

# GENERATOR & REGULATOR

## 1998 Mitsubishi Montero

### 1998 STARTING & CHARGING SYSTEMS Mitsubishi - Generators & Regulators

Diamante, Eclipse, Galant, Mirage, Montero, Montero Sport,  
3000GT

## DESCRIPTION & OPERATION

NOTE: The terms generator and alternator are interchangeable.

Mitsubishi generators 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.

Generator relay or resistor with diode is used to ensure charging of battery even if charging indicator light is defective.

## ADJUSTMENTS

### BELT TENSION

For belt tension, see DRIVE BELT ADJUSTMENT table.

#### DRIVE BELT ADJUSTMENT TABLE

Application	(1) Deflection New Belt In. (mm)	(1) Deflection Used Belt In. (mm)
Diamante (2) .....	.24-.28 (6.0-7.2) .....	.32-.37 (8.2-9.3)
Eclipse		
2.0L Non-Turbo (3) ...	.30-.41 (7.5-10.5) ....	.35-.47 (9.0-12.0)
2.0L Turbo (4) .....	.30-.35 (7.5-9.0) .....	.39 (10.0)
2.4L (4) .....	.30-.35 (7.5-9.0) .....	.39 (10.0)
Galant (4) .....	.30-.35 (7.5-9.0) .....	.39 (10.0)
Mirage (3)		
1.5L .....	.36-.42 (9.2-10.6) ....	.26-.33 (6.6-8.3)
1.8L .....	.33-.39 (8.5-10.0) ....	.28-.31 (7.0-8.0)
Montero (4) .....	.22-.29 (5.5-7.5) ....	.31-.35 (8.0-9.0)
Montero Sport		
2.4L (4) .....	.22-.29 (5.5-7.5) ....	.30-.33 (7.5-8.3)
3.0L (4) .....	.22-.29 (5.5-7.5) ....	.31-.35 (8.0-9.0)
3000GT		
DOHC (5) .....	.14-.16 (3.5-4.0) ....	.16-.20 (4.0-5.0)
SOHC (6) .....	.16-.20 (4.0-5.0) ....	.24-.32 (6.0-8.0)

(1) - With 22 lbs. (10 kg) pressure applied midway on belt run.

(2) - Measure between A/C compressor pulley and crankshaft pulley.

(3) - Measure between crankshaft pulley and generator pulley.

(4) - Measure between water pump pulley and generator pulley.

(5) - Measure between crankshaft pulley and idler pulley.

(6) - Measure between power steering pulley and idler pulley.

## TROUBLE SHOOTING

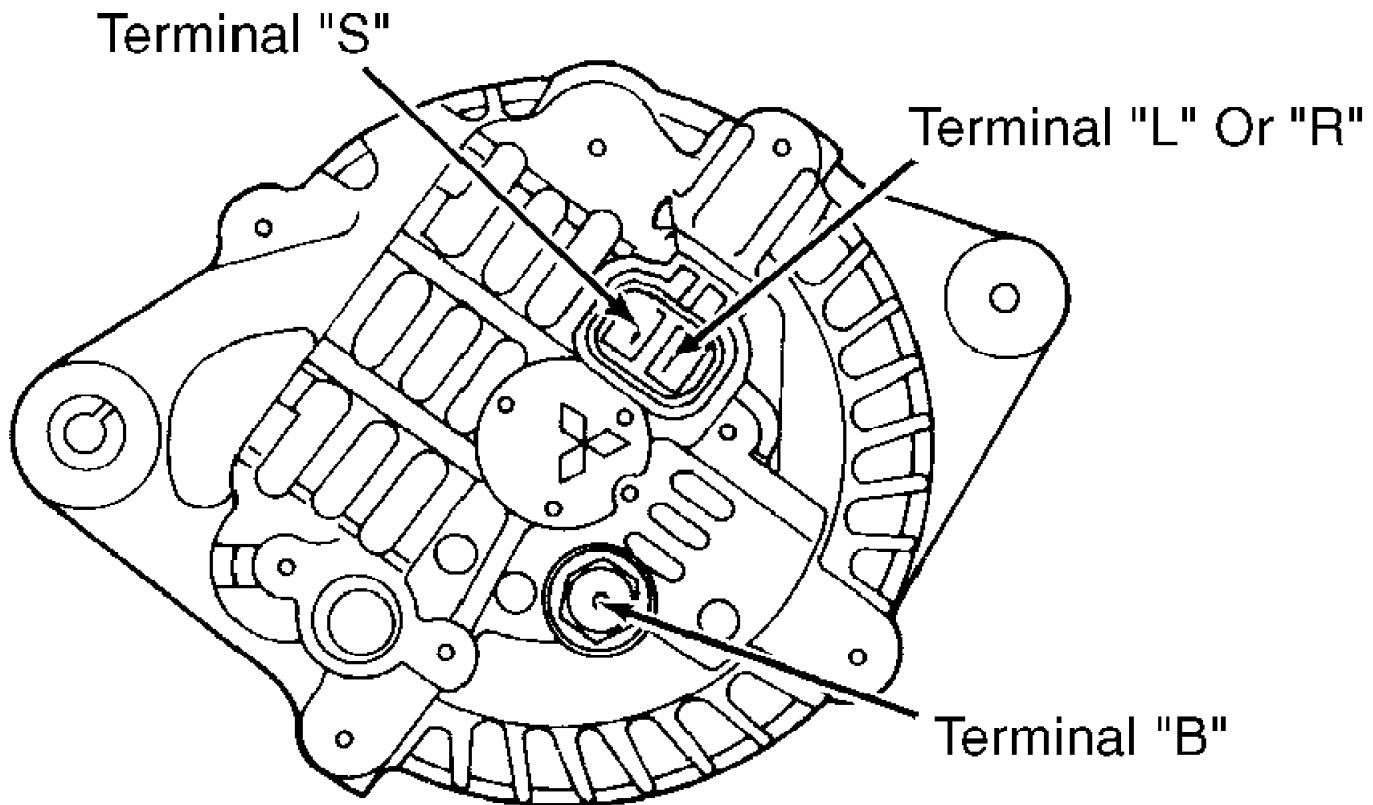
NOTE: See TROUBLE SHOOTING article in the GENERAL INFORMATION section.

## ON-VEHICLE TESTING

### GENERATOR TO BATTERY CONTINUITY TEST

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

1) Turn ignition off. Disconnect negative battery cable. Remove output lead from generator terminal "B". See Fig. 1. Install a 100-amp or 130-amp ammeter in series with terminal "B" and disconnected output lead. Install positive lead of ammeter to terminal "B" and negative lead to disconnected output wire.



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Fig. 1: Identifying Generator Terminals (Typical)  
Courtesy of Mitsubishi Motor Sales of America

2) Install positive lead of digital voltmeter to terminal "B" and negative lead to positive battery terminal. Install a tachometer and reconnect negative battery cable.

3) Start and operate engine at 2500 RPM. Turn accessories on and adjust engine speed until ammeter indicates slightly greater than 30 amps, and note voltmeter reading. If voltmeter indicates .3 volt or less, system is okay.

4) If voltage is greater than .3 volt, check wiring between generator terminal "B", fusible link and positive battery terminal. If terminal is not sufficiently tight or if harness is discolored due to overheating, repair as necessary and retest.

## GENERATOR OUTPUT TEST

NOTE: A slightly discharged battery should be used, as a fully charged battery may not allow full generator output.

1) Turn ignition off. Disconnect negative battery cable. Disconnect generator output wire from terminal "B". Connect 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. An inductive-type ammeter is recommended.

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

3) Ensure voltmeter indicates battery voltage. If voltage is not present, check for open circuit in wire between generator terminal "B" and positive battery terminal. Check grounds and fusible link.

4) Start engine and turn headlights on. Set headlights at high beam and heater blower switch on HIGH. Increase engine speed to 2500 RPM and note generator output current on ammeter. Minimum output should be within specification. See GENERATOR 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 generator or ambient temperature is excessive. Allow generator or temperature to cool, and recheck output. Generator output is stamped on metal plate attached to generator case.

5) If minimum output is not obtained and generator wiring is okay, repair generator. Operate engine at idle speed after the test.

GENERATOR MINIMUM OUTPUT SPECIFICATIONS TABLE

Application	Amps
Diamante .....	110
Eclipse	
2.0L Non-Turbo .....	90
2.0L Turbo .....	75
2.4L .....	90
Galant .....	90
Mirage .....	80
Montero .....	100
Montero Sport	
2.4L .....	60
3.0L .....	85
3000GT	
DOHC .....	110
SOHC .....	90

## REGULATED VOLTAGE TEST

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

1) Turn ignition switch off. Disconnect negative battery cable. Connect positive voltmeter lead to terminal "S" of generator.

See Fig. 1. Connect negative voltmeter lead to ground.

2) Disconnect generator output wire from terminal "B".

Install a 100-amp ammeter in series with terminal "B" and disconnected output lead. Connect 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 on and ensure voltmeter indicates battery voltage. If voltage is not present, check for open in wire between generator terminal "S" and positive battery terminal. Check for blown fusible link.

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

#### 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

### GENERATOR RELAY TEST

NOTE: Information for all other models is not available from manufacturer at time of publication.

#### Diamante & Mirage

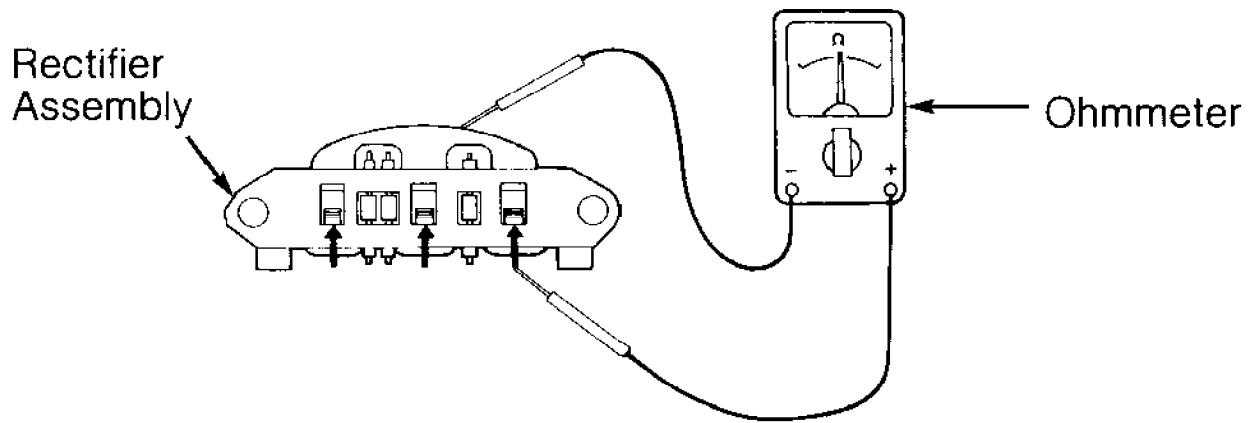
Remove generator relay. On Diamante, relay is located in relay box in engine compartment near battery. On Mirage, relay is located in relay box in engine compartment between battery and strut tower. On both models, connect positive lead of ohmmeter to relay terminal No. 4. See WIRING DIAGRAMS. Connect negative lead of ohmmeter to relay terminal No. 2. Continuity should be present. Switch ohmmeter lead locations. Continuity should not be present. Replace generator relay if continuity is not as specified.

### BENCH TESTING

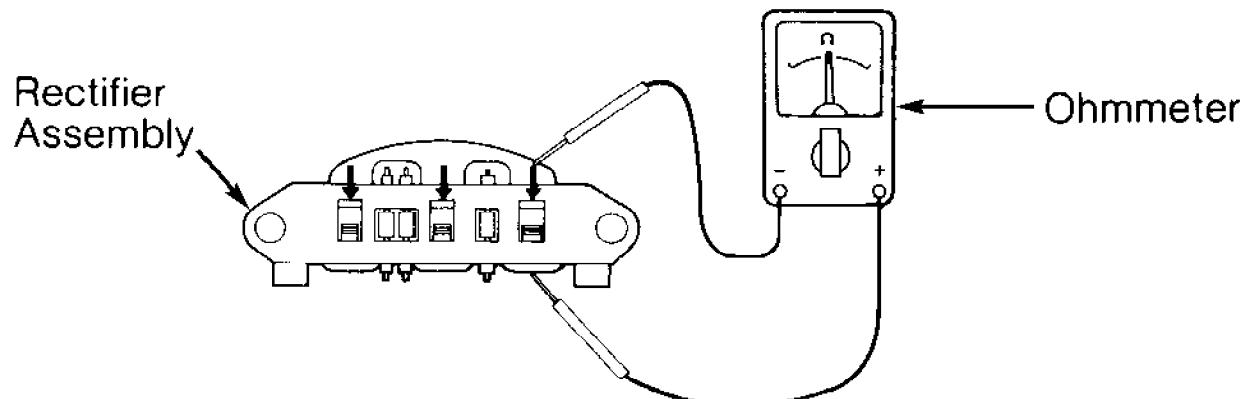
#### RECTIFIER ASSEMBLY

1) Using ohmmeter, check for continuity between diodes and stator coil lead connection. See Fig. 2. Reverse leads. If continuity is present in both directions, diode is shorted. Replace rectifier assembly.

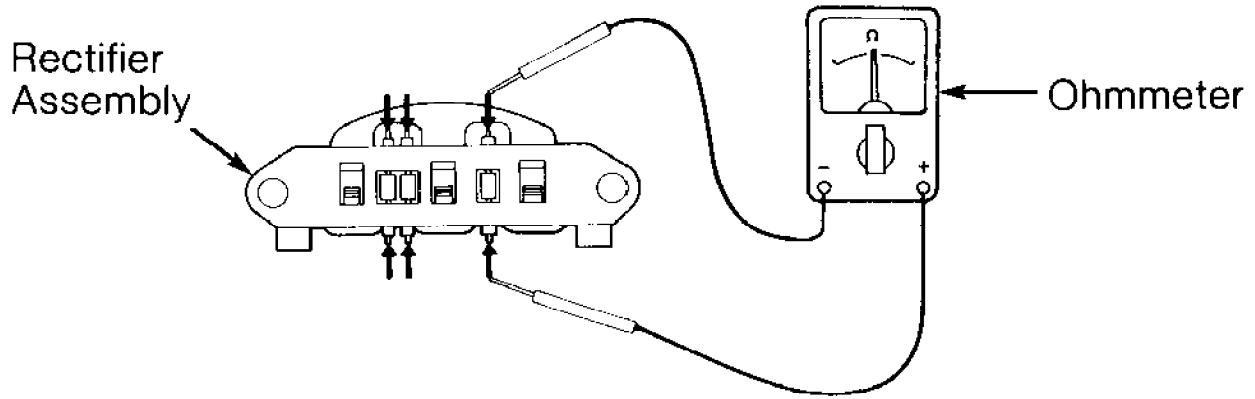
2) To check entire diode assembly, use an ohmmeter to check for continuity between both ends of each diode. See Fig. 2. Switch ohmmeter leads. Continuity should be present in one direction only. If continuity is not as specified, diode is defective. Replace rectifier assembly.



TESTING POSITIVE DIODES



TESTING NEGATIVE DIODES



TESTING DIODE ASSEMBLY

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Fig. 2: Testing Rectifier Assembly  
Courtesy of Mitsubishi Motor Sales of America

ROTOR

1) Check continuity across rotor slip rings. Resistance should be 3-5 ohms. Replace rotor if continuity is not present or resistance is not within specification.

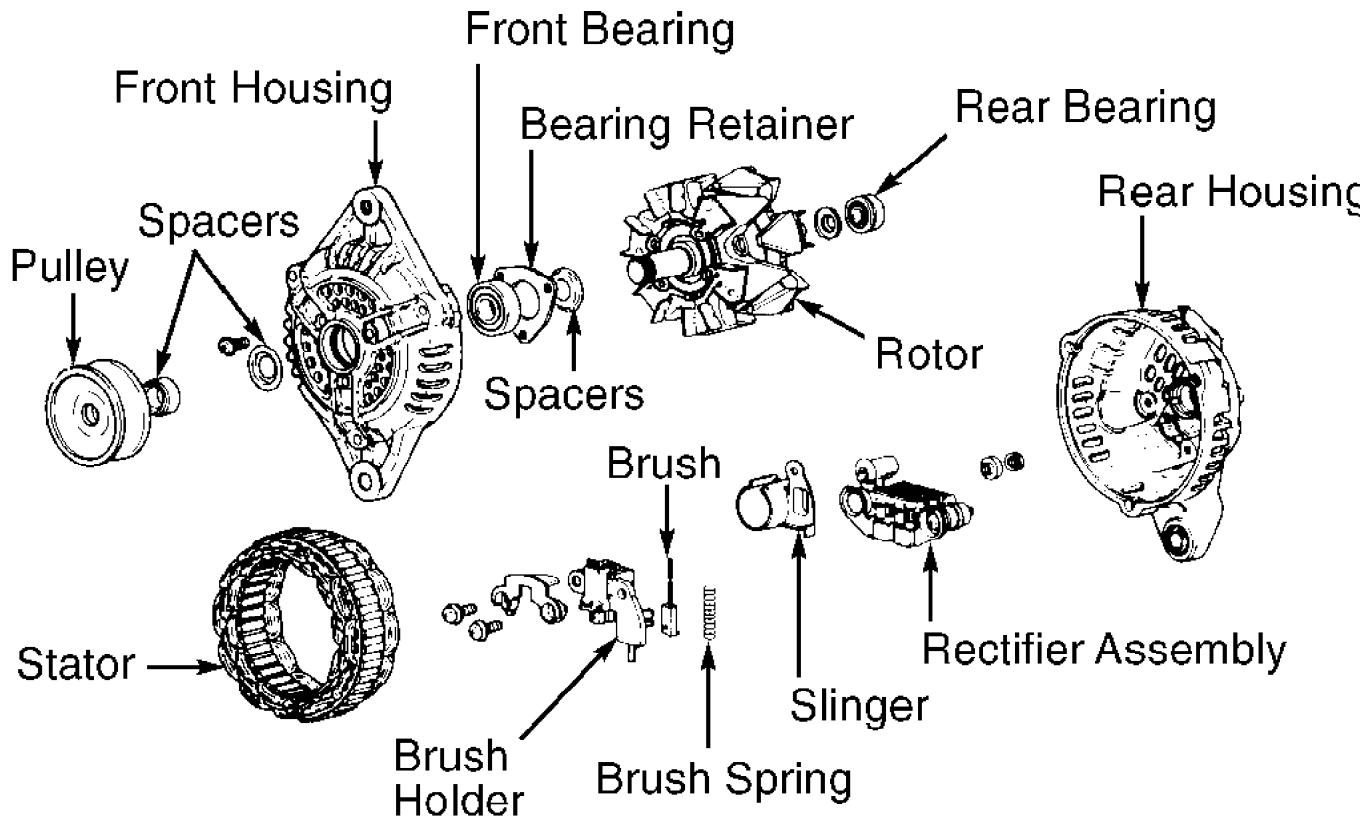
2) Check continuity between individual slip rings and rotor shaft. If continuity is present, rotor coil or slip ring is grounded. Replace rotor.

## STATOR

Ensure continuity is not present between stator coil leads and stator core. Check continuity between leads of stator coil. If continuity is not present 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. See Fig. 3.



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Fig. 3: Exploded View Of Mitsubishi Generator (Typical)  
Courtesy of Mitsubishi Motor Sales of America

## TORQUE SPECIFICATIONS

### TORQUE SPECIFICATIONS TABLE

Application

Ft. Lbs. (N.m)

Generator Adjusting Bolt

Diamante, Mirage, Montero & Montero Sport (3.0L) .....	16 (22)
Eclipse, Galant & Montero Sport (2.4L) .....	9-11 (12-15)
3000GT	
DOHC .....	33 (44)
SOHC .....	9-11 (12-15)

Generator Pivot Bolt Nut

Diamante, Mirage & 3000GT (DOHC) .....	33 (44)
Eclipse, Galant & Montero Sport (2.4L) .....	15-18 (20-25)
Montero & Montero Sport (3.0L) .....	38 (52)

3000GT (SOHC) .....

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## **WIRING DIAGRAMS**

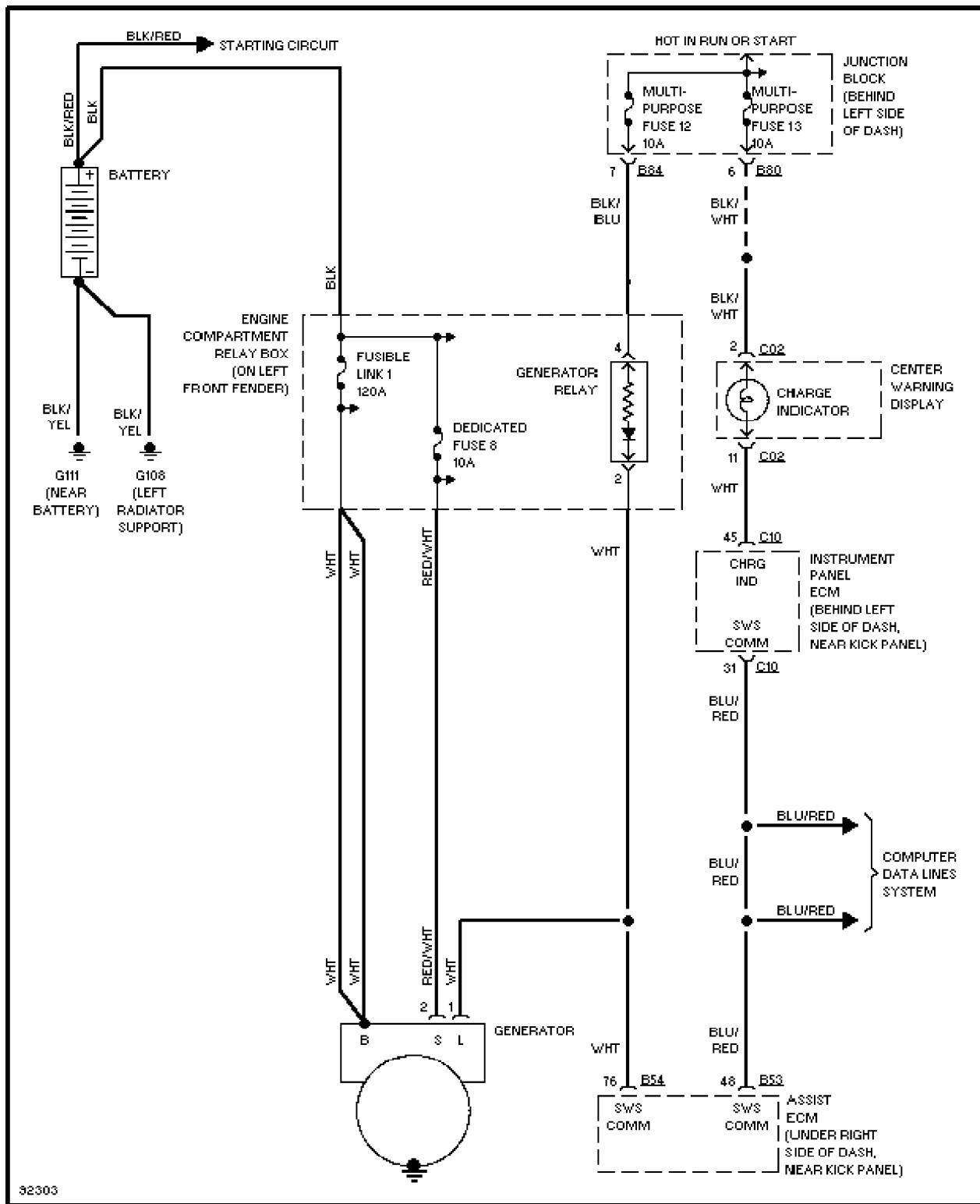


Fig. 4: Charging System Wiring Diagram (Diamante)

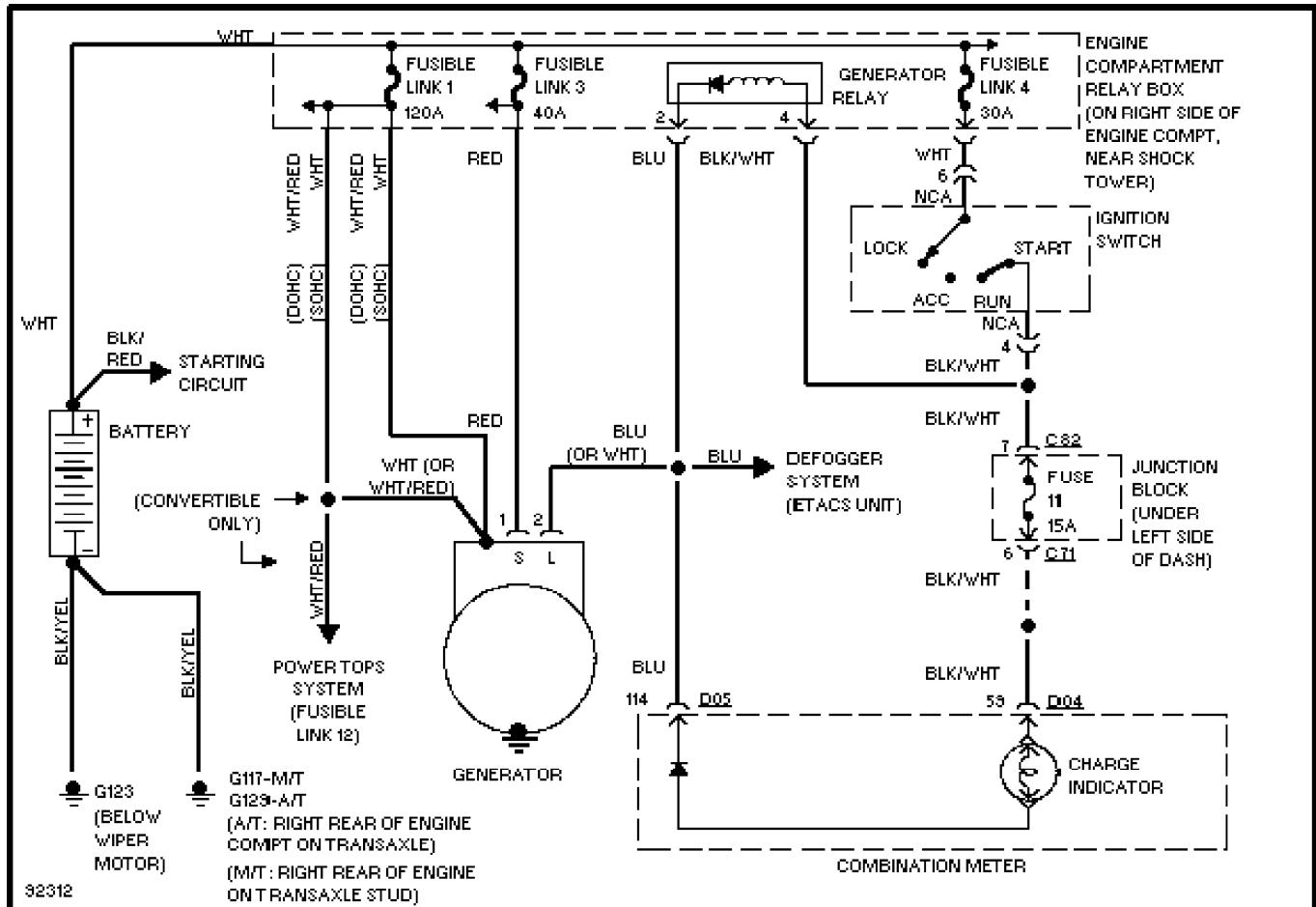


Fig. 5: Charging System Wiring Diagram (3000GT)

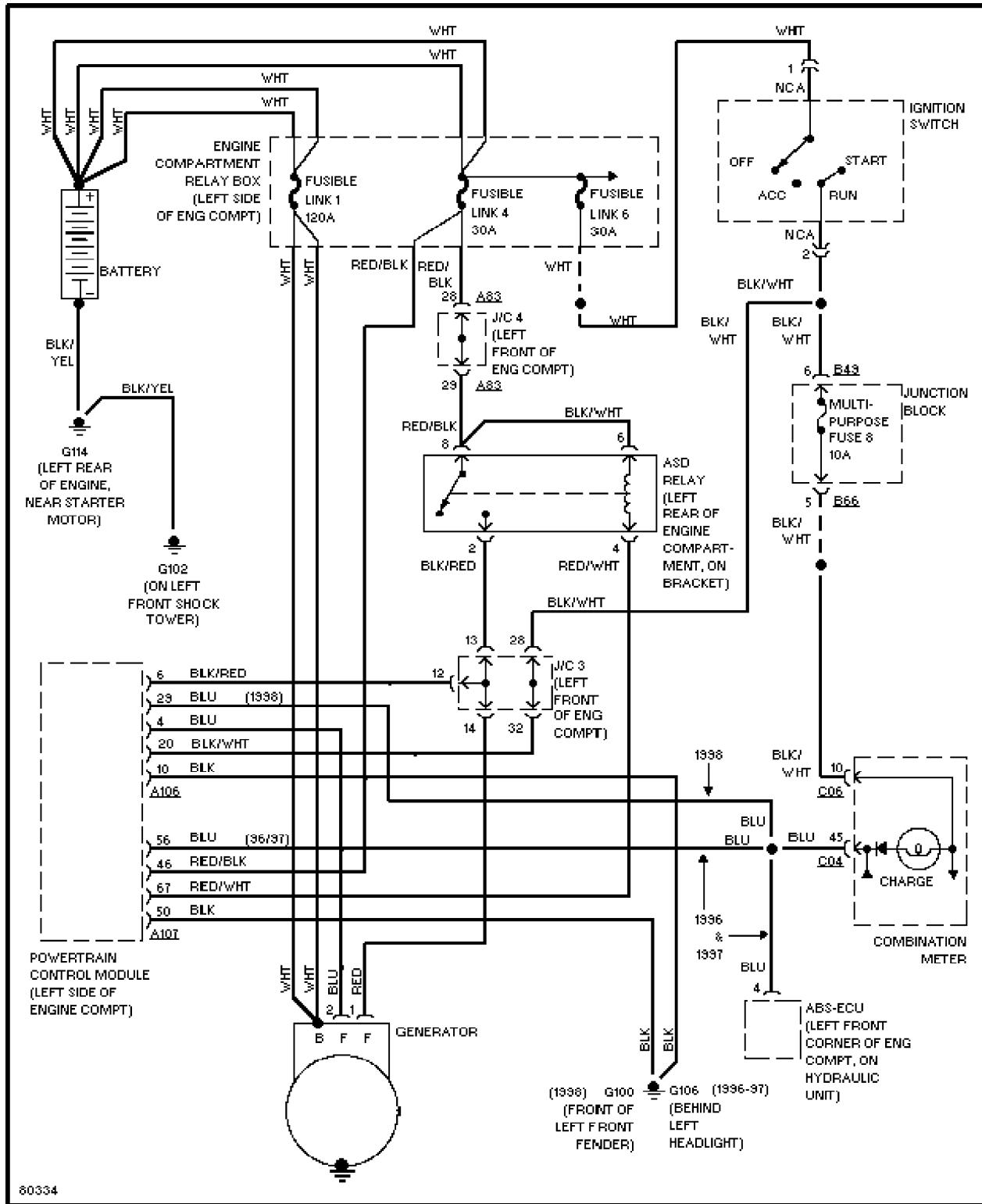


Fig. 6: Charging System Wiring Diagram (Eclipse 2.0L Non-Turbo)

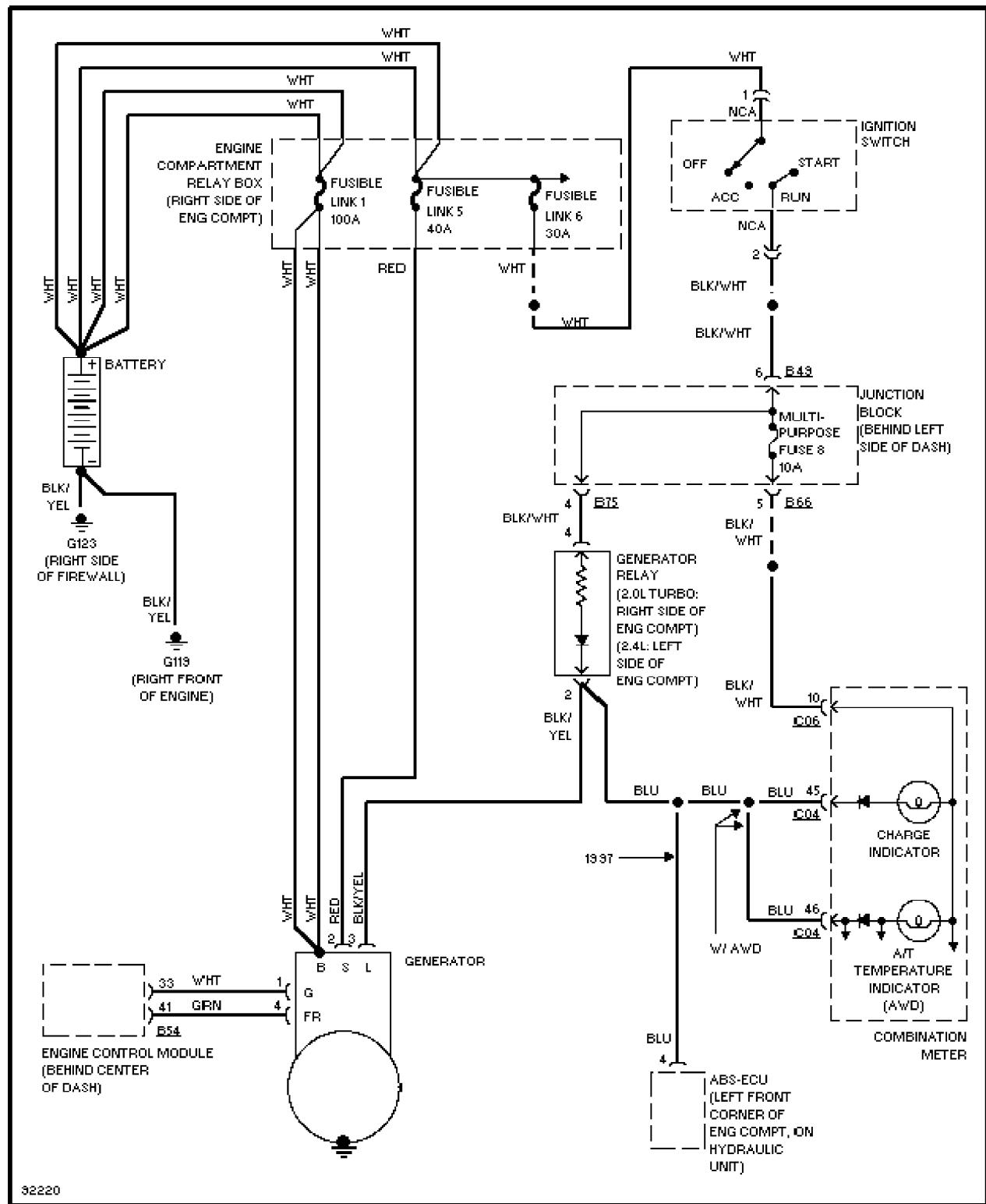


Fig. 7: Charging System Wiring Diagram (Eclipse 2.0L Turbo & 2.4L)

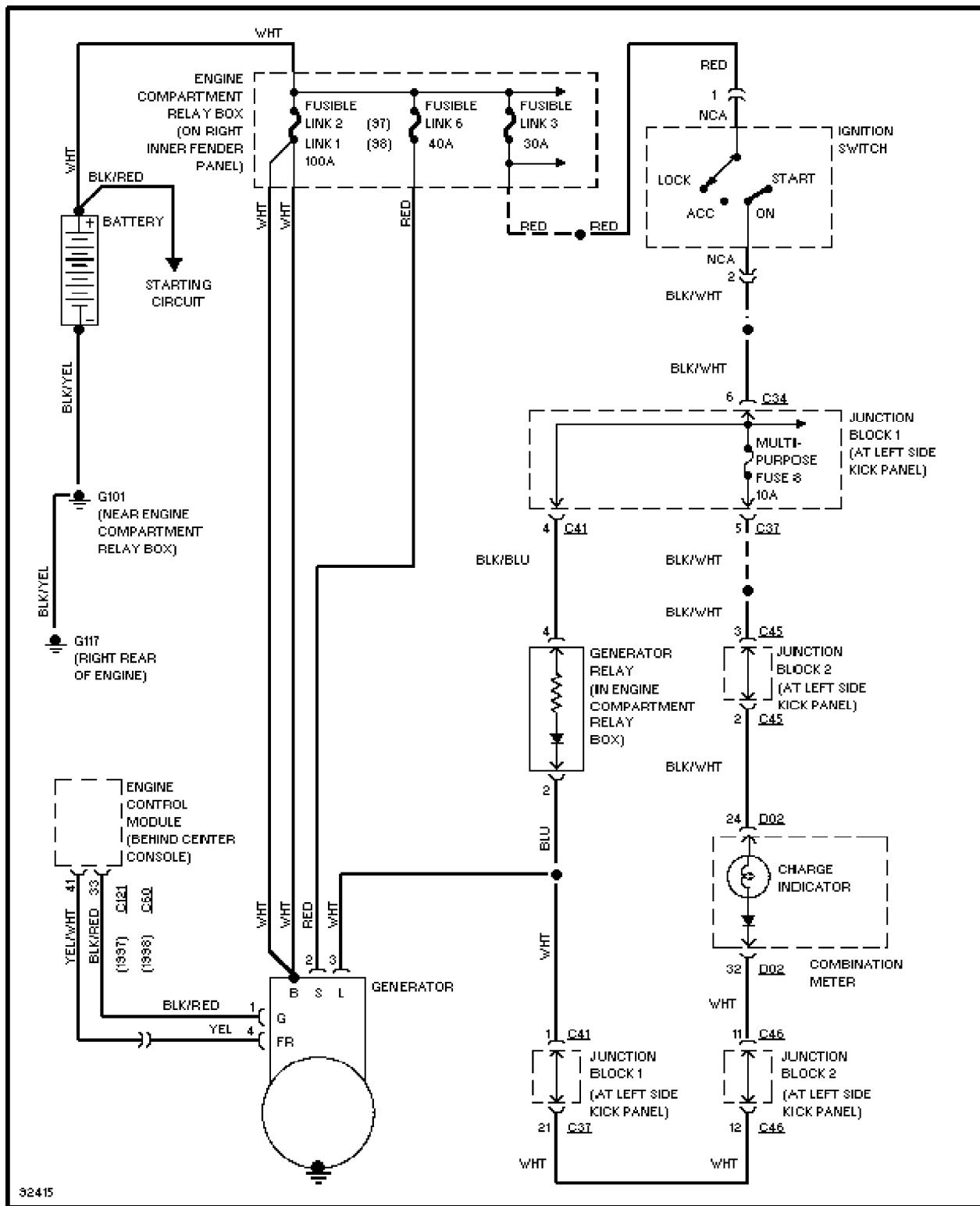


Fig. 8: Charging System Wiring Diagram (Galant)

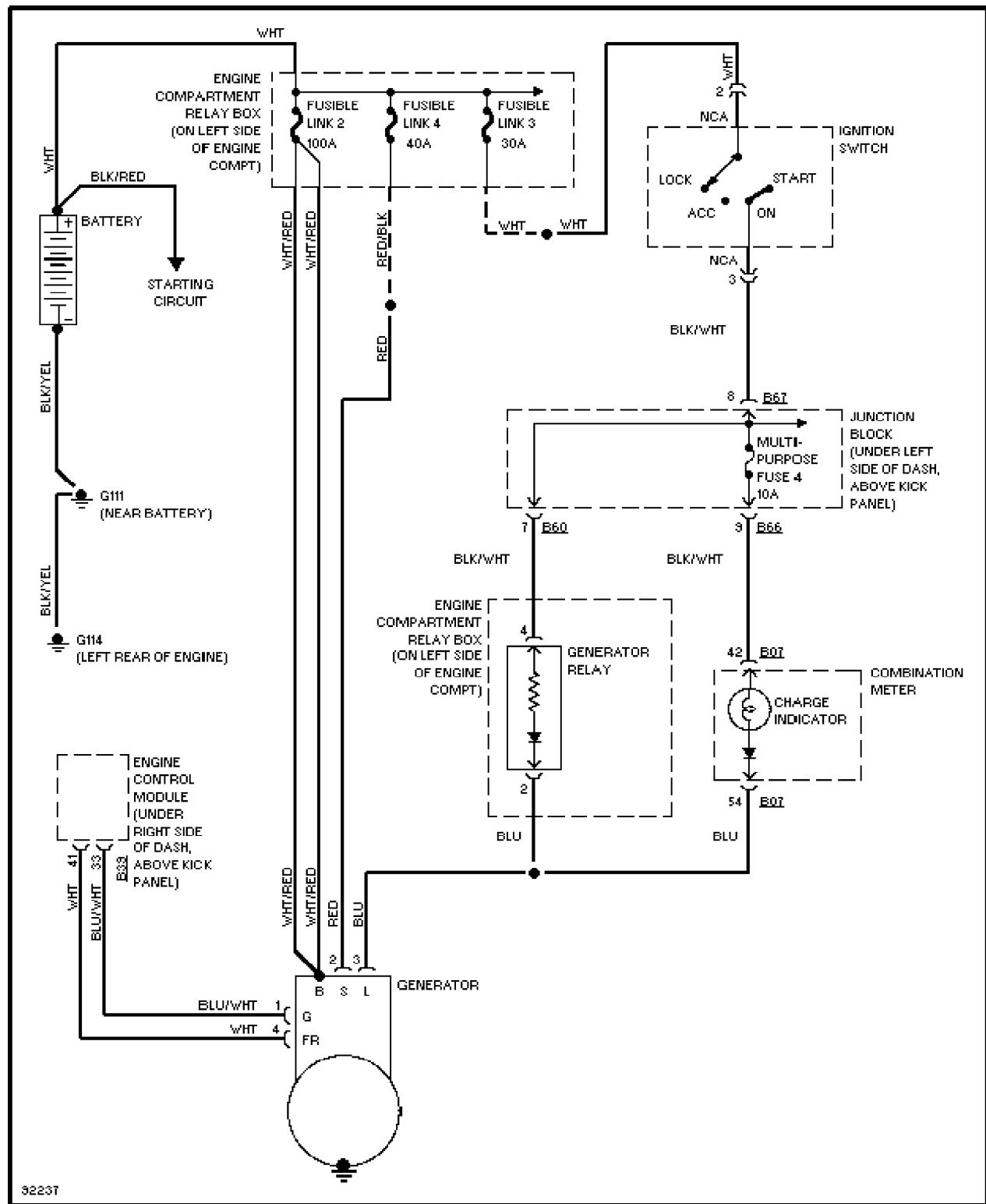


Fig. 9: Charging System Wiring Diagram (Mirage)

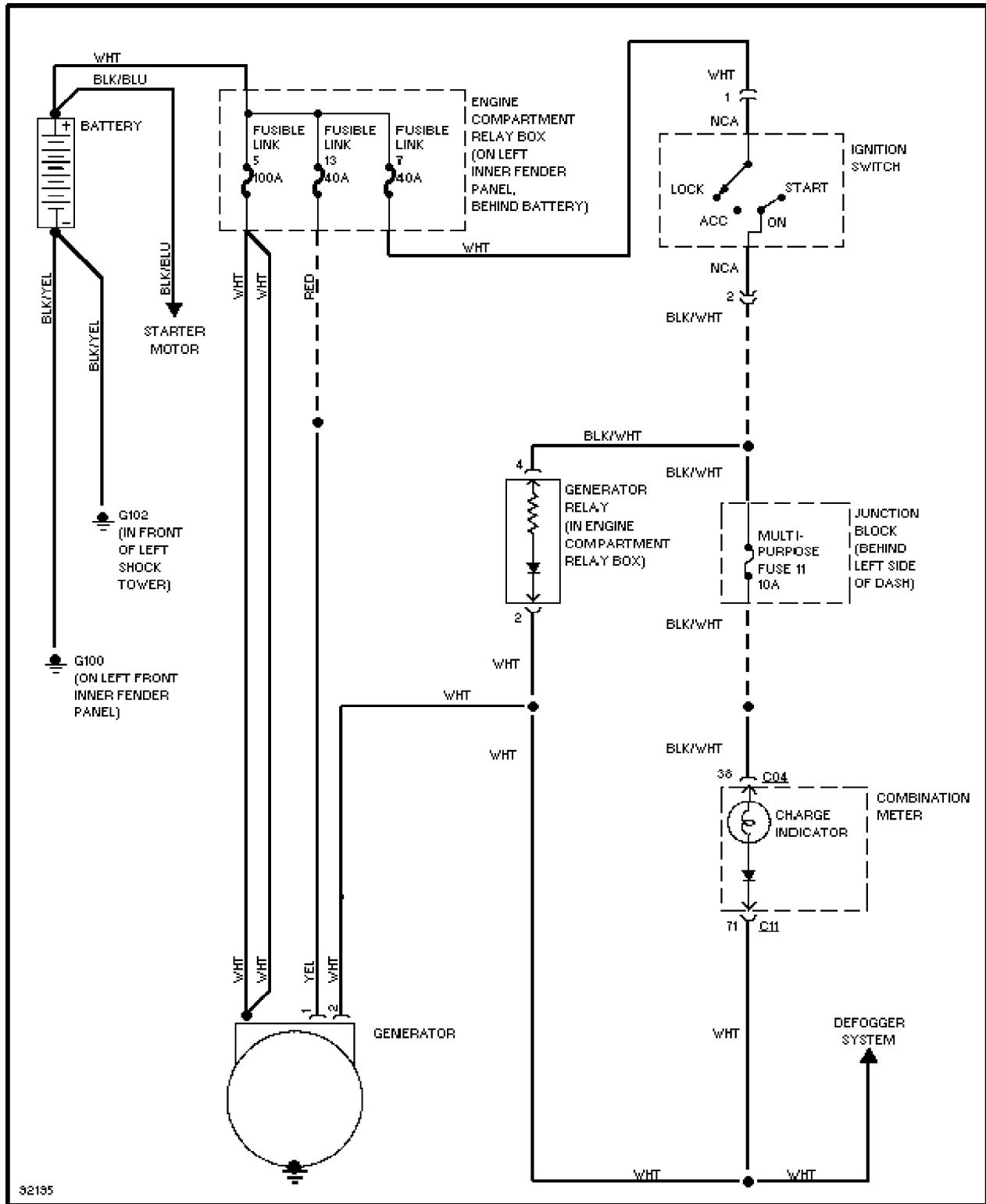


Fig. 10: Charging System Wiring Diagram (Montero)

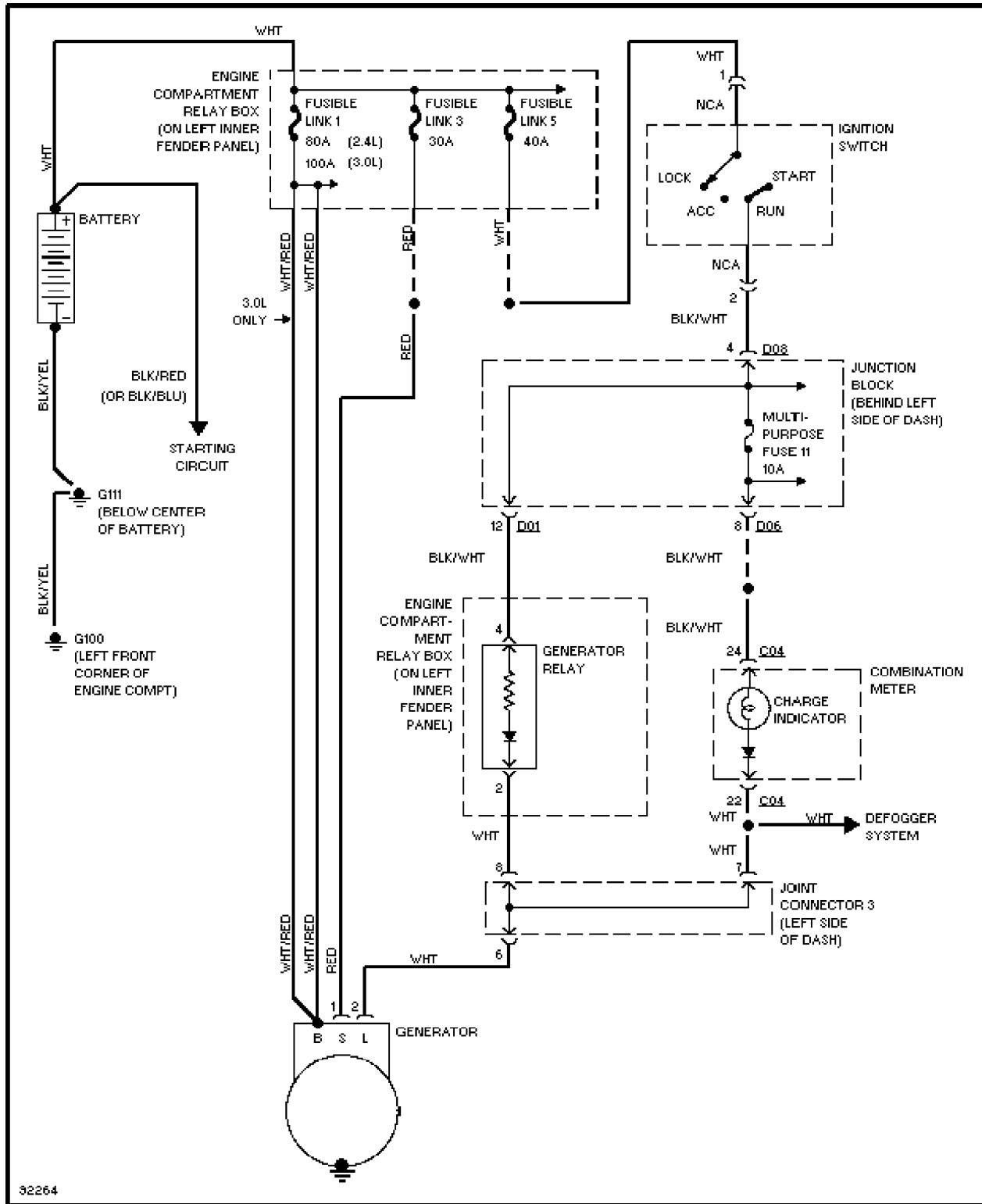


Fig. 11: Charging System Wiring Diagram (Montero Sport)