TECHNICAL INFORMATION

AC Clutch Failure

A/C

No: 82/03/99/NAS
Ref: WSM Section 82
TIB 82/01/99/NAS
Issue: 1
Date: 12/10/99

AFFECTED VEHICLE RANGE:

Range Rover (LP) **Up to XA410503**

SITUATION:

INTERMITTENT OPERATION OF THE ATC SYSTEM - COMPRESSOR CLUTCH

A customer may complain that the Automatic Temperature Control (ATC) system does not provide cold air, or provides cold air intermittently. In addition, the Handbook symbol 🕮 may illuminate on the ATC display. This may be caused by the failure of the ATC compressor clutch to engage due to an out of specification gap. The increased gap allows varying degrees of slip at the clutch faces when the ATC engagement is attempted. Low voltage levels at the compressor clutch connector may have caused this increase in air gap.

RESOLUTION:

COMPRESSOR CLUTCH, OR COMPLETE COMPRESSOR HAS FAILED

A replacement ATC system compressor clutch is now available from Land Rover. Verify that the additional wiring link harnesses described in TIB 82/01/99/NAS have been installed. If the ATC compressor clutch air gap is greater than 0.8mm, the installation of a new ATC compressor clutch should solve ATC operation problems. In some cases it may be necessary to replace the entire compressor assembly based on criteria outlined in this TIB.

PARTS INFORMATION:

JPE100010.....Compressor clutch kit

- **Clutch assembly** **Qty. 1**
- **Shims** **Qty. 4**
  0.4, 0.5, 0.6, 0.7mm sizes
- **Circlips** **Qty. 2**
- **Harness clip** **Qty. 1**
- **Armature nut.** **Qty. 1**

△ **NOTE: Compressor hardware kit JPO100010 is not required for repair. It is available when additional hardware is required because of loss or damage.**

JPO100010 .....Compressor hardware kit

- **Shims** **Qty. 4**
  0.4, 0.5, 0.6, 0.7mm sizes
- **Clutch rotor circlip** **Qty. 1**
- **Armature nut.** **Qty. 1**

WARRANTY CLAIMS:

82.10.89/29 .....Time 1.95 hrs.
Replace ATC compressor clutch
FAULT CODE: U

Normal warranty policy and procedures apply

TIB	CIRCULATE:	Service Mgr	Warranty	Workshop	Body Shop	Parts
82/03/99/NAS	TO	X	X	X	X	X

REPAIR PROCEDURE

DETERMINE IF ATC COMPRESSOR CLUCH REPLACEMENT IS NECESSARY

1. Refer to Technical Bulletin 82/01/99/NAS and verify that additional wiring link harness has been installed.
2. Refer to Technical Bulletin 82/01/99/NAS and verify that ATC compressor clutch air gap is greater than 0.8mm (0.031 in.).
3. If the above conditions are met, replace the ATC compressor clutch.

REMOVE ATC COMPRESSOR CLUTCH ASSEMBLY

△ **NOTE: All repair operations should be performed on a clean bench and with clean tools.**

1. Refer to WSM 82.30.02 and recover refrigerant from ATC system, observing all warnings and cautions.
2. Refer to WSM 82.10.20 and remove the compressor.

⚠ **CAUTION: Ensure compressor is securely positioned prior to starting work, but under no circumstances should it be clamped in a vice.**

3. Remove the compressor clutch dust cover.
4. Hold the clutch rotor with a strap wrench and remove the central 14mm armature-retaining nut.

△ **NOTE: It should be possible to remove the armature from the compressor mainshaft by hand.**

5. Remove the clutch armature by hand.

△ **NOTE: If the armature cannot be removed by hand, the compressor may be damaged. Replace the compressor.**

6. Check the friction surface for grease contamination
7. If grease contamination is found, refer to WSM 82.10.20 and replace compressor.
8. Check compressor clutch for heat damage, indicated by a blue tinge to friction surface.
9. If friction surface has a blue tinge, refer to WSM 82.10.20 and replace compressor.
10. Remove and retain shims from mainshaft.

⚠ **CAUTION: Upon removal of clutch retaining circlip, make sure that circlip is not projected from groove.**

11. Remove the circlip retaining the clutch rotor to the compressor housing using circlip pliers.
12. Inspect the black plastic mainshaft bearing seal for signs of grease seepage.
13. If grease seepage is found, refer to WSM 82.10.20 and replace compressor.
14. Install protective cap LRT-37-010 over mainshaft.

△ **NOTE: Upon removal of clutch rotor and bearing assembly, be careful not to damage end of shaft.**

15. Remove the clutch rotor and bearing assembly using a suitable puller.

16. Disconnect the clutch coil wiring as follows:
    - Release connector tab.
    - Loosen wiring retaining clamp.
    - Remove wiring from beneath the clamp.
    - Disconnect wires.

CAUTION: When removing clutch coil retaining circlip, circlip may be launched from retaining groove. Take care that this does not occur.

17. Remove the circlip retaining the clutch coil to the front housing using circlip pliers.
18. Remove the clutch coil assembly.

INSTALL ATC COMPRESSOR CLUTCH ASSEMBLY

1. Install new clutch coil over front housing such that the wire leads are alligned with the clamp bracket location.
2. Position new coil retaining circlip with chamfer up, and install into groove.
3. Install new clamp, securing wire leads, and torque to **2 Nm (18 lbf.in.)**
4. Connect the lead wire to the thermal protection switch.
5. Slide the electrical connector back onto the bracket.

CAUTION: Press force must not exceed 400kg (882 lbf.)

6. Position compressor and new clutch rotor in hand press, and press rotor assembly onto the compressor.
7. Position new rotor retaining circlip with chamfer up, and install into groove.

NOTE: Four new replacement shims are provided in kit JPE100010. Their thickness dimensions are 0.4mm, 0.5mm, 0.6mm and 0.7mm.

8. Place one new shim of a known thickness onto the shaft.
9. Install the new clutch armature, aligning the flat on the end of the compressor shaft with the corresponding flat on the armature.
10. Restrain the clutch rotor with a strap wrench.
11. Using a 14mm socket, install the ***original*** armature securing nut, and torque to **17Nm (13 lbf.ft.)**.

NOTE: Avoid deflection of the clutch components when measuring gap.

12. Measure the air gap between the clutch armature and clutch rotor as follows:
    - Insert feeler gauges into gap at locations aligned with each of the three clutch armature rivets.
    - Record the three gap clearances.
    - Average the three recorded values.
    - Verify that the calculated average is between the specified range of **0.35mm - 0.65mm (0.014 - 0.026 in.)**.

13. Repeat step 12 until gap is within specified range.
14. Remove original armature securing nut.
15. Orient such that the flat face of the nut is facing the armature.
16. Torque ***new*** armature securing nut to **17Nm (13 lbf.ft.)**.
17. Install compressor clutch dust cover.
18. Refer to WSM 82.10.20 and install compressor.
19. Refer to WSM 82.30.02 and charge ATC system.