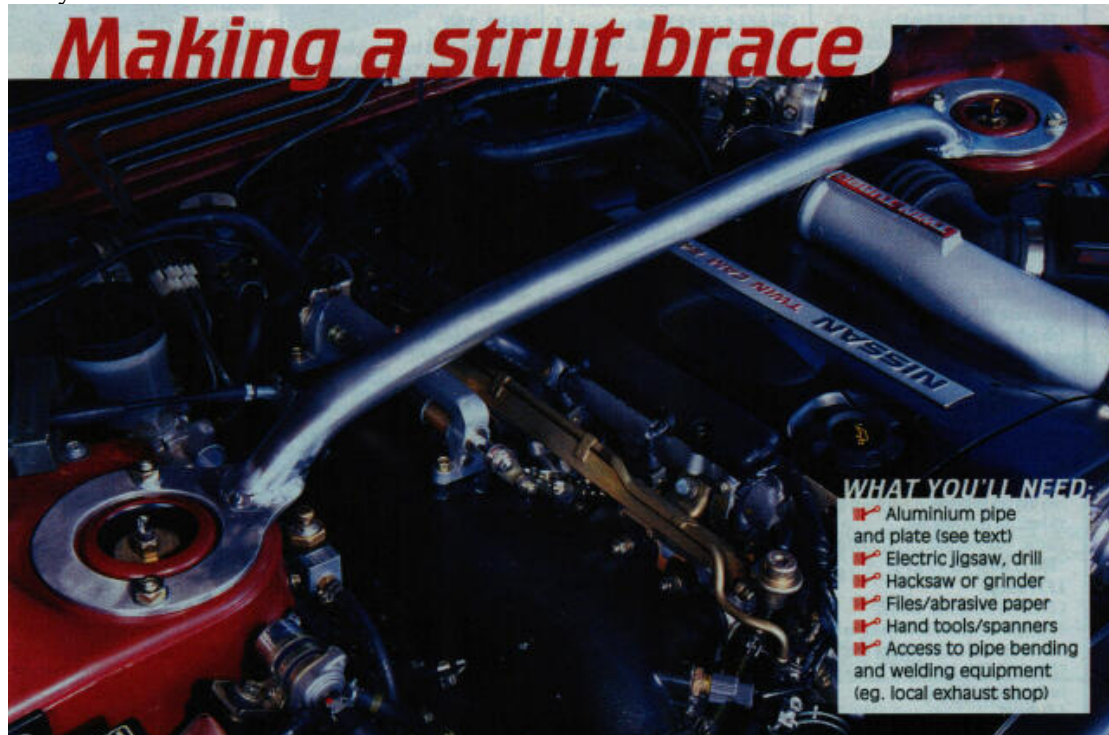


MAKING A STRUT BRACE

STORY AND PHOTOS BY JULIAN EDGAR

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A car's suspension relies on the stiffness of its body shell, sub frames and bushes for precise handling. Unfortunately, especially when cornering forces increase with spirited driving and wider, stickier tyres, a car's suspension system can distort, allowing its carefully designed factory geometry to float around, leading to wobbly handling, increased tyre wear and – in more extreme cases – total loss of traction. Modified wheel alignment settings help, as do polymer suspension bushes (eg Nolathane), helping to eliminate the squish in most cars' standard rubber pivots. The next weak link in the chain usually becomes subframe and bodyshell mounting points. Strut braces can be bought from several suspension suppliers to help eliminate strut tower flex, a problem in many strut-suspension cars. Here's how to make one yourself.



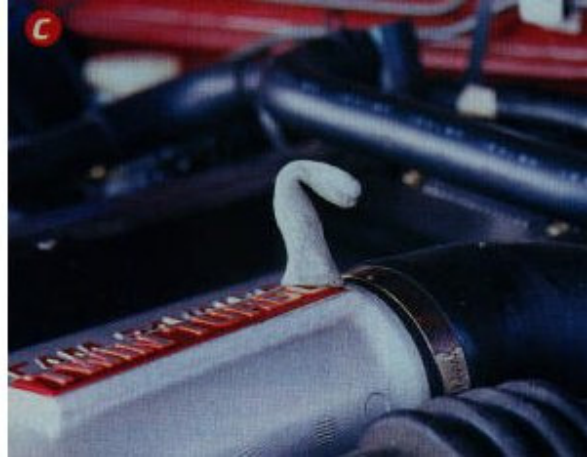
A: The first step is to work out the design of the plates that will bolt to the top of the strut towers. Making a dummy from cardboard allows you to experiment with different designs, including those that use folds in the baseplate. With this car, it was decided to use flat plates.

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B: Before you finish the design of the mounting plates, you need to work out what shape the cross bar will be. It should be as straight as possible. Determine clearances between the engine and bonnet when its shut. Blobs of blue-tac on the engine can be used to determine hard to visualise tight clearances.



C: The squashed blue-tac will show what clearances you have to play with. With these clearance in mind, you can then work out what shape the cross bar will be and how it will attach to the mounting plates. Keep plenty of clearance above the engine – it will move around on its mounts with acceleration forces etc.

D: This hollow alloy bar is 36mm in diameter with a hefty wall thickness of 6mm. Rather than buy new; we bought some alloy pipe and plate at a scrap metal dealer. To fit this car, the crossbar required four bends in it. Keep the number of bends to a minimum; bending reduces the stiffness of the bar.



E: The template shape was transferred to the alloy plate before the electric jigsaw was used to cut it out. Even quite thick alloy can be cut with a jigsaw if the blade is kept lubricated with penetrating oil. (eg WD40) or kerosene. Cut the plate a little oversize to allow for file finishing of the edge.

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F: Once the first plate was cut out, the second was marked using the first as a template. You may find some models of car the plates will not be mirror images; be careful that you don't make two plates for the same side of the car.



G: We drilled the mounting holes for the plates and then bolted them together so the edges could be filed into identical shapes. Once the outside profile was filed the same, we cut out the second plates centre hole.

H: Any exhaust shop or marine engineering company should be able to bend the crossbar for a small charge. Its wise to gradually increase the sharpness of the bends until the bar fits.



I: The tube bender left some small scratches on the alloy; these were finished out with a belt sander. If you don't have access to a belt sander this could easily be done with W&D abrasive paper.

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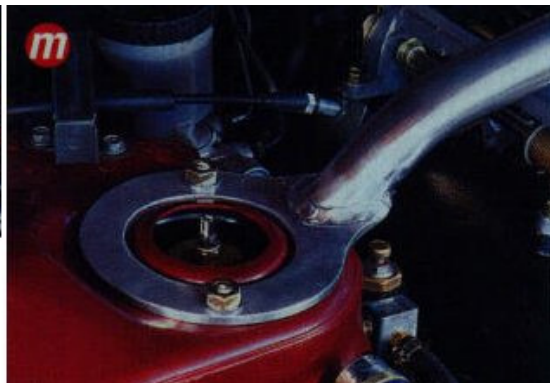
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J: Each end of the bar had to be cut off at an angle and then ground so that the bar sat flat on the baseplates. The bar was cut with a hacksaw and the ends ground flat by rubbing the bar back and forth on coarse paving stones. Don't laugh – this is an effective technique.



K: The crossbar was trial assembled before welding. Make sure that the bonnet shuts – use the blue-tac trick on the crossbar – and the crossbar sits flat on the strut plates. The plates and crossbar can then be polished or brushed to whatever you desire.

L: The crossbar was TIG welded to the baseplates after initial tacking occurred with the crossbar and plates in position on the car. After the tacks were made, the bar was removed for final welding. Attempting to weld on the car can cause paint damage. Or worse!



M: The bar ends welded in place. The standard nuts, with their integral washers, no longer fully engaged on their studs when the strut bar was in place so non standard nuts were required. Ensure any replacement fasteners are of equivalent – or better – quality to the originals.