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MOTORSPORTS USER'S GUIDE

PROXES R888R

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Introduction

This Motorsport User's Guide is designed to help you obtain the best on-track performance from your TOYO TIRES PROXES R888R.

As with all tires, the key to realizing the R888R's full potential is to maximize grip. The level of achievable grip depends primarily on two factors: Your ability to
(i) maximize the contact area between the tire and pavement, and
(ii) maintain operating temperatures within the optimal range of the R888R.

These twin goals can be arrived at through a myriad combination of adjustments to your vehicle's suspension and tires. This guide will focus on wheel camber and tire inflation pressure, and show you how to fine-tune them.

With the right combination of settings, you will be able to unleash the capabilities of your R888Rs, and get on track to faster lap times.

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What Affects Vehicle Handling?

Many factors affect a vehicle's handling performance, including changes to vehicle setup or components, the layout or condition of the particular track, your driving style, and tire settings and condition.

The tables below provide a general overview of how certain adjustments to the vehicle can alter handling behavior.

Table1) Affecting Changes to Understeer and Oversteer Conditions

	Adjustment	To Reduce Mid-Corner Understeer	To Reduce Mid-Corner Oversteer
Air Pressure	Front Tire	Decrease	Increase
	Rear Tire	Increase	Decrease
Tires	Front Section Width	Increase	Decrease
	Rear Section Width	Decrease	Increase
Wheels	Front Wheel Width	Wider	Narrower
	Rear Wheel Width	Narrower	Wider
Alignment Settings	Front Camber	More Negative	Less Negative
	Rear Camber	Less Negative	More Negative
Anti-Roll Bars	Front	Soften	Stiffen
	Rear	Stiffen	Soften

Table2) Affecting Changes to Steering Response

	Quicker	Slower
Front Air Pressure	Increase	Decrease
Front Toe	Toe Out	Toe In

By finding just the right combination of adjustments, you will have a setup for achieving the fastest possible lap times for your vehicle. But how do you know when you have reached that adjustment "sweet spot"? One time-tested method is to measure the temperature of the tires.

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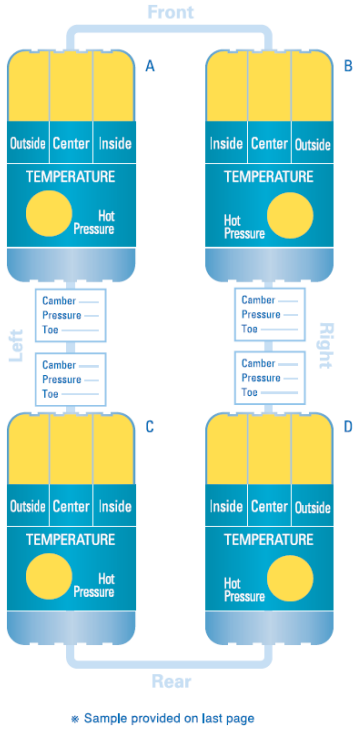
Measuring Tire Temperature

To accurately measure tire temperature, you will need a high-quality probe type pyrometer. We recommend against using a non-contact, infrared pyrometer, because they only measure the surface temperatures of the tread, which can rapidly cool down before you can take measurements. To ensure reliable readings, calibrate your pyrometer before each race session.

Looking at the readings, you will in all likelihood find temperature differences between the three sections of the tire tread.
For example, the inner shoulder may show the highest reading, followed by the center section and the outside shoulder, or vice versa. Or it may be both shoulders followed by the center section. So what can we learn from these measurements?



※ Sample provided on last page

With pyrometer at the ready, follow these steps to accurately measure the tire temperatures:

1. Run the vehicle for several hot laps to ensure that the tires achieve peak temperatures.
2. Bring the vehicle to a stop in a safe area away from the track.
3. Using the pyrometer, immediately commence taking temperature readings in at least three areas across the tire tread: Inside shoulder, center, and outside shoulder.
4. To ensure consistent readings, always start with the same tire position and follow the same sequence (e.g., left front, right front, right rear, left rear; outside, center, inside).
5. For each measurement, wait for the temperature reading to peak on the pyrometer display, and record the temperature.

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Interpreting and Applying Tire Temperature Readings

Heat is generated by friction, and friction comes from contact between the tire and track surface. The higher the temperature reading, the more friction is being generated at that section of the tire. The hottest section is generating the greatest amount of friction (or grip), and therefore doing the most amount of work.

From the standpoint of maximizing tire performance, an ideal handling setup would cause the entire tire contact area to press evenly against the tarmac under all dynamic conditions, ensuring the highest level of grip (In the real world, this would never be possible because as the vehicle changes direction, the lateral g-forces would shift the contact patch to the outside shoulders of the outer tires).

Greater grip means greater traction, and greater traction leads to higher cornering, exit and straight-line speeds. All of this translates to faster lap times.

In our ideal hypothetical example above, all sections of all of the tires would have identical temperature readings. In the real world, you should strive for a car setup that achieves tire temperature readings that are as evenly distributed as possible.

The table below summarizes what each temperature reading tells us:

Table3) Interpreting Tire Temperatures - General Guidelines

Inside shoulder is hottest- more than 15°C/25°F	Too much negative camber
Center section is hottest	Tire pressure is too high
Outside shoulder is hottest	Not enough negative camber
Both shoulders hotter than center	Tire pressure is too low (check camber on other axle as well)

As you can see, through a tire temperature reading, you can tell a lot about the way a car is behaving. This feedback, together with information contained in Table 1, should help you to determine the necessary adjustments to the suspension and tire inflation pressures for a particular car, driver and track combination.

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Getting the Most From Your PROXES R888Rs (1)

Based upon experience gained at test and race courses throughout the world, we compiled below all of the information and advice necessary for you to get started on extracting the most performance from your PROXES R888R. Just remember that these are starting points for you to develop a setup that is right for your particular vehicle, driving style, and track. Combine them with your personal experience and previously acquired data to find the ideal handling balance.

Tire Inflation Pressure Guideline

Never operate your vehicle with tire pressures insufficient to support the vehicle's weight, as this may result in tire damage and sudden failure.

Road Course	Autocross Gymkhana Pylon Slalom	Hill Climb
220-260 kPa 32-38 PSI	200-220 kPa 29-32 PSI	200-220 kPa 29-32 PSI

The ranges take into account variances in vehicle weight. However, lower or higher inflation pressures may be necessary depending on the weight of your vehicle. Never operate your vehicle with tire pressures insufficient to support its weight. Underinflation can damage a tire and cause it to suddenly fail.

Tire inflation pressure adjustments should only be performed to fine-tune the handling of the vehicle. Adjustments to the suspension can have a far greater affect on a vehicle's dynamic attitude. Make only one adjustment at a time and make adjustments in moderation. For example, make changes to tire inflation pressure in 10kPa/2 PSI increments, and adjust pressure on either the front or the rear tires, not both at one time.

A change in tire temperature can affect inflation pressures to the order of approximately 10kPa/2PSI for each 5.6°C /10 °F change in temperature.

Before making any changes to tire pressures, determine if the pressures are the result or the cause of any handling problems. Changes in air pressure should only be used for fine tuning vehicle handling.

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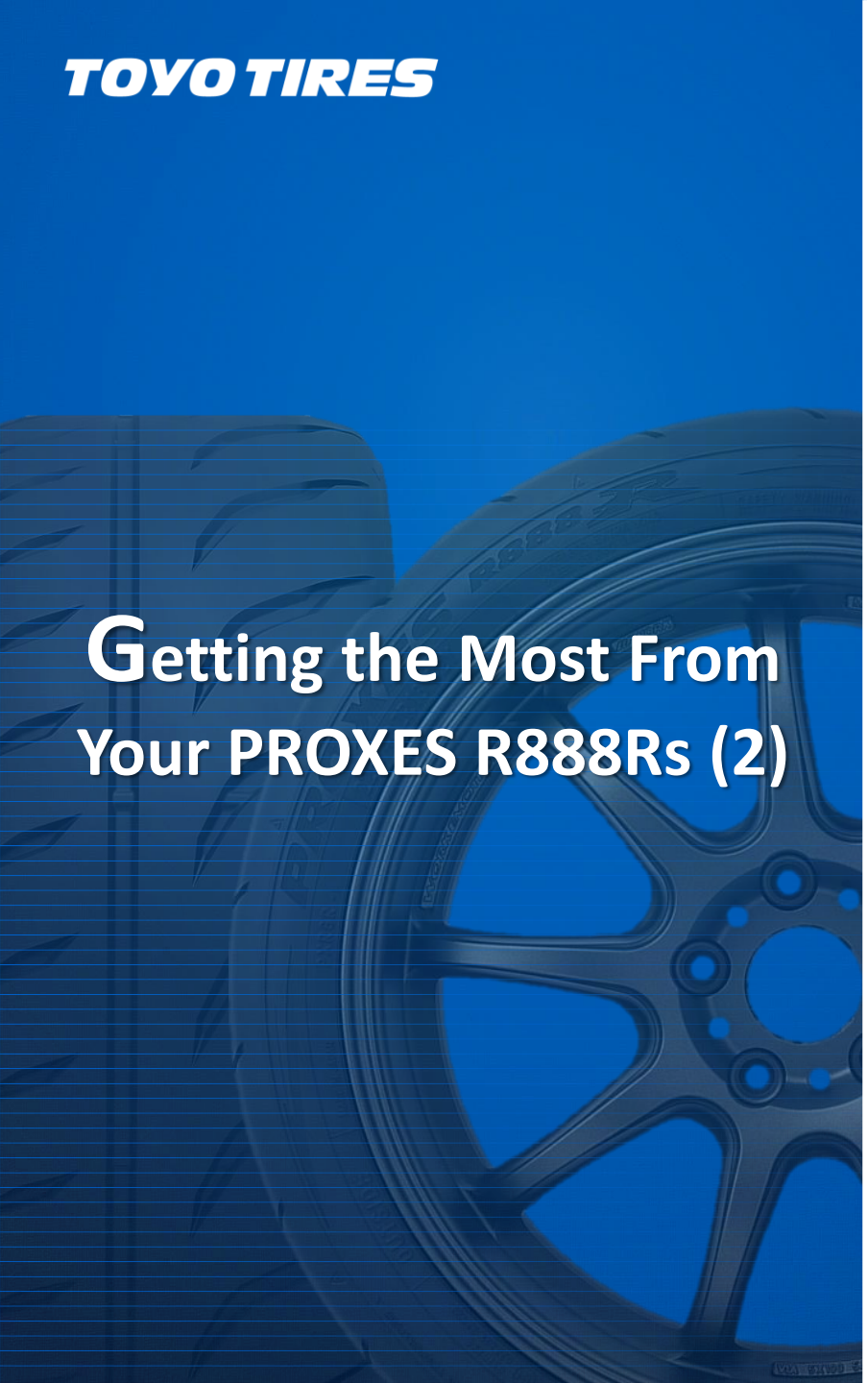

Getting the Most From Your PROXES R888Rs (2)

Tires with full tread depths will experience greater flexing of the tread blocks. The resulting increase in temperature can cause the inflation pressure to increase much more than in a tire with reduced tread depths. As the tread is worn down, and tread flexing diminishes, the changes in heat and inflation pressures will gradually decrease.

Optimal Temperature Range

The optimal tread temperature range for the R888R is 71-105˚C/160-220˚F.

At temperatures below 60˚C/140˚F the tires may not provide sufficient grip. For this reason, it is very important to gradually work the tires up to operating temperatures before proceeding to do a hot lap.

At temperatures above 120˚C/250˚F, the tire may begin to lose grip, and above 132˚C/270˚F, the tire may blister or fail. You should exercise caution and closely monitor tire condition on extremely hot days.

Because of the negative camber setting recommended for the R888R, the inside shoulder of the tire should always have a higher temperature measurement. However, the temperature differential between the inside and outside shoulders should never differ by more than 15˚C/25˚F.

Another point to keep in mind is what influence, if any, that the track layout leading up to the pit entrance may have on tire temperatures. For example, if there is a long right-hand turn before pit entry, the left side tires are naturally going to be hotter from the increased cornering loads and friction they just experienced.

Optimal Camber Settings

Many variables go into selecting the proper camber on a vehicle; among them, maximum on-track speed, track layout, vehicle weight and balance, drive wheels, spring rate, aerodynamic downforce, suspension geometry, etc.

By design, and as confirmed through experience, the R888R works best under most conditions and for most vehicles with a camber angle range of-1 to-3 degrees. However, camber settings of greater than-3 degrees may be required on some vehicles for optimum tire performance.

Having less camber will help improve straight-line speed, braking performance, and uneven tire wear.

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Getting the Most From Your PROXES R888Rs (3)

Rim Width

Each size tire in the R888R lineup is designed to be compatible with a range of rim widths specified by the tire standards organizations. Optimum performance can be attained using rim widths on the wider end of the approved size range.

Break-In Procedure

The R888R features a compound that is fully cured at the factory, making it unnecessary to break-in or heat-cycle the tires before use. However, if you are using a new R888R at full tread depth, we recommend that you scrub the tire clean of any mold release chemical. We also recommend that you bring any new tire, shaved or at full tread depth, up to operating temperature gradually over the course of a few laps to minimize the possibility of graining (see “Troubleshooting” section).

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Specific Uses

Wet Conditions

In raining conditions with standing water on the track surface, we recommend using the R888Rs at full tread depth, slightly scrubbed prior to use. We also advise increasing tire inflation pressure by 40-70 kPa/6-10 PSI to reduce the possibility of hydroplaning. The higher inflation pressure will slightly decrease the contact patch area, and thereby lessen the tires' propensity to aquaplane. The wet track conditions also mean less heat build-up in the tires, and therefore you can expect inflation pressures to not increase by as much as in dry conditions.

Rovals and Road Courses with Banked Corners

Rovals are similar to road courses, but they include portions of an oval race track. Because of the high lateral forces generated by the banked corners, both rovals and road courses with banked corners require higher starting inflation pressures than for the typical road course set-up. Camber should also be reduced, especially on the outside wheel positions for corners with the most banking. It is also important to monitor shoulder tread temperatures. If tread temperatures get near 132˚C/270˚F, further reduce negative camber and/or increase inflation pressure.

Street and Highway Use

For OE tire size inflation pressure recommendations for street and highway use, check the tire information placard or your vehicle' s owner's manual. For tire sizes other than those originally equipped on your vehicle contact your TOYO TIRES dealer.

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Troubleshooting

Wheel Vibration

- Check to see if the tire has slipped on the rim (Tires should be marked to the valve stem location after mounting).
- Clean the wheel of rubber build-up.
- Clean the tire of rubber build-up.
- Check to see if balance weights are still attached to the wheel.
- Check to see if the wheel is still true by measuring the rim run-out.

Tire Wear : Graining

Graining, to the extent shown in this photograph, will have little effect on tire performance. Anything more severe than this will contribute to poor grip and sliding, which in turn will cause even more graining.

Graining can occur from a number of causes:

- If the tire was not properly brought up to working temperature. This will cause the tires to slide and not adhere to the track surface.
- If graining occurs on the front tires, the vehicle may be understeering. The front tires are not generating enough grip (or the rear tire may be generating too much), causing the front tires to slide and create this wear pattern.
- Low track temperature and incorrect suspension settings.

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Exercising Good Safety Practices

The R888R is designed with a reduced tread depth and a special tread rubber compound for optimal dry weather traction. Therefore, it is important that you frequently check the available tread depth as the R888R will wear out much sooner and offer less wet weather grip, than a regular passenger vehicle tire.

WARNING

NEVER USE THE MOTORSPORTS TIRE, OR ANY TIRE, ON THE STREET IF THEY ARE WORN DOWN TO THE WEAR INDICATOR BARS, i.e., the available tread depth is no more than 1.6mm/2/32nds of an inch. **USE EXTREME CAUTION AND REDUCED SPEEDS WHEN DRIVING WITH THE MOTORSPORTS TIRE IN WET CONDITIONS.**

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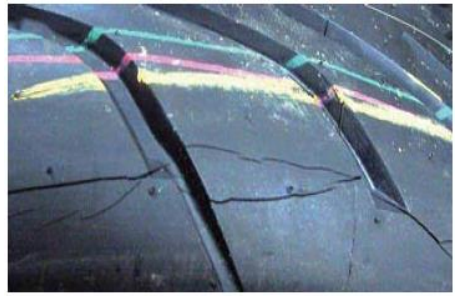
Proper Use and Handling

Cold Weather Warning

If exposed to temperatures below -9°C/15°F, the R888R will lose rubber compound flexibility. Under certain conditions, it may even experience cracking (see image below).



The rubber compounds used in the R888R have unique properties that, when compared to other tires, can cause it to lose some of its flexibility when used or handled in conditions below -9°C/15°F. This loss in flexibility can lead to potential cracking and other damage to the tire.

TO MINIMIZE THE CHANCES OF THIS HAPPENING, CONSUMERS AND INSTALLERS ARE ADVISED TO FOLLOW THESE INSTRUCTIONS:

1. Do not move or operate the vehicle with these tires in conditions below -9°C/15°F. **ALWAYS INSPECT FOR SIGNS OF CRACKING! NEVER USE TIRES THAT HAVE CRACKED!**
2. Avoid moving these tires in conditions below -9°C /15°F.
3. Before mounting or dismounting, store these tires for at least 24 hours in a temperature-controlled environment of 20°C/68°F or warmer, and **ALWAYS INSPECT FOR SIGNS OF CRACKING! NEVER USE TIRES THAT HAVE CRACKED!**
4. Remove the tire and rim assemblies from the vehicle and deflate to half the normal air pressure during prolonged periods of non-use or storage.

Date collection sheet