XK* Repairing the centre air vents

My dash air vents suffered the usual malady where some of the internal air director slats didn't adjust correctly. This is due IMO to a design flaw that makes the actuator 'sliders' prone to breaking. As any replacement unit will have the same defect, I decided to attempt to repair the one I had. Unfortunately, I couldn't see any way of replacing the broken parts without disassembling the unit.

What you will need

- Dremel or similar with a **thin** cutting disk
- Stanley or modelling knife with a **sharp** blade
- A piece of flexible black plastic about 8cm x 2cm x 2mm
- 2mm drill bit
- Glue suitable for ABS* plastic (plumbers pipe cement works well)
- Cocktail stick cut in half for applying the glue
- Two rubber bands big enough to hold the rear intakes in place on reassembly
- Lots of patience.
- Plan that the vent will be on your bench for 24 hours to dry properly

Additionally, if you also decide to replace the shutter foam

- Two pieces of 2mm foam rubber sheet 6cm x 4cm for the foam inserts
- Junior hacksaw
- Small metal ruler as a guide when cutting the foam sheet
- Small C - clamp
- Small punch: ~3mm tip
- More patience

*Both the shutter halves and the main assembly are moulded in ABS, so glue similar to pipe cement should work just fine. Nevertheless, I'd suggest testing on a non-visible area before you do any cutting.

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Preparation

Both the air bag panel and the centre panel are pressed on with fasteners: no screws are present. Some find it easier to detach the air bag panel for best access/better leverage on the centre panel.

To do this, open the glove compartment and prise out at the bottom of the air bag panel using a plastic trim tool. There are two clips on the bottom and two on the top.

The black squares in the photo are the female receptacles for the clips. Allow the panel to dangle, or fold it up on top of the dash.

Unclip the centre panel from the bottom, pull out about an inch or so using a plastic trim tool, then ease the top clips out. Pry gently, and never use the panel as a lever since you may crack the finish. Tip: If the two lower clips (circled) come out with the panel, then detach them and place back in their slots on the dash.

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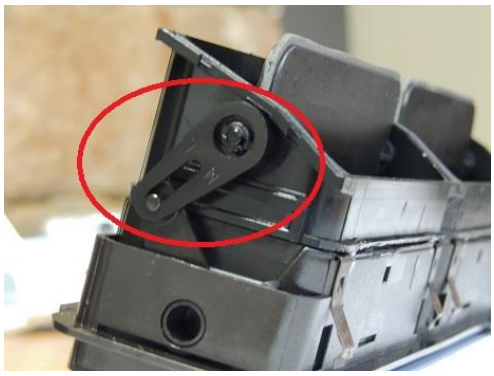
Remove the vent assembly. It's held in place by eight clips (four on both top and bottom edges), and can easily be pried away from the dash. Note that this vent can slide left/right a small distance. This is important for reassembly – remember to carefully align it with the veneer panel before pushing the latter fully back in place

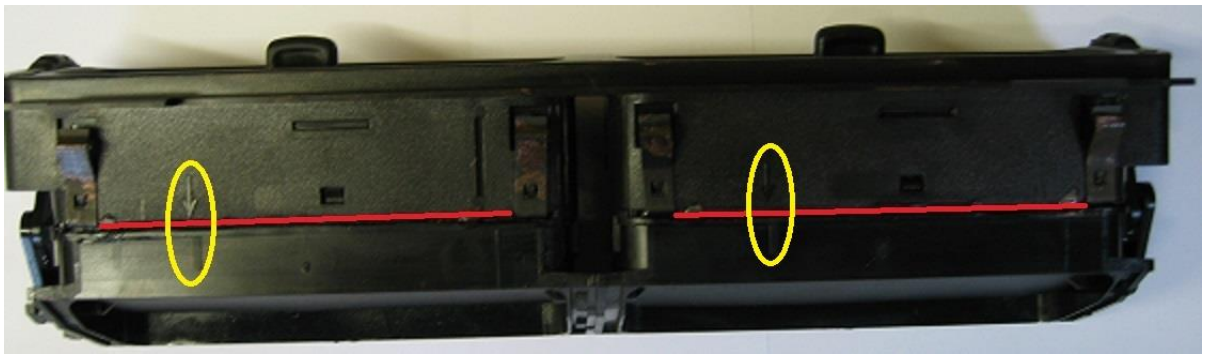
For those of you with the round gauges as shown above – this is a perfect time to clean the entire plastic face of the gauges!

Disassembly - the butchery part.

Remove the shutter actuator arms from each end of the vent: - they just pull off.



The joints between the two rear inlets and the front moulding are welded rather than glued to the main body. Cut the joins on the top and bottom of each inlet with the Dremel along the red marked lines between the metal clips. The cut only needs to be about 1mm or so deep, and as narrow as possible, as this is where the ABS glue is required on reassembly.



Gently separate the inlets from the main body by prising apart the join using a thin flat-bladed screwdriver in the Dremel cuts, taking care not to damage the edges. Note the arrow and bar (circled in yellow above) on each side the moulding, which give the orientation of the rear inlets for assembly. I found that it was obvious which intake went on which side due to slight differences in the cuts, but it wouldn't hurt to mark which side each intake came from.

Remove the eight metal retaining clips.

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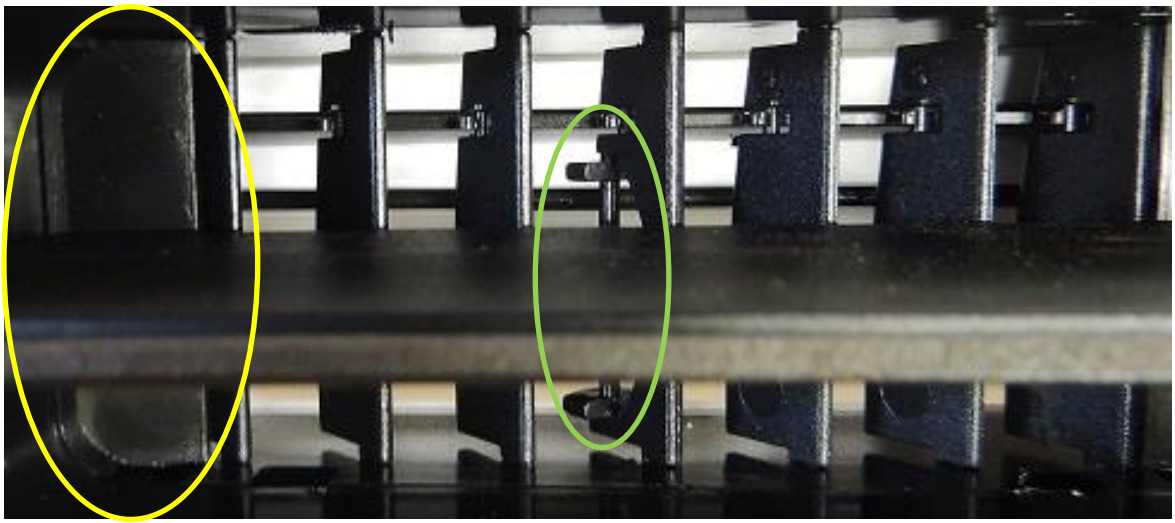
The insert

Note the positions of the horizontal slats before disassembly. The slat with the tab is second up from the bottom of the unit: the other three are identical. The assembly top can be determined by the part number on the left hand side

The vertical slats for each side are contained within two inserts which can be seen once the rear inlets are removed. This back of this insert also holds the horizontal slats in place on the front moulding. The welding process for the inlets may have caught the edges of this insert, so run the knife blade around the top if necessary.



This is the view from the rear of the assembly. You can see the seven vertical slats, together with their actuating ‘slider’ near the top. These don’t need to be disturbed; however, if this slider is also broken it can be accessed easily once the insert is removed. The centre slat has a bar (circled in green) that engages with the tab on the second horizontal slat from the bottom to move them from side to side. The section circled on the left hand side is moulded behind in such a way that the slider for the horizontal slats is kept in place.

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Remove the insert by unclipping from the front moulding then sliding out towards the rear of the assembly. There are two slot-and-tang retainers on each insert: one on top and one on the bottom. They are offset from the centre as an orientation guide during assembly.

Once the insert is removed, you will see the 4 horizontal slats: they are located in U-shaped cutouts on the front moulding, and can be simply lifted out. Note that their slider mechanism is located on the right hand side

Repair - the fiddly part.

Here is the remains of the slider that operates the horizontal slats. They break at the weak spots caused by the cutouts on the bottom: this one has one end broken off. I can't understand why the moulding was designed like this. The slider for the vertical slats does not have these built-in weak points.

They are just too flimsy to glue back together (even if you have all the pieces and a suitable glue) so I made new ones out of a piece of plastic. The 'donor' I used was a securing tab from a plastic console:

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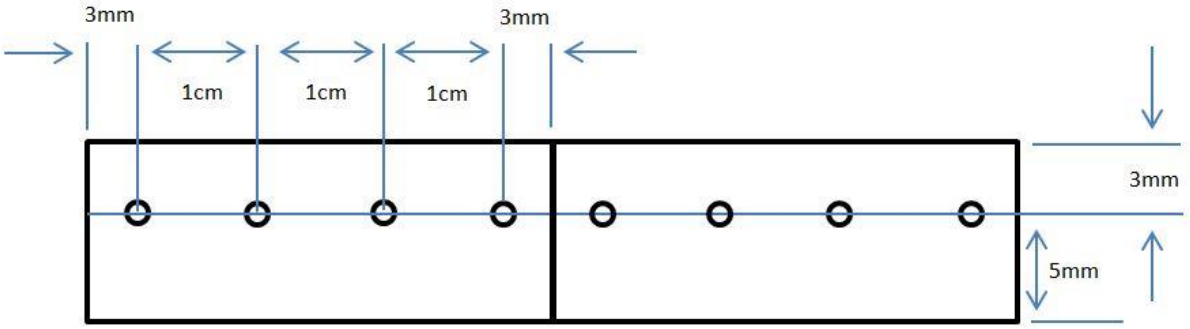
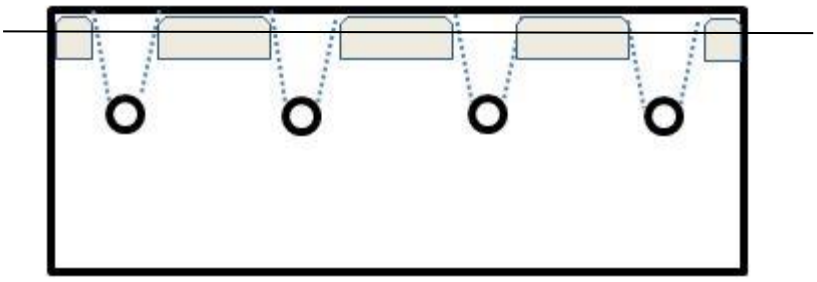
The locating pins on the slats are somewhat wider than the original sliders, so there's an opportunity for a bit of extra strength by using slightly thicker plastic for its replacement. You may need to adjust the thickness slightly by sanding one face so it's not too tight to fit the slat.

This is the template for the sliders: the right is the same as the left and it's easier to make up as one piece then cut in half. Drill the holes using a 2mm drill bit before proceeding to cut out the slots.



Cut along the dotted lines using a sharp knife. The idea is to create a keyhole-shaped slot that the vent pins will clip into. The shaded areas may need to be trimmed to allow the vertical slats to pivot to about 30 degrees either way.



This was my first attempt at making a slider. I cut the top a little too low, but it still clipped well onto the slat pins.

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There is no need to cut out as much material between the holes as on the original, which makes it stronger. Also, the slider can't easily fall off the slat pins as the insert has some plastic retaining tabs that sit just underneath the bottom edge when everything is assembled.

Reassembly - inserts

Clip the horizontal slats into the new slider and then place them into the slots on the front moulding. I used a tiny amount of grease on each pin. Ensure that you have the orientation correct: the slider should be on the right hand side with the vent moulding the correct way up.

Now slide the insert back inside the front moulding, ensuring that the bar on the centre vertical slat engages in the slot on the tab on the horizontal slat.

Check for correct movement of both sets of slats. It's easy to remove the insert and try again at this stage if you don't get it the first time.

Reassembly – intakes

Refit the eight metal retaining clips to the front moulding.

Place each intake in its correct orientation on the front moulding and hold it in place with a rubber band.

Apply ABS cement to the join. I opted just to 'spot fix' (circled in red below) adjacent to each metal clip so that I could more easily disassemble again if necessary. The intakes don't really need much to hold them in place.

Leave to dry for at least 24 hours, and then re-attach the actuator arms to the shutters.

Remember to ensure that the vent is centred when replacing in the dash so that it aligns with the cut-out on the veneer panel. Correct orientation can be

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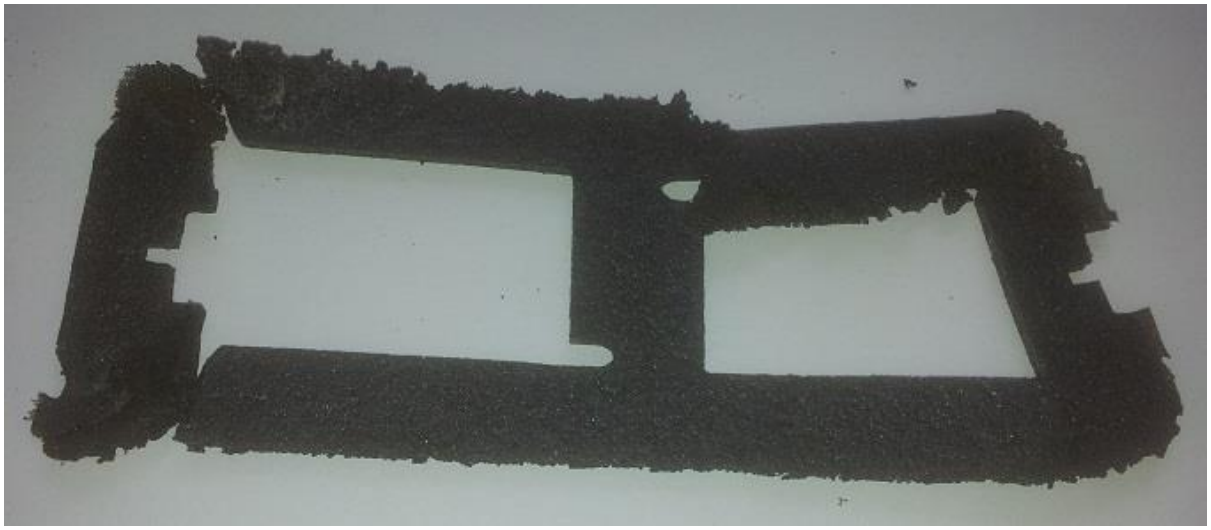
Shutters

These are two-piece ABS mouldings with a foam insert sandwiched between them. The foam moths had gotten to the inserts, so I opted to replace them. Here is before and after:

The remains of the old foam insert. Although the hacksaw didn't help, the edges had crumbled away.



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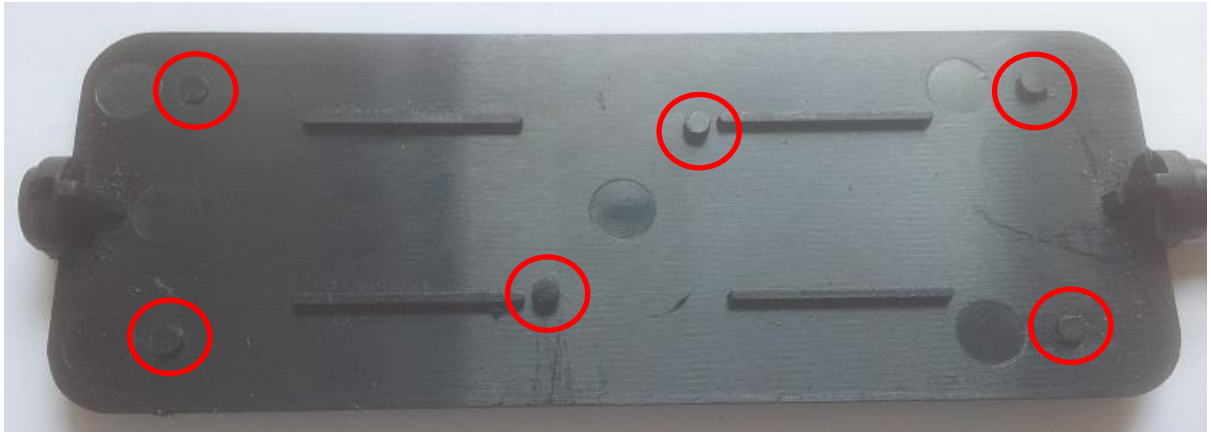
The shutters are removed from the rear inlet by bending slightly then pulling the narrower pivot out of its locating hole. It's on the left in the picture of side A.

The two halves of the shutter are bonded together by six moulded 'pegs' (circled below) which can be cut using a small hacksaw. Cut the four corner ones first, as this will allow the hacksaw blade to be slid in from each end to get to the middle two.

Side A



Side B

This side fits into the side A, and makes a good template for the foam insert. Allow for a 2 mm overhang along each edge to form the seal. I cut a rectangle 4mm wider and longer out of the foam, then used a corner of the shutter as a guide for radiusing the corners.

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The new foam insert should look something like this:

Mark the positions for the six holes by pressing the foam against the peg stubs on one of the shutter halves, and then use a small punch to open out the holes to about 3mm. The foam I used was slightly thinner that the original, so I didn't need cutouts for the horizontal bars on the shutter, which only reach about half way across the gap between the two sides. The end cuts were made using Side B as a template.

Do a dry assembly to check everything fits, then position the foam insert onto side A. Make sure you have the clamp handy, then place a drop of the ABS glue on the top of the peg in each hole using the cocktail stick, and a drop of glue on each peg of side B. Position side B on the top, then clamp the sandwich together and leave to dry for 24 hours. The clamp only needs to be tight enough to compress the foam so that the peg faces meet.

To refit into the inlet, insert the long pivot into the outside hole, then flex the shutter to allow the short pivot to slide inside the other end of the inlet. It's easier if the shutter is kept as close to the closed position as possible.