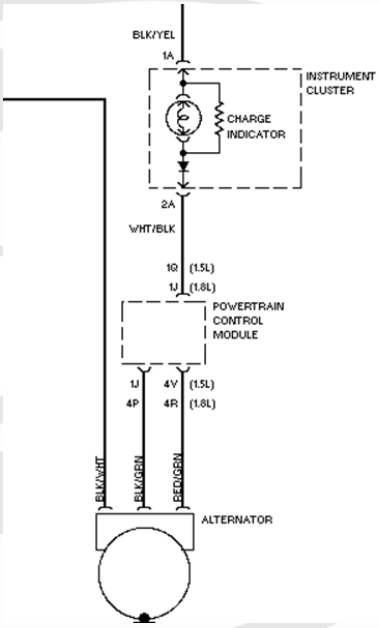
TECH TIPS

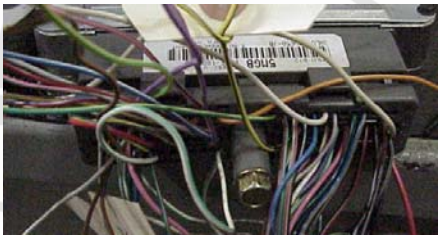
Dixie Part Numbers: A-8669 A-8947 3543-5210 PLG-303

Applications:
1997 – 1998 Mazda Protégé 1.5L
1999 – 2001 Mazda Protégé 1.6L
1997 – 2000 Mazda Protégé 1.8L
2001 – 2003 Mazda Protégé 2.0L

Conditions: The operator of the vehicle may complain that the light comes on. The technician may find that when testing the system the voltage climbs to approximately 18V or higher. Further the technician, when testing the alternator on an alternator tester may obtain erratic readings.

Cause: The alternator on this application is a different design then the majority of alternators with the key difference being that the alternator voltage is controlled by the Power Train Control Module PCM). Additionally, the light circuit, which is typically controlled by the alternator, is also controlled by the PCM. Visually the device looks like a regulator which would typically have an LS connection. The device, shown on the right actually has a PD connection (Dixie Number 3543-5210) and internally there is only a single transistor, which is fed by the PCM to the D connection. There is no light connection on the alternator, as can be seen in the wiring diagram, on the right. The alternator sends a signal to the power train control module, and it controls the lamp function on the vehicle. Below is what the PCM wiring looks like…

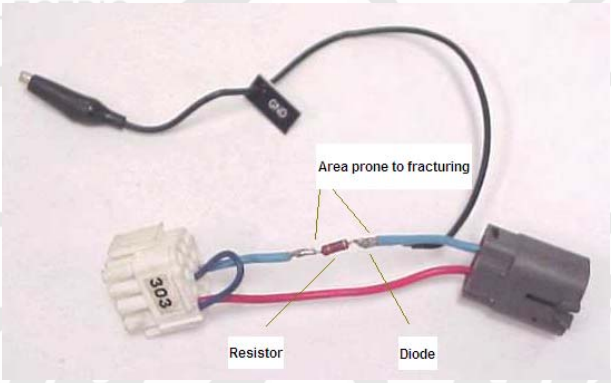




What is the significance of the mess of wires? There are numerous ground wires, one of them being black with a red trace. If this wire is followed through the firewall it is connected to the body of the car on the fender in close proximity to the alternator and is used as a voltage sense wire. When disconnected or with high resistance, such as when the wire corrodes the voltage begins to climb. When fully disconnected the alternator voltage will climb to 18V and the light will come on, indicating that there are troubles in the charging system.

When testing the alternator **DO NOT** improperly probe the leads as this could result in damaging the internal circuitry in the alternator. See TSB-844 for details.

One of the observations made here is that despite the warnings above the alternator is put on a tester, connected using a standard plug and run. This will make the unit charge for a few moments and then blow the alternator electronics. Typically the comment on these is the unit was overcharging and then stopped working. The alternators **must** be tested using either a proper D&V tester with plug 303 or with a Transpo test adapter VRC101-26. On the D&V test lead ensure that the ground wire is connected or the diode will be blown. Also periodically inspect the lead as they are prone to fracture as shown below.



Correction: Use extreme care when testing and diagnosing the charging system on this vehicle.

REV: 20120413 Added A-8669 and related applications which carry the same configuration on the vehicle.