

2014 SUSPENSION

Tires and Wheels - Acadia, Enclave And Traverse

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Wheel Nuts	190 N.m	140 lb ft

ADHESIVES, FLUIDS, LUBRICANTS AND SEALERS

Adhesives, Fluids, Lubricants and Sealers

Application	Type of Material	GM Part Number	Canadian Part Number
Aluminum Wheel	Adhesive/Sealant	12378478	88900041
Aluminum Wheel	3M® General Purpose Cleaner	08984	-
Wheel	Mounting Lubricant	12345884	88863415
Wheel to Hub	Lubricant	1051344	993037

DIAGNOSTIC INFORMATION AND PROCEDURES

TIRE DIAGNOSIS - IRREGULAR OR PREMATURE WEAR

Tire Wear

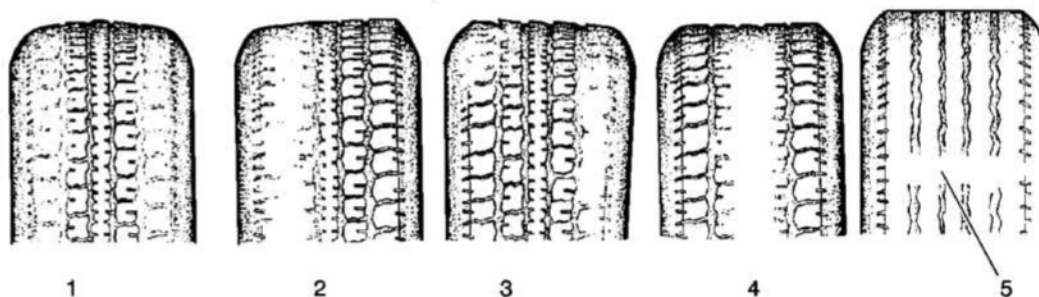


Fig. 1: Identifying Types Of Tire Wear

Courtesy of GENERAL MOTORS COMPANY

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

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 (2).
5. Inspect the struts or the shock absorbers if the tire tread exhibits a cupped appearance (3).

TIRE DIAGNOSIS - WADDLE COMPLAINT

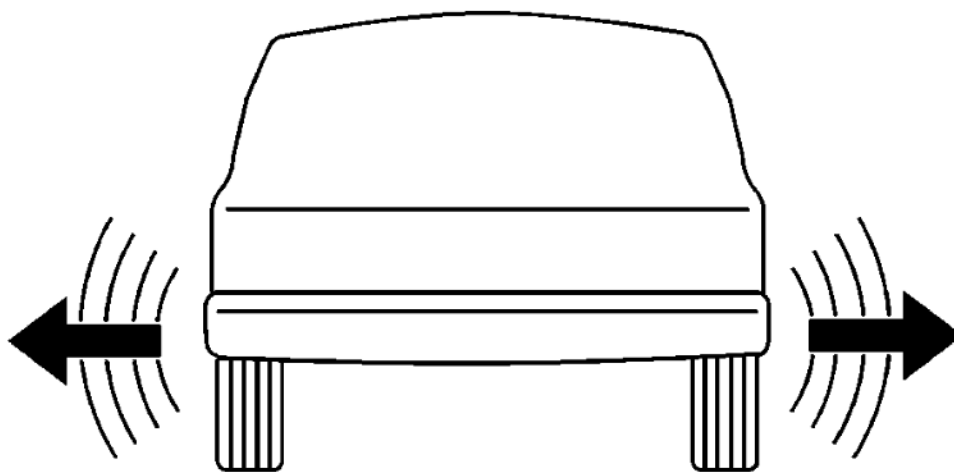


Fig. 2: Identifying Tire Wobble/Waddle
Courtesy of GENERAL MOTORS COMPANY

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** .

2. Perform the following preliminary inspection:

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

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.

1. Thoroughly clean the wheel mounting surface with a clean shop towel and denatured alcohol or equivalent.

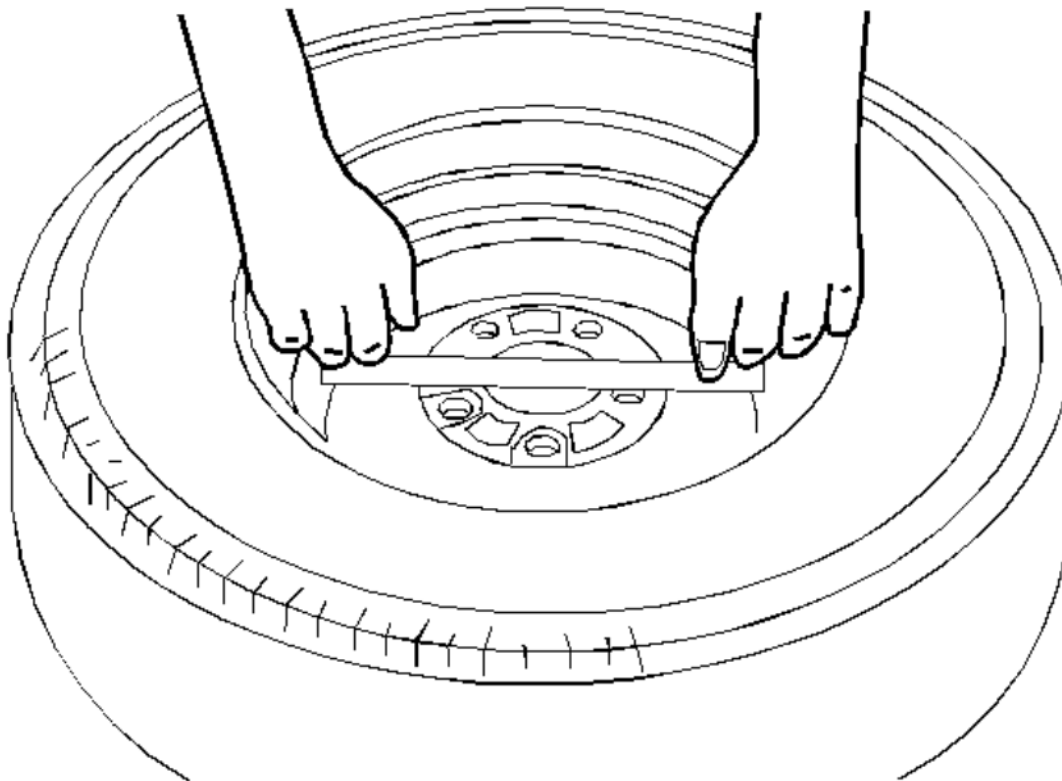


Fig. 3: Checking Wheel Mounting Surface
Courtesy of GENERAL MOTORS COMPANY

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.
5. For steel wheels, repeat the procedure in step 2 on at least 3-4 different positions on the inboard mounting surface.

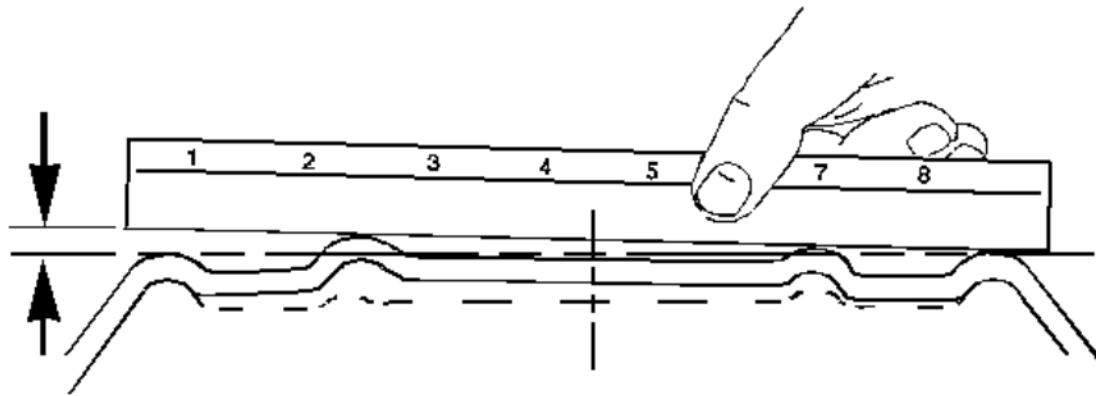


Fig. 4: Inspecting Wheel Inboard Mounting Surface
Courtesy of GENERAL MOTORS COMPANY

- 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.
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.

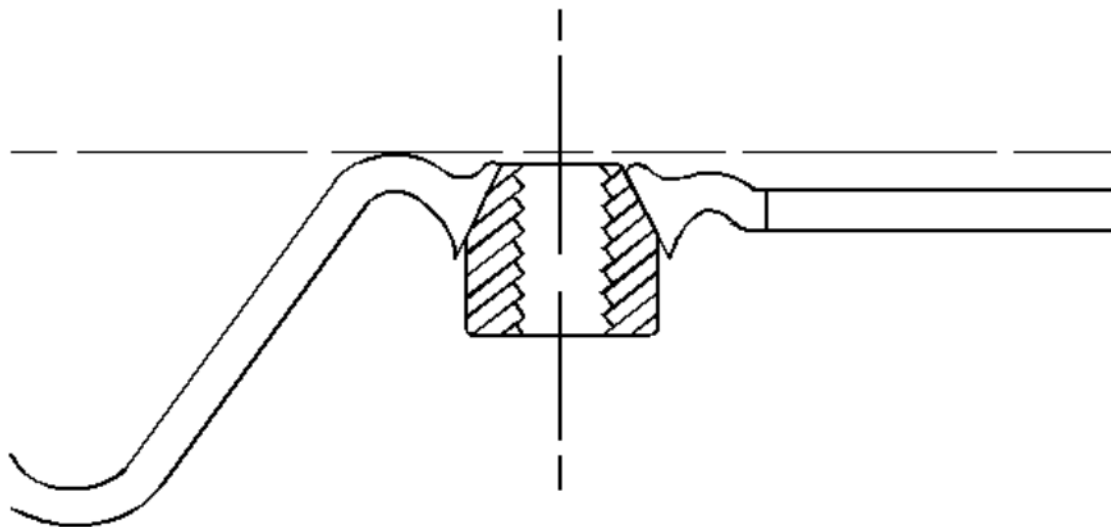


Fig. 5: Inspecting Mounting Wheel/Nut Holes For Damage Caused From Over-Torquing The Wheel/Nuts

Courtesy of GENERAL MOTORS COMPANY

7. Replace the wheel if the wheel is bent.

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

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**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.			
1	Did you perform the Vehicle Leads/Pull diagnostic table?	Go to Step 2	Go to Vehicle Leads/Pulls
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
	Does the vehicle lead/pull in the opposite		Go to Wheel

4	direction?	Go to Step 5	<u>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. Refer to <u>Tire Dismounting and Mounting</u>. Is the repair complete?	Go to Step 9	-
8	Replace the right rear tire. Refer to <u>Tire Dismounting and Mounting</u>. 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

ALUMINUM WHEEL POROSITY REPAIR

1. Remove the tire and wheel. Refer to **Tire and Wheel Removal and Installation**.
2. Inflate the tire to the manufactures specified pressure as stated on the tire.
3. Submerge the tire/wheel into a water bath in order to locate the leak.
4. Inscribe a mark on the wheel in order to indicate the leak areas.
5. Inscribe a mark on the tire at the valve stem in order to Indicate the orientation of the tire to the wheel.
6. Remove the tire from the wheel. Refer to **Tire Dismounting and Mounting**.
7. Use number 80 grit sandpaper to scuff the inside of the rim surface at the leak area.

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

8. Use general purpose cleaner such as 3M®, P/N 08984 or equivalent, to clean the leak area.

9. Apply 3 mm (0.12 in) thick layer of adhesive/sealant, GM P/N 12378478, (Canadian P/N 88900041) or equivalent to the leak area.
10. Allow for the adhesive/sealant to dry.
11. Align the inscribed mark on the tire with the valve stem on the wheel.
12. Install the tire to the wheel. Refer to **Tire Dismounting and Mounting**.
13. Inflate the tire to the manufactures specified pressure as stated on the tire.
14. Submerge the tire/wheel into a water bath in order to ensure the leak is sealed.
15. Balance the tire and wheel. Refer to **Tire and Wheel Assembly Balancing - Off Vehicle**.
16. Install the tire and wheel. Refer to **Tire and Wheel Removal and Installation**.
17. Lower the vehicle.

ALUMINUM WHEEL REFINISHING

Finish Damage Evaluation Procedure

1. Inspect the wheels for damage from uncoated wheel balance weights or from automatic car wash facilities.

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.

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

1. Remove the tire and wheel assembly from the vehicle. Refer to **Tire and Wheel Removal and Installation**.

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.

2. Remove the balance weights from the wheel.
3. Remove the tire from the wheel. Refer to **Tire Dismounting and Mounting**.
4. Use a suitable cleaner in order to remove the following contaminants from the wheel:
 - Lubricants
 - Wax
 - Dirt
5. Use plastic media blasting in order to remove the paint from the wheel.

NOTE:

- **Do not re-machine the wheel.**
- **Do not use chemicals in order to strip 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.
7. Mask the wheel mounting surface and the wheel nut contact surface.

NOTE:

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

8. Follow the paint manufacturer's instructions for painting the wheel.
9. Unmask the wheel.
10. Install a new valve stem.
11. Install the tire to the wheel. Refer to **Tire Dismounting and Mounting**.

NOTE:

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

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**.

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**.

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 nut caps (1), if equipped.

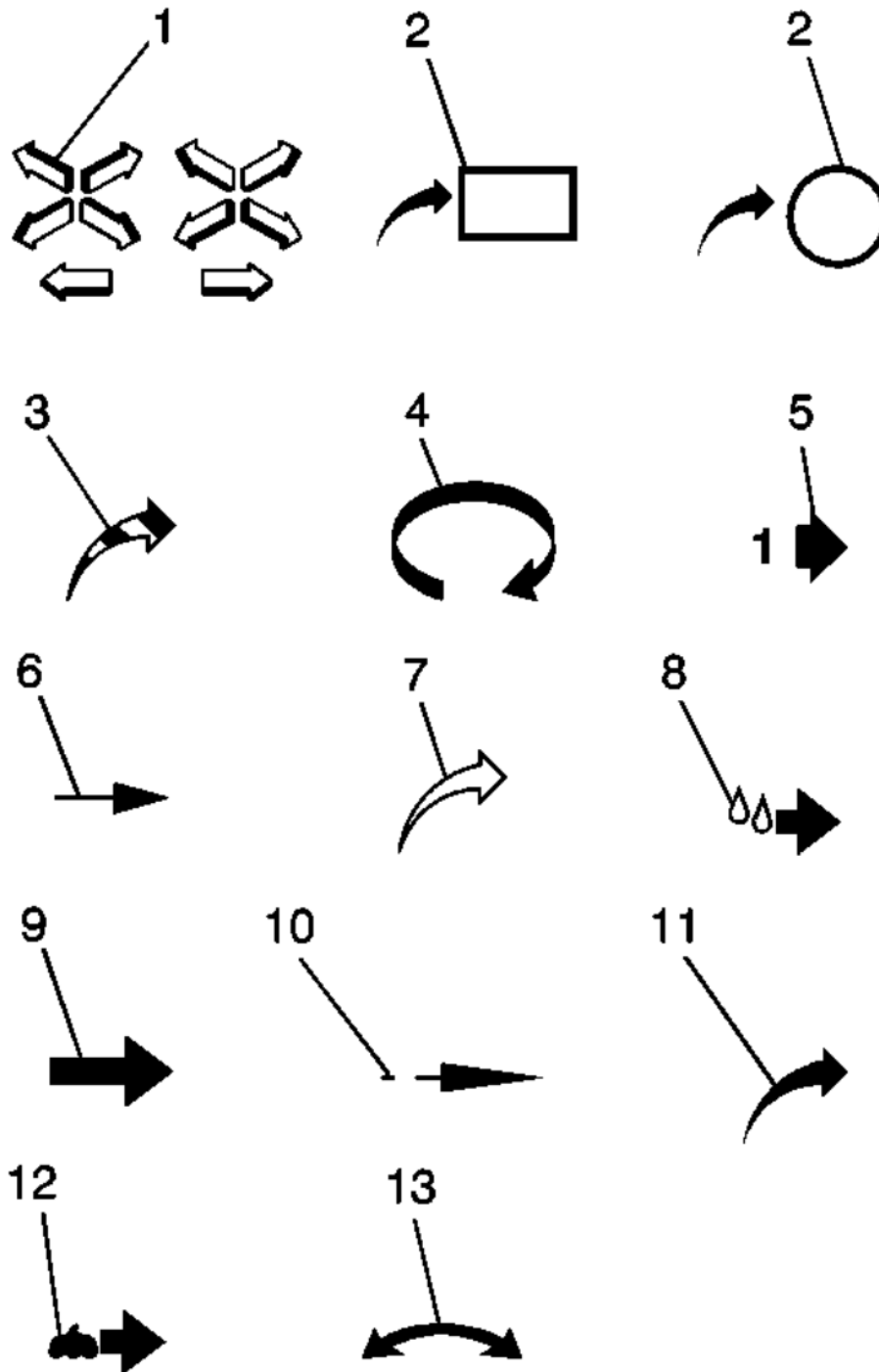


Fig. 6: Wheel Nut Caps

Courtesy of GENERAL MOTORS COMPANY

4. Remove the wheel nuts (1).

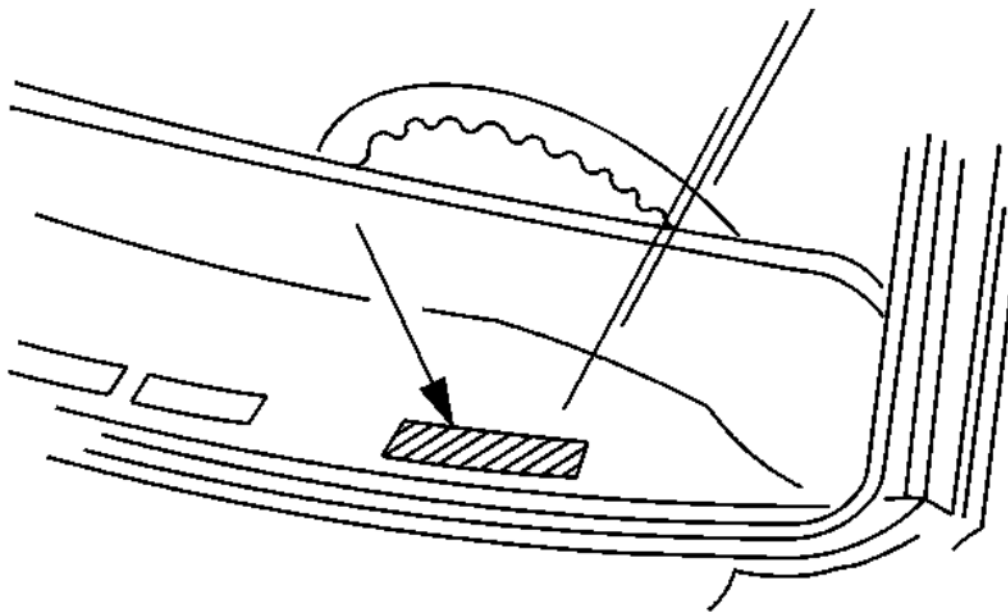


Fig. 7: Wheel Nuts

Courtesy of GENERAL MOTORS COMPANY

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

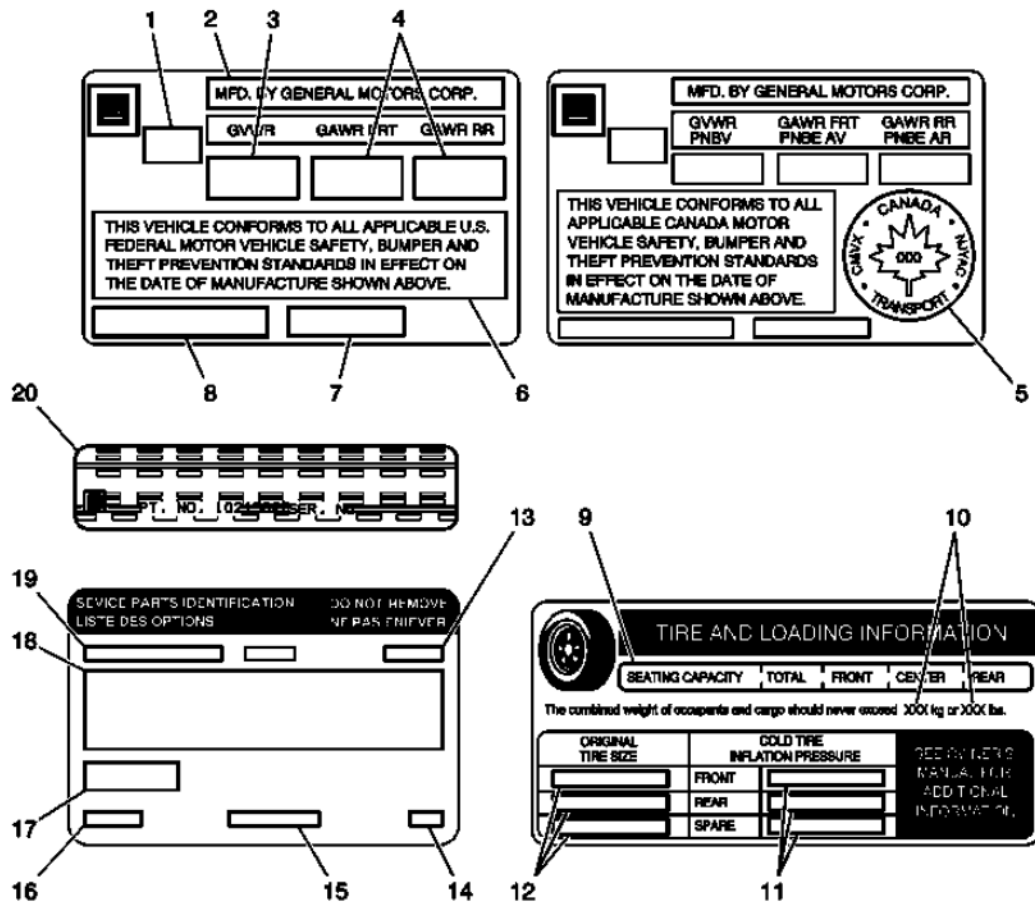


Fig. 8: Tire And Wheel Assembly
 Courtesy of GENERAL MOTORS COMPANY

6. If the tire and wheel assembly is difficult to remove or cannot be removed, perform the following steps:

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.

- 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**.
 8. Remove the wheel nuts.
 9. Remove the tire and wheel assembly.

Installation Procedure

1. Using a wire brush or wire wheel, clean the wheel to brake rotor or drum mating surface.

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.

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** or **Wheel Stud Replacement**.
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**.
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**.

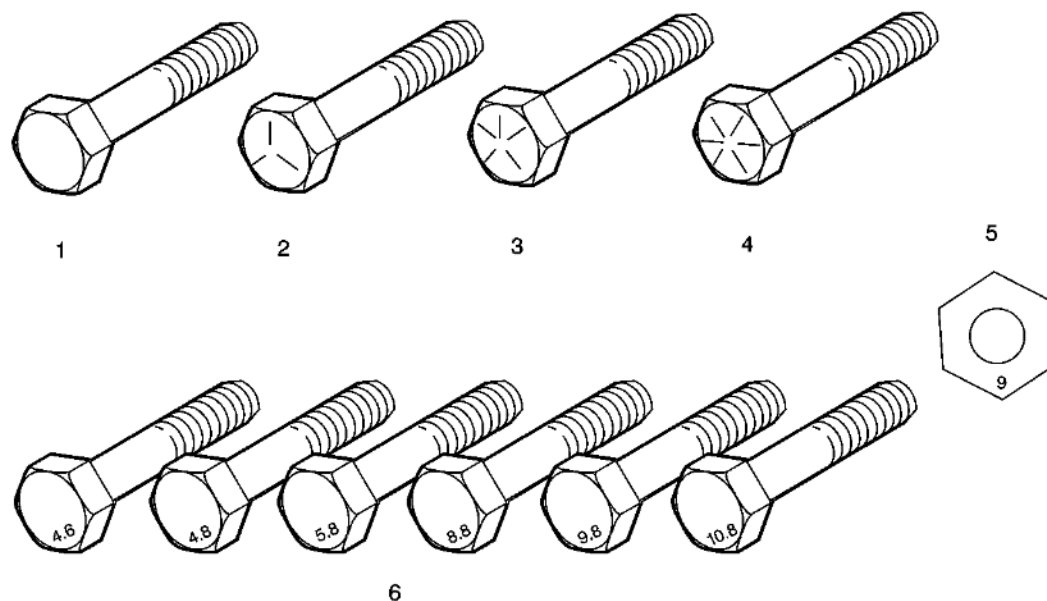


Fig. 9: Rim Inner Center Seat

Courtesy of GENERAL MOTORS COMPANY

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



1



2



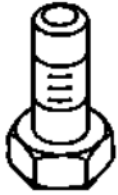
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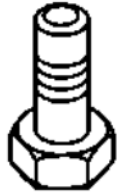
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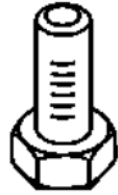
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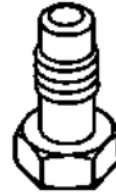
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8



9

Fig. 10: Tire And Wheel Assembly
Courtesy of GENERAL MOTORS COMPANY

10. Hand install the wheel nuts (1).

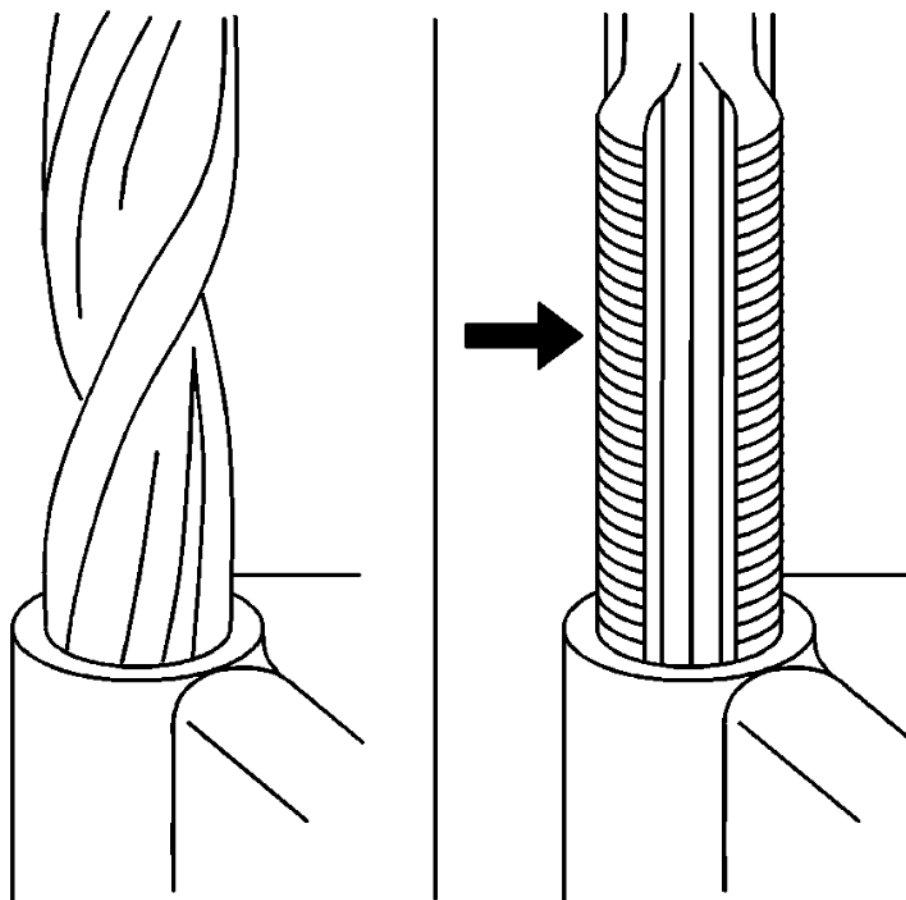


Fig. 11: Wheel Nuts

Courtesy of GENERAL MOTORS COMPANY

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.

11. Using a torque wrench and the appropriate socket, alternately and evenly tighten the wheel nuts to 190 (140 lb ft) in the sequence illustrated.

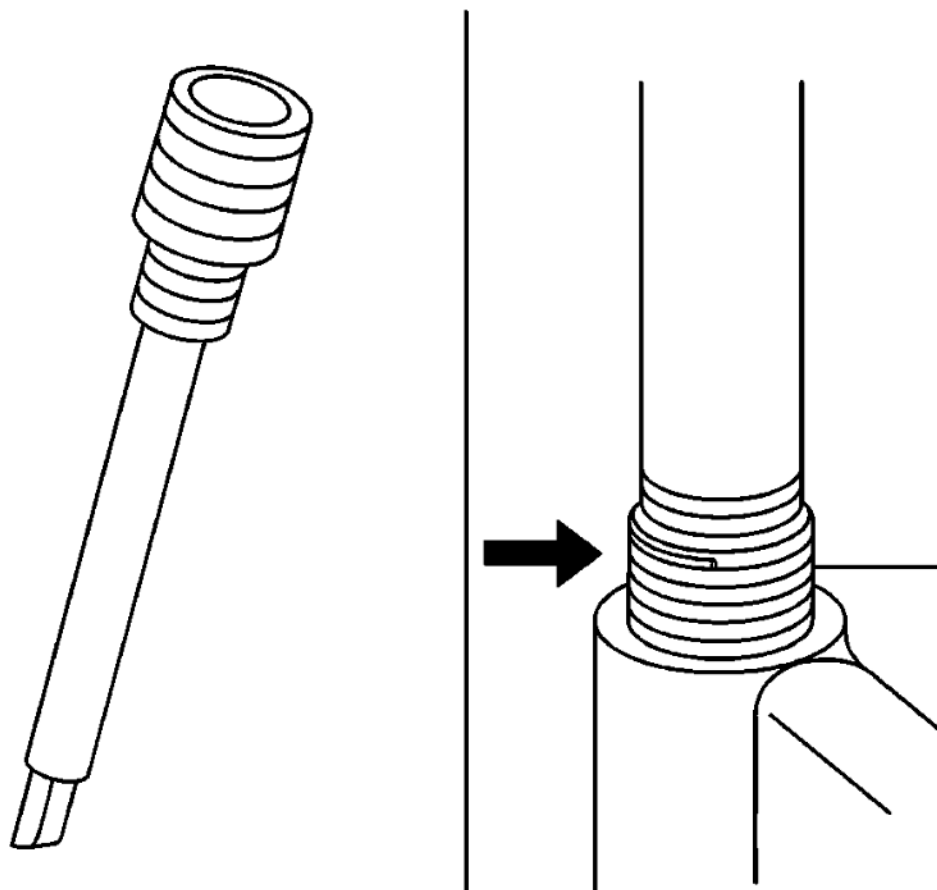


Fig. 12: Wheel Nut Tightening Sequence

Courtesy of GENERAL MOTORS COMPANY

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 .

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

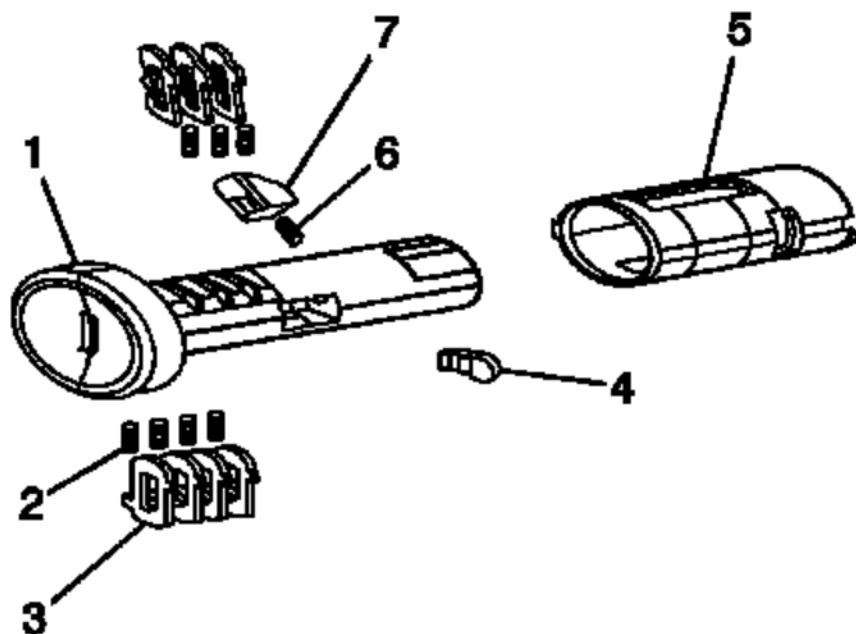


Fig. 13: Wheel Nut Caps

Courtesy of GENERAL MOTORS COMPANY

13. Install the wheel center cap, if equipped.

TIRE REPAIR

Many different materials and techniques are available on the market in order to repair tires. Not all of the materials and techniques work on some types of tires. Tire manufacturers have published detailed instructions on how and when to repair tires. Obtain the instructions from the manufacturer. Do NOT repair the compact spare tire.

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.

1. Remove the valve core from the valve stem.

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.

2. Deflate the tire completely.
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.

NOTE: Rim-clamp European-type tire changers are recommended.

4. When separating the tire bead from the wheel, position the bead breaking fixture 90, 180 and 270 degrees from the valve stem.

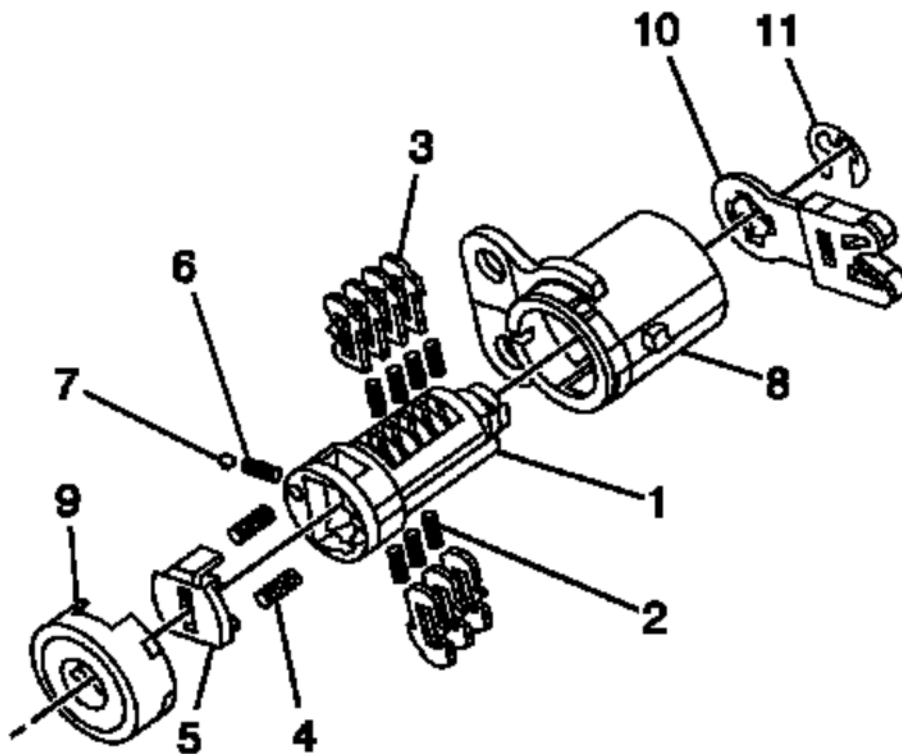


Fig. 14: Using Tire Changer to Remove Tire
Courtesy of GENERAL MOTORS COMPANY

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

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

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.

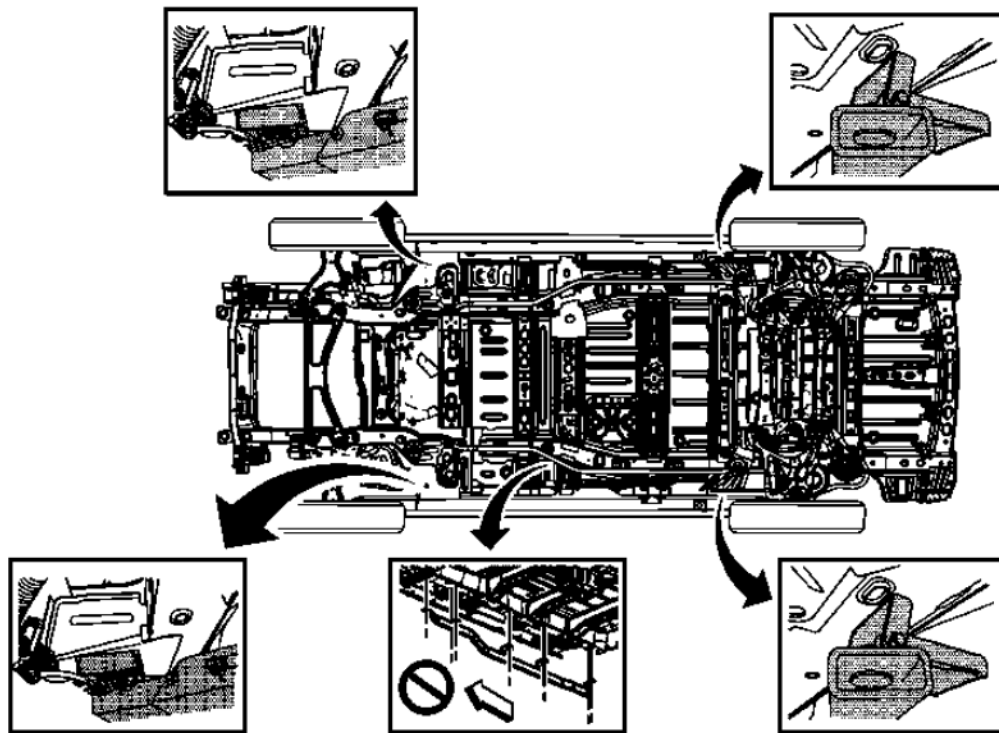


Fig. 15: Separating Tire Bead from Wheel
Courtesy of GENERAL MOTORS COMPANY

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 (Snap In Style)**.
8. Use medium coarseness steel wool in order to remove any rubber, light rust or corrosion from the wheel bead seats.
9. Apply mounting lubricant to the tire bead and the wheel rim. Refer to **Adhesives, Fluids, Lubricants and Sealers**.

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.

10. 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.

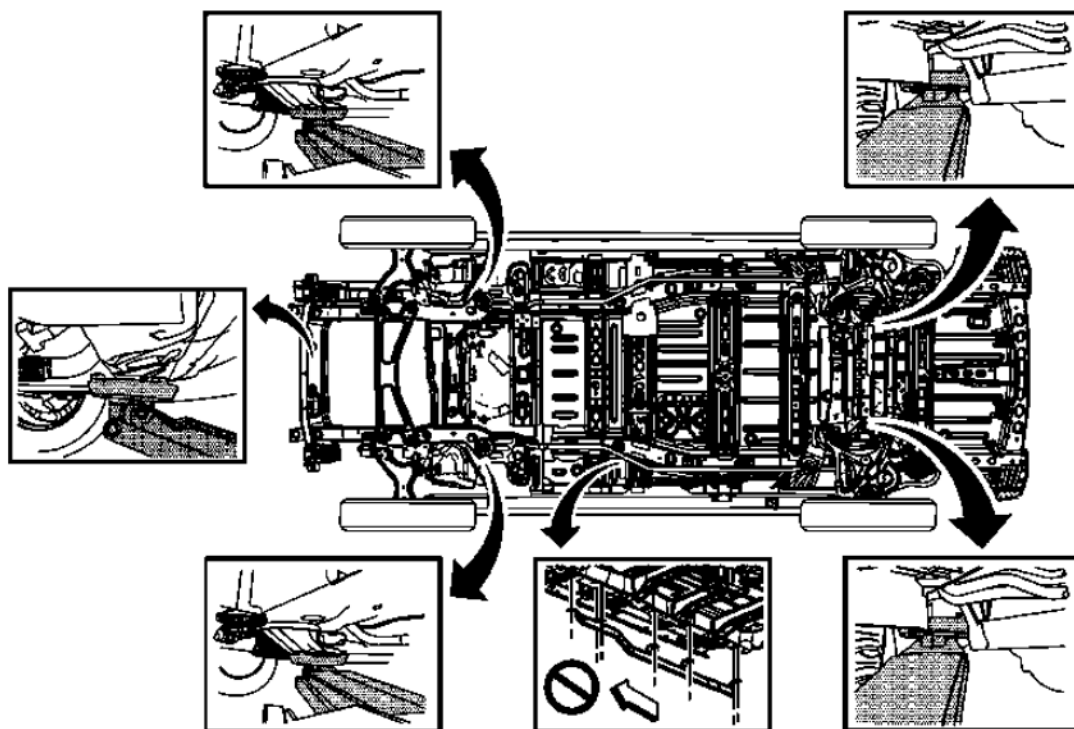


Fig. 16: Position Rim So Valve Stem Is At 7 O'clock Position Relative To Head
Courtesy of GENERAL MOTORS COMPANY

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.

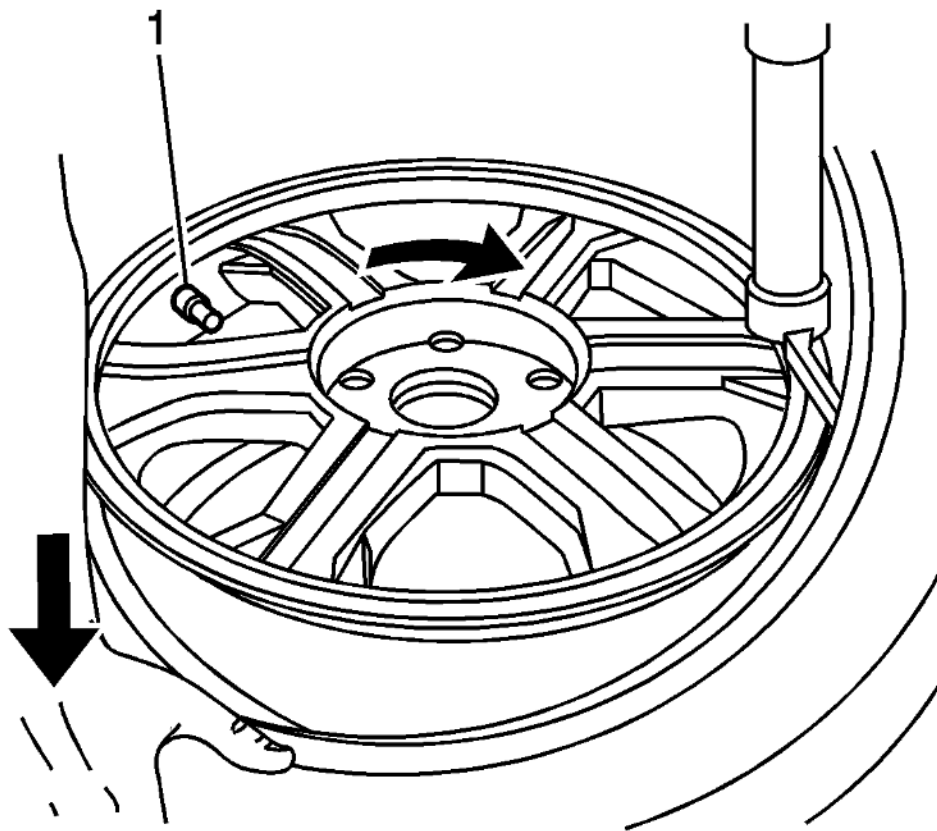


Fig. 17: Ensure Valve Stem Is At 7 O'clock Position

Courtesy of GENERAL MOTORS COMPANY

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.

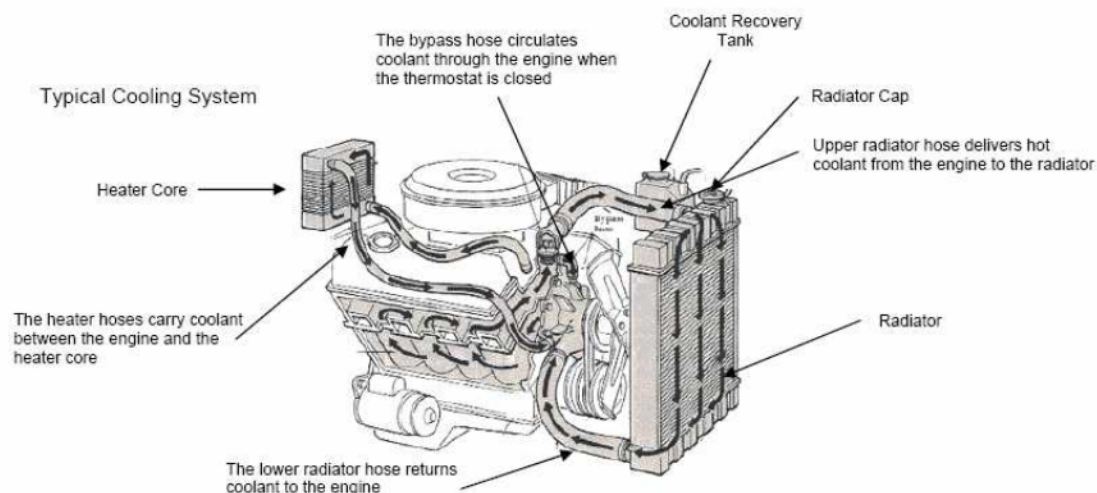


Fig. 18: Reposition Wheel And Tire So Valve Stem Is At 7 O'clock Position Relative To Head
 Courtesy of GENERAL MOTORS COMPANY

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

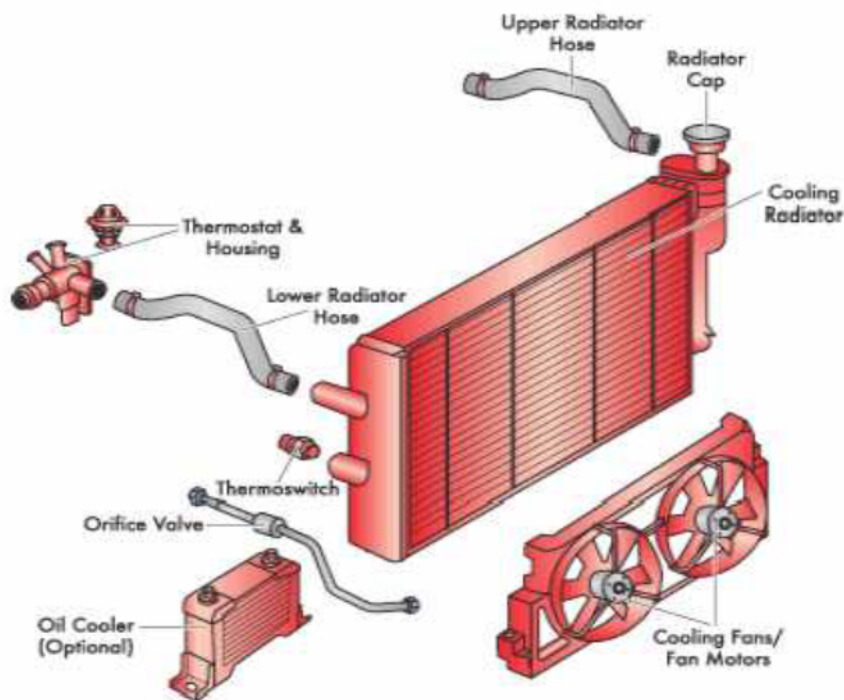


Fig. 19: Transferring Tire Bead
 Courtesy of GENERAL MOTORS COMPANY

14. Inflate the tire until it passes the bead humps. Be sure that the valve core is not installed at this time.

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.

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.

TIRE ROTATION

Rotate the tires and wheels at frequent intervals to equalize wear. In addition to scheduled rotation, rotate the tire and wheel whenever uneven tire wear is noticed.

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

Refer to **Tire and Wheel Removal and Installation** for tire removal.

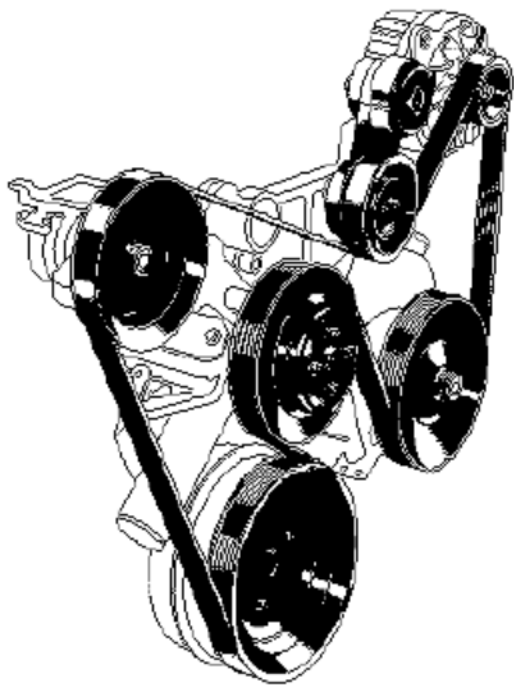


Fig. 20: Identifying Tire Rotation Pattern
Courtesy of GENERAL MOTORS COMPANY

Always use a 4-wheel rotation. After rotation, check the wheel nuts for specified torque. Then, set the tire pressure.

SPARE WHEEL HOIST REPLACEMENT



Parallel misalignment.



Angular misalignment.

Fig. 21: Identifying Spare Wheel Hoist
Courtesy of GENERAL MOTORS COMPANY

Spare Wheel Hoist Replacement

Callout	Component Name
Preliminary Procedure 1. Remove the tire and wheel from the spare tire hoist. 2. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.	
1	Spare Tire Hoist Bolt (Qty: 2) CAUTION: Refer to Fastener Caution . Tighten 25 N.m (18 lb ft)
2	Spare Tire Hoist

DESCRIPTION AND OPERATION

ALL SEASONS TIRES DESCRIPTION



Fig. 22: Identifying All Seasons Tire Marking
Courtesy of GENERAL MOTORS COMPANY

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

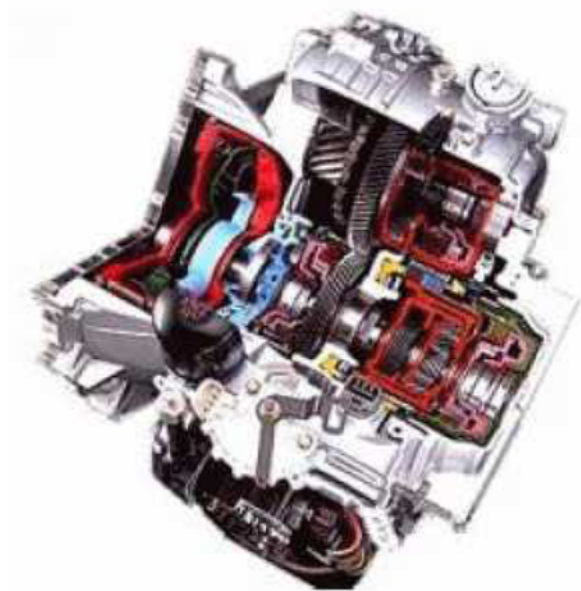


Fig. 23: Identifying P-Metric Sized Tire Marking
Courtesy of GENERAL MOTORS COMPANY

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.
- The wheel leaks air.

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.

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.

TREAD WEAR INDICATORS DESCRIPTION

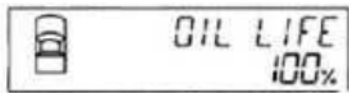


Fig. 24: View Of Tread Wear Indicators
Courtesy of GENERAL MOTORS COMPANY

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

The location of these indicators are at 60° 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

SPECIAL TOOLS

Illustration	Tool Number/Description
	J 39544-KIT Complete Torque Socket Set - 10 PCS