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NOISE REDUCTION

WE VISIT NOISEKILLER TO STRIP THE INTERIOR OF A MK4 ESCORT AND FIND OUT HOW TO SOUNDPROOF IT.

WORDS & PICS: ROB HAWKINS



TOOLS CHECKLIST

- Clean cloths
- Cleaning solution
- Screwdrivers
- Sharp knife
- Socket set and spanners
- Tape measure
- Trim tools

COSTS & CONTACTS

Noisekiller

0161 652 7080

www.noisekiller.co.uk

DIY soundproofing kits from £200 including VAT (excluding postage)
Fitting charge from £100 at Noisekiller's workshop and £180 mobile

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Vibrations, road and engine noise can make the interior of a vehicle sound like you're sitting inside an empty paint tin. Luckily, there are a number of methods for reducing this unwanted noise, including fitting thick material that blocks and absorbs airborne noise travelling through to the interior and stopping panels from vibrating.

We visited soundproofing experts Noisekiller, who have been fitting soundproofing kits for the past 15 years and in that time have developed a number of made to measure kits for popular Fords including Escorts (Mk1-4), Fiestas, Capris, Sierras, Scorpios, Mondeo's and Focuses. These kits are supplied with pre-cut material that's labelled to help indicate where it should be fitted. All you have to do, is remove some of the interior and fit them.

There are three different types of soundproofing material used by Noisekiller. The cabin and boot floors

and the area underneath the rear seat can be covered in a non-adhesive sound barrier, which is a thick mat that helps to block and absorb interior sounds, engine and road noise.

A thinner self-adhesive barrier mat is stuck onto the sides of the boot, around the arches and inside the doors to reduce vibrations and absorb engine and road noise.

The underside of the bonnet can be covered in a self-adhesive Vibrasorb, which also helps to absorb engine noise and vibrations from the engine. Noisekiller also fits engine blankets in some cases, which helps to further reduce the noise from the top of the engine. Available in standard or custom sizes, these blankets help to reduce diesel engine noise in particular.

We spent a full day with Noisekiller, stripping the interior of Ben Clapinson's Mk4 Escort and fitting the aforementioned soundproofing material. He was amazed by the difference the soundproofing has made. The following pages outline the work involved. ●

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TEMPLATES AND KITS

Noisekiller have measured up and soundproofed many cars over the 15 years they have been established, so they have lots of templates to create pre-cut ready to fit kits. Such kits are posted out to customers around the world. If you don't fancy fitting the soundproofing yourself, they have a fitting service at their Manchester based workshop and a mobile service.



STRIPPING THE INTERIOR

Many of Noisekiller's soundproofing kits can be fitted without having to remove the seats, but we wanted to unbolt the front seats, peel back or remove the carpets and look for corrosion. A thick non-adhesive sound barrier will be fitted underneath the carpets, but it's no use fitting this if the carpets are water logged or the floors are full of holes. The outer layer of Sound Barrier is waterproof but the inner section can absorb water if it is fully immersed, so it's best to start with a dry interior.

The Mk4 Escort's front seats are secured with four short M8 bolts with tiny 10mm heads. These are threaded into captive and strengthened areas of the floor, but they still don't inspire much confidence. However, the Jaguar X-TYPE's (Mondeo in disguise) front seats are secured in a similar way, albeit with slightly longer bolts, so maybe there's nothing to worry about.

With the seats removed from our Escort, we realised the carpets couldn't be removed without taking out the plastic sill covers. These are secured with a number of crosshead screws and extend to the front speakers, which are at the base of the A posts. We also decided to remove the speaker covers to help ease out the carpet.

The centre console needs to be removed to be able to free the front of the carpet. This looked a little bewildering at first, but after prising up the gear lever gaiter, all was revealed. Four crosshead screws were holding everything in place.

We could have gone even further, undoing the single mounting bolt for the seatbelt stalks, the mount for the seatbelt rail on each inner sill and working back to the rear seat. However, we decided that peeling back the front of the carpet and feeding the soundproofing material in would be sufficient.



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CARDS OFF THE DOOR

TECH PAGES
SOUNDPROOF



There's no denying the fact that the Mk4 Escort's door cards are well and truly fixed to the doors. Ben took several minutes to remove a selection of screws, prise off the window winder handle and carefully try to remove a cover over the internal handle that conceals another securing screw. And if that wasn't enough, the door card is also held on by several plastic plugs and a couple of locating clips at the base! Someone was keen when this car was designed and manufactured.

Fortunately, the side covers next to the rear seats (our Escort is a three door model) were much easier to remove, or so we thought. With only a selection of

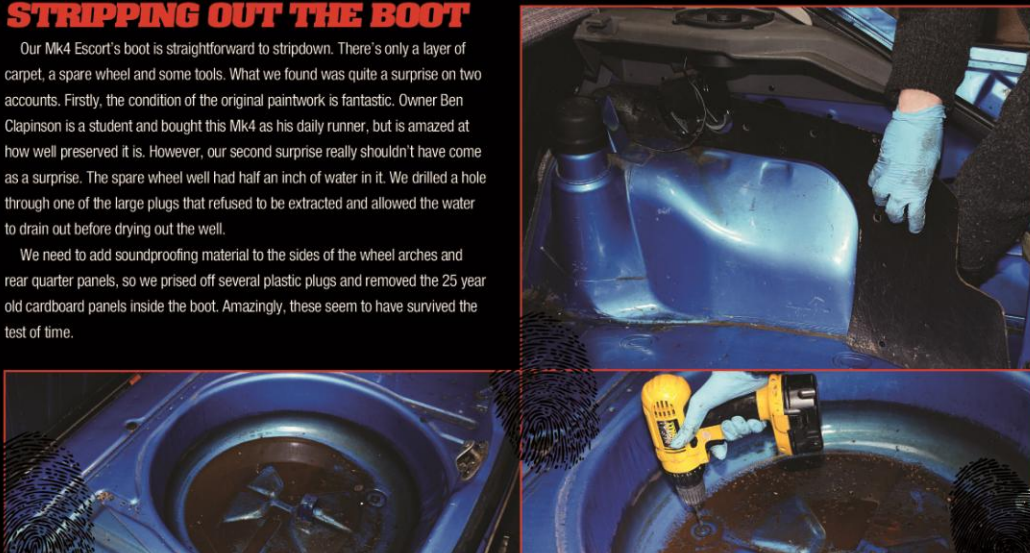
plastic plugs to release at the front of each card, we had enough room to squeeze a hand in between and fit some sound deadening material onto the insides of the side panels. We thought about going further and removing these cards, but gave up after undoing a couple of securing screws and realising we also needed to unbolt the upper rear seatbelt mounts and may have to dismantle the rear seat.

We were satisfied we had enough room to soundproof inside the side panels in the rear of the car and also decided to extract the old soundproofing material. This has survived intact, so Ben is tempted to sell it on eBay.

STRIPPING OUT THE BOOT

Our Mk4 Escort's boot is straightforward to stripdown. There's only a layer of carpet, a spare wheel and some tools. What we found was quite a surprise on two accounts. Firstly, the condition of the original paintwork is fantastic. Owner Ben Clapinson is a student and bought this Mk4 as his daily runner, but is amazed at how well preserved it is. However, our second surprise really shouldn't have come as a surprise. The spare wheel well had half an inch of water in it. We drilled a hole through one of the large plugs that refused to be extracted and allowed the water to drain out before drying out the well.

We need to add soundproofing material to the sides of the wheel arches and rear quarter panels, so we prised off several plastic plugs and removed the 25 year old cardboard panels inside the boot. Amazingly, these seem to have survived the test of time.



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UNDER THE CARPETS



Starting at the front of the carpet, we delved inside the front footwells and retrieved the edges of the carpet. A couple of metal tags are welded to the floor to help secure the carpet, but these can easily be bent out of the way without damaging them. Eventually, we manoeuvred the front of the carpet and peeled it back to reveal 25 year old soundproofing material that had seen better days. Underneath the carpets, there was a layer of material that was starting to disintegrate. At the base of the front bulkhead, there was a thicker material with a solid backing that was starting to crack. All of this old soundproofing material was

bin fodder.

Finally, we could see the metal floors and they are surprisingly healthy overall. Ben has had some welding done around the driver's OSR seat mount, which is also starting to corrode on the passenger side. Otherwise, the paintwork and metalwork were pretty much pristine.

We also had the opportunity to look inside the sills, poking holes in the thick tape that lines the inside of the sills to reveal several large inspection holes. We'll return to these another time with an endoscope and plan to spray some Waxoyl inside.

SOUNDPROOFING THE BONNET

The underside of the bonnet usually consists of a couple of skins of steel, which are ideal for amplifying engine noise and creating lots of vibrations. Fortunately, a lot of this noise can be removed by fitting a self-adhesive Vibrasorb material to the underside of the bonnet, on the underneath of the outer skin. Most bonnets consist of a sort of framework on the underside, which is the second skin, so a full sheet of Vibrasorb cannot be stuck in place. Instead, three or more pieces need to be cut to shape and fixed in position. Noisekiller has the templates for a number of Ford bonnets, but at times, a little trimming may be required. In our case, the welds between the inner and outer skins of the bonnet obstructed the Vibrasorb, so we had to trim the soundproofing material a little to ensure it fitted flush.

Before the Vibrasorb material was fitted, the underside of the bonnet was cleaned with a panel wipe solution to remove any oil or dirt that doesn't help the material stick in position.

Once the Vibrasorb was fitted, a small decorator's roller is used to run over it and ensure it is firmly stuck in position.



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SOUNDPROOFING THE DOORS AND SIDES

With the door cards removed and the waterproof plastic peeled back, there are a few large access holes to the insides of the doors, allowing three pieces of adhesive barrier mat to be fitted to the inside of the exterior skin of each door. NoiseKiller recommend fitting at least one of these pieces directly behind the door speaker (if fitted) to absorb any distorted sound that comes out of the back of the speaker that would cause the outer skin to vibrate.

Water usually runs down inside the doors (hence the waterproof plastic covering behind the door card) and should drain out of the holes in the bottom. Consequently, the inside of the outer door skin needs to be clean and dry before fitting the adhesive barrier mat and should be checked every year to make sure it hasn't become saturated or has fallen off.

We also fitted a couple of adhesive pieces of barrier mat behind the rear side panels, next to the rear passenger seat. This was a little fiddly, but removing the side panels completely seemed to be too complicated and potentially regretful, so we put up with some scratched arms instead.



IRON PAGES
SOUNDPROOF

SOUNDPROOFING THE FLOORS

After peeling back the front of the carpets, removing the old sound deadening material and checking for water and corrosion, we were ready to line the floors with some thick noise absorbing sound barrier and a single piece of adhesive barrier mat. The stick-on barrier mat was secured over the transmission tunnel, forward of the gear lever, then two large pre-cut pieces of thick sound barrier were slotted into the front footwells. These will help to absorb road noise that's transmitted from underneath the car.

Another two pieces of sound barrier were fed under the carpets to line the footwells

for the rear passengers, then we moved onto the rear seat. Releasing and raising the rear seat base, we fitted a pre-cut piece of sound barrier underneath it, which helps to block noise from under the car, especially sounds generated by the vibration of the fuel tank.

Once all of the soundproofing material had been fitted, we could start to reassemble the interior, refitting the carpet, followed by the trim on the inner sills, the centre console and the seats. Ben was soon on his way home, listening to his stereo with the volume turned down.



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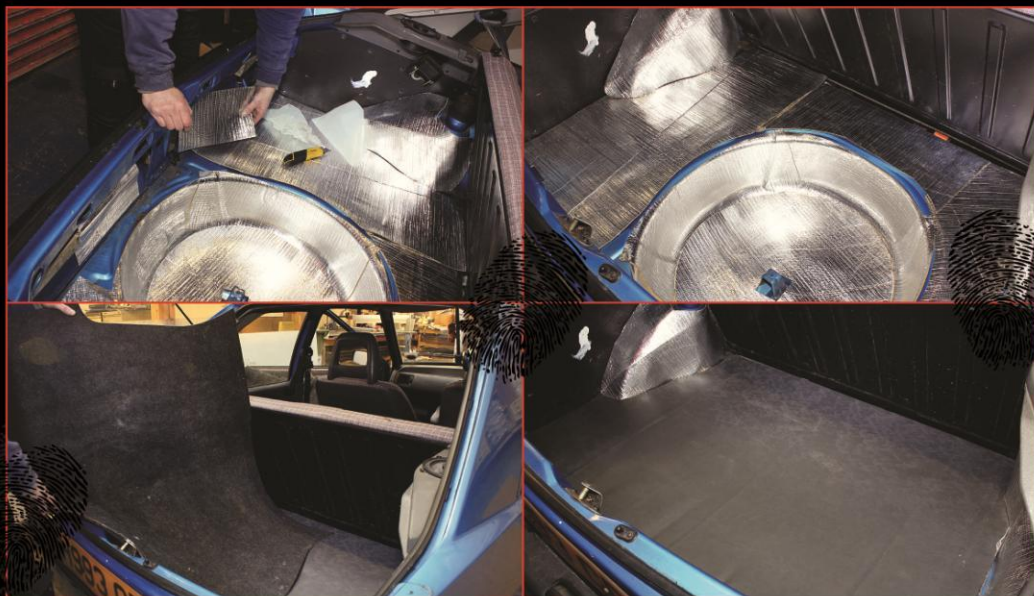
SOUNDPROOFING THE BOOT

The boot is one area of a car that acts as a giant amplifier and loudspeaker all in one. Road and exhaust noise are transmitted through it and you only have to tap the underside of the spare wheel well on the Mk4 Escort seen here to appreciate what happens to that noise. It's amplified through the vibration of the thin metal used in the base of the spare wheel well and transmitted into the inside of the car. Ben admits he likes his music loud and likes nothing more than to cruise along listening to AC/DC, but finds he can't really appreciate it. And even if the music is switched off, there's little chance of having a conversation with anyone else in the car at motorway speeds.

Reducing the noise transmitted by the boot is relatively straightforward. The panels that vibrate need to stop vibrating and the noise from the exhaust and road needs to be absorbed to prevent it getting through to the interior.

NoiseKiller start to soundproof the boot by fitting adhesive barrier mat. This can be stuck to the boot floor, the sides and floor of the spare wheel well, over the rear wheel arches (inside the boot) and inside the rear quarter panels. There's just enough space to squeeze a couple of small patches of adhesive barrier mat onto the insides of the rear quarter panels, which transmit lots of vibrations if they are not soundproofed. The rest of the boot area is more straightforward to line and can be fully covered with the pre-cut sections of barrier mat from NoiseKiller.

After fitting the barrier mat, the spare wheel and toolkit can be refitted, then a thick layer of sound barrier is fitted (to help reduce and absorb airborne sounds produced by the exhaust and from road noise) followed by the original boot floor carpet. ●



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