

{Scooter Sidecar}

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A silver scooter with a sidecar is parked in front of a building with a metal fence. The scooter is on the left, and the sidecar is on the right. The sidecar has a large, clear windshield and a black body. The scooter has a large headlight and a side mirror. The background shows a building with a metal fence and a sign that says "All visitors please report to...".

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A Honda @125 and lots of homegrown ingenuity have got one Brisbane man on the road again.

Words by PETE CALLAGHAN, photography by LOU MARTIN

For most of us, mobility is something we tend to take for granted. Not just the essential mobility our legs provide, but the freedom and convenience scooters give us over longer distances.

When you're confined to a wheelchair by a severe spinal injury, that essential method of mobility is transferred from your legs to the chair's spoked wheels. But what happens when you want to travel further afield, and cars are off the agenda because you can't get yourself into or out of the chair unaided? Taxis are one way to go, but the high cost of fares and the relatively small number of wheelchair-friendly cabs make them a less than practical solution.

Brett Poulsen knows all about the importance of mobility. A C5 quadriplegic since a rugby scrum collapse, Brett's had a gutful of getting around in the back of taxis. He's also well aware of the benefits of two-wheelers, having owned a Ducati 450 as an 18-year-old.

For five years, Brett enjoyed plenty of mobility and independence thanks to his second-hand Nippi, a three-wheeler designed specifically for wheelchair users, and powered by an 80cc two-stroke engine. The Nippi was built around a twist and go scooter, so it was suitable for people with limited hand function such as Brett, as the only controls were throttle, brakes and steering.

When his 20-year-old Nippi started to clap out, though, Brett had a problem. Importing a new one from the UK would cost about \$18,000, he'd have to sort out his own servicing, and he could only expect to get another five years from its little scooter engine. There were always the cabs, but Brett had a better solution, thanks to a bloke named Steve Barry, who'd owned a motorcycle shop and built a few sidecars. He convinced Brett that he could put together a sidecar for a twist and go scooter, with all the controls moved across to the sidecar for the wheelchair rider to use.

"[After the Nippi] I had one of Oz Trikes' trikes – at one stage they also did a Nippi copy," Brett explained. "Same idea, where you had a single rear-wheel drive – they were using a 150cc engine off a TGB or one of the Taiwanese scooters. It was a monster of a thing. My mate who rides 1200s, he struggled to control the torque-steer on dry roads. It had a short wheelbase, it was wide and with single rear-wheel drive it just wanted to go left basically.

"So I was a bit concerned that this sidecar was going to have similar dynamics. Steve wanted to go straight to a 250. I was coming straight off the 80cc two-stroke Nippi, so I was concerned about

that. So we went for this Honda @125, which has one of the longest wheelbases of the 125s, and is one of the more sturdy ones about.

"We decided we would sort the handling out before going for too much power. [Now] I don't think the power is going to affect the handling dynamics to the same extent as it does on a trike, and I think the longer the wheelbase, you're going to get better handling from a sidecar. That's why, for the next one, I think we'll go to a 500."

Steve built the sidecar at his home on Russell Island, in Moreton Bay, using a framework of square-section tubing. If anything, it's been over-engineered. The sidecar connects to the Honda scooter via four anchorage points, while the steering uses a ball-joint set-up. Two arms from the steering rack allow the steering to be adjusted for weight – with the arms in their outer mounting holes the steering



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ratio is 1:1, however Brett has them angled inwards about 20mm on each side to lighten the steering. It gives the outfit the "turning circle of a Mack truck", but makes it much easier for Brett to manoeuvre.

A young bloke named Zeb Lowe, whose father runs Neal Lowe Motorsport at Slacks Creek, sorted the transferral of the Honda's brake and throttle controls, plus the switchgear and instruments, across to the sidecar. With Brett's limited hand function, a conventional twistgrip throttle and hand lever brake are no use, so his outfit has wrist-operated throttle and brake controls, as well as an ingen-



ious indicator switch sprouting from the left end of the handlebar.

Zeb took care of "101 other things", including mounting the clever winch system which hauls Brett and his chair on to the sidecar and lets him back off again.

"It was developed from my previous trike to help me get in and out," Brett said. "It's a worm-drive gearbox from a machine they use in bakeries to stir the dough, powered by a 12v motor. The gearbox doesn't go backwards unless you power it backwards, so that locks me in place. The steel post stops me going forwards, and the seat-belt stops me going up in the air to some degree."

The folding ramp arrangement at the rear of the sidecar, and the sidecar's effective disc brake were also down to Zeb.

"We had just the one test ride," Brett said. "That essentially proved the braking was crap, so we needed to do more work on that. It also showed that we didn't have the toe-in of the sidecar wheel right. But we kind of expected that. There's so much adjustability in the sidecar wheel angle, height and all the hand controls that it was just a matter of getting those to suit me and it all worked.

"The braking was solved by putting a brake on the sidecar wheel. Zeb mounted a brake and plumbed it into the scooter's front brake, so they both operate together. The braking now is one of its best points, it just about throws me over the handlebars."



back it off completely it goes right to some degree. But that's more pronounced at low speed than at high speed. You can go right off the gas at 70 or 80km/h and it stays in the lane."

One of the best features of the sidecar's design is the fact that it allows Brett to swap scooters fairly easily. When the @125 gets too long in the tooth, Brett can have it unbolted from the sidecar and get a new scooter bolted on with just a few days' work.

The sidecar has cost Brett about \$11,000, plus five grand for the Honda @125, mainly because it was being developed from scratch and he was paying an hourly rate for the work. Luckily he received assistance from Technical Aid to the Disabled Queensland, which was a big help. And he's happy with the result, but reckons he'd do it again – with a few changes.

"I'd like to shrink it all closer around my chair. There's 5cm on either side of my chair and I'd rather shrink that down. I'd like to shorten it, take that post forward and reduce the length and try to get it closer to the scooter than it currently is. I reckon by making it narrower you'd reduce that tendency to go left by just reducing the track.

"I reckon you could make big improvements to the suspension by going to a more motorcycle-style swinging-arm arrangement. And apart from that, just more power."

Brett said his scooter sidecar attracts loads of attention whenever he takes to the road.

"There's at least three other guys that I know – two with trikes and one with a sidecar on a motorbike – who are interested. I know there's another guy who's having Steve build him on at the moment.

"Eighty-nine people get spinal injuries every year. The majority of those are young guys from motor vehicle accidents, and many of those are interested in bikes. A lot of people would be interested in this kind of vehicle." *

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Brett's unsure of the exact weight of his scooter outfit – "We just kept adding stuff to it, so it's whatever the scooter weighs plus that, and it's bloody solid" – but the Honda's 125 four-stroke engine is good enough to push it to an 80km/h cruise under most conditions, while giving a range of about 200km from the nine-litre fuel tank.

"It'll do 90km/h down hills, but that's with a breeze behind you. Around town it's a perfect bike, in the 60km/h zones it easily keeps up with the traffic. This gets me to work, which is 20km from home, and everywhere else on the weekends."

"Because I don't have a great deal of strength, I don't ride it like I used to ride my Ducati. You're basically flat-out down the straights and then you're just steering round the corners. The handling's probably governed a lot by the suspension being pretty rigid. I don't have any balance, so the handling is limited by my abilities, and myself, rather than what it is capable of. It pulls a bit to the left when you give it everything, but not too much with the steering adjusted the way I've got it. We've got the toe-in to counter-act that, so when you