

GROUP 31

WHEEL AND TIRE

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GENERAL INFORMATION

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The wheels and tires of the following specifications have been established.

SPECIFICATIONS

ROAD WHEEL AND TIRE

ITEM		SPECIFICATIONS
Wheel	Type	Steel type or Aluminum type*
	Size	14 × 4.5 J
	Amount of wheel offset mm	46
	PCD mm	100
Tire	Size	165/65R14 79S

SPARE WHEEL AND TIRE*

ITEM		SPECIFICATION
Wheel	Type	Steel type
	Size	14 × 4T
	Amount of wheel offset mm	38
	PCD mm	100
Tire	Size	T115/70D14 88M

NOTE: The * mark indicates optional item.

NOTE: PCD indicates the pitch circle diameter of the wheel installation holes.

FLAT TIRE TEMPORARY REPAIR KIT

The flat tire temporary repair kit consists of the flat tire temporary repair agent set and the air compressor, and the kit is stored under the rear right seat.

1. The flat tire temporary repair agent set consists of the flat tire temporary repair agent, injection hose, valve core, valve core turner, vehicle speed restriction sticker, and user's manual.
2. Power supply for the air compressor is available at the cigarette lighter (DC 12V) only.
3. When repairing or replacing the tire to which the flat tire temporary repair kit was used, it is necessary to drain the repair agent remaining in the tire.
4. When a puncture point can be identified, the tire can be repaired according to a normal procedure. However, if the puncture point cannot be identified, replace the tire.

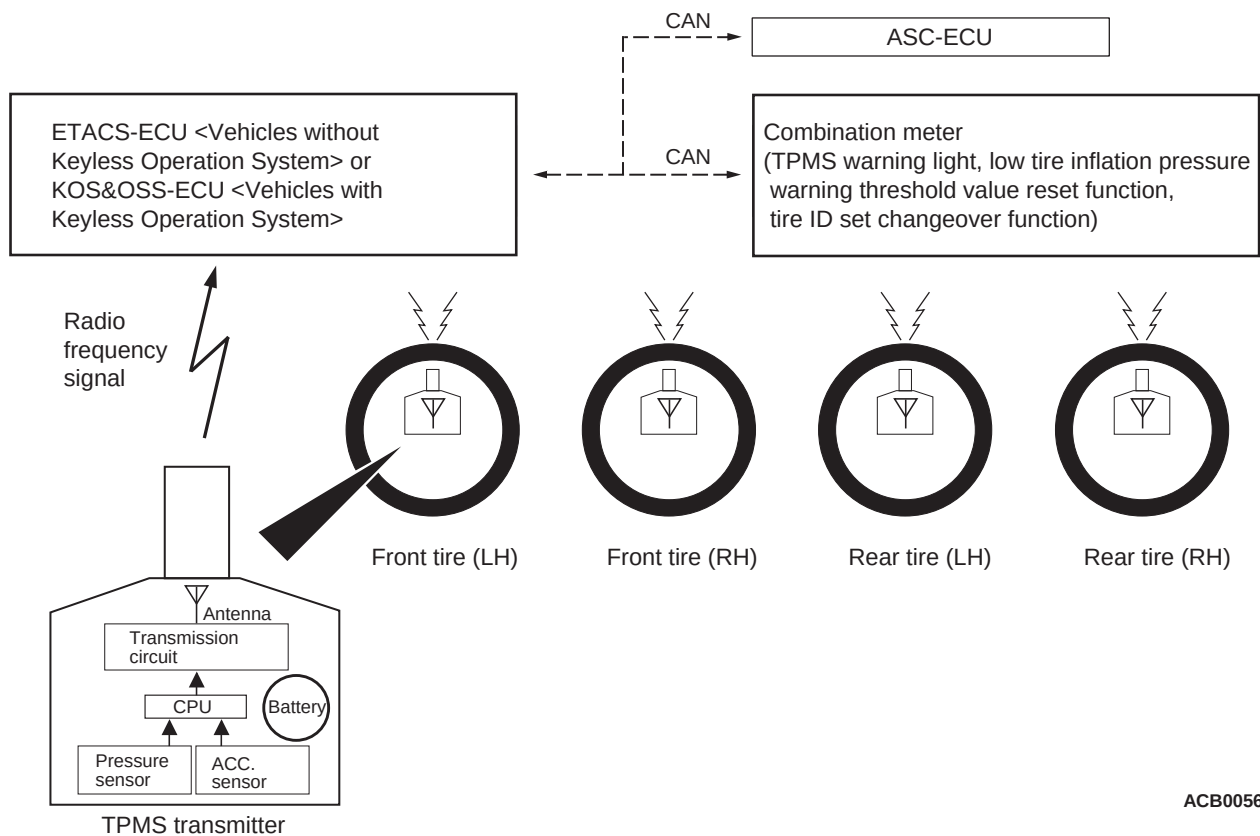
SPECIFICATIONS

Items		Specifications
Flat tire temporary repair agent	Repair agent volume mL (fl. oz.)	320 (10.8)
	Repairable area	Nail puncture hole of 4 mm (0.2 in) or less at tire tread
	Shelf life	Shelf life is indicated on the repair agent bottle.
	Disposal method	Waste oil disposal
Air compressor	Relief valve operating pressure kPa (psi)	800 (116)
	Air compressor maximum current	10A or less
	Air gauge indication error	±3% or less

TIRE PRESSURE MONITORING SYSTEM (TPMS)

When the tire pressure becomes under the specified value, the TPMS function warns the driver of that state by illuminating the TPMS warning light.

SYSTEM CONFIGURATION



ACB00564 AE

OPERATION

- The signals from the TPMS transmitter are received by the ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System>.
- ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System> processes input signals from each TPMS transmitter as well as vehicle speed signals from the ASC-ECU. It receives the atmospheric pressure signal from ECM, and when the atmospheric pressure is low (such as at high altitude), it calibrates the tire pressure received from TPMS transmitter and makes a judgment of warning. When the road tire pressure is low, ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System> sends a warning signal causing the TPMS warning light to be illuminated. When the TPMS has problems, ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System> sends a warning signal causing the TPMS warning light to be flashed*.

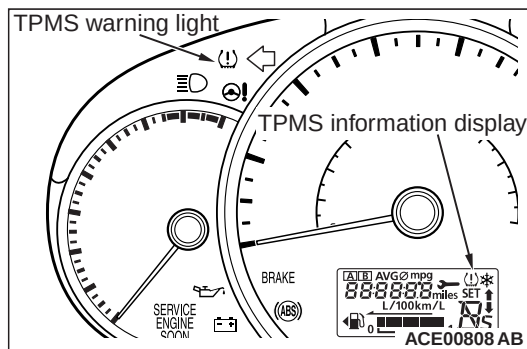
NOTE: *: Change to continuous illumination after flashing for about 1 minute.

- For 3 seconds after the ignition switch (engine starting switch) is turned to the "ON" position, ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System> illuminates the TPMS warning light to check any breaks in the TPMS warning light circuit.
- By connecting the scan tool to the data link connector, data stored in ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System> (data of tire pressure and tire pressure sensor ID, the alarm status and warning history, etc.) can be displayed and tire pressure sensor ID can be registered.
- Two sets of four TPMS transmitters can be registered as sets 1 and 2.

NOTE: If the TPMS transmitter is replaced, register the ID codes of all the TPMS transmitters again about the ID set of tire which includes the replaced transmitter using the scan tool MB991958.

- Low tire inflation pressure warning threshold value reset and tire ID set changeover can be performed. (By registering two sets at the dealer in advance, the tire ID set can be freely switched by operating the combination meter.)

NOTE: When the tire ID set is switched, the low tire inflation pressure warning threshold value will be automatically reset.



TPMS WARNING LIGHT AND DISPLAY

The TPMS warning light on the combination meter illuminates or flashes* to alert the driver by request from the ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System>. When the tire pressure warning or the fault warning is activated, a warning symbol are displayed on the combination meter.

WARNING DISPLAY PATTERN OF TPMS WARNING LIGHT
AND TPMS INFORMATION DISPLAY

Circumstance	Warning light	Information display
For 3 seconds after the engine switch is turned to the "ON" position (warning light circuit self-check)	Illuminates	No indication
TPMS problems	Flashes*	Symbol is displayed
Low tire pressure	Illuminates	Symbol is displayed
Low tire inflation pressure warning threshold value reset	Flashes slowly.	No indication

TPMS TRANSMITTER (TIRE PRESSURE SENSOR)

The TPMS transmitter combines the valve and tire pressure sensor in a single unit. The TPMS transmitters are mounted inside the tires. The TPMS transmitter measures tire pressure directly with its tire pressure sensor and sends radio frequency signals to the ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System>. The TPMS transmitter includes acceleration sensor that senses tire rotation, and change tire pressure sampling and data transmission timing when vehicle is running.

NOTE: Use only genuine wheels. The use of non-genuine wheels may cause the improper installation of the TPMS transmitters, possibly resulting in air leakage and damage to the TPMS transmitter.

TIRE PRESSURE SAMPLING TIMING

Vehicle status	Sampling timing
At vehicle moving	once every 5 seconds
At vehicle stationary	once every 1 minute

NOTE: Vehicle moving = vehicle speed: approximately 25 km/h or more

DATA TRANSMISSION TIMING

Vehicle status	Transmission timing
At vehicle moving	once every 1 minute*
At vehicle stationary	once every 13 hours

If a sampled pressure varies by ± 10 kPa from the last transmitted pressure value, an additional transmission will occur.

*NOTE: *: Once every 15 seconds for first 30 transmission after vehicle starts moving.*

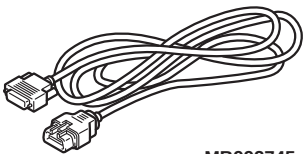
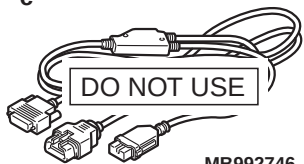
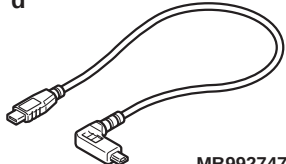
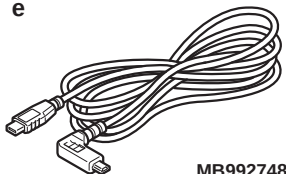
SERVICE SPECIFICATIONS

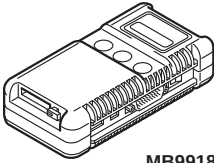
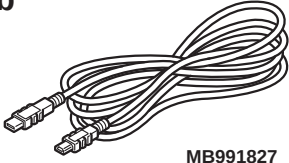
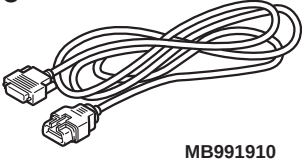
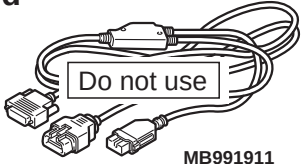
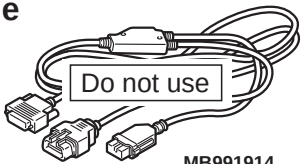
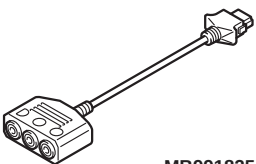
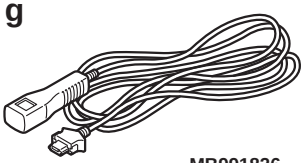
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Items		Limit value
Tread depth of tire mm (in)		Minimum 1.6 (0.06)
Wheel runout <Steel wheel>	Radial runout mm (in)	1.2 (0.05) or less
	Lateral runout mm (in)	1.2 (0.05) or less
Wheel runout <Aluminum wheel>	Radial runout mm (in)	1.0 (0.04) or less
	Lateral runout mm (in)	1.0 (0.04) or less

SPECIAL TOOLS

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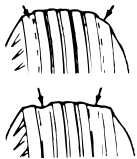
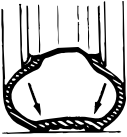
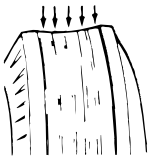
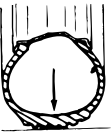
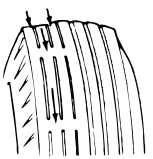
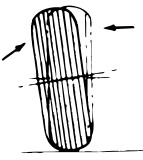
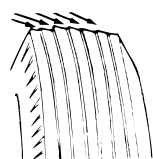
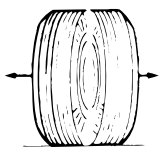
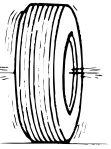
Tool	Tool number and name	Supersession	Application
a  MB992744 b  MB992745 c  MB992746 d  MB992747 e  MB992748 ACB05421AB	a. MB992744 b. MB992745 c. MB992746 d. MB992747 e. MB992748 a. Vehicle communication interface-Lite (V.C.I.-Lite) b. V.C.I.-Lite main harness A (for vehicles with CAN communication) c. V.C.I.-Lite main harness B (for vehicles without CAN communication) d. V.C.I.-Lite USB cable short e. V.C.I.-Lite USB cable long	—	DTC, service data and actuator test check.

Tool	Tool number and name	Supersession	Application
a  MB991824 b  MB991827 c  MB991910 d  MB991911 e  MB991914 f  MB991825 g  MB991826 MB991958	MB991958 a. MB991824 b. MB991827 c. MB991910 d. MB991911 e. MB991914 f. MB991825 g. MB991826 M.U.T.-III sub assembly a. Vehicle communication interface (V.C.I.) b. M.U.T.-III USB cable c. M.U.T.-III main harness A (Vehicles with CAN communication system) d. M.U.T.-III main harness B (Vehicles without CAN communication system) e. M.U.T.-III main harness C (for Chrysler models only) f. M.U.T.-III measurement adapter g. M.U.T.-III trigger harness	MB991824-KIT <i>NOTE: G: MB991826 M.U.T.-III Trigger Harness is not necessary when pushing V.C.I. ENTER key.</i>	⚠ CAUTION M.U.T.-III main harness A (MB991910) should be used. M.U.T.-III main harness B and C should not be used for this vehicle. ETACS-ECU or KOS&OSS-ECU check (Diagnostic trouble code, service data)

WHEEL AND TIRE DIAGNOSIS

DIAGNOSIS

M1311000701021

Symptom		Probable cause		Remedy	Reference page
Rapid wear at shoulders	 ACX00923AB	Under-inflation or lack of rotation	 ACX00924AE	Adjust the tire pressure.	For tire inflation pressure, refer to the label on the driver's side center pillar.
Rapid wear at center	 ACX00925AE	Over-inflation or lack of rotation	 ACX00926AI		
Cracked treads	 ACX00927AB	Under-inflation			
Wear on one side	 ACX00928AB	Excessive camber	 ACX00929AE	Check the camber.	Refer to GROUP 33, On-vehicle Service – Front wheel alignment check and adjustment P.33-6 .
Feathered edge	 ACX00930AB	Incorrect toe-in	 ACX00931AE	Adjust the toe-in.	
Bald spots	 ACX00932AB	Unbalanced wheel	 ACX00933AB	Balance the wheels.	—

Symptom		Probable cause	Remedy	Reference page
Scalloped wear	 ACX00934	Lack of rotation of tires or worn or out-of-alignment suspension	Rotate the tires, and check the front suspension alignment.	Refer to GROUP 33, On-vehicle Service – Front Wheel Alignment Check and adjustment P.33-6 .

WHEEL BALANCE ACCURACY

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PURPOSE

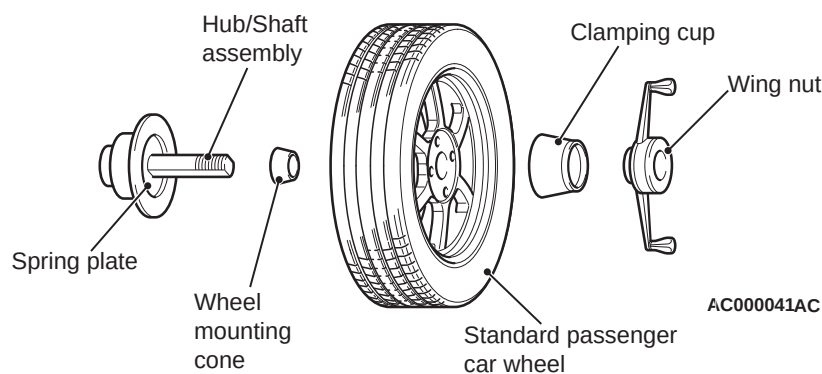
This section contains tips and procedures for achieving accurate wheel balance. Steering wheel vibration and/or body shake can result if any of these procedures are not carefully observed.

1. Wheels and tires must be properly mounted on a balancer in order to achieve correct balance. Centering the wheel on the shaft of the balancer is essential for proper mounting.
2. Off-the-car wheel balancers must be calibrated periodically to ensure good balancing results. An inaccurately calibrated balancer could cause unnecessary replacement of tires, shocks, suspension components, or steering components.

Check your balancer's calibration approximately every 100 balances. Your wheel balancer's instruction manual should include calibration procedures. If the calibration procedures specifically for your balancer are missing, use the generic steps in this section for zero calibration, static balance, and dynamic balance checks. The wheel balancer calibration checks are also described in the flowchart. (Refer to [P.31-11](#).)

PROCEDURE <Balancing Tips>

1. Confirm that the balancer's cone and the wheel mounting cone are undamaged and free of dirt and rust.
2. On this vehicle, the wheel's center hole on the hub side has a chamfered edge. Use a back-mounting cone on your wheel balancer to center the wheel on the balancer shaft.
3. Install a wheel mounting cone. The appropriate size cone for this vehicle is 56.0 mm (2.2 inches).
4. Before balancing the wheel, remove any wheel weights from both sides. Also check both sides for any damage.
5. When installing wheel weights, hammer them at a straight (not diagonal) angle.



<Confirming Proper Balance>

1. After balancing the wheel, loosen the wing nut and turn the wheel 180 degree angle against the balancer's hub. Then re-tighten the wing nut and check the balance again. Repeat wheel balance if necessary.

<Wheel Balancer Calibration Checks>

1. Mount an undamaged original-equipment alloy rim and tire assembly (wheel) onto your off-the-car wheel balancer. Balance the wheel.
2. <<Zero Calibration Check>>
Loosen the balancer wing nut, rotate the wheel a half-turn (180 degree angle), and retighten the nut. Recheck the balance.
 - If the imbalance is 5 g (0.18 ounce) or less, the zero calibration is OK. Rebalance the wheel, then go to Step 4 to check static balance.
 - If the imbalance is more than 5 g (0.18 ounce), go to Step 3.
3. Loosen the balancer wing nut, rotate the wheel 1/4 turn (90 degree angle), and retighten the nut. Recheck the wheel balance.
 - If the imbalance is 5 g (0.18 ounce) or less, the wheel may not be centered on the balancer, or the balancing cones, the cup, and/or wing nut are damaged, dirty, or inappropriate for the wheel. You may need to refer to the balancer manufacturer's instructions to verify the correct attachments. After making the necessary corrections, recheck the wheel balance. If OK, then go to Step 4.
 - If the imbalance is more than 5 g (0.18 ounce), the balancer requires calibration. Contact the balancer manufacturer for calibration by their repair representative.

2. Turn the wheel again 180 degree angle against the balancer's hub. If the wheel becomes out-of-balance each time it is turned against the balancer's hub, the wheel balancer may require calibration.

4. <<Static Balance Check>>

Attach a 5 g (0.18 ounce) weight to the outer rim. Recheck the balancer. The balancer should detect 5 ± 2 g (0.18 ± 0.06 ounce) of imbalance 170 to 190 degree angle away from the 5 g (0.18 ounce) weight.

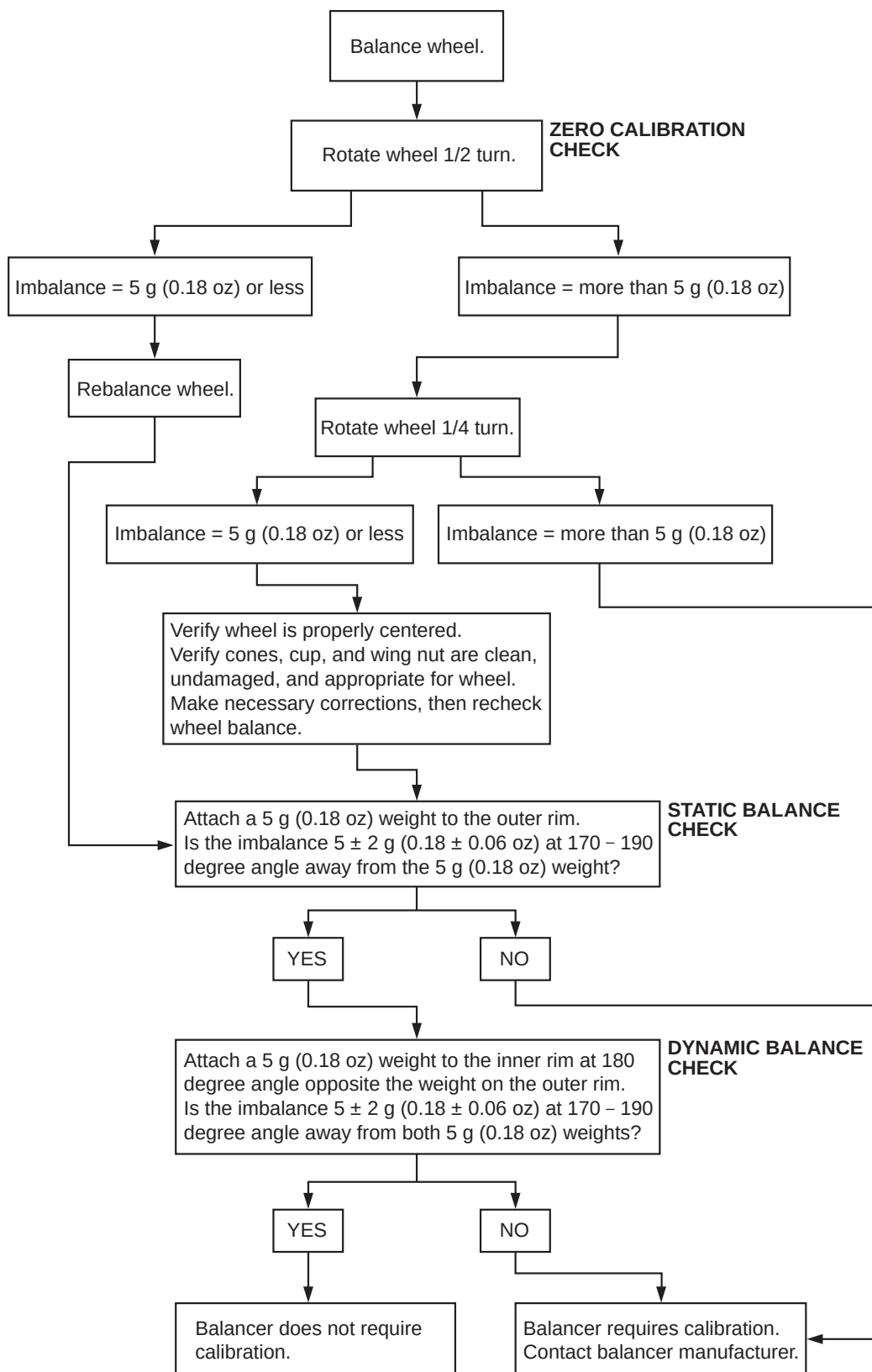
- If the imbalance is within specification, the static balance calibration is correct. Go to Step 5 to check the dynamic balance.
- If the imbalance is out of specification, the balancer requires calibration. Contact the balancer manufacturer for calibration by their repair representative.

5. <<Dynamic Balance Check>>

Attach a 5 g (0.18 ounce) weight to the inner rim at 180 degree angle opposite the 5 g (0.18 ounce) weight that was added in Step 4. Recheck the balance. The balancer should detect 5 ± 2 g (0.18 ± 0.06 ounce) of imbalance 170 to 190 degree angle away from both the inner and outer 5 g (0.18 ounce) weights.

- If the imbalance is within specification, the dynamic balance calibration is correct. The balancer calibration checks are complete.
- If the imbalance is out of specification, the balancer requires calibration. Contact the balancer manufacturer for calibration by their repair representative.

WHEEL BALANCER CALIBRATION CHECKING FLOW CHART



AC403557 AC

TIRE PRESSURE MONITORING SYSTEM (TPMS) DIAGNOSIS

INTRODUCTION TO DIAGNOSIS

TPMS MAY NOT WORK NORMALLY IN THE FOLLOWING CIRCUMSTANCES:

- A wireless facility or device using the same frequency with the TPMS transmitter is near the vehicle.
- Snow or ice is stuck inside the fenders and/or on the wheels.
- The TPMS transmitter's battery is discharged.
- Wheels other than Mitsubishi genuine wheels are being used.
- Wheels that are not fitted with TPMS transmitters are being used.
- Wheels whose tire pressure sensor IDs are not registered by the vehicle are being used.
- Compact spare tire is fitted on a road wheel.
- A window tint that affects the radio wave signals is installed.

WHEN THE TPMS WARNING LIGHT IS ON

- If the TPMS warning light illuminates, check the inflation pressure of all the tires and adjust and drive if necessary. If the TPMS warning light still remains illuminated, a flat tire or a defective TPMS transmitter is suspected.

TPMS TROUBLESHOOTING STRATEGY

Use these steps to plan your diagnostic strategy. If you follow them thoroughly, you will be sure that you have exhausted most of the possible ways to find a TPMS fault.

1. Gather information about the problem from the customer.
2. Verify that the condition described by the customer exists.
3. Check the vehicle for any TPMS DTC.

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- If a road tire does not contain a TPMS transmitter, the TPMS warning light will flash* and the TPMS will not work normally. Replace the tire with one containing a TPMS transmitter.

*NOTE: *: Flash for about 1 minute and then remain illuminated.*

AFTER REPLACING TPMS COMPONENTS

- Whenever the TPMS transmitter and/or ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System> are replaced, register the tire pressure sensor ID of all the TPMS transmitter-contained tires.
- Whenever any TPMS component (transmitter and ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System>) is removed and installed, confirm that no TPMS DTC is set.

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4. If you cannot verify the condition and there are no TPMS DTCs, the malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions [P.00-13](#).
5. If there is a TPMS DTC, record the number of the DTC, then perform the TPMS diagnostic trouble code procedures for the DTC. Refer to [P.31-18](#)

TPMS DIAGNOSTIC FUNCTION

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HOW TO CONNECT THE SCAN TOOL (M.U.T.-III)

CAUTION

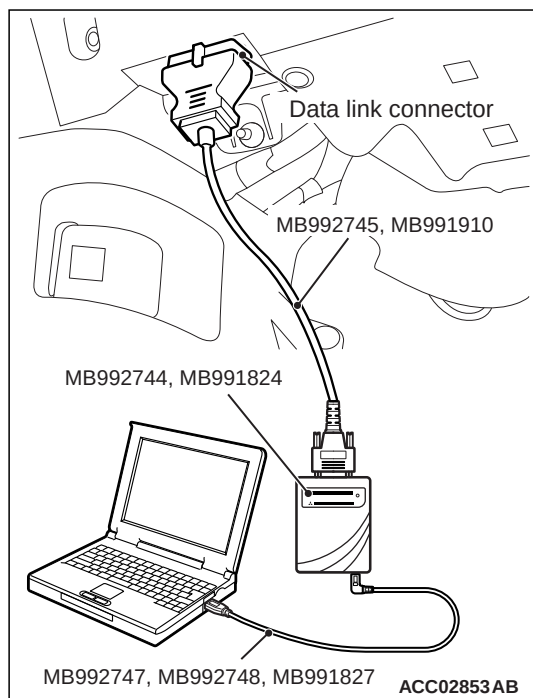
To prevent damage to scan tool MB991958, always turn the ignition switch (engine starting switch) to the LOCK (OFF) position before connecting or disconnecting scan tool MB991958.

1. Ensure that the ignition switch (engine starting switch) is at the LOCK (OFF) position.
2. Turn on the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991910 to special tool MB991824.
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the ON position.

NOTE: When special tool MB991824 is energized, special tool MB991824 indicator light will be illuminated green color.

7. Start the M.U.T.-III system on the personal computer.

NOTE: Disconnecting scan tool MB991958 is the reverse of the connecting sequence, first making sure that the ignition switch (engine starting switch) is at the LOCK (OFF) position.

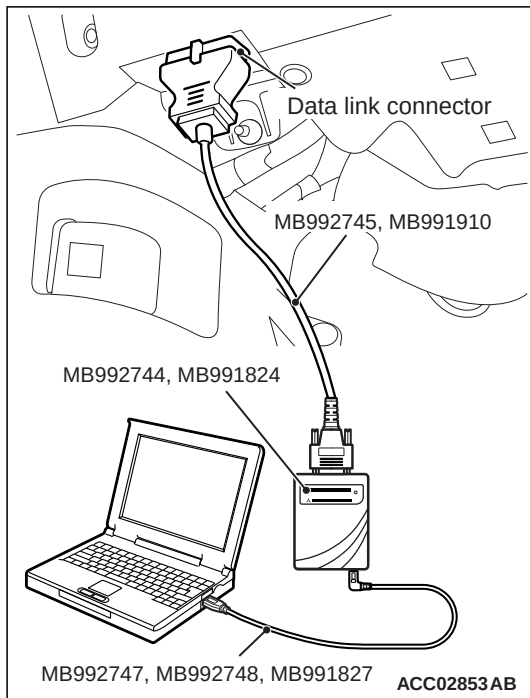


HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES

CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch (engine starting switch) to the LOCK (OFF) position before connecting or disconnecting scan tool MB991958.

NOTE: If the vehicle battery voltage is low, diagnostic trouble codes will not be set. Check the vehicle battery if scan tool MB991958 does not display.



1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch (engine starting switch) to the ON position.
3. Select "Interactive Diagnosis" from the start-up screen.
4. Select "System select."
5. Choose "TPMS" from the "CHASSIS" tab.
6. Select "MITSUBISHI."
7. Select "Diagnostic Trouble Code."
8. If a DTC is set, it is shown.
9. Choose "Erase DTCs" to erase the DTC.

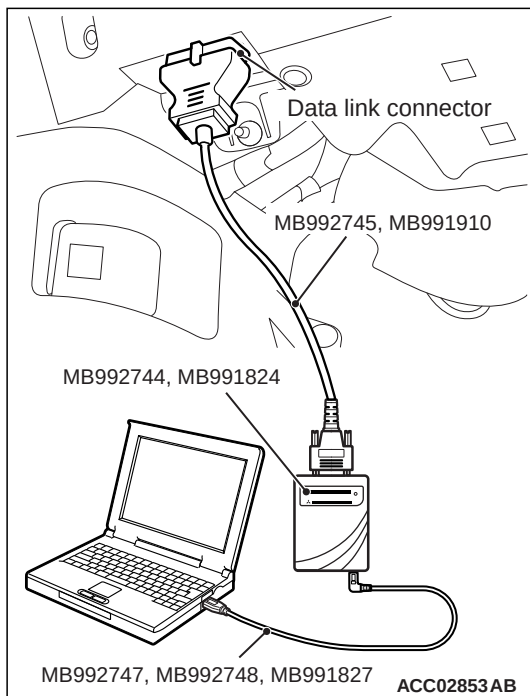
NOTE: Past trouble only

HOW TO READ DATA LIST

⚠ CAUTION

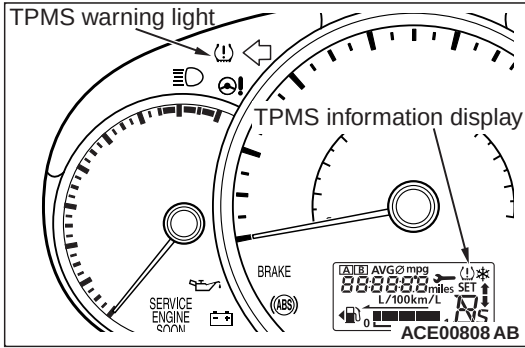
To prevent damage to scan tool MB991958, always turn the ignition switch (engine starting switch) to the LOCK (OFF) position before connecting or disconnecting scan tool MB991958.

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch (engine starting switch) to the ON position.
3. Select "Interactive Diagnosis" from the start-up screen.
4. Select "System select."
5. Choose "TPMS" from the "CHASSIS" tab.
6. Select "MITSUBISHI."
7. Select "Data List."
8. Choose an appropriate item and select the "OK" button.



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TPMS WARNING LIGHT CHECK



1. Check that the TPMS warning light illuminates for approximately three seconds when the ignition switch (engine starting switch) is turned to the "ON" position.
2. Check that it illuminates for approximately three seconds and then goes out (If the warning light does not turn off and stays on, perform troubleshooting for TPMS Inspection Procedure No.1. Refer to [P.31-34](#)) (If the warning light does not turn off and flashes, perform troubleshooting for TPMS Inspection Procedure No.2. Refer to [P.31-36](#)).
3. If the TPMS fails or the tire pressure is low, ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System> warns the driver of that state by the TPMS warning light and the TPMS information display in the combination meter.

WARNING AND WARNING INDICATOR LIST

Item	Display content	State	Warning operation		Warning cancellation condition (when any of the condition met)
			TPMS information display	TPMS warning light	
TPMS warning light bulb open circuit check	Not displayed	The power supply mode is other than OFF ON.	—	Illuminates for 3 seconds.	3 seconds have passed after the TPMS warning light is lit.
Tire pressure alarm	 AC809643	The received tire pressure value is under the alarm ON threshold value.	Symbol is displayed.	Illuminates.	The received tire pressure value is over the alarm OFF threshold value.

Item		Display content	State	Warning operation		Warning cancellation condition (when any of the condition met)
				TPMS information display	TPMS warning light	
TPMS failure warning	ID not stored	 AC809643	The TPMS transmitter ID is not registered in the ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System>.	Symbol is displayed.	Flashes*	ID is registered normally.
	Defective EEPROM		Abnormality of data in the EEPROM of the ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System> is detected.			Data in the EEPROM of the ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System> is checked to be normal.
	Problem in signal reception		The signals from TPMS transmitters cannot be received while driving for about 10 minutes.			The signal from the TPMS transmitter that was warned is received.
	Defective sensor		The sensor failure signal is received from the TPMS transmitter.			A normal signal is received from the TPMS transmitter that was warned.

Item		Display content	State	Warning operation		Warning cancellation condition (when any of the condition met)
				TPMS information display	TPMS warning light	
TPMS failure warning	ID not stored	 AC809643	The TPMS transmitter ID is not registered in the ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System>.	Symbol is displayed.	Flashes*	ID is registered normally.
	Defective EEPROM		Abnormality of data in the EEPROM of the ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with keyless operation system> is detected.			Data in the EEPROM of the ETACS-ECU <vehicles without keyless operation system> or KOS&OSS-ECU <vehicles with Keyless Operation System> is checked to be normal.
	Problem in signal reception		The signals from TPMS transmitters cannot be received while driving for about 20 minutes.			The signal from the TPMS transmitter that was warned is received.

*NOTE: *: Change to continuous illumination after flashing for about 1 minute.*

DIAGNOSTIC TROUBLE CODE CHART

M1311002700132

⚠ CAUTION

- During diagnosis, a DTC associated with another system may be set when the ignition switch (engine starting switch) is turned to the "ON" position with connector(s) disconnected. When diagnosis is finished, check all systems for DTC(s). If DTC(s) are set, erase them all.
- Tire pressure sensor ID registration must not be done before any diagnosis.

DTC	Diagnostic item	Reference page
C1564	Vehicles speed data invalid	P.31-19
C1900	Tire ID code No registration	P.31-20
C1901	Vehicles speed signal	P.31-22
C1902	Reset fail (warning threshold)	P.31-23
C1910	Transmitter BATT. voltage, Tire1	P.31-26
C1911	Tire ID reception fail, Tire1	
C1912	Tire air pressure low, Tire1	P.31-28
C1913	Acceleration sensor, Tire1	P.31-30
C1914	Tire air pressure sensor, Tire1	
C1915	Transmitter OFF mode, Tire1	P.31-32
C1916	Temperature sensor, Tire1	P.31-30
C1920	Transmitter BATT. voltage, Tire2	P.31-26
C1921	Tire ID reception fail, Tire2	
C1922	Tire air pressure low, Tire2	P.31-28
C1923	Acceleration sensor, Tire2	P.31-30
C1924	Tire air pressure sensor, Tire2	
C1925	Transmitter OFF mode, Tire2	P.31-32
C1926	Temperature sensor, Tire2	P.31-30
C1930	Transmitter BATT. voltage, Tire3	P.31-26
C1931	Tire ID reception fail, Tire3	
C1932	Tire air pressure low, Tire3	P.31-28
C1933	Acceleration sensor, Tire3	P.31-30
C1934	Tire air pressure sensor, Tire3	
C1935	Transmitter OFF mode, Tire3	P.31-32
C1936	Temperature sensor, Tire3	P.31-30
C1940	Transmitter BATT. voltage, Tire4	P.31-26
C1941	Tire ID reception fail, Tire4	
C1942	Tire air pressure low, Tire4	P.31-28
C1943	Acceleration sensor, Tire4	P.31-30
C1944	Tire air pressure sensor, Tire4	
C1945	Transmitter OFF mode, Tire4	P.31-32
C1946	Temperature sensor, Tire4	P.31-30

TPMS DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC C1564: Vehicle speed data invalid

CAUTION

If there is any problem in the CAN bus lines, an incorrect DTC may be set. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table P.54C-12).

TROUBLE JUDGMENT

If the ETACS-ECU <Vehicles without Keyless Operation System> or KOS&OSS-ECU <Vehicles with Keyless Operation System> receives an abnormal vehicle speed signal from the ASC-ECU, it sets DTC C1564.

JUDGMENT CRITERIA

When the ETACS-ECU <Vehicles without Keyless Operation System> or KOS&OSS-ECU <Vehicles with Keyless Operation System> receives an abnormal vehicle speed signal consecutively with the ignition switch (engine starting switch) in the "ON" position, the ECU determines that there is a failure.

TROUBLESHOOTING HINTS

- The ASC-ECU may be defective.
- Malfunction of ETACS-ECU <Vehicles without Keyless Operation System>
- Malfunction of KOS&OSS-ECU <Vehicles with Keyless Operation System>
- The CAN bus may be defective.

DIAGNOSIS

STEP 1. Using scan tool MB991958, diagnose the CAN bus lines.

Use the scan tool to diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C, CAN Bus Diagnostics Table P.54C-11). After repairing the CAN bus lines, go to Step 2.

STEP 2. DTC recheck after resetting CAN bus lines

Recheck if DTC C1564 is set.

- (1) Turn the ignition switch (engine starting switch) from the "LOCK" (OFF) to "ON" position.
- (2) Check if the DTC is set.
- (3) Turn the ignition switch (engine starting switch) to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Go to Step 3.

NO : The procedure is complete.

STEP 3. Use scan tool MB991958 to confirm a DTC of other systems.

Check whether the ASC-ECU sets a DTC.

Q: Is the DTC set?

YES : Perform the troubleshooting for the ASC-ECU (Refer to GROUP 35C – Troubleshooting P.35C-16).

NO : Go to Step 4.

STEP 4. Check whether the DTC is set again.

Recheck if the DTC is set.

- (1) Turn the ignition switch (engine starting switch) from the "LOCK" (OFF) to "ON" position.
- (2) Check if the DTC is set.
- (3) Turn the ignition switch (engine starting switch) to the "LOCK" (OFF) position.

Q: Is DTC C1564 set?

YES : Replace the ETACS-ECU <Vehicles without Keyless Operation System> (Refer to GROUP 54A ETACS [P.54A-260](#)) or KOS&OSS-ECU <Vehicles with Keyless Operation System> (Refer to GROUP 42B, KOS&OSS-ECU [P.42B-132](#))

NO : The diagnosis is complete.

DTC C1900: Tire ID code No registration

⚠ CAUTION

If there is any problem in the CAN bus lines, an incorrect DTC may be set. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table [P.54C-12](#)).

DTC SET CONDITION

When the ID codes of the TPMS transmitter is not set in ETACS-ECU <Vehicles without Keyless Operation System> or KOS&OSS-ECU <Vehicles with Keyless Operation System>, and/or when ETACS-ECU <Vehicles without Keyless Operation System> or KOS&OSS-ECU <Vehicles with Keyless Operation System> is replaced with a new one, this code is set. If the ID registration mode is terminated forcibly or timeout after one or more TPMS transmitters are reg-

istered in the ID registration mode, the ID codes in the ETACS-ECU <Vehicles without Keyless Operation System> or KOS&OSS-ECU <Vehicles with Keyless Operation System> is erased, and this diagnostic trouble code is set.

TROUBLESHOOTING HINTS

The most likely causes for this DTC to be set are:

- The CAN bus may be defective.
- Malfunction of TPMS transmitter
- Malfunction of ETACS-ECU <Vehicles without Keyless Operation System>
- Malfunction of KOS&OSS-ECU <Vehicles with Keyless Operation System>
- ID code registration failed

DIAGNOSIS

STEP 1. Using scan tool MB991958, diagnose the CAN bus lines.

Use scan tool to diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table [P.54C-12](#)). On completion, go to Step 2.

STEP 2. Check whether the DTC is set again.

Recheck if the DTC is set.

- (1) Turn the ignition switch (engine starting switch) from the "LOCK" (OFF) to "ON" position.
- (2) Check if the DTC is set.
- (3) Turn the ignition switch (engine starting switch) to the "LOCK" (OFF) position.

Q: Is DTC C1900 set?

YES : Register the ID codes (Refer to [P.31-42](#)). Then go to Step 3.

NO : The procedure is complete.

STEP 3. Check whether the DTC is set again.

Recheck if the DTC is set.

- (1) Turn the ignition switch (engine starting switch) from the "LOCK" (OFF) to "ON" position.
- (2) Check if the DTC is set.
- (3) Turn the ignition switch (engine starting switch) to the "LOCK" (OFF) position.

Q: Is DTC C1900 set?

YES : Replace the ETACS-ECU <Vehicles without Keyless Operation System> (Refer to GROUP 54A ETACS [P.54A-260](#)) or KOS&OSS-ECU <Vehicles with Keyless Operation System> (Refer to GROUP 42B, KOS&OSS-ECU [P.42B-132](#)), and register the ID codes (Refer to [P.31-42](#)). Then start over at Step 4.

NO : The procedure is complete.

STEP 4. Check whether the DTC is set again.

Recheck if the DTC is set.

- (1) Turn the ignition switch (engine starting switch) from the "LOCK" (OFF) to "ON" position.
- (2) Check if the DTC is set.
- (3) Turn the ignition switch (engine starting switch) to the "LOCK" (OFF) position.

Q: Is DTC C1900 set?

YES : Go to Step 1.

NO : The procedure is complete.

DTC C1901: Vehicle speed signal

⚠ CAUTION

If there is any problem in the CAN bus lines, an incorrect DTC may be set. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table [P.54C-12](#)).

DTC SET CONDITION

ETACS-ECU <Vehicles without Keyless Operation System> or KOS&OSS-ECU <Vehicles with Keyless Operation System> receives the wheel speed information from ASC-ECU via the CAN-bus line. Although ETACS-ECU <Vehicles without Keyless

Operation System> or KOS&OSS-ECU <Vehicles with Keyless Operation System> receives the information that the wheel is not currently rotated from ASC-ECU, if the TPMS transmitter sends the information that the wheel is rotated, this code is set.

TROUBLESHOOTING HINTS

The most likely causes for this DTC to be set are:

- The CAN bus may be defective.
- Malfunction of TPMS transmitter
- Malfunction of ETACS-ECU <Vehicles without Keyless Operation System>
- Malfunction of KOS&OSS-ECU <Vehicles with Keyless Operation System>
- Malfunction of ASC-ECU

DIAGNOSIS

STEP 1. Using scan tool MB991958, diagnose the CAN bus lines.

Use scan tool to diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table [P.54C-11](#)). On completion, go to Step 2.

STEP 2. DTC recheck after resetting CAN bus lines

Recheck if DTC C1901 is set.

- (1) Turn the ignition switch (engine starting switch) from the "LOCK" (OFF) to ON position.
- (2) Check if the DTC is set.
- (3) Turn the ignition switch (engine starting switch) to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Go to Step 3.

NO : The procedure is complete.

STEP 3. Using scan tool other system DTC

Check if the DTC is set in the ASC-ECU.

Q: Is the DTC set?

YES : Carry out the troubleshooting for ASC-ECU (Refer to GROUP 35C – Troubleshooting [P.35C-16](#)). Then go to Step 5.

NO : Go to Step 4.

STEP 4. Check the TPMS transmitter acceleration.

Check the acceleration value sent by each TPMS transmitter by performing the transmitter check using the scan tool (Refer to [P.31-38](#)), when the vehicle is stationary.

- Item 31: Acceleration tire1
- Item 32: Acceleration tire2
- Item 33: Acceleration tire3
- Item 34: Acceleration tire4

OK:

Acceleration value: 5G or less

Q: Is the check result normal?

YES : Replace the ETACS-ECU <Vehicles without Keyless Operation System> (Refer to GROUP 54A ETACS [P.54A-260](#)) or KOS&OSS-ECU <Vehicles with Keyless Operation System> (Refer to GROUP 42B, KOS&OSS-ECU [P.42B-132](#)), and register ID codes (Refer to [P.31-42](#)). Then go to Step 5.

NO : Replace the TPMS transmitter (Refer to [P.31-47](#)), and register ID codes (Refer to [P.31-42](#)). Then go to Step 5.

STEP 5. Check whether the DTC is set again.

Recheck if the DTC is set.

- (1) Turn the ignition switch (engine starting switch) from the "LOCK" (OFF) to "ON" position.
- (2) Check if the DTC is set.
- (3) Turn the ignition switch (engine starting switch) to the "LOCK" (OFF) position.

Q: Is DTC C1901 set?

YES : Start over at Step 1.

NO : The procedure is complete.

DTC C1902: Reset fail (warning threshold)

 CAUTION

If there is any problem in the CAN bus lines, an incorrect DTC may be set. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table [P.54C-12](#)).

DTC SET CONDITION

When a tire inflation pressure warning threshold value cannot be reset due to a timeout (10 minutes or more have passed in total at 35 km/h or more), the TPMS receiver will set a diagnostic trouble code.

TROUBLESHOOTING HINTS

The most likely causes for this DTC to be set are:

- Malfunction of CAN bus line
- Damaged wiring harness and connector
- Malfunction of TPMS transmitter
- Malfunction of ETACS-ECU <Vehicles without Keyless Operation System>
- Malfunction of KOS&OSS-ECU <Vehicles with Keyless Operation System>
- ID code registration failed
- Registered IDs unmatched
- Effective ID set unmatched

DIAGNOSIS

STEP 1. Using scan tool MB991958, diagnose the CAN bus lines.

Use scan tool to diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table [P.54C-11](#)). On completion, go to Step 2.

STEP 2. DTC recheck after resetting CAN bus lines.

Recheck if DTC C1902 is set.

- (1) Turn the ignition switch (engine starting switch) from the "LOCK" (OFF) to "ON" position.
- (2) Check if the DTC is set.
- (3) Turn the ignition switch (engine starting switch) to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Go to Step 3.

NO : The procedure is complete.

STEP 3. Check whether the DTC is set.

Recheck if the DTC is set.

- (1) Turn the ignition switch (engine starting switch) from the "LOCK" (OFF) to "ON" position.
- (2) Check if the DTC are set.

Q: Are DTC C1911, C1921, C1931 and C1941 set?

YES : Press the multi-information display switch to toggle tire ID sets. Then perform TPMS TRANSMITTER CHECK (Toggling the tire ID set will trigger the reset function automatically. Then the TPMS warning light will start flashing slowly. Furthermore, DTCs C1911, C1921, C1931 and C1941 will be set as "stored"). Then go to Step 4.

NO : Go to Step 7.

STEP 4. Check the tire IDs for the TPMS transmitters.

Could all the tire IDs for the TPMS transmitters be confirmed?

Q: Is the check result normal?

YES : Adjust the tire inflation pressure to the recommended value. Then road test for a while to complete the reset function. Then go to Step 6.

NO : Go to Step 5.

STEP 5. Check the tire IDs for the TPMS transmitters.

Could any of the tire IDs for the TPMS transmitters be confirmed?

Q: Is the check result normal?

YES : Register the applicable IDs to the ECU as the active tire ID set (Refer to [P.31-42](#)). Then go to Step 8.

NO : Register applicable IDs to the ECU as the previous ID set (Refer to [P.31-42](#)). Then go to Step 8.

STEP 6. Check the reset function.

Check whether the reset function has been completed normally.

Q: Has the reset function been completed normally?

YES : The procedure is complete (The incorrect tire ID set has been activated, and this is not a malfunction).

NO : If the reset function has not been completed after 10-minute road test, register applicable IDs as the active tire ID set (Refer to [P.31-42](#)). Then go to Step 8.

STEP 7. Check for TPMS transmitter.

Identify the TPMS transmitter which the DTC is set by TPMS transmitter check (Refer to [P.31-44](#)).

NOTE: The TPMS transmitter which cannot be checked may be faulty or the ID code may not be registered, thus do not replace it, but register the ID code. If the transmitter is faulty, it is replaced in the ID code registration process.

Q: Are there any TPMS transmitters which are identified?

YES : Among the checked TPMS transmitters, replace the TPMS transmitters to which the DTC is set. Then register the ID codes (Refer to [P.31-42](#)). Then go to Step 8.

NO : Even when no transmitter is checked, register the ID codes (Refer to [P.31-42](#)). Then go to Step 8.

STEP 8. Check whether the DTC is set again.

Recheck if the DTC is set.

(1) Turn the ignition switch (engine starting switch) from the "LOCK" (OFF) to "ON" position.

(2) Check if the DTC is set.

Q: Is DTC C1902 set?

YES : Replace the TPMS receiver (Refer to [P.31-46](#)) and register the ID codes. Then start over at Step 1.

NO : The procedure is complete.

DTC C1910: Transmitter BATT voltage, Tire1
 DTC C1920: Transmitter BATT voltage, Tire2
 DTC C1930: Transmitter BATT voltage, Tire3
 DTC C1940: Transmitter BATT voltage, Tire4
 DTC C1911: Tire ID reception fail, Tire1
 DTC C1921: Tire ID reception fail, Tire2
 DTC C1931: Tire ID reception fail, Tire3
 DTC C1941: Tire ID reception fail, Tire4

⚠ CAUTION

If there is any problem in the CAN bus lines, an incorrect DTC may be set. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table [P.54C-12](#)).

DTC SET CONDITIONS

DTCs C1910, C1920, C1930, C1940

- When the reception abnormality warning is activated because of the low battery voltage of the TPMS transmitter.

DTCs C1911, C1921, C1931, C1941

- When ETACS-ECU <Vehicles without Keyless Operation System> or KOS&OSS-ECU <Vehicles with Keyless Operation System> cannot receive the signals from the TPMS transmitters while driving for about 20 minutes, this code is set.

TROUBLESHOOTING HINTS

The most likely causes for this DTC to be set are:

- Low battery that is incorporated into the TPMS transmitter
- Damaged wiring harness and connector
- Registered IDs unmatched
- Effective ID set unmatched
- Malfunction of TPMS transmitter
- Malfunction of ETACS-ECU <Vehicles without Keyless Operation System>
- Malfunction of KOS&OSS-ECU <Vehicles with Keyless Operation System>
- The CAN bus may be defective.

DIAGNOSIS

STEP 1. Using scan tool MB991958, diagnose the CAN bus lines.

Use scan tool to diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table [P.54C-12](#)). On completion, go to Step 2.

STEP 2. DTC recheck after resetting CAN bus lines

Recheck if DTC No. C1910, C1911, C1920, C1921, C1930, C1931, C1940 or C1941 is set.

- (1) Turn the ignition switch (engine starting switch) from the "LOCK" (OFF) to "ON" position.
- (2) Check if the DTC is set.
- (3) Turn the ignition switch (engine starting switch) to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Go to Step 3.

NO : The procedure is complete.

STEP 3. Check the tire IDs for the TPMS transmitters.

Could all the tire IDs for the TPMS transmitters be confirmed?

Q: Is the check result normal?

YES : Adjust the tire inflation pressure to the recommended value. Then road test for a while to complete the reset function. Then go to Step 5.

NO : Go to Step 4.

STEP 4. Check for TPMS transmitter.

Identify the TPMS transmitter which the DTC is set by TPMS transmitter check (Refer to [P.31-44](#)).

NOTE: The TPMS transmitter which cannot be checked may be faulty or the ID code may not be registered, thus do not replace it, but register the ID code. If the transmitter is faulty, it is replaced in the ID code registration process.

Q: Are there any TPMS transmitters which are identified?

YES : Among the checked TPMS transmitters, replace the TPMS transmitters in which the DTC is set. Then register the ID codes (Refer to [P.31-42](#)). Then go to Step 5.

NO : Even when no transmitter is checked, register the ID codes (Refer to [P.31-42](#)). Then go to Step 5.

STEP 5. Check whether the DTC is set again.

Recheck if the DTC is set.

- (1) Turn the ignition switch (engine starting switch) from the "LOCK" (OFF) to "ON" position.
- (2) Check if the DTC is set.
- (3) Turn the ignition switch (engine starting switch) to the "LOCK" (OFF) position.

Q: Is DTC No. C1910, C1911, C1920, C1921, C1930, C1931, C1940 or C1941 set?

YES : Replace the ETACS-ECU <Vehicles without Keyless Operation System> (Refer to GROUP 54A ETACS [P.54A-260](#)) or KOS&OSS-ECU <Vehicles with Keyless Operation System> (Refer to GROUP 42B, KOS&OSS-ECU [P.42B-132](#)), and register the ID codes (Refer to [P.31-42](#)). Then start over at Step 1.

NO : The procedure is complete.

DTC C1912: Tire air pressure low, Tire1
DTC C1922: Tire air pressure low, Tire2
DTC C1932: Tire air pressure low, Tire3
DTC C1942: Tire air pressure low, Tire4

⚠ CAUTION

If there is any problem in the CAN bus lines, an incorrect DTC may be set. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table [P.54C-12](#)).

DTC SET CONDITION

When the tire pressure included in the signal from the TPMS transmitter is less than the specified value, ETACS-ECU <Vehicles without Keyless Operation System> or KOS&OSS-ECU <Vehicles with Keyless Operation System> sets this code.

TROUBLESHOOTING HINTS

The most likely causes for this DTC to be set is:

- Drop of tire pressure
- Flat tire
- TPMS transmitter malfunction
- Malfunction of ETACS-ECU <Vehicles without Keyless Operation System>
- Malfunction of KOS&OSS-ECU <Vehicles with Keyless Operation System>
- CAN-bus line malfunction

DIAGNOSIS

STEP 1. Using scan tool MB991958, diagnose the CAN bus lines.

Use scan tool to diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table [P.54C-90](#)). On completion, go to Step 2.

STEP 2. DTC recheck after resetting CAN bus lines

Recheck if DTC C1912, C1922, C1932 or C1942 is set.

- (1) Turn the ignition switch (engine starting switch) from the "LOCK" (OFF) to "ON" position.
- (2) Check if the DTC is set.
- (3) Turn the ignition switch (engine starting switch) to the "LOCK" (OFF) position.

Q: Is DTC C1912, C1922, C1932 or C1942 set?

YES : Go to Step 3.

NO : The procedure is complete.

STEP 3. Tire check

Check that there is no abnormality for the items below.

- Flat tire
- Cracked tire
- Air leak from valve

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace or repair it. Then go to Step 4.

STEP 4. Check whether the DTC is set again.

Recheck if the DTC is set.

- (1) Turn the ignition switch (engine starting switch) to the "LOCK" (OFF) to "ON" position, and adjust the pressure to the recommended tire pressure.
- (2) Check if the DTC is set.

Q: Is DTC C1912, C1922, C1932 or C1942 set?

YES : Go to Step 5.

NO : The procedure is complete.

STEP 5. Check whether the DTC is set again.

Recheck if the DTC is set.

- (1) Drive the vehicle for 5 minutes.

NOTE: Even within 5 minutes, if the TPMS warning light goes out, finish the driving and perform the operation (2).

- (2) Check if the DTC is set.

Q: Is DTC C1912, C1922, C1932 or C1942 set?

YES : Go to Step 6.

NO : The procedure is complete.

STEP 6. Tire pressure check by scan tool

- (1) Perform the transmitter check using the scan tool (Refer to [P.31-44.](#)), and check the tire pressure values of all the wheels.
- (2) Check the tire pressure of all the wheels using the tire pressure gauge.
- (3) Compare the measured value (1) with (2).

OK: 20 kPa (2.9 psi) or less

NOTE: The TPMS transmitter which cannot be checked may be faulty or the ID code may not be registered, thus do not replace it, but register the ID code. If the transmitter is faulty, it is replace in the ID code registration process.

Q: Is the check result normal?

YES : Replace the ETACS-ECU <Vehicles without Keyless Operation System> (Refer to GROUP 54A, ETACS [P.54A-260](#)) or KOS&OSS-ECU <Vehicles with Keyless Operation System> (Refer to GROUP 42B, KOS&OSS-ECU [P.42B-132](#)), and register the ID codes (Refer to [P.31-42](#)). Then go to Step 8.

NO : Replace the TPMS transmitter (Refer to [P.31-47](#)), and register the ID codes (Refer to [P.31-42](#)). Then go to Step 7.

STEP 7. Check whether the DTC is set again.

Recheck if the DTC is set.

- (1) Turn the ignition switch (engine starting switch) from the "LOCK" (OFF) to "ON" position.
- (2) Check if the DTC is set.
- (3) Turn the ignition switch (engine starting switch) to the "LOCK" (OFF) position.

Q: Is DTC C1912, C1922, C1932 or C1942 set?

YES : Replace the ETACS-ECU <Vehicles without Keyless Operation System> (Refer to GROUP 54A, ETACS [P.54A-260](#)) or KOS&OSS-ECU <Vehicles with Keyless Operation System> (Refer to GROUP 42B, KOS&OSS-ECU [P.42B-132](#)) and register the ID codes (Refer to [P.31-42](#)). Then go to Step 8.

NO : The procedure is complete.

STEP 8. Check whether the DTC is set again.

Recheck if the DTC is set.

- (1) Turn the ignition switch (engine starting switch) from the "LOCK" (OFF) to "ON" position.
- (2) Check if the DTC is set.
- (3) Turn the ignition switch (engine starting switch) to the "LOCK" (OFF) position.

Q: Is DTC C1912, C1922, C1932 or C1942 set?

YES : Start over at Step 1.

NO : The procedure is complete.

DTC C1913: Acceleration sensor, Tire1
 DTC C1923: Acceleration sensor, Tire2
 DTC C1933: Acceleration sensor, Tire3
 DTC C1943: Acceleration sensor, Tire4
 DTC C1914: Tire air pressure sensor, Tire1
 DTC C1924: Tire air pressure sensor, Tire2
 DTC C1934: Tire air pressure sensor, Tire3
 DTC C1944: Tire air pressure sensor, Tire4
 DTC C1916: Temperature sensor, Tire1
 DTC C1926: Temperature sensor, Tire2
 DTC C1936: Temperature sensor, Tire3
 DTC C1946: Temperature sensor, Tire4

⚠ CAUTION

If there is any problem in the CAN bus lines, an incorrect DTC may be set. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table [P.54C-12](#)).

DTC SET CONDITION**DTCs C1913, C1923, C1933, C1943**

- The TPMS transmitter detects if the wheel is rotated by the acceleration sensor and sends the signals to ETACS-ECU <Vehicles without Keyless Operation System> or KOS&OSS-ECU <Vehicles with Keyless Operation System>. When the TPMS transmitter judges that the acceleration sensor is failed, the failure signal is sent to ETACS-ECU <Vehicles without Keyless

Operation System> or KOS&OSS-ECU <Vehicles with Keyless Operation System>, and ETACS-ECU <Vehicles without Keyless Operation System> or KOS&OSS-ECU <Vehicles with Keyless Operation System> sets this code.

DTCs C1914, C1924, C1934, C1944

- The TPMS transmitter detects if the tire pressure sensor is normal and sends the signal to ETACS-ECU <Vehicles without Keyless Operation System> or KOS&OSS-ECU <Vehicles with Keyless Operation System>. When the TPMS transmitter judges that the tire pressure sensor is failed, the failure signal is sent to ETACS-ECU <Vehicles without Keyless Operation System> or KOS&OSS-ECU <Vehicles with Keyless Operation System>, and ETACS-ECU <Vehicles without Keyless Operation System> or KOS&OSS-ECU <Vehicles with Keyless Operation System> sets this code.

Code No. C1916, C1926, C1936, C1946, C1956

- The TPMS transmitter detects if the tire temperature sensor is normal and sends the signal to ETACS-ECU <Vehicles without Keyless Operation System> or KOS&OSS-ECU <Vehicles with Keyless Operation System>. When the TPMS

transmitter judges that the tire temperature sensor is failed, the failure signal is sent to ETACS-ECU <Vehicles without Keyless Operation System> or KOS&OSS-ECU <Vehicles with Keyless Operation System>, and ETACS-ECU <Vehicles without Keyless Operation System> or KOS&OSS-ECU <Vehicles with Keyless Operation System> sets this code.

TROUBLESHOOTING HINTS

The most likely causes for this DTC to be set are:

- The CAN bus may be defective
- Low battery that is incorporated into the TPMS transmitter
- Damaged wiring harness and connector
- Malfunction of TPMS transmitter
- Malfunction of ETACS-ECU <Vehicles without Keyless Operation System>
- Malfunction of KOS&OSS-ECU <Vehicles with Keyless Operation System>

DIAGNOSIS

STEP 1. Using scan tool MB991958, diagnose the CAN bus lines.

Use scan tool to diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table [P.54C-12](#)). On completion, go to Step 2.

STEP 2. DTC recheck after resetting CAN bus lines

Recheck if DTC C1913, C1914, C1916, C1923, C1924, C1926, C1933, C1934, C1936, C1943, C1944 or C1946 is set.

- (1) Turn the ignition switch (engine starting switch) from the "LOCK" (OFF) to "ON" position.
- (2) Check if the DTC is set.
- (3) Turn the ignition switch (engine starting switch) to the "LOCK" (OFF) position.

Q: Is DTC C1913, C1923, C1933, C1943, C1914, C1924, C1934, C1944, C1916, C1926, C1936 or C1946 set?

YES : Go to Step 3.

NO : The procedure is complete.

STEP 3. Check for TPMS transmitter.

Identify the TPMS transmitter which the DTC is set by TPMS transmitter check (Refer to [P.31-44](#)).

NOTE: The TPMS transmitter which cannot be checked may be faulty or the ID code may not be registered, thus do not replace it, but register the ID code. If the transmitter is faulty, it is replaced in the ID code registration process.

Q: Are there any TPMS transmitters which are identified?

YES : Among the checked TPMS transmitters, replace the TPMS transmitters in which the DTC is set. Then register the ID codes (Refer to [P.31-42](#)). Then go to Step 4.

NO : Even when no transmitter is checked, register the ID codes (Refer to [P.31-42](#)). Then go to Step 4.

STEP 4. Check whether the DTC is set again.

Recheck if the DTC is set.

- (1) Turn the ignition switch (engine starting switch) from the "LOCK" (OFF) to "ON" position.
- (2) Check if the DTC is set.
- (3) Turn the ignition switch (engine starting switch) to the "LOCK" (OFF) position.

Q: Is DTC C1913, C1923, C1933, C1943, C1914, C1924, C1934, C1944, C1916, C1926, C1936 or C1946 set?

YES : Replace the ETACS-ECU <Vehicles without Keyless Operation System> (Refer to GROUP 54A ETACS [P.54A-260](#)) or KOS&OSS-ECU <Vehicles with Keyless Operation System> (Refer to GROUP 42B, KOS&OSS-ECU [P.42B-132](#)), and register the ID codes (Refer to [P.31-42](#)). Then start over at Step 1.

NO : The procedure is complete.

DTC C1915: Transmitter OFF mode, Tire1

DTC C1925: Transmitter OFF mode, Tire2

DTC C1935: Transmitter OFF mode, Tire3

DTC C1945: Transmitter OFF mode, Tire4

 CAUTION

If there is any problem in the CAN bus lines, an incorrect DTC may be set. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table [P.54C-12](#)).

DTC SET CONDITION

When the TPMS transmitter(s) is in the OFF MODE, this code is set.

TROUBLESHOOTING HINTS

The most likely causes for this DTC to be set are:

- OFF mode cancellation not performed
- The CAN bus may be defective
- Malfunction of TPMS transmitter
- Malfunction of ETACS-ECU <Vehicles without Keyless Operation System>
- Malfunction of KOS&OSS-ECU <Vehicles with Keyless Operation System>

DIAGNOSIS

STEP 1. Using scan tool MB991958, diagnose the CAN bus lines.

Use scan tool to diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table [P.54C-11](#)). On completion, go to Step 2.

STEP 2. DTC recheck after resetting CAN bus lines

Recheck if DTC C1915, C1925, C1935 or C1945 is set.

- (1) Turn the ignition switch (engine starting switch) from the "LOCK" (OFF) to "ON" position.
- (2) Check if the DTC is set.
- (3) Turn the ignition switch (engine starting switch) to the "LOCK" (OFF) position.

Q: Is DTC C1915, C1925, C1935 or C1945 set?

YES : Go to Step 3.

NO : The procedure is complete.

STEP 3. Check whether the DTC is set again.

Recheck if the DTC is set.

- (1) Drive the vehicle for five minutes.
- (2) Turn the ignition switch (engine starting switch) from the "LOCK" (OFF) to "ON" position.
- (3) Check if the DTC is set.
- (4) Turn the ignition switch (engine starting switch) to the "LOCK" (OFF) position.

Q: Are the all DTCs C1915, C1925, C1935 and C1945 set?

YES : Replace the TPMS transmitter (Refer to [P.31-47](#)) of all the four wheels, and register ID codes (Refer to [P.31-42](#)). Then go to Step 4.

NO : Register the ID codes (Refer to [P.31-42](#)). Then go to Step 4.

STEP 4. Check whether the DTC is set again.

Recheck if the DTC is set.

- (1) Turn the ignition switch (engine starting switch) from the "LOCK" (OFF) to "ON" position.
- (2) Check if the DTC is set.
- (3) Turn the ignition switch (engine starting switch) to the "LOCK" (OFF) position.

Q: Is DTC C1915, C1925, C1935 or C1945 set?

YES : Replace the ETACS-ECU <Vehicles without Keyless Operation System> (Refer to GROUP 54A ETACS [P.54A-260](#)) or KOS&OSS-ECU <Vehicles with Keyless Operation System> (Refer to GROUP 42B, KOS&OSS-ECU [P.42B-132](#)), and register the ID codes (Refer to [P.31-42](#)). Then start over at Step 1.

NO : The procedure is complete.

TPMS SYMPTOM CHART

⚠ CAUTION

During diagnosis, a DTC associated with another system may be set when the ignition switch (engine starting switch) is turned to the ON position with connector(s) disconnected. When diagnosis is finished, check all systems for DTC. If DTC(s) are set, erase them all.

Symptom	Inspection procedure No.	Reference page
The TPMS warning light stays on.	1	P.31-34
The TPMS warning light flash for about 1 minute and then remain illuminated.	2	P.31-36

TPMS SYMPTOM PROCEDURES

Inspection Procedure 1: The TPMS warning light stays ON.

⚠ CAUTION

- If there is any problem in the CAN bus lines, an incorrect DTC may be set. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table P.54C-12).
- Whenever ECU is replaced, ensure that the CAN bus lines are normal.

OPERATION

- The TPMS warning light will illuminate when the tire inflation pressure of road wheel is below 189 kPa (27.4 psi) or a certain threshold value.
- Furthermore, the TPMS warning light illuminates for three seconds immediately after the ignition switch (engine starting switch) is turned to the "ON" position. This is a bulb check of the TPMS warning light.

COMMENT ON TROUBLE SYMPTOM

This may be caused by faults in the CAN bus line, combination meter or ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System>.

PROBABLE CAUSES

- Damaged wiring harness and connectors
- Low tire inflation pressure
- Punctured tire
- Damaged tire valve and/or valve core
- Inaccurate tire pressure sensor of the TPMS transmitter
- Malfunction of the combination meter
- Malfunction of the ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System>

DIAGNOSIS**STEP 1. Inspect the all tires.**

Visually check road tires for any sign of air leak or puncture.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Replace the valve or valve core, or repair the flat tire.
Replace the tire if necessary. Then go to Step 2.

STEP 2. After the tire inflation pressure is adjusted and the TPMS transmitter sends inflation pressure information on it, check the TPMS warning light.

- (1) Wait until the tires cool down, and adjust road tire inflation pressures to the value specified on the tire pressure label.
- (2) Turn the ignition switch (engine starting switch) to the ON position.
- (3) Drive the vehicle for five minutes.
- (4) Check the TPMS warning light.

Q: Is the TPMS warning light turned off?

YES : The procedure is complete.

NO : Go to Step 3.

STEP 3. Check the tire inflation pressure again.

Use a tire pressure gauge to check that road tire inflation pressures meet the value specified on the tire pressure label.

Q: Is the check result normal?

YES : Go to Step 4.

NO : Replace the valve or valve core, or repair the damaged tire. Replace the tire if necessary. Then return to Step 2.

STEP 4. Using scan tool MB991958, diagnose the CAN bus lines.

Use scan tool to diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 5.

NO : Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table [P.54C-12](#)). Then go to Step 5.

STEP 5. Using scan tool MB991958, read the diagnostic trouble code.

Use scan tool MB991958 to check whether DTC C1912, C1922, C1932 or C1942 (Tire air pressure low) is set.

Q: Is DTC C1912, C1922, C1932 or C1942 set?

YES : Carry out troubleshooting for DTC C1912, C1922, C1932 or C1942 (Tire air pressure low) (Refer to [P.31-28](#)).

NO : Replace the ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System> (Refer to [P.31-46](#)) and execute "Tire Pressure Sensor ID Registration" on scan tool MB991958 "Special Function" (Refer to [P.31-42](#)). Then go to Step 6.

STEP 6. Check the TPMS warning light.

Q: Does the TPMS warning light turn OFF after three seconds of initial lamp check?

YES : Go to Step 7.

NO : Replace the combination meter assembly (Refer to GROUP 54A - Combination Meter Assembly). Then go to Step 7.

STEP 7. Retest the system.

Q: Does the TPMS warning light turn ON and OFF normally?

YES : The procedure is complete.

NO : Repeat the troubleshooting from Step 1.

Inspection Procedure 2: The TPMS warning light flash for about 1 minute and then remain illuminated.

⚠ CAUTION

- If there is any problem in the CAN bus lines, an incorrect DTC may be set. Prior to this diagnosis, diagnose the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table [P.54C-12](#)).
- Whenever ECU is replaced, ensure that the CAN bus lines are normal.

OPERATION

- The TPMS warning light will flash for about 1 minute and then remain illuminated when a fault has occurred in the TPMS.
- The TPMS warning light may also flash for about 1 minute and then remain illuminated when a fault has occurred in the TPMS warning light signal circuit (including open circuit and shorted circuit).

COMMENT ON TROUBLE SYMPTOM

- If any TPMS DTCs are set, carry out the relevant troubleshooting.
- This may be caused by faults in the CAN bus line, combination meter or ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System>.

PROBABLE CAUSES

- Damaged wiring harness and connectors
- Registered IDs unmatched
- Effective ID set unmatched
- A fault has occurred in the TPMS.
- Malfunction of the combination meter
- Malfunction of the ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System>

DIAGNOSIS

STEP 1. Using scan tool MB991958, diagnose the CAN bus lines.

Use scan tool to diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54C – CAN Bus Diagnostics Table [P.54C-12](#)). Then go to Step 2.

STEP 2. Using scan tool MB991958, read the diagnostic trouble code.

- (1) Turn the ignition switch (engine starting switch) to the ON position.
- (2) Check whether any TPMS DTC is set.

Q: Is any TPMS DTC set?

YES : Carry out the relevant TPMS troubleshooting (Refer to [P.31-18](#)).

NO : Go to Step 3.

STEP 3. Check the combination meter.

Check that the combination meter warning lights and indicators other than TPMS warning light illuminate normally.

Q: Is the check result normal?

YES : Replace the ETACS-ECU (Refer to GROUP 54A - ETACS-ECU [P.54A-260](#)) <vehicles without Keyless Operation System> or KOS&OSS-ECU (Refer to GROUP 42B - KOS&OSS-ECU [P.42B-132](#)) <vehicles with Keyless Operation System> and execute "Tire Pressure Sensor ID Registration" and/or "Tire PRS. Sensor ID Reg. (Set 2)" on scan tool MB991958 "Special Function" (Refer to [P.31-42](#)). Then go to Step 4.

NO : Replace the combination meter assembly (Refer to GROUP 54A - Combination Meter Assembly [P.54A-61](#)). Then go to Step 4.

STEP 4. Retest the system.

Q: Does the TPMS warning light turn ON and OFF normally?

YES : The procedure is complete.

NO : Repeat the troubleshooting from Step 1.

DATA LIST REFERENCE TABLE

M1311003300171

NOTE: KOS&OSS-ECU input data refer to GROUP 42B – Data List Reference Table [P.42B-75](#). <Vehicles with Keyless Operation System>

The following items can be read by the scan tool from the ETACS-ECU <Vehicles without Keyless Operation System> input data.

Item No.	Scan tool MB991958 display	Check condition	Normal condition
21	Air pressure, Tire 1	–	–
22	Air pressure, Tire 2		
23	Air pressure, Tire 3		
24	Air pressure, Tire 4		
31	Acceleration, Tire 1	–	–
32	Acceleration, Tire 2		
33	Acceleration, Tire 3		
34	Acceleration, Tire 4		
38	Number of registered TPMS ID	–	Number of stored TPMS
39	Ignition signal (CAN data)	Ignition switch (engine starting switch): "ON"	ON
		Ignition switch (engine starting switch): "OFF"	OFF
40	Ignition signal (Port input)	Ignition switch (engine starting switch): "ON"	ON
		Ignition switch (engine starting switch): "OFF"	OFF
41	VSS	Drive the vehicle (The scan tool and the speedometer readings are approximately the same)	–
42	Ambient TEMP. (after filtering)	–	–
43	MIN. ambient TEMP. (after reset)	–	–
44	Adjusted TEMP. lower limit	–	–
50	Registered ID reception, Tire1	Reception	Yes
		No reception	No
51	Registered ID reception, Tire2	Reception	Yes
		No reception	No
52	Registered ID reception, Tire3	Reception	Yes
		No reception	No
53	Registered ID reception, Tire4	Reception	Yes
		No reception	No

Item No.	Scan tool MB991958 display	Check condition	Normal condition
61	Air pressure, Tire1(not adjusted)	–	–
62	Air pressure, Tire2(not adjusted)		
63	Air pressure, Tire3(not adjusted)		
64	Air pressure, Tire4(not adjusted)		
66	Temperature, Tire1	–	–
67	Temperature, Tire2		
68	Temperature, Tire3		
69	Temperature, Tire4		
71	Air pressure, Tire1 (default)	–	–
72	Air pressure, Tire2 (default)		
73	Air pressure, Tire3 (default)		
74	Air pressure, Tire4 (default)		
76	Temperature, Tire1 (default)	–	–
77	Temperature, Tire2 (default)		
78	Temperature, Tire3 (default)		
79	Temperature, Tire4 (default)		
81	Threshold PRS. warning, Tire1	–	–
82	Threshold PRS. warning release, T1		
83	Threshold PRS. warning, Tire2		
84	Threshold PRS. warning release, T2		
85	Threshold PRS. warning, Tire3		
86	Threshold PRS. warning release, T3		
87	Threshold PRS. warning, Tire4		
88	Threshold PRS. warning release, T4		

Item No.	Scan tool MB991958 display	Check condition	Normal condition
91	Latest R PRS, Tire1 (not adjusted)	–	–
92	Latest R PRS, Tire2 (not adjusted)		
93	Latest R PRS, Tire3 (not adjusted)		
94	Latest R PRS, Tire4 (not adjusted)		
96	Latest reception Air PRS., Tire1	–	–
97	Latest reception Air PRS., Tire2		
98	Latest reception Air PRS., Tire3		
99	Latest reception Air PRS., Tire4		
101	Latest reception TEMP, Tire1	–	–
102	Latest reception TEMP, Tire2		
103	Latest reception TEMP, Tire3		
104	Latest reception TEMP, Tire4		

CHECK AT ECU TERMINAL

Refer to GROUP 54A – ETACS, Check at ECU Terminal [P.54A-253](#). <Vehicles without Keyless Operation System>

Refer to GROUP 42B – Terminal Voltage Reference Chart [P.42B-120](#). <Vehicles with Keyless Operation System>

M1311003400112

ON-VEHICLE SERVICE

TIRE INFLATION PRESSURE CHECK

M1311000900776

NOTE: For the tire pressure, refer to the tire pressure label attached to the lower section of driver's side door striker.

TIRE WEAR CHECK

M1311001000839

Measure the tire tread depth.

Limit value: Minimum 1.6 mm (0.06 inch)

If the remaining tread depth is less than the minimum limit value, replace the tire.

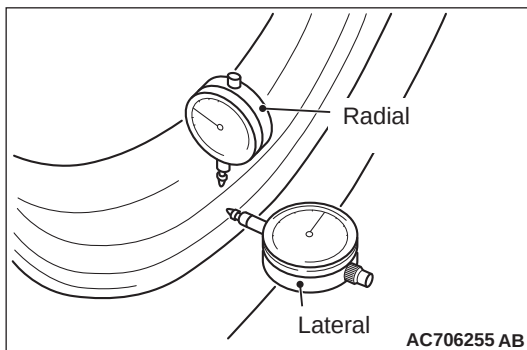
NOTE: If the tire tread depth becomes 1.6 mm (0.06 inch) or less, the wear indicator appears.

WHEEL RUNOUT CHECK

M1311001100999

Jack up the vehicle so that the wheels are clear of the floor. While slowly turning the wheel, measure wheel runout with a dial indicator.

Limit value:



Items	Steel wheel	Aluminum wheel
Radial runout	1.2 mm (0.05 inch) or less	1.0 mm (0.04 inch) or less
Lateral runout	1.2 mm (0.05 inch) or less	1.0 mm (0.04 inch) or less

If wheel runout exceeds the limit value, replace the wheel.

DRAINING OF THE FLAT TIRE TEMPORARY REPAIR AGENT

M1311007800048

CAUTION

- Prepare an exhaust extraction system. The procedures must be carried out in a well ventilated area.
- Wear personal protective equipment not to allow the repair agent to come in contact with your skin, eyes or clothes.
- Wash your face and hands carefully after the work.

Observe the following procedure when you repair or replace the tire(s) which has been filled with a flat tire temporary repair kit.

1. Remove the road wheel(s) and then remove air from the tire(s).
2. Separate the tire from the road wheel while taking care not spill the repair agent.
3. Wipe off the remaining repair agent from the inside of the road wheels and the tire. When you locate a punctured spot, repair it in the usual way. If you cannot locate a punctured spot, replace the tire.
4. Replace the valve, valve core and cap with new ones.

DISPOSAL OF THE FLAT TIRE TEMPORARY REPAIR AGENT

M1311007900056

CAUTION

The repair agent contains propylene glycol, which should be disposed of as industrial waste. Drained or expired repair agent must be disposed of as drained oil.

NOTE: An expiry date is described on a repair agent bottle.

TPMS TRANSMITTER CHECK OR REPLACE

M1311008500028

After removing the tire from the wheel, remove the TPMS transmitter(Refer to P.31-47). Then check it as follows and replace if necessary:

1. Wipe off the agent remained on the TPMS transmitter housing. In particular, remove it thoroughly around the pressure detection hole.

NOTE: Wait for a while to allow the agent to set, and then detach it.

2. If any of the following conditions is found, replace the TPMS transmitter and then register the tire pressure sensor ID code: In addition, replace the valve, the valve core and the cap. Then install the tire assembly to the wheel (Refer to P.31-47).

- Damage (deformation or scratch, etc.) on the exterior of the housing
- The agent cannot be removed thoroughly from inside the pressure detection hole.

3. If the conditions above are not found, the TPMS transmitter can be reused. Replace the valve, the valve core and the cap only. Then install the tire assembly to the wheel (Refer to P.31-47).

NOTE: If the TPMS transmitter is reused, the pressure measurement function should be checked as follows.

- Inflate the corresponding tire to 250 kPa (36.2 psi) or more, and perform step 2 in the TPMS transmitter check (Refer to P.31-44).
- Inflate the corresponding tire to 150 kPa (21.7 psi) or less, and perform step 2 in the TPMS transmitter check (Refer to P.31-44).

If abnormal pressure difference[20 kPa (2.9 psi) or more] is observed in these checks, replace the TPMS transmitter and register the tire pressure sensor ID code.

TPMS SPECIAL FUNCTION**TIRE PRESSURE SENSOR ID REGISTRATION**

M1311003900162

- "Tire Pressure Sensor ID Registration": To enter the ID into Set 1 when the TPMS transmitter or the ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System> is replaced.
- "Tire PRS. Sensor ID Reg.(Set2)": To enter the ID into Set 2 when the TPMS transmitter or the ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System> is replaced.

"TIRE PRESSURE SENSOR ID REGISTRATION" METHOD

1. Select "4tires ID Reg. (Change tire PRS.)" and start the tire pressure sensor ID registration.

CAUTION

Register all tire pressure sensor IDs within twenty minutes.

2. "4 SNSR ID Registration Do you want to start? Note Finish ID Registration within 20 minutes." is displayed. Then, press "OK."

NOTE: If the ID code registration is not finished within 20 minutes, all the ID codes registered in the TPMS transmitter before will be erased. For this reason, the ID codes need to be registered again.

3. Decrease the tire pressure to 189 kPa (27.4 psi) or less by changing 20 kPa (2.9 psi) or more, and register the tire pressure sensor ID code of each wheel to ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System>.

NOTE:

- You can start out the following operations from any TPMS transmitter. The tire pressure sensor ID registration has no order.
- On completion of the tire pressure sensor ID code registration, the tire pressure sensor ID code is displayed on the scan tool MB991958 screen.
- scan tool MB991958 cannot identify which registered TPMS transmitter is used for each wheel. For this reason, write down the tire number for each wheel when the tire number and ID code is displayed on the scan tool MB991958 during ID code registration.
- It may take approximately one minute for the ID code to be displayed on the scan tool MB991958 screen after the tire pressure is reduced.
- If the ID code is not displayed, reduce the tire pressure another 20 kPa (2.9 psi) or more. If the ID code is not displayed yet, rotate the tire to displace the TPMS transmitter, and reduce the tire pressure 20 kPa (2.9 psi) or more again.
- If the ID code cannot be registered for all the four wheels, the ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System> may be faulty, thus replace the ETACS-ECU <vehicles without Keyless Operation System> or KOS&OSS-ECU <vehicles with Keyless Operation System>.
- If the ID code can be registered for one wheel or more, the TPMS transmitter in which the code cannot be registered may be faulty, thus replace that TPMS transmitter.

4. "4 SNSR ID Registration Completed." is displayed. Then, select "OK."
NOTE: The TPMS indicator illuminates for tire pressure alarm.
5. After one minute or more has passed, correct the tire pressure for all wheels with ignition switch (engine starting switch) "ON".
6. Check the data list "Registered ID reception, Tire 1, 2, 3, 4" if "YES" is displayed for each tire. When "NO" is displayed, drive the vehicle for approximately 5 minutes, check the display again. If "NO" is still displayed, register the ID code again.

"TIRE PRS. SENSOR ID REG. (Set2)" METHOD

Follow "Tire Pressure Sensor ID Registration" method.

TIRE PRESSURE SENSOR ID CHECK

M1311004100095

"TIRE PRESSURE SENSOR ID CHECK" METHOD

You can check the tire pressure sensor ID on the diagnosis screen as described below.

1. Operate scan tool MB991958 as follows:
 - Press "Special function" button on the diagnosis screen.
 - Select "Tire Pressure Sensor ID Check" from the "Special function" menu.

CAUTION

If two sets of the IDs have been registered, the scan tool MB991958 will display the IDs of the wheels which are currently effective in the vehicle.

2. Check the tire pressure sensor IDs on the scan tool MB991958 screen.

TPMS TRANSMITTER CHECK

M1311004000117

According to the following procedures, identify which registered TPMS transmitter corresponds to which wheel, and check the tire pressure and acceleration value of each TPMS transmitter.

1. Check the data list "Air Pressure, Tire1, 2, 3, 4" and write down the tire pressure for all wheels.
NOTE: The display at this time is the data received most recently.
2. Perform the following procedures for four wheels in order, identify the wheel by checking the tire pressure of each wheel.
 - (1) Change the pressure of tire for 20 kPa (2.9 psi) or more so that the TPMS transmitter sends the latest sensor data (The tire pressure can either be decreased or increased).
 - (2) Check the data list screen to determine which tire number corresponds to the wheel whose tire pressure has changed.

NOTE:

- It may take approximately one minute that the data of tire pressure change is displayed on the scan tool MB991958 screen.
 - If the data of tire pressure change is not displayed on the scan tool MB991958 screen, the most possible cause is that the radio wave sent from the TPMS transmitter cannot be received. In this case, the radio wave may be received by performing the procedures from (1) again after turning the tire to change the TPMS transmitter position. If the tire pressure change is still not displayed on the scan tool MB991958 screen, the TPMS transmitter in which the ID code is not registered may be installed, or the TPMS transmitter may be faulty. Therefore, perform ID code registration or replace the TPMS transmitter according to the instructions of troubleshooting for DTCs. (At this time, do not register the ID codes or replace the TPMS transmitter.)
3. Check the tire pressure or acceleration value shown in the screen (if needed).
 4. After checking by the tire pressure change, adjust the checked tire pressure to the proper value.

WHEEL AND TIRE

INSTALLATION SERVICE POINT

M1311001300647

Tighten the wheel nuts to the specified torque.

Tightening torque: 98 ± 10 N·m (72 ± 7 ft-lb)

TIRE PRESSURE MONITORING SYSTEM (TPMS)

TPMS RECEIVER

REMOVAL AND INSTALLATION

M1311003700180

Refer to GROUP 54A – ETACS-ECU [P.54A-260](#)
<vehicles without Keyless Operation System> or
GROUP 42B – KOS&OSS-ECU [P.42B-132](#) <vehicles with Keyless Operation System>.

TPMS TRANSMITTER

REMOVAL AND INSTALLATION

M1311003800154

WARNING

Certain components of this vehicles, such as TPMS transmitters, may contain perchlorate materials. Special handling may apply. For additional information, see www.dtsc.ca.gov/hazardouswaste/perchlorate.

CAUTION

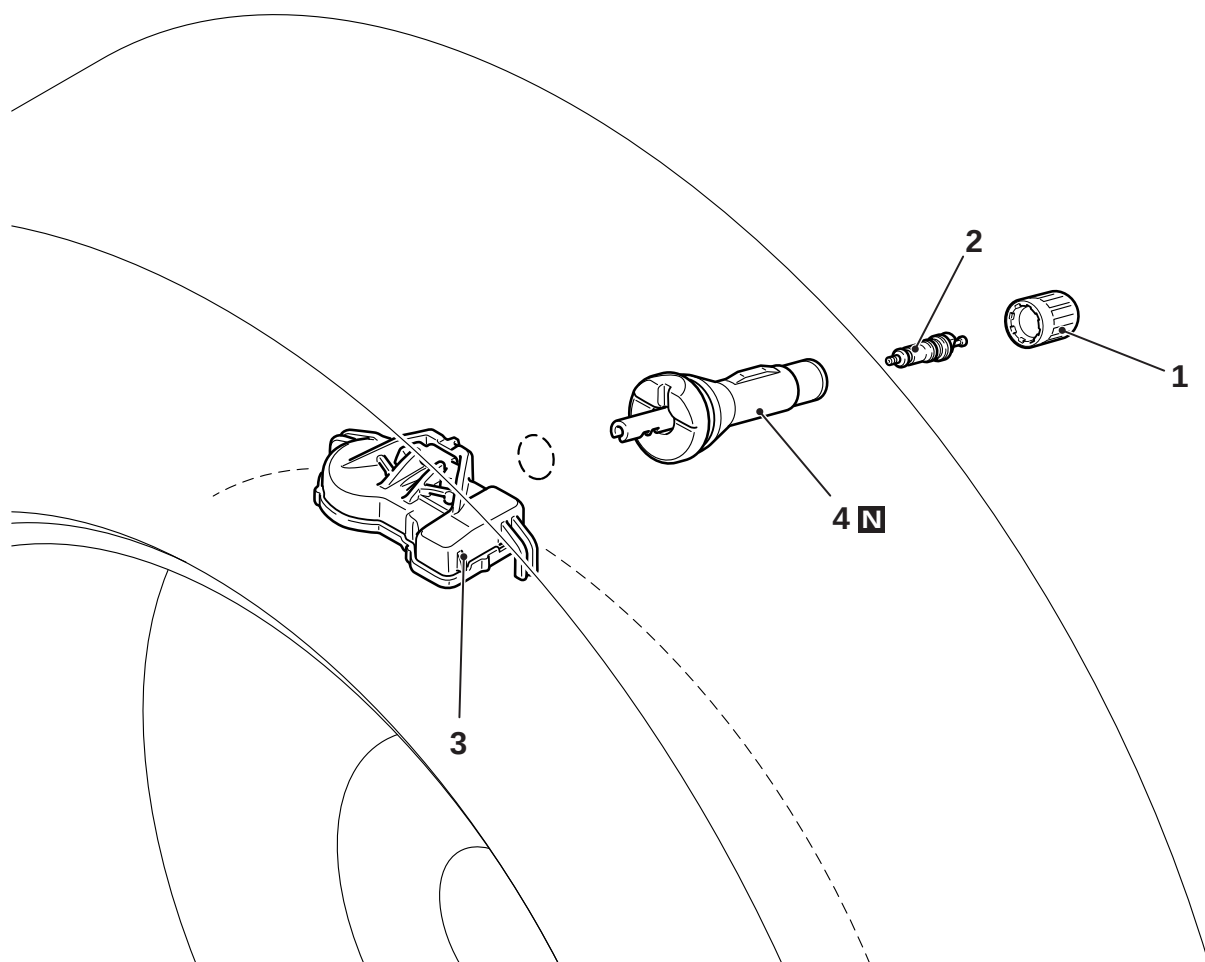
- Ensure valve cap is always in place except when adjusting tire pressure.
- If the valve core and valve cap are replaced, use a genuine replacement part. The valve core is similar to a conventional one, but uses nickel plating to avoid corrosion.
- Replace the valve with a new one every five years or when the tire is replaced.
- Do not drop the TPMS transmitter from height greater than 1 meter (3.3 feet).
- Do not expose the TPMS transmitter to extraneous magnetic fields.
- TPMS transmitter should not be stored at temperatures above 80°C (176°F).
- TPMS transmitter should not be exposed to temperatures above 100°C (212°F).
- If the TPMS transmitter is replaced, execute "Tire Pressure Sensor ID Registration" on scan tool MB991958 "Special Function."
- Be careful not to damage the TPMS transmitter.

Pre-removal Operation

- Wheel and Tire Removal

Post-installation Operation

- Wheel and Tire Installation
- Tire Pressure Sensor ID Registration If a new TPMS transmitter is installed (Refer to [P.31-42](#)).
- After the tire pressure sensor ID registration, check that the TPMS warning light does not illuminate or flash.



ACC02899 AB

Removal steps

1. Cap
2. Valve core
 - Tire bead
3. TPMS transmitter
4. Valve <In case of removing the valve>

<<A>>

Installation steps

- >>A<< 4. Valve <In case of installing the valve>
- >>B<< 3. TPMS transmitter
 - Tire bead mounting
- >>C<< 2. Valve core
 - Tire pressure inflation
1. Cap

REMOVAL SERVICE POINT

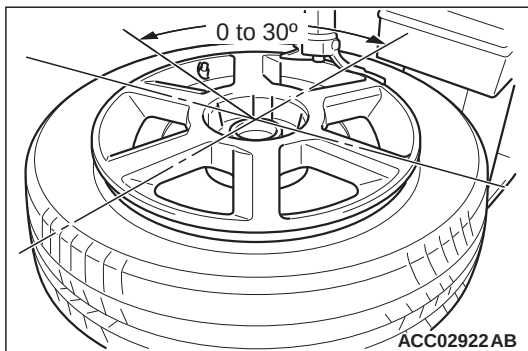
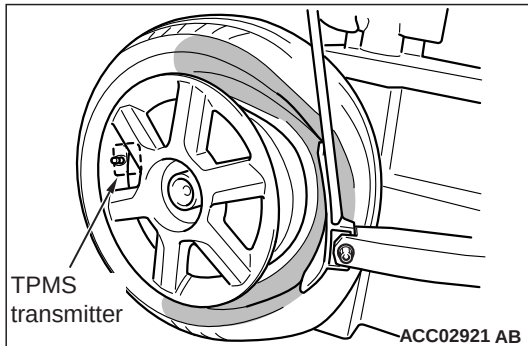
<<A>> TPMS TRANSMITTER REMOVAL

CAUTION

Be careful not to damage the TPMS transmitter.

1. Fix the tire on a tire changing machine. Then apply a bead breaking shoe to the shown range to disengage the tire bead from the wheel rim.

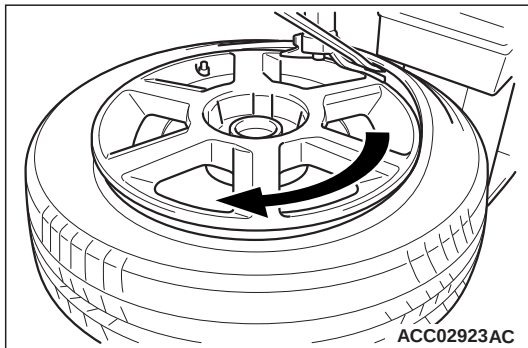
NOTE: For the opposite side, repeat the same procedure.



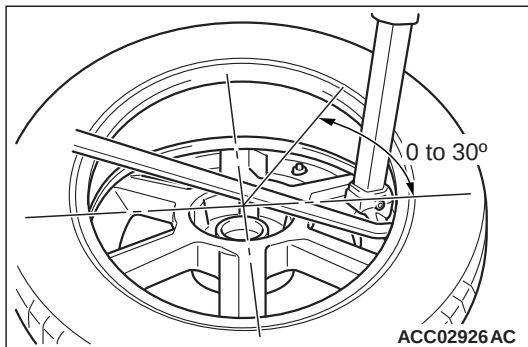
2. Fix the tire on a tire changing machine so that the TPMS transmitter is positioned as shown.

CAUTION

Do not allow any impact or shock to the TPMS transmitter with a tire lever or tire bead.



3. Use a tire lever to disengage the upper bead.
4. Rotate the tire in the direction of arrow to disengage the tire bead from the wheel.

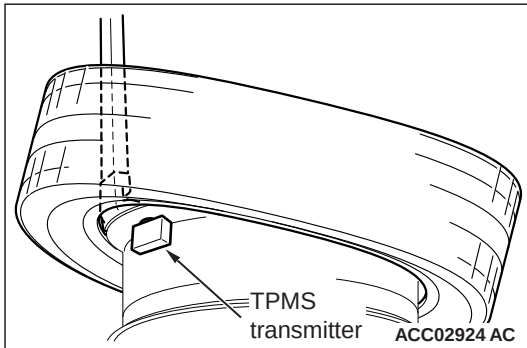


5. Fix the tire on a tire changing machine so that the TPMS transmitter is positioned as shown.

⚠ CAUTION

Do not allow any impact or shock to the TPMS transmitter with a tire lever or tire bead.

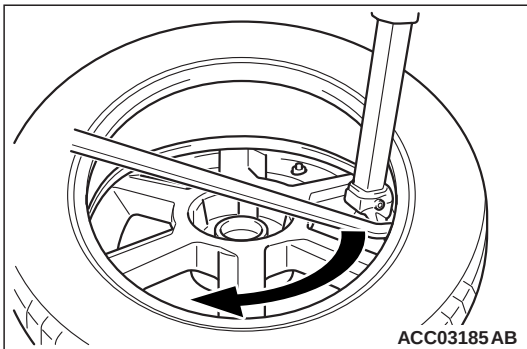
6. Use a tire lever to disengage the lower bead.



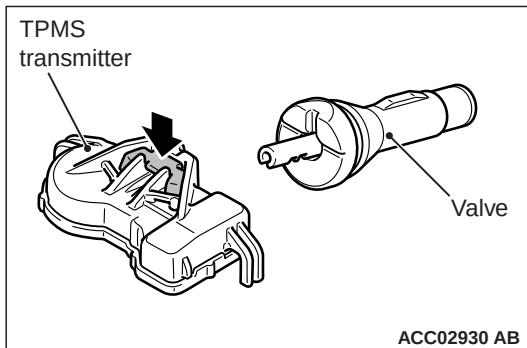
7. Rotate the tire in the direction of arrow to disengage the tire bead from the wheel.

⚠ CAUTION

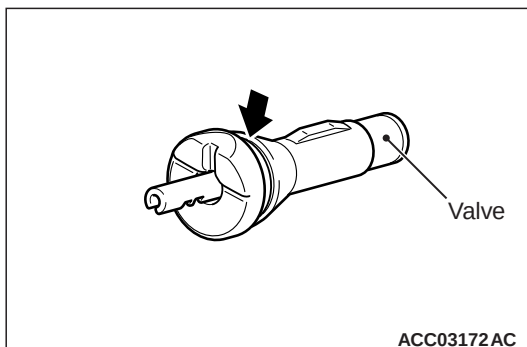
Do not attempt to remove the TPMS transmitter without depressing the portion indicated by the arrow.



8. Remove the TPMS transmitter from the valve while depressing the portion indicated by the arrow.



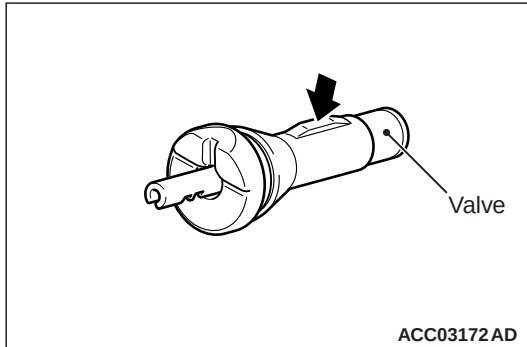
9. Cut down the entire groove shown by the arrow to remove the valve.



INSTALLATION SERVICE POINTS

>>A<< VALVE INSTALLATION

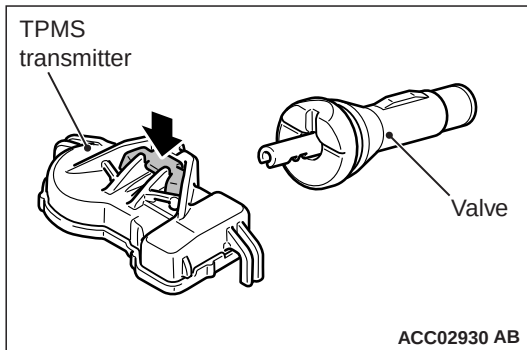
1. The projection shown by the arrow should face towards the outside of the wheel.



>>B<< TPMS TRANSMITTER INSTALLATION

CAUTION

Do not attempt to install the TPMS transmitter without depressing the portion indicated by the arrow.



1. Install the TPMS transmitter into the valve while depressing the portion indicated by the arrow.

CAUTION

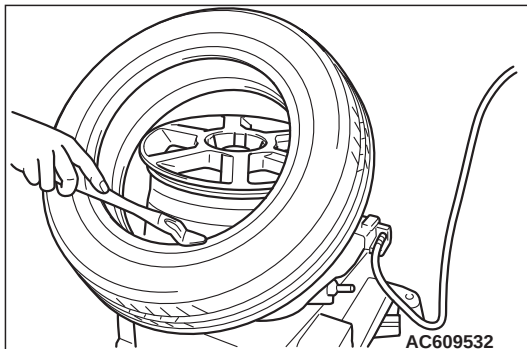
Make sure that the TPMS transmitter and the valve are installed securely.

2. Pull the TPMS transmitter from the valve by hand to make sure it is secure.

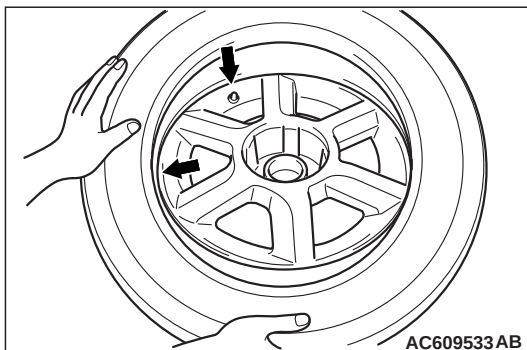
NOTE: If the TPMS transmitter is disconnected from the valve, the tab securing the TPMS transmitter to the valve may be broken.

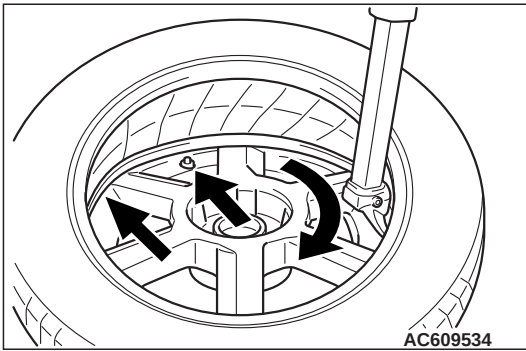
>>C<< TIRE BEAD MOUNTING

1. Prepare the tire and fix the rim as usual.

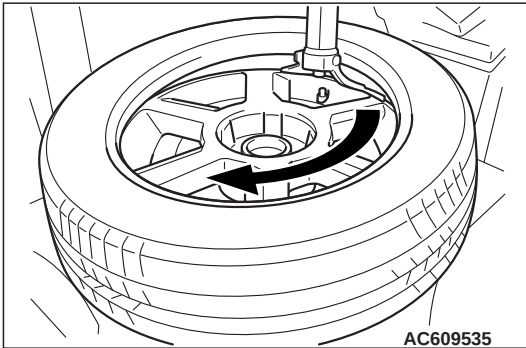


2. Put the tire on the rim, so that the cross point of the bead with the rim is approximately 20 cm (7.9 inch) away from the valve.

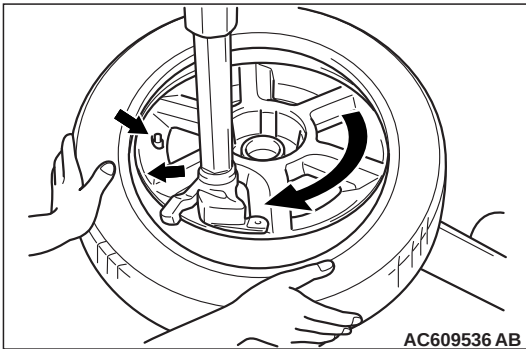




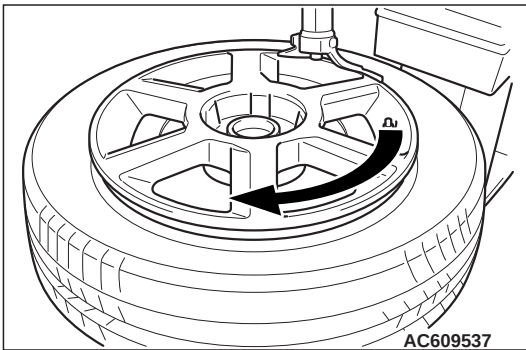
3. Engage the shoe and make sure that 20 cm (7.9 inch) is maintained between the cross point and the valve. The arrow shows the direction of rotation of the wheel.



4. Turn the wheel in order to engage all the first side of the tire.
NOTE: The standard shoes can pass over the sensor without damaging it.



5. Put the second side of the tire in position, so that the cross point of the bead with the rim is approximately 20 cm (7.9 inch) away from the valve. The curved arrow shows the direction of rotation of the wheel.



6. Turn the wheel in order to engage all of the second side of the tire.
NOTE: The standard shoes can pass over the sensor without damaging it.