Hoosier®
RACING TIRE

Tire Care Tips

R3S04 & A3S04

"TIRES DESIGNED FOR CHAMPIONS"®

www.hoosiertire.com
65465 U.S. 31 • Lakeville, IN, 46536 • (574) 784-3152 • Fax (574) 784-2385

Hoosier® RACING TIRE

The R3S04 and A3S04 have been developed to improve wear and consistency without any sacrifice of performance. In many cases, the performance will even improve over previous models. The '04 tire models are an evolution in the continuing effort to provide the best tire for racers.

TIRE BREAK-IN PROCEDURE

Proper break-in will not affect initial performance but will increase the competitive life of the tire.

The procedure can be broken down into phases.
1st phase: The initial run
2nd phase: The length of the time the tire is allowed to "cure"

The Initial Run

The first laps for the tire are critical for setting up the durability and competitive life. The first session should consist of 10-15 minutes of running. The early part of the session should be run at an easy pace, with the speed gradually increased until the end of the session. The final lap should be run at the fastest possible speed. The intent is to achieve maximum tire temp on the last lap. At this point the car must be brought in and the tires allowed to cool at a normal rate. Optimally, the tires should be removed or have the car jacked up during this cooling.

During this process, the inflation pressure should be 3-5 psi higher than you would normally use. The best progression would have the driver taking 3-5 laps to accomplish this break-in. Each lap should be approximately 2-4 seconds a lap faster than the previous lap. The goal is to have the tire temp as high as possible on the last lap without "shocking" the tire during the warm up laps. In essence, no wheelspin, late braking or sliding. The last lap needs to be at, or very close to, the maximum possible temperature.

"Cure" Time

After completing the initial run phase, the length of time the tire is allowed to set is possibly more important. The barest minimum for this process to be beneficial is 24 hours. (Not "the next day.") Any less than this is a waste of time. The best situation would allow a week before using the tire again.

Proper tire management is a difficult process. To accomplish this almost always requires a second set of wheels. The payoff is greatly increased competitive tire life.

Following the recommended break-in procedure will require a lot of planning to make it work. The benefits to doing it right include greatly increased tire life as well as more consistent performance and durability under stress. Please make an effort to educate your team on the importance of this. It can save you a lot of money.

TIRE TEMPERATURE RECOMMENDATIONS

For best performance the expected temperature range will vary from track to track. Generally, optimum traction will be generated when the pit lane temps show 180-200 degrees for R3S04 tires. The A3S04 tire typically runs best at 120-140 degrees.
Note: Use of static infra-red pyrometers is an inaccurate method to monitor tire temps.

CHASSIS SETUP RECOMMENDATIONS

For optimum performance the Hoosier P-Metric radial tires require about 3 degrees of camber. There will be a trade off in maximum performance to maximize wear. Generally, 1/2 degree less than optimum will result in the best compromise for wear and speed. Less than 2.5 degrees can result in excessive wear on the shoulder junction.

The Hoosier tires typically offer better performance with spring/shock rates higher than previous brands you may have run.

"TIRES DESIGNED FOR CHAMPIONS"®

Hoosier® RACING TIRE

TIRE PRESSURE RECOMMENDATIONS

Hoosier tires typically require higher pressures than other brands. Autocross applications require higher ranges of pressure; road racing tends toward the lower end of the recommended pressures.

Reference the following chart for suggested pressures:

Vehicle Size	Recommended Hot Pressure	Cold Pressure
1800-2200 lbs.	39-42	30-36
2200-2600 lbs.	40-43	31-37
2600-3000 lbs.	42-46	32-37
over 3000 lbs.	43-48	32-38

Higher pressures will improve the performance capability but will require a more sensitive feel to take advantage of the increase.

One characteristic of the Hoosier P-Metric radial tires is the tendency to "skate" initially (when inflation pressures are correct). It is important to resist lowering the pressure to eliminate this feeling. Dropping the pressure may improve the "feel" of the tire however it will also lower the performance and increase the wear on the tire, particularly on the outside tread edge.

The above chart is a general recommendation that is intended for a standard configuration vehicle (i.e. front engine, rear wheel drive). Factors that can radically affect your pressure set up would include front wheel drive, independent rear suspension, rear-engine, McPherson vs. control arm front suspension.

Front Wheel Drive

Vehicles configured with FWD are probably the most difficult application for a tire setup. The combination of steering, braking and accelerating on the front tires, combined with higher corner weights for the front positions produce a harsh environment for the tire. These vehicles will typically have a strut type of suspension that limits camber gain. All these factors result in conditions that require the tires to do more work than a simple chart for pressures can accommodate.

In severe cases front tire pressures for FWD vehicles can run in the 48-52 psi (hot). In cases where the tire size is limited to a relatively small tire, the required pressure can run even higher. The front to rear pressure differential on FWD cars can have extreme ranges of inflation, depending on the driver preference, suspension tuning, and track configuration.

Independent rear suspension

With IRS and proper geometry up front, tire pressures can be reduced from the recommendations listed above. When there is adequate camber gain and good roll control, the Hoosier radial tire will perform well at the reduced air pressure. This results in a bigger "sweet spot" and easier control at the limit.

When tuning at reduced pressures use the following formula to determine the minimum safe pressure: Divide the total vehicle weight, including fuel and driver, by 100 to arrive at the minimum safe pressure. Example: Your car weights 2750 lbs. as raced. The minimum safe (cold) tire pressure is 27.5 psi.

Extreme care should be taken when tuning at reduced pressure. Tire damage can occur that is not visible to external inspection.

Vehicles equipped with independent rear suspension (IRS) have a distinct advantage over non-IRS cars when using radial tires. This is true for two reasons. First, it is possible to setup some amount of static negative camber on IRS suspension, if needed. Second, the IRS geometry can provide the proper camber gain to achieve the dynamic camber needed for a radial tire. This is a great benefit because it then becomes possible to better address front tire grip when the rear of the car can be optimized closer to the tire's potential.

"TIRES DESIGNED FOR CHAMPIONS"®

THINGS TO CONSIDER

These tires are molded to their designed tread depth. They do not require shaving to be prepared for competition.

Due to extremely light construction, Hoosier tires have a much lower polar moment than other radial tires. This translates to a very low rotational mass, which is good for performance applications. The down side to this feature is that the tires do not resist "spikes" in braking force as a heavier tire might. **As a result, there is a tendency for drivers to "flatspot" a tire the first time really getting to the limit.** Vehicles equipped with ABS will benefit from its use. If you do not use ABS, it is recommended that you make an effort to minimize stabbing the brakes until you have some experience with the feel of the tire under hard braking.

The light construction also provides less protection from impact damage and punctures. Off course excursions or running over debris on the track will likely result in tire damage.

The tires are not directional. Once some wear has occurred it may be desirable to flip the tire on the wheel in order to even out the wear and maximize tire life.

Wheel Widths

Wheel width dramatically affects wear and performance of the Hoosier P-Metric radial tires.

There is about a one-inch window of optimum width. The trick is to figure out that window. A good rule of thumb to use for determining proper width is to use the tread width of the tire. Measure the tread width. Plus or minus 1/2 inch from the tread dimension will indicate the proper rim sizing. It is possible to use narrower wheels, but at a sacrifice to shoulder wear and cornering power.

"Measured" rim vs. "Recommended" rim

In our printed product catalogue and on our web site tire specifications you will see two columns of information regarding rim dimensions. In most cases, the "measured rim" and the "recommended rim" will be the same. However in the case of DOT tires, the information may appear contradictory.

The reason for the differences lies in the Department of Transportation requirements for publishing tire dimensions on any tire that carries a DOT certification. Each tire size has a specific rim that must be used when taking measurements for tire comparison. This is intended to allow consumers a consistent way to compare tire sized between brands.

With respect to the Hoosier P-Metric line, the recommended rim size will typically be wider than the DOT standardized wheel.

The fact that a tire will "fit" on a rim is not an indication that it will work effectively in that condition. Radial tires are extremely sensitive to wheel widths. The performance characteristic of the tire can change significantly within the recommended range of application. Mounting a tire on a rim that is outside of the recommendation is not a good idea.

Driving Style/Braking

Driving style has also shown to significantly effect tire wear. Drivers who achieve their speed by "tossing" the car run the risk of increased tire wear. Radial tires develop their highest cornering power at relatively low slip angles. Smooth, tidy driving yields faster lap times and better tire wear.

The braking feel of the Hoosier R3S04 tire is vague at the threshold. This is particularly true for "sticker" tires. Drivers need to develop a sensitivity for the limits under braking. This takes time and practice. Failure to apply this will result in flatspotted tires.

Particular care needs to be taken when selecting brake pad compounds. It is possible to have a pad that is too aggressive. This will make it very difficult to develop good braking feel for threshold braking.

Rain Tires

The Hoosier D.O.T. Radial tires are extremely good in dry conditions, however, they do not make very good wet weather tires. Having dedicated rain tires available will be necessary for your team to be properly prepared. Hoosier makes a D.O.T. approved bias-ply tire called a "Dirt Stocker" that has been proven to be far superior to any competitors tire as long as it is a steady "wet" condition. Check with your Hoosier representative for size availability.

Hoosier Racing Tire offers a DOT Radial Wet tire. This tire has a molded tread of a symmetrical design. Check the product catalog for the available sizes. The compound for these tires is intended for wet weather use only.

Hoosier also offers a non-DOT radial rain tire based directly on the P-Metric R3S04 tire. The tread depth is 8/32" and the pattern is the same tread design found on the R3S04. They have been allowed in BMW Club racing and many other sports car clubs as well. Mounting instructions can be found in the "Road Racing FAQ" section of our web site. The list of available sizes can be found in the "road racing/tire specs" section of our web site.

When using rain tires, always increase your starting air pressure 2-4psi over your dry tire pressures.

"TIRES DESIGNED FOR CHAMPIONS"®