

## WHEELS AND TIRES

# TIRE PRESSURE MONITORING SYSTEM INTEGRATED (G2016695)

### DESCRIPTION AND OPERATION



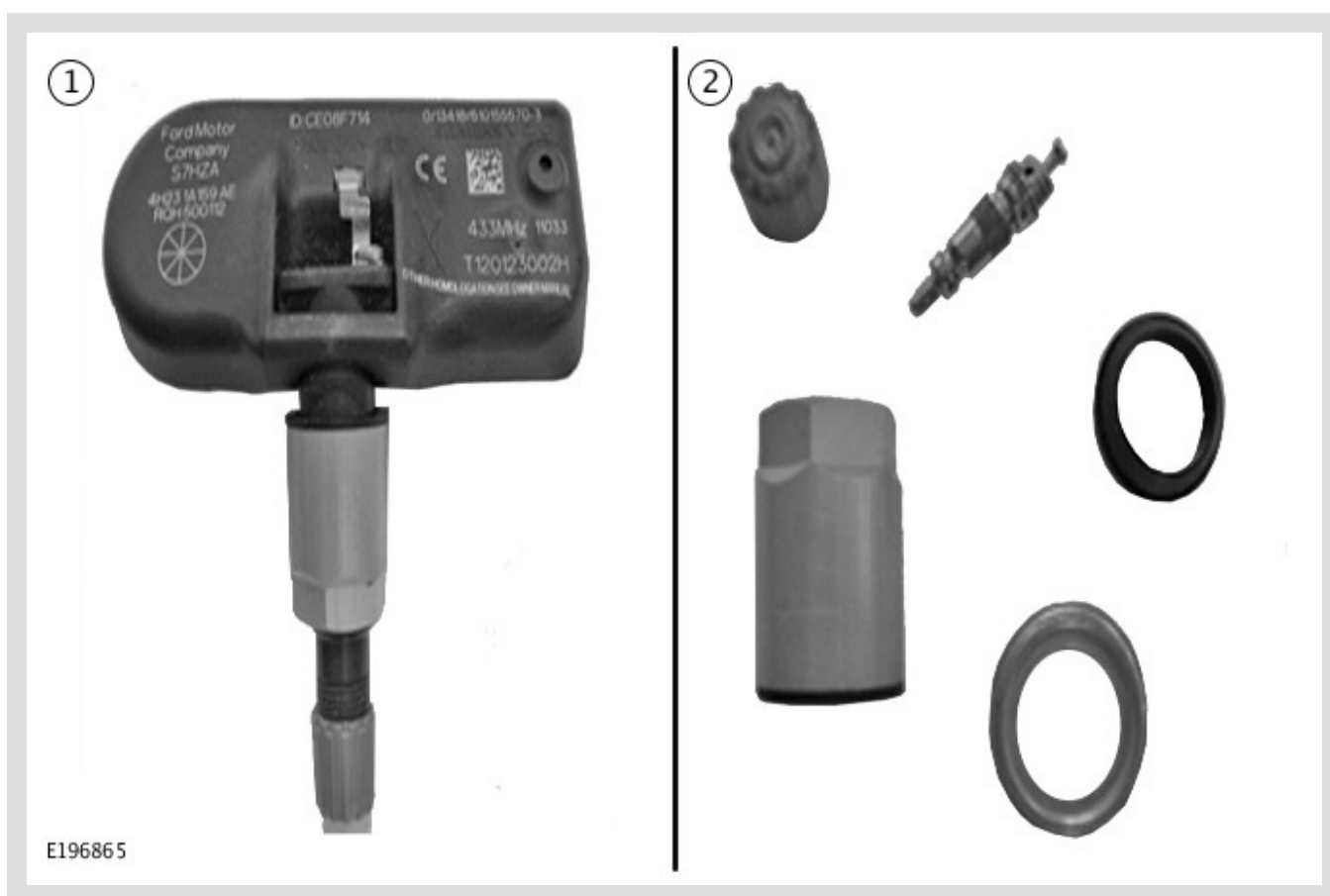
#### NOTES:

- The majority of TPMS **“faults”**, are not genuine component faults, but low pressure warnings, indicating the tyres have lost air, and have reached the point where the TPMS ISO light has been illuminated.
- There is also a TPMS diagnostic flow mapped into the approved Jaguar diagnostic tool, helping technicians to diagnose different possible faults.

#### TPMS valve snaps

If the TPMS valve has snapped, then inspect the TPMS wheel unit and decide if it is a two part construction, or is a one piece part.

If the TPMS wheel unit is a TG1B wheel unit, then replace the wheel unit with the same part (subject to supersession as per the Land Rover Electronic Parts Catalogue).



1 TG1B Valve - complete valve.

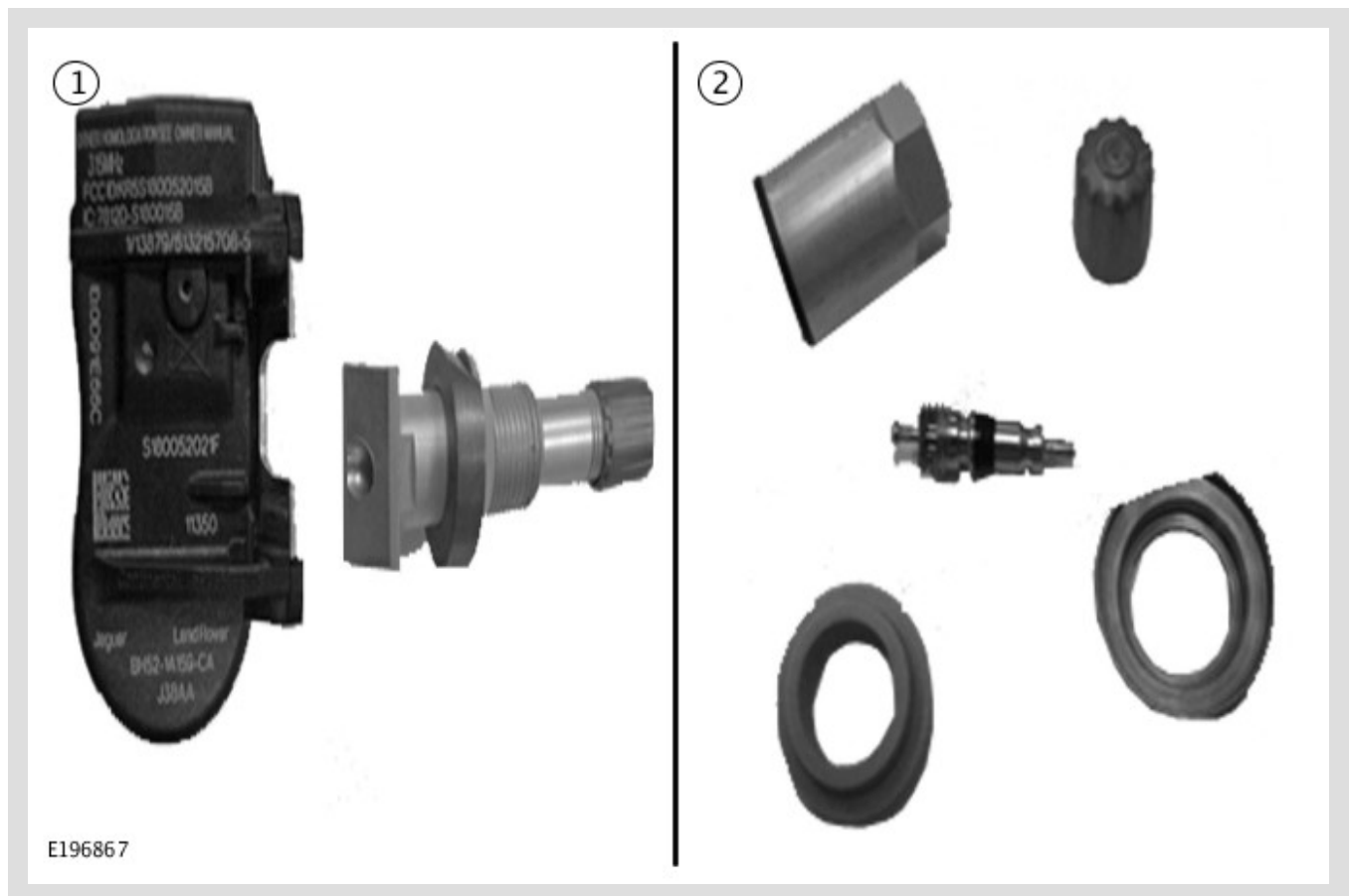
2 TG1B - Service kit.

**NOTE:**

Please note that Jaguar Land Rover does not cover the snapped/damaged TPMS under warranty, this is not a manufacturing defect.

If the TPMS wheel unit is a TG1C, two part TPMS wheel unit, where the valve stem can be separated use part number LR043162, valve stem kit containing 5 replacement valve stems, nuts and washers.

**UK markets only** - valve stem kit with a shorter valve stem use part number LR077043.



**1** TG1C Modular Valve, split in two halves mechanical and electronic modules - available as 5 piece set and as 1 piece.

**2** TG1C Valve - whole/entire valve.

**NOTE:**

Please note that Jaguar Land Rover does not cover the snapped/damaged TPMS under warranty, this is not a manufacturing defect.

### 1. TPMS Instrument Cluster Warnings

Turn the ignition on and look at the instrument cluster.

Does the TPMS ISO symbol flash for 72 seconds, and then stay on permanent: Yes go to **section 2.0**.

Is the TPMS ISO Symbol illuminated permanently on the instrument cluster? Yes go to **section 1.1**.

If the TPMS ISO symbol does not illuminate: There is no fault or problem present on the vehicle at this time.

Ask the customer if they have used a spare wheel fitted with a rubber valve, as this will cause a TPMS symptom fault to be displayed, this is expected behaviour, and there is no fault with the TPMS system. The use of a spare wheel is described in the vehicle handbook.

Ask the customer if the instrument cluster displayed one or more wheels at 0 pressure. If yes go to **section 1.2**.

Ask the customer if the instrument cluster displayed a warning TPMS message. If yes go to **section 1.3**.

Ask the customer if the TPMS fault message came on during a drive, and if the message cleared during a drive cycle. If the customer does indicate this happened, ask the customer if they have used additional accessories in the vehicle such as: USB chargers, insurance cameras, DC-DC converters, cool boxes, satellite navigation and radar detectors, when the TPMS fault light came on. If the answer is yes, ask the customer to remove the items, and see if the TPMS fault light does not come on, during the next drive cycles.

### **1.1 Low Pressure Warnings**

When the TPMS ISO symbol is illuminated permanently, or comes on during a drive cycle, the TPMS system has detected that one or more tires are below the 80% requirement of the required pressure. The required pressure in the tire changes due to the temperature of the air inside the tire, being heated by the tire movement.

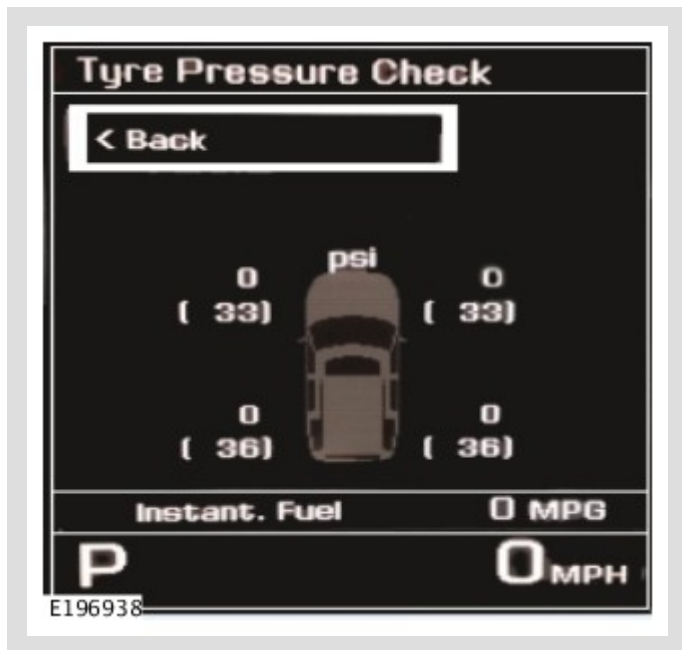
The instrument cluster will display an image of the vehicle showing which tire(s) are below the 80% of the required pressure. If only one wheel is low pressure then that wheel will be highlighted in yellow showing the actual pressure and the Recommended Cold Pressure (RCP) to inflate to.

The message to check all tires is highlighted because if the tire has naturally lost air, then the other three tires will also be close to the threshold to set the warning.

Using the instrument cluster menu, use the menu and arrow keys on the steering wheel to navigate to the TPMS menu, and select the pressure check option. View the pressures of the tires, and add air to the tires as required. The correct pressure is shown in the pressure menu, on the instrument cluster. The Recommended Cold Pressure (RCP) is also shown on the tire label at the bottom of the B-pillar.

The instrument cluster should update as air is being placed into the tires. If the instrument cluster does not update, then drive the vehicle for 3 minutes above 15 Mph. This will make sure the RF signals from the TPMS wheel units are received.

### **1.2 Instrument cluster displays one or more tires at 0 pressure without an ISO TPMS symbol illuminated**



If the instrument cluster is showing one or more tires at 0 pressure, then inflate the tire by 300kPa, and check the instrument cluster to see if the tire pressure has updated. If not then drive the vehicle for 8 minutes above 20 Kph for the TPMS sensors to localise.

### 1.3 TPMS warning messages

#### 1.3.1 Non EU or Non NAS market TPMS warning messages

In non EU or non NAS markets, when rubber valves are fitted, the TPMS instrument cluster will display the message **"Tire monitoring not available"**, after 10 minutes of driving. The instrument cluster message **"Tire monitoring not available"**, will come on every subsequent ignition cycle, until the TPMS sensors are re-fitted.



The instrument cluster message "**Tyre Pressure Monitoring Available**", will be displayed on the instrument cluster when all four TPMS wheel sensors have been detected, and will display for 20 seconds.

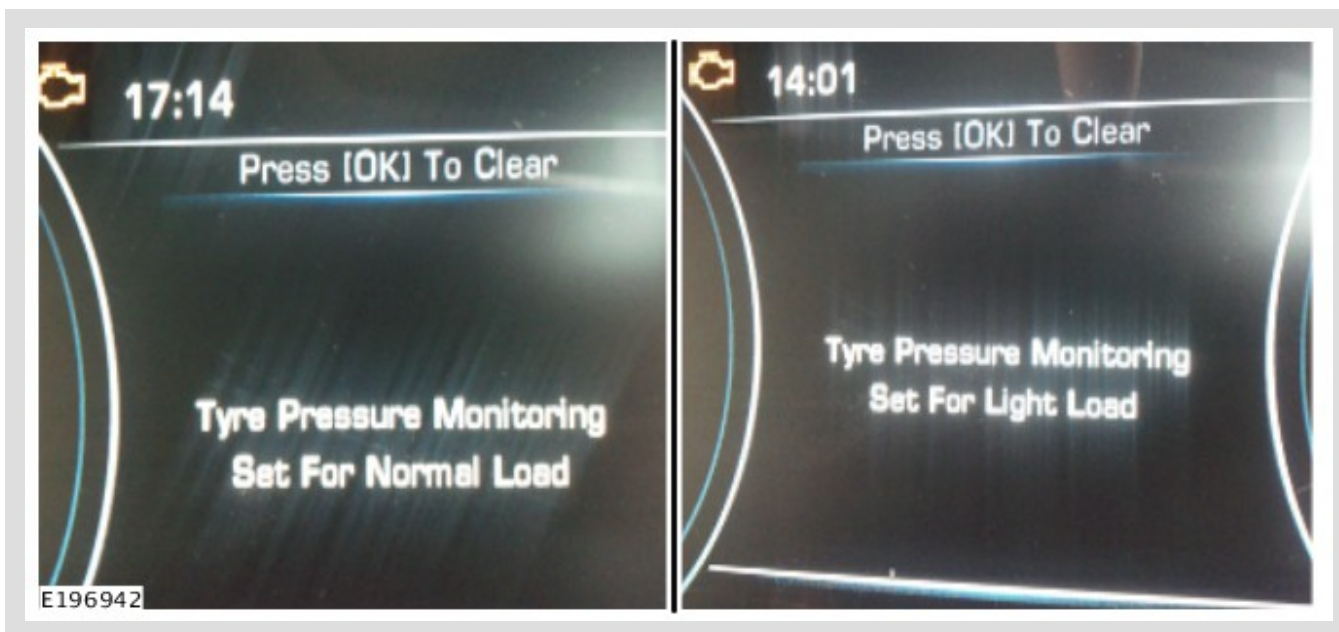
#### 1.3.1 All market warning messages

The instrument cluster message "**Tyre Pressures too low for high speed**" and the TPMS ISO symbol will be displayed when the tire pressures are 80% below the required pressure for high speed driving.

The instrument cluster and the tire pressure label at the bottom of the B-pillar on the driver's side of the vehicle will show the required tire pressures for high speed driving.

#### 1.4 NAS market

The load setting of the vehicle may be changed in the load setting menu, (vehicle dependant).



**1.4.1** The instrument cluster message, "**Tire Pressure set for Light**", is a reminder that the load switching has been set to the light setting, and are the lower of the tire pressures recommended.

**1.4.2** The instrument cluster message, "**Tire Pressures set for Normal**", is a reminder that the load switching has been set the normal setting, and is the highest tire pressures recommended.

### **1.5 EU and ROW markets**

The load setting of the vehicle may be changed in the load setting menu, (vehicle dependant).



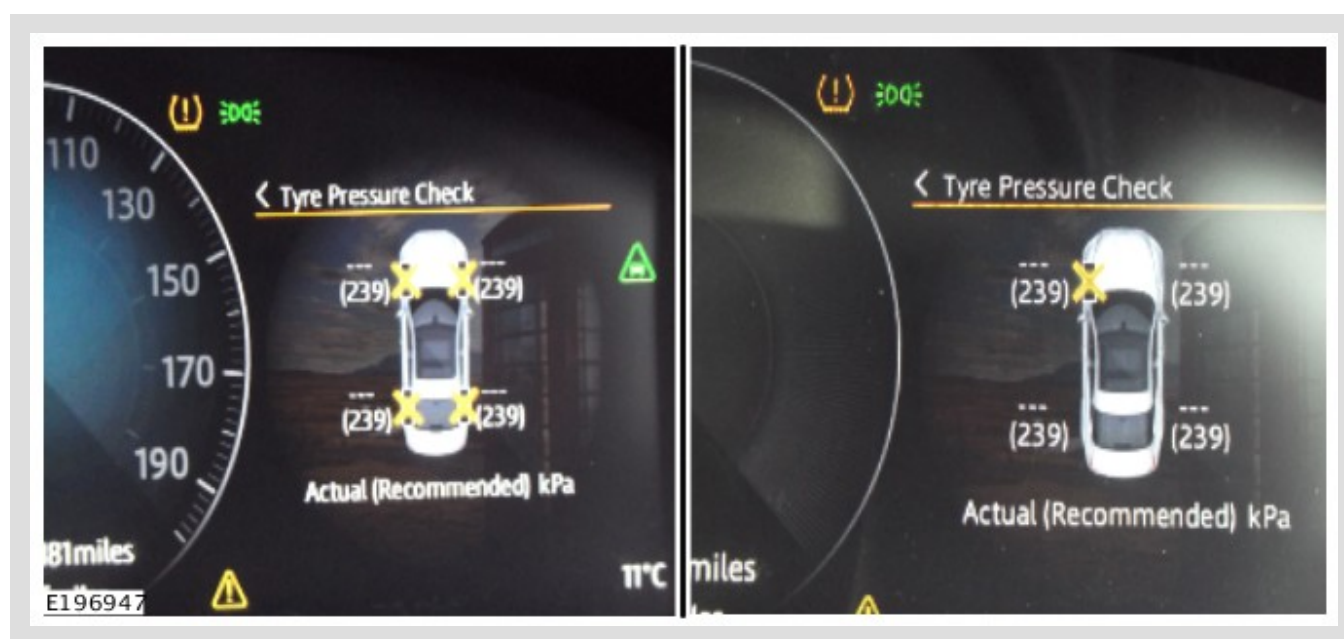
**1.5.1** The instrument cluster message, "**Tire Pressure set for light**", is a reminder that the load switching has been set to the light setting, and are the lower of the tire pressures recommended.

**1.5.2** The instrument cluster message, "**Tire Pressures set for Heavy**", is a reminder that the load switching has been set the Heavy setting, and is the highest tire pressures recommended.

## 2.0 TPMS faults

### 2.1 Wheel cannot be detected.

Using the instrument cluster menu, with the ignition on and the vehicle stationary, does the instrument cluster show one or more wheels with a yellow cross highlighted above the wheel? No then go to **section 2.2**.



Check the wheel(s) to see if a rubber valve has been fitted. If it has, replace with a TPMS valve. **Jaguar Land Rover will not pay for the warranty.**

If the wheel has a TPMS valve go to **section 2.2**.

### 2.2 TPMS Fault messages

Plug in the approved Jaguar diagnostic tool and read the DTCs from the TPMS wheel unit.

#### 2.2.1 NAS markets only

NAS market note the TPMS frequency has been set to 433 MHz from 16MY for all vehicles.

VIN change for 433 MHz, for earlier model years.

- Discovery LR4 (L319) 14MY starting with VIN LA696287.
- Range Rover LG (L405) 14MY starting with VIN LG140913.
- Range Rover Sport LW (L494) 14MY starting with VIN LW319924.
- Range Rover Evoque LV (L538) 15MY 433 MHz starting with VIN SALVA2BC7FH933449.



- Freelander 2 LR2 (L359) stayed on 315 MHz.

### 2.2.1 EU Markets

EU markets the TPMS system is always 433 MHz.

### 2.2.2 Wheel units not recognised from start of a drive cycle

C1D21-05 (Any wheel unit - Failed reception from beginning of TPMS Drive cycle).

Possible Causes:

- 1 Rubber valve fitted go to **section 2.1**.
- 2 315 MHz TPMS wheel unit fitted on a 433 MHz vehicle. NAS markets Inspect wheel unit, if a 315 MHz wheel unit fitted Jaguar Land Rover will not pay for a replacement.
- 3 TPMS wheel unit in ship mode (turned off), customer purchased part, Using a handheld LF tool, turn the TPMS wheel unit on. Jaguar Land Rover will not pay for this as customer purchased.
  - If no TPMS LF hand tool available, then change the TPMS wheel unit to a new one. Jaguar Land Rover will not pay for a replacement, as part not purchased through approved process.
- 4 The TPMS wheel unit battery has failed or the wheel unit has been damaged when tire was replaced.

Replace the identified wheel unit.



#### NOTE:

Please note that Jaguar Land Rover does not cover these cost under warranty, this is not a manufacturing defect.

### 2.2.3 Wheel units not recognised during a drive cycle

C1A56-93 (Left Front Tire Pressure Sensor and Transmitter assembly no operation (During TPMS drive cycle).

C1A58-93 (Right Front Tire Pressure Sensor and Transmitter assembly no operation (During TPMS drive cycle).

C1A60-93 (Left rear Tire Pressure Sensor and Transmitter assembly no operation (During TPMS drive cycle).

C1A62-93 (Right rear Tire Pressure Sensor and Transmitter assembly no operation (During TPMS drive cycle).

Causes:

- 1 One or more wheels swapped over in less than 15 minutes (winter wheel warehouse replacement).
- 2 RF interference of the TPMS signal from the wheel units to the receiver.
- 3 TPMS wheel unit damaged.
- 4 Battery failing, (wheel unit over 6 years old).

Go to **section 3.0**.

## **2.2.4 Wheel unit localisation**

C1D18-00 Wheel localisation failed.

The TPMS system needs to receive the RF transmissions from all 4 wheel units, to enable the location of the TPMS wheel unit and the TPMS wheel unit ID to be matched. If a rubber valve has been fitted to a wheel, or the TPMS sensor is not transmitting, then on the fourth journey, (greater than 10 mins), a localisation DTC will be set.

Make sure all 4 TPMS wheel units are working using the approved Jaguar Land Rover diagnostic tool deflation test.

If there is RF interference, this can cause the localisation to fail.

Check the initiators are correctly located in the wheel arches, as they can be connected into the circuits from the CJB /BCM, but might not be correctly located, especially if the bumper has been changed.

Go to section 3.0

## **2.2.5 K line serial interface communication problems between Central Junction Box (CJB) or Body Control Module (BCM) and the TPMS receiver**

U201F-87(External Receiver missing message) – open circuit

U201F-11(External Receiver short to Ground)

U201F-12(External Receiver Short to battery)

Check the software of the BCM/CJB, (Central Junction Box).

If the CJB/BCM software revision for the following vin ranges is earlier than AJ, make sure the software update is actioned:

- L405 Range Rover (LG), model years: 2014 – 2015, VIN range: LG124984 – LG203069
- L494 Range Rover Sport (LW), model years: 2014 – 2015, VIN range: LW600000 – LW603392
- L494 Range Rover Sport (LW), model years: 2014 – 2015, VIN range: LW000015 – LW509446.
- L538 Range Rover Evoque (LV), model years: 2014 – 2015, VIN range: LV856653 – LV996110
- L538 Range Rover Evoque (LV), model years: 2015, VIN range: LV000007 – LV011753

## **2.2.6 External receiver internal failure**

U201F-04, ignore any other DTCs

Check tire pressure monitoring system RF receiver fuse.

Clear the DTC and retest. If fault persists, check and install a new tire pressure monitoring system RF receiver.

## **2.2.7 Initiator Circuit DTCs**

C1A61-14(Left rear initiator Circuit short to ground or open)

C1A61-12(Left Rear initiator Short to battery)

C1A63-14(Right rear initiator Circuit short to ground or open)

C1A63-12(Right Rear initiator Short to battery)

C1A59-14(Right Front initiator Circuit short to ground or open)

C1A59-12(Right Front initiator Short to battery)

C1A57-14(Left Front initiator Circuit short to ground or open)

C1A57-12(Left Front initiator Short to battery)



**NOTE:**

Two or more of the above DTCs may be set with DTC C1D18-00. If that is the case C1D18-00 should be ignored and the fault causing the above DTCs should be fixed.

Check for either open circuit, short to ground, short to power (depending on occurring DTC description above). Please check, as well, if the connector is correctly latched.

### 3.0 Wheel unit investigation

Break the bead and inspect the TPMS wheel unit and compare the wheel unit ID, with the wheel ID as read by the approved Jaguar Land Rover diagnostic tool. If the TPMS wheel IDs are different, programme the new wheel ID into the approved Jaguar Land Rover diagnostic tool, and run the deflation test. Make sure the TPMS wheel unit is working.

If the TPMS wheel unit is not detected with the new wheel unit, then ask the customer where the TPMS wheel unit was purchased. The wheel unit is in ship mode, and needs to be put into park mode with a LF tool.



**NOTE:**

Jaguar Land Rover will not pay the warranty for this claim, this is not a manufacturing defect.