



Toyota Celica GT / GTS Alternator Troubleshooting and Replacement

This guide will show you how to troubleshoot...

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INTRODUCTION

This guide will show you how to troubleshoot your car's charging system **safely**. I stress safely because even though a car battery's voltage is only 12.6V, it can put out current in excess of 600A (Amperes) meaning that it is enough to melt cables and set them on fire, resulting in serious burns, welding metal to metal, and possibly even a short-circuited car battery which could explode! During any stage of automotive troubleshooting, **please take care** and **always proceed with caution**. Especially when working with the high-current capable charging system, you never want the possibility of the battery positive being shorted to the chassis (battery negative) or another return path.

NOTE 1: I have listed both alternator variants for the GT and GTS models, as well as the 120A fuse, which should be good. During troubleshooting, you may find that you actually need none of these parts. However, I have listed them so that they are easy to identify and purchase in case you do need them.

NOTE 2: Removing the battery will reset all of the emission monitor systems. This will take some driving to reset. Therefore, if you are working close to your car's emissions inspection date, please keep this in mind.

TOOLS:

[Posidriv #1 Screwdriver](#) (1)
[Socket Wrench](#) (1)
[10mm Socket](#) (1)
[12mm Socket](#) (1)
[14mm Socket](#) (1)
[Socket 19mm](#) (1)
[Multimeter](#) (1)
[Leather Work Gloves](#) (1)
[Flashlight](#) (1)

PARTS:

[Alternator Toyota Celica GT \(1ZZFE Engine\) PN: 27060-22040](#) (1)
[1x Alternator Toyota Celica GTS \(2ZZ-GE Engine\) PN: 27060-22080](#) (1)
[120A Fuse PN: 90982-08293](#) (1)

Step 1 — Check the battery is being charged



- Check your battery voltage with the engine off by selecting **DC Voltage** on your multimeter and putting the red probe on the positive terminal and the black probe on the negative terminal. A fully charged battery will show around 12.6V (Volts). If the Voltage is **10.6V or lower** your battery is fully discharged (flat).
- Start the car and repeat the test, the voltage should show **between 13.5V and 14.5V**. If this is not the case, the issue could be (but less likely to be) your battery as it should be actively charging when the engine is running.
- ⓘ If the voltage is still at 12.6V or less with the engine running the battery is not being charged! It's time to troubleshoot the charging circuit!

Step 2 — Troubleshoot the charging system



- Remove the lefthand plastic cover. It is held in place by 4 plastic pins, these have a crosshead and 'should' unscrew enough to be pulled up. In practice, you may have to pry the center pin out.
- Now check the alternator is being driven. Check the drive belt is not slipping or broken! If either is true replace the belt and skip ahead to the reassembly stage for how to fit a new drive belt.
- **Now Turn off the engine**, All the power is coming from your battery you do not want to completely drain it!
- Disconnect the Battery Terminal connectors. **Always Disconnect the Negative (-) Terminal first!** You do this so when you disconnect the Positive Terminal (+) if you wrench touches the bodywork you don't short out the battery as the whole of the car's bodywork is connected to battery Negative!
- **Tip** Almost 100% of the time the positive battery terminal is coated in red; 100% of the time the negative battery terminal is coated in black. If you are unsure which terminal is positive or negative, the car battery has a + and - symbol molded into it near each terminal, that way you can differentiate the terminals.

Step 3 — Troubleshoot the charging system: Alternator fuse



- Locate the Fuse Box and open it. Check the 120A charging fuse. My fuse was good, you can see the copper link.
- You can test the fuse with your multi-meter; set it on Resistance (Ω) and place one probe on each of the fuse retaining screws. It should read 0 Ω (Ohms) as shown. It is likely this fuse is good. If not, replace it!

Step 4 — Check B+ wire to battery positive (+) connector



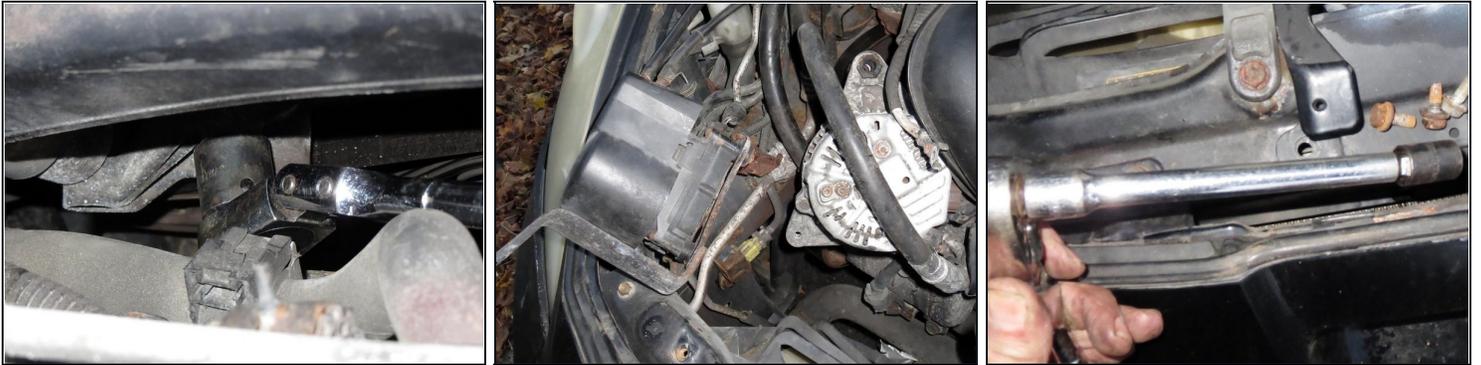
- **With the battery disconnected.** Disconnect the B+ cable from the alternator using a 10mm socket. With your multi-meter set on Resistance(Ω) put one probe through the B+ cable connector and the other on the battery Positive wire you should see close to 0 Ω . You have now verified the wiring to the battery to be good.
- At this point, it is fairly certain your alternator has failed!

Step 5 — Removing the alternator



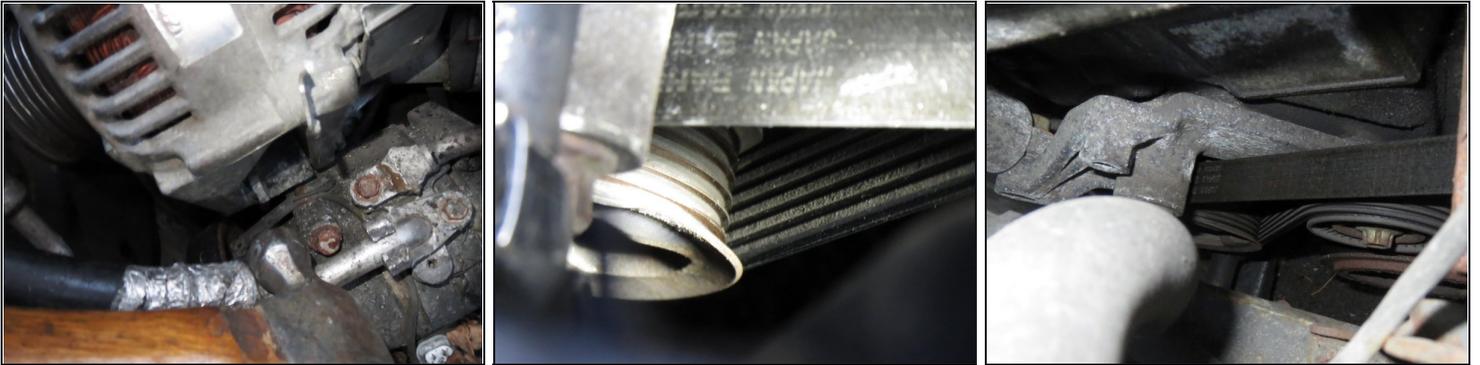
- Unclip and remove the wire from a holding point on the side of the Alternator.
- Unplug the 3 wire connector from the side of the alternator. If you did not B+ cable to perform the continuity test, disconnect it now with a 10mm socket.
- Remove the 12mm bolt holding the top of the alternator in place, then remove the long 14mm bolt. You will need patience to ratchet it out as there is not a lot of room to move your wrench thanks to the A/C piping!

Step 6 — Removing the alternator cont.



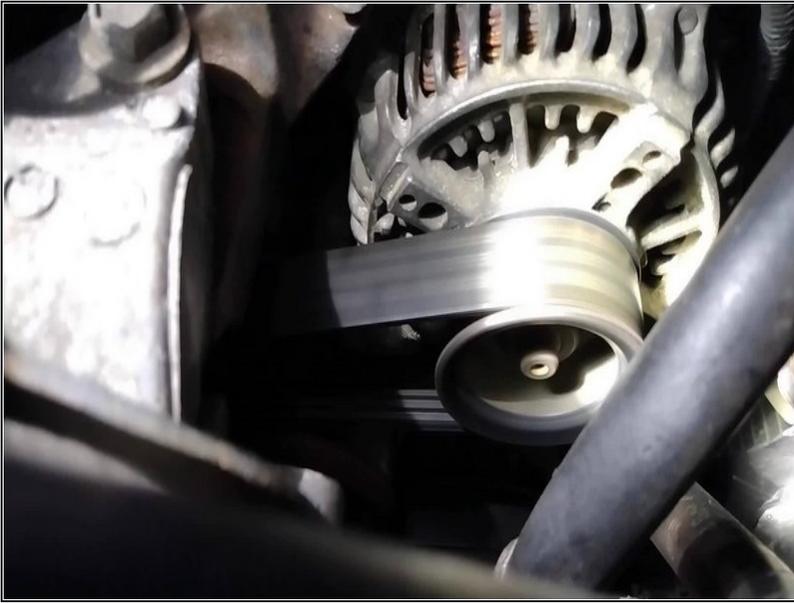
- Using a 19mm socket and a long socket wrench, put the socket on the 19mm location on the side of the belt tensioner and push down to compress its piston and slacken the serpentine belt, while the serpentine belt has slack remove it from the alternator's pulley.
 - **Optional:** I unbolted the cruise control unit, removing three 10mm bolts to give me more room to pull out the old alternator. Also disconnecting the A/C cable will give you more room.
 - **Optional:** If you have never replaced the serpentine belt you may want to inspect it for wear and damage whilst you have the alternator out.
 - **Optional:** At this point, you may want to put your battery on charge in a well ventilated dry area, my new battery was fully discharged after one short night trip and a couple of starts with a dead alternator. Leaving a car battery discharged for any period of time can shorten its life.
- ★ Note: *I checked my failed alternator and found the rectifier had failed. But for the price of used alternators, it made more sense to replace the whole unit!*

Step 7 — Installing the replacement alternator



- Insert the replacement Alternator into place. You may need to tap (*not hit*) with a hammer or mallet until the holes align. Screw the bottom bolt in as far as you can by hand as you have little ratcheting space. Tighten up both bolts.
- Attach the B+ cable and tighten the 10mm retaining bolt. Plug in the three wire connector. Clip the wiring harness onto the mounting point.
- **Important:** Using a 19mm socket and a long wrench, compress the tensioner and place the Belt over the Alternators pully wheel. Release and **check the belt is fully on all pully wheels**, use a flashlight if necessary. Failing to do so can shred your belt. Check Service manual PDF 2, page 313 if you need more info regarding belt fitment.

Step 8 — Finish and test.



- Reinstall the Cruise Control unit *if you removed it*. Plug in the A/C cable if you unplugged it.
- Reinstall the battery *If you removed it*. Connect the Positive (+) terminal first then the Negative (-) terminal.
- Start your car and with the engine running use your multimeter on DC Voltage range to check you and above 14V at your battery terminals.
- If everything is good, turn off your engine. Reinstall your plastic cover.