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ALTERNATOR & REGULATOR

1991 ELECTRICAL Alternators & Regulators

DESCRIPTION

Mitsubishi alternator is a 50-amp, conventional 3-phase, self-rectifying type unit, containing 6 diodes (3 main diodes and a smaller diode trio) and a case-mounted Integrated Circuit (IC) regulator. A charge indicator light in the instrument panel indicates charging system malfunctions. See **Fig. 1** .

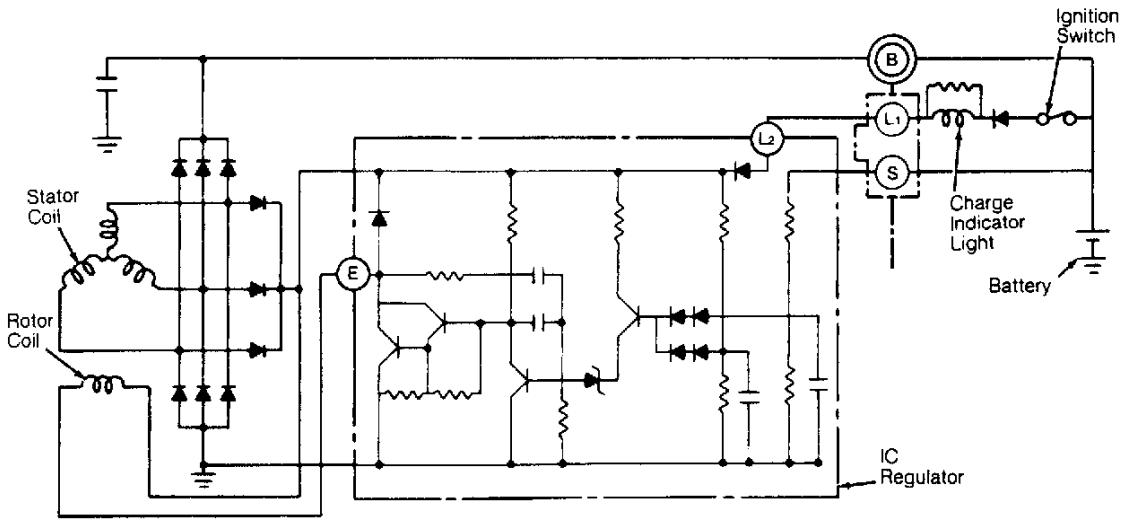

Fig. 1: Charging System Wiring Schematic
Courtesy of FORD MOTOR CO.

ADJUSTMENTS

BELT TENSION

BELT ADJUSTMENTS (1)

Application	New Belt	Used Belt
A/C & P/S Belts	110-125 (50-57)	92-110 (42-50)
Alt. Belt	110-130 (50-60)	95-110 (43-50)
(1) Tension in Lbs. (Kg) Using Strand Tension Gauge		

ON-VEHICLE TESTING

NOTE: **Before testing, check alternator wiring harness connections, drive belt tension and battery voltage. Ensure battery cables and engine ground cable are clean and tight. Wait at least 30 seconds after starting engine before measuring voltage.**

ALTERNATOR OUTPUT

CAUTION: **DO NOT start engine with "L" and "S" terminal connectors disconnected from alternator. DO NOT allow "L" terminal to contact ground while engine is running. See Fig. 2 .**

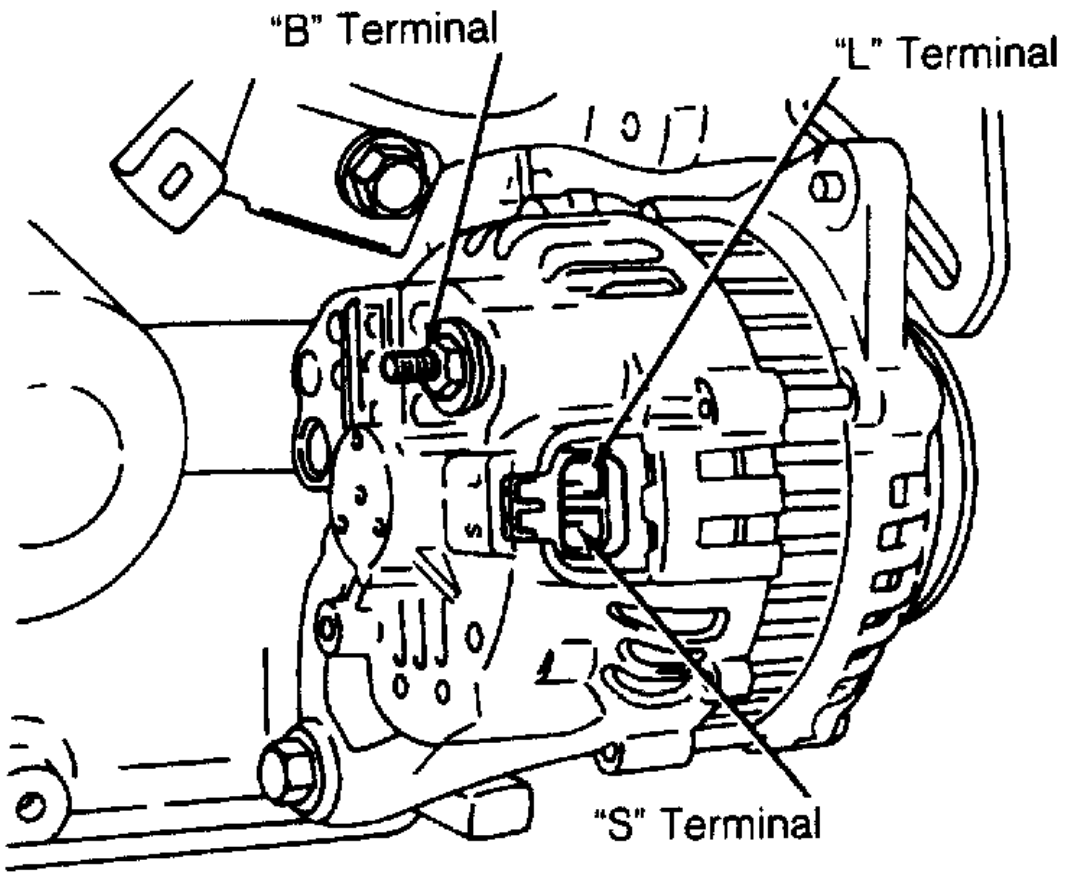

Fig. 2: Identifying Alternator Test Terminals
Courtesy of FORD MOTOR CO.

1. Turn ignition switch to OFF position. Connect positive voltmeter lead wire to alternator "B" terminal and negative wire to ground. See **Fig. 2** . Ensure voltmeter indicates battery voltage. If voltmeter indicates zero volts, an open circuit exists in wire between "B" terminal and battery positive terminal.
2. Remove voltmeter. Disconnect negative battery cable. Remove output lead from alternator terminal "B". Connect a 100-amp ammeter in series between "B" terminal and disconnected output lead. Connect positive lead of ammeter to "B" terminal and negative lead to disconnected output wire.
3. Connect voltmeter in parallel between alternator "B" terminal and battery positive terminal. Connect positive lead wire of voltmeter to "B" terminal and negative lead wire to positive terminal of battery. Reconnect negative battery cable.
4. Install tachometer (if necessary) to monitor engine RPM. Start engine. Turn all lights and accessories on and depress brake pedal to load system. Increase engine speed to 2500-3000 RPM. Ensure alternator output is at least 35 amps.
5. Observe voltmeter reading. If voltmeter indicates .2 volt and amperage output is at least 35 amps, system is okay. If voltage drop is greater than .2 volt, wiring is defective between alternator "B" terminal and battery positive terminal.
6. Allow engine to idle. Turn off all accessories to remove load from system. Disconnect voltmeter. Connect negative lead of voltmeter to ground. Using positive lead of voltmeter, backprobe "S" terminal connector at rear of alternator. See **Fig. 2** .
7. Increase engine speed to 2500-3000 RPM. With no load on system, ammeter should read 5 amps or more. Battery voltage with no load at indicated speed should be 14.1-14.7 volts. If amperage output is less than indicated with or without load and no external faults exist in alternator circuit, overhaul or replace alternator.

BENCH TESTING

Rotor

Check continuity across rotor slip rings. If no continuity exists, replace rotor. Check continuity between individual slip rings and rotor core/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 continuity does not exist, replace stator.

Brushes

Inspect brushes. Replace brushes if worn to wear line (leading edge of small square cast into brush). Use a spring pressure gauge to push each NEW brush into its holder until .079" (2 mm) projects from holder. Spring force should be 10.6-15.6 oz. (.3-.4 kg). If spring force is not within specification, replace brush spring.

Rectifier

1. Using an ohmmeter, check for continuity between positive side of diode leads and heat sink. If no continuity exists from any positive diode lead to heat sink, replace rectifier assembly.
2. Reverse ohmmeter leads, and check for continuity between negative side of diodes and heat sink. If continuity exists from any negative diode lead to heat sink, replace rectifier assembly.
3. Check diode trio (smaller diodes between main diode leads) for continuity in both directions. Continuity should exist in one direction only. If any diode shows continuity in both directions or does not show continuity in either direction, replace diode trio.

TROUBLE SHOOTING

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

OVERHAUL

NOTE: **For exploded view of alternator, see Fig. 3 .**

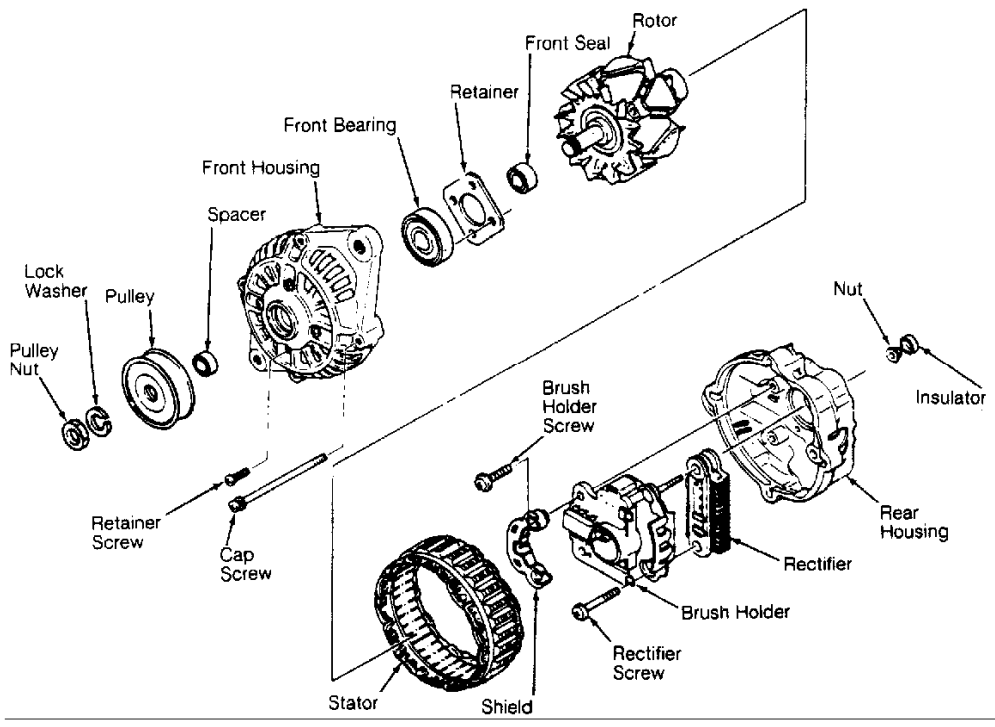

Fig. 3: Exploded View of Mitsubishi Alternator
Courtesy of FORD MOTOR CO.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Alternator Adjustment Bolt	14-18 (19-25)
Alternator Mount Bolt	27-38 (37-52)
Idler Pulley Attaching Nut	23-34 (31-46)
Power Steering Pump Adjustment Lock Nut	27-38 (37-52)
Power Steering Pump Mounting Bolt	27-40 (37-54)

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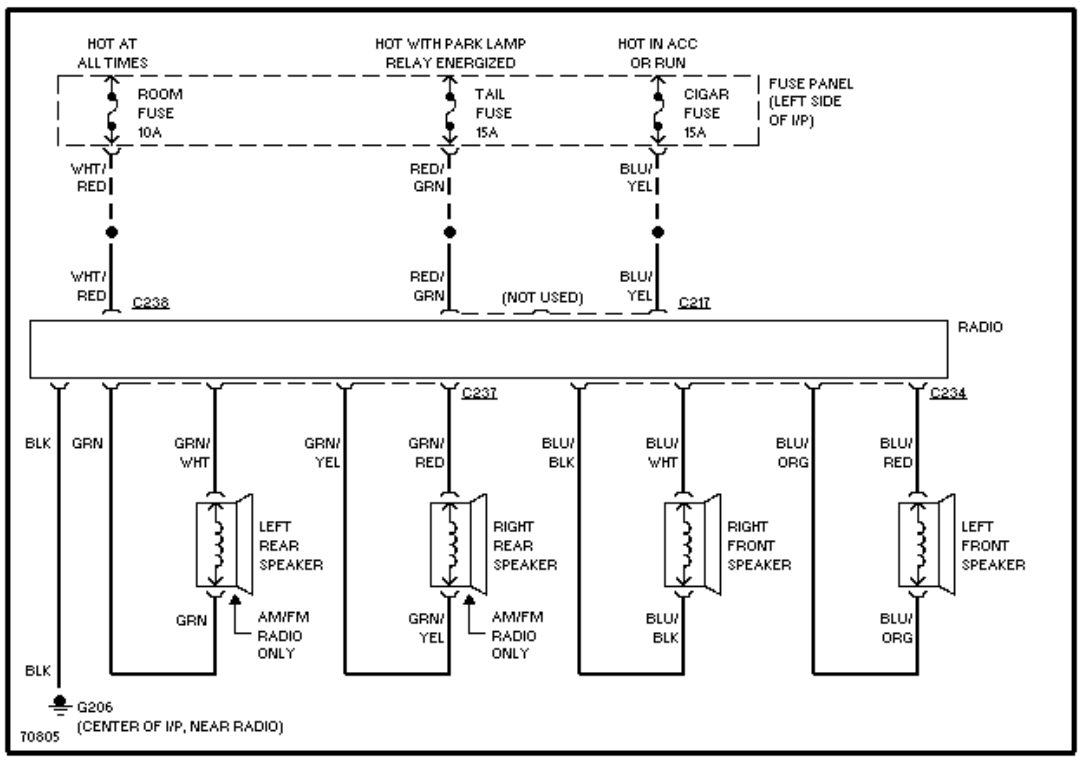

Fig. 5: Radio Circuits

STARTING/CHARGING

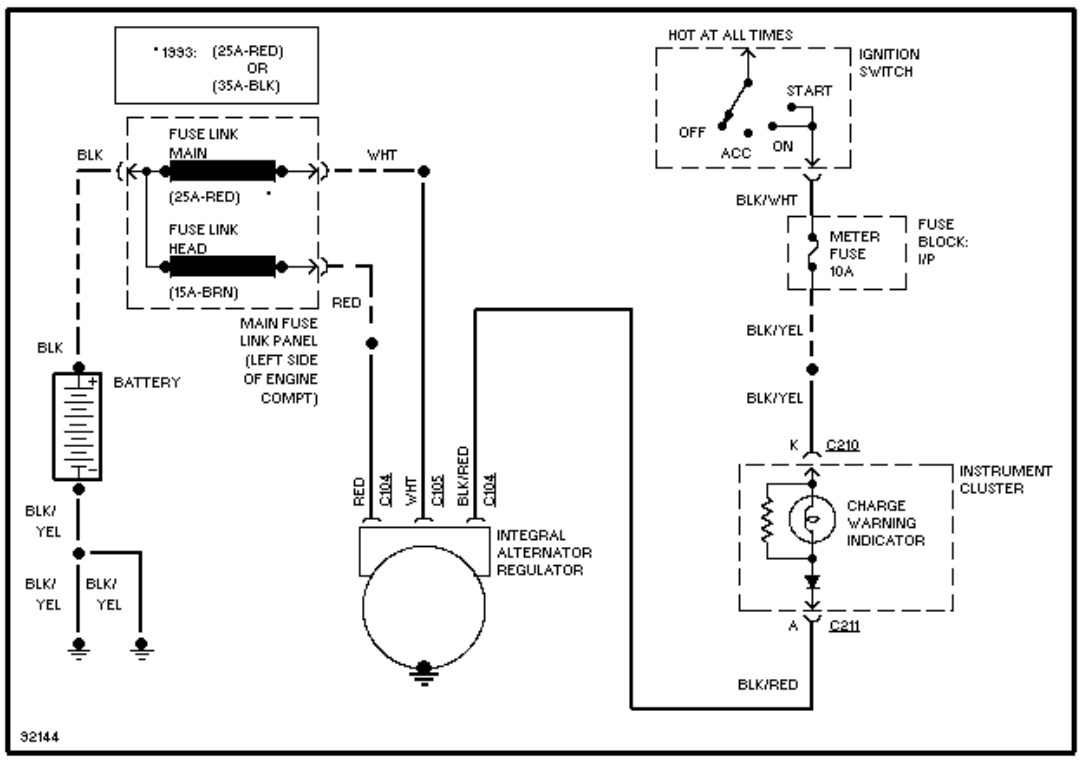

Fig. 6: Charging Circuit