Instructions

Snap-on®

MT-539B Starting and Charging Circuit Tester

CIRCUITS, TESTS AND SPECIFICATIONS

ACCESSORY EQUIPMENT

The instructions in this manual refer to the use of the following equipment which is not included with the MT-539B Tester.

MT-359 Set of Wire Adaptors

The set consists of eight wire adaptors which are necessary to make field rheostat connections.

MT-549 Diode Test Adaptor

This adaptor can be used to test diodes by the voltage drop method without removing the diodes from the alternator.

MT-362A Battery Post Adaptor

This adaptor is used on batteries with side terminals. It replaces the MT-358A Adaptor in those batteries.

THE TESTER CIRCUITS

This Tester combines the ammeter, voltmeter, and load leads to simplify the testing of batteries, starters, and generating systems. Provision has been made, however, for using an external set of voltmeter leads to perform voltage drop or resistance tests. The field rheostat leads are a separate external set of leads. The external set of field rheostat leads is included with the Tester. They can also be used as voltmeter leads.

A toggle switch on the upper right hand corner of the panel provides for a hook-up at either the negative or positive battery terminal. Press it up when connected to the positive battery terminal and down when connected to the negative battery terminal. This switch does not affect the external voltmeter leads.

THE AMMETER CIRCUITS

There are three ammeter circuits and scales in the MT-539B Tester: a 600 amp circuit, a 120 amp circuit, and a 12 amp circuit. The leads for the 600 amp circuit are the load leads permanently attached to the tester. The 120 amp circuit uses the positive load lead with the red clip and the terminal which branches out from the negative load lead and is fastened to the upper plate of the battery post adaptor. The battery post adaptor **switch nut must be turned up** to use this circuit. The 12 amp circuit uses separate external, fused, field rheostat leads. These are color-coded red and black and plug into color-coded terminals on the Tester. Only one circuit can be used at a time by pressing the appropriate button on the panel.

There are three ammeter scales on which the current flow can be read for these ammeter circuits. The top scale reads from —10 to +120 amps in one amp divisions. The middle scale reads from —50 to +600 amps in five amp divisions. The bottom scale reads from —1 to +12 amps in divisions of one-tenth of an amp.

THE VOLTMETER CIRCUITS

There are two voltmeter circuits in the Tester; a 4 volt circuit and a 20 volt circuit. The external leads are used for the 4 volt circuit. The 20 volt circuit can be used with external leads or through the load lead connections, depending upon the voltmeter button pressed down on the panel. The anticipated voltage should always be less than the maximum on the scale to prevent damage to the voltmeter needle.

The top scale reads from 0 to 20 volts in divisions of one-tenth volt from 6 to 16 volts and divisions of one-fifth volt elsewhere. The bottom scale reads from 0 to 4 volts in divisions of .04 volts.

THE FIELD RHEOSTAT

A 100 ohm field rheostat with an open position for cycling is incorporated in the Tester. The field plugs in the instrument and the leads are color-coded black for negative and red for positive.

To read field current or any current of 12 amps or less, press the "12A" button. The positive field lead contains a fuse to protect the field rheostat and field circuit from accidental damage due to wrong connection. If this fuse is blown, replace with a 10 amp fuse.

THE LOAD CIRCUIT

The load leads are permanently connected to the Tester and are color-coded red and black. The load control should be in the "OFF" position when connecting or disconnecting the load clips in order to prevent arcing. The "600A" button should be pressed down when applying and reading the load.

BATTERY LOAD AND STARTER DRAW TESTS

Connections to the Vehicle:
(Load control must be off.)

1. Install the battery post adaptor on either battery post. When connecting to the positive post, disconnect the negative cable **first** in order to prevent accidental shorts.
2. Set the adaptor switch on the instrument panel to the "up" position when the battery post adaptor is on the positive post. When the adaptor is on the negative post, set the switch in the "down" position.
3. Connect the cable with the eyelet to the upper terminal of the battery post adaptor.
4. Connect the black clip to the base of the battery post adaptor.
5. Connect the red clip to the opposite battery terminal. (See figures 1 and 2.)

BATTERY LOAD TEST

(Battery should be at room temperature.)

1. Press the "600 AMP" and "20V INT" buttons.
2. Determine the amp-hour rating of the battery to be tested. If not available, use a 180 amp load for 12 volt batteries and a 200 amp load for 6 volt batteries.
3. Turn the load control to apply a load of 3 times the amp-hour rating for 12 volt batteries, and 2 times the amp-hour rating for 6 volt batteries.

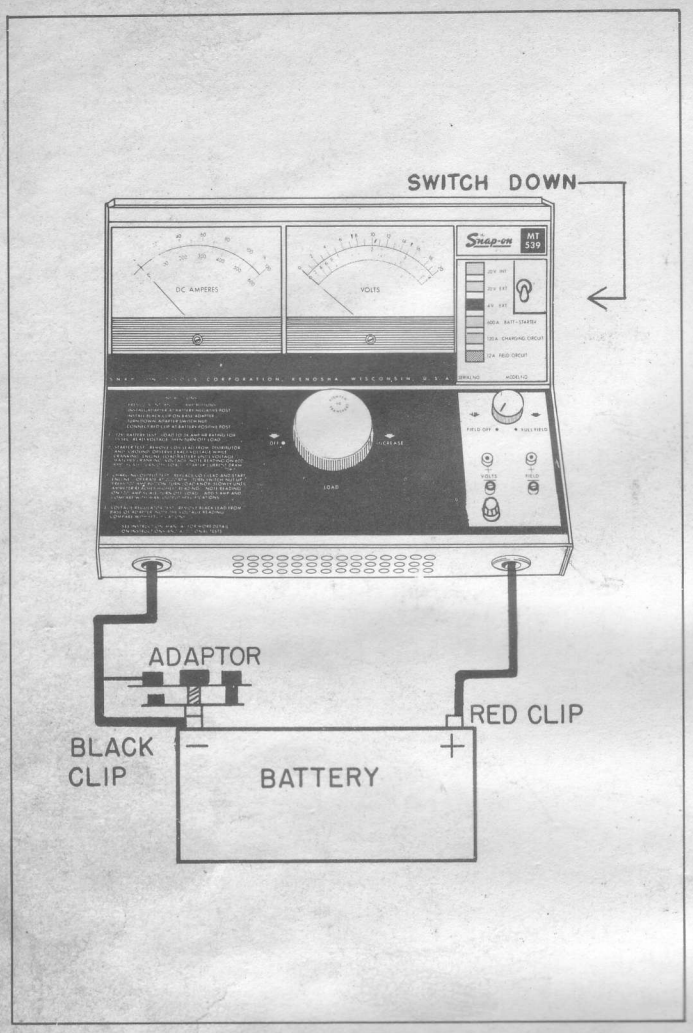

Figure 1 — Connections for Battery Load and Starter Draw Tests. Negative Post Hook-up.

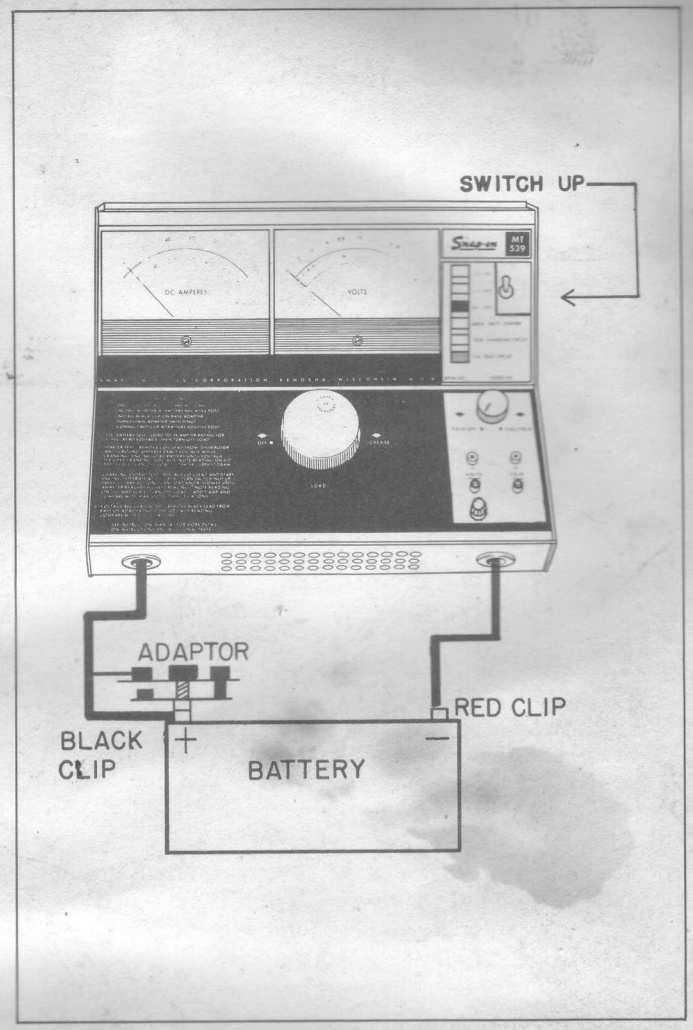

Figure 2 — Connections for Battery Load and Starter Draw Tests. Positive Post Hook-up.

4. Hold the load for 15 seconds while reading the voltmeter. If the reading just before turning off the load is 9.5 volts or more for a 12 volt battery or 4.5 or more volts for a 6 volt battery, the capacity is satisfactory. If the voltage drops rapidly below 9.5 volts during the load test, the battery should be replaced. If it drops slowly below 9.5 volts, the battery should be recharged and tested again. If it still drops below 9.5 volts after charging, it should be replaced.

   If the battery is not at room temperature during the load test, the following chart can be used. These voltages are satisfactory for the temperatures shown.

Temperature	70°	60°	50°	40°	30°	20°	10°	0°
Volts	9.6	9.5	9.4	9.3	9.1	8.9	8.7	8.5

STARTER DRAW TEST

The engine should be at normal operating temperature. Use the same connections as used for the battery load test.

1. Turn down the switch nut on the battery post adaptor.
2. Remove the coil lead from the distributor and ground it to prevent the engine from starting during the test.
3. Crank the engine until the needle is steady and then take a voltmeter reading.
4. Obtain this same voltmeter reading by turning the load control clockwise and then read the ammeter. It will indicate the starter current draw. Turn off the load control. Compare the starter draw with manufacturer's specifications. If unavailable, a 12 volt starter for a six-cylinder engine usually requires 145-165 amps, and a 12 volt starter for a V-8 usually requires 165-185 amps. High compression large V-8's may require 185-225 amps. In analyzing excessive starter current draw, the amp-hour rating of the battery should be considered. The capacity of the battery should be adequate for the current requirements of the starter.

   If cranking current is excessive, the starting system resistance tests should be performed. If excessive resistance is found, then it should be eliminated and the starter test repeated.

STARTING SYSTEM RESISTANCE TESTS

GROUND CIRCUIT TESTS

Connections to the Instrument:

1. Red external voltmeter lead to "+ volts."
2. Black external voltmeter lead to "— volts."

Connections to the Vehicle: (See figure 3)

1. Attach the red voltmeter lead to the starter case.
2. Attach the black voltmeter lead to the negative battery cable at the battery.

To Perform the Test:

1. Press the "4V EXT." button.
2. Crank the engine and note the voltmeter reading on the four volt scale. This is the voltage drop. It should not exceed .3 volt or 1/10 volt for each connection. (Refer to manufacturer's specs if more exact readings are required.)
3. If the reading exceeds .3 volt, change the red voltmeter lead to the engine and crank the engine again. If this reading is greater than .3 volt, the resistance is between the battery and the engine. (Most probably the ground cable or connections.) If this reading is less than .3 volt, the resistance is between the starter and the engine.

INSULATED CIRCUIT TESTS

Connections to the instrument are the same as for the ground circuit test. The "4V EXT" button should be pressed down.

Perform the tests as follows:

1. Attach the black voltmeter lead to the starter terminal.
2. **Only while cranking the engine,** touch the red voltmeter lead to the positive battery terminal while watching the voltmeter.

   Note: If the starter is not operating while the voltmeter is connected at these terminals, a 12 volt reading could damage the voltmeter because the 4 volt button is down.

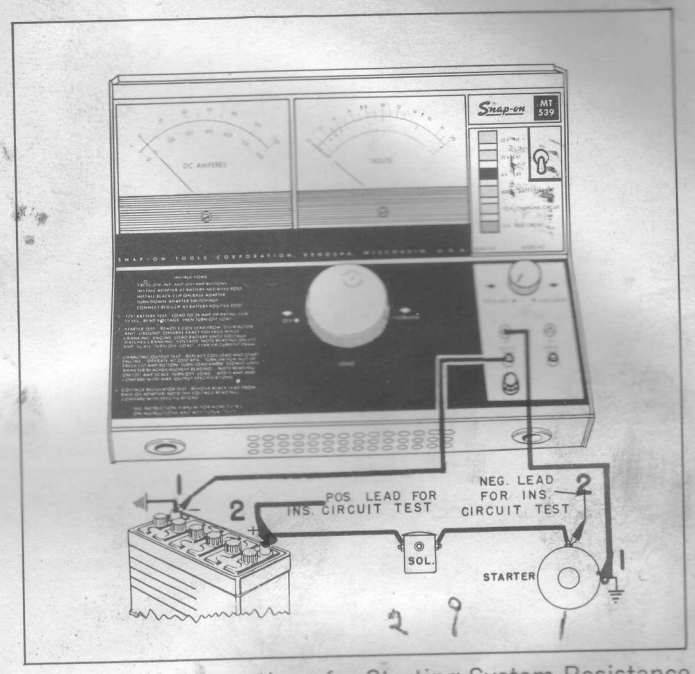

Figure 3 — Connections for Starting System Resistance Tests. (1) Ground Circuit, (2) Insulated Circuit.

3. The voltmeter will indicate the voltage drop. It should not be more than .5 volt (.2 for each cable and .1 for the solenoid).
4. If the reading exceeds .5 volt, change the black voltmeter lead to the starter terminal of the solenoid and repeat the test. If this reading is .3 volt or less, the resistance is between the solenoid and the starter. If the voltage is more than .3 volt, then change the black voltmeter lead to the battery terminal of the solenoid and repeat the test. If the reading is less than .2 volt, the resistance is in the solenoid. If more than .2 volt, the resistance is in the battery cable or connections.
5. Remove the external voltmeter leads from the Tester and vehicle.

QUICK TESTS FOR CHARGING SYSTEMS

With the same vehicle connections as for the battery load test, proceed as follows: (see figures 4 and 5.)

1. Replace the coil lead, turn down switch nut of the battery post adaptor, and start the engine. Operate at 2,000 rpm.
2. Press the "120A" and "20V INT" buttons. **Turn up the switch nut of the battery post adaptor.**
3. Turn the load control slowly clockwise until the ammeter reaches the highest reading, then turn the load off. Add 5 amps (being used by the ignition system and alternator field circuit) and compare with specifications. If low, make a more complete alternator test using the field rheostat.
4. To check the voltage regulator setting, remove the black clip from the base of the adaptor. Note the voltmeter reading. Compare with specifications.

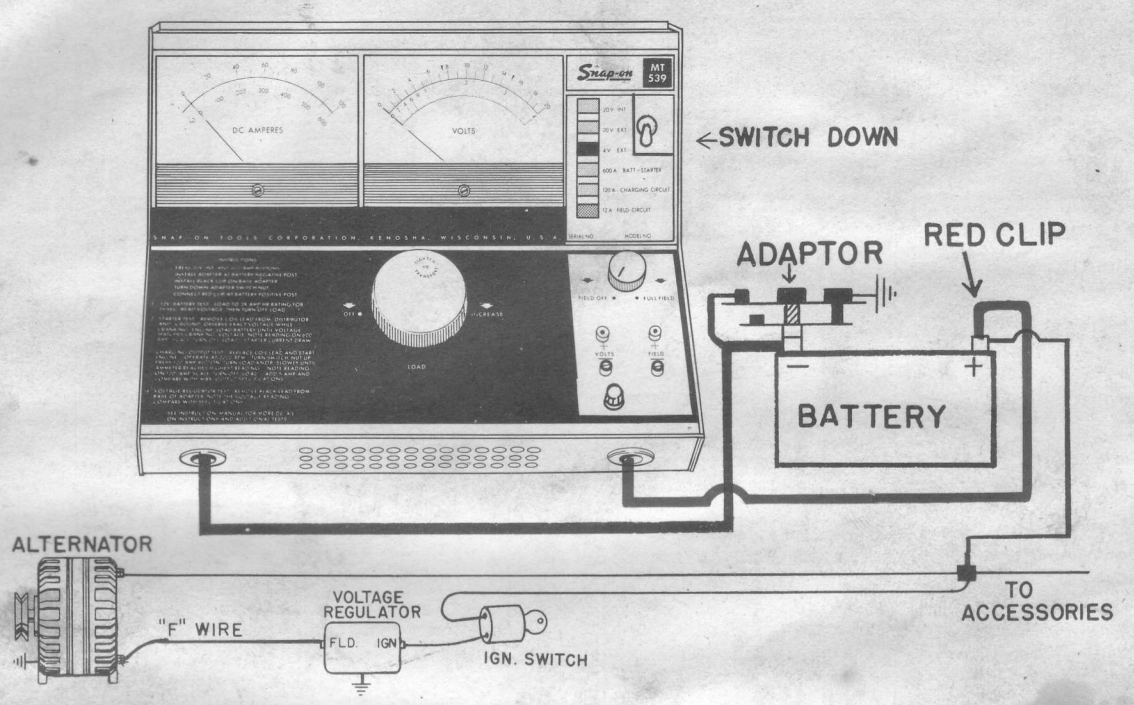

Figure 4 — Connections for a Quick Charging System Test. Negative Post Hook-up.

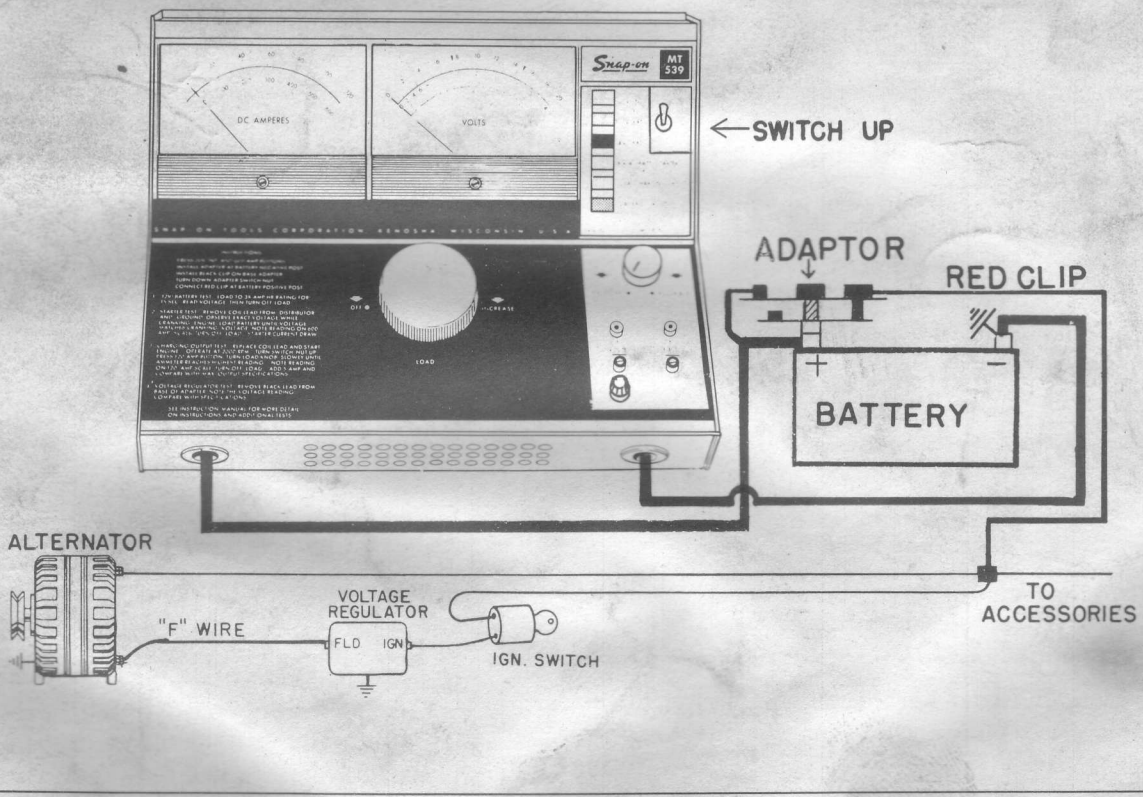

Figure 5 — Connections for a Quick Charging System Test. Positive Post Hook-up.

TESTS FOR ALTERNATOR CHARGING SYSTEMS

The following tests are made while using the field rheostat of the MT-539B Tester. The MT-359 set of adaptors is also required. These are not included with the tester. Integral circuit alternators and Chrysler alternators with electronic voltage regulators are covered in a separate section of this manual. Battery should be in good condition before making tests. All lights and accessories should be off.

Connections to the Instrument:

1. Red field lead to "+ FIELD."
2. Black field lead to "— FIELD."

Connections to the Vehicle:
(Load and field controls must be off.)

1. Install the battery post adaptor on either battery post. When connecting to the positive post, disconnect the negative cable **first** in order to prevent accidental shorts.
2. Set the adaptor switch on the instrument panel to the "up" position when the battery post adaptor is on the positive post. When the adaptor is on the negative post, set the switch in the "down" position.
3. Connect the black clip to the base of the battery post adaptor.
4. Connect the red clip to the opposite battery terminal. (See figures 6 and 7.)
5. For all alternators except Integral Circuit, Ford and Delcotron, disconnect the field wire at the alternator and insert the proper MT-356A wire adaptor in the field terminal of the alternator. **On transistor regulators, disconnect the regulator plug.** Do not ground the field wire or terminals.

   On **Ford** alternators, disconnect the plug at the regulator and insert the MT-352 Ford Adaptor. Attach the regulator plug into the other end of the Ford adaptor.

   On **Delcotron** alternators, disconnect the field plug at the alternator and insert the MT-353 Delcotron adaptor into the field terminal of the alternator. Attach the field plug to the other end of the Delcotron adaptor.
6. Attach the black field rheostat lead to the wire adaptor leading to the alternator field terminal.
7. Attach the red field rheostat lead to the positive battery post.
8. Press the "20V INT" and "120A" buttons.

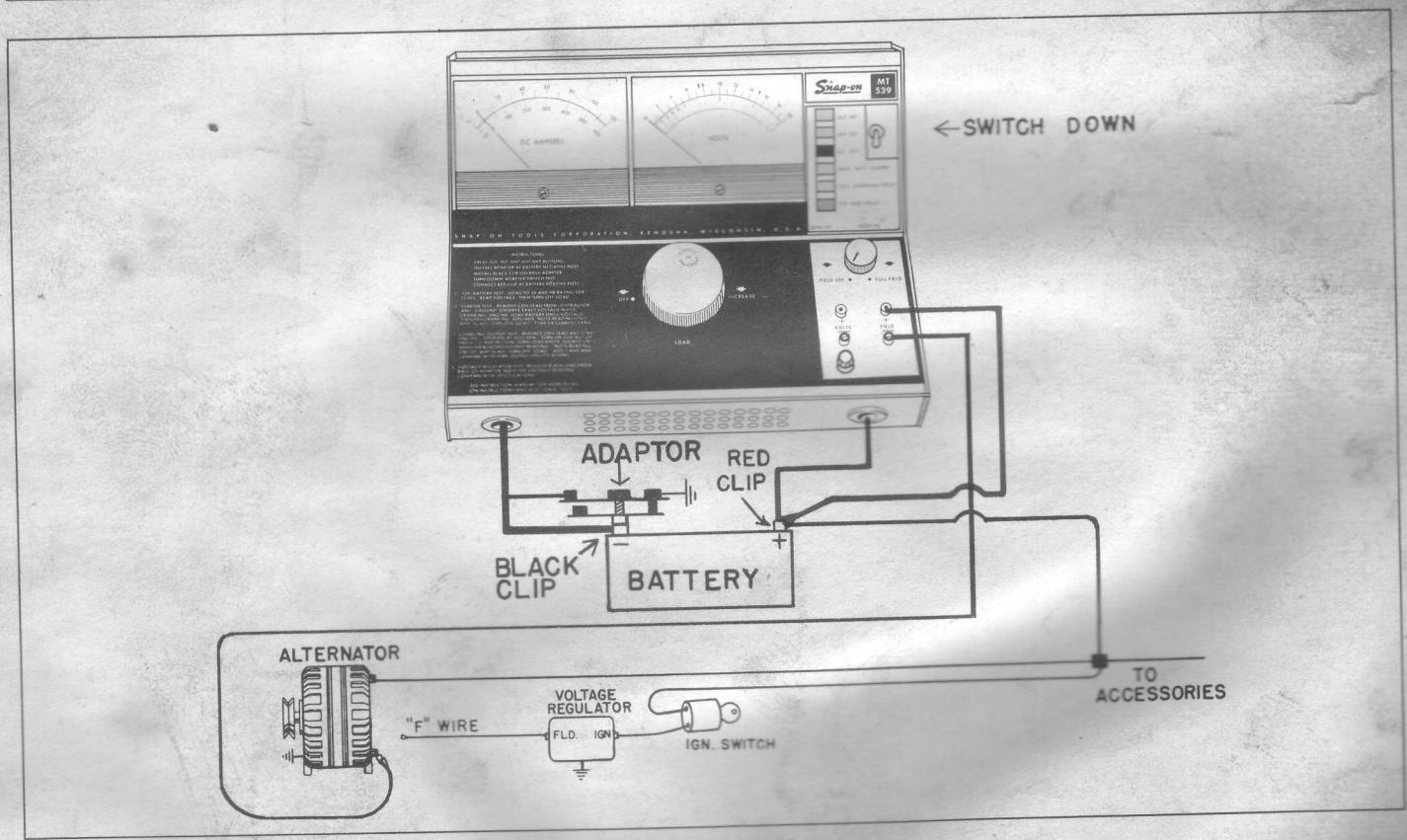

Figure 6 — Connections for Alternator Tests. Negative Post Hook-up.

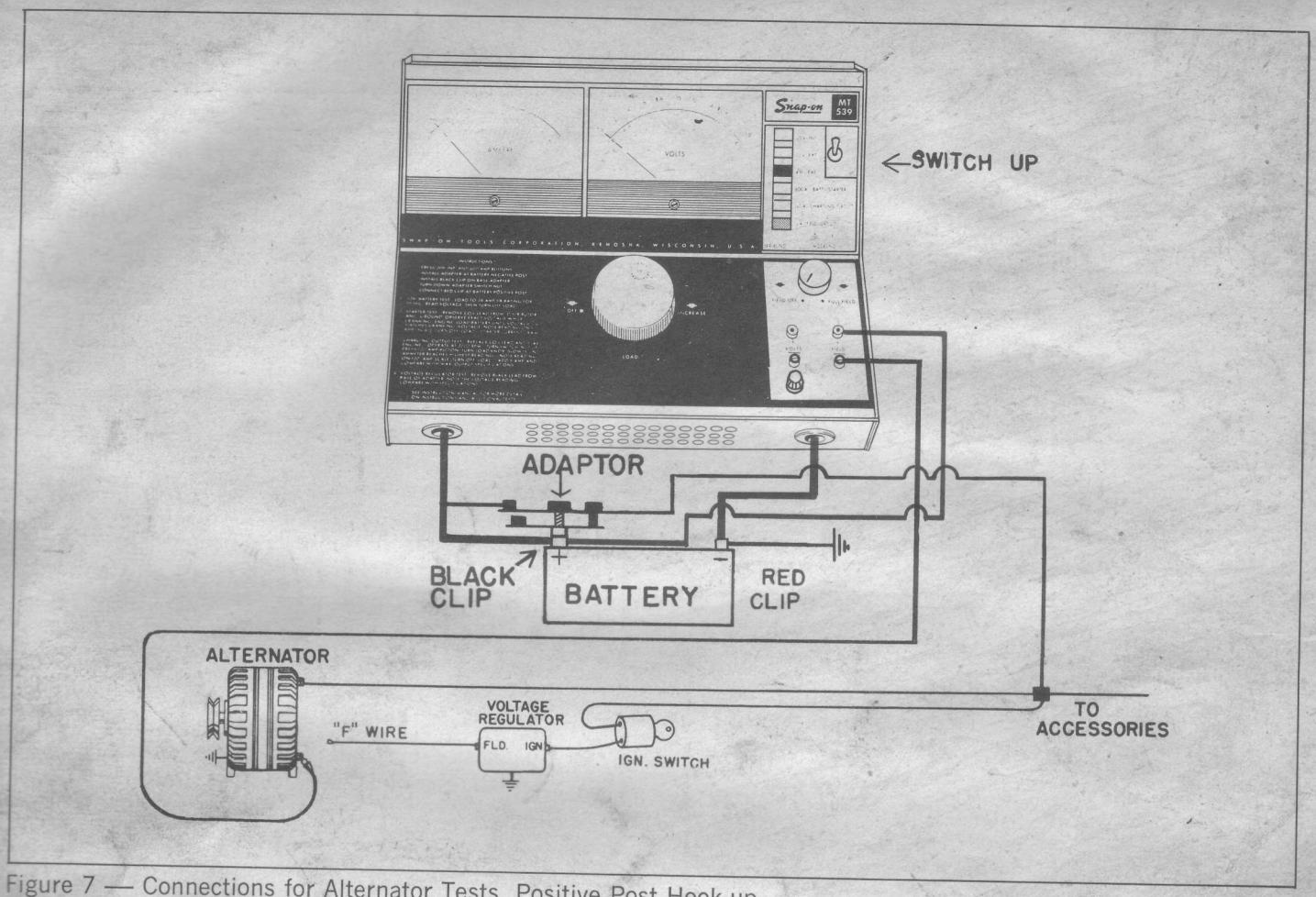

Figure 7 — Connections for Alternator Tests. Positive Post Hook-up.

BATTERY DRAIN TEST

1. Turn the switch nut up.
2. Check the ammeter. The reading should be zero. If a discharge (minus) reading is present, it indicates a battery drain which should be corrected.

ALTERNATOR OUTPUT TEST

1. Turn down the switch nut of the battery post adaptor.
2. Start the engine and adjust engine speed to approximately 2,000 rpm. See manufacturer's manuals for more exact specifications.)
3. **Turn up the switch nut of the battery post adaptor.** Note the discharge current being used by the ignition system.
4. While using the load control to keep the charging voltage below 15 volts, turn the field rheostat to "FULL FIELD."
5. Note the reading on the 120 amp scale. This is alternator output into the battery.
6. Press the "12A" field circuit button. Adjust the load control to drop voltage to 12 volts and note the reading on the 12 amp scale. This is the field current draw of the alternator. Turn the field control and load control off.

Note: Full alternator output consists of **field current, plus discharge current** plus **alternator output.** Compare with specifications.

Analysis of Field Current:

If field current draw is lower than specifications and alternator output is low, this indicates trouble in slip rings, brushes or connections.

If field current draw is higher than specifications, this indicates shorted turns in the field windings of the rotor.

If field current draw is normal but the output of the alternator is low or unsteady, trouble is in the diodes, stator winding, or in a slipping fan belt.

VOLTAGE REGULATOR TEST

1. Disconnect the red field rheostat lead from the positive battery terminal and attach it to the field wire leading to the regulator. On Ford and Delcotron, this connection is made at the special adaptor. On transistor regulators, disconnect the field rheostat leads and reconnect the regulator plug.
2. Remove the black clip from the base of the battery post adaptor. This puts a ¼ ohm resistor in the circuit.
3. With the engine running at approximately 2,000 rpm, slowly turn the field rheostat control all the way clockwise. When it is on "full field" the voltmeter will indicate the voltage regulator setting. Compare with specifications.

TESTING INTEGRAL CIRCUIT ALTERNATORS

Integral circuit alternators have the voltage regulator and alternator combined in one unit. The following test procedure can be used to check these alternators. Although the illustrations were made with the alternators "off the car," the alternator should be properly connected for normal operation in the vehicle. **Chrysler alternators 1969 thru 1972** are also included in this section.

Connections to the Instrument:

1. Red field lead to "+ FIELD."
2. Black field lead to "— FIELD."

Connections to the Vehicle:

(Load and field controls off.)

1. Install the battery post adaptor on either battery post.
2. Connect the black clip to the base of the battery post adaptor.
3. Connect the red clip to the opposite battery post.
4. On **Delcotron** integral circuit alternators having a ground terminal, attach the black field lead to the ground terminal and the red field lead to the regulator heat sink as shown in figure 8. On some later model Delcotrons without the ground terminal, a small hole

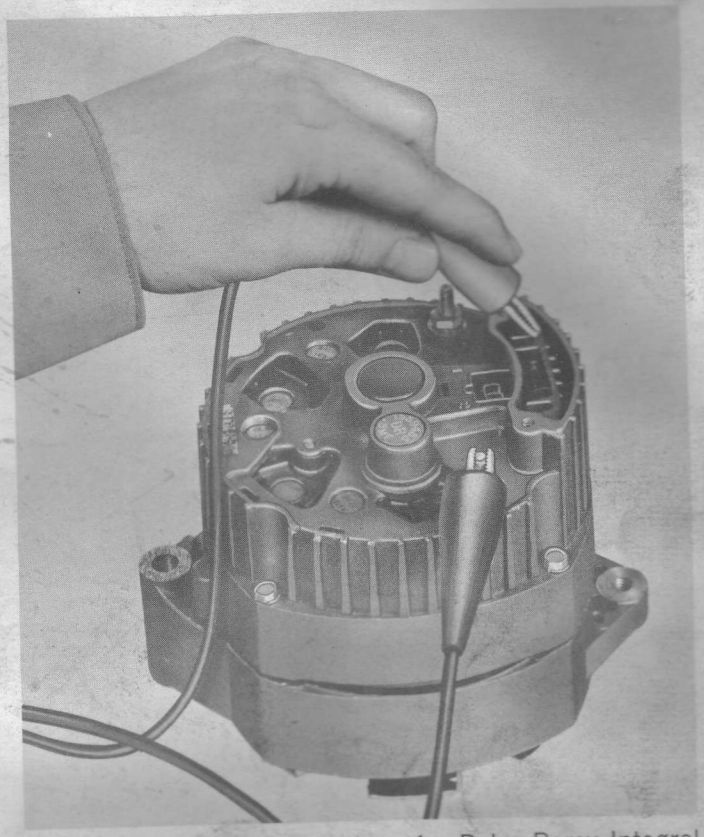

Figure 8 — Field Connections for Delco-Remy Integral Circuit Alternator.

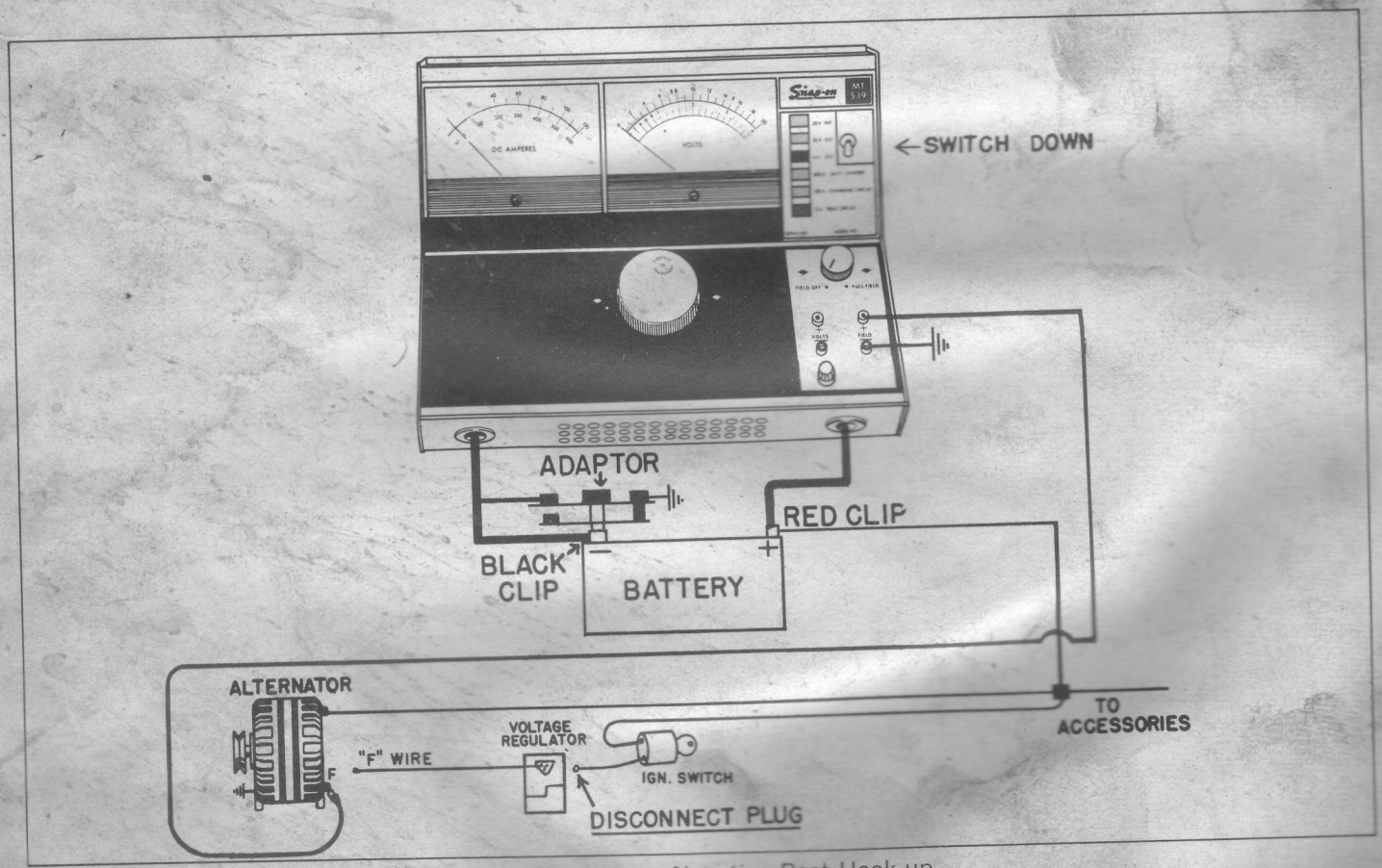

Figure 9 — Connections for 1969 Chrysler Alternators. Negative Post Hook-up.

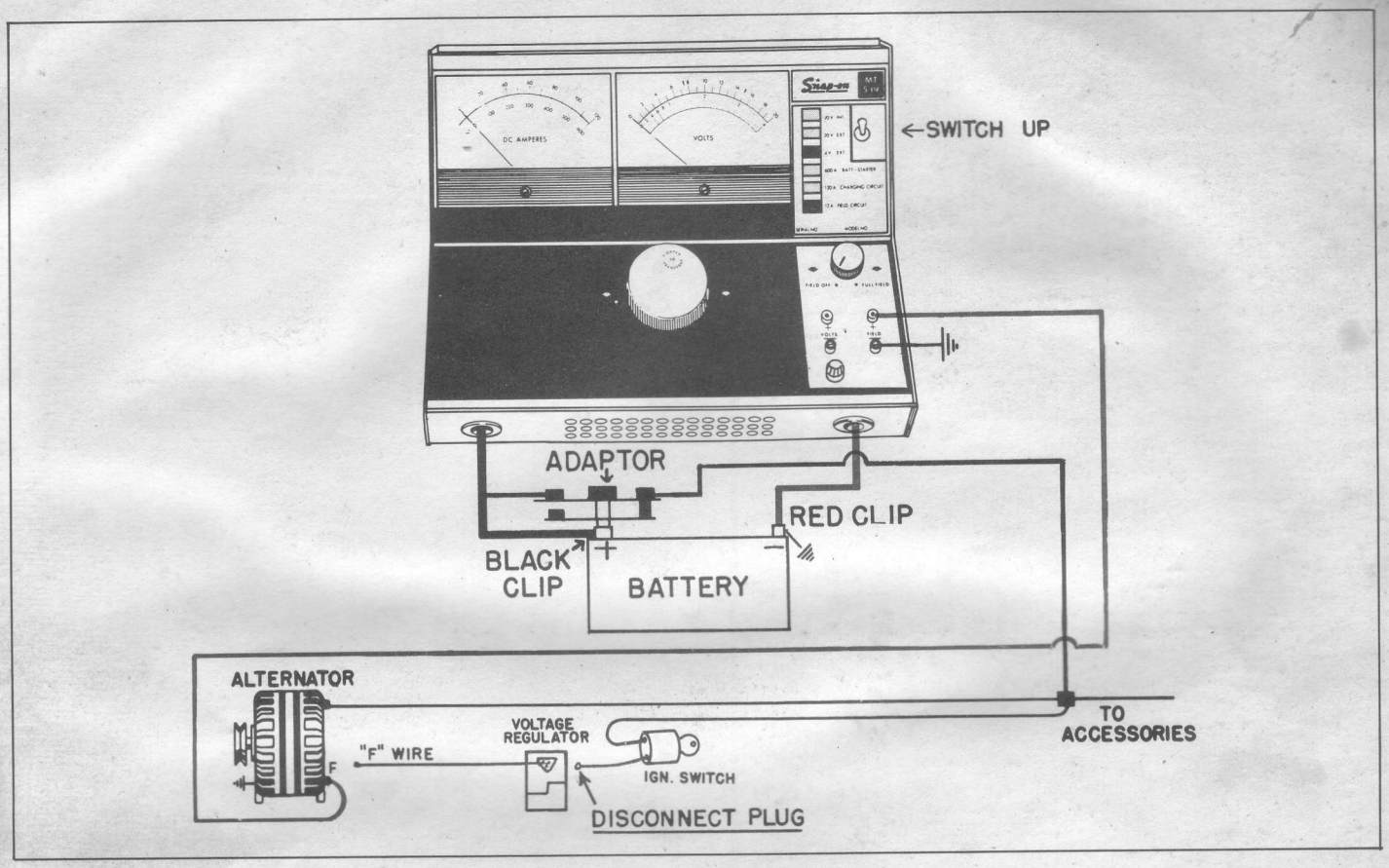

Figure 10 — Connections for 1969 Chrysler Alternators. Positive Post Hook-up.

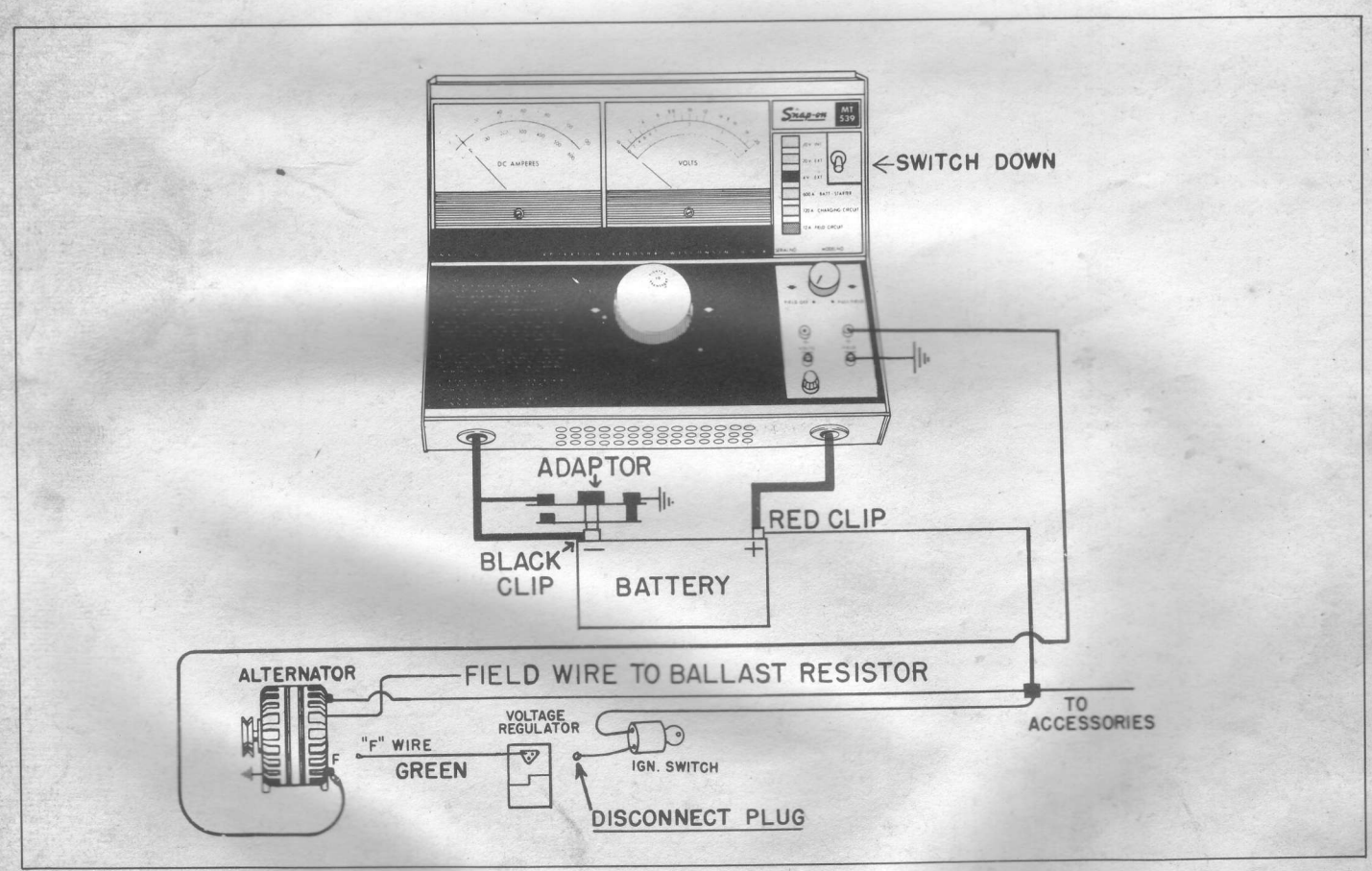

Figure 11 — Connections for 1970-72 Chrysler Alternators. Negative Post Hook-up.

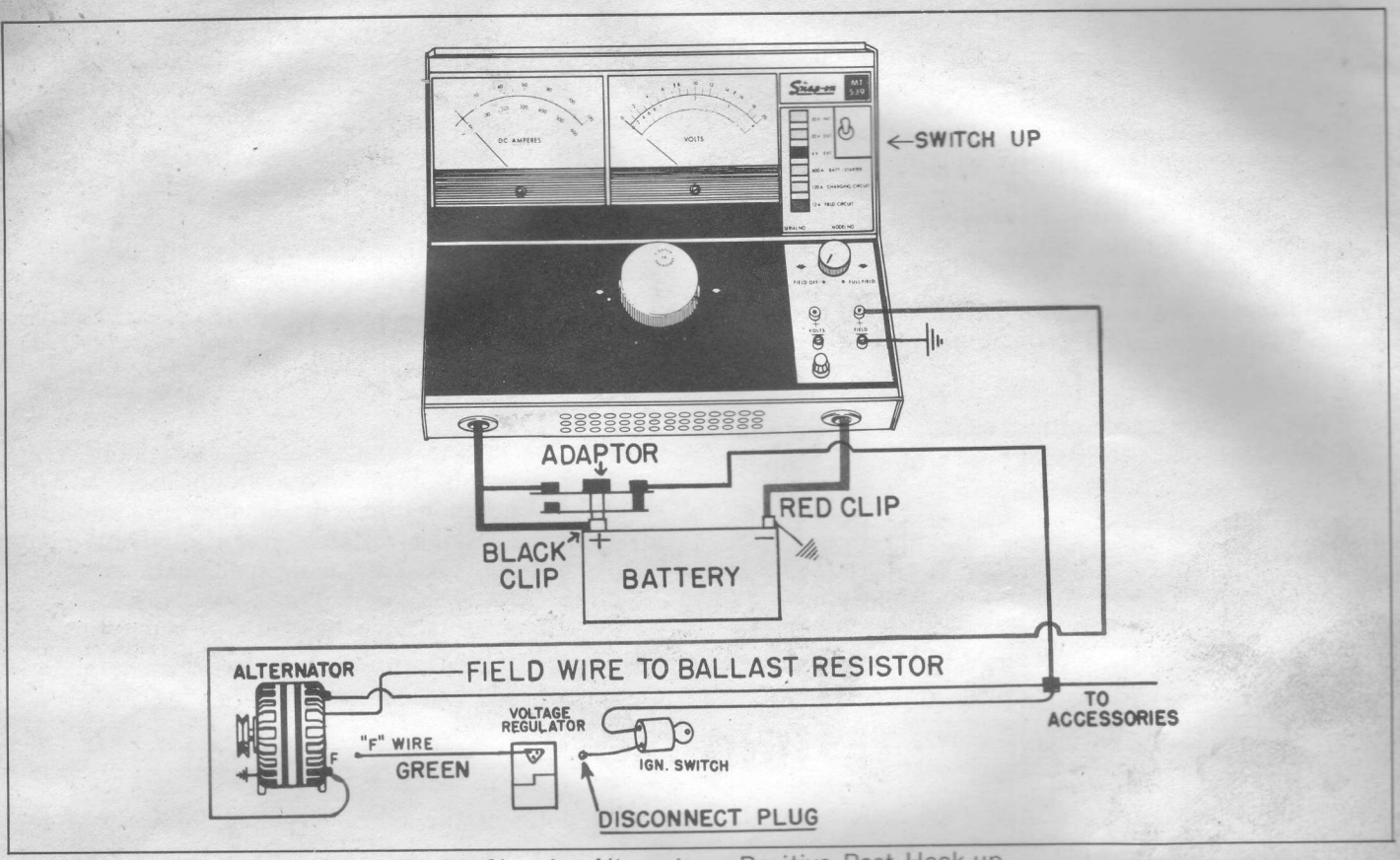

Figure 12 — Connections for 1970-72 Chrysler Alternators. Positive Post Hook-up.

hole adjacent to the regulator provides a means of grounding the field circuit with a small screwdriver.

On **Auto-Lite** integral circuit alternators, attach the black field lead to ground and attach the red field lead to the field terminal of the regulator, as shown in figure 13. This terminal is located under the rubber cap on the housing of the regulator nearest to the center of the alternator end housing.

On **Chrysler** alternators with electronic voltage regulators, connect the field leads, as shown in figures 9 thru 12.

5. Press the "20V INT" and "120A" buttons.

BATTERY DRAIN TEST

1. Turn the switch nut up.
2. Check the ammeter. The reading should be zero. If a discharge (minus) reading is present, it indicates a battery drain which should be corrected.

ALTERNATOR OUTPUT TEST

1. Turn down the switch nut of the battery post adaptor.
2. Start the engine and adjust engine speed to approximately 2,000 rpm. (See manufacturer's manuals for more exact specifications if required.)
3. Turn up the switch nut of the battery post adaptor. Note on the ammeter the discharge current being used by the ignition system.

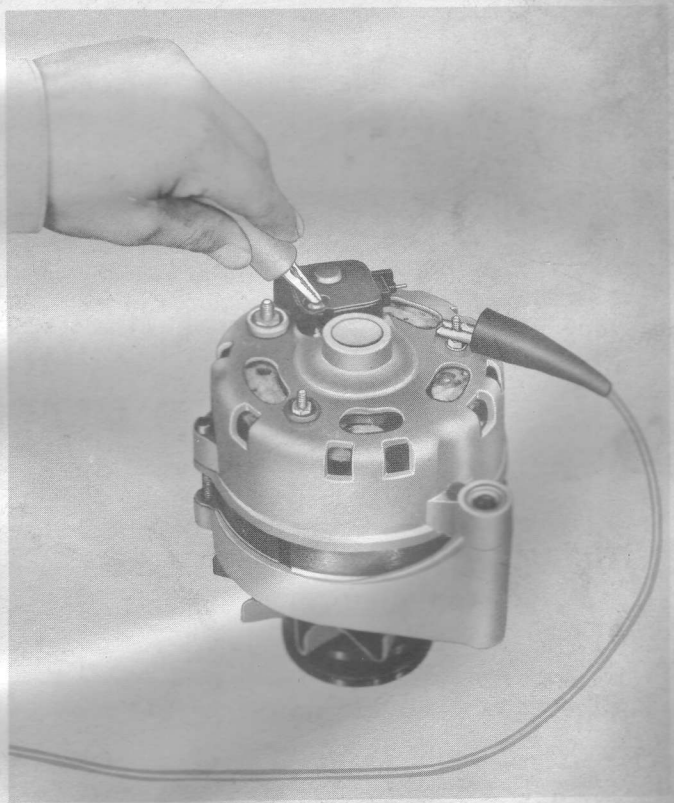

Figure 13 — Field Connections for Autolite Integral circuit Alternator.

4. While using the load control to keep the charging voltage below 15 volts, turn the field rheostat all the way clockwise.
5. Note the reading on the 120 amp scale This is alternator output into the battery.
6. Press the "12A" field circuit button. Adjust the load control to drop voltage to 12 volts and note reading on the 12 amp scale. This is the field current draw of the alternator. Turn the field rheostat and load controls to full counterclockwise (off) position.

Note: Full alternator output consists of **field current** plus **discharge current** plus **alternator output.** Compare with specifications.

Analysis of Field Current:

If field current draw is lower than specifications and alternator output is low, this indicates trouble in slip rings, brushes, or connections.

If field current draw is higher than specifications, this indicates shorted turns in the field windings of the rotor.

If field current draw is normal but the output of the alternator is low or unsteady, trouble is in the diodes, stator winding, or in a slipping fan belt.

VOLTAGE REGULATOR TEST

1. Disconnect the field leads and reconnect the alternator field circuit.
2. With the engine running at approximately 2,000 rpm, remove the black clip at the base of the battery post adaptor to put the ¼ ohm resistor in the circuit. Check the voltmeter for the voltage regulator setting. Compare with specifications. If the voltage setting is not within specs, most integral circuit regulators must be replaced since they are non-adjustable.

TESTING DIODES

By using the MT-549 Adaptor (not included with the MT-539B Tester) in conjunction with the voltmeter of the Tester, it is possible to check diodes by using the voltage drop method. On many alternators, diodes can be checked without removing them from the stator windings.

To connect the adaptor, insert the red jack in the red voltmeter terminal. Connect the black jack to the negative voltmeter terminal. Insert the red voltmeter lead of the Tester in the red plug of the adaptor and the black voltmeter lead in the black plug. Press the "4V" button.

With the connections above, the voltmeter should show the open voltage of the battery contained in the adaptor which is about 1.5 volts.

A good diode will block current in one direction and allow it to flow with slight resistance in the other direction. Thus, a reading of 1.5 volts in one direction and .9 volts in the other direction means that the diode is OK. If the diode is shorted, it will read less than .9 volt. If the diode is open, it will read about 1.5 volts in both directions.

To check negative diodes (stamped with black paint), connect the red voltmeter lead to the frame of the alternator. Touch the black voltmeter lead or probe to the junction of each diode with the stator winding. Readings should be about .9 volt. Three good diodes will all read the same. In case a diode is shorted, the two good ones will read lower than normal and the shorted diode will read about ½ volt. In case a diode is open, the good ones will read normal and the open diode higher than normal.

To check positive diodes (stamped with red paint), connect the black lead to the alternator output terminal and the red lead to the junction of each diode with the stator winding. Readings should be similar to those obtained in testing negative diodes.

TESTS FOR DC CHARGING SYSTEMS

The following tests are made while using the field rheostat of the MT-539B Tester. The battery should be in good condition. All lights and accessories should be turned off.

Connections to the Instrument:
(Load and field controls off.)
1. Red field lead to "+ FIELD."
2. Black field lead to "— FIELD."

Connections to the Vehicle:
(Load and field controls off.)
1. Install the battery post adaptor on either battery post.
2. Connect black clip to the base of the battery post adaptor.
3. Connect the red clip to the opposite battery terminal.
4. Connect the black field lead as follows:
   a) On Auto-Lite and Delco Remy generators

("A" circuit), connect the black field lead to ground. (See figures 14 and 15.)

b) On Ford products or any other "B" circuits, connect the black field lead to the armature terminal of the regulator or generator.

5. Disconnect the field wire at the regulator and attach the red field lead to this wire.
6. Press the "20V INT" and "120A" buttons.

BATTERY DRAIN TEST

1. Turn the switch nut up.
2. Check the ammeter. The reading should be zero. If a discharge (minus) reading is present, it indicates a battery drain which should be corrected.

GENERATOR OUTPUT TEST

1. Turn down the switch nut of the battery post adaptor and start the car. Adjust the engine speed to 2,000 rpm approximately. See manufacturer's manuals for more exact specifications if required.
2. **Turn up the switch nut of the battery post adaptor.**
3. While using the load control to keep the voltage from climbing above 15 volts, turn the field rheostat clockwise until the rated output of the generator is reached. Exceeding the rated output could blow the charging circuit fuse or fuse wire.
4. Turn the field rheostat and load control off. (Counter-clockwise.)

REGULATOR TESTS

Current Regulator Test:

1. Change the black field rheostat lead to the field terminal of the regulator.
2. Turn the field rheostat all the way clockwise.
3. Turn the load control until the voltmeter drops one volt, then read the ammeter. Compare with current regulator specifications. Turn off the load and the field rheostat.

Voltage Regulator Test

1. Disconnect the black clip at the base of the adaptor. Removing this clip puts the ¼ ohm resistor in the charging circuit.

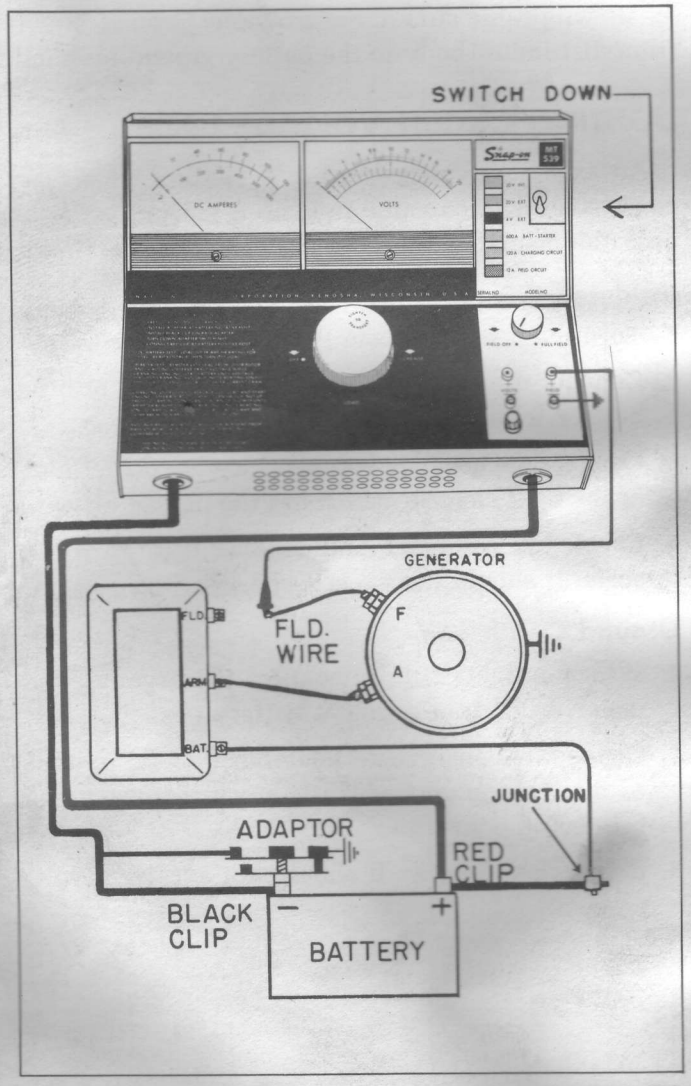

Figure 14 — Connections for Negative Ground DC System. Negative Post Hook-up.

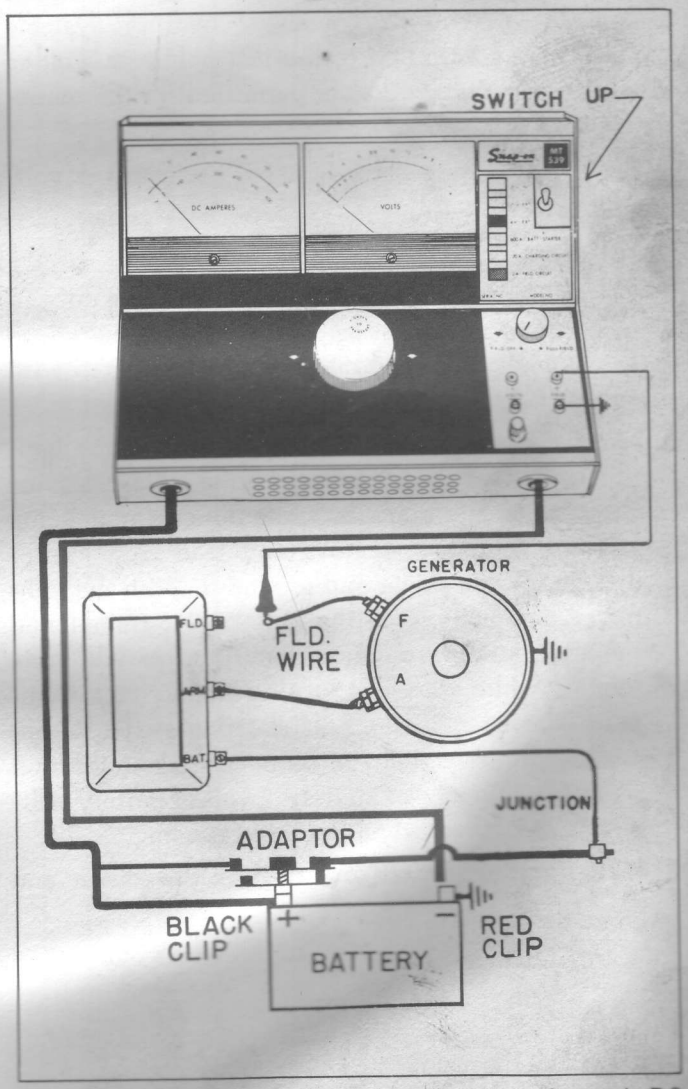

Figure 15 — Connections for Negative Ground DC System. Positive Post Hook-up.

2. Turn the field rheostat all the way clockwise and read the voltmeter. Compare the reading with voltage regulator specifications. Turn the field rheostat all the way counterclockwise and replace the black clip.

3. Idle the engine a few minutes, then turn it off and disconnect the equipment.

GENERATOR FIELD CURRENT

To check generator field current, connect the field rheostat in series with the field circuit observing correct polarity to make the ammeter go up scale. Turn the field rheostat control all the way clockwise while applying the load necessary to drop the voltage to that specified (usually 12 volts). Press the "12A" button and read the field current on the ammeter. Compare with specifications.

VOLTAGE DROP TESTS

The MT-539B Tester can be used for many automotive voltmeter tests because of the range of the voltmeter circuits. Readings as low as .02 volt and as high as 20 volts can be made with dependable accuracy. Automotive shop manuals recommend and explain the performance of a large number of voltmeter tests, particularly voltage drop tests. All can be made with this tester.

An ignition circuit voltage drop test is a typical example. However, the use of other components such as resistance wire or transistor ignition systems would cause a variation in the test points as well as the allowable voltage losses permitted by the manufacturer.

When a ballast resistor is used, perform the voltage drop tests as follows:

1. Press the "4V" button.
2. Connections are made with ignition switch on, and with distributor contacts closed. Voltage drop across ballast resistor may then be compared with specifications.
3. Many vehicles use a shorting device on the ignition switch, or starter to remove the ballast resistor from the ignition circuit, while the engine is being started. To check, remove coil lead from center distributor cap tower and ground it. With the voltmeter connections at the coil "+" terminal and the distributor ground, operate starter and note reading while starter is turning engine over. Compare with specifications. If shorting switch is operating properly, voltage as measured at the coil will be within approximately .2 volt of battery voltage as measured when cranking the engine.
4. With ignition switch on, "20V EXT" down and distributor contacts closed, voltage drop across the distributor contacts, pigtails and terminals may be measured. Use the 20 volt scale and if voltage is below 4 volts, press the "4V" button for more accurate readings. Compare with specifications. A general specification often given, is a maximum of .2 volt drop.

Similar voltage drop tests can be made throughout the ignition circuit, with the ignition switch on, and contacts closed, so that normal ignition current flow exists within the circuit. For example: Ground circuit from distributor body to the battery ground terminal.

LIGHTING CIRCUIT VOLTAGE DROP

An excessive voltage loss in a lighting circuit can cause a serious reduction in lighting efficiency. Check both the insulated and ground portion of the circuit.

Insulated Circuit Test

1. Turn the head lights on. Press "4V" button.
2. Connect the positive voltmeter lead to the positive battery terminal.
3. Connect the negative voltmeter lead to the terminal of the light element which has the lighted filament.
4. Check the voltmeter and note voltage on 4 volt scale. It should not exceed one volt.

Ground Circuit Test

1. With the lights still on connect the negative voltmeter lead to the negative battery post.
2. Connect the positive voltmeter lead to the terminal of the lighting unit which is grounded at the light terminal block.
3. Read the voltmeter. It should not exceed .2 volt.

CHARGING SYSTEM SPECIFICATIONS

American Passenger Cars

Make — Model — Generator or Alternator Number	Year	Cutout Closing Volts	Voltage Regulator Volts*	Current Regulator Amps	Alternator Output Amps	Field Current Amps
BUICK						
Standard Regulator	1962	12-13	14.0-14.9	35-40	—	1.7-1.8
Double Contact Reg.	1962	12-13	14.0-14.8	43-48	—	2.7-2.9
1100623	1963	—	13.5-14.3	—	42	1.9-2.3
1100622	1963	—	13.5-14.3	—	52	1.9-2.3
1100663, 1100624	1964	—	13.5-14.3	—	30	1.9-2.3
1100679	1964	—	13.5-14.3	—	40	2.2-2.6
1100691, 1100708, 1100705	1965-66	—	13.5-14.3	—	30	2.2-2.6
1100710, 1100709	1965-66	—	13.5-14.3	—	40	2.2-2.6
1100761, 762, 888, 905, 2449	1967-72	—	13.5-14.3	—	37	2.2-2.6
1100691, 926, 943, 2443	1967-72	—	13.5-14.3	—	42	2.2-2.6
1100774, 802, 892, 924, 931, 2448	1967-72	—	13.5-14.3	—	55	2.2-2.6
1100860, 932, 2450	1969-72	—	13.5-14.5	—	61	2.2-2.6
1102447	1972	—	13.5-14.5	—	63	2.8-3.2
CADILLAC						
Standard Regulator	1958-62	11.8-13.5	13.8-14.8	32-37	—	1.6-1.8
Double Contact Reg.	1960-62	11.8-12.0	13.8-14.6	43-47	—	2.6-2.9
1100629	1963-64	—	13.5-14.3	—	42	1.9-2.3
1100633	1963-64	—	13.5-14.3	—	52	1.9-2.3
Standard Alternator	1965-72	—	13.5-14.4	—	42	2.2-2.6
Air Cond., Heavy Duty	1965-70	—	13.5-14.4	—	55	2.2-2.6
Heavy Duty 63 Amp	1971	—	13.5-14.4	—	63	2.2-2.6
Heavy Duty 80 Amp	1971	—	13.5-14.5	—	80	4.0-4.5
Heavy Duty, A/C	1972	—	13.5-14.5	—	63	2.8-3.2
CHEVROLET						
30 Amp Generator	1962	11.8-13.5	13.8-14.7	27-31	—	1.5-1.6
35 Amp Generator	1962	11.8-13.5	13.8-14.7	31-35	—	1.7-1.8
1100630, 1100760	1963-64	—	13.5-14.4	—	32	1.9-2.3
1100628, 1100668	1963-64	—	13.5-14.4	—	37	1.9-2.3
1100669	1964	—	13.5-14.4	—	42	1.9-2.3
1100665	1964	—	13.5-14.4	—	55	2.2-2.6
1100684	1964	—	13.7-14.4	—	60	4.4-4.5
1117765	1964-65	—	13.0-13.6	—	62	3.7-4.4
1100695	1965-67	—	13.5-14.4	—	32	2.2-2.6
1100693	1965-68	—	13.5-14.4	—	37	2.2-2.6
1100696	1965-68	—	13.5-14.4	—	42	2.2-2.6
1100694	1965	—	13.5-14.4	—	55	2.2-2.6
1100697	1965	—	13.4-14.0	—	60	2.8-3.2
1100750	1966-68	—	13.5-14.4	—	61	2.2-2.6
1100742	1967	—	13.5-14.3	—	63	2.8-3.2
1100794, 813, 814, 834, 36, 37	1968-70	—	13.5-14.4	—	37	2.2-2.6
1100795, 815, 833, 39, 41, 59	1968-70	—	13.5-14.4	—	42	2.2-2.6
1100796, 817, 750, 825, 43, 97	1968-70	—	13.5-14.4	—	61	2.2-2.6
1100818, 810, 846	1968-70	—	13.5-14.4	—	63	2.2-2.6
1100545, 559	1971-72	—	13.5-14.3	—	32	4.0-4.5
1100566, 836, 37	1971-72	—	13.5-14.3	—	37	2.2-2.6
1100567, 2458, 2459	1971-72	—	13.5-14.3	—	42	2.2-2.6
1100543, 950	1971-72	—	13.5-14.5	—	42	4.0-4.5
1100544	1971-72	—	13.5-14.5	—	61	4.0-4.5
1100843, 1102463	1971-72	—	13.5-14.3	—	61	2.2-2.6
1100917, 1102464	1971-72	—	13.5-14.5	—	63	2.8-3.2
1100546, 560	1972	—	13.5-14.4	—	55	4.0-4.5
1102440, 452, 453, 454, 456	1972	—	13.5-14.4	—	37	2.2-2.6

*At an Ambient Temperature of 115-125 Degrees.

CHARGING SYSTEM SPECIFICATIONS

American Passenger Cars

Make — Model — Generator or Alternator Number	Year	Cutout Closing Volts	Voltage Regulator Volts*	Current Regulator Amps	Alternator Output Amps	Field Current Amps
CHRYSLER						
Std. Duty Alternator	1961-71	—	13.6-14.2	—	35	2.4-2.8
Heavy Duty Alternator	1963-65	—	13.6-14.2	—	39	2.4-2.8
Heavy Duty Alternator, A/C	1966-71	—	13.3-14.2	—	44	2.4-2.8
Special Equip.	1968-71	—	13.3-14.3	—	51	2.4-2.8
Standard	1972	—	13.6-14.2	—	41	2.5-3.1
Heavy Duty, A/C	1972	—	13.6-14.2	—	50	2.5-3.1
CORVAIR						
All	1960-63	11.8-13.5	13.8-14.8	28-31	—	1.5-1.6
All	1964	11.3-13.0	13.8-14.7	31-35	—	1.7-1.8
1100639	1965-69	—	13.8-14.8	—	35	2.2-2.6
1100698	1965-69	—	13.8-14.8	—	45	2.8-3.2
DODGE and DART						
26 Amp Alternator	1961-71	—	13.6-14.2	—	26	2.4-2.8
35 Amp Alternator	1961-70	—	13.5-14.1	—	35	2.4-2.8
Heavy Duty Alternator	1964-65	—	13.4-14.3	—	36-42	2.4-2.8
Heavy Duty Alternator, A/C	1966-71	—	13.3-14.3	—	44	2.4-2.8
Special Equip.	1968-71	—	13.3-14.3	—	51	2.4-2.8
6 Cyl.	1972	—	13.6-14.2	—	34	2.5-3.1
V-8 Standard	1972	—	13.6-14.2	—	41	2.5-3.1
V-8 Heavy Duty, A/C	1972	—	13.6-14.2	—	50	2.5-3.1
FALCON and COMET						
25 Amp Generator	1960-64	12.4-13.2	14.1-14.9	23-27	—	1.0-1.5
30 Amp Generator	1960-64	12.4-13.2	14.1-14.9	28-32	—	1.0-1.5
38 Amp Alternator	1965-67	—	13.8-14.6	—	38	2.8-3.3
42 Amp Alternator	1965-67	—	13.8-14.6	—	42	2.8-3.3
45 Amp Alternator	1966-67	—	13.8-14.6	—	45	2.9
	1968-72 (See Ford)					
FORD						
30 Amp Generator	1956-64	12.2-13.2	14.1-14.9	28-32	—	1.2-1.8
35 Amp Generator	1960-63	12.4-13.2	14.1-14.9	33-37	—	1.2-1.8
30 Amp Alternator	1963	—	14.1-14.9	—	30	2.3-2.5
40 Amp Alternator	1963	—	14.1-14.9	—	40	2.9-3.1
60 Amp Leece-Neville	1963-65	—	13.7-14.4	—	60	2.0-2.5
42 Amp Ford Alternator	1964	—	13.9-14.5	—	42	2.4-2.6
40 Amp Leece-Neville	1964	—	14.0-14.3	—	40	2.4-2.6
42 Amp Autolite	1965-67	—	13.8-14.6	—	42	2.8-3.3
45 Amp Autolite	1965	—	13.8-14.6	—	45	2.8-3.3
55 Amp Autolite	1965-67	—	13.8-14.6	—	55	2.8-3.3
53 Amp Leece-Neville	1965-67	—	13.8-14.6	—	53	2.8-3.3
38 Amp Autolite	1967	—	13.8-14.6	—	38	2.9
Autolite (Purple)	1968-72	—	13.5-15.3	—	38	2.4
Autolite (Orange)	1968-72	—	13.5-15.3	—	42	2.9
Autolite (Red)	1968-72	—	13.5-15.3	—	55	2.9
Autolite (Black)	1968-72	—	13.5-15.3	—	65	2.9
Leece-Neville	1968-72	—	13.6-14.6	—	65	2.9
Autolite (Green)	1972	—	13.5-15.3	—	61	2.9

*At an Ambient Temperature of 115-125 Degrees.

CHARGING SYSTEM SPECIFICATIONS

American Passenger Cars

Make — Model — Generator or Alternator Number	Year	Cutout Closing Volts	Voltage Regulator Volts*	Current Regulator Amps	Alternator Output Amps	Field Current Amps
LINCOLN						
Std. Generator	1958-62	12.0-12.8	14.1-14.9	38-42	—	1.2-1.8
Air Condition Cars	1960-62	11.8-13.0	14.1-14.9	49-58	—	1.2-1.8
40 Amp Alternator	1963-64	—	13.9-14.5	—	40	2.4-2.6
42 Amp Alternator	1965	—	13.8-14.6	—	42	2.8-3.3
55 Amp Autolite	1965-67	—	13.8-14.6	—	55	2.8-3.3
60 Amp Autolite	1966-67	—	13.8-14.6	—	60	4.6
	1968-72 (See Ford)					
MERCURY	1956-72	(See Ford specifications for similar generators)				
OLDSMOBILE						
Standard Regulator	1960-62	11.8-13.5	13.8-14.7	31-35	—	1.6-1.8
Double Contact Reg.	1960-62	11.8-13.5	13.8-14.7	38-45	—	2.7-2.9
1100631, 1100663, 1100656	1963-64	—	13.5-14.4	—	37	2.2-2.6
1100624, 1100659	1963-64	—	13.5-14.4	—	42	2.2-2.6
1100616, 1100657, 658, 664	1964	—	13.7-14.6	—	50-57	2.2-2.6
1100699, 1100696	1965-67	—	13.5-14.4	—	37-44	2.2-2.6
1100704, 1100705	1965-67	—	13.5-14.4	—	32-39	2.2-2.6
1100686, 1100700, 1100710	1965-67	—	13.5-14.4	—	50-57	2.2-2.6
37 Amp Delcotron	1968-72	—	13.5-14.4	—	35	2.2-2.6
42 Amp Delcotron	1968-72	—	13.5-14.4	—	40	2.2-2.6
55 Amp Delcotron	1968-72	—	13.5-14.4	—	50-52	2.2-2.6
55 Amp Int. Circuit	1968-72	—	13.5-16	—	55	4.0-4.5
A/C 61 Amp	1972	—	13.5-14.4	—	61	2.2-2.6
PLYMOUTH						
35 Amp Alternator	1961-71	—	13.4-14.3	—	32-37	2.4-2.8
Heavy Duty Alternator	1964-65	—	13.4-14.3	—	36-42	2.4-2.8
6 cyl. AV-1	1965-71	—	13.4-14.3	—	23-30	2.4-2.8
Heavy Duty Alternator	1966-71	—	13.4-14.3	—	44	2.4-2.8
Special Equip.	1968-71	—	13.3-14.3	—	51	2.4-2.8
6 Cyl.	1972	—	13.6-14.2	—	34	2.5-3.1
V-8 Standard	1972	—	13.6-14.2	—	41	2.5-3.1
V-8 Heavy Duty, A/C	1972	—	13.6-14.2	—	50	2.5-3.1
PONTIAC						
35 Amp Generator	1962	11.8-13.0	13.8-14.6	31-35	—	1.6-1.8
1100634, 636, 678, 680	1963-64	—	13.5-14.4	—	42	2.2-2.6
1100621, 681, 682	1963-64	—	13.5-14.4	—	52	2.2-2.6
1100674, 702, 703	1964-66	—	13.4-14.4	—	58-60	4-4.5
1100727, 699, 739	1965-67	—	13.5-14.4	—	40-42	2.2-2.6
1100728, 726, 760, 745, 700	1965-67	—	13.5-14.4	—	50-55	2.2-2.6
37 Amp Delcotron	1968-70	—	13.5-16	—	35	2.2-2.6
42 Amp Delcotron	1968-70	—	13.5-16	—	40	2.2-2.6
55 Amp Delcotron	1968-70	—	13.5-16	—	50	2.2-2.6
55 Amp Int. Circuit	1969-70	—	13.5-16	—	55	4.0-4.5
37 Amp Delcotron	1971-72	—	13.5-14.5	—	32	4.0-4.5
55 Amp Delcotron	1971-72	—	13.5-14.5	—	50	4.0-4.5
80 Amp Delcotron	1971-72	—	13.5-14.5	—	74	4.0-4.5

*At an Ambient Temperature of 115-125 Degrees.

CHARGING SYSTEM SPECIFICATIONS

American Passenger Cars

Make — Model — Generator or Alternator Number	Year	Cutout Closing Volts	Voltage Regulator Volts*	Current Regulator Amps	Alternator Output Amps	Field Current Amps
RAMBLER, AMC						
DR. 1119122	1960-62	11.8-13.5	13.8-14.7	23-27	—	1.5-1.6
DR. 30 Amp Generator	1960-64	11.8-13.5	13.8-14.7	27-31	—	1.7-2.3
DR. 45 Amp Generator	1962	11.8-13.0	13.8-14.6	38-45	—	2.6-2.9
Motorola 35 Amp Alt.	1963-67	—	13.7-14.5	—	35	2.0-2.6
Motorola 40 Amp Alt.	1965-67	—	13.7-14.5	—	40	1.8-2.4
A12NAM 453, 4, 5, 6, 7	1968-69	—	13.7-14.5	—	35	2.2-2.6
A12NAM 552, 553	1968	—	13.7-14.5	—	40	1.8-2.4
ALK 6310, 11, 3195534	1968-71	—	13.7-14.5	—	35	2.4-2.5
A12NAM 606, 607	1969-71	—	13.7-14.5	—	55	1.8-2.4
35 Amp Motorola	1972	—	13.7-14.5	—	35	1.8-2.5
55 Amp Motorola	1972	—	13.7-14.5	—	55	1.8-2.5
STUDEBAKER						
30 Amp Generator	1956-62	11.8-13.5	13.8-14.7	28-32	—	1.2-1.3
35 Amp Generator	1961-62	12.5-13.5	14.2-15.0	34-36	—	1.7-1.8
34 Amp Alternator	1963-66	—	14.0-14.4	—	34	2.2-2.4
40 Amp Alternator	1963-66	—	14.0-14.4	—	40	1.9-2.5
TEMPEST						
30 Amp Generator	1961-62	11.8-13.5	13.8-14.7	27-31	—	1.5-1.6
35 Amp Generator	1961-62	11.8-13.5	13.8-14.7	31-35	—	1.6-1.8
1100634, 636, 727	1963-65	—	13.5-14.4	—	42	2.2-2.6
1100632, 637, 668, 761, 762, 704	1963-67	—	13.5-14.4	—	37	2.2-2.6
1100665, 627, 760, 745, 700	1963-67	—	13.5-14.4	—	55	2.2-2.6
	1968-72 (See Pontiac)					
VALIANT						
26 Amp Alternator	1960-71	—	13.4-14.3	—	26	2.4-2.8
Heavy Duty Alternator	1964-65	—	13.4-14.3	—	36-42	2.4-2.8
35 Amp Alternator	1965-71	—	13.4-14.3	—	32-37	2.4-2.8
Heavy Duty Alternator	1966-71	—	13.8-14.6	—	44	2.4-2.8
	1972 (See Plymouth)					

*At an Ambient Temperature of 115-125 Degrees.

CONVERSION TABLE FOR DELCO BATTERIES

Some Delco batteries have ratings in watts instead of amp-hours. The listing below gives comparable amp-hour ratings.

WET BATTERY NO.	DRY BATTERY NO.	WATT RATING*	AMP. HR. RATING
9MJ3	R 59	2900	61
3KM	R 63	3000	70
4NF	R 65	2750	65
9TJ3	R 69	3150	70
9MJ6	R 71	3350	73
17M2, 9MJ3	Y 49, Y 59	2350	53
17MJ1	Y 55	2300	45
3KM	Y 63	2700	56
4NF	Y 65	2450	55
9MJ6, 3MFA	Y 71, Y 81	3000	70
17M2, 17MJ1, 9MJ3	G 49, G 55, G 59	1800	41
3KM	G 63	2400	50
4NF	G 65	2000	41

*Cranking Power at 0° F.

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