

★ INSTRUCTIONS ★

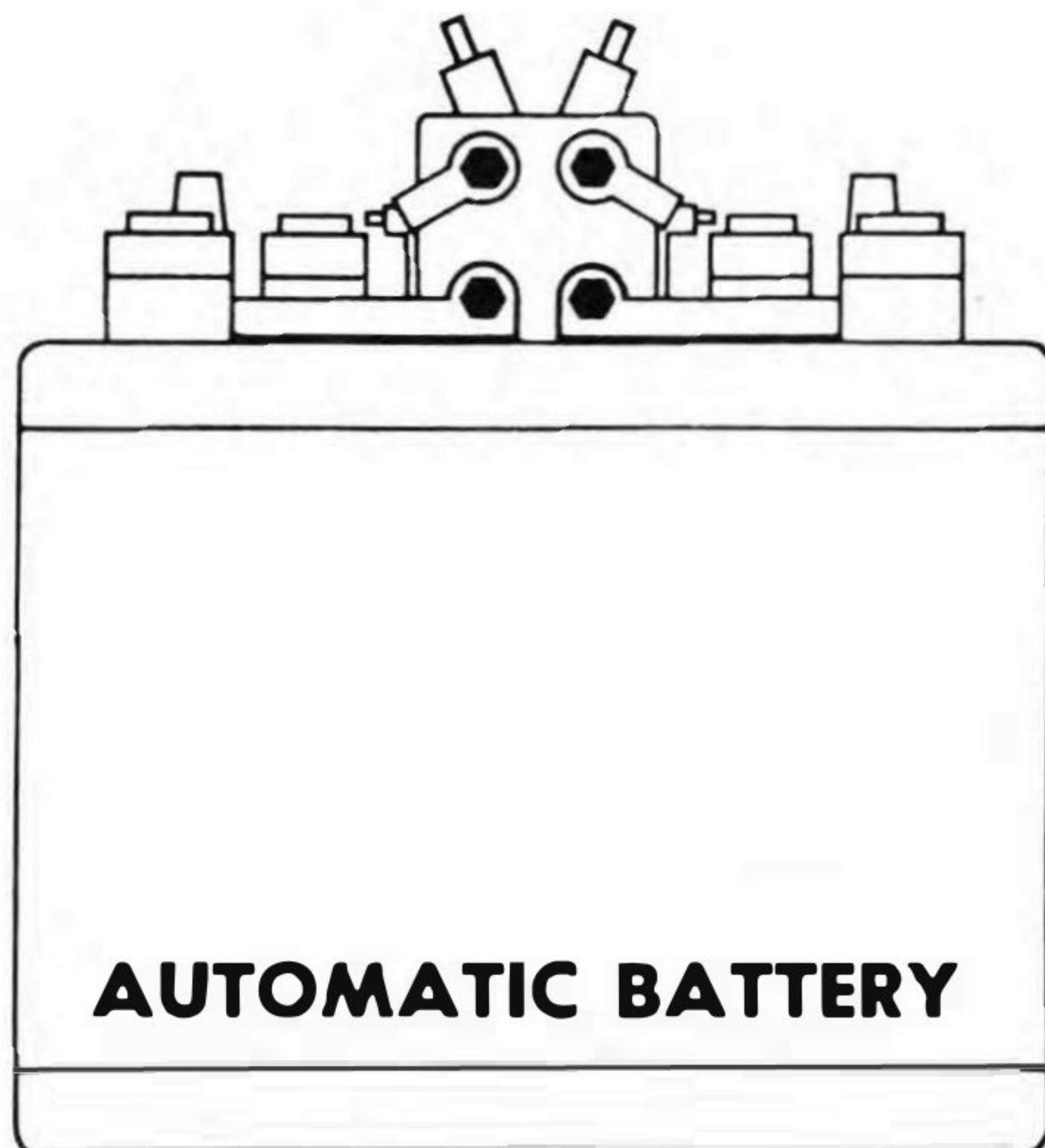
AND SERVICE MANUAL

FOR

INSTALLING AUTOMATIC BATTERY

EQUIPPED WITH THE...

QUICK-FIRE *Opfer* **BATTERY SWITCH**



● LEAVE WITH VEHICLE ●

INDEX TO WIRING INSTRUCTIONS FOR AMERICAN AUTOMOBILES

ALLSTATE

1951-54 Inst. No. 2

BUICK

1946-50 Inst. No. 4

1951-52 Inst. No. 10

1953 (Special) Inst. No. 10

CADILLAC

1946-49 Inst. No. 4

1950-52 Inst. No. 1

CHEVROLET

1946-48 Inst. No. 8

1949-54 Inst. No. 1

CHRYSLER

1946-50 Inst. No. 12

1951-54 Inst. No. 9

CROSLEY

1946-52 Inst. No. 3

DESOTO

1946-50 Inst. No. 12

1951-55 Inst. No. 7 or 9

DODGE

1946-55 Inst. No. 3

FORD

1946-50 Inst. No. 2

1951-55 Inst. No. 3

FRAZER

1947-51 Inst. No. 3

HENRY J

1951-54 Inst. No. 2

HUDSON

1946-55 Inst. No. 3

KAISER

1947-54 Inst. No. 3

LINCOLN

1946-50 Inst. No. 2

1951-55 Inst. No. 3

MERCURY

1946-51 Inst. No. 2

1952-55 Inst. No. 3

NASH

1946-55 Inst. No. 3

OLDSMOBILE

1946-48 Inst. No. 4

1949-52 Inst. No. 1

PACKARD

1946-54 Inst. No. 3

1946-54 (Custom) Inst.
No. 12

PLYMOUTH

1946-55 No. 3

PONTIAC

1946-48 Inst. No. 8

1949-54 Inst. No. 1

STUDEBAKER

1946-55 Inst. No. 2

WILLYS

Inst. No. 5 or 8

NOTICE

There is a wiring diagram in this book for every possible installation. If not listed above, check equipment and refer to instruction sheet index inside back cover.

FOREWORD

Please read before attempting to install an automatic battery.

READING TIME 2 MINUTES

The automatic battery has been developed through years of expert engineering and heavy duty testing. If installed properly and **all other** electrical equipment on the vehicle is maintained in good order, the automatic battery should give you years of trouble free service. Before installing the automatic battery, we would like to make the following suggestions.

1. Have your service station start your vehicle several times with a regular 12 volt battery. Be sure all lights, radio, etc. are off for this test only. If the starter turns well and the engine starts readily, you can expect the automatic battery to give you the same results.
2. If you are a person who is consistently bothered by a dead (discharged) battery, it is usually caused by only one reason; you are taking more electricity out of the storage battery than your generator is putting back in the storage battery. You must find out why you are taking too much out; such as shorted wiring, worn out dragging starter, radio left on, etc., OR you must find out why you are not putting enough electricity in; such as poor wiring connections, faulty generator, faulty regulator, short run driving, etc. The automatic battery will not cure this situation.
3. Make sure the battery hold-down is installed properly and battery is held securely in place. Bolts should be snug but not tightened excessively with wrench.
4. Be sure to read cautions on back cover.
5. Have your voltage regulator checked to the vehicle manufacturers specifications anytime you install a battery, automatic or otherwise.

6. Make sure any wiring splices are soldered properly.
7. Be sure to use the correct wiring diagram for the vehicle.
8. Don't be misled! Installations are quite simple when the instructions are read and followed. (15 to 45 minutes)
9. In all installations you will notice instructions to remove all car body feed wires at the end of the battery cable on the starter switch and connect to the battery switch. In the diagram it is shown as one wire. It could be one, two, or three wires. In any event remove all of them but the battery cable.
10. If after installing an automatic battery, you should ever experience starting trouble again, years of experience has shown that in 99 cases out of 100 it is vehicle equipment trouble beyond the battery. Consult the service section carefully.
11. After installation has been completed, coat all switch and battery connections with a good corrosion preventative.
12. If your automatic battery ever needs to be charged, follow directions on page 23. **USE 6 VOLT CHARGER ONLY.**
13. If your automatic battery ever becomes discharged and it is necessary to use a booster battery, follow directions on page 22. **NEVER LEAVE 12 VOLT BOOSTER BATTERY CONNECTED TO YOUR 6 VOLT AUTOMATIC BATTERY FOR MORE THAN A FEW SECONDS AT A TIME.**
14. **AFTER READING THE INSTRUCTIONS THOROUGHLY, SHOULD YOU HAVE ANY QUESTIONS OR NEED HELP IN PROPERLY INSTALLING OUR PRODUCT, WE RECOMMEND THAT YOU CONTACT A QUALIFIED AUTO ELECTRICIAN IN YOUR AREA.**

CONTENTS

	Page Number
1. Index to wiring instructions (American Automobiles)	Inside Front Cover
2. How to use this service manual and instruction booklet	4
3. How the automatic battery works.....	5
4. Instruction sheets Nos. 1 through 12...6 through	17
5. How the Orpin series-parallel switch works.....	18
6. How to install the Orpin series-parallel switch on automatic battery.....	19
7. How to install the special automatic battery hold-down	20
8. Instructions to User.....	21
9. How to Use 12 Volt Booster Battery.....	22
10. How to charge the automatic battery.....	23
11. Service Section.....	23 through 28
12. Index to wiring instructions (Trucks, Tractors, Boats, and Commercial equipment)	Inside Back Cover
13. How to temporarily replace the automatic battery with a regular battery without major wiring changes.....	Outside Back Cover

HOW TO USE THIS SERVICE MANUAL AND INSTRUCTION BOOKLET

INDEXES TO INSTRUCTION SHEETS:

1. For American cars simply look up the make and year on the inside front cover. The correct instruction sheet No. is listed beside the correct year for the make and model. In two cases you will notice 2 instruction sheets listed. In this case the vehicle equipment must be checked for the correct diagram.
2. For trucks, foreign cars, boats, tractors, and commercial equipment, the index on the inside back cover must be used. Due to the fact that electrical equipment changes do not follow the year, make, and model changes of the vehicles, it is impossible to classify the instruction sheets except by equipment. An example of how to locate the correct diagram is as follows:

Most International 6 volt trucks have the following:

Positive ground, a simple solenoid starter switch (that is, the starter solenoid does **not** engage the starter pinion in the flywheel).

A two wire starter push button (that is, the starter switch is operated by a hot wire instead of a ground wire).

Bendix type starter (that is, a sling-in type rather than solenoid operated).

Matching the above equipment on the inside back cover of the instruction booklet, we find it in diagram #3, the same as a 1952 Ford passenger car.

Diagrams for any installation may be found in this manner. Even electrical systems that have never been manufactured such as can often be found in some home-made boats.

SERVICE SECTION:

The service section of this manual is divided into four sections.

Service Bulletins No. 1 & 2 deal with direct troubles concerned with the automatic battery which will be needed very seldom if ever.

Service Bulletin No. 3 deals with vehicle equipment troubles which will have their effect on the automatic battery. This bulletin should help all mechanics servicing automatic batteries.

Service Bulletin No. 4 shows how to test an Orpin Series-parallel switch with a simple piece of equipment which can readily be made at any garage in just a few minutes.

INDIVIDUALS, Dealers, and Mechanics desiring any technical information about automatic batteries regardless of brand name may receive prompt replies from:

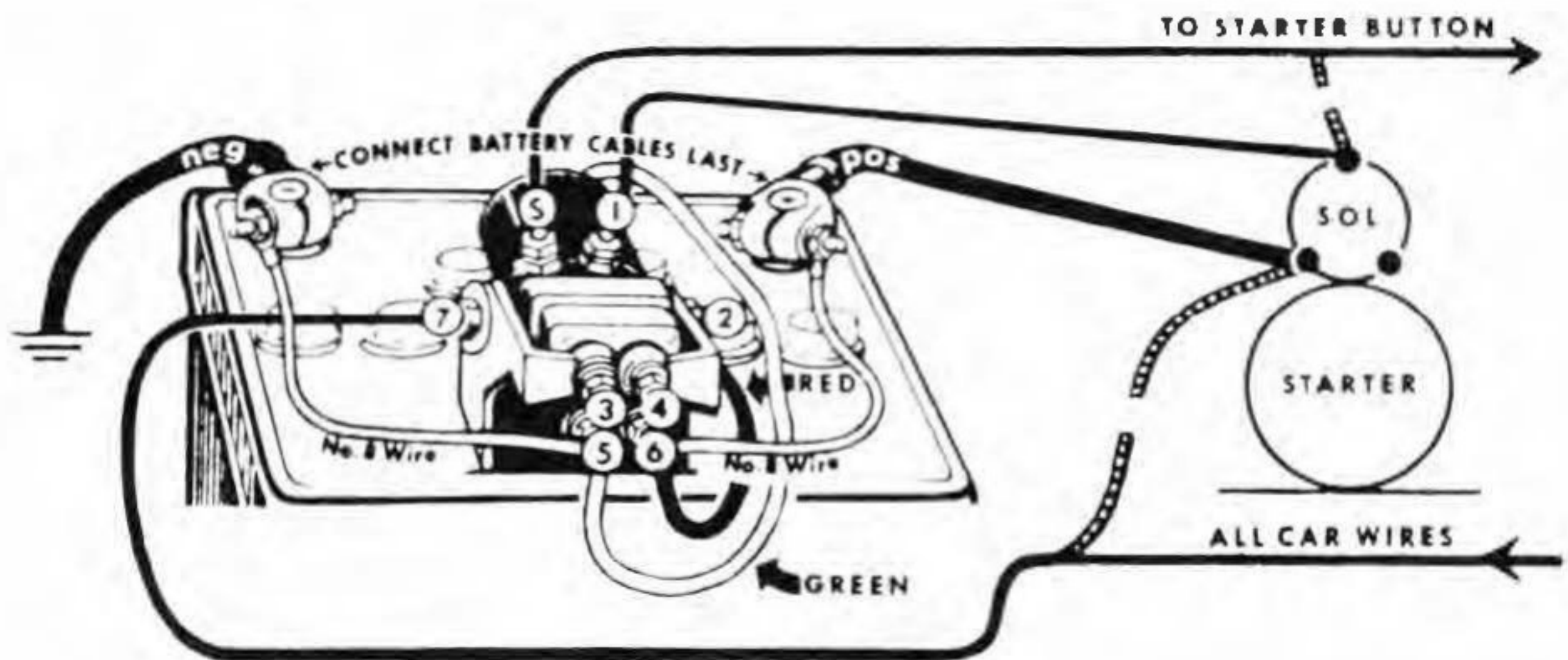
**AUTOMATIC BATTERY CORPORATION
OF AMERICA
P.O. BOX 6002
FULTON, CA 95439**

The Automatic Battery is ingeniously simple. It consists of a regular 6 cell battery divided into two 6 volt sections and an Orpin series-parallel switch. In the normal position the switch makes a parallel connection between the two sections, rendering the entire battery 6 volts. When the starter button is pressed, the parallel connection is broken and a series connection is made, delivering 12 volts for the starter. Since all other car wiring is connected to the switch at the dividing point, no other part of the car receives more than 6 volts whether the car is starting or not. See diagram on page 18.

INSTRUCTION SHEET NO. 1

For cars with negative ground and solenoid operated
clutch without relay

Typical 1952 Oldsmobile—See Index For Others



Broken wire indicates original location of the wire

INSTRUCTIONS

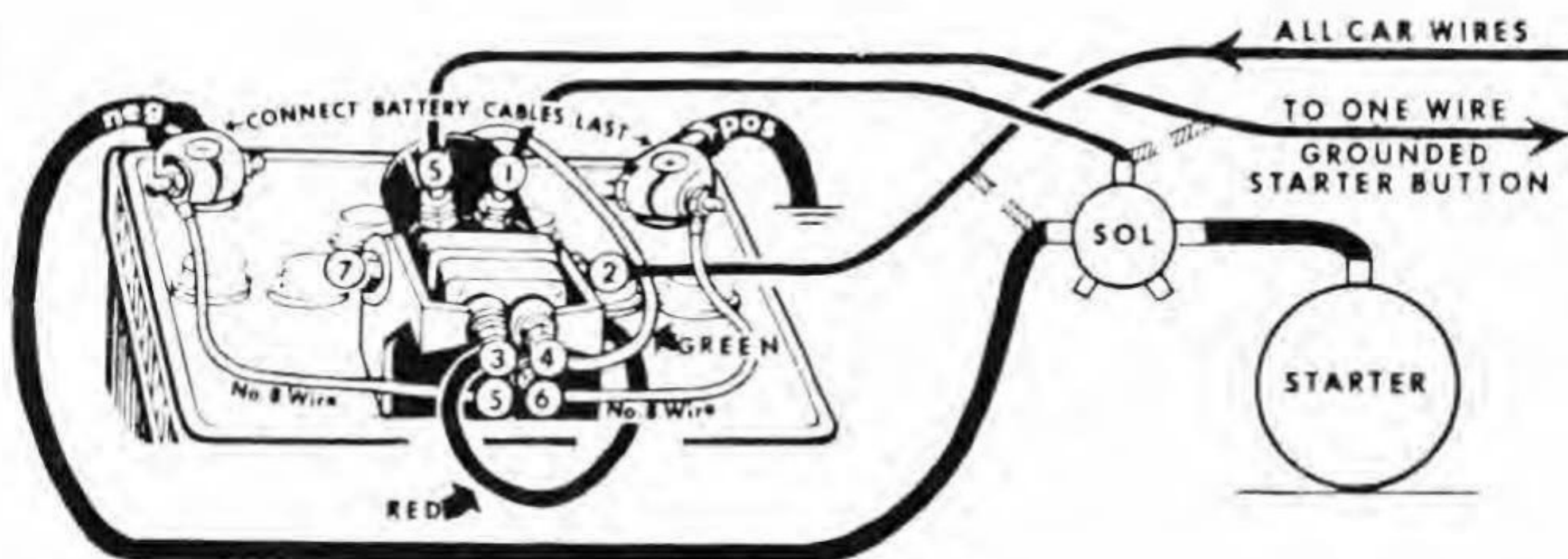
1. Before installing the automatic battery, connect the red wire on the switch to terminal 6 and the green wire to terminal 5
2. Remove old battery
3. Place automatic battery in box and install new hold-down. **DO NOT CONNECT BATTERY CABLES AT THIS TIME**
4. Remove all car body feed wires from starter end of battery cable and connect to terminal 7 on battery switch
5. Remove starter button wire from starter solenoid and connect to terminal S on battery switch and connect wire from terminal I to starter solenoid
6. Connect starter battery cable to positive post and grounded battery cable to negative post
7. Connect #8 lead from terminal 5 to neg. cable clamp bolt and #8 lead from terminal 6 to pos. cable clamp bolt
8. Coat switch and battery connections with a corrosion preventative
9. Check battery regularly. Keep water level up, keep filler caps clean and dry and keep all switch connections and battery cables tight and clean

If car has electric choke, disconnect choke wire from starter and connect to terminal 4. Generator regulator should be set to the original car or truck manufacturer's 6 volt specifications.

INSTRUCTION SHEET NO. 2

For cars with positive ground, simple solenoid starter switch with single wire push button and Bendix drive starter

Typical 1949 Ford—See Index For Others



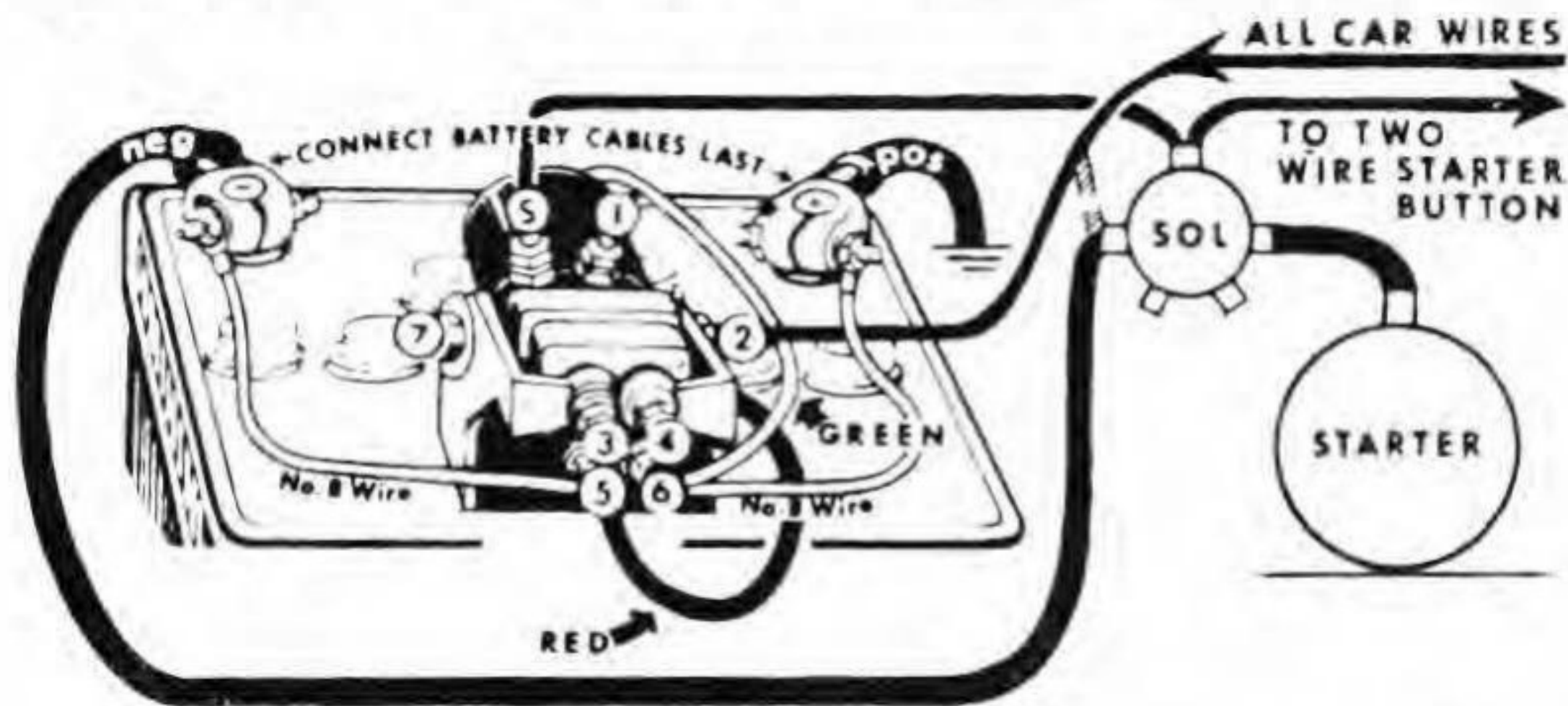
Broken wire indicates original location of the wire

INSTRUCTIONS

1. Before installing the automatic battery, connect the red wire on the switch to terminal 3 and the green wire to terminal 4
 2. Remove old battery
 3. Place automatic battery in box and install new hold-down. **DO NOT CONNECT BATTERY CABLES AT THIS TIME**
 4. Remove all car body feed wires from starter end of battery cable and connect to terminal 2 on battery switch
 5. Remove starter button wire from starter switch and connect to terminal S on battery switch and connect wire from terminal I to starter switch
 6. Connect starter battery cable to negative post and grounded battery cable to positive post
 7. Connect #8 lead from terminal 5 to neg. cable clamp bolt and #8 lead from terminal 6 to pos. cable clamp bolt
 8. Coat switch and battery connections with a corrosion preventative
 9. Check battery regularly. Keep water level up, keep filler caps clean and dry and keep all switch connections and battery cables tight and clean
- If car has electric choke, disconnect choke wire from starter and connect to terminal 3. Generator regulator should be set to the original car or truck manufacturer's 6 volt specifications.

INSTRUCTION SHEET NO. 3

For cars with positive ground, simple solenoid switch with two wire push button or ignition key type Bendix drive starter
Typical 1952 Ford—See Index For Others



Broken wire indicates original location of the wire
Note: For cars with mechanical switch and Bendix type starter (such as Nash), install a 1952 Ford solenoid starter switch and use original starter switch as the push button or dash push button and proceed as follows

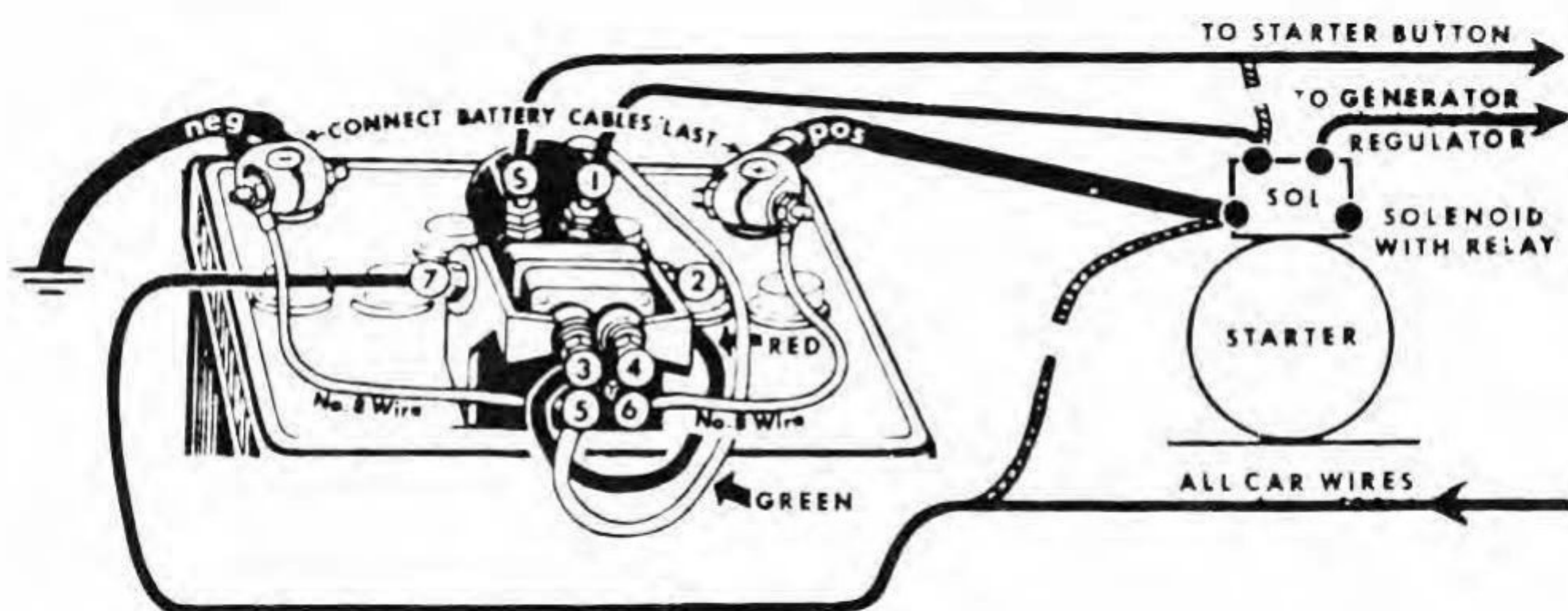
INSTRUCTIONS

1. Before installing the automatic battery, connect the red wire on the switch to terminal 5 and the green wire to terminal 6
 2. Remove old battery
 3. Place automatic battery in box and install new hold-down. **DO NOT CONNECT BATTERY CABLES AT THIS TIME**
 4. Remove all car body feed wires from starter end of battery cable and connect to terminal 2 on battery switch
 5. Connect #14 wire from terminal S on battery switch to starter button terminal on starter solenoid
 6. Connect starter battery cable to negative post and grounded battery cable to positive post
 7. Connect #8 lead from terminal 5 to neg. cable clamp bolt and #8 lead from terminal 6 to pos. cable clamp bolt
 8. Coat switch and battery connections with a corrosion preventative
 9. Check battery regularly. Keep water level up, keep filler caps clean and dry and keep all switch connections and battery cables tight and clean
- If car has electric choke, disconnect choke wire from starter and connect to terminal 3. Generator regulator should be set to the original car or truck manufacturer's 6 volt specifications.

INSTRUCTION SHEET NO. 4

For cars with negative ground and solenoid operated clutch
with relay mounted on solenoid

Typical 1949 Buick—See Index For Others



Broken wire indicates original location of the wire

INSTRUCTIONS

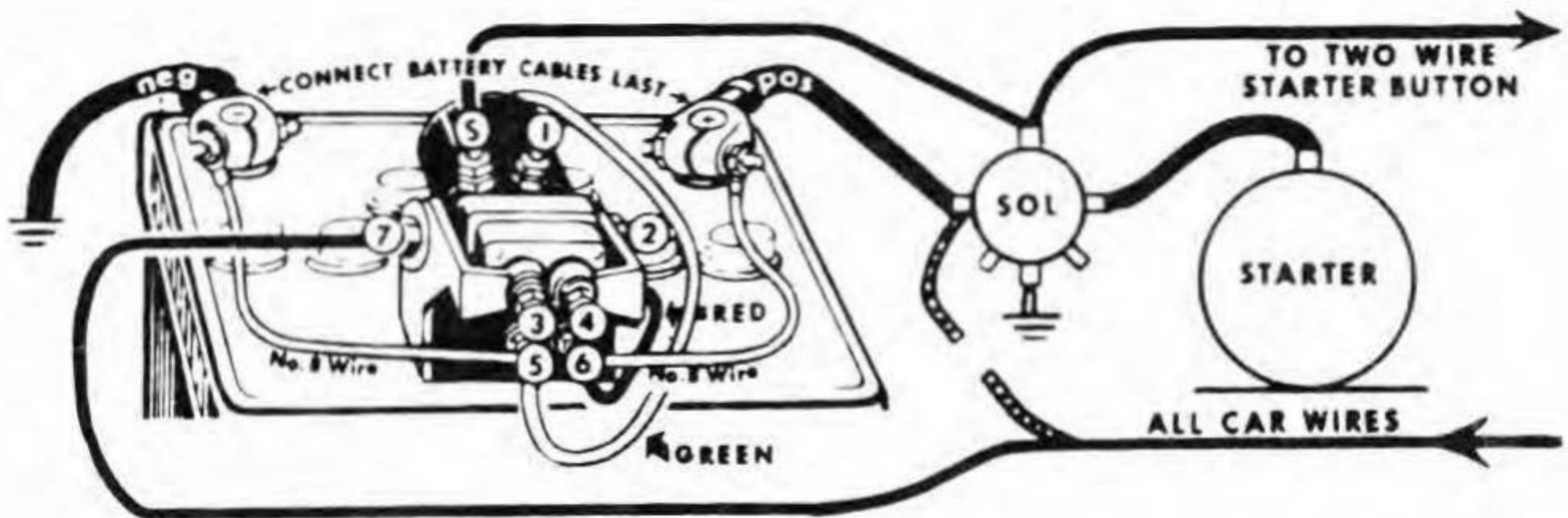
1. Before installing the automatic battery, connect the red wire on the switch to terminal 3 and the green wire to terminal 5
2. Remove old battery
3. Place automatic battery in box and install new hold-down. **DO NOT CONNECT BATTERY CABLES AT THIS TIME**
4. Remove all car body feed wires from starter end of battery cable and connect to terminal 7 on battery switch
5. Remove starter button wire from starter solenoid and connect to terminal S on battery switch and connect wire from terminal I to starter solenoid
6. Connect starter battery cable to positive post and grounded battery cable to negative post
7. Connect #8 lead from terminal 5 to neg. cable clamp bolt and #8 lead from terminal 6 to pos. cable clamp bolt
8. Coat switch and battery connections with a corrosion preventative
9. Check battery regularly. Keep water level up, keep filler caps clean and dry and keep all switch connections and battery cables tight and clean

If car has electric choke, disconnect choke wire from starter and connect to terminal 4. Generator regulator should be set to the original car or truck manufacturer's 6 volt specifications.

INSTRUCTION SHEET NO. 5

For cars with negative ground, simple solenoid switch with two wire push button, or ignition key type and Bendix drive starter

See Index For Models



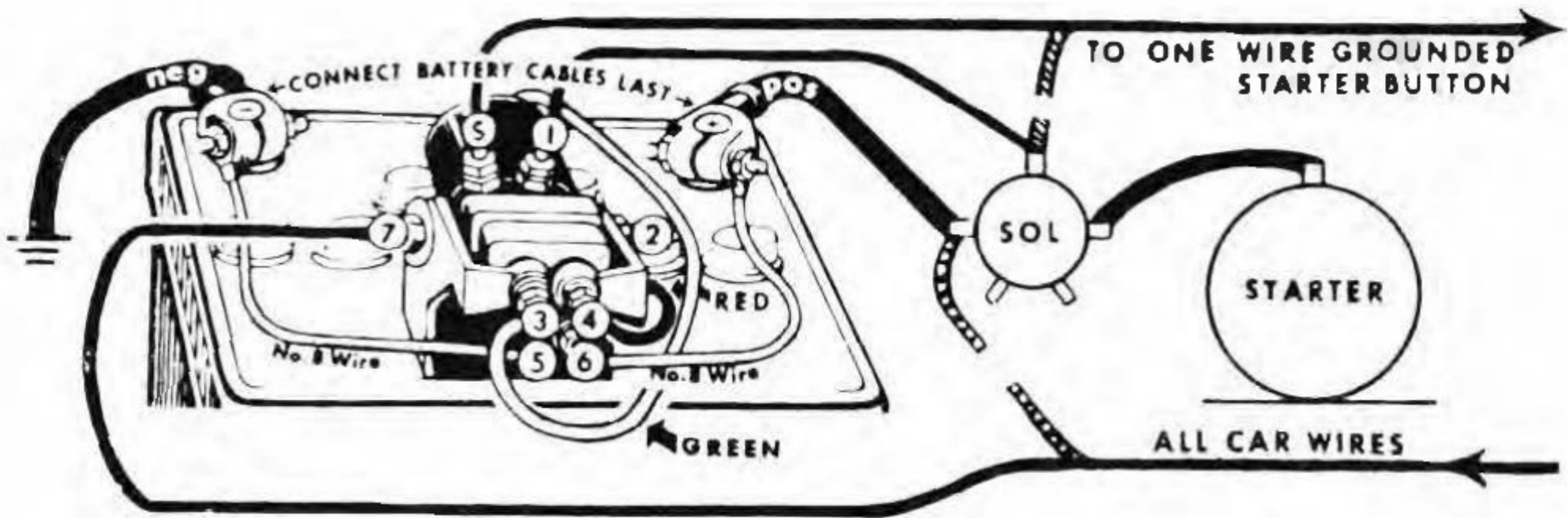
Broken wire indicates original location of the wire
Note: For cars with mechanical switch and Bendix type starter (such as Willys), install a 1952 Ford solenoid starter switch and use original starter switch as the push button or dash push button and proceed as follows

INSTRUCTIONS

1. Before installing the automatic battery, connect the red wire on the switch to terminal 6 and the green wire to terminal 5
 2. Remove old battery
 3. Place automatic battery in box and install new hold-down. **DO NOT CONNECT BATTERY CABLES AT THIS TIME**
 4. Remove all car body feed wires from starter end of battery cable and connect to terminal 7 on battery switch
 5. Connect #14 wire from terminal S on battery switch to starter button terminal on starter solenoid
 6. Connect starter battery cable to positive post and grounded battery cable to negative post
 7. Connect #8 lead from terminal 5 to neg. cable clamp bolt and #8 lead from terminal 6 to pos. cable clamp bolt
 8. Coat switch and battery connections with a corrosion preventative
 9. Check battery regularly. Keep water level up, keep filler caps clean and dry and keep all switch connections and battery cables tight and clean
- If car has electric choke, disconnect choke wire from starter and connect to terminal 4. Generator regulator should be set to the original car or truck manufacturer's 6 volt specifications.

INSTRUCTION SHEET NO. 6

For cars with negative ground, simple solenoid switch with
one wire push button, and Bendix drive starter
See Index For Models



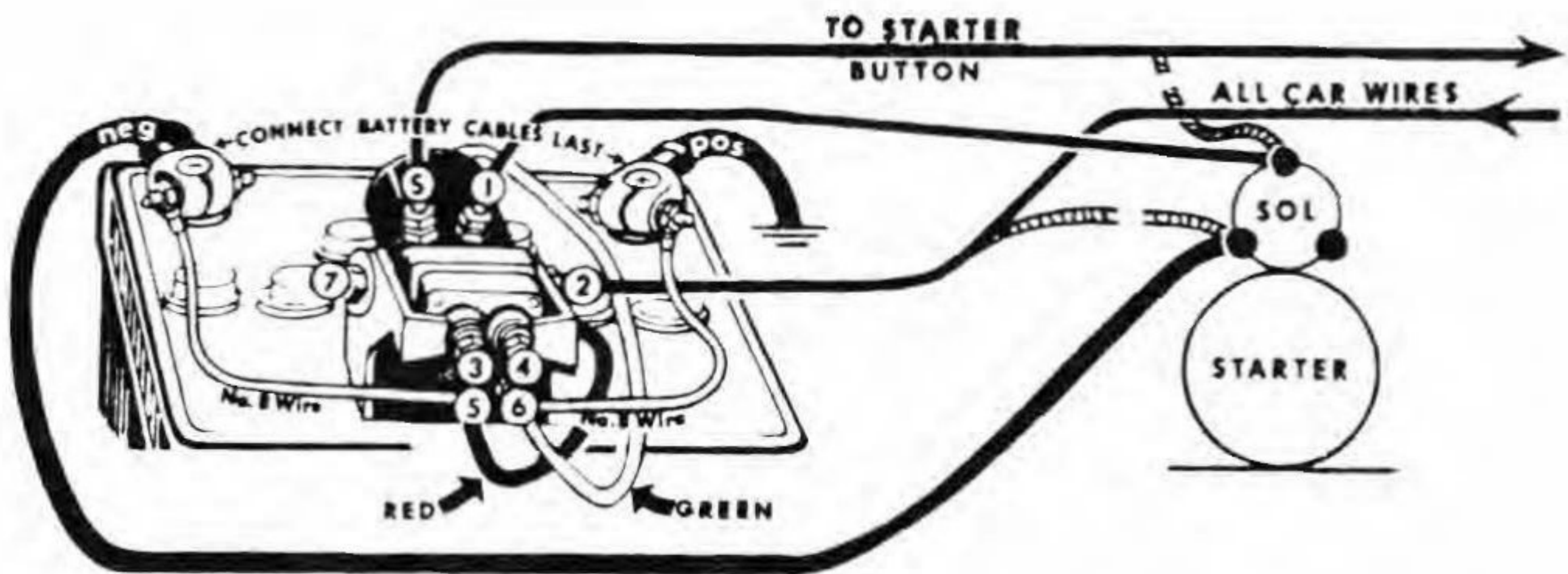
Broken wire indicates original location of the wire
INSTRUCTIONS

1. Before installing the automatic battery, connect the red wire on the switch to terminal 4 and the green wire to terminal 3
 2. Remove old battery
 3. Place automatic battery in box and install new hold-down. **DO NOT CONNECT BATTERY CABLES AT THIS TIME**
 4. Remove all car body feed wires from starter end of battery cable and connect to terminal 7 on battery switch
 5. Remove starter button wire from starter switch and connect to terminal S on battery switch and connect wire from terminal I to starter switch
 6. Connect starter battery cable to positive post and grounded battery cable to negative post
 7. Connect #8 lead from terminal 5 to neg. cable clamp bolt and #8 lead from terminal 6 to pos. cable clamp bolt
 8. Coat switch and battery connections with a corrosion preventative
 9. Check battery regularly. Keep water level up, keep filler caps clean and dry and keep all switch connections and battery cables tight and clean
- If car has electric choke, disconnect choke wire from starter and connect to terminal 3. Generator regulator should be set to the original car or truck manufacturer's 6 volt specifications.

INSTRUCTION SHEET NO. 7

For cors with positive ground, and solenoid operated clutch
without relay

See Index For Models



Broken wire indicates original location of the wire

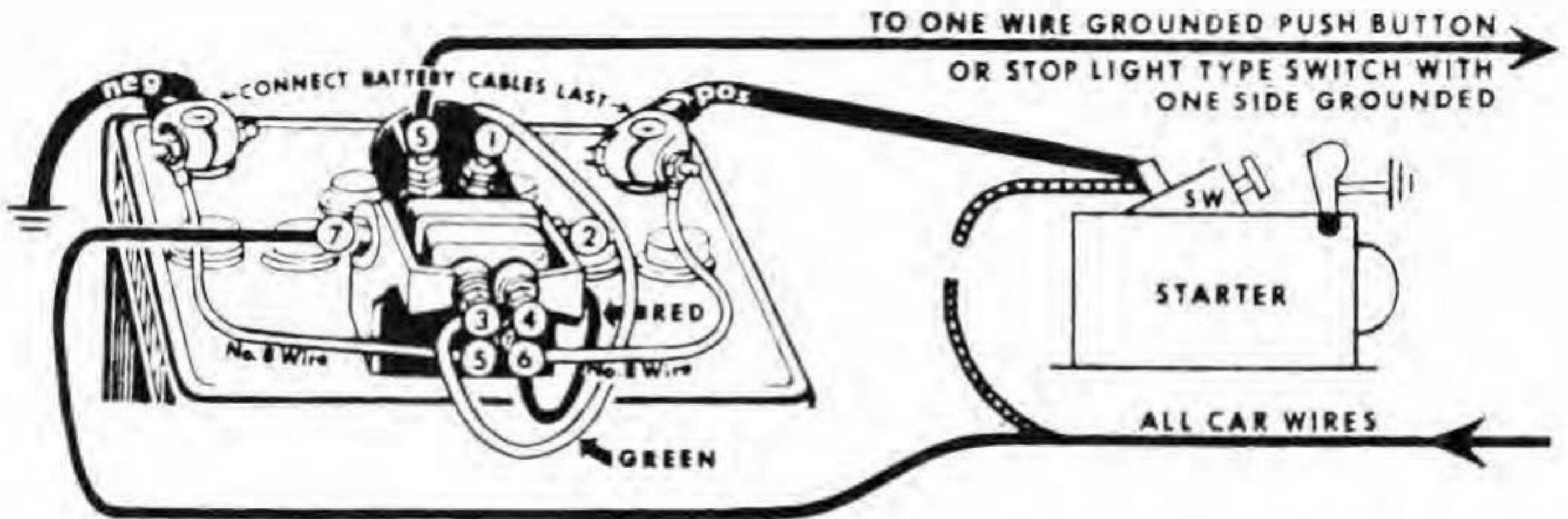
INSTRUCTIONS

1. Before installing the automatic battery, connect the red wire on the battery to terminal 5 and the green wire to terminal 6
2. Remove old battery
3. Place automatic battery in box and install new hold-down. DO NOT CONNECT BATTERY CABLES AT THIS TIME
4. Remove all car body feed wires from starter end of battery cable and connect to terminal 2 on battery switch
5. Remove starter button wire from starter solenoid and connect to terminal S on battery switch and connect wire from terminal I to starter solenoid
6. Connect starter battery cable to negative post and grounded battery cable to positive post
7. Connect #8 lead from terminal 5 to neg. cable clamp bolt and #8 lead from terminal 6 to pos. cable clamp bolt
8. Coat switch and battery connections with a corrosion preventative
9. Check battery regularly. Keep water level up, keep filler caps clean and dry and keep all switch connections and battery cables tight and clean

If car has electric choke, disconnect choke wire from starter and connect to terminal 3. Generator regulator should be set to the original car or truck manufacturer's 6 volt specifications.

INSTRUCTION SHEET NO. 8

For cars with negative ground, and lever operated starter
clutch with switch mounted on starter
Typical 1947 Chevrolet—See Index For Others



Broken wire indicates original location of the wire
INSTRUCTIONS

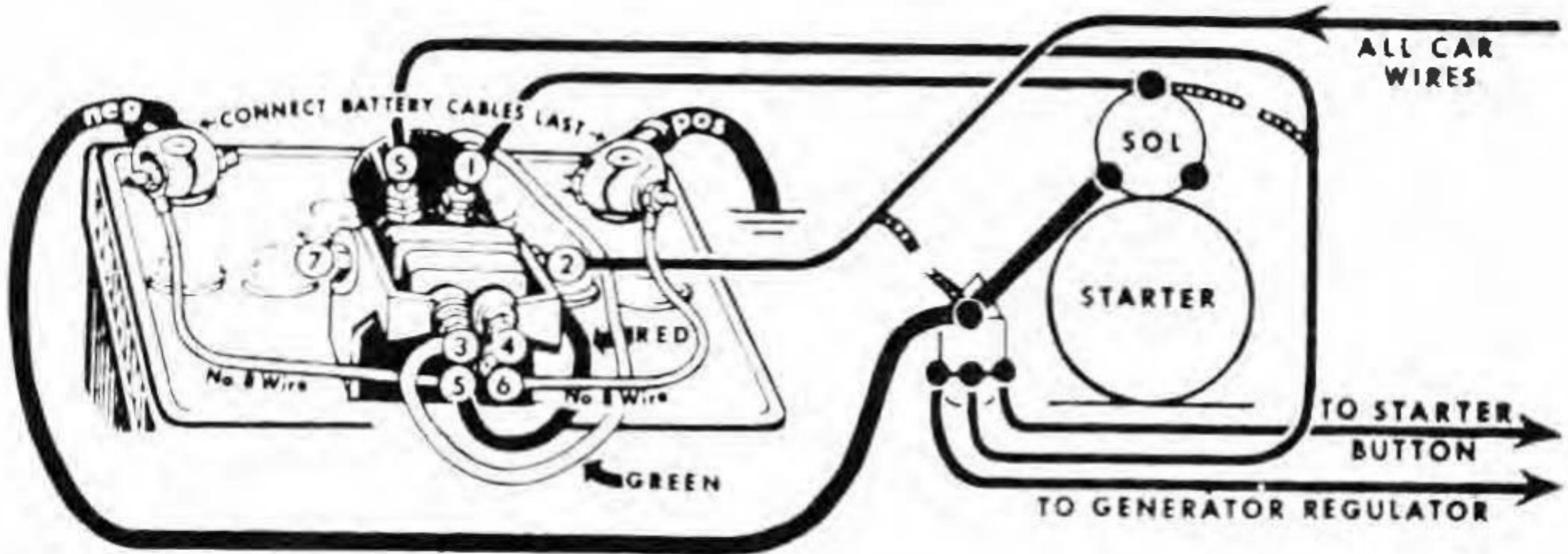
1. Before installing the automatic battery, connect the red wire on the battery to terminal 6 and the green wire to terminal 3
2. Remove old battery
3. Place automatic battery in box and install new hold-down. **DO NOT CONNECT BATTERY CABLES AT THIS TIME**
4. Remove all car body feed wires from starter end of battery cable and connect to terminal 7 on battery switch
5. Connect wire from terminal S on battery switch to ground type starter button
6. Connect starter battery cable to positive post and grounded battery cable to negative post
7. Connect #8 lead from terminal 5 to neg. cable clamp bolt and #8 lead from terminal 6 to pos. cable clamp bolt
8. If stop light type switch is mounted on floor board in such a manner as to close by movement of starter lever, action is entirely automatic. If not used, press dash button first for 12 v then press mechanical starter switch
9. Coat switch and battery connections with a corrosion preventative
10. Check battery regularly. Keep water level up, keep filler caps clean and dry and keep all switch connections and battery cables tight and clean

If car has electric choke, disconnect choke wire from starter and connect to terminal 4. Generator regulator should be set to the original car or truck manufacturer's 6 volt specifications.

INSTRUCTION SHEET NO. 9

For cars with positive ground, solenoid operated starter clutch, and separate solenoid relay

Typical 1952 DeSoto—See Index For Others



Broken wire indicates original location of the wire

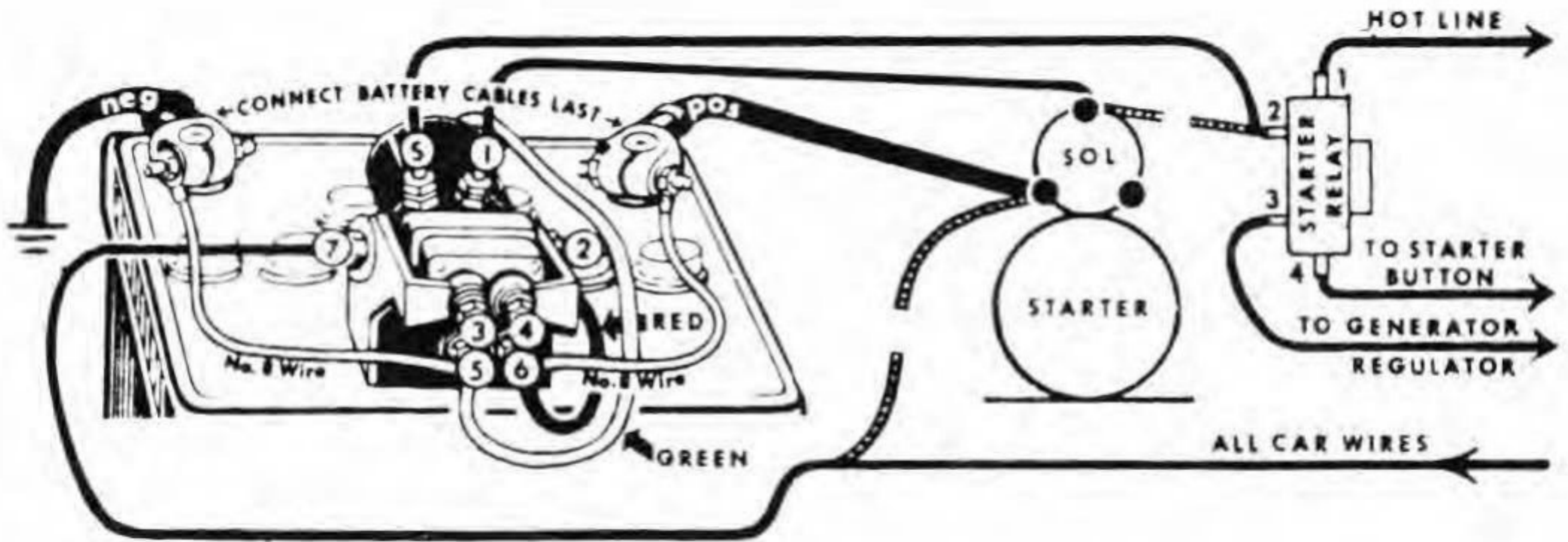
INSTRUCTIONS

1. Before installing the automatic battery, connect the red wire to terminal 5 and the green wire to terminal 3
 2. Remove old battery
 3. Place automatic battery in box and install new hold-down. **DO NOT CONNECT BATTERY CABLES AT THIS TIME**
 4. Remove all car body feed wires from starter end of battery cable and connect to terminal 2 on battery switch
 5. Remove relay wire from solenoid and connect to terminal S on battery switch and connect wire from terminal I to starter solenoid
 6. Connect starter battery cable to negative post and grounded battery cable to positive post
 7. Connect #8 lead from terminal 5 to neg. cable clamp bolt and #8 lead from terminal 6 to pos. cable clamp bolt
 8. Coat switch and battery connections with a corrosion preventative
 9. Check battery regularly. Keep water level up, keep filler caps clean and dry and keep all switch connections and battery cables tight and clean
- If car has electric choke, disconnect choke wire from starter and connect to terminal 3. Generator regulator should be set to the original car or truck manufacturer's 6 volt specifications.

INSTRUCTION SHEET NO. 10

For cars with negative ground, solenoid operated starter clutch, and separate solenoid relay

Typical 1952 Buick—See Index For Others



Broken wire indicates original location of the wire
INSTRUCTIONS

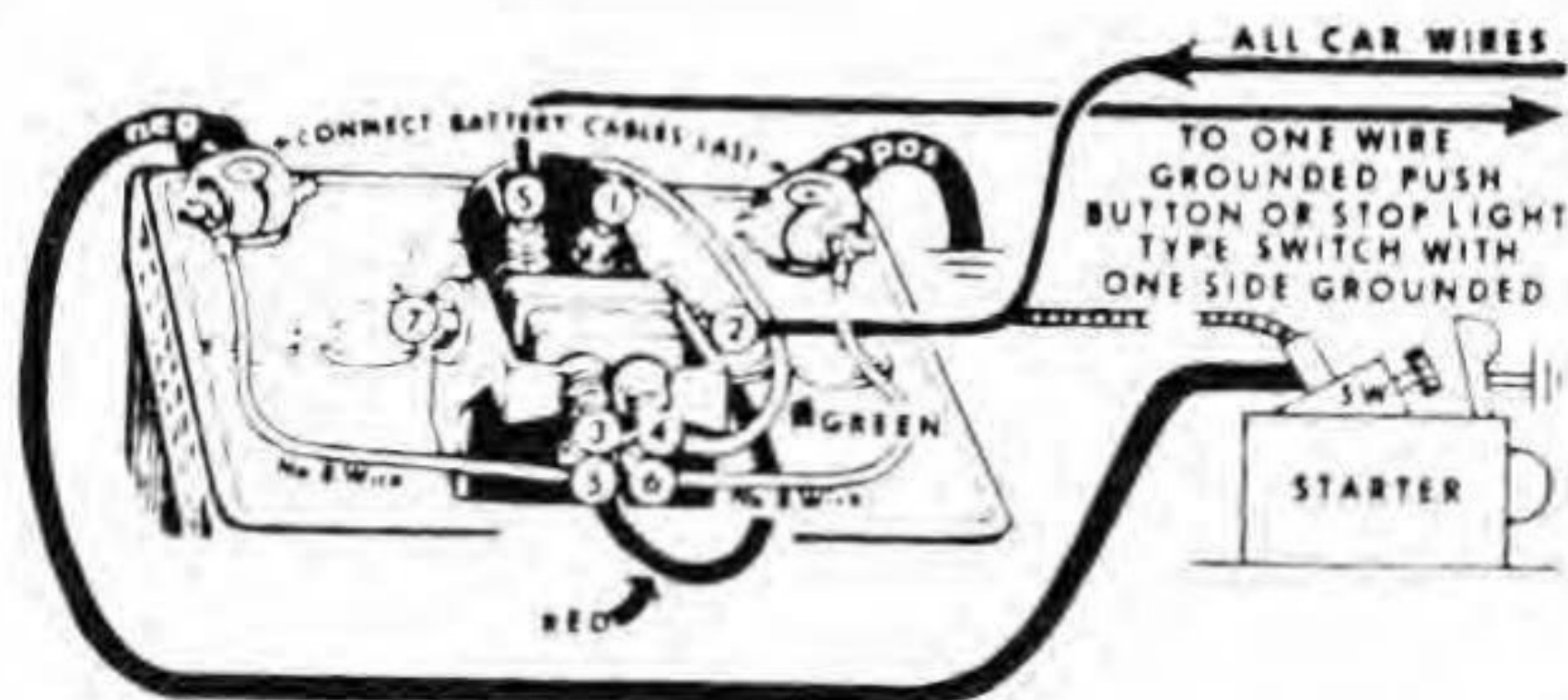
1. Before installing the automatic battery, connect the red wire to terminal 6 and the green wire to terminal 5
 2. Remove old battery
 3. Place automatic battery in box and install new hold-down. **DO NOT CONNECT BATTERY CABLES AT THIS TIME**
 4. Remove all car body feed wires from starter end of battery cable and connect to terminal 7 and battery switch
 5. Remove relay wire from solenoid and connect to terminal S on battery switch and connect wire from terminal I to starter solenoid
 6. Connect starter battery cable to positive post and grounded battery cable to negative post
 7. Connect #8 lead from terminal 5 to neg. cable clamp bolt and #8 lead from terminal 6 to pos. cable clamp bolt
 8. Coat switch and battery connections with a corrosion preventative
 9. Check battery regularly. Keep water level up, keep filler caps clean and dry and keep all switch connections and battery cables tight and clean
- If car has electric choke, disconnect choke wire from starter and connect to terminal 4. Generator regulator should be set to the original car or truck manufacturer's 6 volt specifications.

INSTRUCTION SHEET NO. 11

For cars with positive ground, and lever operated starter clutch with switch mounted on starter

See Index For Models

Note: Mechanical (foot) operated starter switch. Bendix type starter (no lever engages starter with fly-wheel band). Use wiring instruction sheet No. 3



Broken wire indicates original location of the wire

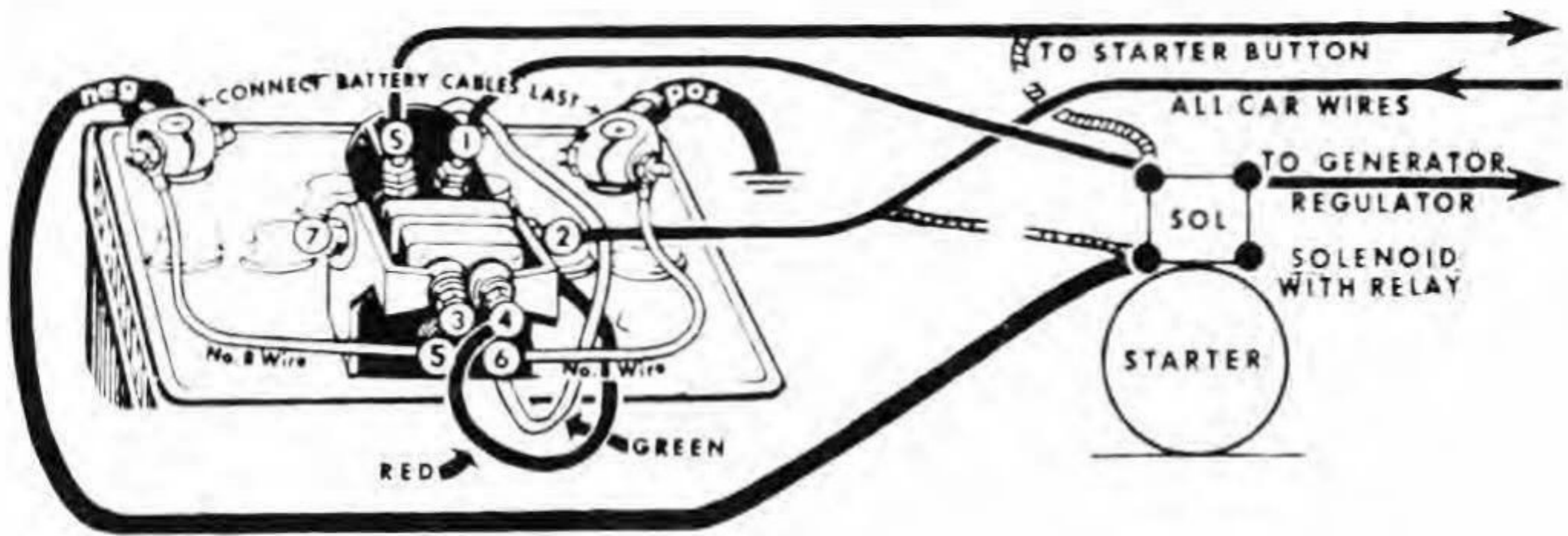
INSTRUCTIONS

1. Before installing the automatic battery, connect the red wire to terminal 5 and the green wire to terminal 4
2. Remove old battery
3. Place automatic battery in box and install new hold-down. **DO NOT CONNECT BATTERY CABLES AT THIS TIME**
4. Remove all car body feed wires from starter end of battery cable and connect to terminal 2 on battery switch
5. Connect wire from terminal S on battery switch to ground type starter button
6. Connect starter battery cable to negative post and grounded battery cable to positive post
7. Connect #8 lead from terminal 5 to neg. cable clamp bolt and #8 lead from terminal 6 to pos. cable clamp bolt
8. If stop light type switch is mounted on floor board in such a manner as to close by movement of starter lever, action is entirely automatic. If not used, press dash button first for 12 v then press mechanical starter switch
9. Coat switch and battery connections with a corrosion preventative
10. Check battery regularly. Keep water level up, keep filler caps clean and dry and keep all switch connections and battery cables tight and clean

If car has electric choke, disconnect choke wire from starter and connect to terminal 3. Generator regulator should be set to the original car or truck manufacturer's 6 volt specifications.

INSTRUCTION SHEET NO. 12

For cars with positive ground, solenoid operated clutch,
and relay-solenoid unit mounted on starter
1946-50 DeSoto—1946-50 Chrysler
1946-54 Packard (Custom)



Broken wire indicates original location of the wire

INSTRUCTIONS

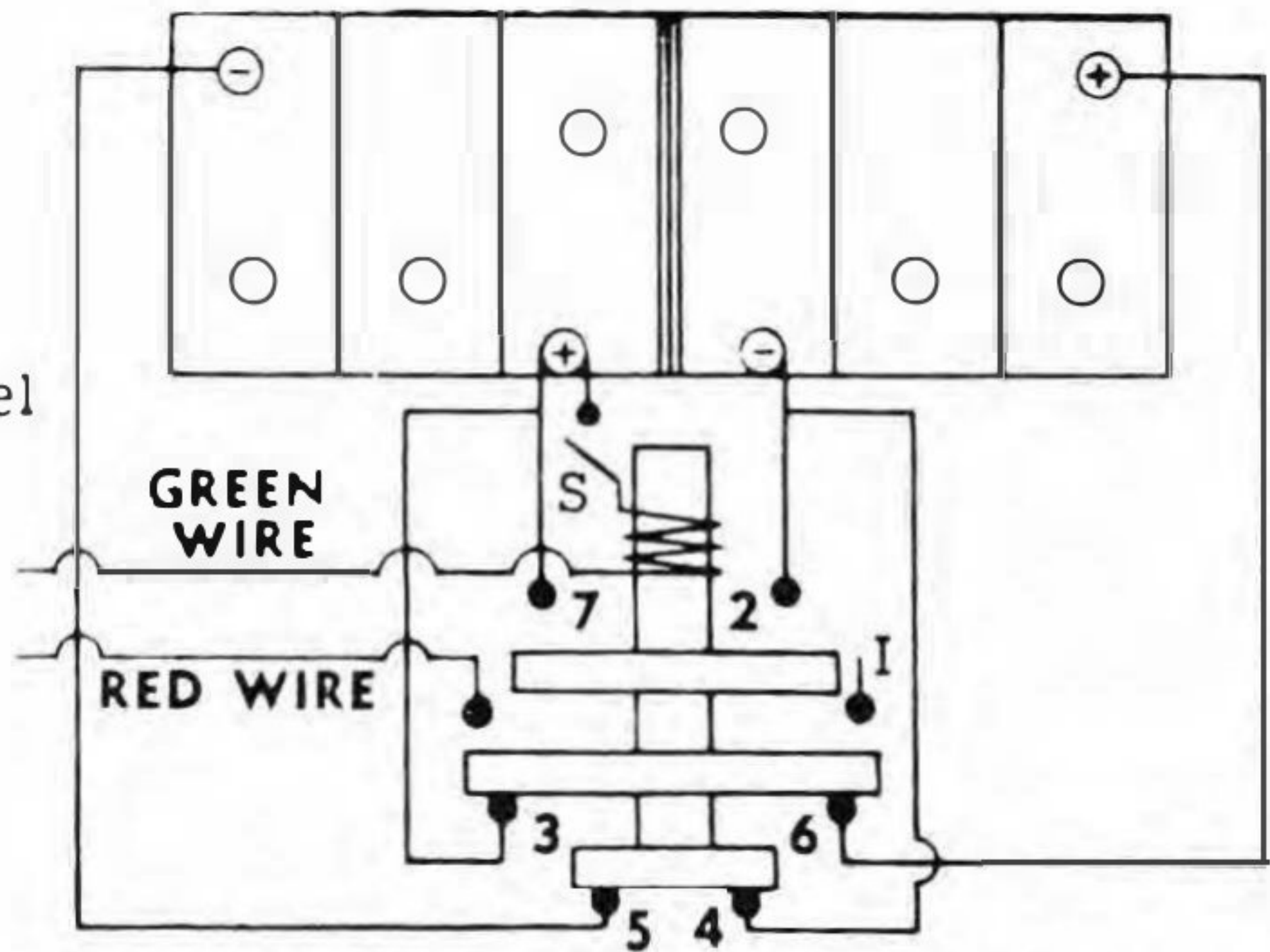
1. Before installing the automatic battery, connect the red wire on the battery to terminal 4 and the green wire to terminal 6
2. Remove old battery
3. Place automatic battery in box and install new hold-down. **DO NOT CONNECT BATTERY CABLES AT THIS TIME**
4. Remove all car body feed wires from starter end of battery cable and connect to terminal 2 on battery switch
5. Remove starter button wire from starter solenoid relay and connect to terminal S on battery switch. Connect wire from terminal I to starter solenoid relay
6. Connect starter battery cable to negative post and grounded battery cable to positive post
7. Connect #8 lead from terminal 5 to neg. cable clamp bolt and #8 lead from terminal 6 to pos. cable clamp bolt
8. Coat switch and battery connections with a corrosion preventative
9. Check battery regularly. Keep water level up, keep filler caps clean and dry and keep all switch connections and battery cables tight and clean

If car has electric choke, disconnect choke wire from starter and connect to terminal 3. Generator regulator should be set to the original car or truck manufacturer's 6 volt specifications.

HOW YOUR ORPIN SERIES-PARALLEL SWITCH WORKS

NOTE:

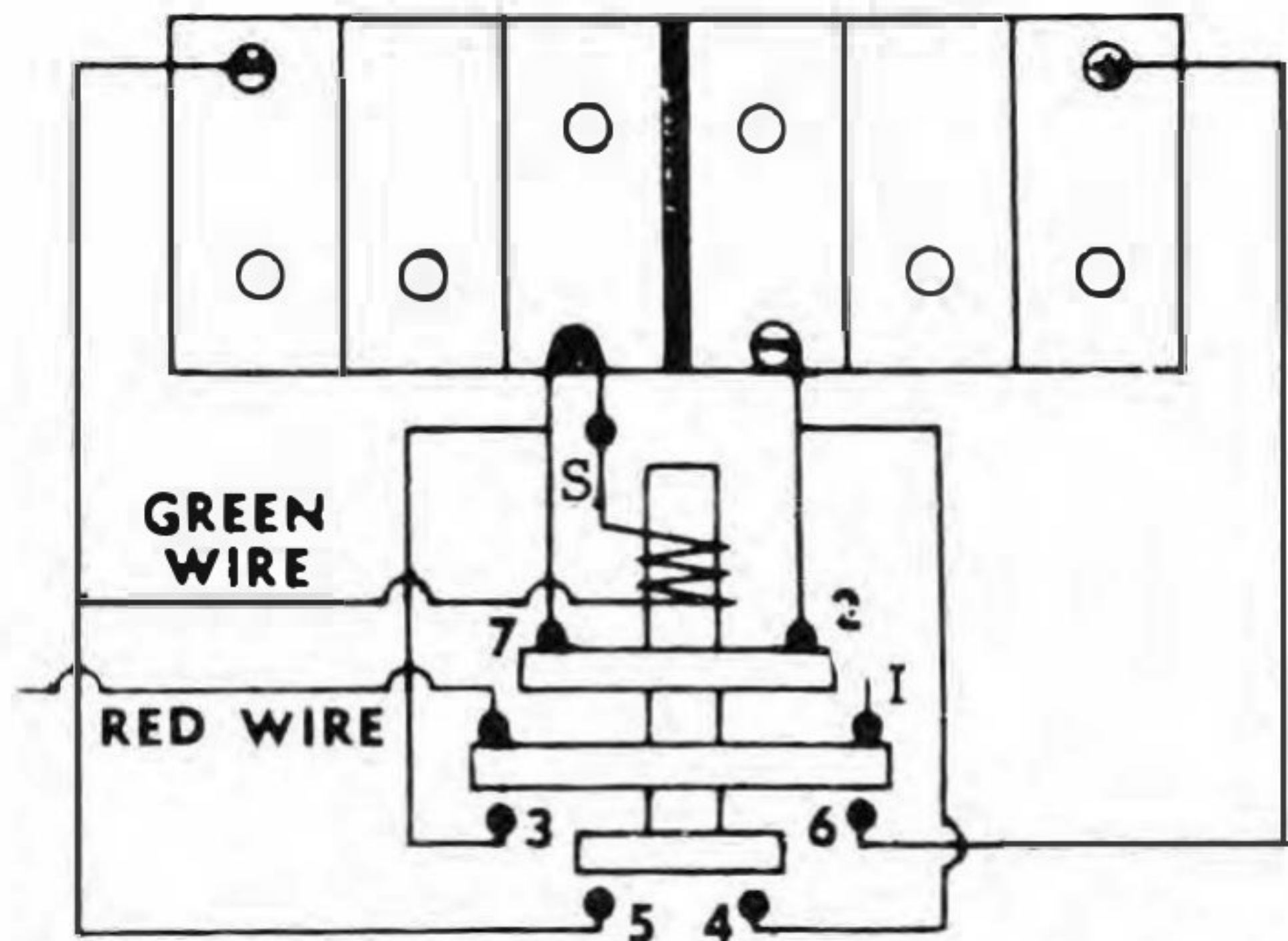
Green wire and S terminals operate coil on all Orpin series-parallel switches



NORMAL POSITION—TWO 6 VOLT SECTIONS CONNECTED IN PARALLEL—ENTIRE BATTERY 6 VOLTS

NOTE:

Red wire to I circuit is used to send 12 volts to starter solenoid in certain installations



STARTING POSITION—TWO 6 VOLT SECTIONS CONNECTED IN SERIES—ENTIRE BATTERY 12 VOLTS

When the automatic battery is installed according to the previous instructions, no part of the car ever receives over 6 volts except the starting circuit regardless of whether the car is starting or not.

HOW TO INSTALL ORPIN SERIES-PARALLEL SWITCH ON AUTOMATIC BATTERY

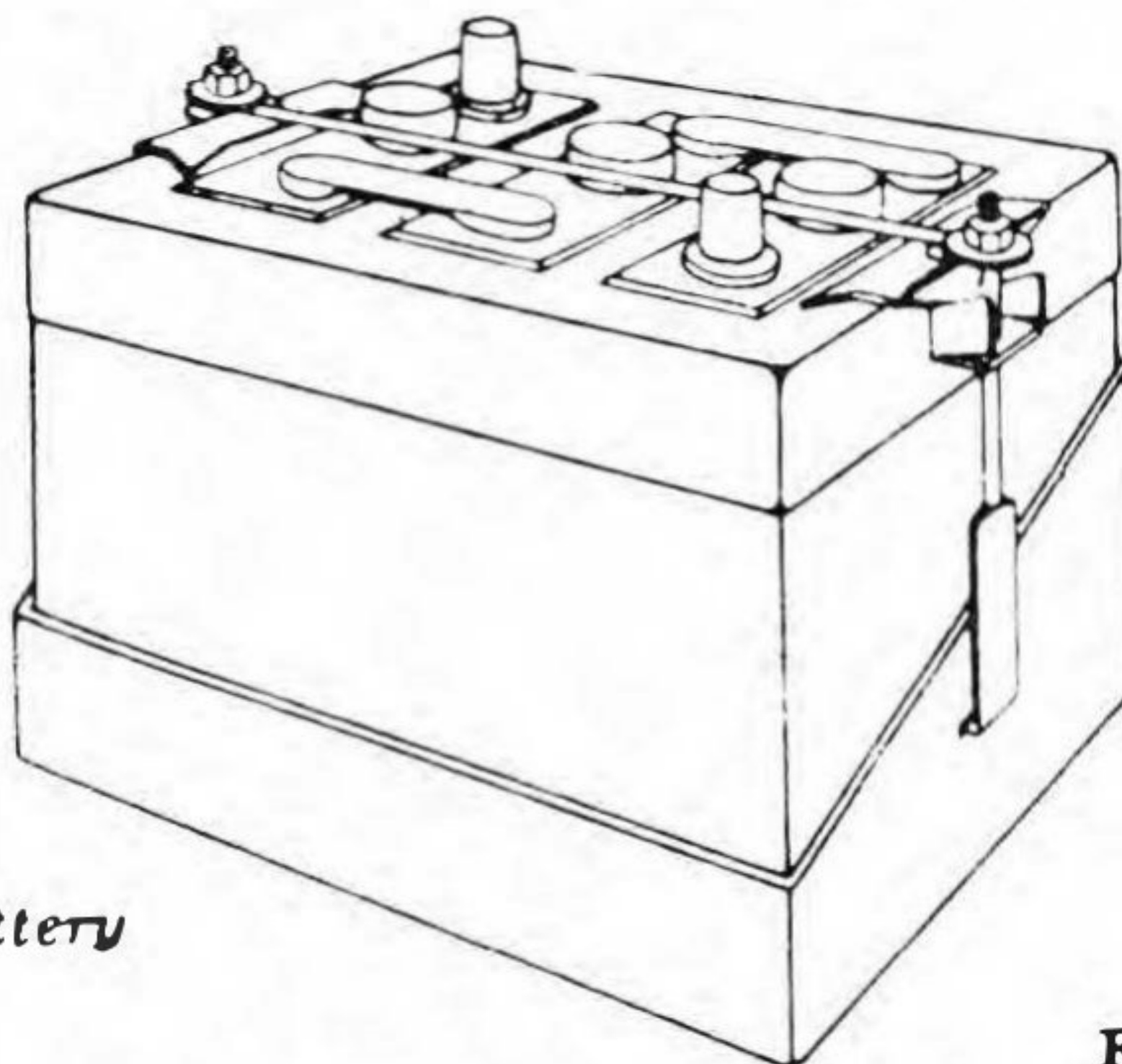
1. Remove outside nuts and washers from switch. Place treated felt washers on large terminals on each side of switch. Slide these felt washers over the inside nuts and press tightly against switch sides.
2. Place terminal post #3 and #4 through bracket holes and place large terminals in bracket slots as shown in fig. 1.



3. Install large flat washers and nuts on large side terminals.
4. Install small terminals of #8 yellow wire leads (furnished) on terminals #5 and #6 as shown in fig. 2. Install lock washers and nuts on terminals #5 and #6.
5. Make sure all nuts are pulled up tight, however, be careful not to tighten nuts more than necessary.



AUTOMATIC BATTERY WITH ORPIN SWITCH INSTALLED



*Drawing shows
use on
conventional battery*

Fig. 3

HOLD-DOWN INSTALLATION

Put a hold-down on each end, or the sides, to match the position of the box bolts.

The wire should be placed across the battery and looped around each bolt, under the nut and washer as shown in the illustration (Fig. 3).

(Each set consists of two hold-downs and one length of insulated wire)

INSTRUCTIONS TO USER

How to get more life from your battery

After your car is started, and the generator running, the generator supplies all your electrical needs and the battery is simply a standby. If you use lights, radio, fans, etc. without the generator running, the current is coming from the battery and must be put back in by the generator while driving the car, otherwise the battery will become discharged.

Every battery has just so many cycles of charge and discharge and when that number of cycles is reached the battery is worn out. So, be very conservative with the amount of current you use when the engine is not running. Letting the engine idle too slowly for the generator to charge will also take current from the battery to supply the ignition. Also, a short in the wiring will drain your battery.

Have your automatic battery checked quite often to make sure the cells on both sides of the switch test the same. If they don't test the same there is probably a poor connection at the switch and both sides of the battery are not receiving the same charge. You can check this fairly well yourself by removing a cap from a cell on each side of the switch and with the generator running see if both cells are bubbling about equal.

If corrosion forms on switch connections, remove all corrosion and coat connections with NOCO.

Avoid putting too much water in your battery. Overfilling causes excessive corrosion. Overcharging causes excessive corrosion. If your car has no ammeter, check the voltage regulator occasionally.

MAKE SURE that if battery is recharged that it is recharged at 6 VOLTS ONLY. Your battery is actually two 6-Volt batteries side by side in one battery case.

CHOKE LIGHT. The high speed on the starter might cause engine to flood. Keep breaker point properly adjusted for quick starting. Never leave starter switch on longer than several seconds without shutting off and giving switch coil a chance to cool.

HOW TO USE 12 VOLT BOOSTER BATTERY

For dealer, mechanic and owner

OK to use 12 volt booster battery if car battery has sufficient current left to activate the solenoid coil in the Orpin switch. With two people present, have one turn on the starter switch and attempt to start the engine. The other person should be in a position to connect booster battery cables immediately. Negative to negative and positive to positive. It works best if you will connect the negative posts on both batteries together with one booster cable, and only one end of the other cable to the booster battery positive post. Hold the other end several inches from the positive post on the automatic battery. As soon as the starter switch is turned on and you hear the Orpin switch solenoid activate—press down the end of the other cable clamp hard on the positive post. CAUTION, as soon as the engine starts, or after about 10 seconds and the engine fails to start, DISCONNECT the cable clamp from the positive post of the automatic battery. NEVER, NEVER leave both booster battery cables connected to automatic battery for more than 10 seconds at a time. If there is insufficient current left in the battery to activate switch solenoid coil, the battery should be removed and charged. An alternate method is as follows; connect booster cables to booster battery. Connect negative cable clamp to ground on engine if vehicle has negative ground system, or if positive ground connect positive cable clamp to ground at some suitable place on chassis or engine. Take other cable from 12 VOLT booster battery and touch to magnetic solenoid terminal on starter motor side. This method completely by passes automatic battery switch and the magnetic solenoid switch. Remember, your automatic battery is actually two 6 volt batteries in one case. It is only a 12 volt battery during the starting cycle, therefore a 12 volt booster battery can only be connected to your automatic battery while the Orpin switch is activated and the automatic battery is temporarily made into a 12 volt battery.

HOW TO CHARGE THE AUTOMATIC BATTERY

For the vehicle owner

Charge the automatic battery, if in the vehicle, in the same manner you charge any 6 volt battery. Make the positive and negative connections at the cable posts and charge through the switch. Leave all switch wires connected as they are, during charging. Always use a slow charger if possible. If a fast charger is used, be sure it is 6 VOLTS and limit current to 50 amps.

If the battery is out of the vehicle, charge in the same manner but fasten the No. 8 wire leads from the switch to their respective posts with the charger clamps. Instructions for testing battery are contained in SERVICE BULLETINS NOS. 1 & 2.

Before charging the battery it is very important to clean all switch and battery connections thoroughly, and care should be taken to make sure all cables and wires are in good condition and connections are securely fastened. Poor or unclean connections across the switch cover will prevent the two sides of the battery from charging, either by the generator in the vehicle or by a charger.

Dry charged batteries should be boosted after filling and before putting into service. If it is desired to charge the battery before the Orpin switch is installed, simply clamp the switch lead mounting brackets together with vice-grip pliers and charge in normal manner with a 12 VOLT CHARGER. In the event battery fails to operate properly with a boost, try fully charging as in all probability air entered since original manufacture. DON'T CONDEMN GOOD BATTERIES. Should failure of dry charged battery occur within first few days or weeks, do not condemn battery, but full charge battery on slow charge 24 to 36 hours at 5 to 6 amps., this overcomes most trouble in dry charged battery failures. Also, again check vehicle for electrical leaks or charging deficiency.

SERVICE BULLETINS NOS. 1 & 2 FOR DEALERS AND MECHANICS

AUTOMATIC BATTERY TROUBLES IN 99% OF ALL CASES ARE TRACED TO POOR CONNECTIONS BETWEEN THE BATTERY CABLES AND BATTERY POSTS, OR A BATTERY IN A LOW STATE OF CHARGE.

SUBJECT: Servicing and Trouble Shooting Automatic Batteries in the Vehicle

Step 1. BATTERY FAILS TO EQUALIZE CHARGE.

A. Check specific gravity of battery. If all cells check below 1.200, set generator and regulator to car or truck manufacturer's 6 volt specifications and recharge battery. Please remember that it is impossible for the series-parallel switch to slowly discharge the battery while at rest. Disregard the battery and check for usual vehicle wiring troubles. If all cells show 1.200 or over, check cell with cell tester. If all cells check good proceed to Step 2 or 3.

HOW TO CHARGE THE AUTOMATIC BATTERY

Charge the automatic battery, if in the vehicle, in the same manner you charge any 6 Volt battery. Make the positive and negative connections at the cable posts and charge through the switch. Always use a slow charger if possible. If a fast charger is used, be sure it is 6 volts and limit current to 50 amps.

If the battery is out of the vehicle, charge in the same manner but fasten the No. 8 leads from the switch to their respective posts with the charger clamps.

B. If **Five** cells check good and **One** cell checks bad, replace battery and file claim on Service Guarantee Claim Form.

REMEMBER: The automatic battery is actually **2 SIX VOLT** batteries in one case. If the parallel circuits are not functioning properly, one side of the battery will go down while the other side remains charged. This condition does **NOT** indicate a defective battery.

C. If more than **One** cell checks low, check all connections between parallel switch and battery. If a faulty connection is found, correct connection and then recharge battery. If all connections are good, replace parallel switch and then recharge battery. File claim on Service Guarantee Claim Form.

Step 2. STARTER FAILS TO FUNCTION.

A. Follow operations in Step 1 first.

B. Check wiring with correct diagram. Make sure all connections are soldered properly. Check all connections Especially Grounds.

C. Press starter button and note if battery switch snaps to series position. If not, remove switch from battery and check with any 6 volt battery by connecting green wire to negative post and terminal "S" to positive post. If switch doesn't activate, replace.

D. If terminal "I" is used in the correct wiring diagram for the vehicle, check to see if terminal "I" is sending proper current to original starter switch when battery switch is in the "on" position.

IF THE INSTALLATION PASSES THE ABOVE CHECKS, THE TROUBLE LIES IN THE ORIGINAL STARTER SWITCH OR STARTER. REPAIR AS NECESSARY.

Step 3. SWITCH STICKS IN "ON" POSITION

If the battery switch should stick in the "on" position, immediately tap switch or remove ground cable to prevent damage to battery; then proceed to check for the cause.

A. Conditions which cause the ORPIN Series-Parallel Switch to stick.

1. Battery in low charged condition.

2. Very high current draw caused by shorted cables and wires, dragging and shorted starters, locked starters, or shorted starter switches.

3. Wired incorrectly.

4. A sticking or shorted starter button continuing to furnish current to the "S" terminal on the battery switch. Remember: It is impossible for the switch to move itself from the parallel to the starting position unless current from some source reaches terminal "S".

B. Check for the above conditions as follows:

1. Follow operations in Step 1 first.

2. Check wiring with correct diagram, make sure all connections are soldered properly.

3. Make sure no current is reaching terminal "S" with starter button in off position.

4. Check current draw through starter cable with starter running. If OVER 300 AMPS, make necessary repairs to starter or other equipment. If UNDER 300 AMPS, and switch continues to stick, replace switch and file claim on Service Guarantee Claim Form.

SERVICE BULLETIN NO. 3

AUTOMATIC BATTERY TROUBLES IN 99% OF ALL CASES ARE TRACED TO POOR CONNECTIONS BETWEEN THE BATTERY CABLE AND BATTERY POSTS, OR A BATTERY IN A LOW STATE OF CHARGE.

SUBJECT: DEFECTIVE VEHICLE EQUIPMENT WHICH DAMAGES THE AUTOMATIC BATTERY THROUGH NO FAULT OF THE BATTERY

1. Visible Trouble—Yellow Leads Burned

Causes:

Starter cable grounded.

Dragging and shorted starter causing **Original** starter solenoid to stick on.

Switch shorted against hood or other cover.

(Automatic batteries must be fastened securely with hold-down.)

Remember it is impossible for battery switch to short internally.

2. Visible Trouble—Battery Heats on Top—Lug Between Cells Burns Out—Lead Switch Brackets Melted.

Causes:

Excessive starter draw or starter cable grounded.

(Automatic batteries must be fastened securely with hold-down.)

3. Visible Trouble—Red Wire on Switch Burned.

Causes:

Wire between "I" terminal and starter switch shorted.

Original starter switch burned out.

Switch shorted against hood or other cover.

4. Visible Trouble—Green Wire on Switch Burned.

Causes:

Improperly wired and battery switch burned out. Refer to correct diagram.

Switch should only be "On" when starting.

5. Visible Trouble—Battery Corrodes Excessively and Uses Excessive Amount of Water.

Causes:

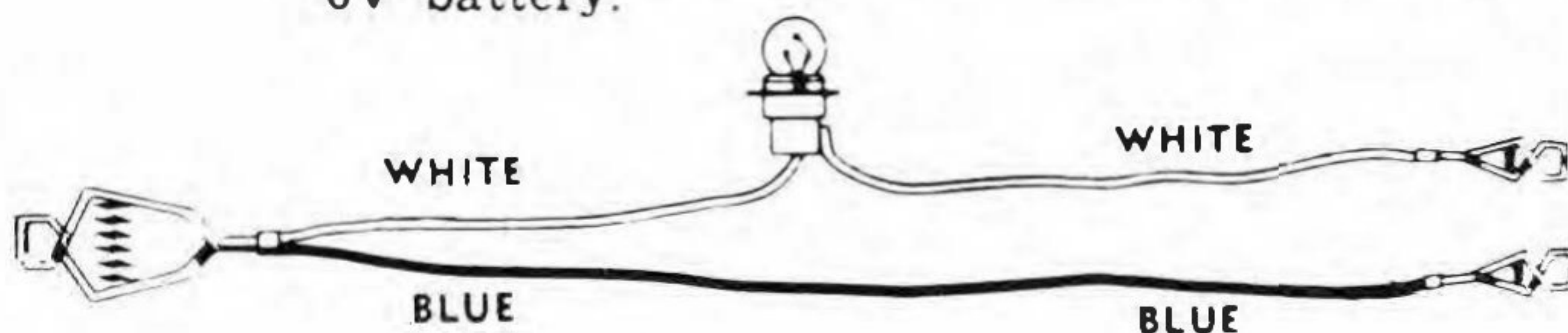
Generator voltage set too high.

6. Car Starts in Any Gear with Automatic Transmission.
Causes:
Improperly wired. Check equipment and refer to correct diagram.
7. Coil in Battery Switch Burned Out.
Causes:
Same as 4.
8. Battery Switch Vibrates.
Causes:
Battery in low state of charge.
Improperly wired or weak ground connection between battery post and engine.
9. Battery Switch and Original Starter Switch Operate but Starter Fails to Turn.
Causes:
Weak Connection between battery post and starter.
Locked starter.
Worn out and shorted starter.
10. Starter Turns Engine Very Well But Fails to Start.
Causes:
Weak connection of large wire marked "All car wires". Refer to diagram.
Usual causes such as weak ignition, carburation, valves, compression, etc.
11. Visible Trouble--Lights Brighten When Starter is Turning.
Causes:
Improperly wired. Entire system receiving 12 volts.
12. So Called Self Discharging of Battery. Battery Found Discharged after a Period of Hours.
 - A. It is impossible for the battery switch to slowly discharge the battery. If the above condition is encountered, look for usual vehicle troubles such as radio or lights left on, sticking stoplight switch, etc. Remove the large wire marked "All Car Wires" from battery switch. Connect volt-meter between this wire and the terminal it was connected to. If any voltage whatsoever is observed, something in the vehicle is still on. Check can be made in same manner by removing ground cable at motor or chassis end.
 - B. Generator not putting back in as much current as taken out.

SERVICE BULLETIN NO. 4

SUBJECT: CHECKING ORPIN SERIES - PARALLEL SWITCHES

Equipment required as shown plus one regular 6V battery.



Switch must be removed from battery.

1. Connect large clip containing blue and white wire to negative battery post and touch white terminal to positive battery post to test light.
2. COIL CIRCUIT—"S" terminal to "Green wire"
Connect blue tester clip to terminal "S" and touch "Green Wire" to positive battery post.
Make sure switch activates and proceed to step 3.
3. SERIES CIRCUIT—Terminal "2" to "7"
Connect blue tester clip to terminal "S" and white clip to terminal "2". Press "Green wire" and terminal "7" to positive battery post.
Switch should activate and light should burn.
4. SENDING CIRCUIT—"I" terminal to "Red wire"
Connect blue tester clip to terminal "S" and white clip to "I". Touch "Green wire" and "Red wire" to positive battery post.
Switch should activate and light should burn.
5. PARALLEL CIRCUIT—Terminals "3" to "6"
Connect white tester clip to terminal "3" and touch terminal "6" to positive battery post.
Light should burn.
6. PARALLEL CIRCUIT—Terminals "4" to "5"
Connect white tester clip to terminal "4" and touch terminal "5" to positive battery post.
Light should burn.

INDEX TO INSTRUCTION SHEETS

For trucks, tractors, boats, and commercial equipment

Negative ground—solenoid operated starter clutch—without relay. Inst. No. 1

Negative ground—solenoid operated starter clutch—with separate solenoid relay. Inst. No. 10

Negative ground—solenoid operated starter clutch—with relay combined with solenoid Inst. No. 4

Negative ground—simple solenoid starter switch—with one wire grounded type button—Bendix type starter (starter solenoid may be mounted on starter—diagram shows solenoid away from starter) Inst. No. 6

Negative ground—simple solenoid starter switch—with two wire push button or ignition key type—Bendix type starter (solenoid may be mounted on starter—diagram shows solenoid away from starter) Inst. No. 5

Negative ground—lever (foot) operated starter clutch with starter switch mounted on starter (lever engages starter clutch with flywheel band) Inst. No. 8

Negative ground—mechanical (foot) operated starter switch—Bendix type starter—(no lever engages starter with flywheel band)—see note on instruction sheet Inst. No. 5

Positive ground—solenoid operated starter clutch—without relay Inst. No. 7

Positive ground—solenoid operated starter clutch—with separate solenoid relay Inst. No. 9

Positive ground solenoid operated starter clutch—with relay combined with solenoid Inst. No. 12

Positive ground—simple solenoid starter switch—with one wire grounded type push button—Bendix type starter (starter solenoid may be mounted on starter—diagram shows solenoid away from starter) Inst. No. 2

Positive ground—simple solenoid starter switch—with two wire push button or ignition key type—Bendix type starter (solenoid may be mounted on starter—diagram shows solenoid away from starter) Inst. No. 3

Positive ground—lever (foot) operated starter clutch with starter switch mounted on starter (lever engages starter clutch with flywheel band) Inst. No. 11

Positive ground—mechanical (foot) operated starter switch—Bendix type starter—(no lever engages starter with flywheel band)—see note on instruction sheet Inst. No. 3

CAUTIONS

Make sure battery switch clears hood, etc., and is fastened in place securely. Do not short together any terminals on switch or damage to battery conductors may result. If any wire must be extended, make sure it is as large as the original and soldered properly. If generator regulator has been set for an 8 volt battery, be sure to reset it for a 6 volt battery according to car manufacturer's specifications. Use 1.265 to 1.275 electrolyte. See instructions on container for proper filling.

ALWAYS REMEMBER

You get out of a battery only what your generator puts into it.

CHARGING

Charge the automatic battery in the same manner as any 6 volt battery, making the charger connections at the cable posts. Fast charges should be limited to 50 amps. If one side of the automatic battery is found in a discharged condition while the other side is in a charged condition, the switch or leads are not making one or both of the parallel circuits and should be checked. Additional instructions on page 23.

USING BOOSTER BATTERY

Use 12 volt booster battery ONLY as explained on page 22. Failure to follow directions may result in damage to your automatic battery.

HOW TO TEMPORARILY REPLACE AUTOMATIC BATTERY WITH REGULAR 6 VOLT BATTERY

If it is desired to temporarily replace an automatic battery with a regular 6 volt battery, disconnect the wires from terminals S and I and connect together. Remove car feed wire from terminal 2 or 7 and connect to the ungrounded cable clamp bolt on the regular 6 volt battery.

- LEAVE WITH VEHICLE •