

NIPPONDENSO ALTERNATORS

Chrysler Corp. Imports
Arrow (1600 cc)
Honda
 Accord
 Civic
 Prelude
Toyota
 Celica

Corolla
Corona
Land Cruiser
 Pickup
 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	ⓐPart No.
Arrow	45	100211 0140
Honda		
Accord	50	31100-689-014
Civic	45	31100-PA0-662
Prelude	50	31100-689-014
Toyota		
Celica	55	27020 28012
Corolla	50	27020 26101
Corona	55	27020 28012
Land Cruiser		
Standard	40	27020 61013
Optional	55	27020 61071
Pickup		
Standard	40	27020 38104
Optional	55	27020 38111
Supra	60	27020 45140
Tercel		
Standard	50	27020 15040
Optional	55	27020 15050

ⓐ — 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 suitable test meter (09081-00010 alternator tester for models with special connector from regulator, or a common regulator tester) as shown in illustrations. Start engine and increase speed gradually to 2000-2300 RPM. Read "B" terminal voltage. Voltage should be 13.5-14.8 with a current draw of not more than 10 amps. If current is over specifications, battery is discharged or internally shorted.

2) If voltage is not steady, dirty regulator points or defective connection at "F" terminal may be the cause.

3) If voltage reading is too high, one 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. Open circuit regulator coil or voltage relay

coil. Open circuit regulator "N" terminal or "B" terminal. Low speed point contact tension too heavy. Loose regulator ground connection.

"F" Terminal Voltage Test — 1) With regulator tester, stop engine, disconnect alternator wiring connector, turn ignition switch to "ON" and measure voltage between "F" and "E" terminals of connector. Voltage should be 12 volts. If voltage is zero or very low, note the following possible causes; blown fuse, regulator "IG" terminal open, or regulator high speed points are burned.

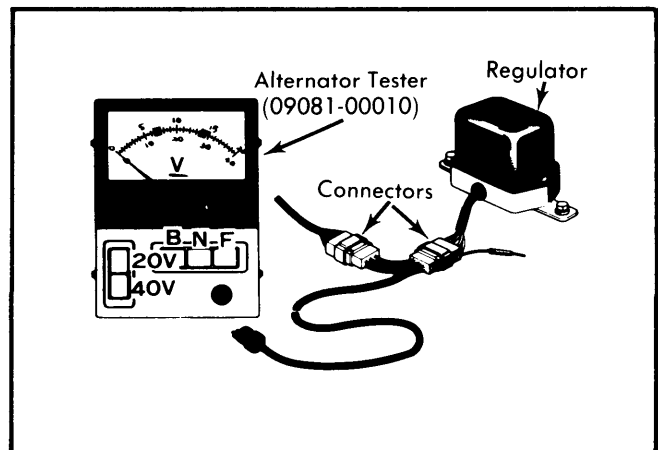


Fig. 1 Connections for Tester 0981-00010

2) With alternator tester (09081-00010) connected and engine idling, press switch "F" on tester. Gradually increase engine speed to 2300 RPM. Needle on tester should deflect in small steps from 12-7 volts, 6-4 volts and 3-1 volts. If voltage does not drop as specified, regulator is defective or out of adjustment.

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.

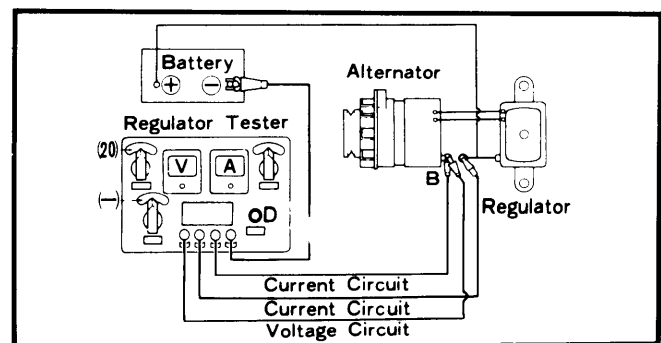


Fig. 2 Connections for Regulator Tester

NIPPONDENSO ALTERNATORS (Cont.)

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.

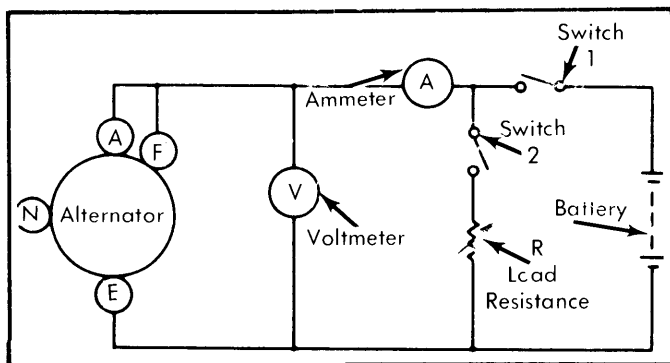


Fig. 3 Conventional Tester Connections

OVERHAUL

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 rotor for open field windings using an ohmmeter across the slip rings. Coil resistance should be approximately 4.1-4.3 ohms. 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.

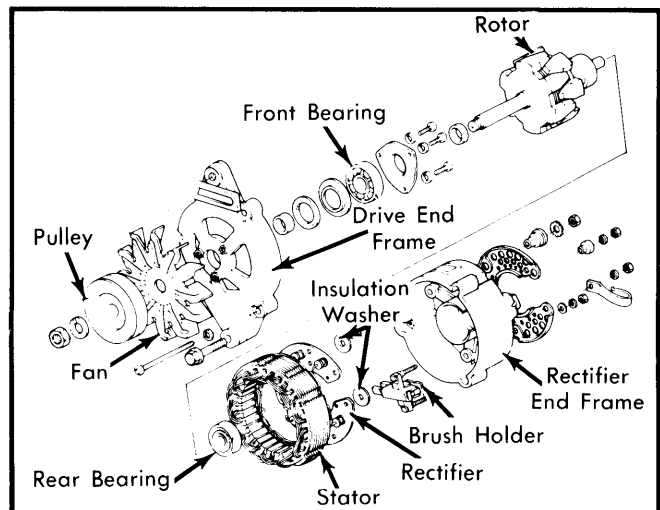


Fig. 4 Disassembled View of Nippondenso Alternator

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 spring when replacing brush. Solder brush wire keeping brush protruded length to .51" (13 mm). For heavy duty alternators, brush should protrude .73" (18.5 mm) from holder.

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.