



TECH TIPS

Dixie Part Numbers: A-8669 A-8890 A-8930
 A-8947 A-80043

Applications: 1997 Kia Sephia 1.8L
 1997 – 1998 Mazda Protégé 1.5L
 1999 – 2000 Mazda Miata/MX5 1.8L
 1999 – 2001 Mazda Protégé 1.6L
 1999 – 2003 Mazda Protégé 1.8L
 2000 – 2001 Mazda MPV 2.5L
 2002 – 2006 Mazda MPV 3.0L

Condition: The vehicle's charging system is not working properly even though the alternator has been replaced.

Cause: This alternator has a P – D style regulator, or external driver.

Correction: For this *Dixie Tech Tip* only topic of the P–D regulator will be covered. For the following topics refer to the appropriate *Dixie Tech Tip*:

- *Voltage Drop Testing – TSB-001*
- *Alternator Trouble Shooting Guide – TSB-010*
- *Alternator Installation Guide – TSB-011*
- *Alternator Pulley Installation Guide – TSB-012*
- *Why batteries can not be disconnected to test alternators – TSB-013*

To properly test the alternator use a voltmeter **only** on the P terminal – never on the D terminal or the alternator will **immediately** fail. Never apply voltage to the D terminal or the **alternator will be destroyed!** This is a common mistake, as the plug looks identical to other plugs used on many other Mitsubishi manufactured alternators but with different terminals. Below are pictures of the resulting damage to the transistor in the alternator, the transistor has been blown apart.



- Always follow the manufacturers diagnostic procedures for each specific vehicle.
- To check the alternator charge condition a voltmeter can be connected to the P terminal. The P terminal will be the top one with the lock on the left, see the sketch below showing both types of plugs. The voltage reading at the P terminal should be $\frac{1}{2}$ of the operating voltage. For example a system operating at 14.2 volts should have a reading of 7.1 volts on the P terminal (+/- 0.5) if the voltage at the P terminal is higher or lower by around 1.5 volts the rectifier is blown.
- If you have an alternator that is not charging you can use an oscilloscope to check the D terminal, the vehicle sends out a square wave signal to the alternator to make it charge (typically 1-3V when testing).

