7102 10DN GM ALTERNATOR INSTALLATION INSTRUCTIONS

CAREFULLY READ THESE INSTRUCTIONS BEFORE ATTEMPTING ANY MODIFICATIONS!

Proper installation of this alternator is the responsibility of the installer. Improper modification or installation will void your warranty and may result in vehicle damage or personal injury. If you have any installation questions, refer to your factory shop manual or call our Tech Service personnel at 216-961-1800 from 7am to 4pm EDT.

ALTERNATOR INSTALLATION INSTRUCTIONS

1 - Disconnect the ground cable from the battery.
2 - Disconnect all wire connections from the alternator and label wires for future replacement.
3 - Remove alternator belt(s).
4 - Loosen alternator mounting and tension arm bolts.
5 - Hold the alternator securely while removing the mounting bolts and spacers. Remove old alternator.
6 - Install new alternator and replace all mounting bolts and spacers. Do not fully tighten bolts.
7 - Replace drive belt(s) on pulleys. Adjust V-belt tension. V-belts should have ½" to ¾" play as light pressure is applied at midpoint between pulleys.
8 - Tighten all alternator and bracket bolts.
9 - Reconnect alternator wires and battery ground cable.
10 - **Make sure battery is fully charged before starting engine.**
11 - Reconnect the ground cable, start the engine and using a VOM meter, verify that the alternator is charging at least 13.8 volts @ 1,000 engine RPM's.

ALL ALTERNATORS REQUIRES A GOOD GROUND

In order for an alternator to charge properly, an alternator must be grounded to the engine block. If an alternator has paint or clear-coat on the mounting surfaces, it may not be grounded and will not charge. For these reasons, many Tuff Stuff alternators include a grounding tab that should be used to ground the alternator.

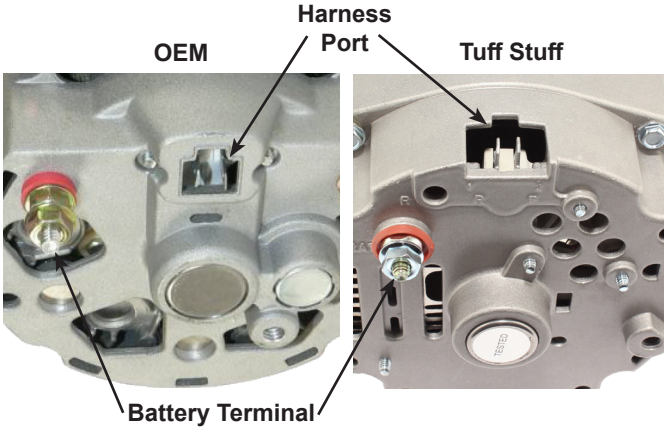
CORRECT WIRE SIZE IS CRITICAL

It is very important to use the correct wire size to connect the alternator to the battery. A wire size too small can allow the wire to overheat, melt the insulation and cause a fire or worse. Depending upon the maximum output of the alternator, use the following chart as a minimum wire size guide. Wire size is based on 4' battery cables. Trunk mounted batteries require heavier gauge battery cables - contact Tech Service for recommendation.

Alt Rating	Wire Size	Alt Rating	Wire Size
75 Amps	8 gauge	150 Amps	4 gauge
100 Amps	6 gauge	200 Amps	4 gauge

ROTATION SPEED

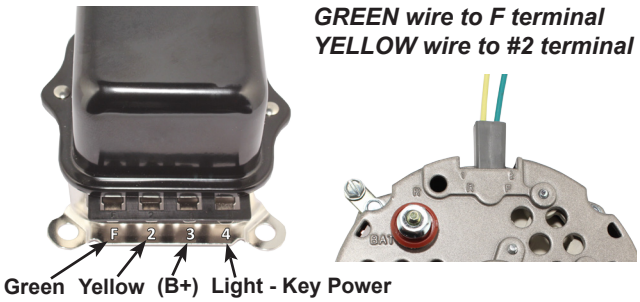
Alternators spin at approximately 2.5 times that of crankshaft RPM, so an engine at a 700 RPM idle would spin the alternator at 1,750 RPM. Note that the maximum RPM of any Tuff Stuff alternator should not exceed 18,000 RPM's (7,200 engine RPM's). There is no need to worry about use of an underdrive pulley system or an ignition regulator turn on with Tuff Stuff alternators. All Tuff Stuff alternators charge at very low engine RPM's. No other manufacturer in the industry has an alternator that produces more amps at low RPM's than Tuff Stuff. Also note that Tuff Stuff alternators are bi-directional and will charge when spun in either direction.



The OEM 10DN GM alternator has a harness port on the back side of the alternator. Tuff Stuff's 10DN alternator has a harness port on the top of the back case. Both alternators accept the same stock wiring plug, the only difference being the physical location. Once the new alternator is installed, simply hook up the battery wire and plug in the harness connector.

CAUTION

If replacing with a higher output alternator, it is critical to use a larger gauge wire between the alternator and battery. Failure to do so could cause a fire or worse. To work properly, the alternator needs to be grounded – use the supplied grounding tab.



SOLID STATE VOLTAGE REGULATOR REQUIRED

Tuff Stuff's 10DN alternators require a solid state voltage regulator like Tuff Stuff 7635. If using a new alternator wiring plug like Tuff Stuff 7520B, the GREEN wire connects to the F terminal of the voltage regulator and the YELLOW wire connects to the #2 terminal.

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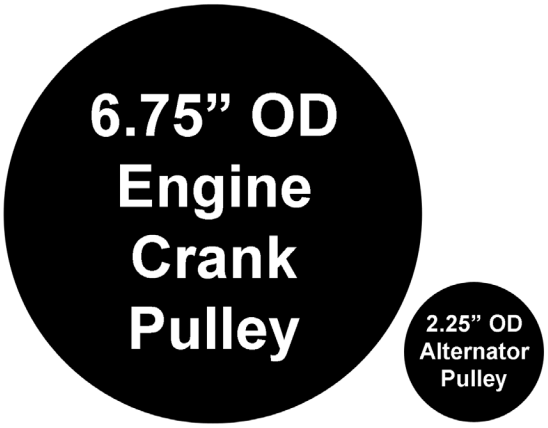
WARNING

THIS ALTERNATOR SHOULD NEVER EXCEED 18000 RPM's!

Alternator bearings and components are not designed for extremely high RPM's. Tuff Stuff strongly recommends that you calculate your pulley ratio to determine if your alternator will operate within the safe RPM range.

To calculate your alternator pulley ratio, divide the engine crankshaft pulley diameter by the alternator pulley diameter. Using the ratio that you calculated, multiply that number by the highest anticipated engine RPM to determine the maximum alternator RPM.



ALTERNATOR PULLEY RATIO
Crankshaft pulley diameter ÷ alt pulley diameter = alternator pulley ratio
Example
6.75 ÷ 2.25" = 3:1 alternator pulley ratio

MAXIMUM ALTERNATOR RPM
Alt pulley ratio X Max engine RPM = Max alternator RPM
Example
3 X 6000 max engine RPM = 18000 max alternator RPM = SAFE
3 X 7000 max engine RPM = 21000 max alternator rpm = UNSAFE

If your max calculation is greater than 18000 alternator RPM's, increase the alternator pulley diameter or decrease the crank pulley diameter to compensate. If changing the alternator pulley is not possible, use an engine rev limiter to control maximum engine RPM's.

Excessive RPM's can cause the alternator fan to flex and contact the drive belt. Besides being unsafe, it could cause property damage and/or personal injury. Other factors that will substantially increase the likelihood of alternator fan-to-belt contact include:

LOOSE OR WORN BELTS
Loose or worn belts allow for movement and deflection which will decrease the gap between the fan and belt and increase the likelihood of contact.

INCORRECT BELTS
Tuff Stuff supplied V-belt pulleys are designed to accommodate a 3/8" wide V-belt. Wider belts will not fully seat into the pulley groove and will increase the likelihood of belt-to-fan contact. If the application requires a wider belt, use the original alternator pulley instead of the supplied pulley.

ALTERNATOR BRACKETS ALIGNMENT:
Loose, damaged or misaligned alternator brackets can reduce the clearance between the alternator fan and belt.

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LIMITED WARRANTY

All Tuff Stuff Performance Accessories products are covered by a one year Limited Warranty, which may be read or downloaded at www.tuffstuffperformance.com.