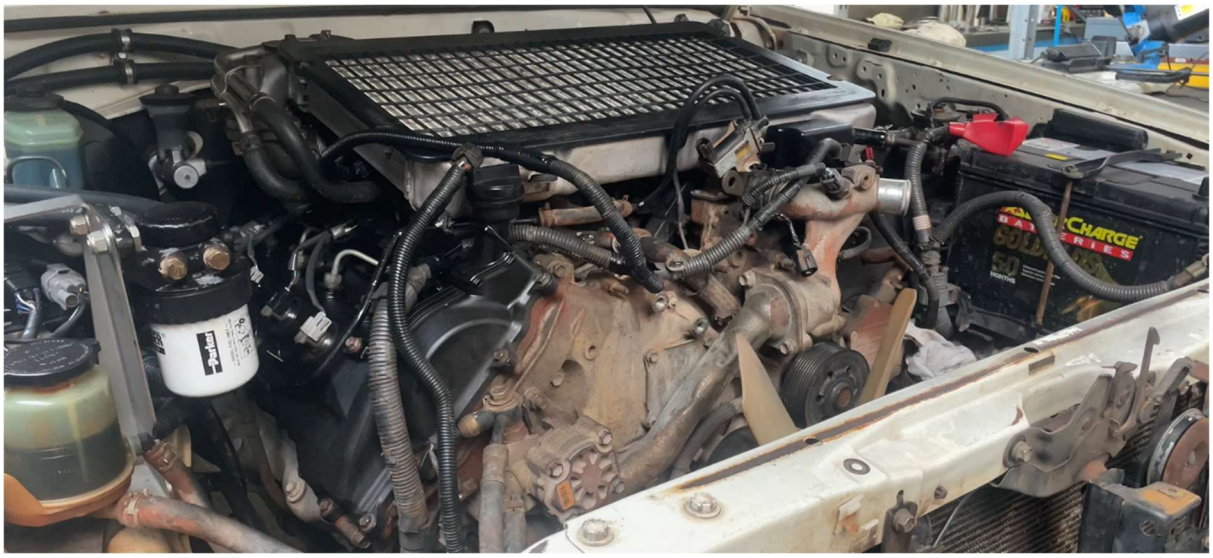
High mount Alternator kit Fitting Instructions:

Professional Fitment is Recommended.

It is recommended to read these instructions fully before commencing the installation, to ensure that you have the necessary tools ready and understand what this installation entails. If you get partially through the installation and cannot complete it, the vehicle will not be drivable until the installation is complete or reverted back to stock. So please make sure you are aware of the full process and prepare accordingly before starting.

It is recommended to use your preferred thread retaining compound to protect threads from corrosion and loosening due to engine vibration.

1. Gain access to the front face of the engine block. To do this you need to remove the following:
    - Factory intake pipe
    - Radiator guard
    - Airbox
    - Coolant reservoir
    - Fan shroud
    - Radiator

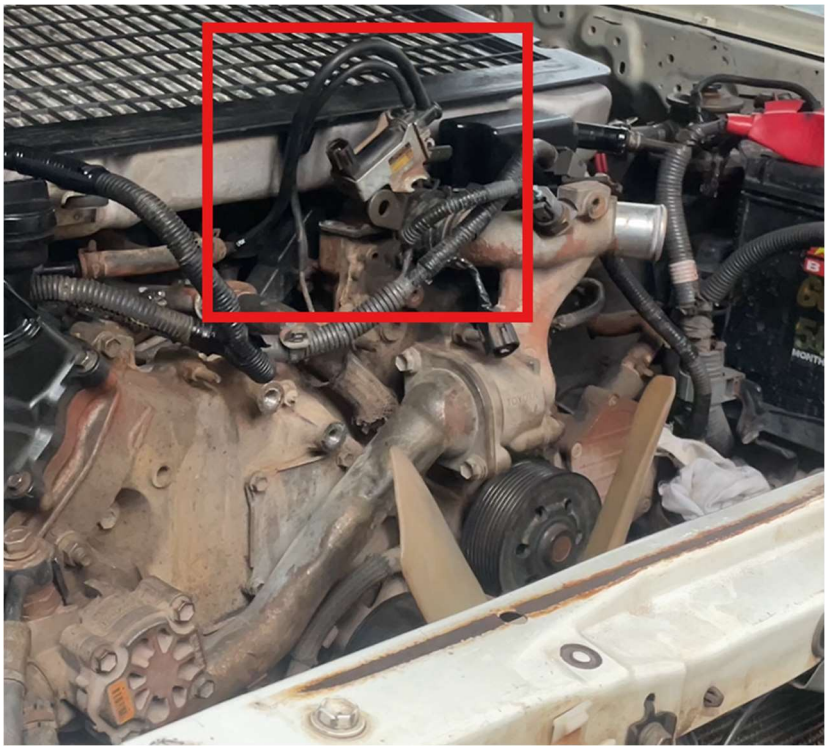


It may be possible to fit the kit without removing all these items, however removing these items will ensure proper access.

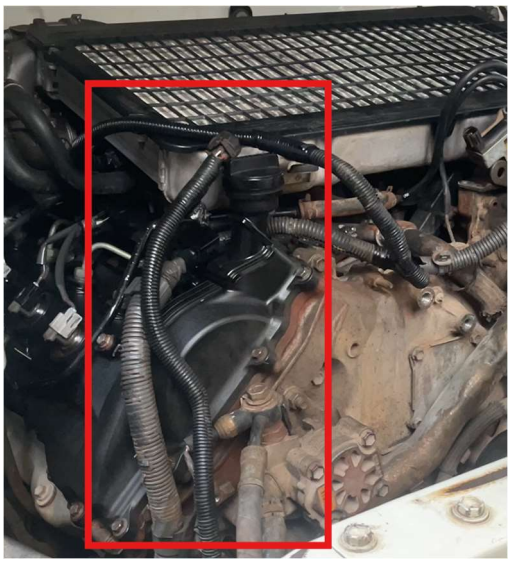
During this process put a rag or similar into the exposed intake to prevent contaminants from entering the engine.

2. Remove the alternator from the stock position and remove the Toyota tensioner assembly from the engine block.

3. Remove the vacuum assembly from the block. Pictured Below is the vacuum assembly connected to our extended vacuum lines.

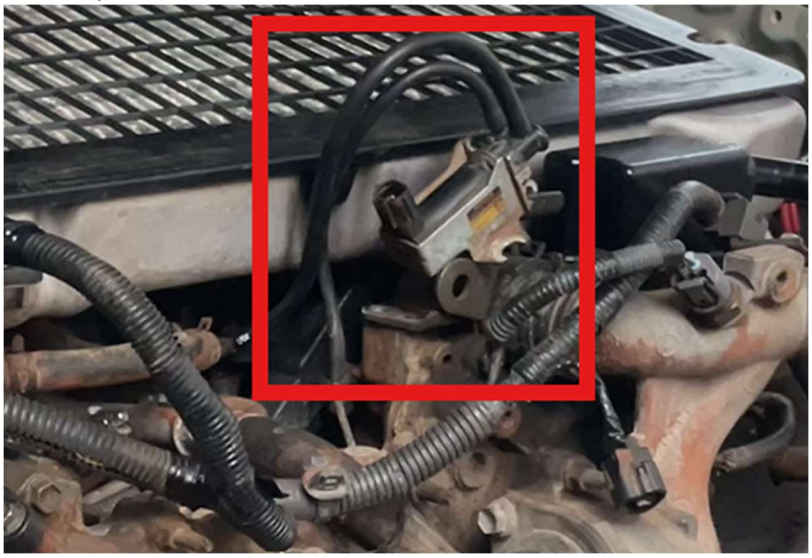


4. Extend the voltage regulator plug 700mm using the supplied wire.
   These are the wires that used to plug into the back of the alternator, as the alternator will be mounted in a new location these wires must be extended. Ensure they are correctly soldered and insulated so that the regulator reads properly. Individually insulate wire connections and then use the supplied conduit to fully insulate the extended loom.



5. Extend the Mass Airflow sensor 580mm using the supplied wires.
   Solder and insulate these wires well to ensure the sensor reads correctly. Individually insulate wire connections and then use the supplied conduit to fully insulate the extended loom.

6. Replace vacuum lines with longer vacuum line provided. (ensure that the lines are on the correct ports)



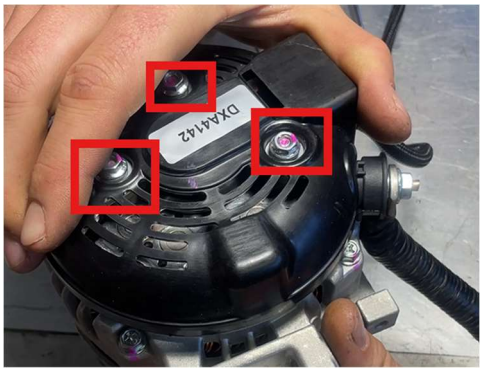
7. Unbolt Coolant pipe under intercooler and extend perpendicular adjoining hose with supplied hose, barb and hose clamps.

8. Pin hose out of the way using supplied bar

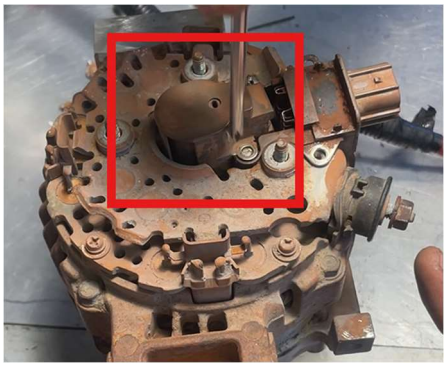
Using the supplied part pictured and an M6 cap screw, washer and spring washer, mount the coolant pipe in the new location as shown. Low to Medium strength thread locker may be used if desired.

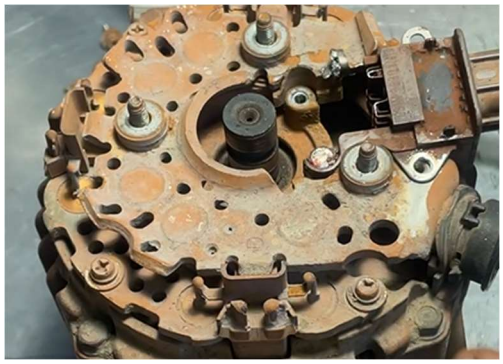
9. Modifications to alternator

Remove the rear plastic cover from the alternator.

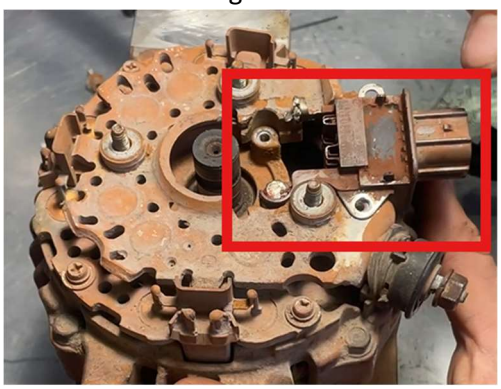


Remove the brushes from the alternator using a screwdriver.

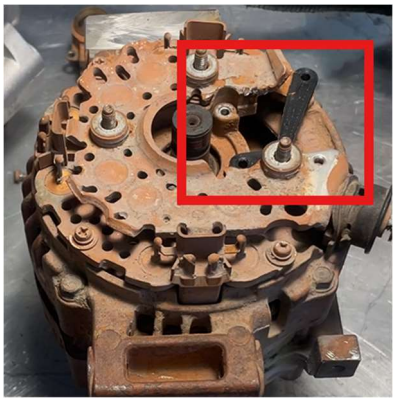


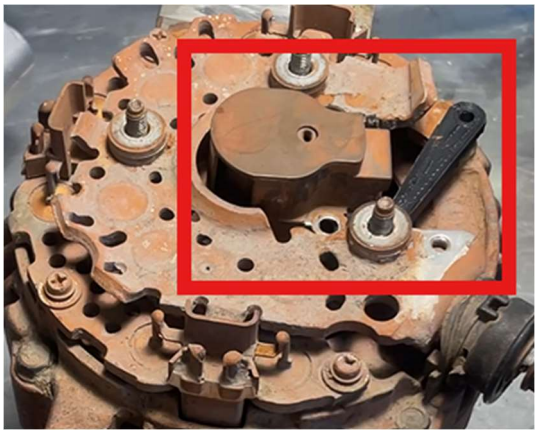


Remove the voltage regulator from the alternator by first removing the screws, taking note of where they went, and then using a soldering iron to melt the soldered connection. If an upwards force is applied to the regulator whilst the connection is being heated, when the solder melts the regulator will come free.



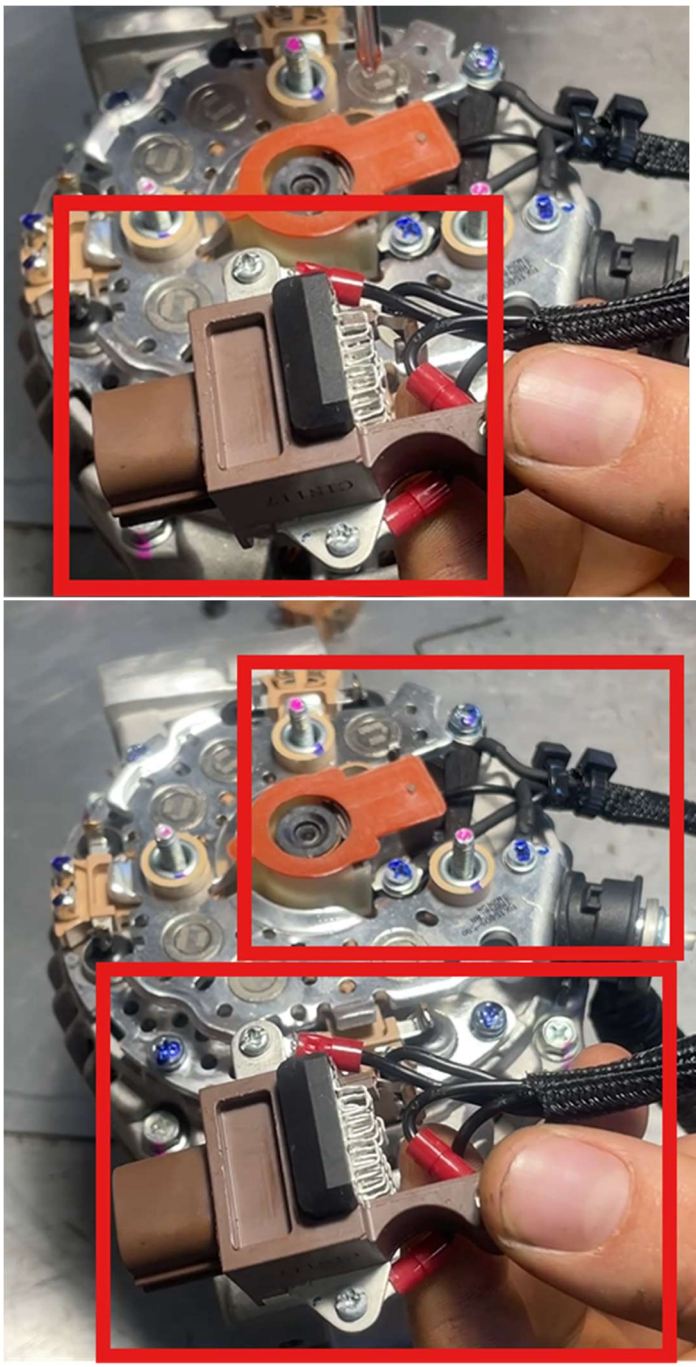
Install the Bakerlite brace piece as shown in the back of the alternator. Re-install the brushes and mount the left hand tab of the brush housing to the bakerlite brace piece. This will hold the brushes in place.



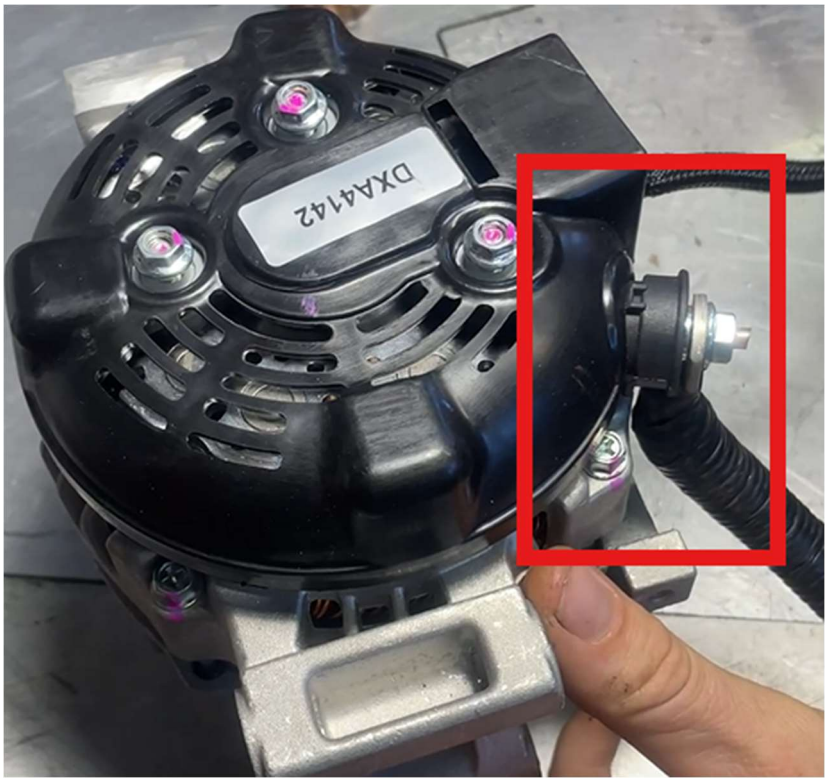


To relocate the voltage regulator cut 4 lengths of wire 420 mm long. Crimp and solder the supplied low-profile lugs to the voltage regulator extension wires. One of these wires will be soldered on and does not require a lug. Insulate these lugs with heat shrink and screw them to the alternator in the correct locations where the contacts of the voltage regulator were attached. One of these wires will have to be soldered onto the connection that the voltage regulator was soldered to.

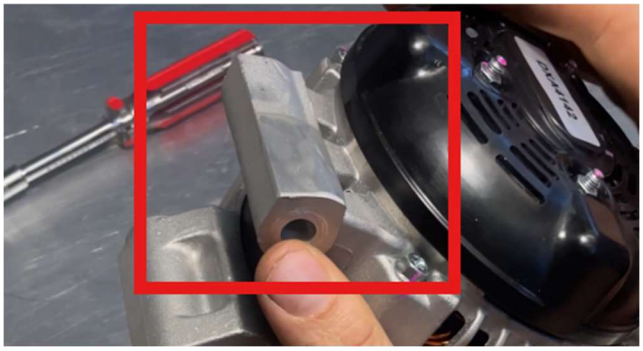
Crimp lugs to the opposite end of these wires and bolt them to the corresponding tabs on the voltage regulator. One of these wires will need to be soldered on.



Secure these wires appropriately and insulate using the supplied split conduit.
Re-install the rear plastic cover and attach the charge wire to the alternator making sure the lug is upside down to give the assembly a lower profile.



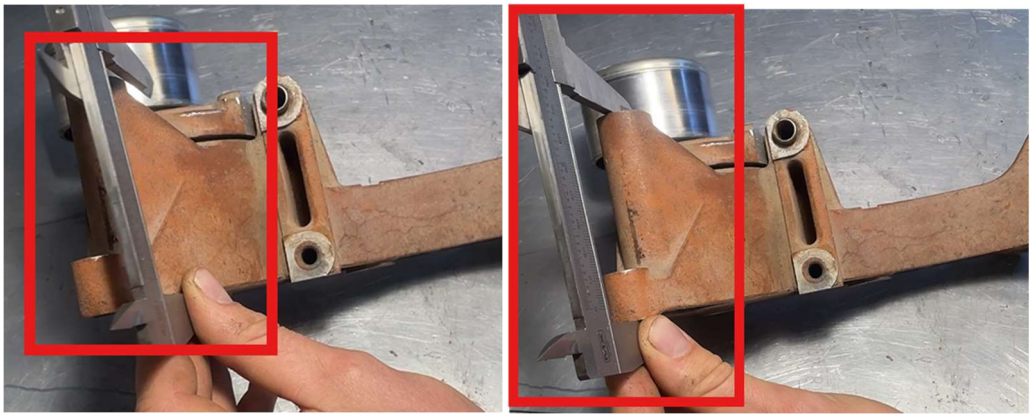
Remove the protruding bolt lug from the body of the alternator. This lug needs to be cut off to allow the alternator to fit in its new location. Removing this lug does not prevent the alternator from being mounted in the factory location. When removing the lug it is important to wrap up the alternator to prevent cutting debris from damaging the internals of the alternator.



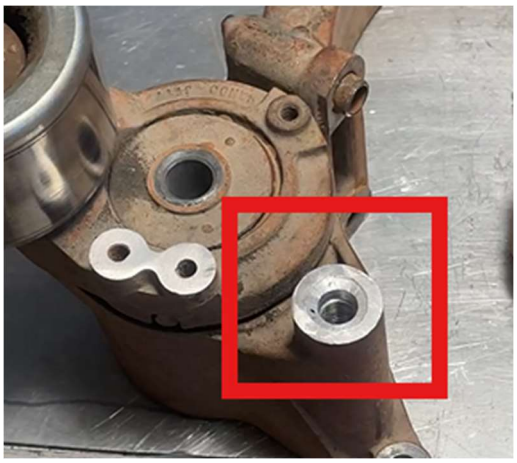
10. Modifications to tensioner

    The tensioner needs to be modified to hold the lower idler pulley. These modifications do not prevent the alternator from being mounted in the stock position but are necessary to high mount the alternator.

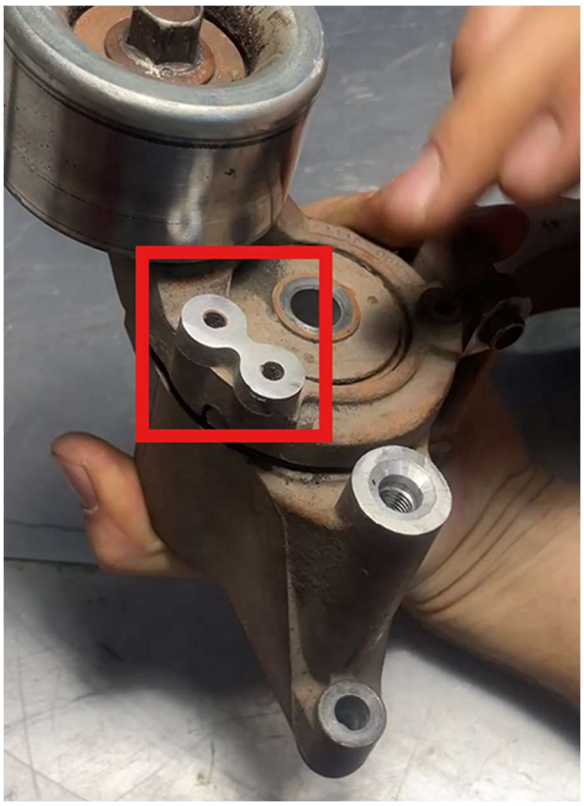
    The post shown must be cut down to 83mm from the base of the tensioner and 84.7mm from the machined face of the bolt eye that mates with the engine block as shown.

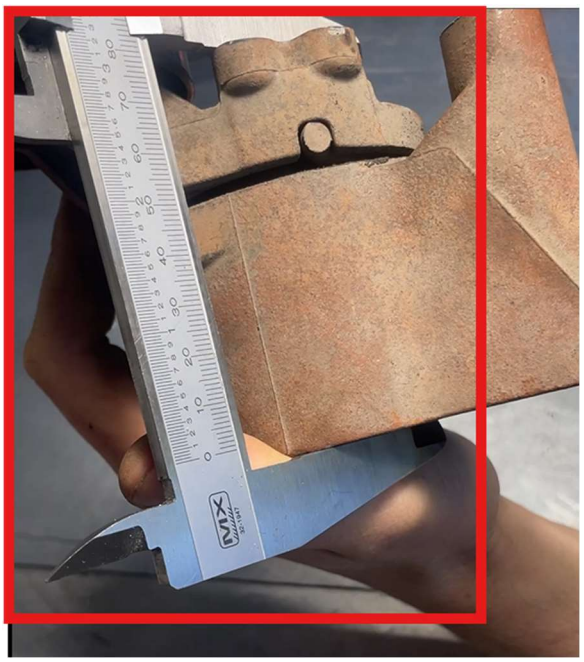


    This cut must be flat and parallel to the machined mounting surfaces to ensure the idler runs properly. Once the cut surface is flat it needs to be countersunk slightly so that the lower idler can be bolted down flat against this face.



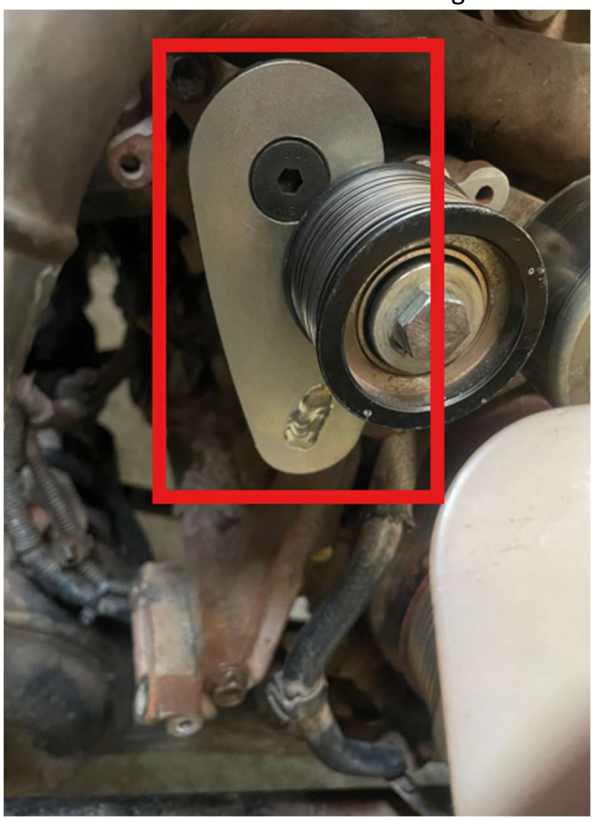
The countersunk bolt will protrude slightly past this plate and needs to bottom out on the lower idler plate and not the tensioner assembly. The M10 thread in this post may also need to be tapped deeper to allow the bolt to fully seat.
The second feature that needs to be modified is on the face of the assembly as shown. It needs to be cut down to 87mm from the cast base of the tensioner housing.





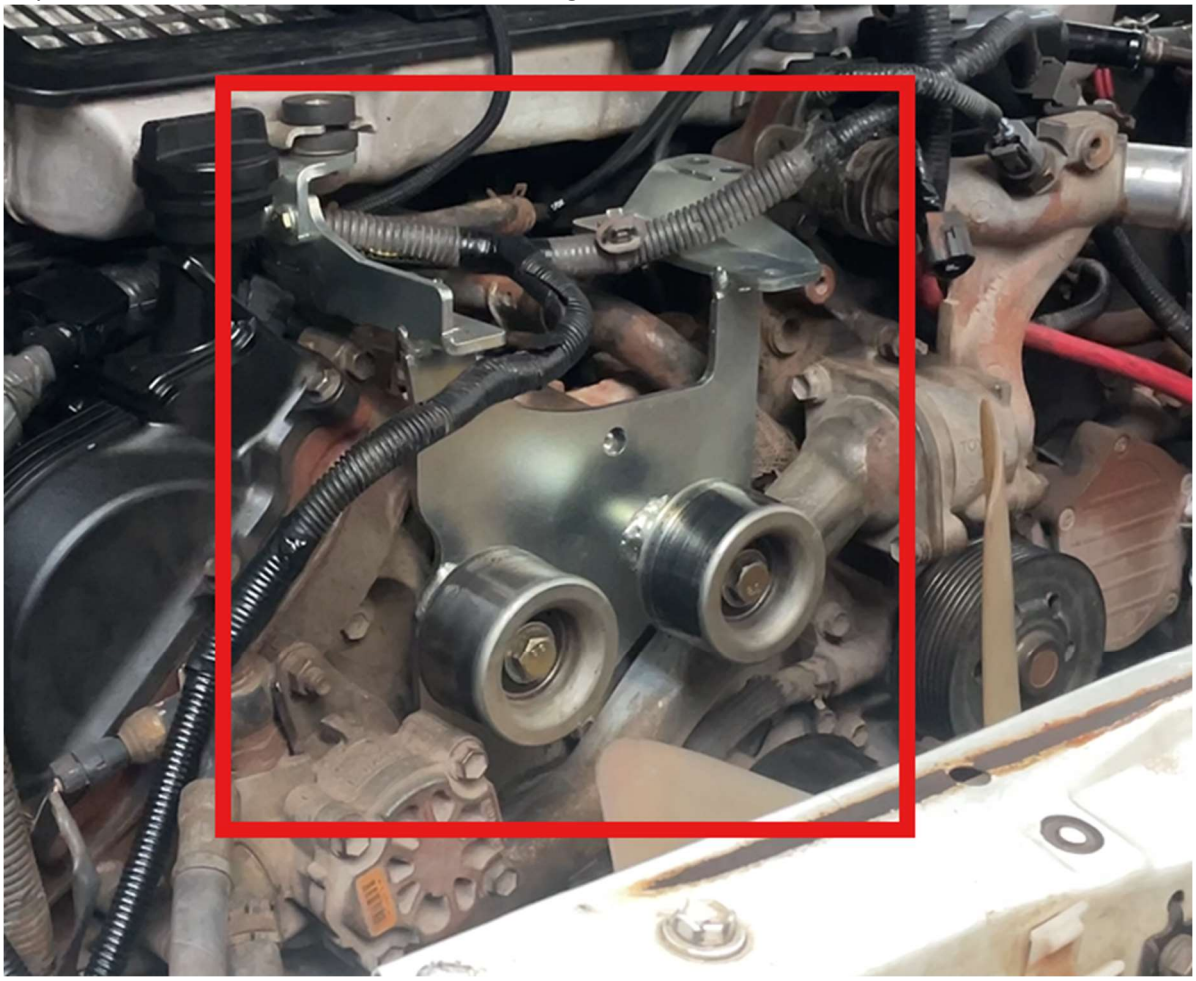
Remove the stud from the alternator assembly. It is threaded into place and can be unscrewed.

11. Re-install tensioner
12. Install lower idler bracket and pulley
    Install the locating tab and M8 bolt first using a washer and spring washer. Then install the M10 countersunk bolt. Medium strength thread locker can be used if desired.



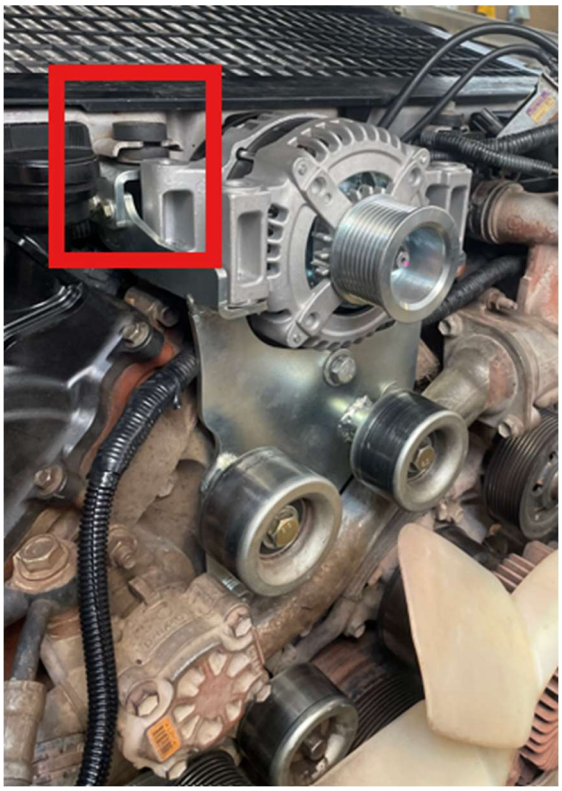
13. Install Main alternator bracket
    Install the main alt bracket using the supplied M10 bolts and the Toyota intercooler bracket bolts. These bolts have a fine thread. Ensure you are using bolts of the correct thread pitch to avoid cross threading bolts. The threads in the block may need to be cleaned, tapped and blown out using compressed air as they are often dirty. Use washers and spring washers with the supplied M10 bolts. Get all the 7 bolts that hold the bracket in place started before fully tightening any of them. This will make it easier to line up all the holes. On the passenger

side upper mounting point on this bracket, the bracket must be mounted over the top of the Toyota intercooler bracket as shown in the image below.

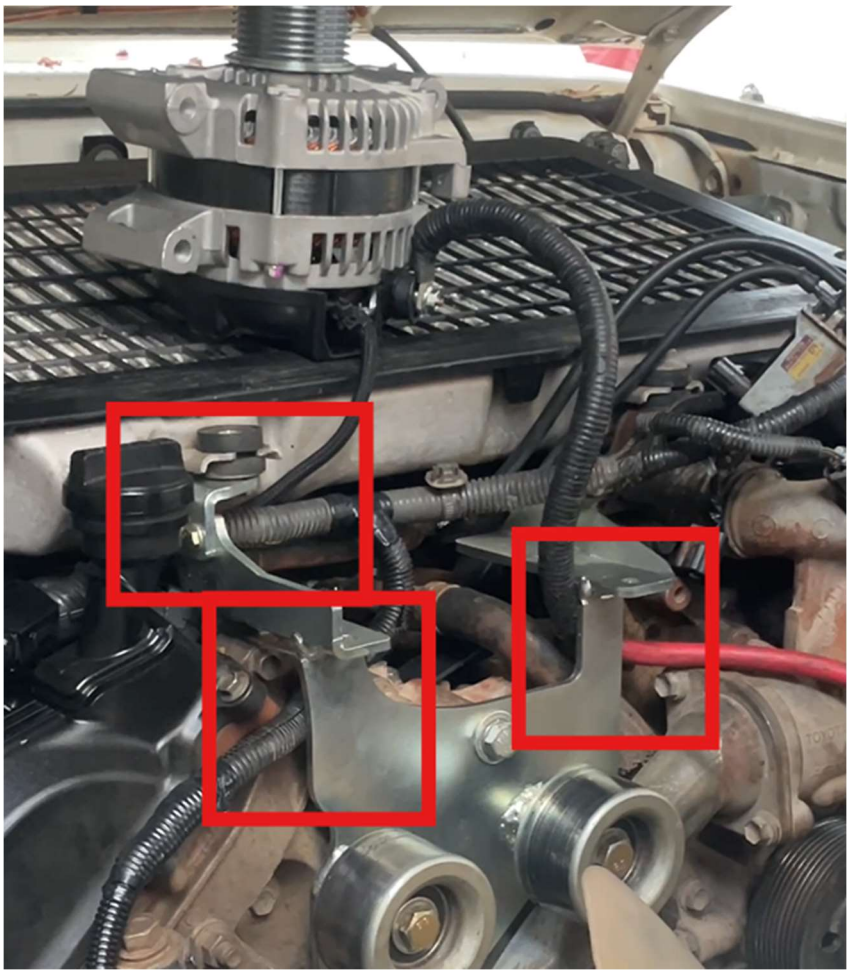


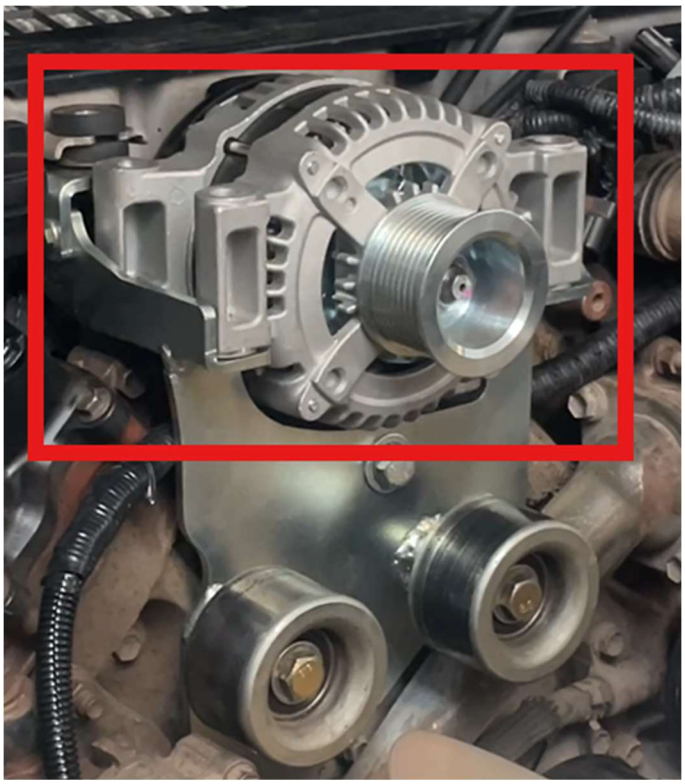
14. Install idler pulleys
    Bolt idler pulleys to the bracket using M10 bolts, large M10 washers and spring washers. Make sure the M10 bolts used are the correct thread pitch. Threadlocker may be used if desired. If your kit includes an engine driven air compressor, Fit the stock ribbed idler pulley to the 3rd pulley mounting position. This will apply a light pressure to the belt and help it to run properly.

15. Bolt intercooler to alternator bracket
    Using the supplied M8 bolt and the Toyota bushing nut bolt the intercooler to the top of the alternator bracket shown below.

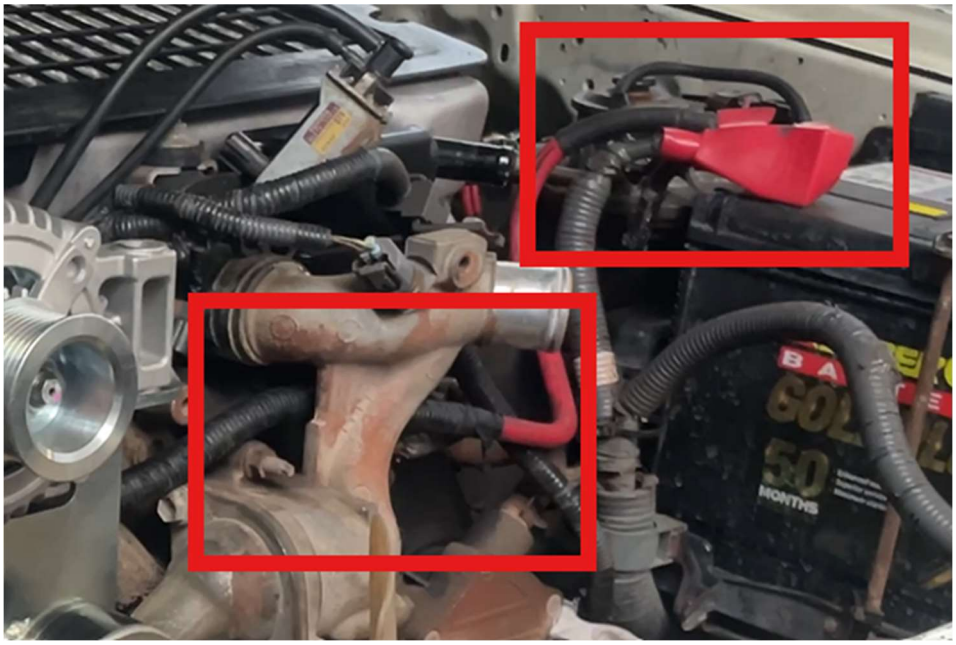


16. Install alternator
    Run voltage regulator wires behind the bracket as shown, run charge wire under bracket as shown, run mass airflow sensor under bracket as shown. Put the alternator in place and pull wires through as the alternator is lowered into place to prevent wires from being crushed.

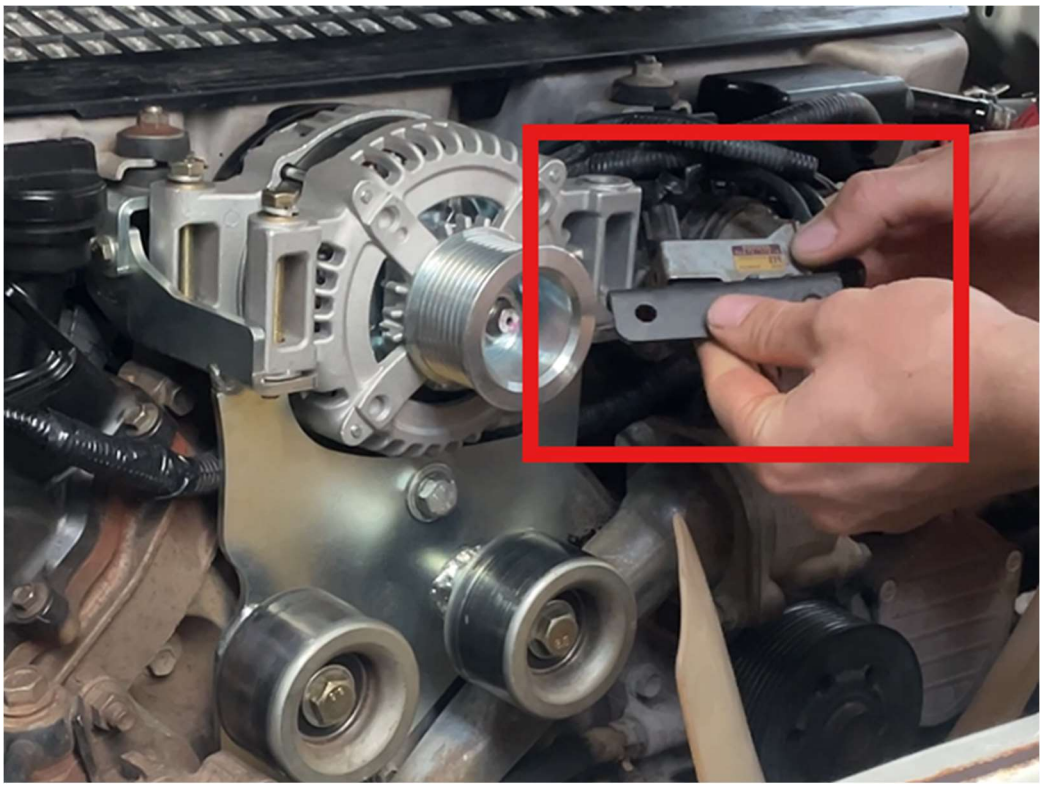




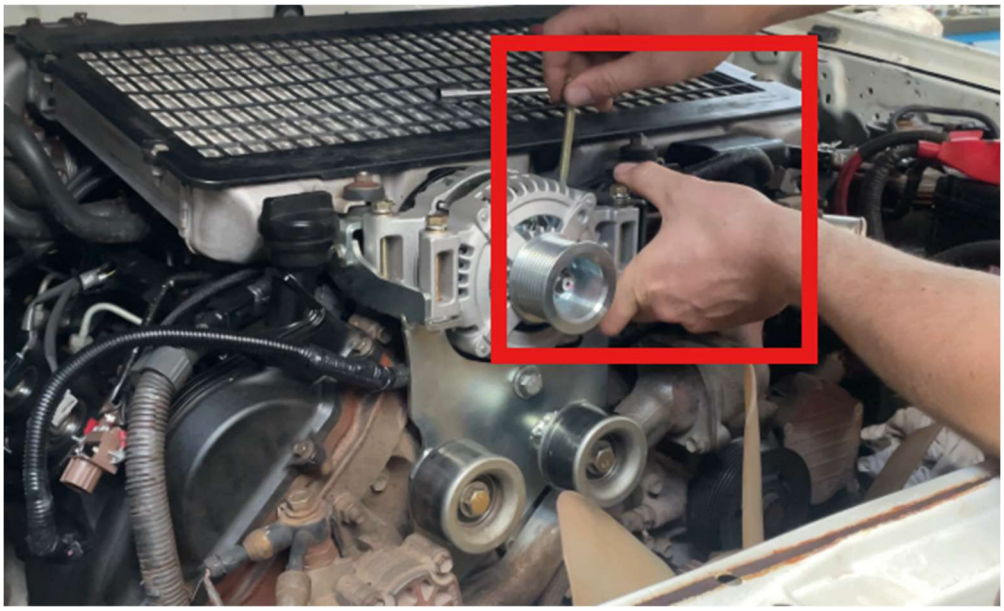
17. Attach charge wire
    Run charge wire behind bolt on features and attach to positive terminal of battery. Make sure it is insulated properly and not being cut by anything sharp.



18. Fit vacuum bracket
    Fit the vacuum device to the supplied bracket and hang it on the side of the alternator.

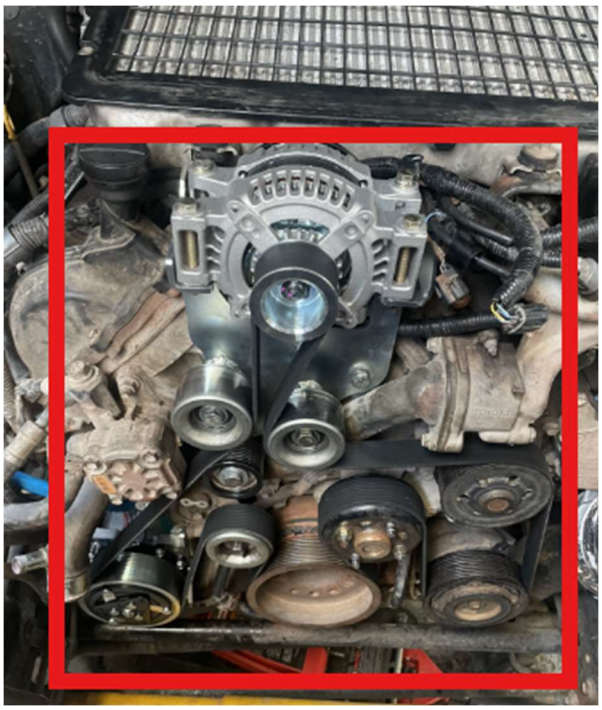


19. Bolt down Alternator with vacuum bracket
    Use supplied M8 bolts, washers and spring washers.



20. Install belt
    Use a 14mm socket and breaker bar to compress the tensioner spring and install the new belt. They are often tight before the belt is run in.

The image Below shows the correct routing of the belt. The Image is of an engine driven compressor kit. The routing for Alternator kits is the same except the compressor (bottom left) is substituted for the ribbed idler mounted to the tensioner.



21. Check all pulleys are correctly running and aligned.
    These kits are checked before they are shipped out, however it is good practice to check alignment before running the engine. You can use a digital angle finder for this. Shims can be used to correct any error. All idlers and pulleys should be aligned with the harmonic balancer pulley. Some error is acceptable, but too much will cause the belt to be thrown off and damaged.

22. Re-install radiator, coolant reservoir, fan shroud and other components

Please see intake pipe instructions for fitting intake pipe.

Maintenance:

- Check belts and pulleys at your diesel engines 5000km service interval.
- Regularly visually inspect rubber intake pipes – system must be completely sealed to prevent dust and water ingress into engine.
- Report any Faults to Rapid Inflation Systems.

- Regularly Grease engine driven compressors with Pentite high temp bearing grease. (pictured below) using different grease will cause the compressor to fail.

Plumbing Engine Driven Compressors:

- Use the provided pressure switch in combination with the provided rocker switch to control the compressor clutch. (also wire in N/O solenoid – see below)
- Use the provided pressure safety valve in the high presure side of the system.
- Braided Teflon Hose is supplied for the dicharge side of the compressor (Marked ‘‘D’’), this is necessary as the air discharged by the compressor can be extremley hot and will melt ordinary air lines. The length of teflon hose supplied will dissipate the heat enough to plumb the end of the braided teflon hose into ordinary 10mm airline.
- Plumb the suction side of the compressor (Marked ‘‘S’’), into the clean side of the airbox using the supplied brass hose barb. Sealant is recommended.
- Make sure all hoses and wiring are routed correctly to avoid fouling moving parts or touching hot components.
- Depending on your intended use for the compressor, a check valve is necessary between the compressor and the outlet/receiver. This will prevent air from flowing back out through the compressor. Mount your pressure switch on the opposite side of the check valve to your compressor. (Receiver side)
- **IMPORTANT:** The Normally Open (N/O) solenoid needs to be mounted in the air line between the compressor and receiver/outlet and wired into the control circuit for the clutch such that it will close when the clutch is engaged. This will make sure that the main air line is empty when the compressor is not running and makes it easy for the compressor clutch to properly engage when an air receiver is already at high pressure. If this is not done correctly the compressor clutch may slip and not engage properly at high pressure.