

NOISY ALTERNATOR BELT:

If you have the later Bosch 115-amp alternator with the multi-groove belt, chances are that sooner or later you will have trouble with that belt squealing. Neither tightening the belt nor even replacing it will help for long. The problem here is a flaw in the design of the multi-groove pulley -- not just this one on the Jag, but basically with all multi-groove pulleys.

V-belts and multi-groove belts work basically the same way: a V-shaped section of belt is wedged into a mating groove in a pulley, and the load is transmitted by friction. The wedging action is what provides enough friction to handle the load.

A conventional single-V belt wears on the sides, making it narrower and therefore sitting deeper in the groove, so it needs periodic tightening. This works fine until the belt either breaks or is so worn that it sits in the bottom of the groove instead of wedging between the sides, in which case it will slip badly.

The multi-groove belts, unfortunately, cannot wear anywhere near that much before they begin to slip. In fact, after the pulley itself has a little wear on it, they cannot wear at all before they begin to slip -- the brand new belt will slip almost immediately. This is because the belt will contact the pulley on top of the ridges between the grooves and ride on these edges rather than wedging down into the grooves. Sitting up on these smooth edges, it can

barely transmit any power at all without slipping. In fact, even when it's not squealing it's probably still slipping.

It is easy to confirm this is what's happening: look at the alternator pulley with a flashlight. If the top edges of those ridges are bright and shiny, you've found the problem. Usually, the inside surfaces of the V's are much duller, sometimes even rusty, indicating the belt isn't even touching them. The fix is easy, too, except that it requires getting that pulley out -- which isn't easy. With the pulley removed from the alternator, mount it on something that will spin it (a lathe, or find a way to chuck it up in a drill if you don't have a lathe) and grind the edges of those ridges down.

Don't worry about grinding off too much. Yes, you are reducing the contact area of the wedge area, but the fact is that once the belt is actually wedging rather than skimming around the ridges, contact area isn't a problem -- the multi-groove belt will easily handle all the load of the alternator and then some without complaint. Just make sure to grind the ridges down enough that they won't be a problem any more, even with a worn belt.

Obviously, the grooves on the damper pulley itself would benefit from similar treatment. It's not really called for, however; the larger diameter means that the belt generally won't slip on this pulley, even when it is riding on top of the ridges.

