

Description

TREAD Lamp

–Tire Under Inflation / Leak Warning.



1. Turn on condition

- When tire pressure is below allowed threshold
- When rapid leak is detected by the sensor.
- Indicates that tire needs to be re-inflated to placard pressure / repaired.

2. Turn off condition

- Under-inflation ; When tire pressure is above (warning threshold + hysteresis).
- Rapid Leak ; When tire pressure is above (leak warning threshold).

DTC Warning

1. Turn on condition

- When the system detects a fault that is external to the receiver/ sensor.
- When the system detects a receiver fault.
- When the system detects a sensor fault.

2. Turn off condition

- If the fault is considered as 'critical', then the lamp is held on throughout the current Ignition cycle (even if the DTC has been demoted). This is because it is important to bring the problem to the drivers attention. On the following Ignition cycle, the demotion conditions will be re-checked. If the demotion conditions occur, the lamp will be turned off. It will be held on until DTC demotion checking is completed.
- 'Non critical' faults are those that can occur temporarily e.g. vehicle battery under voltage. The lamp is therefore turned off when the DTC demotion condition occurs.



If the vehicle starts within 19 minutes after the replacement of the wheel of the stopped vehicle, the TPMS Malfunction Indicator on the instrument cluster illuminates.

- The above symptom is due to communication failure between the BCM and the replaced TPMS ID.
- This communication failure indicator turns off in 19 minutes after the vehicle stops through the BCM's automatic learning process of TPMS ID.
(When driving the vehicle after stopping for over 19 minutes, the indicator turns off automatically.)

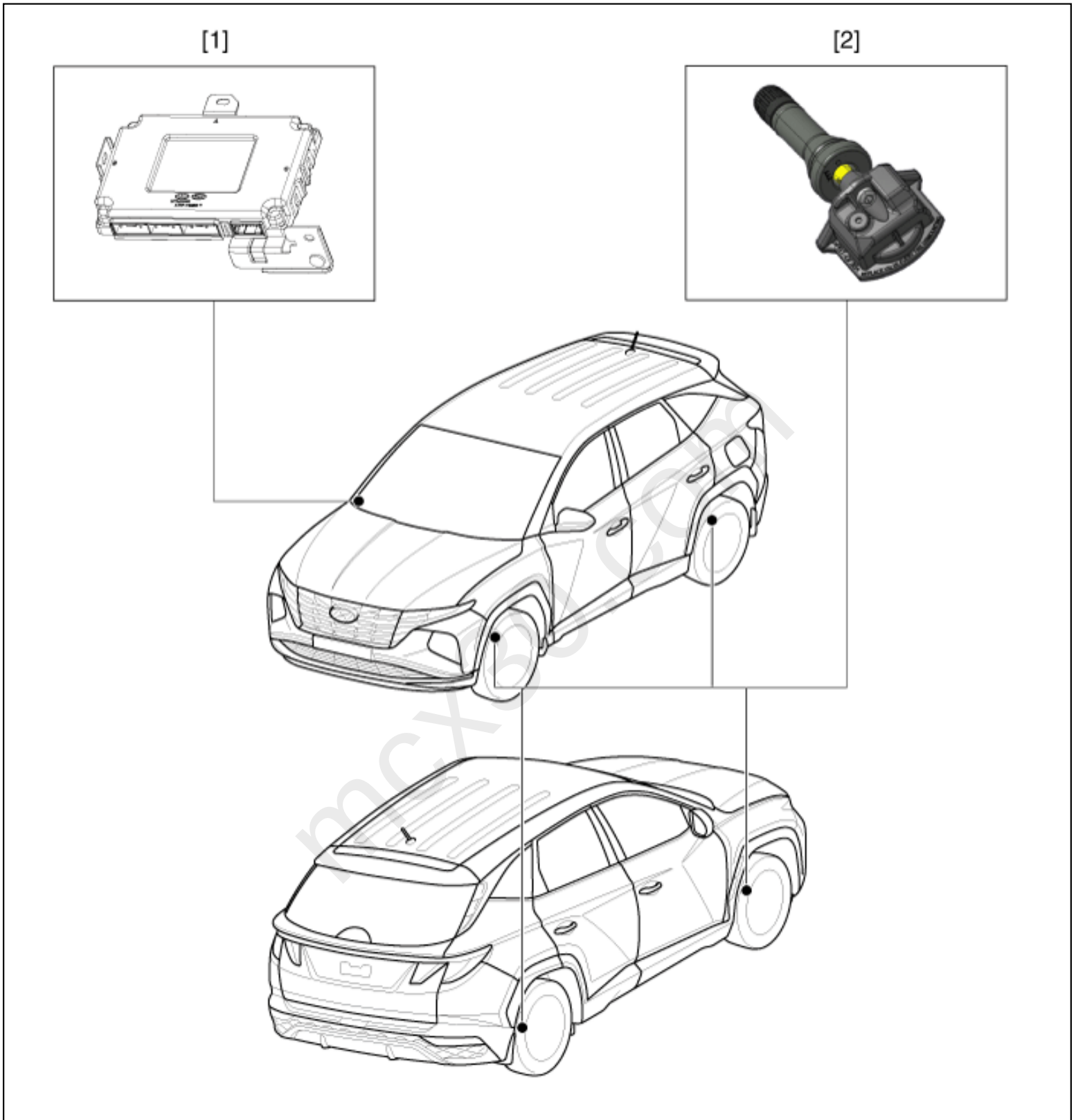
System Fault

1. General Function

- The system monitors a number of inputs across time in order to determine that a fault exists.
- Faults are prioritized according to which has the most likely cause.
- Maximum fault store is equal to 15.
- Certain faults are not covered through DTC. The main ones are :
 - a.Sensor thermal shutdown (over 257°F / 125°C).
 - b.Ignition Line stuck ; requires observation of lamps at Ignition ON to diagnose.

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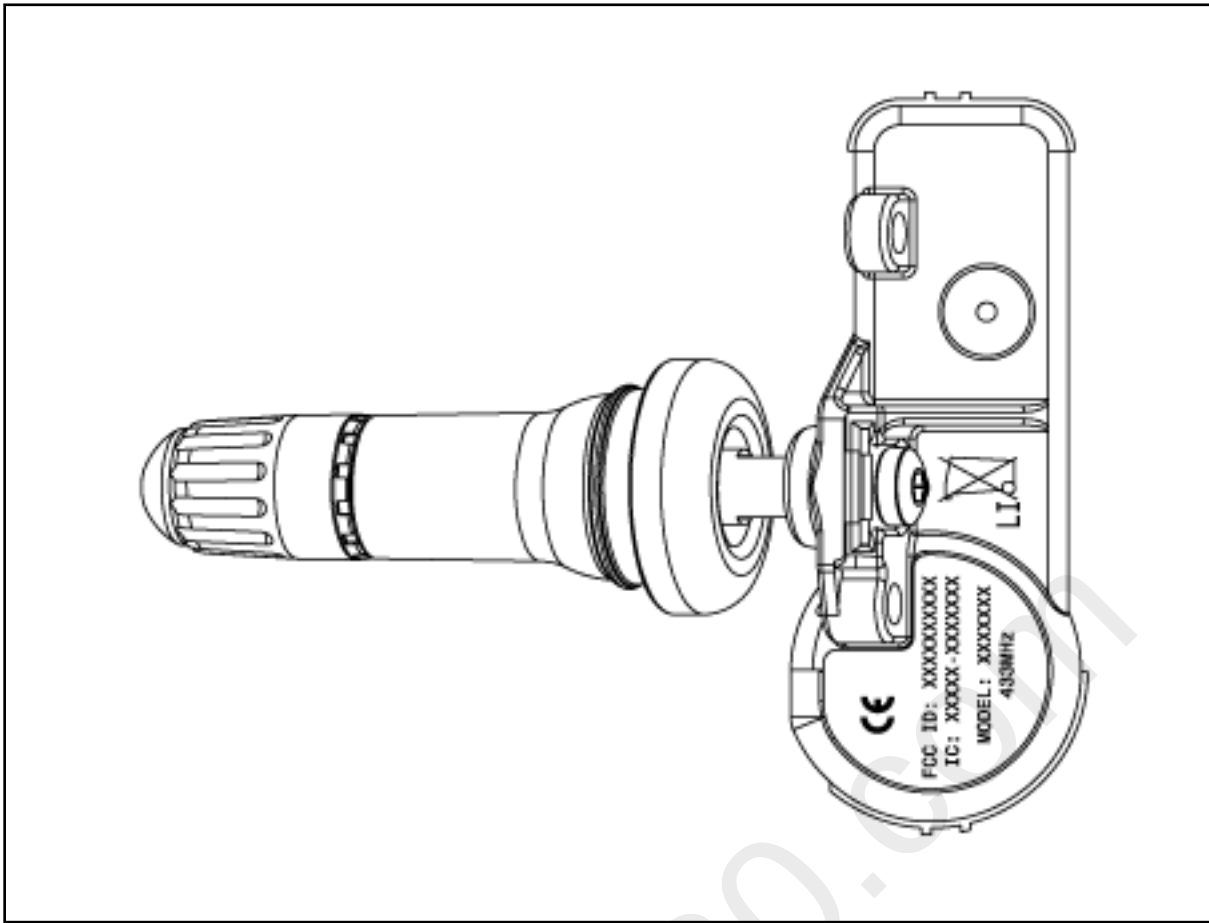
Components
Location



1. Receiver

4. TPMS Sensor

Description



1. **Driving state**

Sensor transmissions occur every 1 minutes and pressure is measured every 15 seconds.

2. **Stationary state**

Sensor transmissions does not occur and pressure is measured every 60 seconds.

3. **Auto learning status**

When driving after stopping more than 15 minutes , sensor transmissions occur every 33 seconds and pressure is measured every 10.8 seconds.

4. **Off status**

The TPMS sensor is not operated.

Due to stock status, does not measured pressure, temperature, battery status.

5. **Alert State :**

When a 2 psi change in pressure from the last transmission occurs, transmit tire information immediately.

The pressure is measured every 2 seconds.

Replacement

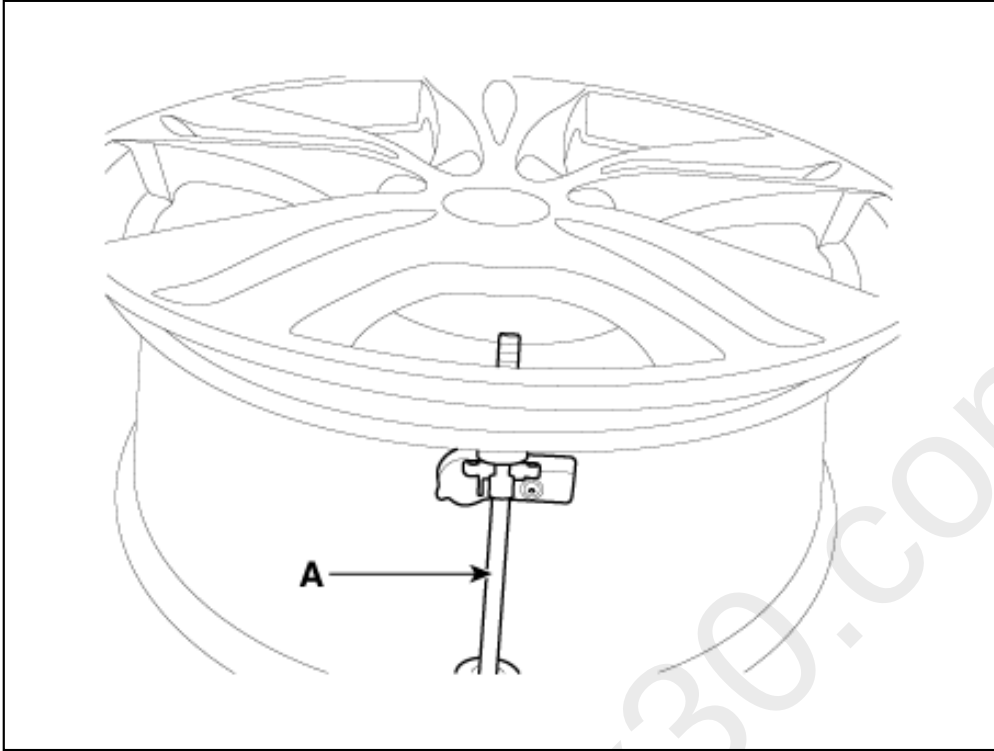
1. Remove the tire.

(Refer to Suspension System - "Wheel")

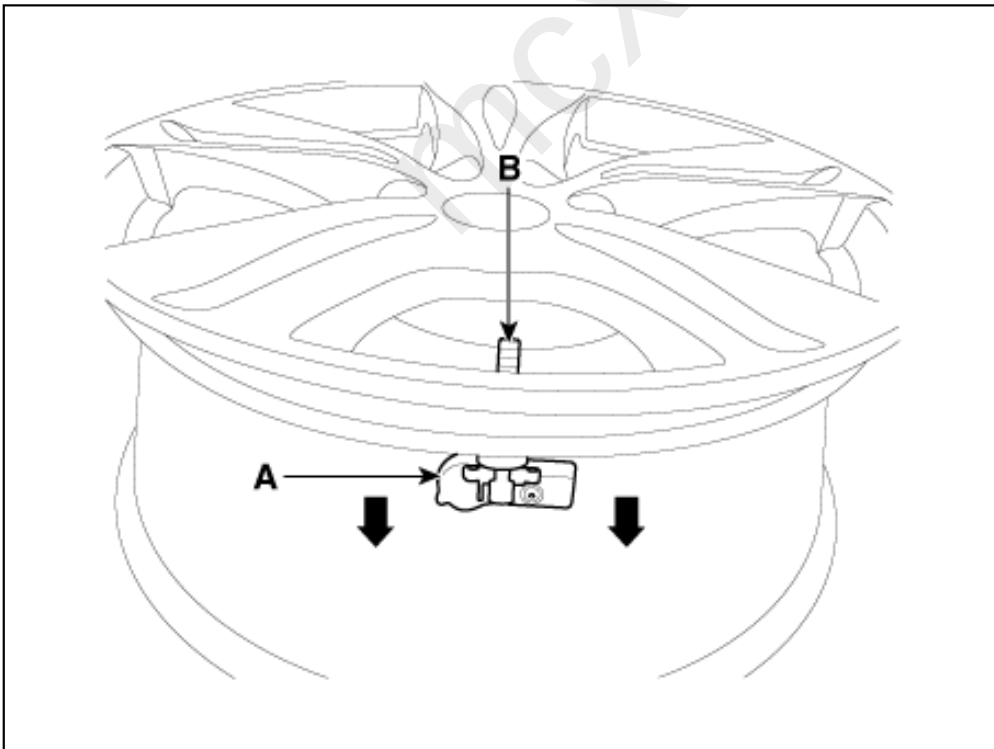
2. Remove the screw with torx driver (A).



- When installing the bead brake, make sure that it does not come in contact with the TPMS sensor.
- Be careful not to damage the TPMS sensor when installing the bead brake near the TPMS sensor.



3. Remove the sensor body (A) from the valve (B) in the direction of the arrow.

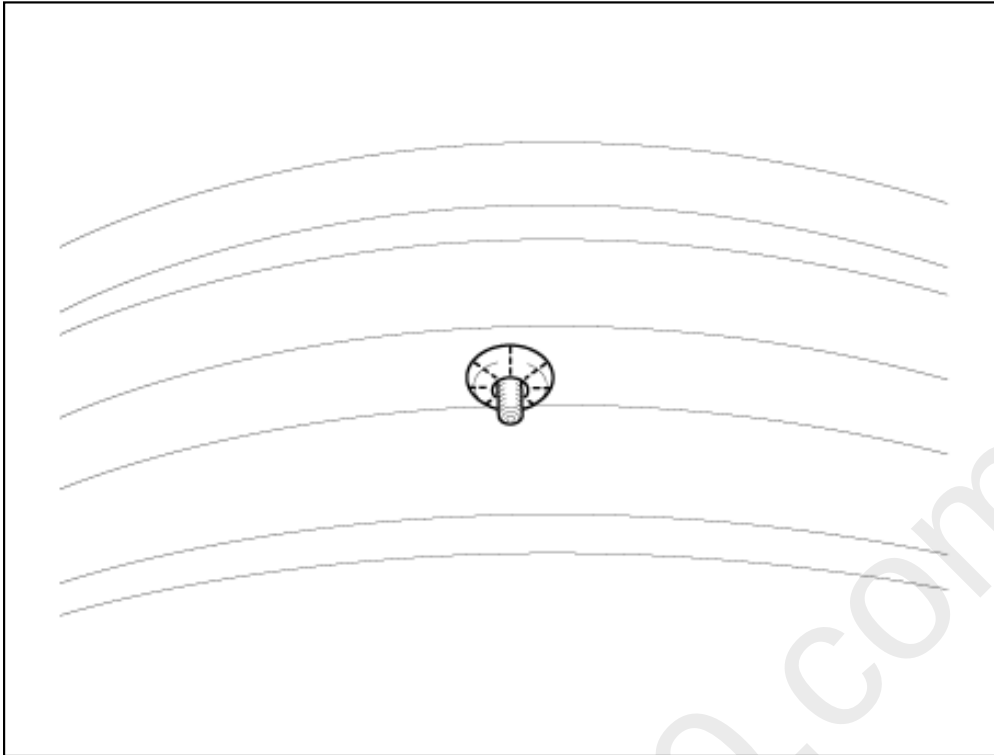


4. Remove the valve using the valve mounting tool.

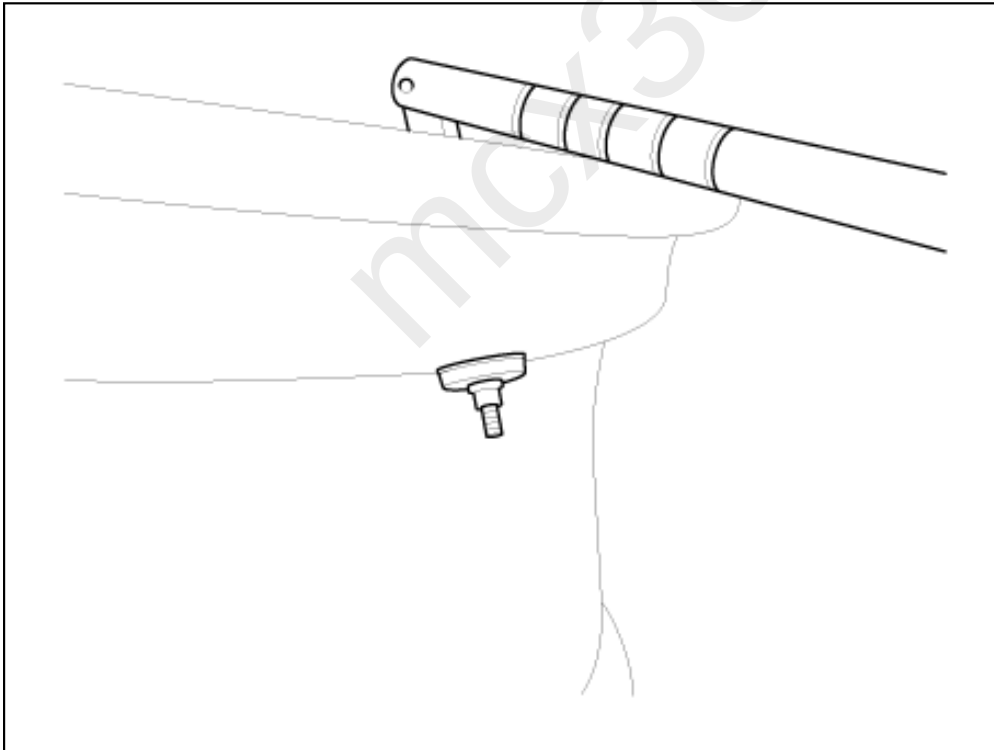


- Do not reuse the snap-in type TPMS sensor.

(1) Cut the rubber at the bottom of valve with a knife.



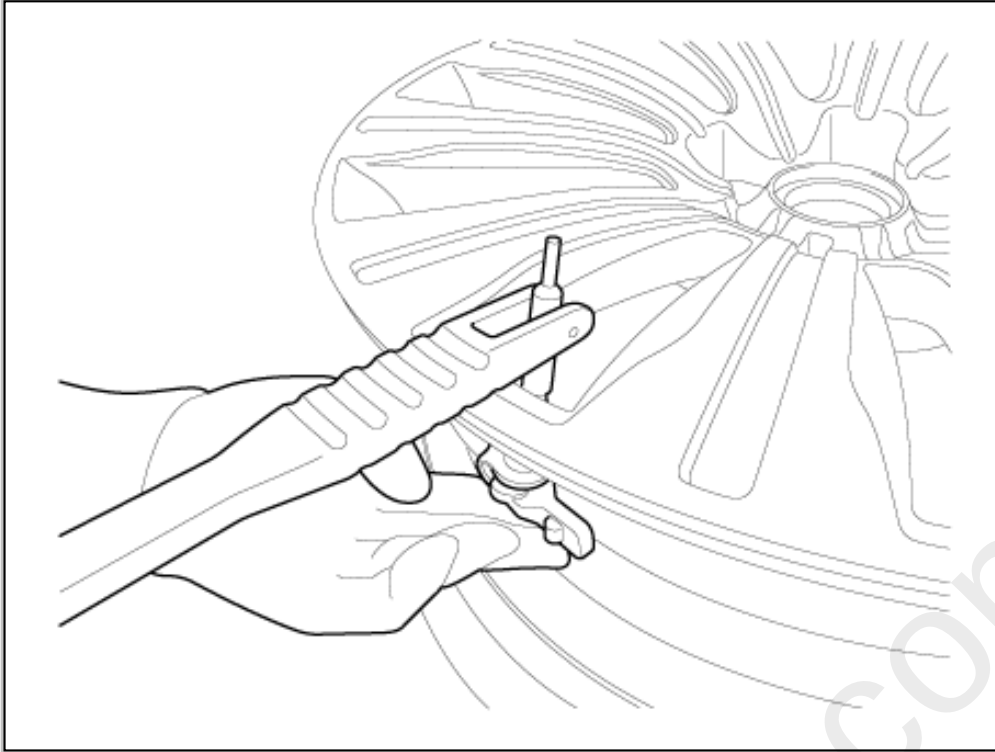
(2) Use the valve mounting tool to pull out the valve until it is entirely out of the lower hole.



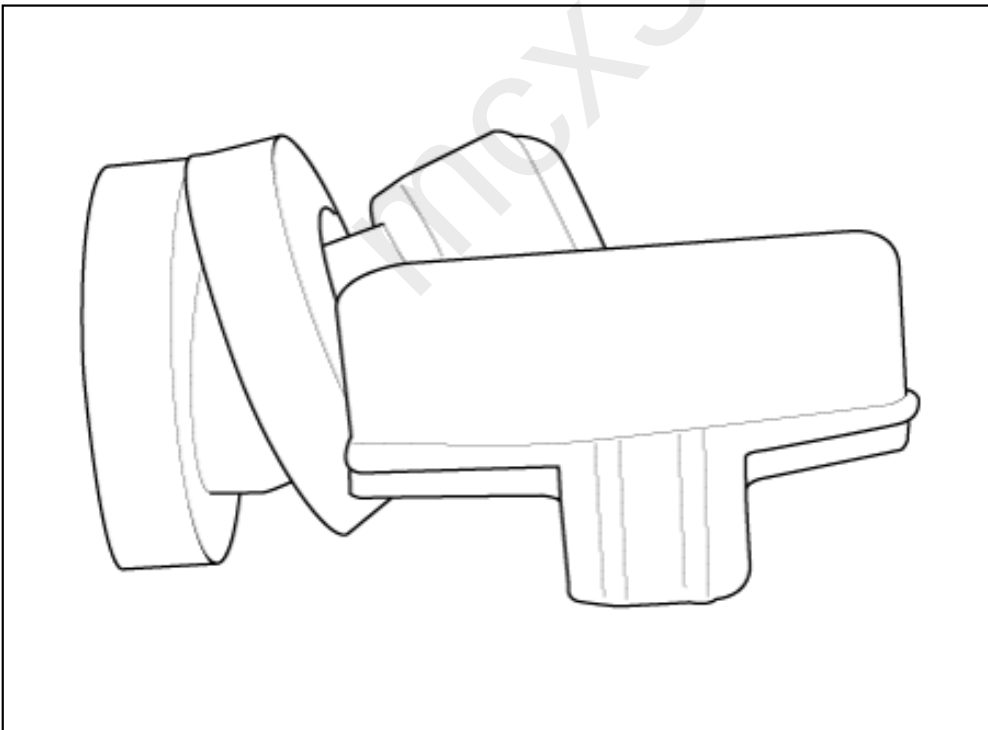
5. Apply lubricant to the surface of the valve, and then mount it through the valve hole of the wheel.



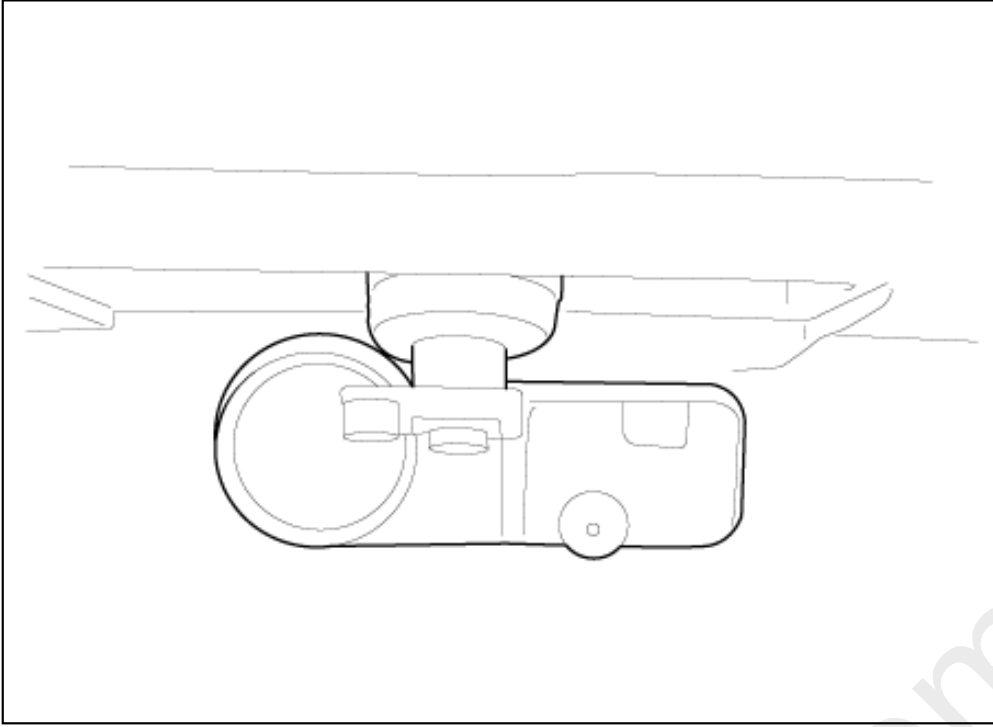
We recommend using regular soapy water as lubricant.



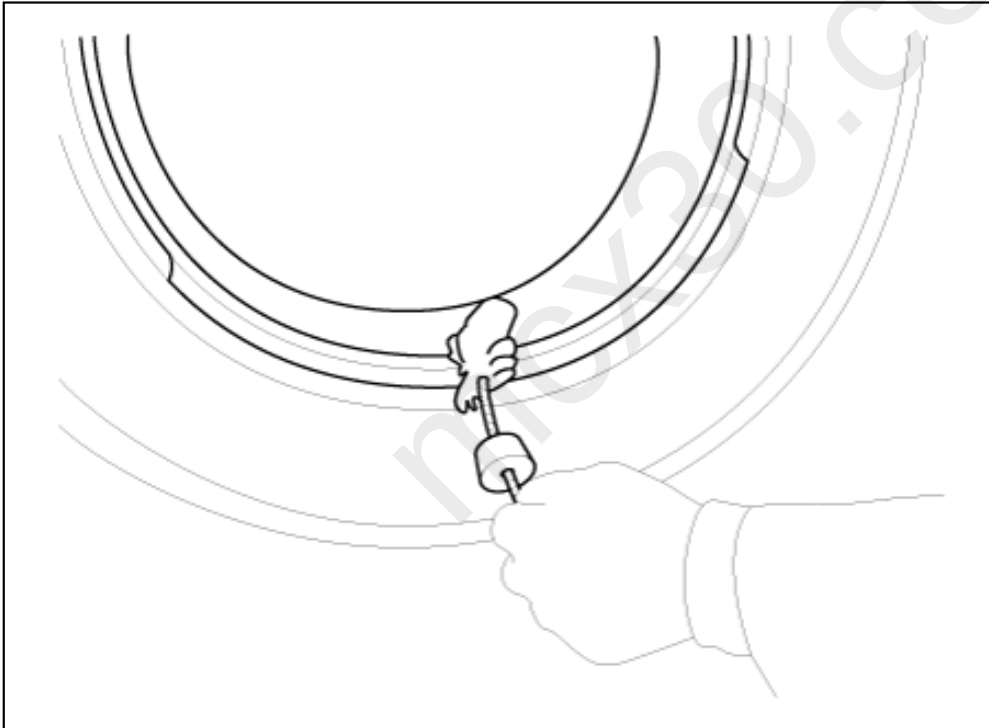
- The TPMS sensor valve bottom is not properly sealed if it is not fully mounted on the wheel, as shown in the following figure:



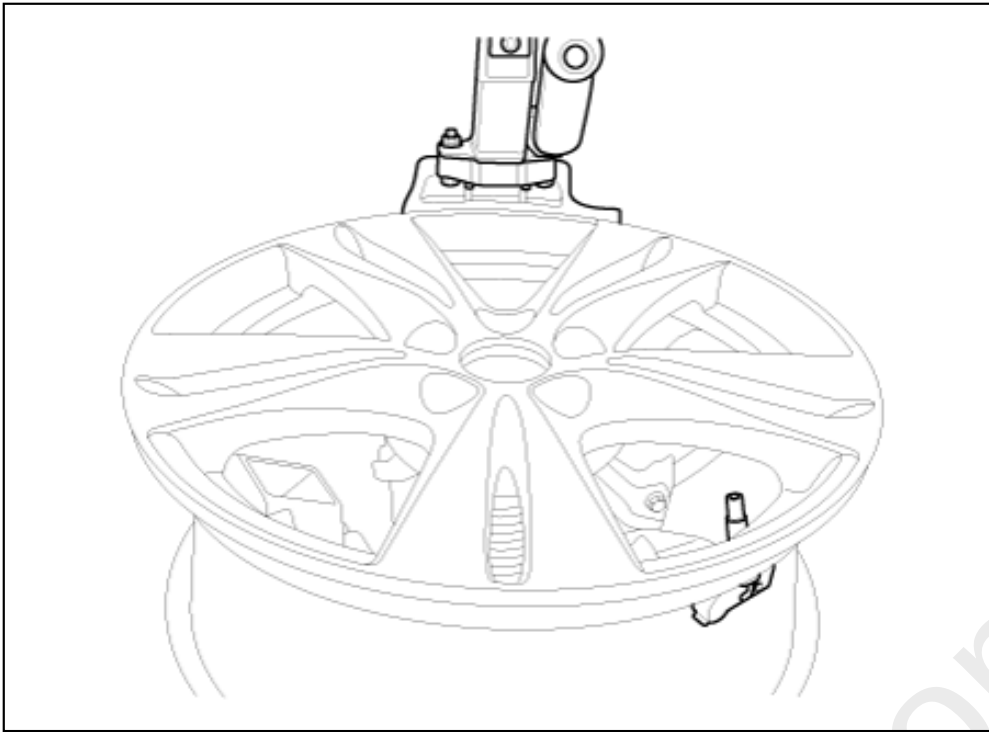
- Make sure that the valve body is pulled entirely through the hole.



6. Apply soapy water or lubricant to the upper/lower bead section of the tire.



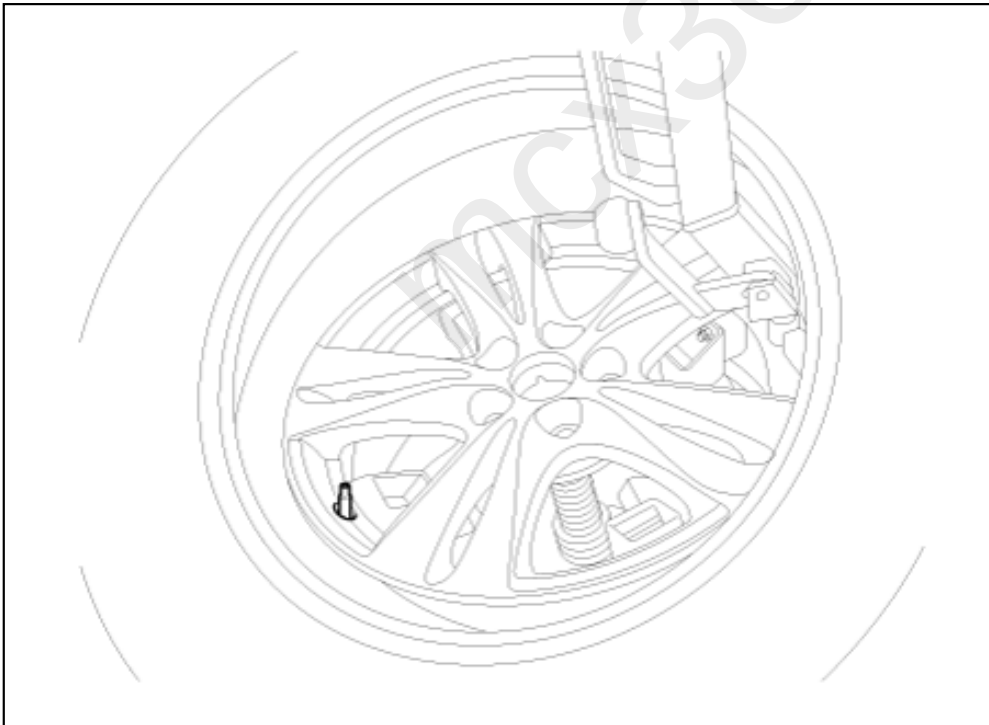
7. In order to mount lower the beads, place the TPMS sensor at 5 o'clock, starting from the head of the tire replacement equipment.



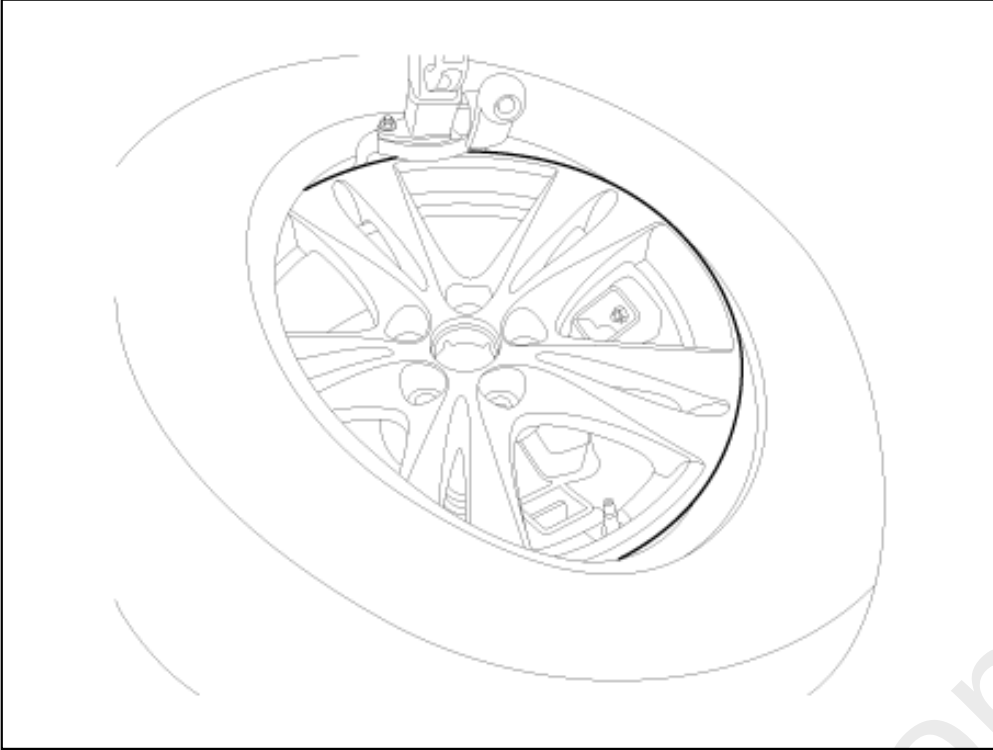
8. Rotate the rim clockwise and press tire towards 3 o'clock to mount the lower beads.



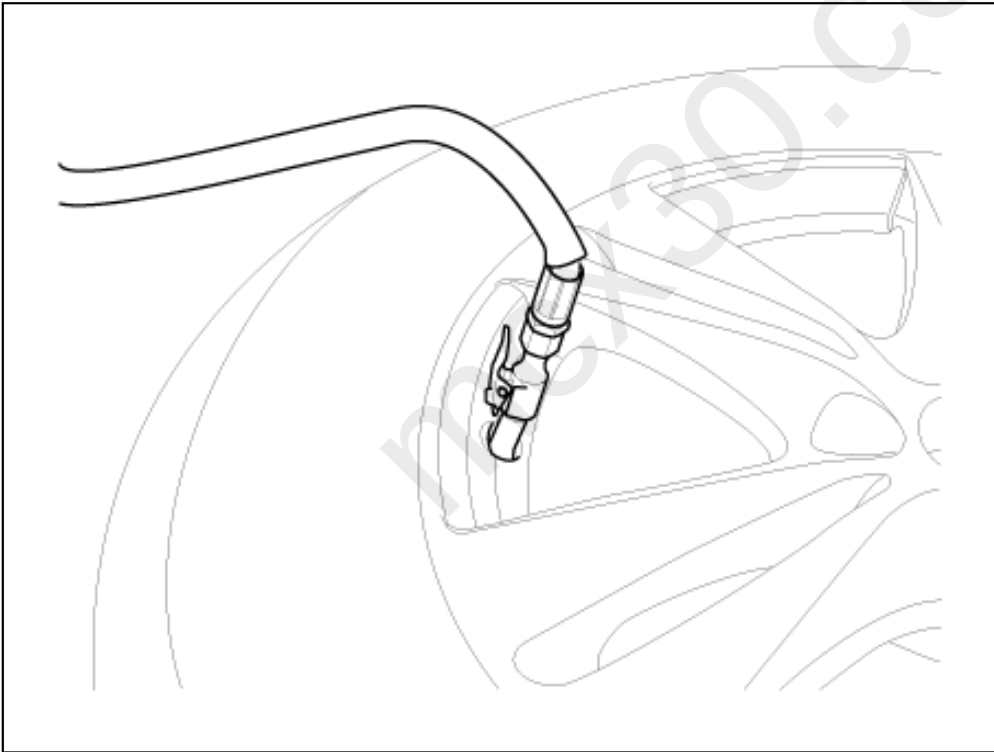
- Mount the tire on the wheel. Make sure that the beads touch the edge of the rim behind the sensor (towards 6 o'clock).



9. In order to mount the upper beads, press the tire towards 3 o'clock and turn the rim clockwise.



10. Inject air into the tire until the beads are in the correct position.



11. Adjust the tire pressure according to the recommended tire pressure for the vehicle.

12. If the TPMS sensor malfunctions, you must perform TPMS sensor learning. Replace any faulty sensors and perform TPMS sensor learning.

Diagnostic Procedure Using a Diagnostic Instrument

The following section describes how to diagnose faults using a diagnostic instrument.

1. Connect the diagnostic instrument to the self-diagnostic connector (16-pin) beneath the crash pad on the side of driver's seat, and then turn on the ignition to activate the diagnostic instrument.
2. In the GDS Vehicle Type Selection menu, select "Vehicle Type" and "TPMS" System, and then opt for "OK."

S/W Management

Systems**Components**Unfold All

■ Motor Driven Power Steering	⬇
■ Tire Pressure Monitoring System(High Type)	⬆
■ System Identification	📄
■ Sensor Status	📄
■ Register Sensor	📄
■ Write VIN	📄
■ Vehicle Name Writing	📄
■ TPMS TEST	📄
■ Wheel Sensor ID Writing	📄
■ Tire Pressure Monitoring System(Low Type)	⬇
■ Parking Guide System	⬇
■ Immobilizer	⬇
■ Smart Key Unit	⬇
■ Body Control Module	⬇
■ Cluster Module	⬇
■ Seat Belt Reminder/Lighting Module	⬇
■ Transmitter Code Saving	⬇

 Do not touch any system buttons while performing this function.



• Register Sensor

Purpose	To write Sensor ID into Tire Pressure Monitoring System(TPMS) ECU.
Enable Condition	1. Engine Off 2. Ignition Switch On 3. TPMS Exciter required
Concerned Component	Tire Pressure Monitoring System(TPMS) ECU, Initiator, Tire Pressure Monitoring System(TPMS) sensor
Concerned DTC	-
Fail Safe	-
Etc	This function is to write sensor ID that read with TPMS exciter to ECU

OK



Do not touch any system buttons while performing this function.

S/W Management

■ Register Sensor

● [Register sensor]

1. This function is to input sensor ID to TPMS control module(TPMS ECU), Which is used to operate the TPMS properly.
2. The data is composed of 8 alphanumeric characters.
3. [Read ID] is the sensor ID which is read through TPMS diagnosis module currently, [Write ID] is the new sensor ID which is stored in the TPMS ECU.

● [Condition]

1. IG. On (Engine Off)

Press the **[OK]** button.

OK

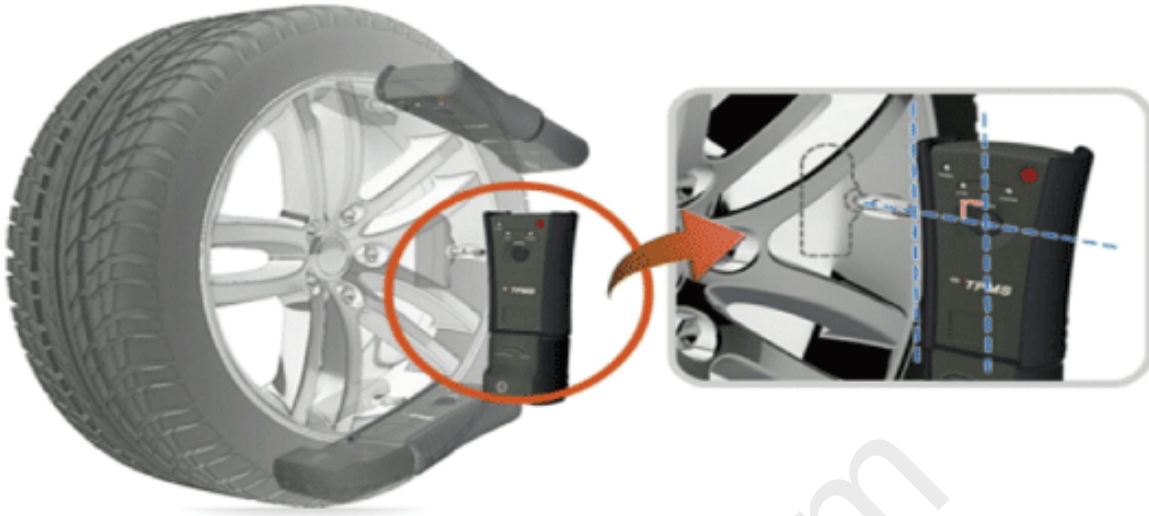
Cancel



Do not touch any system buttons while performing this function.

S/W Management

■ Register Sensor



[Caution]

For most accurate reading and retrieval of correct sensor data, follow the guide below.

1. Place the [Enter] button of the TPMS Diagnosis Module in line with the TPMS sensor(Valve stem) of the wheel as shown in the image.
2. Position the TPMS Diagnosis Module as near as possible to the tire.
3. Reading may take 30~60 seconds depending on the sensor's characteristics.

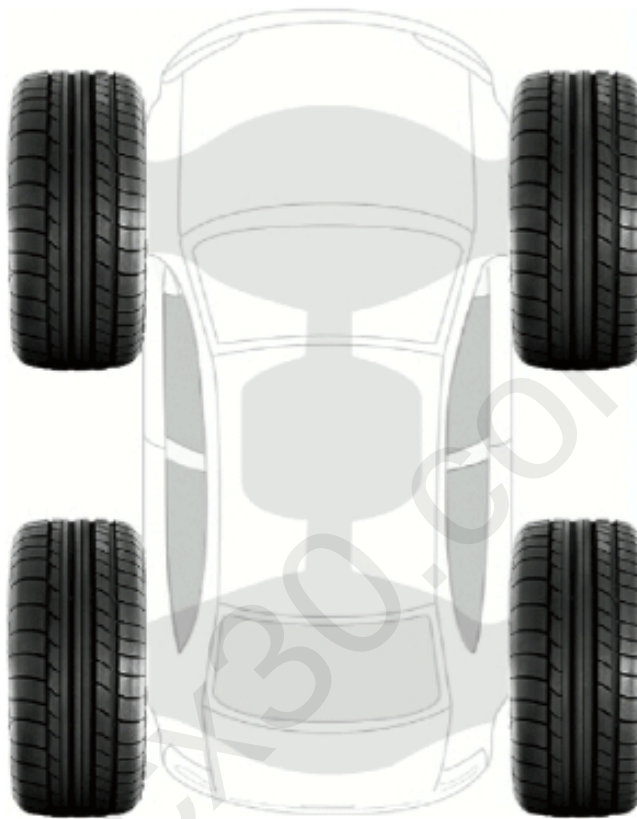
OK



Do not touch any system buttons while performing this function.

S/W Management

■ Register Sensor



The diagram shows a top-down view of a car with four tires. Each tire is associated with a sensor registration box. The boxes are arranged in a 2x2 grid around the car. Each box contains the following information:

- Front Left**
 - Read ID
 - 82D2C731
 - Write ID
 - [Empty box]
- Front Right**
 - Read ID
 - 83DB56AC
 - Write ID
 - [Empty box]
- Rear Left**
 - Read ID
 - 83DB56A7
 - Write ID
 - [Empty box]
- Rear Right**
 - Read ID
 - 82D2DBC0
 - Write ID
 - [Empty box]

Clear

Write

Cancel



Do not touch any system buttons while performing this function.

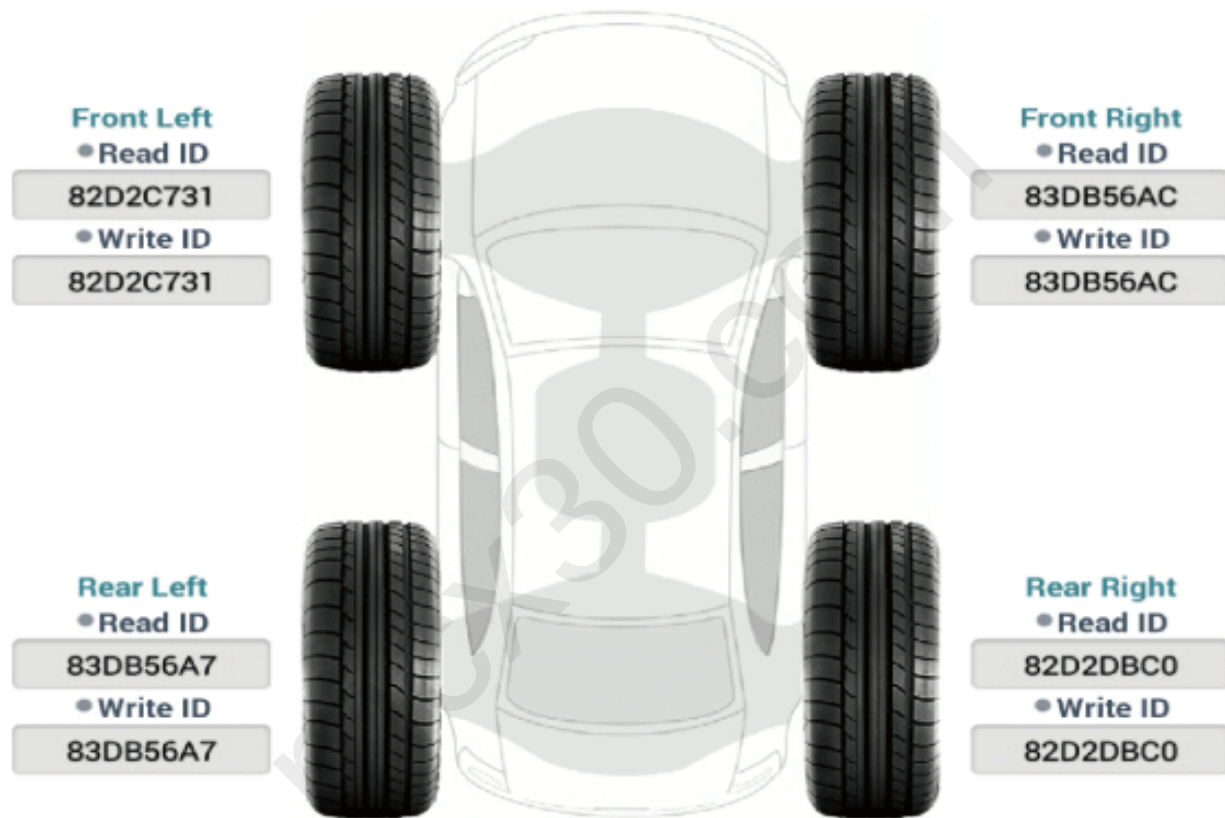


- Check that Write ID and Read ID are the match.
- After successfully registering the sensor, perform "Sensor Wireless Information" to confirm that the sensor operates properly.

S/W Management

■ Register Sensor

Modify sensor ID and press the **[OK]** button.



OK



Do not touch any system buttons while performing this function.

[Sensor Status Method]



■ Motor Driven Power Steering



■ Tire Pressure Monitoring System(High Type)



■ System Identification



■ Sensor Status



■ Register Sensor



■ Write VIN



■ Vehicle Name Writing



■ TPMS TEST



■ Wheel Sensor ID Writing



■ Tire Pressure Monitoring System(Low Type)



■ Parking Guide System



■ Immobilizer



■ Smart Key Unit



■ Body Control Module



■ Cluster Module



■ Seat Belt Reminder/Lighting Module



■ Transmitter Code Saving



Do not touch any system buttons while performing this function.

S/W Management



• Sensor Status

Purpose	To check status of TPMS(Tire Pressure Monitoring System) sensor installed in each wheels.
Enable Condition	1. Engine Off 2. Ignition Switch On 3. TPMS Exciter required
Concerned Component	Tire Pressure Monitoring System(TPMS) ECU, Initiator, Tire Pressure Monitoring System(TPMS) Sensor
Concerned DTC	-
Fail Safe	-
Etc	1.Must check vehicle type(Low or High) before change sensor type. 2.In case vehicle type is low, then sensor status must be changed to low type.

OK



Do not touch any system buttons while performing this function.

S/W Management

■ Sensor Status

● [Sensor status]

This function is to read information about sensor status from TPMS sensor in the Tire.

Press the **[OK]** button.

OK

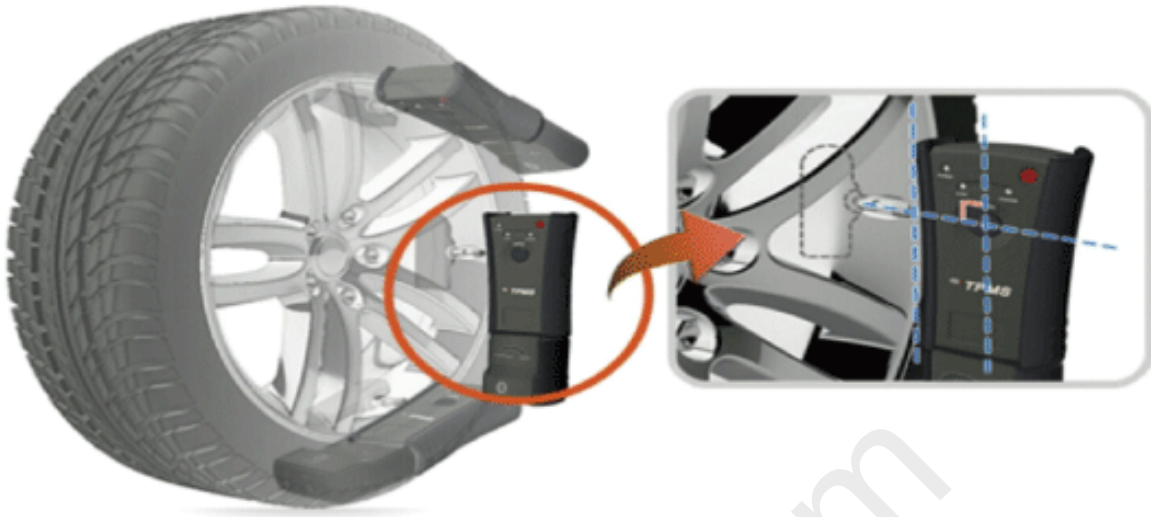
Cancel



Do not touch any system buttons while performing this function.

S/W Management

■ Sensor Status



⚠ [Caution]

For most accurate reading and retrieval of correct sensor data, follow the guide below.

1. Place the [Enter] button of the TPMS Diagnosis Module in line with the TPMS sensor (Valve stem) of the wheel as shown in the image.
2. Position the TPMS Diagnosis Module as near as possible to the tire.
3. Reading may take 30~60 seconds depending on the sensor's characteristics.

OK



Do not touch any system buttons while performing this function.

S/W Management

■ Sensor Status

1

ITEM	VALUE	UNIT
ID :	82D2C731	
Tire Type :	50 psi	
Pressure :	0.0	psi
Temperature :	32	'F
Acceleration :	1.0	g
Market :	Except USA	
Sensor Status :	PARK MODE	
Battery Level :	OK	

Retry

2

ITEM	VALUE	UNIT
ID :		
Tire Type :		
Pressure :		psi
Temperature :		'F
Acceleration :		g
Market :		
Sensor Status :		
Battery Level :		

Retry

3

ITEM	VALUE	UNIT
ID :		
Tire Type :		
Pressure :		psi
Temperature :		'F
Acceleration :		g
Market :		
Sensor Status :		
Battery Level :		

Retry

4

ITEM	VALUE	UNIT
ID :		
Tire Type :		
Pressure :		psi
Temperature :		'F
Acceleration :		g
Market :		
Sensor Status :		
Battery Level :		

Retry

Cancel



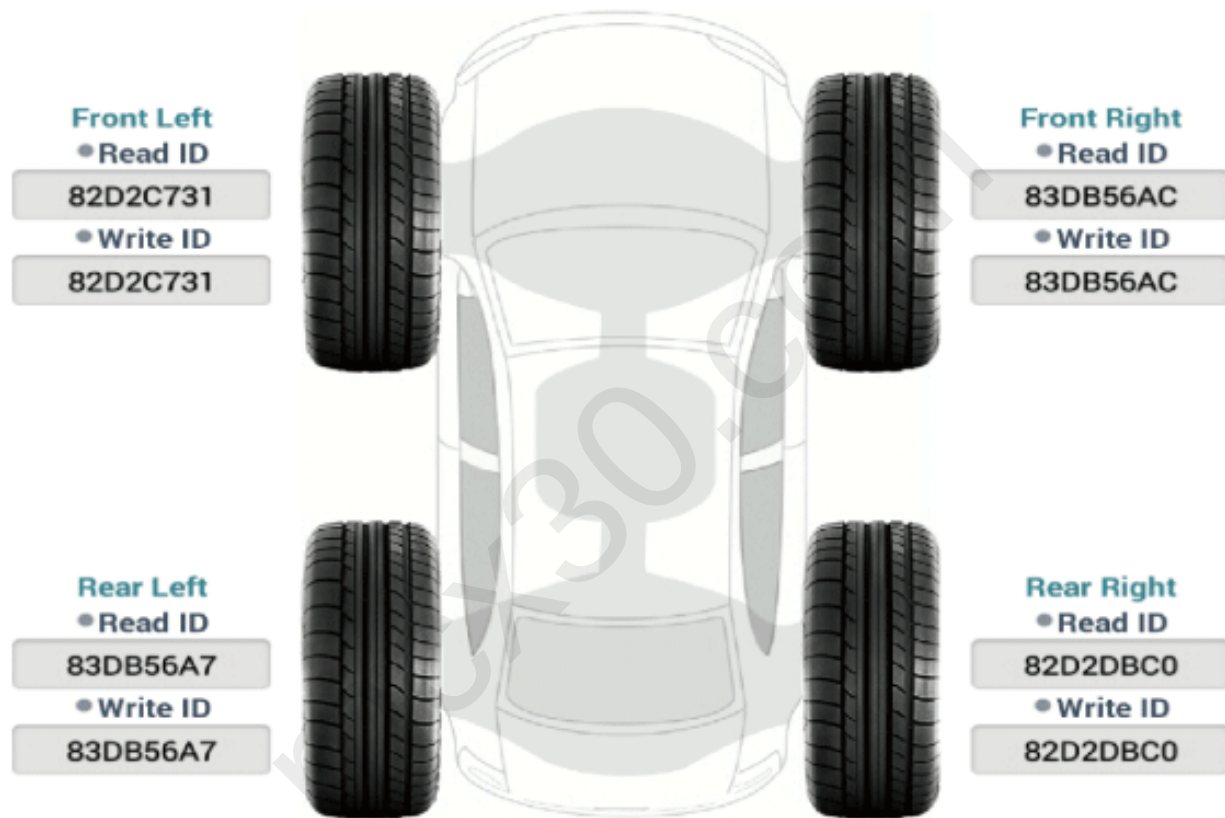
Do not touch any system buttons while performing this function.

- Each entry must be checked for normal operation of each sensor.
- After replacing the tires or sensors, check for proper operation of sensor after sensor registration process.

S/W Management

■ Register Sensor

Modify sensor ID and press the **[OK]** button.



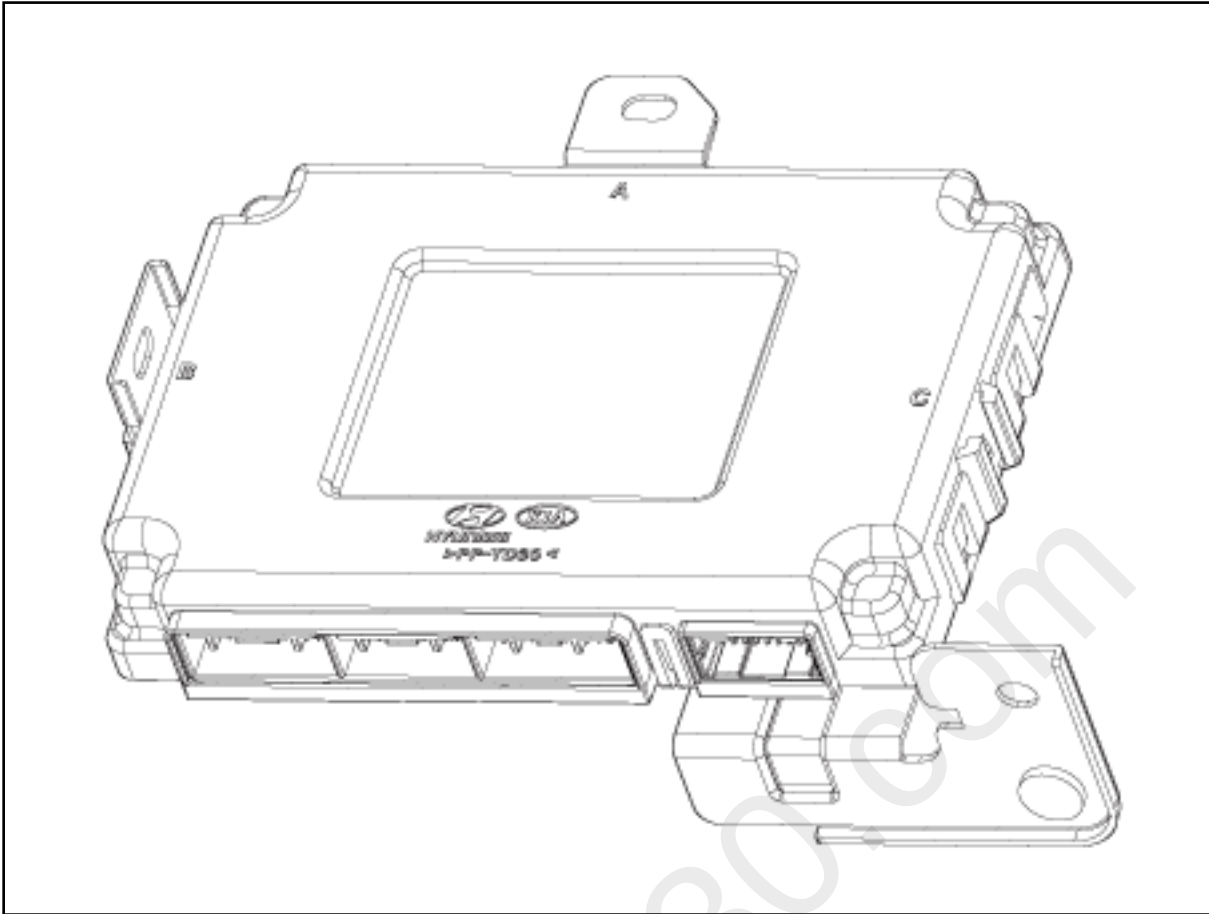
OK



Do not touch any system buttons while performing this function.

Description

TPMS Receiver : BCM(body control module) integrated management



1. Mode

(1) Virgin State

- The receiver as a sole part is shipped in this state. Replacement parts should therefore arrive in this state.
- In this state, there is no Auto-Location, no sensor wake-up, no sensor monitoring and no DTC monitoring..
- The state indicates that platform specific parameters must be written to the receiver and that sensors are un-learned.

(2) Normal State

- In order for tire inflation state and DTC monitoring to occur, the receiver must be in this state.
- In this state, automatic sensor location / learning is enabled.

2. Overview

- Learn TPMS sensor for under inflation monitoring automatically.
- Uses sensor information, distance travelled, background noise levels, Auto-learn status, short / open circuit output status, vehicle battery level, internal receiver states to determine if there is a system or a vehicle fault.

Operation

1. General Function

- Auto-learn takes place only once per Ignition cycle.
- On successful completion, 4 road wheel sensor ID's are latched into memory for monitoring.
- Until Auto-learn completes, previously learned sensors are monitored for under inflation / leak warnings.

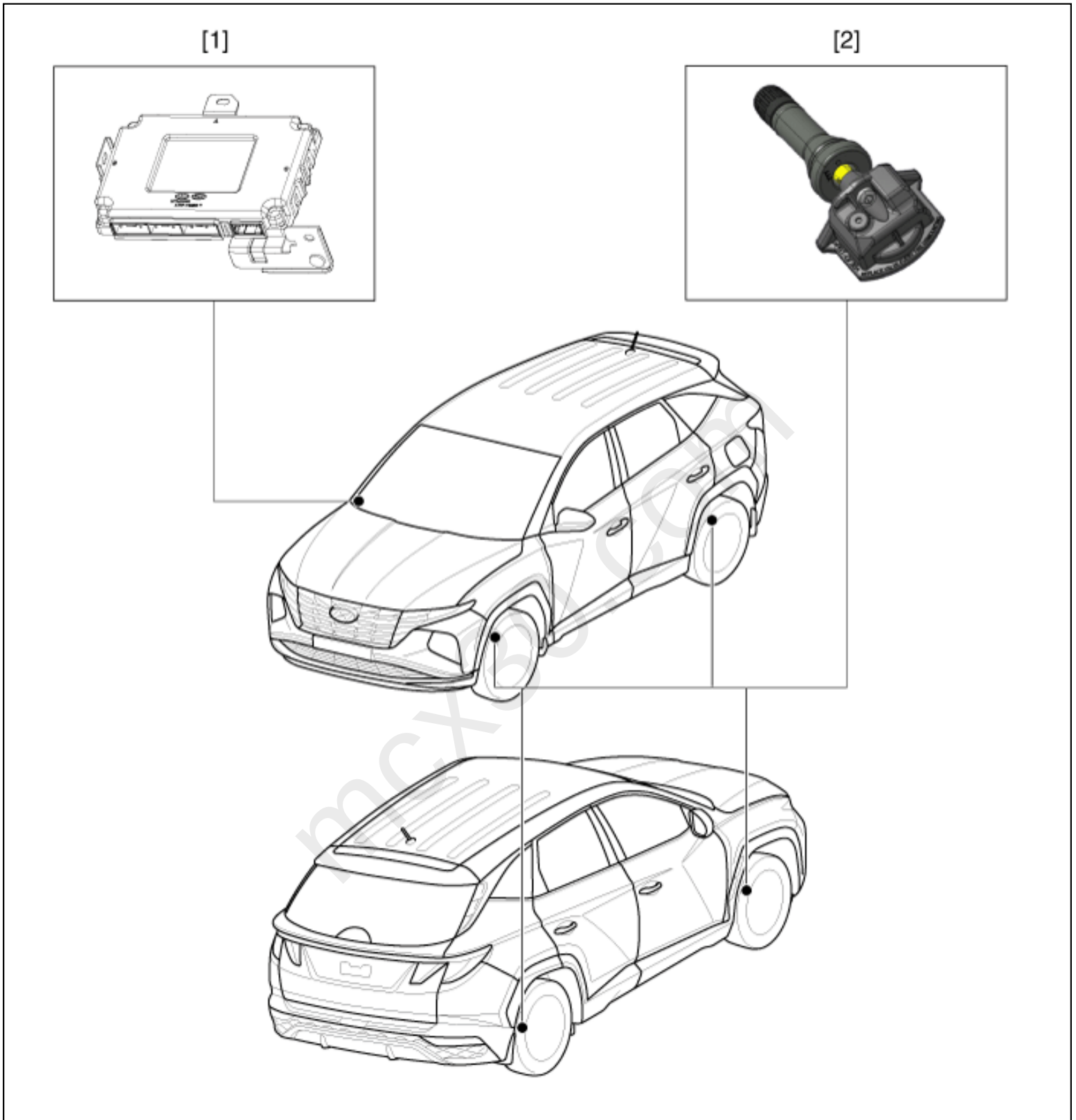
2. General Conditions to Learn New Sensors:

- Receiver must determine that it is confident that sensor is not temporary:
 - a. Uses vehicle speed.
 - b. Uses confidence reduction of previously learned sensors.
- Typical time at driving continuously over 15.5 mph(25 kph) to learn a new sensor is up to 20 minutes.

3. General Conditions to Un-Learn a sensor that is removed :

- It takes less than 20 minutes at 15.5 mph(20-30 kph).
- Confidence reduction is dependent on time which vehicle is driven at speed greater than or equal to 12.4 mph(20-30 kph).

Components
Location

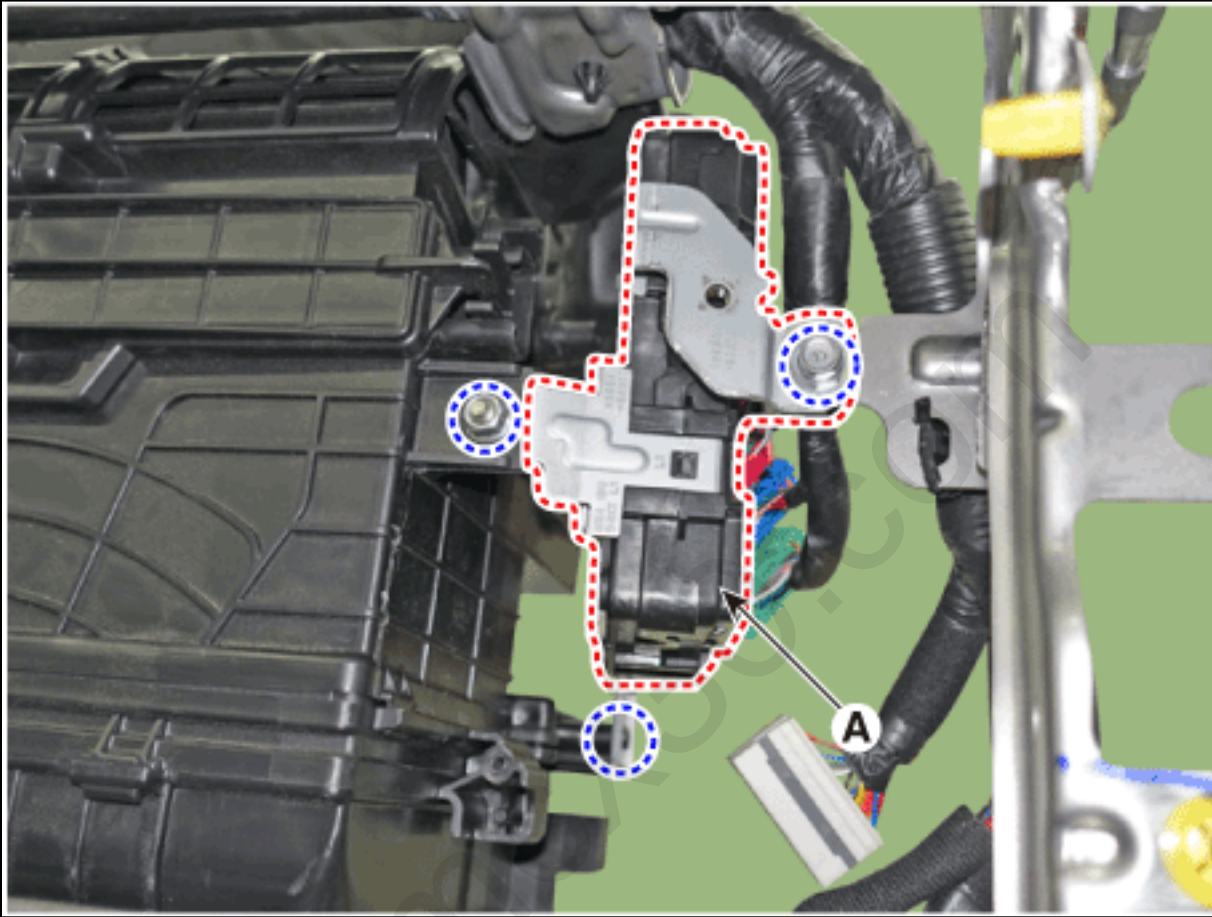


1. Receiver

2. TPMS Sensor

Removal

1. Turn the ignition switch OFF and disconnect the battery negative (-) cable.
2. Remove the glove box.
(Refer to Body - "Glove Box")
3. Remove the heater control unit.
(Refer to Heating,Ventilation And Air Conditioning - "Heater Control Unit")
4. Remove the integrated Body control Unit (IBU) (A) after loosening the mounting bolts and nuts.



5. Remove the integrated Body control Unit (IBU) (A) after disconnecting the connector.



Installation

1. To install, reverse the removal procedures.

Installation

Smart Key Unit

2. (Refer to Body Electrical System - "Smart Key Diagnostic")

Smart Key Switch

3. (Refer to Body Electrical System - "Smart Key Diagnostic")