

The Elan Factory – Product Datasheet



Adjustable top suspension arms to suit Lotus Elan or Elan +2

The suspension geometry on a Lotus Elan is not usually adjustable and is therefore severely limited by the accuracy of the chassis during construction. From experience gained in our workshop, it is disappointing to discover a consistent castor error in new chassis's imported from the UK. To overcome these errors in a new or existing chassis, adjustable suspension arms offer a flexible solution where both camber and castor angles are easily adjusted.

These adjustable suspension arms are manufactured in-house using high quality materials throughout to ensure optimum results. All interconnecting parts are fully machined to maximise joint contact area prior to welding. The arms are placed in a precision jig to be TIG welded at all interconnecting joints. This procedure ensures maximum strength and dimensional accuracy of the arms once welded.

Corrosion protection is provided by powder coating and installing plugs in the open ends of the arms.

Depending on vehicle use, there is a choice of bushes to suit the relevant application.

- 1) Rubber bush, steel jacket with integral steel central crush tube. These are ideal for standard road applications
- 2) Polymer bush, with central steel crush tube. These are most suited for sprint or tarmac road competition.
- 3) Race specification bush, high quality Chrome-Moly threaded spherical joint. These are for race applications and are simply screwed in to replace the steel billet bush housing.



When manufacturing safety critical suspension components, it is important to understand the difference between brazing and welding. Brazing is carried out by melting a non-ferrous alloy at a temperature above 450 degrees Centigrade. Welding is carried out at much higher temperatures where the base material melts and the filler material (if applicable) has the same composition as the base material when fused together. This process is in sharp contrast to brazing (a non-fusion process) where the mechanical and physical properties of the material cannot be reproduced at the joint. It is a fact, if two joints with the same geometry are compared; the brazed joint (particularly a butt joint) is not as strong (by 1/3) as the welded joint. Therefore a fabricated or bronzed housing construction should be considered as a compromise. It is unreasonable to expect a fabricated housing to adequately withstand the shock loads imposed by the suspension movement. This point is illustrated by the original pressed steel component that is welded. For safety reasons, a CNC machined steel billet bush housing is employed at the pivot points **and not a brazed assembly**. The bush housing is a single piece construction that provides maximum strength as well as a male thread for a convenient means of adjustment. In-house safety checks have been carried out on these components by subjecting them to various torsional loads. This was achieved in a 20 Tonne hydraulic press where the arms bent under load rather than fail at the welded joint.

For further information refer to The Procedure Handbook of Arc Welding published by The Lincoln Electric Company and also the Metals Handbook. (Properties and Selection of Metals) published by the American Society for Metals

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