



## General Alternator Test Procedure

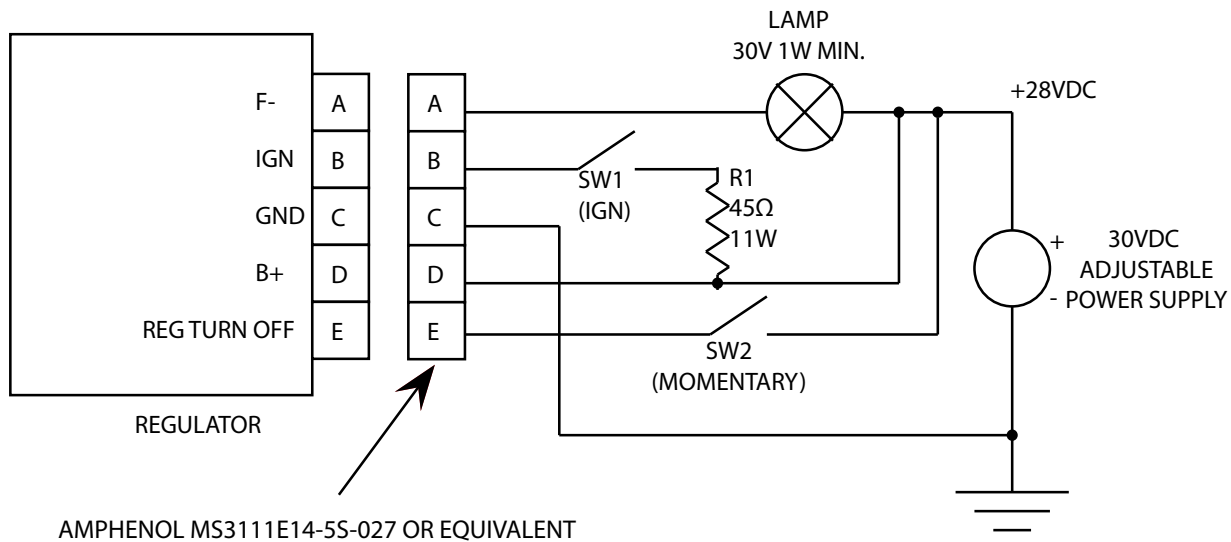
1. Inspect charging system wiring.
  - a. Ensure all positive and negative battery cables are free of corrosion and dirt and tightened properly.
  - b. Check that all battery terminal stack sequences meet manufacturer's specifications. If there are two positive output terminals on the alternator, there must be a heavy gauge jumper wire between the two output studs and also one between the ground terminals of both alternator housings.
  - c. Make sure drive belt and tensioner are in good condition and to vehicle specification.
2. With battery switch on and ignition switch off, measure voltage on alternator positive output terminal(s). Reading should be 23.0-26.0 volts. If not, make sure battery switch is on and repair battery wiring if necessary. Voltage on ignition terminal on regulator should be near zero.

3. Start engine. Alternator RPM at idle should be at least 1500 RPM.
  - a. Measure voltage at ignition terminal on regulator. Reading should be 24.0-29.0 volts. If not, repair ignition wiring.
  - b. Measure voltage at alternator positive output terminal(s). Reading should be 27.0-29.0 volts.
  - c. Apply inductive ammeter on alternator main positive output stud. Meter should read several amps, dependent on vehicle electrical loads and battery state of charge.

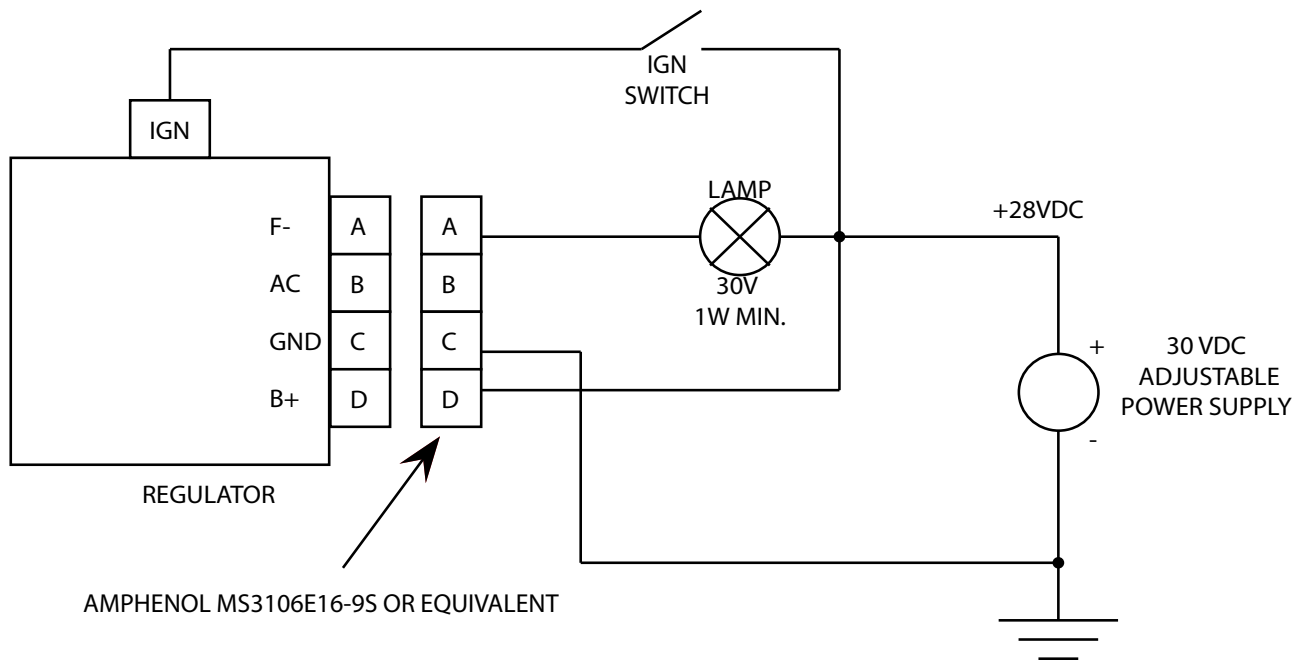
If voltages measured in steps a and b are **less than** listed and **ammeter reads zero** in step c, alternator or regulator may need to be replaced. Test regulator as shown on pages 2-4 for appropriate regulator or apply new regulator and repeat test. If test fails again, assume alternator is faulty and refer to specific alternator troubleshooting guide for corrective action.

If voltage measured in steps a and b are **less than** listed and **ammeter reads high amperage** in step c, alternator may be overloaded. Remove electrical loads and charge or replace batteries. Repeat test. If voltage is still low and electrical load is within alternator output curve specification, alternator/regulator may need to be replaced. Test regulator as shown on pages 2-4 for appropriate regulator or apply new regulator and repeat test. If test fails again, assume alternator is faulty and refer to specific alternator troubleshooting guide for corrective action.

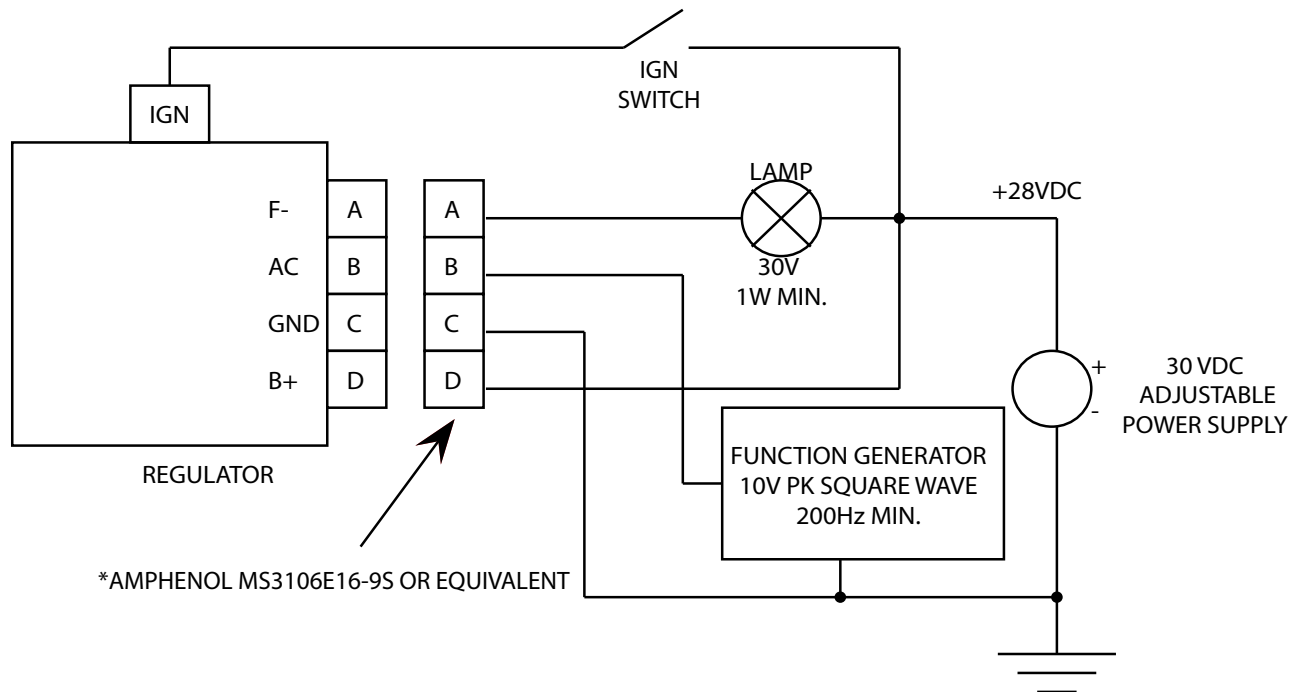
**N3012/N3210 Regulator Test Setup Diagram..... 2**  
**N3107/N3121 Regulator Test Setup Diagram ..... 3**  
**N3237/N3211 Regulator Test Setup Diagram ..... 4**



1. SET UP AS DEMONSTRATED IN SCHEMATIC DIAGRAM. SW2 IS MOMENTARY, NORMALLY OPEN.
2. MAKE SURE IGN SWITCH (SW1) IS OFF.
3. TURN ON ADJUSTABLE DC POWER SUPPLY.
4. SET POWER SUPPLY TO 24.0 VDC.  
LAMP SHOULD BE OFF. IF LAMP IS ON, REGULATOR IS DEFECTIVE.
5. TURN ON IGN SWITCH.  
LAMP SHOULD NOW BE ON. IF LAMP IS NOW OFF, REGULATOR IS DEFECTIVE.
6. RAISE VOLTAGE ON ADJUSTABLE POWER SUPPLY .  
LAMP SHOULD TURN OFF WHEN POWER SUPPLY VOLTAGE IS RAISED HIGHER THAN REGULATOR SET POINT (27.0 -29.0 VDC). IF NOT, REGULATOR IS DEFECTIVE.
7. BRIEFLY PRESS SW2. LAMP SHOULD BE OFF WHILE SW2 IS PRESSED, AND TURN BACK ON WHEN BUTTON IS RELEASED. IF NOT, REGULATOR IS DEFECTIVE.



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2. MAKE SURE IGN SWITCH IS OFF.
3. TURN ON ADJUSTABLE DC POWER SUPPLY.
4. SET POWER SUPPLY TO 24.0 VDC.  
LAMP SHOULD BE OFF. IF LAMP IS ON, REGULATOR IS DEFECTIVE.
5. TURN ON IGN SWITCH.  
LAMP SHOULD NOW BE ON. IF LAMP IS NOW OFF, REGULATOR IS DEFECTIVE.
6. RAISE VOLTAGE ON ADJUSTABLE POWER SUPPLY .  
LAMP SHOULD TURN OFF WHEN POWER SUPPLY VOLTAGE IS RAISED HIGHER THAN REGULATOR SET POINT (27.0-29.0 VDC). IF NOT, REGULATOR IS DEFECTIVE.



1. SET UP AS DEMONSTRATED IN SCHEMATIC DIAGRAM.
2. MAKE SURE IGN SWITCH IS OFF.
3. TURN ON ADJUSTABLE DC POWER SUPPLY.
4. SET POWER SUPPLY TO 24.0 VDC.  
LAMP SHOULD BE OFF. IF LAMP IS ON, REGULATOR IS DEFECTIVE.
5. TURN ON FUNCTION GENERATOR. SET TO 10V PEAK SQUARE WAVE, 200Hz MIN.  
LAMP SHOULD BE OFF. IF LAMP IS ON, REGULATOR IS DEFECTIVE.
6. TURN ON IGN SWITCH.  
LAMP SHOULD NOW BE ON. IF LAMP IS NOW OFF, REGULATOR IS DEFECTIVE.
7. RAISE VOLTAGE ON ADJUSTABLE POWER SUPPLY .  
LAMP SHOULD TURN OFF WHEN POWER SUPPLY VOLTAGE IS RAISED HIGHER THAN REGULATOR SET POINT (27.0-29.0 VDC). IF NOT, REGULATOR IS DEFECTIVE.
8. REDUCE VOLTAGE ON POWER SUPPLY UNTIL LAMP IS ON. REDUCE SIGNAL GENERATOR FREQUENCY TO 100Hz OR LESS.  
LAMP SHOULD HAVE ONLY VERY WEAK ILLUMINATION BELOW 110Hz. IF NOT, REGULATOR IS DEFECTIVE.

If you have questions about your alternator or any of these test procedures, or if you need to locate a Factory Authorized Service Dealer, please contact us at:

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