Spec Miata Setup Guidelines

The information provided in this guideline are general recommendations, your final setup may deviate from what is stated here.

	RA1		R888	
	Full Tread	4/32nds	Full Tread	4/32nds
	Stiffness			
IP (kPa)	220	220	220	220
Load (kg)	370	370	370	370
Kz (N/mm)	245	233	272	251
Ky (N/mm)	158	178	188	194
Kx (N/mm)	454	473	495	495
IP (PSI)	32.0	32.0	32.0	32.0
Load (lbs)	816	816	816	816
Kz (lbs/in)	1,397	1,328	1,550	1,431
Ky (lbs/in)	901	1,015	1,072	1,106
Kx (lbs/in)	2,588	2,696	2,822	2,822
	Cornering Power (CP) / Cornering Force (CF)			
CP (kN/deg)	1.03	1.35	1.25	1.46
CF w/4deg Slip Angle (kN)	2.98	3.69	3.72	4.02
CP (lbs/deg)	231.6	303.5	281.0	328.2
CF w/4deg Slip Angle (lbs)	669.9	829.5	836.3	903.7

As shown in the chart above the Proxes R888 is stiffer (higher spring rate) and creates more cornering power and force than the RA1. These changes in tire design might require chassis setup changes and driving behavior to maximize performance and wear.

Shaving

The R888 was designed to be raced on at full tread depths (6/32nds). In back-to-back testing, a full tread depth R888 is faster than an RA1 that has been shaved to 4/32nds. Racers looking to maximize wear life should strongly consider using the R888 at full tread depths. The R888 can also be shaved to increase speed, but less remaining tread means less usable life.

Air Pressure

The R888 can be used at lower hot pressures as compared to the RA1 because of its design. Decreasing the air pressure will improve contact pressure and footprint shape. A recommended hot pressure range is 32 – 38 psi. For a light weight vehicle such as the Spec Miata, 32 psi hot is a good starting point.

Tread Temperatures

The optimum tread temperature for the R888 is 160°F to 220°F. Below 140°F and above 250°F the tire may not provide sufficient grip. Generally there will be a 35°F temperature gradient from inside to outside shoulder, with the inside shoulder being the hottest. Most distance and time on a race track is in a straight line therefore, the inside shoulder is hottest because of negative camber. The same temperatures across the tread face should not be expected.

Understand the track layout before pit entry. If for example there is a long right hand turn before entry, the left tires will be hotter. Take tire temperatures and pressures after a few laps to get the temperatures and pressures stabilized and come in after a hot lap.

Camber

To maximize the potential of the RA1 a lot of negative camber might have been required. The R888 on the other hand produces more camber thrust at the same camber angles as the RA1, therefore less negative camber might be beneficial. Reducing negative camber will improve contact pressure distribution across the tread face improving wear. Start at -2.5° in the front and -3.0° in the rear. Analyzing the tire temperatures, wear, and chassis behavior will help you dial-in the optimum camber for your setup.

Front Toe

One of the benefits of the increased stiffness of the R888 is the improved steering response over the RA1. Setting the front toe to zero will likely improve straight line speed, stability and wear life with minimal sacrifice to steering response. The exact setting will vary depending on driver and situation.

Driving

Due to the higher cornering performance compared to the RA1 a driving style with less slip (steering) angle is possible. As shown in the chart above the R888 is generating more cornering force at a typical 4 degrees of slip angle. The RA1 would require more slip angle to generate comparable forces. The R888 will be quickest when it is not sliding too much or being over-driven.

Graining

The following are reasons why race tires grain:

- The tire was not properly brought up to working temperature. This will cause the tires to slide and not adhere to the track surface.
- Low track temperatures will not allow tire to come up to proper working temperatures.
- A vehicle that is setup poorly in suspension or alignment.

If graining is seen on the front tires the car may be understeering. The front tires are not generating enough grip (or rear tires may be generating too much) therefore the front tires are sliding creating this wear pattern.

Graining will contribute to poor grip and sliding which can cause more graining in an endless cycle.