

HOW FAST? a challenge, and a creative solution

by Craig Talbot

Editor's Note: It takes particular talent to mate components that were never intended to work together, and there are always many details to work out. Here, JCCV member Craig Talbot describes one such problem, and how he solved it.

The Jaguar small saloons have a reputation as nice driver's cars, and this is certainly true in the UK market where many cars were equipped with a manual transmission and overdrive. For the North American market however, many of the Mark 2 and S-Type saloons were built with a 3 speed automatic, and a lower rear axle ratio than a UK market car. This makes for great acceleration off the line, but highway cruising revs are far too high, and the fuel consumption is high to go with the revs.

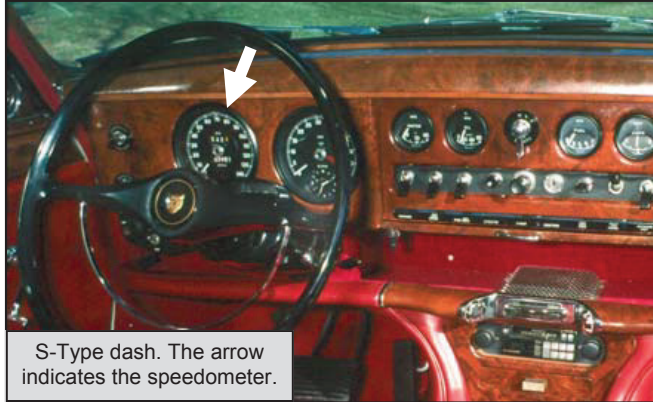
When I bought my S-Type as an abandoned restoration project many years ago the previous owner had taken the engine and transmission out, and dismantled the transmission. When I removed the car from the barn it had been stored in, the automatic was in a box of parts, the torque converter was sitting in a puddle of spilled ATF in the passenger's footwell, and the bellhousing had a massive crack in it. It wasn't an encouraging start.

I started looking at various vendors' parts catalogues and I saw that a gasket kit was \$600, and clutches and bands were extra on top of that. I also saw that I could buy a Borg Warner 5 speed manual at my local Ford dealer for \$1,295 brand new, and that sealed the fate of the automatic. It was destined to collect dust on my shelf as a box of parts. To this day I don't know if I even have all the parts from the automatic, as I've never tried to reassemble it.

The transmission I bought is the Ford Motorsport version of the T5, designed to fit a 1979-93 V8 Mustang. Not all T5's are identical, but this one has a 0.63 overdrive and the highest torque rating which is more than adequate for the power of a Jaguar 3.8 litre engine. With the overdrive it will give me relaxed highway cruising and much better fuel economy.

I engineered an adaptor plate for the transmission to the Jaguar bellhousing, so I could use a stock Jaguar clutch, and also manufactured a rear transmission mount, using a Jaguar motor mount as the isolating element. That left one challenge for the conversion: the speedometer cable.

Some conversions using this transmission have gone for an electronic speedometer, but I wanted to use the original that came with the car. Other conversions, especially for E-Types, keep the original speedometer and use a custom designed tailshaft to incorporate a Jaguar angle drive. That option was approximately four times more expensive than the cost of my transmission, so I knew that was out.



S-Type dash. The arrow indicates the speedometer.

What I needed to achieve was a Ford end on the speedometer cable to go into the transmission, and the Jaguar end to attach to the speedometer. My next stop was the local speedometer shop, and I took in the Jaguar speedometer and the original Jaguar speedometer cable and told them what I needed to do. They looked at

what I had brought, and looked in their drawers of parts and said that it couldn't be done. The problem was that the outer sheath of a Ford speedometer cable is larger than the Jaguar sheath. They had a Ford end, but not the Jaguar end, plus the Jaguar end is smaller than the Ford cable.

Discouraged, I thought that perhaps I might have to entertain one of the expensive options to obtain a working speedometer. Then I started doing some searching on the internet, mainly Ford forums. From there I found that Fords with manual transmissions from the 1970s onward all used the same speedometer driven gears, and the same transmission ends, so I was not restricted to just looking at Mustangs with a T5 transmission.

That weekend I visited my local self serve junkyard and started wandering among the Ford section. I found a few Mustangs and removed the speedometer cable from them. The cable was about 4" too short, so I needed to look at bigger vehicles. My next stop was the truck row, and I found an 84 F150 with a manual transmission. This cable was just the right length; it was the same as the Jaguar automatic cable at 69". The truck was early enough to not have a vehicle speed sensor, which is placed between the transmission and the cable, and provides a pulse to the cruise control. When this is in place the speedometer cable has a different end, and is unsuitable for my needs.

The driven gears in the transmission are colour coded according to their tooth counts, and are used to adjust for rear axle ratios and tire sizes. Fords use a standard

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speedometer, whereas Jaguar used different speedometers to account for tire and rear axle ratio differences. There are many calculators on the internet for determining what gear to use in a Mustang, but they won't account for the speedometer internal gearing, so a hand calculation is necessary. In my case I needed a 19 tooth (pink) gear, and that is what this truck had.

My trouble still remained: how to mate the large diameter Ford cable to the smaller diameter Jaguar end? After discussion with another auto enthusiast friend who has a 1967 Lincoln and has changed the speedometer cable in his car, I came across the solution.

The first step was to remove the crimped-on speedometer connection end from the Ford cable. I heated the metal briefly with a propane torch, and after a few seconds was able to slide it off with vice grips. I had to heat it just enough to soften the plastic sheath, not to melt it. With that removed, I saw the inner drive cable with a plastic square end which fits into the square recess in the speedometer itself. A bit more heat and this end was also off.

The Jaguar speedometer cable has an inner drive cable,

and the protective sheath is a twisted steel core, covered by a protective plastic layer. The ferrule and nut that attaches to the speedometer are crimped to the plastic. After applying the propane torch to the ferrule for a few seconds I was able to pull it off. The remains of the cable from the original Jaguar automatic transmission are shown in Figure 1, and the ferrule in Figure 2.

Once the pieces were free, I cleaned up the end of the Jaguar ferrule, and gently spread it with a tapered punch. I wasn't able to completely reverse the crimping, but I was able to flare the opening to ease sliding it over the Ford cable.

The Ford sheath is very different from the Jaguar one; it is a plastic tube with steel reinforcing wires embedded into it. It is also 0.340" diameter to the Jaguar's 0.300". Using a utility knife, I was able to taper the end of the Ford sheath slightly, to help the Jaguar ferrule slide on. I again heated the Jaguar ferrule and holding it with pliers was able to slide it right onto the Ford sheath, heating the plastic just sufficiently to soften it. Once cooled, the plas-

tic had gripped the Jaguar ferrule tightly. I now had an outer sheath with a Ford Transmission end, and a Jaguar speedometer end. However, we're not done yet!

I had some concerns about mating the Ford and Jaguar parts, as the diameter of the Ford speedometer drive cable is 0.125", and the recess in the Jaguar speedometer is 0.150". Fortunately, on the automatic cars Jaguar also used a 0.125" inner cable and then soldered an adapter to the end of the cable to mate to the speedometer. Out

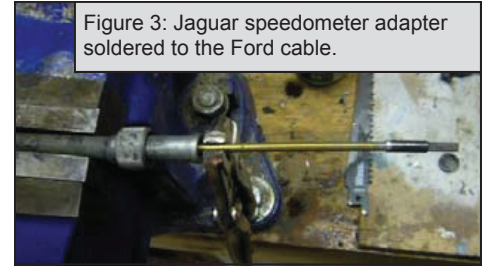


Figure 3: Jaguar speedometer adapter soldered to the Ford cable.

came the torch again and the adapter was unsoldered from the Jaguar cable, and soldered to the Ford cable. Figure 4 shows the Jaguar adapter end soldered to the inner Ford cable.



Figure 4: The completed cable, Jaguar end.

Next the small plastic end that centralizes the drive cable was pushed over the adapter, I applied a small bit of lubricant to both ends, and I have a completed "Forduar" speedometer cable, at a net cost of \$3.99 for the junkyard cable.

I tested the cable by attaching the speedometer end to a spare speedometer from my parts car, and driving the transmission end with my variable speed drill. The speedometer needle is nice and steady, rather than wavering like a worn or kinked cable would. My drill can go 52 MPH! Excluding my time in the junkyard, the process of building this cable took less than an hour, and it was satisfying to accomplish something that a specialist said was impossible.

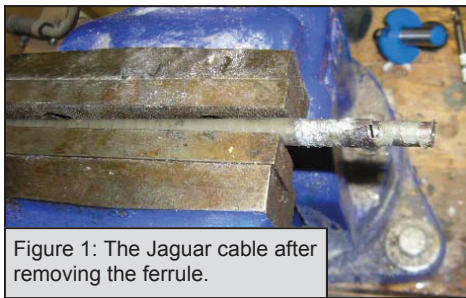


Figure 1: The Jaguar cable after removing the ferrule.

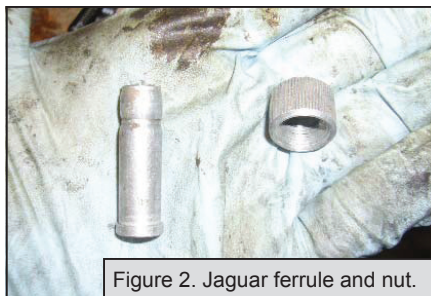


Figure 2. Jaguar ferrule and nut.

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