CIRCULATE TO:-	
SERVICE MGR	X
RECEPTION	X
WORKSHOP	X
PARTS	X

TECHNICAL INFORMATION

Issue 2

12/13/96

US

SUBJECT

PRIDE HVAC Printed Circuit Board

MODEL

Range Rover

AFFECTED VEHICLES

LP SA to TA 1
LH
LJ
LD

DETAIL

Some Range Rovers may experience poor operation of the heating and ventilation unit. To overcome these concerns, Land Rover has introduced a new Heating and Air Conditioning Control logic. The new control software has been fitted on the assembly line and produces a safe VIN of TA344173. Any vehicle after this VIN will have the new control software fitted upon assembly.

A fix has been designed which involves the replacement of the PC board in the control unit. Use the following procedure to replace the PC board.

The diagnostic steps and repair procedures detailed on the following pages were developed as an element of the Land Rover ay OPERATION PRIDE This TIB provides a li rary location for PRIDE information within the Land Rover North America technical literature system

ACTION REQUIRED

Upon customer complaint for the symptoms outlined, perform the specified repairs. Reference should also be made to bulletin 86/02/96/US (Exterior Temperature Reading Incorrect) prior to replacing the control panel.

PARTS INFORMATION

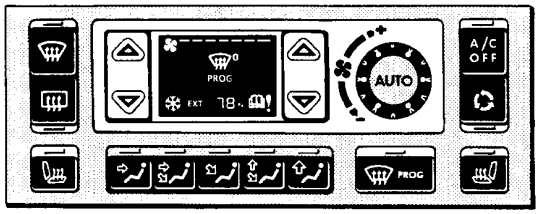
STC 3702K HVAC Circuit Board

LRNASTATK Anti-static Mat Kit

PROCEDURE

Perform the diagnostic procedures and repairs as outlined in the following pages for the repair of HVAC control units.

ILLUSTRATION



WARRANTY

Normal warranty procedures and policies apply.

COMP. CODE

Y1U

SRO

80.10.02 - Time 0.35 hr.
Remove HVAC control and inspect
80.10.89.27- Time 0.55 hr.
Remove HVAC control, inspect and replace circuit board

NOTE Times and operation descriptions are modification of PRIDE manual information.

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SYMPTOMS

Poor operation of the heating and ventilation unit can be categorized by the following symptoms:

Symptom 1 : Poor performance of heating and ventilation system in automatic mode. Specifically, insufficient responsiveness to achieve and maintain selected cabin temperature after start-up in hot ambient conditions.
Symptom : Delay after start-up in hot, ambient conditions before cooled air is supplied.
Symptom : Inaccurate exterior temperature readout, especially after hot soak.

To overcome these concerns Land Rover is introducing a new Heater and Air Conditioning Control Panel with the following changes to overcome the above symptoms:

Symptom 1 : More aggressive fan speed control and revised dynamic performance strategy (including improved recirculation logic) to provide optimum performance in achieving and maintaining selected cabin temperature.
Symptom : Logic changes within the unit eliminate the delay.
Symptom : High temperature accuracy is improved due to changes made in the recirculation within the unit.

NOTE

For more information on system characteristics, how the system works and diagnostics, see the HVAC specification document published with Operation PRIDE.

Refer to the Workshop Manual section 80, HVAC Controls, for removal instructions.

(Refer to pages 3-5 for the PC board replacement instructions)

(Continued...)

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Removal

1. Remove two screws in each center console side panel.
2. Pull side panels down and away, and remove (Fig 1).
3. Remove four screws holding control unit (Fig 2).
4. Ensure that the parking brake is on, place gear selector in neutral, and carefully remove HVAC control unit.
5. Remove four multi-plugs from control unit.

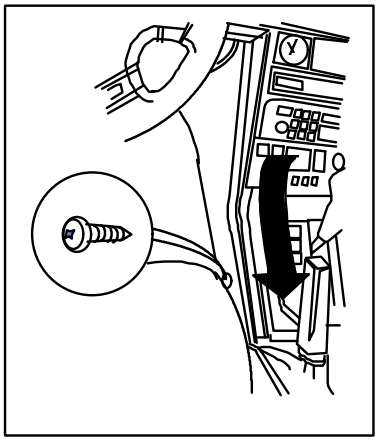

Figure 1. Remove two screws in each center console side panels

Inspection

1. Check control for **Soft 1** label. If present the modification has already been done.
2. Check for part number **A R** (the updated part, beyond VIN TA344173).
3. In any other case the board must be changed.

PC Board Replacement

Before performing this repair, obtain a grounded anti static mat. Place the control unit on the mat and attach wrist and

1. Remove six Torx® (T-10) screws from metal base.
2. Place control unit on an anti-static mat with control unit face towards you.
3. Put anti-static bracelet on your wrist and ground bracelet to anti static work station.
4. Pry apart two plastic retainers from metal base and remove metal base.

CAUTION Do not touch any metallic pins or surfaces on PC oard. Handle the PC oard y its edges.

5. Carefully remove PC board from control unit. Push on the plastic parts of the harness connectors if necessary.
6. Holding the PC board by its edges, remove ribbon plug from PC board and scrap old PC board.

CAUTION Do not touch any metallic pins or surfaces on PC oard. Handle the PC oard y its edges.

7. Remove new PC board from its packaging.

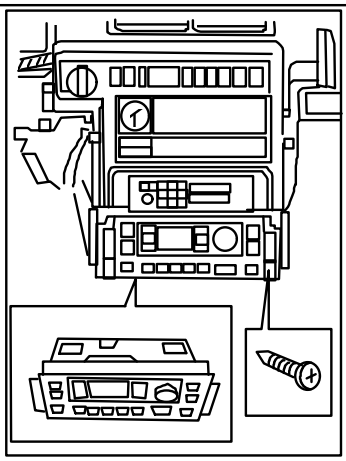

Figure 2

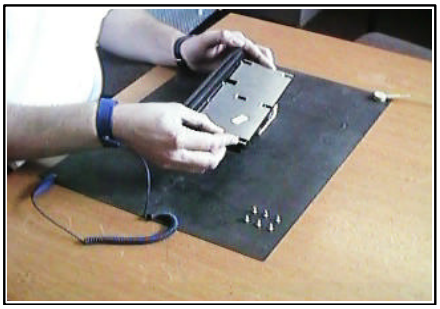

Figure 3. Pry apart two plastic retainers from metal base

(Continued ...)

8. Ensure ribbon cable is not twisted. Carefully install ribbon plug fully and **firmly** onto new PC board.

9. Holding the PC board by its edges, tilt control unit horizontally and carefully install new PC board.

NOTE Ensure that oth the lack and the white connector will fit into control unit housing

CAUTION Screws must not e over tightened or allowed to drop into control unit interior If a screw falls into control unit interior the unit must e scrapped

Figure 4. Remove PC board, push only on the plastic parts of the harness connectors

10. Position metal cover and using magnetic screwdriver, snugly tighten six retaining screws..

11. Install label provided with STC3702K on control unit over old label to denote service update.

12. Install four multi-connectors onto control unit, making sure that the plugs are fully seated in sockets.

13. Place control unit into dash and secure with four screws.

14. Install center console side panels and secure with screws removed earlier.

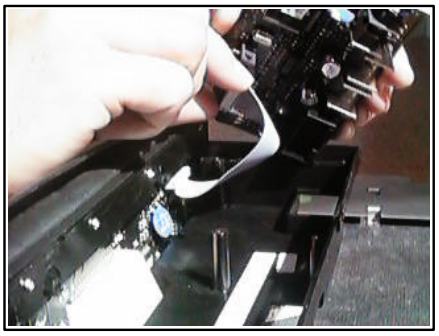

Figure 5. Holding the PC board by its edges, remove ribbon plug. Carefully install on new PC board making sure ribbon cable is not twisted.

NOTE A complete test of the newly installed control unit must now e performed

15. First, place ignition switch in position 2:, Front panel must show:
    - Temp. = 21°C (70°F) and 21°C (70°F).
    - Face vent LED illuminated.

16. Complete HVAC initialization procedure using TestBook.

17. After initialization is completed with TestBook, start the engine and set temp to LO/LO.

18. Observe that the following HVAC functions occur:
    - Blower speed to MAX
    - Recirc. to ON
    - A/C ON

    NOTE After 10 secs. cold air should be emitted from the vents. Make sure that the air is circulated using the recirculation mode, not fresh air.

19. Next, with the engine running set the temperature to HI/HI.

(Continued ...)

20. Observe that the following HVAC functions occur:
    - Blower slows to MEDIUM
    - Recirc. to OFF
    - A/C is ON

    NOTE After 10 seconds hot air should be emitted from the vents. Make sure that the air is circulated using the recirculation mode, not fresh air.

21. Set distribution to the following positions and verify at each step the LED is illuminated above the appropriate button and the air comes out of the appropriate vent.
    - Face and feet.
    - Then to just feet.
    - Then to windshield and feet.
    - Then to just windshield.

22. Push each heated seat buttons and check that the LED is illuminated above the appropriate button and the seat begins to heat up.

23. Push both demist buttons (front and back) and check that the LED is illuminated above the appropriate button and the relay is heard switching.

24. Connect TestBook and interrogate HVAC system to determine if any faults are stored. Ensure that cold climate package is selected for vehicle specifications.

NOTE The HVAC control unit logic includes a self-tune feature to ensure optimum air control flap position, both on assembly and during the early life bedding in period. The self-tune routine is activated on the 1st, 10th, 20th, 50th, 100th, 500th and subsequent 500th start-ups. It sweeps the air control flaps (recirculation, blend, and distribution) through all positions, and takes 90 seconds to complete. During this time, there is no fan operation or airflow.

After servicing a vehicle that requires a new control unit, inform the customer of the self tuning routine This will ensure that the customer does not mistake the self tuning as a fault Explain to the customer that the self tuning routine is a cali ration process that improves the performance consistency throughout the life of the vehicle and is done to accommodate any wear of the mechanisms associated with the HVAC unit