

# ALTERNATOR & REGULATOR

1992 Subaru SVX  
For 1234

1992 ELECTRICAL  
Alternators & Regulators - Mitsubishi

SVX

## DESCRIPTION

Mitsubishi conventional 3-phase, self-rectifying alternator contains 8 diodes (4 positive and 4 negative) that rectify current. See Fig. 1.

The internal circuitry of a Mitsubishi IC regulator consists of 3 circuits. See Fig. 2. Circuit No. 1 functions when ignition is first turned on and engine is off. With ignition switch in ON position, the charge indicator light comes on to show a current flow of less than .5 amps flowing through field coil. If indicator light is not on, the fault may be one of the following: burned out indicator bulb, break in field coil wiring defective IC regulator, or worn brushes.

Circuit No. 2 functions when alternator turns and generates voltage. The charge indicator light goes out because voltage at both ends of light bulb is now equal. Field current is now supplied from diodes. When voltage at connection "a" (between resistors Rv and Rl) is low voltage, no voltage flows into Zener diode Dz, keeping transistor Tr1 turned off.

Voltage flows into power transistor, (large circle in wiring diagram) turning it on and allowing field current to flow through it, creating voltage. In this condition, when current voltage exceeds battery voltage at terminal "B" of IC regulator, excess current voltage flows to charge battery.

Circuit No. 3 functions when alternator creates too much voltage at terminal "L" of IC regulator. This increases voltage at connection "a" (between resistors Rv and Rl). When increased "a" voltage exceeds rated value of Zener diode Dz, current flows through diode Dz and turns on transistor Tr1. This condition turns off power transistor and "regulates" voltage output to preset parameters (14.0-15.0 volts). IC regulator continually repeats operation of circuits No. 2 and 3 to regulate voltage.

## BELT TENSION ADJUSTMENTS

### BELT ADJUSTMENT

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Application	(1) Deflection - In. (mm)
New Belt .....	.16-.20 (4-5)
Used Belt .....	.20-.24 (5-6)

(1) - Measure deflection with 22 lbs. (10 kg) of force applied at longest belt run.

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## TROUBLESHOOTING

### CHARGING SYSTEM TROUBLE SHOOTING TABLE

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PROBLEM	Action
Possible Cause	

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#### NO START CONDITION

Dead Battery ..... Check/Replace Battery  
Bad Cable Connections ..... Clean/Replace Cables  
Ignition Switch/Circuit Fault ..... Check Switch/Circuit

#### CHARGING SYSTEM WARNING LIGHT STAYS ON

Loose/Worn Alternator Belt ..... Tighten/Replace Belt  
Loose Alternator Connections ..... Check/Repair Connections  
Warning Light Wiring ..... Check/Repair Wiring  
Faulty Stator/Diodes ..... Test/Repair Alternator  
Faulty Voltage Regulator ..... Test/Repair Regulator

#### WARNING LIGHT OFF WITH IGNITION SWITCH ON

Blown Fuse ..... Check/Replace Fuse  
Faulty Alternator ..... Test Alternator  
Bad Warning Light Bulb ..... Test/Replace Bulb

#### WARNING LIGHT ON WITH IGNITION SWITCH OFF

Alternator Wiring Short ..... Check/Repair Wiring  
Faulty Rectifier Bridge ..... Test/Repair Alternator

#### AMMETER INDICATES DISCHARGE

Loose/Worn Alternator Belt ..... Tighten/Replace Belt  
Loose Alternator Connections ..... Check/Repair Connections  
Faulty Ammeter ..... Test/Replace Ammeter  
NOISY Defective Battery ..... Replace Battery  
Defective Alternator ..... Test/Repair Alternator  
Defective Regulator ..... Test/Repair Regulator

### ON-VEHICLE TESTING

NOTE: Alternator on-vehicle testing information not available at time of publication.

#### ALTERNATOR OUTPUT SPECIFICATIONS

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Application	Amps
1500 RPM .....	39 Or More
2500 RPM .....	73 Or More
5000 RPM .....	95 Or More

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### BENCH TESTING

#### DIODE ASSEMBLY

1) To check diode assembly, remove assembly from rear cover. Using ohmmeter, check each diode for continuity. Continuity should exist in one direction only. If continuity is shown in both directions, diode is open. If any diodes are defective, replace complete rectifier assembly.

2) Diode trio is good if continuity exists in one direction only. If continuity exists in both directions, replace diode trio.

## ROTOR

Continuity across rotor slip rings should be 3 ohms. If continuity does not exist, replace rotor. Check continuity between each slip ring and rotor core/shaft, individually. If any continuity exists, rotor coil and/or slip ring are grounded. Replace rotor.

## STATOR

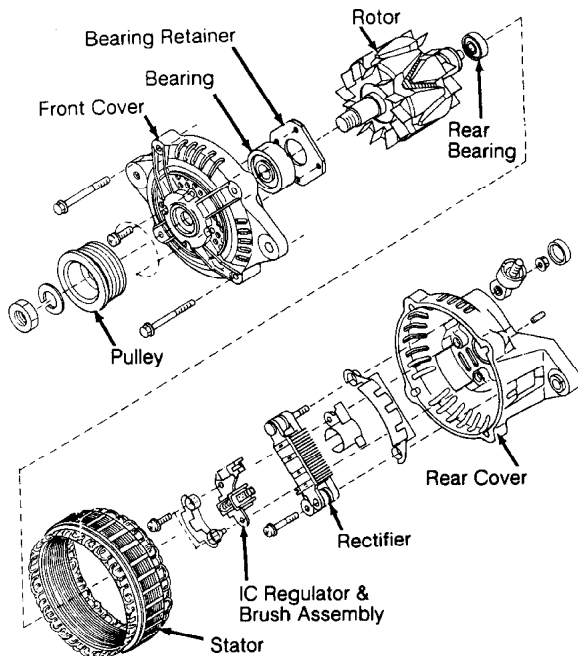
Ensure no continuity exists between stator coil leads and stator core. Continuity should exist between leads of stator coil. If there is no continuity, replace stator.

## BRUSHES

Replace brushes if brush length is .31" (8mm) or less, or if brushes are worn to wear limit line. Wear limit line on brush is bottom line of Mitsubishi symbol box. Remove brushes from holder by unsoldering pigtail from terminal. To replace, solder pigtail to terminal ensuring 1/4" (6 mm) of brush is still located in brush holder.

## OVERHAUL

To remove a stuck rear cover after removing case bolts, use soldering iron/gun to heat rear cover bearing housing to about 122-140 °F (50-60 °C). This action will expand housing enough to slide cover off rear rotor bearing. Use care not to lose spring washer located in rear cover bearing bore. See Fig. 1.



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Fig. 1: Exploded View Of Mitsubishi Alternator (Typical)  
Courtesy of Subaru of America, Inc.

## WIRING DIAGRAM

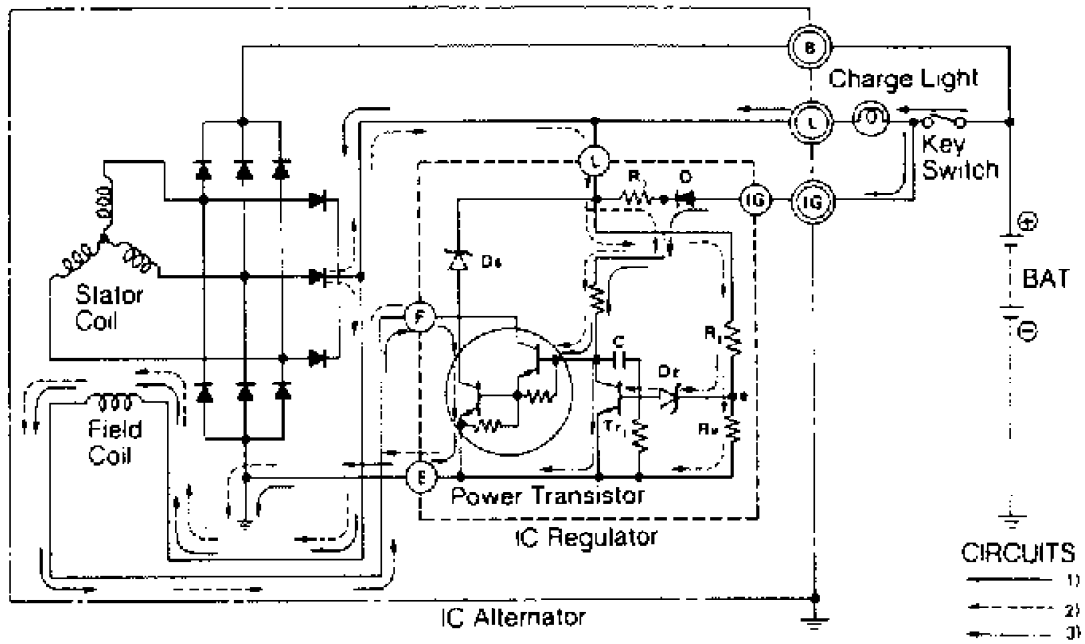


Fig. 2: Charging System Wiring Schematic  
 Courtesy of Subaru of America, Inc.