

# Tire Sizing For the TR6

BY TERENCE MCKILLEN

I recently checked the date of manufacture of the tires on my 73 Six – one pair was 9 years old while the other was ten. Despite having lots of tread wear remaining, it was nevertheless, time to consider a change of rubber as, after careful inspection, I had noticed some cracks had developed in the sidewalls, particularly on the inside walls, hidden from normal view.

There is a great deal of comment on various on-line forums, regarding the correct size of replacement tires for our classic cars. Leaving aside, for the moment, any considerations relating to aesthetics, tread pattern, quality of ride or ground clearance, it is a relatively simple exercise to calculate which modern tire size most closely resembles the 185SR-15 Michelin-X Redlines or Goodyear G800s that came as stock on North American TR6 deliveries back in the 1970s. They were a very good looking tire when fitted on the TR6 and by all accounts provided a smooth ride. Because of the relatively high aspect ratio and the narrow section width, these tires were of little use as performance tires. The 165HR-15s fitted as standard to the 150bhp PI British

models would have been even worse from a performance perspective.

Current tire sizes are based on an alphanumeric code which is generally moulded into the sidewall of the tire. This code specifies the dimensions of the tire, and some of its key limitations, such as load-bearing ability and maximum speed. Sometimes the inner sidewall contains information not included on the outer sidewall, and vice versa. The code has grown in complexity over the years, as is evident from the mix of metric and imperial units, and ad-hoc extensions to lettering and numbering schemes. Most tires sizes currently are given using the ISO Metric sizing system which consists of a string of letters and numbers, as listed in the sidebar.

Although not specifically required under the Ontario Highway Traffic Act, the MTO Safety Standards Certificate seems to require that tires not be older than six or seven years at the time the inspection is carried out. This seems a reasonably sound decision and appears to be in keeping with recommendations by some manufacturer's not to use a "new" tire that has been sitting on the shelf for more than five or six years. Tire life is shortened by exposure to UV light as well as to improper inflation, long-term storage, driving habits and a myriad of road hazards. As Glen Donaldson<sup>1</sup> wisely recommended in an earlier Ragtop article on this subject, "when they start to go hard, it is game over."

The type and size of the wheel rim will have a considerable impact on the size and type of tire that can be considered. Other considerations include the overall ground clearance, gearing and aesthetics. A 50% aspect ratio tire might be a great choice for

high speed cornering but regular driving would be more hazardous as potholes, speed bumps, kerbs, etc. would become potential hazards and the improved performance would be offset by a harsher ride. The low profile tires would also alter the final gear ratio of the car, making highway driving more tedious. On the other hand, acceleration would be greatly improved.

On the 5.5 inch wide J-type steel rims fitted as standard on North American Sixes (I believe UK cars may have had a 6J wheel option), the maximum tire width is probably limited to a P205 radial. Some people do report fitting up to a P215 (i.e. 215/70R-15) on standard rims but the side wall will bulge out considerably as this tire is better suited to a 6 to 7.5 inch rim. The combination of rim size and tire size/profile chosen will also have an impact on the accuracy of



Andrew Grace's Modern Redlines, with white lines painted red

the speedometer and odometer.

The OEM Goodyear G800 or Michelin-X Redline 185-15 tires were known as 70 or 80 series profile tires, which is to say that the sidewalls were roughly 80% of the width of the tire (actually 78-82%). The aspect ratio was not recorded on the sidewalls of pre-1990 tires. The dimensions of the original tires were 185mm in width or 7.28 inches (section width) and a sidewall height of 5.68 inches (7.28 x 0.78). With a rim diameter of 15 inches this resulted in an overall wheel diameter of 26.36 inches (2 x 5.68 + 15), a circumference of 82.82 inches (π x 26.36) and a total of 765 wheel revolutions per mile (63,360 ÷ 82.82). There may have been some minor variations in dimensions between different manufacturers for the same size of tire.

There are three tire sizes in the 15 inch diameter range that are almost perfect as replacements for the original TR6 tires. These are 195/75R-15, 205/70R-15 and 205/75R-15. All have an overall diameter that is very close to the original which will ensure that the speedometer/odometer remains reasonably accurate (within +2%).

A 205 will provide a greater amount of rubber footprint on the road over a 195 with its narrower profile. The 205/70R-15 has a sidewall height of 5.65 inches, a total diameter of 26.30 inches (-0.24%), a circumference of 82.62 inches and 767 revolutions per mile (+0.24%) while the 195/75R-15 has a sidewall height of 5.76 inches, a total diameter of 26.52 inches (+0.58%), a circumference of 83.30 inches and 761 revolutions per mile (-0.58%). The 205/75R-15 has the highest sidewall height of the trio, at 6.05 inches, a total diameter of 27.11 inches (+2.82%), a circumference



Coker 185R-15 Classic Redlines

Nexen 205/70R-15s



Pirelli 205/75R-15s - a lot of rubber in the wheel arches

of 85.16 inches and 744 revolutions per mile (-2.75%).

If you are after high performance tires, one option is to consider changing to a larger diameter wheel rim, to 16 inches for example, and fitting lower profile tires in order to maintain the same overall wheel diameter. However, changing rim size leads to other considerations such as suspension and wheel-well clearances, but does open up the possibility of using higher performance tires such as a 205/60-16,<sup>2</sup> although

this particular combination will lower the ground clearance and slightly change the overall gear ratio.

Some enthusiasts<sup>3</sup> have recreated a good approximation to the original Michelin X Redline look using modern Michelin Symmetry White Stripes (not available in Canada) and hand painting/spraying the white stripe with red vinyl paint.

Finally, some aesthetics need to be considered. Assuming the car is equipped with standard suspension, the 205/75R-15 with its higher sidewall will fill up the entire wheel well and will look, as some have observed, somewhat like a dune buggy. On my particular car this translated into a clearance between the fender edge and the tread of the tire (freeboard) of between 3/4 inch (19mm) at the front to 1 1/4 inches (31mm) at the rear. The 195/75R-15 will look more authentic, closely matching the look of the original G800/Redlines. Some people are happy with a 205/65R-15 tire and like the aesthetic appearance, but with a diameter almost one inch less than the original, the ground clearance will suf-

## ISO Metric Sizing Codes

• An optional letter (or letters) indicating the intended use or vehicle class for the tire:

- P: Passenger Car
- LT: Light Truck
- ST: Special Trailer
- T: Temporary (restricted usage for "Space-Saver" spare wheels)

Use of the letter P indicates that the tire is engineered to Tire and Rim Association (TRA) standards and absence of a letter indicates that the tire is engineered to the European Tire and Rim Technical Organisation (ETRTO) standards. In practice, the standards of the two organizations have evolved together and are virtually interchangeable.

- 3 digit number: The "nominal section width" of the tire in millimetres; the widest point from both outer edges.
- /: Slash character for character separation.
- 2 or 3 digit number: The "aspect ratio" of the sidewall height to the total width of the tire, as a percentage.
- An optional letter indicating construction of the fabric carcass of the tire:
  - B: bias belt
  - D: diagonal
  - R: radial
  - if omitted, then it is a cross ply tire
- 2 digit number: Diameter in inches of the wheel that the tires are designed to fit.
- 2 or 3 digit number: Load index.
- 1 or 2 digit/letter combo: Speed rating.
- Additional marks: Including DOT marks with date of manufacture (two digits for week of the year plus two digits for year; or two digits for week of the year plus one digit for year for tires made prior to 2000).

After: Wikipedia – the Free Encyclopedia - //en.wikipedia.org/wiki/Tire\_code



Michelin

Type	Section Width (mm)	Section Width (in.)	Section Ratio (%)	Aspect Height (in.)	Sidewall Diameter (in.)	Rim Diameter (in.)	Total (%)	Difference (in.)	Circumference	Rev /Mile	Difference (%)
185-15	185	7.28	78	5.68	15	26.36	0		82.82	765	0
205/70-15	205	8.07	70	5.65	15	26.30	-0.24		82.62	767	+0.24
205/75-15	205	8.07	75	6.05	15	27.11	+2.82		85.16	744	-2.75
195/75-15	195	7.68	75	5.76	15	26.52	+0.58		83.20	761	-0.58
215/70-15	215	8.46	70	5.93	15	26.85	+1.85		84.35	752	-1.82
205/65-15	205	8.07	65	5.25	15	25.49	-3.30		80.09	791	+3.41
205/60-16	205	8.07	60	4.84	16	25.68	-2.90		80.68	785	+2.55



Panasport, Minilite or KN replicas make excellent replacements for TR6 or Spitfire wheel rims

A Toyo 205/70R-15

pared by Dan Masters<sup>4</sup> which will calculate and graph road speed vs. engine speed data, for any car model. Be sure to input the appropriate gear ratios, final drive ratio as well as your tire details.

I inherited the 205/75R-15s on my Six but I didn't like the full-rubber look of the wheel wells. My money has recently gone on a set of five 205/70R-15s which provide a nice balance between the traditional look but giving a little more freeboard gap of about 2.5 inches (63mm) while providing an excellent footprint and minimal change to the speedometer and odometer settings. This choice is confirmed in an informal survey of owners conducted by triumphowners.com<sup>5</sup> suggesting 25% of respondents had chosen the same tire size as a replacement for their Sixes.

Now that the choices in tire size are clearer, you are free to select the tire of your choice based on manufacturer, tread



pattern, speed rating, comfort of ride, availability, wearability, performance rating, redline, white sidewall, black, for summer driving or all season, or just plain value for money. **RAGTOP**

- 1 Tired Tires. Glen Donaldson, Ragtop | Winter 2010
- 2 Tire & Wheel Plus Sizing. Kelvin Dodd, Moss Motors - British Motoring, Winter 2005
- 3 Modern Michelin Redlines. Andrew Grace, Ragtop | Fall 2009
- 4 [www.buckeyetriumphs.org/technical/Calculator/road\\_speed\\_vs\\_engine\\_speed\\_calcu.htm](http://www.buckeyetriumphs.org/technical/Calculator/road_speed_vs_engine_speed_calcu.htm)
- 5 [www.triumphowners.com](http://www.triumphowners.com)

fer. The 215/70R-15 tire is also a possibility with an excellent match in terms of total diameter, but it is pushing beyond the limit for a 5.5 inch wheel rim.

As far as driveability is concerned, using a 205/70R-15, the overall gear ratio changes only very slightly. To figure out new overall gear ratios and speedometer readings after changing tires, the following formula can be used: - highway speed at a given RPM (say 3,000 rpm) = overall tire circumference (inches) times engine rpm times 60 (# minutes in an hour) divided by the differential gear ratio (3.7) times the selected gear ratio (4th gear is 1.0) times 63,360 (#inches in a mile).

The Buckeye Triumph Club website contains an Excel spreadsheet calculator pre-



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### 1974 Triumph TR6

Southern California car, only a few miles since a complete bare shell restoration by us. Finished in high quality Pimento red paint on a nice, straight, rust-free, body. All of the body rubbers, soft trim, and most of the chrome was replaced, the engine and overdrive transmission, the suspension, brakes and all other mechanical systems were rebuilt. Falcon SS exhaust to original TR6 design. Chestnut brown interior was all replaced. This is a stunning car that is show and driver ready. \$21,600



### 1974 Triumph TR6

Californian TR6. No accidents, no rust, paint is nice with only minor defects, on a beautiful, straight body. New front & rear bumpers, stainless trim rings and tires. Tan interior has new seats, panel kit, dashtop, sunvisors, tan Robbins top, retractor seatbelts and windshield and seals. Engine is strong with electronic ignition and the overdrive transmission was rebuilt two years ago. 4 tip Ansa exhaust system. Front end rebuild including bushings, ball joints, tie rod ends, and steering rack boots & at the rear new differential mounts and trailing arm bushings. Hydraulics all redone with new clutch and brake master, slave cylinder and hoses. \$16,600.



### 1973 TR6

California car in good shape, the paint is older, but still looks good. Comes with factory hard & soft tops. Engine runs well, brakes redone, all suspension bushings replaced and new tires fitted. The interior is in good serviceable condition and a new door panel kit has just been installed. Drive and enjoy a clean bodied car at a reasonable price. Reduced \$8,900