

Tires and Wheels

Specifications

Tire and Wheel Specifications

Inflation Pressure At Full Load

Tires	Wheel	Front		Rear	
		kPa	psi	kPa	psi
195/65R15 (RPO Code Q1W)	15x6.0J (steel RPO Code RRL) 15x6.0J (Aluminum RPO Code RRL)	207	30	207	30
205/55R16 (RPO Code Q1X)	16x6.0J (RPO Code RRV Aluminum)	207	30	207	30

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Wheel Nuts	140 N•m	103 lb ft

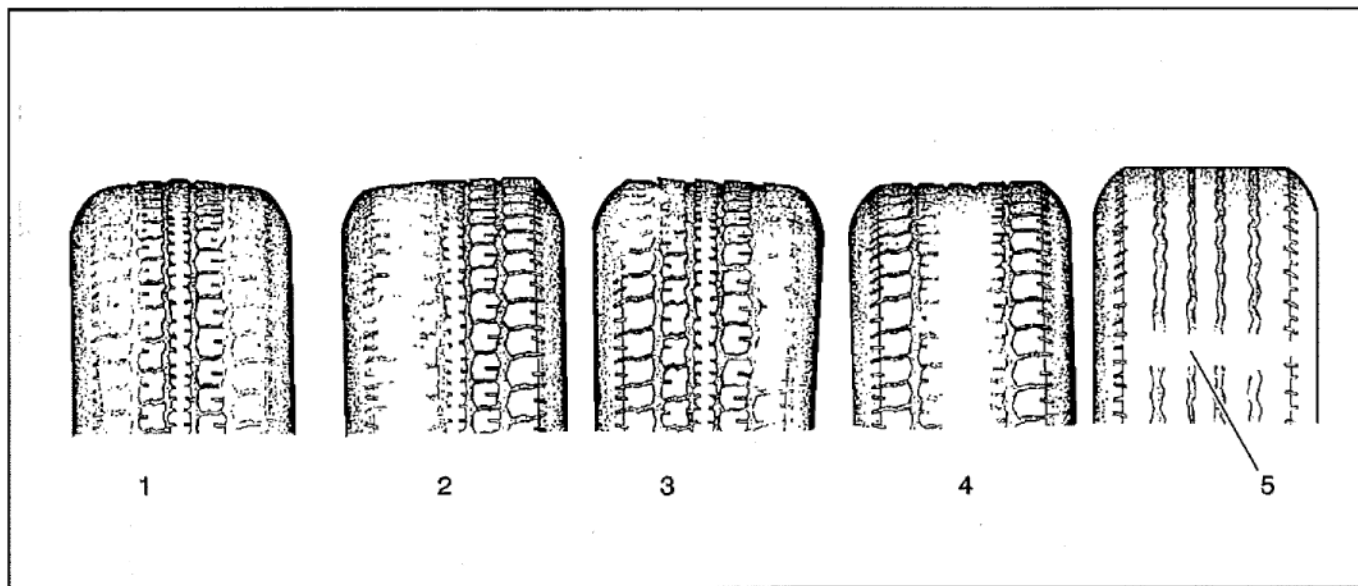
Adhesives, Fluids, Lubricants, and Sealers

Application	Type of Material	GM Part Number	Canadian Part Number
Aluminum Wheel	Adhesive/Sealant	12378478	88900041
Wheel	Mounting Lubricant	12345884	88863415
Wheel to Hub	Lubricant	1051344	993037

Diagnostic Information and Procedures

Tire Diagnosis - Irregular or Premature Wear

Tire Wear



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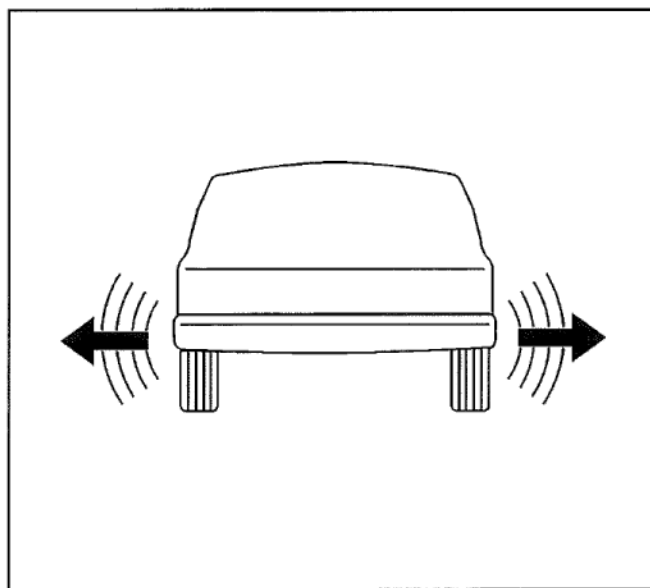
Legend

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

Inspection Procedure

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 (4).
5. Inspect the struts or the shock absorbers if the tire tread exhibits a cupped appearance (3).

Tire Diagnosis - Waddle Complaint



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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
- 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

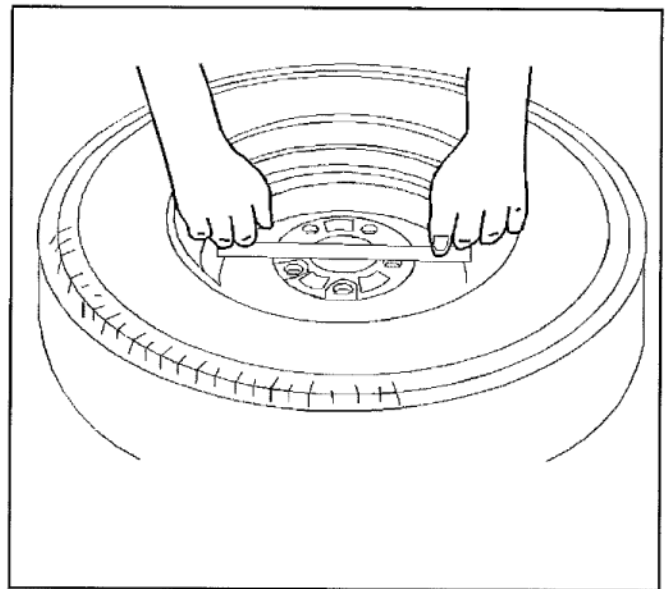
1. Raise and support the vehicle with safety stands. Refer to *Lifting and Jacking the Vehicle* on page 1-31.

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:
 - 2.1. Mark the tire with a crayon in order to note the start and the stop position.
 - 2.2. Rotate each tire and wheel by hand.
 - 2.3. 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:
 - 3.1. Use a comparable tire in order to replace each tire, one at a time.
 - 3.2. Test drive the vehicle.
 - 3.3. If the problem is tire or wheel related, you will eliminate the problem when you remove the faulty tire from the vehicle.

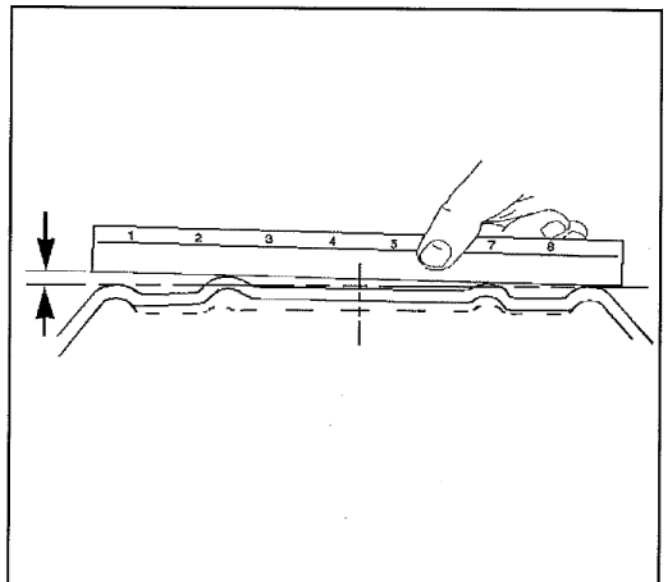
Wheel Mounting Surface Check

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.



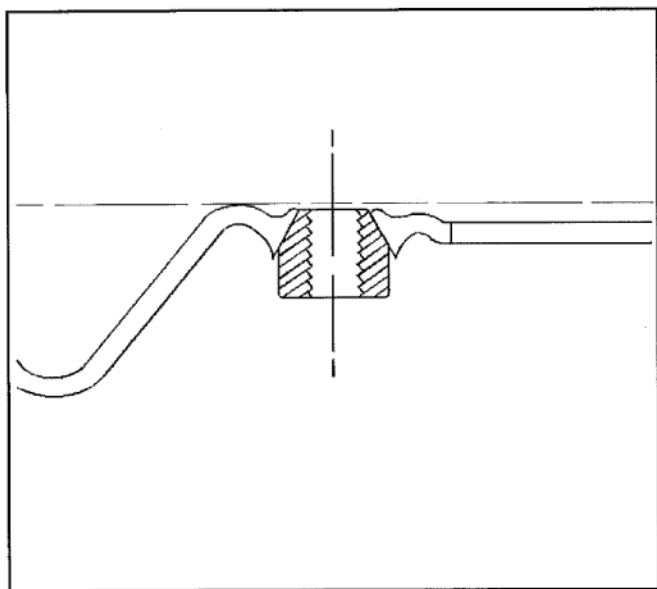
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1. Use a straight edge 203–229 mm (8–9 in) long. Place the straight edge on the wheel inboard mounting surface. Try to rock the straightedge up and down within the mounting surface.



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2. Repeat this procedure on at least 3–4 different positions on the inboard mounting surface.
 - The outer ring of the mounting surface normally is raised above everything inside the mounting surface.
 - The mounting surface will be raised above the outer ring if the wheel mounting surface has been bent on a tire changer.
 - If you can rock the straight edge, the mounting surface is bent and you must replace the wheel.



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3. 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

4. Replace the wheel if the wheel is bent.
5. 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

Lead/pull is the deviation of the vehicle from a straight path on a level road with no pressure on the steering wheel. Lead is usually caused by:

- Incorrect alignment
- Uneven brake adjustment
- Tire construction

The way in which a tire is built can produce lead/pull in the vehicle. Off-center belts on radial tires can cause the tire to develop a side force while the vehicle rolls straight down the road. If one side of the tire has even a little larger diameter than the diameter of the other side, the tire will tend to roll to one side. Unequal diameters will cause the tire to develop a side force which can produce vehicle lead/pull.

The radial lead/pull diagnosis chart should be used to determine whether the problem originates from an alignment problem or from the tires. Part of the lead diagnosis procedure calls for tire rotation that is different from the proper tire rotation pattern. If a medium-mileage to high-mileage tire is moved to the other side of the vehicle, be sure to check for ride roughness. Rear tires will not cause lead/pull.

Radial Tire Lead/Pull Correction

Step	Action	Yes	No
1	1. Perform wheel alignment preliminary inspection. 2. Check the brakes for dragging. 3. Road test the vehicle. Does the vehicle lead/pull?	Go to Step 2	System OK
2	1. Cross switch the front tire and wheel assemblies. 2. Road test the vehicle. Does the vehicle lead/pull?	Go to Step 3	System OK
3	Check the front wheel alignment. Is the alignment within specifications?	Go to Step 4	Adjust alignment

Radial Tire Lead/Pull Correction (cont'd)

Step	Action	Yes	No
4	Compare the front camber and front caster to specifications. Are they within specifications?	Go to Step 7	Go to Step 5
5	Check the vehicle frame. Is the frame bent?	Go to Step 6	Go to Step 1
6	Straighten the frame. Is the repair complete?	Go to Step 3	—
7	1. The probable cause is the tires. 2. Switch the left front tire and wheel assembly with the left rear tire and wheel assembly. 3. Road test the vehicle. Does the vehicle still lead/pull?	Go to Step 9	Go to Step 8
8	Switch the left front tire and wheel assembly with the left rear tire and wheel assembly, and replace the left front tire. Is the repair complete?	System OK	Go to Step 1
9	1. Switch the right front tire and wheel assembly with the right rear tire and wheel assembly. 2. Road test the vehicle. Does the vehicle still lead/pull?	Go to Step 1	Go to Step 10
10	Switch the right front tire and wheel assembly with the right rear tire and wheel assembly, and replace the right front tire. Is the repair complete?	System OK	Go to Step 1

Repair Instructions**Aluminum Wheel Porosity Repair**

1. Raise and support the vehicle. Refer to *Lifting and Jacking the Vehicle* on page 1-31.
2. Remove the tire and wheel. Refer to *Tire and Wheel Removal and Installation* on page 16-60.
3. Inflate the tire to the manufacturer specified pressure as stated on the tire.
4. Submerge the tire/wheel into a water bath in order to locate the leak.
5. Inscribe a mark on the wheel in order to indicate the leak areas.
6. Inscribe a mark on the tire at the valve stem in order to indicate the orientation of the tire to the wheel.
7. Remove the tire from the wheel. Refer to *Tire Dismounting and Mounting* on page 16-63.

Important: Do not damage the exterior surface of the wheel.

8. Use number 80 grit sandpaper to scuff the inside of the rim surface at the leak area.
9. Use general purpose cleaner such as 3M®, P/N 08984 or equivalent, to clean the leak area.
10. Apply 3 mm (0.12 in) thick layer of adhesive/sealant, GM P/N 1052366 or equivalent, to the leak area.
11. Allow for the adhesive/sealant to dry.
12. Align the inscribed mark on the tire with the valve stem on the wheel.

13. Install the tire to the wheel. Refer to *Tire Dismounting and Mounting* on page 16-63.
14. Inflate the tire to the manufacturer specified pressure as stated on the tire.
15. Submerge the tire/wheel into a water bath in order ensure the leak is sealed.
16. Balance the tire and wheel. Refer to *Tire and Wheel Assembly Balancing - Off Vehicle* on page 1-72.
17. Install the tire and wheel. Refer to *Tire and Wheel Removal and Installation* on page 16-60.
18. Lower the vehicle.

Aluminum Wheel Refinishing**Finish Damage Evaluation Procedure****Note:**

- If the wheels are chrome-plated, do not re-plate or refinish the wheels.
- If the wheels are polished aluminum, do not refinish the wheels in the dealer environment. Utilize a refinisher that meets manufacturer guidelines.

1. Inspect the wheels for damage from uncoated wheel balance weights or from automatic car wash facilities.
2. Inspect the wheels for the following conditions:
 - Corrosion
 - Scrapes
 - Gouges
3. Verify the damage is not deeper than what sanding can remove.

4. Inspect the wheels for cracks. If a wheel has cracks, discard the wheel.
5. Inspect the wheels for bent rim flanges. If a rim flange is bent, discard the wheel.

Refinishing Procedure

Warning: To avoid serious personal injury when applying any two part component paint system, follow the specific precautions provided by the paint manufacturer. Failure to follow these precautions may cause lung irritation and allergic respiratory reaction.

1. Remove the tire and wheel assembly from the vehicle. Refer to *Tire and Wheel Removal and Installation* on page 16-60.
2. Remove the balance weights from the wheel.
3. Remove the tire from the wheel. Refer to *Tire Dismounting and Mounting* on page 16-63.
4. Use a suitable cleaner in order to remove the following contaminants from the wheel:
 - Lubricants
 - Wax
 - Dirt

Note:

- Do not re-machine the wheel.
 - Do not use chemicals in order to strip the paint from the wheel.
5. Use plastic media blasting in order to remove the paint from the wheel.
 6. If the wheel had a machined aluminum finish, spin the wheel and use sand paper in order to restore the circular machined appearance.

Note: The wheel mounting surface and the wheel nut contact surface must remain free of paint.

7. Mask the wheel mounting surface and the wheel nut contact surface.
8. Follow the paint manufacturer's instructions for painting the wheel.
9. Unmask the wheel.
10. Install a new valve stem.

Note: Use new coated balance weights in order to balance the wheel.

11. Install the tire to the wheel. Refer to *Tire Dismounting and Mounting* on page 16-63.
12. Use a suitable cleaner in order to remove the following contaminants from the wheel mounting surface:
 - Corrosion
 - Overspray
 - Dirt
13. Install the tire and wheel assembly to the vehicle. Refer to *Tire and Wheel Removal and Installation* on page 16-60.

Tire and Wheel Removal and Installation

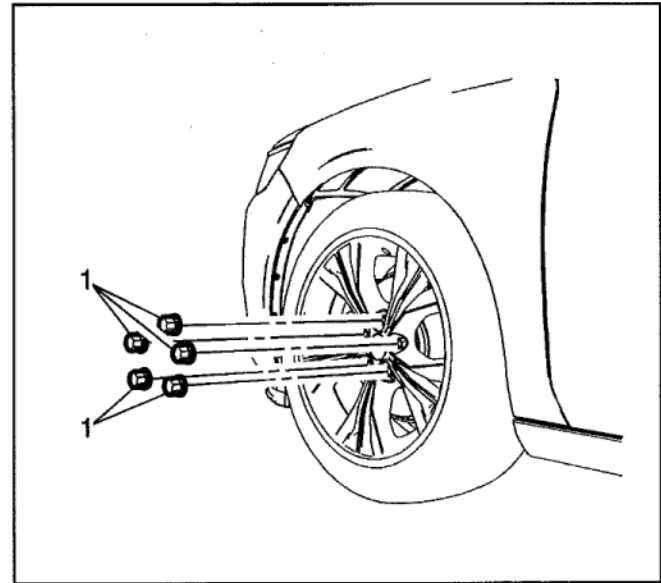
Special Tools

- CH-41013 Rotor Resurfacing Kit
- CH-42450-A Wheel Hub Resurfacing Kit

For equivalent regional tools, refer to *Special Tools* on page 16-68.

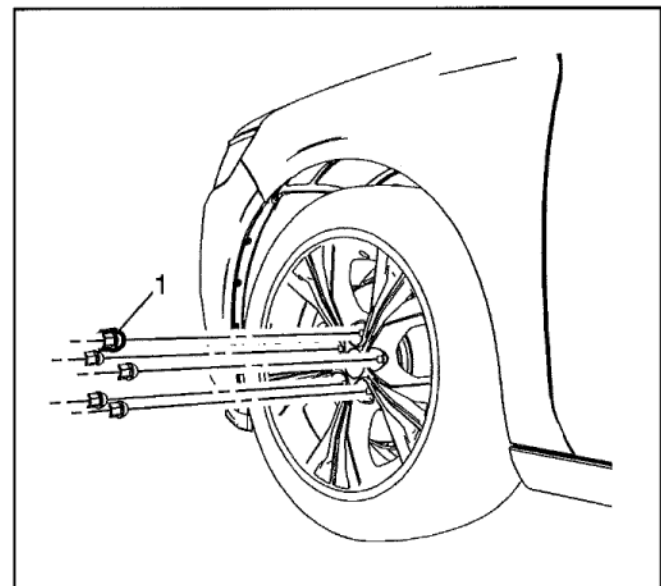
Removal Procedure

1. Raise and support the vehicle. Refer to *Lifting and Jacking the Vehicle* on page 1-31.
2. Remove the wheel center cap, if equipped.



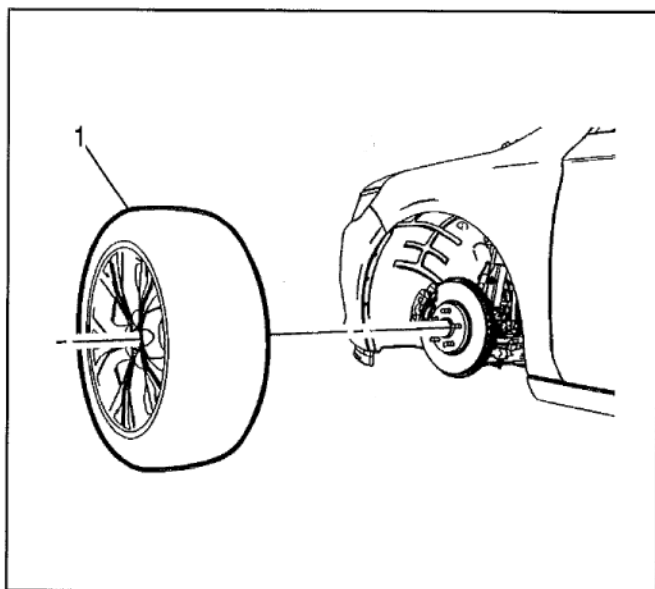
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3. Remove the wheel nut caps (1), if equipped.



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4. Remove the wheel nuts (1).



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5. Remove the tire and wheel assembly (1).

Warning: If penetrating oil gets on the vertical surfaces between the wheel and the rotor or drum it could cause the wheel to work loose as the vehicle is driven, resulting in loss of control and an injury accident.

Caution: Removing the wheel may be difficult because of foreign materials or a tight fit between the wheel and the hub/rotor. Slightly tap the tire side wall with a rubber mallet in order to remove the wheel. Failure to follow these instructions may result in damage to the wheel.

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

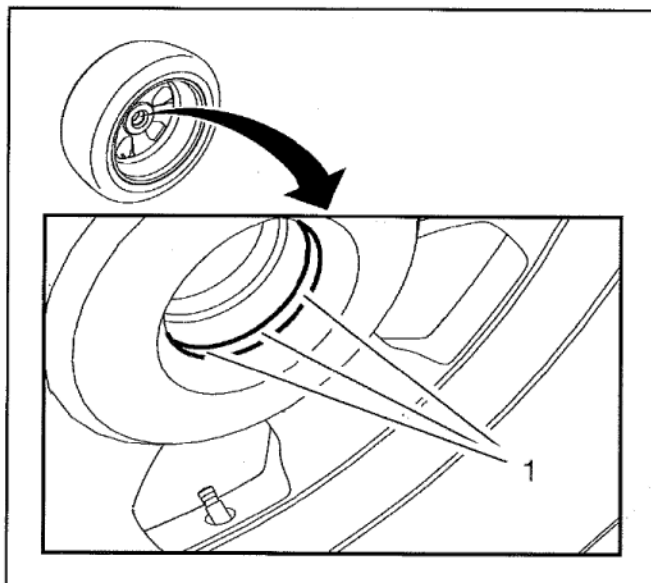
6. If the tire and wheel assembly is difficult to remove or cannot be removed, perform the following steps:
 - Hand install the wheel nuts.
 - Loosen the wheel nuts 2 complete turns.
 - Lower the vehicle.
 - Rock the vehicle from side to side.
 - Repeat the procedure if necessary.
7. When the tire and wheel assembly loosens, raise and support the vehicle. Refer to *Lifting and Jacking the Vehicle* on page 1-31.
8. Remove the wheel nuts.
9. Remove the tire and wheel assembly.

Installation Procedure

Warning: Before installing the wheels, remove any buildup of corrosion on the wheel mounting surface and brake drum or disc mounting surface. Installing wheels with poor metal-to-metal contact at the mounting surfaces can cause wheel nuts to loosen. This can cause a wheel to come off when the vehicle is moving, causing loss of control and possibly personal injury.

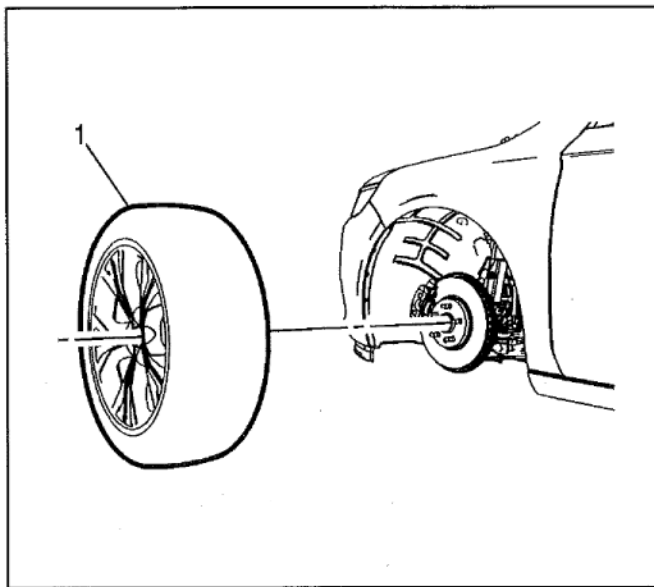
Note: Do not use power grinding tools to clean the brake rotor or drum to wheel mating surfaces.

1. Using a wire brush or wire wheel, clean the wheel to brake rotor or drum mating surface.
2. Using the CH-41013 Rotor Resurfacing Kit, clean the rotor or drum to wheel contact area.
3. Using the CH-42450-A Wheel Hub Resurfacing Kit, clean the surfaces around the wheel studs.
4. Clean the threads of the wheel studs.
5. If the threads of the wheel stud are damaged, replace the wheel stud. Refer to *Wheel Stud Replacement* on page 16-15 or *Wheel Stud Replacement* on page 16-33.
6. After cleaning all of the wheel and brake rotor or drum contact areas, use brake cleaner or denatured alcohol to remove any dirt and debris from the wheel nuts and the brake rotor or drum.
7. Inspect and clean the contact areas of the wheel. Refer to *Wheel Mounting Surface Check* on page 16-57.



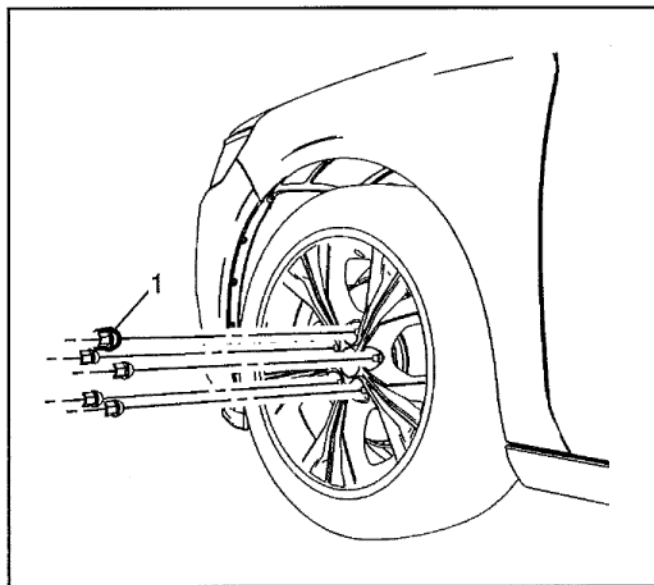
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8. Apply a small amount of lubricant to the inner diameter of the wheel hub pilot hole (1) where it contacts the wheel hub flange. Refer to *Adhesives, Fluids, Lubricants, and Sealers* on page 16-55.



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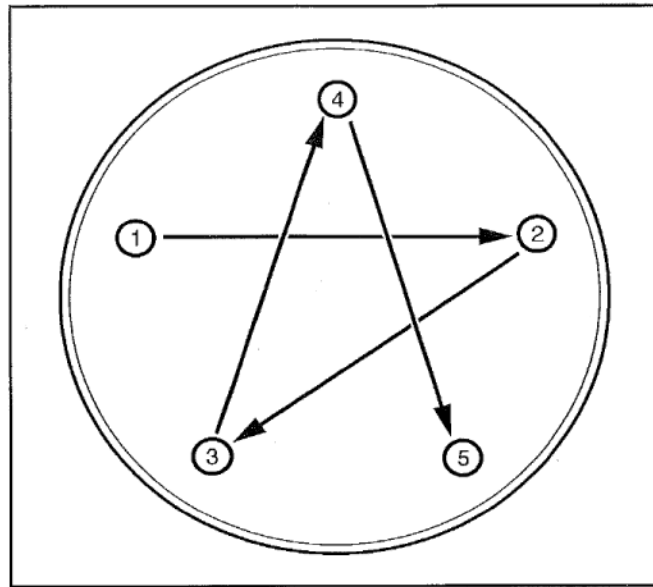
9. Install the tire and wheel assembly (1).



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Warning: Never grease or lubricate wheel nuts, studs and mounting surfaces. Wheel nuts, studs, and mounting surfaces must be clean and dry. Tightening the lubricated parts can cause damage to the wheel studs. This can cause a wheel to come off when the vehicle is moving, causing loss of control and possibly personal injury.

10. Hand install the wheel nuts (1).

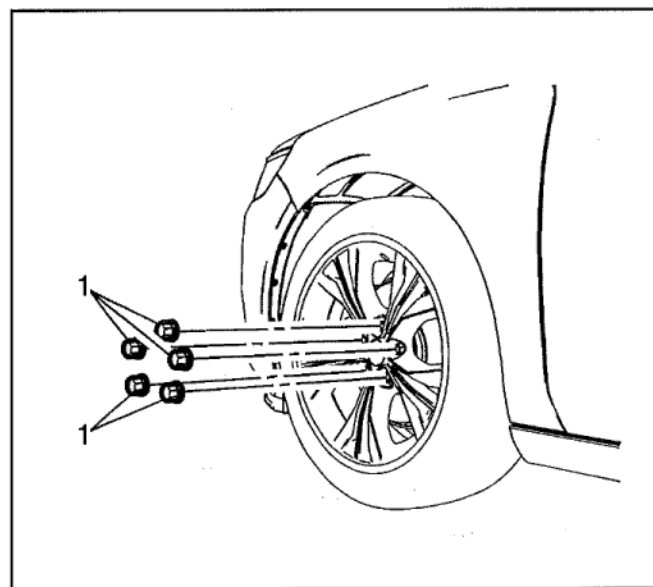


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Caution: Improperly tightened wheel bolts or nuts can lead to brake pulsation and rotor damage. In order to avoid expensive brake repairs, evenly tighten the wheel bolts or nuts to the proper torque specification.

Caution: Refer to *Fastener Caution* on page 0-8.

11. Using a torque wrench and the appropriate socket, alternately and evenly tighten the wheel nuts to **140 N•m (103 lb ft)** in the sequence illustrated.



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12. Install the wheel nut caps (1), if equipped.
13. Install the wheel center cap, if equipped.

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. Deflate the tire completely.

Note: Rim-clamp, sometimes called-European-type tire changers are recommended.

2. Use the tire changer in order to remove the tire from the wheel.
3. 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.

4. Apply GM P/N 12345884 (Canadian P/N 5728223) or equivalent to the tire bead and the wheel rim.
5. 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.

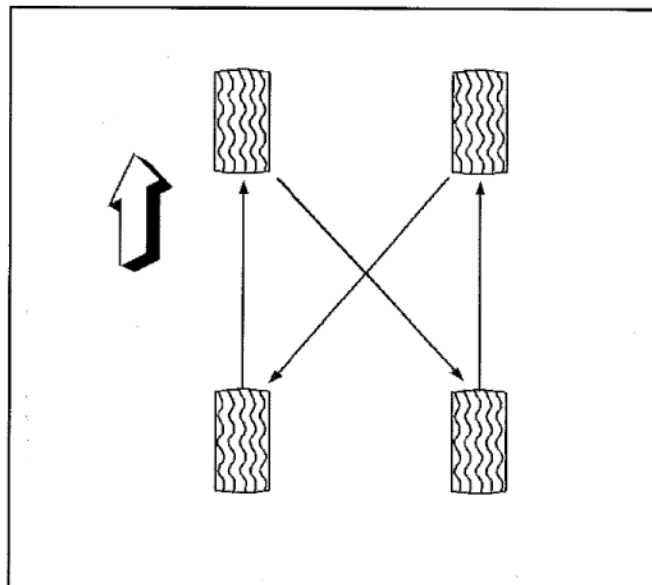
6. Inflate the tire to the proper air pressure.
7. Ensure that the locating rings are visible on both sides of the tire in order to verify that the tire bead is fully seated on the wheel.

Tire Rotation

In order to equalize wear, rotate the tires at the specified intervals. Also, rotate the tire and wheel assembly whenever you notice uneven tire wear.

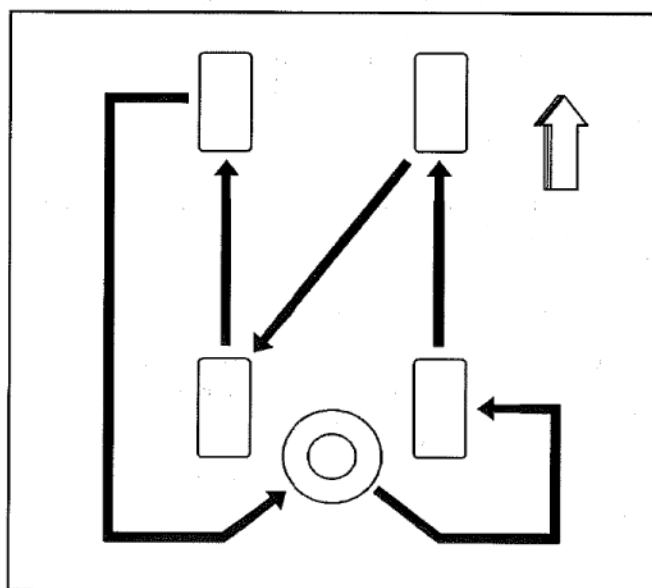
Radial tires tend to wear faster in the shoulder area, particularly in front positions, due to design. Radial tires in non-drive locations may develop an irregular wear pattern that can generate tire noise. This especially makes regular tire rotation necessary.

- Remove the tires and wheels. Refer to *Tire and Wheel Removal and Installation* on page 16-60.



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- For vehicles with single rear wheels (4 tires), rotate the tires as shown.

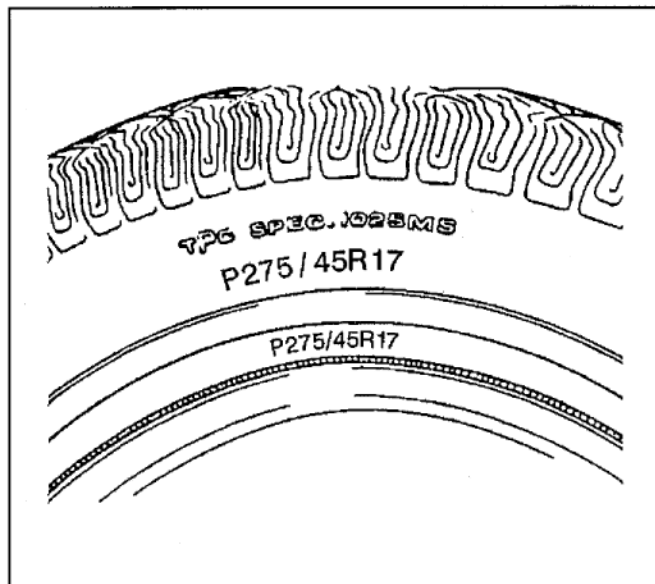


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- For vehicles with single rear wheels (5 tires), rotate the tires as shown.

Description and Operation

All Seasons Tires Description



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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

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

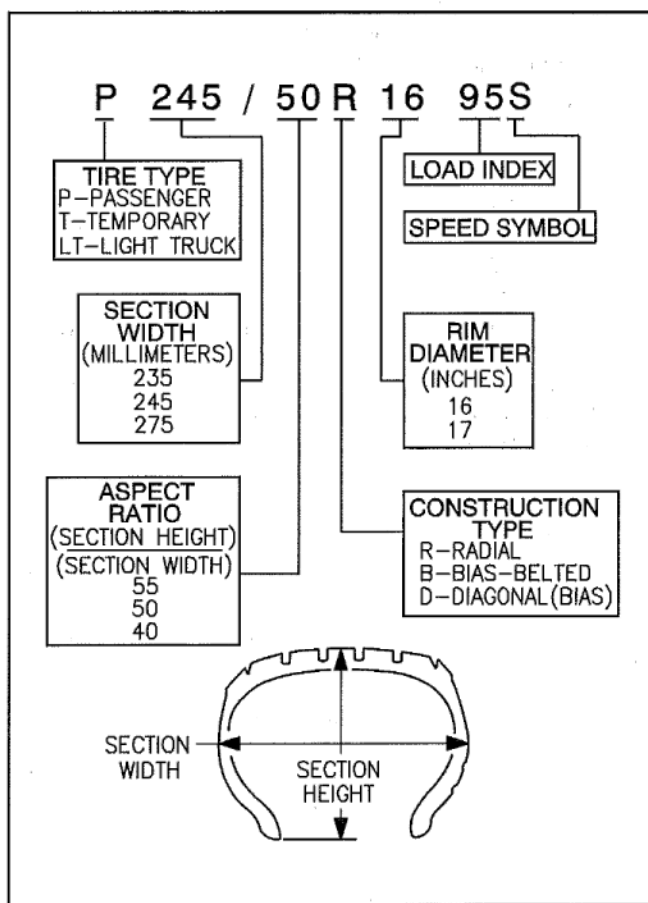
Metric wheel/nuts and bolts are identified in the following way:

- 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



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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

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 rusted.
- The wheel is severely corroded.

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

- The wheel leaks air.

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.

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.

Steel wheel identification is stamped into the wheel near the valve stem.

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

Steel Wheel Repair Description

Caution: Do not heat wheels in an attempt to soften them for straightening or repair damage from striking curbs, etc. Do not weld wheels. The alloy used in these wheels is heat-treated and uncontrolled heating from welding affects the properties of the material.

Caution: The use of tubes in tubeless tires is not a recommended repair due to the fact that speed ratings are greatly reduced.

You can repair porosity in aluminum wheels. If leaks are found in a steel wheel, replace the wheel with a wheel of original equipment quality.

Tire Inflation Description

When you inflate the tires to the recommended inflation pressures, the factory-installed wheels and tires are designed in order to handle loads to the tire's rated load capacity. Incorrect tire pressures, or under-inflated tires, can cause the following conditions:

- Vehicle handling concerns
- Poor fuel economy
- Shortened tire life
- Tire overloading

Inspect the tire pressure when the following conditions apply:

- The vehicle has been sitting at least 3 hours.
- The vehicle has not been driven for more than 1.6 km (1 mi).
- The tires are cool.

Inspect the tires monthly or before any extended trip. Adjust the tire pressure to the specifications on the tire label. Install the valve caps or the extensions on the valves. The caps or the extensions keep out dust and water.

The kilopascal (kPa) is the metric term for pressure. The tire pressure may be printed in both kilopascal (kPa) and psi. One psi equals 6.9 kPa.

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			

Tires with a higher than recommended pressure can cause the following conditions:

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

Tires with a lower than recommended pressure can cause the following conditions:

- A tire squeal on turns
- Hard steering
- Rapid wear and uneven wear on the edge of the tread
- Tire rim bruises and tire rim rupture
- Tire cord breakage
- High tire temperatures

- Reduced vehicle handling
- High fuel consumption
- Soft riding

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

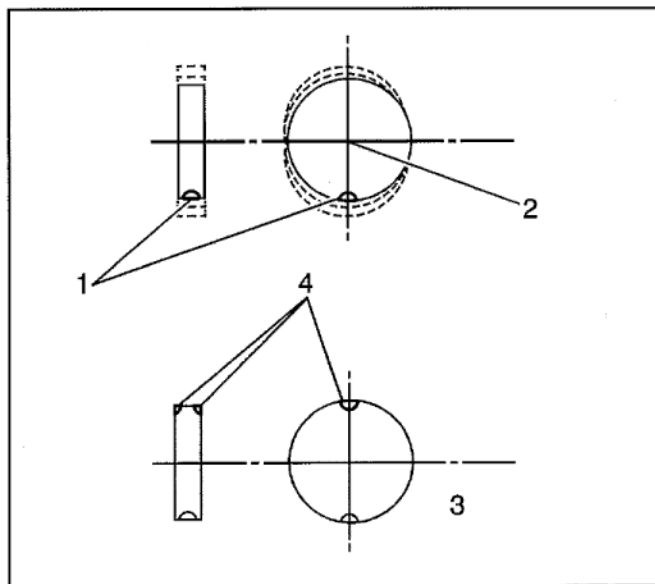
- Uneven braking
- Steering lead
- Reduced vehicle handling

Refer to the Tire Placard for specific tire and wheel applications and tire pressures.

Tires and Wheels Description and Operation

There are two types of tire and wheel balancing: static and dynamic.

Static balance is the equal distribution of weight around the wheel. Assemblies that are statically unbalanced cause a bouncing action called wheel tramp. This condition may eventually cause uneven tire wear.

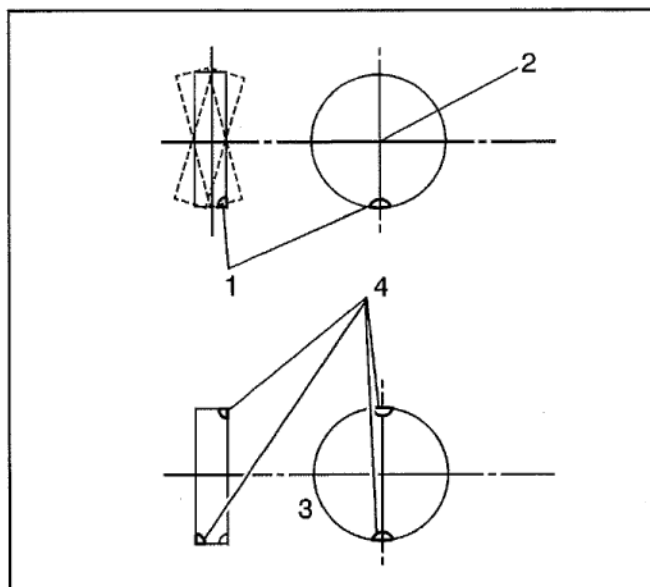


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Legend

- (1) Heavy Spot
- (2) Centerline of Spindle
- (3) Corrective Weights
- (4) Add Balance Weights Here

Dynamic balance is the equal distribution of weight on each side of the centerline so that when the assembly spins there is no tendency for it to move from side to side. Assemblies that are dynamically unbalanced may cause wheel shimmy.



1290869

Legend

- (1) Heavy Spot
- (2) Centerline of Spindle
- (3) Corrective Weights
- (4) Add Balance Weights Here

General Balance Precautions

Remove all deposits of foreign material from the inside of the wheel.

Warning: Stones should be removed from the tread to provide accurate wheel balancing and to avoid operator injury (from stones becoming dislodged while wheel is in motion) during the procedure.

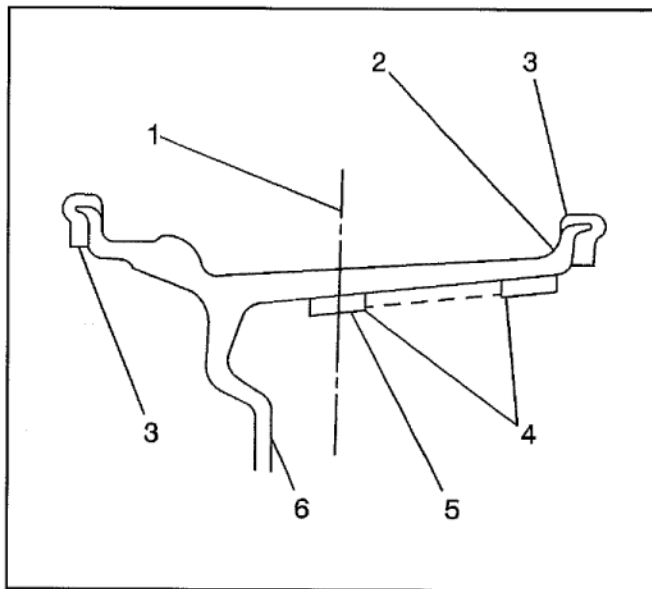
Inspect the tire for any damage. Balance the tire according to the equipment manufacturer's recommendations.

Wheel Weights

If more than 85 grams (3.0 ounces) are needed to static balance the wheel, split the wheel weights as equally as possible between the inboard and the outboard flanges.

Balancing the assemblies with factory alloy wheels requires the use of special nylon-coated, clip-on wheel weights. These weights are designed to fit over the thicker rim flange of the alloy wheel. Install these weights with a plastic-tipped hammer.

Adhesive wheel weights are also available. Use the following procedure to install adhesive wheel weights



1290867

Legend

- (1) Centerline
- (2) Inside Flange
- (3) Clip-on Weight
- (4) Dynamic Balance Adhesive Weight
- (5) Static Balance Adhesive Weight
- (6) Mounting Face

Adhesive Wheel Weight Installation

1. Clean the wheel by sanding it to bare alloy where the wheel weight will be installed.
2. Use a clean cloth or paper towel saturated with a mixture of half isopropyl alcohol and half water to wipe the place where the wheel weight will be installed.
3. Dry the area with hot air. The surface of the wheel should be warm to the touch.
4. Warm the adhesive backing on the wheel weights to room temperature.
5. Remove the tape from the back of the weights. Do not touch the adhesive surface.
6. Apply the wheel weight and press it on with hand pressure.
7. Secure the wheel weight with a 70-110 N (16-25 lb) force applied with a roller.

Tire Chain Usage

Due to limited tire-to-body clearance on certain vehicles, recommendations for tire chain use are published in the Owner's Manual. When tire chains need to be used, most current General Motors vehicles require SAE Class "S" tire chains. These may also be designated as 1100 Series, type PL tire chains. These chains are specifically designed to limit the "fly off" effect which occurs when the wheel rotates.

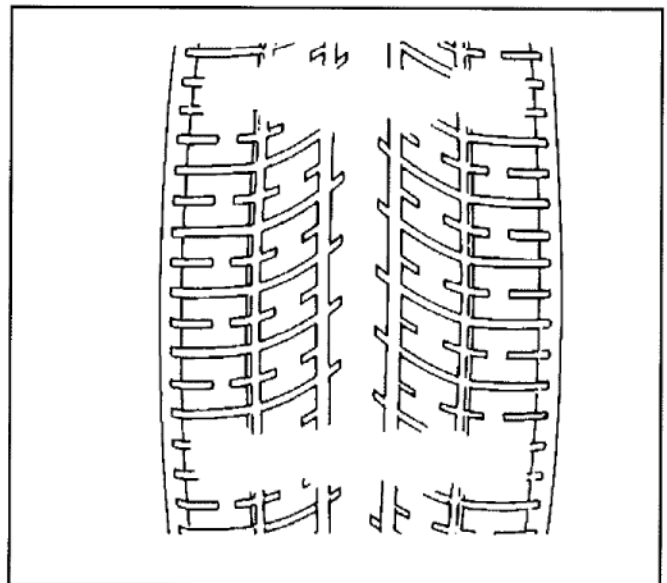
Be sure that only fine-link chains are used which do not add more than 15 mm (0.590 in), including the lock, to the tread surface and the inner sides of the tires.

Manufacturers of tire chains have a specific chain size for each tire size to ensure a proper fit when the chain is installed. Be sure to purchase the correct chains for the tires on which they are to be used. Use rubber adjusters to take up any slack or clearance in loose chains.

Use of chains may adversely affect vehicle handling. When tire chains are installed, follow these precautions:

- Adjust speed to road conditions
- Avoid sharp turns
- Avoid locked-wheel braking

To prevent chain damage to the vehicle, install the chains on the front tires as tightly as possible. Tighten them again after driving 0.4–0.8 kilometer (0.3–0.5 mile). The use of chains on the rear tires is not recommended because they may contact the vehicle and possibly damage it. If chains must be used on the rear tires, be sure there is sufficient clearance between the chains and the body. Do not exceed 70 km/h (45 mph) or the chain manufacturer's speed limit, if lower. Avoid large bumps, potholes, severe turns and any other maneuvers which could cause the tires to bounce. Follow any other instructions of the chain manufacturer which do not disagree with the above instructions.

Tread Wear Indicators Description

143383

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).

Special Tools and Equipment

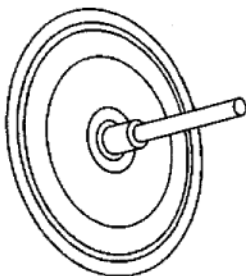
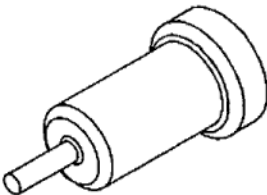
Illustration	Tool Number/ Description
 573333	CH 41013 J 41013 Rotor Resurfacing kit

Illustration	Tool Number/ Description
 380097	CH 42450-A J 42450-A Wheel Hub Resurfacing Kit