P-018

Police Modifier Bulletin

SVE BULLETIN

SPECIAL VEHICLE ENGINEERING – BODY BUILDERS ADVISORY SERVICE

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Date: 25 March, 2013

2013 Utility Police Interceptor Tire Pressure Monitor System Upfit Information

Models Affected

2013 Utility Interceptors beginning Job #1 2013MY.

Purpose

This bulletin provides description of Tire Pressure Monitor System (TPMS) function in Utility Police Interceptors. This document will provide information on the description of TPMS operation and potential interactions with electrically noisy non-OEM wiring and components.

2013 Utility Police Interceptor Tire Pressure Monitor System Upfit Information

Tire Pressure Monitoring System (TPMS) Principles of Operation

The TPMS system monitors the tire pressure using 4 valve stem mounted TPMS sensors. Each sensor contains its own battery and transmits tire pressure data to the receiver module every 60 seconds when the vehicle speed exceeds 32 km/h (20 mph). The TPM module is a radio receiver that collects the tire pressure data and relays the information via the MS-CAN to the BCM. All of the TPMS functions are controlled by the BCM. Please refer to the Service Manual for the location of each part of the system.

The TPMS sensors are trained to the BCM, which records a unique identifier for each TPMS sensor. The BCM records where each TPMS sensor is located based on the training order and compares the actual tire pressure with the desired tire pressure as indicated on the Vehicle Certification label. If the tire pressure deviates from the desired tire pressure the BCM, using the HS-CAN, signals the IPC to illuminate the TPMS warning indicator and also displays a message on the message center. The programmed tire pressure cannot be changed.

2013 Utility Police Interceptor Tire Pressure Monitor System Upfit Information

Section 1: General Information

This vehicle, as delivered by Ford Motor Company is equipped with a Tire Pressure Monitoring System that conforms to Standard FMVSS138. This system may not function if any of the following components are removed, relocated or modified:

- Original Equipment Manufacturer (OEM) wheels and tires
- Tire pressure sensors or valve stems
- Body Control Module (BCM)
- Body Control Module (BCM) software and calibrations
- Tire Pressure Module (TPM)
- Instrument Cluster (IC) module
- Instrument Cluster (IC) software and calibrations
- Vehicle wheel base longer than originally released

Certain modifications could cause reduced system performance, up to and including the complete loss of TPMS functionality. This may include:

- The addition of intended or unintended transmitters to the vehicle may affect the signal strength of the sensors or interfere with the TPM module's antenna.
- Mounting non-OEM modules or routing wiring on or near the TPM module. Keep non-OEM wiring and modules away from the TPM module if possible.
- Aftermarket wiring and modules should also be shielded with conductive tape if near the TPM module
- Non-OEM wheels or tires
- The addition of steel carcass or run-flat tires
- Modification of the vehicle's recommended tire pressure
- Lengthening of the vehicle's wheel base may affect signal strength of the sensors to a point where the rear sensors can no longer be heard by the TPM module. (Vehicles certified at released wheelbases only).
- The addition of metallic structures, such as prisoner partitions, may affect the signal strength of the sensors and could interfere or prevent the TPM module from hearing the rear sensors.

Section 2: TPMS Interaction With Up-fitted Equipment

The TPMS system operates as defined by the National Highway Transportation Safety Authority (NHTSA) as produced and released by the Ford Motor Company.

In the event non-OEM wiring and modules are placed near the TPM, it may be necessary to shield added wiring and components with some type of metallic material (foil wrap), which includes a drain to ground.

Similarly, to improve TPMS functionality in the presence of electrically noisy non-OEM wiring and components, it may also be necessary to relocate the TPM module away from added equipment and wiring.

Section 2: TPMS Interaction With Up-fitted Equipment (continued)

1. TPMS Module Location

For Explorer Police utility vehicles, the TPM module is under the bottom of the center console (if originally equipped with a factory console) or at the bottom of the center stack, below the radio.

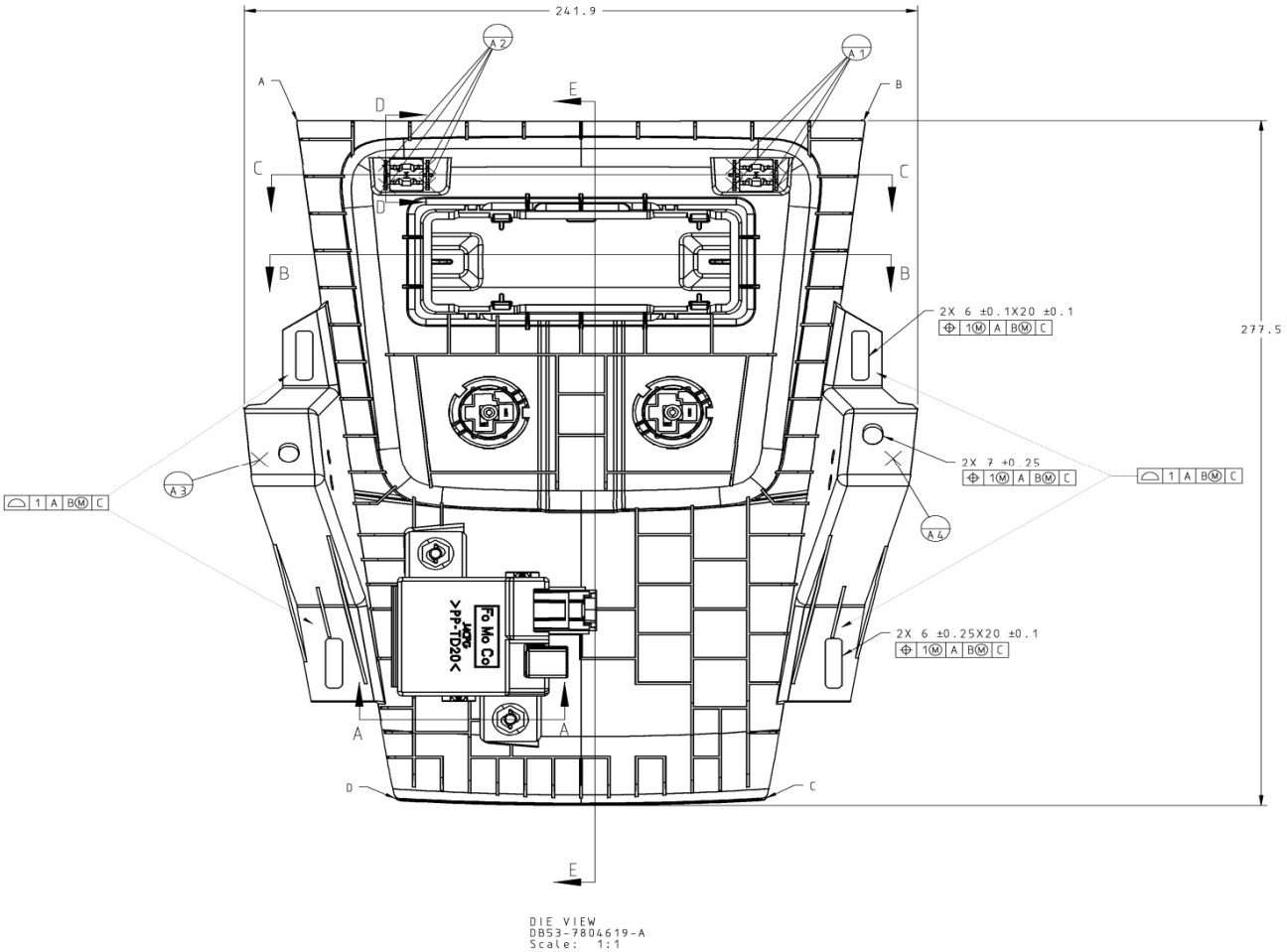


Illustration #1: TPM module location for police utility vehicles without an OEM center console.

Section 2: TPMS Interaction With Up-fitted Equipment (continued)

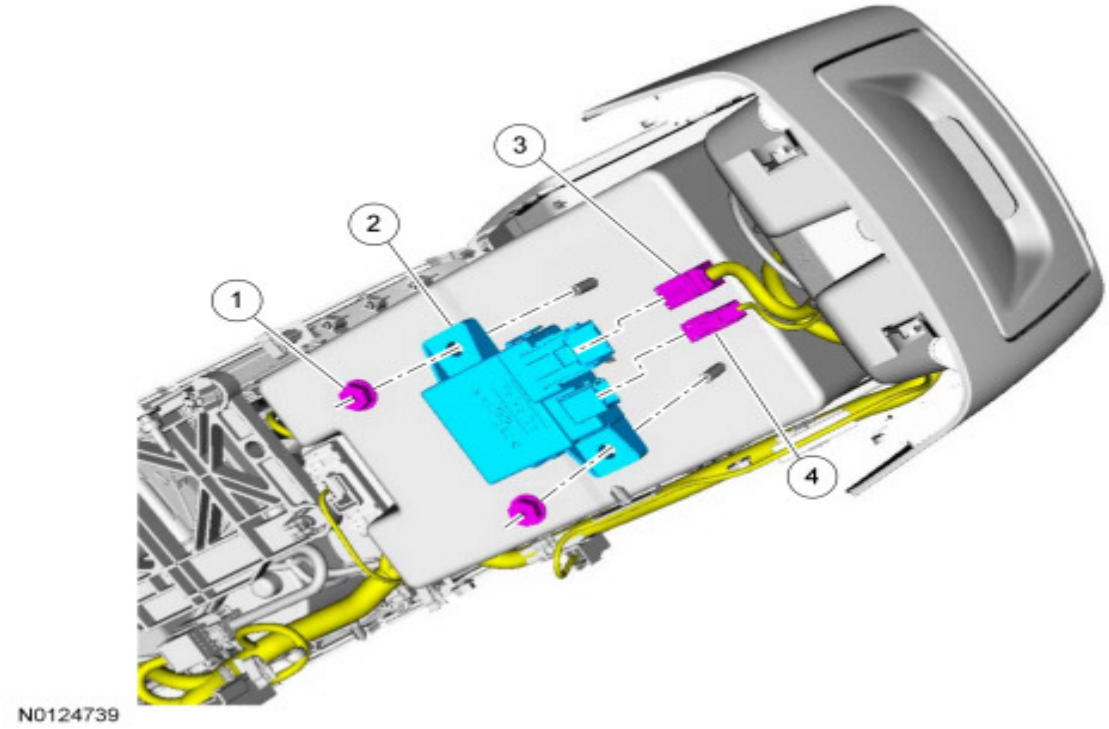


Illustration #2: Location of TPM module on the bottom of the OEM installed center console.

2. Lengthening TPM Wiring For Relocation

The wiring for the TPM module can be lengthened to accommodate a new packaging location away from non-OEM wiring and modules. It should be shielded with metallic material as well as covered in convolute over its entire length.

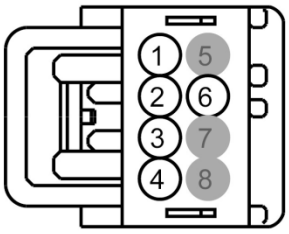
Pigtail specifics:

a) Total length of pigtail can be no longer than 6 feet (1.8 m)
b) CAN +/- circuits must be twisted together, and have a minimum twist rate of 3 twists per 50mm.
c) Twisting shall be maintained to within 50mm of any in-line connector or component.
d) Shielding with metallic tape (Such as 3M's Aluminum Electrical Shielding Tape) is required.
e) Use electrical tape to cover and protect the aluminum shield from damage.
f) Plastic convolute needs to be used to cover the entire length of the pigtail.
g) The module and wiring must be rigidly attached with a retention point every 300 mm or less. (The important principle is to place retention where it's needed, to prevent the bundle from contacting other objects or from excessive flexing and vibration)

Section 2: TPMS Interaction With Up-fitted Equipment (continued)

3. Installation of Pigtail on Non-Console Equipped Police Utility Vehicles

a) Cut connector C3641 off the harness leaving length to re-use it on the pigtail. (see wiring manual for details on the connector location).
b) Splice in additional wiring to create the pigtail using the requirements described above.
c) Locate a suitable location for the module, using as much of the pigtail as possible. (One location used in the field is behind the passenger's seat high up on the metal divider)
d) Secure the module as per defined above.



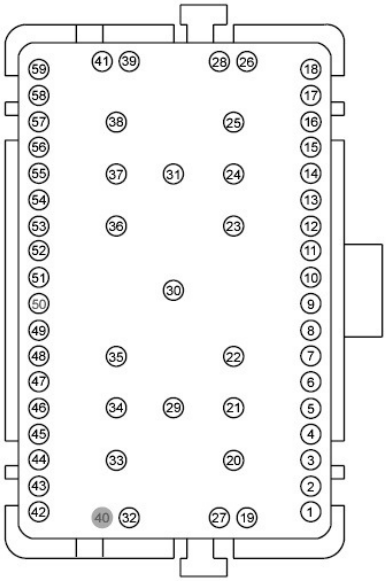
Pin	Circuit	Gauge	Circuit Function	Qualifier
1	VDB06 (GY-OG)	22	CONNECTOR - DIAGNOSTIC # CAN BUS MEDIUM SPEED HIGH	
2	VDB07 (VT-OG)	22	CONNECTOR - DIAGNOSTIC # CAN BUS MEDIUM SPEED LOW	
3	VPL56 (BU-GY)	22	RECEIVER - REMOTE RF	with IA
4	SBP26 (YE-RD)	22	FUSE - 26 OR CIRCUIT BREAKER	
5	*	*	Not Used	
6	GD214 (BK-BU)	22	GROUND - INSTRUMENT PANEL STRUCTURE	
7	*	*	Not Used	
8	*	*	Not Used	

Illustration of connector C3641 and pin-out details.

Section 2: TPMS Interaction With Up-fitted Equipment (continued)

4. Installation of Pigtail on Console Equipped Police Utility Vehicles

a) Cut connector C2451 off the 144401 harness (see wiring manual for details on the connector location).
b) Properly terminate and seal all other circuits not used for the TPM module.
c) Cut connector C2451 off the center-console harness.
d) Re-use TPM connector and associated wiring from the center console harness.
e) Splice in additional wiring to create the pigtail using the requirements described above.
f) Locate a suitable location for the module, using as much of the pigtail as possible.
g) (One location used in the field is behind the passenger's seat high up on the metal divider)
h) Secure the module as per defined above.



Pin #14 SBP26 (YE-RD)	Fuse – 26 or Circuit Breaker
Pin #16 VDB06 (GY-OG)	Connector – Diagnostic # CAN Bus Medium Speed High
Pin #17 VDB07 (VT-OG)	Connector – Diagnostic # CAN Bus Medium Speed Low
Pin #20 GD214 (BK-BU)	Ground – Instrument Panel Structure
Pin #54 VPL56 (BU-GY)	Receiver – Remote RF

Illustration of connector C237 and pin-out details.

Section 2: TPMS Interaction With Up-fitted Equipment (continued)

The TPMS, as delivered from the Ford Motor Company, complies with part 15 of the FCC rules and with RS-210 of Industry Canada. Operation is subject to the following 2 conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

This vehicle, when completed, must conform to Standard 138, Tire Pressure Monitoring Systems. It is the responsibility of the modifier to ensure the TPMS system functions properly after any vehicle modifications including the addition of non-OEM equipment and associated wiring.

If you have any questions, please contact the Ford Truck Body Builders Advisory Service as shown in the header of this bulletin.