



Service Bulletin No 2706

<i>MODEL</i> 102D3/DL3	<i>TYPE</i> Service Information	<i>SECTION/GROUP</i> 13 - Transmission	<i>DATE</i> Jan. 15, 1996
<i>SUBJECT</i> ALLISON B500/B500R TRANSMISSION FEATURES AND DOWNHILL OPERATING INFORMATION			
<i>CONDITIONS</i> Service Information Only			

Description:

The Allison B500 and B500R automatic transmission operates basically the same as any other automatic transmission. However they have some special features that are explained in the following list.

–FEATURES–

Pre-selectable Shifts

" This enables the operator to select any gear at any time. The transmission however will only shift to that gear when it's output RPMs reach sufficient speeds to allow shifting to occur.

Mode Button

" The mode button, located on the the shift selector pad, has multiple functions however its primary function is to allow switching between the economy and performance shift modes. These different shift modes are accurately described as follows. Economy mode is the mode the transmission is always in at startup. It allows early transmission upshifts to provide improved fuel economy. The transmission is in performance mode when the selection button is switched "ON." This allows the transmission to remain in the original gear for a slightly longer period, providing better coach performance. The mode feature can be used anytime during operation.

Up & Down Selector Buttons

Selector buttons are not only used to select gears, but also to check oil level and to display error codes.

" *Gear Selector:* These buttons allow selection of the gears in which the driver wants to operate.

" *Oil Level Check:* To check the oil level of the transmission, park the coach on level ground with the transmission in neutral, and with the park brake applied. Simultaneously depress both buttons once. This will start a count down that will show on the selector pad display. If the oil is too hot or too cold, a numeric code will signal in the display. Should this occur, allow the transmission to either warm up or cool down .When the temperature is correct, the oil level will then be read. Once the level is read, it will display either an "OK," or if the level is high, (H1, H2) or if low, (L1, L2).

" *Error Code Display:* The buttons will display transmission error codes that have been experienced in the last twenty five ignition cycles. This is activated by pressing both buttons a second time. Also if the "Mode On" is illuminated when reading these codes, it will mean that the code is an active one and should be reviewed before any further operation. A total of five codes can be stored in memory and can be switched by depressing the mode button. Code clearing is done by depressing and holding the mode button for approximately ten seconds until a second audible "beep" is heard.

Default Features

" There are some default features the driver should know and understand that will assist him in operating the transmission. A very important one is the "Limp Home" feature which will lock the transmission in a selected gear, enabling the continued operation of the coach until it can be safely moved out of traffic. Note: The codes that are logged on the ECU must be read and understood prior to further use. If shifted to neutral, the "Limp Home" function is discontinued.

" "Over" temperature alarms occur if the internal sensors of the transmission sense temperatures above three hundred thirty (330) degrees Fahrenheit in the retarder cavity or two hundred seventy (270) degrees Fahrenheit in the sump portion of the transmission. This alarm is installed to warn the operator that recommended temperature parameters have been exceeded and a cool down period is required as soon as possible. This can be accomplished on B500R, retarder-equipped transmissions by switching off the retarder switch on the dash and continuing coach operation until sufficient time has elapsed to allow the transmission to cool. Continued use is now possible. On B500 transmissions, an "over" temperature of the transmission indicates a problem is occurring.

–DOWNHILL OPERATION OF THE B500R TRANSMISSION–

There are a number of tips that should be utilized for successful coach operation on long downgrades to help keep the transmission at the proper operating temperature and for proper brake and retarder application.

1. Pre-selected Downshift. This has many benefits starting with the ability to increase engine RPMs and thereby increase the coolant flow through the system, allowing the transmission to work at its maximum efficiency. There is no need to be concerned with engine overspeed during this operation since the transmission will automatically upshift if the engine speed increases to over approximately two thousand five hundred (2500) RPMs. It will also downshift when it decreases speed below this point. The specific gear selection to accomplish this will vary, depending on coach configuration and operating climate.

A large increase in the rolling resistance of the vehicle is another benefit of forced downshifts. This alone will greatly reduce the retardation level required to control coach speed. In addition, the number of brake applications required will be reduced substantially.

2. Brake Applications. Brake applications during a descent can greatly affect the temperatures occurring in the transmission. The retarder is connected to the brake pedal on the coach and maximum retardation is available very early in a brake application. Recommended practice therefore is to limit the duration and use of the service brakes as much as possible. Hard (Stab) braking applications are highly recommended rather than "feathering" the brakes. "Feathering" not only causes unnecessary heat for the transmission, but may cause premature brake fading when the brakes are genuinely required.
3. Retarder Lever Usage. The retarder lever is used to control the vehicle speed. Note: Increase of the lever position increases transmission retardation. It is also good practice to reduce retarder intensity rather than accelerating the engine. This greatly improves fuel economy over repetitive accelerations. Good driving practice dictates that a considerable distance between the coach and the traffic ahead, is necessary for safe operation. Therefore, a forced downshift will control speed better and with the varied use of the retarder lever, should produce a constant speed. This will provide a safer and more comfortable ride for the passengers and driver.