switch – gear selector  
361 Stop lamps switch  
361a 'Off' position  
361b 'On' position  
375a Ignition switch  
376 Tachometer  
378 Air injection temperature switch. Cars fitted with catalytic converters  
390 Fuel level transmitter  
391 Oil level transmitter  
395 Vehicle diagnostic socket pin(s)  
401 Speedometer

402 Warning panels  
403e Luggage compartment fuse 5  
528 Ignition coils  
530 Injector valves  
531 Air intake temperature sensor  
537 Main engine management relay  
538 Air injection relay. Cars fitted with catalytic converters  
689 Charge cooler coolant temperature sensor  
690 Fuel temperature sensor  
691 Lambda sensor – pre catalyst  
692 Manifold absolute pressure sensor  
695 Charge cooler fan relay  
696 Charge cooler fan  
697 Charge cooler pump relay  
698 Charge cooler pump  
699 Catalyst thermocouple  
700 On-board diagnostics II connector  
701 Data link connector  
702 Charge cooler fuse  
703 Engine ancillaries fuse

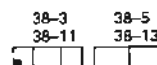
The theoretical wiring diagram on page 19 is primarily for the engine management system. However to aid diagnosis certain ancillary circuits are also shown in skeletal form to indicate their inter connection with the engine management system circuits.

If more detail is required on the ancillary circuits refer to TSD 5500 Workshop Manual Electrical.

An indication of the page number is given by the symbol



The position of the ancillary circuit is indicated on the symbol by a black square as shown in the following example.



## 21. Battery and starter system

The example above shows the location of circuit 21, Battery and starter system for Bentley Turbo S and Bentley Continental S motor cars.

To locate the Battery and starter system circuit for Bentley Turbo S Reference should be made to page 38-3 of TSD 5500 Workshop Manual Electrical.

To locate the Battery and starter system circuit for Bentley Continental S Reference should be made to page 38-11 of TSD 5500 Workshop Manual Electrical.

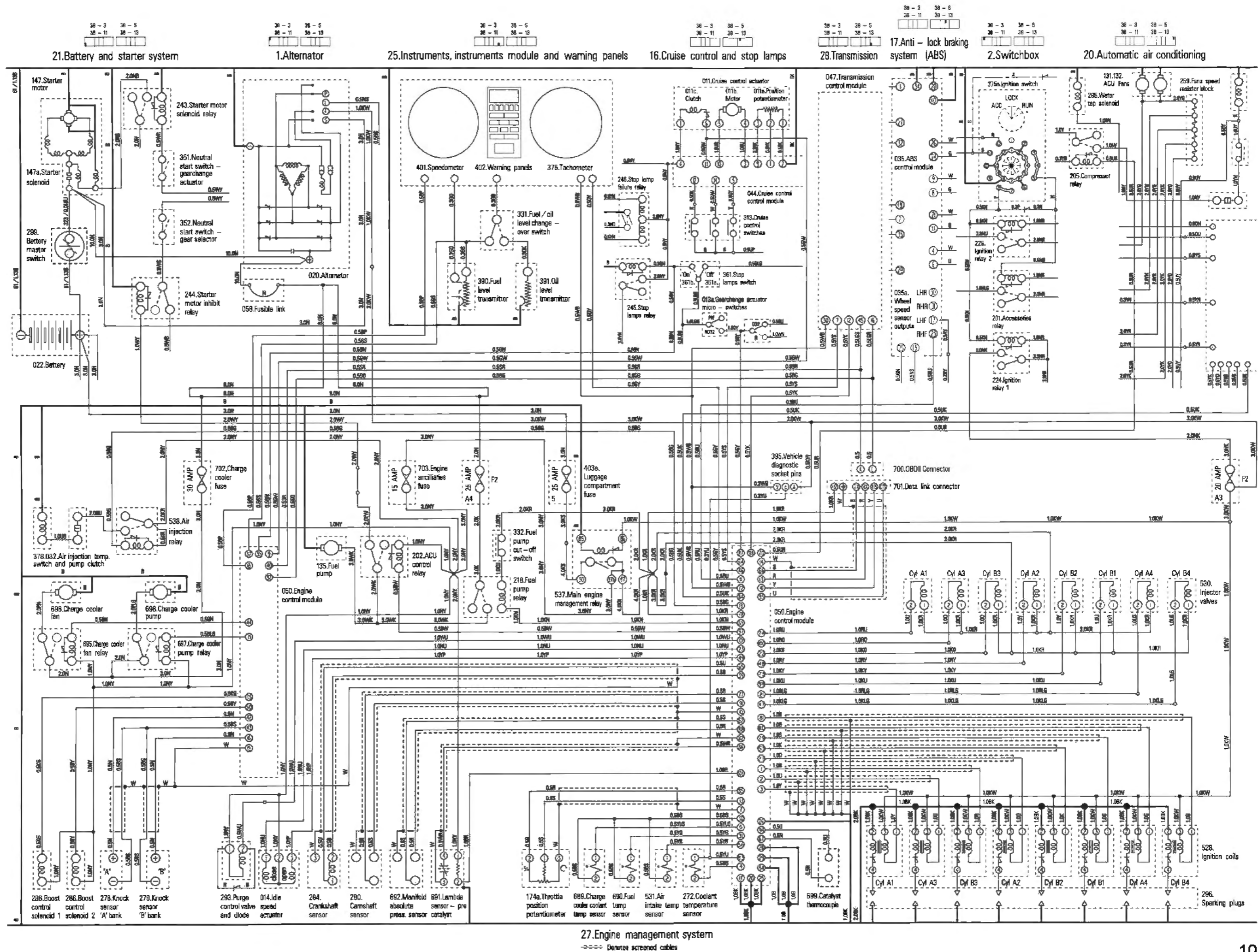


Fig. 6 Engine management theoretical wiring diagram

## Body and Coachwork

### Introduction

Bentley Turbo S is similar to 1994 MY Turbo R but has certain unique body and coachwork features. The following information is intended to supplement that contained within TSD 5000 Workshop Manual.

The bumpers are similar in construction to Bentley Continental R being one piece mouldings with no separate airdam at the front.

The spare wheel is stowed inside the luggage compartment under the floor.

### Bumpers

Each bumper assembly is constructed around an aluminium beam. The outer surface of the bumper consists of a moulding with foam bonded to its inner surface. This outer skin is attached to the beam via studs bonded to the moulding.

A moulding is fitted to the front bumper to carry the registration plate.

The lower air vents are secured into position by screws into the front bumper outer cover. Extension pieces are screwed to the lower edge of the rear bumper moulding.

Each end of the outer cover is secured to the body by means of a bobbin fixed via a bracket assembly to the bumper. The bobbin slides into a channel fixed to the body.

The bumper assembly is mounted to the bumper brackets via an adapter. The bumper brackets are then bolted to the longerons at the front and rear of the car.

The bumper mounting brackets are secured to the longeron by two setscrews and two locking bolts which fix the position of the mounting bracket relative to the longeron.

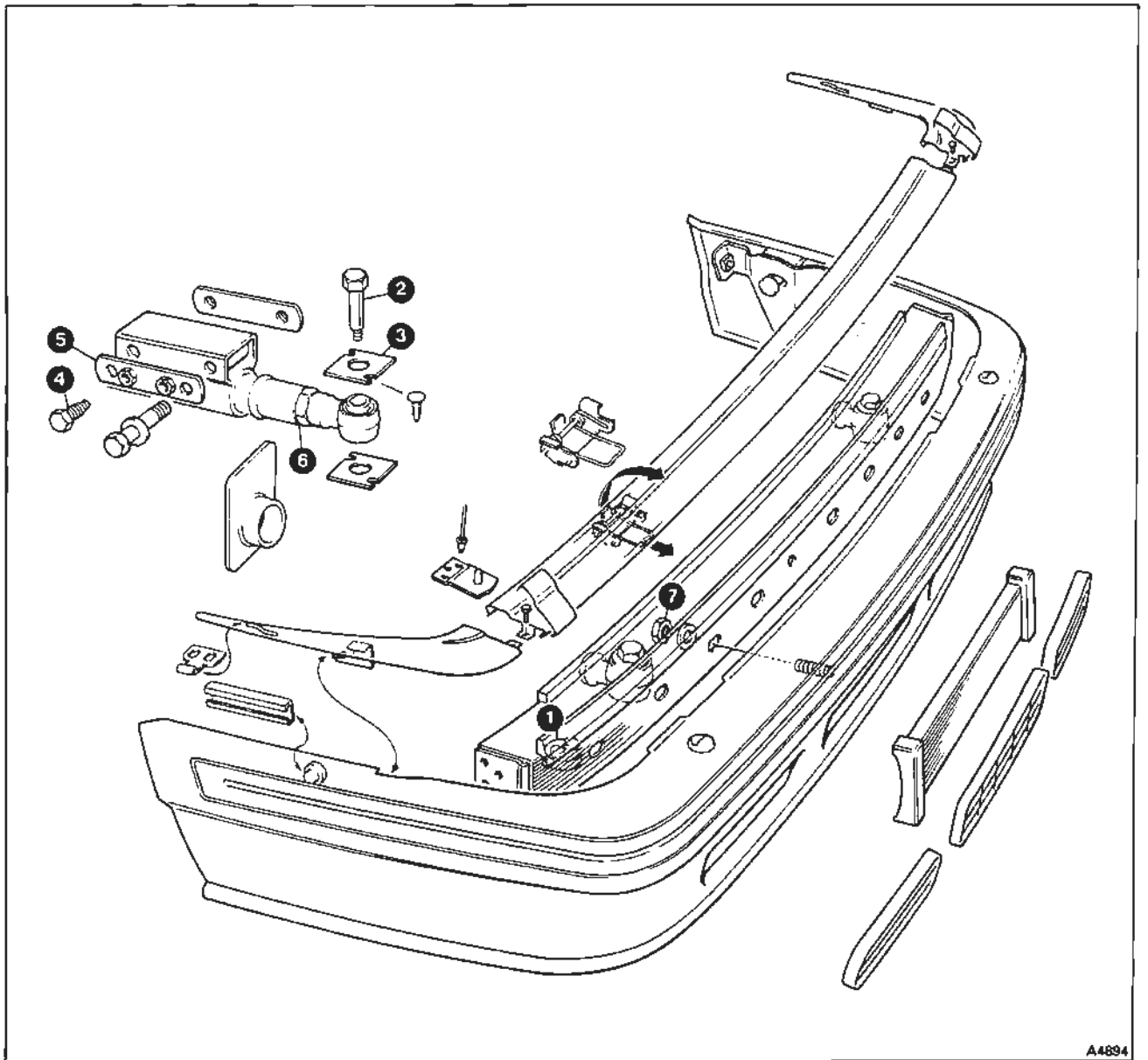


Fig. 7 Front bumper assembly

This positioning is set during the factory build of the car to ensure the bumper assembly matches up to the bodywork.

Prior to commencing work, a suitably prepared area should be made available where work can be carried out on a removed bumper assembly.

#### **Front bumper assembly – To remove and fit** (see fig. 7)

1. Disconnect the battery leads.
2. Remove the snow shields.
3. To remove the bumper top finishers proceed as follows.

Unclip the joint covers at each corner of the bumper by lifting the end closest to the body first. Remove the exposed screws.

Slide the side finishers out of the retaining sockets.

Remove the front finisher by lifting the edge nearest to the body and then pulling it away from the body.

4. To release the air conditioning ambient sensor (item 1) from the lower right-hand side of the bumper beam proceed as follows.

Remove the setscrew, washers, and nut securing the cable tie to the bumper beam.

Withdraw the sensor from its mounting block and secure it safely until the bumper is refitted.

5. To release the bumper from the body proceed as follows.

6. With the help of an assistant, support the bumper and remove the bolts and washers (item 2).

Note the position and quantity of any spacing washers (item 3) situated between the adapters and the aluminium beam. Then, carefully withdraw the bumper assembly sufficiently to disconnect the headlamp power wash hoses.

7. If it is necessary to remove the bumper mounting brackets from the longerons proceed as follows.

Remove the two bolts, two locking bolts (item 4), locking plate (item 5), and tapping plate securing each mounting bracket to the longeron.

Withdraw the mounting brackets and aperture seals.

If the adapters are removed from the mounting brackets note the number of any spacers which are fitted between the adapter and bracket.

8. To fit the bumper assembly reverse the removal procedure noting the following.

Loosely fit the bumper mounting brackets to the longeron using the bolts, locking plate and tapping plate.

Fit drill bushes RH 13727 to the locking plate. Using a suitable tool align the locking bolt holes in the mounting bracket and longeron, remove the drill bushes, fit the locking bolts and then tighten the mounting bolts.

Ensure that the spacing washers between the adapters and the aluminium beam are in the correct position.

Pack the ambient sensor mounting block with silicone grease, then slide the sensor into position and fit the rubber grommet.

Secure the sensor lead to the bumper beam.

#### **Front bumper – To renew mounting brackets** (see fig. 7)

1. Remove the bumper assembly and mounting brackets (see Front bumper assembly – To remove and fit).
2. Assemble the adapters to the bumper mounting brackets using five spacers (item 6).
3. Loosely fit the bumper mounting brackets to the longeron using the bolts, locking plate and tapping plate.

Fit the drill bushes RH 13727 to the locking plate.

Using a suitable tool align the locking plate with the existing locking bolt holes in the longeron. Temporarily tighten the main fixing bolts to hold the locking plate in position.

Remove the drill bushes and screw in the locking bolts sufficiently to hold the locking plate in position on the longeron.

Slacken the main fixing bolts sufficiently to allow the bumper mounting brackets to move.

4. With the help of an assistant, fit the bumper assembly to the car and adjust its position to give the best fit to the body.

Tighten the main fixing bolts.

5. Remove the bumper assembly and using drill bushes RH 13727 and a 7,0 mm (0.276 in) drill, drill the bumper mounting brackets for the locking bolts. Fit the locking bolts.

6. Refit the bumper assembly. If the bumper does not accurately line up with the body, adjustment can be achieved as follows:

To give adjustment in a fore and aft direction, add or remove washers (item 6) between the adapter and mounting bracket.

To give adjustment in a vertical direction, reposition washers (item 3) between the adapters and the aluminium beam.

#### **Front bumper assembly – To dismantle** (see fig. 7)

1. Remove the bumper assembly (see Front bumper assembly – To remove and fit).
2. Unscrew and remove the number plate and moulding.
3. Remove the nuts and washers (item 7) and remove the outer cover assembly.
4. If necessary, unscrew and remove the recovery stem.

#### **Front bumper assembly – To assemble** (see fig. 7)

Reverse the dismantling procedure noting the following.

1. Prior to fitting the recovery eye (if fitted), apply Tectyl 175 corrosion prevention material to the areas of the aluminium beam that will come into contact with the recovery eye stem.

This will prevent corrosion caused by the contact of dissimilar metals.

**Rear bumper assembly – To remove and fit** (see fig. 8)

1. To remove the bumper top finishers proceed as follows.

Unclip the joint covers at each corner of the bumper by lifting the end closest to the body first. Remove the exposed screws.

Slide the side finishers out of the retaining sockets. Remove the rear finisher by lifting the edge nearest to the body and then pulling it away from the body.

2. To release the bumper from the body proceed as follows.

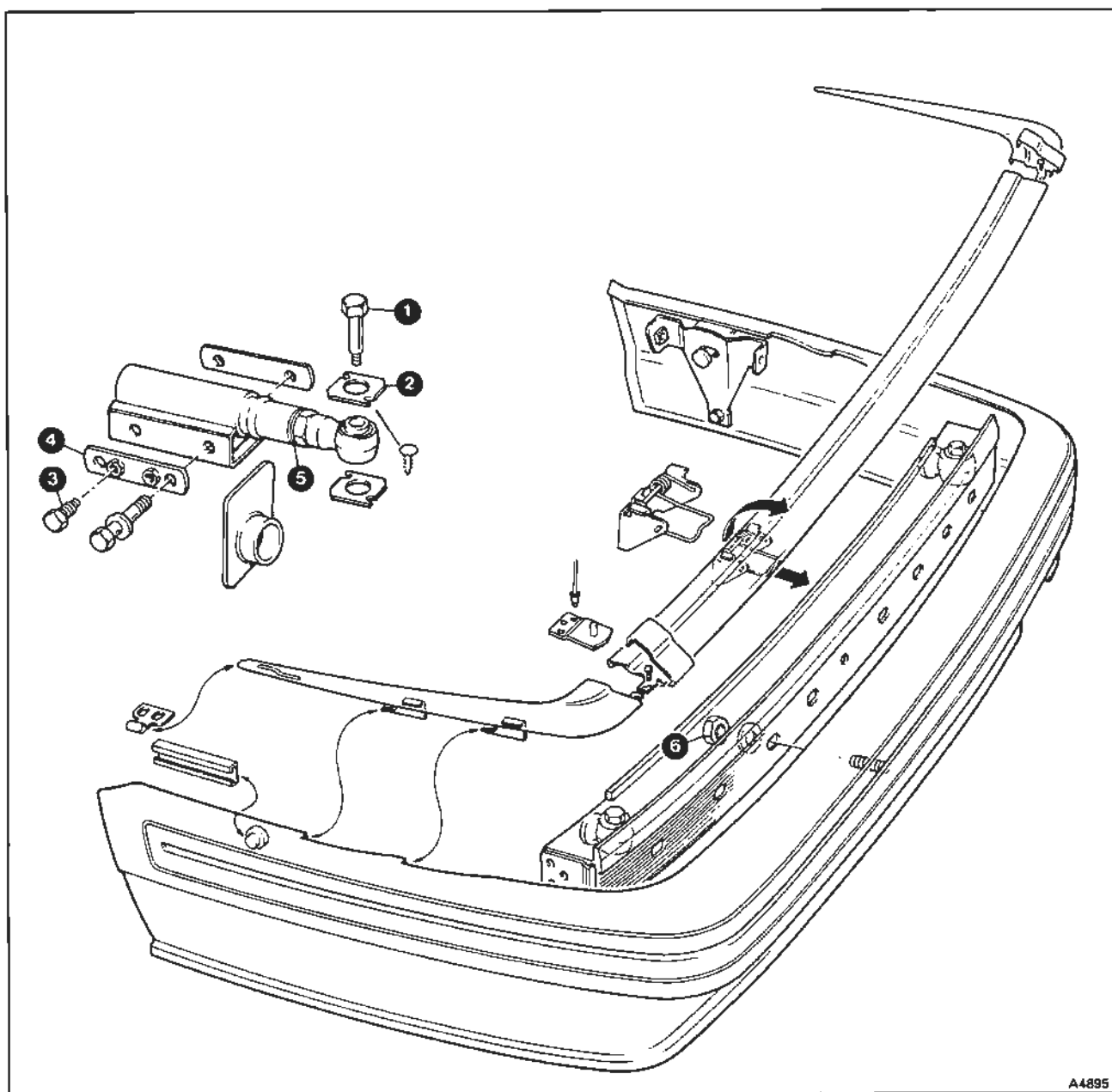
3. With the help of an assistant, support the bumper and remove the bolts and washers (item 1).

Note the position and quantity of any spacing washers (item 2) situated between the adapters and the aluminium beam. Then, carefully withdraw the bumper assembly and remove.

4. If it is necessary to remove the bumper mounting brackets from the longerons proceed as follows.

Remove the two bolts, two locking bolts (item 3), locking plate (item 4), and nuts and washers securing each mounting bracket to the longeron. Withdraw the mounting brackets and aperture seals.

**Note** For some markets a towing eye is fitted to the left-hand longeron and is secured using the same fixing bolts as the bumper mounting



**Fig. 8 Rear bumper assembly**

brackets. The locking bolts are fitted to the towing eye side plate.

If the adapters are removed from the mounting brackets note the number of any spacers which are fitted between the adapter and bracket.

5. To fit the bumper assembly reverse the removal procedure noting the following.

Loosely fit the bumper mounting brackets to the longeron using the bolts, locking plate and tapping plate. Fit drill bushes RH 13727 to the locking plate.

Using a suitable tool align the locking bolt holes in the mounting bracket and longeron, remove the drill bushes, fit the locking bolts and then tighten the mounting bolts.

Ensure that the spacing washers between the adapters and the aluminium beam are in the correct position.

#### **Rear bumper – To renew mounting brackets (see fig. 8)**

1. Remove the bumper assembly and mounting brackets (see Front bumper assembly – To remove and fit).

2. Assemble the adapters to the bumper mounting brackets using five spacers (item 5).

3. Loosely fit the bumper mounting brackets to the longeron using the bolts, locking plate and tapping plate. Fit the drill bushes RH 13727 to the locking plate.

Using a suitable tool align the locking plate with the existing locking bolt holes in the longeron. Temporarily tighten the main fixing bolts to hold the locking plate in position.

Remove the drill bushes and screw in the locking bolts sufficiently to hold the locking plate in position on the longeron.

Slacken the main fixing bolts sufficiently to allow the bumper mounting brackets to move.

4. With the help of an assistant, fit the bumper assembly to the car and adjust its position to give the best fit to the body. Tighten the main fixing bolts.

5. Remove the bumper assembly and using drill bushes RH 13727 and a 7,0 mm (0.276 in) drill, drill the bumper mounting brackets for the locking bolts. Fit the locking bolts.

6. Refit the bumper assembly. If the bumper does not accurately line up with the body, adjustment can be achieved as follows:

To give adjustment in a fore and aft direction, add or remove washers (item 5) between the adapter and mounting bracket.

To give adjustment in a vertical direction, reposition washers (item 2) between the adapters and the aluminium beam.

#### **Rear bumper assembly – To dismantle and assemble (see fig. 8)**

1. Remove the bumper assembly (see Rear bumper assembly – To remove and fit).

2. Remove the nuts and washers (item 6) and remove the outer cover assembly.

3. To assemble, reverse the above procedure.

#### **Headlamp power wash jets – To remove and fit (see fig. 9)**

1. To remove the power wash jets proceed as follows.

Release the jet lock-nut and remove the jet.

2. To fit the jet, reverse the removal procedure.

#### **Headlamp power wash jets – To adjust**

1. Using a suitable tool, align the jet nozzle so that the washer fluid strikes the centre of the headlamp lens.

Care must be taken to avoid damaging the bumper moulding during this operation. Note that the power wash system will only operate when the headlamps are switched on.

#### **Spare wheel stowage (see fig. 10)**

The spare wheel is stowed inside the vehicle luggage compartment. It is located in a moulding bonded to the luggage compartment floor using polyurethane adhesive.

#### **Spare wheel stowage – To renew (see fig. 10)**

If the spare wheel stowage moulding is to be renewed it must be cut away from the luggage compartment floor and a new one bonded into place.

Prior to commencing work, ensure that a suitably prepared area is available to store any items of trim, etc., that are removed.

When replacing a spare wheel moulding it is essential that a high level of cleanliness and attention to detail is observed. This is particularly important during the cleaning and priming of the moulding and body flange.

When fitting a spare wheel moulding Gurit Essex Betaseal Adhesive windscreen kit RH 13618 **must be** used. This kit will contain all the components

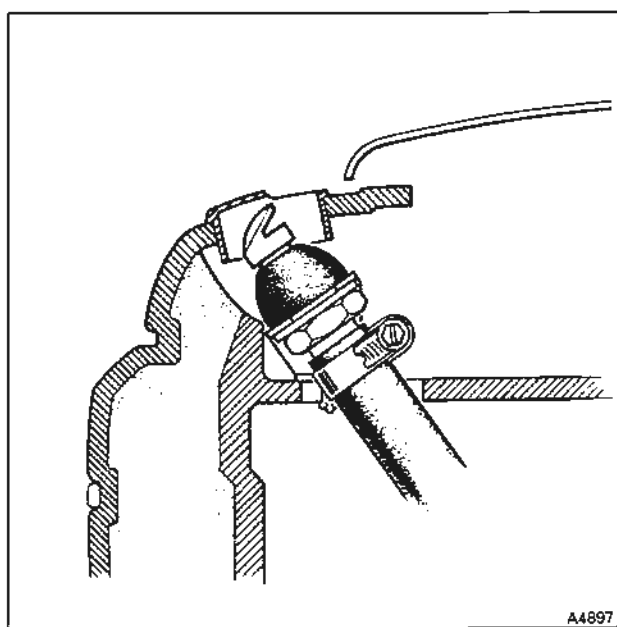


Fig. 9 Power wash jets

necessary to carry out the operation. It is therefore essential that the information under the heading Preheating the adhesive is followed.

Special tools are also required, therefore reference **must be** made to TSD 5000 Workshop Manual, Section S19.

#### **Safety procedures**

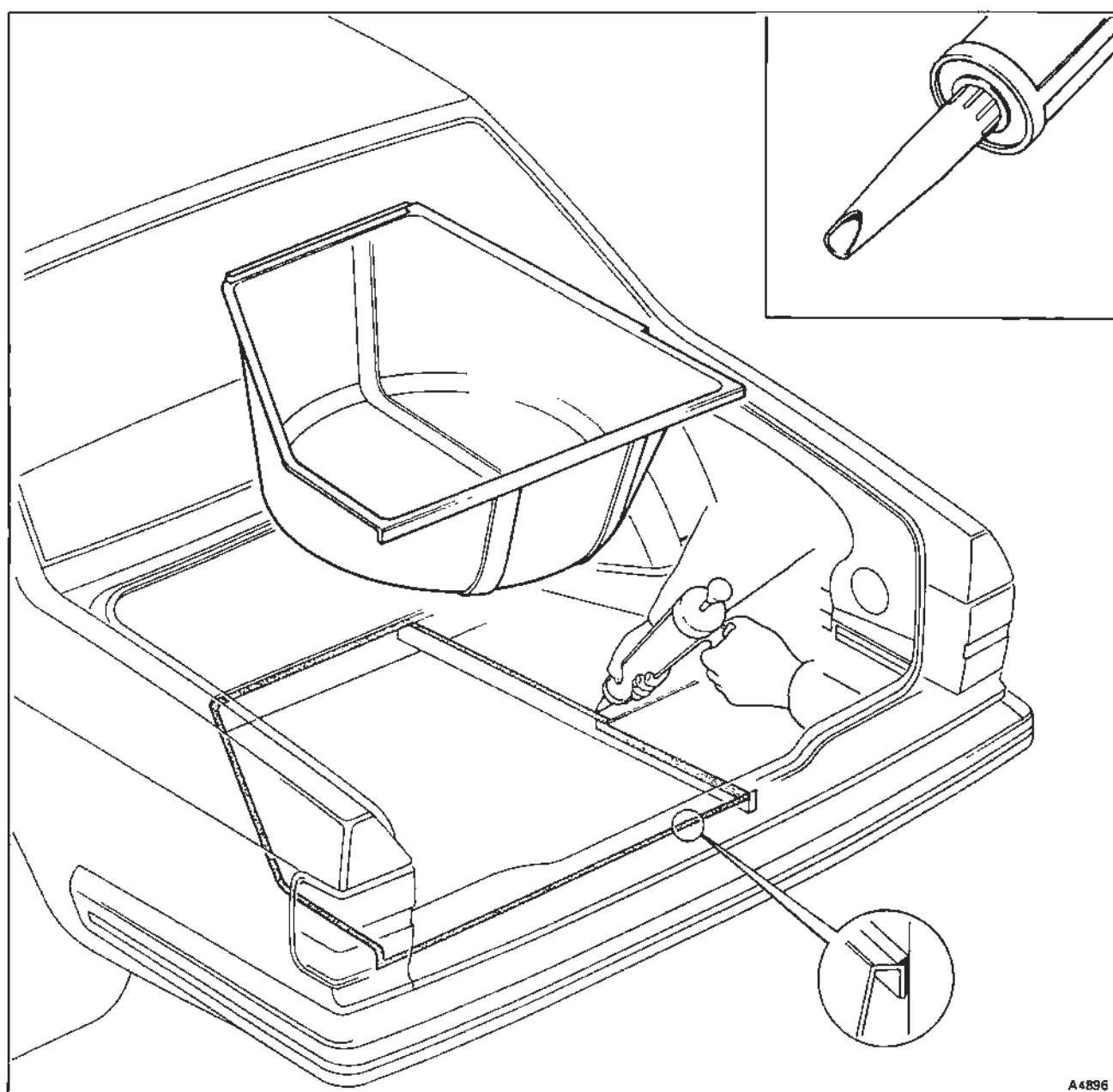
The cleaners, primers, and adhesives referred to in this section are classified as highly flammable. For guidance on their use reference **must be** made to TSD 5000 Workshop Manual, Section S3.

#### **Preheating the adhesive**

When fitting a spare wheel moulding, Gurit Essex Betaseal Adhesive **must be** used. It is essential that

the cartridge of the adhesive is preheated in a Cartridge Oven RH 13201 prior to use. Therefore, the following procedure **must be** used.

1. Push in the cover at the base of a cartridge of Gurit Essex Betaseal Adhesive and remove the enclosed desiccant pellets.
2. Pierce the seal on the screwed end of the cartridge, then attach a windscreen applicator nozzle to the cartridge.
3. Place the cartridge of Gurit Essex Betaseal Adhesive into the Cartridge Oven for a minimum of 10 minutes, and for no more than 20 minutes.
4. The adhesive **must be** used immediately the cartridge is removed from the oven, and the spare wheel moulding **must be** fitted within fifteen minutes of the application of the adhesive to the body.



**Fig. 10 Attachment of spare wheel moulding to body**



5. The shelf life of Gurit Essex Betaseal Adhesive when in an unopened container, with the desiccant pellets enclosed, is nine months.

#### **Spare wheel moulding – To remove** (see fig. 10)

1. To release the spare wheel moulding from its aperture the Pneu-knife Sealant Cutter RH 13203 should be used to cut through the adhesive.

It may be necessary to cut away the majority of the moulding before using the Sealant Cutter to remove the portion bonded to the body. The air powered tool incorporates an oscillating blade which will cut through the adhesive with a minimum of effort.

**Note** Always use the Sealant Cutter in a well ventilated area to avoid inhalation of any fumes/gases produced by the friction of the cutting process.

Excess force will result in damage to the blade of the tool. Safety goggles **must be** worn during the following removal operations.

Insert the blade of the tool through the adhesive and behind the moulding.

Depress the operating trigger, and cut through the adhesive by pulling the blade slowly around the complete periphery of the moulding.

When the moulding is free, lift it clear of the body.

#### **Spare wheel moulding – To fit** (see fig. 10)

1. Using the Sealant Cutter RH 13203 fitted with the Scraper depth blade RH 13206, carefully trim the adhesive remaining on the body aperture flange, to leave an even layer approximately 1,0 mm (0.040 in) in thickness.

**Warning** BETAWIPE is a clear solution, do not use the solution if it has turned cloudy.

2. Preparing the moulding.

Using the BETAWIPE (YELLOW CAP) solution clean the edge of the moulding that will come into contact with the adhesive.

Wipe off any excess.

Using the BETAWIPE (RED CAP), shake the container continuously for one minute.

Apply the primer to the moulding in a continuous movement, giving an even film coverage using either a sponge or a felt applicator.

Allow to dry for ten minutes.

3. Preparing the adhesive.

Pierce the screwed end of the cartridge, then attach a windscreen applicator nozzle to the cartridge.

If necessary the applicator nozzle should be trimmed to produce the shape indicated in figure 8, to produce a bead of adhesive approximately 10 mm (0.40 in) wide and 12 mm (0.48 in) high.

Place the cartridge of BETASEAL adhesive into the Cartridge Oven RH 13201 for a minimum of ten minutes, and for no more than twenty minutes during which time the adhesive will attain a temperature that will facilitate the application procedure.

4. Preparing the body flange.

**Note** If the body flange is corroded, use a suitable self-etching primer after the bare metal has been cleaned.

Clean the body flange with a cloth moistened with Genklene. Wipe off any excess with a clean dry cloth.

Apply masking tape to the areas where the adhesive is applied to a vertical surface to give a guide for adhesive application.

Using the BETAPRIME (RED CAP), shake the container continuously for one minute. Apply the primer to the body flange in a continuous movement, giving an even film coverage using the plastic bottle applicator.

Allow to dry for ten minutes.

5. Using suitable gloves, remove the cartridge from the oven. Then, insert the cartridge into the Cartridge Gun RH 13200.

6. The adhesive **must be** applied immediately.

Apply a continuous bead of adhesive around the aperture.

**Note** The moulding **must be** fitted to the vehicle within ten minutes of application of the adhesive.

Remove the masking tape from the vertical surfaces.

7. Lift the moulding into place taking care not to touch the primed edge of the moulding or the adhesive. Then, bring the moulding into contact with the body and press firmly into position using maximum hand pressure.

8. Apply a second bead of adhesive to the edges of the moulding which are bonded to vertical surfaces (see fig. 8), in order to ensure a watertight joint with the body.

If necessary, excess adhesive can be removed, while still soft, using a cloth moistened with Bostik Cleaner 6009.

9. The vehicle will be roadworthy within two to three hours under normal atmospheric conditions, full bond strength will be attained after eight hours.

## Parts list

### Introduction

The following information is intended to supplement that contained within the illustrated parts list TSD 5504 in order to assist dealer personnel in obtaining parts for Bentley Turbo S and Bentley Continental S motor cars.

When using the parts list in relation to Bentley

Turbo S and Bentley Continental S motor cars it should be remembered that:

The following table indicates those parts which are unique to Bentley Turbo S and Bentley Continental S, all other parts are to be found in TSD 5504 as listed under 1994 model year Bentley Turbo R and Bentley Continental R.

Part number	Description	Quantity
NT 10013	Trim Kit 4 Door LH Drive	1
NT 10014	Trim Kit 4 Door RH Drive	1
NT 10027	Trim Cover Assembly Rear Squab LH	1
NT 10028	Trim Cover Assembly Rear Squab RH	1
NT 10037	Trim Cover Assembly Front Seat Cushion	2
NT 10042	Trim Cover Assembly Rear Cushion RH	1
NT 10043	Trim Cover Assembly Rear Cushion LH	1
NT 10052	Trim Cover Assembly Front Seat Squab	2
NT 10057	Assembly Squab Trim Rear Sports	1
NT 10058	Assembly Cushion Rear Seat	1
NT 10059	Assembly Seat Cushion Front Sports	2
NT 10060	Assembly Squab Front RH Sports	1
NT 10061	Assembly Squab Front LH Sports	1
NT 10065	Assembly Trimmed Outer Door Pad LH	1
NT 10066	Assembly Trimmed Outer Door Pad RH	1
NT 10068PC	Assembly Side Panel Map Pocket RH	1
NT 10074PC	Assembly Outer Door Panel RH	1
NT 10075PC	Assembly Outer Door Panel LH	1
NT 10094	Decal RH Waistrail Bentley	2
NT 10095	Decal LH Waistrail Bentley	2
NT 10104	Control Module Gearbox	1
NT 10105	Control Module Engine Management (ZYTEK)	1
NT 10107	Nameplate Boot Lid & Wing	3
NT 10114	Cooling Box Engine Control Module Top	1
NT 10115	Cooling Box Engine Control Module Bottom	1
NT 10116	Body In White Complete Turbo S	1
NT 10117	Nameplate Turbo S	1
NT 10118	Nameplate Continental S	1
NT 10119	Assembly Luggage Floor Spare Wheel	1
NT 10120	Retainer 1/4 Turn Screw	2
NT 10121	Fastener 1/4 Turn Screw	2
NT 10122	Retaining Spring 1/4 Turn Screw	2
NT 10123	Pad Spare Wheel Retention	1
NT 10124	Assembly Luggage Floor & Foam Pads	1
NT 10125	Badge Continental S	1
NT 10130	Badge - Engine Niche Turbo	1
NT 10135PA	Assembly Head Restraint Complete Fixed	1
NT 10136PA	Assembly Head Rest Complete Adjustable - Front	1
NT 10137PB	Assembly Cover Head Rest - Front	1

Part number	Description	Quantity
UT 10052	Bracket Finisher Support Front	2
UT 10071	Kit Front Finisher Painted	1
UT 10073	Kit Rear Finisher Painted	1
UT 10094	Sensor Lambda (Upstream)	1
UT 10098	Sensor Camshaft Timing	1
UT 10106PF	Bracket Body In White Support Passenger Side	4
UT 10259	Assembly Radiator Shell Complete – Chrome	1
UT 10260	Assembly Radiator Shell Complete – Painted	1
UT 10285	Assembly Front Bumper Turbo With Towing Eye	1
UT 10286	Assembly Front Bumper Turbo No Towing Eye	1
UT 10298	Moulding Number Plate (Wide)	1
UT 10299	Moulding Number Plate (Narrow)	1
UT 10305	Plate Model Name	1
UT 10364	Assembly Crankcase Gearbox Adapter	1
UT 10372	'O' Ring Elbow – Plenum	2
UT 10373	Hose Elbow To Throttle Body	2
UT 10374	Assembly Plenum Chamber 'A' Bank	1
UT 10377	Assembly Plenum Chamber 'B' Bank	1
UT 10386	Assembly Ram Pipe A1 B4	2
UT 10389	Assembly Ram Pipe B1 A4	2
UT 10395	Disc Camshaft Timing	1
UT 10410	Hose Feed Chargecooler Continental	1
UT 10411	Hose Return Chargecooler Continental	1
UT 10428	Mounting Slide Body In White Bumper	4
UT 10466	Assembly Elbow Intake 'A' Bank	1
UT 10467	Assembly Elbow Intake 'B' Bank	1
UT 10476	Loom Body LH	1
UT 10479	Loom Main Distribution LH Drive	1
UT 10480	Loom Main Distribution RH Drive	1
UT 10489	Hose Transmission Oil Cooler Return	1
UT 10490	Pump Chargecooler	1
UT 10491	Assembly Bracket Pump Chargecooler	1
UT 10494	Assembly Radiator Chargecooler Bentley Turbo S	1
UT 10500	Assembly Elbow Inlet Turbo	1
UT 10513	Assembly Towing Eye Rear	1
UT 10548	Bracket Radiator Inboard Lower	1
UT 10549	Assy. Moulding Front Cover	1
UT 10572	Heatshield Exhaust Rear	1
UT 10573	Soundproofing Kit Boot	1
UT 10581	Hose Dump Valve To Turbo	1
UT 10583	Bracket Mounting Chargecooler	2
UT 10585	Bracket Mounting Coil Tray	4
UT 10589	Hose Chargecooler To Expansion Tank	1
UT 10590	Tank Header Chargecooler	1
UT 10591	Bracket Mounting Header Tank Chargecooler	1

Part number	Description	Quantity
UT 10615	By-Pass To Feed Elbow	2
UT 10617	Bracket Throttle Body Lower	1
UT 10618	Pipe Breather	1
UT 10653	Loom Valance LH	1
UT 10654	Assembly Bracket Support ECM RH Drive	1
UT 10655	Assembly Bracket Support ECM LH Drive	1
UT 10658	Loom Valance RH	1
UT 10669	Hose Chargecooler Radiator To Pump	1
UT 10741	Switch Level Coolant Chargecooler	1
UT 10755	Loom Engine Run Timer Link (ZYTEK)	1
UT 10757	Loom Manifold Pressure (ZYTEK)	1
UT 10765	Loom Engine (ZYTEK)	1
UT 10806PC	Pipe. Engine Oil Cooler Return	1
UT 10810	Tube. Insulate Transmission Upper	1
UT 10811	Tube. Insulate Transmission Return	1
UT 10827	Cap Header Tank - 7psi	1
UT 10845	Assembly OBD II Manifold Pressure	1
UT 10875	Mount Rear Sub-frame	1
UT 10881	Assembly Bush & Mounting Rear Sub-frame	1
UT 10889	Bracket Aerial	1
UT 10890	Bracket Aerial boot	3
UT 10921	Bracket Mounting Chargecooler 'B' Bank	2
UT 11025	Label Tyre Placard Bentley Turbo S	1
UT 11070	Bracket Oil Cooler To Chassis RH	2
UT 11125	Gasket Cylinder Head	2
UT 11164	Snowshield LH	1
UT 11200	Turbocharger	1
UT 11211	Bracket Throttle Body 'A' Bank	1
UT 11223	Pipe Signal Compressor	1
UT 11225	Pipe Signal Wastegate	1
UT 11227	Assembly Pipe Fuel Feed	1
UT 11229	Hose Turbocharger To Duct Intercooler	1
UT 11230	Assembly Bracket Inner Knee Bolster RH	1
UT 11231	Assembly Bracket Inner Knee Bolster LH	1
UT 11326	Hose Breather	2
UT 11352	Adapter Air Filter To Hose	1
UT 11368	Shim Bumper Mounting	30
UT 11375	Rivet Expansion Plinth	3
UT 11422	Assembly Rear Sub-frame	1
UT 11423	Assembly Front Sub-frame	1
UT 11441	Assembly Pipe Fuel Return	1
UT 11446	Plate Locking Bumper Mounting	1
UT 11447	Bolt Locking Bumper Mounting	1
UT 11451	Nut Plate Bumper Mounting	1
UT 11485	Assembly Pipe Oil Cooler	1

Part number	Description	Quantity
UT 11522	Snowshield RH	1
UT 11524	Undersheet Front Portion RH Wing	1
UT 11531	Assembly By-Pass Pipe	1
UT 11536	Finished Snow Support Bar LH	1
UT 11537	Finished Snow Support Bar RH	1
UT 11561	Connector Hose Straight	1
UT 11563	'T' Piece Pressure Transducers	1
UT 11567	Assembly Bracket Fuel Pipes	1
UT 11569	Bracket Angle Support Trim	2
UT 11571	Assembly Plate Mounting Header	1
UT 11592	Bracket Radiator Inboard Top	1
UT 11594	Assembly Plate Mounting Header	1
UT 11625	Assembly Dumb Iron	2
UT 11643	Boot Rear Wall Trim	1
UT 11653	Pipe Signal Transient Boost	1
UT 11668	Cover Spare Wheel	1
UT 11674	Hose Air Filter To Turbo	1
UT 11675	Strip Insulating Pump Chargecooler	1
UT 11683	Bracket Spring Retainer	2
UT 11684	Bracket Spring Container	3
UT 11685	Spring Finishers	5
UT 11686	Heatshield Turbocharger	1
UT 11687	Assembly Soundproofing Spare Wheel	1
UT 11705	Battery Well Boot Floor	1
UT 11706	Plate Mounting Chargecooler Pump	1
UT 11707	Strap Mounting Chargecooler Pump	1
UT 11720	Assembly Pipe Coolant Inlet Chargecooler	1
UT 11721	Assembly Pipe Coolant Outlet Chargecooler	1
UT 11749	Assembly Bar Mounting Air Dam Radiator Cooling	1
UT 11750	Plate Reinforcing Air Dam	1
UT 11751	Flap Rubber Air Dam	1
UT 11814	Screw Bracket Chargecooler	1
UT 11815PC	Bracket Rear LH Finisher Support	1
UT 11816PC	Bracket Rear RH Finisher Support	1
UT 11831	Assembly Plate & Coils 'B' Bank	1
UT 11837PB	Loom Temperature Sensor Link	1
UT 11840	Assembly Plate & Coils 'A' Bank	1
UT 11847	Assembly Bracket & Horns	1
UT 11850	Hose Transmission Oil Cooler Pipes	1
UT 11851	Bracket Mounting Oil Cooler Pipes	1
UT 11852	Cooler Transmission & Engine Oil	1
UT 11871	Webbing Aid Spare Wheel Removal	1
UT 11875	Assembly Solid Bumper Mounting	4
UT 11876	Adapter Solid Bumper Mounting	4
UT 11885PA	Undersheet Wheelarch LH Side	1

<b>Part number</b>	<b>Description</b>	<b>Quantity</b>
UT 11896PA	Pad Spare Wheel Retention	4
UT 11914PA	T' Piece Fuel Pipes	1

#### **Workshop tools**

<b>Part number</b>	<b>Description</b>	<b>Quantity</b>
RH 13703	Mastercheck Engine/transmission Data Card (English)	1
RH 13716	Mastercheck Engine/transmission Data Card (German)	1
RH 13717	Mastercheck Engine/transmission Data Card (French)	1
RH 13718	Mastercheck Engine/transmission Data Card (Italian)	1
RH 13719	Mastercheck Engine/transmission Data Card (Spanish)	1
RH 13727	Drill Bush - Bumper Mounting Bracket	4

### Transmission Control Module (TCM)

A new transmission control module (TCM) has been fitted (Part No. NT 10104). The installation is very similar to 1994 model year.

The main alteration being a single multi-pin connector which replaces the two previous connectors, thus resulting in pin-out number changes (see chart below).

The 1994 model year wiring diagrams for the TCM may still be used to diagnose faults on the vehicle.

### Additional changes

1. The input and output shaft speed sensors are now 2-core screened cables, whereas 1994 model year were single core screened.
2. The TCM supplies a 5 volt feed and signal ground to the boost pressure transducer. On 1994

model year cars, the feeds came from the boost control module which has now been deleted.

3. The Shift Energy Management signal is now a pulse-width modulated signal which controls the amount of power reduction required for each gear shift.

4. The brake signal has changed on the TCM. The colour of the brake signal cable remains green/light green (GLG) at the TCM connector, but it is now spliced into the green/brown (GN) signal line from the stop lamps switch. The 'off' side of the stop lamps switch is now not connected. This GN signal also connects to the ECM (pin 35), the ABS control module (pin 25), and the ARC control module. The signal from this cable is as follows, 1 volt - brake off; battery voltage - brake on.

The following inputs/outputs from the TCM have been deleted; A8 - Diagnostics switch, C2 - Ground, C7 - Parameter code.

New pin	94 MY pin	Description	Cable
2	B3	Air conditioning compressor signal	0.5 UY
3	A3	PSM X – Mode A switch	0.5 OLG
4	A5	PSM Z – Mode C switch	0.5 OU
5	A2	Mode change switch – Sport	0.5 GB
6	C6	Parameter code switch	0.5 WO
7	A10	Shift energy management signal – To ECM	0.5 YS
12	B1	Acknowledge shift signal – From ECM	0.5 YK
14	C3	Sensor ground - Barometer, boost and throttle potentiometer	0.5 BO
15	D14	Barometer sensor signal	0.5 GO
16	D12	Diagnostics line 'L'	0.5 LGR
17	C4	Sensor supply (+5V) - Barometer, boost and throttle potentiometer	0.5 PO
18	-	Output speed sensor screen	0.5 W
19	-	Input speed sensor screen	0.5 W
21	B2	Check engine – signal input	0.5 GY
22	A4	PSM Y – Mode B switch	0.5 ON
23	A1	Mode change switch – Manual	0.5 OB
25	B4	Brake switch	0.5 GLG
26	D13	Transmission temperature sensor	0.5 OG
30	D5	Engine speed – From ECM	0.5 WB
31	D10	Throttle position potentiometer	0.5 RO
34	D1	Road speed signal output to cruise control	0.5 RP
35	D8	Boost pressure transducer	0.5 GP
36	B11	Output speed sensor – High	0.5 U
37	D4	Input speed sensor – High	0.5 U
39	A7	Shift solenoid A	0.5 OY
40	B9	Check transmission – signal output	0.5 LGO
41	B6	Sport mode lamp	0.5 SG
42	B5	TCC solenoid	0.5 OW

<b>New pin</b>	<b>94 MY pin</b>	<b>Description</b>	<b>Cable</b>
43	A6	Shift solenoid B	0.5 OS
44	B7	Manual mode lamp	0.5 SO
45	B10	Diagnostics line K	0.5 LGS
49	C15	Force motor – Low	0.5 OP
50	D3	Input speed sensor – Low	0.5 N
51	B12	Output speed sensor – Low	0.5 N
52	D16	Force motor – High	0.5 OR
53	C16	Ignition supply	1.0 KO
54	C1	Ground	1.0 BK
55	A12	Battery supply	0.5 NO