

2007 SUSPENSION

Symptom Troubleshooting - MX-5 Miata

TIRE PRESSURE MONITORING SYSTEM (TPMS) WIRING DIAGRAM

WITH ADVANCED KEYLESS SYSTEM OR KEYLESS ENTRY SYSTEM

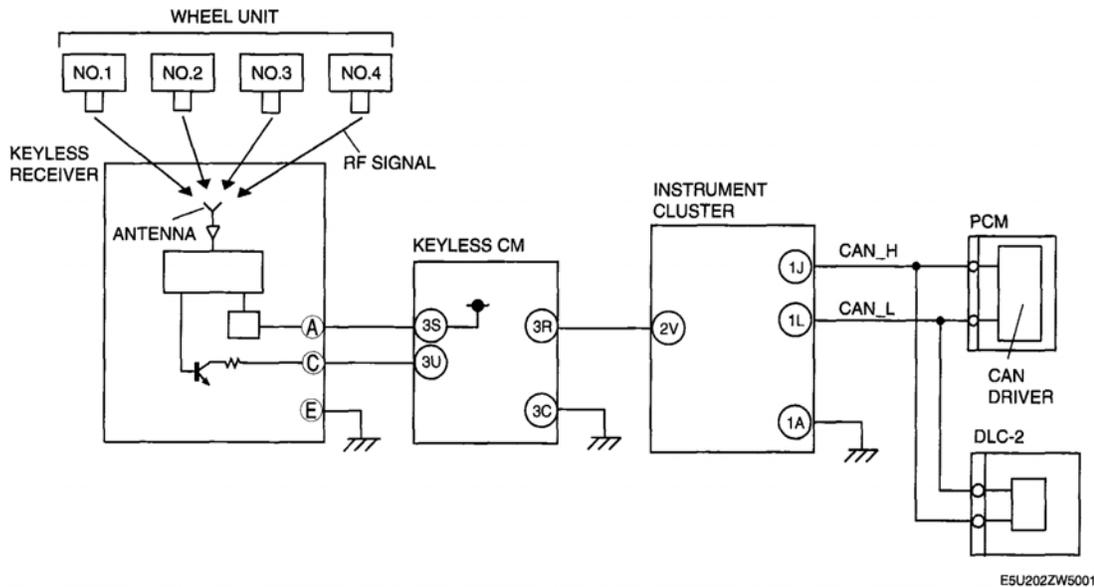


Fig. 1: Tire Pressure Monitoring System (TPMS) Wiring Diagram (With Advanced Keyless System Or Keyless Entry System)

Courtesy of MAZDA MOTORS CORP.

WITHOUT ADVANCED KEYLESS SYSTEM AND KEYLESS ENTRY SYSTEM

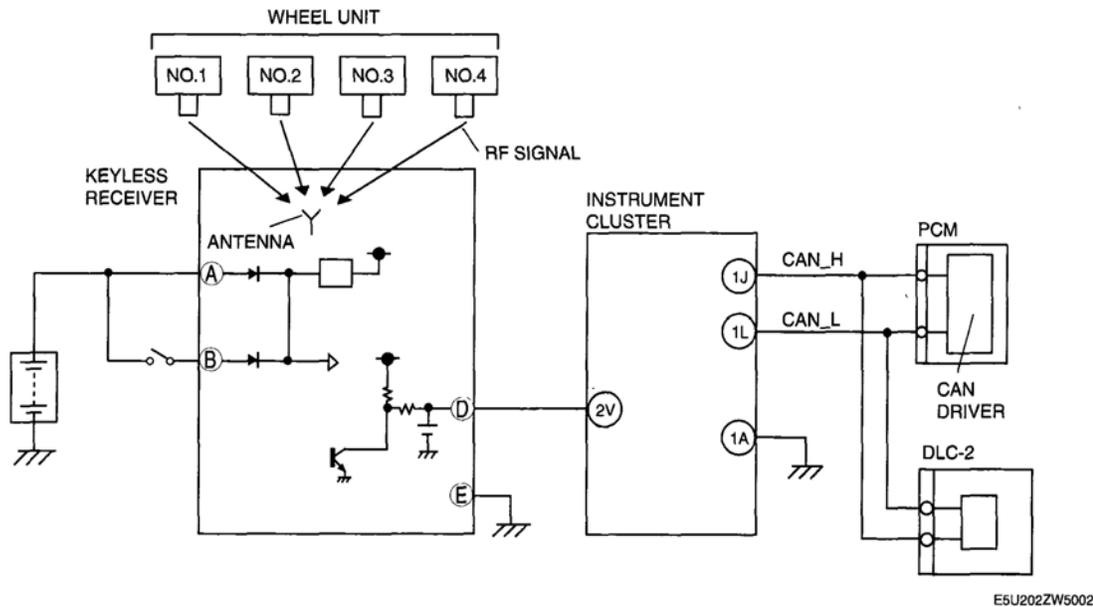


Fig. 2: Tire Pressure Monitoring System (TPMS) Wiring Diagram (Without Advanced Keyless System And Keyless Entry System)

Courtesy of MAZDA MOTORS CORP.

FOREWORD

- Before performing the steps in Symptom Troubleshooting, perform the On-board Diagnostic Inspection. To check the DTC, follow the DTC Inspection steps. (See **DTC TABLE** .)

PRECAUTION

INTERMITTENT CONCERN TROUBLESHOOTING

Vibration Method

- If malfunction occurs or becomes worse while driving on a rough road or when the engine is vibrating, perform the steps below.

NOTE:

- **There are several reasons why vehicle or engine vibration could cause an electrical malfunction. Some of the things to check for are:**
 - **Connectors not fully seated.**
 - **Wire harnesses not having full play.**
 - **Wires laying across brackets or moving parts.**
 - **Wires routed too close to hot parts.**

- An improperly routed, improperly clamped, or loose harness can cause wiring to become pinched

between parts.

- The connector joints, points of vibration, and places where wire harnesses pass through the firewall, body panels and other panels are the major areas to be checked.

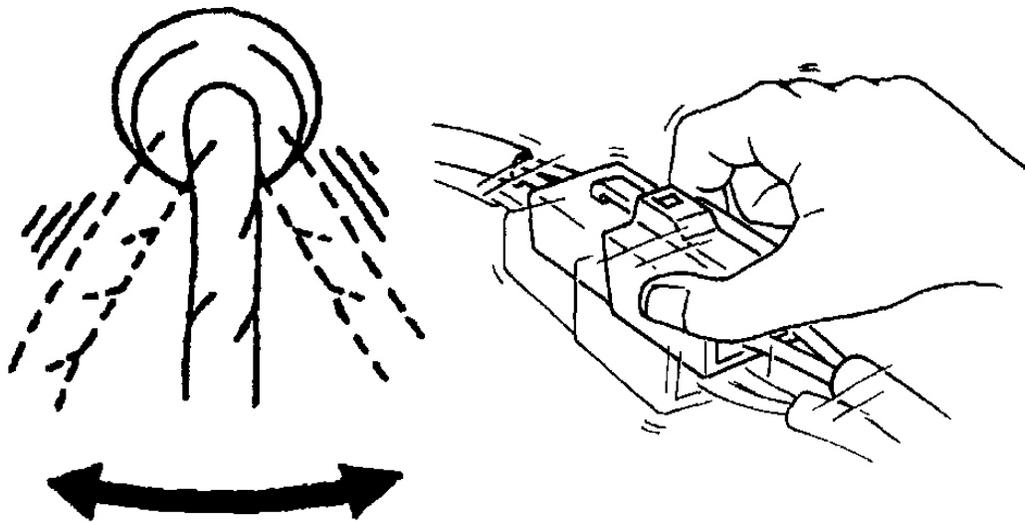
Inspection Method for Switch and/or Sensor Connectors or Wires

1. Connect M-MDS or equivalent to DLC-2.
2. Turn the ignition switch to the ON position (engine off).

NOTE:

- If engine starts and runs, perform the following steps at idle.

3. Access PIDs for the switch you are inspecting.
4. Turn switch on manually.
5. Shake each connector or wire harness a bit vertically and horizontally while monitoring the PID.
 - If PID value is unstable, check for poor connection.



CHU0603W001

Fig. 3: Shaking Connector Or Wire Harness
Courtesy of MAZDA MOTORS CORP.

Inspection Method for Sensors

1. Connect M-MDS or equivalent to DLC-2.
2. Turn the ignition switch to the ON position (engine off).

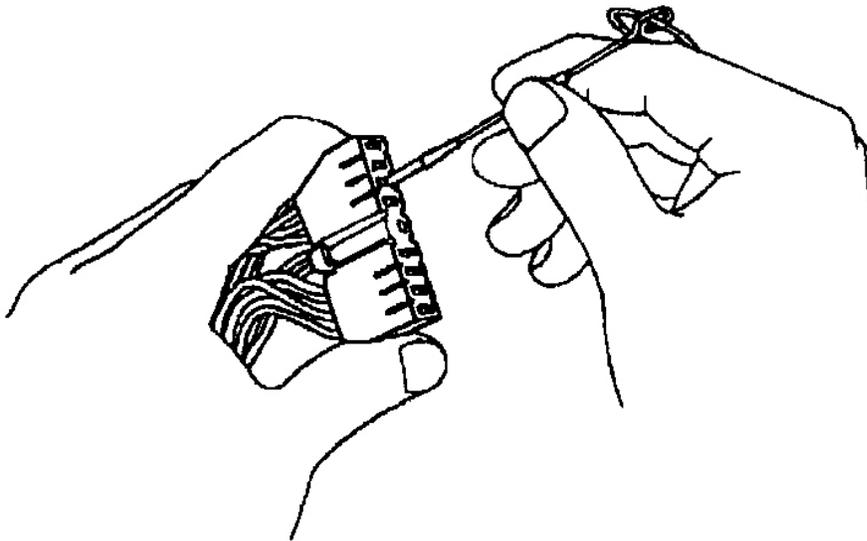
NOTE:

- If engine starts and runs, perform the following steps at idle.

3. Access PIDs for the switch you are inspecting.
4. Vibrate the sensor slightly with your finger.
 - If PID value is unstable or malfunction occurs, check for poor connection and/or poorly mounted sensor.

Connector Terminal Check Method

1. Check the connection condition of each female terminal.
2. Insert male terminal; fit the female terminal side to female terminal and check to see whether the malfunction is in the female terminal or not.



CHU0603W002

Fig. 4: Checking Connection Condition Of Female Terminal
 Courtesy of MAZDA MOTORS CORP.

SYMPTOM TROUBLESHOOTING

SYMPTOM TROUBLESHOOTING CHART

No.	Symptom
1	TPMS warning light illuminates continuously.
	TPMS warning light (low pressure warning) illuminates after engine start and turns off after driving

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2	for a period of time.
3	Flat tire warning light (flat tire warning) illuminates.
4	Wheel unit ID registration cannot be performed (TPMS warning light flashes).

NO.1 TPMS WARNING LIGHT ILLUMINATES CONTINUOUSLY

- CAUTION:**
- The tire pressure cannot be measured accurately after driving for a long period due to the internal temperature and pressure. Stop the vehicle for approx. 1 hour and then perform the tire pressure measurement and adjustment.
 - Use a high accuracy digital gauge for measurement of the tire pressure.

- NOTE:**
- If the DTC clearing procedure is implement, the TPMS warning light turns off.

SYMPTOM TROUBLESHOOTING HINTS

1	TPMS warning light illuminates continuously
[TROUBLESHOOTING HINTS]	
<ul style="list-style-type: none"> • Tire pressure is lower than the specification. 	

DIAGNOSTIC PROCEDURE

STEP	INSPECTION	YES/NO	ACTION
1	INSPECT THE TIRE <ul style="list-style-type: none"> • Is there any foreign object adhering to the tire? 	Yes	Remove any foreign object. Replace the tire if necessary, and then go to the next step.
		No	Go to the next step.
2	INSPECT THE TIRE PRESSURE <ul style="list-style-type: none"> • Is the tire pressure lower than the specification? 	Yes	Adjust the tire pressure to the specification when the engine is cold, and then go tot the next step.
		No	Go to the next step.
3	DOES THE TPMS WARNING LIGHT TURN OFF?	Yes	Troubleshooting completed. Explain to the customer what has been repaired.
		No	Go to the next step.
4	DRIVE THE VEHICLE AT 25 KM/H FOR 10 MIN. <ul style="list-style-type: none"> • Does the TPMS warning light turn off? 	Yes	Troubleshooting completed. Explain to the customer what has been repaired.
		No	Adjust the tire pressure to the specification, and then return to Step 1. NOTE: <ul style="list-style-type: none"> • If the TPMS warning light does not turn off

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after repeating this step, the tire may be flat.

NO. 2 TPMS WARNING LIGHT (LOW PRESSURE WARNING) ILLUMINATES AFTER ENGINE START AND TURNS OFF AFTER DRIVING FOR PERIOD OF TIME

- CAUTION:**
- The tire pressure cannot be measured accurately after driving for a long period due to increased internal temperature and pressure. Stop the vehicle for approx. 1 hour and then perform the tire pressure measurement and adjustment.
 - Use a high accuracy digital gauge for measurement of the tire pressure.

- NOTE:**
- The tire pressure decreases spontaneously by approx. 7 kPa {0.07 kgf/cm² , 1.02 psi} per month even if the tire is normal.
 - The FFD (temperature and pressure) stored when the TPMS warning light is turned on or off can be verified by operating the M-MDS or equivalent.

SYMPTOM TROUBLESHOOTING HINTS

2	TPMS warning light (low pressure warning) illuminates after engine start and turns off after driving for a period of time.
[TROUBLESHOOTING HINTS]	
<ul style="list-style-type: none"> • The tire pressure decreases (approaches value to illuminate TPMS warning light) when the internal temperature of the tire is low. 	

DIAGNOSTIC PROCEDURE

STEP	INSPECTION		ACTION
1	INSPECT THE TIRE <ul style="list-style-type: none"> • Is there any foreign object adhering to the tire? 	Yes	Remove any foreign object. Replace the tire if necessary, and then go to the next step.
		No	Go to the next step.
2	MEASURE THE TIRE PRESSURE WHEN THE ENGINE IS COLD <ul style="list-style-type: none"> • Has the tire pressure decreased (approaches value to illuminate TPMS warning light)? 	Yes	Adjust the tire pressure to the specification, and then go to the next step.
		No	Go to the next step.
3	IS THE MALFUNCTION CORRECTED?	Yes	Troubleshooting completed.
		No	Verify troubleshooting again and return to Step 1 if the malfunction recurs.

NO. 3 FLAT TIRE WARNING LIGHT (FLAT TIRE WARNING) ILLUMINATES

NOTE:

- When the DTC clear command of the M-MDS or equivalent is operated, the flat tire warning light can be turned off.
- The FFD (temperature and pressure) stored when the flat tire warning light is turned on or off can be verified by operating the M-MDS or equivalent.

SYMPTOM TROUBLESHOOTING HINTS

3 Flat tire warning light (flat tire warning) illuminates.

[TROUBLESHOOTING HINTS]

- Flat tire

DIAGNOSTIC PROCEDURE

STEP	INSPECTION	ACTION
1	IDENTIFY THE FLAT TIRE <ul style="list-style-type: none"> • Can the flat tire be identified by a visual check or using a digital gauge? 	Yes Replace the flat tire, and then go tot the next step.
		No Go to the next step.
2	DOES THE FLAT TIRE WARNING LIGHT TURN OFF? <ul style="list-style-type: none"> • Adjust the tire pressure, and then drive the vehicle at 25 km/h {15.5 mph} or more for 10 min of more . 	Yes Troubleshooting completed.
		No Verify troubleshooting again and return to Step 1 if the malfunction recurs.

NO.4 WHEEL UNIT ID REGISTRATION CANNOT BE PERFORMED (TPMS WARNING LIGHT FLASHES)

CAUTION:

- Active the wheel unit ID registration mode using the M-MDS or equivalent, and perform the following steps if the TPMS warning light does not turn off after driving at 25 km/h {15.5 mph} or more for 10 min or more.

SYMPTOM TROUBLESHOOTING HINTS

4 Wheel unit ID registration cannot be performed (TPMS warning light flashes).

[TROUBLESHOOTING HINTS]

- New wheel unit malfunction (caused when installing to wheel)
- Any malfunction on an old wheel unit which has not been replaced.

DIAGNOSTIC PROCEDURE

STEP	INSPECTION	ACTION

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STEP	INSPECTION	ACTION	
1	<p>CAN THE WHEEL UNIT ID REGISTERED?</p> <ul style="list-style-type: none"> • Connect the M-MDS or equivalent. • Display the wheel unit ID registration condition (ID and tire pressure table) using the M-MDS or equivalent. • Temporarily remove the battery and reinstall it immediately. <p>NOTE:</p> <ul style="list-style-type: none"> • If the battery is removed, the tire pressure data for WU_1 to WU_4 stored in the instrument cluster is reset. • Pressure is 0 kPa {0 kgf/cm², 0 psi} when it is displayed again using the M-MDS or equivalent. <ul style="list-style-type: none"> • Set tire pressure for the four wheels separately. • Perform the wheel unit ID registration again. • Can the ID be registered? 	Yes	Trouble shooting completed. (Adjust the tire pressure on four wheels, and then return the vehicle to the customer.)
		No	Go to the next step.
2	<p>VERIFY THE WHEEL UNIT ID REGISTRATION CONDITIONS (ID AND TIRE PRESSURE TABLE) USING THE M-MDS OR EQUIVALENT</p> <ul style="list-style-type: none"> • Refer to [M-MDS display (example)] to specify wheel unit for which the ID could not be registered. (See Display Of M-MDS (Example) .) • Is the wheel unit for which the ID could not be registered a new wheel unit? <p>CAUTION:</p> <ul style="list-style-type: none"> • ID numbers of WU_1 to WU_4 are updated when wheel on all of four wheels are registered. 	Yes	Replace with a new wheel unit, and then go to Step 4.
		No	Go to the next step.
3	Replace the old wheel unit, and then go to the next step (any malfunction on an old wheel unit which has not been replaced).		
4	<p>CAN THE WHEEL UNIT ID REGISTERED?</p> <ul style="list-style-type: none"> • Perform the wheel unit ID registration using the M-MDS or equivalent. 	Yes	Troubleshooting completed.
		No	Verify troubleshooting again and return to Step 1 if the malfunction recurs.

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DISPLAY OF M-MDS (EXAMPLE)

Registered ID: 0xAAAAAAAA, 0xBBBBBBBB, 0xCCCCCCCC, and 0xDDDDDDDD (AAAAAAAA, BBBBBBBB, CCCCCCCC, and DDDDDDDD mean arbitrary numbers.) Unregistered ID: 0x00000000

Tire pressure: aaa kPa, bbb kPa, ccc kPa, ddd kPa (aaa, bbb, ccc, and ddd mean measurement value.)

*The battery is removed, the stored tire pressure is reset to 0 kPa.

THREE REGISTERED WHEEL UNITS AND A REPLACED WHEEL UNIT

WHEN A REPLACED WHEEL UNIT MALFUNCTIONS

-	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0x00000000	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	bbb kPa	ccc kPa	0 kPa
Tire Pressure (Candidate)	0 kPa	0 kPa	0 kPa	0 kPa

WHEN A REGISTERED WHEEL UNIT MALFUNCTIONS

-	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	bbb kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	0 kPa	0 kPa	0 kPa

WHEN TWO REGISTERED WHEEL UNIT MALFUNCTION

-	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	0 kPa	0 kPa	0 kPa

WHEN A REPLACED WHEEL UNIT AND A REGISTERED WHEEL UNIT MALFUNCTION

-	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0x00000000	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	bbb kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	0 kPa	0 kPa	0 kPa	0 kPa

WHEN A REPLACED WHEEL UNIT AND TWO REGISTERED WHEEL UNITS MALFUNCTIONS

-	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0x00000000	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	bbb kPa	ccc kPa	0 kPa
Tire Pressure (Candidate)	0 kPa	0 kPa	0 kPa	0 kPa

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ID Number (Candidate)	0x00000000	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	0 kPa	0 kPa	0 kPa	0 kPa

WHEN THREE REGISTERED WHEEL UNITS MALFUNCTION

-	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	0 kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	0 kPa	0 kPa	0 kPa

TWO REGISTERED WHEEL UNITS AND TWO REPLACED WHEEL UNITS**WHEN A REPLACED WHEEL UNIT MALFUNCTIONS**

-	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	bbb kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	0 kPa	0 kPa	0 kPa

WHEN A REGISTERED WHEEL UNIT MALFUNCTIONS

-	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0xFFFFFFFF	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	fff kPa	0 kPa	0 kPa

WHEN TWO REPLACED WHEEL UNITS MALFUNCTION

-	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0x00000000	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	bbb kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	0 kPa	0 kPa	0 kPa	0 kPa

WHEN TWO REGISTERED WHEEL UNITS MALFUNCTION

-	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0xFFFFFFFF	0x00000000	0x00000000
Tire Pressure (Stored)	0 kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	fff kPa	0 kPa	0 kPa

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WHEN A REPLACED WHEEL UNIT AND A REGISTERED WHEEL UNIT MALFUNCTION

-	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	0 kPa	0 kPa	0 kPa

WHEN TWO REPLACED WHEEL UNITS AND A REGISTERED WHEEL UNIT MALFUNCTION

-	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0x00000000	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	0 kPa	0 kPa	0 kPa	0 kPa

WHEN A REPLACED WHEEL UNIT AND TWO REGISTERED WHEEL UNITS MALFUNCTION

-	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	0 kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	0 kPa	0 kPa	0 kPa

A REGISTERED WHEEL UNIT AND THREE REPLACED WHEEL UNITS**WHEN A REGISTERED WHEEL UNIT MALFUNCTIONS**

-	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0xFFFFFFFF	0xGGGGGGGG	0x00000000
Tire Pressure (Stored)	0 kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	fff kPa	ggg kPa	0 kPa

WHEN A REPLACED WHEEL UNIT MALFUNCTIONS

-	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0xFFFFFFFF	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	fff kPa	0 kPa	0 kPa

WHEN A REPLACED WHEEL UNIT AND A REGISTERED WHEEL UNIT MALFUNCTION

-	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0xFFFFFFFF	0x00000000	0x00000000

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Tire Pressure (Stored)	0 kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	fff kPa	0 kPa	0 kPa

WHEN TWO REPLACED WHEEL UNITS MALFUNCTION

-	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	0 kPa	0 kPa	0 kPa

WHEN TWO REPLACED WHEEL UNITS AND A REGISTERED WHEEL UNIT MALFUNCTION

-	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0xEEEEEEEE	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	0 kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	eee kPa	0 kPa	0 kPa	0 kPa

WHEN THREE REPLACED WHEEL UNITS MALFUNCTION

-	WU_1	WU_2	WU_3	WU_4
ID Number (Stored)	0xAAAAAAAA	0xBBBBBBBB	0xCCCCCCC	0xDDDDDDDD
ID Number (Candidate)	0x00000000	0x00000000	0x00000000	0x00000000
Tire Pressure (Stored)	aaa kPa	0 kPa	0 kPa	0 kPa
Tire Pressure (Candidate)	0 kPa	0 kPa	0 kPa	0 kPa