



MAINTENANCE INFORMATION

MI20-07

DATE :	August 2020	SECTION :	23 ACCESSORIES
SUBJECT :	TIRE PRESSURE MONITORING SYSTEM – “TPMS LITE” DIAGNOSTIC		

First Release

Aug-18-2020

- TPMS Lite is based on a new SKIM module called **WSSM** (Wheel Sensor Signal Management).

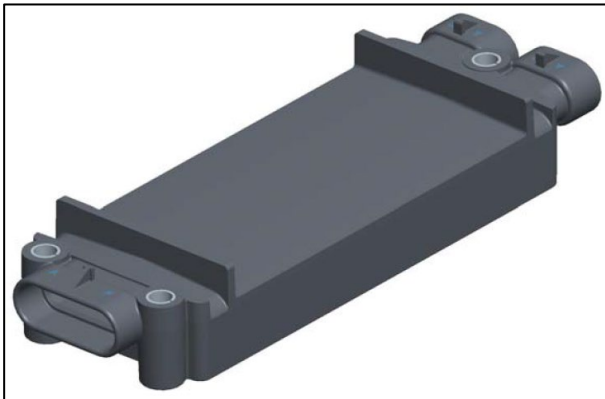


FIGURE 1: SKIM MODULE

- **TPMS Lite** architecture with FMS gateway and CAN antennas (also apply to On-Screen TPMS version)

Effective with the following vehicles: L-0909, L-6516, L-7684

- FMS Gateway (programmed by vendor)
- Three CAN network antennas. Three different part numbers, each assigned to a specific location on the vehicle.
- New wiring harnesses routed from front to rear (CAN network).

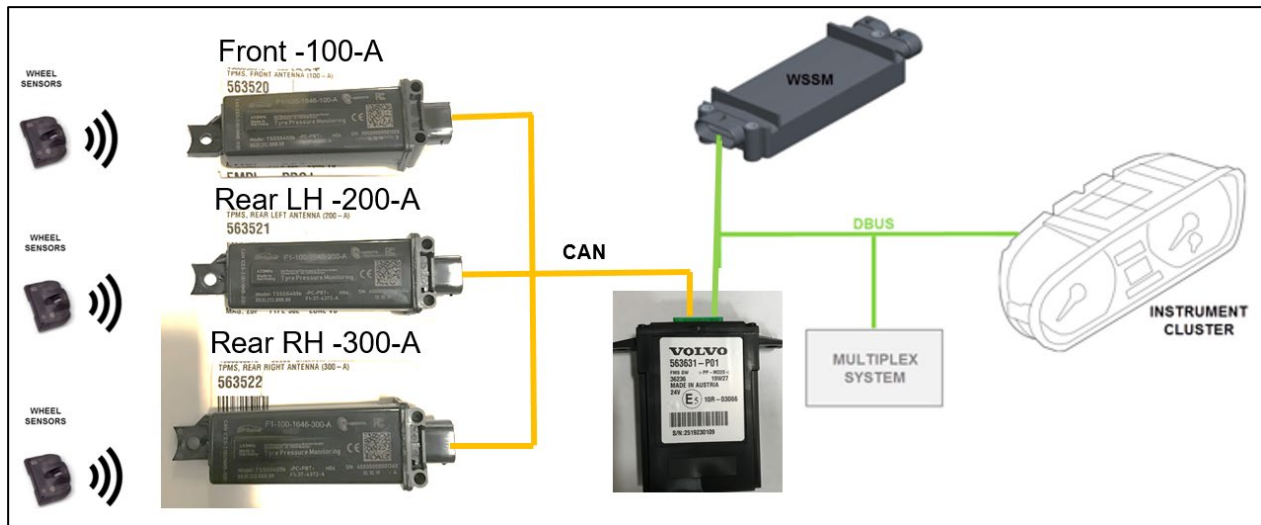


FIGURE 2: TPMS LITE ARCHITECTURE

TPMS LITE OPERATION

- **Power-up telltale light test**
 - When the ignition key is turned to the ON position, the WSSM module is powered up and will activate TPMS telltale for a period of 3 seconds.
- **Onboard sensors recognition**
 - As the vehicle is moving (speed greater than 6 mph / 10 km/h) and a new sensor is detected by the WSSM module, its ID is temporarily stored and a tracking algorithm begins evaluating whether the sensor belongs to the vehicle or a very close vehicle.
 - The algorithm checks for sensor updates over a 15-minute period and if all conditions are met, the sensor ID will then be stored in non-volatile memory, meaning that at next power-up, it will not have to go through this process again.
 - When a sensor is removed (ex.: tire maintenance), the algorithm keeps the ID in memory for 5 more minutes, looking for updates. After this period if no updates are received, the ID will be deleted.
- **On Board Sensors Quantity**
 - As the speed gets over 6 mph / 10 km/h, the WSSM begins evaluating if the onboard sensor quantity is sufficient. It takes several minutes after the vehicle starts moving to get the confirmation there is a sufficient number of sensors. After the period has elapsed, the system will keep monitoring sensor quantity until vehicle is stopped.
 - In the event that sensor quantity is below minimum value, *system error* state is activated and generates the following:
 - TPMS SYSTEM MALFUNCTION popup
 - INFO telltale ON + corresponding audible signal

- Following fault code is saved and occurrence is incremented (Ref to Electrical fault in the DID)
 - System error state will clear itself 5 minutes after a sufficient number of sensors are detected or if the ignition key is cycled.
- **Tire Pressure monitoring (P)**
 - As soon as a new sensor is confirmed as on board and valid, pressure is monitored. Pressure values are compensated for temperature within each individual wheel.
 - *Low pressure alarm.* In the event where the pressure drops below 40 PSI in a wheel, the *Low Pressure Alarm* state is activated and generates the following:
 - CHECK telltale ON + TPMS telltale ON + warning audible signal
 - Following fault code is saved and occurrence is incremented (SID 55, FMI 1)
 - The *Low Pressure Alarm* will clear itself after the pressure has reached over 42 PSI or if the sensor stops broadcasting (see on board sensor recognition section).
- **Tire Temperature monitoring (T °)**
 - As soon as a new sensor is confirmed as on board and valid, temperature is monitored.
 - *High temperature warning.* In the event where the temperature goes above 90°C in a wheel, the *High Temperature Warning* state is activated and generates the following:
 - CHECK telltale ON + TPMS telltale flashing + warning audible signal
 - Following fault code is saved and occurrence is incremented (SID 106, FMI 0)
 - The *High Temperature Warning* will clear itself after the temperature has dropped below 185°F / 85°C or if the sensor stops broadcasting (see on board sensor recognition section).
 - *High temperature alarm.* In the event where the temperature goes above 212° F / 100° C in a wheel, the *High Temperature Alarm* state is activated and generates the following:
 - STOP telltale ON + TPMS telltale flashing + warning audible signal
 - Following fault code is saved and occurrence is incremented (SID 106, FMI 13)
 - The *High Temperature Alarm* will clear itself after the temperature has dropped below 203° F / 95° C or if sensor stops broadcasting (see on board sensor recognition section).

DIAGNOSTIC TROUBLESHOOTING CODES (DTC) ON TPMS LITE

Fault codes displayed on MID 188 ELECTRICAL SYSTEM

SID	FMI	Fault message /Description	Troubleshooting Instruction
55	1	Tire Pressure too low	Visually check low pressure tire
106	0	Tire temperature too high	Feel temperature on each tire
106	13	Tire temperature critically High	Feel temperature on each tire
107	2	Tire sensor not responding	Always associated with SID faults 110 to 115. Troubleshoot 2 nd fault
110	4	Sensor Low Batt	Connect Cantrak and perform sensor learn ID
111	2	LIN/CAN Bus Power fault	Trouble shoot CAN/LIN communication error
112	2	Front Antenna Fault	Check Front Antenna
113	2	Rear Left Antenna Fault	Check Rear Left Antenna
114	2	Rear Right Antenna Fault	Check Rear Right Antenna
115	1	Low sensor counts	Connect Cantrak and perform sensor learn ID

CONNECTING A CANTRAK MODULE AS A DIAGNOSTIC TOOL TO IDENTIFY FAULTY SENSOR

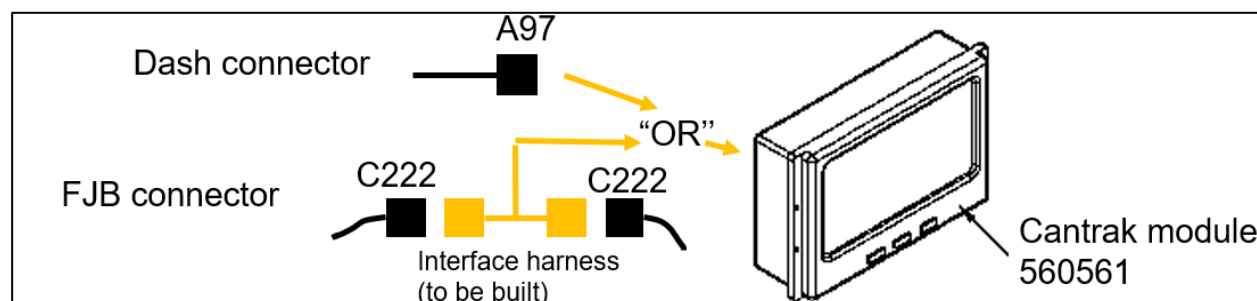
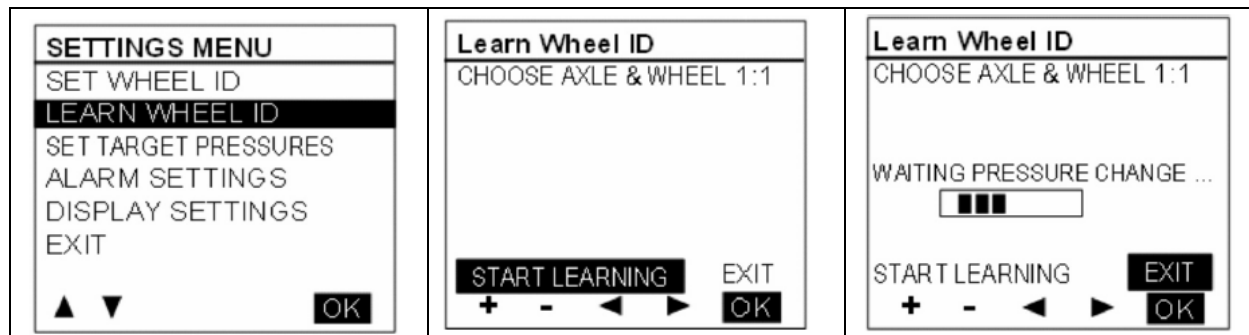
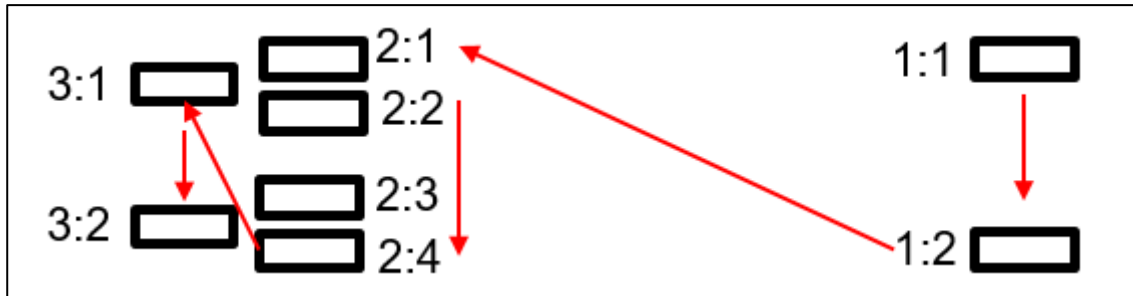


FIGURE 3: DIAGNOSTIC TOOL USING CANTRAK MODULE





Select *Learn wheel ID*. Select 1:1, and then start learning. Lower air pressure in Front LH Tire until display automatically move to 1:2. Repeat the same on front R.H. tire. Follow learning sequence. Replace sensor(s) that cannot be detected or shows low battery.

Note: With TPMS Lite, the backup alarm beep is disabled when learning wheel ID operation. Look at the screen to acknowledge tire identification.

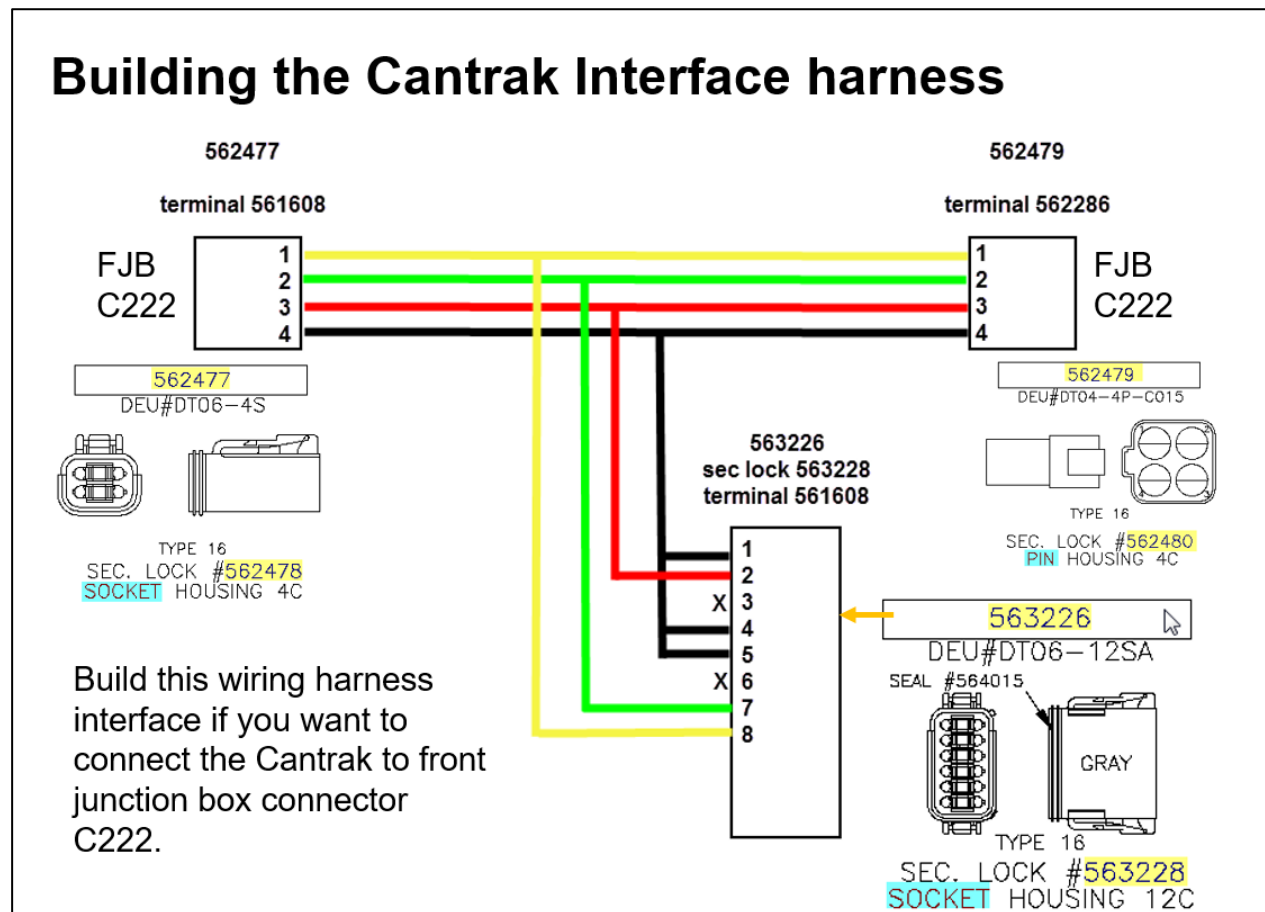
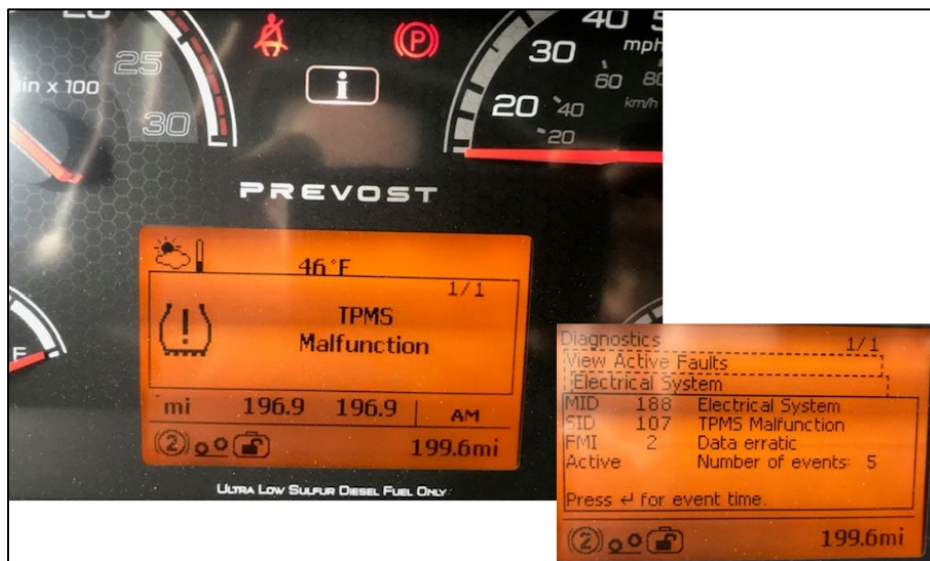


FIGURE 4: CANTRAK INTERFACE HARNESS DESIGN

EXAMPLES OF POP UP MESSAGE AND DIAGNOSTIC TROUBLESHOOTING CODE

First example



Second example

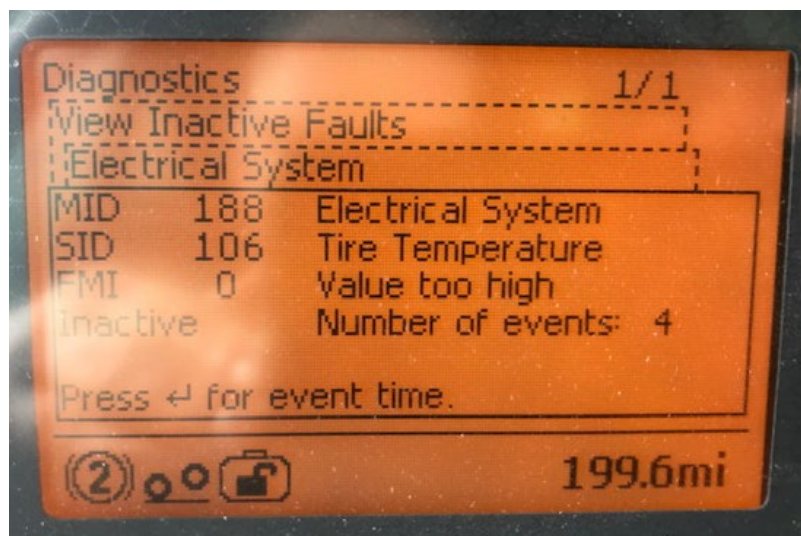
CHECK telltale:



TPMS telltale flashing:



Diagnostic troubleshooting
code:



PARTS / WASTE DISPOSAL

Discard according to applicable environmental regulations (Municipal/State[Prov.]/ Federal)

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