



SHIFT LOCK TECHNICAL BULLETIN

Vehicles Affected: 2009 Ford E-Series Vans
Interlocks Affected: ITM121, ITM122, ITM123

Description of Issue:

The Inpower interlocks for the 2009 Ford E-Series vehicles open the Brake Shift Interlock (BSI) circuit to lock the vehicle in Park position and some Ford vehicles the Smart Junction Box (SJB) software improperly interprets the open circuit as a short circuit. The Ford SJB software counts these errors and when the count reaches 74 the SJB software sets DTCs B2572 and B106E. After setting these DTCs the Ford SJB disables the BSI output which permanently locks the vehicle in Park until a dealer resets the DTCs and runs a SJB self test. Only vehicles equipped with SJB that use a dual smart high side driver VND5050K with a status output have this software malfunction. The vehicles with a SJB that use the single output version of the high side driver incorporating the current monitoring capability do not have this issue. In these vehicles the SJB software monitors the BSI circuit current and correctly interprets the error conditions.

Technical Description:

The VND5050K device provides status feedback with a single status output. By monitoring this status output and the input control a microprocessor can determine the exact status of the VND5050K device. The VND5050K status output timing, truth table, and wave forms are available on pages 11-13 of the attached data sheet. On pages 20-21 is an operational description of the Open Load detection circuit. To properly detect the difference between an Open Load and a Shorted Load a pull-up resistor must be connected to the VND5050K output terminal. By referring to Figure 4 OPEN LOAD STATUS TIMING and Table 12 TRUTH TABLE on page 11 the difference between an Open Load and a Shorted Load can be seen. During an Open Load the status output (Vstat) stays low when the device input (Vin) is turned off. Where as a Shorted Load (Over temperature) the status output changes state from Low to High when the device input (Vin) is turned off. The Ford SJB does have the required pull-up resistor on the device output to differentiate between an Open Load and a Shorted Load. However the Ford SJB software incorrectly interprets all changes in the status output from High to Low as Shorts, thus setting up the incorrect diagnosis of short and causing the shift lock issue.

TB-57 031809