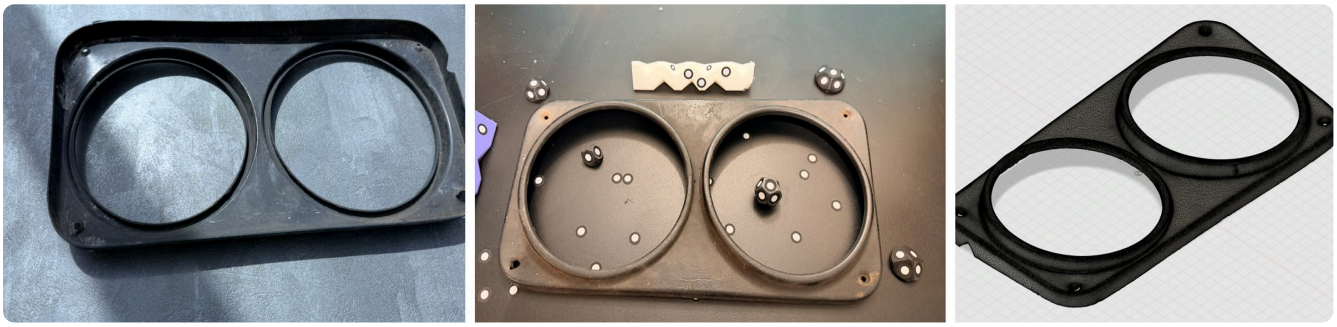
CASE STUDY

New headlight masks for a Lotus Esprit S2

> When we were asked about new masks for the Esprit S2's pop-up headlights, we first checked that one would fit on our printer. Then we scanned an original and made a handed pair.

On the Lotus Esprit S2, each pop-up headlight pod carries a pair of round lamps behind a black mask. The mask frames the lamps and closes off the pod, so it is one of the first things people see when the lights come up. After decades in the sun, many are worn and discoloured. When we were asked whether we could make new ones, the first question was size: at over 300 mm across, we checked that a mask would fit on our printer before going any further.



Left: an original mask, worn and discoloured. Centre: an original prepared for scanning, with tracking markers. Right: the original captured with a 3D scanner.

The challenge

A headlight mask is large, thin and very visible, and the new ones had to:

- line up with the screw holes on each pod, which vary slightly from car to car;
- stay flat and undistorted as the mounting screws are tightened;
- clear the surrounding bodywork without catching as the headlights are raised and lowered;
- frame the lamps neatly, with the raised rings around each lamp;
- look right on a classic Lotus, with no visible print lines.

Our approach

01 **Scan and measure.** We 3D-scanned an original mask, then measured the screw hole positions on the headlight pods of more than one car.

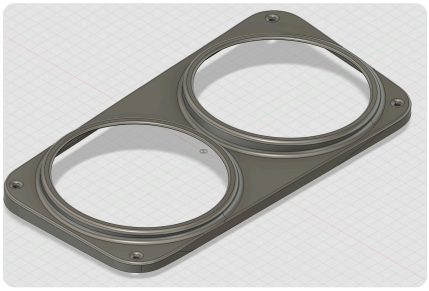
02 **Rebuild it properly.** Rather than copying the worn original, we modelled a clean new mask in professional CAD, with the scan as our reference for shape and the car measurements for the screw holes. We added extra material at the corners, so the mask holds its shape as the screws are tightened.

03 **Print it to last.** We print each mask in one piece in tough, UV-resistant ASA. A fine texture added to the surface hides the print lines, so the finish is in place straight off the printer.

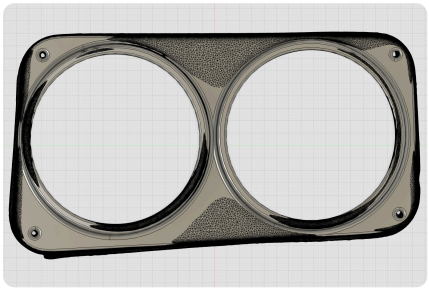
We use AI alongside our own engineering judgement to align the scan, compare measurements and refine the design. It handles the slow number-crunching, so each round of changes takes minutes, not days and you get your part sooner.

Improving on the original

Laid over the original scan, the new model follows its outline and the rings around each lamp. Where the original could be improved, it has been. The corners carry extra material, so tightening the screws no longer pulls the mask out of shape. The mounting holes are printed in, with a small countersink on the front for the screw heads and a larger chamfer on the back, which allows for the small differences in hole positions left by the original build, measured across more than one car. Left- and right-hand masks are made as a handed pair.



The new digital model, with raised rings around both lamp openings.



The new model (grey) laid over the original scan (black).



The finished handed pair, printed in ASA with a textured surface.



A new mask fitted to an Esprit S2 headlight pod with all four screws, framing the original lamps.

The result

A handed pair of headlight masks for the Lotus Esprit S2, printed in tough, UV-resistant ASA with a textured black finish. New black screws are included. Because the masks now exist as a precise digital model, more can be printed on demand.

Now available on eBay:
Left-hand: ebay.co.uk/itm/198472277449
Right-hand: ebay.co.uk/itm/198473261344

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