BLUE STREAK service bulletin

89-57

HELPFUL HINTS from SHERLOCK McKANICK

Our mutual friend, Sherlock McKanick, who is constantly sleuthing around for information that would help you in your daily work and, especially for solutions to problems that often arise due to new designs in car equipment, has come across some highly authoritative service hints and asked us to pass them on to you.

1. DIRT ENTERING THE DISTRIBUTOR: A number of 1956 cars and trucks are equipped with the "external adjustment" type Delco-Remy distributor. *(See our BLUE STREAK Bulletin #86-55 for detailed description.)* Investigation in the field shows that the sliding door in the distributor head of such distributors is sometimes carelessly left open or only partially closed after the distributor adjustment. When this happens dirt and dust enter the distributor and cause many ignition troubles.

Therefore after any adjustment push down the sliding door to make sure that it is firmly closed.

Also please note: **Dirt in a distributor due to any cause will result in trouble at all times. The inside of the distributor must be kept scrupulously clean if you want to reduce the burning of breaker points, undue wear of breaker arm bumper blocks and many other ignition troubles.**

2. GENERATOR BRUSH LEAD POSITIONING: When servicing generators it is extremely important that special care be taken in arranging the flexible brush leads to assure maximum brush life.

The flexible portion of the brush leads must *never touch any part of the generator*. The following precautions should be observed:

- Locate the lead so there is clearance between it and the brush holder.
- Arrange the brush lead so that it can never touch the commutator during brush life.
- Position the brush lead so there are no loops or "hang-up" on the brush holder as the brush wears.
- Check to see that the brushes ride freely in the brush holders.

If you follow these procedures, you will probably cure a lot of so-called voltage regulator troubles.

For additional information on generator handling, see BLUE STREAK Service Bulletin #2-37.

It is a good idea at the same time to check the brush springs on the generator, as those originally supplied, often become weak with use. This causes short brush life, excessive commutator wear, and poor generator action resulting in fluctuating voltage and current output. The voltage regulator is usually blamed for this condition whereas it is not at fault and can actually be damaged. Weak brush springs should be replaced as soon as discovered with springs of proper strength.

3. ALIGNING IGNITION POINTS TO PREVENT BURNING: One cause of short ignition point life is misalignment of the contact surfaces. If the tungsten contacts are not properly aligned and the edge of one contact touches the surface of the mating contact, the normal arcing between the points will be concentrated at this edge. Furthermore the concentration of the arc will cause overheating and rapid point burning. Unless both contacts are exactly parallel to each other, edge contact *must* occur.

As it is practically impossible to align two flat surfaces exactly parallel, all BLUE STREAK and STANDARD breaker point sets are furnished with one flat and one radiused (rounded) contact. *With this arrangement, even when aligned approximately parallel the arc does not occur at an edge.*

When aligning contact points, always carefully bend the stationary arm, never the movable breaker arm. Our TA-5 point aligning tool will help you with this.

4. CHEVROLET DISTRIBUTOR WIRE: In the late model Chevrolets, *(see our BLUE STREAK Bulletin #75-53 for details)*, the primary wire from the coil to the distributor is a plastic insulated wire consisting of a number of thin strands. As this wire is constantly flexed in service by the action of the vacuum advance, strands often break within the plastic insulation. It is practically impossible to detect these breaks inside the insulation, yet they may cause many ignition troubles.

It is therefore recommended that whenever new points are installed, this wire be replaced with a new one. Use our DDL-20 made with extra flexible wire stranding, to insure a safe and complete repair.

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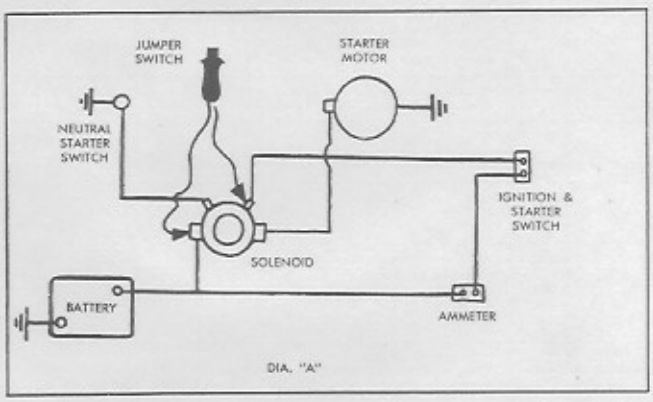
ANOTHER IMPORTANT HINT FOR BETTER ELECTRICAL SERVICE

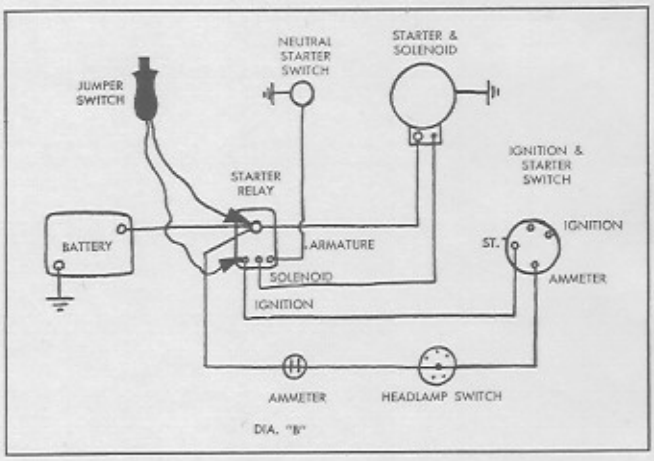
The combination ignition and starter switch which is becoming more and more popular on American cars, presents somewhat of a difficulty to the mechanic when it becomes necessary to turn over the engine without turning on the ignition, as in engine compression tests for example. Jumpers or auxiliary push-button starter switches are commonly used for this purpose.

On cars equipped with automatic transmissions there is usually a neutral safety switch in the circuit. This switch can be damaged or even burnt out if the jumper or auxiliary push-button starter switch is improperly connected.

As wiring circuits differ on different makes of cars and even in different models of the same make, it would be impractical to list all of them in a Service Bulletin, and we therefore picked out a characteristic set-up, as in the 1957 DeSoto, as a guide for properly connecting a means for turning over the engine without ignition.



On the 1957 DeSoto, S-27 models, connect the leads to the battery terminal and starter switch terminal of the solenoid starter switch, as above.



On the 1957 DeSoto, S-25 or S-26 models, connect the leads to the battery and ignition terminals of the starter relay.

As a general rule, for making connections on other cars with combination starter and ignition switches and automatic transmissions, please remember that at no time must the leads be connected in any way that would apply battery to the neutral safety switch. ***To be entirely safe, we would recommend that you remove existing connections at the neutral safety switch during the test and replace them afterwards.***

There is still another simple method for turning over the engine without turning on the ignition. All you have to do is to temporarily disconnect ***the wire that normally runs from the coil primary to the distributor.*** Disconnect this wire from the coil primary terminal, which will break and de-activate the entire ignition circuit during your tests.

You can thus use the key in the ignition switch for turning over the engine without turning on the ignition. ***Remember, of course, to re-connect the wire when the tests are over.***

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BLUE STREAK service bulletin

91-57 C

Hi Mike:

In my last letter to you (Bulletin 85-75) I promised to tell you how to locate the real *trouble when your voltmeter reads higher than 7.7 volts, or 15.2 volts on a 12 volt system, after you had made certain tests described in that letter.*

I told you then *not* to change the regulator yet, and I repeat: **"Don't Change the Regulator."** Believe me, pal, I have personally checked thousands of condemned regulators of our own and other makes, and have yet to find more than a couple of *any* make that were really defective due to faults of their own. I've seen them burnt to a crisp, damaged by water, mutilated, rusted almost to a powder, misadjusted and so on, but the fault was *never* in the regulator itself. What's more important, most of them were perfectly O.K. and could have kept on working for years, if the real cause of the trouble in the car charging system had been detected and corrected by the serviceman. This really hurts, it hurts the manufacturer, it hurts the jobber, and it hurts the serviceman, who must have spent and wasted time removing a good regulator and installing a new one with the customer still unsatisfied.

What to do? How do you make sure that you have laid the ghost and really done a good final *job on the jalopy?*

Listen, Mike, and pay close attention because the rest of this letter will give you the dope on how to become a *real* expert, a professor of voltage regulation. It's all yours—if you want it.

And all you need is the very same voltmeter I told you about in my first letter and the additional information I'm going to give you in this one.

So let's get with it.

Get your voltmeter ready and connect it as before, one post to the "B" terminal of the regulator and the other post to a good ground; now start the engine and run it at a speed that would operate the generator at approximately medium speed and turn on lights and/or accessories to pull approximately one-half of the maximum generator charging rate. If the voltmeter now reads over 7.7 volts or 15.2 volts in a 12 volt system, disconnect the lead from the "F" terminal of the regulator and watch the voltmeter.

If the voltage does not drop to any extent, you have found the trouble, you don't have to go any further. It's either a short circuit in the field coils of the generator or a short in the wire that runs from the "F" terminal of the generator to the "F" terminal of the regulator. In this case you can't do anything else but remove and repair the generator or locate the spot at which the lead is shorted to the frame and tape it up so as to prevent the wire from making contact with the grounded frame. *(Continued on other side)*

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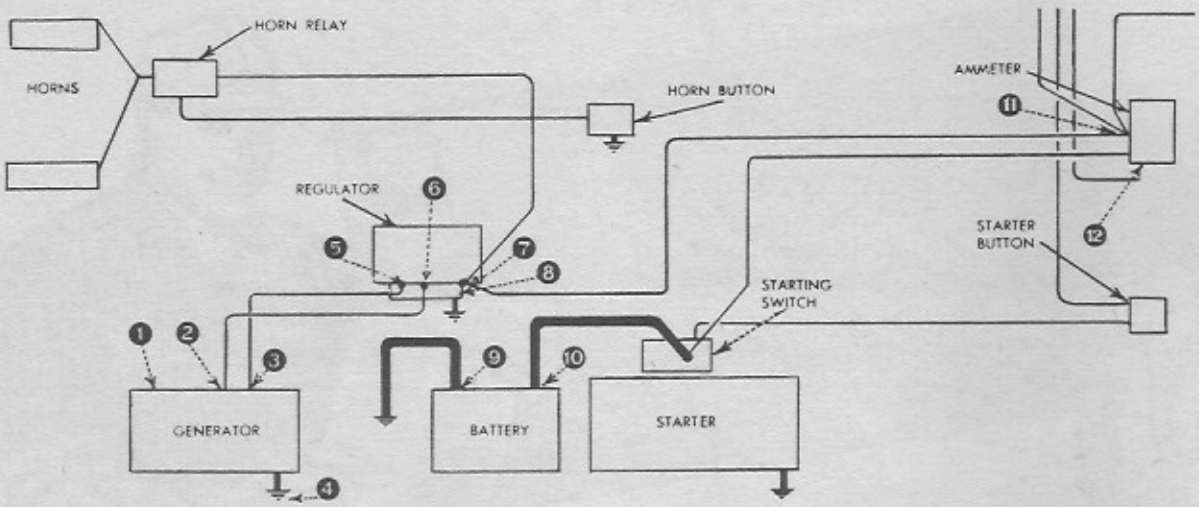
(Continued)

If, however, the voltage does drop, the generator field and field wire are O.K. Then, if after reconnecting the "F" terminal to the regulator **you still get a high reading** on the voltmeter, the cause can probably be located in a high resistance connection somewhere in the charging system. Proceed as follows: Leave the engine running at the same speed as before. Disconnect your voltmeter and start taking readings between the points marked and numbered on the drawing.



VOLTMETER CONNECTION POINTS	MAX. PERMISSIBLE VOLTAGE READINGS 6 V. system	12 V. system
3 & 10	.5	1.0
3 & 5	.1	.2
3 & 7	.1	.2
7 & 5	.1	.2
12 & 11	1.0	2.0
10 & 12	.1	.2
2 & 6	.05	.1
1 & 9	.04	.08
1 & 4	.02	.04
9 & 4	.02	.04
1 & 8	.04	.08

KEY TO NUMBERED POINTS
3 Gen. A Terminal
10 Batt. Ungrounded Post (Not Cable Terminal)
5 Reg. A Terminal
7 Reg. B Terminal
12 Ammeter Terminal
11 Ammeter Terminal
2 Gen. F Terminal
6 Reg. F Terminal
1 Gen. Frame
9 Batt. Grounded Post (Not Cable Terminal)
4 Car Frame
8 Reg. Base

If any one of the readings is higher than shown in the chart, you must carefully check for the cause. If it's due to a bad connection, the wire terminal must be carefully cleaned and the connection tightened. If wire strands are broken, the wire must be repaired. **If the reading is now within the permissible maximum** given in the chart, you have located at least one source of trouble. If this does not bring down the reading, it is best to run a new wire between the two trouble points. In running the new wire be sure that it is not of a smaller gauge than the old wire and that the terminals you will be using are properly and securely connected to the wire. Avoid sharp bends in the wire and bind or clamp the wire to some part of the chassis to prevent vibration of the wire, which may cause breakage. Always use an insulated grommet when running the wire through a hole in sheet metal.

Well, Mike, this all sounds too easy and simple to be true, doesn't it? Just the same, I can assure you, that if you follow the routine in my two letters, you will change and condemn fewer regulators but will turn out just as many more trouble free jobs.

I want to give you just a couple of more tips that may save you time and worry:

1. **If on a hot summer day** some wild-eyed motorist drives in and complains that his **ammeter shows a high charge** on a long drive, get the man a cool drink and talk to him for a while. That'll cool him off and, what is more important, it will give the battery in his car a chance to cool off. When the battery is hot, it will pull a high charge regardless of the regulator setting or anything else. It's the nature of the beast and there's nothing anyone can do about it. Of course, if the guy intends to continue his long drive for any length of time and the weather promises to stay hot, you *could* readjust his regulator a few tenths of a volt downward, but this is a bit dangerous, because, if conditions become normal again, he may find himself with an undercharged battery unless he comes across another expert like yourself, who will then readjust his regulator for normal operation.

2. By the same token, **if anyone complains on a cold, winter day that he does not get any charge,** it's the same thing in reverse. A cold battery will not take a normal charge. So give him some hot coffee and while he is warming up, pull his car into a warm spot in your garage and let the battery get the chill out of its insides. The chances are that by the time he is through with his coffee and talking to you, nature will have taken its course and the trouble will have disappeared as the battery will have warmed up in the meantime also. But remember Mike, in neither of the above cases should you go into the regular routine of changing regulators or messing with *his* regulator. It will do you or him no good at all.

3. When you find that you *must* change regulators in cases where the old one was damaged beyond redemption, install the new one but don't stop there. *Use your meter again and make sure that the new one works properly on the particular application, as I explained in previous bulletins, especially in #77-54 and 78-54.* Also, don't try to adjust regulators without consulting our voltage regulator manual.

I think you are pretty well set now but if I think of anything else that could be of help to you, I will write you still another letter. Also, let me hear from you if you come across some tough ones that you can't lick. If you do, be sure to tell me *exactly* what happened and what you did or did not do.

As always, yours for service,

Doc

BLUE STREAK service bulletin

92-57

THIS AND THAT (PART 1)

(Up-to-date hints and tips to help you in your daily work)

1957 MERCURY

Possible ignition troubles may be encountered on some 1957 Mercury cars. The ignition resistor, which is used in the coil primary circuit, may be found to ground out to the intake manifold. In its present position, the lower terminal of the resistor almost touches the top surface of the manifold and can actually be in contact with it, thus grounding the ignition circuit and causing permanent or intermittent ignition troubles and failures.

To correct this very undesirable condition, the resistor should be bent on its bracket toward the coil sufficiently to provide the necessary clearance between the resistor terminal and the manifold.

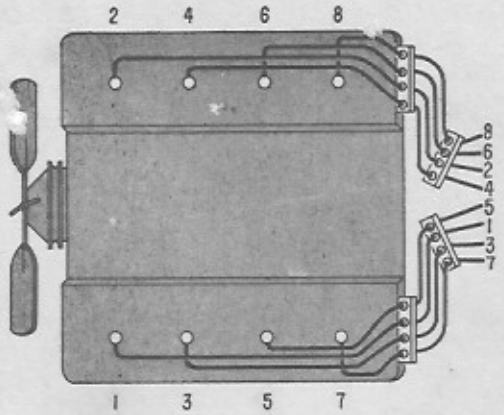
Watch out for this possible defect, so that you will avoid condemning good coils and probably clear up a puzzling ignition trouble.

CHEVROLET V-8

The Chevrolet V-8 engine may suddenly develop a missing or spitting condition, which may cause you to change spark plugs unnecessarily and without eliminating the trouble, as the real cause is probably cross firing due to induction.

When the high tension current flows through the ignition cable on its way from the distributor to the spark plug, it may "induce" voltage in another plug wire, immediately adjacent to it, especially when the two wires run parallel to each other for some distance. This "induced" voltage may cause a spark plug to fire out of correct sequence resulting in a miss or spit back and generally rough engine performance.

Cross firing is most likely to occur between the two rear cylinders in the left back, which immediately follow each other in order of fire. The remedy for this condition is to reroute the spark plug wires so that #5 and #7 wires are not next to each other. See illustration for the proper relocation of the wires.



Chevrolet V-8, with 1-8-4-3-6-5-7-2 firing order, calls for this secondary ignition wire arrangement

The following precautions must also be exercised to help prevent troublesome cross firing.

1. Too wide a setting of a spark plug gap, will cause a voltage increase in the corresponding plug wire, thus increasing the possibility of "inducing" excessive voltage in another plug wire.
2. Too narrow a spark plug gap will make it possible for the plug to fire more readily at a lower voltage. In such cases, even a small amount of "induced" voltage can cause the plug to cross fire.

PONTIAC 1953 and earlier

You may come across a troublesome situation on these cars: You may find that even with a correctly polarized generator the voltage regulator cutout points will oscillate and click.

To remedy this highly undesirable trouble, which will tend to burn out the regulator contact points in the cutout, install a ground strap between the rear of the cylinder head and the forewall to provide a good ground between the generator and the regulator.

Sometime in 1953 the ground strap installation became standard equipment on Pontiacs. Nevertheless this connection must be checked for tightness at every opportunity, as the connecting bolts sometimes loosen up and the regulator trouble will appear, in addition to which your headlights will flicker.

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93-57

THIS AND THAT (PART 2)

EXTERNAL ADJUSTMENT DISTRIBUTORS on some GM cars

You may experience an electrical shock when adjusting these distributors on the car. To adjust the point gap in these distributors, it is necessary to open the window in the distributor head. This exposes the adjusting screw, but it also exposes a slotted screw which fastens the condenser and coil primary leads. As the adjustment is often made with the engine running, the exposed screw may have as much as 100 to 250 volts on it. With the distributor sometimes located in a relatively inaccessible location, it is possible for the Allen adjusting wrench to touch the slotted screw and give you an electrical shock. To avoid this unpleasant experience you should wrap some friction tape around the wrench.

1957 BUICK

Don't be deceived by the lower vacuum readings on 1957 Buicks. The manufacturer now specifies a 14½" minimum on 1957 engines instead of the 1956 15½" minimum. The lower vacuum readings therefore do not indicate valve trouble. This also applies to other than 1957 Buick engines.

1957 BUICK ENGINES

When hard, cold starting is sometimes encountered on a 1957 Buick, equipped with a Carter 4-barrel carburetor, the air cleaner may be interfering with the choke linkage, causing the choke to stay open. To remedy this condition use two air cleaner-to-carburetor gaskets, which will cause the cleaner-silencer assembly to become raised sufficiently to eliminate the binding interference.

ALL CARS

In all cases of unsatisfactory ignition performance, check the spark plug wires carefully. In service, the insulation of the high tension wires sometimes stretches or the metal strands contract and shrink. In either case the terminals at either end of the wire will not make contact with the conductive core of the wire, causing a jump spark there with possible loss of power, missing and putting an abnormal strain on the ignition coil.

This is especially true when the spark plug wires are of the resistor type with a carbon core. Contact between the terminal and the carbon core is often incomplete. In addition the core sometimes separates inside the insulation. Such wires should be checked with an Ohmmeter. Their resistance should check at approximately 1000 ohms per inch of wire.

1956-1957 PLYMOUTHS—PLYMOUTH 6

Cold starting difficulties may be occasionally encountered on 1956 and 1957 Plymouths using an oil-filled Auto-Lite coil No. CAG-4001.

This coil is usually mounted in a horizontal position on a separate engine fastened bracket. The cold starting difficulty may sometimes be corrected by remounting the coil in a vertical position flat against the face of the engine bracket. Two changes will have to be made for the new coil position:

1. A slightly longer distributor-to-coil high tension wire will have to be used.
2. The top flange of the engine bracket may have to be hacksawed off and the holes in this bracket may have to be changed. You will have to drill two ¼" holes to match the holes in the coil bracket and then elongate the two holes by means of a round file.

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94-57

UNIVERSAL CONDENSER AL-118 and AL-118X

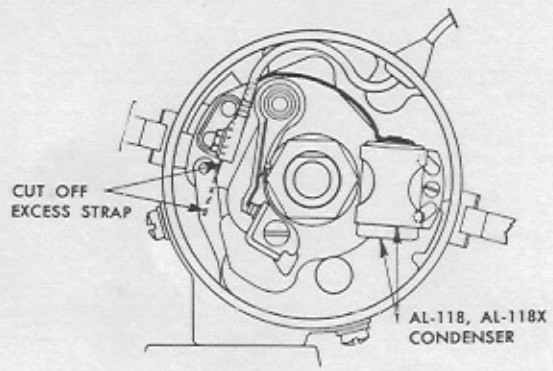
for Auto-Lite Replacement

There are many types of Auto-Lite condensers which are mounted on the breaker plate, and the main difference between them is just the difference in the length of their leads. The new AL-118 and AL-118X condensers are universal and replace about 11 numbers of condensers. They are so designed that the length of the leads may be tailored to any particular Auto-Lite type condenser application. This can be done easily and quickly if the directions given below are followed:

An instruction sheet will be found in each AL-118 or AL-118X box, but it is suggested that you keep this bulletin for reference.

All of the newer Auto-Lite distributors now use condensers with copper straps instead of flexible leads.

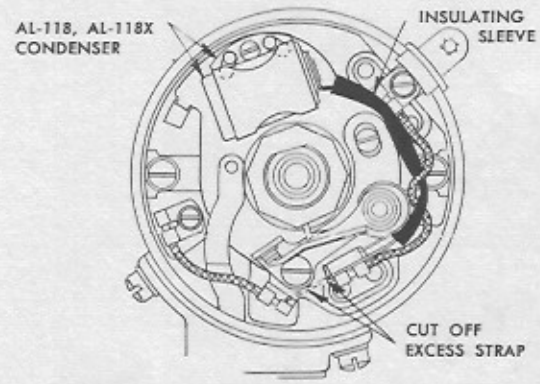
A *To replace any copper strap condenser with the AL-118 or AL-118X proceed as follows:*



1. Remove the old condenser and set it side by side with the AL-118 or AL-118X.
2. Straighten the straps on both of them, being careful not to do excessive bending; all bending should be done beyond the right angle bend where the strap joins the condenser top. This bend should not be changed at any time.
3. Compare lengths of straightened straps on the two condensers and find the hole in the AL-118(X) strap which is closest to the hole in old condenser.
4. Cut off the strap on the AL-118 or AL-118X, 1/16" beyond this hole; scissors or cutters can be used.
5. Snap the bracket on our new condenser to correspond with the bracket position on the old one. You now have a duplicate of the old condenser.
6. Install the new condenser in the customary manner.

NOTE: *The insulating sleeve you will find in the box is not used for this application.*

B *To replace the flexible lead type condenser with the AL-118 or AL-118X condenser proceed as follows:*



1. Form strap into the approximate shape of the old lead, being careful not to do any bending of the 90° angle where strap joins the condenser top.
2. Hold the condenser in its proper position on the breaker plate and determine which hole will comfortably reach the primary terminal without putting a strain on the strap or leaving too much slack which would crowd the installation; cut off the strap 1/16" beyond this hole.
3. Cut the insulating sleeve about ½" shorter than the strap length and install it on the strap.
4. Put the new condenser on the table in the position it will be mounted on the breaker plate and snap the mounting bracket on to it in the correct position as when installed on the plate.
5. Install the condenser, taking care to keep the strap and/or insulating sleeve from touching the base breaker plate or the breaker plate screw.
6. Wrap the primary lead around the strap, as it was done on the old condenser, so that the breaker plate movement will remain free. Install the condenser mounting screw and the primary terminal screw.
7. Make a final check by rotating the breaker subplate while watching for any interference.

NOTE: *On some Auto-Lite distributors, like the IAY type for instance, you may find it necessary to change the round hole into a slot; this may be done by cutting away part of the strap either above or below the hole, so that it will leave a slot instead of a hole.*

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BLUE STREAK service bulletin

95-58

VOLTAGE REGULATOR — *Installation Cautions*

It never fails! Every time we open our big mouths and brag, "Now, we've seen everything, every possible method of voltage regulator mayhem and outright 'murder', along comes another 'cutie' that we have to investigate, analyze and pass on to you so that you may know about it and guard against it."

In this bulletin we will give you several of the most prominent "cuties" we have come across recently, any one of them will damage and probably "kill" a regulator; all of them are easily avoidable by just exercising a little caution and paying close attention to the work while installing a regulator.

"Cutie" No. 1

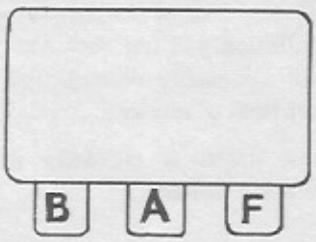
CROSSED CONNECTIONS

This baby is partly chargeable to the unfortunate fact that while the Delco and Auto-Lite regulators operate on the same principle, the terminals on their respective regulators are placed in different positions. It is easy to see that after you have worked on a number of cars in a row equipped with one of these systems, you may automatically misconnect the regulator if a car of the other type happens to come along.

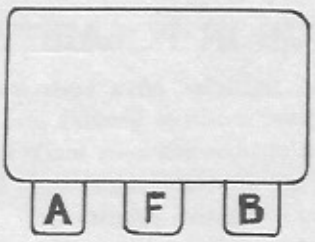
In any case, the life of a misconnected regulator is between 30 and 45 seconds, *that's all.* The electric chair at Sing Sing probably doesn't work that fast, but the results would still be the same: a dead criminal, a dead regulator. Except that in this case it's the innocent party, the regulator that gets killed.

Even all Auto-Lite equipment regulators do not have the same location of terminals. Up to a few years ago all Auto-Lite regulators had the three terminals in a row, on one side of the regulator, but they have changed to a different arrangement with the "A" and "F" terminals on one side of the regulator and the "B" on the other side, which means that at the present time you have to watch out for four different arrangements of terminals: The Delco, the 2 Auto-Lites, and the Ford. You must really WATCH out if you don't want to be a VR executioner...

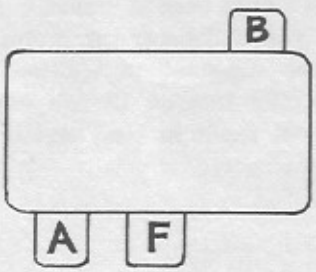
To make it easier for you to stick to the straight, narrow and safe path, we furnish below pictures of the exact terminal locations on the different equipment makes of regulators. The same applies to most of the replacement types also.



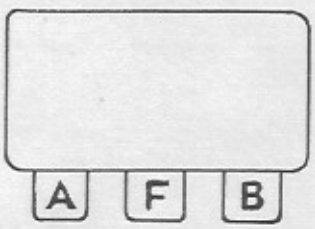
DELCO-REMY TYPE



AUTO-LITE TYPE A



AUTO-LITE TYPE B



FORD TYPE

(*Continued on other side*)

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"Cutie" No. 2

RADIO BY-PASS CONDENSER

On radio equipped cars, there is usually a radio by-pass condenser in the charging circuit to prevent radio interference from the generator. This condenser is usually mounted on the "A" terminal of the generator or the "B" terminal of the regulator. It must *never* be installed on the "F" terminal of the generator or regulator. A wrong installation will not show up right after installation, but will invariably damage the regulator contacts after a short time of service.

Whenever you come across a regulator with badly pitted contacts, check for this first.

CHANGE IN POLARITY

As you well know, batteries have been installed in vehicles in two ways: positive ground and negative ground. However, a change has been made by the car manufacturers and all 12 volt system cars, beginning with 1957, now have a negative polarity.

Correct polarity has always been of utmost importance, as incorrect polarity will damage car radios, voltage regulators and cause sub-standard ignition performance. This is especially true on 12 volt cars, where incorrect polarity will result in even greater damage to these units. So please pay very close attention to battery polarities at all times, but even more so on 12 volt cars.

CAUTION

You must watch all 12 volt batteries in service for wet tops. The presence of water or even dampness on battery tops will cause battery discharge. This is true even with 6 volt batteries, but is really critical on 12 volts, as the higher voltage aggravates the condition. You may come across many cases of "high charge" which cannot be cured by normal means and the trouble is due to nothing else than current leakage across a wet battery top, which will cause the battery to discharge itself with the generator and voltage regulator trying to compensate for this by providing a higher charging rate.

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96-58

5 Volt INSTRUMENT VOLTAGE REGULATOR on LATE MODEL FORD PRODUCTS

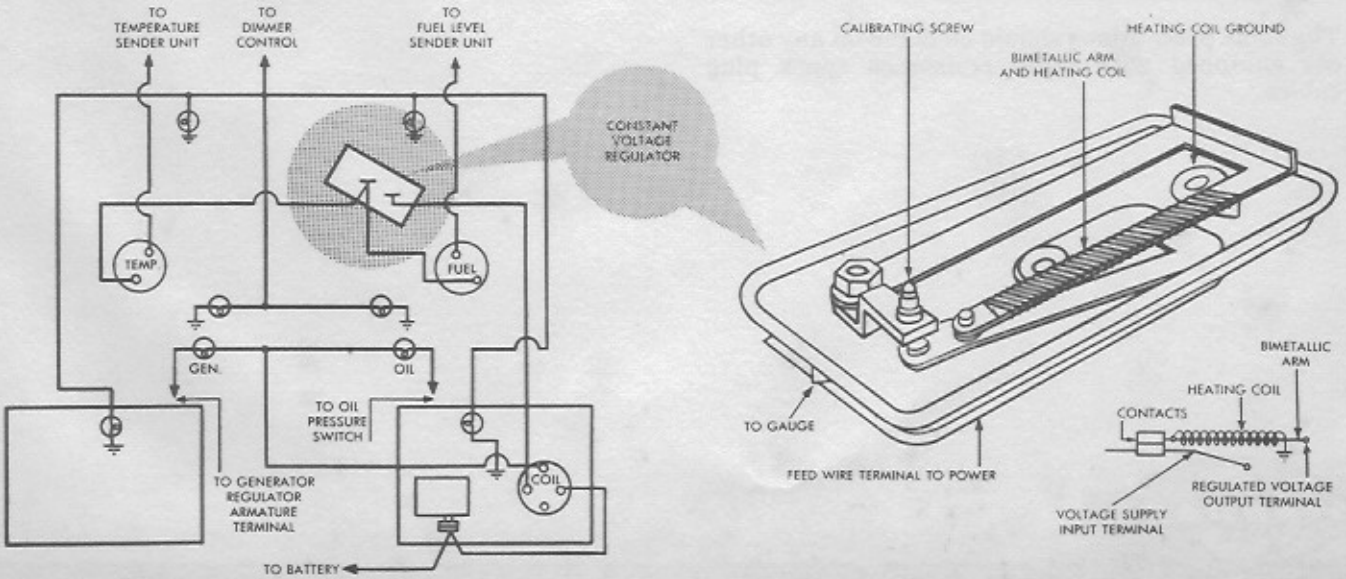
We have received a number of inquiries concerning the 5-volt Instrument Voltage Regulator used on late model Ford made cars. Several of the inquirers wanted to know how to use the generator voltage regulator for this purpose.

The two units cannot be used interchangeably. They are entirely different from each other in construction, principles of operation and application. In fact, the only similarity between the two is in the name "regulator".

The instrument regulator on late model Ford products is furnished for the purpose of maintaining an average voltage of 5 volts at the terminals of the fuel and temperature gauges, as these gauges are calibrated to show correct readings at this voltage.

The instrument regulator construction is quite simple. It consists of a bi-metallic arm with a contact at one end and a heating coil wrapped around the arm. When the ignition switch is turned on, current flows through the heating coil, and the heat produced thereby acts upon the bi-metallic arm causing it to bend and break the contacts. This disconnects the current supply from the heating coil, causing it to cool off. Without the heat from the heating coil, the bi-metallic arm cools and straightens out again bringing the contacts together again and starting the heating-cooling cycle once more. The resulting pulsating voltage has an effective or average value of 5 volts which is furnished to the gauges.

The regulator has a calibrating screw which is set and sealed at the factory. It controls the rate at which the contacts make and break and thus the value of the regulated voltage. *Do not attempt to change the setting of this screw.*



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1958 MERCURY, LINCOLN & CONTINENTAL SPARK PLUG CABLES

The original equipment spark plug cables on the above cars are of the radio resistance type, where the conductor is not metallic but is of the graphite impregnated core construction.

In handling and especially in removing these cables from the spark plugs, attention must be given to the proper method of performing this operation if ignition troubles are to be avoided.

To remove this type of spark plug cable from the spark plug, first grasp the molded terminal boot, then rotate the boot slightly before removal so as to break the adhesion between the boot and the spark plug porcelain. At no time should the cables themselves be used as handles during the removal.

If these instructions are not followed, the graphite conductor of the cable may become partially separated from its terminal, or the cable may even stretch, thereby increasing its resistance. In either case, ignition troubles will result.

The same precautions should be taken on any other car equipped with radio resistance spark plug cables.

VERY IMPORTANT!

CORRECT GENERATOR BRUSHES FOR LATE MODEL FORD MADE CARS

Ford now furnishes two types of generator brushes:

A soft brush set, Ford B6A—10043-B, our #**FX-15**
and

A hard brush set Ford B4A—10043-A, our #**FX-14**.

The soft brush set *must* be used on the 12 volt 30 ampere generator, and the hard brush on the 6 volt 30 ampere generator.

If the hard brush is used on the 12 volt generator, it will cause excessive wear, chipping and damage to the generator commutator segment.

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TIPS ON TIMING

(Tips on timing new cars and other hints for your daily work)

IGNITION TIMING CHANGED ON 1959 CHEVROLET

The ignition timing on all 1959 passenger car and truck engines of 235 cu. in. displacement has been changed to improve performance and economy. Early models were timed for the breaker points to open at top center. Recently, the timing was changed so that the points open at 5 deg. before top center. If you are timing early model 1959 engines, the timing should be changed to conform to the new specifications. Ignition timing on all past models of both 235 cu. in. and 261 cu. in. remains at top center. The 5 deg. B.T.D.C. mark is the first short vertical line stamped on the flywheel at a location clockwise from the timing ball which is at top dead center.

CHECKING TIMING ON 1959 CHEVROLET 348 CU. IN.

When checking the timing on 348 cu. in. 1959 Chevrolet engines, the vacuum advance hose should be disconnected. The distributor advance vacuum from these engines is taken from the intake manifold instead of from the carburetor throttle body making it necessary to disconnect the vacuum line in order to do an accurate job of timing. With the vacuum line disconnected, set the timing at 4 deg. before top dead center with the engine idling.

HARD STARTING ON PLYMOUTH

Hard starting on the 350 cu. in. Plymouth can be caused by an improperly located distributor vacuum port, resulting in incorrect ignition timing. To check this condition make a vacuum test on the rear carburetor (Carter AFB 2653-S). After disconnecting the vacuum line from the carburetor, connect a vacuum gauge to the carburetor fitting. If the gauge shows more than 6 in. of vacuum, with the idle set screw off the idle cam, the primary throttle valve is probably not covering the vacuum port. The condition can be corrected by correctly positioning the throttle valve or by grinding the valve lip to a thickness of .030 in.

SMOOTH IDLING

One of the many causes of rough idling is a dirty air filter on the carburetor. This is more apt to happen on late model cars which are equipped with the dry type air filters. As the filter becomes loaded with dust, it chokes off the air supply and a rich mixture results which in turn causes a rough idle. Readjusting the idle mixture will smooth out the idle, but power is reduced. The only answer, of course, is to replace the air filter cartridge.

TIMING TROUBLES

Every once in a while, when using a timing light, the marks seem to fan out or flutter at certain engine speeds. Sometimes the variation may be as much as four to five degrees, making it impossible to do an accurate job of timing. When this occurs, check for a worn distributor drive shaft slot. This results in excessive play between the drive shaft and the distributor which will make it difficult to time the engine.

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98-59

LEARN TO LIVE WITH HIGH COMPRESSION

You can't do much about "lead poisoning" in the high compression engine's spark plugs, but extra care on ignition tune-ups will help maintain satisfactory performance.

It's Not Your Fault

Take a high-compression engine, add two pinches of lead, a teaspoonful of some octane-boosting additive, stir carefully at low engine speeds, and you've got a mixture that's as lethal to spark plug life as the gas chamber at San Quentin. Not much you can do about it either, so don't blame yourself when a 3-month old tune up comes limping back into the shop with the same symptoms.

You Can't Get the Lead Out

Lead, and all the other gasoline additives, *are* needed. Without them the new high-compression engines start knocking (detonation "ping") as soon as they leave the showroom. Trouble is that these additives are not highly volatile, and in low speed, stop-and-go driving, engines don't get hot enough to burn away all the additives with the gasoline, and deposits build up on spark plugs. This "lead poisoning" fouls plugs, producing loss of acceleration, and a rough engine idle, with the result that plugs which formerly would not require servicing until after 10 or 15,000 miles of use now need reviving or replacing after as few as 3,000 to 5,000.

Exercise Sometimes Helps

A short jaunt to the country often does wonders for fouled plugs. The clean, fresh air (inhaled at highway speeds, of course) breathes new life into tired plugs — engines get hot enough to burn off deposits faster than they can form and the engine, in effect, cleans itself. But this treatment doesn't always work, unfortunately. Highway speeds increase engine temperatures, but they also increase the temperatures of spark plug deposits. When this happens, the electrical resistance of the deposits drops and they act as conductors of electricity. The current can then follow the deposits to the shell of the plug and cause the engine to miss. Frequently, only cleaning the plugs will correct the trouble at this stage. Many times, only replacement will do the trick.

Pick the Right Plug

No tune up is perfect unless the spark plugs are perfect. So pick plugs to suit the driving needs of the particular vehicle you're putting them in. In other words, select a plug in the correct heat range as recommended by the manufacturer. Hotter plugs won't foul easily at low speeds, but they may get too hot at highway speeds and burn their electrodes. This causes pre-ignition and may lead to mechanical damage. Colder spark plugs have a longer, trouble-free life if used only for open-road driving. But put them in any vehicle normally driven in low-speed, stop-and-go style, and colder plugs will foul faster than a ball of yarn in a kitten's paws.

Check the Whole Ignition System, Too

High-compression engines brought with them a need for higher-voltage ignition systems and, subsequently, for greater care and attention, since any weak spot in the ignition system leads to early trouble. Short spark plug life and engine misfiring, for example, can be traced to inadequate voltage. So check for insulation leakage on wire leads and for loose connections at terminals. Check the coil and condenser (particularly when hot) and the breaker points.

Voltage loss may also occur at the distributor cap and rotor. As part of your tune up procedure, clean the cap, both inside and out, and check the towers into which the spark plug leads are pushed to make sure that there is no corrosion. Also, see that the rotor segment is not burned. Too large a gap between the rotor segment and the distributor cap segments will ruin an otherwise perfectly good tune up.

And Don't Overlook the Fuel System

The electrical system may be perfect, but if the carburetor is not functioning properly, your tune up will be a failure. Major trouble points in the modern carburetor are: incorrect float level, gum and dirt in the fuel bowl, the needle and seat, and the accelerator-pump plunger, and improperly adjusted idling screws. If you disassemble any part of a carburetor which has a paper gasket, always use a new gasket when reassembling. Putting back the old one may leave the carburetor with a slight air leak.

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