

PLAY IN EUROPA'S REAR WHEELS

In December 1970 Ray Bisordi and I wrote an article in Stress Cracks regarding play in Europa rear wheels. This stage-1 fix consisted of making special tapered washers to locate the hub properly on the splined shaft. This cure worked for a few thousand miles but the washers wore, causing the same problem again. The possibility of having the washers hardened was considered, but this would not have been a complete cure because play would have remained between the hub splines and the shaft splines. This play is caused by the splines fretting (that is, moving a few thousandths of an inch everytime the load is taken on-and-off the hub).

To check if you have such a problem, jack-up the rear of your car and check wheels for play in the same manner you would check a front wheel for a loose or bad wheel bearing. OK, so you have play in your rear wheels: The cure for me consisted of having the hub shaft splines metal sprayed or flash (hard) chromed. If the wheel moves only a few thousandths in your test you may be able to salvage your own shafts. BE SURE to check to see if this play is in your U-joints and not in the wheel hub (use the same manner of checking but look at each U-joint). If it is in the U-joints replace them, then check the wheel again for play. If the play is in the hub you will have to remove the hub and shaft.

To remove hub, remove wheel and brake drum, straighten tab washer, remove $1\frac{1}{2}$ inch nut, remove hub by pulling straight out. To remove shaft, take out outboard U-joint and remove shaft. One way to remove shaft is to replace the hub nut part way on the shaft, place a board against the nut, hit the board with a heavy hammer. After the shaft is removed, check the bearings for wear. If they are bad, replace them. The outboard bearing is a standard part which can be purchased at your local bearing house, but the inside bearing is a special one which is sold only by your Lotus dealer, and which has a non-standard I.D.

If you have to replace this bearing, it is recommended that the shafts be turned down to 30 mm (a standard I.D.) so that a standard bearing can be used. Take your hub and shaft down to your machine shop to have the shaft metal sprayed or to an industrial plating shop to have the shaft hard chromed. It is recommended that the shaft be chromed instead of metal sprayed, as chrome is harder and will not wear as metal spray will. Do not chrome the hub but only the shaft. The final fit should be one-to-two thousandths press fit. Replace the assembly, torque the nut to 150 ft/lbs. This should cure the problem, however a periodic check (every 8,000-10,000 miles) should be made. If there is any play the hub should be the only part needing replacing, (the hub is about $1/3$ the cost of the shaft).

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