ALTERNATOR & REGULATOR

1991 Mitsubishi Montero

1991 ELECTRICAL
Alternators & Regulators

Colt, Colt Vista, Colt 200, Ram-50, Stealth, Summit;
Eclipse, Galant, Mirage, Montero, Pickup, Precis, 3000GT

DESCRIPTION

Mitsubishi alternators are conventional 3-phase, self-rectifying type units containing 6 diodes (3 positive and 3 negative) which are used to rectify current. All models use a case-mounted Integrated Circuit (IC) voltage regulator.

Alternator relay or resistor with diode is used to ensure charging of battery even if charging indicator light is defective. See Figs. 1-9.

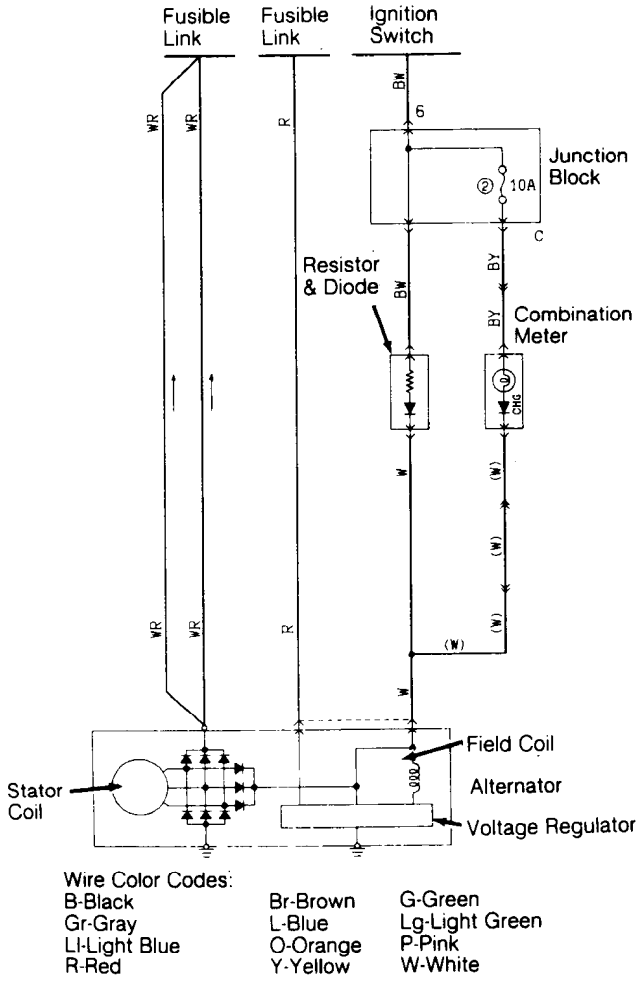

Fig. 1: Charging System Wiring Schematic (Colt, Mirage & Summit)
Courtesy of Mitsubishi Motor Sales of America.

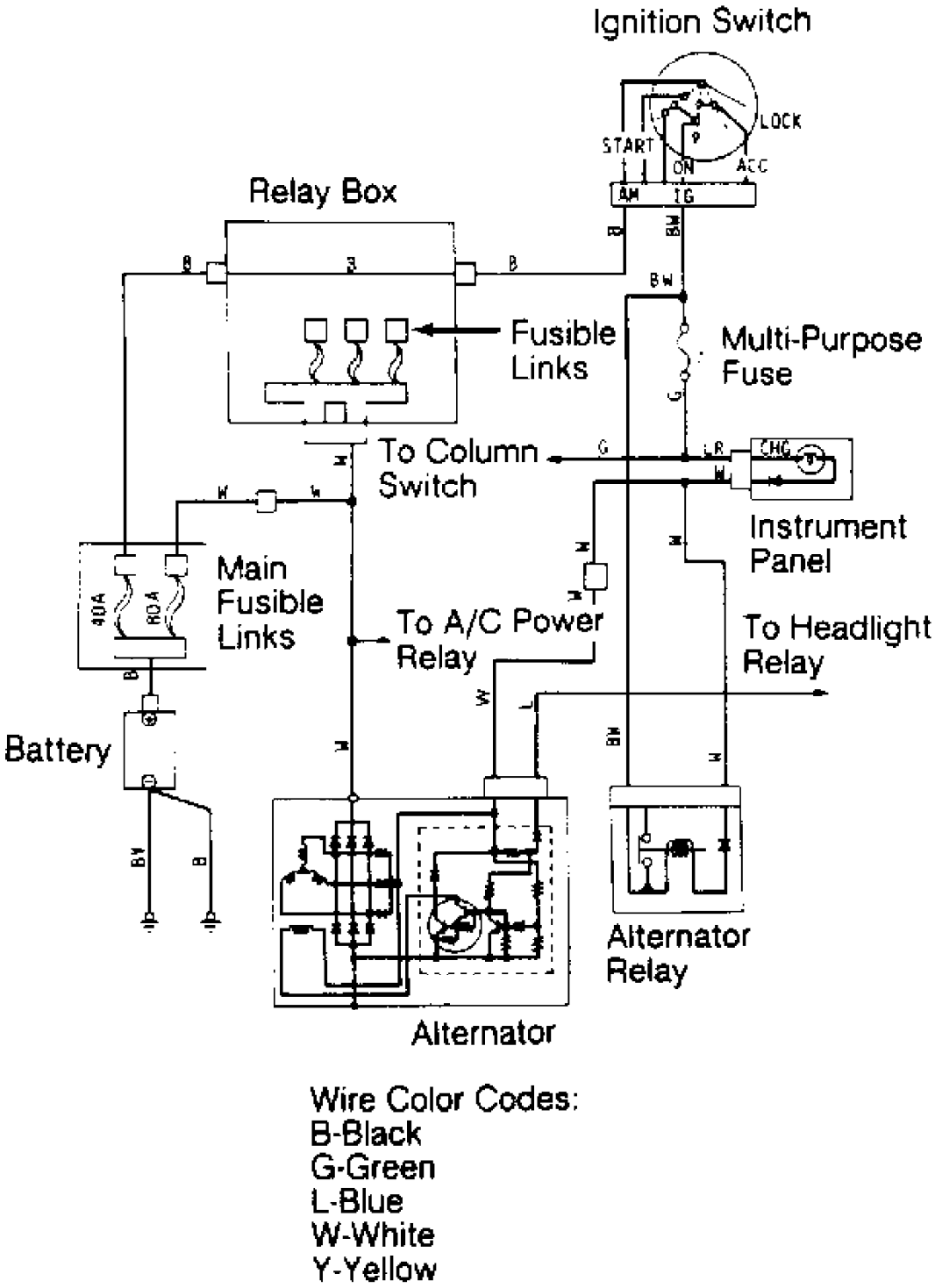

Fig. 2: Charging System Wiring Schematic (Colt Vista)
Courtesy of Chrysler Motors.

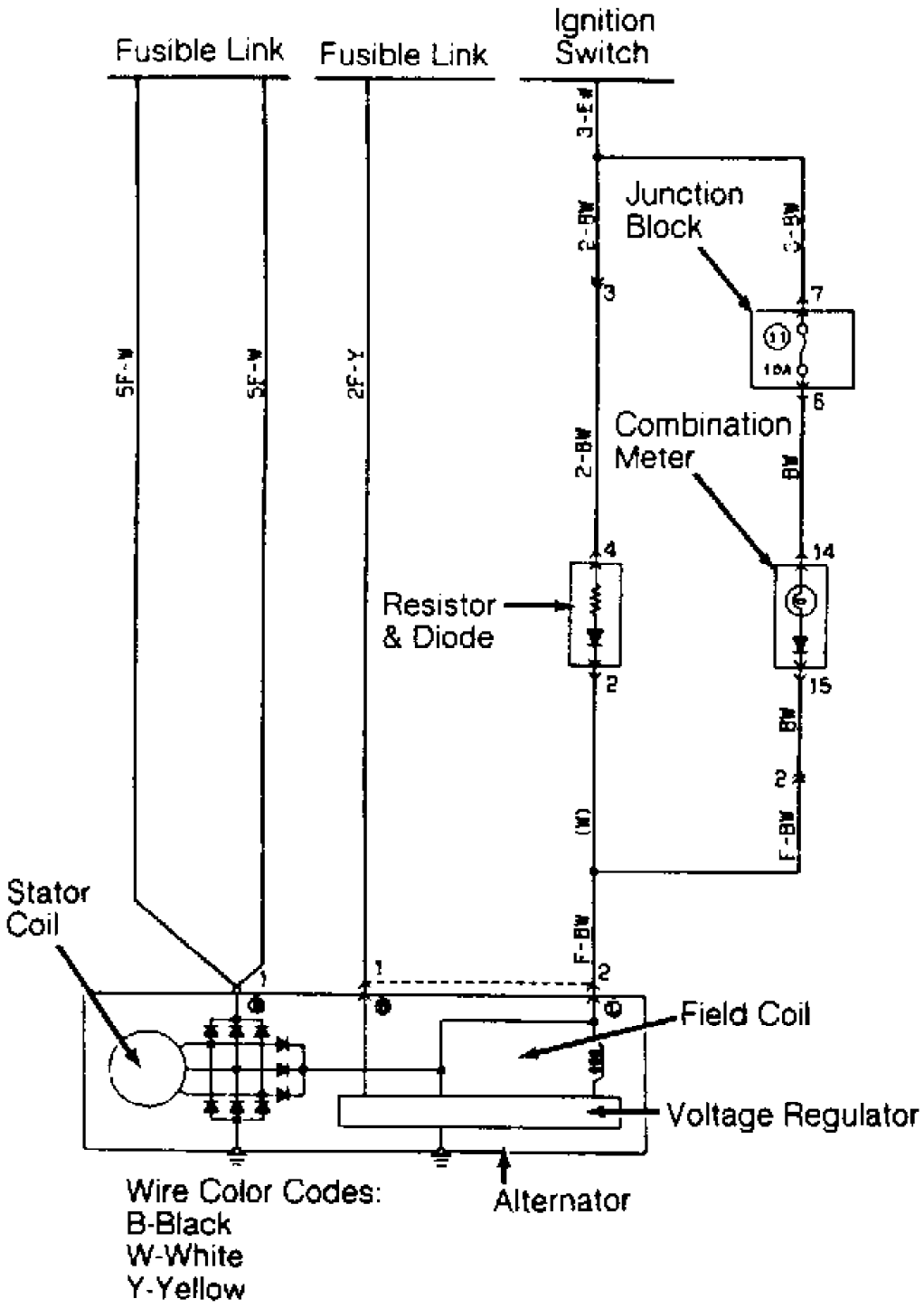

Fig. 3: Charging System Wiring Schematic (Eclipse)
Courtesy of Mitsubishi Motor Sales of America.

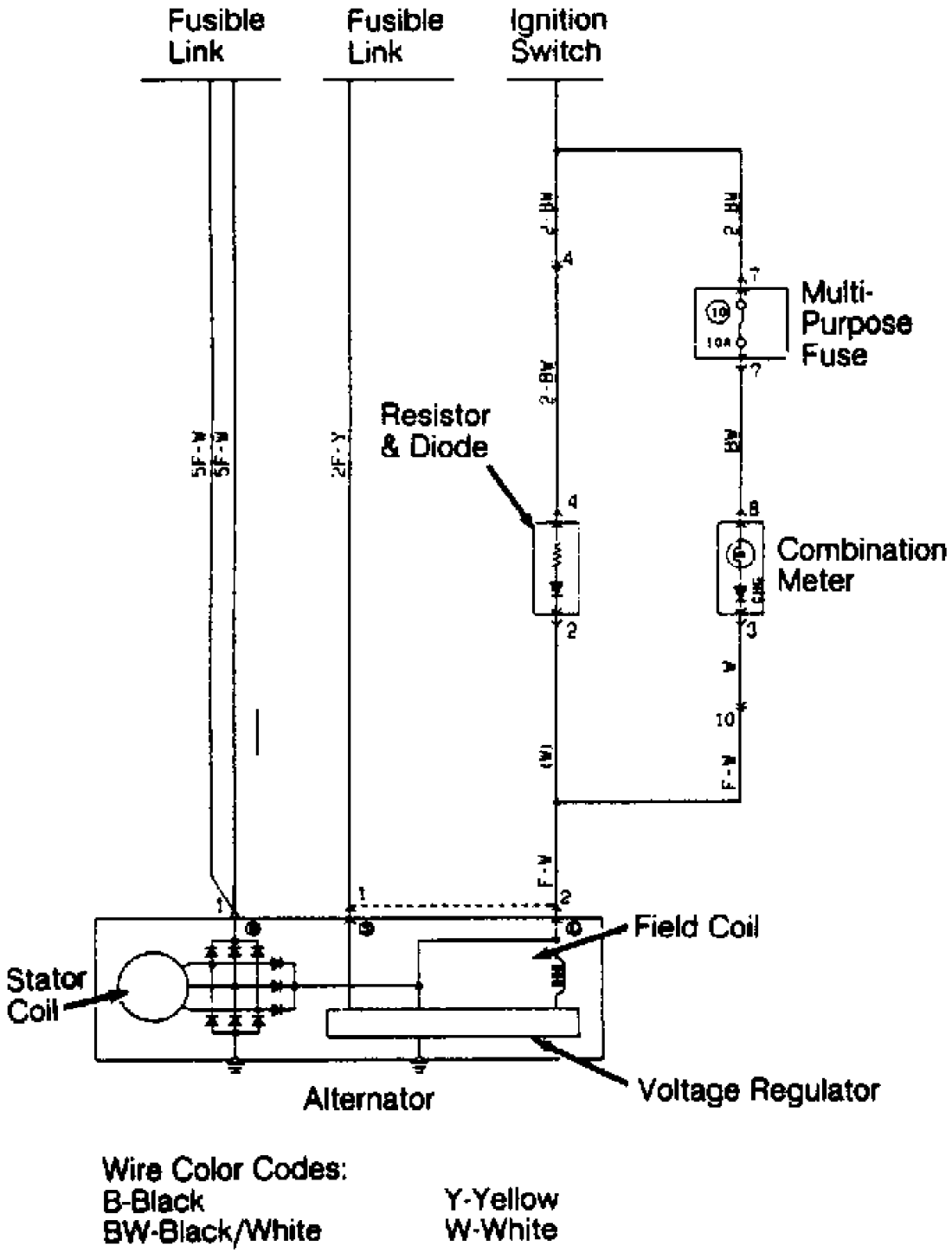

Fig. 4: Charging System Wiring Schematic (Galant)
Courtesy of Mitsubishi Motor Sales of America.

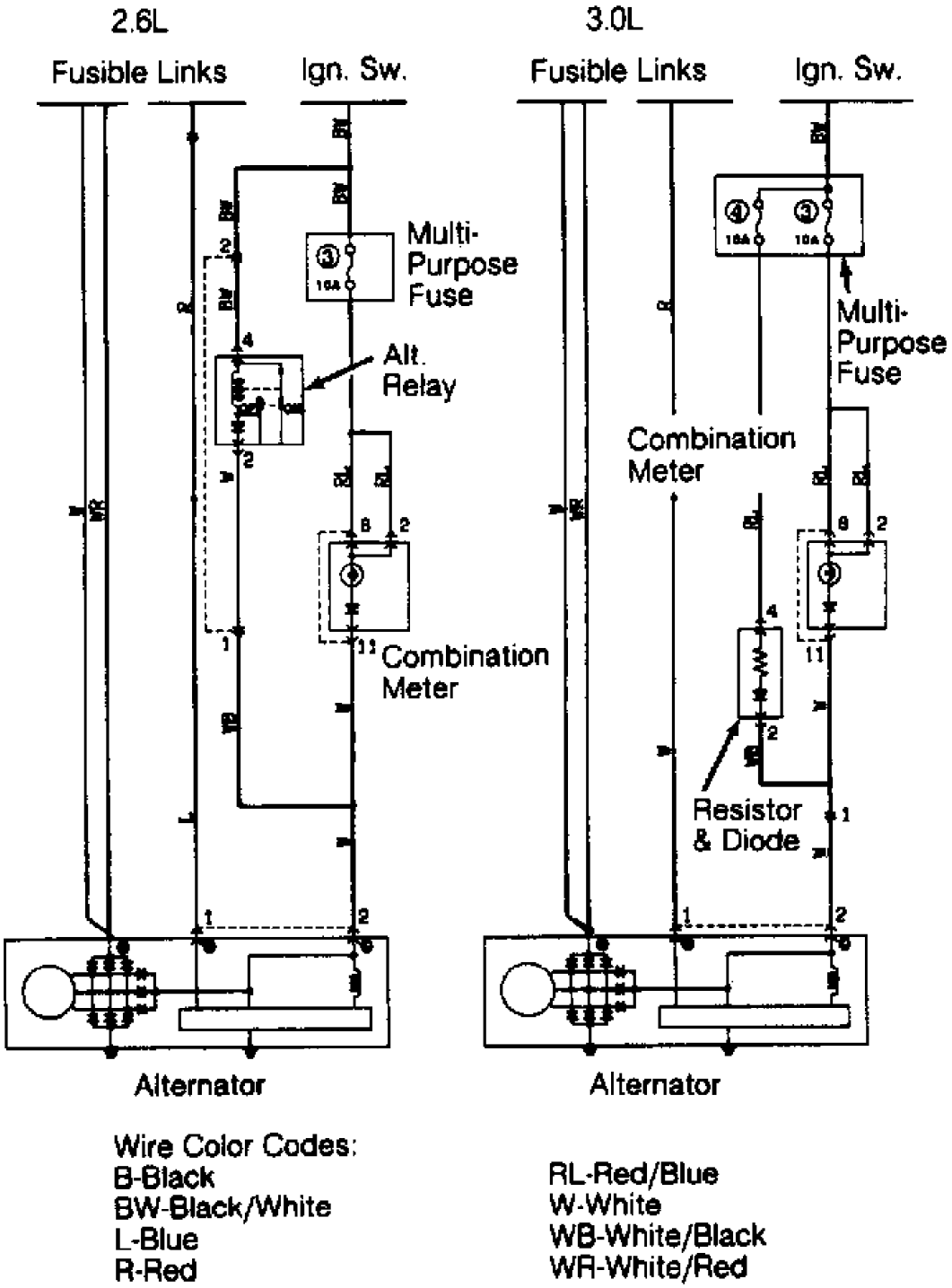

Fig. 5: Charging System Wiring Schematic (Montero)
Courtesy of Mitsubishi Motor Sales of America.

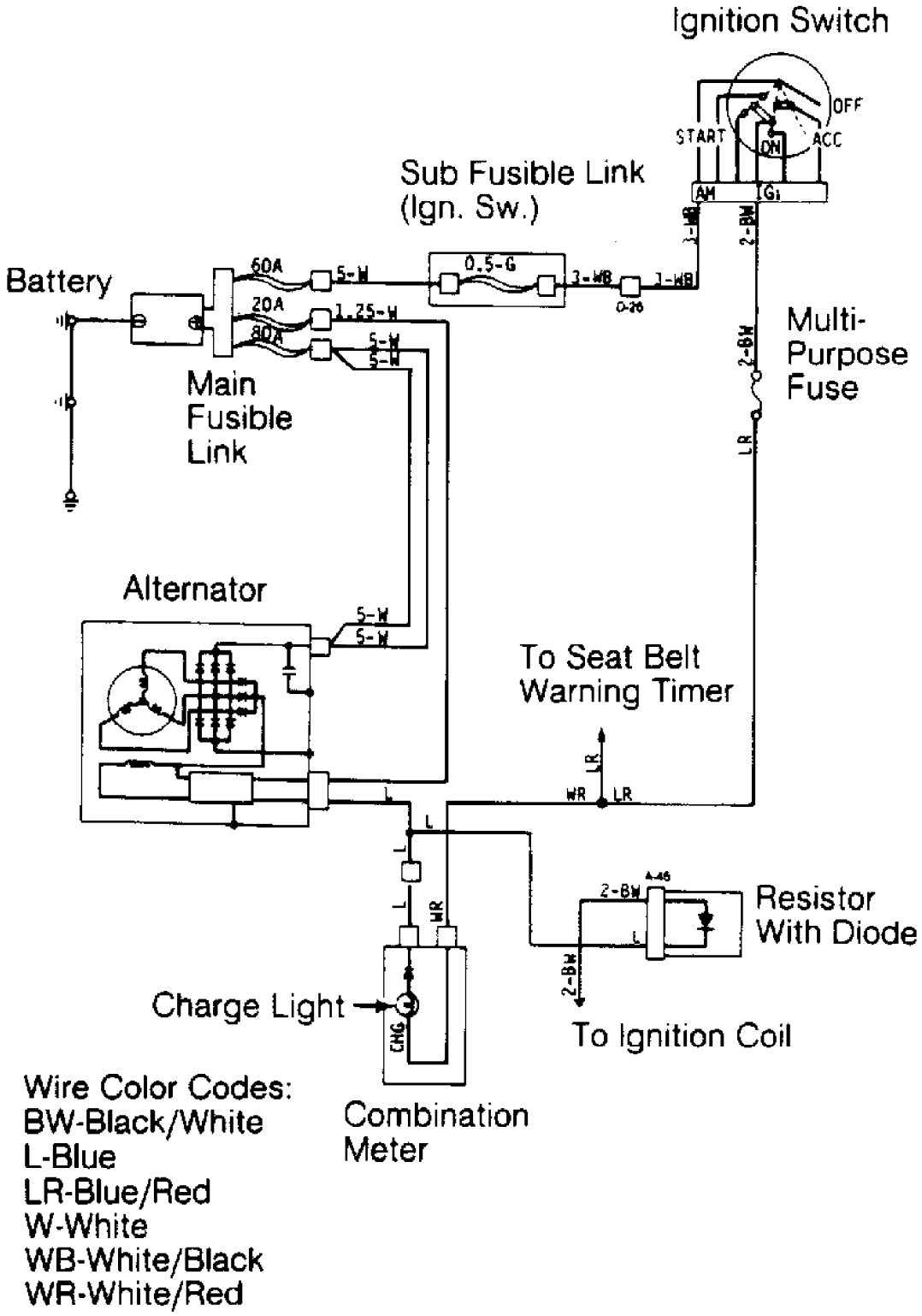

Fig. 6: Charging System Wiring Schematic (Pickup & Ram-50)
Courtesy of Mitsubishi Motor Sales of America.

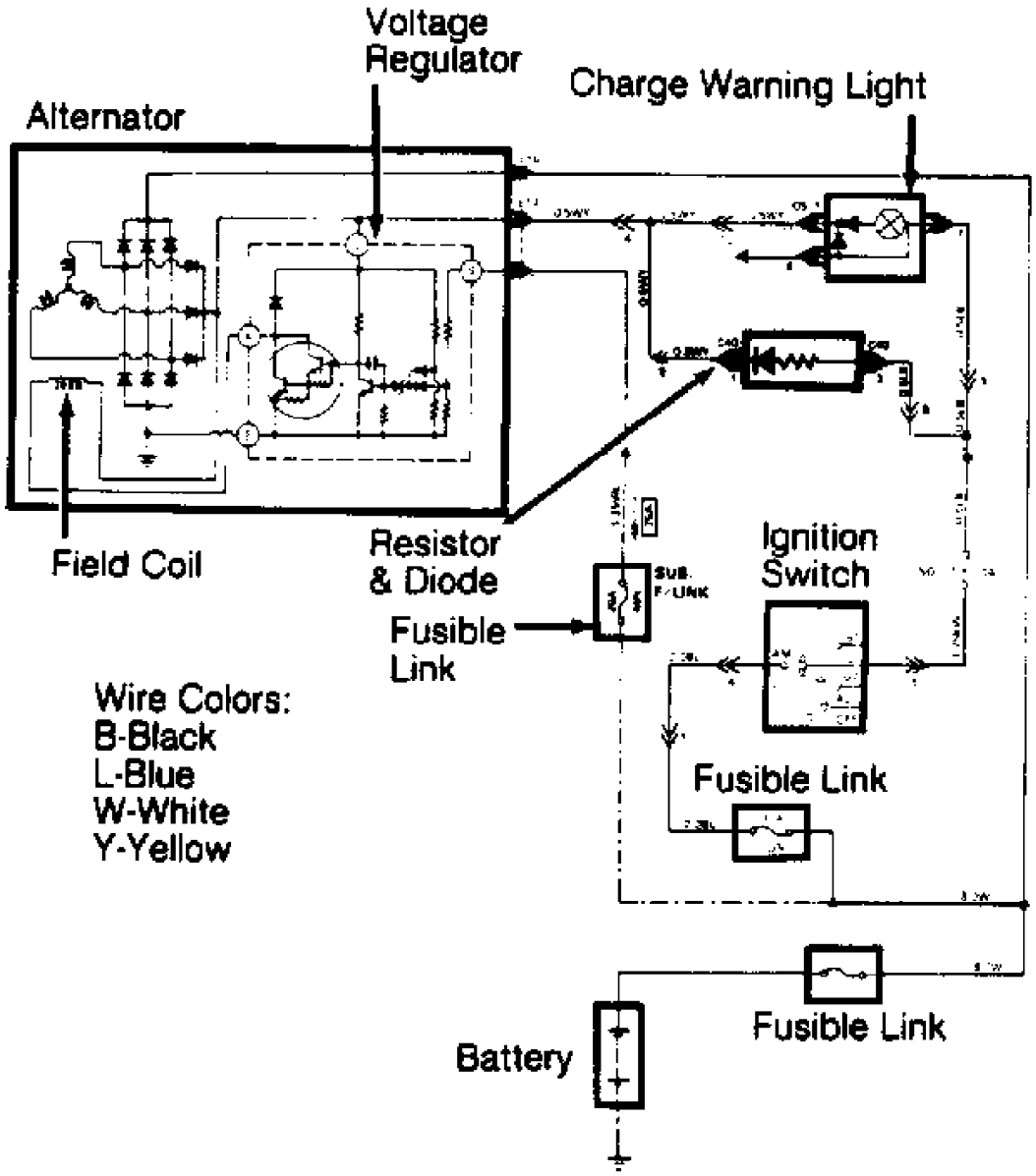

Fig. 7: Charging System Wiring Schematic (Precis)
Courtesy of Mitsubishi Motor Sales of America.

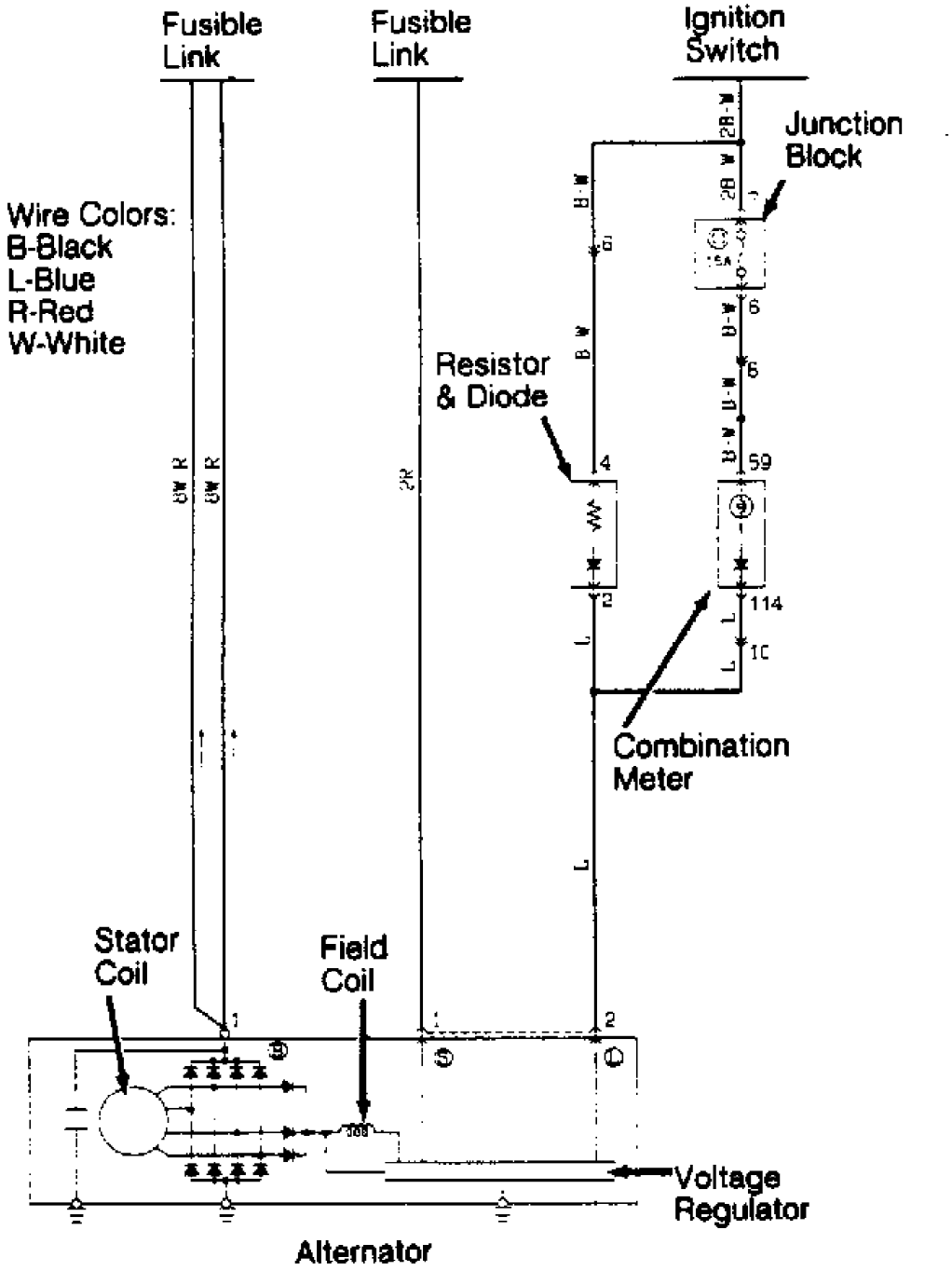

Fig. 8: Charging System Wiring Schematic (Stealth DOHC & 3000GT)
Courtesy of Mitsubishi Motor Sales of America.

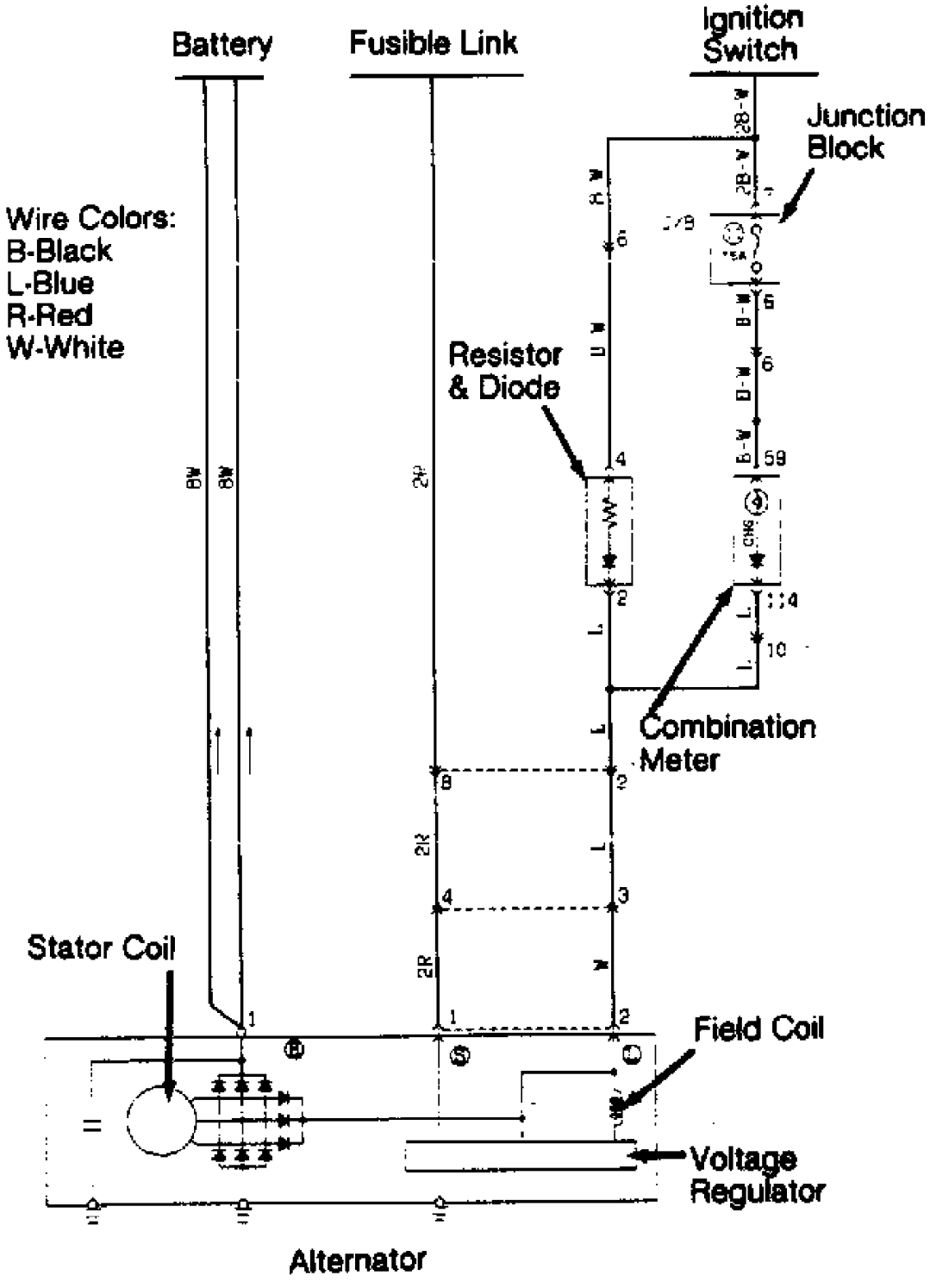

Fig. 9: Charging System Wiring Schematic (Stealth SOHC)
Courtesy of Chrysler Motors.

ADJUSTMENTS

BELT ADJUSTMENT TABLE

Application	(1) New Belt Deflection: In. (mm)
Colt, Colt 200 & Summit	.28-.35 (7.1-8.9)
Mirage	
1.5L	.28-.35 (7.1-8.9)
1.6L	.35-.45 (8.9-11.4)
Colt Vista	.28-.34 (7.1-8.6)
Eclipse & Galant	
1.8L	.32-.43 (8.1-10.9)
2.0L	.35-.45 (8.9-11.4)
Montero	.22-.32 (5.6-8.1)
Pickup & Ram-50	
2.4L	.28-.39 (7.1-9.9)
3.0L	.32-.39 (8.1-9.9)
Precis	.28-.32 (7.1-8.1)
Stealth & 3000GT	
DOHC	.16-.22 (4.1-5.6)
SOHC	.24-.35 (6.1-8.9)

(1) - Deflection measured with 22 lbs. (10 kg) pressure applied midway on belt run.

TROUBLE SHOOTING

NOTE: See TROUBLE SHOOTING - BASIC PROCEDURES article in the GENERAL INFORMATION section.

TESTING (ON-VEHICLE)

ALTERNATOR TO BATTERY CONTINUITY TEST

NOTE: Check alternator wire harness connections and drive belt tension and ensure battery is fully charged before performing test.

1) Turn ignition switch to OFF position. Disconnect negative battery cable. Remove output lead from alternator terminal "B". See Fig. 10. Install a 100-amp ammeter in series to terminal "B" and disconnected output lead. Install positive lead of ammeter to terminal "B" and negative lead to disconnected output wire.

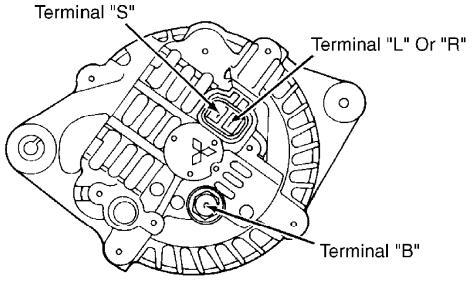

Fig. 10: Identifying Alternator Terminals
Courtesy of Chrysler Motors.

2) Install a digital voltmeter between alternator terminal "B" and positive battery terminal. Install positive voltmeter lead to

terminal "B" and negative lead to positive battery terminal. Reconnect negative battery cable.

3) Start engine. Turn accessories on and adjust engine speed until ammeter indicates 20 amps, and note voltmeter reading. If voltmeter indicates .2 volt or less, system is okay.

4) If voltage is greater than .2 volt, wiring is defective between alternator terminal "B", fusible link and battery positive terminal. Disconnect negative battery cable, and remove test equipment.

ALTERNATOR OUTPUT TEST

NOTE: During alternator output test, a slightly discharged battery should be used as a fully charged battery may not allow full alternator output.

1) Turn ignition switch to OFF position. Disconnect negative battery cable. Disconnect alternator output wire from terminal "B". Install positive lead of 100-amp ammeter to terminal "B" and negative lead to disconnected output lead.

CAUTION: Tighten each connection securely as heavy current flow will exist. DO NOT use clips on ammeter.

2) Connect positive voltmeter lead (0-20 volts) to alternator terminal "B" and negative lead to ground. Install tachometer, and reconnect negative battery cable.

3) Ensure voltmeter indicates battery voltage. If no voltage exists, an open circuit is present in wire between alternator terminal "B" and battery negative terminal. Check grounds and fusible link.

4) Turn headlights on, and start engine. Set headlights at high beam and heater switch on HIGH. Quickly accelerate engine speed to 2500 RPM and note alternator output current registered on the ammeter. Minimum output should be within specification. Refer to the ALTERNATOR MINIMUM OUTPUT SPECIFICATIONS table.

NOTE: Output voltage changes with electrical load and temperature. Ensure proper electrical load is applied while checking output. Nominal output may not be obtained if alternator or ambient temperature is excessive. Allow to cool, and recheck output. Alternator output is stamped on metal plate attached to alternator case.

5) If minimum output is not obtained and alternator wiring is okay, repair alternator. Disconnect negative battery cable, and remove test equipment.

REGULATED VOLTAGE TEST

NOTE: Ensure battery is fully charged and proper drive belt tension exists.

1) Turn ignition switch to OFF position. Disconnect negative battery cable. Install a digital voltmeter between alternator terminal "S" and ground. See Fig. 10. Connect positive voltmeter lead to terminal "S" of alternator. Connect negative voltmeter lead to ground.

2) Disconnect alternator output wire from terminal "B". Install a 100-amp ammeter in series to terminal "B" and disconnected output lead. Install positive lead of ammeter to terminal "B" and negative lead to disconnected output wire. Install a tachometer, and reconnect negative battery cable.

3) Turn ignition switch to ON position and ensure voltmeter indicates battery voltage. If no voltage exists, an open circuit

exists in wire between alternator terminal "S" and positive battery terminal or fusible link is blown.

4) Start engine. Ensure all lights and accessories are off. Operate engine at 2500 RPM and read voltmeter when alternator output current drops to 10 amps or less. Voltage regulator is okay if voltage output is within specification. See REGULATOR VOLTAGE SPECIFICATIONS table.

BENCH TESTING

RECTIFIER ASSEMBLY

1) Using ohmmeter, check for continuity between both diodes and stator coil lead connection. See Fig. 11. Reverse leads. If continuity exists in both directions, diode is shorted. Replace rectifier assembly.

2) To check entire diode assembly, use an ohmmeter to check for continuity between both ends of each diode. See Fig. 11. Switch ohmmeter leads. Continuity should exist in one direction, but not other. If no continuity exists or continuity exists in both directions, diode is defective. Replace rectifier assembly.

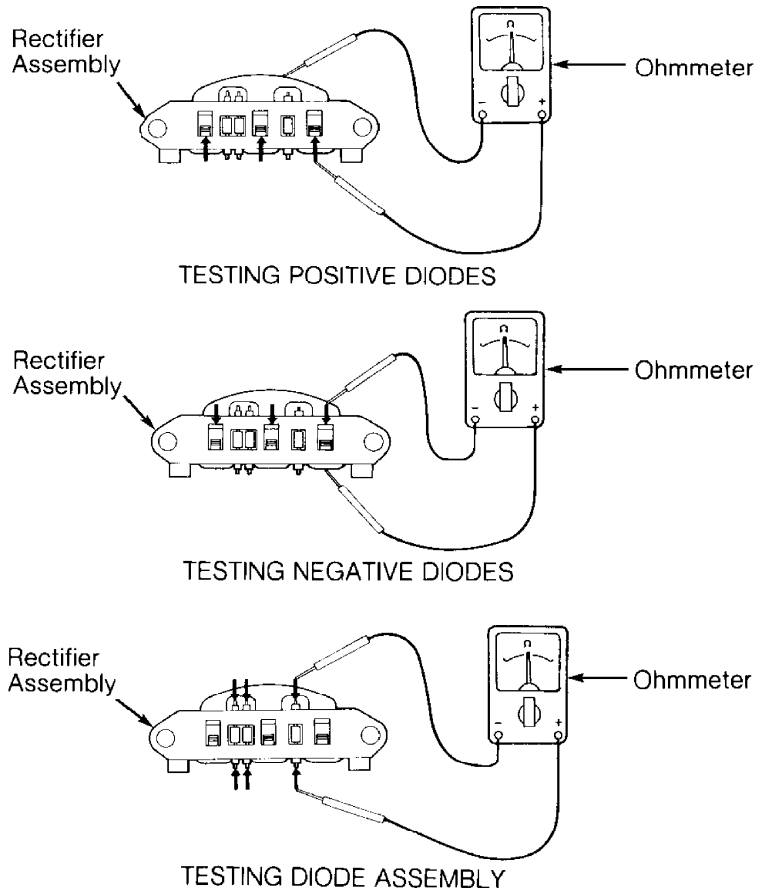

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Fig. 11: Testing Rectifier Assembly
Courtesy of Mitsubishi Motor Sales of America.

ROTOR

1) Check continuity across rotor slip rings. Resistance should be within specification. See ROTOR RESISTANCE SPECIFICATIONS table. Replace rotor if no continuity exists or resistance is not within specification.

2) Check continuity between individual slip rings and rotor shaft. If continuity exists, rotor coil or slip ring is grounded. Replace rotor.

STATOR

Ensure no continuity exists between stator coil leads and stator core. Check continuity between leads of stator coil. If no continuity exists between coil leads, replace stator.

OVERHAUL

Replace brushes if worn to limit line. Limit line is line closest to rotor contact end of brush. Brushes can be retained in brush holder while installing rotor by inserting wire into back of rear housing.

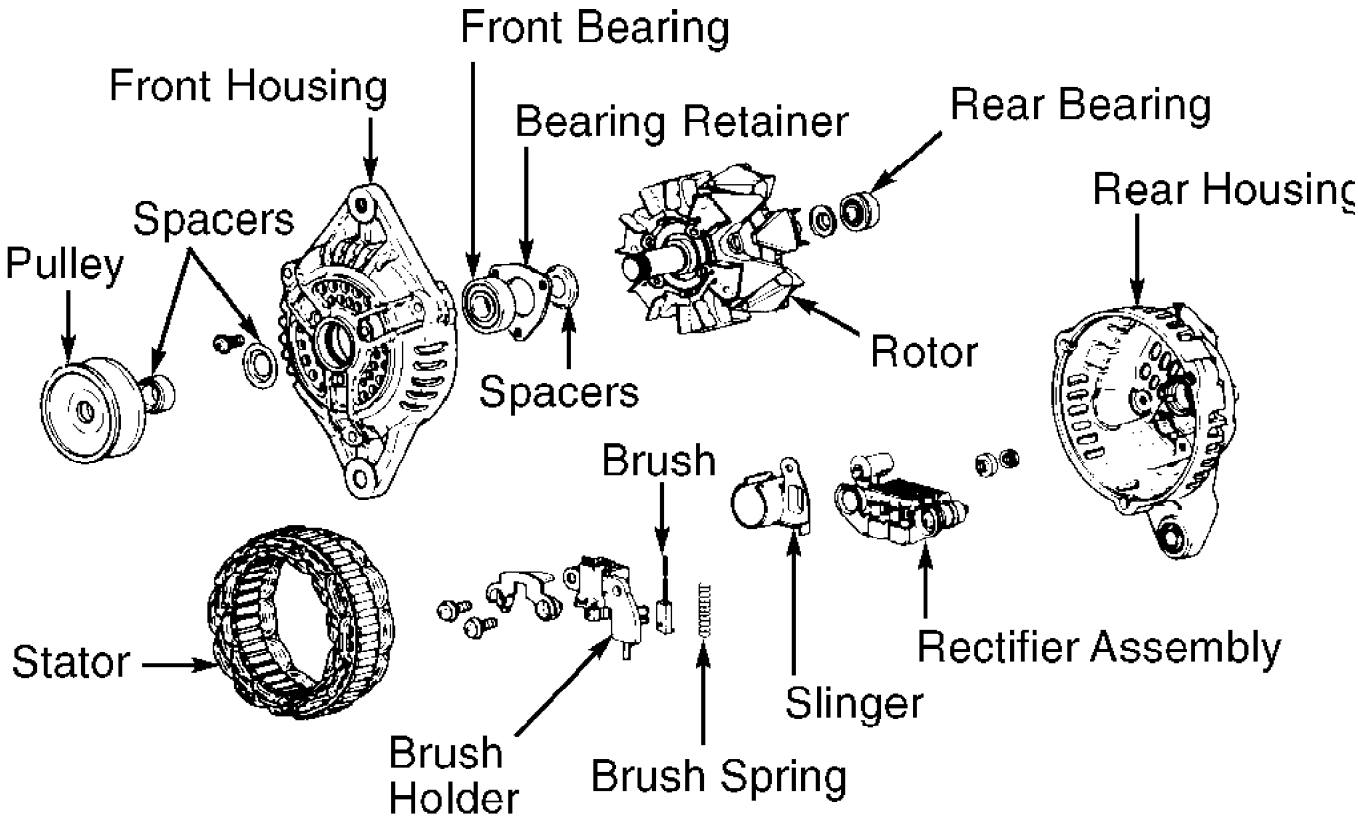

Fig. 12: Exploded View of Typical Mitsubishi Alternator
Courtesy of Mitsubishi Motor Sales of America.

SPECIFICATIONS

ALTERNATOR MINIMUM OUTPUT SPECIFICATIONS TABLE

Application	Amps

Colt, Colt 200, Galant, Montero, Precis & Summit	52.5
Colt Vista	45
Eclipse	
A/T & M/T Turbo	52.5
M/T Non-Turbo	45.5
Mirage	
1.5L & 1.6L A/T	52.5
1.6L M/T	45.5
Pickup & Ram-50	
2.4L	28
2.4L (Optional - Ram-50)	42
3.0L	45.5
Stealth & 3000GT	
DOHC	77
SOHC	63

REGULATOR VOLTAGE SPECIFICATIONS TABLE

Ambient Temperature	Voltage
-4°F (-20°C)	14.2-15.4
68°F (20°C)	13.9-14.9
140°F (60°C)	13.4-14.6
176°F (80°C)	13.1-14.5

ROTOR RESISTANCE SPECIFICATIONS TABLE

Application	Ohms
Colt, Colt 200, Mirage, Precis & Summit	3.1
Colt Vista	4.3
Eclipse, Galant, Montero, Pickup, Ram-50, Stealth & 3000GT	3.0-5.0