Tire pressure monitoring system

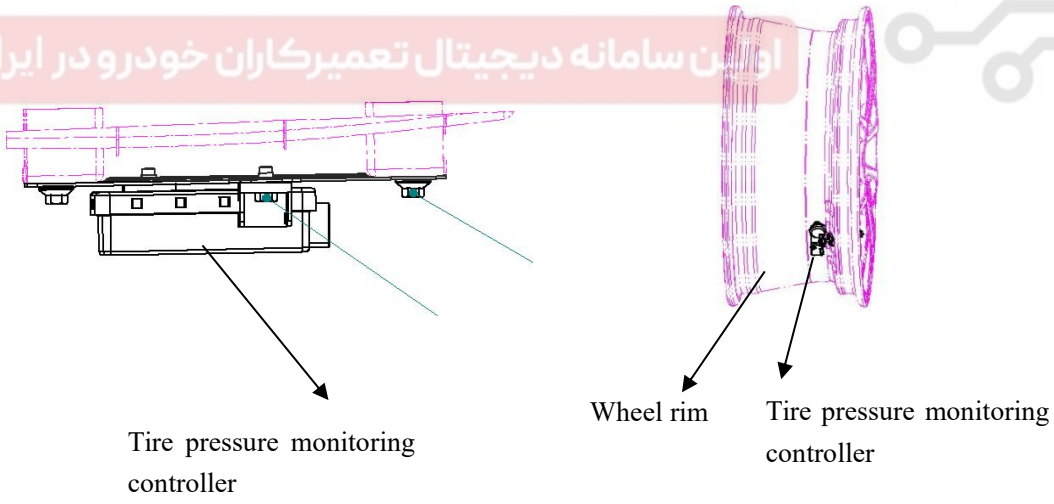
1. System overview

Tire pressure monitoring system can monitor the pressure and temperature in the tire, give alarm in time when the setting value is exceeded (the alarm indicator is indicated by the instrument light), help the driver to grasp the condition of the tire in real time and reduce the traffic accidents caused by the tire failure, increasing vehicle driving safety.

TPMS system consists of three components: alarm indicator (integrated in the dashboard), tire pressure monitoring controller, tire pressure monitoring sensor. Detailed composition is as follows

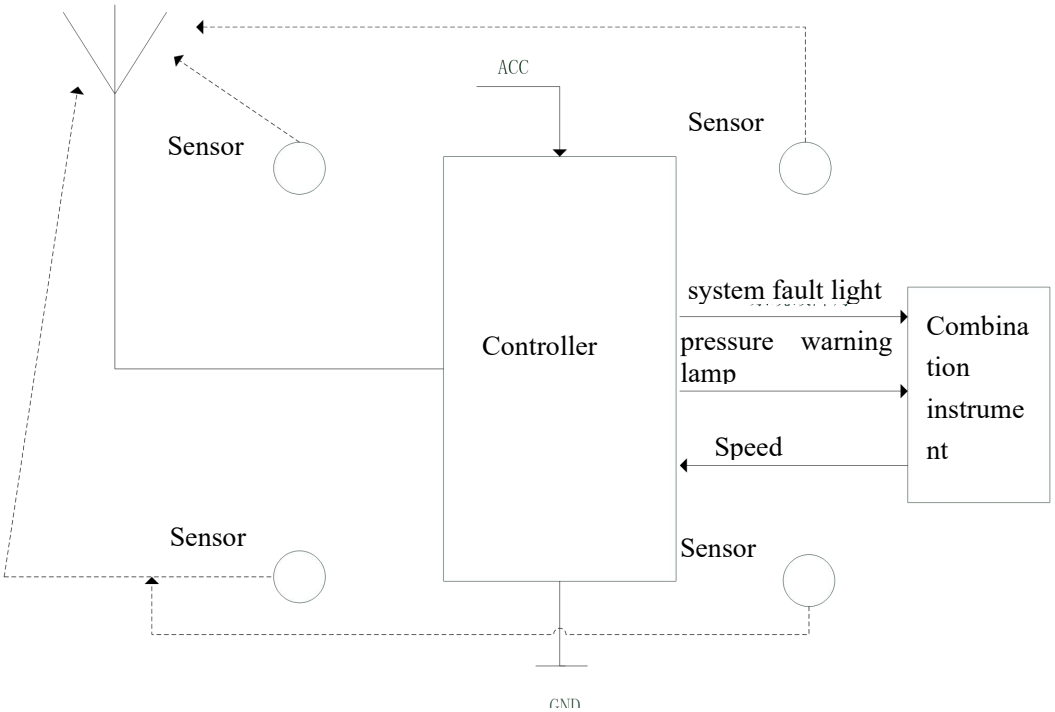
Parts name	Quantity	Remark
Tire pressure monitoring controller	1	Installed on the body sheet metal under the C-pillar
Tire pressure monitoring controller	4	Installed in four tires
alarm indicator	2	Integrated on the instrument cluster (two indicators) 1. (!) Warning indicating lamp 2. TPMS Warning indicating lamp

2, the component location map



Tire pressure monitoring system component location map

3. Principle diagram



Description: 433.92MHz RF Signal

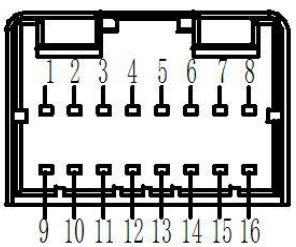
Tire pressure monitoring system schematic

4, component testing

1. Check if the power supply of the tire pressure monitoring system controller is normal (9V ~ 16V).

2. The terminal of the tire pressure monitoring system control module is defined as follows:

Controller terminal definition table

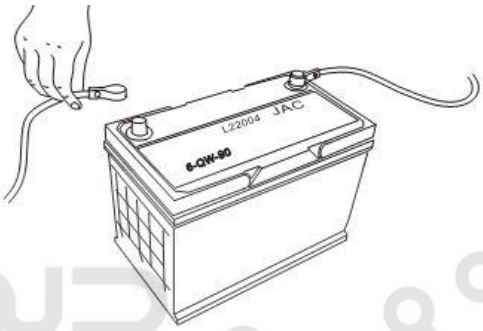
Tire pressure monitoring controller	Connector definition			Remark
	1			
	2	IGN		
	3	CAN-H		
	4	CAN-L		
	5			
	6			
	7	/		
	8	/		
	9	GND		
	10			

	11	/		
	12	/		
	13	/		
	14	/		
	15	/		
	16	/		

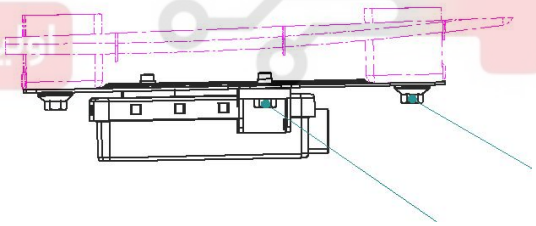
5, tire pressure monitoring system control module replacement

1.Demounting procedure:

1) Disconnect the battery negative.



2) Remove the sub-meter.

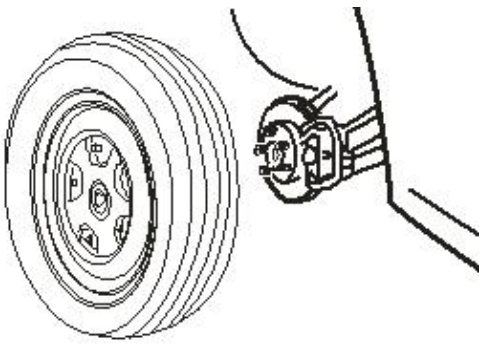


3) Remove the fixing bolts of the tire pressure monitoring system module.

4) Disconnect the connector and take out the tire pressure monitoring system module.

2. Install in the reverse order of disassembly.

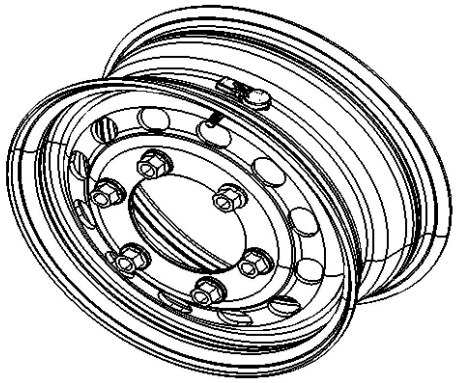
6, tire pressure monitoring system sensor replacement



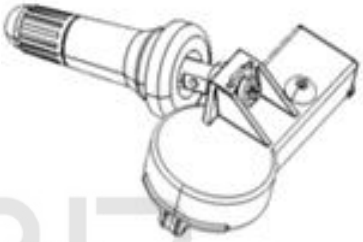
1.Demounting procedure:

1) disassemble wheel.

2). Remove the tire.



3) Remove the tire pressure monitoring sensor.



2. Install in the reverse order of disassembly.

7, common fault detection and maintenance methods

1. Tire pressure monitoring instruction

Symbol (instrument)	Indicator lamp type	Indicator type
	Abnormal Tire Pressure	Quick tire leak: twinkle Low pressure: normally on High pressure: normally on High temperature: normally on
TPMS	System fault	Sensor battery low battery: always bright Sensor failure: always bright High frequency acceptance

		failure: always bright Tire pressure controller and instrument communication disconnect

2. Alarm type and description

Alarm type	Description
Quick tire leak	When the system is running, one or more tire pressures drop more than 30 kPa in 1 minute, and a rapid air leak alarm is issued; the pressure does not change or rises, and the rapid air leak alarm is cancelled.
Low pressure	When the system is running, one or more tire pressures are lower than 75% of the cold pressure value specified by the manufacturer, and a low pressure alarm is issued; the pressure returns to normal and the low pressure alarm is released.
High pressure	When the system is running, one or more tire pressures are higher than 125% of the cold pressure value specified by the manufacturer, and a high pressure alarm is issued; the pressure returns to normal and the low pressure alarm is released.
High temperature	When the system is running, one or more tires are above 85℃, and a high temperature alarm is issued; the temperature returns to normal and the high temperature alarm is released.
Sensor battery low power	When the system is running, one or more of the tire pressure sensor battery power is lower than a certain value, and a low battery alarm is issued; the battery returns to normal, and the low battery alarm is released.
Sensor failure	When the system is running, vehicle speed is more than 30km/h, one or two sensor valid data is not received within 58 minutes (the rest of the sensors can receive valid data), and a sensor failure alarm is issued; all sensor valid data are received and the failure alarm is released.

① Ignition switch ON/START, if the four sensors have been bound, the indicator light and the TPMS system fault light turn on 2s and turn off at the same time.

② Ignition switch ON/START. If four sensors are bound, the tire pressure warning indicator will turn off after 2s. TPMS system failure lamp will twinkle in the period of 2s.

③ Enter the sensor learning mode, the two lights turn on at the same time (light), when the binding is successful, the two lights turn off at the same time.

④ driving process, the system and the pressure is normal, the two lights do not light.

⑤ release the alarm, the corresponding alarm light goes out.

⑥ system according to the alarm situation priority is divided into three levels (one highest):

Level 1: quick leak

Second level: low pressure, high pressure, high temperature

Level 3: sensor battery low power, sensor failure, high frequency reception failure

When an alarm status is indicated, the high-level alarm indicator lights first, and both LEDs do not light at the same time.

⑦ After the alarm (the corresponding indicator light), if the ignition switch off and then re-open, the system clear a variety of alarm status instructions, re-detection.

3. Tire pressure monitoring system alarm and processing method

Indicator lamp status	Possible Reasons	Disposal Method
Ignition switch ON/START, the tire pressure warning indicator point and TPMS indicator light turn on 2s and then go out	The original receiver of the vehicle is not learning binding.	To the 4S shop, please use a hand-held learning tool to regain all tire sensor IDs and bind the receiving controller.
	The acceptance controller has been replaced and the receiving controller has not been learned to bind.	
Indicator lamp flashes	Driving process, the tire tie holes, split and other injuries, the rapid decline in tire pressure.	It is necessary to stop as soon as possible and check all tires and air pressure.
	While parking (ignition switch ON/START),	To be deflated stop or inflated, it will

	deflate the tire.	automatically lift the alarm.
Indicator lamp normally on	During stop (ignition switch ON/START), the tire is deflated, causing the air pressure to be too low.	Inflate the tire to the correct air pressure (tire pressure is listed on the tire pressure label).
	During the stop (ignition switch ON/START), the tire is deflated, resulting in excessive air pressure.	Deflate the tire to the correct pressure value.
	Driving on bumpy roads/ turning, the force of each tire is different, causing the tire pressure to be too high or too low during this period.	Drive to a flat / straight road, if the pressure is normal, the alarm will be automatically released.
	During driving, the tire pressure was detected to be insufficient (the tire has not been inflated for a long time / leaked due to tire damage).	It is necessary to stop as soon as possible and check all tires and air pressure.
	You must stop as soon as possible to check all tires and air pressure. The vehicle travels at high speed and overload, causing tires to overheat.	Slow down and do not overload.
	During driving, if the air pressure is insufficient, the friction increases, causing the tire to overheat.	It is necessary to stop as soon as possible and check all tires and air pressure.

	One or more tire pressure sensors have battery levels below a certain value.	Timely go to the 4S shop to replace the sensor and re-learn the binding.
	One of the four tires does not have a tire pressure sensor installed in one or both tires.	Install the correct sensor in the 4S shop and relearn the binding.
	One or two of the four tires are mounted incorrectly (ie, the sensor ID does not match the receiving controller ID).	Install the right tires at the 4S store and re-learn the bindings
	Of the four tires, the tire pressure sensor of one or two of the tires fails and data cannot be transmitted.	Go to the 4S shop to replace the sensor and relearn the binding.
TPMS indicator lamp normally on	The high-frequency receiving module of the receiving controller is damaged and has not received any sensor data for 20 consecutive minutes.	Check the receiving controller at the 4S shop. If you need to replace the receiving controller, you must relearn the binding.
	The sensor IDs of all four tires and the receiving controller ID do not match and no valid sensor data was received for 20 consecutive minutes.	Re-learn the bindings at the 4S store.
	Driving in the same-frequency interference area (strong	After leaving the same frequency interference zone, the alarm status is

	interference, continuous), such as airports, radio towers, etc., may cover the sensor signal.	automatically released.
	Receiver controller wire harness bad contact	Unplug the receiving controller and reconnect it
The ignition switch is turned from OFF to START or ON,and the indicator does not light.	Indicator light failure	Go to the 4S shop and ask the professional to check the instrument. If the instrument is damaged, you need to replace the instrument.

Attention：

■The TPMS system is the tire pressure monitoring auxiliary system. The signal transmission is completed by the high-frequency signal. When the high-frequency signal is interfered by the same frequency electromagnetic field and interfered with for a long time, it will send a system fault alarm. When the car is away from the strong magnetic field, alarm status will be automatically lifted, it is normal

■When the vehicle is running or turning on a bumpy road, the tires are stressed differently. As a result, the tire pressure is too high or too low during this period. Sometimes the system may occasionally get an alarm. When the vehicle travels to a flat and straight road, if the pressure is normal, the alarm will be automatically released, which is normal.

■There is no tire pressure monitoring sensor installed in the spare tire. After changing the spare tire, the TPMS system fault light will be on constantly.