



Tire Care for High-Performance Tires

A Performance-Minded Guide for Porsche Drivers

Tire Basics • Inflation • Rotation • Alignment

How to select and care for tires → top performance and longer treadwear

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PART 1

Reading a Performance Tire

Decode the Sidewall

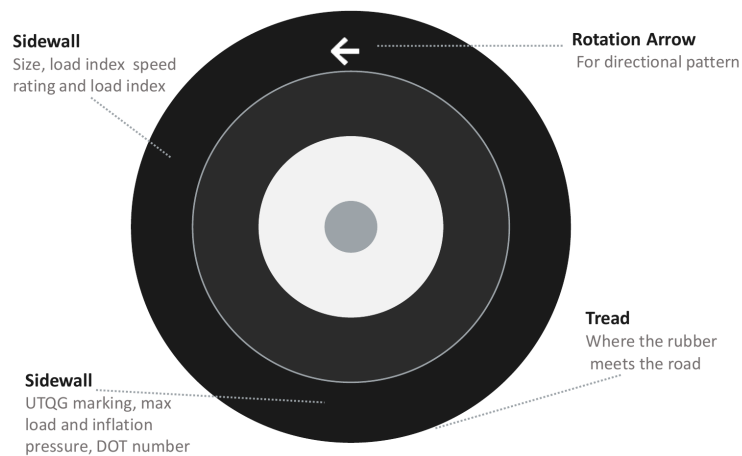
Sidewall codes carry extra meaning on high-performance fitments.

265/35R20 (99Y)

265	Width in millimeters
35	Aspect ratio Height as a percentage of width
ZR	R - radial tire
20	Rim diameter in inches
99Y	99 - Load index & Y - speed rating

Directional tires: Mount so the tread arrow points forward.

Parts of the Tire



Where to find the codes on a tire

Sidewall

Size, load index and speed rating

Rotation arrow

For directional pattern

Sidewall

UTQG marking, max load and inflation pressure, DOT number

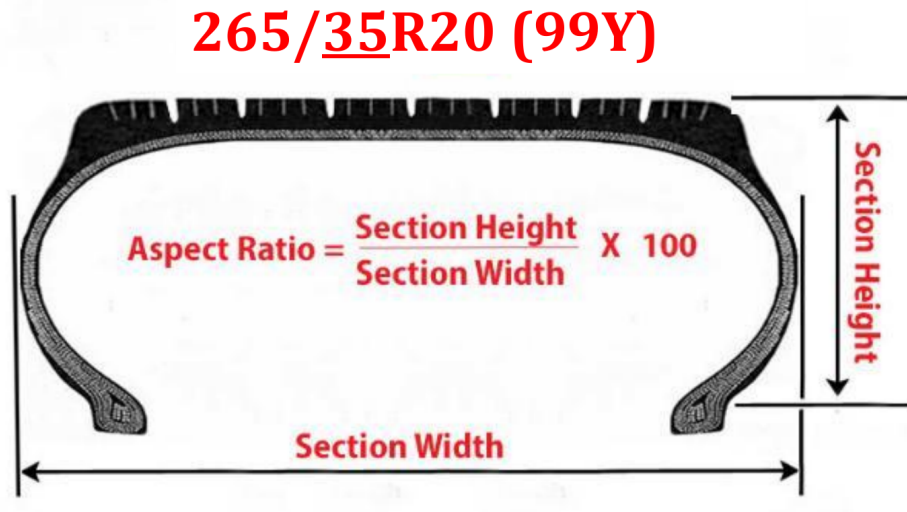
Tread

Where the rubber meets the road



What the Aspect Ratio Means

Aspect ratio compares the height of the sidewall (section height) with the width of the tire (section width). In 265/35R20 (99Y), the **35** means the sidewall is 35% as tall as the tire is wide.

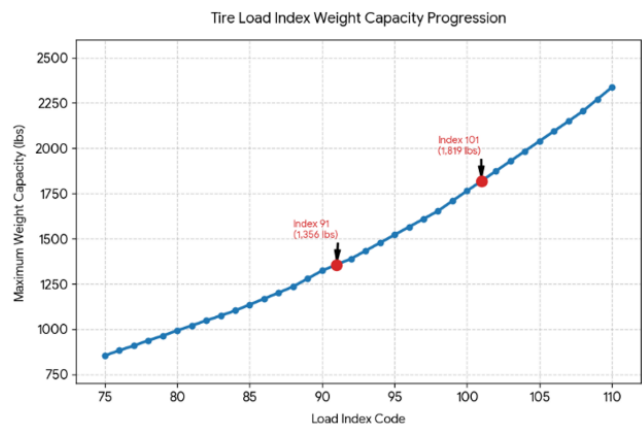


What Is the Load Index?

The load index is a number on the sidewall, just after the rim size, that tells you the maximum weight the tire can carry. In the example below, **91** is the load index. Capacity climbs steadily as the index goes up: index 91 carries 1,356 lbs and index 101 carries 1,819 lbs.



Reading a tire size: the load index sits just before the speed-rating letter



Tire load index weight capacity progression



Tire Speed Ratings

The letter after the load index caps how fast a tire is built to safely run.

Rating	Max speed (mph)	Max speed (km/h)	Category
Q	99	160	Touring and sport
R	106	170	Touring and sport
S	112	180	Touring and sport
T	118	190	Touring and sport
U	124	200	Touring and sport
H	130	210	Touring and sport
V	149	240	High performance
W	168	270	High performance
Y	186	300	High performance
(Y)	186+	300+	High performance
Z*	149+	240+	High performance

*Z is a legacy marking for tires rated above 149 mph (240 km/h).

Never fit a replacement tire with a lower speed rating than your Porsche's factory placard specifies. It can affect high-speed stability, warranty coverage, and insurance validity, even if you never approach the rated speed.



Uniform Tire Quality Grading (UTQG)

A federally mandated label molded into the sidewall — useful?



400

Treadwear

A comparative index, not a mileage promise. A 400 should outlast a 200 on **the same maker's test course** — but grades aren't comparable across brands.

AA

Traction

Straight-line wet-braking grip, graded AA (best), A, B, or C. It measures **wet stopping distance only** — not cornering grip, dry grip, or winter traction.

B

Temperature

Resistance to heat buildup at sustained speed, graded A (best), B, or C. A is the grade required to handle extended highway or track speeds safely.

Grades apply to passenger and light-truck tires only — they don't cover winter, off-road, or track-only tires.

Decoding the DOT Number

A serial code molded into the sidewall that tells you who built the tire — and how old it is.

DOT 7Z EF 1A2B 3824 (3 digits pre-2000)

DOT

Department of Transportation

Maker certifies the tire meets U.S. safety standards

7Z

Plant code

Two characters identifying where the tire was built

EF

Tire size code

Two characters identifying the tire size and mold

1A2B

Manufacturer's option code

Up to four characters for brand, tread design, or tracking

3824

Date of manufacture

Week + year: the 38th week of 2024



READING THE DATE

3824

= week 38 of 2024

Why the date matters. Rubber hardens with age even when the tread looks fine, costing grip on a performance tire. Many automakers and tire makers advise replacing tires at about six years old, never more than 10 years regardless of tread depth.

Check both sides. The full DOT code — including the date — is required on only one sidewall. The other side may show a partial code.

PART 2

Why Performance Tires Need Extra Care

Porsche drivers expect high-performance levels out of their cars AND their tires.

Higher Cornering Loads

- Sports car drivers demand more from their tires
- Vigorous driving pushes tires to their limits

Faster and Less Even Wear

- Aggressive compounds and stiffer sidewalls require attentive care
- Inflation, alignment, and tire rotation all matter more

Track Days

- Track days create even greater demands on cars and tires
- Track speeds and tire loading concerns require special attention



PART 3

Tire Inflation

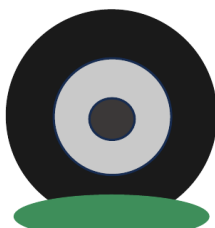
Everyday Driving

Get the daily-driver basics right before you think about track pressures.



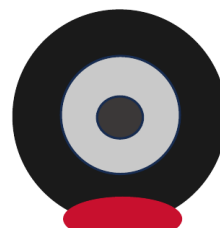
Underinflated

Edges wear fast, more drag, plus increased heat and higher rolling resistance, which increases fuel usage



Correctly Inflated

Even wear, best grip



Overinflated

Center wears fast, harsh ride and reduces tread contact area

How to Check It Right

Use the “door-jamb” placard recommendation

The correct PSI is on the driver-door sticker — not the tire’s sidewall max.

Check pressures with a high-quality tire gauge

Cheap gauges may not be accurate.

Check tires cold

Measure before driving; friction heat results in a higher inflation pressure reading.



Tire and loading information placard, driver-door jamb



TRA/ETRTO Load-Inflation Chart

Example tire size: 225/55R17

225/55R17 — Metric (ISO), Standard Load — Load Index 97								
PSI	26	29	32	35				36
Load (lbs)	1232	1345	1455	1563				1609

225/55R17 — Metric (ISO), Extra Load — Load Index 101								
PSI	26	29	32	35	36	38	41	42
Load (lbs)	1239	1351	1462	1570	1607	1678	1781	1819

The last column of each table (in red) is the tire's maximum load at its maximum pressure.

Tire Pressure Monitoring System (TPMS)

A short history of TPMS and what it does.

1986

Porsche 959 becomes the first passenger car with tire pressure monitoring

2000

Firestone/Ford tire-failure rollovers prompt Congress to pass the TREAD Act

2007

TPMS required on all new U.S. passenger vehicles; phase-in began in 2005



TPMS warning light

Early warning. Sensors at each wheel watch tire pressure and light a dashboard warning when a tire runs about **25% or more under the recommended level** — catching slow leaks early.

Safety net, not a gauge. Helps protect handling, braking, tire life and fuel economy. But it warns only after pressure has dropped a lot, so still check with a gauge when tires are cold.



Nitrogen vs. Air for Tire Inflation

Nitrogen has modest benefits — but plain air works well for most street driving.

Nitrogen Inflation

Dry, oxygen-reduced fill

PROS

- Loses pressure more slowly than air in independent tests
- Dry gas: pressure rises more predictably as tires heat up
- May reduce inner-liner oxidation and wheel corrosion

CONS

- Fill costs extra and isn't available everywhere
- Topping off with air dilutes the benefit
- Gains are small — monthly pressure checks still needed

Air Inflation

Plain compressed air (already ~78% nitrogen)

PROS

- Free or cheap at nearly any gas station or shop
- Easy to top off anywhere, any time
- Fine for daily driving and spirited street use

CONS

- Leaks down slightly faster, so check pressure monthly
- Compressed air can carry moisture, so pressure swings more with heat
- Oxygen slowly oxidizes the inner liner over time (minor)

Bottom line: correct pressure, checked monthly, matters far more than the type of gas — nitrogen is optional.

Ambient Temperature & Inflation Pressure

Tire inflation pressure is affected by the ambient temperature.

THE RULE OF THUMB

≈1 PSI

per 10°F change in ambient air temperature

This is separate from the heat that driving adds to a tire. Always read pressure cold — before the sun, the road, or a drive has warmed it — then adjust for the season, not just the moment.

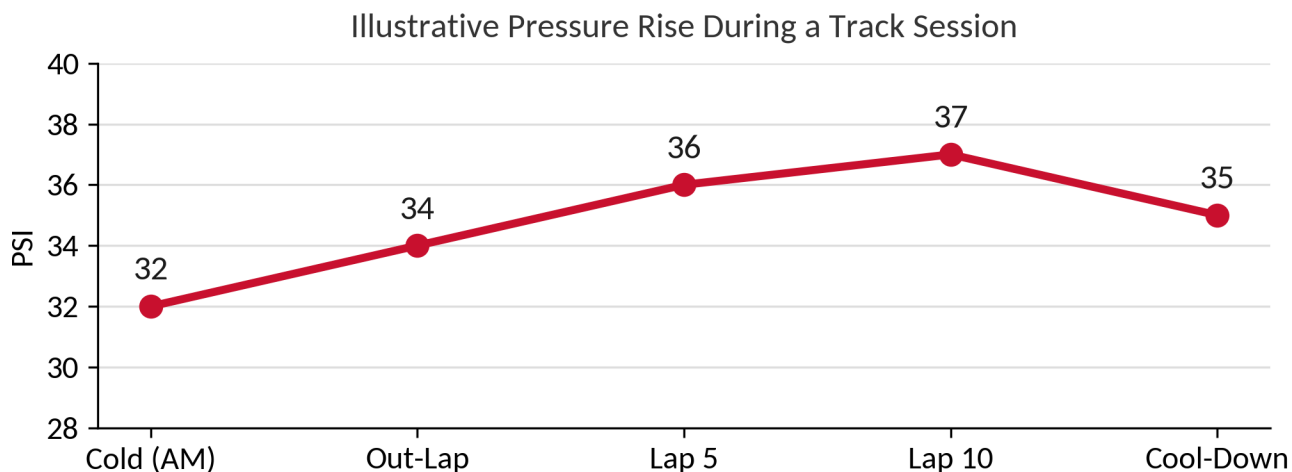
Cold snap. Overnight and seasonal cold pulls pressure down roughly 1 PSI per 10°F drop. A sharp cold front can leave tires several PSI low by the next morning — with no leak involved.

Heat wave. Rising ambient temperature pushes cold pressure back up the same way. Set pressures on a mild day, then recheck after any big seasonal swing, hot or cold.



Tire Inflation — Spirited & Track Driving

Heat builds pressure fast once you start pushing.



Actual rise varies by tire, session length, and conditions — verify hot and cold with your own gauge.

Set cold from target hot. Many drivers dial in cold pressure based on the hot pressure they want after a few hard laps — check your tire maker's target range.

Staggered? Check both ends. Front and rear tires often need different pressures on staggered setups — treat each axle separately.



Metal Valve Caps vs. Plastic Valve Caps

Always use a quality, metal valve cap. Metal caps have a rubber gasket in the top that provides an additional seal if the valve core fails.



Metal — recommended



Plastic — avoid



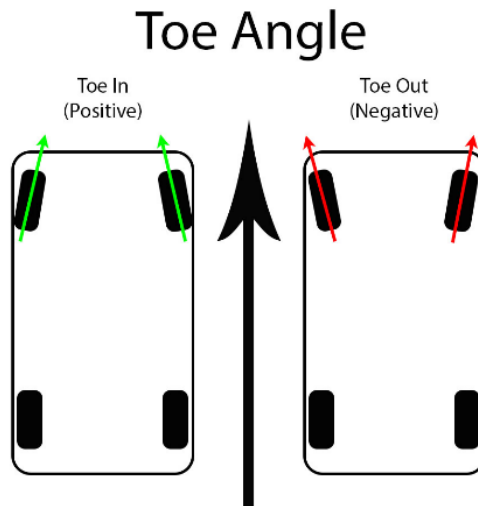
PART 4

Wheel Alignment

Three angles determine how your tires meet the road — **Toe**, **Camber** and **Caster**.

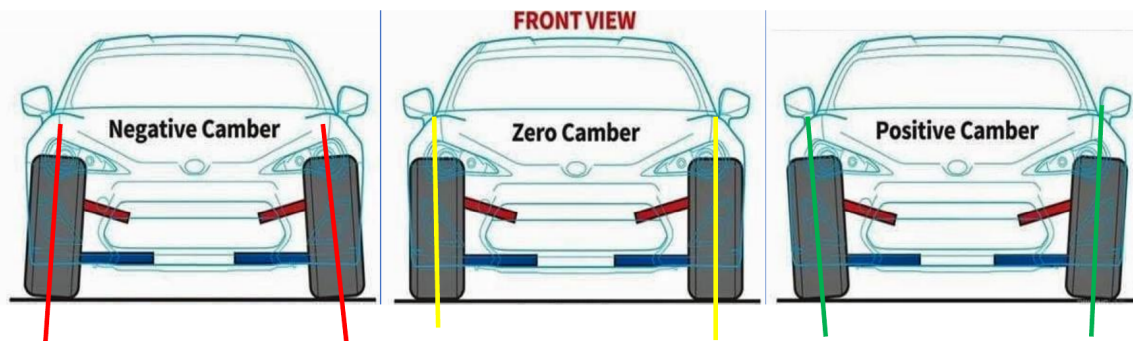
#1 — Toe

How much the tires point inward or outward from straight ahead, viewed from above. Affects tire scrub and stability.



#2 — Camber

Camber is the inward or outward tilt of the tire, seen from the front. Negative camber (top tilted in) boosts cornering grip.





Camber — Street vs. Track Setup

Two different goals call for two different specs.

Street Alignment

WHAT TO EXPECT

- Matches manufacturer spec
- Even tread wear over the tire's life
- Comfortable, predictable daily driving

Track-Oriented Alignment

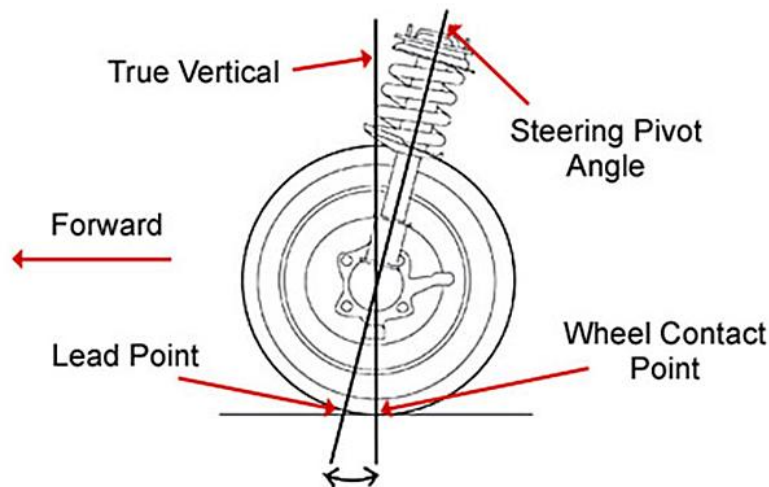
WHAT TO EXPECT

- More negative camber for improved cornering grip
- Faster inner-edge wear is normal
- Often needs camber shims or adjustable arms

#3 — Caster

The steering-axis tilt viewed from the side. Higher caster improves steering feel, stability at speed and “return-to-center.”

Too little caster may cause instability; too much caster may create high-speed wobble, which may lead to irregular tire wear.



Every car has a factory recommended set of wheel alignment specs.



PART 5

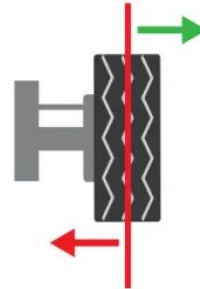
Tire and Wheel Balancing

Static (Bubble) vs. Dynamic (Spin)



STATIC BALANCE

- Corrects weight in **one plane** (top-to-bottom)
- Fixes vertical wheel bounce, known as **tramp**
- Uses a single weight placed in the center or one side of the rim
- Best for **narrow wheels**, motorcycles, trailers, and low-speed driving



DYNAMIC BALANCE

- Corrects weight in **two planes** at once (inner and outer rim)
- Fixes both vertical bounce and **side-to-side wobble**
- Uses a motorized spin balancer to measure centrifugal forces while the wheel turns
- Standard for **modern cars**, trucks, and wider alloy wheels at high speeds

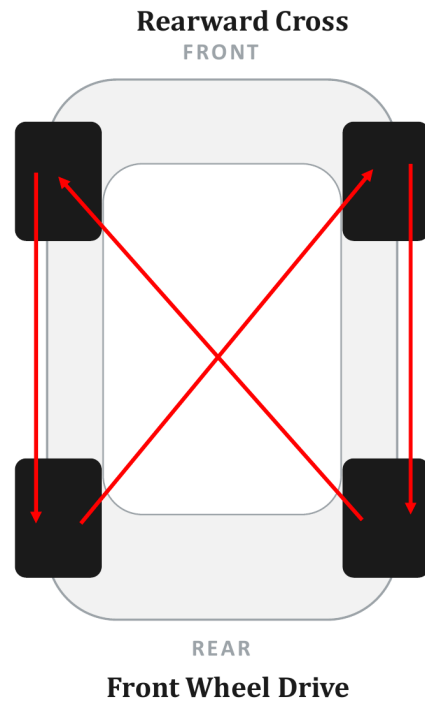
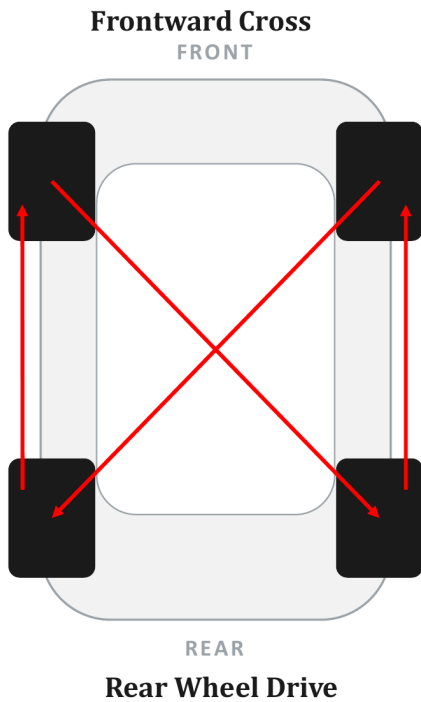


PART 6

Tire Rotation

Rear wheel drive and front wheel drive

For vehicles where all tires are the same size and none are directional.

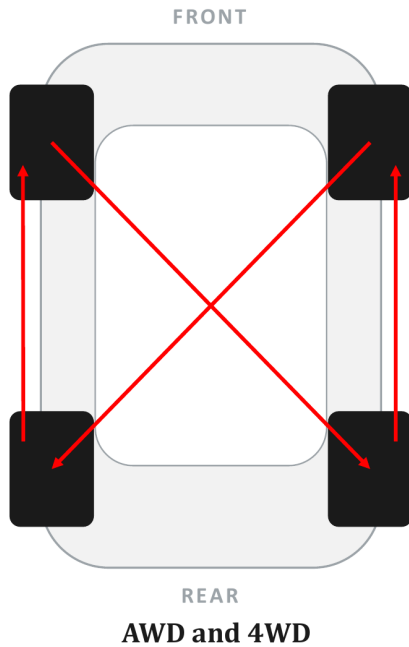




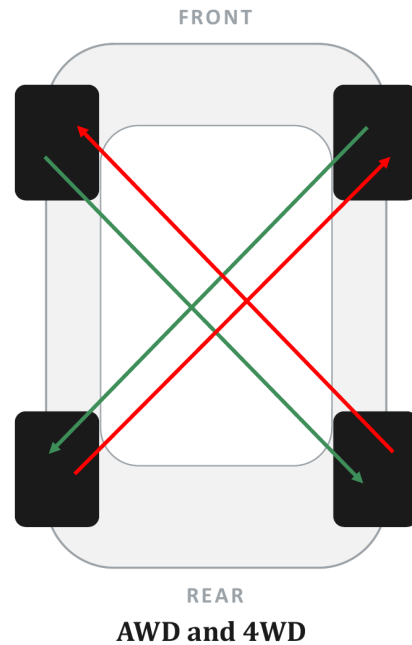
All wheel drive and 4-wheel drive

For vehicles where all tires are the same size and none are directional.

Rearward Cross (Most Common)

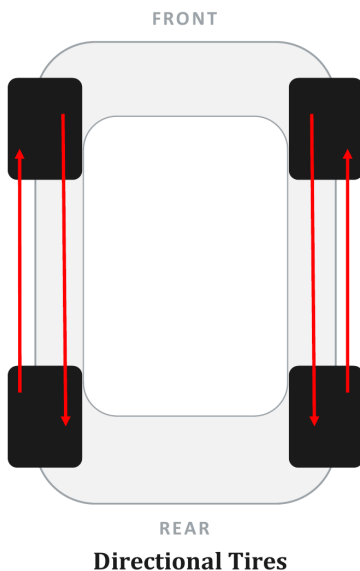


X – Pattern or Criss-Cross

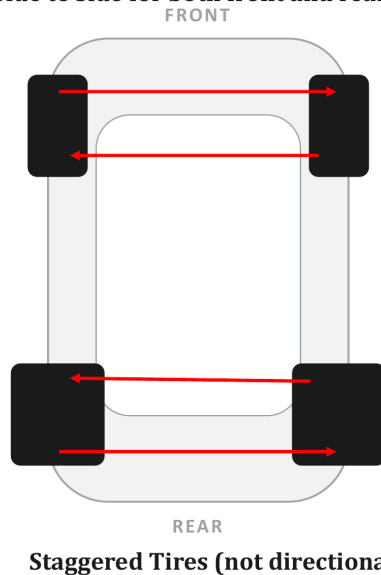


Different sizes front and rear, and directional tires

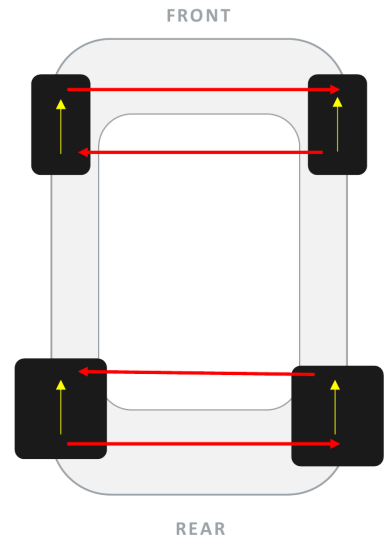
Front to back and back to front



Side to side for both front and rear



Rotation requires dismounting all tires



Staggered Directional Tire Fitment

Wider rear tires can't move to the front — rotation only possible by dismounting and remounting all 4 tires



PART 7

Tire Condition Warning Signs

See any of these? Something is wrong...



Cupping / Scalloping

Wavy wear patches often point to worn shocks or struts, worn wheel bearings or an alignment issue.



Heat Blistering

Bubbles or soft spots from excess heat, often tied to underinflation.



Feathering

Sharp edges on tread blocks usually trace back to incorrect toe.



Chunking

Tread tearing away — a sign of pushing a compound past its limit.



Shoulder Wear

Common with excessive negative or positive camber or heavy track use.



Sidewall Bulge or Cut

Curb strikes or manufacturing defect.

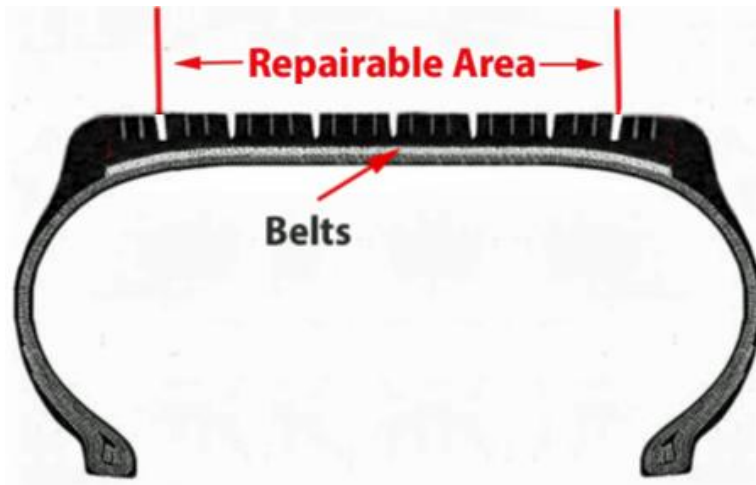


PART 8

Repairing a Nail Hole in a Tire

A proper repair is made from inside the tire — and only within the tread's repairable zone.

Where a Repair Can Be Made



- Center tread — repairable
- Shoulder — do not repair
- Sidewall — never repair

Maximum puncture: ¼ in (6 mm). **Multiple repairs must not overlap.**

How a Proper Repair Is Done

1

Dismount and inspect

Remove the tire and check the inside for hidden damage.

2

Remove the nail and ream

Clear the injury channel and confirm it is in the repairable zone.

3

Prep the inner liner

Buff and clean the inside around the hole so the patch bonds.

4

Fill and seal

Pull a combination plug-patch in from inside: the plug fills the hole, the patch seals the liner.

5

Remount, balance, check

Reinstall, balance, set pressure and check for leaks.

Note: A plug or sealant alone is only temporary. Some tire makers restrict repairs on high-speed-rated tires — check their policy.



PART 9

Tire Care Summary

Five habits worth adding to your tire care routine.



Check inflation pressures regularly



Have alignment checked after new tires are installed, any curb impact or when irregular tread wear is apparent



Rotate tires to different wheel positions every 5000 miles to even out tire wear



Inspect tires (tread depth and irregular wear) every time you wash your car and before taking long trips