

In this world of 'more value for less money', the metalwork of your car sometimes isn't as substantial as it could be. Suspension components work best when they've got a rigid and flex-free base from which to work. Strut tower braces, which can usually be fitted to both front and back suspension tower tops in MacPherson strut-equipped cars, act to brace the suspension components against twisting forces caused by flexible mounting points.

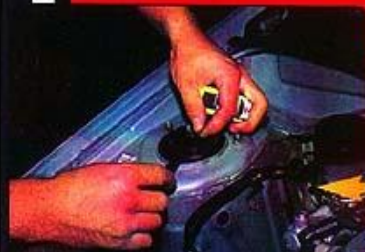
There are a number of good off-the-shelf designs available for popular cars. Finding one for my Daihatsu Charade proved difficult, and even more so when the placement of the Unifilter ram pod - almost directly from the throttle body - was considered. A chat with Whiteline, however, presented a solution.

Whiteline previously imported strut braces from Taiwan to suit various models, but quickly found that the consistency wasn't there. "One batch would fit their relevant application perfectly, but the next would be way out," said company president Jim Gurieff. Whiteline decided to take the whole process of measuring and manufacturing strut braces in-house, not only to guarantee fit but to ensure that each brace would fit each car, regardless of under-bonnet (or boot, or hatch) arrangements. We decided to order a pair of strut tower braces to suit the Charade, and track the process.



brace yourself

fitting a custom strut brace



Measuring the PCD of the mounting bolts, and the distance between the towers



Measuring Up

Firstly, a series of measurements are made in the engine bay, paying particular attention to the area around the ram pod, as well as the gap between the brace and the bonnet. The inner and outer diameter of the mounting plate, the PCD (Pitch Circle Diameter) of the mounting bolts and the distance between the towers are all noted, and a small sketch produced. As this will be the first brace made for the G200 Charade, the build date of the car is noted, as well. The measurements are entered into a database, and the information is sent to the supplier of the alloy cross pieces and steel base-plates.

First Fitting

When the raw materials for the brace lob into the Minto factory, it's time for the first fitting. The base plates are bolted onto the strut tops. The 6061-T6 alloy brace bar is tapped at both ends to accept the adjustable-length, zinc-plated bolt (chromed bolts are a bad idea, as the chrome can flake off and wreck the threads), and the bracket plates are attached to the bar ends. The bar is then dummy-fitted to ensure everything will fit as it should. Particular care is taken to ensure that a moving engine won't hit the brace, and that the bonnet will actually close

once the brace is in place. If your car has air-con hoses, this is the time to make sure all the measurements were done correctly and that the brace fits without fouling anything. The brackets are then tack-welded onto the bases. Everything is marked before disassembly, and the almost-complete brace is ready for final welding, painting and polishing.

At The Back

The rear bar is a slightly different story. It's rare you'll find a modern car without plastic trim covering the rear suspension towers, and the Charade is no different. With some careful blade work, some of the already-scrappy plastic trim is cut away to access the two strut mounting bolts on either side of the car, and the same measurements that were taken from the car's front are repeated.

The sketch is converted into metal and the fitting process is repeated. Slight trimming of the alloy bar is required to make it all fit correctly, but it is an easy job. It certainly reduces access to the rear hatch for bigger items (I occasionally shove a mountain bike in the back), but the middle section is easily unbolted without disturbing any other fittings. The main reason the plastic trim looks like it has been attacked by a deranged chipmunk is because the trim piece was difficult to remove without dismantling the whole interior (and I didn't care either way). Whiteline's strut brace boss Wojtek has already discovered a better way to do it on this car, and is confident that most cars can be fitted with a rear bar with a minimum of trim damage.

Final Fitting

Voilà! The completed front brace. There's more to fitting than meets the eye, though, as the car has to be sitting on flat ground (not jacked up) before the brace can be fitted. The adjustable ends are then used to fit the bar precisely, but aren't wound up tightly (or preloaded). If the brace is preloaded, it's already lost more than half of its effectiveness before the car leaves the driveway. The same thing will happen if the car is jacked up while the bar is being installed, as the weight of the wheels and suspension will drag the alignment settings out of their usual state.



Fitting the rear bar required some modifications to the plastic trim



The final fitting. It is important not to pre-load the strut brace, or fit it while the car is jacked up. Doing this will dramatically reduce the effectiveness of the brace.



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