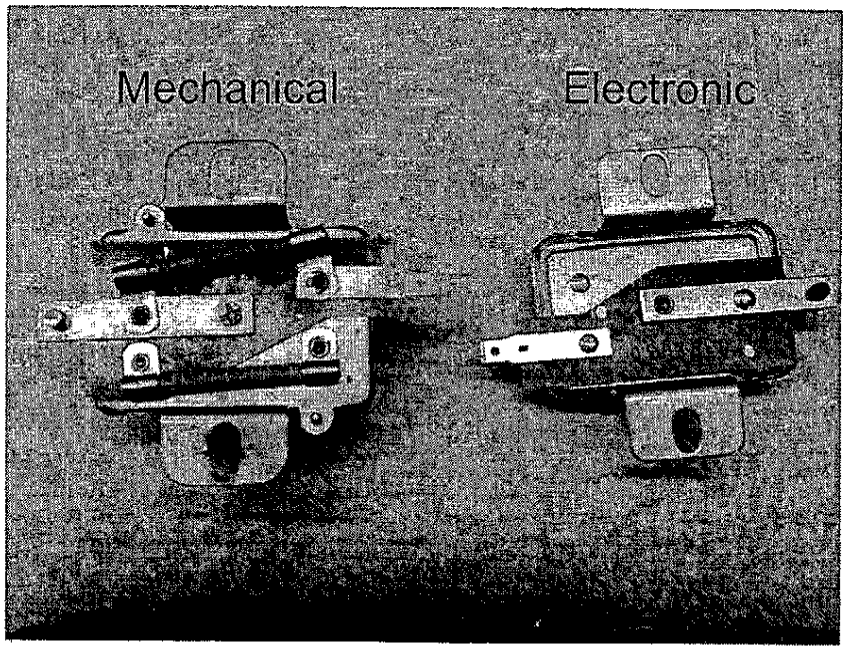
Chrysler Charging systems
Prepared by T+M AUTOMOTIVE 572-0694

Chrysler did a bad thing to us when they set up their charging system. The biggest design issue is that they chose to run the main feeds from the battery and alternator through the firewall bulkhead connector and then onto the ammeter. Electronics 101A teaches one that every connection is a potential problem and this circuit is a prime example of that theory. In addition to running the main feeds through the bulkhead they also ran the regulator "sense" wire, which is susceptible to the same issues as the main feed wires.

Good Ground connections between the Battery, engine and body cannot be stressed enough. Failure to confirm these before proceeding will have you chasing your tail and bruising your forehead on the closest wall.

The basic function of the charging system is controlled by the regulator. The regulator case requires a good ground.

The pre 70 vehicles used a mechanical style regulator with one field connection on the alternator. The mechanical style regulator is considered to be inadequate by today's standards and is best replaced by an electronic version, which is available from a number of sources. The mechanical regulators by design are not capable of maintaining a constant voltage and lead to problems with items such as electronic ignition conversions, stereos and a multitude of other accessories. A mechanical style regulator is easily identified by it's resistors on the backside. Mopar performance offers an electronic replacement but it's reputation is spotty. Wells also sells one through Autozone under part number VR706. This regulator functions by looking at the available voltage on the "sense" line and then varying the voltage going to the field windings in the alternator thereby regulating to alternators output.



The 70 and later vehicles used an electronic style regulator with two field connections on the alternator. One of the field connections is tied to ignition switch/regulator voltage (sense line) while the other gets a variable ground signal from the regulator. By varying the ground the regulator is able to control the alternator output

How to check the system.

A quick check is to hook up a DVM across the terminals of the battery with the engine running at about 1500 RPM. Ideal conditions will give a reading of 13.8 to 14.2 V although readings as low as 13.5 and as high as 14.5 are acceptable.
While observing the meter turn on high draw accessories such as the head lights and blower motor. You may observe a momentary dip in the reading as the system adjusts for the additional load requirements. If the system is functioning well, the readings will be very close to the previously measured numbers. If not prepare for a trouble shooting session.

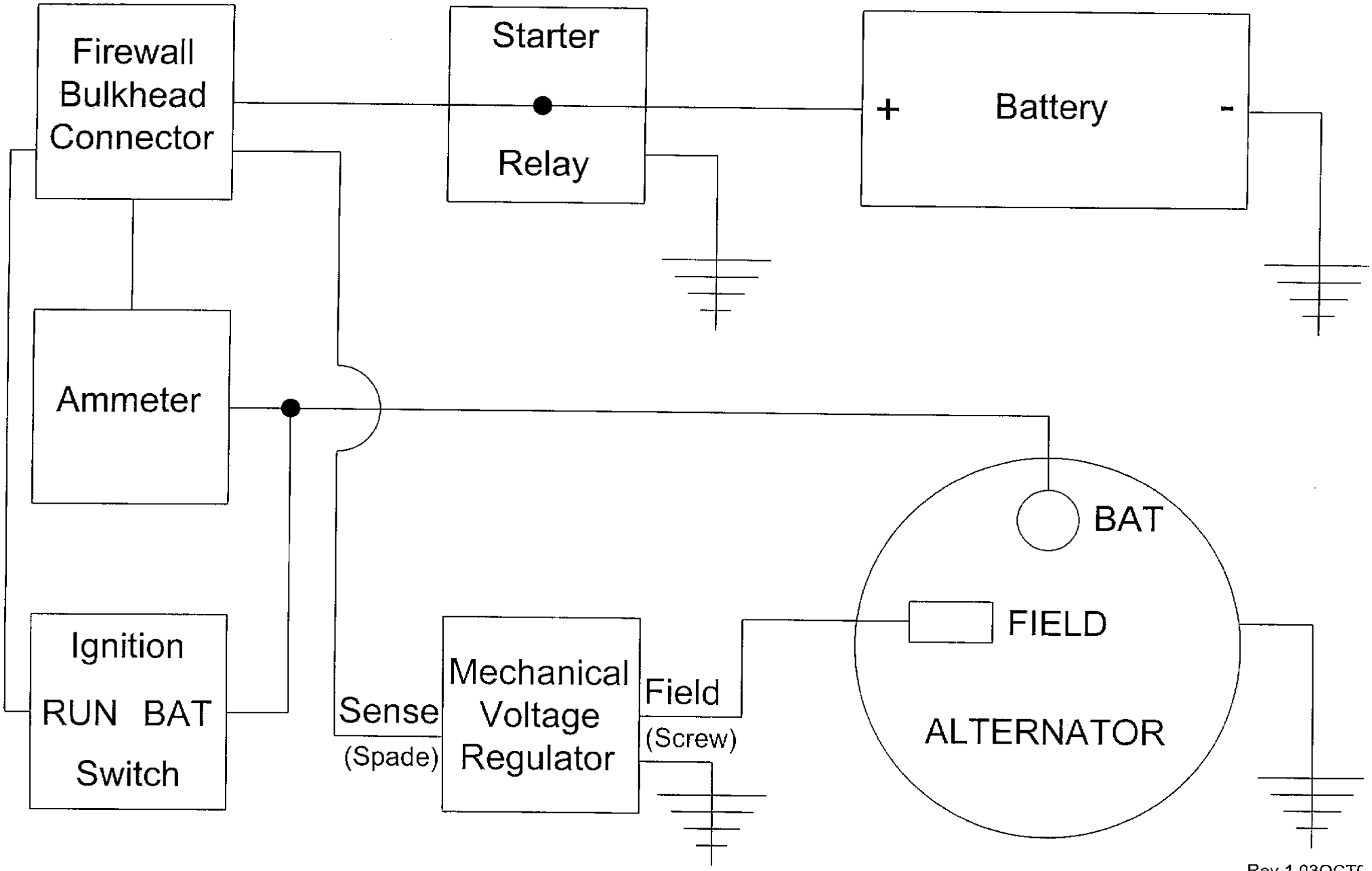
Most problems in the charging circuit usually result in one of the following conditions

1. Flickering ammeter. Usually due to intermittent connections in the circuit or a flaky mechanical regulator. Bad grounds or lack of a body to engine ground cable can also contribute to this condition.
2. Undercharging. Move the DVM to the BAT terminal of the alternator and check the reading.
    a. If it is still low then look for a bad alternator, regulator, grounds or poor connections between the alternator field connections and the regulator
    b. If it is higher than the reading obtained at the battery, look for faulty connections anywhere between the alternator BAT terminal and the battery positive post.
3. Overcharging. Move the DVM to the "sense" terminal of the regulator and check the reading
    a. If the reading is still high you have either a bad regulator, alternator, problems in the field connections or a ground problem
    b. If it is substantially lower you have a poor connection between BAT terminal of the alternator and the sense line. This is causing the regulator to think it needs more output from the alternator which results in the overcharging.

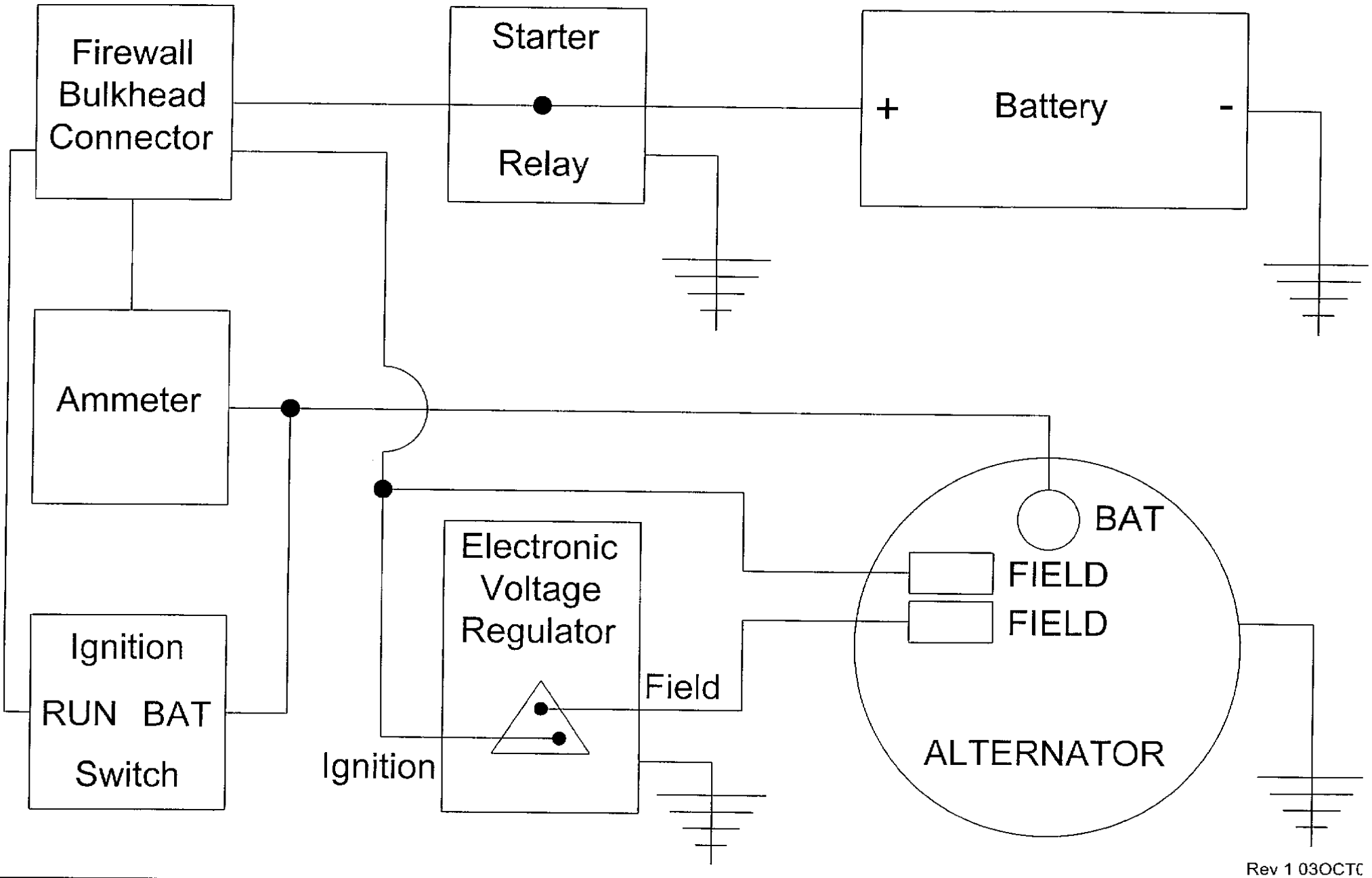
Most likely causes for the above can be found in the following areas.

1. Corroded or loose contacts at the bulkhead connector. The main feed lines carry a lot of current and dirty or loose connections create resistance impeding the flow of the current.
2. Dirty or loose connections at the Ammeter
3. Worn ignition switch contacts or poor connections at switch
4. BUBBAFIED wiring harnesses. IE: Butt slices, improperly crimped dime store connectors, u haul connectors etc. Any repairs made to the main feed line(s), regulator sense line or alternator field connections should be soldered and shrink tubed.
5. Crappy replacement battery terminals.
6. Bad alternator/regulator or both

Chrysler charging circuit w/single field alternator (pre-1970)



Chrysler charging circuit w/dual field alternator (post-1970)



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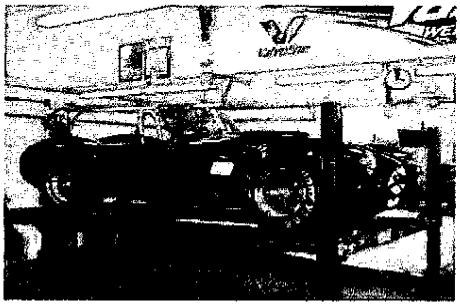
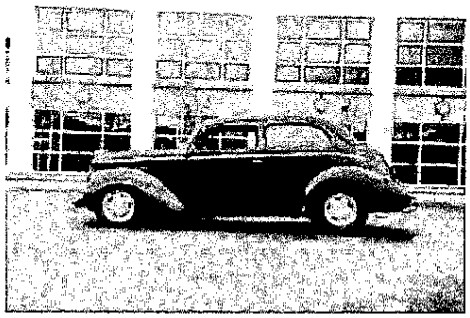
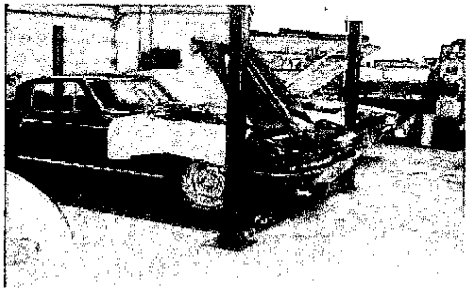



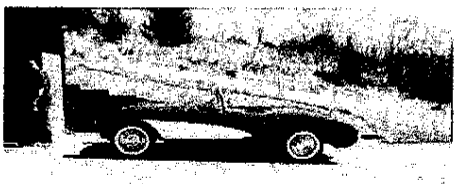
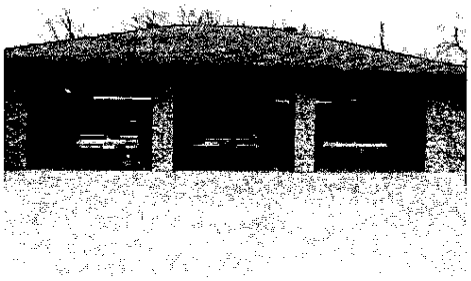
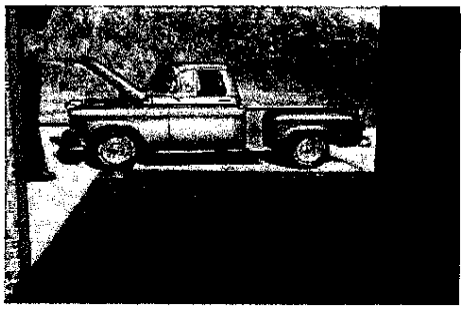

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