

# TECHNICAL INFORMATION



No: 86/01/02/NAS  
Ref:  
Issue: 1  
Date: 02/05/02

## Navigation System Calibration

### AFFECTED VEHICLE RANGE:

Discovery Series II (LT)  
Freelander (LN)

ALL HSE equipped with Becker NAV unit  
ALL HSE equipped with Becker NAV unit

### SITUATION:

#### NON-OPERATIONAL NAV SYSTEM

For NAV unit replacement or when battery power has been interrupted, it will be necessary to calibrate or enter certain configuration features into the Becker Navigational system to ensure proper operation.

### RESOLUTION:



**CAUTION:** All procedures outlined in this bulletin are required after NAV head unit replacement.

If power interruption (battery disconnection) occurs, the "CONFIGURATION" portions of this procedure will be required. See POWER INTERRUPT REACTIVATION section.



**NOTE:** Calibration of the Navigation System must be carried out after new unit replacement. Part of the calibration process is to follow a road route approximately one mile long containing both left and right turns. The reason for the road test is to permit the NAV computer to identify and compare road speed signals, satellite input and NAV CD parameters. Speeds between 10 mph and 40 mph should be maintained through the majority of the course. While performing the initial calibration, the unit displays the "GPS MODULE ERROR" message intermittently. This is not a fault condition, and will display until the NAV unit is able to obtain a firm positional fix from the GPS satellites.

#### CALIBRATE NAVIGATION SYSTEM

Carefully perform the calibration procedures outlined in this procedure whenever a new NAV unit is installed in a vehicle.

### PARTS INFORMATION:

Customer Owned Navigation CD ROM

### WARRANTY CLAIMS:

86.53.15 .....Time 0.80 hrs  
Install new NAV unit and program  
86.53.09 .....Time 0.10  
Perform CONFIGURATION after power disconnect

*Normal warranty policy and procedures apply.*

TIB	CIRCULATE:	Service Mgr	Warranty	Workshop	Body Shop	Parts
86/01/02/NAS	TO	X	X	X	X	X

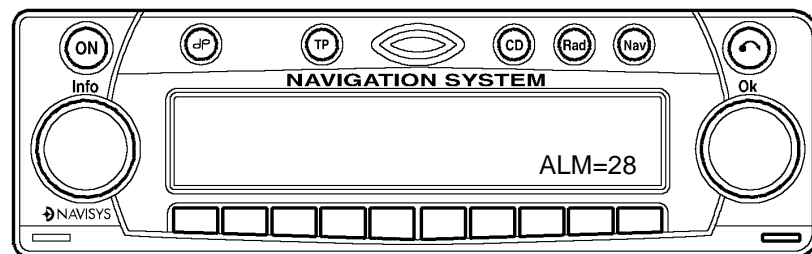
## PROCEDURE

### ALMANAC LOAD

△ **NOTE:** The more open the surrounding area is, the faster the system will acquire sufficient GPS satellite signals to begin calibration. To minimize the calibration time, the vehicle should not be moved once the process has begun until the calibration ride.

△ **NOTE:** When the security system RF receiver is active on Freelander models, it disrupts the GPS satellite signals and the almanac counter will not increment. The RF receiver is deactivated when the ignition is on. During calibration, the ignition must remain in position "II" (ON). The vehicle **CANNOT** be parked next to a Freelander because the active RF receiver on the nearby vehicle will corrupt the GPS signals also.

Figure 1



A8704WM2

1. Park the vehicle outside in an area away from other Freelander vehicles and clear of high buildings, trees or similar obstructions.
2. Turn the ignition switch to position "II" or start the vehicle.
3. If the navigation computer does not come on, press the navigation computer ON button.
4. If necessary, use the navigation computer multifunction buttons to enter the security code.
5. Turn the LH rotary control to minimum volume.

△ **NOTE:** A "GPS ANTENNA ERROR" message indicates that the NAV unit cannot detect the GPS antenna (Discovery on roof, Freelander in base of radio antenna). Investigation of cable connections or cable damage will determine the cause.

6. If the message "GPS ANTENNA ERROR" appears, investigate the cable connections and continuity to ensure the NAV computer can see the satellite GPS signals.


△ **NOTE:** Watch the 'ALM' number. Once it has reached a number of 28, calibration can continue.

7. Determine if "ALM=28" appears in the lower right of the NAV screen.
8. If "ALM=28" does NOT appear, allow the car to download the 'Almanac' from the satellites until "ALM=28" appears.



## PERFORM NAV UNIT CD/LANGUAGE LOAD AND SELECTIONS


1. Ensure the navigation computer LCD shows a GPS almanac figure of "28."
2. Insert the navigation CD using the following procedure:
  - Press the 'ON' radio button to turn the radio off.
  - Press the 'ON' button a second time to energize the radio.
  - Press the CD eject button in the upper RH corner of the unit to flip open the radio faceplate.
  - Insert the navigation CD for your area, East, West or Canada. (Canadian availability pending)
3. Press the 'NAV' button on the radio and observe the LCD display cycle through "Checking CD", followed by "Start Update" and a bar graph showing the progress of the update to the radio software.

 **NOTE: When the bar graph reaches 100% the Liquid Crystal Display (LCD) will revert back to the radio display.**

4. Press the "NAV" button once.
5. Turn the RH rotary control to highlight the required language "GB English."
6. Press the RH rotary control to select GB English.


 **NOTE: The navigation computer will prompt for a voice to be selected.**


7. Turn the RH rotary control to scroll through the options.
8. Highlight the desired voice (MALE 1) and press the RH rotary control to select.
9. Wait until the navigation computer LCD advises "Language has been loaded, press OK."
10. Press the RH rotary control to confirm the language and voice selections.

 **NOTE: The navigation computer will now display the message "Do not program while driving. Press OK if you understand the instructions in manual. Press OK to select."**


11. Read the warning and press the RH rotary control to accept.

## TEST DRIVE

 **NOTE: While performing the initial calibration on a new vehicle or service replacement, the satellite navigation unit displays the message "GPS MODULE ERROR intermittently. This is not a fault condition. The message will be shown, alternating approximately every minute with various numbers on the screen, until the unit is able to obtain a firm positional fix from the GPS satellites and the calibration drive has been performed.**

 **NOTE: The navigation computer LCD will default to the "Calibration Ride" screen and should show the "Calibration Ride Can Start" message. The GPS data and the road speed counter will also be shown.**

12. Wait for the navigation computer LCD to default to the "Calibration Ride" screen.

 **NOTE: Calibration is complete when the navigation computer LCD switches to show "DESTINATION."**

13. Drive the vehicle over the road course until the screen displays "DESTINATION."



## CONFIGURATION – RADIO OPTIONS

1. Turn the ignition switch to position "I."



**NOTE: FM modes other than "FM Stations Fix" should be avoided due to limited RDS coverage. Selecting RDS dependent modes means that reception is limited to the comparatively few radio stations that transmit the RDS data. Using the "FM Stations Fix" mode will also disable TP and PTY functions.**

2. Set FM Mode as follows:
  - Press 'RAD'
  - Press 'FM' button repeatedly until "FM Stations Fix" appears in the display.
3. Press and hold the music (dp) button for more than two seconds to display the options.
4. Use the multifunction buttons to scroll through the selectable options. (Recommended settings are provided in the table.)

Abbreviation.	Select option	Notes.
GAL	0	Set to 0 to ensure that no change in volume will occur with road speed changes
TEL	Mute	This function is NOT USED
LED	Blinking	Ensures that security LED is always configured to blink.
M/S	Auto	Ensures that unit switches between Mono and Stereo when weak or noisy radio signals are detected.
NAV	Mixed	Navigation audio commands are mixed with either the CD or Radio.
AUX	Mode OFF	NOT USED
CMP	Show Compass	Verify that compass is displayed on radio.
BeV	+5	Sets beep volume to this level.

## CONFIGURATION – NAV OPTIONS



**NOTE: The navigation computer defaults to metric units of measure. If metric measure is desired pressing the NAV button at this point will return to the destination menu.**

1. Press 'NAV' until "Save Position" is displayed
2. Turn the RH rotary control to scroll through the displayed menu. (Recommended settings are provided in the table.)

Option	Select option	Notes.
Language	GB English, Male Voice	Voice will be loaded from navigation CD.
Animation	ON	Press right rotary knob as required to toggle to ON. Press "NAV" button to return to the settings menu.
Measuring Unit	Imperial	Scroll to "Imperial" and press rotary knob to select. (See instructions below)
Announcement ETA	ON	Press right rotary knob repeatedly to toggle between ON and OFF. Press "NAV" button to return to the settings menu.
Time	Set Clock - 12 hour mode	Press multifunction button #1 to set clock to 12hr mode. Use +/- buttons to select the correct time. Press OK



**NOTE:** After calibration is complete the navigation system is ready for use. The accuracy of the system will automatically be fine tuned when a further journey is made, but this is not required as part of the calibration procedure.

## POWER INTERRUPT REACTIVATION

1. Whenever the power is interrupted to the NAV unit perform the following steps to reactivate the unit:
  - Ensure navigation CD is inserted into the unit.
  - Wait until the NAV computer reads the required information from the CD and displays "DESTINATION."
  - Perform both RADIO OPTIONS and NAV OPTIONS "CONFIGURATION" sections of this TIB to return the NAV system to normal operational configuration.