

NIPPONDENSO ALTERNATORS

Honda
Accord
Civic
Prelude
Toyota
Celica
Corolla

Corona
Cressida
Land Cruiser
Pickup
Starlet
Supra
Tercel

DESCRIPTION

Nippondenso alternators are conventional 3-phase alternators utilizing 6 diodes (3 positive and 3 negative) to rectify current. Charge control may be either integrated circuit (IC) or externally mounted contact point type.

APPLICATION

Model	Amps	①Part No.
Honda		
Accord & Prelude	55	31100-PB2-004
Civic		
2-Door	55	31100-PA6-004
4-Door		
Sedan	55	31100-PA6-901
Wagon	50	31100-PA6-004
Toyota		
Celica		
.....	55	27020-28020
.....	60	27020-38102
Corolla		
.....	50	27020-26102
.....	55	27020-28020
Corona		
.....	55	27020-28020
.....	60	27020-38102
Cressida		
.....		27060-43030
Land Cruiser		
.....	40	27020-61100
.....	55	27020-61071
Pickup		
Diesel		
.....	40	27020-54080
Gas		
Standard	40	27020-35040
I. C. Type	40	27020-35050
Starlet		
Standard		27020-13090
I. C. Type		27060-13010
Supra		
.....		27060-43030
Tercel		
.....	50	27020-15040

① — Vehicle manufacturer part number.

TESTING

ON CAR TEST

Preliminary Inspection — Check alternator mounting and drive belt tension. Inspect turn signal and gauge fuses. Check alternator and regulator wire connections for tightness. Battery must be fully charged prior to beginning test.

No Load Test — **1)** Connect a test meter (09081-00010 alternator tester for models with special connector from regulator) as shown in illustrations. Start engine and increase speed to about 2000 RPM. Read "B" terminal voltage on models with external voltage regulator.

2) On models with external voltage regulators, voltage should be 13.8-14.8 volts. On models with IC type voltage

regulators, voltage should be 14.0-14.7 volts. On all models, current draw should be less than 10 amps.

3) If voltage is not steady, dirty regulator points or defective connection at "F" terminal may be responsible. If voltage reading is too high, 1 of the following problems may be indicated: Regulator low speed gap too wide. High speed point gap too wide. High speed point gap resistance too high.

4) Problem could also be due to open in regulator coil or voltage relay coil. Open circuit in regulator "N" terminal of "B" terminal. Low speed contact tension too heavy. Loose regulator ground connection. Faulty IC regulator.

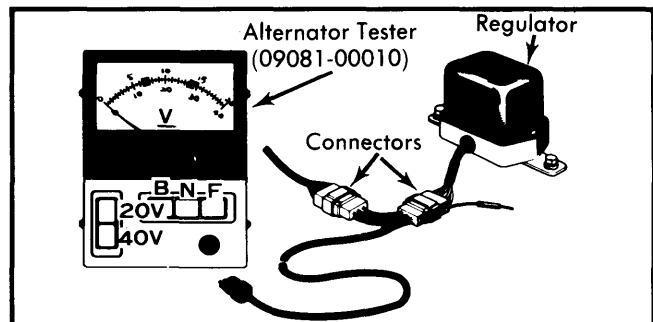


Fig. 1 Connections for Tester 09081-00010

"F" Terminal Voltage (External Regulator) — 1) Disconnect connector from alternator regulator. Turn ignition switch "ON". Check voltage at the red wire terminal. If there is no voltage, check engine fuse and/or ignition switch. Connect connector to voltage regulator. Check voltage at "N" terminal (yellow wire).

2) If voltage is 1-2 volts, check alternator. If battery voltage, turn ignition switch "OFF" and disconnect connector from alternator. Check for continuity between alternator terminals "N" and "F". If there is continuity, replace voltage regulator. If there is no continuity, check alternator.

Regulator Circuit Resistance — Disconnect regulator connector plug and check resistance between regulator "IG" and "F" terminals with an ohmmeter. If any resistance is shown, the low speed contact in the regulator is defective.

Load Test — With regulator tester connected as illustrated, start engine and turn on all lights and accessories. Run engine at 1100 RPM and check amperage and voltage. If reading is low due to fully charged battery, it may be necessary to crank engine (with coil disconnected) for about 15 seconds to discharge battery. If amperage is low when rechecking, rectifiers are open or shorted, or stator coil is open or shorted.

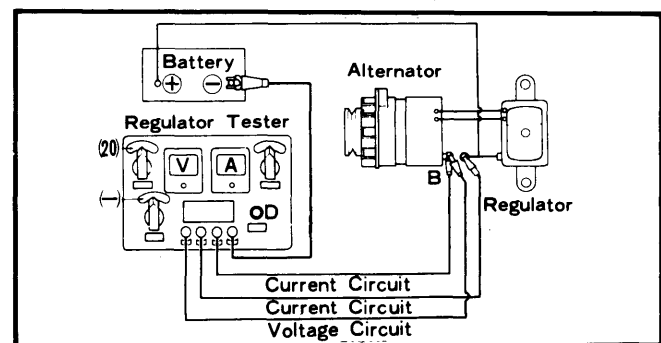


Fig. 2 Connections for Regulator Tester

NIPPONDENSO ALTERNATORS (Cont.)

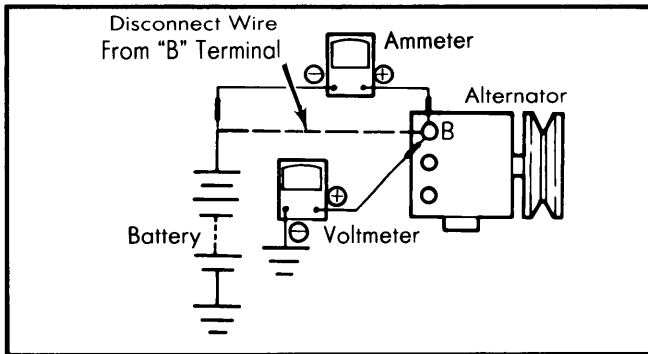


Fig. 3 Test Connections for Alternator With IC Regulator

Performance Test Using Conventional Tester – 1) Attach tester as illustrated and increase engine speed until reverse current (approximately 2.5 amp.) ceases to flow to rotor field coil.

2) Turn off No. 1 switch and increase speed until voltmeter indicates 14V. If speed is under 1000 RPM, alternator performance is satisfactory.

3) Increase load resistance to near maximum so that nearly no current will flow. Close switches 1 and 2 while gradually increasing speed. Rated output should be reached by approximately 5000 RPM with satisfactory alternator.

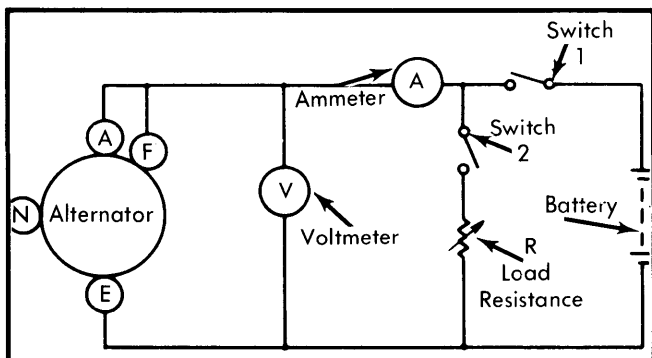


Fig. 4 Conventional Tester Connections

OVERHAUL

DISASSEMBLY

NOTE – Alternators differ slightly with model application. The following procedures are general only. The procedures can be used if attention is paid to the order of parts during disassembly.

1) Remove retaining screws and pry drive end frame from stator with screwdriver. If necessary, tap lightly on drive end frame with mallet. Secure rotor core in padded vise and remove pulley attaching nut. Withdraw pulley, fan and spacer. Press rotor from drive end frame. Remove bearing retainer from end frame, then remove bearing, felt cover and felt ring.

2) Remove rectifier holder securing nuts and brush holder attaching screws. Separate stator with rectifier holders and brush holders from rectifier end frame. Remove brush lead terminal and stator coil "N" terminal from brush holder using a small screwdriver. When removing brush holder assembly, DO NOT cut "N" terminal lead or melt the solder.

TESTING

Rotor — Check the rotor for open field windings by using an ohmmeter across the slip rings. Coil resistance should be 3.9-4.2 ohms for external regulator models, and 2.8-3.0 ohms for IC regulator models. Check smoothness of slip rings. Check bearing and replace if necessary.

Stator — Use ohmmeter to check stator coil for ground. To check for open circuit, stator leads must be disconnected from diode leads. To disconnect leads from diodes, unsolder as quickly as possible with a low watt iron. Check 4 leads of stator coil for continuity between each lead. If no continuity or if resistance is noted, stator coil must be replaced.

Diode Test — With diode assembly on bench, contact diode plate with one probe and each of 3 diode leads with other probe. Note ohmmeter reading, then reverse probes and repeat test. Check both positive and negative diodes in this manner. All diodes should show a low reading in one direction and NO reading in the opposite direction. If any rectifier (diode) is defective, replace holder assembly.

NOTE — Also see *General Servicing* in this section.

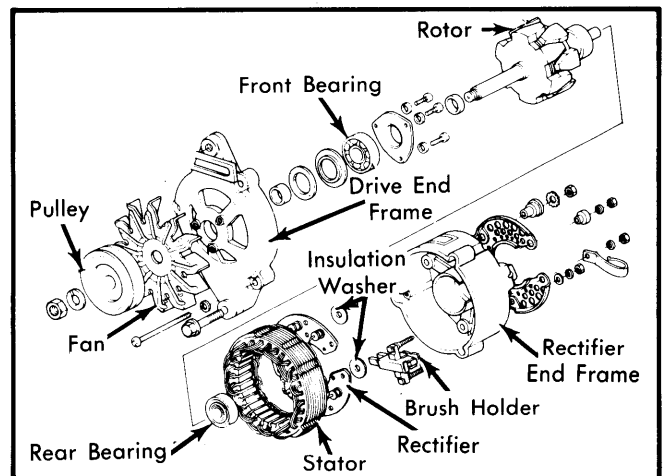


Fig. 5 Disassembled View of Typical Nippondenso Alternator With External Voltage Regulator

PARTS REPLACEMENT

Brushes — Check for cracks and minimum length of .22" (5.5 mm). If damaged or worn beyond limit, replace brushes. Brushes should slide smoothly in holders. Install new springs when replacing brushes. Solder brush wire. New brush protrusion should be .650" (16.5 mm) for Celica, Supra and Tercel, .630" (26 mm) for Cressida, .610" (15.5 mm) for Honda, and .492 (12.5 mm) for all other models.

REASSEMBLY

1) Press brushes into holder against spring tension. Insert a retaining wire through access hole in rectifier and frame and into brush holder to prevent brushes from falling. Remove wire after assembly to end frame is completed.

2) Pack multipurpose grease into rear bearing and press bearing onto rotor shaft. Pack drive end bearing with grease and install in drive end frame. Install felt ring, cover and bearing retainer.

3) Ensure that drive end frame with rotor and rectifier end frame with stator are assembled in original alignment. Tighten body screws and remove brush retaining wire.