

2010 Cadillac SRX

2010 SUSPENSION Tires and Wheels - SRX

2010 SUSPENSION

Tires and Wheels - SRX

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Application	Specification	
	Metric	English
Wheel Nut Torque	150 N.m	110 lb ft

ADHESIVES FLUIDS LUBRICANTS AND SEALERS

Application	Type of Material	GM Part Number
Wheels	Counting Lubricant	12345884 Canadian P/N 5728223

DIAGNOSTIC INFORMATION AND PROCEDURES

TIRE DIAGNOSIS - IRREGULAR OR PREMATURE WEAR

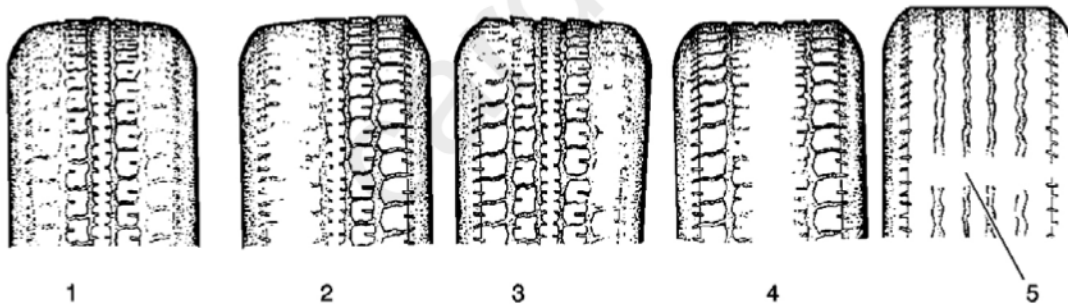


Fig. 1: Identifying Types Of Tire Wear
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Under-Inflation, Hard Cornering, Lack of Regular Rotation
2	Incorrect Wheel Alignment, Hard Cornering, Lack of Regular Rotation
3	Incorrect Wheel Alignment
4	Over-Inflation, Heavy Acceleration, Lack of Regular Rotation
5	Normal Wear to the Wear Indicator

1. Inspect the front tire wear.
2. Inspect the rear tire wear.
3. Rotate the tires if any of the following conditions exist:
 - The amount of time or mileage since the last tire rotation matches the maintenance schedule.
 - The outer tread blocks are worn more than the middle tread blocks 1 .
 - The outer tread blocks are worn more than the inner tread blocks 2 .
 - The middle tread blocks are worn more than the outer tread blocks 4 .
4. Measure the wheel alignment if any of the following conditions exist:
 - The tread blocks have feathered edges 3 .
 - The outer tread blocks are worn more than the inner tread blocks 2 .
 - The inner tread blocks are worn more than the outer tread blocks 2 .
5. Inspect the struts or the shock absorbers if the tire tread exhibits a cupped appearance 3 .

TIRE DIAGNOSIS - WADDLE COMPLAINT

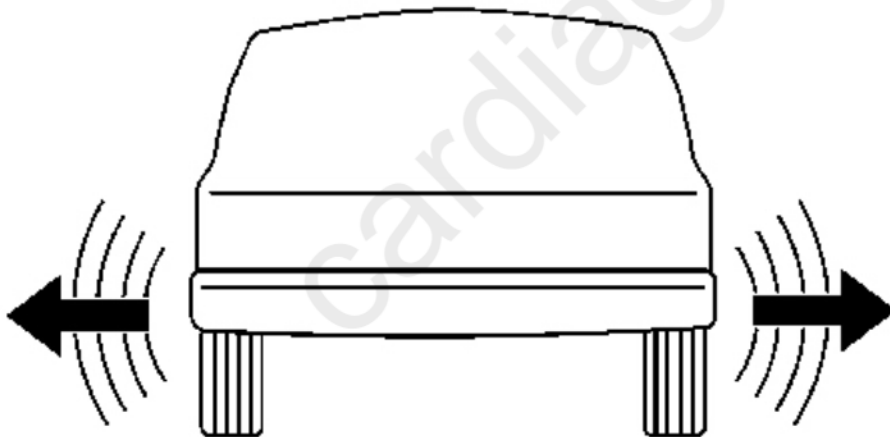


Fig. 2: Identifying Tire Wobble/Waddle
Courtesy of GENERAL MOTORS CORP.

Tire waddle is a side to side movement at the front of the vehicle and/or the rear of the vehicle. Tire waddle can be caused by the following conditions:

- A steel belt not being straight within the tire
- Excessive lateral runout of the tire

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- Excessive lateral runout of the wheel

The tire waddle is most noticeable at a low speed of about 8-48 km/h 5-30 mph . Tire waddle may appear as ride roughness at 80-113 km/h 50-70 mph . Tire waddle may appear as a vibration at 80-113 km/h 50-70 mph .

Inspection Procedure

1. Raise and support the vehicle with safety stands. Refer to **Lifting and Jacking the Vehicle** .

WARNING: Wear gloves when inspecting the tires in order to prevent personal injury from steel belts sticking through the tire.

2. Perform the following preliminary inspection:
 1. Mark the tire with a crayon in order to note the start and the stop position.
 2. Rotate each tire and wheel by hand.
 3. Inspect the tire for bulges or bent wheels. Replace as necessary.
3. Use tire substitution in order to identify the faulty tire. Perform the following steps for a tire substitution check:
 1. Use a comparable tire in order to replace each tire, one at a time.
 2. Test drive the vehicle.
 3. If the problem is tire or wheel related, you will eliminate the problem when you remove the faulty tire from the vehicle.

WHEEL MOUNTING SURFACE CHECK

Replace any wheels that are bent or dented, or have excessive lateral or radial runout. Wheels with runout greater than specified may cause objectionable vibrations.

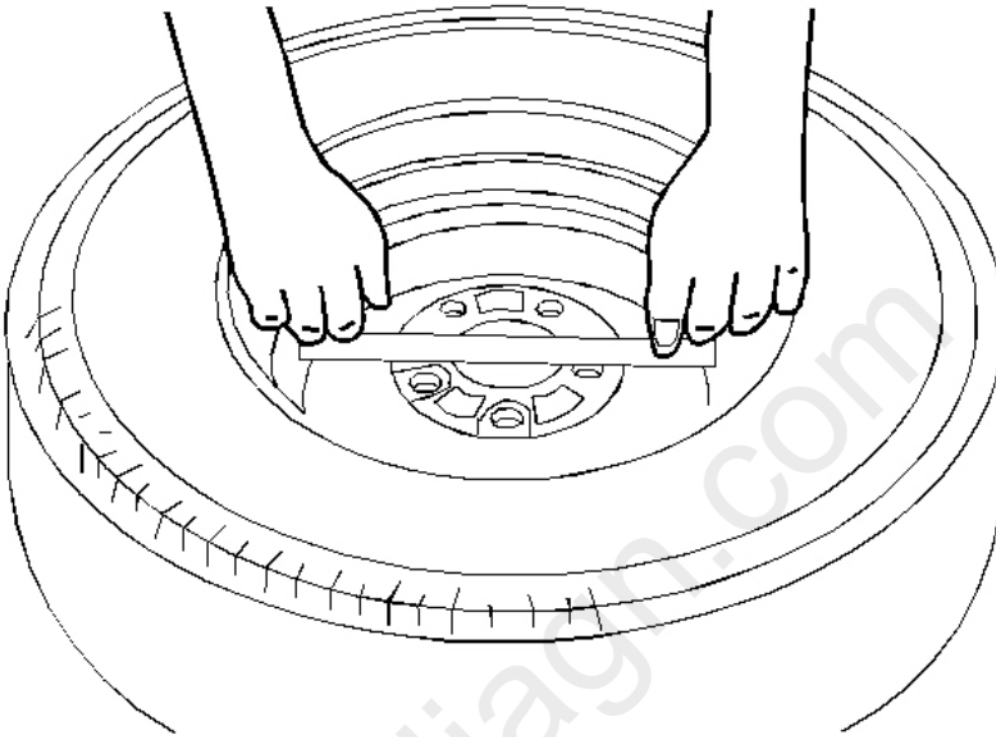


Fig. 3: Checking Wheel Mounting Surface
Courtesy of GENERAL MOTORS CORP.

1. Thoroughly clean the wheel mounting surface with a clean shop towel and denatured alcohol, or equivalent.
2. Use a straight edge 203-229 mm 8-9 in long. Place the straight edge on the wheel inboard mounting surface. Try to rock the straight edge up and down within the mounting surface.
3. For aluminum flat-mount wheels, repeat the procedure in step 2 on at least 3-4 different positions on the inboard mounting surface.

If you can rock the straight edge, the mounting surface is bent and you must replace the wheel.

4. Inspect the mounting wheel/nut holes for damage caused from over-torquing the wheel/nuts. Inspect for collapsed wheel/nut bosses. Inspect for cracked wheel bosses.

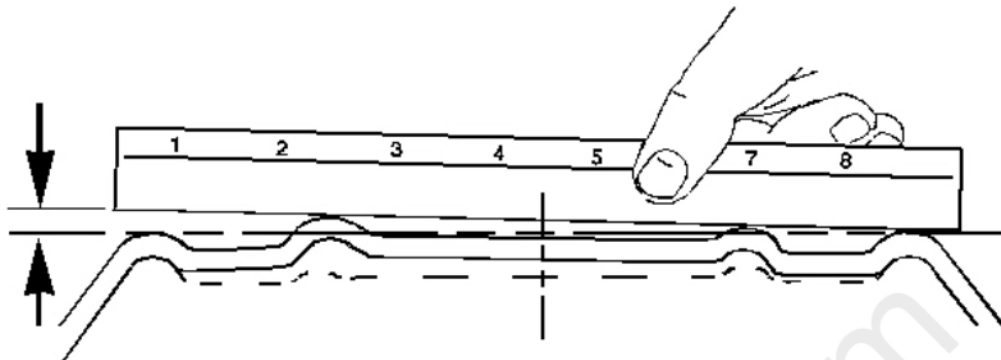


Fig. 4: Inspecting Wheel Inboard Mounting Surface
Courtesy of GENERAL MOTORS CORP.

5. For steel wheels, repeat the procedure in step 2 on at least 3-4 different positions on the inboard mounting surface.
 - The outer mounting ring is designed to be raised slightly above the inner mounting ring.
 - If you can rock the straight edge, the mounting surface is bent and you must replace the wheel.

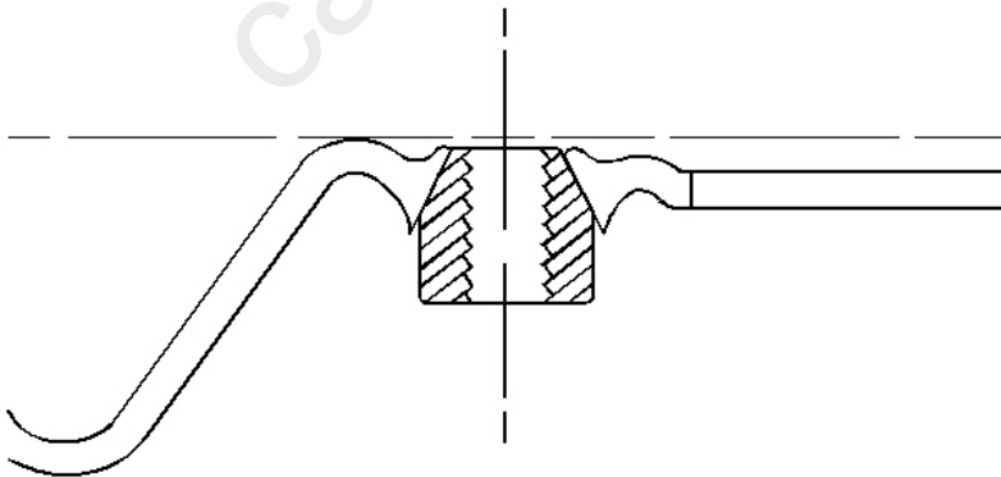


Fig. 5: Inspecting Mounting Wheel/Nut Holes For Damage Caused From Over-Torquing The Wheel/Nuts

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Courtesy of GENERAL MOTORS CORP.

6. Inspect the mounting wheel/nut holes for damage caused from over-torquing the wheel/nuts. Inspect for collapsed wheel/nut bosses. Inspect for cracked wheel bosses.

CAUTION: The use of non-GM original equipment wheels may cause:

- Damage to the wheel bearing, the wheel fasteners and the wheel
- Tire damage caused by the modified clearance to the adjacent vehicle components
- Adverse vehicle steering stability caused by the modified scrub radius
- Damage to the vehicle caused by the modified ground clearance
- Speedometer and odometer inaccuracy

NOTE:

- Replacement wheels must be equivalent to the original equipment wheels in the following ways:
 - The load capacity
 - The wheel diameter
 - The rim width
 - The wheel offset
 - The mounting configuration
- A wheel of the incorrect size or type may affect the following conditions:
 - Wheel and hub-bearing life
 - Brake cooling
 - Speedometer/odometer calibration
 - Vehicle ground clearance
 - Tire clearance to the body and the chassis

7. Replace the wheel if the wheel is bent.
8. Replace the wheel if the wheel/nut boss area is cracked.

Identify steel wheels with a 2 or 3-letter code stamped into the rim near the valve stem. Aluminum wheels have the code, the part number, and the manufacturer identification cast into the back side of the wheel.

RADIAL TIRE LEAD/PULL CORRECTION

Step	Action	Yes	No
DEFINITION: Lead/pull is the deviation of the vehicle from a straight path on a level road with no pressure on the steering wheel.			
	Did you perform the Vehicle Leads/Pull diagnostic		Go to Vehicle

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1	table?	Go to Step 2	<u>Leads/Pulls</u>
2	Road test the vehicle to verify the complaint. Select a smooth level surface to perform the test. Does the condition exist?	Go to Step 3	System OK
3	1. Cross-switch the front tire/wheel assemblies. Refer to <u>Tire and Wheel Removal and Installation</u> . 2. Road test the vehicle on a smooth level surface. Does the vehicle still lead/pull?	Go to Step 4	System OK
4	Does the vehicle lead/pull in the opposite direction?	Go to Step 5	Go to <u>Wheel Alignment Measurement</u>
5	1. Cross-switch the left front tire/wheel assembly with the left rear tire/wheel assembly. Refer to <u>Tire and Wheel Removal and Installation</u> . 2. Road test the vehicle on a smooth level surface. Does the vehicle still lead/pull?	Go to Step 6	Go to Step 7
6	1. Cross-switch the right front tire/wheel assembly with the right rear tire/wheel assembly. Refer to <u>Tire and Wheel Removal and Installation</u> . 2. Road test the vehicle on a smooth level surface. Does the vehicle still lead/pull?	Go to <u>Wheel Alignment Measurement</u>	Go to Step 8
7	Replace the left rear tire. Is the repair complete?	Go to Step 9	-
8	Replace the right rear tire. Is the repair complete?	Go to Step 9	-
9	Verify proper vehicle operation. Does the original condition still exist?	Go to Step 1	System OK

REPAIR INSTRUCTIONS**TIRE AND WHEEL REMOVAL AND INSTALLATION****Special Tools**

- **J 41013** Rotor Resurfacing Kit
- **J 42450-A** Wheel Hub Resurfacing Kit

Removal Procedure

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle**.

2. Remove the wheel center cap, if equipped.
3. Remove the wheel center cap nuts, if equipped.
4. Remove the wheel nuts.
5. Remove the tire and wheel assembly.

CAUTION: Never use heat to loosen a tight wheel bolt or nut. This can shorten the life of wheel and damage wheel bearings.

6. If the tire and wheel assembly is difficult to remove or cannot be removed, perform the following steps:
 1. Apply a small amount of penetrating oil to the wheel nuts, and the center hub. Allow a few moments for the penetrating oil to work.
 2. Loosen each wheel nut 2 complete turns.
 3. Lower the vehicle.
 4. Rock the vehicle from side to side.
 5. Repeat the procedure if necessary.
7. If the tire and wheel assembly still does not loosen, perform the following:
 1. Start the engine.
 2. Allow the vehicle to move forward, and quickly apply the brakes. Repeat this procedure in reverse.
 3. Repeat this procedure if necessary.
8. With the tire and wheel assembly loose, raise and support the vehicle.
9. Remove the tire and wheel assembly.

CAUTION: Before installing wheels, remove any build-up of corrosion on the wheel mounting surface by scraping and wire brushing. Installing wheels without good metal-to-metal contact at the mounting surfaces can cause wheel bolts or nuts to loosen, which can later allow a wheel bolt or nut to come off while the vehicle is moving. Wheel bolts or nuts must be tightened in sequence and to proper torque to avoid bending the wheel, brake drum or rotor.

NOTE:

- **Wear approved safety glasses when performing the following service procedures.**
- **DO NOT use power grinders to clean any of the brake rotor or brake drum to wheel contact areas.**

10. Using a wire brush or wire wheel, clean the rotor to the wheel or brake drum to wheel hub contact area.
11. Where possible, use the **J 41013** to clean the contact areas of the wheel to brake rotor or brake drum.

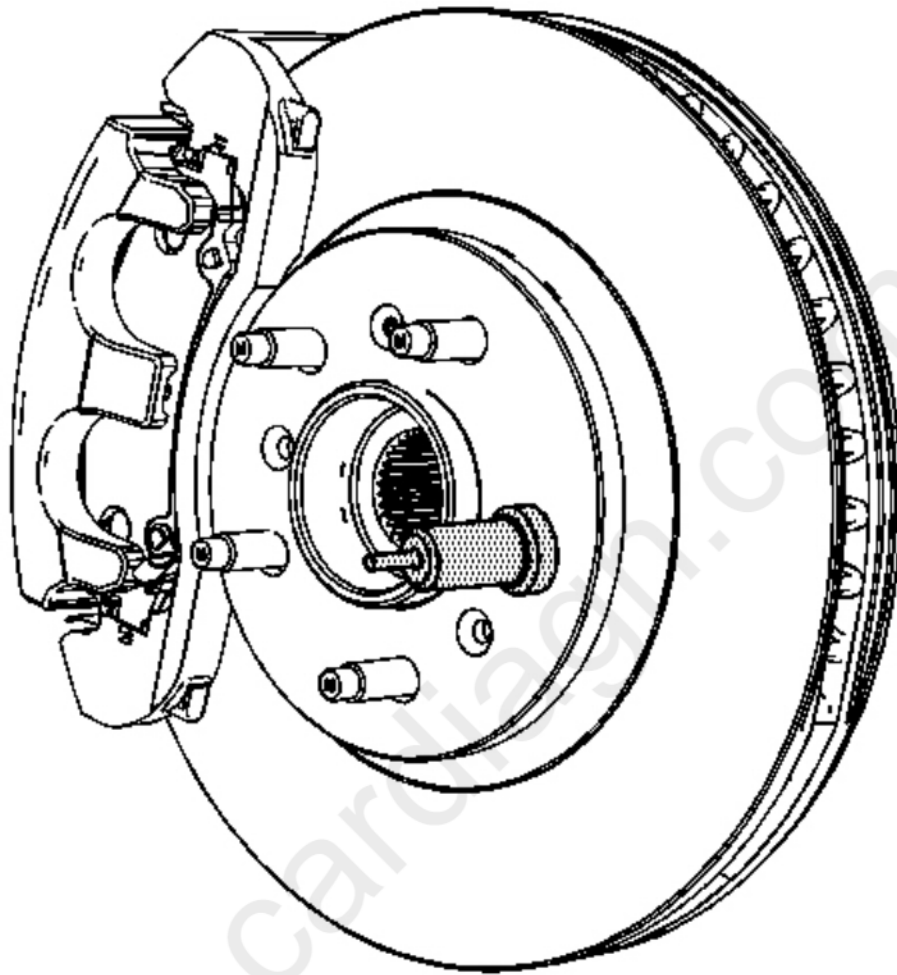


Fig. 6: View Of Special Tool J 42450-A & Wheel Studs
Courtesy of GENERAL MOTORS CORP.

12. Using the **J 42450-A** , clean the surface around the wheel studs.
13. Clean the threads of the wheel studs. If the threads are damaged, replace the wheel stud.
 - For the front wheel stud replacement, refer to **Wheel Stud Replacement** .
 - For the rear wheel stud replacement, refer to **Wheel Stud Replacement** .
14. After cleaning all the contact areas, use brake clean or denatured alcohol to remove all the penetrating oil, dirt and debris from the wheel nuts, brake rotor or brake drum.
15. Inspect and clean the contact area of the wheel. Refer to **Wheel Mounting Surface Check**.

Installation Procedure

1. Install the tire and wheel assembly.
2. Hand start the wheel nuts.

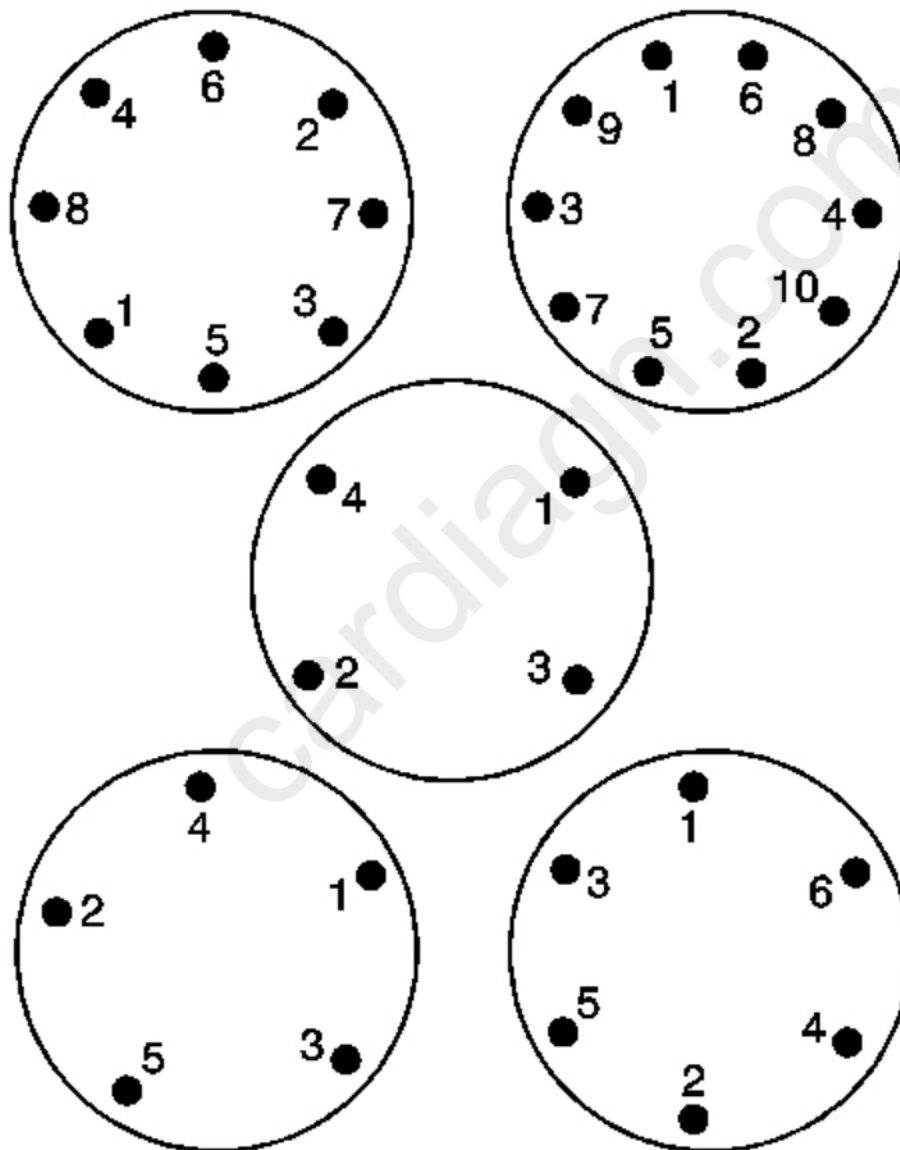


Fig. 7: Identifying Wheel Bolt/Nut Tightening Sequence
Courtesy of GENERAL MOTORS CORP.

CAUTION: Improperly tightened wheel bolts or nuts can lead to brake pulsation and rotor damage. In order to avoid expensive brake repairs, evenly tighten the wheel bolts or nuts to the proper torque specification.

3. Using the proper size socket and the torque wrench, tighten the wheel nuts in the proper sequence. Refer to **Fastener Tightening Specifications**
4. Install the wheel center cap, if required.
5. Install the wheel cap nuts, if required.
6. Remove the support and lower the vehicle.

TIRE DISMOUNTING AND MOUNTING

CAUTION: Use a tire changing machine in order to dismount tires. Do not use hand tools or tire irons alone in order to remove the tire from the wheel. Damage to the tire beads or the wheel rim could result.

CAUTION: Do not scratch or damage the clear coating on aluminum wheels with the tire changing equipment. Scratching the clear coating could cause the aluminum wheel to corrode and the clear coating to peel from the wheel.

CAUTION: Damage to either the tire bead or the wheel mounting holes can result from the use of improper wheel attachment or tire mounting procedures. It takes up to 70 seconds for all of the air to completely exhaust from a large tire. Failure to follow the proper procedures could cause the tire changer to put enough force on the tire to bend the wheel at the mounting surface. Such damage may result in vibration and or shimmy, and under severe usage lead to wheel cracking.

1. Remove the valve core from the valve stem.
2. Deflate the tire completely.

NOTE: Rim clamp European type tire changers are recommended.

3. Use the tire changer in order to remove the tire from the wheel. Follow steps 4-7 to remove the tire from the wheel.

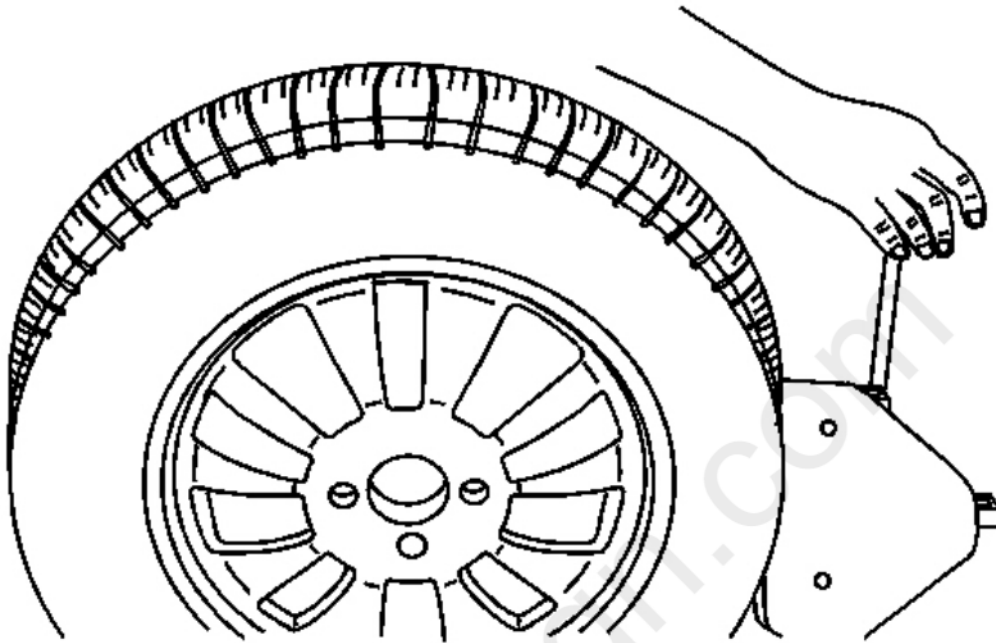


Fig. : ie Of Tire Changer
Courtesy of GENERAL MOTORS CORP.

4. When separating the tire bead from the wheel, position the bead breaking fixture, 1 and 27 degrees from the valve stem.

CAUTION: Failure to position valve stem in proper position while dismounting and mounting the tire may result in the TP sensor to become damaged.

5. Position the wheel and tire so the valve stem is at the 7 o'clock position relative to the head. The tire iron or pry bar can be inserted when prying the outer tire bead up and over the mounting/dismounting head.

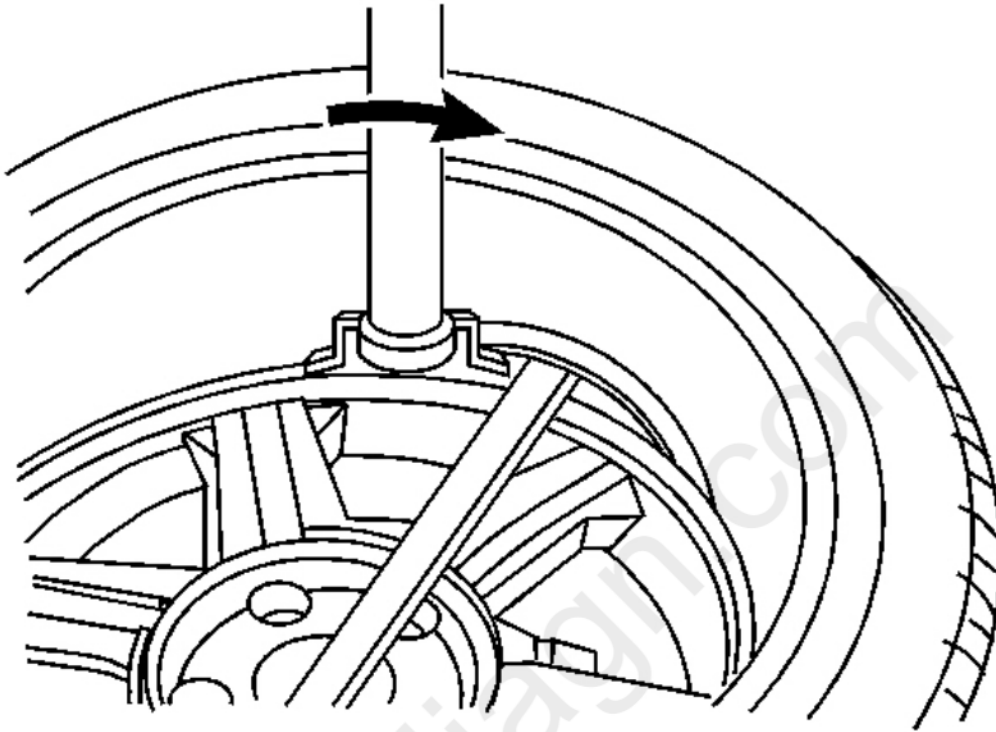


Fig. : Separating Tire Bead From Wheel
 Courtesy of GENERAL MOTORS CORP.

6. Position the wheel and tire so the valve stem is again at the 7 o'clock position relative to the head. The tire iron or pry bar can be inserted when prying the inner tire bead up and over the mounting/dismounting head.
7. Remove all residual liquid sealant from the inside of the tire and wheel surfaces. If any tire sealant is noted upon tire dismounting on vehicles equipped with TPM, replace the tire pressure sensor. Refer to **Tire Pressure Indicator Sensor Replacement**.
8. Use a wire brush or coarse steel wool in order to remove any rubber, light rust or corrosion from the wheel bead seats.

CAUTION: When mounting the tires, use an approved tire mounting lubricant. **DO NOT** use silicon or corrosive base compounds to lubricate the tire bead and the wheel rim. A silicon base compound can cause the tire to slip on the rim. A corrosive type compound can cause tire or rim deterioration.

9. Apply mounting lubricant to the tire bead and the wheel rim. Refer to **Adhesives Fluids Lubricants**.

and Sealers.

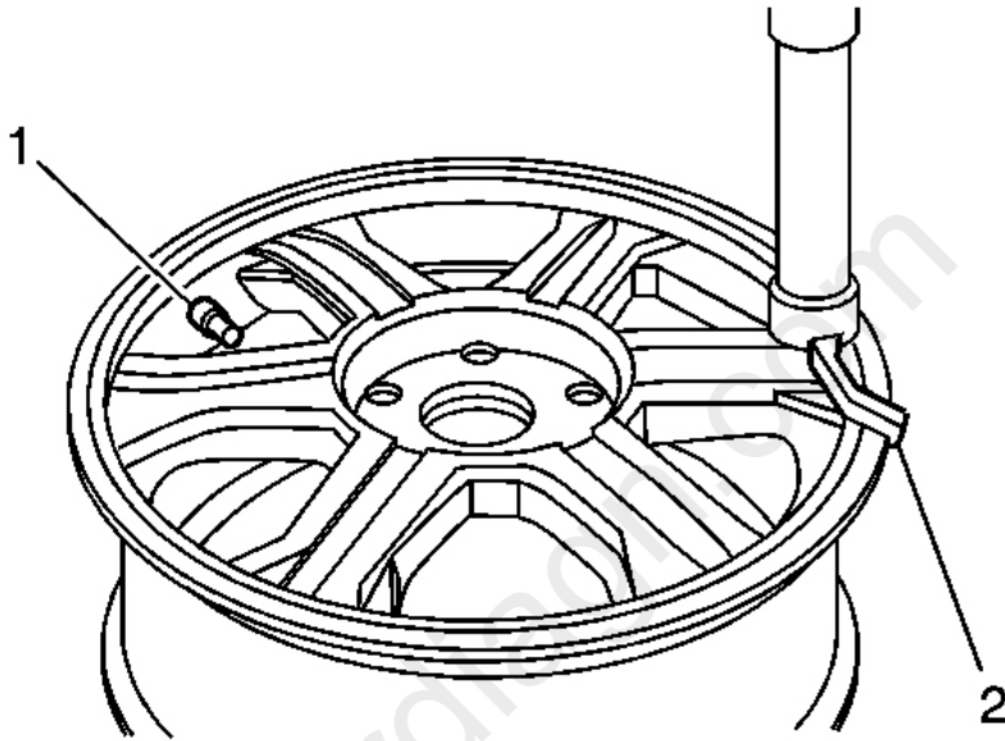


Fig. 1 : Positioning Rim So Valve Stem Is At 7 o'clock Position Relative To Head
Courtesy of GENERAL MOTORS CORP.

- 1 . Position the rim so the valve stem (1) is at the 7 o'clock position relative to the head (2). This will protect the sensor when the bottom bead seats.

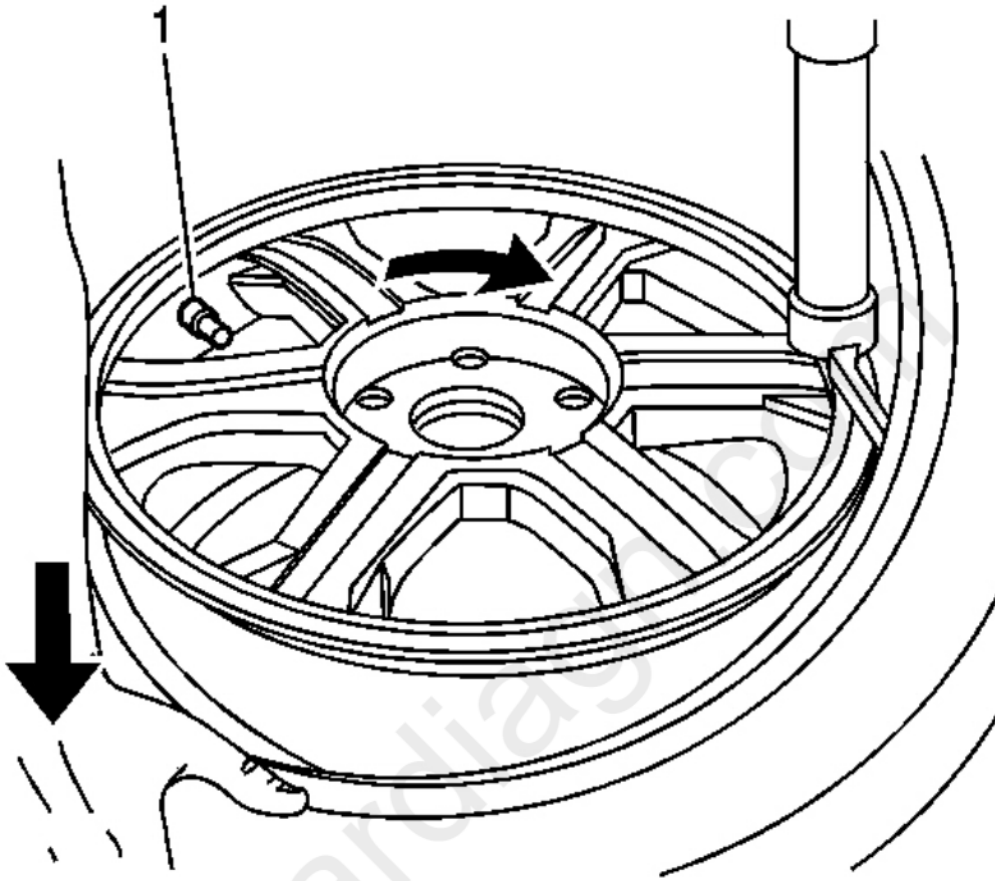


Fig. 11: Transferring Tire Bead To Inside Of Wheel Ri
Courtesy of GENERAL MOTORS CORP.

11. Using the tire machine, rotate the tire/wheel assembly clockwise when transferring the tire bead to the inside of the wheel rim. Ensure that the valve stem (1) is at the 7 o'clock position.

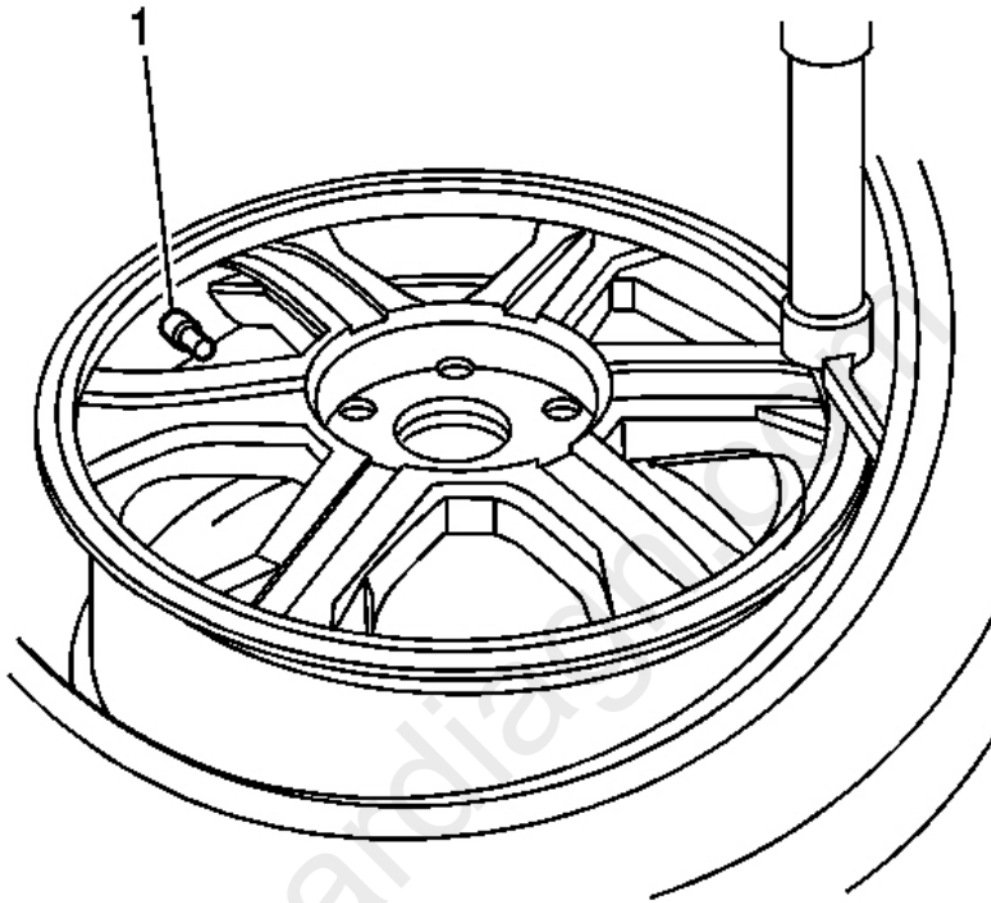


Fig. 12: Mounting Tire Bead To Outside Of Wheel
Courtesy of GENERAL MOTORS CORP.

12. After the bottom bead is on the wheel, reposition the wheel and tire so that the valve stem (1) is at the 7 o'clock position relative to the head. This will protect the sensor while mounting the tire bead to the outside of the wheel.

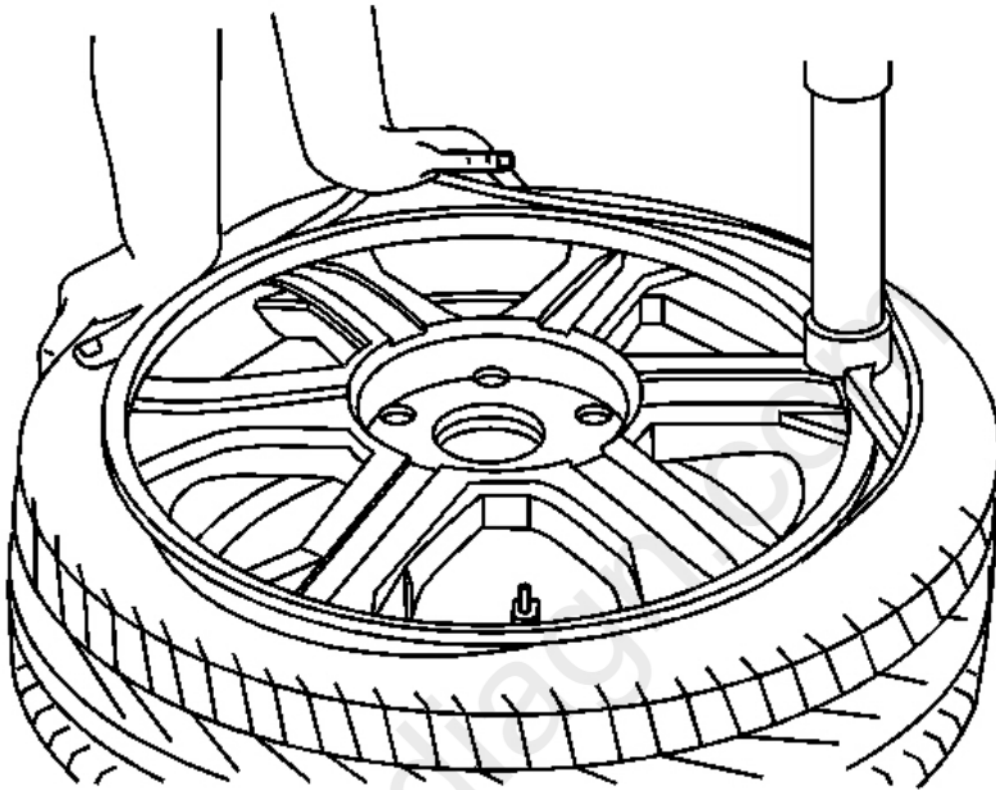


Fig. 13: Using Tire Changer

Courtesy of GENERAL MOTORS CORP.

13. Use the tire changer in order to install the tire to the wheel.

WARNING: To avoid serious personal injury, do not stand over tire when inflating. The bead may break when the bead snaps over the safety hump. Do not exceed 275 kPa (40 psi) pressure when inflating any tire if beads are not seated. If 275 kPa (40 psi) pressure will not seat the beads, deflate, relubricate the beads and reinflate. Overinflation may cause the bead to break and cause serious personal injury.

14. Inflate the tire until it passes the bead humps. Be sure that the valve core is not installed at this time.
15. Install the valve core to the valve core stem.
16. Inflate the tire to the proper air pressure.
17. Ensure that the locating rings are visible on both sides of the tire in order to verify that the tire bead is fully seated on the wheel.

DESCRIPTION AND OPERATION

ALL SEASONS TIRES DESCRIPTION

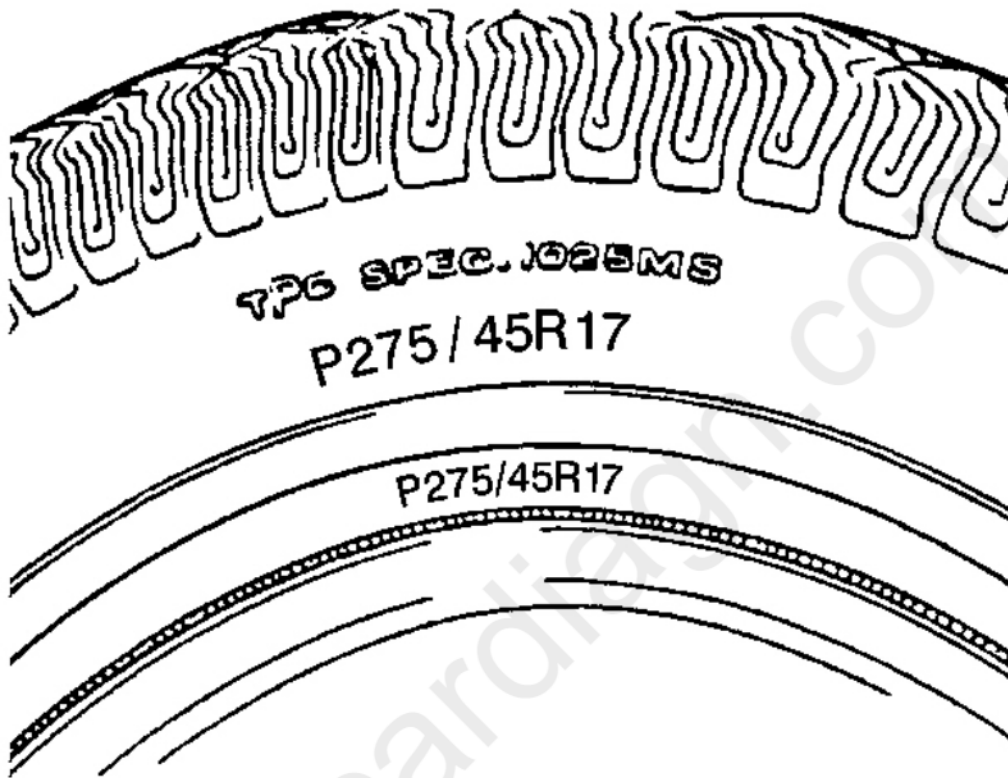


Fig. 14: Identifying All Seasons Tire Marking
Courtesy of GENERAL MOTORS CORP.

Most GM vehicles are equipped with steel belted all-season radial tires as standard equipment. These tires qualify as snow tires, with a higher than average rating for snow traction than the non-all season radial tires previously used. Other performance areas, such as wet traction, rolling resistance, tread life, and air retention, are also improved. This is done by improvements in both tread design and tread compounds. These tires are identified by an M + S molded in the tire side wall after the tire size. The suffix MS is also molded in the tire side wall after the TPC specification number.

The optional handling tires used on some vehicles now also have the MS marking after the tire size and the TPC specification number.

GENERAL DESCRIPTION

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The factory installed tires are designed to operate satisfactorily with loads up to and including the full rated load capacity when these tires are inflated to the recommended pressures.

The following factors have an important influence on tire life:

- Correct tire pressures
- Correct wheel alignment
- Proper driving techniques
- Tire rotation

The following factors increase tire wear:

- Heavy cornering
- Excessively rapid acceleration
- Heavy braking

METRIC WHEEL NUTS AND BOLTS DESCRIPTION

Metric wheel/nuts and bolts are identified in the following way:

- The wheel/nut has the word Metric stamped on the face.
- The letter M is stamped on the end of the wheel bolt.

The thread sizes of metric wheel/nuts and the bolts are indicated by the following example: M12 x 1.5.

- M = Metric
- 12 = Diameter in millimeters
- 1.5 = Millimeters gap per thread

P-METRIC SIZED TIRES DESCRIPTION

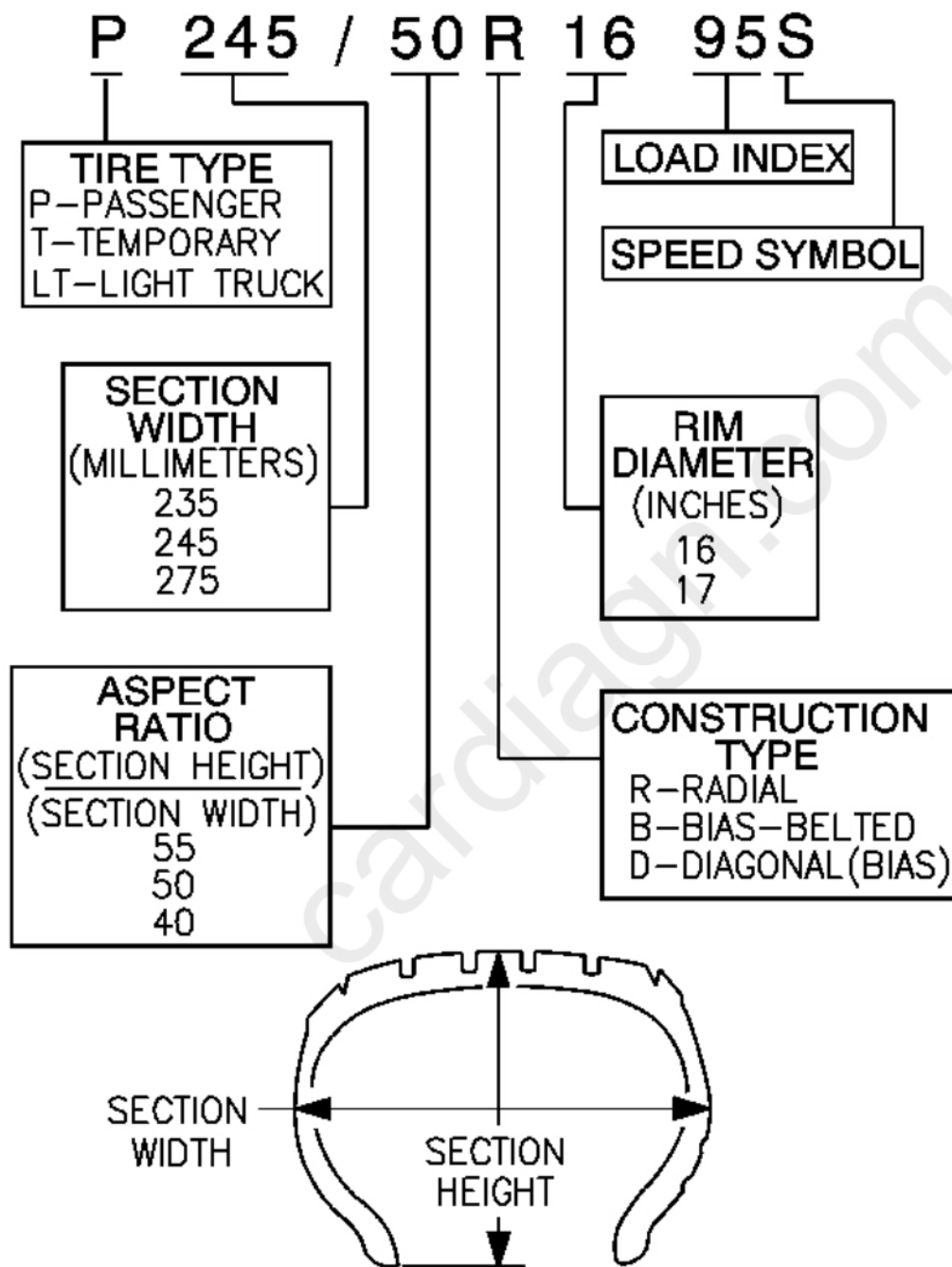


Fig. 15: Identifying P-Metric Sized Tire Marking
Courtesy of GENERAL MOTORS CORP.

Replacement tires should be of the same tire performance criteria (TPC) specification number. This will ensure the same size, the same load range, and the same construction as those originally installed on the vehicle.

REPLACEMENT WHEELS DESCRIPTION

WARNING: Do Not use flat mount wheels on dual ring type wheel applications. The use of flat mount wheels on a dual ring application may cause the wheel to loosen and could cause loss of vehicle control resulting in personal injury.

Replace the wheel if any of the following conditions exist:

- The wheel exhibits excessive runout.
- The wheel is bent.
- The wheel is cracked.
- The wheel is severely corroded.

NOTE: Air leaks caused by porosity on aluminum wheels are repairable.

WARNING: If you are replacing the wheel(s), the wheel stud(s), the wheel nut(s) or the wheel bolt(s), install only new GM original equipment parts. Installation of used parts or non-GM original equipment parts may cause the wheel to loosen, loss of tire air pressure, poor vehicle handling and loss of vehicle control resulting in personal injury.

- The wheel leaks air.

CAUTION: The use of non-GM original equipment wheels may cause:

- Damage to the wheel bearing, the wheel fasteners and the wheel
- Tire damage caused by the modified clearance to the adjacent vehicle components
- Adverse vehicle steering stability caused by the modified scrub radius
- Damage to the vehicle caused by the modified ground clearance
- Speedometer and odometer inaccuracy

Replace the wheel, the wheel studs and the wheel/nuts, or the wheel bolts if applicable, if any of the following conditions exist:

- The wheel has elongated bolt holes.
- The wheel/nuts, or bolts if applicable, loosen repeatedly.

Aluminum wheel identification is cast into the inboard side of the wheel.

TIRE INFLATION DESCRIPTION

IMPORTANT: This vehicle is equipped with a tire pressure monitoring system. Refer to [Tire Pressure Monitor Description and Operation](#) .

This vehicle has been engineered to operate up to the stated load capacity with wheel and tire assemblies of the type, size, construction, and configuration as originally installed. Maintenance of the tire inflation pressures is critical to the continued satisfactory performance, handling, and operating economy of the vehicle. Operation with incorrectly or improperly inflated tires can adversely affect vehicle performance and may contribute to the following:

- Reduced fuel economy
- Tire overloading
- Shortened tire life
- Excessive tire wear
- Uneven tire wear
- Vehicle handling concerns

Inspect the tire pressures when the vehicle has not been driven for at least 3 hours or not more than 1.6 km (1 mi) and when the tires are cool to the touch.

Tire inflation pressures should be inspected monthly and before an extended trip and adjusted to meet the specifications listed for the particular vehicle. Replace any missing or damaged tire valve stem extensions and/or caps to prevent the intrusion of water and contaminants.

One pound per square inch (psi) equals 6.9 Kilopascals (kPa). The following table illustrates the conversion of Kilopascals to pounds per square inch:

Inflation Pressure Conversion (Kilopascals to PSI)

kPa	psi	kPa	psi
140	20	215	31
145	21	220	32
155	22	230	33
160	23	235	34
165	24	240	35
170	25	250	36
180	26	275	40
185	27	310	45
190	28	345	50
200	29	380	55
205	30	415	60
Conversion: 6.9 kPa = 1 psi			

For the correct inflation pressures refer to the vehicle tire placard.

Tires inflated to a higher than recommended pressure can contribute to the following conditions:

- A hard ride
- Tire bruising
- Rapid tread wear at the center of the tire

Tires inflated to a lower than recommended pressure can contribute to the following conditions:

- Tire squeal on turns
- Hard steering
- Rapid and/or uneven wear on the outer edges of the tread
- Tire rim bruises and tire rim rupture
- Tire cord breakage
- High tire temperatures
- Sluggish vehicle handling
- Higher fuel consumption

Unequal pressure on the same axle can cause the following conditions:

- Uneven braking action
- Steering lead
- Imprecise vehicle handling

TREAD WEAR INDICATORS DESCRIPTION

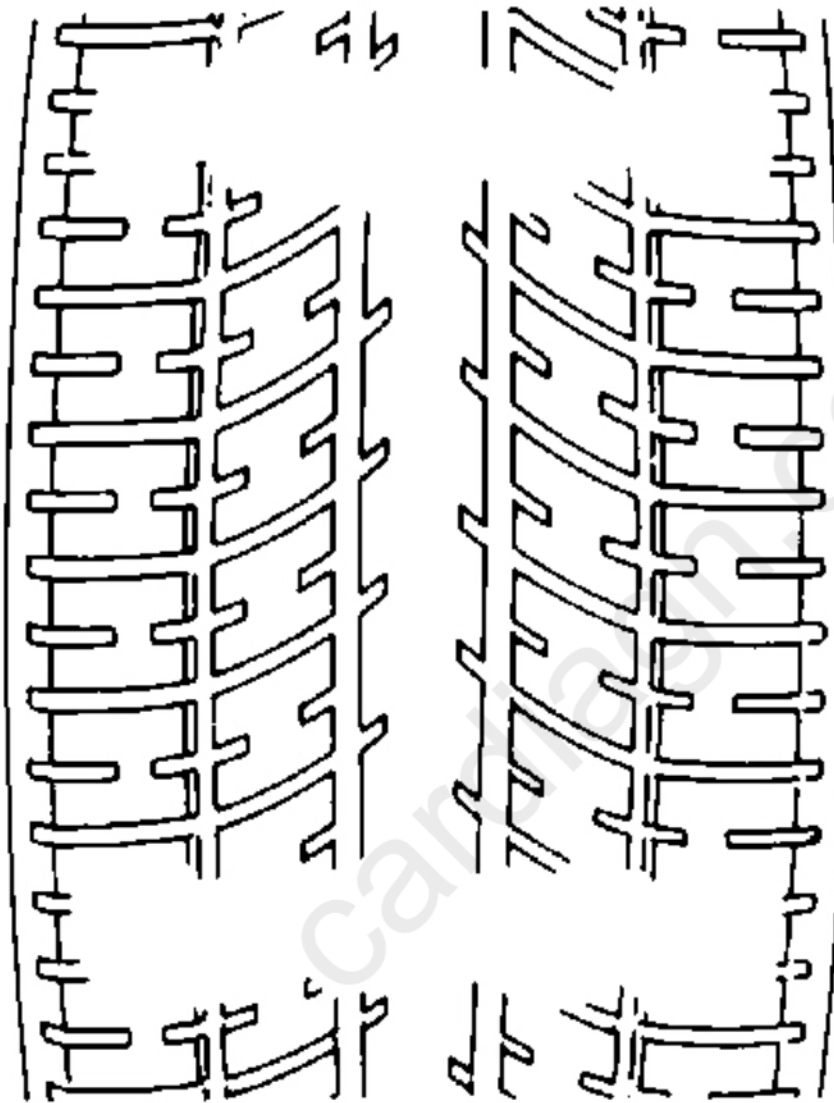


Fig. 16: View Of Tread Wear Indicators
Courtesy of GENERAL MOTORS CORP.

The original equipment tires have tread wear indicators that show when you should replace the tires.

The location of these indicators are at 60 degree intervals around the outer diameter of the tire. The indicators appear as a 6 mm (0.25 in) wide band when the tire tread depth becomes 1.6 mm (2/32 in).

