

ALTERNATOR & REGULATOR - HITACHI

1993 Nissan Sentra

1993 ELECTRICAL
Nissan Alternators & Regulators - Hitachi

Altima, Maxima, NX, Pathfinder, Pickup, Sentra, 240SX, 300ZX

NOTE: If vehicle is equipped with Mitsubishi alternator, see ALTERNATOR & REGULATOR - MITSUBISHI article in the ELECTRICAL section.

DESCRIPTION

Conventional 3-phase, self-rectifying Hitachi alternator contains 3 positive and 3 negative diodes that rectify current. See Fig. 3. Regulator is inside alternator.

ADJUSTMENTS

BELT TENSION

ALTERNATOR BELT ADJUSTMENT

Application	(1) Deflection In. (mm)
Altima .....	.24-.28 (6-7)
Maxima (2)	
VE30DE .....	.29-.33 (7.5-8.5)
VG30E .....	.28-.35 (7-9)
NX & Sentra	
1.6L .....	.28-.35 (7-9)
2.0L (With A/C) .....	.28-.31 (7-8)
2.0L (Without A/C) .....	.31-.35 (8-9)
Pathfinder & Pickup	
2.4L .....	.39-.47 (10-12)
3.0L .....	.24-.31 (6-8)
240SX .....	.28-.31 (7-8)
300ZX .....	.28-.31 (7-8)

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

(2) - Vehicles with VE30DE engine use a distributorless ignition system. Vehicles with VG30E engine use a distributor.

TROUBLE SHOOTING

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

ON-VEHICLE TESTING

NOTE: Before testing, ensure alternator wire harness connections are secure, drive belt tension is okay and battery is fully charged. After starting engine, wait at least 30 seconds before measuring voltage. Terminals "S", "L", "B", and "E" are marked on alternator's rear cover. Terminal "F" is inside alternator.

Alternator Test

1) Turn ignition on. If charge indicator light on instrument panel comes on, go to step 3). If light is off, disconnect alternator connector (terminals "L" and "S"). Ground terminal "L". If light remains off, replace indicator bulb, reconnect alternator connector and recheck.

2) If light comes on, reconnect alternator connector. Full-field alternator by grounding internal terminal "F" with a wire. See Fig. 1. If light goes out, repair or replace alternator. If light is on, replace regulator.

3) Start and run engine at idle. If light is dim, flickers or remains on (bright), repair or replace alternator. If light goes out, operate engine at 1500 RPM and turn on headlights. If light comes on, replace regulator.

4) If light stays off, measure voltage at terminal "B" while running engine at 1500 RPM. If more than 15.5 volts are present, replace regulator. If 13-15 volts are present, alternator and regulator are okay. Ensure alternator output amperage is as specified. See HITACHI ALTERNATOR OUTPUT AMPERAGE SPECIFICATIONS table.

HITACHI ALTERNATOR OUTPUT AMPERAGE SPECIFICATIONS

Application	Amps @ 2500 RPM	Amps @ 5000 RPM
Altima	66	77
Maxima (1)		
VE30DE	80	91
VG30E	63	84
NX & Sentra		
1.6L	50	67
2.0L	63	77
Pathfinder & Pickup		
2.4L	48	57
3.0L	50	67
240SX	63	77
300ZX	65	80

(1) - Vehicles with VE30DE engine use a distributorless ignition system. Vehicles with VG30E engine use a distributor.

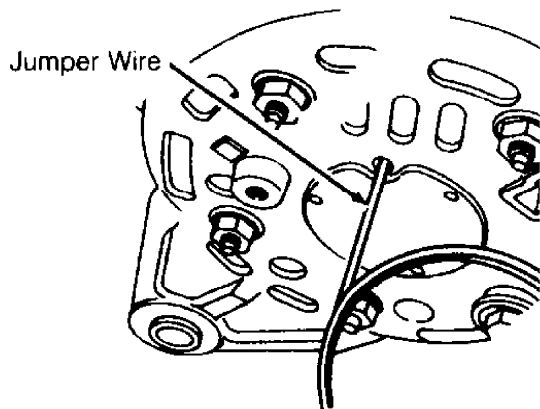


Fig. 1: Full-Fielding Hitachi Alternator
 Courtesy of Nissan Motor Co., U.S.A.

BENCH TESTING

Rotor

Connect one ohmmeter lead to each rotor slip ring. If resistance is about 2-3 ohms, rotor is okay. If about 2-3 ohms resistance is not present, rotor is defective. Connect an ohmmeter lead to any rotor slip ring, and connect remaining lead to rotor core. If continuity exists, replace rotor assembly.

MINIMUM SLIP RING DIAMETER

Application	In. (mm)
Maxima & 300ZX	1.0 (26)
All Others	1.2 (30.5)

NOTE: To test stator or diodes, separate them by unsoldering connecting wires. Use just enough heat to melt solder. Excess heat will damage diodes.

Stator

Using ohmmeter, check continuity between stator core leads. If continuity is not present between leads, replace stator. Connect an ohmmeter lead to stator core. Connect remaining ohmmeter lead, in turn, to each of the stator leads. If continuity is not present, stator is good. If continuity exists, stator is grounded. Replace stator.

Diodes

Using an ohmmeter, check continuity of all diodes in both directions. Ensure continuity exists in only one direction. See ALTERNATOR DIODES TEST table. See Fig. 2. If continuity exists in both directions, diode is shorted. If continuity is not present in either direction, diode is open. If any diode is defective, replace entire diode assembly.

ALTERNATOR DIODES TEST

Positive Meter Lead	Negative Meter Lead	Continuity
(+) Diode Plate	Diode Terminals	Yes
Diode Terminals	(+) Diode Plate	No
(-) Diode Plate	Diode Terminals	No
Diode Terminals	(-) Diode Plate	Yes

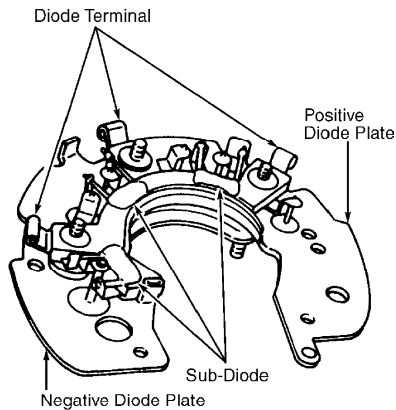


Fig. 2: Testing Diode Assembly
 Courtesy of Nissan Motor Co., U.S.A.

Brushes

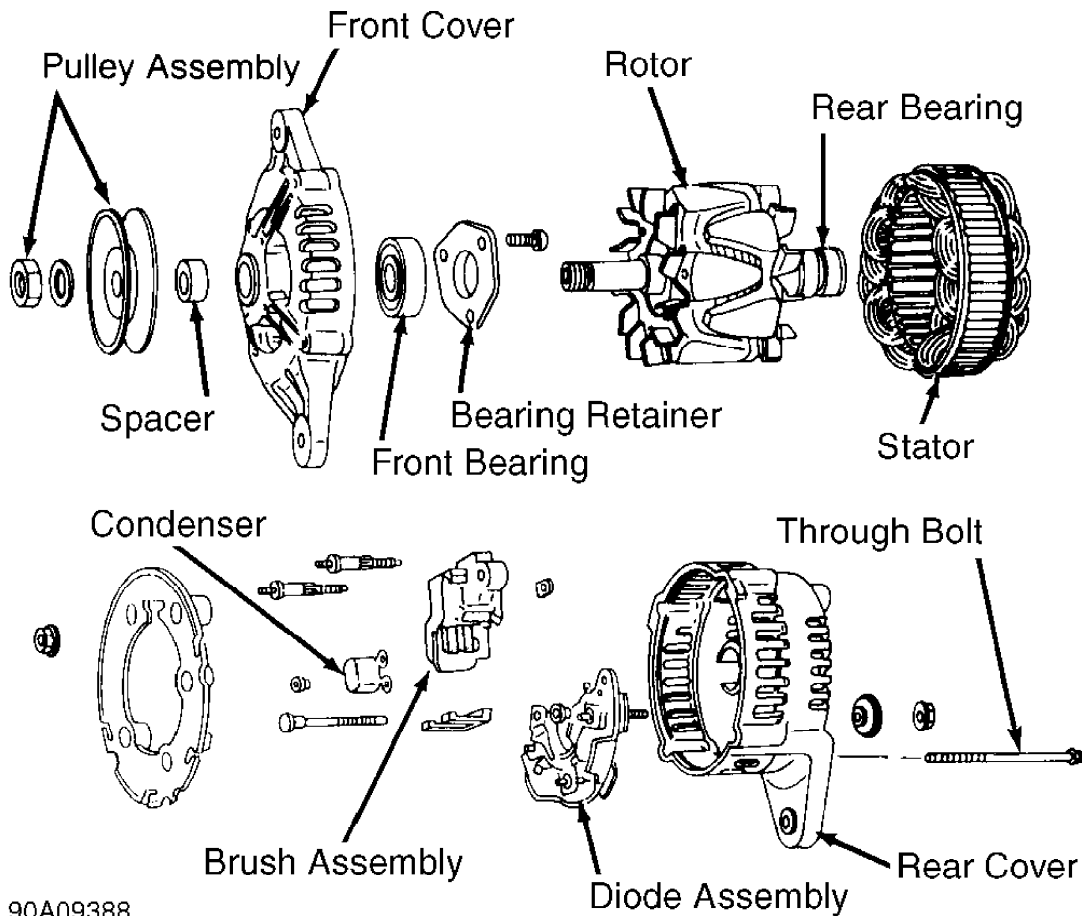
Inspect brushes for freedom of movement in holder. Clean brush holder if necessary. Check brushes for cracks and wear. Check brush springs for corrosion or damage. Ensure brushes are not worn beyond minimum length. See MINIMUM BRUSH LENGTH table.

MINIMUM BRUSH LENGTH

Application	In. (mm)
Maxima With Distributor & 300ZX .....	.28 (7)
All Others .....	.24 (6)

OVERHAUL

NOTE: A ring is used to lock outer bearing race in alternator's rear cover. It may be necessary to heat bearing housing to remove cover. Use a 200-watt soldering iron to heat housing. DO NOT use heat gun as it may damage diode. For exploded view of alternator, see Fig. 3.



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Fig. 3: Exploded View Of Typical Hitachi Alternator
 Courtesy of Nissan Motor Co., U.S.A.

WIRING DIAGRAMS

Proceed to appropriate WIRING DIAGRAM article listed below in WIRING DIAGRAMS section.

- * WIRING DIAGRAMS (for Altima).
- * WIRING DIAGRAMS (for Maxima).
- * WIRING DIAGRAMS (for NX).
- * WIRING DIAGRAMS (for Pathfinder).
- * WIRING DIAGRAMS (for Pickup).
- * WIRING DIAGRAMS (for Sentra).
- * WIRING DIAGRAMS (for 240SX).
- * WIRING DIAGRAMS (for 300ZX).