

# PRACTICAL ELECTRICAL REPAIRS

by  
Raymond R. Falle

## Introduction:

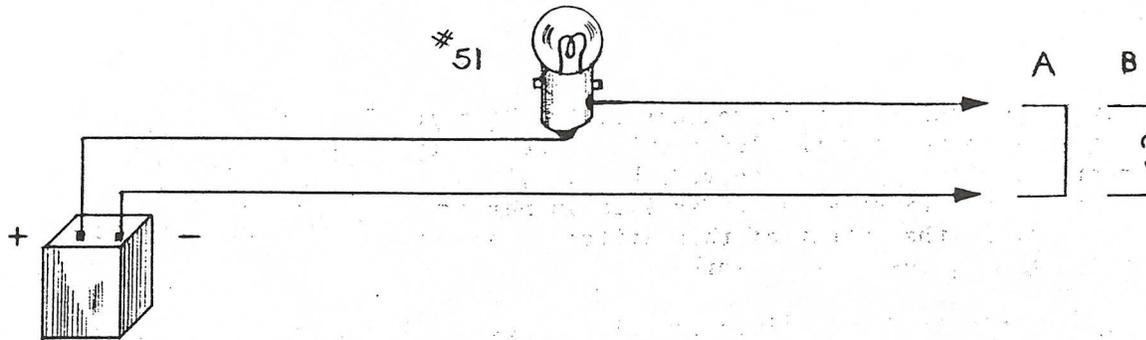
It is obvious that many members of the "Airflow Club of America", are highly talented and skilled people. These people can perform most of the restoration work by themselves, however, there are probably many members who are not experienced or skilled in performing practical electrical repairs. It is the intent of this writer to help these club members with their electrical restoration work.

I do not intend to go into complicated electrical theory. The material presented will be in simple language and drawings, so that practical repairs can be made.

## Part I Basic Rules

1. Never use acid solder on electrical connections, only rosin core solder should be used.
2. Never use emery paper on starter or generator commutators, only fine sand paper.
3. Never use a coarse file on relay or contact points.
4. Be neat with wiring, keep wiring free of mechanical movement.
5. When using electrical tape, wrap the tape tightly around connection.
6. Do not memorize the wiring plan, draw a picture or diagram of removed wires, electrical parts etc. (your own symbols or drawings are ok as long as they make sense to you.)
7. Never by-pass or defeat fuses permanently.
8. Do not leave battery connected in vehicle until all electrical work is properly completed.

editors note- As mentioned in the January issue, we are starting this month with a new series of technical pages on electrical problems and repairs. Writer RAYMOND FALLE is a member of the AIRFLOW CLUB OF AMERICA, and a Staff Engineer at Station W-I-S-N AM/FM/TV Milwaukee, Wisconsin.



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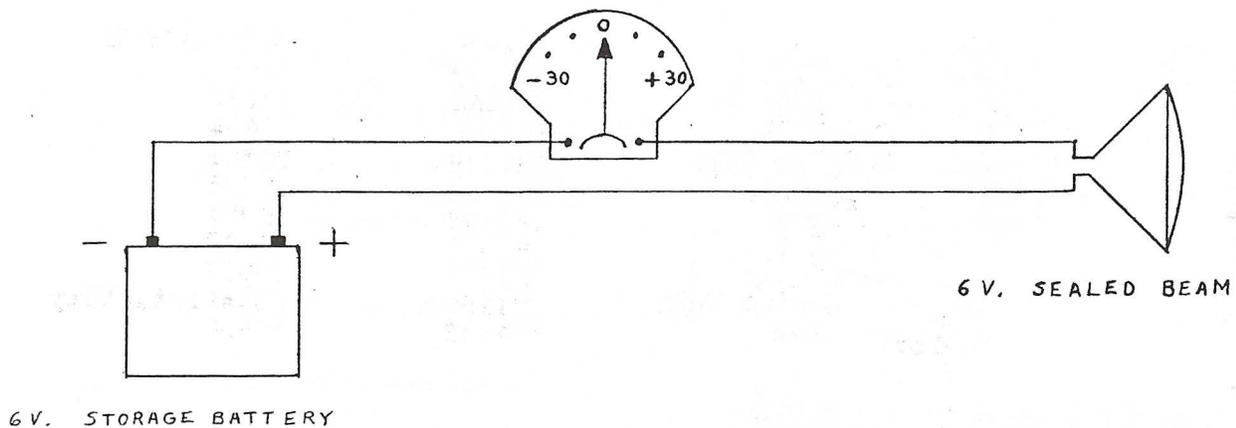
RAYMOND R. FALLE

### Part II Simple Test Set-up

This is a simple test set-up, using an inexpensive 6 volt lantern battery, and a 6 volt bulb, number #51, or equivalent. It is useful for checking electrical continuity of wires and connections.

Using a small soldering iron, carefully solder the wires to the bulb as shown. Then strip the ends of the wires for test leads. When wire "A" is touched across the leads, the battery circuit will be complete and the bulb will light. Assume wire "B" to be a wire that is broken beneath the insulation. Since it cannot complete the circuit, the bulb will not light, indicating an open circuit. The bulb and battery may be taped together, or may be mounted in a box, as desired.

This simple device may be used in many ways, such as testing switches, testing horn and light relays, initial setting of ignition timing, etc.



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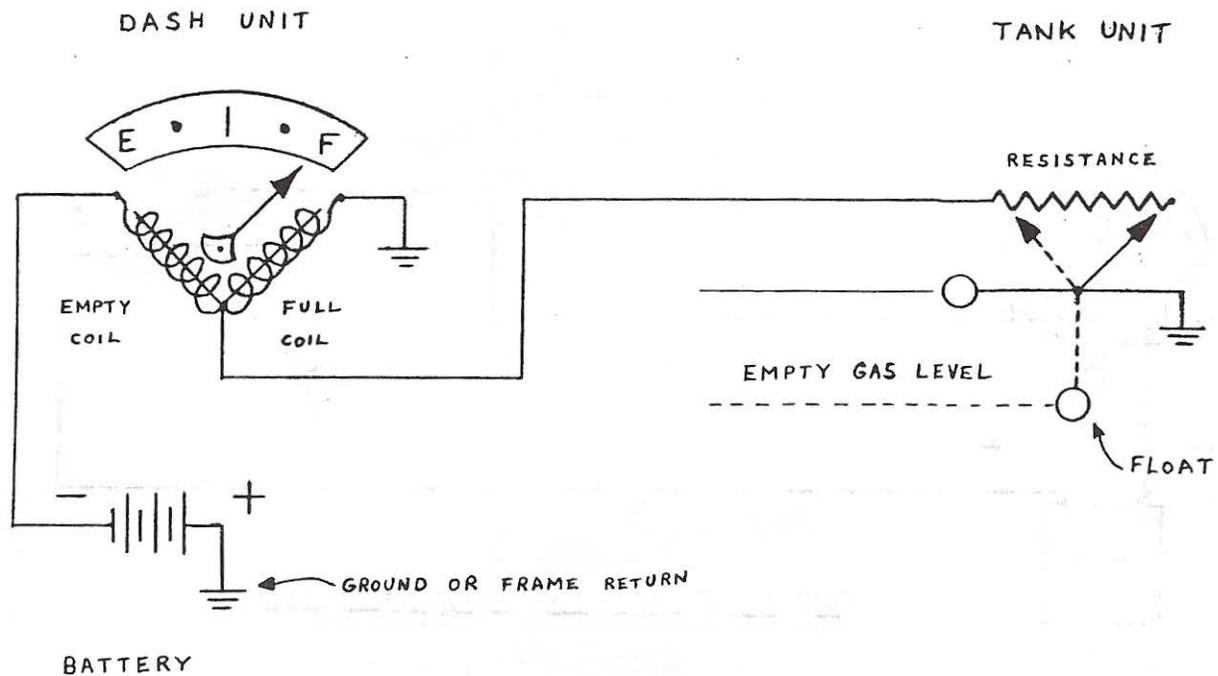
### Part III Ammeter Bench Test

By Raymond R. Falle

After removing the ammeter from the instrument cluster, connect as shown in diagram. This simple circuit can be used to test your airflow ammeter deflection. Since the airflow has a "positive" electrical ground system, the ammeter will indicate "discharge" when connected as shown. To check the ammeter deflection in the "charge" direction, simply reverse the connections on the battery.

The 6 volt sealed beam was used here because it will draw enough current to indicate pointer deflection. Any 6 volt accessory or load could be used. However, a pilot lamp bulb, for instance, does not draw enough current to deflect meter sufficiently so that mechanical movement or swing can be checked properly. The pointer, if bent, can be carefully straightened with a pair of tweezers. If the ammeter is beyond repair, and a replacement cannot be found, here is one solution.

I have found the meter movement of some 1935 - 1938 Chrysler corporation cars to be the same. Using care, the indicating face plate of your old meter can be removed, by carefully hand drilling the rivets, and notting the face of your old meter on the substitute one. The indicating pointer may be slightly different, but would not easily be detected. This would suffice until an original ammeter could be found.



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### Part IV The Airflow Fuel Gauge System

By Raymond R. Falle

The airflow fuel gauge system is of the balanced coil type. The dash unit consists of two magnetic coils, an armature, needle and pointer.

The tank unit consists of an electrical resistance, and a movable contact and float.

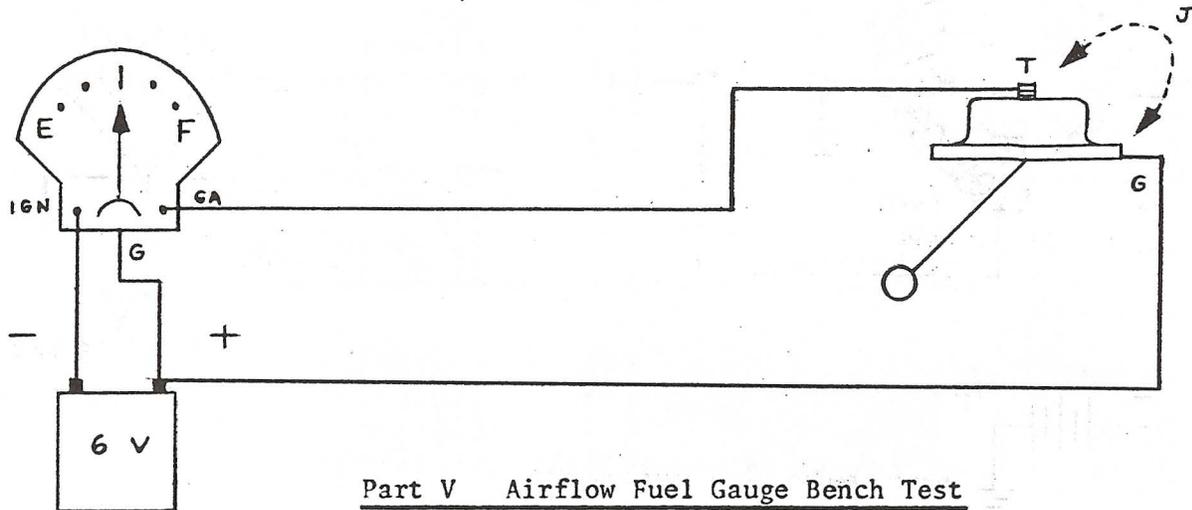
As the fuel in the tank rises or falls, the float causes the movable contact to increase or decrease the electrical resistance in the circuit. This in turn varies the current to the balanced coils in the dash unit. The pointer is attracted to a point of balance between the two coils, depending upon the current in the circuit.

The advantage of the balanced coil system is that voltage variations of the car's electrical system does not affect the reading of the gauge.

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Part V Airflow Fuel Gauge Bench Test

After removing the dash and tank units from the car, connect as shown in the diagram.

On the back terminal side of the dash unit, are inscribed the markings "IGN and GA". "T" is the terminal of the tank unit. "G" is the ground, or metal frames of both units. "J" is a jumper wire that is not used initially.

The 6 volt battery can be your lantern or vehicle battery. Moving the float slowly upward should cause the pointer to move from empty to full. If there is no movement of gauge, touch jumper wire "J" from "T" to "G", momentarily. The gauge should swing the full scale. If the gauge does not move with jumper, the gauge is defective or you have poor connections. The tank unit has a wire-wound resistance of about 120 ohms. An electronics repairman can check it to see if it is erratic or open. Sometimes they can be repaired by drilling out rivets, disassembling, and cleaning movable contact which has become oxidized. Other Chrysler corporation cars of the same vintage may have a similar tank unit, however, the length of the float rod may have to be changed if it is not the same length. You may experience a slight tingling or shock when connecting or disconnecting the units during tests. This is normal, it is the inductive effect of the coils in the dash unit.

In the majority of cases, the tank unit will be found to be defective. This will be apparent when the jumper wire "J" is touched across the tank unit and the gauge indicates movement. If the fuel gauge system operates on the bench, but not in the car, chances are the car's wiring and / or connections are defective.