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September, 2017  
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**SUBJECT:** Servicing Low Rate Damper (LRD) Torque Converters, High Gain Neutral at Stop (NAS) Main Valve Bodies, and Retracked NAS Components

**MODELS AFFECTED:** 1000 Series™ and 2000 Series™ Transmissions

### Introduction:

Allison Transmission is offering three (3) new torque converter designs using a LRD. The LRD torque converter uses a lower rate (less stiff) spring damper design.

Greater torsional activity with some of the newer 4 cylinder diesel engines can be attributed to engines with smaller displacements and higher cylinder pressure. The LRD lower rate springs help reduce the affects of these highly-torsionally active, 4 cylinder, diesel engines. The LRD torque converter also uses a “learned” lock up apply command, found in software BCD161 and newer. The learned lock up command enables the torque converter lock up clutch to engage at lower engine speeds.

LRD torque converter and High Gain NAS main valve bodies are standard components in FuelSense® 2.0 Max. FuelSense® 2.0 Max allows for lower-range torque converter lock up, 1<sup>st</sup> range for close ratio transmissions and 2<sup>nd</sup> range for wide ratio transmissions. Using these components along with FuelSense® 2.0 Max calibration, are designed to enhance fuel economy.

High Gain NAS valve body produces a higher Torque Converter Clutch (TCC) pressure. The higher TCC pressure is achieved by using a larger TCC valve and spring in a larger TCC valve bore.

The new LRD design requires a higher Torque Converter Clutch (TCC) engagement pressure. To accomplish higher TCC pressure, a main valve body modification incorporates a larger TCC valve bore inside diameter and a larger TCC valve and spring combination. The new valve bodies will be referred to as the High Gain NAS main valve body.



**NOTE:** The LRD torque converters must be paired with High Gain NAS Main valve bodies. Failure to do so will cause the torque converter to fail prematurely due to low lock up pressure.

Low Gain NAS main valve body parts will be serviced with either Low Gain NAS or High Gain NAS main valve body components. Low gain NAS main valve body parts will be available until stock is exhausted. Former Low Gain NAS main valve body TCC valve, P/N 29545994 and spring, P/N 29550070 will continue to be serviceable with the Low Gain valve and spring. Refer to [Table 1](#) for part numbers and part descriptions.

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**Please Note:** Allison Transmission Service Information Letters are intended for use by professional, trained technicians, not for the “do-it-yourselfer.” They are written to inform those technicians of conditions that may occur on some transmission models (or serial numbers ranges) or to provide information that could assist in the proper servicing of a specific Allison transmission. Properly trained technicians have the equipment, tools, safety instructions, and know-how to do a job properly and safely. If a condition is described, do not assume that the Service Information Letter applies to your transmission, or that your transmission has the condition described. Product evolution and information updates are inevitable. Please see your authorized Allison Transmission service dealer or distributor to understand if your particular transmission may benefit from the information contained within the Service Information Letter.

A TCM software update to BCD161 (released April, 2016) or later is required to apply logic that “learns” what TCC pressure to use.



**NOTE:** Neutral at Stop–Standard is formerly known as Reduced Engine Load at Stop, or RELS. Neutral at Stop–Premium is formerly known as Enhanced Converter Load Reduction, or ECLR.

Allison’s Service Channel shall continue servicing traditional and LRD torque converters with “like” parts. Additionally, fielded Low Gain NAS main valve bodies can be serviced with either same replacement parts (as long as they are available) or with High Gain NAS main valve body components (provided the TCM software is upgraded to minimum BCD161 level).



**NOTE:** BCD161 software contains algorithms that learn to optimize lockup pressures.

**Table 1. Torque Converters**

| Part Name                             | Engineering Group | Original Part Number | Low Rate Damper Part Number | Description of Change                    |
|---------------------------------------|-------------------|----------------------|-----------------------------|------------------------------------------|
| TC210, Torque Converter Assembly      | 21-950            | 29546574             | —                           | No change to original twin-plate design  |
| TC211, Torque Converter Assembly      | 21-949            | 29546573             | —                           | No change to original twin-plate design  |
| TC221, Torque Converter Assembly      | 21-951            | 29546576             | —                           | No change to original twin-plate design  |
| TC222, Torque Converter Assembly      | 21-952            | 29546575             | —                           | No change to original twin-plate design  |
| TC211D, Torque Converter Assembly LRD | 21-966            | —                    | 29556904                    | New Low Rate Damper, single-plate design |
| TC221D, Torque Converter Assembly LRD | 21-967            | —                    | 29556905                    | New Low Rate Damper, single-plate design |
| TC222D, Torque Converter Assembly LRD | 21-968            | —                    | 29556906                    | New Low Rate Damper, single-plate design |

### Interchangeability:

The High Gain NAS main valve body design must be used with the Low Rate Damper torque converter design in order to deliver the higher converter clutch apply pressure needed to appropriately apply the new lockup clutch design. Failure to pair the LRD torque converter and High Gain NAS main valve body will cause the torque converter to fail prematurely. Dowel pin location change on the NAS re-tracked valve body that feeds through the NAS separator plate and into the High Gain NAS main valve body will physically prevent unintentional parts from being assembled. Physically prevent mismatched parts from being assembled.



**NOTE:** Reference Service Information Letter (SIL) 13-1K2K-17 for NAS Valve Body Retracking changes and interchangeability.

**Parts Modifications:**

- Hardware Changes
  - Low Rate Damper Torque Converter single plate design
  - Main valve body gain change (larger TCC valve P/N 29557801 and TCC spring P/N 29557802) to increase Torque Converter Clutch, TCC pressure. The High Gain NAS main valve body is found in Engineering Group 16-1902