| General Service Bulletin (GSB): | Fusion Gearshift Module (GSM) Illumination Strategy |
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| GSB Overview: | This GSB provides information to aid in the understanding of the Gearshift Module (GSM) illumination strategy on 2017 and newer MY Fusion / Fusion Hybrid vehicles. |
| NOTE: This information is not intended to replace or supersede any warranty, parts and service policy, Work Shop Manual (WSM) procedures or technical training or wiring diagram information. | |

**Included in this GSB is information on the following GSM topics:**

- General Information
- Illumination Overview
- Section 1 – Illumination Strategy for GSM Software Level Prior to 'AL'
- Section 2 – Illumination Strategy for GSM Software Level 'AL' and after:
- GSM Software Level Identification
- Important Notes

## General Information:

The Gearshift Module (GSM) is used on select vehicles allowing the driver to change gear position, P R N D or L, by rotating the GSM dial.

Information on the GSM can be found in the 'Transmission' section of the vehicle Owner Guide. Additional information, including Description and Operation, Diagnosis and Testing and Removal and Installation procedures can be found in the Section 307-05,'Automatic Transmission External Controls', of the appropriate Workshop Manual.



Figure 1 – GSM Examples

## Illumination Overview:

The GSM is required to turn on in the event of vehicle Controller Area Network (CAN) communication. The GSM will also indicate gear position, and depending on software level, illuminate backlighting and halo ring upon any CAN communication.

**NOTE:** Due to a difference in the illumination strategy, information beyond this point have been broken into two sections. Section 1 applies to GSMs with software levels prior to 'AL' and Section 2 for GSMs software levels 'AL' and after.

## Section 1 – Illumination Strategy for GSM Software Level Prior to 'AL':

With key off, the GSM will indicate, illuminate PRNDS/L, and have the halo ring lit upon any CAN communication for the duration that CAN is awake, plus an additional 60 seconds.  Pressing the center 'S' or 'L' button on the GSM will initiate a CAN signal which will result in indication, illumination, and halo ring all turning on for the full duration of CAN awake, plus 60 seconds. This is the only way the GSM can initiate CAN communication.  CAN communication can also start, but is not limited to, unlocking the vehicle, opening the door, or stepping on the brake pedal. Depending on how CAN wake up is initiated, will result in different durations of CAN wake up and as a result, also affect the duration of the GSM lighting up. (For example, pressing the brake pedal will keep CAN up longer than opening the driver door).
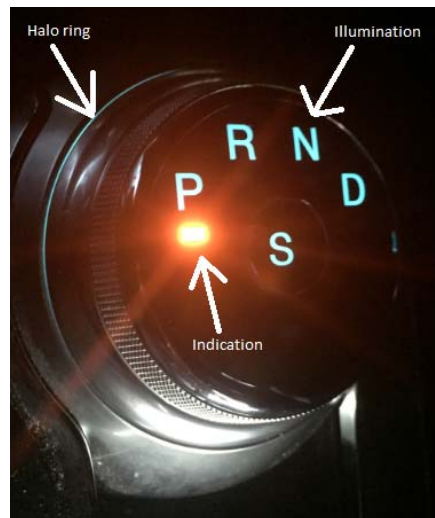


Figure 2 - GSM with halo ring, illumination and indication all turned on and labelled.

Fusion, Non Hybrid, vehicles complete routine system checks at 5, and 10, minutes after shutdown. Fusion Hybrids will complete an additional check at 30 minutes.  During this time the GSM will indicate, illuminate, and have halo ring lit for the full duration of CAN communication, plus an additional 60 seconds.  Depending on the duration of CAN being awake, the GSM can stay fully lit (Indication, illumination, and halo ring) for longer than 5 minutes. **If the GSM is lit indefinitely, this is a sign that a module is keeping CAN awake.**

In the event an overcurrent condition is found at fuse 12, this is indicative that either the Front Controls Interface Module (FCIM) or GSM is drawing power. If the GSM is found to be drawing current, keep in mind the GSM is required to stay awake to communicate with the vehicle at all times during an active CAN signal. **If CAN bus is awake with key on, a current draw of 276mA at fuse F12 is considered normal operation.  If CAN bus is awake with key off, a current draw of 210mA at fuse F12 is considered normal operation.  When CAN bus is in sleep mode, a current draw of less that 1mA at fuse F12 is considered normal operation.**
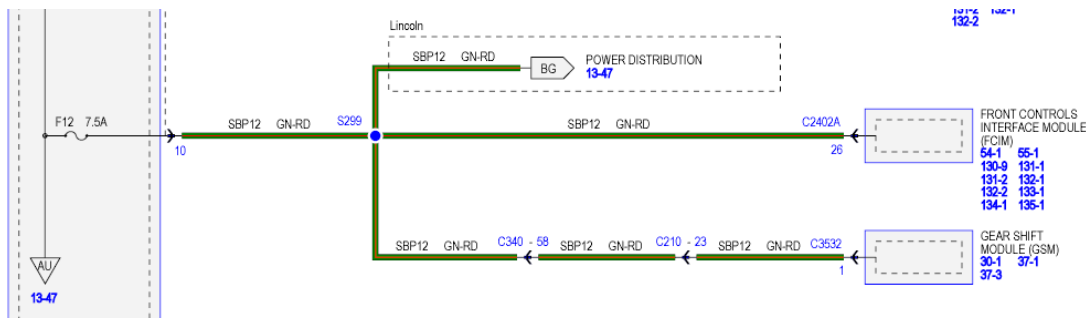
Fig 3: Fuse 12 contains both the Gear Shift Module and the Front Controls Interface Module.

## Section 2 – Illumination Strategy for GSM Software Level 'AL' and after:

With key off, the GSM will indicate gear position for 5 seconds upon any CAN communication. Once CAN communication has ended, a one minute timer is initiated. After the initial 5 second indication, the GSM will not indicate again on additional CAN signals until the one minute timer has completed, after which, any additional CAN signal will repeat the cycle starting with 5 second indication. Pressing the center 'S' or 'L' button of the GSM will initiate a CAN signal which could result in indication if the CAN is not already up and the one minute timer within the GSM has completed after the last CAN signal ended. This is the only way the GSM can initiate CAN communication. CAN communication can also start, but is not limited to, unlocking the vehicle, opening the door, or stepping on the brake pedal. With software after AL level, the GSM will not illuminate PRNDS/PRNDL and halo light unless the vehicle senses 'night' mode **and** the headlights are on. If these conditions are not met, the GSM will only indicate gear position.
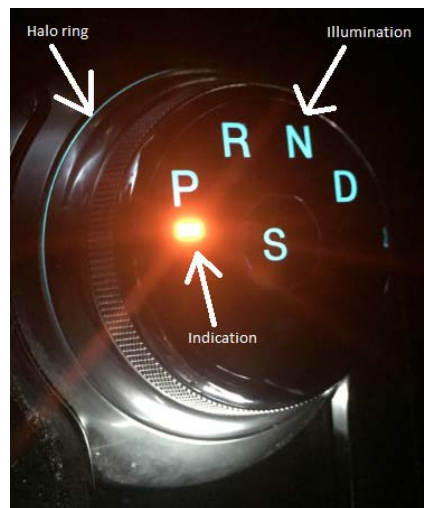


Fig 4. Picture of GSM with halo ring, illumination, and indication all turned on and labelled.

Fusion, Non Hybrid, vehicles complete routine system checks at 5, and 10, minutes after shutdown. Fusion Hybrids will complete an additional check at 30 minutes. During this time the GSM will be lit for 5 seconds due to CAN bus wake ups.

In the event an overcurrent condition is found at fuse 12, this is indicative that either the Front Controls Interface Module (FCIM) or GSM is drawing power. If the GSM is found to be drawing current, keep in mind the GSM is required to stay awake to communicate with the vehicle at all times during an active CAN signal, even if the GSM is not illuminated or indicating gear position. **If CAN bus is awake with key on, a current draw of 276mA at fuse F12 is considered normal operation. If CAN bus is awake with key off, a current draw of 210mA at fuse F12 is considered normal operation. When CAN bus is in sleep mode, a current draw of less than 1mA at fuse F12 is considered normal operation.**
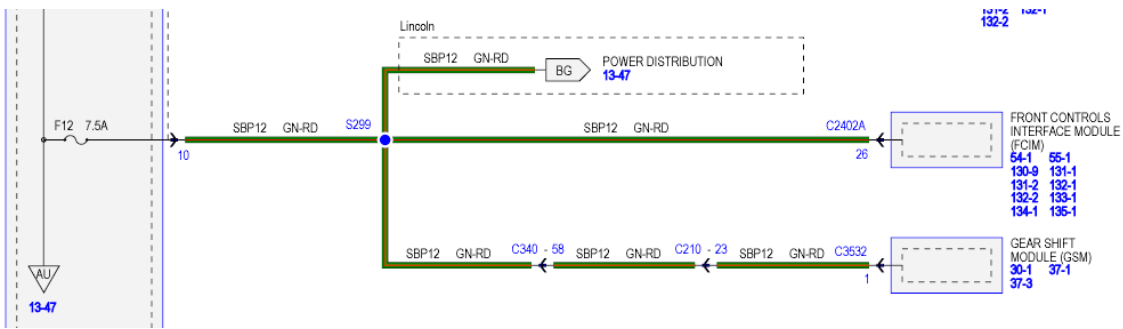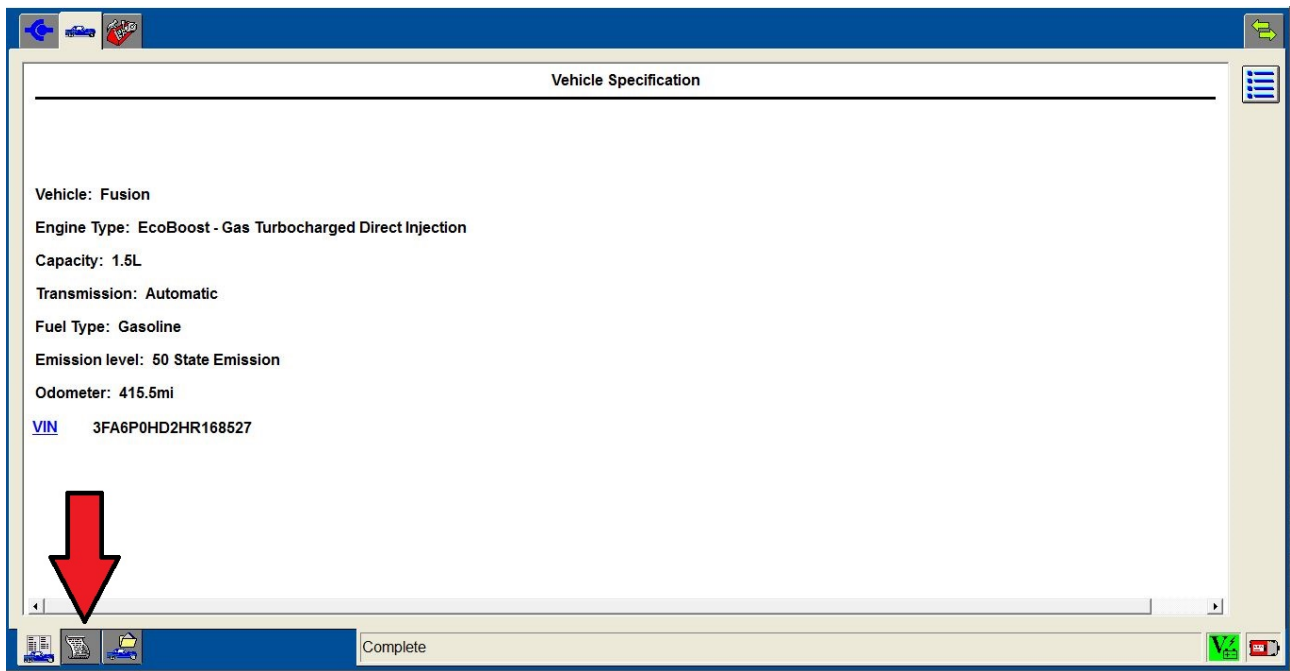
Fig 5: Fuse 12 contains both the Gear Shift Module and the Front Controls Interface Module.

## GSM Software Level Identification:

1) **Use the diagnostic scan tool and start a vehicle session. From the Vehicle Session screen, select the Session Log Viewer:**

**2) Scroll through the viewer to find the (GSM)_FILENAME = XX – XXXXX – XX. The filename suffix represents the GSM software level**
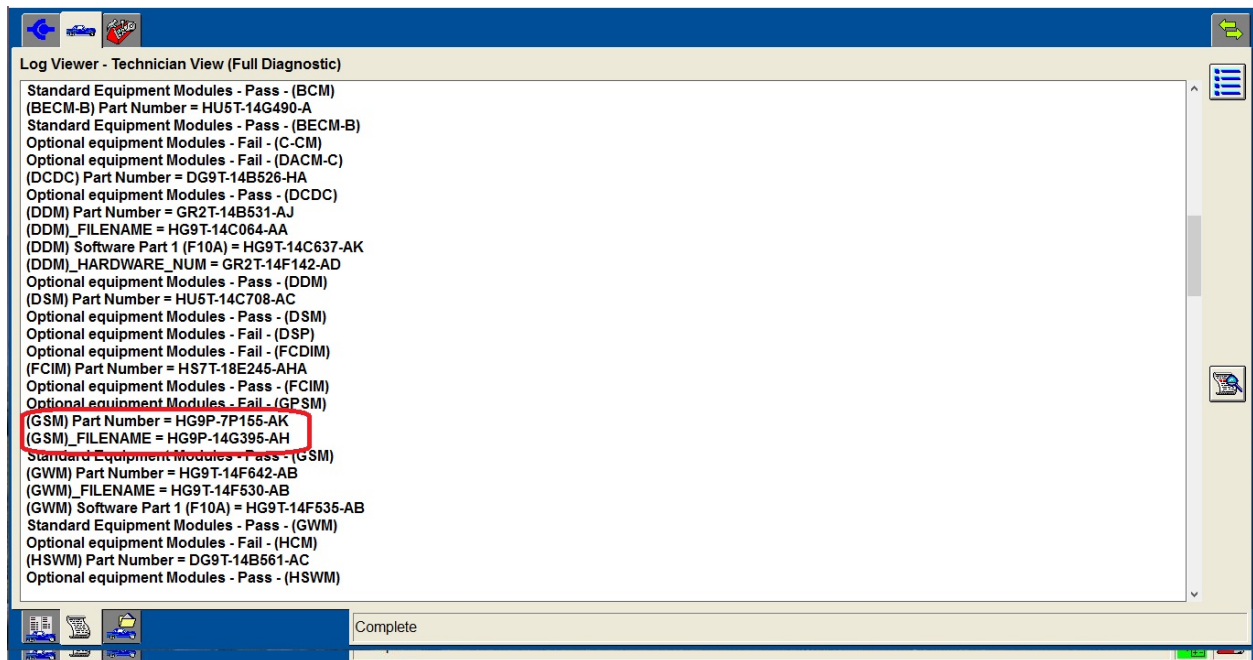


## Important Notes:

- **When diagnosing issues related to the GSM please check for any applicable Technical Service Bulletins or Special Service Messages.**

- **If diagnosing a battery drain issue on a vehicle with a GSM please use this information and that contained in the Workshop Manual and other applicable service publications to determine if the GSM is functioning correctly. GSM operation is dependent on other modules / CAN communication. Its normal operation should not be considered the cause of a battery drain issue.**