Autolite 24 volt Generator Regulator

Cleaning and Adjustment

M38 Military Jeep

1950-1952

The following are excerpts from the military maintenance manual on Auto-lite electrical equipment.

brush generators. Groups 3 (fig. 88) and 4 (fig. 89) have three units; these are: the circuit breaker, voltage regulator, and current regulator. These last two groups are used with shunt type generators.

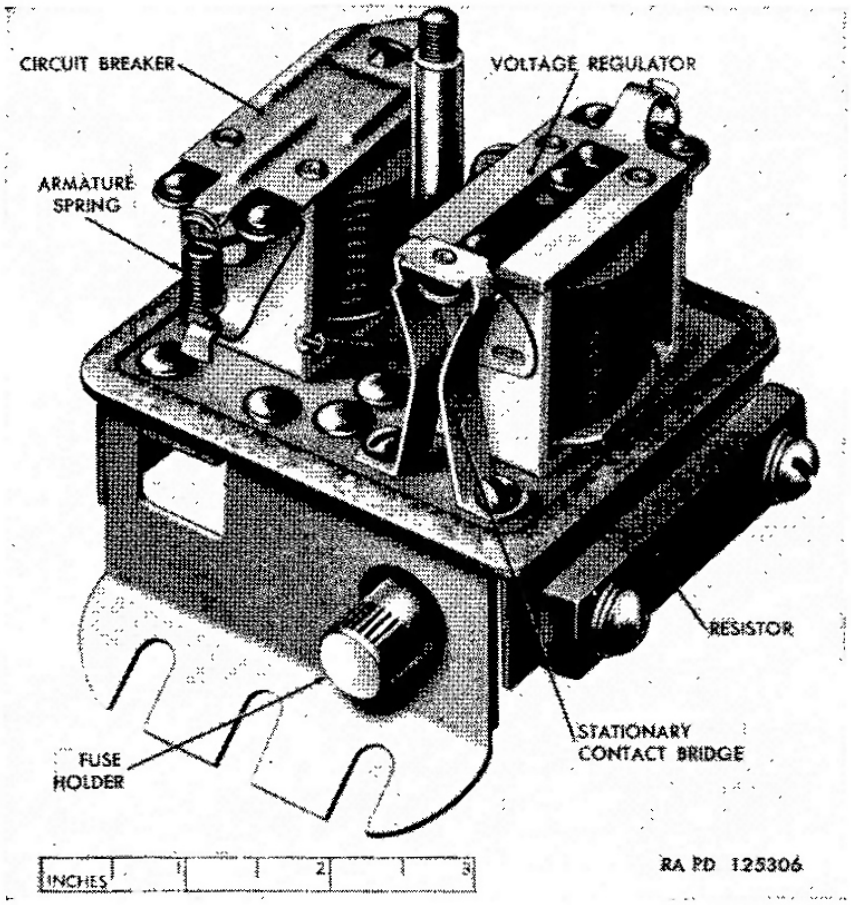


Figure 87. Group 2 regulator with cover removed.

(2) *Circuit breaker unit.*

(*a*) The circuit breaker unit consists of an electromagnet and a set of contacts. One of the contacts is mounted on a stationary bridge while the other is mounted on a movable armature which is controlled by the electromagnet. The movable contact is usually mounted on a spring arm so that, as the contacts open and close, a slight wiping action is produced. The heavy duty regulators in group 4 (fig. 89) have two of the above sets of contacts. These two sets operate simultaneously and in parallel and are used to reduce voltage loss.

(*b*) The electromagnet (fig. 86) of the circuit breaker has two windings (figs. 90 through 104); a shunt winding which is connected across the generator output like a voltmeter and

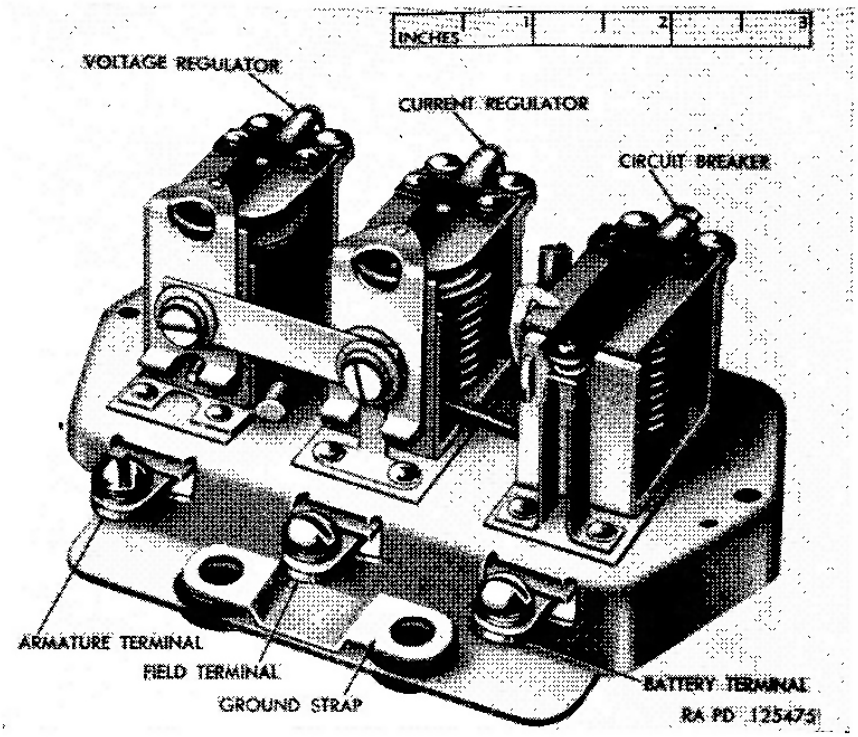


Figure 88. Group 3 regulator with cover removed.

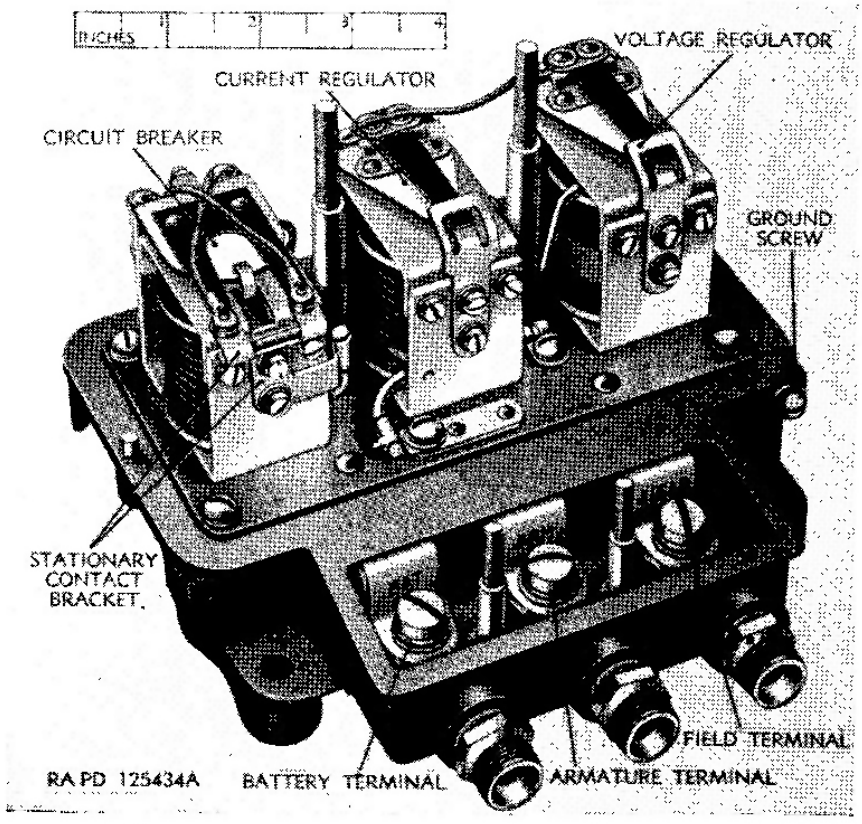


Figure 89. Group 4 regulator with cover removed.

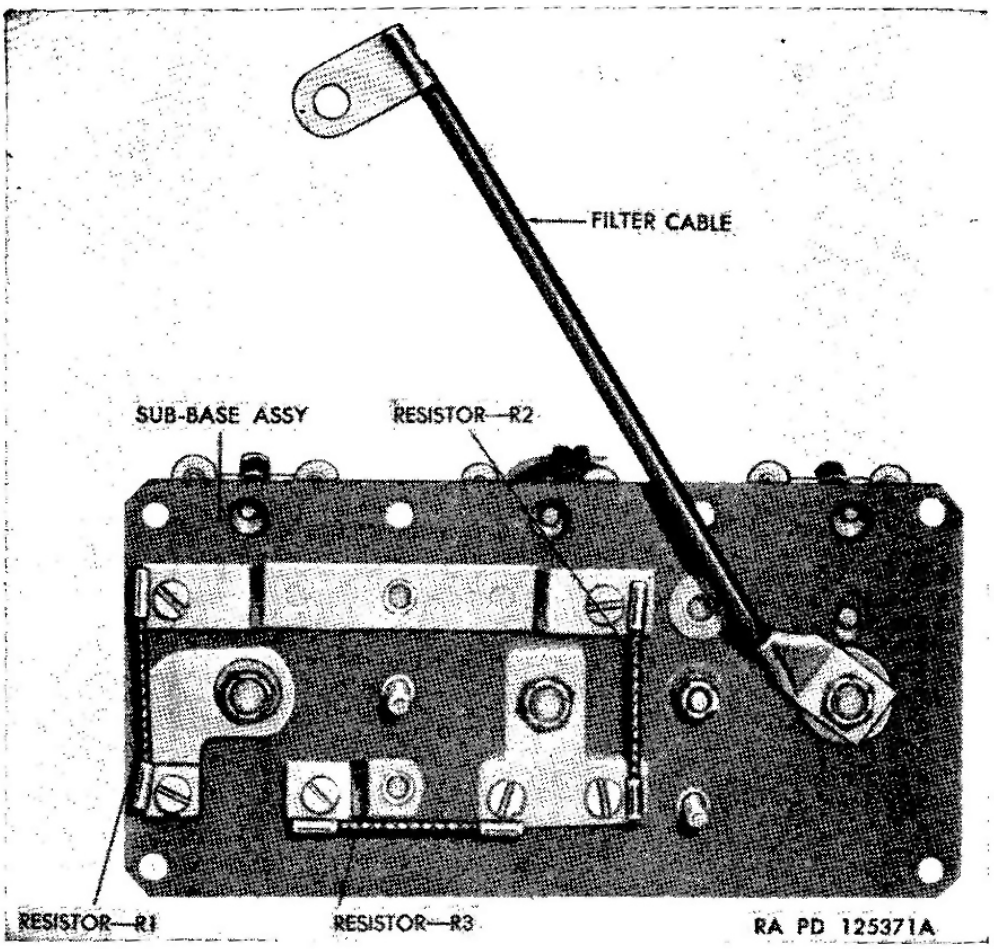


Figure 125. Resistor assembly on VBC–4002UT regulator.

connection to base between current and voltage regulator units and measure from this lead to current regulator yoke. Install new current regulator unit if this resistance is open.

(*e*) *Voltage regulator frequency winding.* This is the winding of heavier wire on the voltage regulator unit. Insulate voltage regulator contacts by placing paper between them and measure resistance between the two leads of the frequency winding. It is unnecessary to further disconnect the leads to make this check. Install new voltage regulator unit if the resistance is not within limits (table VIII) or if the winding is open.

(3) *Continuity.*

(*a*) Make sure all resistors are correctly installed (figs. 122, 123, 124, and 125).

(*b*) With test probes (fig. 16) touch "ARM" terminal and circuit breaker stationary contact. (Touch end of series winding and circuit breaker stationary contact on regu-

lators which do not have the terminals directly on the subbase.) If lamp does not light, it indicates an open circuit in one of the series coils or connections. Inspect to find cause of open and repair or replace parts affected.

(*c*) Touch test probes to "ARM" and "BAT" terminals. (Touch end of series winding and circuit breaker yoke on regulators which do not have the terminals directly on the subbase.) If lamp lights, install new circuit breaker unit. Hold circuit breaker contacts closed. If lamp does not light, install new circuit breaker contacts or complete circuit breaker unit.

(*d*) Touch test probes to "FIELD" and "ARM" terminals. (Series winding and voltage regulator yoke if terminals are not on subbase.) If lamp does not light, it indicates faulty resistor, frequency winding or faulty contacts on either current or voltage regulator units. If lamp lights, open current regulator contacts. Release current regulator contacts and open voltage regulator contacts. If lamp does not go out in each case, replace armature affected (*c*(4) below).

(4) *Capacitors* (*condensers*) (*if pertinent*). Disconnect capacitor (condenser) leads and measure capacity with tester. It is unnecessary to dismount capacitor (condenser). Install new capacitor (condenser) if capacity is not within specifications (table VIII). Check capacitors (condensers) for grounds and replace if grounded.

(5) *Contact pressure.*

(*a*) Back off adjusting nut (fig. 132) on voltage and current regulator units until there is no spring tension.

(*b*) Place sub-base on insulated table and connect battery and lamp bulb in series with "ARM" and "FIELD" terminals (fig. 126). Remove armature stop (fig. 127) on voltage and current regulator units. Hook tension gage at upper contact. Hold armature firm and pull contacts apart with gage (fig. 127). Take reading as lamp goes out. Install new armature (*c*(4) below) if this reading is not between 7 and 8 ounces. Check both current and voltage regulator units in this manner.

(*c*) Install armature stop making sure fiber block (fig. 127) is in place.

(6) *Filter* (*if pertinent*).

(*a*) With direct current test probes touch either filter terminal and filter case. Replace if lamp lights.

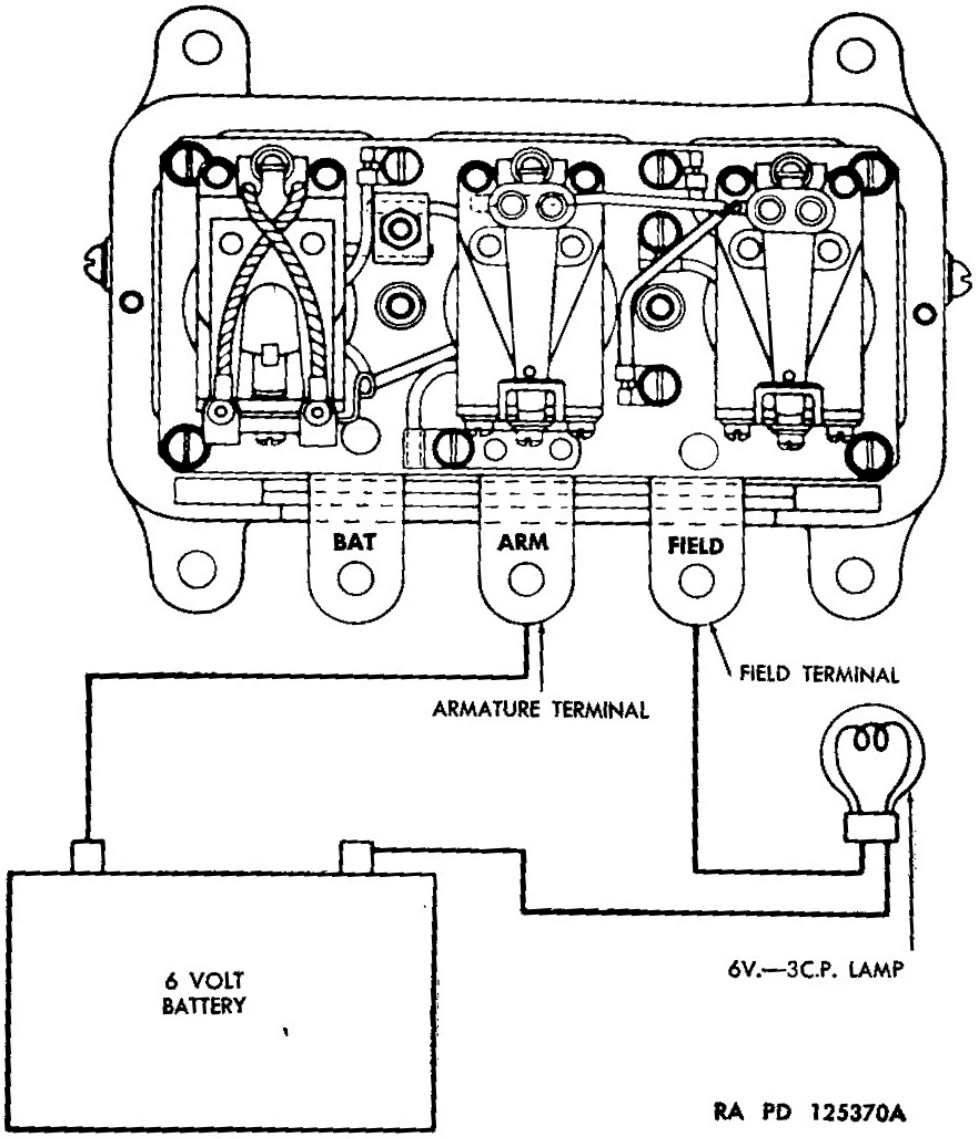


Figure 126. Hookup for indicating when contacts are open or closed.

(*b*) Touch probes to two filter terminals. Replace filter if lamp does not light.

(7) *Contacts.* Inspect contacts on all three units. In normal use contacts will become grayed. If contacts are burned, dirty, or rough, file with contact point dresser parallel and lengthwise to armature (fig. 128). File just enough so contacts present smooth surfaces. It is not necessary to remove every trace of burning. After filing, dampen a piece of linen tape in carbon tetrachloride and draw between contacts (fig. 129). Repeat with dry tape. Use clean tape for each set of contacts. Due to type of contact material used on VAD–4106A,

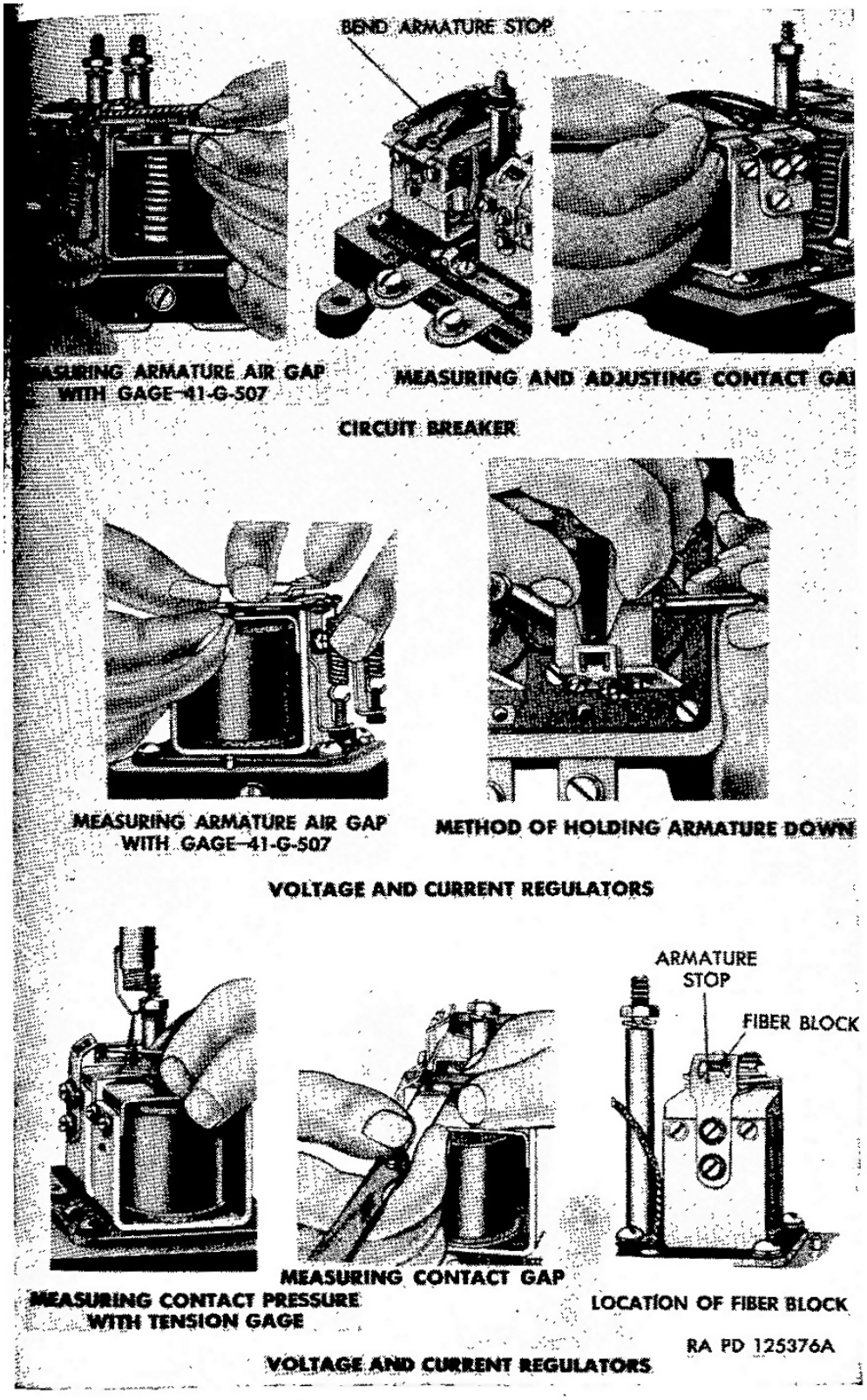


Figure 127. Adjustments of group 4 regulators.

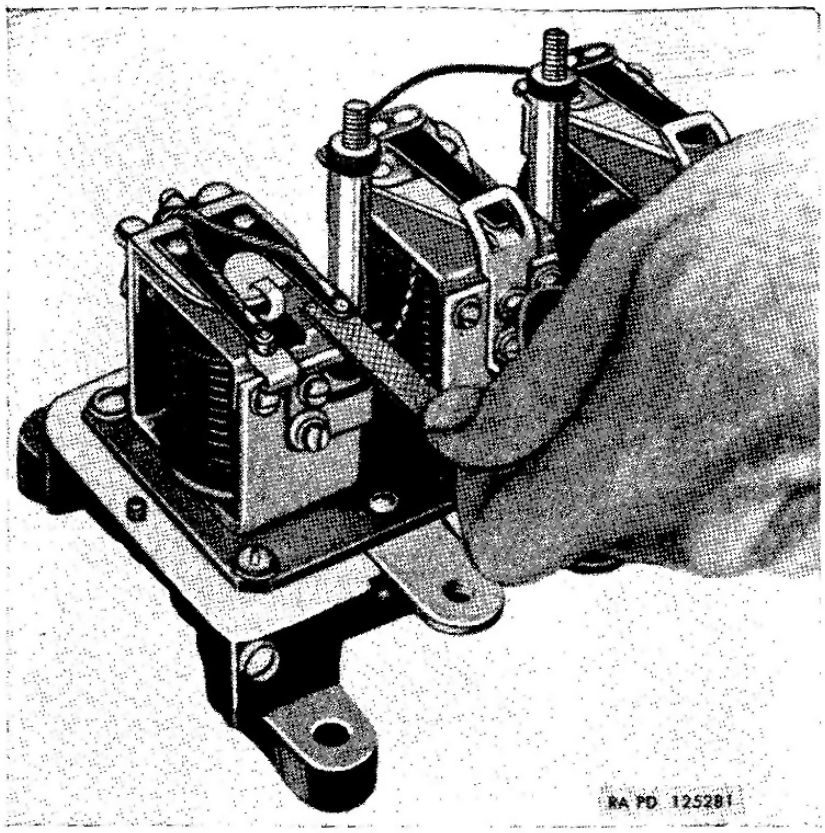


Figure 128. Filing contacts on group 4 regulators with contact point dresser.

VAD–4106B, and VAD–4106C regulators, it is not possible to file contacts. Clean VAD contacts as above and replace unit if contacts are burned badly.

c. Repair.

(1) *To install new circuit breaker unit.*

(*a*) Remove nut and clamp on series connection (fig. 132) between circuit breaker and current regulator units.

(*b*) Remove nut and washer from bottom of circuit breaker magnet core (fig. 122).

(*c*) Lift circuit breaker unit off base.

(*d*) Install new circuit breaker unit on base. Make sure alining lug enters hole in base.

(*e*) On VAD and VBC type install cable on core (figs. 123 and 125).

(*f*) Install and tighten the core washer and nut.

(*g*) Install and tighten series clamp, lock washer, and nut.

(2) *To install new voltage or current regulator unit.*

(*a*) Remove nuts and clamps on series connection (fig. 132) or connections.

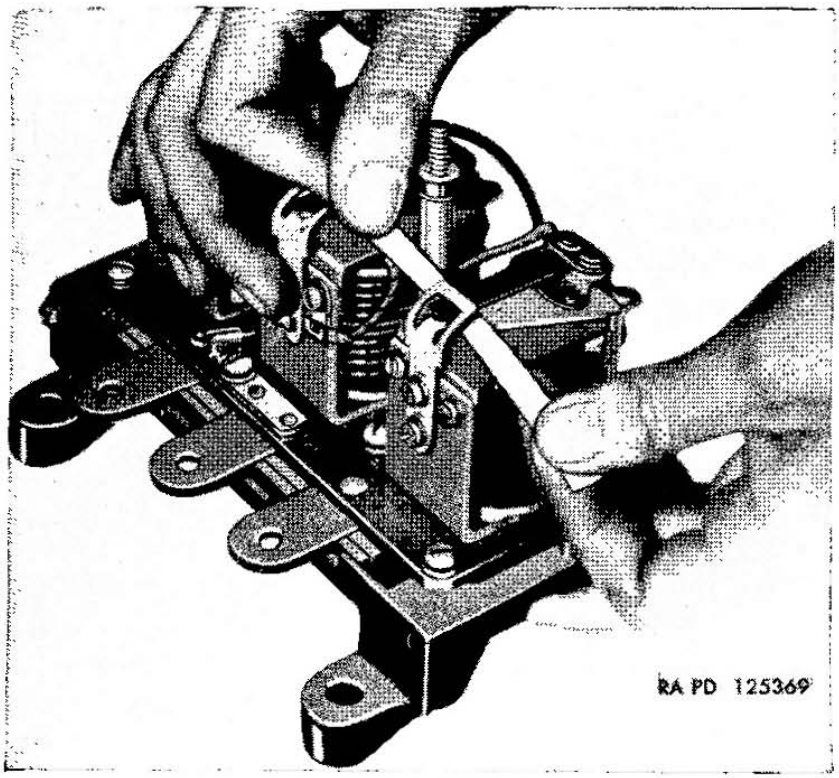


Figure 129. Cleaning contacts on group 4 regulators with linen tape and carbon tetrachloride.

(*b*) Remove capacitor (condenser) if mounted on regulator yoke.

(*c*) Disconnect leads, paying strict attention to their proper location so they can be reassembled without interchanging.

(*d*) Remove the core nut (fig. 122) from the bottom of the base being careful not to damage resistors.

(*e*) Install new regulator unit on base and tighten core nut.

(*f*) Connect leads as noted when disassembling the unit.

(*g*) Install capacitor.

(3) *To install new circuit breaker contacts* (fig. 132). (Does not apply to VAD and VBC type as they are complete unit replacement only.)

(*a*) Remove armature spring, adjusting nut, and screw.

(*b*) Remove screws attaching armature to yoke. Lift off armature.

(*c*) Unsolder and unclamp series and shunt coil connections from stationary contact bracket.

(*d*) Take out stationary contact bracket attaching screws. Lift off contact bracket and insulation.

(*e*) Install insulation, new stationary contact bracket, insulating bushings, insulating washers, plain washers, lock washers, and screws and tighten.

(*f*) Clamp series and shunt coil leads to contact bracket and solder.

(*g*) Place new armature on yoke and install attaching screws, lock washers, and plain washers. Hold armature hinge tightly against yoke while tightening screws.

(*h*) Install armature spring, adjusting screw, and adjusting nut.

(*i*) Measure gap between armature hinge or hinge spacer and yoke. If this gap is more than 0.002 inch, loosen armature screws and press armature against yoke. Tighten screws and check gap.

(4) *To install new voltage or current regulator armature.* (Does not apply to VAD and VBC type as they are complete unit replacement only.)

(*a*) Remove adjusting nut, adjusting screw, and armature spring (fig. 132). Unsolder lead from contact spring.

(*b*) Remove armature attaching screws holding armature to yoke. Lift off armature.

(*c*) Place new armature on yoke. Install plain washers, lock washers, and screws. Hold armature hinge tightly against yoke when tightening screws.

(*d*) Assemble armature spring, adjusting screw, and adjusting nut. Solder lead to contact spring with rosin core solder.

(*e*) Measure gap between armature hinge or hinge spacer and yoke. If this gap is more than 0.002 inch, loosen armature attaching screws and press armature against yoke. Tighten screws and check gap.

57. Assembly

a. Tighten Screws. Tighten all screws and nuts and install locking wires where required.

b. Assemble Base (fig. 121). Install filter, capacitor (condenser), resistor, rectifier, terminals, and cables in base.

c. Assemble Subbase (figs. 122, 123, 124, and 125). Install resistors and capacitors (condensers) on subbase. Be sure resistors are assembled as indicated in the resistor installation figure noted in table VIII (par. 60).

d. Install Subbase (fig. 120).

(1) On VAD type put leads through holes in subbase.

(2) Connect all internal connections.
(3) Check internal wiring with wiring diagram noted in table IX (par. 61).
(4) Install subbase mounting screws (figs. 119 and 132), connecting ground leads where necessary.
(5) On VAD type connect lead from radio type resistor and capacitor (condenser) to voltage regulator yoke and connect lead from automotive type capacitor (condenser) to current regulator yoke.
(6) Install bottom cover plate and terminal housing if pertinent.
(7) Lock screws with wire where required.

58. Test and Adjustment

a. Adjust Armature Air Gap.

(1) *Circuit breaker unit.* Use pin gage of correct size for circuit breaker armature air gap (table VIII, par. 60) and insert between armature and core on contact side and next to brass pin in core (figs. 115 and 127). Adjust gap by bending armature stop (fig. 127). Be sure stop does not interfere with armature movement.

(2) *Voltage-regulator unit.* Connect battery and lamp in series with "ARM" and "FIELD" terminals to indicate when contacts are opened and closed (fig. 126). Insert pin gage of correct dimension to give voltage regulator armature air gap specified (table VIII) between armature and core on contact side and next to brass pin in core (figs. 115 and 127). Hold armature down with two fingers (fig. 127) so contact spring is not touched. Adjust gap so lamp will burn brightly when high limit gage is in place and will go out or dim when low limit gage is in place. Adjust gap by slightly loosening screws holding armature stop (fig. 127) and raising or lowering stop. Tighten screws and check gap.

(3) *Current-regulator unit.* Check and adjust as described ((2) above) for voltage regulator using correct gage 41–G–507 (table I, par. 7) to give current-regulator armature air gap specified in table VIII.

b. Check Gap Between Contact Spring and Stop.

(1) *Voltage-regulator unit.* Hold armature down against core stop and with feeler gage 41–G–507 (table I, par. 7) measure gap between contact spring and armature stop. If gap is not between 0.010 and 0.016 inch, inspect fiber block (fig. 127) for damage or improper assembly and inspect armature stop for distortion or incorrect adjustment.

(2) *Current-regulator unit.* The same limits and procedure as described for voltage regulator ((1) above) applies to current-regulator unit.

c. Measure Contact Point Gap on Circuit Breaker Unit. Measure gap between both sets of contacts (fig. 127). Do not set this gap to less than 0.025 inch (0.080 inch for VAD type) but it may be set larger than this after adjusting contact opening amperage. Bend stationary contact brackets (fig. 89) to adjust gap and aline contacts so contact is made and broken on both sets of contacts at the same time.

d. Testing.

(1) *Circuit breaker* (figs. 130 and 131).

(*a*) Mount regulator on test stand in same position as it is mounted on vehicle; if this is unknown, mount with base vertical and terminals hanging down. Use generator of type specified for regulator (table IX, par. 61) and mount on test stand. Connect battery for correct voltage and polarity (table IX).

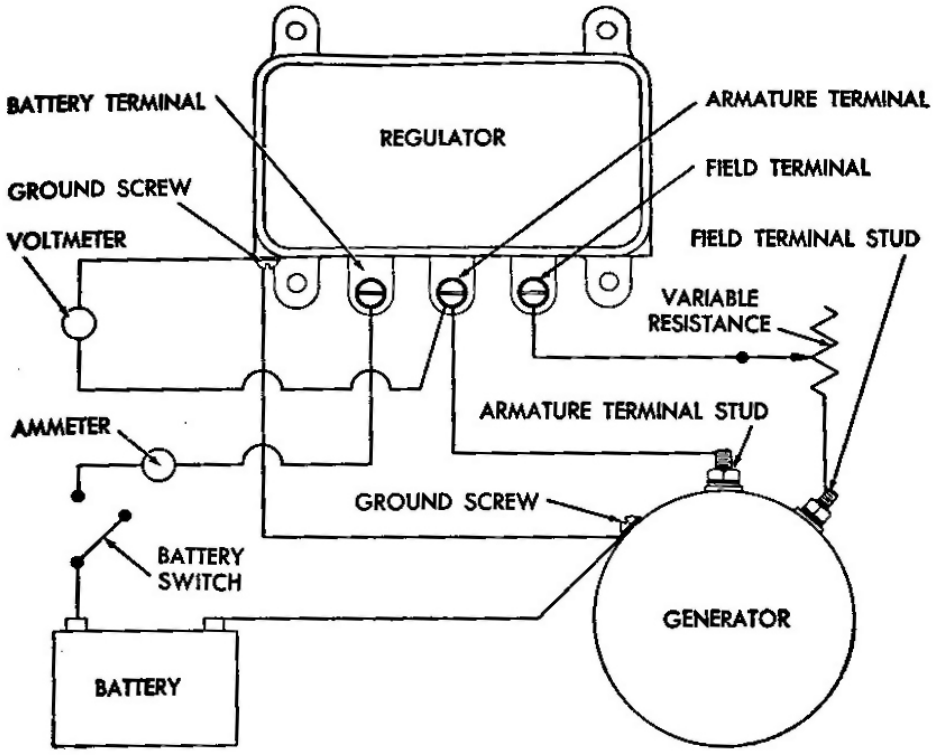
(*b*) Connect regulator, generator, battery, and meters using improvised test connectors (table II) as shown in the circuit breaker test in figures 130 or 131.

(*c*) Polarize the generator to prevent burning regulator contacts; remove generator field lead from variable resistance, close test stand battery switch and momentarily touch field lead to regulator "BAT" terminal; then connect field lead to variable resistance as above.

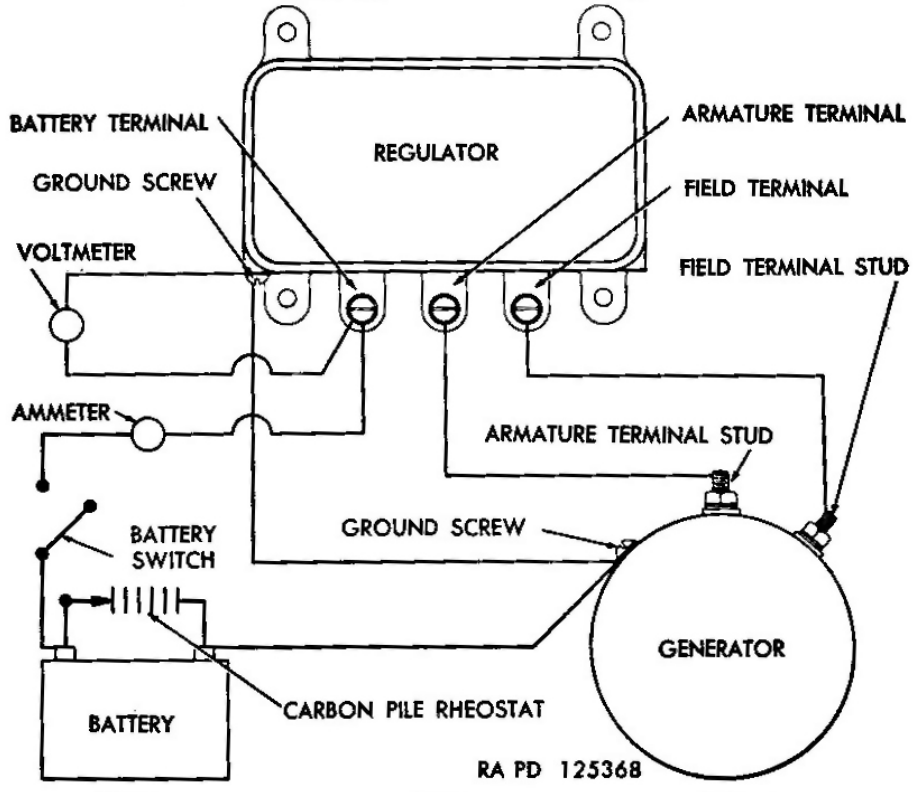
(*d*) Adjust variable resistance to insert all the resistance in field circuit. Start generator and operate at 1,000 to 2,000 rpm. Decrease field resistance slowly noting voltmeter reading just before change caused by closing of the circuit breaker. Decrease resistance until ammeter shows a charge of one half current value stamped on regulator nameplate; then increase resistance slowly. Note amperage discharge just before contacts open and ammeter reading drops to zero.

(*e*) Adjust closing voltage to specified figure (table IX) by turning adjusting nut on lower end of armature spring with tool 41–T–3383–55 (fig. 132). Some group 4 regulators have a lock nut on this adjustment which must be loosened to make adjustments. Recheck closing voltage after each adjustment.

(*f*) Adjust opening discharge current to specified figure by raising or lowering stationary contacts. Open test stand battery switch to prevent shorting. Bend stationary con-

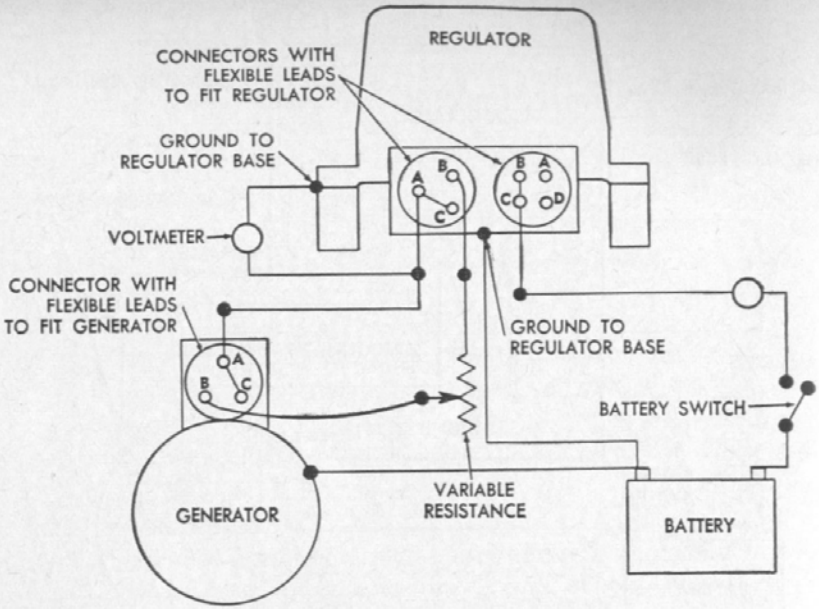


HOOKUP FOR TESTING CIRCUIT BREAKER

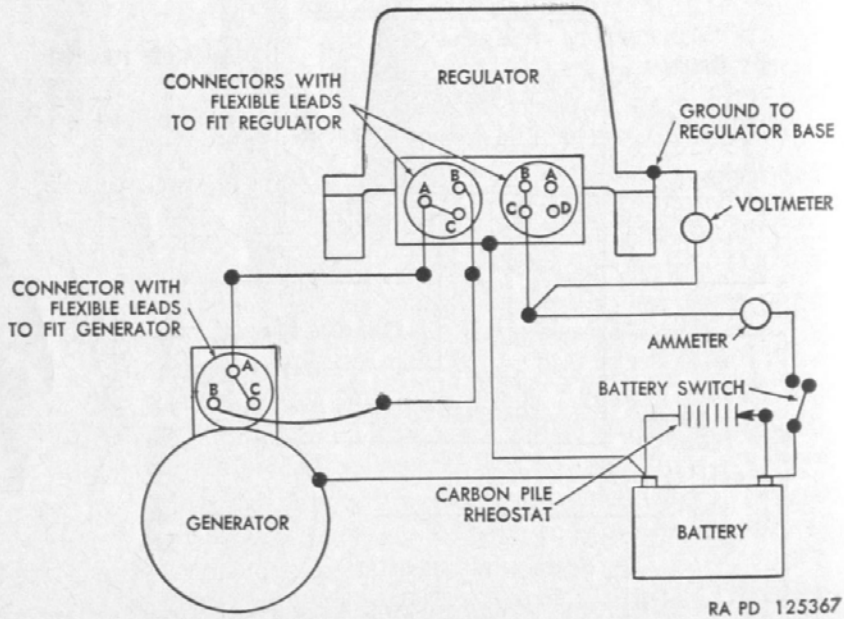


HOOKUP FOR TESTING VOLTAGE AND CURRENT REGULATORS

Figure 130. Test hookups for group 4 regulators (heavy-duty type).



HOOKUP FOR TESTING CIRCUIT BREAKER



HOOKUP FOR TESTING VOLTAGE AND CURRENT REGULATORS

Figure 131. Test hookups for VBC regulators.

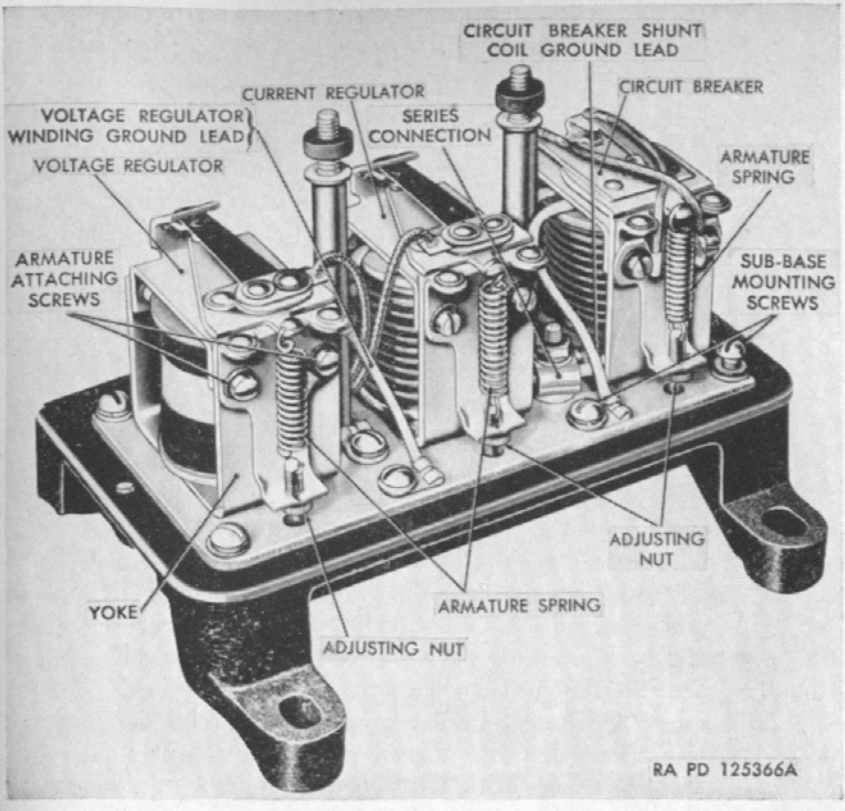


Figure 132. Operating adjustments on group 4 regulators.

tact brackets to increase or decrease contact gap. Increasing contact gap increases opening discharge amperes. Keep contacts alined for full face contact and adjust both sets of contacts so they operate simultaneously. Do not adjust gap between contacts when open to less than 0.025 inch (0.080 inch for VAD type).

(*g*) Open test stand battery switch.

(2) *Voltage and current regulators* (figs. 130 and 131).

(*a*) Change connections to those shown for voltage and current regulator test in figures 130 and 131. The load rheostat may consist of a carbon pile or a lamp bank.

(*b*) On units that have been completely rebuilt close test stand battery switch and operate generator at 2,500 to 3,000 rpm. Hold voltage regulator contacts closed by pressing lightly on back of voltage regulator armature and read ammeter.

If this is within two amperes of correct setting, do not adjust. If current setting is not within two amperes, turn adjusting nut (fig. 132) on lower end of armature spring with tool 41–T–3383–55. On some regulators it is necessary to first loosen lock nut. Release voltage regulator armature. Stop generator, then start and bring speed up to 2,500 to 3,000 rpm. Adjust current to one-half the value stamped on regulator name plate by changing carbon pile load rheostat or lamp bank. Read voltmeter. If this reading is within 0.3 volt for 6 volt, 0.5 volt for 12 volt, or 0.8 volt for 24-volt units of correct operating voltage, do not adjust. If voltage is not within these approximate settings, turn adjusting nut on lower end of armature spring (fig. 132) with tool 41–T–3383–55. On some regulators it is first necessary to loosen lock nut. Stop generator and open test stand battery switch.

(*c*) Install cover gasket and cover on regulator.

(*d*) Close test stand battery switch and operate generator at 2,500 to 3,000 rpm. Adjust load rheostat or lamp bank so ammeter reads one-half current regulator operating amperage. Operate at this current for 30 minutes to bring regulator up to operating temperature.

(*e*) Place thermometer near regulator to ascertain temperature of air around unit. Thermometer must not touch regulator.

(*f*) Stop generator; then immediately start and bring it up to 2,500 to 3,000 rpm. Adjust current to one-half current regulator operating current (table IX, par. 61) and read voltmeter and thermometer. This voltage must be within the limits specified for voltage regulator for temperature specified (table IX). If voltage is not within limits, stop generator, open test stand battery switch and remove regulator cover. Close switch and start generator. Turn adjusting nut on lower end of voltage regulator armature spring (fig. 132) with tool 41–T–3383–55 until voltmeter reading is within limits. Check this setting by stopping generator; then operate generator at 2,500 to 3,000 rpm and at one-half maximum current. Read voltmeter and readjust and recheck voltage regulator if not within operating limits.

(*g*) Adjust load rheostat or lamp bank so voltmeter reading drops 0.5 to 0.7 volt and read ammeter. This reading must be within limits specified for current regulator operating amperage (table IX). If current is not within limits, stop

generator and remove regulator cover. Start generator and adjust current setting by turning adjusting nut on lower end of armature spring (fig. 132). On some regulators it is first necessary to loosen lock nut.

(*h*) Stop generator and open battery switch. Secure all screws on regulators, designed for locking wire, with locking wire and tighten lock nuts. Install regulator cover.

(*i*) Close test stand battery switch and operate generator at one-half current regulator setting for 5 minutes; then check voltage and current setting ((*f*) and (*g*) above). Make any readjustments that are necessary and finish with a final 5 minute run and check.

59. Regulator Sealing

a. Responsibility.

(1) Generator regulators are precision control instruments used to protect electrical units in automotive electrical systems. To insure that this protection is maintained and to prevent tampering, all generator regulators must be sealed.

(2) All unsealed generator regulators which operate satisfactorily after rebuild and test or that are already mounted in vehicles will be sealed at the earliest practical date by qualified personnel of third or higher echelons.

b. Materials Required. There are two types of seals for sealing generator regulators (fig. 118 and 133).

(1) *Type 1—lead seal and wire.*

(*a*) This type of seal is employed when cover studs or retaining screws are drilled for locking wire and when cover retaining straps are used.

(*b*) The materials necessary to apply this seal are: one-half inch diameter lead seal with 12 inch long wire 583068; double jaw seal hand press 41–P–2745–500.

(2) *Type 2—seal cup and sealing wax.*

(*a*) This type of seal is employed when round head or similar type screws not drilled for locking wire are used to secure the cover to the base of the generator regulator.

(*b*) The materials necessary to apply this seal are: seal cup 7704028 and red sealing wax (4-oz sticks) 53–X–W–360 (QM issue).

c. Application of Seals.

(1) *Type 1—lead seal and wire.* Type 1 seals may be applied in two distinct manners, as illustrated in figure 133. However, the principle of application is the same. Before applying the

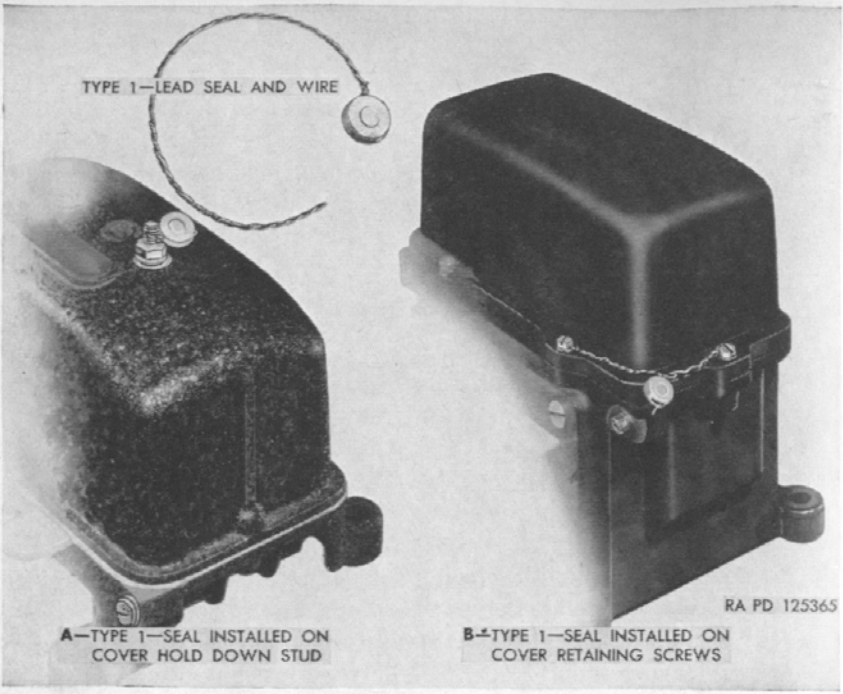


Figure 133. Sealing of group 4 regulators.

seal, secure cover hold-down stud nuts or retaining screws, whichever are used to secure the cover. Insert the wire through the drilled hole in the cover hold-down stud or retaining screws. Then thread the wire through the lead seal and pull tight. Crimp the lead seal and cut off the surplus wire.

Note. There is no provision for applying lead seals on VBC-type regulators.

(2) *Type 2—seal cup and sealing wax.* This type is not used on group 4 regulators.

Section VI. REPAIR AND REBUILD STANDARDS AND TEST DATA

60. Regulatory Repair and Rebuild Standards

Table VIII lists the repair and rebuild standards on all regulators covered in this manual and includes all mechanical test data necessary for rebuilding the equipment.

Regulator	VBC–4002UT	VRA–4102A	VRA–4105A	VRG–4102B	VRG–4103B, C	VRH–4101C
Internal wiring	fig. 102	fig. 95	fig. 95	fig. 95	fig. 95	fig. 100
Resistors	3 used	3 used	3 used	3 used	3 used	4 used
Installation	fig. 125	fig. 122	fig. 122	fig. 122	fig. 122	fig. 122
R1 marked	200	135	135	135	135	80
R1 ohms	190–210	130–140	130–140	130–140	130–140	76–84
R2 marked	15	15	15	15	15	15
R2 ohms	14–17.1	13.5–16.5	13.5–16.5	13.5–16.5	13.5–16.5	13.5–16.5
R3 marked	175	0.65	0.65	0.65	0.65	30
R3 ohms	166.25–183.75	0.6–0.7	0.6–0.7	0.6–0.7	0.6–0.7	28–32
R4 marked						1
R4 ohms						0.9–1.1
Capacitors	1 used	None	None	None	None	None
C1 (automotive type) microfarads	2.0–2.5					
C2 (radio type) microfarads						
Resistance of 2 coils in parallel (ohms) [a]						
Circuit breaker:						
Resistance of shunt coil (ohms)	215–237	47.5–52.5	47.5–52.5	47.5–52.5	47.5–52.5	43.7–48.3
Armature spring (number of turns)	16	16	16	16	16	16
Armature air gap (in.)	[b] 0.060–0.065	0.0595–0.0625	0.0595–0.0625	0.0595–0.0625	0.0595–0.0625	0.0595–0.0625
Contact point gap (in.)	[c] 0.035 min.	0.025 min.	0.025 min.	0.025 min.	0.025 min.	0.025 min.
Gap between hinge and yoke (in.)		0.002 max.	0.002 max.	0.002 max.	0.002 max.	0.002 max.
Current regulator:						
Resistance of frequency winding (ohms)		0.094–0.104	0.094–0.104	0.129–0.143	0.129–0.143	None.
Armature spring (Number of turns)	16	16	16	16	16	16
Armature air gap (in.)	0.047–0.049	0.047–0.049	0.047–0.049	0.047–0.049	0.047–0.049	0.047–0.049
Pressure of contacts (oz.)	7–8	7–8	7–8	7–8	7–8	7–8
Gap between hinge and yoke (in.)		0.002 max.	0.002 max.	0.002 max.	0.002 max.	0.002 max.
Gap between contact spring and stop (in.)	0.010–0.016	0.010–0.016	0.010–0.016	0.010–0.016	0.010–0.016	0.010–0.016
Voltage regulator:						
Resistance of main winding (ohms)		15.7–17.3	15.7–17.3	15.7–17.3	15.7–17.3	15.7–17.3
Armature spring (number of turns)	14½	14½	14½	14½	14½	14½
Armature air gap (in.)	0.040–0.042	0.040–0.042	0.040–0.042	0.040–0.042	0.040–0.042	0.040–0.042
Pressure of contacts (oz.)	7–8	7–8	7–8	7–8	7–8	7–8
Gap between hinge and yoke (in.)		0.002 max.	0.002 max.	0.002 max.	0.002 max.	0.002 max.
Gap between contact spring and stop (in.)	0.010–0.016	0.010–0.016	0.010–0.016	0.010–0.016	0.010–0.016	0.010–0.016

[a] Measure from "A" terminal to base.
[b] Counterbalanced armatures to have an air gap of 0.066–0.070.
[c] 0.047 min. with counterbalanced armature.

Table IX. Regulator Electrical Data—Continued

Regulator	VAM–4101A	VAM–4101B	VAO–4001AM	VAS–4001A	VAV–4401A	VBA–4103A	VBC–4002UT
Internal wiring	fig. 100	fig. 100	fig. 101	fig. 101	fig. 92	fig. 94	fig. 102
Test wiring	fig. 130	fig. 130	fig. 130	fig. 130	fig. 116	fig. 116	fig. 131
Rated volts	12	12	24	24	6	6	24
Ground polarity	Neg.	Neg.	Neg.	Neg.	Pos.	Pos.	Neg.
Generator type	[b] GGA	[b] GGA	GFZ	[b] GGF	GGJ	GGJ	GHA
Circuit breaker:							
Contact point gap (in.)	0.025 min.	0.025 min.	0.025 min.	0.025 min.	0.015 min.	0.015 min.	[c] 0.035 min.
Closing volts	13.0–13.5	13.0–13.5	26.0–27.2	26.0–27.2	6.4–6.9	6.3–6.8	25.7–26.7
Opening volts					4.1–4.8	4.1–4.8	
Opening amperes (discharge)	0.5–6.0	3.0–5.0	3.0–5.0	1.7–3.8			7.0–11.0
Current regulator:							
Operating amperes	39.0–41.0	39.0–41.0	25.0–27.0	9.8–10.2	49–51	[d] 50	24.5–26.0
Voltage regulator:							
Operating voltages:							
50° F	14.31 ±0.25	14.53 ±0.25	29.38 ±0.40	28.58 ±0.40	7.41 ±0.15	7.16 ±0.10	28.45 ±0.40
60° F	14.28 ±0.25	14.515 ±0.25	29.34 ±0.40	28.54 ±0.40	7.38 ±0.15	7.13 ±0.10	28.40 ±0.40
70° F	14.25 ±0.25	14.50 ±0.25	29.30 ±0.40	28.50 ±0.40	7.35 ±0.15	7.10 ±0.10	28.30 ±0.40
80° F	14.22 ±0.25	14.485 ±0.25	29.26 ±0.40	28.46 ±0.40	7.32 ±0.15	7.07 ±0.10	28.25 ±0.40
90° F	14.19 ±0.25	14.47 ±0.25	29.21 ±0.40	28.41 ±0.40	7.29 ±0.15	7.04 ±0.10	28.20 ±0.40
100° F	14.16 ±0.25	14.455 ±0.25	29.17 ±0.40	28.37 ±0.40	7.27 ±0.15	7.02 ±0.10	28.10 ±0.40
110° F	14.13 ±0.25	14.44 ±0.25	29.13 ±0.40	28.33 ±0.40	7.24 ±0.15	6.99 ±0.10	28.05 ±0.40
120° F	14.10 ±0.25	14.425 ±0.25	29.09 ±0.40	28.29 ±0.40	7.21 ±0.15	6.96 ±0.10	27.95 ±0.40

Table IX. Regulator Electrical Data—Continued

Regulator	VRY-4202A	VRY-4203A, B, D, E, F, G	VRY-4204A
Internal wiring	fig. 104	fig. 104	fig. 104
Test wiring	fig. 130	fig. 130	fig. 130
Rated volts	6	6	6
Ground polarity	Pos.	Neg.	Neg.
Generator type	[b] GEW	[b] GEG	[b] GEG
Circuit breaker:			
Contact point gap (in.)	0.025 min.	0.025 min.	0.025 min.
Closing volts	6.5-7.0	6.5-7.0	6.5-7.0
Opening volts			
Opening amperes (discharge)	0.5-6.0	0.5-6.0	0.5-6.0
Current regulator:			
Operating amperes	25-27	40-42	40-42
Voltage regulator:			
Operating voltages:			
50° F	7.41 ±0.15	7.41 ±0.15	7.41 ±0.15
60° F	7.38 ±0.15	7.38 ±0.15	7.38 ±0.15
70° F	7.35 ±0.15	7.35 ±0.15	7.35 ±0.15
80° F	7.32 ±0.15	7.32 ±0.15	7.32 ±0.15
90° F	7.29 ±0.15	7.29 ±0.15	7.29 ±0.15
100° F	7.26 ±0.15	7.26 ±0.15	7.26 ±0.15
110° F	7.23 ±0.15	7.23 ±0.15	7.23 ±0.15
120° F	7.20 ±0.15	7.20 ±0.15	7.20 ±0.15

[a] This is the contact opening voltage for group 2 regulators. Contact closing voltages are as follows:

Temp. F	50°	60°	70°	80°	90°	100°	110°	120°	Tolerance
Volts	7.20	7.12	7.05	6.97	6.90	6.83	6.76	6.69	±0.20

[b] Must be group 2B generator.

[c] 0.047 min. with counterbalanced armature.

[d] This is the nominal setting for the temperature compensated current regulator. After 15 minutes run on voltage regulator test the current setting will be as specified in test "A" below. After an additional 15 minutes operation on current regulator, the current setting will be as specified in test "B". Use test "A" figures only for approximate settings and check setting after the full ½-hour operation.

Nominal setting	Temp. F	40°	60°	70°	80°	100°
35	test A	45 max.	43 max.	42 max.	41 max.	39 max.
	test B	36-40	34-38	33-37	32-36	30-34
40	test A	49 max.	47 max.	46 max.	45 max.	43 max.
	test B	41-45	39-43	38-42	37-41	35-39
50	test A	59 max.	57 max.	56 max.	55 max.	53 max.
	test B	51-55	49-53	48-52	47-51	45-49

Note. See table VII (par. 37) for group numbers of regulators listed.

Item	Identifying No.	References		Use
		Fig.	Par.	
[illegible] special, [illegible] for voltage regulator [illegible]. Composed of:	41-T-[illegible]			
GAGE,* voltage regulator, wire type	41-G-[illegible]	1, 112, 113, 127	45, 59, 64	To check contact spacing and air gap between regulator armature and core.
TOOL, voltage regulator, point adjusting	41-T-[illegible]-12	1, 115	59	To adjust air gap between regulator armature and core.
TOOL, voltage regulator, spring tension adjusting	41-T-[illegible]-14	1, 113	47, 52, 59	To adjust armature spring tension.

*GAGE set 41-G-[illegible] is composed of five pin gages and three flat gages of the following sizes:
Pin gages:
[illegible]
Flat gages:
[illegible]

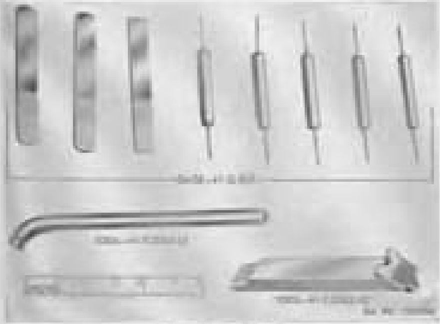
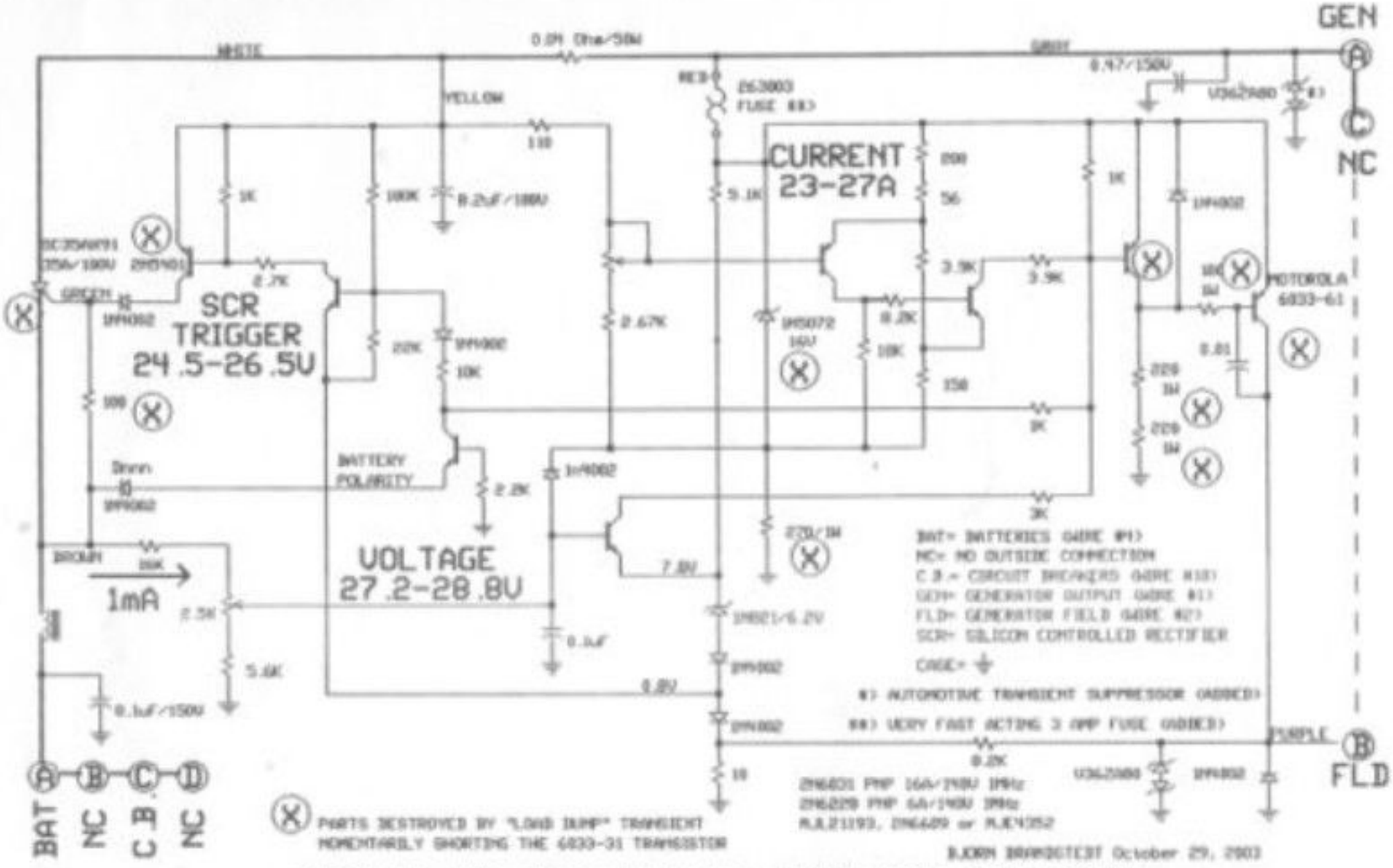


Figure 1. Special tools



2920-00-800-7218 28V/25A REGULATOR SCHEMATIC

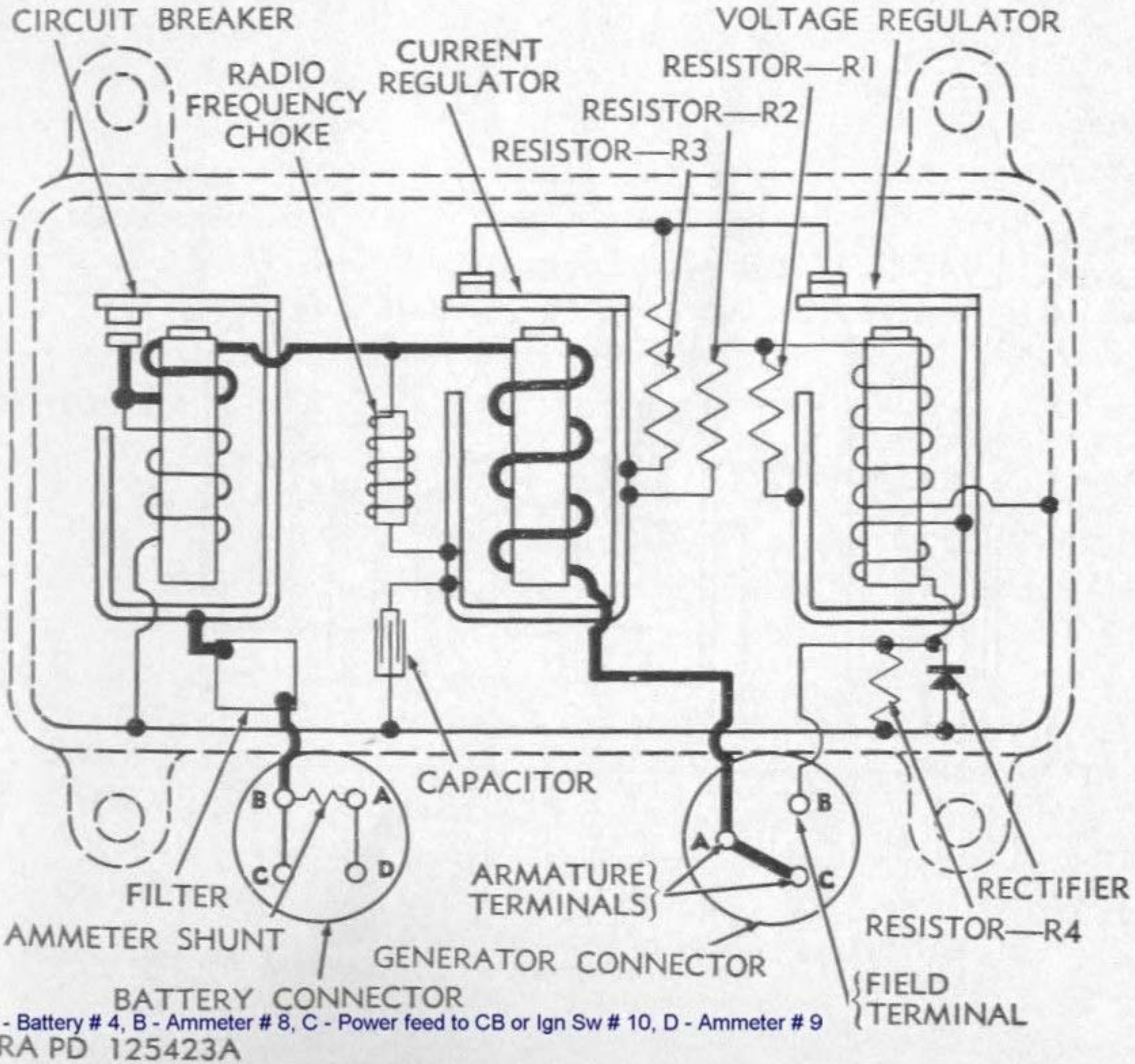
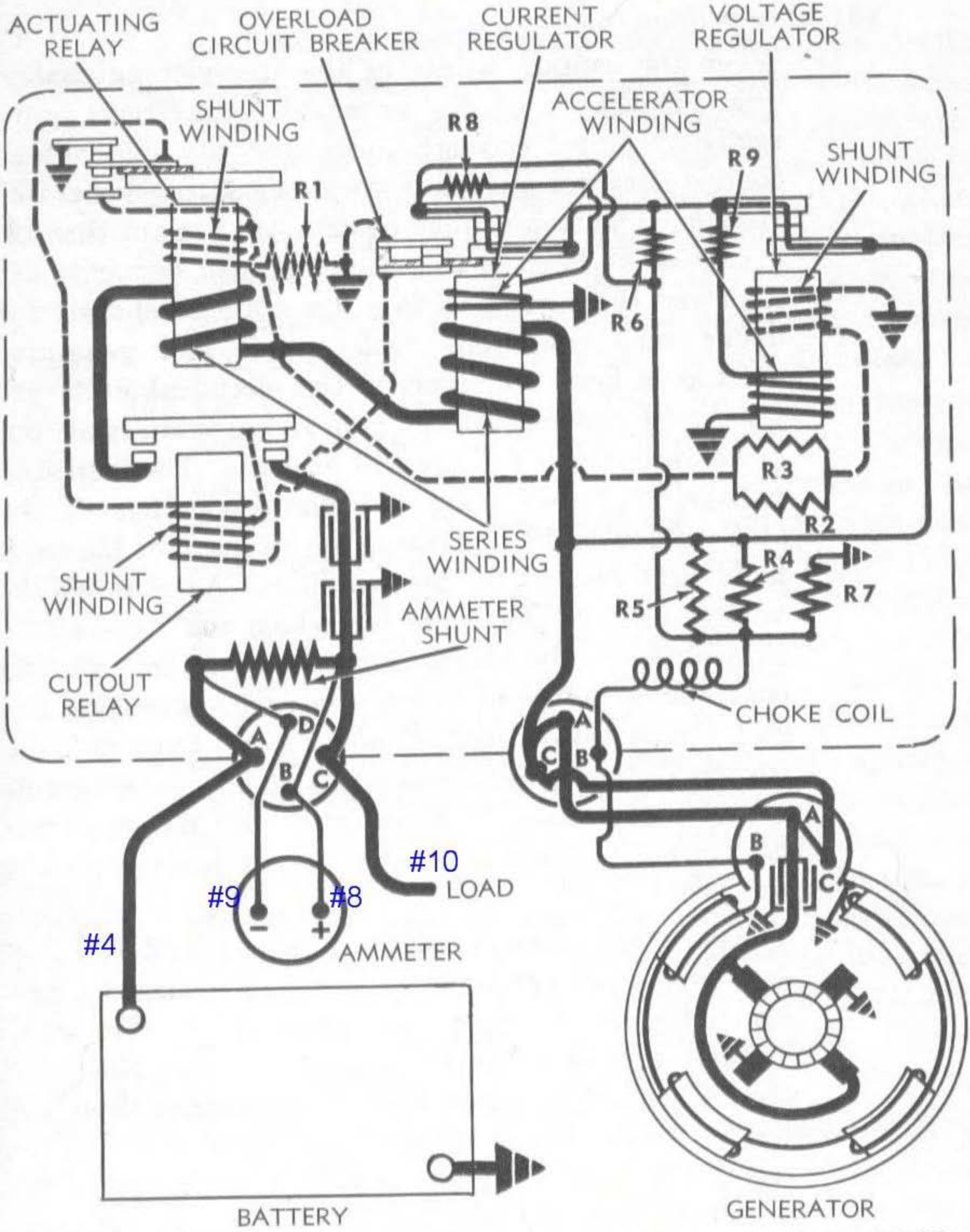


Figure 102. Internal wiring of VBC–4002UT regulator.

Delco Remy 1118606 Group 6 regulator



TM 9-8627 Fig 106 Pg 189 Edited by Wes Knettle