



# JEEP HOSPITAL

Each month Dr Jeep (Tony Whitehead) takes us through the trials and tribulations at his "Jeep Hospital", USA 4X4 Jeep Specialist in Melbourne, Victoria. Over 20 Jeeps are admitted weekly for servicing and suspension work through to differential, transmission and engine rebuilds. Dr Jeep explains the diagnosis, the corrective surgery and future care of these vehicles.



Tony Whitehead (Dr Jeep) and head mechanic Travis



Stripped starter motor

**T**his starter belongs to a 2005 TJ 4.0L that has obviously been in plenty of bog holes. We noticed it didn't sound normal when we hit the key, instead of the nice whirring sound there were some abrasive grinding noises.

All Jeep starters since the 89' Jeep Grand Wagoneer changed to a reduction gear starter motor. These draw less current thanks to a set of mini planetary gears instead of the old direct drive clapper style starters seen on the 232/258/360 AMC motors. For reliability these little gears are meant to be clean and greased, so when one of these starter motors are submersed in muck and engulf all that silty abrasive mud, from then on each start-up gets worse and worse until one day you're left with nothing.

They're easy to remove from the Jeep with a couple of mounting bolts and a couple of wires to unhook, then, when they're out on the bench it can be stripped down for inspection. When stripped down we found the gears and the plunger full of crud and not too far gone but we were able to leave the brushes and the armature as one piece for now. Using brake cleaner, a stiff brush and some elbow grease you can clean a starter body and gear train up so it can be reassembled with grease on the bearings, plunger pivot and gear train. If the starter has stopped turning altogether you will need to clean up the brushes and commutator, which can be done with some fine emery paper until you get the brass commutator bars looking good. If they're not looking smooth and even, or the brushes are worn away it's time to have it overhauled by an auto electrician.

If you have had to strip the starter right down to the brushes, take care refitting them as this can be a little fiddly.

Now it's all back together, we now test our rebuilt starter in the vice with a battery and some jumper leads before it goes back in the Jeep.

Even if you're not up to the rebuild yourself at least being able to recognize when the starter is on the way out before it dies altogether and being able to remove it from the Jeep and send to an auto electrician will save you some dollars. New starters are more expensive compared to a reconditioned job if it's not too late.

As written previously in the Jeep Hospital, when refitting starter motors and bell housings after clutch replacements we use a little silastic to slow the mud from entering again, but you must add a vent for daily driving.

When it comes to the older AMC starter motors we rarely get a chance to rebuild them as when they're dead they've usually had it altogether. The old clapper type starters don't last anywhere as long as the gear driven ones and usually need to be replaced. Non genuine



units are available and once again bolt in with two bolts. One common mistake has been the use of Ford V8 starter motors in AMC Jeep motors. They look almost identical but the Ford one doesn't throw out as far and soon eats the ring gear off the fly wheel, resulting in more repairs. When removed you will see Ford embossed in the alloy end cap.

Another electrical component that doesn't like mud is the alternator; this one is from a 97 TJ. It was so full of gunk it was not charging the battery and bringing on the check engine



AMC (left) and Chrysler starters

light when under load winching.

While pulling apart an alternator isn't rocket science it's best left up to an auto electrician to refurbish and test the alternator. They're simple to remove and refit with a mounting bolt and a wire. Be careful with that wire though as it's live and will make an ugly zap if earthed out. This unit was removed and sent away.

A little word on batteries, all of our late model Jeeps come with a 600cca battery. CCA stands for cold cranking amps, a rating of current output that the battery can sustain for a period of time at sea level at -18°C. That sort of temperature in Australia is rare so we get more power again than that rating but it's important to be running above the minimum CCA battery. Given the accessories we like to add a bigger battery again is often required or dual systems can be popular in some models. Most WARN winches specify allowing for a minimum 650CCA battery, and keeping that fully charged is the alternator's job so it's important it's running at full capacity for when you need it most half way up a long wet hill in the dark.

So take a look over your charging and starting systems before your next outing, it might just save you a lot of costs and dramas you don't need.



Alternator



Jeep Patriot



Suspension modification



This little Jeep Patriot came in with a saggy bum! The owner hauls a fair bit of junk and a big camper. We looked around for a lift kit but couldn't find anything so we made do with what we could. Simply by relocating the rear lower strut mounting bolt we were able to raise the rear 40mm. It made all the difference and the owner was very pleased with the result. We didn't touch the front end and advised him to sell the camper that has a 200KG+ ball weight. As with all vehicles we really need to make sure the tow ball weight is minimal so we don't need to modify suspension to suit by adding air bags etc. Although in this Jeep model's case, there was no option to add air bags at all thanks to the independent rear end.



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