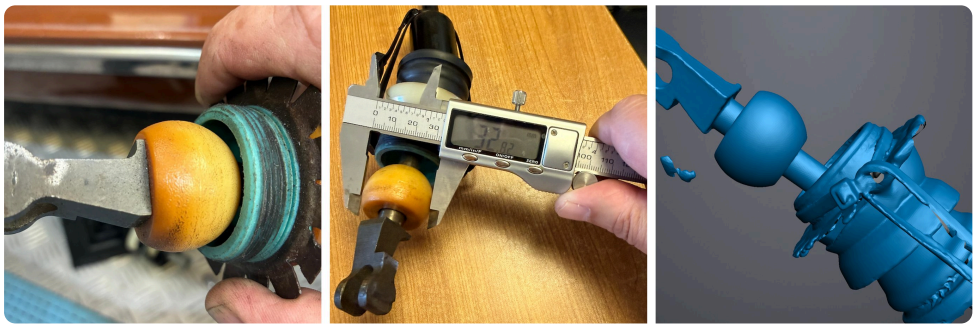
CASE STUDY

A new pivot-ball for the original Lotus 5-speed gear lever

> An owner wanted to keep the original Lotus gear lever rather than buy a replacement. We made just the pivot-ball, in two pieces, so it fits the original lever.

On the Lotus 5-speed gearbox, as fitted to the Elan +2S 130/5 and the series 1 5-speed Elite and Eclat, the gear lever pivots on a plastic ball that sits in a socket on top of the gearbox. Over the years the original ball breaks down, and the gear change becomes vague and sloppy. Complete replacement levers are available, but this customer didn't feel they were as good as the original Lotus levers. They asked whether we could make just the pivot-ball, as a two-piece part that could be fitted to the original lever.



Left: the original pivot-ball on the lever, aged and worn. Centre: measuring the lever and ball. Right: the lever, ball and socket captured with a 3D scanner.

The challenge

The original ball is moulded onto the lever, so a new one can't simply slide on. The replacement had to:

- come in two halves that close around the lever without removing or modifying it;
- grip the lever firmly, so it can't turn or rattle;
- match the original ball's size, so it sits in the socket and the gear change feels right;
- stand up to years of movement in a warm gearbox tunnel.

Our approach

01 **Measure and scan.** We measured the lever, ball and socket with a vernier calliper, and 3D-scanned the assembly to capture the shape of the lever where the ball sits.

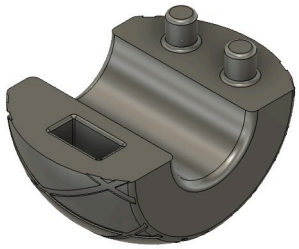
02 **Design it in two halves.** In professional CAD, we modelled a ball split down the middle, with a channel in each half shaped to the lever. Two pegs and a square key line the halves up, so together they make a true sphere.

03 **Choose the right material.** We print the halves in PA6/66, a tough nylon that is wear-resistant and slides smoothly, so the ball keeps moving freely in its socket.

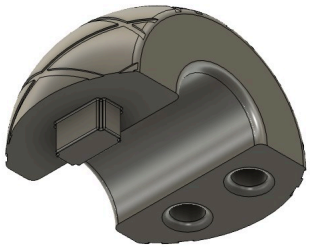
We use AI alongside our own engineering judgement to measure the scan, check the fit and refine the design. It handles the slow number-crunching, so each round of changes takes minutes, not days and you get your part sooner.

Two halves, one ball

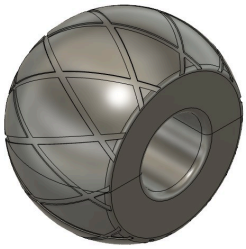
Each half has a curved channel that wraps around the lever. On the joint, two pegs on one half drop into matching holes in the other, and a square key locks into a socket, so the halves line up exactly and can't shift. Shallow grease channels across the surface hold lubricant where the ball turns in its socket. Closed together around the lever, they form a ball to the original's size. Nothing on the lever has to be cut, drilled or changed.



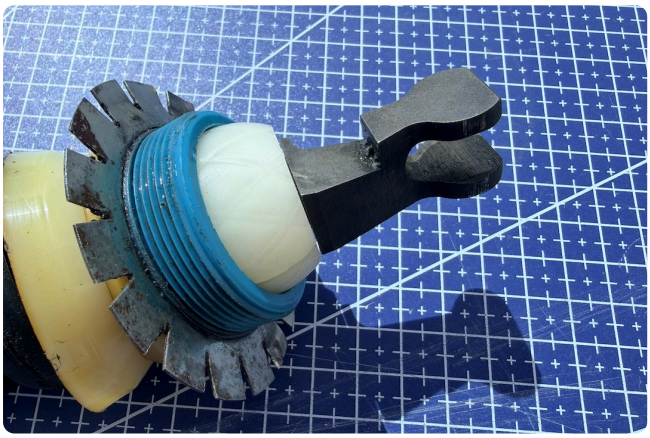
The lower half, with its two locating pegs and a socket for the square key.



The upper half, with the matching holes and square key.



The two halves closed together, with grease channels across the surface.



The new pivot-ball on an original Lotus gear lever, seated in its socket.

The result

A two-piece pivot-ball, printed in tough, wear-resistant PA6/66, that fits the original gear lever, a Ford part Lotus used in period, and seats in the original socket. Owners keep the lever their car was built with and get back a tight, positive gear change.

It fits the Lotus Elan +2S 130/5, and the series 1 Elite and Eclat with the 5-speed gearbox.

> **"These are very good… the result is far better than before with less play and a more precise shift."**
>
> An Elan +2S 130/5 owner, on an owners' forum

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