

GENERATOR REGULATORS

DELCO-REMY SINGLE & TWO CORE REGULATOR SETTINGS

Unit Number	Cutout Relay Settings		Voltage Unit Settings				Current Unit Settings			
	Armature Air Gap, Inch	Point Opening, Inch	Armature Air Gap, Inch	Point Opening, Inch	Contact Spring Tension, Ounce	Fibre Bumper Clearance, Inch	Armature Air Gap, Inch	Point Opening, Inch	Contact Spring Tension, Ounce	Fibre Bumper Clearance, Inch
5587	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5588	.020	.020	.063	.020	3.5	.010	None	None	None	None
5592	.020	.020	.063	.020	3.5	.010	None	None	None	None
5596	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5597	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5598	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5599	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5600	.020	.020	.063	.020	3.5	.010	None	None	None	None
5801	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5802	.020	.020	.063	.020	3.5	.010	None	None	None	None
5803	.020	.020	.063	.020	3.5	.010	None	None	None	None
5806	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5810	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5814	.020	.020	.063	.020	3.5	.010	None	None	None	None
5819	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5820	.020	.020	.063	.020	3.5	.010	None	None	None	None
5823	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5825	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5826	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5828	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5829	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5836	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5841	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5842	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5847	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5852	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5854	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5856	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5858	.020	.020	.063	.020	3.5	.010	None	None	None	None
5860	.020	.020	.063	.020	3.5	.010	None	None	None	None
5862	.020	.020	.063	.020	3.5	.010	None	None	None	None
5866	.020	.020	.063	.020	3.5	.010	None	None	None	None
5870	.020	.020	.063	.020	3.5	.010	None	None	None	None
5877	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010
5885	.020	.020	.063	.020	3.5	.010	.075	.020	3.5	.010

DELCO-REMY SINGLE & TWO CORE REGULATOR SETTINGS

Unit No.	Cutout Armature Air Gap, Inch	Cutout Point Opening, Inch	Voltage Unit Armature Air Gap, Inch	Current Unit Armature Air Gap, Inch	Unit No.	Cutout Armature Air Gap, Inch	Cutout Point Opening, Inch	Voltage Unit Armature Air Gap, Inch	Current Unit Armature Air Gap, Inch	Unit No.	Cutout Armature Air Gap, Inch	Cutout Point Opening, Inch	Voltage Unit Armature Air Gap, Inch	Current Unit Armature Air Gap, Inch
1118201	.020	.020	.070	.080	1118229	.020	.020	.070	.080	1118285	.020	.020	.070	.080
1118202	.020	.020	.070	.080	1118230	.020	.020	.070	.080	1118300	.020	.020	.075	.075
1118204	.020	.020	.070	None	1118231	.020	.020	.070	None	1118301	.020	.020	.075	.075
1118206	.020	.020	.070	None	1118232	.020	.020	.070	.080	1118302	.020	.020	.075	.075
1118208	.020	.020	.070	.080	1118233	.020	.020	.070	.080	1118303	.020	.020	.075	.075
1118209	.020	.020	.070	.080	1118234	.020	.020	.070	.080	1118314	.020	.020	.075	.075
1118210	.020	.020	.070	.080	1118236	.020	.020	.070	.080	1118316	.020	.020	.075	.075
1118212	.020	.020	.070	.080	1118237	.020	.020	.070	.080	1118319	.020	.020	.075	None
1118214	.020	.020	.070	.080	1118241	.020	.020	.070	.080	1118328	.020	.020	.075	.075
1118215	.020	.020	.070	.080	1118244	.020	.020	.070	.080	1118333	.020	.020	.075	.075
1118217	.020	.020	.070	.080	1118245	.020	.020	.070	.080	1118334	.020	.020	.075	.075
1118218	.020	.020	.070	.080	1118260	.020	.020	.070	.080	1118335	.020	.020	.075	.075
1118219	.020	.020	.070	.080	1118261	.020	.020	.070	.080	1118337	.020	.020	.075	.075
1118220	.020	.020	.070	.080	1118271	.020	.020	.070	.080	1118338	.020	.020	.075	.075
1118221	.020	.020	.070	.080	1118273	.020	.020	.070	.080	1118339	.020	.020	.075	.075
1118222	.020	.020	.070	.080	1118276	.020	.020	.070	.080	1118344	.020	.020	.075	.075
1118225	.020	.020	.070	.080	1118277	.020	.020	.070	.080	1118350	.020	.020	.075	.075
1118227	.020	.020	.070	None	1118279	.020	.020	.070	.080	1118354	.020	.020	.075	.075

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GENERATOR REGULATORS

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FORD REGULATOR SPECIFICATIONS

Unit No.	Cutout Armature Air Gap, Inch	Cutout Point Opening, Inch	Voltage Unit Armature Air Gap, Inch	Current Unit Armature Air Gap, Inch	Regulator Number	Cut In Voltage		Voltage Regulation		Amp. Regulation	
						Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
					B-10505	6.1	6.3	None	None	None	None
					01A-10505C	6.1	6.3	7.0	7.2	30	33
					5EH-10505C	6.6	7.0	7.2	7.6	38	42
					51A-10505-C2,A2	6.0	6.3	7.0	7.3	30	33
1118366	.020	.020	.075	.075	51A-10505-A1	6.6	7.0	7.2	7.6	30	34
1118368	.020	.020	.075	.075	51A-10505-H	6.6	7.0	7.2	7.6	34	38
1118382	.020	.020	.075	.075	51A-10505-J	6.6	7.0	7.0	7.4	34	38
1118392	.020	.020	.075	.075	8BA-10505-A	5.9	6.2	7.1	7.3	55	60
1118393	.020	.020	.075	.075	8A-10505	6.0	6.6	7.2	7.6	30	34
1118394	.020	.020	.075	.075	8L-10505	6.0	6.6	7.2	7.6	38	42
1118395	.020	.020	.075	.075	8M-10505	6.0	6.6	7.2	7.6	34	38
					FAC-10505-A, B	6.0	6.6	7.2	7.6	34	38
					FAD-10505-A	6.0	6.6	7.2	7.6	38	42

□ Cold Setting Voltage. All other regulator voltage settings are for regulator at normal operating temperature in ambient (surrounding air) temperature of 70-80°F.

ALL Auto-Lite, Delco-Remy and Ford generator regulators used on automotive vehicles for the past decade or so are of the vibrating type. The operating principle is the vibration of a set of contacts which alternately cut a resistance in and out of the generator field circuit. The changes in resistance are more than necessary, but because of the time lag of the generator field windings, a steady generator voltage is maintained, depending upon the proportionate time the resistance is in and out of the circuit.

When this type of regulator is used with a third brush generator, it consists of two elements, a cutout relay (circuit breaker) and a voltage regulator. For shunt type generators, a current limit regulator is added to prevent exceeding the safe ampere output of the generator when the battery is discharged. Fig. 1 illustrates a typical three element regulator.

REGULATOR CONTACTS—Most regulator contacts have dissimilar contact metal. Therefore, it is important that the contacts be installed in their proper relation according to the grounding of the system in which they are used. Failure to observe this precaution will result in short contact life.

Contacts are usually designed to have a slight wiping action when they open and close. Therefore, when servicing contacts, a very fine file should be used and the filing should be done parallel with the length of the armature, which would be in the direction of the wipe. Cross filing causes a mechanical locking of the contacts, resulting in very erratic operation.

After filing, the contacts should be cleaned by drawing a strip of clean linen tape moistened with cleaning fluid between them and then rubbing briskly with dry tape. Oil or dirt on the contact surfaces of voltage regulators results in high operating voltage. And in a majority of cases where regulators are found to be operating at higher than specified voltage, the cleaning of the contacts is sufficient to restore their operation to normal.

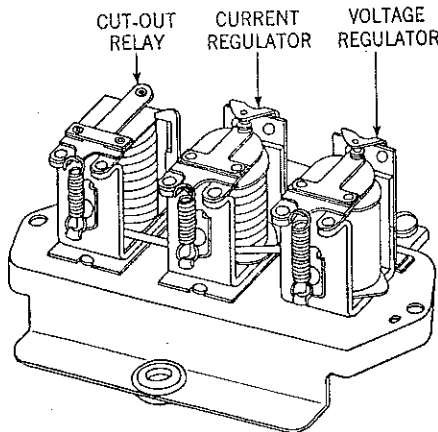


Fig. 1 Typical three unit generator regulator

RESISTANCE—In automotive electrical equipment, excessive resistance in the various parts of the electrical system causes trouble. The charging circuit is very sensitive to resistance when a shunt type generator is used.

The point of greatest trouble in resistance is the ground connection of the regulator. Most regulators are grounded by screws which attach the regulator base to the vehicle body. Resistance anywhere between the regulator base and the generator frame in excess of .01 ohm tends to increase the operating voltage of the regulator.

This condition is comparatively easy to locate without instruments. If the dash ammeter shows that the generator is operating at maximum output, connect a

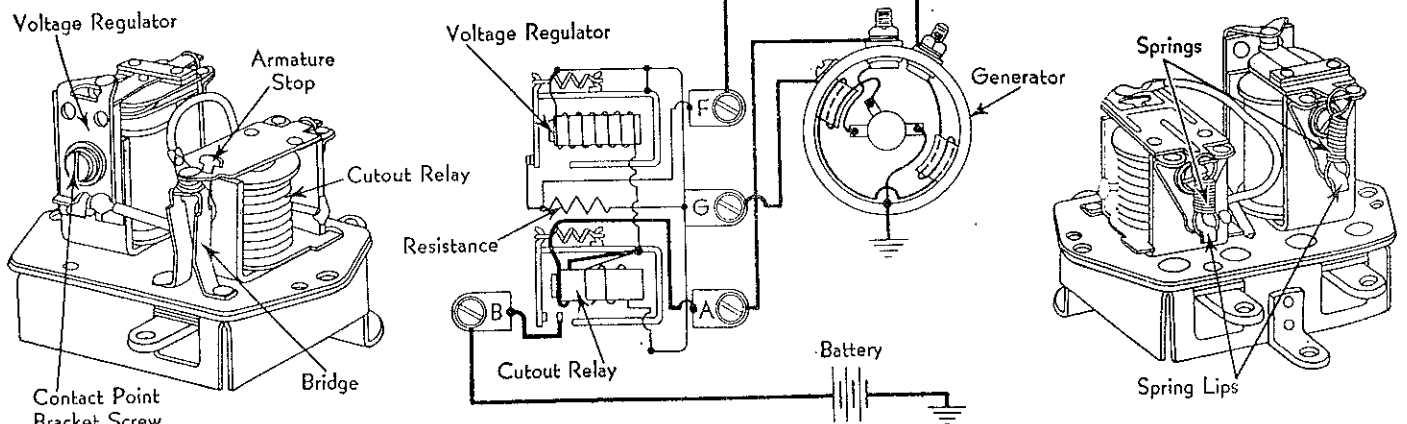


Fig. 2 Auto-Lite VRD and VRR voltage regulator showing front and rear views and wiring diagram

GENERATOR REGULATORS

bracket of the spiral spring. Bending the spring bracket down increases the closing voltage; bending it up decreases the closing voltage.

The closing voltage must always be 0.5 volt lower than the voltage regulator voltage setting.

After each adjustment, replace the cover and test the cutout relay action.

OPENING AMPERAGE—This is adjusted by raising or lowering the stationary contact, and is accomplished by expanding or contracting the bridge supporting the stationary contact. Lowering the contact lowers the opening voltage and increases the opening amperage. Raising the contact increases the opening voltage and lowers the opening amperage. After each adjustment, replace the cover and test the action of the cutout relay.

VOLTAGE REGULATOR

ARMATURE AIR GAP—Disconnect the regulator and adjust as follows:

The armature air gap should be checked with a pin gauge on the contact side of the armature stop pin in the winding core. The pin gauge should be placed as close to the armature stop pin as possible. Contacts should barely be touching as the gap is checked.

To perform this check accurately, connect a three candlepower test lamp and a six volt battery in series with the regulator "F" terminal and the regulator base. With the points open, the light will dim or go out. With the points closed, the light will burn.

A low limit and a high limit pin gauge may be used. With low limit gauge in place, push armature down (push against armature, not the spring). Light should dim or go out.

With the high limit gauge in place, push armature down; light should stay lit.

To adjust, loosen the screw holding the upper bracket and raise or lower the bracket as required. Tighten screw after adjustment, being sure points are aligned. Recheck adjustment after tightening screw.

VOLTAGE SETTING—This setting is accomplished by bending the lower spring arm to decrease or increase the spiral spring tension, Fig. 5. Increasing the tension raises the voltage setting; lowering the tension reduces the setting. After each change of adjustment, replace the cover, stop generator and bring it back to speed at which 10 amperes is produced.

CURRENT REGULATOR

ARMATURE AIR GAP—Fig. 5. This adjustment is accomplished in the same manner as outlined for the voltage regulator unit.

CONTACT GAP—Contact gap is checked with the armature held down against the stop pin in the winding core. Do not touch spring. Too much variations from the specifications indicates wrong length of armature stop pin and a new unit will be needed.

CURRENT SETTING—This setting is adjusted by bending the lower spring bracket. Bending the spring bracket down to increase the spring tension increases the current setting; bending it up lowers the current setting.

VR HEAVY DUTY REGULATORS

Fig. 6 illustrates a typical regulator of this type. To adjust, proceed as follows:

CUTOUT RELAY

ARMATURE AIR GAP—The air gap is measured with the contacts open. Use a flat gauge inserted on the contact side of the brass pin in the winding core. Adjust by raising or lowering the upper armature stop.

CONTACT GAP—This gap is measured with the contacts open, and is adjusted by bending the supporting arms of the stationary contacts. Be sure that both sets of contacts are in perfect alignment and that both sets close at the same instant. Use a straightedge to check the alignment of the contacts.

CLOSING VOLTAGE—Closing voltage is adjusted by turning the adjusting nut on the screw at the lower end of the spiral spring. Turning the nut to increase the spring tension raises the closing voltage; lowering the spring tension decreases the closing voltage.

After each adjustment, replace the cover and test the setting. The cutout relay closing voltage must always be 0.5 volt less than the voltage regulator voltage setting.

OPENING AMPERAGE—This setting is accomplished by raising or lowering the stationary contacts. Raising the stationary contacts lowers the opening amperage. Lowering the contacts increases the opening amperage.

VOLTAGE REGULATOR

ARMATURE AIR GAP—The air gap should be checked with the contacts just breaking. Use a pin gauge placed between the armature and winding core, on the contact side of the brass armature stop pin in the core.

To determine accurately the instant at which the contacts separate, connect a three-candlepower test lamp and a six-volt battery in series with the "A" and "F" terminals of the regulator. Use a low limit

and high limit pin gauge. With the low limit gauge in position, push the armature down, being careful not to touch the contact spring—the lamp should go out. With the high limit gauge the lamp should stay lit. Adjust by loosening the two armature stop attaching screws, and raise or lower the stop as required.

CONTACT GAP—Contact gap is checked with the armature pushed down against the armature stop pin in the winding core. If the gap is too small, make sure that the bridge carrying the nickel-iron shunt has been pushed down in the assembly. If the bridge has been pushed down so the armature rivets do not strike the shunt, and the contact gap is still wrong, replace the unit.

VOLTAGE SETTING—This setting is accomplished by turning the adjusting nut on the screw at the lower end of the spiral spring, Fig. 6. Turning the nut to increase the spring tension increases the voltage setting; decreasing the spring tension lowers the voltage setting.

After each change of adjustment, replace the cover, stop the generator and then bring it back to a speed which will produce 10 amperes before taking the voltage reading.

CURRENT REGULATOR

Armature air gap and contact gap are checked in the same manner outlined for the voltage regulator. Current setting is adjusted by varying the spiral spring tension in the manner outlined for the voltage regulator.

DELCO-REMY

All Delco-Remy vibrating type regulators are classified as being (1) two-core type and (2) single core type. Both types are made in standard and heavy duty models, and either with or without a current regulator unit. The standard duty models are mounted on a stamped base, whereas the heavy duty units are mounted on a cast base.

The two core type of regulator can be identified by the part number which is stamped on the mounting leg. Part numbers of these units are in the 5000 group.

All single core regulators are of the 1118200 series, the last three digits of the part number being stamped on the mounting leg of the regulator. Thus, if the part number is 1118201, for example, 201 will be found on the mounting leg.

TWO CORE REGULATORS

Fig. 7 illustrates the wiring circuits of the light duty regulator, while Fig 8 pictures a front and rear view of the same unit. Adjustments are made as follows:

CUTOUT RELAY

ARMATURE AIR GAP—The air gap is

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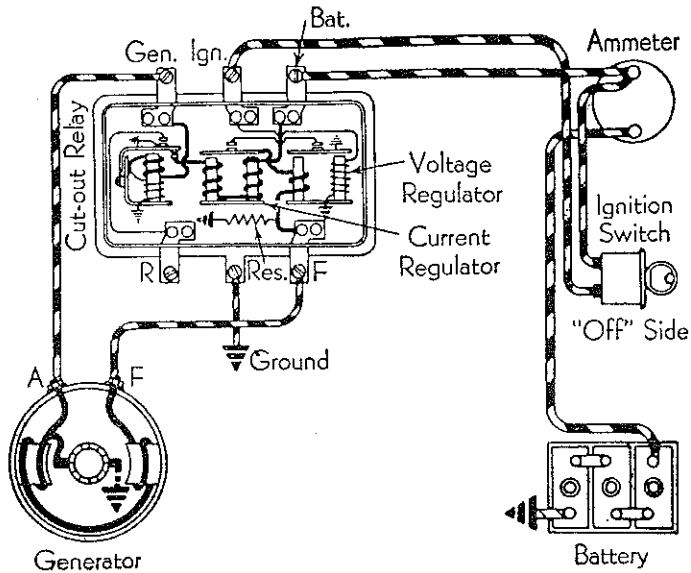


Fig. 7 Delco-Remy two core vibrating current and voltage regulator

checked with the contact points held closed, and measurements taken between the center of the core and armature. Adjust by loosening the two armature mounting screws at the back of the relay, and raising or lowering the armature as required.

POINT GAP—Point opening is checked with the points open, and is adjusted by bending the upper armature stop. Where the unit has a set of auxiliary contact points mounted above the relay contact points, bend the upper auxiliary contact point support arm to adjust point opening.

CLOSING VOLTAGE—This setting is obtained by bending the spring post down to decrease the tension of the flat spring and the closing voltage. Bending the spring post up raises the spring tension and closing voltage.

VOLTAGE REGULATOR

Figs. 9 and 10 illustrate the adjustment requirements on this unit. Although two-element regulators are shown, the adjustments are the same on three-element units.

CURRENT REGULATOR

The current regulator air gap, point opening, gap between fibre bumper and contact spring post, and contact point spring tension are all made with the regulator disconnected and in the manner shown in Figs. 9 and 10 for the voltage regulator unit.

The current setting is adjusted by bending the lower spring hanger up to lower the spiral spring tension and current set-

Fig. 9 Mechanical settings of Delco-Remy two core voltage regulators. Use same procedure on current and voltage units

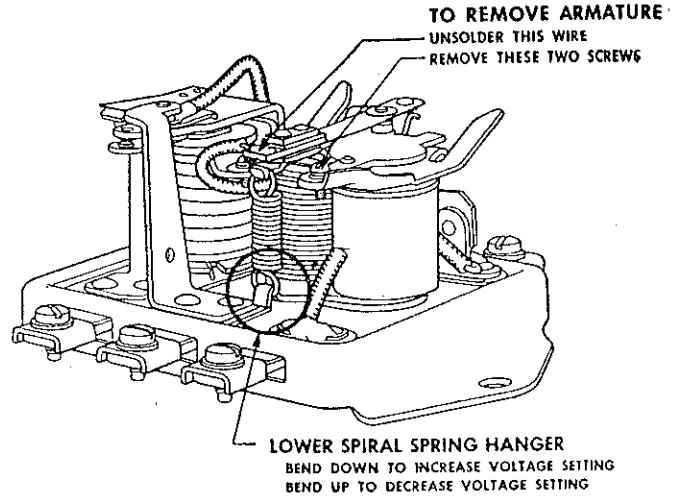


Fig. 10 Electrical settings of Delco-Remy two core voltage regulator. Use same procedure on current and voltage units

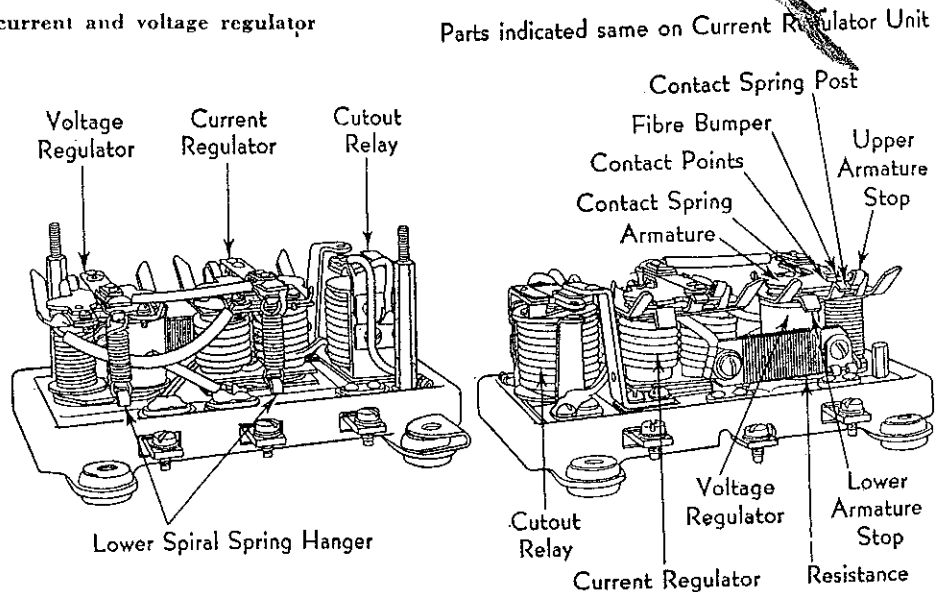


Fig. 8 Front and rear views of Delco-Remy two core vibrating current and voltage regulator

ADJUSTMENTS

A. AIR GAP

MEASURE WITH (4)
BARELY TOUCHING (5)
BEND (5) TO ADJUST

B. CONTACT POINT OPENING

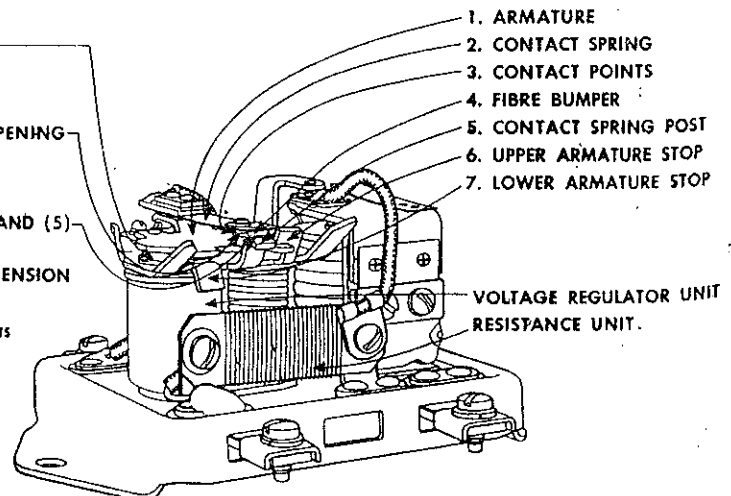
MEASURE WITH (1)
MOVED DOWN TO (7)
BEND (7) TO ADJUST

C. GAP BETWEEN (4) AND (5)

BEND (6) TO ADJUST

D. CONTACT SPRING TENSION

BEND (2) TO GET NOT
LESS THAN 3/8 OUNCES
PRESSURE BETWEEN POINTS



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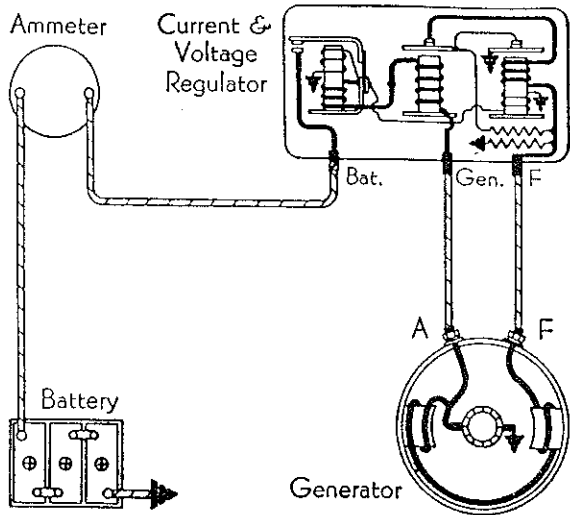


Fig. 12 Wiring diagram of Delco-Remy single core current and voltage regulator of type which is adjusted by bending spring hangers

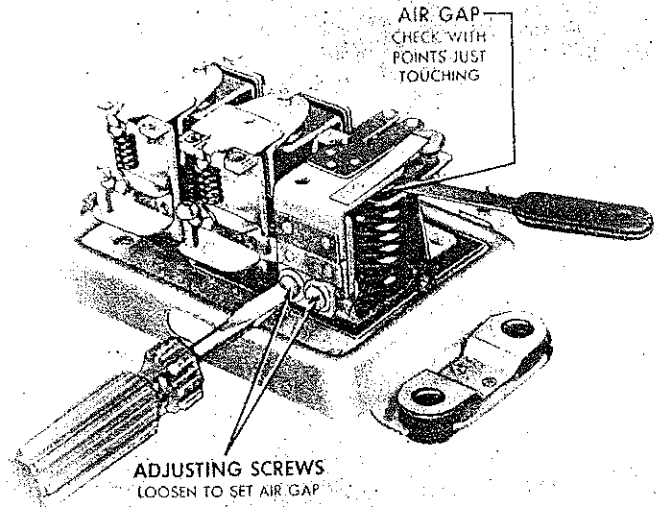


Fig. 15 Adjusting armature air gap of cutout relay on Delco-Remy single core regulators with screw adjustment

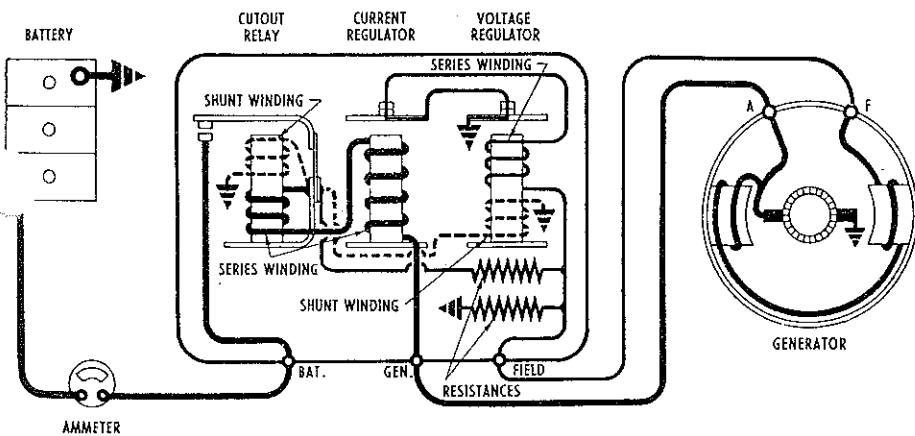


Fig. 13 Wiring diagram of Delco-Remy single core regulator of type using screws as a means of adjustment

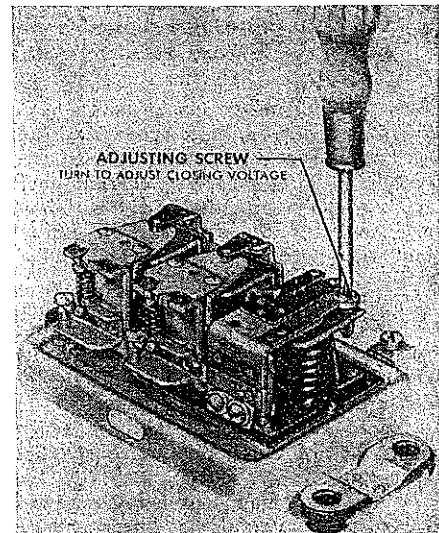


Fig. 14 Adjusting closing voltage of cutout relay on Delco-Remy single core regulators with screw adjustment

ting, or down to increase the current setting.

SINGLE CORE REGULATORS

Fig. 11 illustrates a typical Delco-Remy single core light duty current and voltage regulator. Two types of these regulators are in use. The first type, a wiring diagram of which is shown in Fig. 12, is adjusted by bending the spring hangers. The second type, introduced in 1948, uses screws as a means of adjustment. A wiring diagram of this type is pictured in Fig. 13.

SCREW ADJUSTMENT TYPE

Regulators of this type which are designed

for positive grounded systems have copper plated current and voltage regulator armatures, whereas regulators designed for negative grounded systems have cadmium plated armatures. To adjust the regulator, proceed as follows:

CUTOUT RELAY

CLOSING VOLTAGE—To adjust the closing voltage, turn the adjusting screw, Fig. 14, until the preferred setting is obtained. Turn screw clockwise to increase spring tension and closing voltage, and counterclockwise to decrease spring tension and closing voltage.

With the closing voltage adjusted, in-

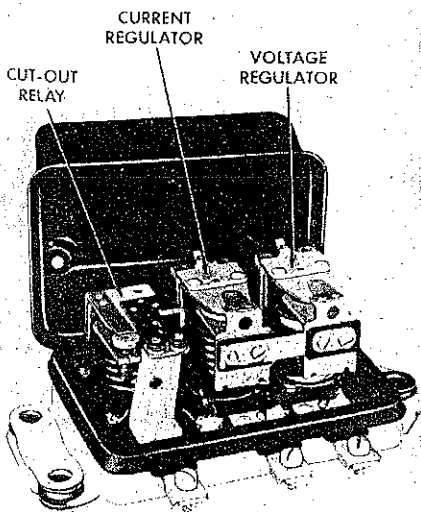


Fig. 11 Delco-Remy single core current and voltage regulator

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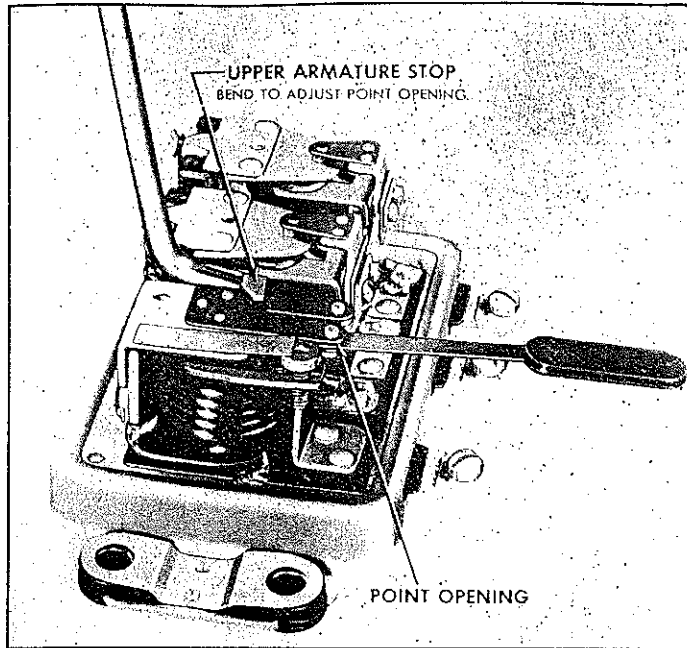


Fig. 16 Adjusting cutout relay point opening on Delco-Remy single core regulators with screw adjustment

crease engine speed to close points. Then slowly decrease engine speed and note discharge current necessary to open relay points. If the reverse current necessary to open the points is not within the specified limits, the armature air gap and point opening should be checked and adjusted.

ARMATURE AIR GAP—Place finger on armature directly above core and move armature down until points just close. Measure air gap between armature and center of core, Fig. 15. If both sets of points do not close simultaneously, bend spring fingers so they do.

To adjust air gap, loosen two screws at back of relay and raise or lower armature as required. Tighten screws securely after adjustment.

POINT OPENING—Adjust point opening by bending upper armature stop, Fig. 16. After making air gap and point opening adjustments, recheck closing voltage and opening amperage and make any necessary readjustments.

VOLTAGE REGULATOR

VOLTAGE SETTING—To adjust, turn the adjusting screw, Fig. 17, clockwise to increase voltage setting, or counterclockwise to decrease it.

CAUTION—If adjusting screw is turned down (clockwise) beyond the normal range required for adjustment, the spring support may be bent beyond its elastic limit and fail to return when pressure is relieved. In such a case, turn the screw counterclockwise until sufficient clearance develops between the screw head and the

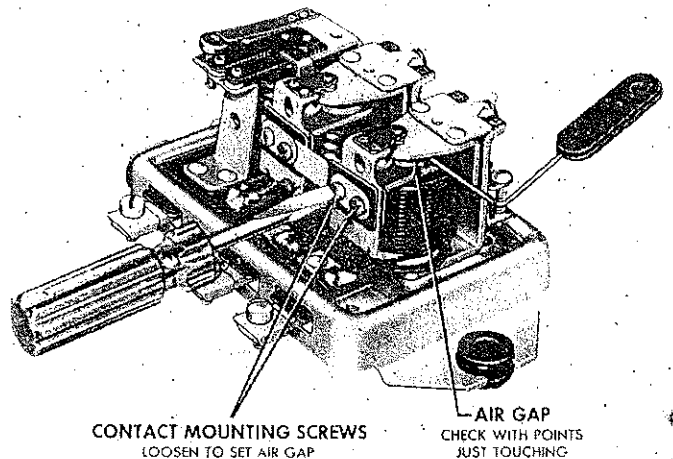


Fig. 18 Adjusting voltage regulator armature air gap on Delco-Remy single core regulators with screw adjustment

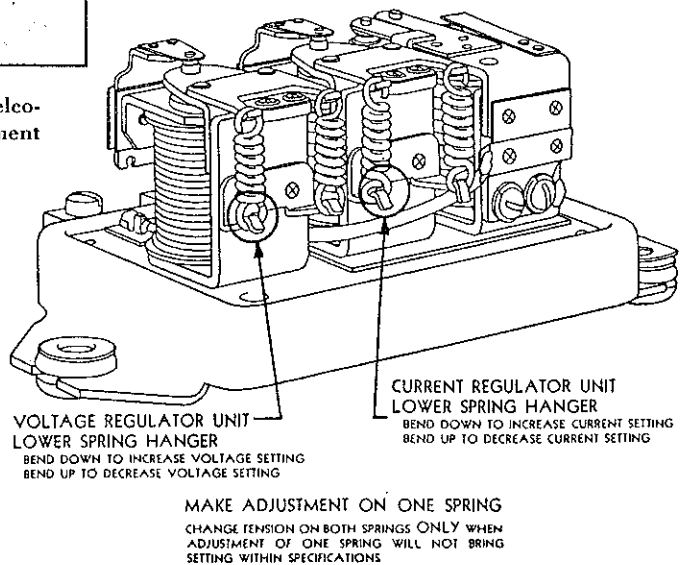


Fig. 19 Electrical settings of Delco-Remy single core regulators which are adjusted by bending spring hangers

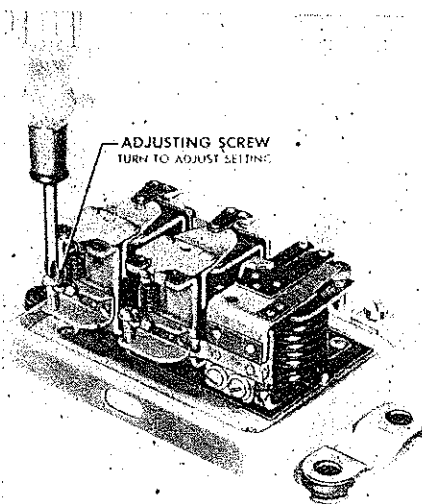


Fig. 17 Adjusting voltage setting of voltage regulator on Delco-Remy single core regulators with screw adjustment

spring support, then bend spring support up carefully with small pliers until contact is made with the screw head. The final setting of the unit should always be approached by increasing the spring tension, never by reducing it. In other words, if the setting is found to be too high, the unit should be adjusted below the required value and then raised to the exact setting by increasing the spring tension. After each adjustment and before taking voltage, replace the regulator cover, reduce engine speed until the relay points open and then slowly increase the engine speed again.

AIR GAP—Place fingers on armature directly above core and move armature down to the core and release it until the

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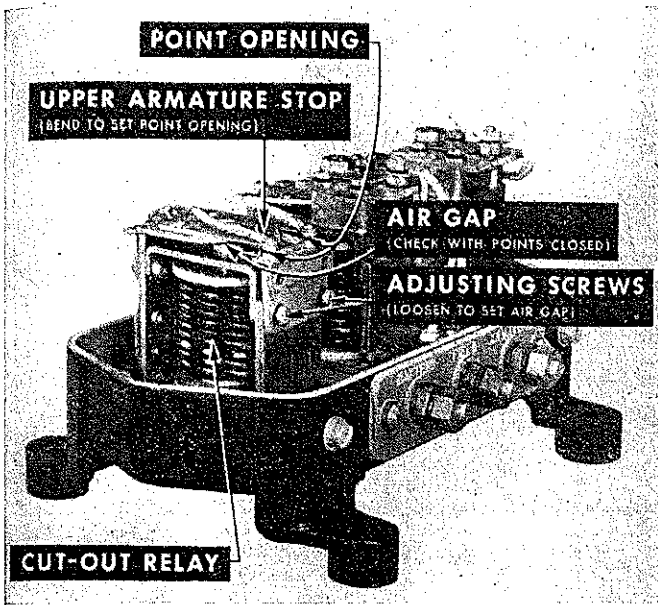


Fig. 20 Cutout relay settings on Delco-Remy heavy duty regulators

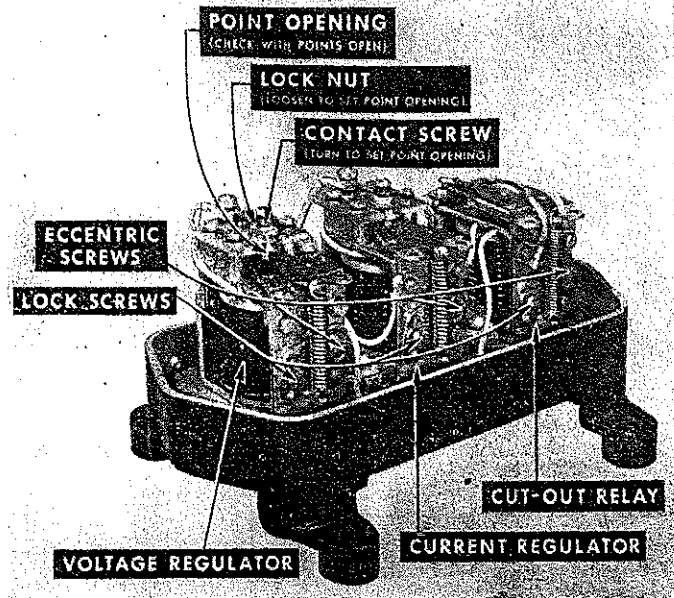


Fig. 21 Delco-Remy heavy duty regulator adjustments

contact points just touch. Measure the air gap between the armature and the center of the core, Fig. 18. If not within the specified limits, loosen the contact mounting screws and raise or lower the contact brackets as required. Tighten contact mounting screws securely, making sure points are lined up.

After making air gap adjustment, recheck voltage setting and make any necessary readjustments.

CURRENT REGULATOR

The armature air gap on the current regulator is adjusted in the same manner outlined for the voltage regulator.

To adjust the current setting, turn the adjusting screw clockwise to increase current setting, or counterclockwise to decrease it. See the "Caution Note" under voltage regulator setting of voltage regulator.

STOP SPRING ADJUSTMENT TYPE

The cutout relay is adjusted in the same manner outlined for the screw adjustment type regulator. The armature air gap on both the current and voltage regulator is adjusted in the same manner described for the screw adjustment type. See Fig. 19 for method of adjusting electrical settings.

HEAVY DUTY REGULATORS

This type regulator, Figs. 20 and 21, may be identified by the fact that the units are mounted on a cast base. To adjust, proceed as follows:

CUTOUT RELAY

ARMATURE AIR GAP—The air gap is checked with the contact points closed, and is measured between the armature and the winding core. Adjust by loosening the two screws attaching the lower contact bracket and raise or lower the contact brackets as required. Be sure points are lined up and tighten screws after adjustment.

POINT OPENING—Point gap is adjusted by bending the upper armature stop. If all points do not close at the same instant, either realign the lower contact bracket or slightly bend the spring fingers.

CLOSING VOLTAGE—Closing voltage is adjusted by loosening the locking screw and turning the eccentric to increase or lower the spiral spring tension. Increasing the tension raises the closing voltage, and vice versa.

VOLTAGE REGULATOR

POINT OPENING—Point opening is checked with the armature held down against the winding core. It is adjusted by loosening the lock nut and turning the contact screw. Care must be taken to avoid bending the flat springs on which the contact screw is mounted. The spring rises slightly above the fibre insulator when the points come together to provide a wiping action between the points so that better contact is maintained.

VOLTAGE SETTING—This adjustment is made by loosening the lock screw and turning the eccentric to change the spiral

spring tension. Increasing the tension increases the voltage setting.

CURRENT REGULATOR

Point opening is checked in the same manner as outlined for the voltage regulator. Current setting is adjusted by loosening the lock screw and turning the eccentric to change the spiral spring tension. Increasing the spring tension increases the current setting.

FORD REGULATORS

Ford vibrating regulators are either of the two or three element type. The two element type, of course, consists of a cutout relay and voltage regulator and is designed for use with a third brush generator. The three element type, consisting of a cutout relay, voltage regulator and current regulator, is designed for use with a shunt type generator. To adjust, proceed as follows:

REGULATOR AIR GAP—The following applies to either the voltage or current control. To set the air gap, bend the adjusting arm down until the armature spring is clear of the adjusting arm. Place a piece of round stock, .035" in diameter between the armature and core, Fig. 22. Press down on the armature with a pencil. Lower the upper contact until it just touches the lower contact, and tighten the lock nut.

NOTE—The armature on the voltage control is provided with a brass rivet to