STARTER

A problem noted in the owners survey and one which has plagued Elan owners forever is the starter, specifically the pinion barrel assembly gear versus flywheel ringgear. The unit used on Lotus Cortina is relatively trouble-free, but the one that haunts the Elan (formerly Anglia) is another story.

The usual problem is that of locking or binding in mesh on engagement. Why this occurs no one in England knows, or so it was reported by the Lotus manager of customer service. We colonials have some ideas however. Apparently there is a critical tolerance that must be maintained to promote smooth operation, or any operation for some. As with other Lotus phenomena, some owners never have trouble, others nothing but. The distance from crank center to starter gear center no doubt plays a big role. Case to point is the author's Elan, the starter of which ran perfectly with one starter gear replacement until big overhaul, including align boring, at 70k miles. New starter gear was installed as matter of course. Upon starting new engine, starter gear would not disengage. Solution, take off NEW, put on OLD gear. The minute change in crank centerline to starter gear certainly must remain suspect. Some owners replace so many of the starter gears they cannot count the times. If you suffer as these do, try taking a chem-dye reading off of a new starter gear to note the degree of mesh. Some set-ups are apparently too deep (mine), some not deep enough. It is difficult to change the center-to-center dimension. No real cure is available to date. Someone should try the Lotus Cortina set up. One problem is price, especially solenoid - brace for $20 for the latter alone. Another may be clearance for the solenoid. The cure I used (shudder) after putting on the used gear was to buy a nice new battery. A few starts and, viola, better than a machine job the soft starter gear was properly clearanced. Seriously, it must remain a matter of luck. Hope your setup is correct or too tight.

The replacement of the pinion barrel assembly is relatively simple, but requires some sort of strong spring compressor. A good valve spring compressor may work on two "u" shaped fixtures may be made for use in a vise. The circlip on the shaft will orbit if care is not used. Few problems arise with the electrical portion of the unit except occassioned brush failure or mucked up commutator from an ever leaking engine. A good idea is to pot, encapsulate, seal or otherwise shut out the elements. Switch for a moment to the flywheel, ring gear and its tricks. Jim Kerswell has aptly summarized a catastrophic mode below. Other than this characteristic the other trick to watch for is backwards installation of the ring over the flywheel and excessive wear.

Tom Dill

Two interesting problems centering around the Llan starter motor have occurred within recent months. To assist other drivers the resolution of these problems will be described.

The first problem may have been an isolated case, however, its reoccurrence seems likely wherever the ring gear is shrunk onto the flywheel. It manifests itself to the driver when the starter pinion gear fails to engage the ring gear. Turning the key produces a whirring sound, but the engine does not turn over. The cause may be that the leading edges of the pinion gear teeth have been deformed and worn away. If this is noticed when the starter motor is removed, measure, with a steel rule or depth gauge the distance from the front surface of the bellhousing where the starter motor's flange seats back to the ring gear. If this distance is less than 1 inch, and a distinct step can be seen between the ring gear and the flywheel, the ring gear has started to come forward off the flywheel under the impact of the pinion gear. It can probably be tapped back into place. Obtain a chunk of aluminum or other soft metal about 1 inch in diameter and 2 inches long. Using this chunk and a large hammer, such as the copper hammer used on knockoffs, gently and patiently tap the ring gear back into place as a friend turns the engine over from the front of the crankshaft. Assuming, at this point, that the ring gear is now at least flush with the front face of the flywheel, it will have to be secured or it will just as easily be knocked forward again. One of the authors of this article has found that an expedient method is to tack weld the two pieces together in several places using an arc welder with stainless steel rod. A welder was found who could do this through the starter motor opening and will be recommended to anyone who might require this job done.

Jim Kerswell