

**WRX STi  
BUILD  
PROJECT**



**B**uilding a rally car from the ground up is never an easy task. The endless fiddling to get things right, the small jobs that take longer than expected, and the rush to get the job done in the required time all combine to make it a stressful time. But try doing all that in two weeks!

That's exactly what the team from MRT Performance in Sydney had to do in order to build a client's MY05 STi Impreza WRX for a test run in the Rally of Tasmania in February.

Being a tarmac rally car meant that the workload in building the car was somewhat less than it would have been for a gravel car, but two weeks is still a very short period of time to have the car up and running.

With Targa Tasmania the goal, the client wanted to give the car a full competition shakedown and with plenty of hard work, the job was finished in the nick of time,

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*Could you build  
a tarmac rally car  
from the ground  
up in two weeks?  
MRT did.*

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- Removal of carpet in preparation for the roll cage and maximum weight removal (below). Air bag had to be refitted.
- The standard Impreza WRX STi interior, as delivered from the factory (below right).

sometimes with five people working full time on the car.

The car ran Rally Tasmania in the limited modified class (LMS), which basically meant it was a standard Impreza STi with minimal changes made – very similar to Group N, but with no turbo restrictor.

As far as the STi 1994cc engine was concerned, the catalytic converter was removed and a straight-through exhaust pipe fitted of the same diameter – the exhaust system is now, in essence, a Group N rally set-up.

Although the category allows for freedoms in the Engine Control Unit (ECU), and a full aftermarket ECU could have been fitted, the factory Subaru unit is incredibly powerful and was more than capable of doing the job. It was, however, retuned using EcuTeK tuning software. It was also customised on the MRT dyno, and tuned to run on Elf LMS fuel.

The MRT crew have tuned hundreds of road, race and rally cars and have plenty of experience with fuels. Brett Middleton's Group A Impreza and Tony Sullens' Targa winning Subaru are examples.

Running on the factory 17x7" wheels, the LMS class allows "free brakes". The standard STi rotors are huge (326mm x 30mm) but to further improve consistency MRT fitted





● Standard rear Subaru strut with Whiteline Group 4 strut and MRT adjustable strut top.

DBA "Kangaroo Paw" 5000 Series rotors with alloy hats (to reduce heat build up), and SBS pads were fitted all round. SBS pads were chosen because of their lower cost and excellent performance.

**M**RT has a very close relationship with Sydney-based suspension manufacturers, Whiteline. Being heavily involved in all their Subaru testing, they knew that with the right set-up, they could save many hours of testing, whilst providing a car that was quick "out of the box"

The suspension (in LMS) is also free (the whole strut only) and was improved by fitting Whiteline Group 4 fully adjustable shock assemblies and struts, with MRT adjustable strut tops to match. The Whiteline strut was chosen as it's a monotube gas pressurised strut with a genuine 46mm piston shaft.

"The Subaru has an unusual load issue, especially in the rear where the shock shaft is loaded sideways due to its mounts," Middleton says. "We have found on a race track the Whiteline shock alone is worth at least



● Front suspension with massive factory fitted brakes. Car will later have alloy padded rotors.

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● **Rear suspension showing adjustable platform, standard sway bar and alloy control arms. The sway bar was later replaced.**

one second per lap when compared to other popular brands.”

Other small suspension ‘tweaks’ were also completed, within the rules.

The bolt-in roll cage came via Bond Roll Bars in Sydney. It consisted of a ‘classic cage’ with extra features like rear horizontal brace for added stiffness, while providing an extra bit of safety with a mount for the four harness seat belts, and front side intrusion bars.

While a comprehensive weld-in cage will eventually be installed, the short time between the build of the car and Rally Tasmania meant that the bolt-in version had to suffice for the car’s first event.

The car had few other rally modifications prior to that first event. Customised seats were solid mounted to the floor, for stiffness, utilizing an alloy mounting kit, full harness seat belts were installed, as was a Terratrip tripmeter and Terraphone intercom. No easy solution was available for the Terratrip mount, so MRT fabricated an alloy one off the front roll cage leg.

Yokohama competition tyres were fitted, and as the car comes with a space-saver wheel, the only wheels that could be easily obtained (Subaru has updated the 20-year old stud pattern on this model) were the factory ones at \$700 each!



**A**s the owner used to compete in a Porsche GT3, he specified a quick-release suede Momo steering wheel – very cool! But other than that, it was a standard 2005 Impreza STi.

The car finished Rally Tasmania in 17<sup>th</sup> place and 10<sup>th</sup> in class – a fine effort after such a short lead up to the rally.

Ironically, although Targa Tasmania was the targeted event for the car, the owner is now best man at a wedding on the same weekend as Targa, meaning that he’ll have to sit on the sidelines. Other events planned for this year, however, include Rallye Burnie, and possibly East Coast Targa and Targa West. Tarmac special stage rallies are certainly his preference.

Eventually the car will have a new turbo engine fitted and will be up-specced to a unique full overseas model specification, but in the meantime the car is proving more than quick enough to strut its stuff on the tarmac stages in Australia.

**In next month’s RallySport Magazine we’ll look at the engine performance of the car, show you some dyno sheets, what’s planned next and explain how the team at MRT went about extracting some added performance – both in the workshop and on the track.**



● **The Subaru rear brakes (here with suspension removed) are more than up to the task.**



● **Front suspension with new Group 4 strut, standard sway bar and alloy control arms.**



● **Although a bolt-in roll cage was fitted, this will later be replaced by a cage which is welded to the bodyshell.**

## Tech Spec

### 2005 SUBARU IMPREZA STi

**BODY:** February 2005-built MY05 Impreza STi. Stripped for rally preparation, with Bond Roll Bars bolt-in cage installed.

**ENGINE:** 1944cc (2.0litre) turbo-charged, horizontally opposed, 4-cylinder, 16 valve, multi-point injected DOHC with AVCS. Bore: 92mm, Stroke: 75mm. 8.0:1 compression ratio. Factory ECU retuned using EcuTeK software. 195kW at 6000rpm (standard car figures)

**TRANSMISSION:** Standard Subaru STi 6-speed gearbox.

Front differential Suretrack (torsion style) LSD

Centre differential: with semi-active (or manual mode) electronic controlled torque split

Rear differential: viscous LSD.

**SUSPENSION:** McPherson strut at front and rear. Front alloy lower arms with alloy multi-link lateral arms and steel trailing arms at rear. Whiteline Group 4 struts and MRT strut tops, fully adjustable, replacing standard Subaru units.

**BRAKES:** Brembo brakes front and rear with DBA rotors and SBS brake pads.

**WHEELS & TYRES:** Standard 17” Subaru STi wheels with Yokohama tyres.

**WEIGHT:** 1475kg (standard car weight)