Inflate. Rotate. Evaluate.

How to maintain your tires

BF50793 1Mil 01/06

Tire Maintenance Contents

Inflate.

Check your tire pressure monthly.

Rotate.

Rotate your tires as recommended by the vehicle manufacturer or every 5,000 miles.

Evaluate.

Routinely look for signs of tread wear or damage.

Follow This *Easy* Step-By-Step Checklist To Maintain All Tires, *Including The Spare*.

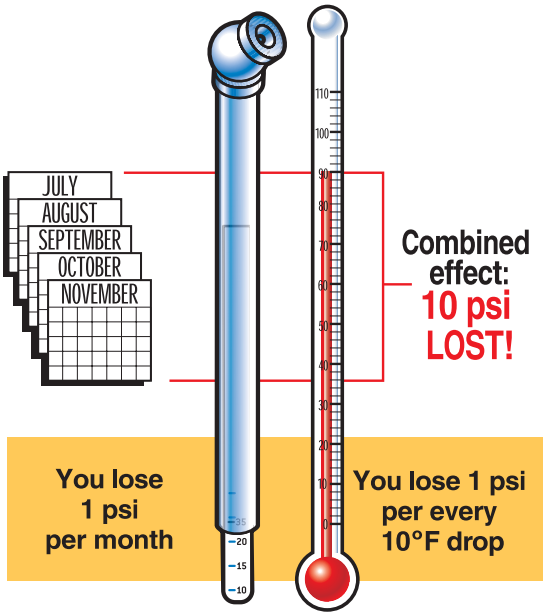
Front _____ PSI

Rear _____ PSI

J	F	M	A	M	J	J	A	S	O	N	D

Tire Pressure Basics

Tires can lose 1 psi (pound per square inch) per month under normal conditions. Additionally, tires can lose 1 psi for every 10° F temperature drop.

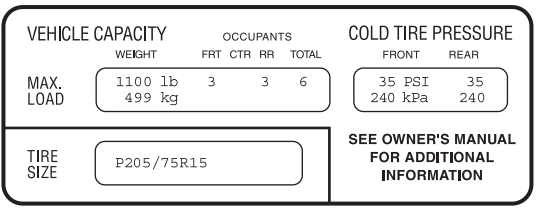


Just a look won't do it. One of these tires is actually 10 psi underinflated. Your eyes can deceive you, so rely on a good tire gauge for an accurate reading.

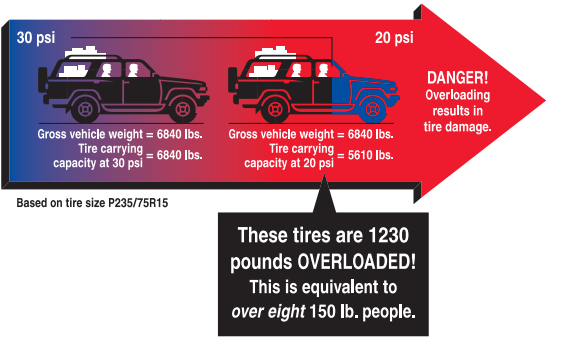
30 psi

20 psi

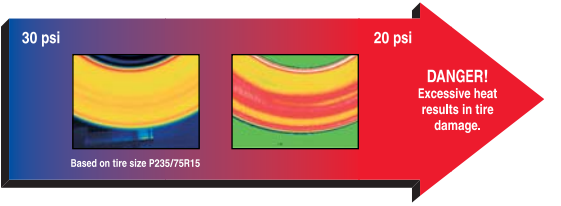
Look for the manufacturer's recommended air pressure listed on the sticker of your vehicle's door jamb or owner's manual. Example:



This chart shows you how underinflation can create an overload on tires. Check your air pressure every month to make sure it's up to specification, especially before long trips or carrying extra weight.



Lower pressure increases heat. Infrared photography of tires tested at high speed. Damaging heat increases as inflation pressure drops.



Air Pressure—Monthly Check

For accuracy, check your air pressure with a tire gauge when tires are cold. Driving heats up tires and makes the reading incorrect.

a) Remove tire valve cap.

b) Place the end of the tire gauge over valve.

c) Press the tire gauge straight and firmly until the scale extends.

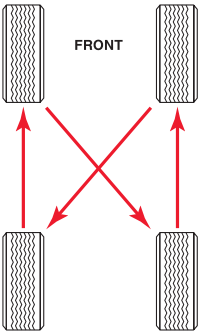
d) If needed, add air and recheck pressure with the tire gauge.

e) Replace valve caps.

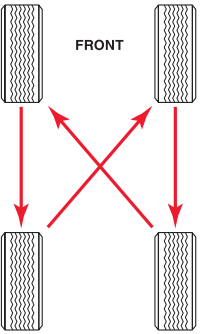
Tire Rotation

For maximum mileage, rotate your tires according to the vehicle manufacturer's recommendations (see your owner's manual), or if not provided, rotate every 5,000 miles using a rotation pattern such as below.

Rear and Four Wheel Drive Vehicles

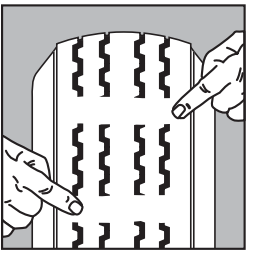


Front Wheel Drive Vehicles

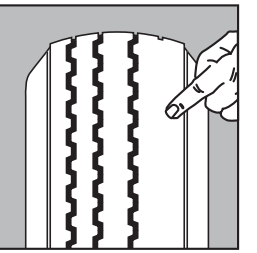


Tire Wear—Visual Check

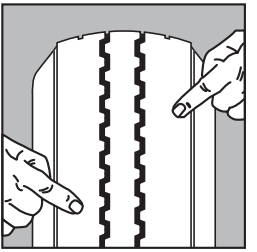
Check for obvious signs of wear.



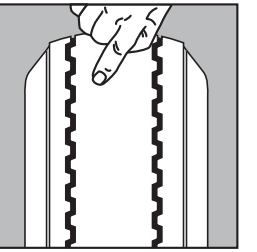
Exposed tread bars (replace)



Irregular shoulder wear (have inspected)



Shoulder wear (have inspected)



Center wear (have inspected)

Place a penny in the tire as shown. If you can see the top of Lincoln's head, the treads are worn and need replacing.

Important Maintenance & Safety Information

Any tire, no matter how well constructed, may fail in use as a result of punctures, impact damage, improper inflation, overloading, or other conditions resulting from use or misuse. Tire failure may create a risk of property damage, serious personal injury or death. To reduce the risk of tire failure, we strongly recommend you read and follow all safety information contained in this manual.

Bridgestone Firestone North American Tire, LLC recommends periodic inspection and removal of imbedded objects by a qualified service person. The use of PROSEAL or SEALIX tires still requires following the important safety information contained this manual.

Serious personal injury or death may result from a tire failure. Many tire failures are preceded by vibration, bumps, bulges or irregular wear. If a vibration occurs while driving your vehicle or you notice a bump, bulge or irregular wear, have your tires and vehicle evaluated by a qualified service person.

It is not often that a properly maintained tire will "blow out" while you are driving. More commonly, if air is lost, it will be gradual. If you do experience a blowout or sudden tire failure, the following information should be helpful:

When the failure occurs, you may hear a loud noise, feel a vibration, and/or the vehicle may pull toward the side of the failed tire. DO NOT ABRUPTLY BRAKE OR TURN. Slowly remove your foot from the accelerator, hold the steering wheel firmly, and steer to maintain your lane position. Once the vehicle has slowed, apply the brakes gently. Gradually pull over to the shoulder and come to a stop.

Tire Inflation

Always keep the vehicle manufacturer's recommended air pressure in all your tires, including the spare. This is an important requirement for tire safety and mileage. Your vehicle's tire placard or owner's manual will tell you the recommended cold air pressure. On some vehicles, the recommended front and rear tire pressures will be different. THE DEALER associate will be happy to point this out to you.

Driving on tirs with too little air pressure is dangerous. Your tires will get overheated. This can cause a sudden tire failure that could lead to serious personal injury or death.

Underinflation may also: 1. damage the tire leading to tire failure. 2. adversely affect vehicle handling. 3. reduce tire life. 4. increase fuel consumption.

Driving on tires with too much air can be dangerous. The tires are more likely to be cut, punctured, or broken by sudden impact. Serious personal injury or death could result. Consult your vehicle's tire placard for the recommended inflation and your owner's manual for other tire information.

Never inflate a tire unless it is secured to the vehicle or a tire mounting machine. Inflating an unsecured tire is dangerous. If it bursts, it could be hurled into the air with explosive force resulting in serious personal injury or death.

Tips For Safe Tire Inflation

- Check your tire air pressure, including your spare tire monthly and before long trips. Be sure to use an accurate pressure gauge.
- Check your air pressure when the tires are "cold." The tires are "cold" when your vehicle has been driven less than a mile at moderate speed or after being stopped for three or more hours.
- If you must add air when your tires are hot, add four pounds per square inch (4 psi)(28 kPa) above the recommended cold air pressure. Recheck the inflation pressure when the tire is cold.
- Never release air from a hot tire in order to reach the recommended cold tire pressure. Normal driving causes tires to run hotter and air pressure to increase. If you release air when your tires are hot, you may dangerously underinflate your tires.
- If your tires lose more than two pounds per square inch (2 psi)(14 kPa) per month, the tire, the valve, or wheel may be damaged. Consult THE DEALER location for an inspection.
- Check your spare tire. Consult your vehicle owner's manual for the correct inflation and use of a "temporary use" spare tire.
- Use valve caps to keep valve core cleats clear of debris and to help guard against air leakage.

Driving your vehicle in an overloaded condition is dangerous. Overloading causes excessive heat to build up in your tires. This can lead to sudden tire failure and serious personal injury or death while the tire is overloaded or at some later date.

Tips For Safe Loading

Consult your vehicle tire placard and owner's manual for the vehicle load limits, proper tire inflation, and special trailer towing instructions that apply to your vehicle and tires. Never exceed the maximum load rating stamped on tire sidewall of your tire or the maximum vehicle load rating, whichever is less. The maximum vehicle load rating (GVWR) is found on the certification label on the driver's door.

Tire Damage

Driving on damaged tires is dangerous. A damaged tire can suddenly fail causing serious personal injury or death. Have your tires regularly inspected by THE DEALER location for damage.

Tips For Spotting Damaged Tires

- After striking anything unusual in the roadway, ask THE DEALER location to demount the tire and inspect it for damage. A tire may not have visible signs of damage on the tire surface. Yet, the tire may suddenly fail without warning, a day, a week, or even months later.
- Inspect your tires for cuts, cracks, splits or bruises in the tread and sidewall areas. Bumps or bulges may indicate a separation within the tire body. Have your tire inspected by a qualified tire service person. It may be necessary to have it removed from the wheel for a complete inspection.
- Inspect your tires for adequate tread depth. When the tire is worn to the built-in indicators at 2/32nd inch (1.6 millimeters) or less tread groove depth, or the tire cord or fabric is exposed, the tire is dangerously worn and must be replaced immediately.
- Inspect your tires for uneven wear. Wear on one side of the tread or flat spots in the tread may indicate a problem with the tire or vehicle. Consult THE DEALER location.
- Inspect your rims also. If you have a bent or cracked rim, it must be replaced.

Tire Repairs

Driving on an improperly repaired tire is dangerous. An improper repair can cause further damage to the tire. It may suddenly fail, causing serious personal injury or death. To be safe, go to TIRE DEALER location for proper tire repairs.

Before having a tire repaired, tell THE DEALER location if you have used an aerosol fixer to inflate/ seal the tire. Aerosol fixers could contain a highly volatile gas. Always remove the valve core outdoors, away from sources of excessive heat, flame, or sparks and completely deflate the tire before removing it from the rim for repair.

- Never repair a tire with less than 2/32nd inch (1.6 millimeters) tread remaining. At this tread depth, the tire is worn out and must be replaced.
- Never repair a tire with a puncture larger than 1/4 inch (6.4 millimeters) in diameter. Such tires cannot be properly repaired and must be replaced.
- Repairs of all tires (radial and non-radial) must be of the plug and inside patch type. Using plugs alone on any type of tire is not a safe repair.
- Never repair a tire with a puncture or other damage outside the tread area. Such tires cannot be properly repaired and must be replaced.
- Any tire repair done without removing the tire from the rim is improper.
- Tubes, like tires, should be repaired only by a qualified tire service person.
- Never use a tube as a substitute for a proper repair.

A tire's speed rating is void if the tire is repaired, retreaded, damaged or abused, or otherwise altered from its original condition. Thereafter, it should be treated as a non-speed-rated tire.

Removing and Replacing Tires on Rims (Tire Mounting)

Always stand well clear of any tire mounting operation. This is especially important when the service operator inflates the tire. If the tire has been improperly mounted, it may burst with explosive force causing serious personal injury or death.

A new valve must be installed on the rim each time a worn out passenger or light truck tire is replaced.

Removing and replacing tires on rims can be dangerous. Attempting to mount tires with improper tools or procedures may result in a tire explosion causing serious personal injury or death. This is a job for THE DEALER location or other qualified tire service location only.

Serious personal injury or death can result from:

1. Failure to select the proper tire and rim. The tire must match the width and diameter requirements of the rim. For example, when mounting 16-inch diameter tires, use only 16-inch diameter rims. **When mounting truck type radial tires, use only wheels approved for radial tires.**
2. Failure to inspect both the tire and rim.The rim must be free of cracks, dents, chips, and rust.The tire must be free of bead damage, cuts, and punctures.
3. Failure to follow proper procedures. For proper mounting procedures, consult the **Care and Service of Automobile and Light Truck Tires** published by the Rubber Manufacturer's Association.
4. Exceeding the maximum bead seating pressure. The tire service person must never inflate a tire beyond 40 pounds per square inch (psi)(276kPa) to seat the beads. Be absolutely certain beads are fully seated before adjusting inflation pressure to the level recommended for vehicle operation.

Never put flammable substances in tire/rim assemblies at any time. Never put any flammable substance into a tire/ rim assembly and attempt to ignite to seat the beads.

Tire Mixing

Driving your vehicle with an improper mix of tires is dangerous. Your car's handling characteristics can be seriously affected. You could have an accident resulting in serious personal injury or death. Consult your vehicle owner's manual or THE DEALER location for the proper tire replacement.

Winter Tires

Winter driving presents special challenges for vehicle mobility. Use of winter tires, studs and chains, while improving traction performance in snow and ice, requires special care with regard to braking, cornering and speed. It is important to drive with care not only on snow and ice, but on dry and wet roads as well.

Braking & Cornering

For front wheel drive vehicles, vehicle control problems can be minimized by putting winter tires on all four wheel positions. This applies as well if the customer has selected studded winter tires.

Tire Speed Rating

When lower speed rated winter tires replace higher speed rated touring and high performance all-season radial tires, speed should be reduced accordingly. Follow recommendations in vehicle owner's manual for winter tires, studs and chains.

Consult THE DEALER for recommendations on stud usage and seasonal restrictions.

Temporary Use Spare Tires

Your car may be equipped with a "temporary use" spare tire. This spare may differ in size and construction from the other tires on your vehicle.

Check inflation pressure before use. See Tire Inflation Section in this manual. Failure to have proper inflation pressure when using your spare tire can result in serious personal injury or death.

Placing (mounting) your temporary use tire on a wheel which is not specifically designed for use with the temporary use tire or placing another type tire on your temporary use wheel can be dangerous. Your vehicle's handling characteristics can be seriously affected. You could have an accident resulting in serious personal injury or death. Consult your vehicle owner's manual for proper use of your "temporary use" spare tires.

High Speed

Driving at high speed is dangerous, and can cause a vehicle accident, including serious personal injury or death.

1. Regardless of the speed and handling capabilities of your car and its tires, a **loss of vehicle control** can result from exceeding the maximum speed:
   (a) allowed by law or
   (b) warranted by traffic, weather, vehicle, or road conditions. High-speed driving should be left to trained professionals operating under controlled conditions.
2. No tire, **regardless** of its design or speed rating, has unlimited capacity for speed, and a **sudden tire failure** can occur if its limits are exceeded.

(a) Non-speed-rated tires are built for ordinary passenger service, and should never be used for high-speed driving.
(b) Even "speed-rated" tires may not be safely driven at speeds exceeding their maximum actual speed capability.

3. LT (Light Truck) Designated Tires Only. It is not recommended that your truck be operated at speeds in excess of legal limits. However, if it is anticipated that sustained driving speeds in excess of 65 mph may be required, then:
   (a) At speeds from 66 mph through 75 mph (106km/h through 121 km/h), cold inflation pressures must be increased 10 psi (70 kPa) above the recommended pressure for the load being carried. Do not exceed the maximum inflation pressure of the wheel. **Sustained speeds from 66 mph through 75 mph are not permitted when the 10 psi (70kPa) increase would exceed the wheel's maximum inflation pressure.**
   (b) For sustained driving at speeds from 76 mph through 85 mph (122 km/h through 137 km/h), reduce axle load capacity by 10% in addition to increasing the cold inflation pressure by 10 psi (70kPa) above recommended pressures as listed in (a) above.

Note: Non-speed rated LT tires should not be operated at speeds in excess of 85 mph (137 km/h).

Tire Speed Ratings

Some tires bear a letter "speed rating" designation indicating the tire's design speed capability. This speed rating system is intended to allow you to compare the speed capabilities of tires.

When purchasing or replacing speed-rated tires, make sure to:
(a) use the rankings in the chart below to compare the speed ratings of all the tires, and
(b) follow the vehicle manufacturer's recommendations, if any, concerning the use of speed-rated tires.

To avoid reducing the speed capability of the vehicle, replace a speed-rated tire only with another tire having at least the same speed rating. Remember, it's the "top speed" of the "slowest" tire on the car which cannot be exceeded without risk of tire failure.

The letter symbols and corresponding design speeds are:

Speed-Rating Symbol	Speed Category*
L	Up to 75 mph (120 km/h)
M	Up to 81 mph (130 km/h)
N	Up to 87 mph (140 km/h)
P	Up to 94 mph (150 km/h)
Q	Up to 99 mph (160 km/h)
S	Up to 112 mph (180 km/h)
T	Up to 118 mph (190 km/h)
U	Up to 124 mph (200 km/h)
H	Up to 130 mph (210 km/h)
V (with service description)	Up to 149 mph (240 km/h)
V (no service description)	Over 130 mph (210 km/h)**
W	Up to 168 mph (270 kmh)***
Y	Up to 186 mph (299 kmh)***
(Y)	Over 186 mph (300 kmh)****
Z (no service description)	Over 149 mph (240 km/h)**

* In laboratory tests that relate directly to highway speeds. Reminder: Actual tire speed and performance capability depends on factors such as inflation pressure, load, tire condition, wear and driving conditions.

** Although no upper limit speed is specified here, the indicated tires nonetheless have limited rated speed capability. Call 1-800-367-3872 for a referral for more technical information.

*** Any tire with a speed capability above 149 mph (240 kph) can, at the tire manufacturer's option, include a "Z" in the size designation (P275/40ZR17). If a service description IS NOT included, the tire manufacturer must be consulted for the maximum speed capability (P275/40ZR17-speed capability is greater than 149 mph). If a service description is included with the size description, the speed capability is limited by the speed symbol in the service description (example—P275/40ZR17 93W =maximum speed 168 mph).

**** For tires having a maximum speed capability above 186 mph (300km/h), a "Z" must appear in the size designation and the Service Description should be marked within brackets (P275/40ZR17 93(Y).

These speed ratings are based on laboratory tests under specific, controlled conditions. While these tests relate to performance on the road under those conditions, remember that real-life driving is rarely identical to any test conditions. Your tire's actual speed capability may be less than its rated speed, since it is affected by factors such as inflation pressure, load, prior alteration or damage, driving conditions, alignment, wear, vehicle condition, and the duration for which high speed is sustained.

A tire's speed rating becomes void if the tire is repaired, retreaded, damaged or abused, or otherwise altered from its original condition. Thereafter, it should be treated as a non-speed-rated tire.

The tire's speed rating designation appears on the tire sidewall with the tire size. Examples:

P215/65R15 88H P225/50VR16 91V 185/70SR13

In these examples, the "H," "V" and "S" respectively, are the speed-ratings ("R" indicates that each of the example tire sizes are radials). The "88H" and "91V" in the first two examples are called "service descriptions."

Tire Spinning

Spinning a tire to remove a vehicle stuck in mud, ice, snow, or wet grass can be dangerous. A tire spinning at a speedometer reading above 35 miles per hour (55 km/h) can in a matter of seconds reach a speed capable of disintegrating a tire with explosive force. Under some conditions, a tire may be spinning at a speed twice that shown on the speedometer. This could cause serious personal injury or death to a bystander or passenger and extensive vehicle damage. Never spin a tire above a speedometer reading of 35 mph (55 km/h).

Spin balancing a tire on the vehicle; at speeds exceeding a vehicle speedometer reading of 35 mph (55 km/h) [70 mph (115 km/h) if the tire is being balanced off of the vehicle or if the vehicle is equipped with a limited slip differential]; can be dangerous. The tire may fail with explosive force causing serious personal injury or death. Only trained personnel should spin balance tires. You should stand well away from the work area when tires are being spin balanced either on or off the vehicle.

Tire Damage, Inspection and Service Life

Evaluation and maintenance of your tires is important to their performance and the service they provide to you. Over time and/or through use, the condition of a tire can change from exposure to everyday road conditions, the environment, damaging events such as punctures, and other external factors.

Driving on damaged tires is dangerous. A damaged tire can suddenly fail causing serious personal injury or death. Have your tires regularly inspected by a qualified tire service professional.

You should visually inspect your tires on a regular basis throughout their life, and you should have your tires periodically evaluated by a qualified service person when your vehicle is serviced such as routine maintenance intervals, oil changes, and tire rotations. In particular, note the following tips for spotting tire damage:

- After striking anything unusual in the roadway, have a qualified tire service professional demount the tire and inspect it for damage. A tire may not have visible signs of damage on the tire surface. Yet, the tire may suddenly fail without warning, a day, a week, or even months later.
- Inspect your tires for cuts, cracks, splits or bruises in the tread and sidewall areas. Bumps or bulges may indicate a separation within the tire body. Have your tire inspected by a qualified tire service professional. It may be necessary to have it removed from the wheel for a complete inspection.
- Inspect your tires for adequate tread depth. When the tire is worn to the built-in indicators at 2/32nd inch (1.6 millimeters) or less tread groove depth, or the tire cord or fabric is exposed, the tire is dangerously worn and must be replaced immediately.
- Inspect your tires for uneven wear. Wear on one side of the tread or flat spots in the tread may indicate a problem with the tire or vehicle. Consult with a qualified tire service professional.
- Inspect your rims also. If you have a bent or cracked rim, it must be replaced.
- Don't forget to check the spare tire.

Make sure your tires, including the spare tire, continue to be regularly inspected after 5 years of service to determine if they can continue in service. Even when your tires appear to be usable from their external appearance or the tread depth may have not reached the minimum wear out depth, it is recommended that all tires (including spare tires and "temporary use" spares) more than 10 years old be replaced with new tires.

The 10 year period after the date of production is not an indicator of actual service life for any individual tire. Some tires will need to be replaced before 10 years due to conditions such as punctures, impact damage, improper inflation, overloading, tread wear or other conditions involving use or misuse of the tire. If a tire is worn out or otherwise unserviceable from damage or conditions of use, it should be replaced regardless of when it was produced or placed in service.

The vehicle manufacturer may consider vehicle performance characteristics when making tire replacement recommenda-

tions. Consult your vehicle owner's manual for any information regarding tire service life and replacement and follow the recommendations applicable to your vehicle.

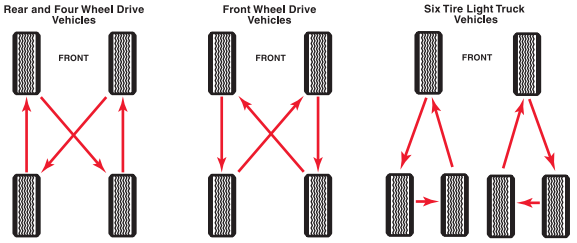
Tire Manufacture Date

The tire manufacture date is determined by the last 3 or 4 digits of the DOT serial number (4 digit shown below). For the 1990 – 2000 decade some tires were marked with a triangle pointing to the last digit of the DOT serial number. Prior to 2000, the year code of the manufacture date was represented by 1 digit instead of 2 (i.e. 189 would represent the 18th week of 1999).

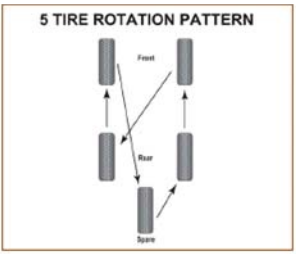
Radial Tire Rotation

The purpose of tire rotation is to minimize irregular or uneven wear caused by maintaining a tire in one rotation direction and one position over an extended period. Rotate tires as recommended by the vehicle manufacturer or every 5,000 miles. Individual tire pressures must be checked after rotation and adjusted to the vehicle manufacturer's recommendation for the tire's new location on the vehicle. Vehicle alignment should be checked if irregular wear is evident.

For vehicles with a "temporary use" spare tire, follow the vehicle manufacturer's recommended pattern for rotation, or, if not provided, the following may be used:



If your spare is the same size, load rating, and type of tire as your road tires, it should be included in the tire rotation process. For vehicles with a "full-size" spare, the following rotation patterns may be used:



1. Rear and Four Wheel Drive Vehicles
2. Front Wheel Drive Vehicles

Note:

- Never include a “temporary use” spare tire in the rotation.
- Tires with directional tread patterns must be rotated so the direction of revolution does not change; this may require demounting/mounting the tires to accomplish.
- Some vehicles may have different size tires/wheels on front and rear which would restrict rotation. Always check and follow the vehicle manufacturer's rotation recommendation.
- To use a full-size spare in the rotation pattern on vehicles with dual rear wheels, see your vehicle owner's manual for the recommended procedures or consult the vehicle manufacturer.

Your Spare Tire

Consult your vehicle owner’s manual for proper application of your spare tire. Your car may be equipped with a “temporary use” spare tire; this spare may differ in size and construction from the other tires on your vehicle.

Safety Warning

Check inflation pressure before use. See Tire Inflation section in this manual. Failure to have proper inflation pressure when using your spare tire can result in serious personal injury or death.

Safety Warning

Mounting a “temporary use” tire on a wheel which is not specifically designed for it, or placing another type tire on a wheel designated for temporary use can be dangerous. Your vehicle’s handling characteristics can be seriously affected. You could have an accident resulting in serious personal injury or death. Consult your vehicle owner’s manual for proper application of your “temporary use” spare tire.

The spare tire in your vehicle is intended to be used as a spare when needed. The spare tire carrier is not intended to be used for long term storage, except for “temporary use” tires. If your spare is the same size, load rating, and type of tire as your road tires, it should be included in the tire rota-

tion process; see the section Radial Tire Rotation for more information.

The spare should be included in regular tire inspections and inflation pressure checks. In addition, it should be replaced ten (10) years after date of manufacture, regardless of condition or tread depth. For more information, see the section Tire damage, Inspection and duration.

Tire Storage

Tires should be stored indoors in a cool, dry place where water cannot collect inside the tires. The tires should be placed away from electric generators/motors and sources of heat such as hot pipes. Storage surfaces should be clean and free of grease, gasoline or other substances which can deteriorate the rubber.

Improper storage can damage your tires in ways that may not be visible and can lead to a failure resulting in serious personal injury or death.

The spare tire in your vehicle is intended to be used as a spare when needed. The spare tire carrier is not intended to be used for long term storage, except for "temporary use" tires. For more information, see the sections Your Spare Tire and Radial Tire Rotation.

Tire Service Customer Satisfaction

Normal tire maintenance and warranty services are available at locations across the U.S.A. and Canada. For more information, please call the Technical Service Department.

U.S.A.: (1-800-356-4644) or Canada: (1-800-267-1318).

Additional information on the care and service of automobile tires is available by writing to the:

Rubber Manufacturers Association
1400 K Street, N.W.
Washington, DC 20005-2403

Tire Registration

Registration of your tires is an important safety precaution since it allows the manufacturer to notify you in the event of a recall. When you purchase replacement tires at an independent tire DEALER, you will be provided with a registration card on which the tire serial numbers have been recorded. Be sure to fill in your name and address on this card and mail it promptly. You need not register tires which come as original equipment on new vehicles, as the vehicle and tire manufacturers handle that for you.

Maintenance Record

Mile Check	Actual Mileage (Beginning Mileage)	Date	Store Approval	Rotation	Balance	Steering and Suspension	Alignment
5,000							
10,000							
15,000							
20,000							
25,000							
30,000							
35,000							
40,000							
45,000							
50,000							
55,000							
60,000							
65,000							
70,000							
75,000							
80,000							

Vehicle Manufacturer's Recommended:

Tire Inflation Pressure: Front	Rear	Lug Nut Torque Specifications
_____ p.s.i.	_____ p.s.i.	_____ ft.lbs.