

<http://aimpartsonline.com/faq>

Frequently Asked Questions**

(Answers provided by the experts in AIM's Production Engineering Department)

Q: My charging system spec's are 14.5 volts. Why is my system running at 13.0 volts?

A: There is a load being applied to system. When amp's go up volts go down.

Example: A 105amp alternator with a 60amp load will run at 13.0 volts.

The only condition where the 14.5 volts [regulator set point] can be reached is with all loads removed. Remember a under-charged battery is also a load.

Q: Can I test to see if my alternator is working by disconnecting the battery cable while the engine is running to see if it dies?

A: No, this was a common practice in the days of the old DC generators. In an alternator-equipped system, this is a good way to destroy regulators. Oh sure, some say they have done it seemingly without consequence, but at the least it is risky and will shorten the life of the regulator. Emphasis is on DON'T DO IT!

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GM

-Early Delco External Regulator, 10DN

R: Relay; energizes the 'field relay' coil of the externally mounted regulator so that field current can be relayed to the field circuit of the alternator.

F: Field

-SI series, Delco Internal Regulator

1: Ign/Lamp. Excites, or turns on the regulator by means of power from the ignition switch. Lamp function also controlled by this circuit.

2: Sense. Senses system voltage. Is always directly connected to bat +, is always hot.

R: Relays an AC output to tachometer in some applications.

-CS & AD series, internal regulators PLIS & PLFS

P: Phase. This an AC output to the tachometer; not always used and not required for alternator to function.

L: Lamp. Operates lamp circuit and may also be used to turn on the regulator.

*Never apply full voltage to this terminal without a lamp in series; damage to the regulator will result.

I: Ignition. May also be used to turn on the regulator.

F: Feedback. This is not a 'field' terminal as in other olde alternators. It provides a PWM (pulse width modulated) signal to the PCM (Powertrain Control Module). The on-board computer (PCM) is using this to read the duty cycle of the alternator.

S: Sense. Senses system voltage. Is always directly connected to bat+, is always hot.

FORD

-1G, Early external regulator

STA: Stator, an AC voltage typically used to turn lamp off.

FLD: Field

GRD: Ground

-2G & 3G, internal regulator

A: Voltage Sense & field source.

S: Stator. An AC voltage used to turn lamp off.

I: Ign/Lamp. Lamp on circuit and turns on regulator.

-6G, internal reg, Late, I-D-A, FR-SIG-A, I-FR-A

I: Ign/Lamp. Lamp circuit and turns on regulator.

D: Dummy; not used.

A: Voltage sense & field source.

FR: Field rate. Like the 'F' on GM, the PCM (computer) is monitoring the duty cycle of the alternator from this terminal. (PCM monitored regulator)

SIG: This terminal receives a PWM 'signal' from the computer to modify system voltage. This is done to regulate when the torque load of the alternator is decreased or increased, improving engine efficiency and performance. (PCM controlled regulator)

IMPORTANT: There are some Ford alternators that are look-alikes, but will not interchange! They will mount and may be connected up, but they will not work. Care must be taken to assure the correct unit is selected for the application.

CHRYSLER Externally regulated

From 1985 to present, voltage regulation is external to the alternator and performed by the on-board computer. It is not uncommon for the computer to be responsible for a 'no charge' condition. Alternator terminals are:

F1: Field pos. from computer.

F2: Field neg. to computer for voltage regulation.

TOYOTA – HONDA Early externally regulated

L: (D+) Lamp; turns on regulator and controls lamp.

E: (Earth, Grd)

F: Field. Usually a positive voltage is applied (B circuit).

An exception is the 14552 (A circuit); ground F to test.

N: Stator, an AC voltage tap on stator, used as a field relay.

Internal Fan, Internal regulator, S-IG-L, D-IG-L, C-IG- D-FR-IG-L, C-FR-IG-L, S-FR-IG-L

IG: Ignition; turns regulator on.

L: Lamp control.

D: Dummy, not used.

C: Computer. Under certain conditions this terminal is grounded by the computer to reduce torque load on the engine. The system voltage will drop to about 12.8-13V. This is normal, but because this is sometimes not understood, good alternators have

FR: Field rate; an output to the computer indicating the Duty cycle (how hard the alternator is working).

S: Senses system voltage. The regulator adjusts voltage to accommodate changing electrical loads, thus maintaining the desired voltage set point at all times.

There are of course more, but this covers most of what you are likely to encounter. If you do come up against something unfamiliar, please contact AIM's Technical Support department at 800-366-3246.

**If there is a question you would like answered by AIM's Engineers, complete the form within our "Contact Us" page. Please use FAQ as your subject line.