SIL 10-1K2K-22
March 23, 2023


SUBJECT: Allison 9-Speed Transmission Launch Information

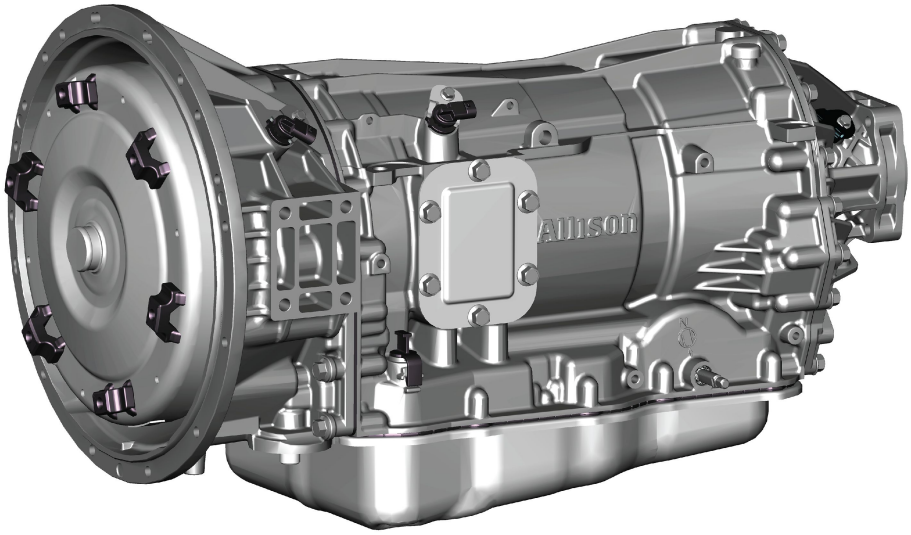
MODELS AFFECTED: 2900 Series

SERIAL NUMBERS AFFECTED: Indianapolis, Plant 4 – 6410001000 and after

## Introduction

Allison Transmission is pleased to announce the February 2023 launch of the Allison 9-Speed transmission (Figure 1). This medium-duty, fully-automatic transmission offers nine forward ranges (consisting of three overdrive ranges) for improved drivability and increased gear ratio coverage over a transmission with fewer ranges. Refer to Table 1 for gear ratio comparisons of traditional 6-speed and new 9-speed designs.

The new 9-Speed transmission performs in vehicle applications up to 1220 N·m (900 lb-ft), 283 kW (380 hp), and 25,855 kg (57,000 lbs) GVWR/GCWR without park pawl (or 14,969 kg (33,000 lbs) GVWR/GCWR with park pawl).




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**Figure 1. 9-Speed Automatic Transmission**

Allison's 9-Speed incorporates an additional planetary gear set and stationary clutch over traditional Allison 1000 Series™ and 2000 Series™ 6-speed products to achieve nine forward ranges. Figure 2 shows the locations of the



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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.*

new P4 planetary and C6 clutch, and how other planetaries/clutches retain their original naming convention and front-to-back sequence.

**Table 1. Comparison Between 9-speed and 6-speed Gear Ratios**

| | 1000 Series and 2000 Series 6-speed | | 9-Speed | |
|---|---|---|---|---|
| **Gear Ratio** | **Close Ratio** | **Wide Ratio** | **Close Ratio** | **Wide Ratio** |
| 1st | 3.10 | 3.51 | 4.20 | 4.82 |
| 2nd | 1.81 | 1.90 | 3.10 | 3.51 |
| 3rd | 1.41 | 1.44 | 2.61 | 2.85 |
| 4th | 1.00 | 1.00 | 1.81 | 1.90 |
| 5th | 0.71 | 0.74 | 1.41 | 1.44 |
| 6th | 0.61 | 0.64 | 1.00 | 1.00 |
| 7th | — | — | 0.71 | 0.74 |
| 8th | — | — | 0.61 | 0.64 |
| 9th | — | — | 0.54 | 0.57 |
| Reverse | -4.49 | -5.09 | -4.49 | -5.09 |
| Ratio Coverage | 5.05 | 5.46 | 7.78 | 8.46 |

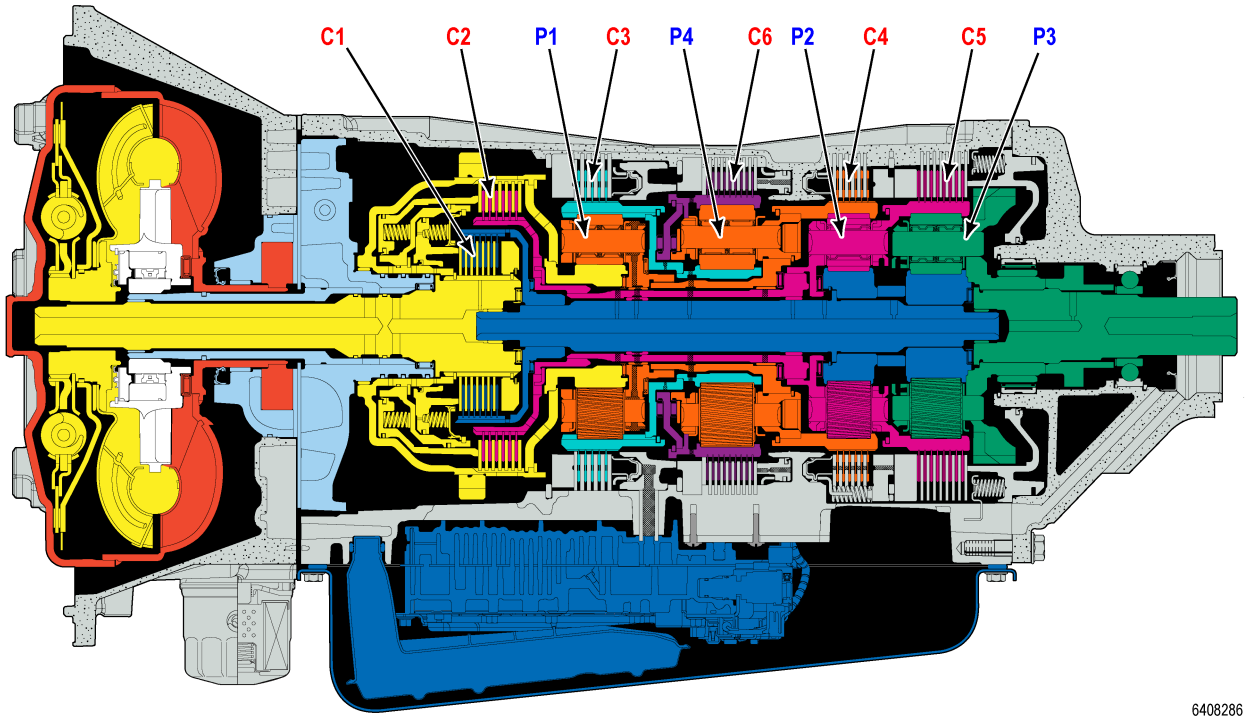



**Figure 2. 9-Speed Clutch and Planetary Positions and Sequence**

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## Model Designations

The 2900 Series model nomenclature is a “smart” number that can help define maximum input torque capacity, close or wide ratio gearing and park pawl configuration.

Approved vocational models include the Highway Series™ (HS), Motorhome Series™ (MH), Pupil Transport/Shuttle Series™ (PTS), Rugged Duty Series™ (RDS), Specialty Series™ (SP), Torqmatic® Series and International. Vocational model numbers include a prefix or suffix to designate the vocation intended. Figure 3 shows variations of the 2900 Series vocational model numbers.

**NOTE:** Additional vocational models can be considered for release and will be managed through the 9-speed opportunity pipeline. Contact your Allison sales representative to explore models, ratings or growth opportunities.

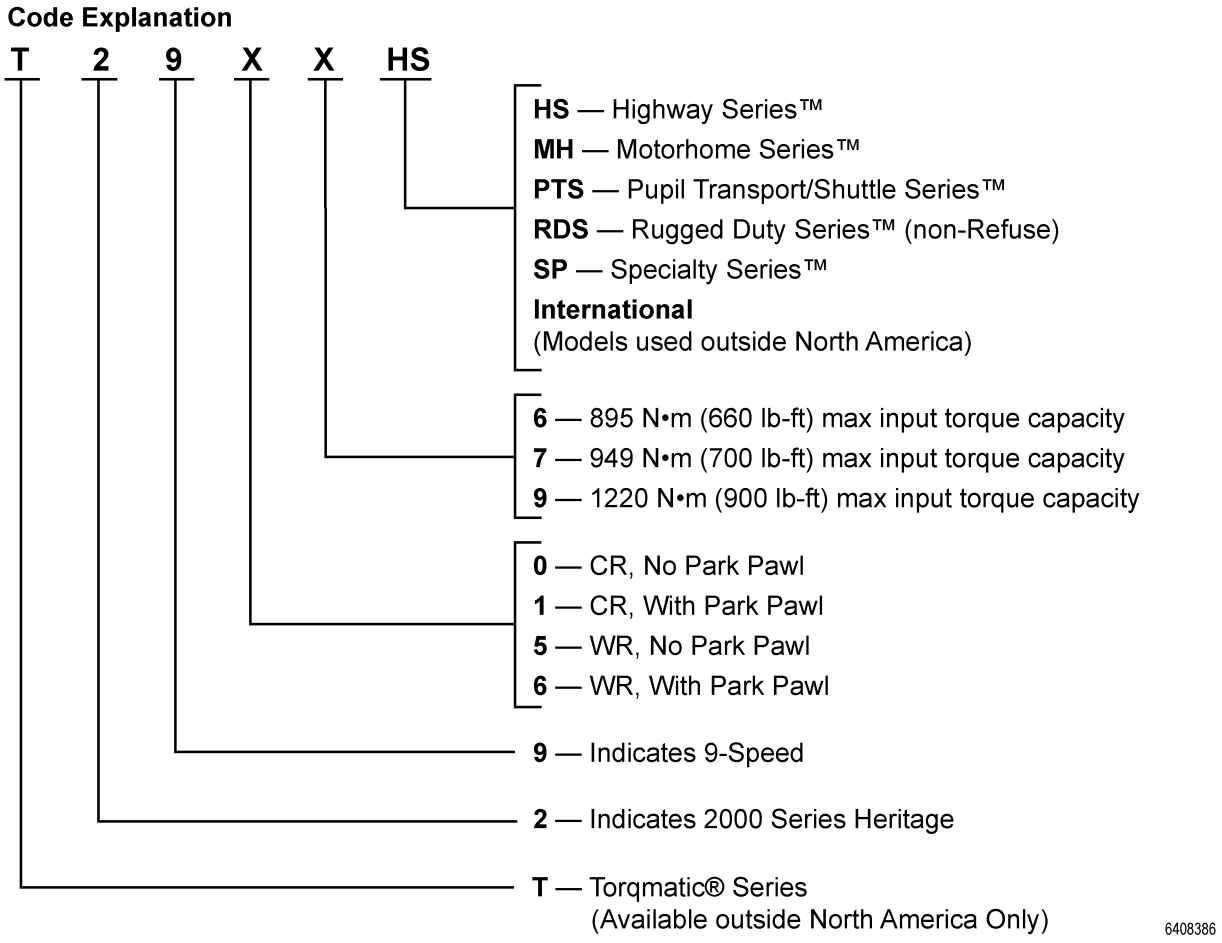
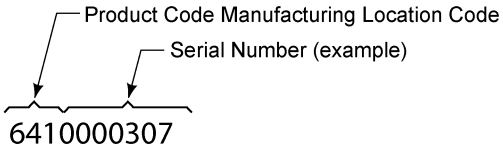



**Figure 3. 9-Speed 2900 Series Vocational Model Nomenclature**

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## Component Identification

Each 9-Speed transmission will be identified with a production serial number. The 7-digit serial number will be preceded with a 3-digit prefix code to denote the product and manufacturing location. Refer to Figure 4 for serial number breakdown definition.




UNIT SERIAL NUMBER PREFIX TABLES:

| MODEL | PRODUCT CODE | MFG. LOC. CODE |
|---|---|---|
| 2900 Series | 64 | 1 (Indianapolis) |

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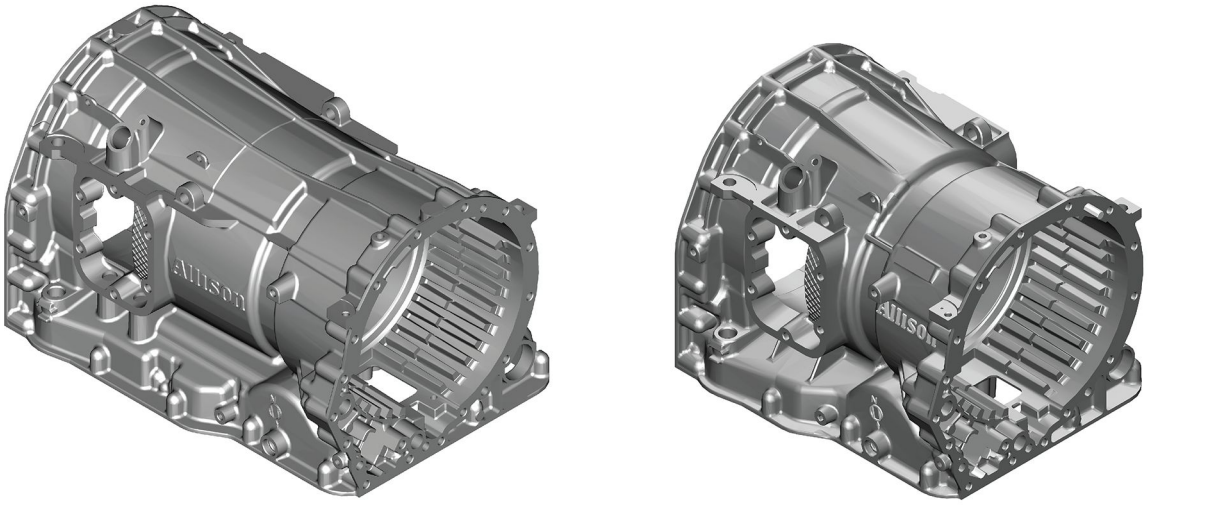
**Figure 4. 9-Speed Unit Serial Number Breakdown Definition**

## COMPONENT OVERVIEW

### Main Case Housing

The 9-Speed transmission main case housing is 110 mm (4.33 in) longer to allow for the addition of the new P4 planetary and C6 clutch (refer to Figure 5).

Parts that assemble to create the longer housing have been released in new engineering groups 01-912 and 01-913, shift-by-wire and shift-by-cable, respectively. Details can be found in Parts Catalog PC8895 under these group numbers.




**9-Speed** **1000/2000 Series 6-Speed**

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**Figure 5. Main Case Housing Comparison**

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### Torque Converter Options

Listed in Table 2 are MY2022 torque converters that were released for the coordinated front end changes. Coordinated front end changes that occurred to the 1000 Series and 2000 Series 6-speed are described in SIL 21-1K2K-21 and describe compatibility with the new front support and turbine shaft design.

Torque converter assemblies for the 9-Speed product have been released in new engineering group numbers shown in Table 2. Refer to the 9-Speed Parts Catalog (PC8895) for any updates to serviceable torque converter part numbers.

There are no OEM interface changes to the MY2022 torque converters.

**Table 2. MY2022 Torque Converter for 9-Speed Transmissions**

| Engineering Group | Description | P/N |
|---|---|---|
| 21-975 | TC 210 Torque Converter, 9-speed, Stall Torque Ratio 2.06:1.00 | 29564108 |
| 21-976 | TC 211, Torque Converter, 9-speed, Stall Torque Ratio 2.01:1.00 | 29564107 |
| 21-977 | TC 221, Torque Converter, 9-speed, Stall Torque Ratio 1.75:1.00 | 29564109 |
| 21-978 | TC 222, Torque Converter, 9-speed, Stall Torque Ratio 1.63:1.00 | 29564110 |
| 21-979 | TC 222H, High Rate Damper Converter, 9-speed, Stall Torque Ratio 1.63:1.00 | 29565110 |
| 21-980 | TC 211D, Low Rate Damper Converter, 9-speed, Stall Torque Ratio 2.01:1.00 | 29564111 |
| 21-981 | TC 221D, Low Rate Damper Converter, 9-speed, Stall Torque Ratio 1:75:1.00 | 29564112 |
| 21-982 | TC 222D, Low Rate Damper Converter, 9-speed, Stall Torque Ratio 1.63:1.00 | 29564113 |



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**Figure 6. External View of Torque Converter (Pump Side)**

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### Front Support & Oil Pump

The front support assembly is common with the coordinated front end changes that were made to the 1000 Series and 2000 Series 6-speed products in January 2022. Specifically, the MY2022 redesign uses a shorter ground sleeve. See SIL 21-1K2K-21 for additional details.

The new 9-Speed front support assembly does not contain the C1 backfill valve, as it was eliminated prior to MY2022 design release. Additionally, the ground sleeve has been shortened for movement of the lockup pressure sealing surface.

Parts that comprise the new front support and oil pump assembly for the 9-Speed product have been released in new engineering group 10-675 which is listed in Parts Catalog PC8895. Figure 7 compares the new 9-speed front support to the pre-MY2022 6-speed design.

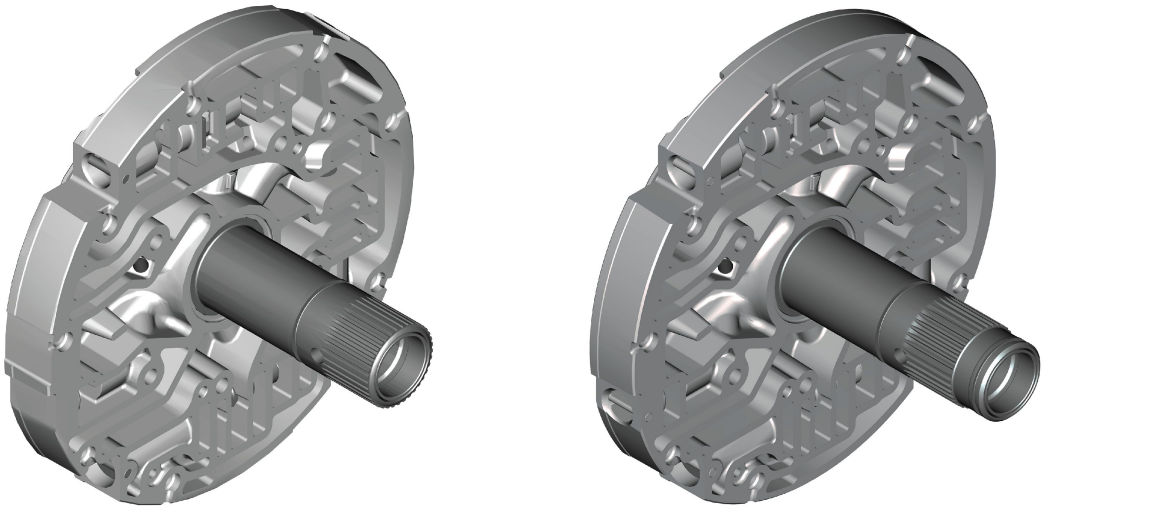



**Figure 7. Front Support Assembly Comparison**

### Rotating Clutch & PTO Options

The rotating clutch assembly is common with the coordinated front end changes that were made to the 1000 Series and 2000 Series, 6-speed in January 2022 (reference SIL 21-1K2K-21). Specifically, the MY2022 redesign uses a new lockup clutch sealing surface between the turbine shaft and torque converter.

Parts that assemble the new 9-Speed rotating clutch assemblies have been released in new engineering groups: 14-1141 that includes the PTO drive gear, and 14-1142 that contains a tone wheel instead of the PTO drive gear. Both configurations can be reviewed in Parts Catalog PC8895.

Figure 8 compares the new rotating clutch assembly to the pre-MY2022 6-speed design and shows the difference in turbine shafts.

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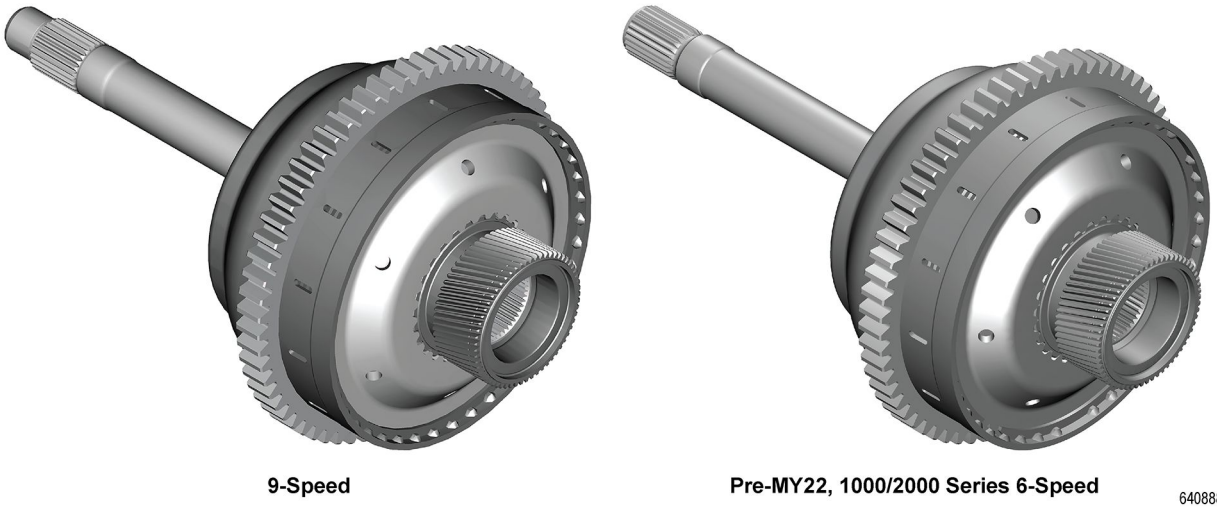



**Figure 8. Rotating Clutch and Turbine Shaft Assembly Comparison**

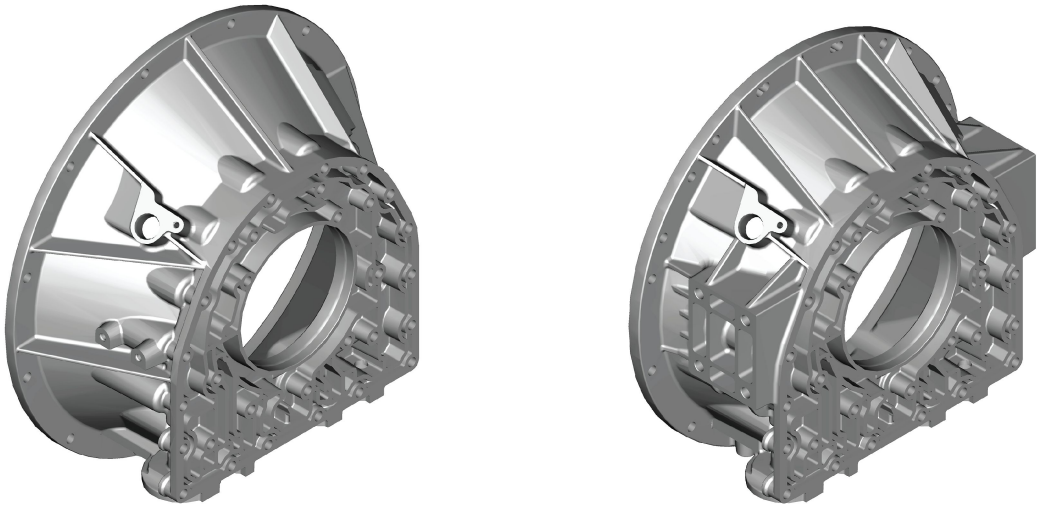
### Torque Converter Housings

No design changes have been made to the standard SAE #2 and SAE #3 transmission converter housings. Figure 9 shows the available converter housing options for the 9-Speed transmission. The SAE #2 and SAE #3 converter housing designs are unchanged; however, when associated with the 9-speed they are included within new engineering groups 34-617 and 34-618, respectively.

No OEM interface changes have been made to these traditional SAE #2 and SAE #3 converter housings. Refer to Allison 2900 Series Tech Data located on the Allison HUB™ for installation specifications.

**NOTE:** A direct mount converter housing for the GM 6.6L engine is available for the 1000 Series and 2000 Series 6-speed (not shown). This direct mount is not available with the 9-speed at this time. Please contact Allison Sales group with opportunities to use the direct mount converter housing for the 9-speed.

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SAE #2, Group 34-617

SAE #3, Group 34-618

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**Figure 9. 9-Speed Converter Housing Options**

### Control Valve Body Options

Control valve body designs include seven new Pressure Control Solenoids (PCS) (four blue normally high variable force solenoids and three green normally low variable force solenoids, along with two white shift solenoids). Refer to the 9-Speed Principles of Operation publication (PO8891) for explanation of variable force solenoids function. Four PCS solenoids with blue connectors are used to control Modulated Main, C2/C5, C3 and C1 clutches, whereas the three PCS solenoids with green connectors are used to control C4, C6 and the Torque Converter Clutch (TCC). Internal wire harness branches are oriented for ease of assembly and contain coordinated color connectors. Refer to Figure 10 for connector callouts.

**NOTE:** The 9-Speed design contains a new 29-Way transmission connector. Refer to Figure 10, Figure 11, *Allison Tech Data* and Troubleshooting Manual (TS8887) for pin details.

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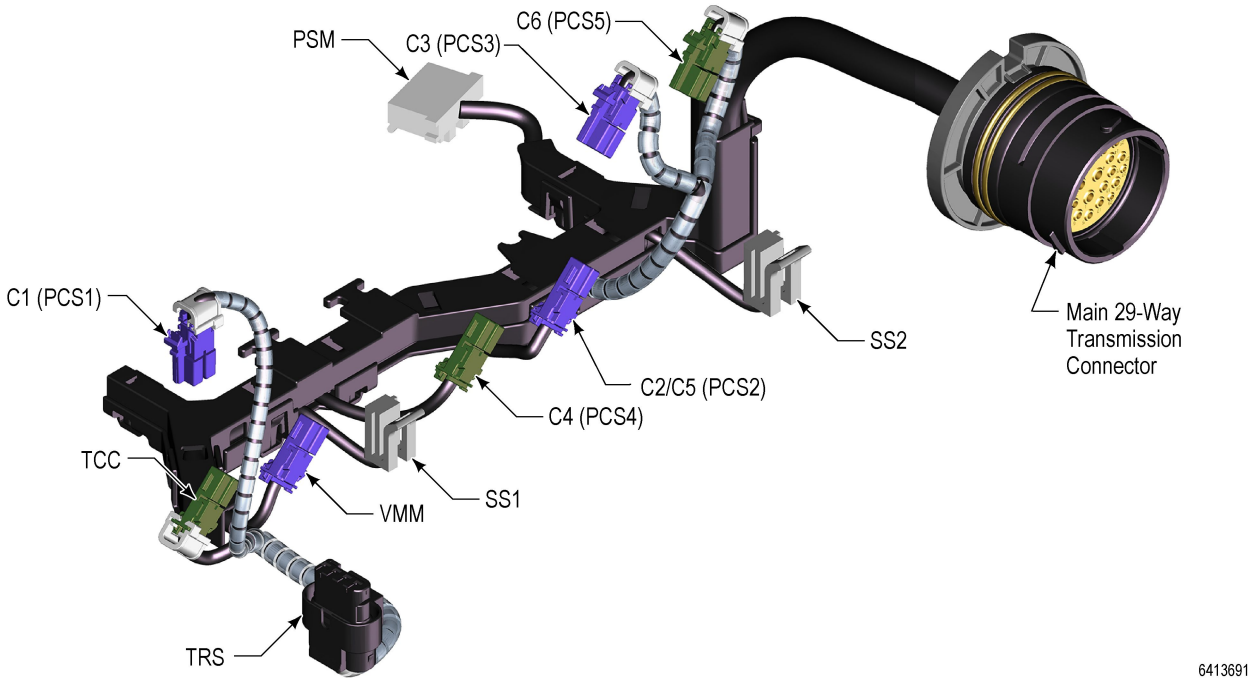



**Figure 10. Internal Wire Harness with TRS Breakout and Solenoid Connector Colors**

Figure 11 compares the new 9-speed control valve body assembly to that of the traditional 6-speed control valve body assembly. The new 9-speed design incorporates the use of solenoid brackets and retention hardware to retain a bank of solenoids in each valve body.

**NOTE:** It may be difficult to disconnect and remove C1 solenoid without removing the control valve body assembly.

Rubberized separator plate gasket (P/N 29570911) is not reusable. Inspect valve body surfaces for residual gasket material before reassembly.

Components that assemble to create the new control valve body assembly for the 9-Speed product have been released in new engineering groups; 16-1929 for shift-by-wire and 16-1930 for shift-by-cable configurations. Reference Parts Catalog PC8895 for a complete list of service parts.

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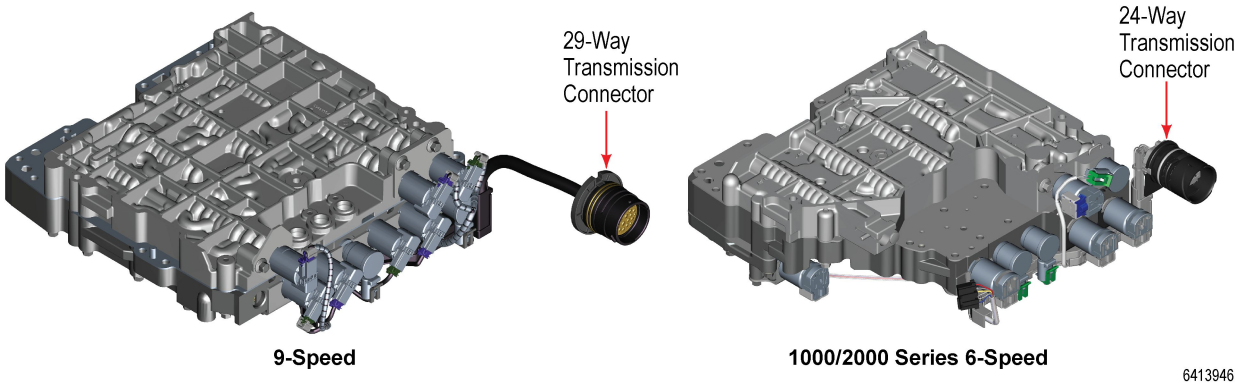



**Figure 11. Control Valve Body Assembly Comparison**

### Oil Pan

The oil pan length is 110 mm (4.33 in) longer to accommodate the added length of the main case. The 9-Speed oil pan is sealed to the transmission main case with a reusable rubberized pan gasket (P/N 29564555).

Parts that comprise the new oil pan for the 9-Speed have been released in new engineering group 37-602 in Parts Catalog PC8895. Figure 12 compares the 9-speed to 6-speed oil pan designs.

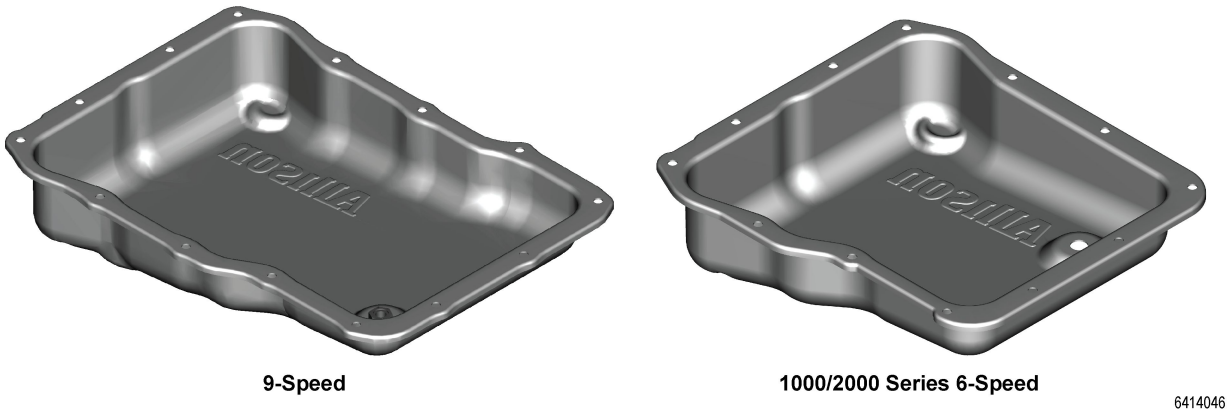



**Figure 12. Shallow Oil Pan Comparison**

### Rear Cover & Park Pawl Options

There are no OEM interface changes to the rear cover options.

Parts that comprise the new rear cover groups for the 9-Speed have been released in engineering groups 39-1077 through 39-1088, all of which can be located in Parts Catalog PC8895. Refer to Table 3 for a listing of new 9-Speed rear cover groups and Figure 13 for illustrations.

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**Table 3. Listing of 9-Speed Rear Cover and Brake Options**

| Group Number | Group Description |
|---|---|
| 39-1077 | Close Ratio, With Park Pawl, With 9x3 Park Brake Provision, Without Tachograph |
| 39-1078 | Close Ratio, Without Park Pawl, With 9x3 Park Brake Provision, Without Tachograph |
| 39-1079 | Wide Ratio, With Park Pawl, With 9x3 Park Brake Provision, Without Tachograph |
| 39-1080 | Wide Ratio, Without Park Pawl, With 9x3 Park Brake Provision, Without Tachograph |
| 39-1081 | Close Ratio, With Park Pawl, With 10x3 Park Brake Provision, With Tachograph |
| 39-1082 | Close Ratio, Without Park Pawl, With 10x3 Park Brake Provision, With Tachograph |
| 39-1083 | Wide Ratio, With Park Pawl, With 10x3 Park Brake Provision, With Tachograph |
| 39-1084 | Wide Ratio, Without Park Pawl, With 10x3 Park Brake Provision, With Tachograph |
| 39-1085 | Close Ratio, With Park Pawl and Transfer Case, With Tachograph Provision |
| 39-1086 | Close Ratio, Without Park Pawl, With Transfer Case, With Tachograph Provision |
| 39-1087 | Wide Ratio, With Park Pawl and Transfer Case, With Tachograph Provision |
| 39-1088 | Wide Ratio, Without Park Pawl, With Transfer Case, With Tachograph Provision |

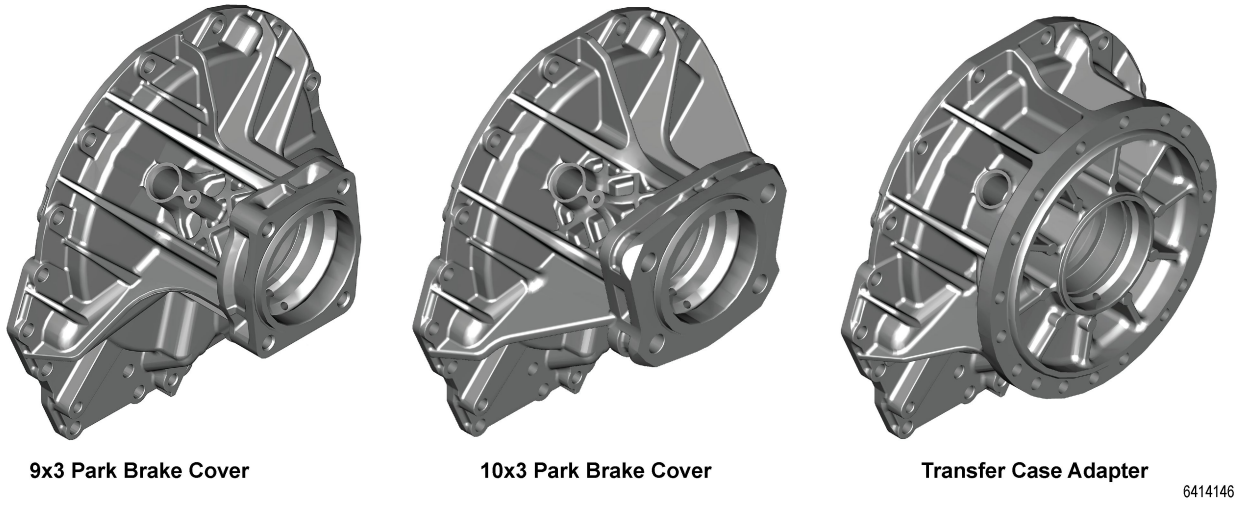



**Figure 13. Rear Cover Options for 9-Speed Transmission**

## Shift Selector & Shifting

The 9-speed transmission features skip shifting capability. This transmission feature commands the transmission to skip certain ranges during a shift to attain the most efficient range during acceleration or deceleration.

The 1-3 and 2-4 upshifts are the only skip upshifts that are currently enabled. These can be scheduled based on DynActive® evaluation to prevent the engine's interaction with the governor during quick accelerations or for fuel economy purposes based on the active DynActive flat ground economy bias.

The only double skip shift allowable at this time is the 9-6 full-throttle downshift. All skip downshifts are possible, e.g. 9-7, 8-6, etc. During closed throttle shifts, these are evaluated when the deceleration rate is high. Skip full-throttle downshifts are evaluated and scheduled based on the desired performance, the active DynActive

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Economy bias and acceleration among other inputs. The selected DynActive Economy bias will impact how skip shifts are scheduled based on vehicle performance and driver input.

Allison 9-Speed transmissions offer three shift selector control options: shift-by-wire, shift-by-cable and park-by-cable. Allison 6th Generation Controls push button selectors (PBSS) are used when integrating shift-by-wire configurations. Shift-by-wire configurations do not include a selector shaft in the transmission. Shift-by-cable and park-by-cable configurations include a selector shaft (similar to Allison 1000 Series and 2000 Series transmissions) and a Hall-effect Transmission Range Sensor (TRS) to signal selector shaft position to the transmission TCM. The TRS replaces the Internal Mode Switch (IMS) used in Allison 1000 Series and 2000 Series transmissions and is not included with transmissions configured for shift-by-wire.

## SPECIAL SERVICE INSTRUCTIONS

### Transmission Range Sensor

The Transmission Range Sensor (TRS) is an internal Hall effect device integrated with the shift selector shaft and detent lever system that is used to confirm the selected range. The TRS takes the place of the traditional Internal Mode Switch (IMS) and will be included in the park-by-cable and shift-by-cable valve body configurations.

Proper installation of the TRS is critical. Extra attention is required to install the detent spring pin between the ears of the TRS interface. Refer to the red arrows in Figure 14 and Instruction Sheet 375 for proper installation.

**WARNING:** Failure to properly install the Transmission Range Sensor can lead to unintended vehicle movement. Be sure to follow Service Manual (SM8889) for complete installation instructions.

The TRS is mounted to the transmission by retention hardware that is not reusable after initial use since the hardware threads contain a locking compound. Use TRS service kit P/N 29570435 which contains new, one-time use retention hardware and installation instructions when replacing the TRS. Additional TRS retention hardware is also available from the Parts Distribution Center (PDC).

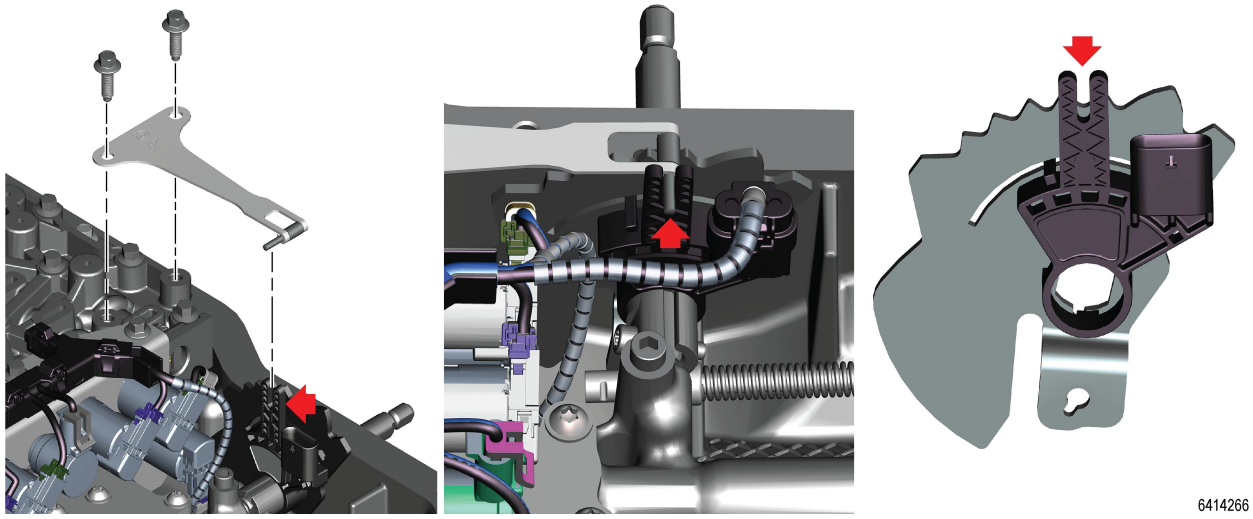


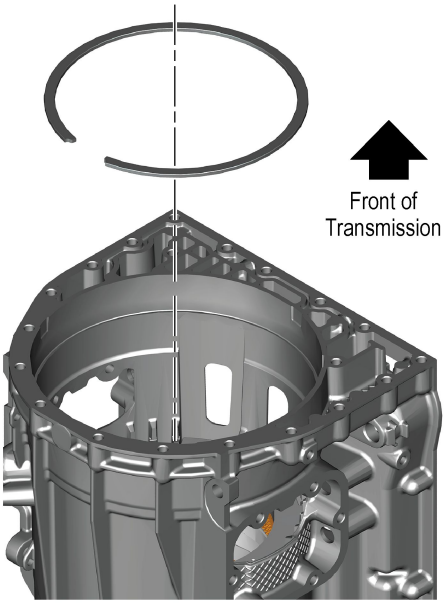

**Figure 14. Transmission Range Sensor (TRS) Installation**

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**NOTE:** TRS installation has a different wiring schematic with two additional wires as compared to the 9-speed without TRS and 6-speed designs. Refer to Troubleshooting Manual (TS8887) to view 9-Speed with TRS wiring schematic for additional details.

### C3 Clutch Retaining Ring

Retaining ring orientation for C3 clutch is important during installation. The retaining ring gap needs to be installed at the 12 o'clock orientation (viewed from the front of the transmission). Refer to Figure 15. Be sure to follow Service Manual (SM8889) instructions for proper retaining ring orientation.




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**Figure 15. C3 Clutch Retaining Ring Orientation**

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### C4 and C5 Clutch Retaining Rings

There are two nested retaining rings for C4 and C5 clutch packs and these retaining ring orientations are critical during installation. The C4 clutch retaining ring gap needs to be installed at the 3 o'clock orientation, and C5 clutch retaining ring gap needs to be installed at the 9 o'clock orientation (both installation orientations viewed from the rear of the transmission). Refer to Figure 16. Be sure to follow Service Manual (SM8889) instructions for proper retaining ring orientation.

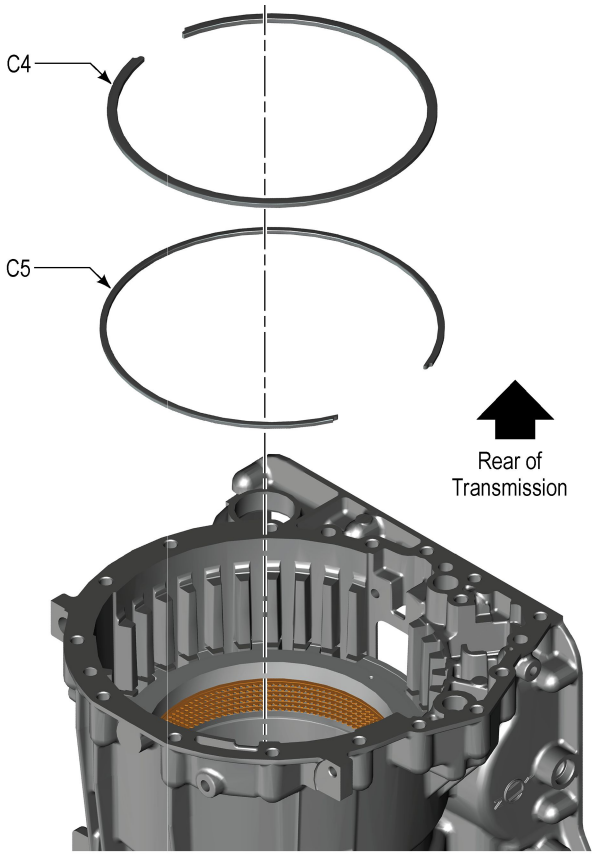



**Figure 16. C4 and C5 Clutch Retaining Ring Orientations**

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### C6 Clutch Retaining Ring

Retaining ring orientation for C6 clutch is important during installation. Retaining ring gap needs to be installed at the 3 o'clock orientation (viewed from the front of the transmission). Refer to Figure 17. Be sure to follow Service Manual (SM8889) instructions for proper retaining ring orientation.

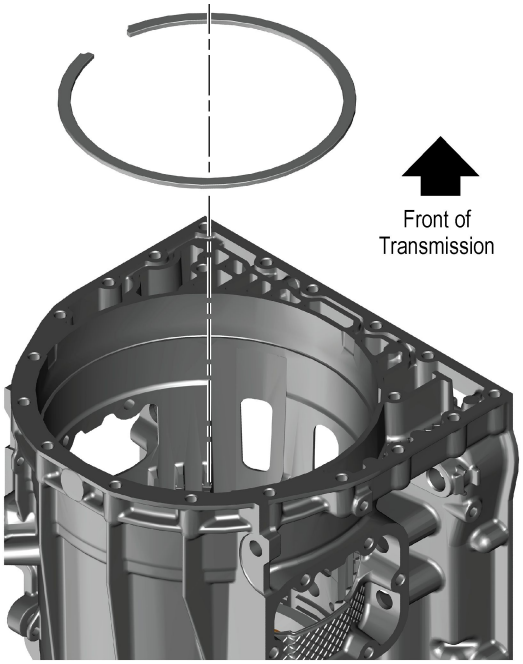



**Figure 17. C6 Clutch Retaining Ring Orientation**

### Technical Publications

The uniqueness of the 9-Speed design requires the need for separate publications from the 1000 Series and 2000 Series 6-speed products. Listed below are the 9-Speed publication numbers that can be referenced when requesting support materials.

- 9-Speed Operator's Manual – OM8888EN
- 9-Speed Parts Catalog – PC8895EN
- 9-Speed Service Manual – SM8889EN
- 9-Speed Troubleshooting Manual – TS8887EN
- 9-Speed Mechanic's Tips – MT8890EN
- 9-Speed Principles of Operation – PO8891EN

### Automatic Transmission Fluid (ATF)

Approved ATF includes TES 668® and TES 295® (while supplies last in channel). Allison will perform final test with TES 668 fluid. Transmissions will ship from Allison to Original Equipment Manufacturers (OEMs) with residual TES 668 fluid and it will be up to OEMs to select their transmission fluid for transmission filling and top-off. Allison Extended Transmission Coverage (ETC) requires the use of Allison Approved fluids per the ETC agreement.

Follow Service Information Letter SIL 10-TR-99 (latest revision) for recommended transmission fluid and filter change intervals. Table 4 provides an excerpt of information from the SIL.

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**Table 4. Recommended Filter Change/Fluid Intervals**

| 9-Speed Fluid And Filter Change Interval Recommendations | | | |
|---|---|---|---|
| | | **Prognostics Turned Off or Not Calibrated in TCM** | **Prognostics Turned On** |
| | **Duty Cycle** | **Allison Approved TES 668® and/or TES 295® Fluid** | **Allison Approved TES 668® and/or TES 295® Fluid** |
| **Fluid** | General* | 150,000 Miles (240,000 km)<br>4,000 Hours<br>48 Months | When indicated by controller or 48 months, whichever occurs first |
| | Severe** | 75,000 Miles (120,000 km)<br>3,000 Hours<br>36 Months | |
| **Spin-On Control Main Filter** | General* | 50,000 Miles (80,000 km)<br>2,000 Hours<br>24 Months | When indicated by controller or 48 months, whichever occurs first |
| | Severe** | 50,000 Miles (80,000 km)<br>2,000 Hours<br>24 Months | |
| **Internal Filter** | All | Overhaul | Overhaul |

* General Vocation: All vocations not classified as Severe
** Severe Vocation: On/Off Highway, City Transit, Shuttle Transit

### Technician Training

Training to support technician capabilities for initial product release is in development. Web training will be accessed via Allison eLEARN™ and announced when available. Training will prepare technicians to perform specific tasks (when requested by Allison's Technical Assistance Center or Service Engineering) related to diagnostics and limited repairs.

Allison requires all Allison Authorized Distributors to have two (2) trained technicians available at each Distributor location as the new 9-Speed product is fielded in the Area of Responsibility (AOR).

### Repair and Replacement Policy

Allison requests that all channel partners, including Allison Authorized Distributorships and Authorized Dealers, establish a new Technical Assistance Center (TAC) case when it encounters a 9-Speed transmission complaint or failure in the field. Having complete TAC case details will allow Allison-Indianapolis to take appropriate actions to help satisfy the customer’s needs. Contact Allison TAC at (800) 252-5283 with complaint and failure details to establish each case.

TAC will escalate cases to Allison’s Service Engineering team for the appropriate guidance and next steps. Channel partners should assume there may be a need for returned parts, components or even the entire transmission.

**Important:** Wait for Service Engineering instructions before removing the 9-Speed transmission from chassis in the event there is additional chassis information needed beforehand.

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### Diagnostic Trouble Codes (DTCs)

Transmission Range Sensor (TRS) diagnostics and wiring are unique to the 9-Speed. Seven DTCs have been developed to help locate any issues within the TRS system or associated circuit(s). Refer to the first seven DTCs listed in Table 5 for specific DTCs. Range verification diagnostics for 7th, 8th and 9th ranges have also been developed, along with three DTCs associated with Pressure Control Solenoid 5 (PCS5).

**NOTE:** 9-Speed uses PCS5 nomenclature for C6 clutch, whereas the 3000 Series™ and 4000 Series™ use 'PCS5' nomenclature for retarder circuits.

**Table 5. New Diagnostic Trouble Codes for 9-Speed Transmissions**

| DTC | DTC Name |
|---|---|
| P0706 | Transmission Range Sensor 1 Circuit Performance |
| P0707 | Transmission Range Sensor 1 Circuit Low |
| P0708 | Transmission Range Sensor 1 Circuit High |
| P2801 | Transmission Range Sensor 1 Circuit Performance |
| P2802 | Transmission Range Sensor 1 Circuit Low |
| P2803 | Transmission Range Sensor 1 Circuit High |
| P2805 | Transmission Range Sensor Plausibility |
| P076F | Incorrect 7th Gear Ratio |
| P07D9 | Incorrect 8th Gear Ratio |
| P07F6 | Incorrect 9th Gear Ratio |
| P2732 | Pressure Control Solenoid (PCS) 5 Stuck Off |
| P2733 | Pressure Control Solenoid (PCS) 5 Stuck On |
| P2737 | Pressure Control Solenoid (PCS) 5 Functional Safety Plausibility and Performance |

Reference the latest revisions of the 9-Speed Troubleshooting Manual (TS8887) and Service Manual (SM8889) to follow prescribed troubleshooting techniques, service procedures and torque specifications for the 9-Speed product.

### Special Tools

To perform overhauls on the 9-Speed transmission, Allison channel partners will need additional special tools for unique removal and installation requirements. A Global Tool Notification Letter will be issued in the future announcing that these tools are available for purchase. Refer to the Global Tool Notification Letter for purchasing guidance upon its release.

Table 6 lists the new, essential special tools that are required to overhaul and/or maintain the 9-Speed transmission. Pictures of these tools can be viewed in Figures 18 through 23. J-53374 C2-P2 Bushing Drive Sleeve (Front) will be used to remove and install the front bushing and install the rear bushing into the C2-P2 drive sleeve. J-53375 C2-P2 Bushing Drive Sleeve (Rear) will be used to remove the rear bushing from the C2-P2 drive sleeve. J-53370 P1-P4 Bushing Drive Sleeve (P1 Carrier) will be used to remove and install the bushings from the P1-P4 drive sleeve and P1 carrier.

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Special tools for 9-Speed transmissions are intended to be acquired in addition to tools required for 1000 Series and 2000 Series 6-speed transmissions.

**Table 6. List of Special Tools to Maintain or Overhaul 9-Speed Transmissions**

| Tool Description | Tool # | Figure Number | Maintenance or Overhaul | New or Update | Essential or Optional |
|---|---|---|---|---|---|
| C2-P2 Bushing Drive Sleeve (Front) | J-53374 | Figure 18 | Overhaul | New | Essential |
| C2-P2 Bushing Drive Sleeve (Rear) | J-53375 | Figure 19 | Overhaul | New | Essential |
| P1-P4 Bushing Drive Sleeve (P1 Carrier) | J-53370 | Figure 20 | Overhaul | New | Essential |
| Breakout Harness and Overlay | J-53376 | Figure 21 | Maintenance | New | Essential |
| Overlay Only for Breakout Harness | J-53376-1 | Figure 21 | Maintenance | New | Essential |
| Allison Diagnostic Optimized Connection (Allison DOC®) | 90510<br>90530 (USB) | Figure 22 | Maintenance & Overhaul | Update | Essential |



6414566

**Figure 18. J-53374 C2-P2 Bushing Drive Sleeve (Front)**



6414656

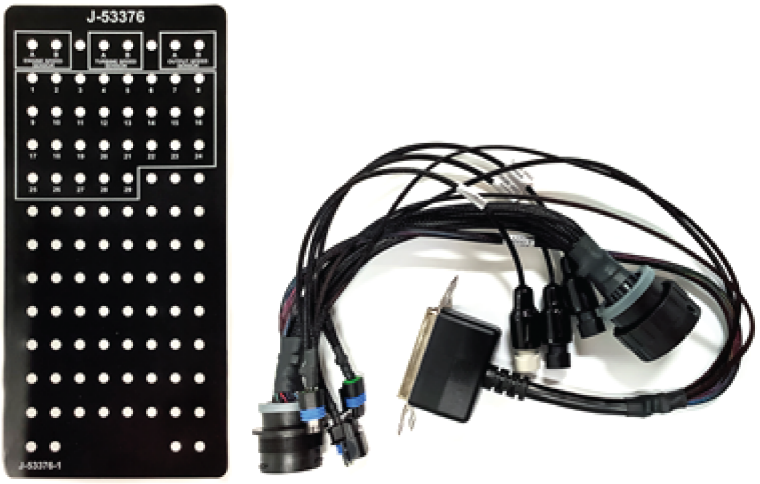
**Figure 19. J-53375 C2-P2 Bushing Drive Sleeve (Rear)**

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**Figure 20. J-53370 P1-P4 Bushing Drive Sleeve (P1 Carrier)**




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**Figure 21. J-53376 Breakout Harness and Overlay and J-53376-1 Overlay Only for Breakout Harness**

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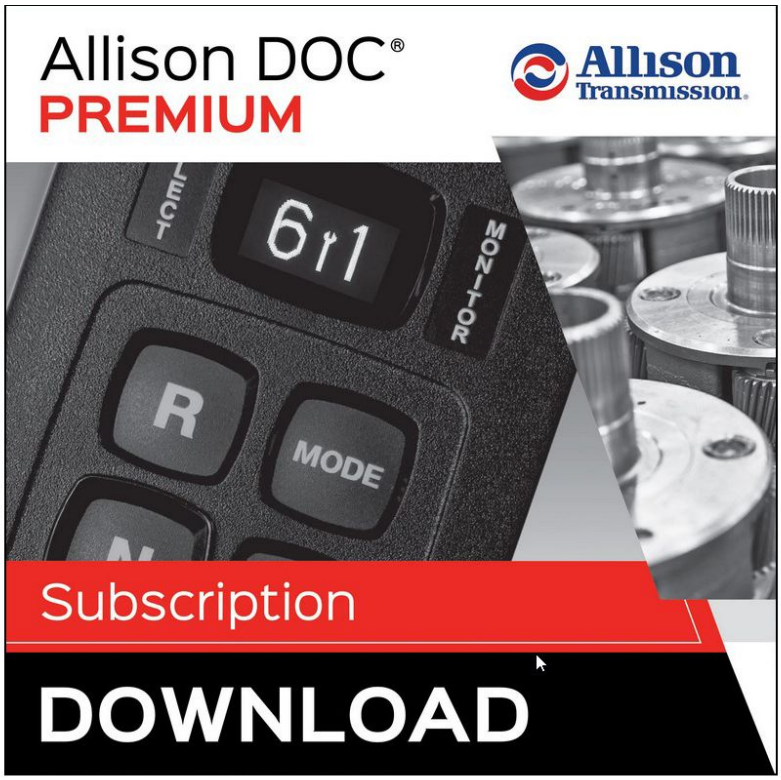



**Figure 22. Allison Diagnostic Optimized Connection (Allison DOC 90510 and 90530 USB)**

### Service Parts

New service parts have been released to maintain and repair the new 9-Speed design. Reference the 9-Speed Parts Catalog (PC8895) for complete bill of materials, illustrations, cross sectional drawings and support equipment options. Contact your Allison Parts Distribution Center Order Administrator to place service parts orders.

ReTran® offerings are not currently available but are being evaluated for future release.

**Table 7. Unique 9-Speed Service Parts**

| Service P/N | Part Description | Quantity per Transmission | Engineering Group |
|---|---|---|---|
| 29558527 | HOUSING-CLUTCH, C3 PISTON | 1 | 01-912 |
| 29558532 | PLATE-BACKING, C6 | 1 | 01-912 |
| 29558533 | RETAINING RING-INT, C6 BACKING PLATE | 1 | 01-912 |
| 29558535 | SEAL-EXTERNAL, C6 PISTON | 1 | 01-912 |
| 29558536 | SEAL-INTERNAL, C6 PISTON | 1 | 01-912 |
| 29558549 | PLATE-BACKING, C3 | 1 | 01-912 |
| 29558550 | RETAINING RING-INT, C3 BACKING PLATE | 1 | 01-912 |
| 29558556 | PLATE-BACKING, C5 | 1 | 01-912 |

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**Table 7. Unique 9-Speed Service Parts *(cont'd)***

| Service P/N | Part Description | Quantity per Transmission | Engineering Group |
|---|---|---|---|
| 29559016 | BOLT-FLANGED HEX, M6 X 1.0, 35 | 1 | 01-912 |
| 29560876 | PISTON-APPLY, C6 | 1 | 01-912 |
| 29561225 | PLATE-COVER | 1 | 01-912 |
| 29561970 | SEAL-TRANSFER, C3 | 1 | 01-912 |
| 29562728 | HOUSING ASSEMBLY-MAIN | 1 | 01-912 |
| 29562879 | PLUG-SEAL | 1 | 01-912 |
| 29563885 | CLIP-CONNECTOR, C-SHAPE, FLAT, 29W PASS- | 1 | 01-912 |
| 29565090 | CAP-SHIPPING, CONNECTOR, 29W-INTERNAL HA | 1 | 01-912 |
| 29546314 | ASSY - STOP AND O'RING | 1 | 10-675 |
| 29569147 | SLEEVE-GROUND, SHAFT | 1 | 10-675 |
| 29569360 | SLEEVE ASSEMBLY-GROUND, W/BUSHING | 1 | 10-675 |
| 29569630 | SUPPORT ASSEMBLY-FRONT, W/GND SLEEVE AND BEARING | 1 | 10-675 |
| 29558540 | BUSHING-BRONZE, C2-P2 FLANGE | 1 | 14-1141/-1142 |
| 29560380 | BUSHING-BRONZE, P2 CARRIER | 1 | 14-1141/-1142 |
| 29565907 | BUSHING-BRONZE, C2-P2 | 1 | 14-1141/-1142 |
| 29558517 | GEAR-RING, P4 | 1 | 14-1142 |
| 29558552 | GEAR-RING, P1 | 1 | 14-1142 |
| 29558595 | RETAINING RING-INT, P4 RING GEAR | 1 | 14-1142 |
| 29558597 | PLATE-SUPPORT, THRUST BEARING, P4 FLANGE | 1 | 14-1142 |
| 29558635 | GEAR ASSEMBLY-SUN, GEAR P4 | 1 | 14-1142 |
| 29559129 | BEARING-THRUST, T8 | 1 | 14-1142 |
| 29559242 | CARRIER ASSEMBLY-PLANETARY, P1 (w/ Pinions) | 1 | 14-1142 |
| 29559859 | CARRIER ASSEMBLY-PLANETARY, P4 | 1 | 14-1142 |
| 29559861 | GEAR-RING, P2 | 1 | 14-1142 |
| 29560414 | CARRIER ASSEMBLY-PLANETARY, P2 | 1 | 14-1142 |
| 29560909 | SLEEVE ASSEMBLY-BUSHING, P1-P4 DRIVE | 1 | 14-1142 |
| 29562692 | SEALRING-PISTON, EXTERNAL | 1 | 14-1142 |
| 29563897 | SHAFT ASSEMBLY-TURBINE | 1 | 14-1142 |
| 29565039 | SHAFT-MAIN | 1 | 14-1142 |
| 29565070 | GEAR-SUN, P2 | 1 | 14-1142 |
| 29565072 | RETAINING RING-INT, STRAIGHT | 1 | 14-1142 |
| 29565120 | SLEEVE ASSEMBLY-BUSHING, C2-P2 DRIVE | 1 | 14-1142 |
| 29565455 | WASHER-THRUST, P4 PLANET | 10 | 14-1142 |

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**Table 7. Unique 9-Speed Service Parts *(cont'd)***

| Service P/N | Part Description | Quantity per Transmission | Engineering Group |
|---|---|---|---|
| 29565830 | RETAINING RING-INT, STRAIGHT | 1 | 14-1142 |
| 29566185 | FLANGE-DRIVE, P4 RING GEAR | 1 | 14-1142 |
| 29566556 | WASHER-THRUST, C2 HUB | 1 | 14-1142 |
| 29558922 | SPRING-HELICAL COMPN, GROUND ENDS, SV1, | 2 | 16-1929 |
| 29559256 | BALL-CARBON STEEL | 1 | 16-1929 |
| 29559332 | BOLT-HEAVY FLANGED HEX, M6 X 1.0, 35 | 4 | 16-1929 |
| 29560651 | SOLENOID-TRIM, NORM LOW, VFS (GREEN) | 3 | 16-1929 |
| 29560652 | SOLENOID-TRIM, NORM HIGH, VFS (BLUE) | 4 | 16-1929 |
| 29561082 | VALVE-PLUG | 8 | 16-1929 |
| 29561086 | RETAINER-SOLENOID, PCS3, PCS5 | 1 | 16-1929 |
| 29561087 | RETAINER-SOLENOID, PCS1 | 1 | 16-1929 |
| 29561093 | PLUG-ACCUMULATOR | 7 | 16-1929 |
| 29561094 | SPRING-HELICAL COMPN, ACCUMULATOR | 7 | 16-1929 |
| 29561099 | VALVE-SHIFT, SV1 | 1 | 16-1929 |
| 29563879 | HARNESS-WIRING, INTERNAL, 29W MD9 | 1 | 16-1929 |
| 29563964 | VALVE-PRESSURE, BOOST, PCV2 | 1 | 16-1929 |
| 29563965 | VALVE-CONTROL, PRESSURE, TCC, PCV2 | 2 | 16-1929 |
| 29563967 | VALVE-TRIM, CLUTCH, PCV1/PCV5 | 2 | 16-1929 |
| 29563968 | VALVE-CONTROL, PRESSURE, PCV3 | 1 | 16-1929 |
| 29563969 | VALVE-SHIFT, SV3 | 1 | 16-1929 |
| 29564193 | BODY ASSEMBLY-VALVE, MAIN, PIN, (MD9) | 1 | 16-1929 |
| 29564194 | BODY ASSEMBLY-VALVE, CHECK BALL, SHIFT B | 1 | 16-1929 |
| 29564200 | MODULE-CONTROL ASSEMBLY | 1 | 16-1929 |
| 29564529 | VALVE-RELIEF, CONTROL MAIN RELIEF | 1 | 16-1929 |
| 29564805 | VALVE-SHIFT, SV2 | 1 | 16-1929 |
| 29564837 | SPRING-HELICAL COMPN, GROUND ENDS, SV2 | 1 | 16-1929 |
| 29564838 | SPRING-COMPRESSION, BOOST PCV2 | 1 | 16-1929 |
| 29565056 | SPRING-HELICAL COMPN, PCV | 6 | 16-1929 |
| 29565348 | CLIP-SPRING, RETAINING | 6 | 16-1929 |
| 29568490 | VALVE-CONTROL, PRESSURE, PCV4 | 1 | 16-1929 |
| 29569893 | PLATE-SEPARATOR, 1.5MM (RUBBERIZED) | 1 | 16-1929 |
| 29564811 | RETAINER-SOLENOID, ASSEMBLY | 1 | 16-1929/-1930 |
| 29563880 | HARNESS-WIRING, INTERNAL, 29W MD9 TRS | 1 | 16-1930 |
| 29564828 | MODULE-CONTROL ASSEMBLY, TRS | 1 | 16-1930 |

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**Table 7. Unique 9-Speed Service Parts *(cont'd)***

| Service P/N | Part Description | Quantity per Transmission | Engineering Group |
|---|---|---|---|
| 29564108 | CONVERTER ASSEMBLY-TORQUE, TC210 | 1 | 21-975 |
| 29564107 | CONVERTER ASSEMBLY-TORQUE, TC211 | 1 | 21-976 |
| 29564109 | CONVERTER ASSEMBLY-TORQUE, TC221 | 1 | 21-977 |
| 29564110 | CONVERTER ASSEMBLY-TORQUE, TC222 | 1 | 21-978 |
| 29565110 | CONVERTER ASSEMBLY-TORQUE, TC222H | 1 | 21-979 |
| 29564111 | CONVERTER ASSEMBLY-TORQUE, TC211D | 1 | 21-980 |
| 29564112 | CONVERTER ASSEMBLY-TORQUE, TC221D | 1 | 21-981 |
| 29564113 | CONVERTER ASSEMBLY-TORQUE, TC222D | 1 | 21-982 |
| 29562924 | PAN ASSEMBLY-OIL, SHALLOW SUMP | 1 | 37-602 |
| 29565334 | SCREW-ROUND, PAN, 6 LOBE, T30 | 10 | 37-602 |
| 29569044 | FILTER-OIL, SUCTION, WELDED | 1 | 37-602 |
| 29536850 | SHIM-SELECTIVE, (SEE CHART 29536849) | 1 | 39-1077 thru -1088 |
| 29536851 | SHIM-SELECTIVE, (SEE CHART 29536849) | 1 | 39-1077 thru -1088 |
| 29536852 | SHIM-SELECTIVE, (SEE CHART 29536849) | 1 | 39-1077 thru -1088 |
| 29536853 | SHIM-SELECTIVE, (SEE CHART 29536849) | 1 | 39-1077 thru -1088 |
| 29536854 | SHIM-SELECTIVE, (SEE CHART 29536849) | 1 | 39-1077 thru -1088 |
| 29536855 | SHIM-SELECTIVE, (SEE CHART 29536849) | 1 | 39-1077 thru -1088 |
| 29536856 | SHIM-SELECTIVE, (SEE CHART 29536849) | 1 | 39-1077 thru -1088 |
| 29565337 | SHIM-SELECTIVE, (SEE CHART 29536849) | 1 | 39-1077 thru -1088 |
| 29565338 | SHIM-SELECTIVE, (SEE CHART 29536849) | 1 | 39-1077 thru -1088 |
| 29570435 | TRANSMISSION RANGE SENSOR (TRS) KIT | 1 | SERVICE KITS |
| 29542697 | SCREW, M5 X 0.8 X 20 MM SOCKET HD CAP | 1 | SERVICE KITS |
| 29559241 | PIN, CLEVIS | 1 | SERVICE KITS |
| 29563400 | SENSOR, TRANSMISSION RANGE (TRS) | 1 | SERVICE KITS |
| 29571188 | INSTRUCTION SHEET NO. 375. | 1 | SERVICE KITS |

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