

# Alternators

## 1965-72 DELCO-REMY WITH SEPARATE REGULATOR

► **BATTERY INSTALLATION, BATTERY CHARGING, OR USING A BOOSTER BATTERY TO START ENGINE CAUTION:** Reversed polarity or excessive voltage will result in extensive damage to alternator system.

**NOTE THE FOLLOWING TO PREVENT DAMAGE:**

**Battery Installation** – Alternator polarity determines which battery terminal is grounded. For negative polarity alternators, **negative** battery terminal must be grounded. **DO NOT REVERSE BATTERY LEADS** or rectifiers will be damaged.

**Charging Battery** – If a “Fast Charger” is used, both car battery cables must be disconnected from battery. **DO NOT Use a “Fast Charger” to provide starting voltage.**

**Booster Battery (Used To Start Engine)** – Booster battery must be connected with negative lead to negative terminal of battery and positive lead to positive terminal of battery. **DO NOT REVERSE BATTERY LEADS.**

### DESCRIPTION

Conventional three-phase, self-rectifying type alternators. All have a single field winding wound on rotor shaft and encased between two multi-fingered overlapping iron pole pieces assembled on rotor shaft. Field winding is connected to two slip rings assembled on, but insulated from, rotor shaft.

### TESTING (ON CAR)

Observe following cautions when making tests:

- 1) Do not short across or ground any of the terminals on alternator or regulator.
- 2) Do not polarize alternator as it is not required and doing so will damage entire system.

3) Do not operate alternator on open circuit. Make sure all connections are secure and tight.

4) Before making any test connections, battery ground cable should be disconnected. Connect ground cable after all test connections are completed.

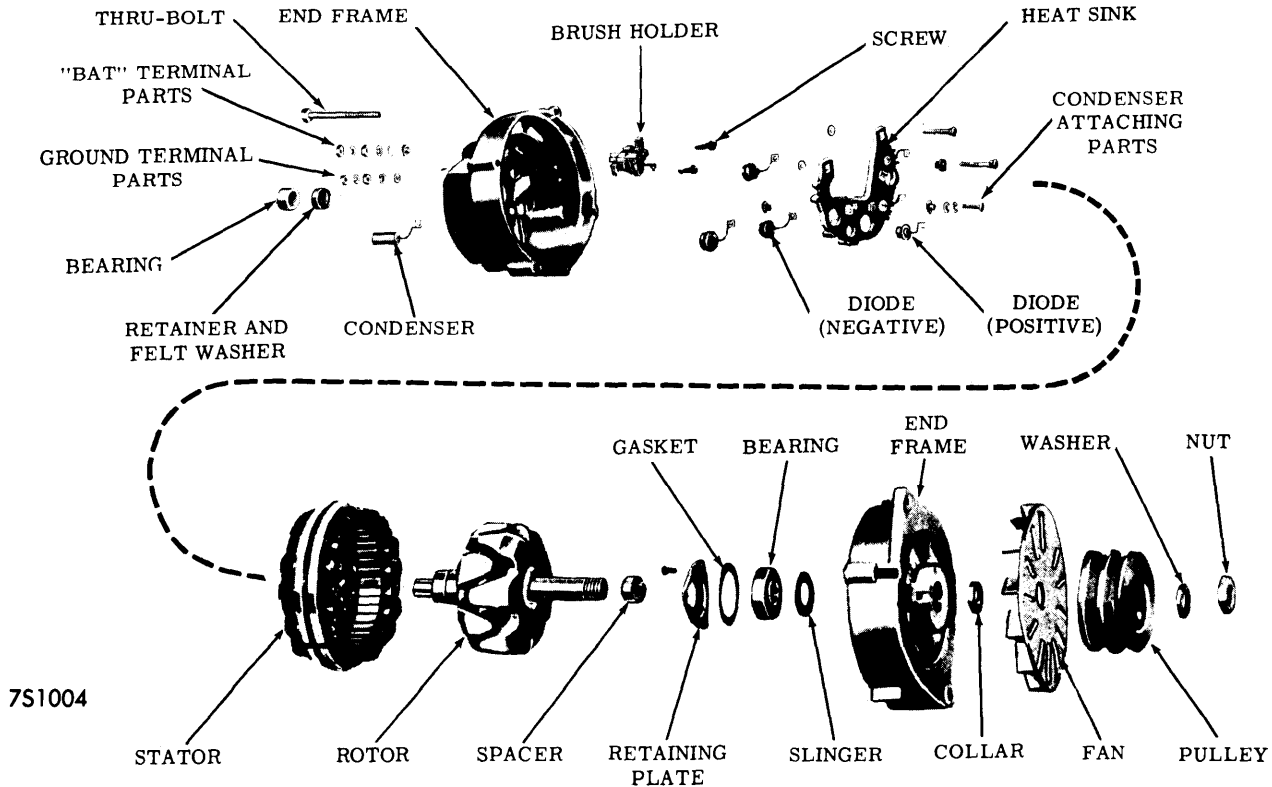
### ALTERNATOR OUTPUT

**CAUTION** – Do not allow voltage to exceed 16 volts when operating alternator without regulator in circuit. Use a carbon pile rheostat connected across battery, or turn on headlights and accessories to load battery and limit voltage to 14 volts. Connect an ammeter in charging line at alternator “BAT” terminal (disconnect lead and connect ammeter between lead and terminal), connect voltmeter between this “BAT” terminal and ground. Disconnect alternator field lead at “F” terminal and connect field directly to battery by installing jumper wire between alternator “F” and “BAT” terminals. Start engine and slowly increase speed using care to prevent excessively high voltage. Check alternator output at 1500-2500 RPM. Output should be within 10 amperes of rated output. See Specifications.

### DIODE ASSEMBLIES

Disconnect battery and field leads from alternator. Use a battery powered test light (J-21008) or ohmmeter to check each diode assembly as follows:

**Positive Diodes** – Connect one test probe to alternator “R” terminal and other test probe to alternator “BAT” terminal, then reverse test probes. Lamp should light in one direction only and not light when test probes reversed, or ohmmeter should show high reading in one direction and low reading when reversed.



**DELCO-REMY DELCOTRON ALTERNATOR ASSEMBLY (TYPICAL)**

## 1965-72 DELCO-REMY WITH SEPARATE REGULATOR (Cont.)

**Negative Diodes** – Connect one test probe to alternator “R” terminal and other test probe to alternator “GRD” terminal, then reverse test probes. Lamp should light in one direction only and not light when test probes reversed, or ohmmeter should show high reading in one direction and low reading when reversed.

**Test Conclusions** – If test lamp lights in both directions, or if ohmmeter reading is high or low in both directions when making tests, one or more shorted diodes is indicated. Alternator must be disassembled to test diodes individually.

### OVERHAUL

#### DISASSEMBLY

1) Scribe mark all mating parts for reassembly. Remove through bolts and separate drive end frame and rotor assembly from stator assembly. Tape slip ring end housing bearing to prevent dirt entry. *NOTE* – Brushes may drop onto rotor shaft during separation of components and come into contact with lubricant. Clean brushes as soon as possible with suitable cleaner (tri-chlorethylene) to prevent them becoming grease soaked.

2) Install rotor in a soft-jawed vise, or use 5/16" Allen wrench in pulley end of rotor shaft to hold rotor while removing pulley nut, then remove washer, pulley, fan and collar from shaft. Separate drive end frame from rotor shaft, remove inner collar or spacer from shaft.

3) Remove three stator lead attaching nuts and separate stator from end frame. Remove screws, brushes and holder assembly. Remove heat sink from end frame by removing “BAT” and “GRD” terminals and one attaching screw.

#### CLEANING & INSPECTION

Wash all metal parts except stator and rotor assemblies. Clean bearings and inspect for sealing, pitting or roughness. Slip rings may be cleaned with 400 grain polishing cloth (rotate shaft while cleaning to prevent flat spots on rings). Slip ring maximum out of round limit is .001" (Cadillac & Chevrolet) and .002" (Buick & Oldsmobile). Turn slip rings in a lathe to correct and remove only sufficient material to make rings smooth and round. Polish

with crocus cloth while spinning rotor in lathe and blow away all dust. *NOTE* – Slip rings are not replaceable, excessive damage will require rotor assembly replacement. If brushes worn more than halfway, replace.

#### TESTING

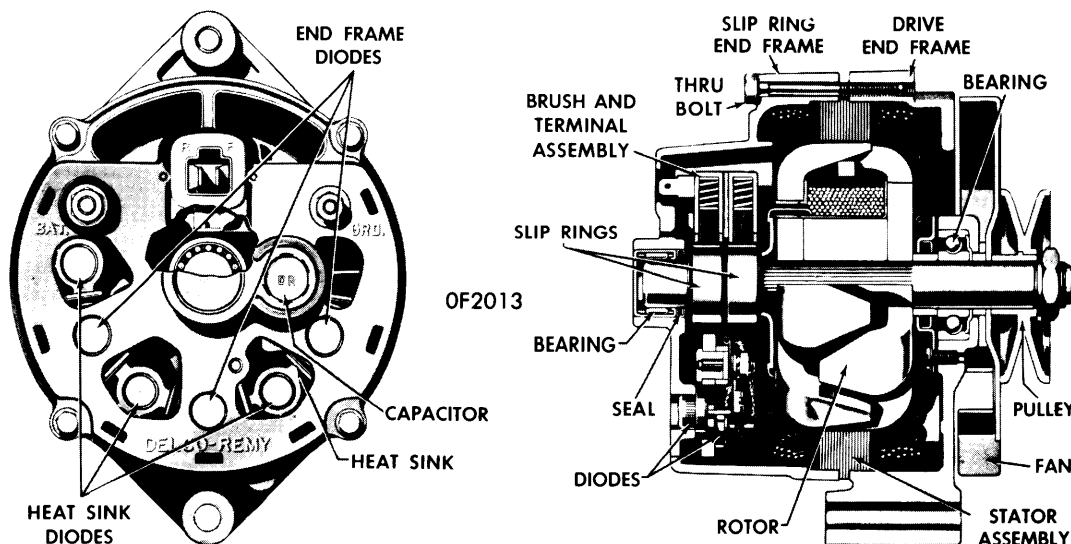
**Rotor** – To test for grounds, connect a 110 volt test lamp or ohmmeter from either slip ring to rotor shaft or rotor poles. If lamp lights or if ohmmeter reading is low, field windings are grounded. To test for open circuit, connect test lamp or ohmmeter to each slip ring. If lamp does not light or if ohmmeter reading is high, windings are open. To test for short circuit, connect a 12 volt battery and ammeter in series with slip rings. If ammeter reading is higher than specified, (see Specification Table), field windings are shorted. Replace rotor assembly or field windings as necessary.

**Stator** – To test for grounds, connect a 110 volt test lamp or ohmmeter from any stator lead to stator frame. If test lamp lights or if ohmmeter reads low, windings are grounded. To test for open circuit, connect test lamp or ohmmeter successively between each pair of stator leads. If lamp does not light or ohmmeter reads high, windings are open. A short circuit in stator may be assumed if all other electrical checks are normal and alternator does not produce rated output.

**Diodes** – With diodes disconnected from stator leads, check by using an ohmmeter or 12 volt test lamp as follows:

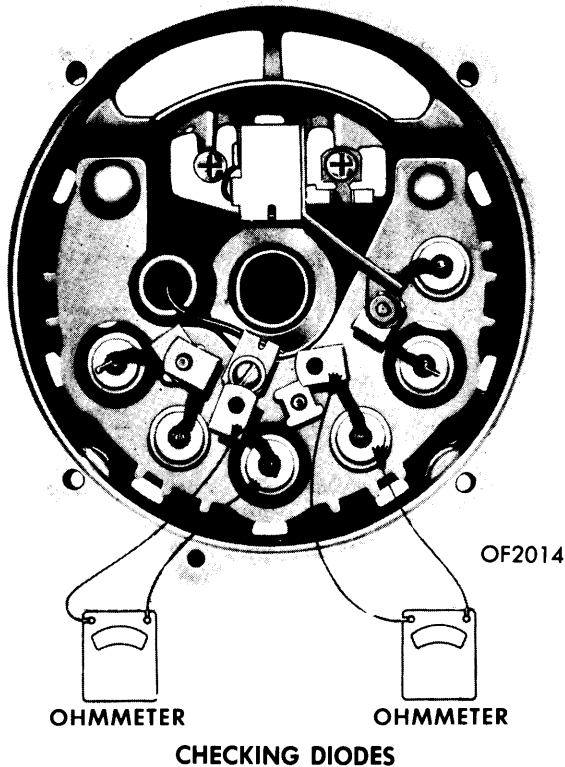
**Ohmmeter Method** – Use an ohmmeter with a 1½ volt cell and use lowest range scale. Connect one ohmmeter probe to end frame and other probe to diode and note ohmmeter readings. Reverse ohmmeter leads and note reading. If both readings are very high or very low, diode is defective. A good diode will give one low and one high reading.

**12 Volt Test Lamp Method** – *CAUTION* – Do not use 110 volt test lamp or diodes will be damaged. Connect one test lamp probe to diode and other probe to heat sink or end frame, then reverse test lamp probes. If lamp lights in both directions or does not light in either direction, diode is defective. A good diode will cause lamp to light in one direction only.



CROSS SECTIONAL VIEW OF DELCO-REMY DELCOTRON ALTERNATOR

## 1965-72 DELCO-REMY WITH SEPARATE REGULATOR (Cont.)



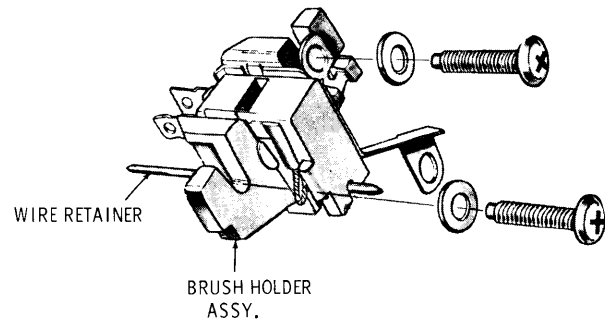
### PARTS REPLACEMENT

**Diodes** – Support end housing with suitable tool (J-9717-2) and use diode removal tool J-9717-1 to press diode out with aid of an arbor press. **CAUTION** – Do not strike diode as shock may damage other diodes. To install new diode, support end frame surface around diode hole on flat smooth surface or support with tool J-9717-2, select correct type diode (Positive diodes have red markings, Negative diodes have black markings), position installer tool J-9600-2 on diode using care not to bend or move diode stem, press diode into place using suitable tool (arbor press). **CAUTION** – Diode must be square with end frame or heat sink and started straight in hole.

**Bearing (Drive End Frame)** – To remove, detach retainer plate bolts, then separate retainer plate and seal assembly from end frame. Press bearing out using suitable tube or pipe on inner race. If bearing is not pre-lubricated type, fill ¼-full with Delco-Remy No. 1948971 grease (or equivalent). **CAUTION** – Do not overfill. To install, press into end frame using suitable tool that fits over outer race.

**Bearing (Slip Ring End Frame)** – Replace bearing if grease supply is exhausted. Press bearing from outside of housing toward inside, using suitable tool that just fits inside end frame. To install, place a flat plate over bearing and press in from outside of housing until bearing is flush with outside of end frame. **CAUTION** – Support inside of end frame around bearing bore with suitable tool to prevent distortion, using extreme care to avoid misalignment. Saturate felt seal with SAE 20 engine oil and install seal and steel retainer at inner end of bearing assembly.

**Brush Assembly** – Remove brush holder assembly by detaching two brush holder attaching screws. If brushes worn or oil soaked, replace. Replace springs if weak or distorted. After brushes and springs assembled in holder, insert straight wire or pin through holes in bottom of holder to retain brushes. Mount assembly in end frame with wire protruding through hole in end frame so that it can be withdrawn after rotor installed which will allow brushes to contact slip rings.



### BRUSH HOLDER ASSEMBLY

**Slip Ring End Frame & Heat Sink** – When replacing these parts, refer to illustration for correct assembly of bolts and terminals to insure proper connection and insulation of these parts.

### REASSEMBLY

Reassemble alternator by reversing disassembly procedure. After slip ring end frame assembled on rotor and drive end frame assembly, withdraw brush retaining wire from brush holder to allow brushes to drop down on slip rings.

# Alternators

## 1972 DELCO-REMY DELCOTRON

DELCO-REMY DELCOTRON SPECIFICATIONS						
Delco-Remy Number	Rating (Amps.)	Test Specifications (At 14.0 Volts)				Field Current (Amps.) 12 Volts, 80° F
		Amps.	RPM	Amps.	RPM	
1100494	62	32	2000	58	5000	4.0-4.5
1100542	62	32	2000	58	5000	4.0-4.5
1100543	42	.....	.....	37	5000	4.0-4.5
1100544	61	.....	.....	55	5000	4.0-4.5
1100545	32	.....	.....	31	5000	4.0-4.5
1100546	55	.....	.....	50	5000	4.0-4.5
1100550	37	.....	.....	32	5000	4.0-4.5
1100559	32	.....	.....	31	5000	4.0-4.5
1100560	55	.....	.....	50	5000	4.0-4.5
1100597	61	30	2000	55	5000	4.0-4.5
1100566	37	25	2000	35	5000	2.2-2.6
1100567	42	28	2000	40	5000	2.2-2.6
1100836	37	25	2000	35	5000	2.2-2.6
1100837	37	25	2000	35	5000	2.2-2.6
1100843	61	33	2000	58	5000	2.2-2.6
1100917	63	35	2000	59	5000	2.8-3.2
1100924	55	.....	.....	50	5000	4.0-4.5
1100926	42	.....	.....	37	5000	4.0-4.5
1100927	37	.....	.....	32	5000	4.0-4.5
1100928	55	.....	.....	50	5000	4.0-4.5
1100937	63	.....	.....	58	5000	4.0-4.5
1100940	42	.....	.....	37	5000	4.0-4.5
1100950	42	.....	.....	37	5000	4.0-4.5
1102433	63	35	2000	59	5000	2.8-3.2
1102434	42	28	2000	40	5000	2.2-2.6
1102435	42	28	2000	40	5000	2.2-2.6
1102439	55	32	2000	50	5000	2.2-2.6
1102440	37	25	2000	35	5000	2.2-2.6
1102441	63	35	2000	59	5000	2.2-3.2
1102442	55	32	2000	50	5000	2.2-2.6
1102443	42	28	2000	40	5000	2.2-2.6
1102447	63	35	2000	59	5000	2.8-3.2
1102448	55	32	2000	50	5000	2.2-2.6
1102449	37	25	2000	35	5000	2.2-2.6
1102450	61	33	2000	58	5000	2.2-2.6
1102452	37	25	2000	35	5000	2.2-2.6
1102453	37	25	2000	35	5000	2.2-2.6
1102454	37	25	2000	35	5000	2.2-2.6
1102456	37	25	2000	35	5000	2.2-2.6
1102463	61	33	2000	58	5000	2.2-2.6
1102464	63	35	2000	59	5000	2.8-3.2
1117141	145	.....	.....	150	5000	4.0-4.5
1101015	80	.....	.....	74	5000	4.0-4.5
1101018	80	.....	.....	74	5000	4.0-4.5

# Alternators

## 1973 DELCO-REMY DELCOTRON

DELCO-REMY DELCOTRON SPECIFICATIONS						
Delco-Remy Number	Rating (Amps.)	Test Specifications (At 14.0 Volts)				Field Current (Amps.) 12 Volts, 80° F
		Amps.	RPM	Amps.	RPM	
1100494	63	32	2000	60	5000	4.0-4.5
1100497	37	22	2000	33	5000	4.0-4.5
1100542	63	32	2000	60	5000	4.0-4.5
1100544	61	30	2000	60	5000	4.0-4.5
1100545	32	21	2000	31	5000	4.0-4.5
1100546	55	30	2000	50	5000	4.0-4.5
1100559	32	21	2000	31	5000	4.0-4.5
1100560	55	30	2000	50	5000	4.0-4.5
1100573	42	25	2000	37	5000	4.0-4.5
1100575	55	30	2000	50	5000	4.0-4.5
1100597	61	30	2000	55	5000	4.0-4.5
1100924	55	30	2000	51	5000	4.0-4.5
1100925	63	32	2000	58	5000	4.0-4.5
1100926	42	25	2000	38	5000	4.0-4.5
1100927	37	22	2000	33	5000	4.0-4.5
1100928	55	30	2000	51	5000	4.0-4.5
1100934	37	22	2000	33	5000	4.0-4.5
1100937	63	32	2000	58	5000	4.0-4.5
1100940	42	25	2000	38	5000	4.0-4.5
1100946	55	30	2000	51	5000	4.0-4.5
1100947	37	22	2000	33	5000	4.0-4.5
1100948	61	30	2000	57	5000	4.0-4.5
1100950	42	25	2000	38	5000	4.0-4.5
1101015	80	55	2000	76	5000	4.4-4.9
1101018	80	55	2000	76	5000	4.4-4.9
1102346	61	30	2000	57	5000	4.0-4.5
1102353	42	25	2000	38	5000	4.0-4.5
1102354	61	32	2000	58	5000	4.0-4.5
1102367	55	30	2000	51	5000	4.0-4.5
1102368	61	30	2000	57	5000	4.0-4.5
1102369	61	32	2000	58	5000	4.0-4.5