NEUTRAL IDLE CONTROL

COMPLAINT: A GM vehicle with a 6T40 transmission has a complaint of dropping in and out of gear at a stop. A scan for codes indicated a P057B was set for a Brake Pedal Position Sensor (BPPS) fault. Initially the technician did not see the connection between the code and what the vehicle was doing.

With the idea of seeing something in the data list that would help with this complaint, the technician switched the scan tool to data. What was seen was that Pressure Control Solenoid 5 was cycling on and off as the transmission would drop in and out of gear. It was also noted that the brake position sensor voltage would change even though the foot brake was constantly applied.

CAUSE: Starting in the 2012 model year, the GM Neutral Idle Control feature was introduced which allows the transmission to be put into a neutral state when at a stop with the foot brake applied. This was done as a fuel saving feature. Due to the malfunction of the Brake Pedal Position Sensor (see figure 1 for sensor location), the TCM would react to the voltage variation of the BPPS causing the Neutral Idle Control to engage and release which resulted in the dropping in and out of gear condition.

If you encounter this complaint, a simple test to perform is to put the gearshift lever into the manual shift position. The Neutral Idle Control will not activate in the manual shift position and the dropping in and out of gear will cease. Another way to accomplish this is to apply the parking brake instead of the foot brake, in both cases Neutral Idle Control will not be activated which stops the dropping in and out of gear condition.

CORRECTION: Replacing the Brake Pedal Position Sensor and performing the BPPS relearn procedure corrected the complaint.

SERVICE INFORMATION:

Neutral Idle Control can only be commanded ON when the transmission is operating in the drive range, first gear. When the foot brake is applied and vehicle speed, throttle position and transmission temperature meet the necessary requirements for Neutral Idle Control, it will then disengage. The low/reverse clutch will remain applied while the TCM will command Pressure Control Solenoid 5 to exhaust 1-2-3-4 clutch pressure putting the transmission into a neutral state. This is why PCS 5 was cycling along with the BPPS varying voltage which caused the 1-2-3-4 clutch to apply and release resulting in the dropping in and out of gear condition. This can also be seen when using the scan tool to view input speed versus engine speed. When Neutral Idle Control is not active input rpm will be zero as seen in figure 2. When Neutral Idle Control is active, input speed will nearly match engine and input speed as seen in figure 3.

NOTE: There is no indication on the instrument cluster or the scan tool that Neutral Idle Control has been activated. No RPO number can be found as to which vehicles may have this feature and which do not.

GM NEUTRAL IDLE CONTROL

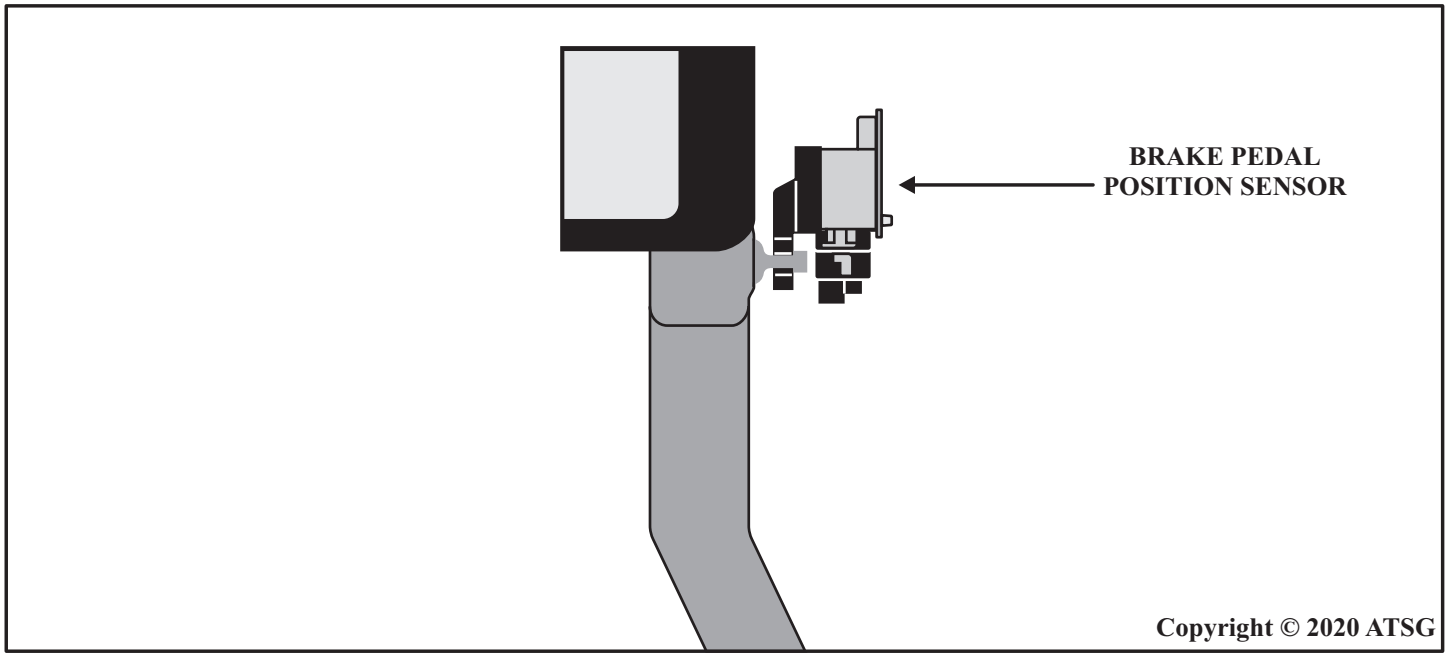

Figure 1

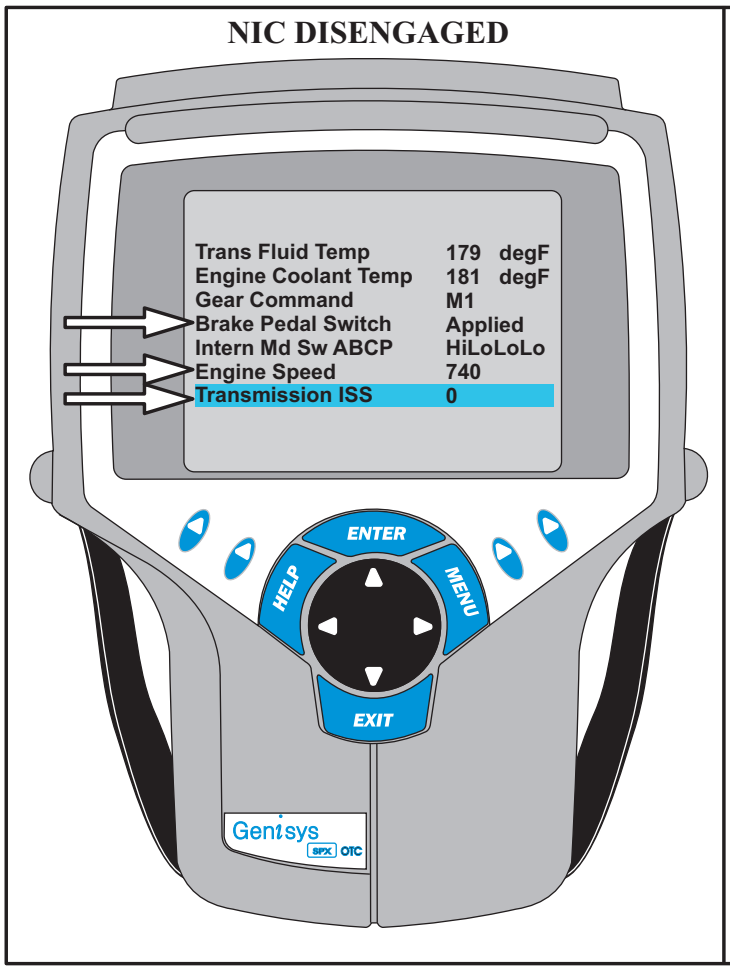

Figure 2

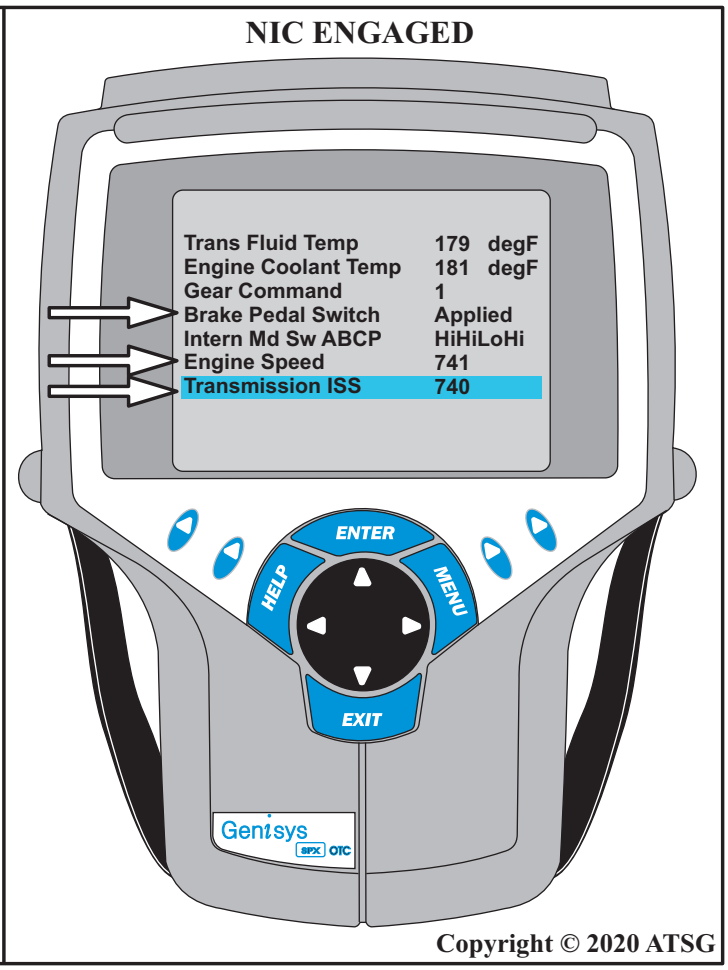

Figure 3