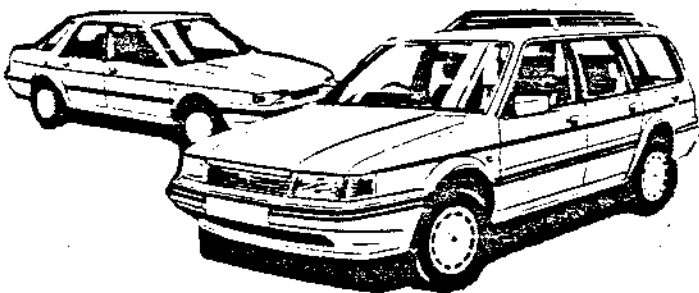


AUSTIN ROVER

Service

BULLETIN
MONTEGO TECHNICAL



		Initials	Date
	PRINCIPAL		
X	SERVICE MANAGER	SW	1-1/89
	SALES MANAGER		
X	PARTS MANAGER		
X	WARRANTY ADMIN'R		
X	SERVICE RECEPTION		
X	WORKSHOP	NP	3/2/89

X indicates the persons to whom this information should be circulated

Item 49

TURBOCHARGER PROBLEMS - INCORRECT DIAGNOSIS

DERIVATIVE: Turbocharged versions

Problem:

Incorrect diagnosis of the cause of the following reported problems leading to unnecessary Turbocharger replacement.

- 1 Oil pull-over or leaks around intercooler circuit or Turbo connections.
- 2 Chirp or whistle when idling.
- 3 Performance problems
- 4 Excessive whine.

Cause:

1. Oil Pull-over or Leaks

Oil mist drawn through breather and intercooler circuit.

It should NOT be assumed that a mechanical fault in either engine or Turbocharger is responsible.

Oil may be drawn through the breathing system (and in turn passed through the intercooler circuit) under certain crankcase pressure conditions.

The following should assist in reducing oil mist pull-over to a minimum:

- a. Advise customer that sump should not be filled beyond the maximum mark.
- b. Check that correct dipstick (yellow top, part number UAM 2580) is fitted.
- c. Ensure that breathing system and valves are correctly assembled - refer to fig. 1.

Ensure that breather restrictor has been fitted in correct position in one-way valve - see section 2.

- d. Remove breather pipe from separator and look for evidence of emulsification. If present, remove and flush out all pipes and the plastics regulator valve, replacing any if in doubt. When refitting, ensure that orientation of pipe to diverter valve is correct (fig. 1), clean out oil filler tube and renew oil filler cap and separator. Renew air cleaner element, if oil contaminated.

The primary causes of emulsification are kinked or trapped breather pipes or conditions of use of the car (e.g. frequent cold starting).

On earlier cars an improvement can be achieved by carrying out the air bleed/lagging modification, as described in Service Bulletin 139, Item 871.

Should the intercooler circuit not be completely airtight, oil mist may be expelled at high pressure resulting in engine compartment contamination.

Action:

Where the source of the leak can be established, clean off oil deposits, dust area with leak detector and road test. Replace intercooler rubber piping if split or perished and reposition clips to ensure that joints do not leak.

Should oil be found to be dripping from the Turbocharger, the cause may be incorrect positioning of the worm drive clip securing the air intake adaptor to the Turbocharger. Ensure that the intake adaptor is in good condition and reposition the clip to achieve correct compression of the slotted joint.

If cause of problem cannot be determined by the above action, renew regulator valve (3) and one-way valve (4) - see fig. 1, as neither can easily be checked for correct operation.

Cause:

2. Chirp or Whistle when Idling

Excessive crankcase depression drawing air past rear main oil seal.

Action:

Pull off breather pipe from one-way valve on inlet manifold. A plastics restrictor should be positioned in the top of the valve. If not visible, it may be stuck in the breather pipe. If so, remove and reposition in valve.

The restrictor fitted may be either of the following:

Original type - cars up to vin 363744 without air bleed tube modification (a white coloured restrictor with 1.8 mm hole, part number UAM 1330).

Later type - cars from vin 363745 with full air bleed modification (a blue/green coloured restrictor with 2.2 mm hole, part number UAM 2836)

If the later type restrictor is fitted to a car without the air bleed modification, excessive suction will cause higher than normal crankcase depression resulting in air being drawn through the rear main oil seal at idle.

3. Performance Problems

Cause:

These are unlikely to be caused by a condition necessitating Turbocharger replacement and are probably the result of one of the following:

Action:

Reduced power or late or reduced boost (refer to fig. 2 for layout of fuel and boost sensing hoses):

Disconnect pressure sensing hose from plenum

chamber. Connect a suitable "T" piece, a length of hose and pressure gauge 18G 1500 so that gauge can be positioned inside car.

Follow the fault finding procedures detailed in the repair and fault diagnosis manuals, taking note of the following additional information which may assist.

The actuator control rod is set by the Turbocharger manufacturer and should not require adjustment. The red paint seal, locknut to thread, MUST NOT be disturbed. Any Turbocharger returned under warranty with this seal broken will be rejected.

It should be possible to re-calibrate an actuator, where the setting has been disturbed, as follows:

WITH ENGINE OFF, disconnect pressure hose from steel pipe on bulkhead. Apply air pressure, regulated to 8 lbf in sq, to wastegate actuator valve. The valve should just begin to open. Should it not do so, adjust control rod until it does.

Now apply air pressure at 10 lbf in sq and check that valve continues to open. Should it not, disconnect control rod from wastegate lever and re-check.

If actuator unit now operates, seizure of the wastegate valve is indicated. Remove Turbocharger and check wastegate valve mechanism for seizure or damage.

Where operation appears to be satisfactory, disconnect regulated air supply and reconnect pressure sensing pipe.

Connect pressure gauge 18G 1500, to the plenum chamber, as described before.

Disconnect fuel feed pipe from carburetter and connect a second pressure gauge, 18G 1500, again using a "T" piece and suitable length of pipe to check fuel pressure, positioning both gauges inside car.

ROAD TEST CAR

At idle, fuel pressure should be approximately 3 to 4 lbf in sq. If not, check fuel circuit in accordance with fuel system fault diagnosis instructions. If it is suspected that the fault lies with the fuel regulator, it may be that the adjustment has been tampered with.

With car on the road, compare the readings from the two pressure gauges. Fuel pressure should always be approximately 4 lbf in sq above air pressure. If not, and the fuel system is proved to be functioning correctly, then a continuing wastegate actuator rod adjustment problem is indicated.

Note:

Should only one 18G 1500 pressure gauge be available, it should be connected to the fuel circuit as described. Disconnect pressure sensing pipe from plenum chamber and connect regulated air supply to the pipe. Disconnect and short to earth, the oil pressure switch lead. With ignition on but engine not running, apply regulated air pressure up to 10 lbf in sq. Again fuel pressure should be approximately 4 lbf in sq above regulated air pressure i.e. 14 lbf in sq.

Intermittent Power loss

Misfire or intermittent holding back under acceleration

during boost may be caused by:

- a) Float chamber vent valve leaking - Clamp pipe to valve and re-test. If cured, check wiring to valve (see Service bulletin Item 680). If circuit is operating correctly, replace valve.

Note:

"Ignition off - valve open".

"Ignition on, engine running - valve closed".

- b) Fuel pipes kinked or blocked - Even where pipes appear to be satisfactory their internal structure may have deteriorated.
- c) Fuel not entering float chamber - Float spindle, needle valve problems or needle valve filter blocked.
- d) HT lead breakdown - Check with kv meter or oscilloscope.

4. Excessive Whine from Turbocharger

Check air cleaner element for contamination. Excessive oil pull-over described earlier may clog element and restrict air flow, resulting in whine. Fit a new element if it is found to be contaminated.

Check for air leaks in the intercooler circuit. If no leaks are evident, remove air intake adaptor from Turbocharger and check for foreign matter which may be fouling the vanes. If any debris has entered the turbocharger, damage to the vanes will almost certainly have occurred. Spin impellor by hand and listen for fouling. Check also for up and down spindle movement. Some movement should be apparent but an excessive amount may suggest that oil starvation has resulted in bearing wear allowing the impellor vanes to come into contact with the Turbocharger housing. If in any doubt over the amount of spindle movement, Carry out the checking procedure detailed in the Repair Manual - Fuel System - Turbocharger section.

TURBOCHARGERS RETURNED UNDER WARRANTY

Examination has shown the majority to be free from fault. It would appear, therefore, that they are being changed as a result of incorrect diagnosis.

Only where there is clear evidence of a problem, such as:

- Spindle movement in excess of:-
0.15 mm (0.006 in) radial clearance
0.081 mm (0.004 in) axial end float

Damage to impellor vanes

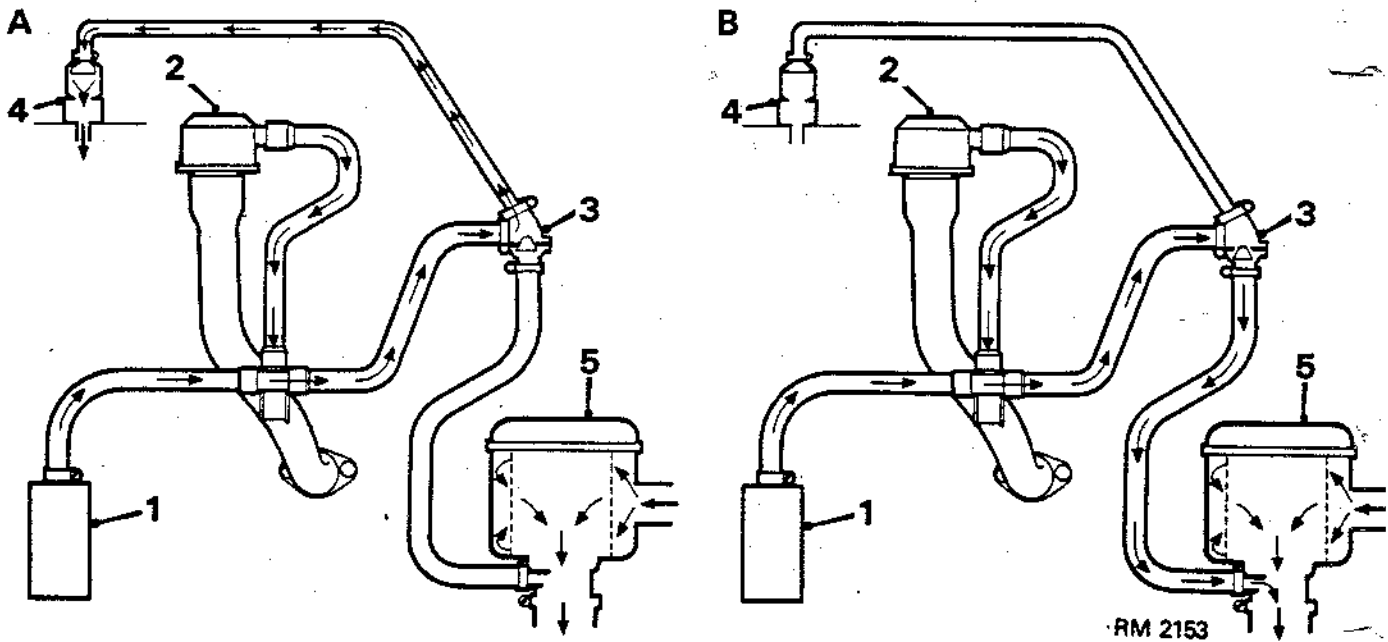
Wastegate control inoperative

Casing cracked,

should a new unit be fitted.

Claims for Turbochargers found to be free from fault having the actuator rod adjustment seal broken will be debited.

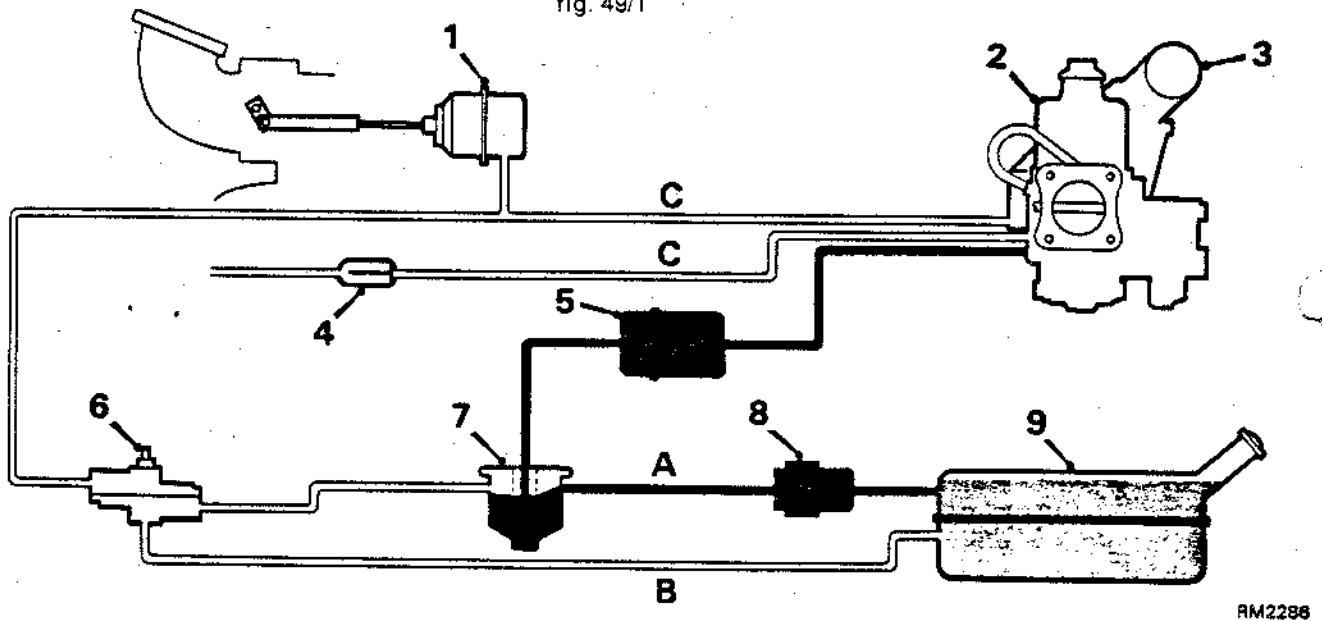
For additional useful information on Turbocharger operation and basic diagnosis, see Service Insight VIB SMD 8725/1.



Crankcase ventilation system

- A. System with manifold depression
- B. System with manifold pressure
- 1. Crankcase oil separator
- 2. Engine oil filler cap
- 3. Regulator valve
- 4. One-way valve - inlet manifold
- 5. Air cleaner

fig. 49/1



Fuel circuit

- 1. Wastegate actuator
- 2. Carburettor
- 3. Plenum chamber
- 4. Carburettor vent valve
- 5. Fuel filter (if fitted)
- 6. Fuel pressure regulator
- 7. Vapour separator
- 8. Fuel pump
- 9. Fuel tank
- A. Fuel supply to carburettor
- B. Fuel spill return to tank
- C. Turbocharger boost pressure

fig. 49/2