

## NIPPONDENSO ALTERNATORS

Arrow/Colt  
(1600 cc Engine)  
Honda  
Opel  
Toyota

### DESCRIPTION

Nippondenso alternators are conventional 3 phase, self rectifying type alternators. Six diodes (3 positive and 3 negative) are used to rectify current.

### APPLICATION

Model	Amps	Part No.
Arrow/Colt .....	35 .....	021000-6420
Honda		
Accord .....	50 .....	62720-671-014①
Civic .....	40 .....	65042-634-671①
Civic CVCC		
W/O Air Cond. ....	35 .....	59473-657-024①
W/Air Cond. ....	50 .....	62720-671-014①
Toyota②		
Corolla		
3KC .....	50 .....	24071
3KC .....	55 .....	24090
2TC .....	40 .....	26091
Corona		
20R .....	55 .....	38061
Celica		
20R .....	45 .....	38051
20R .....	55 .....	③38061
20R .....	55 .....	38090
Cressida		
4M .....	55 .....	45100
4M .....	60 .....	③45110
Land Cruiser		
2F .....	55 .....	24020
Pickup		
20R .....	40 .....	38012
20R .....	40 .....	38013

- ① - 31100 identifies Honda alternator.
- ② - All Toyota numbers are preceded by 27020.
- ③ - Without regulator. With IC regulator, Celica 20R uses 27060 & 38021.

### SPECIFICATIONS

#### Coil Resistance (Ohms)

Application	Rotor
All Models .....	4.1-4.3

#### Minimum Brush Length

Application	In.(mm)
All Models .....	.22 (5.5)

### TESTING

#### ON CAR TEST

**Preliminary Inspection** - Check alternator mounting and belt tension. Inspect turn signal fuse and gauge fuse. Check alternator and regulator wire connections for tightness.

**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.

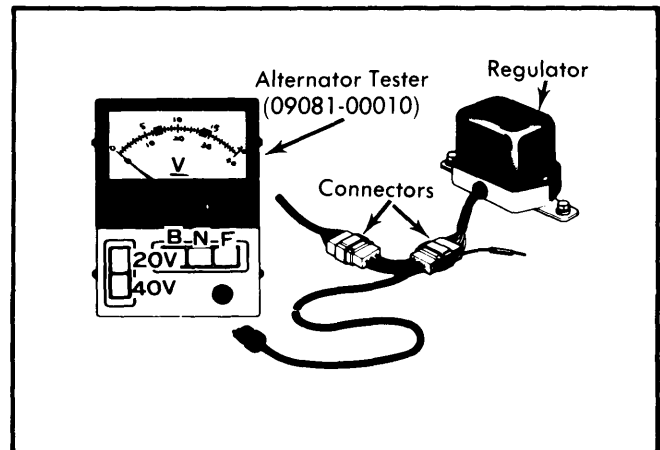


Fig. 1 Connections for Tester 0981-00010

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"

## NIPPONDENSO ALTERNATORS (Cont.)

terminals with an ohmmeter. If there is any resistance, the low speed contact in regulator is defective.

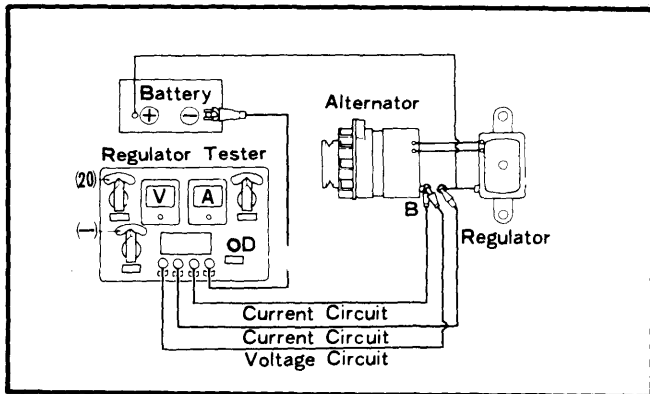


Fig. 2 Connections for Regulator Tester

**Load Test** — With regulator tester connected as shown in illustration, start engine and turn on all lights and accessories. Run engine at 1100 RPM. Read amperage and voltage. It should be as specified. If battery is fully charged and reading is low, discharge battery by cranking engine (without spark) for about 15 seconds. Now if amperage is low, the rectifiers are open, shorted, or stator coil is open or shorted.

**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.

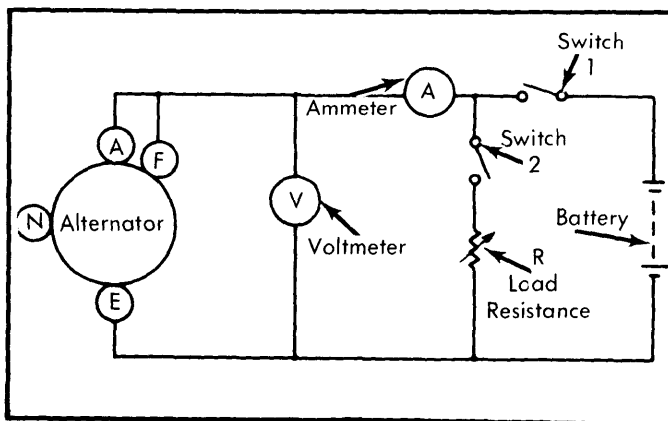


Fig. 3 Conventional Tester Connections

### OVERHAUL

#### DISASSEMBLY

1) Remove three retaining screws and insert screwdrivers into notches in drive end frame, pry with screwdrivers to separate

drive end frame from stator. If necessary, tap lightly on drive end frame with a mallet.

2) Secure rotor core in padded vise, remove pulley attaching nut, and withdraw pulley, fan, and spacer. Remove rotor from drive end frame, utilizing a press. Remove bearing retainer from drive end frame, then remove bearing, felt cover and felt ring.

3) Remove four rectifier holder securing nuts and two brush holder securing 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, utilizing a small screwdriver. **CAUTION** — When removing brush holder assembly, do not remove it by cutting "N" terminal lead or melting the solder.

#### TESTING

**Rotor** — Check rotor for open field windings by connecting an ohmmeter across the slip rings. Coil resistance should be approximately as specified. Next check bearing and replace if necessary. Check slip rings for rough condition.

**Stator** — Use ohmmeter to check stator coil for ground. To check stator 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 ohmmeter shows no continuity, stator coil is open and must be replaced. Resistance should be zero.

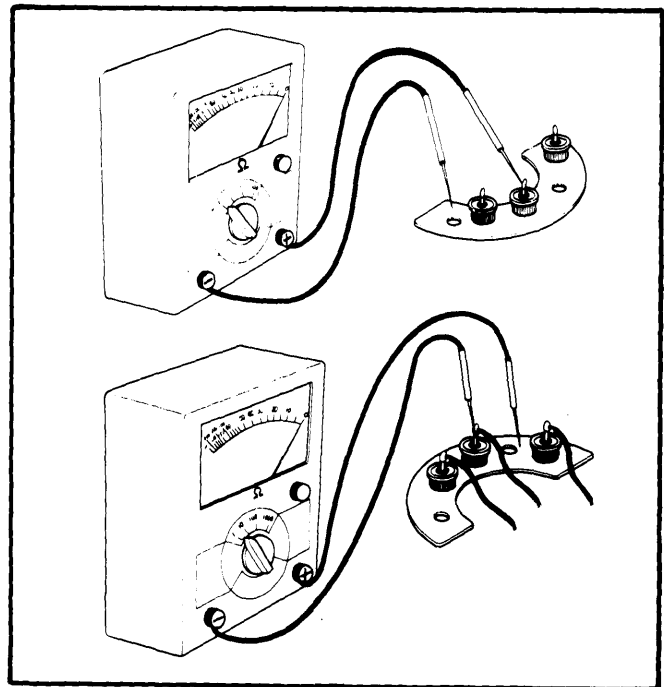


Fig. 4 Testing the Diodes

**Diode Test** — With diode assembly on bench, make test connections as illustrated, using an ohmmeter. Contact diode plate with one probe and contact each of the three diode leads with the 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

# Alternators & Regulators

## NIPPONDENSO ALTERNATORS (Cont.)

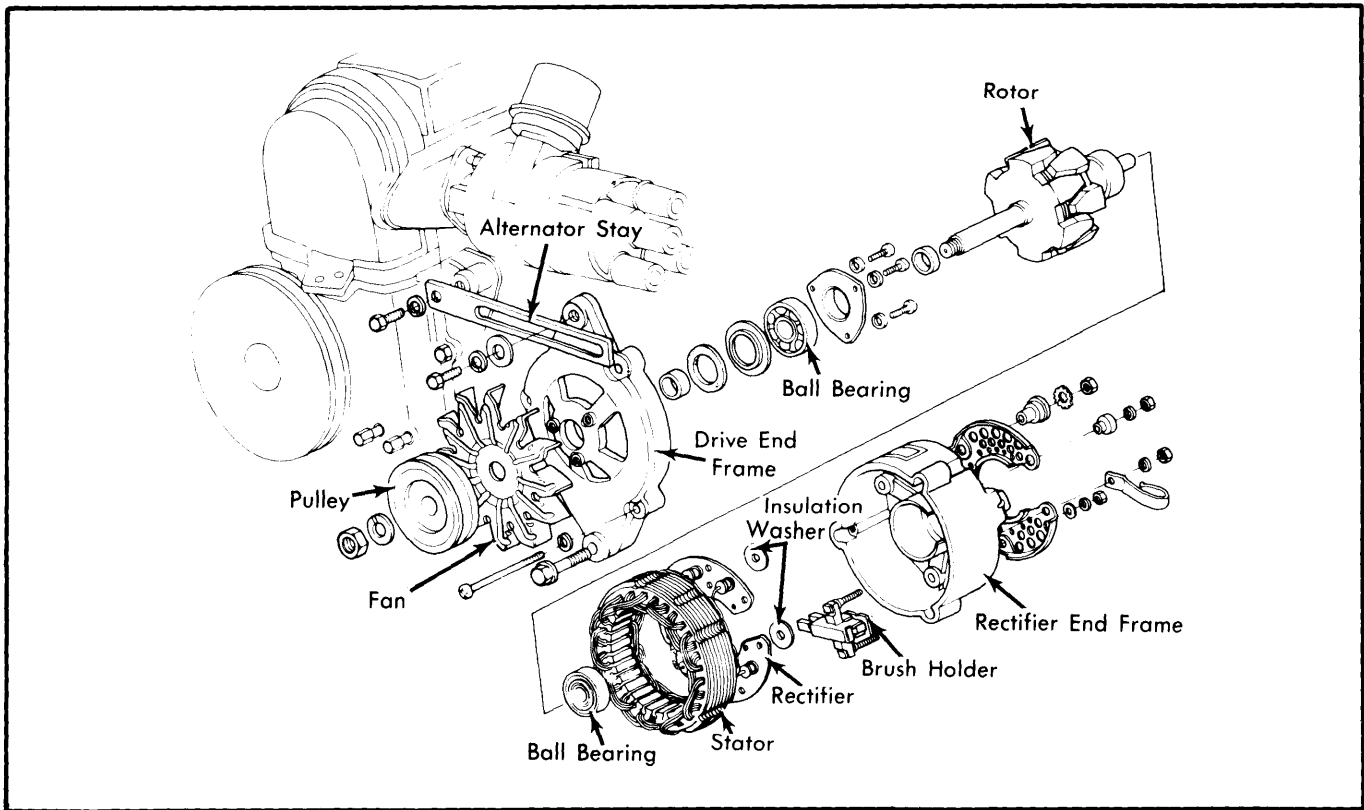


Fig. 5 Disassembled View of Nippondenso Alternator

direction and no reading in opposite direction. If any one rectifier is defective, always replace positive or negative holder assembly.

### PARTS REPLACEMENT

**Brushes** — Check for cracks and wear. If brushes are worn beyond specifications, replace. Brushes should slide smoothly. Install new brush spring when replacing brush. Solder brush lead wire keeping protruded length to .51" (13 mm).

**NOTE** — Brush length for Heavy Duty alternators is .73" (18.5 mm).

### REASSEMBLY

Reassemble alternator by reversing disassembly procedure, noting the following points:

- 1) Press brushes, against spring tension, into brush holder. Insert a wire through access hole in rectifier and frame, and into hole in brush holder. This will 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.
- 3) Install felt ring and felt cover so that convex surface of cover will face toward pulley side onto drive end frame. Next pack multipurpose grease into bearing and install bearing.