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HOW DOES... SOUNDPROOFING WORK?

Rob Hawkins visits Noisekiller to see if soundproofing can make a difference to the level of noise in a car and the ride quality

I've owned plenty of kit cars that soon become irritating to drive once the novelty has worn off and the reality of road noise and unwanted panel vibrations start to sink in. Fortunately, there are a number of solutions. Panels can be lined with a material that deadens the sound and stops them vibrating. Floors can be covered in a thick matting to stop sounds transmitting through. The engine bay can be lined with a lead sandwich, an engine blanket and vibration reduction material to help muffle noise. Applying underseal or a similar product to the wheel arches and the underside of panels can also help.

We visited Noisekiller to see what they can offer for soundproofing a Mazda MX-5, which is a suitable starting point for a number of panel kits based on this production sports car and similar to others such as the BMW Z3 and Toyota MR2. After fitting all the soundproofing material to our own MX-5, the difference was astonishing. Before the car was soundproofed, we had wondered whether the suspension was worn and several panels were loose because the car seemed to crash over bumps in the road, but now we realise it was all down to noise transmitted through the body of the car.

The following pages reveal all, showing where the soundproofing should be fitted.

continues on page 88...



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MX-5 PANEL KITS



Panel kits such as the MX250 from Tribute and the TVR inspired Widow both make use of the entire Mazda MX-5, transforming the soft top sports car into a GRP clad coupe. So soundproofing is almost certainly a must for these conversions.



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STRIP THE INTERIOR



Soundproofing a vehicle is a good opportunity to strip the interior, clean it and check for corrosion. Start by removing the seats, which are usually secured with four 14mm bolts – two at the front and two at the rear.



If there are covers fitted over the tops of the sills, these will need to be removed to be able to lift the carpets. Use a trim tool to carefully lever the covers off. They may be brittle and could easily break.



Undo the 17mm bottom seatbelt mounting bolt to be able to lift up the carpet. Once undone, move the carpet out of the way, then refit the bolt, loosely fitting it for now to ensure you don't lose it.



The footrest in the driver's footwell can be removed to make it easier to lift the carpet and apply soundproofing material to the propshaft tunnel. This is secured with a couple of dome headed 10mm nuts.



The centre console needs to be removed if you want to soundproof the propshaft tunnel. Remove the box inside the ashtray, then undo two crosshead screws. Undo more crosshead screws inside the lockable compartment.



Prise up the switch panel for the electric windows and disconnect the plug. Undo the retaining screws at the side of the centre console. Unscrew the gear knob and you should now be able to lift off the centre console.



The carpet for the floors and over the propshaft tunnel may be secured with some plastic plugs, which can be carefully released with a trim tool. Work around the carpet, making sure it isn't secured to any part of the car.



Inspect the floors and check everything is dry. Remove any old soundproofing using a scraper. Dry anything that is wet and treat any corrosion before fitting the new soundproofing material.

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SOUNDPROOF THE INTERIOR & DOORS



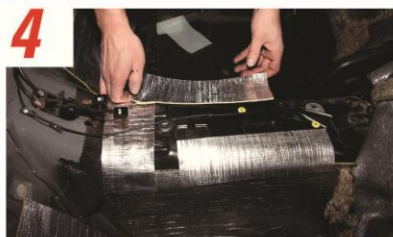
Two pieces of thick sound barrier can be fitted underneath each side of the floor. This is supplied pre-cut from Noisekiller and helps to reduce vibrations and block road noise. In the centre of the matting, there is an open cell acoustic foam which absorbs airborne sounds.



Remove the carpeting from the rear bulkhead and fit two large sections of self-adhesive barrier mat. This helps to reduce vibrations and block noise from the road and differential. Make sure it's firmly stuck down by going over it with a decorator's roller.



The sides of the propshaft tunnel can be covered in self-adhesive barrier mat. A large single piece can be fitted on the driver's side and three smaller pieces can be fitted on the passenger's side.



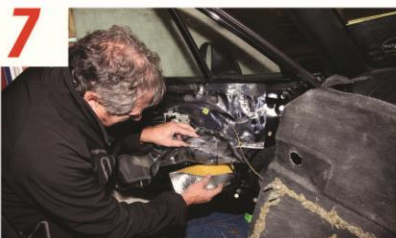
The top of the propshaft tunnel has room for three small strips of self-adhesive barrier mat. Do not cover over the mounting holes for the centre console. Once fitted, the carpets can be refitted and the interior reassembled.



The insides of the doors can be soundproofed with self-adhesive barrier mat, so the door cards have to be removed. Start by undoing the securing screw inside the internal grab handle and behind the door handle.



There's another screw at the top of the grab handle, a plastic trim plug near the front of the door card, then several clips to release before the door card can be lifted off the door – detach the speaker wiring.



Peel back the plastic waterproof sheeting to see where the barrier mat can be fitted inside the door. Use small pieces and see if they can be easily fed into position without sticking to everything.



After fitting a few pieces of self-adhesive barrier mat, make sure they are securely stuck down by running over them with a decorator's roller. Water will drip down the inside of the door, so the barrier mat must be secure.

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SOUNDPROOF THE BOOT

1



Remove all of the contents of the boot including the spare wheel, any tools, the carpets and moulded side trim (secured with plastic trim plugs). Dry out the boot if it's wet and treat any rust.

2



A steel panel is fitted around the petrol tank filler neck. This can be removed to fit soundproofing material, so undo the 10mm bolts that secure it, then carefully manoeuvre it out of the boot.

3



Trial fit several pieces of self-adhesive barrier mat around the walls of the spare wheel well. Don't stick them down until you have trial fitted all the pieces to ensure the area is fully covered.

4



Fit a large piece of self-adhesive barrier mat in the floor of the spare wheel well. Use a decorator's roller to ensure all the barrier mat is stuck down. If the floor of the boot is wet, dry it out first.

5



Small pieces of self-adhesive barrier mat can be fitted inside the rear wings. There's not much room to fit these. Tap the panels to see where the noise is generated, then trial fit a piece or two in position.

6



Here's the boot area lined with self-adhesive barrier mat. Additional pieces have been fitted on the front and rear walls of the boot, plus the floor of the boot to the side of the spare wheel well.

7



Another area of the boot to be soundproofed is the underside of the boot lid. The single skin areas can be covered in self-adhesive Vibrasorb, which helps to reduce panel vibration and absorb sounds.

8



The final piece of soundproofing for the boot consists of a large sheet of non-adhesive sound barrier. This can be fitted under the boot carpet and helps to reduce vibrations and block road and exhaust noise.

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ENGINE SOUNDPROOFING



1 The underside of the bonnet can be soundproofed in self-adhesive Vibrasorb to help reduce engine noise. First, this area needs to be cleaned with a degreaser to remove any dirt and oil residue.



2 Noisekiller use templates for cutting out the Vibrasorb and their other soundproofing materials, so all of the soundproofing material is supplied pre-cut for fitting into the MX-5.

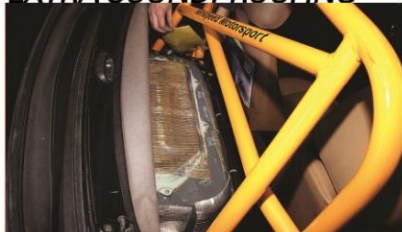


3 Trial fit the pieces of Vibrasorb to the underside of the bonnet to determine where each one needs to be secured. If a piece is a little too large to fit, it can be trimmed with a sharp knife.

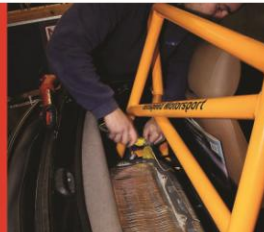


4 Peel off the backing paper from the Vibrasorb and fit each piece onto the single skin sections of the bonnet. Use a decorator's roller to firmly press the Vibrasorb down and ensure it has stuck to the bonnet.

EXTRA SOUNDPROOFING



With a roll cage fitted and no trim across the back of the interior, there was a large area of exposed metal in the back of our MX-5, which conceals the petrol tank. This can generate lots of noise, so we fitted several pieces of self-adhesive barrier mat here.



THE VERDICT

We were amazed by the difference Noisekiller's soundproofing made. The panel rattles had gone and what we suspected to be worn suspension noise, was also down to noise transmitted through the bodywork, which was eliminated. The noise from the road, engine and tyres was also reduced, helping to transform the ride quality. We have since renewed the suspension on this MX-5 and fitted a new set of tyres, which has further contributed towards making this car feel as good as new.

Contact Noisekiller
Tel: 0161 652 7080 / www.noisekiller.co.uk
MX-5 soundproofing kit from £210 including VAT
Fitting charge at factory from £100

