

# PREPARING THE TORANA FOR RACING

by  
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# "I like to experiment... and never expect immediate



The work begins from the moment a Torana reaches my workshop in Melbourne. I drive the car a few miles, looking for handling and feel. I know what I want and I make certain tests to ensure I get it. I check the shell to see that it meets my requirements, then I give the rest of the car a general look over to make sure there are no basic faults.

I go on driving until it has about 500 miles up, then I have it taken to pieces and proceed according to a plan I've laid out which takes advantage of the manufacturers' tolerances, one way or the other. The engine, suspension, body and all other important components have to be dismantled, thoroughly inspected, tested and blueprinted.

Cylinder head and breathing of the engine are of utmost importance, so I take great care and select the finest grained, best finished heads, with maximum sized ports and smoothest port passages.

When I have the production parts I need, I set about improving their finish by polishing (when regulations permit) and do so with the greatest of care for detail. Finally, I have certain components fully balanced.

The engine is then reassembled and, frankly, the way we reassemble an engine and the conditions under which my mechanics sometimes have

to work would give some people the horrors. We work at such a frantic pace, (usually about 10 hours a day, for weeks, when a big event is coming up) that there is simply no time to fully clean up around the workshop.

I am always fastidious about what I do, but not down to assembling engines on a sheet of white paper.

I use an electronic tuner and can generally come up with the right combination on tune. But always being on the lookout for ways to improve performance, I like to experiment with little things. A different carburettor setting or spark-plug type can sometimes produce another half or one horsepower. I never expect immediate big gulps of power. For example, the megaphone exhaust we use on the Torana took me a week to perfect but gained us six horsepower.



I check the car on a dynamometer and then make any necessary final adjustments to bring the engine's performance to an optimum. But I never use the dynamometer to run in an engine. Nothing wears a motor out quicker, as dynamometers apply heavy static loads rather than the varying loads applied by normal road work.

Finally I take the car out on the public road to run-in the power train, (i.e. engine, transmission and rear axle). Best suited for this is the Princes Highway from Melbourne to Sydney. It's flat initially and I can motor along at a gentle 2500 rpm; later the road starts to get hilly and with the motor loosened up I can use the hills to advantage to gradually raise the revs through the 3500, 4000 and 4500 rpm marks. By the time I have travelled about 400 miles and have given the car plenty of  $\frac{3}{4}$  throttle work, I am ready to give it a few full throttle bursts. The procedure I use here is to rev up and down the scale going fast then slowing down, fast and slow. I keep this up until I am satisfied the components are fully run in.

Now for the suspension. With handling it's a case of constant experimenting using the trial and error method. For instance the stabiliser bar on the Torana is moveable fore and aft, with the movements either stiffening or softening its action and thus altering the handling. So I do the final settings during actual tests on the particular track where we are going to race. And I always take into consideration the "driver's preference" as it's very rare to get two drivers liking the same steering characteristics.

Shock absorbers are left open by race regulations so the choice is really very much up to the competitor. On our race Toranas I use Armstrong shock absorbers as they haven't given me any trouble and are readily avail-

# big gulps of power.”



able. But I'm always on the lookout and, should I find an improved version which works a little better, I would use it.

Another controversial area is brakes. People have sometimes suggested that I alter the brake balance on the Toranas by using wheel cylinders of different diameters, which is incorrect. Usually, I only arrive at the brake balance I want after experimenting with a variety of brake linings and selecting the ones that give best results.

Tyres are the costliest item in motor sport and nothing can send you broke as quickly as trying to run on the very best of rubber while you are gaining experience; there are a number of less expensive tyres available which although not as fast are quite suitable for beginners.

Tyres have improved dramatically in the past year or so and those I'm using at the moment vary in size

from 4.25 through 4.75 to 5.00 x 9.00 — 13 inch racing covers — with the selected combination depending on such things as the weather (i.e. wet or dry), driver's technique, and the tracks surface characteristics.

Whenever I'm looking for a way to improve a part or a way to overcome a problem, I usually sit quietly in my workshop on a little camp stool and just toss ideas around in my mind. A little bit of concentrated thinking often saves a great deal of wasted time and effort. And when I run into a problem which I cannot solve myself, I consult someone else!



*Harry Firth*



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