



F250_'s 2002 F250, 7.3L Power Stroke Diesel

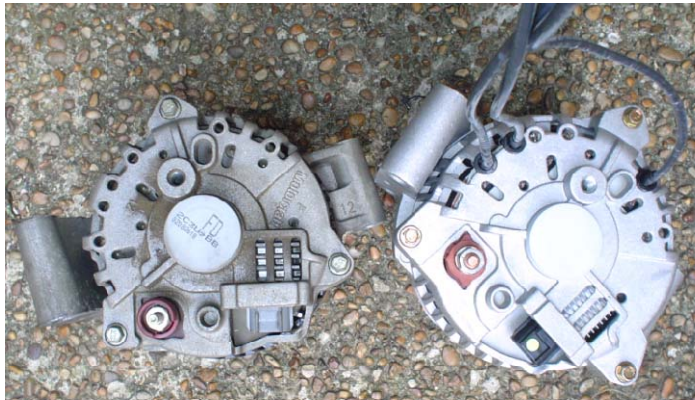
Alternator / Charging System Upgrade, 08/08/2010



Original alternator went out at 189,913 miles. Not the longest living alternator, but not too bad. One symptom I saw was the glow plug WTS light sometimes just staying on. The real killer symptom was that my A/C wouldn't cool at all when on MAX, and the Southern Summer heat wouldn't allow me to NOT replace the alternator.

Replacement choice was a 160 amp, 6G, Heavy Duty model with a fan-cooled External Rectifier Box from Quick Start...

<http://store.alternatorparts.com/6g-series-160-amp-heavy-duty-power-stroke-alternator.aspx>



The alternator on the far left is the OEM unit, while the one next to it and on the far right is the upgraded HD unit from Quick Start. You can see the pre-installed wiring which connects the new alternator's internal rectifier to the additional fan-cooled remote Rectifier box (Quicktifier).



Installation wasn't bad, but the kit did not include the necessary 4 AWG cables for running from the new alternator to the rectifier box and then to the battery. Also, there was no wiring diagram for those without a solid grasp on all the electrical implications of this upgrade, so I included a simplified version of mine below for reference. Other unexpected issues I faced were:

- Adding some extra heat shrink tubing to the pre-installed wires from the internal rectifier
- fabricating a bracket to mount the new Quicktifier (and potentially the ANL fuse block)
- purchasing a HI-amp ANL fuse block and fuses
- the need for either 1) spacers to lift the new 6G case, or 2) grinding the alternator bracket so it would sit level
- grinding my fuel gauge mounting bracket to fit around a bulge on the new unit's case.

Once the installation was complete, I used AutoEnginuity's Scantool to check the system, and it was near perfect from the very instant I started the truck... 14.3-14.4 volts immediately. While idling in the driveway and running MAX A/C, headlights, brake lights, overhead interior lights, laptop plugged in, GPS on, wipers on high, and blinkers going... the voltage slowly drifted down to about 13.1, and as soon as I shut everything off, the voltage popped right back to 14.2, then 14.3, and 14.4. Very pleased thus far!

Tools & Materials required:

½" drive ratchet handle to tilt tensioner pulley's for belt removal

Wire crimper

Small Flat tip Screwdriver

Various wrenches & sockets

Cable crimper (for 6-2 AWG cable)

Grinder

Materials:

small ring connector for fan's power supply

wire loom

cable lugs

proper size ANL fuse block & fuses

flat bar stock to fab a bracket for the rectifier box, and necessary mounting bolts & nuts

large AWG cable (use table at end of document to determine gauge and length for your application details)

primary wire (14 gauge) for fan power supply

Optional - 3/8" washers (12 of them) to shim the alternator for clearance and proper alignment of the pulley

¾" & ¼" heat shrink tubing (2-3 layers per conxn)

zip ties

8mmx1.25.15mm bolt for ground on alternator

in-line 2 amp fuse for fan's power supply

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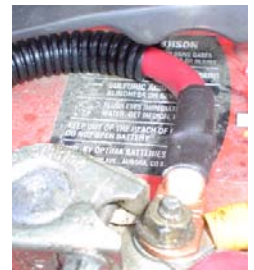
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BEFORE installing anything, plan your wiring routes and make sure you have ALL required materials (cables, connectors, lugs, tools, heat shrink, ANL fuse block & fuses, etc.). Also, electricity is like human nature... it seeks the path of least resistance, so try to keep your cable runs as short as possible and locate your Quicktifier box as close as possible to the battery.

Installation:

1. Disconnect batteries (both of them) and remove the serpentine belt.
2. Remove alternator bolts.
3. Disconnect large power cable and small plastic clip from alternator. Small plastic clip can be more easily removed by using a small flat tip screwdriver to release the tab... be careful to not break the connector.
4. Set the old alternator aside.
5. On the new alternator, slip some short pieces of heat shrink tubing onto each of the three wires coming from the rear of the alternator housing (I used two short pieces on each conxn), install the vendor supplied ring connectors (one on each of the three wires), and then install the heat shrink over the connection points.
6. Make up each required power and ground cable. Use large heat shrink to cover the connector and cable to minimize short circuiting from inadvertent contact.
7. Run each new cable through wire loom to prevent the cables from rubbing or chafing against other engine components, and route the cables through the locations where you want them. The three rectifier wires can go into a single wire loom.
NOTE: The picture to the right shows a crimped lug which has been heat-shrunk and the cable has been run through wire loom.
8. Before connecting the new alternator, decide if you're going to either 1) grind the bottom valley's of the alternator bracket, or 2) install washer shims under each of the new alternator's four "feet", but one of these will have to be done to obtain clearance and have the new unit sit level. Grinding is more complicated, but eliminates extra tension on the serp belt. Also, if you chose to grind, remove the serp belt first to prevent getting metal chips in the belt grooves.
9. Connect the wiring to the new alternator.
10. Mount the new alternator. Install and tighten the three mounting bolts.
11. Re-Install the serpentine belt (the shimmed position should not require a longer alternator belt, but could).
12. Fabricate and install the mounting brackets (if required) for the Quicktifier and the ANL fuse block.
13. Insert the ANL fuse into the fuse block.
14. Mount the Quicktifier and fuse block onto the necessary brackets, and remove the top lid which holds the rectifier.
15. Route the three smaller wires from the alternator though the same grommated hole that the red fan wire protruded from.
16. Connect each of the three wires from the alternator, one to each of the three copper studs on the rectifier (inside the Quicktifier box). It does not matter which order or configuration these three wires are connected.
17. Re-attach the rectifier lid to the box.
18. Run an ignition sourced wire (powered only while the ignition key is "ON") to the red fan power supply. Install a 2 amp fuse in this line between your power source and the fan (i.e. *one of the key-powered lugs off my glow plug relay*).
19. Connect the remaining new wiring according to the schematic at the end of this document. The cables do not have to go to separate batteries, but my installation worked out better by splitting the alternator cables with one to each battery.
NOTE: You MUST re-install the original alternator battery cable to prevent the alternator from overcharging the system!
20. Double-check your cable and wiring connections to match the schematic, and then re-connect the battery cables.
21. Secure all wire loom and cables to ensure there is no rubbing or chafing against other engine-bay components.
22. Turn your ignition key on to ensure that your Quicktifier cooling fan runs properly.
23. Start your engine and check the voltage, which should be right at 14.3-14.5 volts.





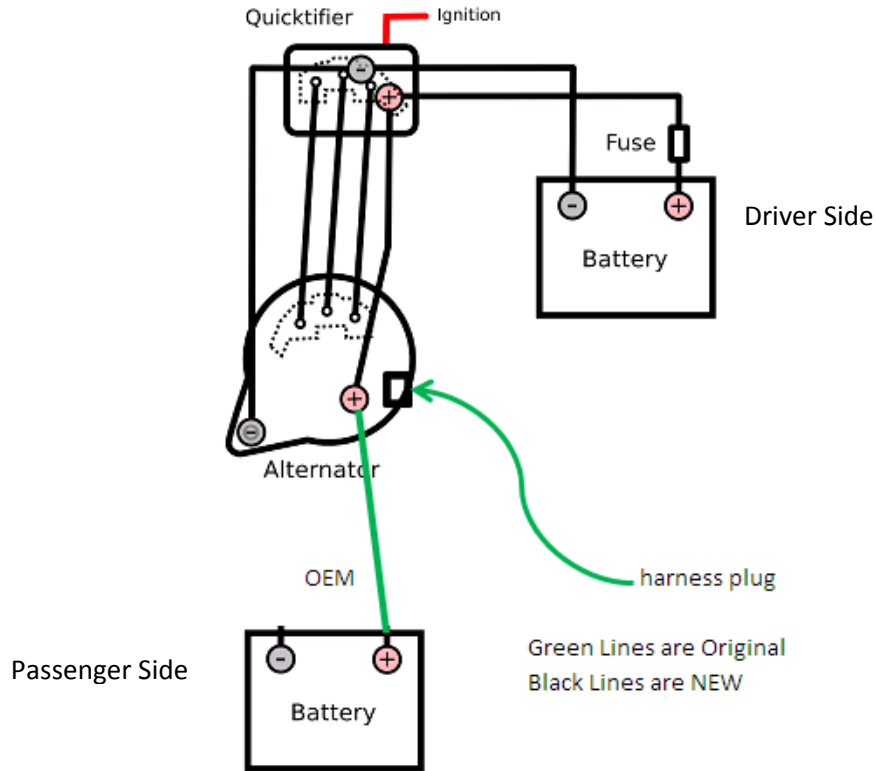
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Contact the vendor if anything does not appear to be working correctly.

Installation pictures are at the end of the document.



Choose the correct cable size depending upon wire length and amperage ratings.

System Voltage	Amps	< 5 Ft	5-10 Ft	10-15 Ft	15-20 Ft	20-25 Ft	25-30 Ft
12 Volt	0-60	8 AWG wire	4 AWG wire	2 AWG wire	2 AWG wire	1 AWG wire	2/0 AWG wire
12 Volt	60-100	6 AWG	4 AWG	1 AWG	0 AWG	0 AWG	2/0 AWG
12 Volt	100-150	4 AWG	2 AWG	0 AWG	2/0 AWG	2/0 AWG	3/0 AWG
12 Volt	150-190	4 AWG	1 AWG	2/0 AWG	3/0 AWG	4/0 AWG	4/0 AWG
12 Volt	190-250	2 AWG	0 AWG	2/0 AWG	4/0 AWG	4/0 AWG	4/0 AWG
12 Volt	250-300	0 AWG	2/0 AWG	3/0 AWG	4/0 AWG	4/0 AWG	4/0 AWG

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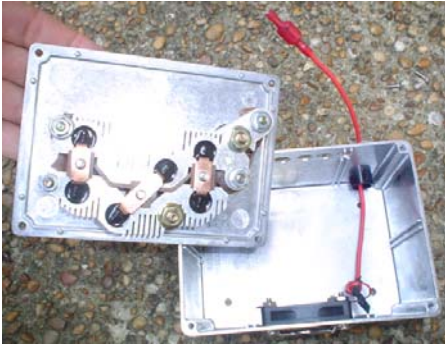


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Inside of the Quicktifier



Custom bracket for mounting Quicktifier



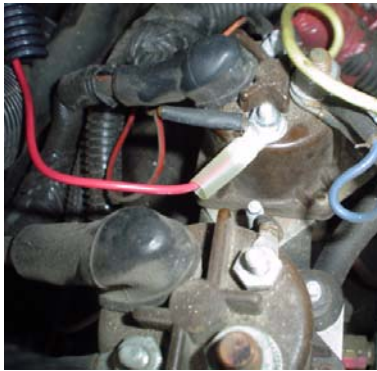
Mounting location for Quicktifier



Quicktifier in position.



Power supply (GPR) for fan.



Positive battery conxn from ANL fuse block.



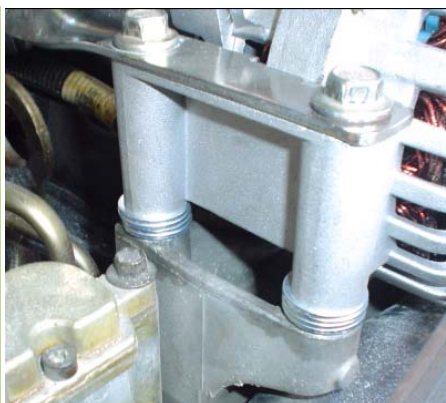
Ground conxn from Quicktifier.



200 amp ANL fuse block between Quicktifier and Battery (driver side).



Minor Bracket Grinding or Shims under the mounting feet.



Mounted and ready to run!!



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