

2008 Mazda CX-9 Grand Touring

2008 SUSPENSION Wheels and Tires - Mazda CX-9

2008 SUSPENSION

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WHEEL AND TIRE SPECIFICATION

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Item			Specification		
Standard tire	Tire	Size	P245/60R18 104H P245/50R20 102V		
		Air pressure (kPa {psi})	Front	250 {36}	230 {34}
			Rear		
	Remaining treed	(mm {in})	1.6 {0.07}		
	Wheel	Size	18x7 1/2J 20x7 1/2J		
		Material	Aluminum alloy		
		Wheel offset	(mm {in})	45 {1.8}	
		Wheel pitch circle diameter	(mm {in})	114.3 {4.5}	
	Wheel and tire runout	(mm {in})	Lateral direction	2.0 {0.08}	
			Radial direction	1.5 {0.06}	
	Wheel and tire imbalance	(g {oz})	Adhesive-type ^{*1} : 10 {0.35} max.	Adhesive-type ^{*1} : 6 {0.21} max.	
			Knock-type ^{*2} : 6 {0.21} max.	Knock-type ^{*2} : 4 {0.14} max.	
			^{*1} : Total weight exceeds 160 g {5.65 oz} . ^{*2} : One balance weight: 60 g {2.12 oz} max . If the total weight exceeds 100 g {3.53 oz} on one side, rebalance after moving the tire around on the rim. Do not use three or more balance weights.		
Wheel nut tightening torque	(N.m {kgf.m, ft.lbf})	107.8-147.0 {11.0-14.9, 79.6-108.4}			

Temporary spare tire

WHEEL AND TIRE SPECIFICATION

Item			Specification	
Tire	Size	T155/90D 18 195/80R17 99M		
	Air pressure (kPa {psi})	420 {60}	250 {36}	
	Remaining treed	(mm {in})	1.6 {0.07}	
	Size	18x4T	17x5 1/2J	

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Temporary spare tire	Wheel	Material	Steel	
		Wheel offset (mm {in})	40 {1.57}	45 {1.8}
	Wheel pitch circle diameter (mm {in})	114.3 {4.5}		
	Wheel and tire runout (mm {in})	Lateral direction	2.0 {0.08}	
		Radial direction	1.5 {0.06}	
Wheel nut tightening torque (N.m {kgf.m, ft.lbf})	107.8-147.0 {11.0-14.9, 79.6-108.4}			

WHEEL BALANCE ADJUSTMENT (ALUMINUM ALLOY WHEEL)

- CAUTION:**
- Adjust the outer wheel balance first, then the inner wheel balance.
 - Be careful not to scratch the wheels.

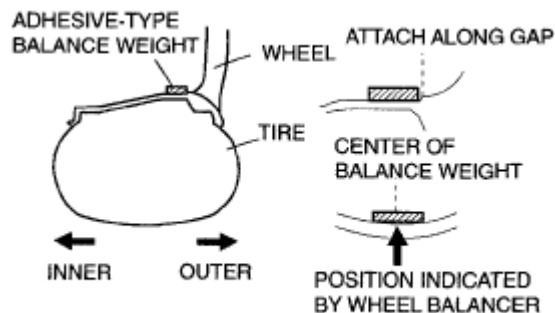
ADHESIVE-TYPE BALANCE WEIGHT (OUTER)

1. Remove the old balance weight from the wheel.
2. Remove the double-sided adhesive tape remaining on the wheel, then clean and degrease the bonding area.
3. Set the wheel on a wheel balancer, measure the amount of unbalance and the position with the mode set for knock-type balance weight.
4. Multiply the amount of unbalance by **1.6** to get the balance weight value.
5. Select a balance weight closest to the weight value and attach the balance weight on the position (outer) indicated by the wheel balancer.

Example calculation of balance weight value Indicated amount of unbalance: 23 g {0.81 oz}

$$23 \text{ g } \{0.81 \text{ oz}\} \times 1.6 = 36.8 \text{ g } \{1.30 \text{ oz}\}$$

Selected balance weight value: 35 g {1.24 oz}



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Fig. 1: Identifying Adhesive-Type Balance Weight (Outer)
 Courtesy of MAZDA MOTORS CORP.

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NOTE:

- When selecting a balance weight, select one closest to the calculated value.

Example: 32.4 g {1.14 oz}= 30 g {1.06 oz}, 32.5 g {1.15 oz}= 35 g {1.24 oz}

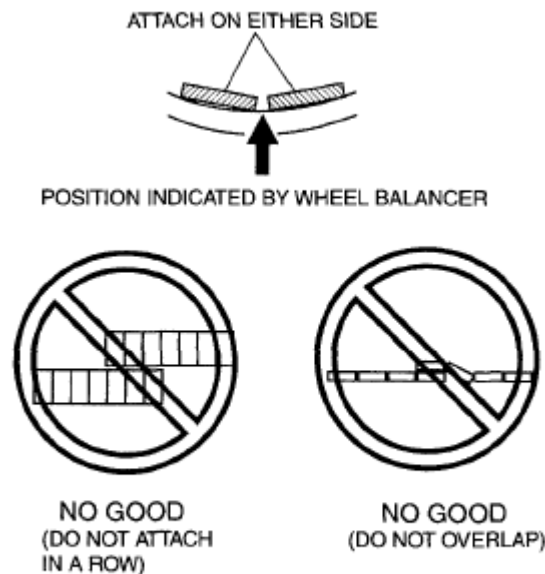
CAUTION:

- Use a genuine balance weight or equivalent (steel).
- When attaching the weight balance, press the balance weight with a force of 25 N {2.5 kgf, 5.5 lbf} per 5 g {0.17 oz} for 2 seconds or more.

6. If attaching 2 balance weights, position them so that each is on either side of the position indicated by the wheel balancer.

CAUTION:

- Do not attach weight balances in a row.
- Do not overlap the balance weights.
- Total weight must not exceed 160g {5.65 oz}.



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Fig. 2: Locating Wheel Balancer Position
Courtesy of MAZDA MOTORS CORP.

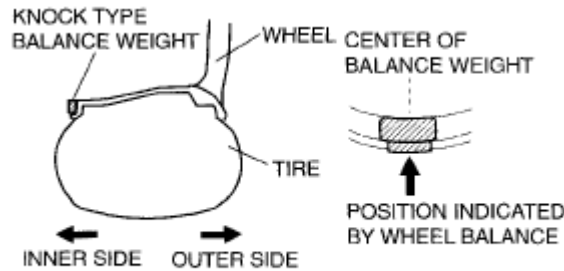
KNOCK-TYPE BALANCE WEIGHT (INNER)

1. Measure the amount of unbalance with a wheel balancer.
2. Attach a balance weight corresponding to the measured weight value on the position (inner) indicated by

the wheel balancer.

CAUTION:

- Do not attach 3 or more balance weights.
- One balance weight must not exceed 60g {2.12 oz}, and a total of 2 balance weights must not exceed 100g {3.53 oz}.



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Fig. 3: Locating Wheel Balance Position
 Courtesy of MAZDA MOTORS CORP.

REMAINING AMOUNT OF UNBALANCE CONFIRMATION

1. After installing the outer and inner balance weights, operate the wheel balancer again.
2. Confirm that the remaining unbalance does not exceed following on either side.

Standard

WHEEL SPECIFICATIONS

	Outer	Inner
18 inch wheel	10 g {0.35 oz}	6 g {0.21 oz}
20 inch wheel	6 g {0.21 oz}	4g {0.14 oz}

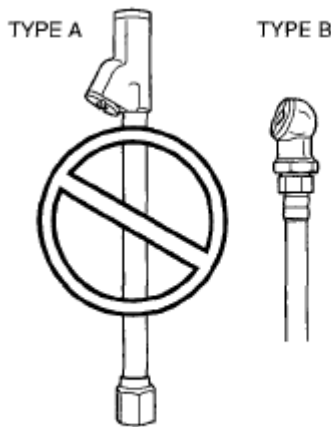
TIRE PRESSURE ADJUSTMENT (WITH TPMS)

1. Use of a digital gauge is recommended for accurate measurement of the air pressure.
2. Tire pressure lowers gradually as time passes. Due to this, monthly air pressure inspection is recommended.
3. Perform tire pressure adjustment before driving. (When tires are cold.)
 - Tire pressure will increase after driving because the internal temperature of the tire is high. If tire pressure is adjusted to specifications when the internal temperature of the tire is high, tire pressure will decrease when the internal temperature of the tire decreases to the same level as ambient temperature. If the tire pressure is lower than the lower-limit pressure, the TPMS warning light may illuminate.
 - Even though the air pressure is adjusted to specifications, the indicated air pressure may be higher than the specified value when the internal temperature of the tire is higher than ambient

temperature. (Example: Air pressure changes approx. **10 kPa {0.1 kgf/cm², 1.5 psi}** when the temperature changes 10 °C {18 °F})

CAUTION:

- In an area or a season with varying temperatures, tire pressure will change due to ambient temperature change. If the tire pressure is lower than the lower-limit pressure due to low ambient temperature, the TPMS warning light may illuminate. Adjust the pressure when the TPMS warning light illuminates.
- Do not tilt or use excessive side force when checking air pressure or inflating the tire with air. Which can provide enough leverage to easily bend or break the wheel unit.
- To prevent damage to the valve area of the wheel unit or pressure loss during air pressure adjustment, use a type B tool with a round end as shown in the figure, not a type A tool.



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Fig. 4: Identifying Air Pressure Adjustment Tool Types
Courtesy of MAZDA MOTORS CORP.

WHEEL UNIT ID REGISTRATION

NOTE:

- After the wheel unit replacement, registration of the wheel unit identification codes must be performed.
- ID registration can be done using the M-MDS, or not using the M-MDS.

USING M-MDS

1. After the vehicle is identified, select the following items from the initialization screen of the M-MDS.
 - This function is available for only the IDS (notebook PC).

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1. Select the "Toolbox" tab.
2. Select the "Body" tab.
3. Select the "TPMS Functions".
4. Select the "Wheel Unit ID Registration".
2. Leave the vehicle with the engine off for **15 min or more** .
3. Verify that the TPMS warning light turns on and off in **0.5 s** cycles repeatedly.
4. Drive the vehicle at a speed of **25 km/h {15.5 mph} or more** for **10 min** to implement the wheel unit ID registration.

NOTE:

- If the ID registration is not completed even after driving the vehicle for **10 min or more** at a speed of **25 km/h {15.5 mph} or more** , the **TPMS warning light flashes**.

5. Verify that the TPMS warning light turns off.

NOTE:

- If the wheel unit ID registration cannot be performed after driving **10 min or more**, refer to the symptom troubleshooting procedure.

WITHOUT USING M-MDS

1. Turn the ignition switch to the ON position, then turn it off.
2. Leave the vehicle with the engine off for **15 min or more** .
3. Drive the vehicle at a speed of **25 km/h {15.5 mph} or more for 10 min or more** .
4. After driving for 10 min, verify that the TPMS warning light does not flash and is not illuminated.

WHEEL UNIT REMOVAL/INSTALLATION

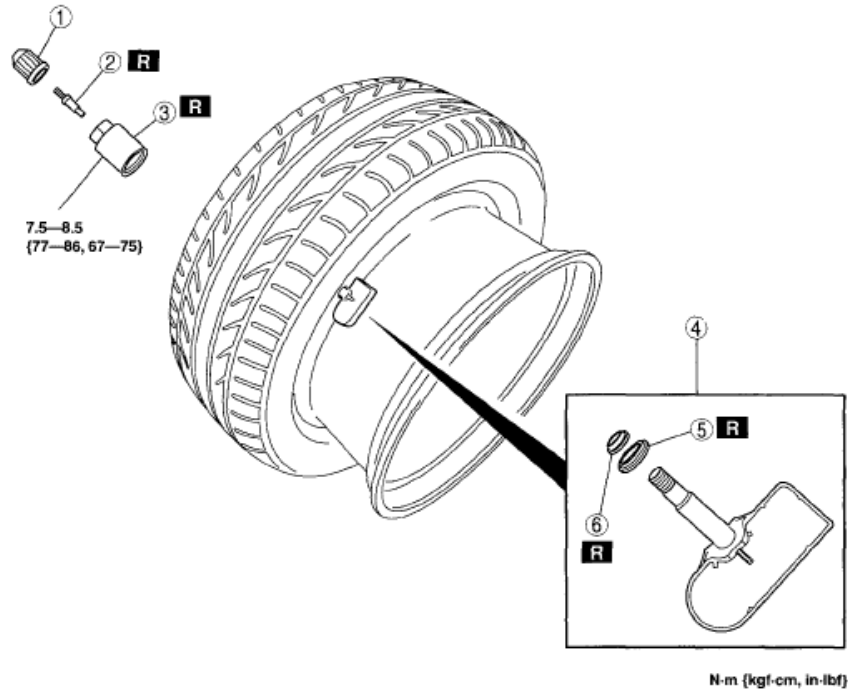
1. Remove in the order indicated in the table.
2. Install in the reverse order of removal.
3. When replacing wheel unit (s), register the new wheel unit ID (s). (See WHEEL UNIT ID REGISTRATION.)

NOTE:

- If the wheel unit is replaced with a new one, the ID registration must be performed. When the ID registration is finished, the data for the new wheel unit is displayed on the M-MDS.

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1	Valve cap
2	Valve core (See 02-12-5 Valve Core Removal Note.)
3	Valve nut and washer

4	Wheel unit (See 02-12-5 Wheel Unit Removal Note.) (See 02-12-6 Wheel Unit Installation Note.)
5	Seal washer
6	Seal

Fig. 5: Identifying Wheel Unit Seal Washer, Valve Cap & Torque Specifications
Courtesy of MAZDA MOTORS CORP.

VALVE CORE REMOVAL NOTE

1. Remove the valve core of the wheel unit, and bleed the air from the tire.

WHEEL UNIT REMOVAL NOTE

1. Push the tire valve completely into the tire.

CAUTION:

- Breaking the tire bead with the wheel unit installed normally could damage the unit. Be sure to always push the wheel unit so that it is completely inside the tire to prevent any damage.

2. Position the shoe (bead breaker) of the tire changer **10-20 mm {0.40-0.78 in}** from the outer edge of the wheel, and break both tire beads.
3. Remove the bead from one side of the wheel.
4. Remove the wheel unit.

WHEEL UNIT INSTALLATION NOTE

1. Insert the wheel unit valve into the valve hole so that the polyurethane foam side faces the rim.

NOTE:

- **Maintain the wheel unit in contact with the rim, then start manually to screw the valve nut for a few turns.**

2. Install the nut from the outer side of the wheel.
3. Tighten the valve nut slowly (**15 rpm max.**) to **8.0 N.m {82 kgf.cm, 71 in.lbf}** in one rotation.

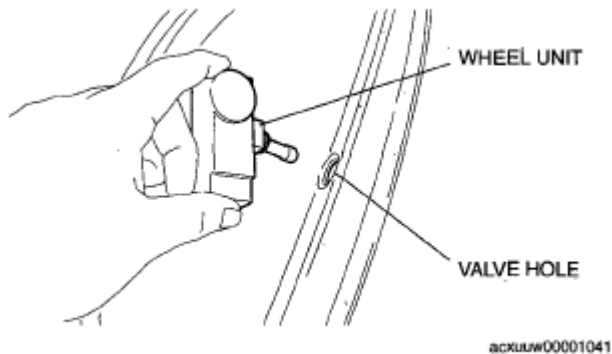


Fig. 6: Inserting Wheel Unit Valve Into Valve Hole
Courtesy of MAZDA MOTORS CORP.

CAUTION:

- **Do not retighten the valve nut after the initial operation.**

4. Set the tire changer so that it is **45°** away (point A) from the valve hole.

CAUTION:

- **Do not position the tire changer near the tire valve to avoid any damage to the wheel unit.**

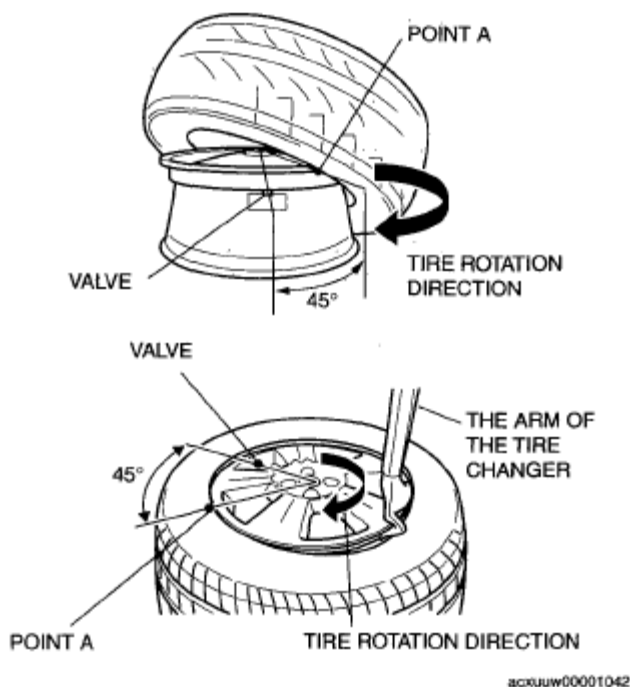


Fig. 7: Setting Tire Changer
Courtesy of MAZDA MOTORS CORP.

5. Fill the tire with air and verify the valve nut tightening torque.

CAUTION:

- To prevent damage to the valve area of the wheel unit or charging loss during air pressure adjustment, use a type B tool with a round end as shown in the figure, not a type A tool.

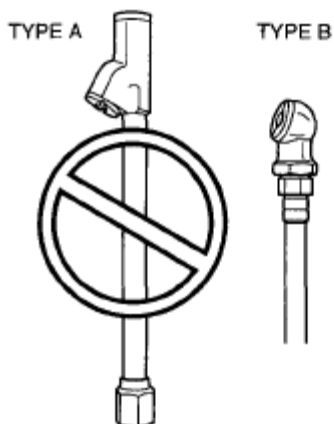


Fig. 8: Identifying Air Pressure Adjustment Tool Type
Courtesy of MAZDA MOTORS CORP.