

# Tech Talk ... Tyres & Rims

## Tyres & Rims ■ Words: Robert Downes, Assistant Club Captain - Motor Sport

Quality tyres and an accurate wheel alignment can enhance the beautifully balanced chassis, impeccable road manners and fine handling that have been a major attraction of the MX-5 since its introduction.

Each successive model has endeavoured to elevate these features to new levels partly through the use of larger diameter wheels with lower profile (and wider) tyres.

### Tyres: philosophy & performance criteria

Tyres are the car's only point of contact with the road and all acceleration, braking, cornering and directional control are through them. Considering the important job they perform, the amount of time you will use them and the fact that it will be expensive to discard a near new set of tyres if you are really unhappy with your purchase, it is worth finding the tyres that best meet your requirements and budget.

What are we looking at in terms of selection criteria? Its:

- » braking modulation, cornering stability, steering response, handling predictability in both dry and wet conditions
- » ride comfort and noise generated
- » treadwear
- » price and availability

I do not know of a tyre that can get "top marks" on each of the above items but I for one am not prepared to compromise on the performance criteria.

### Tyre brands

The quality of tyres now being made available by the major global manufacturers has dramatically improved over the last couple of years. Each offers a range of tyres from budget to expensive, ultra high performance. Inside the MX-5 Club motor sport fraternity several makes / models have surfaced as great performers including, in no ranked order:

- » Toyo RIR
- » Kumho KU36
- » Hankook RS2
- » Dunlop DZZI
- » Bridgestone Adrenalin RE001

As stated earlier, every tyre manufacturer is forced to make a compromise of some kind and so it will also be with those mentioned. Other brands and models should definitely not be excluded and some websites provide tyre tests and/or reviews eg, [www.tyrereviews.co.uk](http://www.tyrereviews.co.uk) and [www.tirerack.com](http://www.tirerack.com). In addition also speak to tyre retailers that carry tyres from a range of manufacturers. **DO NOT** even consider retread tyres or second-hand tyres and don't wait until your tyres are completely worn out before you replace them – that's when you can have an accident.

### Tyre & rim size selection consideration

Mazda fitted lightweight rims to each MX-5 model to reduce "unsprung weight" which affects handling and we need to be aware that some (not all) aftermarket rims, although looking "beautiful", can be substantially heavier than identically-sized stock rims. Also some aftermarket rims do not have the correct "offset", which refers to how far "out" from the car a wheel sits. This can risk rubbing the tyre on the lip of the guard and other problems.

### Factory rim details

MX-5 model	NA	NA	NB8A	NB8B	NC
Year	89-93	94-97	98-99	00-04	05-
Diameter (in)	14	14	15	16	17
Width (in)	5.5	6	6	6.5	7
Offset (mm)	45	45	40	40	55
Rim weight (lb)	12.3	11.2	13.1	15.5	17

### Typical tyre details

Tyre size	Weight (lb)	Revs / km
185/60/14	18	575
195/60/14	19	560
195/50/15	18-19	575
205/50/15	19-21	565
205/45/16	20-21	561
215/45/17	25	530

As you can see, even fitting a 16" X 6 1/2" rim and tyre off an NB8B on to a 1994 NA will result in a rim/tyre combination of about 36lb versus 30lb. Not only is this enough to affect the car's handling adversely but it will also:

- » reduce the car's acceleration
- » put your speedo out 2.3%
- » increase the ride height 7mm
- » require an additional 5mm inside clearance but critically an additional 15mm outside width clearance together with 7mm vertical clearance.

Go to [www.superjamie.net/garage](http://www.superjamie.net/garage) and the Tyre Section Calculator to work out any comparison you wish.

Also remember that large diameter tyres usually cost more and low profile tyres give a harsher ride.

On the NA8 racecar we either use factory 14" x 6" rims with 195/60/14 tyres or factory 15" x 6" rims with 195/50/15 tyres - weight and dimensions virtually identical. These are my two recommended combinations for any NA model. I do **NOT** recommend lowering or stiffening the suspension of a "public road"-only driven car – I'm happy to explain in a separate MX-TRA article if requested.

### Proper fitment

It's all a balancing act! You have done a deal for a set of new tyres and it's time to fit them. Suggestions: insist on the "rims only" being spun up on the dynamic balancer to see if they run perfectly true. If this is not the case pick the best two and earmark those to be used on the front of the vehicle. I make arrangements at time of purchase to stand next to the chap doing the balancing to ensure I get the best outcome.

### Tyre pressure

Very important! My recommendations:

- » City driving NA/NB front & rear: 29 psi (200kPa)  
NC front & rear: 34 psi (230kPa)
- » Country driving NA/NB front & rear: 33 psi (225kPa)
- » Check tyre pressures every 2-3 weeks

**Ask an Expert** Mazda Australia are about to add an "Ask an Expert" section to their consumer website, and they are looking for "real life" ideas and suggestions for them to address. If you have any questions or topics (including modifications or motor sport questions), please send them to <editor@mx5vic.org.au> and we will pass them on. Mazda have agreed that we can use any MX-5 topics in MX-TRA.



- » Check spare every three months: 60 psi (410kPa)
- » Don't trust "servo" gauges; keep a dial pressure gauge in the glove box
- » Always use metal valve caps
- » Rotate and rebalance tyres at "half-life".

### Wheel alignment

Which way are your wheels pointing? A set of good quality, well balanced tyres in combination with an accurate wheel alignment can virtually transform your MX-5 in terms of the way it steers and rides. Mazda, like all manufacturers has wide tolerances on its wheel alignment specification. The MX-5 requires a four-wheel alignment. My recommendations are as follows:

<b>NA &amp; NB</b>	Front:	Camber:	1.0 deg NEG
		Toe in:	0.8mm each side
		Castor:	3 to 5 deg
	Rear:	Camber:	1.5 deg NEG
		Toe in:	0.8mm each side
<b>NC</b> (as supplied by Randy ...)	Front:	Camber:	2.1 deg NEG
		Toe in:	1.0mm each side
		Castor:	6 deg
	Rear:	Camber:	2.0 deg NEG
		Toe in:	1.0mm each side

Tell them what you want and ask for a "before and after" printout – keep with your service records. I prefer to take the

car to a specialist alignment company but it is certainly not as convenient as having it done when the tyres are being fitted. The alignment is not going to last forever and I would suggest another one at tyre "half-life". I have several friends who, when they take delivery of a brand new car, have the alignment checked and measured immediately to ensure they do not prematurely scrub out expensive new tyres.

### In summary

- » MX-5s respond positively to quality tyres inflated to the correct pressure, accurate wheel balancing and wheel alignment.
- » Tyres are a compromise between performance, treadwear and price. Do your homework before purchasing.
- » Beware of fitting larger diameter and/or aftermarket rims and tyres.
- » Have the tyre/rim accurately balanced.
- » Keep your tyres inflated to the correct pressure.
- » Nominate your required wheel alignment settings ... don't just take what they give you.

Perhaps we could have some feedback from Club members on this article regarding tyres, rims, pressures and/or wheel alignment settings. Please send your comments to [editor@mx5vic.org.au](mailto:editor@mx5vic.org.au)

*I hope the information makes your MX-5 even more enjoyable to drive.*

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