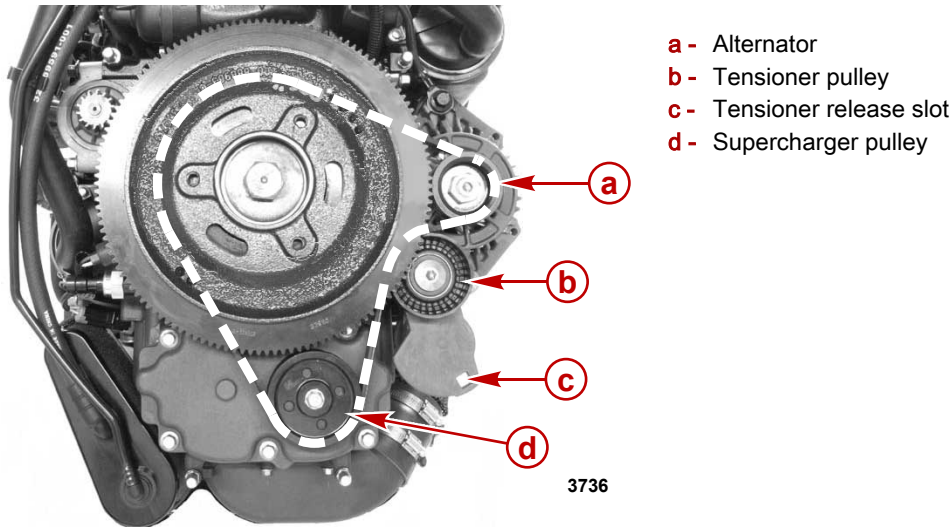


Alternator and Supercharger Belt Tension Adjustment

Correct alternator and supercharger belt tension is maintained by a belt tensioner assembly.



- a - Alternator
- b - Tensioner pulley
- c - Tensioner release slot
- d - Supercharger pulley

Alternator Description

The alternator employs a rotor that is supported in two end frames by ball bearings and is driven at 2.8 times engine speed. The rotor contains a field winding enclosed between two multiple-finger pole pieces. The ends of the field winding are connected to two brushes which make continuous sliding contact with the slip rings. The current flowing through the field winding creates a magnetic field that causes the adjacent fingers of the pole pieces to become alternate north and south magnetic poles.

The three phase stator is mounted directly over the rotor pole pieces and between the two end frames. It consists of three windings wound 120 degrees electrically out of phase on the inside of a laminated core.

The rectifier bridge contains six diodes which allows current to flow from the ground, through the stator, and to the output terminal, but not in the opposite direction.

When current is supplied to the rotor field winding and the rotor is turned, the movement of the magnetic fields created induces an alternating current into the stator windings. The rectifier bridge changes the alternating current to direct current which is present at the output terminal. The diode trio is connected to the stator windings to supply current to the regulator and the rotor field during operation.

Voltage output of the alternator is controlled by a transistorized voltage regulator that senses the voltage at the battery and regulates the field current to maintain alternator voltage for properly charging the battery. Current output of the alternator does not require regulation and is self-limited by the design of the alternator. As long as the voltage is regulated within the prescribed limits, the alternator cannot produce excessive current. A cutout relay in the voltage regulator is not required. The rectifier diodes prevent the battery from discharging back through the stator.

A small amount of current is supplied by the excitation circuit in the regulator to the rotor field to initially start the alternator charging. Once the alternator begins to produce output, field current is supplied solely by the diode trio.

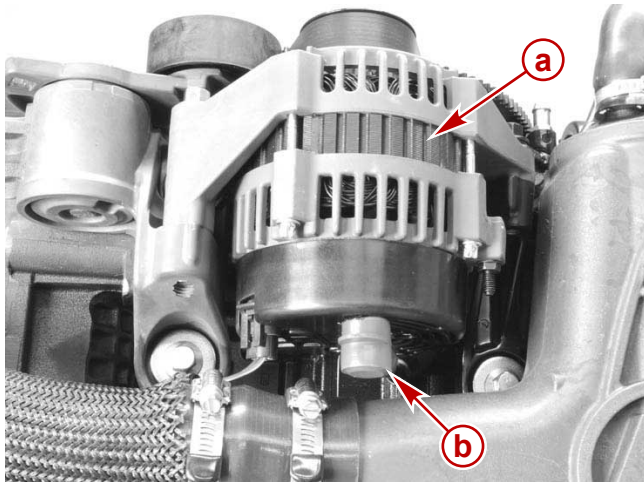
The alternator is equipped with two fans which induce air flow through the alternator to remove heat created by the rectifier and stator.

Diagnosis of Alternator System on Engine

1. If the problem is an undercharged battery, verify condition has not been caused by excessive accessory current draw or by accessories which have accidentally been left on.
2. Check physical condition and state of charge of battery. Battery must be at least 75% (1.230 specific gravity) of fully charged to obtain valid results in the following tests. If not, charge battery before testing system.
3. Inspect entire alternator system wiring for defects. Check all connections for tightness and cleanliness, particularly battery cable clamps and battery terminals.
IMPORTANT: Red output lead from alternator must be tight. A darkened red sleeve indicates lead was loose and becoming hot. Verify output lead attaching nut is torqued to specification.

Charging and Starting System

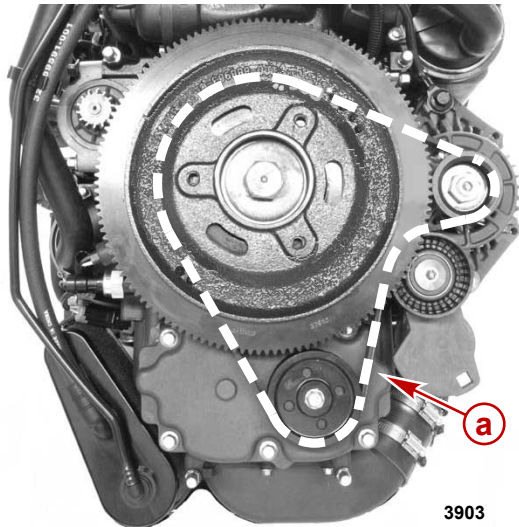
Description	Nm	lb. in.	lb. ft.
Nut	7	62	



- a** - Alternator
- b** - Red sleeved output lead (under red boot)

3888

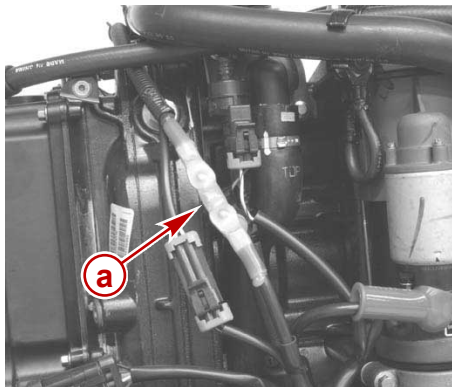
4. Check alternator drive belt for excessive wear, cracks, glazed surfaces, and fraying. Replace if necessary. Check belt tension.



- a** - Alternator/supercharger drive belt

3903

5. Inspect 150 amp fusible link located in alternator red sleeved output lead. If link is blown, check battery leads for reversal and replace alternator red sleeved output lead.



- a** - 150 amp fusible link

3905

Alternator System Circuitry Test

Perform the following tests with a DMT 2004 digital multimeter to ensure that all of the circuits between the alternator and the other components within the charging system are in good condition.

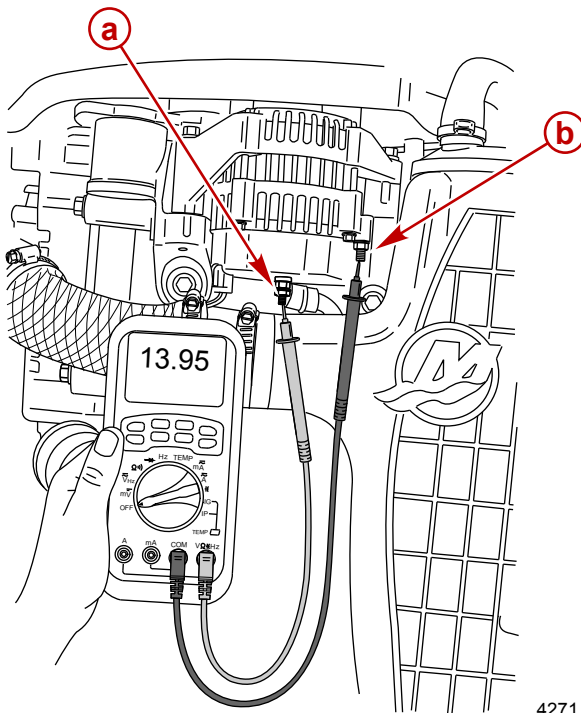
DMT 2004 Digital Multimeter

91-892647A01

1. Check the belt condition and tension.
2. Check the wire connections at the alternator for tightness and absence of corrosion.
3. Check the wire connections at the battery for tightness and absence of corrosion.
4. Check the battery condition. The battery should be fully charged.

Output Circuit

1. Connect the DMT positive (+) lead to the battery positive (+) post.
2. Connect the DMT negative (-) lead to the battery negative (-) post.
3. Supply cooling water to the engine.
4. Start the engine and increase engine speed to approximately 1300 RPM.
5. Observe the voltage reading.
6. If the reading is between 13.5 and 14.8 volts, switch the DMT to the AC volt position. A reading of 0.25 AC volts or less indicates that the alternator diodes are fully functional. A reading above 0.25 AC volts indicates that the diodes are faulty and the alternator must be replaced.
7. If the reading is below 13.5 volts:
 - a. Connect the positive (+) DMT lead to the alternator output post.
 - b. Connect the negative (-) DMT lead to the ground post on the alternator.
 - c. Wiggle the engine wiring harness while observing the voltmeter. The meter should indicate the approximate battery voltage and should not vary. If no reading is obtained, or if the reading varies, inspect the wiring harness for loose connections, corrosion, breaks, or shorts. Repair or replace harness as required.
8. If the reading is above 15 volts at the battery, the alternator is overcharging and must be replaced.



- a** - Alternator output post
b - Alternator ground post

4271

Sensing Circuit

1. Unplug the red and red/white connector from the alternator.
2. Connect the positive (+) DMT lead to the red pin and the negative (-) DMT lead to the alternator ground post.