CHRYSLER CORP. ALTERNATORS

Chrysler Corp.

DESCRIPTION

Alternator main components are the stator, rotor, rectifiers, end shield and drive pulley. The built-in silicon rectifiers convert A.C. current into D.C. output current. The 117 amp. model has 12 silicon rectifiers, all others have 6 rectifiers.

IDENTIFICATION

Chrysler Corp. Part No.	Tag Color	Rated Amp. Output
4111928	Violet	41
4091460	Yellow	60
4091461	Yellow	117
4091568	Yellow	60
4091727	Yellow	60

SPECIFICATIONS

Rated Amp. Output	①Minimum Amp. Output
41	40@15 Volts
60	57@15 Volts
100	72@13 Volts

① – At 900 engine RPM (117 Amp. Alt.); 1250 RPM all others. Measured at alternator.

Rotation – Clockwise at drive end.

Field Coil Draw – 4.75-6.0 amps. (117 amp.); 4.5-6.5 amp. (all others); at 12 volts while turning rotor manually.

Capacitor Capacity – .50 mfd. ± 20%.

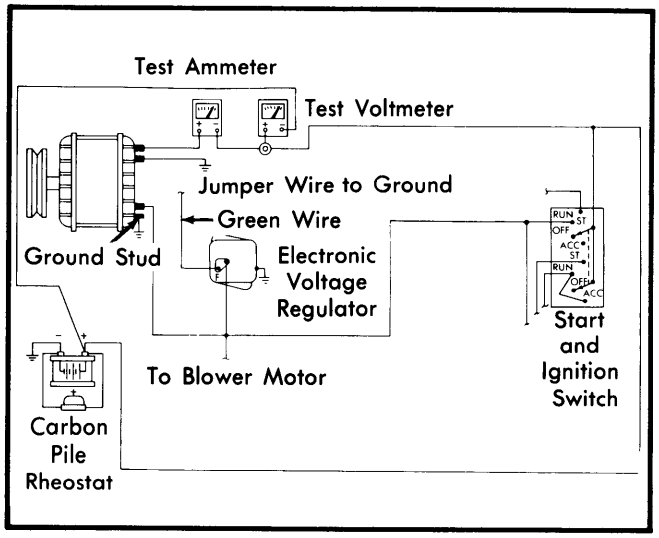

Fig. 1 Diagram Showing Meter Connections for Charging Circuit Resistance Test

ON VEHICLE TESTS

CHARGING CIRCUIT RESISTANCE

NOTE – *Before making test connections, disconnect battery ground cable at battery negative post to avoid accidental shorting of charging or field circuits.*

1) Disconnect "BAT" lead at alternator and connect a 0-100 ampere scale D.C. ammeter in series between alternator "BAT" terminal and disconnected "BAT" lead. Connect positive lead of D.C. voltmeter to disconnected "BAT" lead and connect negative voltmeter lead to battery positive terminal. Disconnect field lead from alternator, then connect a jumper lead from alternator field terminal to ground. Connect a tachometer, then connect battery ground cable. Connect a variable carbon pile to battery terminals.

2) Start engine and immediately reduce engine speed to idle. Adjust engine speed and carbon pile to obtain 20 amps. flowing in circuit. Voltmeter reading should not exceed 0.7 volts. If a higher voltage drop is indicated, inspect, clean and tighten all connections in charging circuit.

NOTE – *If necessary, test voltage drop at each connection to locate connection with excessive resistance.*

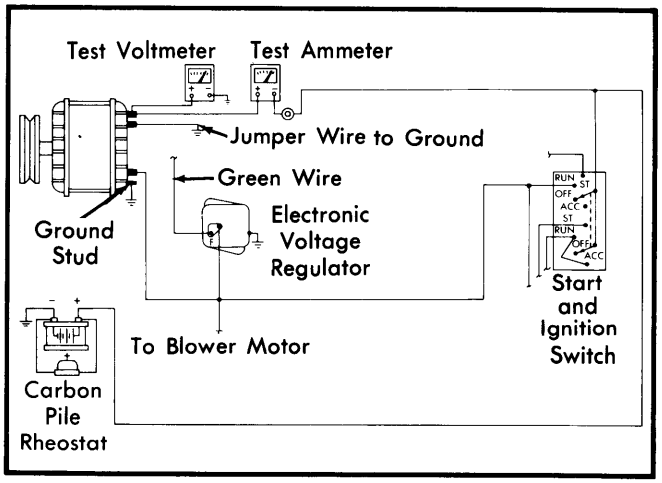

Fig. 2 Diagram Showing Meter Connections for Alternator Current Output Test

CURRENT OUTPUT

1) With test connections made as for "Charging Circuit Resistance", move negative lead of voltmeter to a good ground, then move the positive lead of voltmeter to "BAT" terminal of alternator. Start engine and operate at idle.

CAUTION – *To avoid damage, reduce engine speed to idle immediately after starting.*

2) Adjust engine speed and carbon pile until a speed of 900 RPM (117 amp.) or 1250 RPM (all others) and a voltmeter reading of 13 volts (117 amp.) or 15 volts (all others) is obtained. Do not increase engine speed enough to allow voltage to exceed 16 volts. Observe ammeter, current output should be within specifications. If output is less than specified, remove the alternator from the vehicle and bench test it.

CHRYSLER CORP. ALTERNATORS (Cont.)

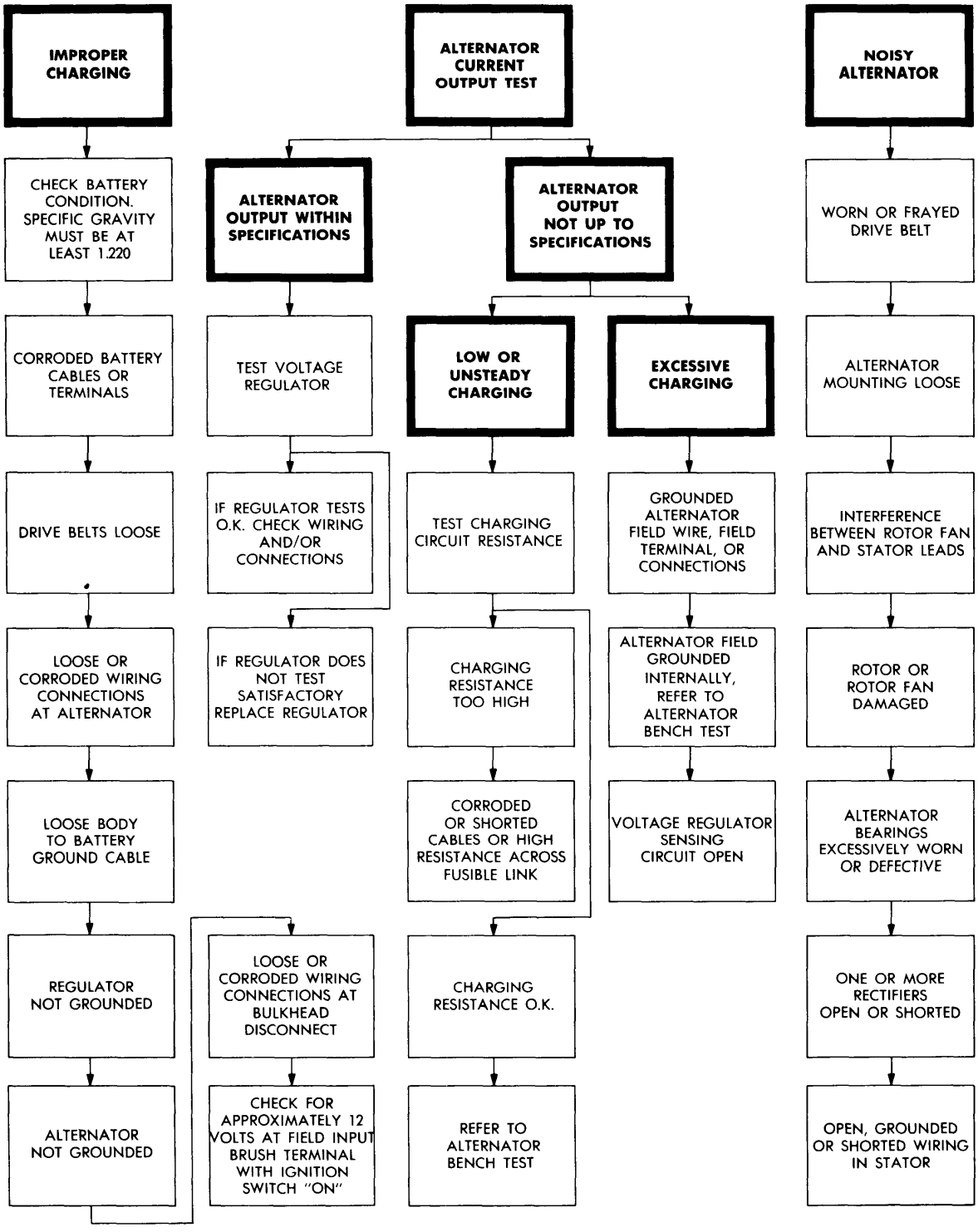

Fig. 3 Charging Circuit Service Diagnosis Guide for All Chrysler Corp. Models

CHRYSLER CORP. ALTERNATORS (Cont.)

BENCH TESTING

FIELD COIL DRAW

Connect a wire between one field terminal of alternator and positive terminal of a fully charged battery. Connect test ammeter positive lead to the other field terminal of alternator and negative lead to battery negative terminal. Slowly rotate alternator rotor by hand. Observe ammeter reading. Field coil draw should be 4.75-6.0 amps. (117 amp.) or 4.5-6.5 amps. (all others) at 12 volts. A low coil draw is an indication of high resistance in field coil circuit (brushes, slip ring or rotor). A higher coil draw indicates possible shorted rotor coil or grounded rotor. No reading indicates an open rotor or defective brushes.

RECTIFIER (DIODE) TESTS

NOTE – *Do not break plastic cases of diodes, cases are for protection against corrosion. Always touch test probe to metal strap nearest diode. Rectifier diodes may be tested with a test lamp or tester C-3829A as follows:*

Test Lamp Method – With rectifier end shield and stator assembly separated, test rectifiers with a 12V battery and suitable test lamp. Connect test lamp to battery and measure rectifier continuity with probes of test lamp touching heat sink and rectifier top strap. Now reverse probes, if lamp lights with current flow in only one direction, rectifier is satisfactory. If lamp lights with probes either way, rectifier is shorted. If lamp does not light at all, rectifier is open. Test each rectifier and both assemblies in this manner.

Tool C-3829A Method – Remove alternator brushes and through bolts. Separate rectifier end housing and stator from drive end housing and rotor. Test rectifiers as follows:

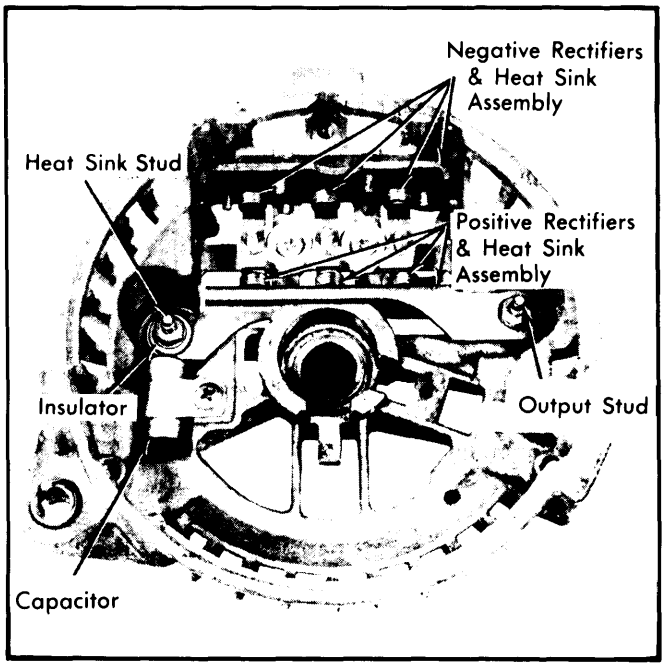

Fig. 4 View of Rectifier End Shield

Positive Rectifiers – With alternator on an insulated surface, connect test lead clip to alternator "BAT" output terminal and plug tool into 110 volt A.C. power supply. Touch exposed bare metal connections of each positive case rectifier with test probe. Reading for satisfactory rectifiers will be 1¾ amperes or more and should be approximately the same for each rectifier. When two rectifiers are good and one is shorted, reading taken at good rectifiers will be low and reading at shorted rectifier will be zero. Disconnect lead to rectifier reading zero and retest. Reading of good rectifiers will now be within satisfactory range. When on rectifier is open it will read approximately 1 ampere, and two good rectifiers will read within satisfactory range.

Negative Rectifiers – Connect test lead clip to rectifier end housing. Touch exposed connection of each negative rectifier with test probe. Test specifications and results will be approximately the same as for positive case rectifiers, except meter will read on opposite side of scale.

STATOR TEST

NOTE – *On 100 amp. alternators, stator windings are "Delta" wound and cannot be checked with common shop equipment for opens and shorts. If stator is not grounded and all other components check correctly, suspect an open or a short in stator.*

Separate stator from both end shields. Press test probe firmly onto any pin on stator frame. Be sure varnish has been removed so the pin is bare. Press test probe firmly to each of the three phase lead terminals one at a time. If lamp lights stator lead is grounded. Now press test probe firmly on one phase control lead and contact each of the other two stator leads. Test lamp should light when prod contacts each of the terminals. If lamp does not light, stator is open. Install a new stator if it is open or grounded.

ROTOR TEST

Test rotor for grounded, open or shorted field coils using an ohmmeter. Test for grounds between slip rings and rotor shaft; no continuity should exist. Check for an open field by connecting ohmmeter across slip rings, 1.7-2.1 ohms (117 amp.) or 1.5-2.0 ohms (all others) is normal resistance with rotor at room temperature. Readings above 3.5 ohms indicate high resistance and rotor replacement may be necessary. If reading is below 1.7 ohms (117 amp.) or 1.5 ohms (all others), the field coil is shorted.

OVERHAUL

DISASSEMBLY

1) Remove brush screws, insulating washers, and lift brush assemblies from end shield.

CAUTION – *Stator is laminated. Do not burr stator or end shield.*

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2) Remove thru bolts and pry between stator and drive end shield with blade of screwdriver. Carefully separate drive end shield, pulley and rotor assembly away from stator and rectifier end shield assembly.

NOTE – *If negative heat sink diode straps are on top of positive heat sink straps, loosen 4 hex-head screws on negative rectifier and heat sink assembly and remove heat sink assembly. Proceed to step 3).*

3) On all except 117 amp. alternators, remove nut, washer and insulator from output (BAT) terminal on outside of end shield. Turn end shield over and remove capacitor, insulated washer and positive heat sink assembly. Remove insulator from "BAT" terminal hole.

4) On 117 amp. alternators, from inside rectifier end shield remove nut and insulator attaching positive heat sink to end shield. Remove capacitor screw, capacitor and insulator. From outside end shield, remove nut and insulator attaching positive heat sink to end shield. Remove nuts attaching negative heat sink to end shield. Remove positive and negative heat sink assemblies and note locations of insulators. Remove terminal block attaching screws and terminal block.

5) On all except 117 amp. alternators, remove mica insulator from end shield and loosen four hex head screws on negative rectifier and heat sink assembly. Remove two outer screws and remove heat sink assembly.

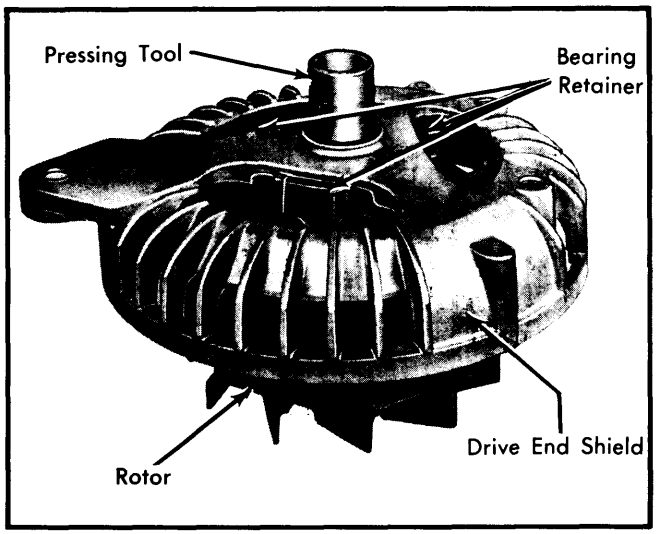

Fig. 5 Installing Drive End Shield Bearing

6) Using suitable puller, remove drive pulley from shaft. Remove screws attaching bearing retainer to drive end shield (117 amp. only). Separate bearing retainer from end shield. Support end shield and tap rotor shaft with plastic hammer to separate rotor from end shield.

7) Using suitable puller, remove drive end ball bearing. If needle roller bearing in rectifier and shield must be replaced, it can be pressed out of a properly supported end shield.

SLIP RING REPLACEMENT

Slip rings are not serviced as a separate item. They are serviced as a rotor assembly.

REASSEMBLY

All Exc. 117 Amp. – 1) Place grease retainer on rotor shaft and press retainer onto shaft until suitable tool (C-3921) bottoms on shaft. Position rectifier end shield bearing on base of tool C-4201-1. Place end shield on top of bearing so it is properly aligned. With top part of tool C-4201-2 placed on end shield, press into place until it bottoms.

2) Insert drive end bearing in drive end shield and install bearing retainer plate to hold bearing in place. Position bearing and drive end shield on rotor shaft, and while supporting base of rotor shaft press bearing end shield into position on rotor shaft with an arbor press and suitable adapter (C-3858).

CAUTION – *Make sure bearing is installed squarely.*

3) Install pulley on rotor shaft. Shaft of rotor must be supported so all pressing force is on pulley hub and rotor shaft, and not on bearings. Do not hammer pulley on.

4) If removed, install output terminal stud and insulator thru end shield. Be sure mica insulators are in place and undamaged. Install positive heat sink assembly over studs; guide rectifier straps over studs on terminal block. Install capacitor. Slide negative rectifier and heat sink assembly into place, position straps and install screws.

5) Position stator over rectifier end shield and install winding terminals on terminal block and press stator pins into each end shield. Route leads so they cannot contact rotor or sharp edge of negative heat sink. Position rotor and drive end shield over stator and rectifier end shield and install through bolts. Compress both ends manually and tighten through bolts evenly to 25-55 INCH lbs.

6) Install field brushes in insulated holders. Position vertical and horizontal field brushes in proper location in rectifier end shield. Place an insulating washer on each field brush terminal and install lockwashers. Be sure that brushes are not grounded. Rotate pulley slowly by hand to be sure rotor fan blades do not hit stator winding leads.

Reassembly (117 Amp.) – 1) Position rectifier end shield bearing on base of tool C-4330-1. Place end shield on top of bearing so it is properly aligned. With tool C-4330-2 placed on end shield, press into place until end shield touches base of press.

2) Insert drive end bearing in end shield, position retainer in place and tighten mounting screws, ensuring that rotor spacer is in position. Position bearing and drive end shield on rotor shaft and press end shield into position with arbor press and tool C-3858.

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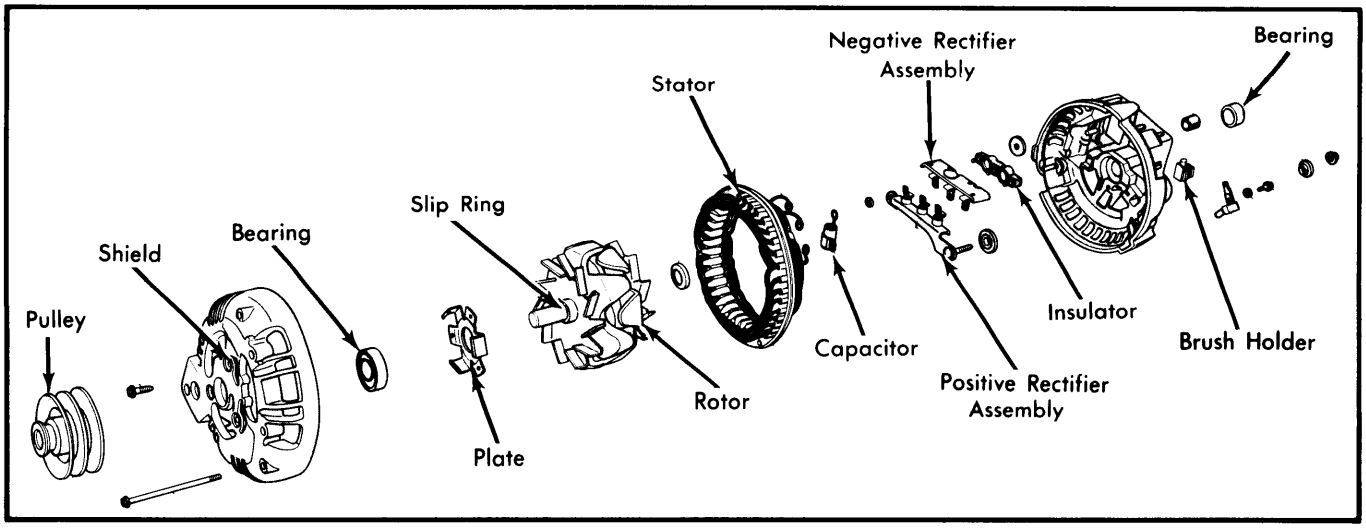

Fig. 6 Exploded View of Typical Chrysler Corp. Alternator

3) Install pulley on rotor shaft. Support shaft so that pressing force is on pulley hub. Press pulley on shaft until it contacts inner race of drive end bearing. Position insulator and capacitor on positive heat sink mounting stud and tighten attaching screw.

4) Position terminal block in rectifier end shield and tighten screws. Position negative heat sink in end shield ensuring that metal straps are properly positioned over studs on terminal block. Install mounting screws and tighten.

5) Install insulator on positive heat sink stud and place assembly into end shield ensuring that metal straps are properly positioned over studs on terminal block. From inside end shield install insulator on positive heat sink stud and tighten nut.

6) From outside of end shield, install insulator on stud and tighten mounting bolt. Position stator over end shield and install terminals on terminal block, routing leads so they cannot contact rotor or sharp edges of negative heat sink.

7) Position rotor and drive end shield over end shield assembly and align through bolts. Compress stator and both end shields manually, install and tighten through bolts. Install field brushes in brush holder with long terminal on bottom and short terminal on top. Install insulators and mounting screw.

8) Position brush holder assembly to end shield making sure it is properly seated and tighten mounting screw. Rotate pulley by hand to ensure rotor poles do not hit stator winding leads.

TIGHTENING SPECIFICATIONS

Application	INCH Lbs.
Capacitor Bracket Screws	30-40
Positive Heat Sink Stud Nut	20-30
Plastic Insulator Nut	30-50
Winding Terminal Nut	11-17
Negative Heat Sink Mount Screw	
All Exc. 117 Amp.	19-29
117 Amp.	30-40
Through Bolts	
All Exc. 117 Amp.	25-55
117 Amp.	40-60
Field Brush Screws	
All Exc. 117 Amp.	15-35
117 Amp.	30-40
End Bearing Mount Screws	
117 Amp.	19-29
Terminal Block Mount Screws	
117 Amp.	30-40