Performance Racing Options and Services (PROs) Tuning

Nissan 300ZX GM Alternator Adapter Bracket – Installation Guide

PROs Tuning
843 W 13th Ct, Riviera Beach, FL 33404
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Introduction

The PROs Tuning 300ZX GM Alternator Adapter Bracket is our in-house designed and CNC-manufactured solution to common Nissan 300ZX charging problems. From the factory, Nissan specifies either an 80-amp alternator for naturally aspirated (NA) models or a 90-amp alternator for twin-turbo (TT) models.

This can lead to under-charging issues both at idle or at speed, when either the electrical loads on the car are higher than normal (electric fan conversion, stereo systems, additional fuel pumps, etc.) or the car is warmed up – alternators provide less output when hot compared to cold.

Also – alternators are not always rated for output at idle. Some aftermarket units advertised at "200-amp" may only output 100 or less amps at idle!

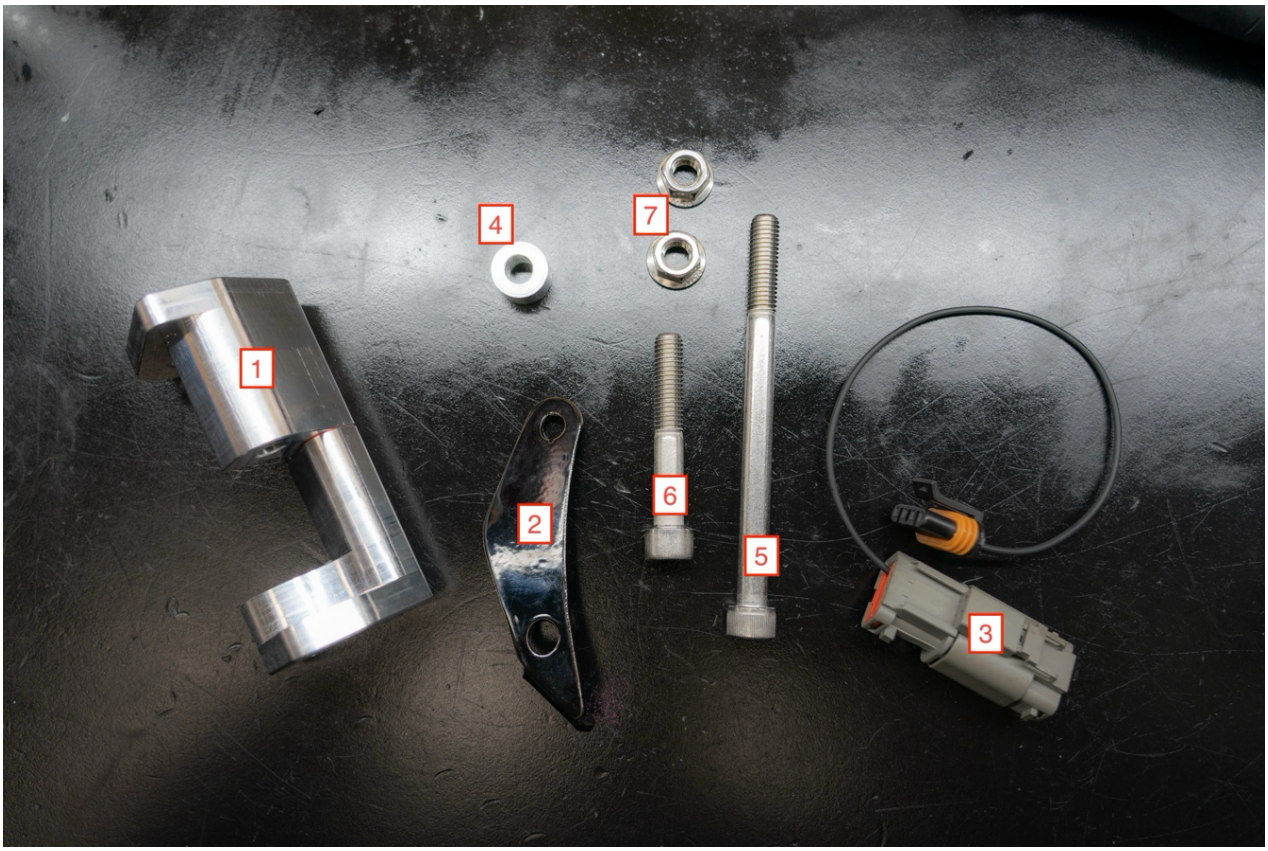
This GM Alternator Adapter Bracket allows the bolt-on conversion to a GM AD244 or GM DR44-style alternator, commonly found in early 2000's Chevrolet/GMC trucks. For ease in finding the part in a store, you can search for an alternator from a "2001 Chevrolet Suburban 1500".

These alternators range from 135 amps to 500+ amps – and are readily available from local/online parts stores.

*Note – this kit only works with 4-pin alternators (and not the 2-pin DR44-g alternator). We also do not recommend "self-exciting" alternators. If you use one, you would not use the patch harness, and your OEM battery low voltage light will be permanently lit.

Parts List

1. Billet GM Alternator Adapter
2. GM-to-OEM 300ZX alternator tensioning adapter
3. Nissan 300ZX to GM 1-wire patch harness
4. (1) Aluminum spacer
5. (1) M10x1.5 130mm bolt
6. (1) M10x1.5 65mm bolt
7. (2) M10x1.5 flange nuts



Special Considerations

For higher output alternators (110 amps or greater) we highly recommend you add an additional power cable from the alternator stud to the battery in parallel to the OEM alternator harness. In general, we recommend this for any alternator upgrade as your factor wiring may be degraded due to age and heat.

Most configurations of GM alternator you will find are a 6-rib or 8-rib belt. The factory alternator belt is a 4-rib grooved belt which has been confirmed to work with a 6-rib or 8-rib GM alternator provided there is proper tension, and the belt is on the proper grooves of the alternator in terms of alignment. The OEM belt size (or the one that comes with an underdrive/overdrive pulley kit) is the correct dimension for the GM alternator as well.

This kit only works with 4-pin alternators (and not the 2-pin DR44-g alternator). We also do not recommend "self-exciting" alternators. If you use one, you will not use the patch harness, and your OEM battery low voltage light will be permanently lit.

Installation Guide

Initial Steps/Safety

Before beginning to work on your vehicle and its electrical components, please do the following:

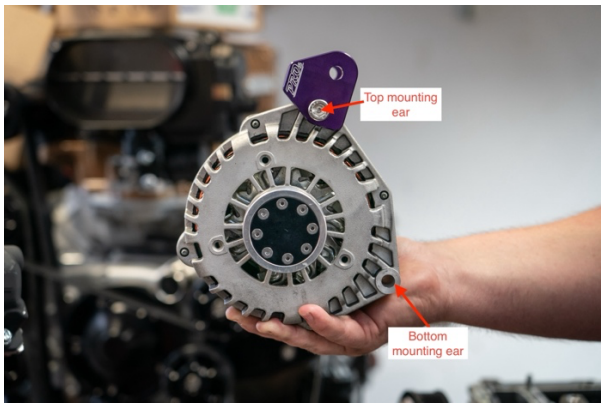
- Disconnect the battery from your vehicle and wait a few minutes to ensure the vehicle is completely discharged electrically.
- Ensure there are no loose tools or wiring near the battery terminals to avoid short circuit situations.

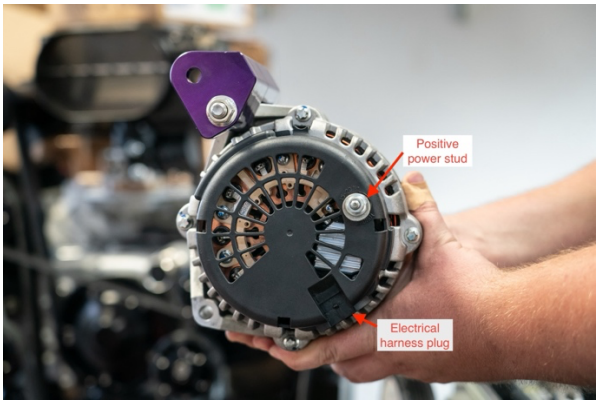
Bench Assembly of your Alternator Setup

This section details our recommendations for properly setting the angle of the GM alternator adapter bracket onto the alternator itself.

The bracket was designed to have some overall adjustability to account for varying alternator sizes and case designs. In our development we used a typical GM AD244 (AC Delco or equivalent) from the local parts store. The overall purpose of the adjustment is to "set" the bracket against the casing of the alternator so it does not have any possibility of moving further – which would reduce belt tension.

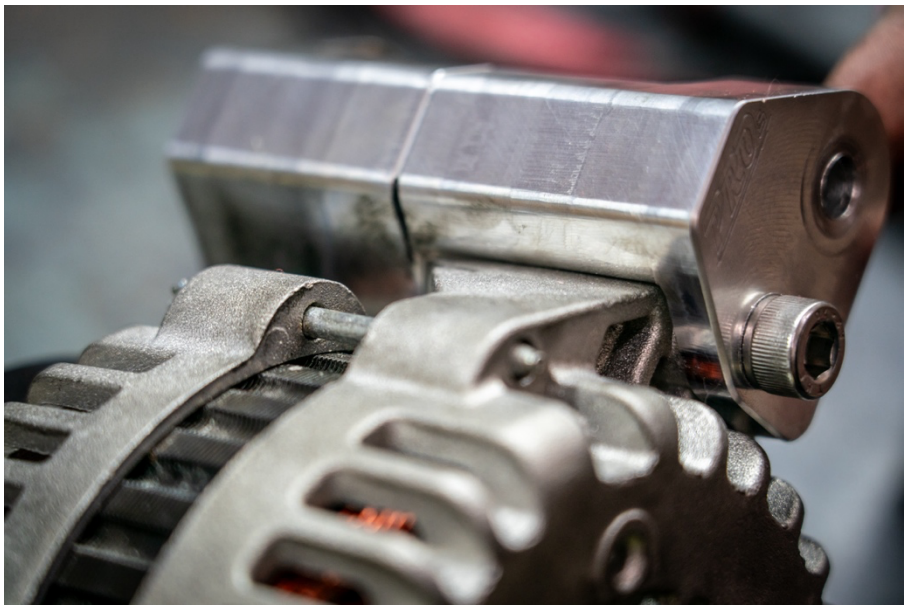
Below is a reference showing the various parts of the alternator and the orientation of top versus bottom:





1. Loosely bolt the alternator bracket to the “top” mounting ear of the alternator using the longer 130mm bolt and a flange nut as shown:

2. Clock the bracket towards the top of the alternator as this will provide the most clearance away from the frame and “locks” the bracket from moving further once installed:

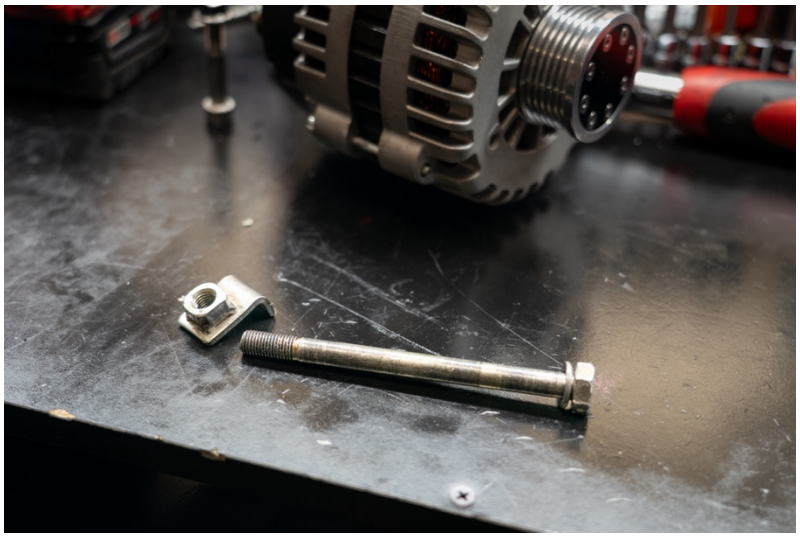


3. Tighten the bolt and nut while keeping the assembly in-place, approximately to 45 ft-lbs.
    a. Loctite is recommended to ensure this bracket will not slip or move.

Removal of Existing Alternator

WARNING – ensure you have disconnected the battery and made the car electrically safe.

1. Jack up/lift the vehicle to a working height.
2. Remove splash shield/undertray to gain access to the engine compartment.
3. Remove the sway bar.
    a. Note: this may require removal of the tension rod assembly.
4. De-tension the existing alternator.
    a. Note: if you are reusing the same belt on your vehicle, you do not need to remove the power steering and A/C belts.
5. Unbolt and remove the OEM tensioning bracket.
6. Unbolt the alternator.
    a. This OEM upper bolt and the "flag" nut will be reused on your new alternator:



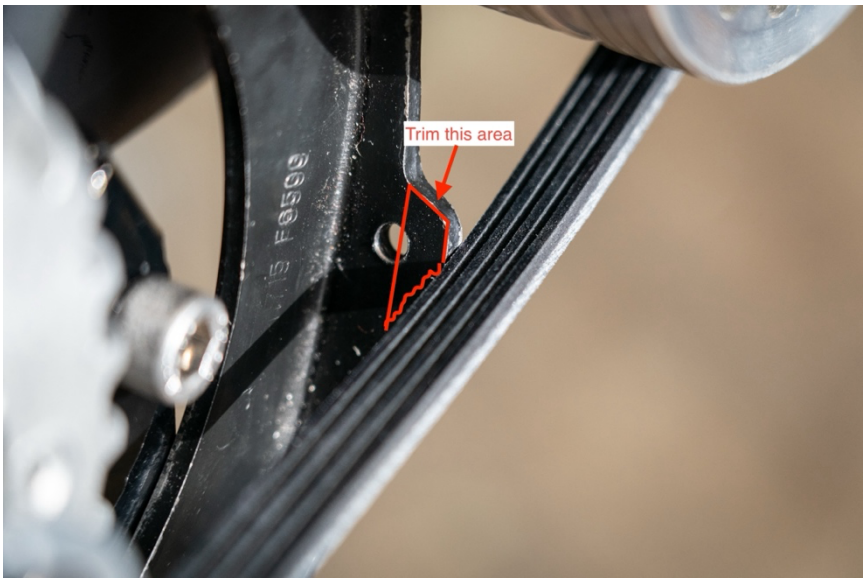
7. Disconnect the electrical harness, ground connection, and main power cable.
8. Remove the alternator from the car.

Tensioning Bracket Modification

The OEM tensioner bracket is used in conjunction with the included GM-to-OEM tensioning adapter to provide proper tension on the belt. With a GM alternator, the belt routing changes slightly, and your belt will may touch part of the OEM tensioner bracket.

We have noticed that stock and underdrive pullies may not need this modification – but we recommend doing it in case your belt deflects under high rpm load. Overdrive pullies such as the ATI Superdamper require this modification.

This section details the small modification that may be required for your setup. In the photo below you can see how the new belt geometry slightly interferes with this protrusion:



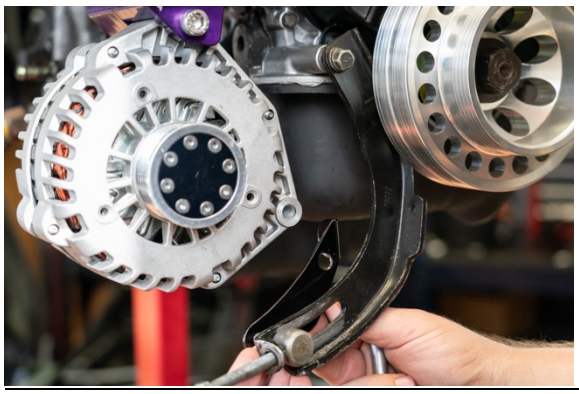
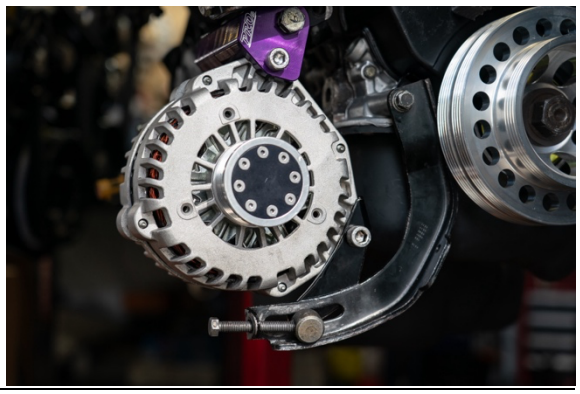
This photo details the area to be ground/cut down:

And this photo shows the result after modification, and the alternator fully tensioned:

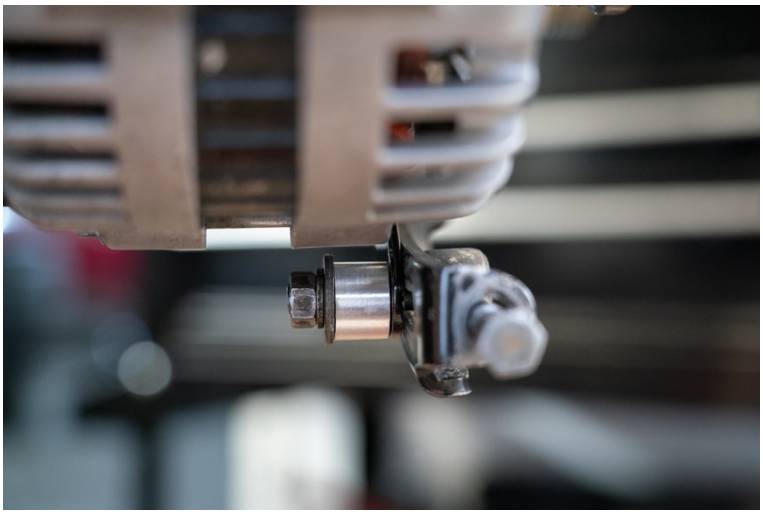
Installation of New Alternator Setup

1. With your bench-assembled alternator, roughly position the alternator in the engine bay and attach the power cables and using the Nissan 300ZX to GM 1-wire patch harness, connect the alternator to the OEM harness.
    a. Note: The ground wire may or may not be needed to be connected in your application. The alternator grounds through the casing and through the alternator adapter bracket – unless it is painted/anodized. In this situation you may have to add a ground wire to the alternator case.
    b. An additional power cable of 4 gauge or larger is recommended for higher output alternators – and will depend on your application.
2. Install the alternator to the engine by reusing your OEM flag nut and bolt.
    a. Note – keep an eye out for pinched wiring and ensure you route your harness/cables away from heat sources or pinch points.
    b. A typical GM alternator will be larger than an OEM alternator – your wiring harness will have to be adjusted and moved around slightly to fit.


3. Install the OEM tensioner bracket to the engine and the GM-to-OEM 300ZX alternator tensioning adapter.
    a. Note – please see next section titled "Tensioning Bracket Modification" for the minor modification required in certain situations.

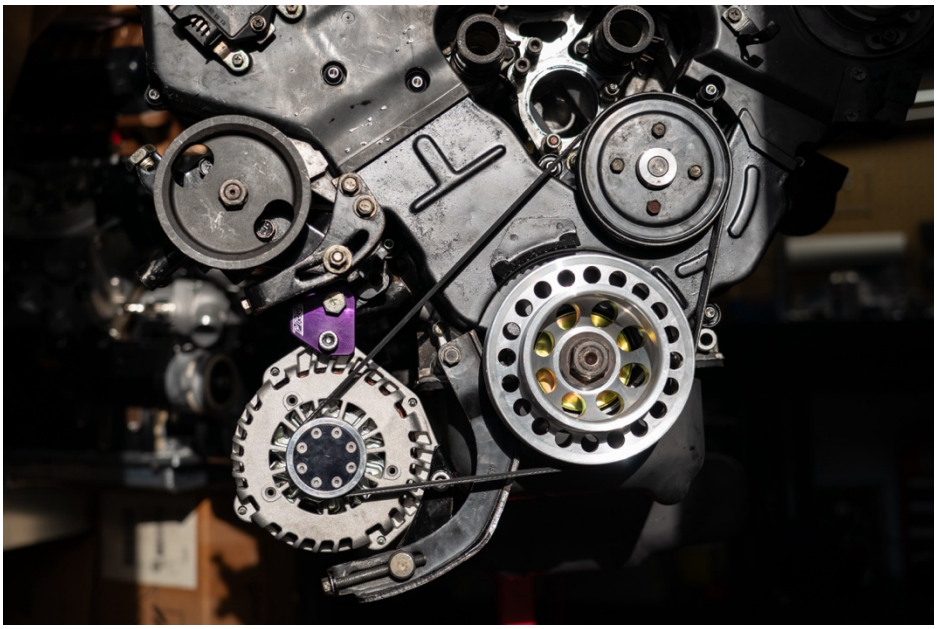



b. Note: you will need to use the Aluminum spacer to bolt up the OEM tension nut properly:



4. Install the alternator belt.
    a. Note – different alternators may require the belt sit on different ribs, line up the belt so there is the least deflection possible. To be 100% certain, there are specialty laser alignment tools available as shown:

5. Tension the alternator to the proper specification.
6. Reinstall all other parts (sway bar, splash shield, etc.).
7. Reconnect battery.



Final Considerations

After completing your install of the GM alternator, it is advised to check the vehicle for proper charging operation. If installed in the configuration as detailed in this guide (i.e., using the 1-wire patch harness with no other external voltage regulation), you should expect to see a constant ~13.5-14.4 volts at the battery with a multimeter at idle.

If you are seeing voltage below these values, check and see if the harness connections, ground, and power are tight and corrosion free. This also may indicate a problem with the alternator itself, or that the alternator is not sized large enough for your electrical loads.

Note: if you read the voltage "inside" the car via an ECU, OBD II, cigarette outlet, radio, or otherwise, you may see lower voltage as the voltage drops naturally through the OEM body/engine harness due to resistance. This is normal. Measuring from the battery is the most sure-fire way to verify voltage.