Component Description

To change gear position the driver selects P R N or D by rotating the GSM dial or M by pressing the M button on the GSM when the rotary dial is in D to select the manual mode. The GSM senses the dial position and sends a request over the Subnet Network and the High Speed Controller Area Network 2 (HS2-CAN), through the GWM over the High Speed Controller Area Network 1 (HS1-CAN) to the PCM. The PCM receives the input from the GSM, combines in vehicle conditions and moves the transmission to the commanded position. The PCM reads the TR sensor and confirms the correct position has been achieved.

There is a redundant Transmission Controller Area Network (TRANS-CAN) that allows the GSM to communicate directly with the PCM in the event of a malfunction in the HS1-CAN, the HS2-CAN or the GWM.

GSM

The GSM rotary dial has Hall-effect sensors that are used as inputs to indicate the dial has been rotated. When P is selected above 5 mph (8 km/h) N is provided along with a message in the IPC. The Brake Transmission Shift Interlock (BTSI) CAN signal is used for normal function to shift from P.

RCM

The shift by wire system uses the driverâ€™s safety belt buckle as one of several inputs to determine driver presence. If the buckle is deemed faulty for any reason the system reads this as unbuckled so that any time the door transitions to open below a set speed the PCM commands a to return to P.

PCM

The PCM actuates the transmission in place of a conventional selector lever and selector lever cable. It receives commands from the GSM over the High Speed CAN.

IPC

The IPC receives signals from the PCM and displays the current range of the transmission on the PRNDM. Under some circumstances messages from the shift by wire system are also displayed for the customer on the multifunction display. For example, Press Brake to shift from Park is displayed when an attempt to shift out of P and the brake is not pressed.

BCM

The BCM provides Brake Transmission Shift Interlock (BTSI) information, GSM LED intensity status, electronic door lock commands, and ignition status to the GSM and PCM. The BCM is also responsible for customizing BTSI and other signals based on local regulations and vehicle features.

Rotary Dial Shift Modes

Automatic Return to Park

NOTE: *This feature does not operate when the vehicle is in Stay In Neutral Mode.*

The vehicle has a safety feature that automatically shifts the transmission into P when any of the following conditions are met at low speed:

- The ignition is turned off and vehicle falls below low speed threshold.
- Opening the driver door while the seat belt is unbuckled.
- Unbuckling the seat belt while the driver door is open.

Stay in Neutral Mode

If it is necessary for the vehicle to stay in N without the driver present, such as being pulled through a car wash, this mode disables Return to Park. In Stay in Neutral the system remains awake draining the battery if the engine is off. When you enter neutral at low speed Press M to Enter Stay in Neutral will be displayed. If the driver presses the M button within 5 seconds, the message Stay in Neutral Mode appears on the multifunction display. During this mode the N position on the GSM flashes continuously and the instrument cluster will display N as the selected gear. To exit Stay in Neutral Mode, shift out of N.

If the battery discharges while in Stay in Neutral Mode, the park lock pawl solenoid releases and transmission returns to P. Do not tow the vehicle in this mode. Neutral Hold exits 30 minutes after the ignition key is turned OFF resulting in transmission returning to P.

Emergency Tow Mode

Refer to: Transmission Park by Wire Manual Release (307-05A Automatic Transmission External Controls - 10-Speed Automatic Transmission â€“ 10R60, General Procedures).
for information on moving the transmission out of P with the engine off.