

Thread: [Air-conditioning Compressor Pulley Bearing Replacement](#)

Geek2.0

G'day folks!

As the title suggests this how-to is on replacing the aircon compressor pulley bearing, this how-to will be based on a V6 VP Berlina, but the procedure should be the same for most cars, the VP uses a Sanden compressor. I completed this job with the compressor still on the car, and I didn't have to de-gas the aircon.

Description:

The front of the compressor has 5 main components, from the rear of the car forward these components are: electromagnet, pulley (with pressed in bearing), shims, clutch and the nut.

When the aircon is off the electromagnet is powered off, meaning the clutch is disengaged. At this point the pulley is allowed to spin freely because of the bearing.

When the aircon is switched on the electromagnet receives power, coupling the clutch to the pulley and therefore turning the compressor shaft (the clutch is splined to the shaft). While the aircon is on the bearing inside the pulley is still spinning.

Symptoms:

In my case I heard a typical bad bearing noise (whirring and chattering) particularly in cold conditions. My aircon also didn't always remain engaged when the engine was under load or high RPM. My suspicions were confirmed by removing the serpentine belt and feeling the AC pulley, it felt chunky and spun too easily.

A good pulley will be almost silent and will feel consistent throughout its entire revolution; it should also only free spin briefly.

Tools:

Socket set

circlip pliers

compressor pulley tool (<http://www.sbtools.com.my/eng30b.jpg>)

pulley puller (maybe, I got away without it)

Rubber mallet (could get away with a block of wood and normal hammer)

Hammer

I also used a shop press because it is easier than using a hammer, but it is by no means required.

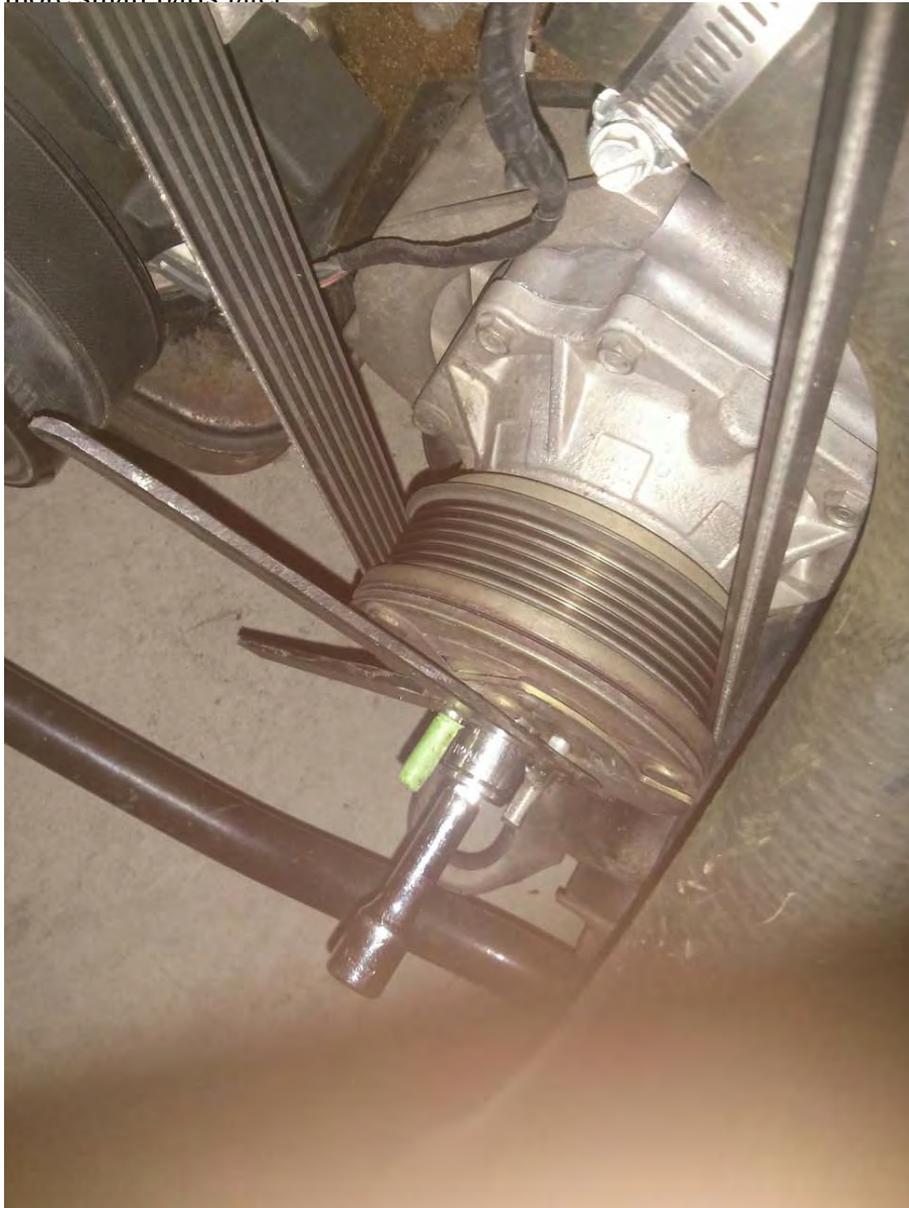
I made my own pulley locking tool:



The repair:

1. Disconnect the battery for good measure. You shouldn't need to jack up the car, but access may be easier from below.
2. Take note of the serpentine belt configuration, and then remove it. On the old Buicks (VN, VP, VR) you simply use a ratchet or ring spanner on the tensioner bolt and turn it counter clockwise, this lifts the tensioner and allows you to remove the belt.

3. Take your pulley locking tool and use it to stop the compressor from spinning, and then undo the nut on the front of the clutch. Put the nut in a safe place like a jar, there are more small parts later





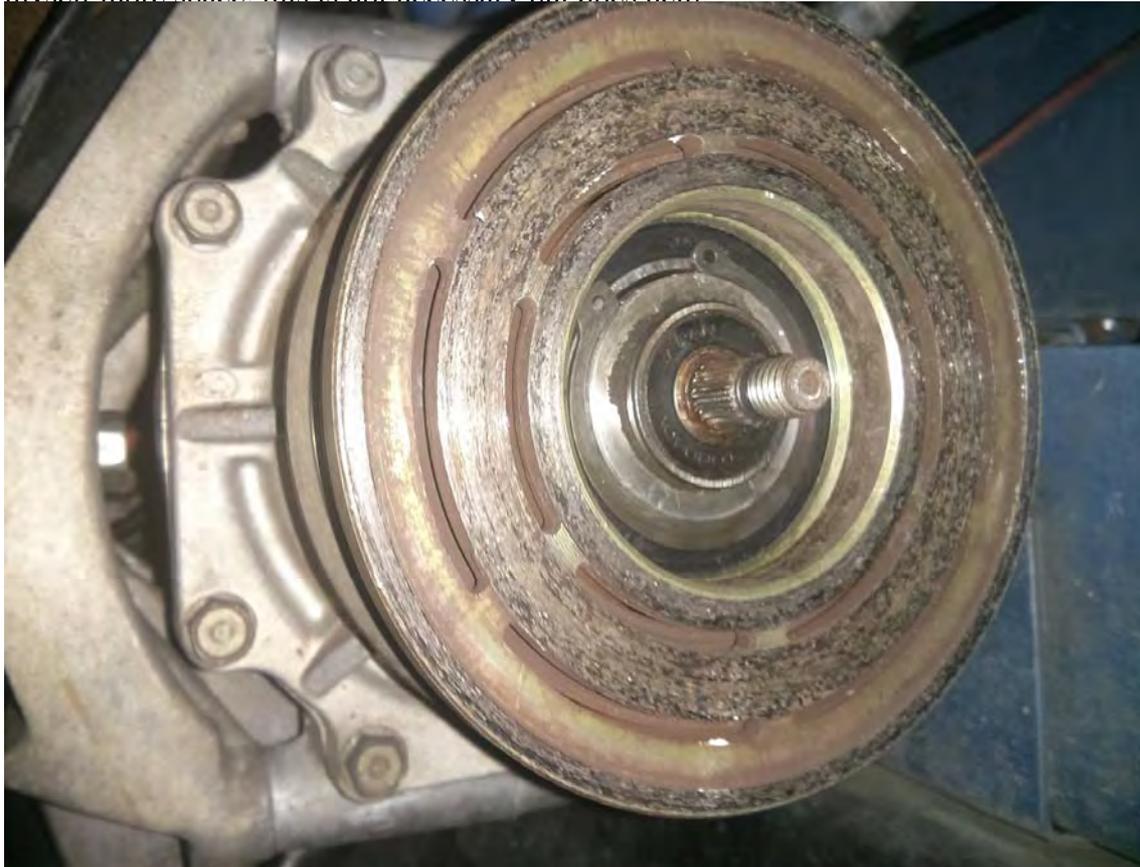
4. Remove the clutch, I got it off with a bit of wiggling, some penetrating oil might help too. Be careful of the shims (thin washers) falling out.





5. Remove shims and put in a safe place, mine had two shims; the number will vary from car to car.

6. Remove circlip (opens outwards). At this step I also removed the radiator fan to give myself more space: this is not necessary but does help



Small parts taken off thus far:



7. Remove pulley. I used a rubber mallet and my hands to jiggle and persuade the pulley off, mine came off fairly easily, if yours will not come off you might need to use a pulley puller.

8. Now we need to get the bearing out of the pulley, to do this first remove the circlip and then support the back of the pulley evenly, this is important to avoid warping the pulley. Once supported it is simple matter of pressing the bearing out, I used a large socket, a steel plate and a shop press, but a combination of a socket and a hammer or even a vice should suffice. The important thing is to ensure that you remove it evenly, if it becomes uneven it can gouge the pulley, if the bearing starts to become uneven, tap it back in a little from the other side and then continue.



Once the bearing was out I took it to my local bearing specialist, they had it in stock and it was about \$50.

9. Clean up the pulley a bit and then press in the new bearing, to do this I like to use the old bearing but I remove the dust seal first so as not to damage the new bearing: Same as removal just make sure the bearing goes in evenly and that the pulley is supported well. Make sure that the bearing is properly seated; otherwise the clutch assembly won't work correctly.





10. Reinstall circlip.

11. Ensure the electromagnet is in the correct position on the compressor and reinstall the pulley, mine required some persuasion with the rubber mallet.





12. Reinstall the circlip onto the front of the compressor.
13. Reinsert the shims and the clutch (the splines will only go on one way, don't force it!).
14. Using the pulley locking tool and a socket tighten the compressor nut, my service manual says the torque spec is 1kg-m (9.8Nm), I did mine up a little tighter before looking at the book.
15. Re-fit the serpentine belt.

Test it out! With the AC switch off, the pulley should be the only part spinning, with the AC switch on, the pulley, clutch and compressor shaft should spin.

After completing this job my noise was gone and my aircon stays engaged as it should, I believe free play in the bearing was making the pulley further away from the clutch and thus not allowing it to couple properly.