

Tech Article – Sideways Capri Setup

Most of us love the Group 5 cars. I have 1,2,3, . . . er lots.

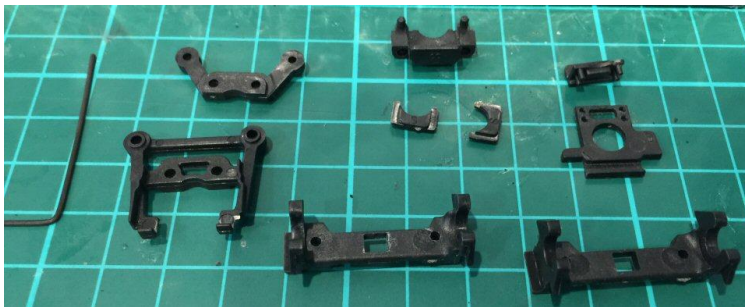
Mostly I like sidewinder setups, but that means a complete mechanical transplant; so having just driven some very fast angle-winders in the Group 5 proxy series, I recently went back to my two early Capris which are angle-winders, and tweaked them. I was surprised how well they went.

So now to do a completely fresh build out of the box, – what I call my “one hour challenge”.

I may take a couple of hours to do the build, wandering in and out of the workshop while glue is drying, the tyres are on the lathe, and so on. But essentially, the build following is only about one hour of work.



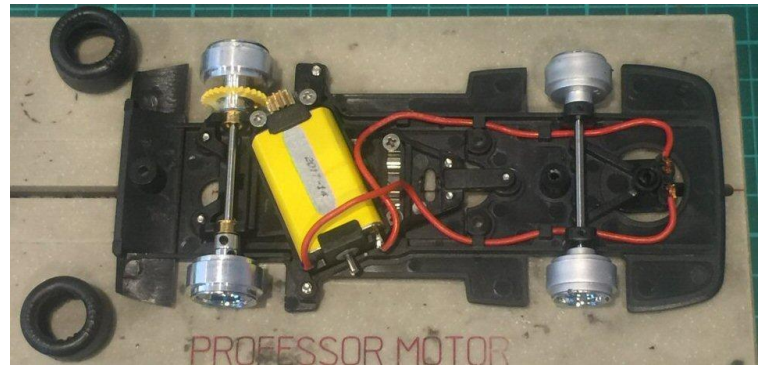
So here is the car unboxed. Take a look at the ride height as it comes. About 2mm of ground clearance front and rear. We will drop that, to lower the centre of gravity.



Make sure you look underneath the base, there is a hex key, and a pile of small plastic bits for adapting the ride height, and for swapping out the Slot.it Flat-6, for an FK180 “boxer motor of any brand. Front right are two axle mount brackets that will take axle bushes. If you look closely they are marked with lettering. One of which reads 0.5 and the other 1.0

They are to replace the axle mount in the car, which has no axle “offset” from the height of the motor shaft, with either 0.5mm offset, or 1mm offset. To lower the rear those amounts, by raising the rear axle above the line of the motor shaft height.

So whip off the body, and this is what you see.



The mechanics are mostly Slot.it parts, axles, wheels, motor and gears. The fronts are 15.8 x 8mm plastics, the rear are 17.3 x 8mm alloy.



The exception is the axle bushes. These are unique, and if you look closely, you can see that on one side they are concave. This is so that the axle is only contacting them for part of their width, and friction is reduced.

We will remove these from the car.



But first, let's get some race tyres fitted for wood racing. Above are a pair of Slot.it PT1172N22 tyres, which will fit any hub from 15.8mm diameter, to these 17.3mm hubs.

Take a look at the tyre on the right which I have turned inside out. Notice it is not the same on each side? The right hand side as pictured, has a wider shoulder. This is the side which has the Slot.it lettering and tyre ID on it. I like to fit this to the Inside of the wheel for two reasons. Firstly, as a performance matter I believe that having the “overhang” of the tyre on the outside,

creates a springing effect as the car corners and loads this area up, which is sitting outside the vertical line of the wheel. As the load increases, the overhand squishes, and then as the car exits the corner, it expands, and can destabilize the car. Well that's my story and I'm sticking to it. The second practical point, is that with the main overhang on the inside, we can easily sand any residual overhang back, so the wheel sits as wide as possible for the widest track we can get inside the wheel arch.

As per my tech article on gluing tyres last year, avoid cheap, quickset superglues. They often react with the tyres, causing rapid distortion as they dry, and cause the tyre to split. The Selleys Quickfix gel above has up to 10 seconds work time, depending on tightness of tyre fit and ambient temperature. As it is a gel it is easy to apply a small blob to the rim, spread it with a toothpick, then seat the tyre on it. I mount the tyres as above on the rim, apply glue all around the outside shoulder (never on the centre part), then pull the tyre across quickly and seat it. In some cases I can spin the tyre on the rim for a couple of seconds to ensure it is seated evenly, and to spread the glue, others I can't. This helps avoid the tyre sitting twisted on the rim. Your mileage may vary. As quickly as possible, wipe any excess off the outside of the tyre then press the outside hard onto a flat surface. This also helps ensure correct seating on the rim with no twist.

Then glue the inside shoulder by peeling back the tyre a portion of the circumference at a time, smear some glue on the wheel shoulder with a toothpick, spread it, let the tyre re-seat itself, working your way around the circumference. Wheels done, leave them for at least half an hour for the glue to cure properly.

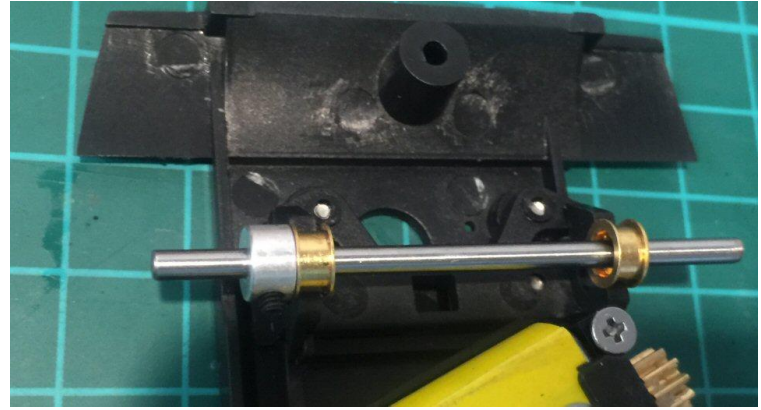
ALSO TAKE A READ OF THE TYRE GLUEING ARTICLE ON THE WEBSITE UNDER [TECH ARTICLES](#) FROM NEWSLETTERS

Now we will get onto changing that axle mount.

First remove the wheel on the gear side, then loosen the grub screw on the gear. Slide the axle away leaving the gear to drop free. This ensures we don't damage the gear by forcing it out of position while sitting against the pinion. With the gear removed, push the

axle back in place, and gently lifting both sides at once, until the axle pops out first from one axle bush mount, then the other.

Underneath the car are two flat head Phillips screws which hold the axle bush mount. Unscrew these and remove the standard zero offset axle mount holder. Now take the mount with 1.0 marked on it, and replace this into the motor pod, screw up tight.



Now you can sit the axle and bushes on top of it with the concave side of the bushes to the inside, so the load bearing surfaces are as wide as possible for axle stability. Press gently on both sides at once, until the bushes click down into the new axle mount.

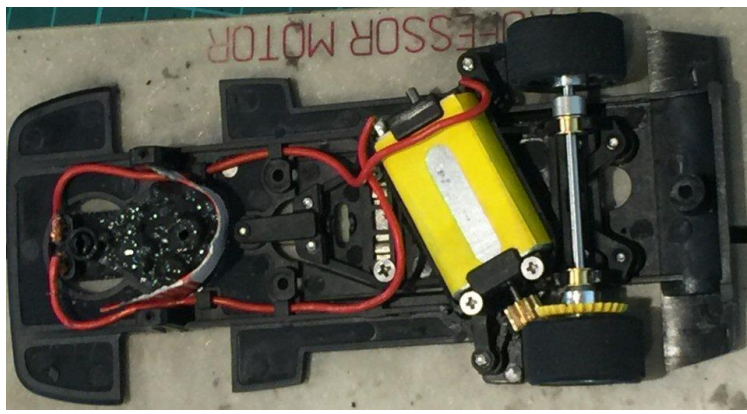


Now we can go to work on the fronts. These are a tight press fit on the axle, twist carefully and pull off straight, so you don't risk cracking them.

Plastic wheels are injection molded and can sometimes have small burrs. See above the small imperfections on both wheels. These ones weren't bad, but I still scraped them with a sharp blade, then sanded smooth.

The original tyres are fine for the fronts, so glue these on using the same procedure as for the rears.

As angle-winder, the weight balance is heavily slanted to the rear. This makes them taily, and too light in the front out of the corners.



You could of course neatly cut some sticky back lead to fit the forward area, but I was out of it, and I am a bit impatient. So I have fitted a small half circle of cardboard in an arc, part filled the entire area in front of it with JB KWIK – the 10 minute cure version of JB WELD, and poured lead buckshot over it, then topped with a little icing of more JB KWIK as it sets. – No, I don't know the weight, but at a guess, around 9 grams.

While that JB KWIK was curing, I grabbed some Sideways soft braid, as the original braid is too stiff for wood track racing, and tends to lift the front. – On plastic tracks you get down force from motor magnetism even when racing “non magnet” – we don't. The sideways braid is also very thin, under 0.2mm wide, and that enables the guide to sit deeper in the slot.

I used sandpaper on the edges of all 4 tyres before removing them from the lathe, to create a small rounded profile on the edges, this helps prevent tyres shaving “marbles” when under load in corners, and it gives a smoother overall ride. With all four tyres trued; I refitted to the car. Now I can adjust front ride height so the wheels just touch the setup block, but the guide is deep as possible in the slot and sharing the front weight.

With some chassis fettling it would be possible to raise the guide and lower the front even more, but we have gained almost 1mm at front from dropping the guide with thinner braid then raising the axle ride height with the 2 pairs of grub screws above and below the axle.

The car set up for this article is now for sale on the website under “Limited Editions”



If you look carefully above, there is a 1mm nylon spacer between the drive side axle bush and the spur gear. There is a good reason for this. Originally there was a very thin bush, about 0.2mm but when we moved the rear axle 1mm above the horizontal plane of the motor shaft, we also moved it “further away” in total distance. This made the gear mesh very loose, so this 1mm packer pushes the gear outwards, so that it intersects with the angled pinion at a closer point to the line of where the axle would be it if continued outwards. Net effect, nice deep gear mesh with no slapping on and off the throttle.

I set the rear wheel on the drive side hard against the spur gear, but even with the tyre set with that lettering to the inside, it was rubbing the inside of the guard. So I planed/sanded that tyre until it was flush with the outside of the wheel insert instead of bulbous. Now it rotates freely. The other side I set as wide as possible inside the mudguard.



Having raised the rear axle with the replacement axle mount, and trued down the replacement tyres so they are slightly smaller OD than the originals. The ride height is greatly lowered. The back is about 1.3mm lower.

The car runs a smooth 5.2 and 5.3 on my track, that puts it up there with the pack. With a little more work it could be a rocket ship. The one hour challenge done.