

NIPPONDENSO

Honda Civic
Toyota

DESCRIPTION

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

► CHANGES, CAUTIONS, CORRECTIONS

► **BATTERY INSTALLATION & OTHER ELECTRICAL SYSTEM REPAIR CAUTIONS** — Reversed polarity or excessive voltage will result in extensive damage to alternator system. Note the following to prevent damage:

Battery Installation — Negative battery terminal must be connected to ground (negative ground systems) and positive terminal must be connected to starter. **DO NOT** reverse battery leads.

Battery Charging — If a Quick Charger is used, both battery cables must be disconnected from battery. **DO NOT** use a Quick Charger to provide starting voltage.

Circuit Interruption — Battery must **NEVER** be disconnected while alternator is running.

Alternator Removal — Always disconnect battery ground before replacement of alternator.

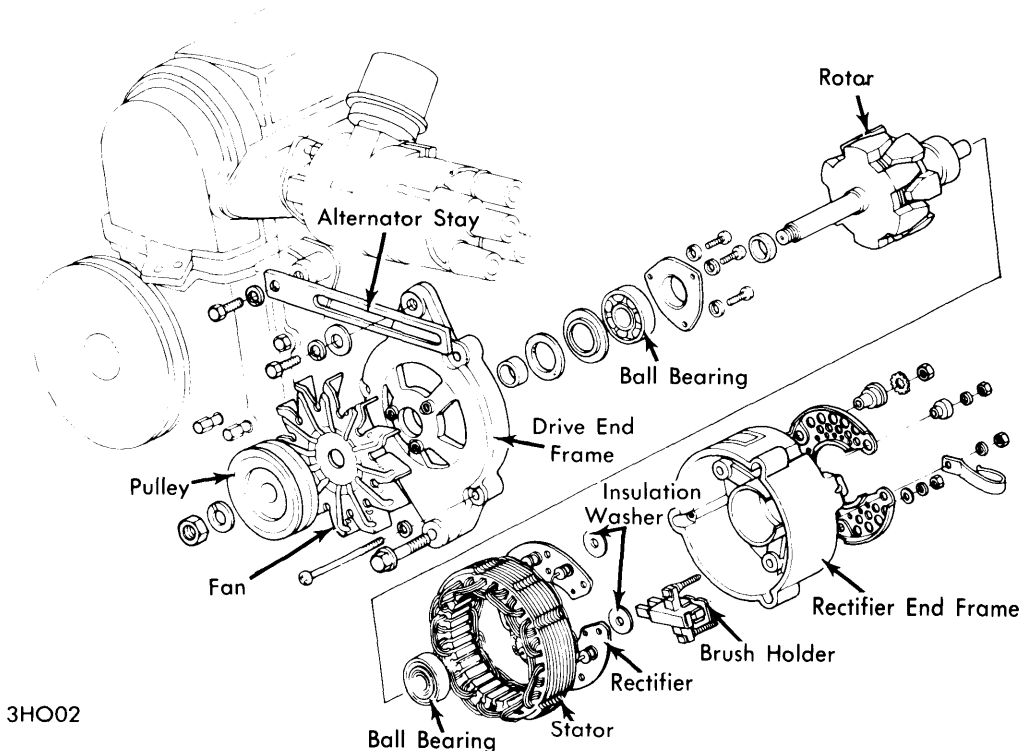
High Voltage — **DO NOT** use a high voltage source to test diodes.

Booster Battery (For Engine Start) — Booster battery must be connected with negative lead to negative terminal of battery and positive lead to positive battery terminal. **DO NOT** reverse battery leads.

APPLICATION

Model	Part No.
Honda.....	① 38760 634 811
Toyota	
3K-C Standard	
To 4/74	27020 24020
From 4/74	27020 12011
3K-C Optional	
To 4/74	27020 24031
From 4/74	27020 36021
2T-C	
To 4/74	27020 25010
From 4/74	27020 36021
18R-C	
Celica & Corona	27020 36041
Hilux Pickup	27020 36021
4M	
Federal	27020 45030
California	27020 45021
F	
Standard	
To 1/74	27020 60070
From 1/74	27020 60071
Optional	27020 60040

① — Honda Part Number.



NIPPONDENSO ALTERNATOR (TYPICAL)

Alternators

NIPPONDENSO (Cont.)

SPECIFICATIONS

Rated Output @ 3500 RPM

Application	Amps.	Volts
27020 12011	25	14
27020 24020	25	14
27020 24031	35	14
27020 25010	40	14
27020 36021	40	14
27020 36041	45	14
27020 45021	45	14
27020 45030	55	14
27020 60040	55	14
27020 60070	40	14
27020 60071	40	14
Honda	40	① 14

① - Output at 2000 RPM.

Coil Resistance (Ohms)

Application	Rotor
27020 12011	4.2
27020 24020	4.2
27020 24031	4.2
27020 25010	4.2
27020 36021	4.2
27020 36041	4.2
27020 45021	3.2-4.2
27020 45030	3.2-4.2
27020 60040	4.2
27020 60070	4.2
27020 60071	4.2
Honda .....	.....

Minimum Brush Length

Application	In. (mm)
27020 12011 .....	.35 (9)
27020 24020 .....	.35 (9)
27020 24031 .....	.35 (9)
27020 25010 .....	.34 (8.5)
27020 36021 .....	.35 (9)
27020 36041 .....	.22 (5.5)
27020 45021 .....	.34 (8.5)
27020 45030 .....	.34 (8.5)
27020 60040 .....	.22 (5.5)
27020 60070 .....	.22 (5.5)
27020 60071 .....	.22 (5.5)
Honda .....	.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.

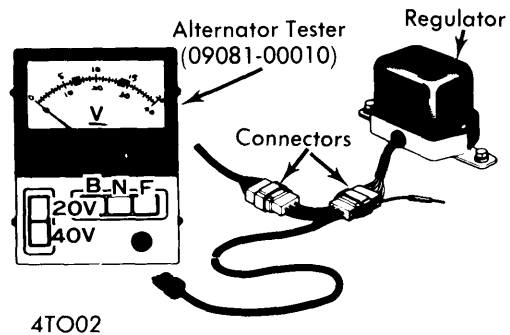
No Load Test - 1) Connect a suitable test meter (09081-00010 alternator tester for models with special connector from regulator, or a common regulator tester) as shown in illustrations. Start engine and increase speed gradually to 2000-2300 RPM. Read "B" terminal voltage. Voltage should be 13.5-14.8 with a current draw of not more than 10 amps. If current is over specifications, battery is discharged or internally shorted.

2) If voltage reading is not steady, it indicates regulator points are dirty, or defective connection exists at "F" terminal.

3) If voltage reading is too high, it indicates the following problems: Regulator low speed gap is too wide. High speed point gap is too wide. High speed point resistance is too high. Open circuit regulator coil or voltage relay coil. Open circuited regulator coil or voltage relay coil. Open circuited regulator "N" terminal or "B" terminal. Low speed point contact tension too heavy. Loose regulator ground connection.

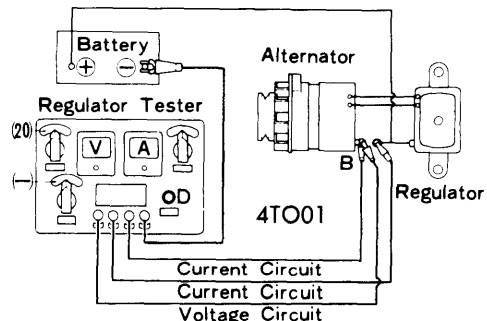
"F" Terminal Voltage Test - 1) With regulator tester, stop engine, disconnect alternator wiring connector, turn ignition switch to "ON" and measure voltage between "F" and "E" terminals of connector. Voltage should be 12 volts. If voltage is zero or very low, note the following possible causes; blown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

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.



ALTERNATOR TESTER (09081-00010) HOOKUP

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



REGULATOR TESTER HOOKUP

NIPPONDENSO (Cont.)

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.

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 and with a low-watt iron. Check four leads of stator coil for conduction between each lead. If ohmmeter shows no conduction, stator coil is open and must be replaced. Resistance should be zero.

OVERHAUL

DISASSEMBLY

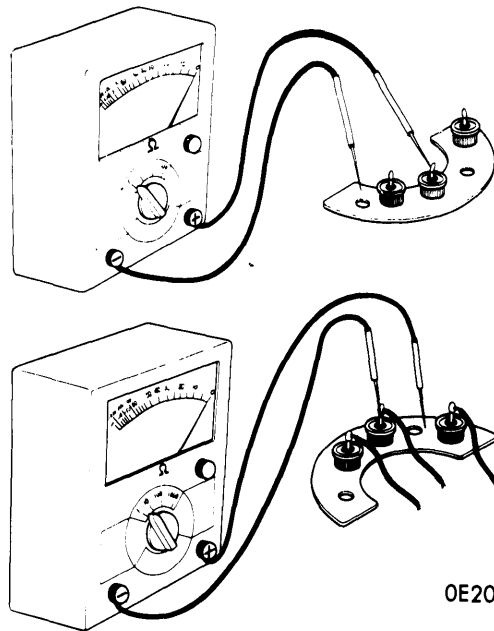
1) Remove three retaining screws and insert screwdrivers into notches in drive end frame, pry with screwdrivers to separate drive end frame from stator. If necessary, tap lightly on drive end frame with a mallet.

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.

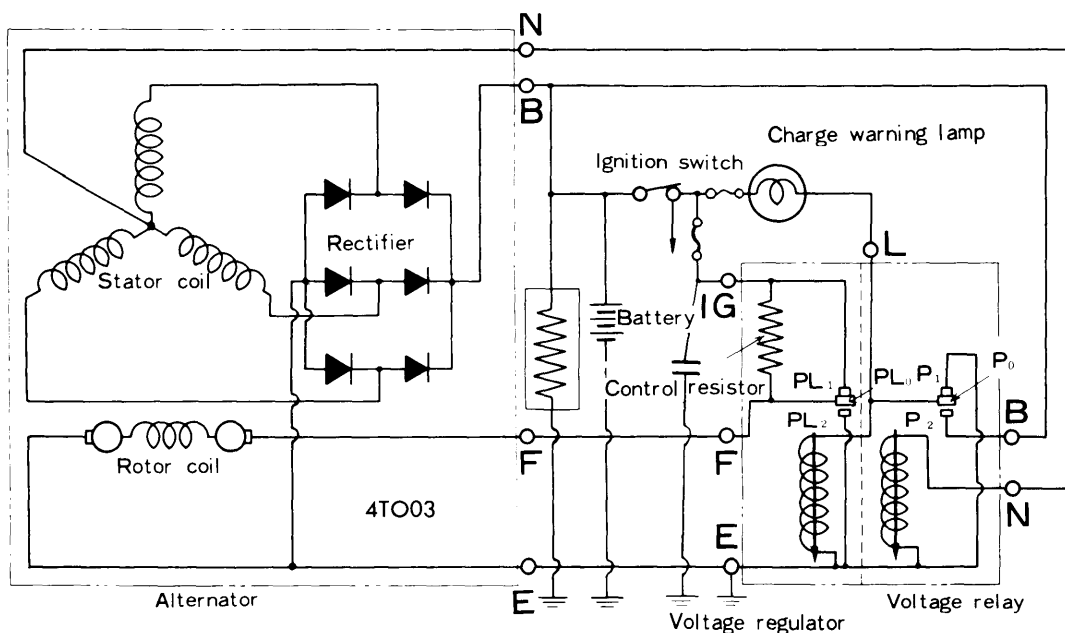
TESTING

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.



0E2061

TESTING DIODES



ALTERNATOR, REGULATOR CIRCUIT (3K-C)

Alternators

NIPPONDENSO (Cont.)

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 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 opposite direction. If any one rectifier is defective, always replace positive or negative holder assembly.

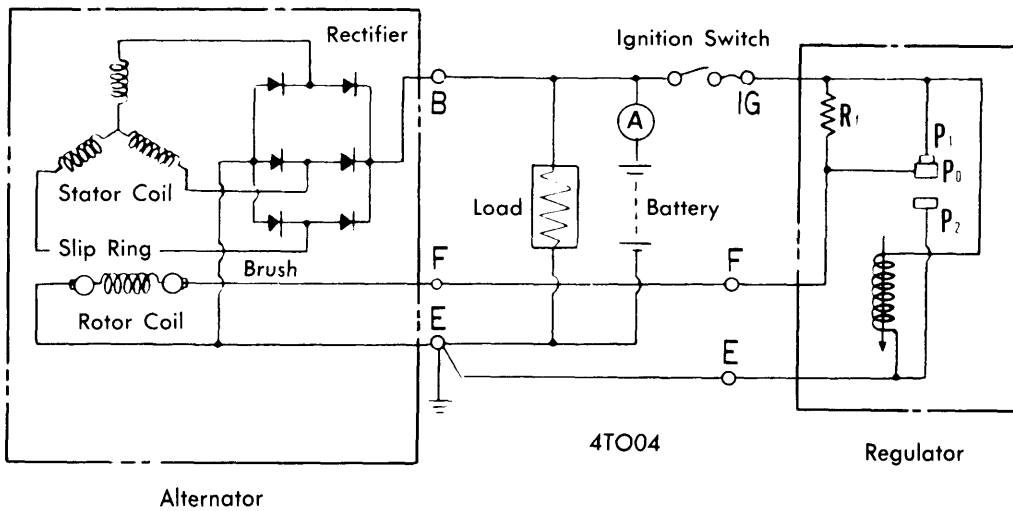
PARTS REPLACEMENT

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).

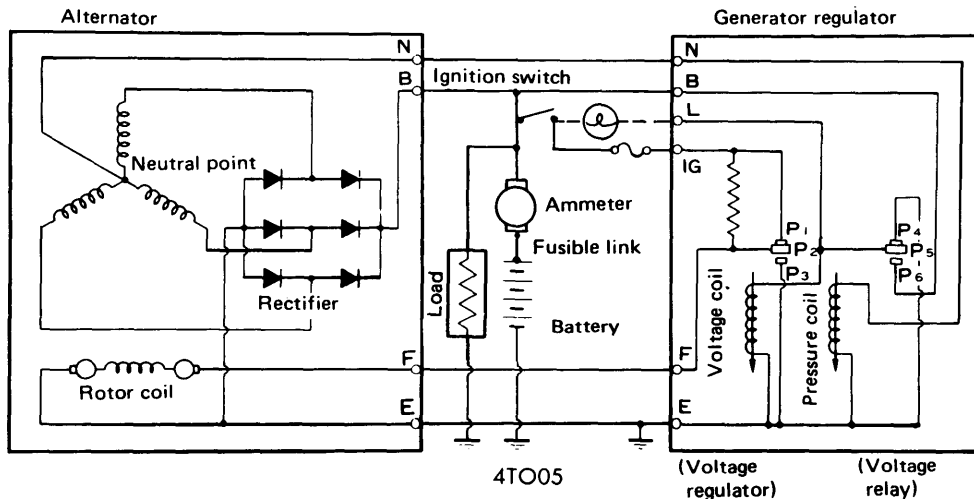
REASSEMBLY

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.

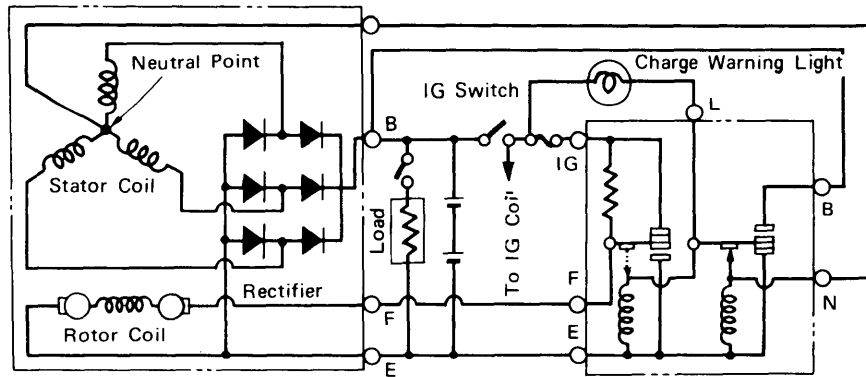


ALTERNATOR, REGULATOR CIRCUIT (F)



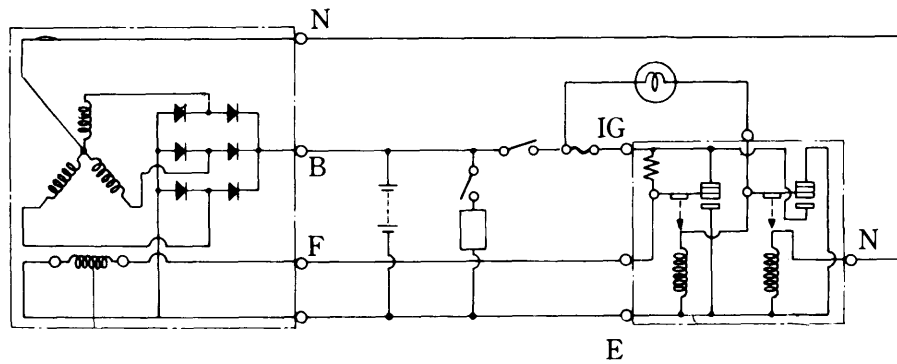
ALTERNATOR, REGULATOR CIRCUIT (18R-C & 2T-C)

NIPPONDENSO (Cont.)



4TO06

ALTERNATOR, REGULATOR CIRCUIT (4M)



4HO01

ALTERNATOR, REGULATOR CIRCUIT (HONDA)