

MITSUBISHI

DATSUN (NISSAN MOTOR CO.)

MODEL

410 Sedan	AC300/12AIR
SP 310 (1500 Sports)	AC300/12ARX2R
411 Sedan	AC300/12WR
SP 311 (1600 Sports)	AC300/12X2R
SR 311 (2000 Sports)	AS2030A2
520 Pick-Up	AS2030A1

►CHANGES, CAUTIONS & CORRECTIONS

► **BATTERY INSTALLATION, BATTERY CHARGING, OR USING A BOOSTER BATTERY TO START ENGINE CAUTION** – Reversed polarity or excessive voltage will result in extensive damage to alternator system. **NOTE** the following to prevent damage:

Battery Installation (410 Sedan & SP 310 Sports Only) – These models have a positive ground electrical system. Positive battery terminal must be connected to **ground**. Negative terminal must be connected to starter lead. **Do not reverse battery leads.**

Battery Installation (All Other Models) – These models have a negative ground electrical system. Negative battery terminal must be connected to ground. Positive terminal must be connected to starter lead. **Do not reverse battery leads.**

Battery Charging – If a “Fast Charger” is used, both of the car’s battery cables must be disconnected from battery. **Do not use “Fast Charger” to provide starting voltage.**

Booster Battery (Used to Start Engine) – Booster Battery must be connected with negative lead to negative terminal of battery and positive lead to positive terminal of battery. **Do not reverse battery leads.**

DESCRIPTION

Mitsubishi alternators are conventional three-phase, self-rectifying type alternators. Six diodes (three positive and three negative) are used to rectify current.

SPECIFICATIONS

Alternator ①	Amperes		Alt. RPM
	Nor. Temp.	High Temp.	
AC300/12AR.....	24.5.....	21.5.....	2500
AC300/12ARX2R.....	24.5.....	21.5.....	2500
AC300/12WR.....	24.5.....	21.5.....	2500
AC300/12X2R.....	24.5.....	21.5.....	2500
AS2030A2.....	23.....	2500
AS2030A1.....	24.5.....	21.5.....	2400

① – At 14 volts.

Nominal Output – All Exc. AS2030A2 ..12 Volts–25 Amps.
AS2030A2 ..12 Volts–30 Amps.

Rotation – Clockwise at drive end.

Field Coil Resistance (At Normal Ambient Temperature) –

All Exc. AS2030A2	6-7 Ohms
AS2030A2	4.47 Ohms

Minimum Brush Length –

AS2030A2 Only256 in. (6.5 mm)
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Brush Spring Tension –

AS2030A2 Only	① .77 lb. (.35 kg)
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① – Minimum tension is .44 lb. (.2 kg).

TESTING

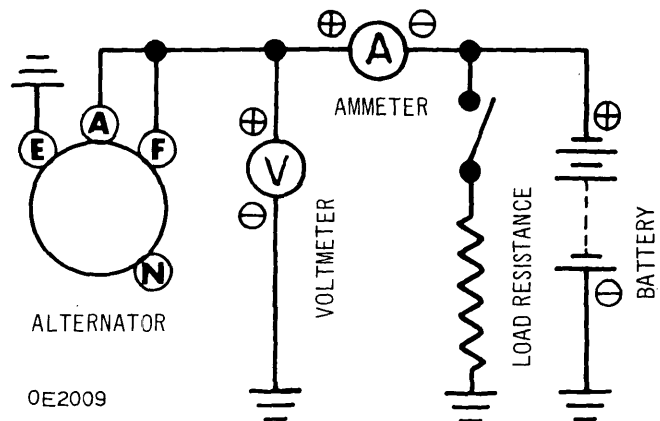
ON-CAR TEST

Whenever battery is discharged and charging rate is low, following test should be performed to determine whether fault lies in alternator or regulator. First, place ammeter between “A” terminal of regulator and battery. Disconnect wire at “F” terminal of regulator and touch lead to “A” terminal of regulator. If charging current remains constant, alternator is defective. But if current increases greatly, then regulator is faulty.

ALTERNATOR OUTPUT

NOTE – Battery used for this test should be fully charged.

For output test, remove alternator from vehicle and connect wiring as shown in illustration. **IMPORTANT** – For 410 Sedans and SP/310 Sports models only, the polarity of all components must be reversed as these models are positive ground. Failure to do so could result in damage to alternator or test instruments or both. Drive alternator with a motor. Run alternator up to a speed where there is no reverse current flow to field coil. At this point alternator speed should be approximately 1000 RPM. Next, increase alternator RPM while at the same time increasing load resistance to prevent voltage output from becoming too high. If alternator is functioning correctly, output current should be close to specified value at specified RPM and and voltage, see specifications.



CIRCUIT FOR ALTERNATOR OUTPUT TEST

DIODE ASSEMBLIES

Disconnect battery lead and field lead from alternator. Use a 12 volt test lamp and battery or an ohmmeter to check each diode assembly as follows:

Positive Diodes – Connect negative test probe to alternator “A” terminal or connector “A” terminal (white color) and other test probe to connector “N” terminal (yellow color). **NOTE** – On positive ground alternator connect negative test probe to alternator “E” terminal and other probe to “N” terminal.

Test lamp should light or ohmmeter should show a low resistance. Now reverse connections, test lamp should not light or ohmmeter should show a high resistance.

Alternators

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Negative Diodes – Connect negative test probe to connector “N” terminal (yellow color) and other test probe to alternator “E” terminal or connector “E” terminal (black color). *NOTE* – On positive ground alternator connect negative test probe to alternator “A” terminal and other probe to “N” terminal. Test lamp should light or ohmmeter should show a low resistance. Now reverse connections, test lamp should not light or ohmmeter should show a high resistance.

Test Conclusions – If test lamp lights or doesn't light in both directions, or if ohmmeter reading is high or low in both directions, when making above tests, one or more defective diodes is indicated. Alternator must be disassembled to test diodes individually.

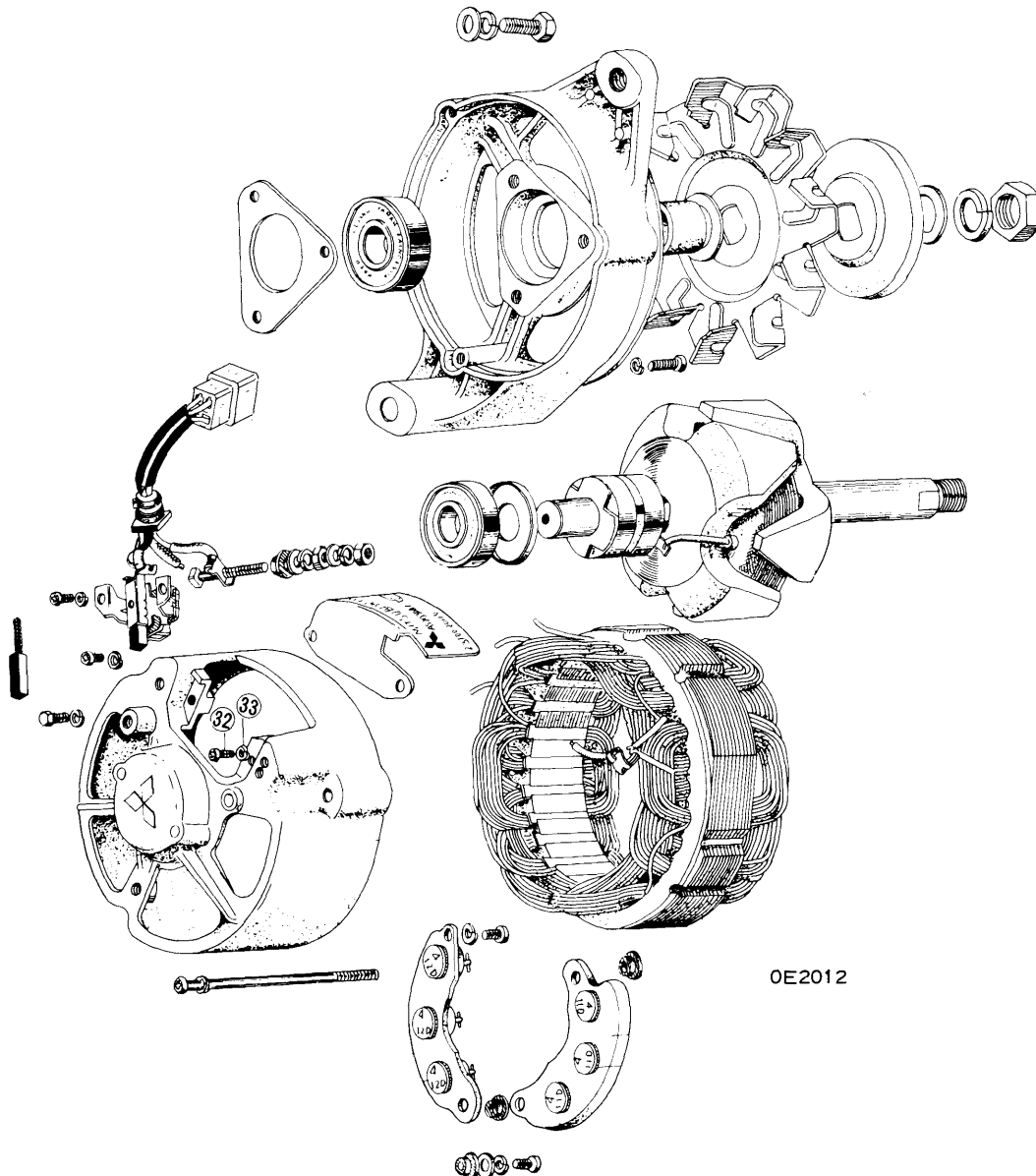
OVERHAUL

DISASSEMBLY

1) Remove brush cover by unscrewing setscrews. Unscrew and remove through bolts. Separate diode end housing from drive end housing assembly by hitting front bracket lightly with a soft mallet.

2) Place rotor shaft carefully into vice so as not to damage rotor shaft. Remove pulley nut, pulley, fan and spacer. Remove rotor from drive end housing assembly by lightly hitting drive end housing with a soft mallet.

3) To separate stator from diode end housing assembly, melt solder from three negative diode leads (positive diode leads on positive ground alternators) and from each wire between the diodes and disconnect all leads. **CAUTION** – If internal temperature of a diode rises over 300° F (150°



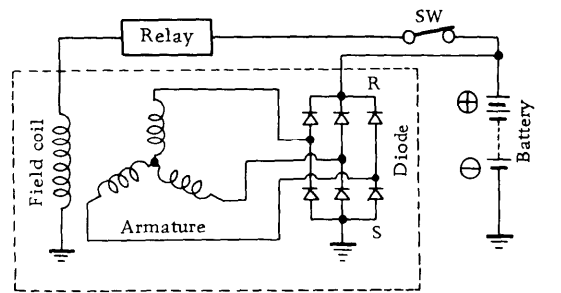
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MITSUBISHI ALTERNATOR ASSEMBLY

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C), diode will be destroyed. Therefore, use an electric solder iron of 100-200 watt capacity for approximately two seconds to safely unsolder connections. Unsolder "N" terminal (yellow color) lead wire, then separate diode end housing and stator.

4) Remove heat sink and brush holder from rear cover by removing setscrews. Disassemble brush holder. Unsolder lead wire "F" (black/white), lead wire "E" (black color) and brush holder wires (negative and positive).



INTERNAL CIRCUIT

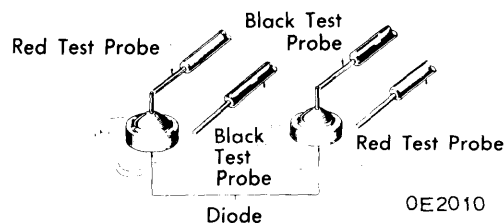
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TESTING

Rotor – To test for open circuit, connect an ohmmeter between rotor slip rings. If ohmmeter reading is high, windings are open. For correct resistance of field coils, see specifications. To test for grounded coils, connect an ohmmeter between either slip ring and rotor core or shaft. If ohmmeter reading is low, field windings are grounded. Check eccentricity of rotor, using a dial indicator. If eccentricity of rotor exceeds .0039 in. (.10 mm), it must either be repaired or replaced.

Stator – To test for open circuit, connect an ohmmeter successively between neutral lead wire (yellow color) and three stator leads. If ohmmeter reading is high, stator windings are open. To test for grounded coil, connect an ohmmeter from any stator lead to stator frame. If ohmmeter reading is low, windings are grounded. Repair or replace stator as necessary.

Diodes – With diodes disconnected from stator leads, check each diode lead with ohmmeter as follows: Connect one ohmmeter lead to diode lead and connect other ohmmeter lead to heat sink and note reading. Reverse ohmmeter leads and note reading. If both readings are very low or very high, diode is defective and must be replaced. A good diode will give one low and one high reading.



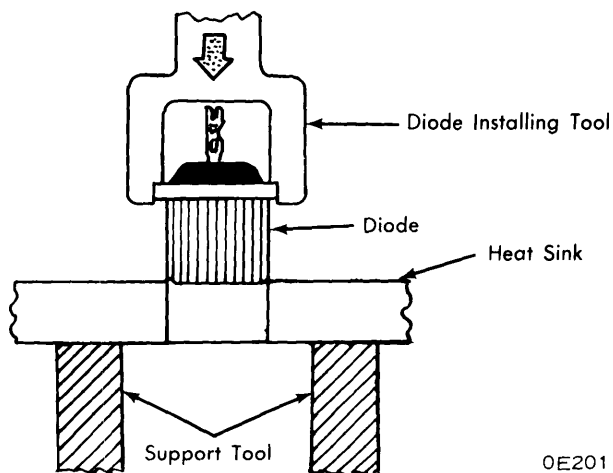
CHECKING DIODE

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Brushes & Brush Spring Tension – Check movement of brush in brush holder. If movement is not smooth, clean and inspect brush holder. Replace brushes if worn, see specifications. Check brush spring tension and replace springs if tension is not adequate, see specifications.

PARTS REPLACEMENT

Diodes – To remove diode, use a suitable tool to support heat sink and remove diode by use of a suitable press. Press out carefully to avoid damaging mounting bore of heat sink. **CAUTION** – Do not strike diode as shock may damage other diodes. To install diode, support heat sink as in removal, select correct type diode (positive diodes have RED markings, negative diodes have BLACK markings) and press diode into heat sink using a suitable diode installation tool which fits over outer edge of diode (see illustration). Press diode completely into heat sink. New diode should not be removable with a force smaller than 33lbs. (15 kg).



INSTALLING DIODE

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Drive End Bearing – Remove bearing retainer by unscrewing set screws and press out bearing using a suitable press.

Rear Bearing – Remove rear bearing from housing assembly using a suitable press or bearing puller.

REASSEMBLY

Reassemble alternator by reversing disassembly procedure. During assembly, always make sure that polarity of diodes is correct.