



**Countries:** CANADA, UNITED STATES **Document ID:** IK1300186  
**Availability:** ISIS, FleetSIS, Body Builder, IsSIR **Revision:** 0  
**Major System:** TRANSMISSION **Created:** 8/5/2020  
**Current Language:** English **Last Modified:** 8/12/2020  
**Other Languages:** NONE **Author:** Charles Schroeder  
**Viewed:** 79

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Coding Information

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**Title:** Auxiliary Transmission Diagnostics

**Applies To:** Vehicles with feature 0013607 or 0013PNB controlled by DLB feature 0597268

## CHANGE LOG

Please refer to the change log text box below for recent changes to this article:

10/8/10/2020 - Initial Article Release.

## DESCRIPTION

Overview information on the auxiliary transmission. This feature allows the driver to switch between Low, Neutral and High gears for the Auxiliary Transmission. Low gear provides more torque for better rough off-road hauls. High gear is for normal driving. To shift ranges, the vehicle must be stationary (no vehicle speed), and the ignition must be on. The system is controlled by a 3 position multiplexed switch, located in the center panel switch pack. The Body Control Module (BCM) will send voltage to air solenoids depending on switch location. If a fault code is active, the air solenoids will maintain last known state if possible.

## SYMPTOMS

**Diagnostic Trouble Codes & Dashboard Indicator Lights:**

DTC/Light	Description
SPN 3957 FMI 5	Auxiliary Transmission Constant Supply Actuator : Current Below Normal Or Open Circuit
SPN 3958 FMI 5	Auxiliary Transmission High Range Actuator : Current Below Normal Or Open Circuit
SPN 3959 FMI 5	Auxiliary Transmission Neutral Actuator : Current Below Normal Or Open Circuit
SPN 3957 FMI 6	Auxiliary Transmission Constant Supply Actuator : Current Above Normal Or Grounded Circuit
SPN 3958 FMI 6	Auxiliary Transmission High Range Actuator : Current Above Normal Or Grounded Circuit
SPN 3959 FMI 6	Auxiliary Transmission Neutral Actuator : Current Above Normal Or Grounded Circuit

**Customer Observations or Concerns:**

- Stuck in Low Range
- Stuck in High Range
- Auxiliary transmission will not shift

## SPECIAL TOOLS / SOFTWARE

Tool Description	Tool Number	Comments	Instructions
Diamond Logic® Builder (DLB)		EZ-Tech Software	

**SERVICE PARTS INFORMATION**

Kit Description	Part Number	Quantity Required	Notes
BASE, MOUNTING SOLENOID 4 PACK	2505594C1	As Needed	
KIT AIR BRK SOLENOID N.C. 12V (VALVE, SOLENOID AUXILIARY TRANSMISSION)	2506711C91	As Needed	

**DIAGNOSTIC STEPS**

Step	Action	Decision
#1	<b>DIAGNOSTIC:</b> Use DLB to check for system faults.	<b>Yes:</b> Perform Circuit Checks from Body Control Module (BCM) to Air Solenoid Switch Packs
	<b>Is a fault code present for any Auxiliary Transmission Solenoids?</b>	<b>No:</b> Continue to Step 2

Step	Action	Decision
#2	<b>DIAGNOSTIC:</b> Review auxiliary transmission shifting	<b>Yes:</b> Verify driver complaint.
	<b>Does the auxiliary transmission shift properly?</b>	<b>No:</b> Verify air line routing from air solenoids to auxiliary transmission air ports.

**REPAIR STEP(S)**

Below is designed operation of this feature. The Low Air Solenoid will provide constant pressure to the Auxiliary Transmission as required. When the switch state changes the Neutral and High air solenoids will energize or de-energize. Make a session in DLB for feature 597268 to monitor the switch state and air solenoid outputs. For more information on making a session in DLB, please refer to [IK2600008 - How to Diagnose Electrical Problems with Diamond Logic Builder](#). Solenoid location may vary by application. The location shown below on the left frame rail is typical. It may be located on a crossmember as well. The table below outlines which solenoids will be active for each range.

- To troubleshoot a fault code, use the wiring schematic information to check the wiring from the BCM to the Air Solenoid Pack for the solenoid that has a fault
- To troubleshoot a shifting complaint, verify the air solenoids are being commanded properly, and that the air lines are connected to the correct port on the auxiliary transmission

Air Solenoid Operation		
Low Range	Neutral	High Range
Low Air Solenoid = Active Neutral Air Solenoid = Inactive High Air Solenoid = Inactive	Low Air Solenoid = Active Neutral Air Solenoid = Active High Air Solenoid = Inactive	Low Air Solenoid = Active Neutral Air Solenoid = Inactive High Air Solenoid = Active

DLB Session 0597268

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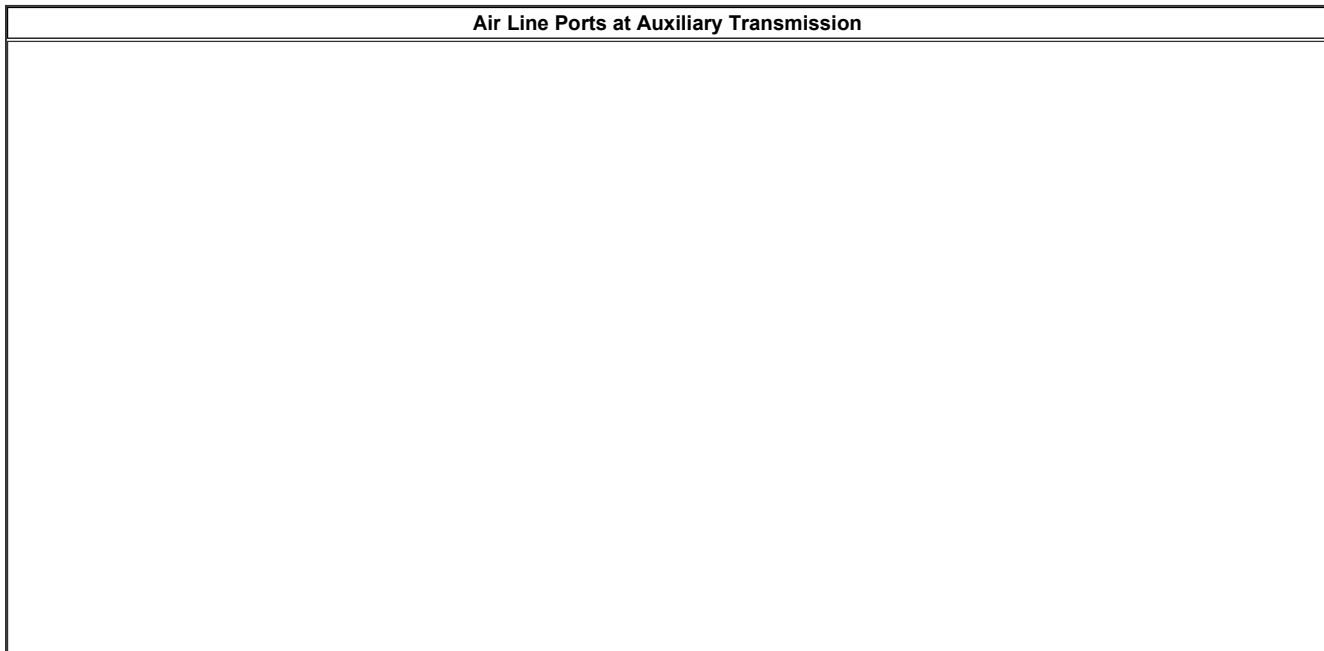
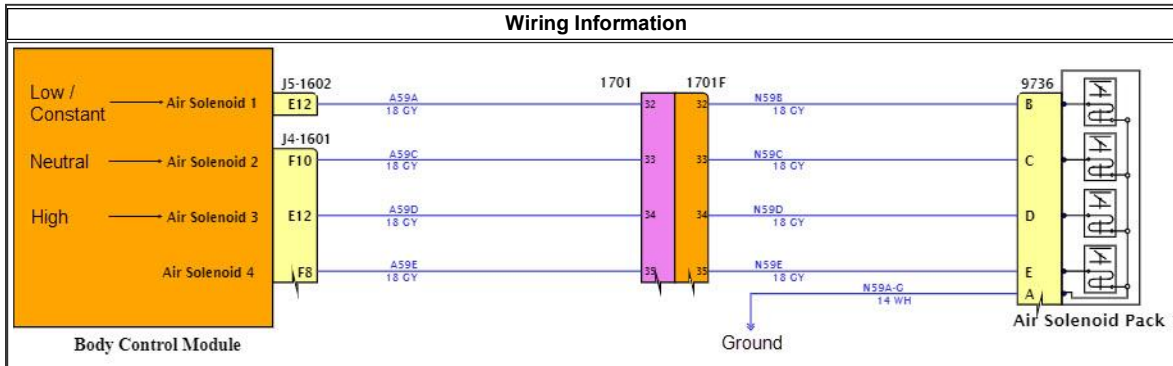
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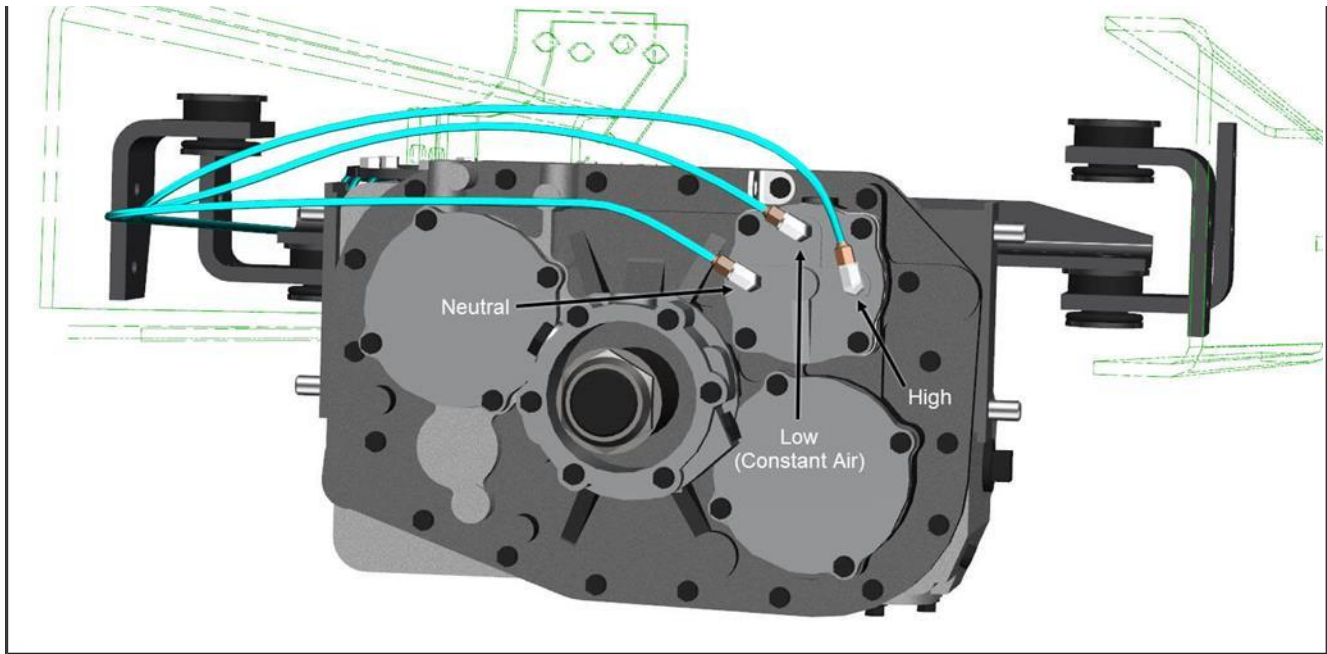
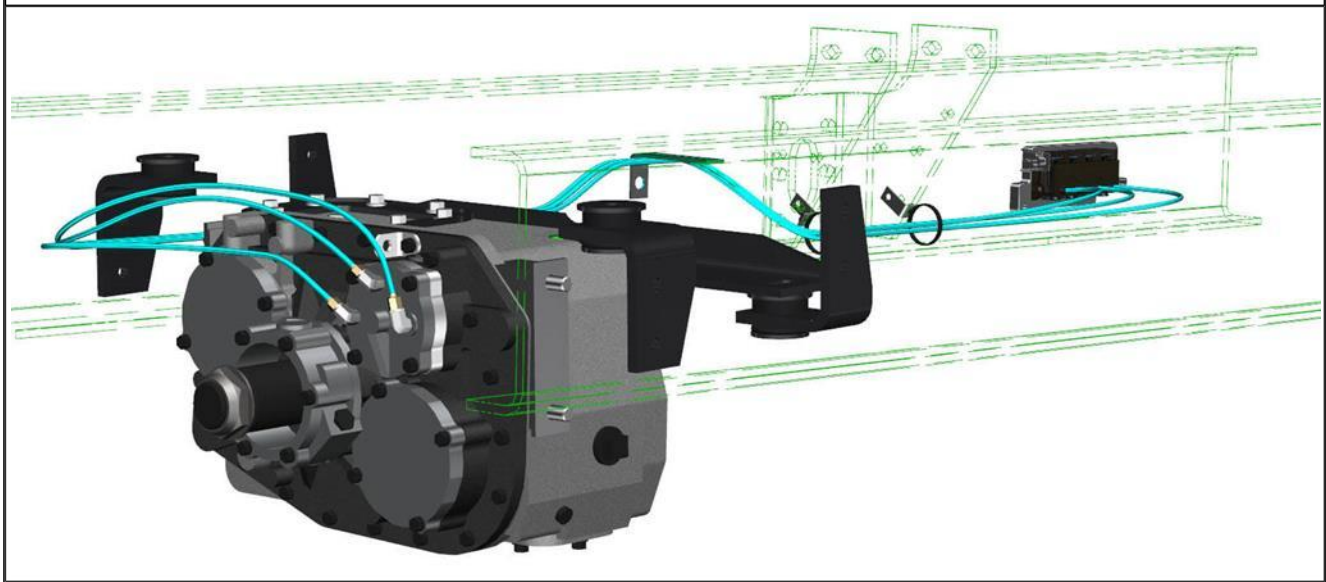
Session: 0597268

Signal	Pins	Signal Type	Description	Unit
Aux_Xmsn_Hi_Switch		J1939 Input	indicates when the Aux transmission switch is in the high position.	On/Off
Aux_Xmsn_Lo_Switch		J1939 Input	indicates when the Aux transmission switch is in the low position.	On/Off
Aux_Xmsn_Solenoid_A_Cmd	1602-E12	Digital Output	command for the Aux Transmission Solenoid in the SSC 4 pack air solenoid module	On/Off
Aux_Xmsn_Solenoid_B_Cmd	1601-F10	Relay Driver Output	command for the Aux transmission solenoid in the SSC 4 pack	On/Off
Aux_Xmsn_Solenoid_C_Cmd	1601-E12	Relay Driver Output	Command used to drive the Air solenoid attached to the Aux transmission High port.	On/Off
Ignition				
Vehicle_Speed				mph

Chart represents most recent recording.

- Aux\_Xmsn\_Solenoid\_A\_Cmd (1602-E12) controls Low Range (Constant Air)
- Aux\_Xmsn\_Solenoid\_B\_Cmd (1601-F10) controls Neutral
- Aux\_Xmsn\_Solenoid\_C\_Cmd (1601-E12) controls High Range



**Solenoid and Airline Overview**

## **WARRANTY INFORMATION**

### **Warranty Claim Coding:**

Refer to the [Warranty Coding Manual](#) for Group and Noun Codes.

### **Standard Repair Time(s):**

Refer to the [SRT Manual](#) for Repair Times

## **OTHER RESOURCES**

[Master Service Information Site](#)

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