



How to

Upgrade early English axles

Swapping your Anglia 105E or '60s Cortina's English axle because it wasn't strong enough used to be a given. Now life just got easier...

There are only two relevant OE choices of rear axles that were fitted to classic Fords, and it's traditional to think that if you upgrade your engine for loads more power, you need to fit the beefier of the options — the Atlas — originally fitted to Capris and Mk3, Mk4 and Mk5 Cortinas. After all, that's what Boreham did when they went rallying — swapped in a stock width or introduced a narrowed version to get the wheels under the arches.

Couple these facts with the ratios that were available and upgrading to the Atlas' Salisbury-type diff was the only real choice there was. In many cases, that meant narrowing the axle or relocating the spring perches if you were keeping leaf spring set-up (although many used it as an excuse to four-link the rear suspension).

Recently though, we've seen an influx of upgraded halfshafts that use Atlas sizes and rally-derived tricks to

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add strength to the humble English axle — and one of these players has been Retro Ford, that's now taken the concept one step further.

It's common knowledge that super-strong halfshafts are available in Escort widths but nothing really represents the rest of the English axle fraternity. What do you do if for example, you have a Mk1 or Mk2 Cortina?

The thing is, these mega-strong components make some very subtle points — because they now exist, it means you don't have to swap your axle to the Atlas because as Dave points out, upgrade the components inside, and the English can take up to 300 bhp. With the value of many classic Fords sometime reaching ridiculous levels, keeping components relatively standard-pattern (and for that matter, reversible) is now high on many owners' agendas. Retaining the English then, is often at the forefront of many people's minds.

Where Retro Ford comes in — as always — is to make the whole process dead easy, so all you have to do is the minimum of work, buy the right bits and virtually bolt them in (although there's a bit of work to do to some cases before you can go and have some fun!). But, there's a lot more to the English than just one axle — there are several alternative widths and a couple of different bearing sizes for a start. What this needs is a bit more investigation, so we've done just that and let Retro Ford's Dave Colledge explain the score.

In addition, Dave has a solution to the ratio problem, too — he's had manufactured (and from one of Ford's original OE suppliers at that) the crownwheel and pinion set that gives you the much-needed and desirable ratio of 3.3:1; allowing your Ford to cruise beautifully on the motorway without screaming blue hell!



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The anatomy

Plenty of widths of English axles exist – from the narrowest (the 105E's) at 48 inches. Only Escort-width halfshafts exist in uprated form meaning you're stuck if you have anything narrower — until now. On the left is the Escort axle, centre is the Mk1 Cortina saloon and on the right Mk2 Cortina – these are just three of the many examples out there — often with very subtle differences in width and bearing size.



Along with halfshaft upgrades for the English (and for that matter, Atlas too) are the Blackline range of LSDs. These are incredible value for money and we're constantly hearing good things about them. Retro Ford stocks them and gear their upgrade kits around them, and why not? They commonly use an 18-spline count and therefore need 18-spline halfshafts to go with them. Dave tells us that you have the choice of traditional plate diff and helical LSDs in this pattern – although he did say you can still fit an LSD with 22-spline shafts, although the choice is limited to plate diff only. Pictured right is a complete Retro Ford kit to fit an LSD in your axle along with the larger side-bearings needed to correspond with larger diameter halfshafts.



Side by side, you can see the difference in physical size between the Retro Ford halfshafts, which are much larger diameter and the standard Mk1 Cortina shafts...



...although the main difference is in the spline count and size. Standard is 22-spline, and above it is the 18-spline that Retro Ford's Cortina-size halfshafts are made to — and there's a reason!



Apart from the width of the casing, there are differences in bearing size in the ends — with a pair of vernier callipers, you can measure the depth. This is a Mk1 Cortina casing...



...which corresponds with these bearings on the end of a standard Cortina halfshaft – 16 mm thick. Note too that the halfshaft has O/S written on it — it's good practise to label the side the shaft came from as they wind up in use — fit them to the opposite side and they'll wind back, meaning they'll break in very short time. Always label your halfshafts!



By contrast, the bearings on an Escort — and indeed Mk2 Cortina — are 22 mm thick.

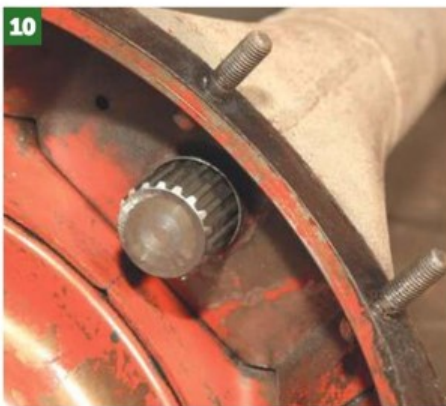


Smaller bearing casing differences

Because the new shafts are a larger physical diameter than the originals, the shafts won't pass through the Mk1 Cortina casing on a small bearing axle.



Therefore, it will need dressing back for which Dave uses a rotary sander in an air tool. The casing will need to be cleaned out afterwards to avoid getting damaging swarf in the bearings and differential unit.



Once it's opened up, the halfshaft will easily pass right through the casing.



This is a small bearing case from a Mk1 Cortina saloon, which also has this oil seal. These can be left in the casing, which the larger bearing cases don't have — they use a seal around the bearing.



Once the halfshafts fit the casing, you can see with a pair of Escort-length shafts fitted that the centres virtually touch. This gap is the part Dave works out — also taking into account that an LSD will usually have a thicker centre crosspin which isn't always allowed for with all aftermarket halfshafts. Believe it or not, they can be too long and bottom out on the pin. This bit is critical and Retro Ford pays particular attention to it meaning their shafts fit!



Halfshaft anatomy

Retro Ford's halfshafts are two-piece units which bolt together.



Undo the centre nut, which is shown here being torqued up...

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...and the end flange slides off another spline on the end of the halfshaft, which means the shafts can be supplied in various lengths, the end flange slid on and the whole lot still retains its strength.

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This is deliberate because it appears that the bearing is running the wrong way round with oil seal facing out. For technical reasons, this is necessary.

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Crownwheel and pinion

One of the reasons to swap to the Atlas axle is that it opens up another range of ratios that aren't available in the English axle range. Retro Ford has commissioned a crownwheel and pinion with the ideal ratio of 3.3:1, which complements a five speed conversion — indeed, you can even get away with a four-speed with no overdrive and still cruise at decent revs on the motorway. "Introducing this ratio almost provides the missing link for a car that does everything you want it to," reckons Dave. "We are increasingly seeing people moving away from the full-on race car set-up to one of cruising with excellent performance. By using an OE manufacturer that supplied to Ford in the first place, we can offer excellent quality units at a competitive price, meaning you can retain your English axle and still have all the benefits of an Atlas. The scene has changed..."

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There are a couple more components of the halfshaft system that need explaining here — at the top, there's a pressed plate with a dome in it, and this retains the bearing.

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The other plate is used in place of the drum backplate. If you're still retaining drums, then you don't need this bit but if you convert to discs, then this spacing ring takes the place of the backplate — leave it out and you could upset and distort the keeper plate. It's a small thing, but it's the details that matter!

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Here you can see where the ring fits in front of the oil seal retainer. The whole lot is designed with care so that you don't upset the offset of the wheels either.

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Dave stresses that Retro Ford's kits are all based on serviceable items — everything's available using top-quality bearings should your axle need them in the future — hopefully because you've had too much fun with it!