



SERVICE SHEETS

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BSA SERVICE SHEET No. 804A

January 1957

A, B and M Group Models Control Box - Model RB107

General.

The regulator and cut-out contacts are positioned, for ease of access, above their respective armatures. It will be noticed that some of the internal electrical joints are resistance brazed.

SETTING DATA.

Cut-Out.

Cut-in voltage	...	...	6.3—6.7 volts.
Drop-off voltage	...	...	4.8—5.3 volts.
Reverse current	...	...	3.0—5.0 amps.

Regulator.

Setting on open circuit relative to ambient temperature.

10°C. 50°F.	...	...	7.7—8.1 volts.
20°C. 68°F.	...	...	7.6—8.0 volts.
30°C. 86°F.	...	...	7.5—7.9 volts.
40°C. 104°F.	...	...	7.4—7.8 volts.

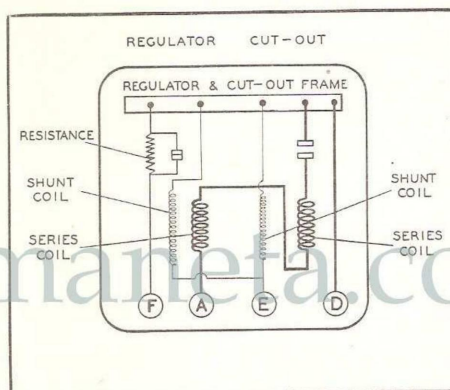


Fig. Y.15A.
Internal Connections of Control Box.

Servicing.

Before making any adjustment to the regulator, ensure that the dynamo, dynamo drive and battery are in order.

If the machine is used regularly and a sound battery does not keep in a charged condition, or if the dynamo output does not fall when the battery is fully charged, the following procedure should be adopted:—

Withdraw the cable from terminal *A*, Fig. Y.16A, and connect it to the negative terminal of a voltmeter. Connect the positive voltmeter terminal to an earthing point on the machine. If a voltmeter reading is given, the circuit from the battery to terminal *A* is in order.

If there is no reading, examine the wiring for defective cables or loose connections. Re-connect the cable to terminal *A*.

Check that the wiring between dynamo terminal *D* and control box terminal *D*, and between dynamo terminal *F* and control box terminal *F*, is in good condition.

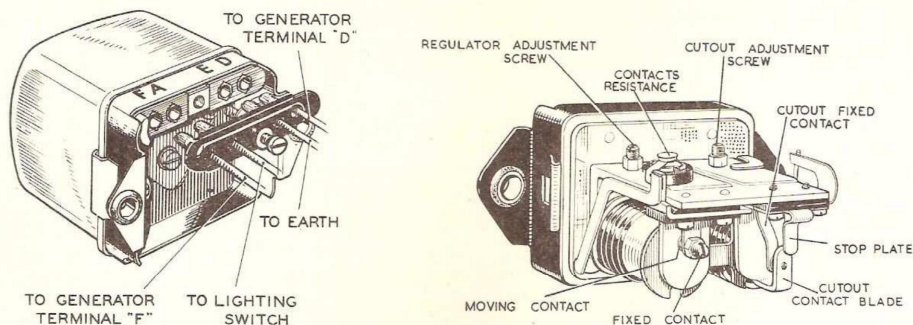


Fig. Y.16A. Control Box Connections and Internal Layout.

Electrical Setting of Regulator.

The regulator is carefully set during manufacture and it should not be necessary to make further adjustment. If the charging system is suspect, it is important that only a good quality moving coil voltmeter (0-20 volts) is used for checking.

Connect the negative voltmeter lead to terminal *D* and the positive lead to terminal *E* on the control box. Remove the negative cable from the battery.

Start the engine and slowly increase the speed until the voltmeter needle "flicks" and then steadies. Note the reading and stop the engine.

If the voltage lies outside the limits given in the setting data, the regulator must be adjusted.

Remove the control box from the machine and take off the cover. It is important that adjustments are carried out with the control box supported in a similar position to that in which it is mounted on the machine. Re-start the engine.

Slacken the locknut of the adjusting screw, Fig. Y.17A, and turn the screw clockwise to raise, or anti-clockwise to lower the setting. Turn the screw only a fraction of a turn at a time and then tighten the locknut. Repeat until the correct setting is obtained. Then stop the engine.

Adjustment should be completed within 30 seconds, otherwise heating of the shunt winding will cause false settings to be made. A dynamo run at high speed on open circuit will build up a high voltage; therefore, do not run the engine up to more than half full speed.

Mechanical Setting of Regulator.

If the armature has been removed, the air gap settings will have to be re-adjusted. Otherwise, they should not be altered. To adjust, proceed as follows:—

Slacken the locknut on the voltage adjusting screw and unscrew the adjuster until it is well clear of the armature tension spring. Also slacken the two armature securing screws, Fig. Y.17A.

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Insert a .015 in. feeler gauge wide enough to cover completely the core face between the armature and the core shim, taking care not to damage the shim. Press the armature squarely down against the gauge and tighten the two securing screws. With the gauge still in position, screw the adjustable contact down until it just touches the armature contact.

Tighten the locknut, and re-set the voltage adjusting screw as described above.

Cleaning Contacts.

After long periods of service it may be found necessary to clean the contacts. Use a fine carborundum stone or fine emery cloth. Wipe away all traces of dust or other foreign matter with methylated spirits.

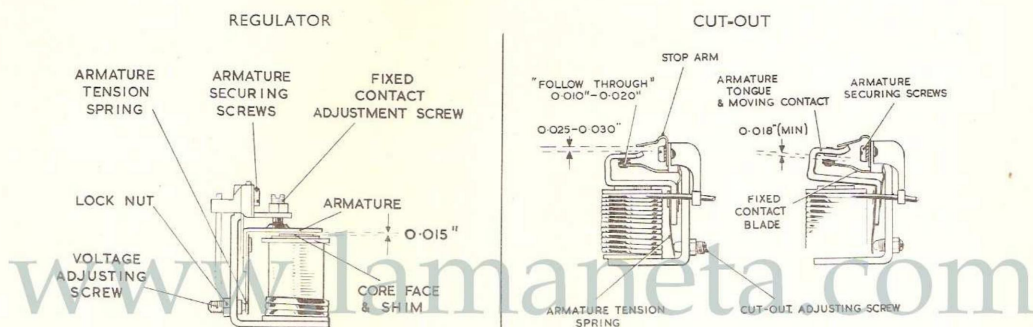


Fig. Y.17A. Regulator and Cut-Out Adjustment and Setting.

Electrical Setting of Cut-Out.

If the regulator is correctly set but the battery is still not being charged, the cut-out may be out of adjustment.

Connect a voltmeter between terminals *D* and *E* on the control box, start the engine and slowly increase the speed until the contacts close. Note the reading, and stop the engine. If outside the limits of 6.3—6.7 volts, it will be necessary to adjust the cut-out.

Re-start the engine, and slacken the locknut securing the cut-out adjusting screw, Fig. Y.17A. Turn the screw clockwise to raise, or anti-clockwise to lower the setting. Move the screw only a fraction of a turn at a time and then re-tighten the locknut. Test after each adjustment by increasing engine speed and noting the voltmeter reading at the instant of contact closure. Stop the engine.

Setting of the cut-out, like that of the regulator, must be made as quickly as possible because of temperature rise effects.

If the cut-out fails to operate, there may be an open circuit in the wiring of the control box, in which case the unit should be replaced.

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Mechanical Setting of Cut-Out.

If, for any reason, the armature has been removed from the frame, the correct air-gap settings must be obtained on re-assembly.

Slacken the adjusting screw locknut and unscrew the adjuster until it is well clear of the tension spring. Press the armature squarely down on the core face and tighten the securing screws. Adjust the gap between the armature tongue and the stop arm by carefully bending the arm. The gap must be .025 in.—.030 in. when the armature is pressed down, Fig. Y.17A. Similarly, the fixed contact blade must be bent so that, when the armature is pressed down, there is a minimum "follow-through" or blade deflection of .010 in. To prevent contact chatter, the "follow-through" must not exceed .020 in.

With the armature in the free position, the contact gap must be .018 in. minimum.

Finally, re-set the cut-out adjusting screw.

Cleaning Contacts.

If the cut-out contacts appear rough or burnt, place a strip of fine glasspaper between them, close the contacts by hand and draw the paper through two or three times with the rough side towards each contact in turn. Wipe away dust or other foreign matter with methylated spirits.

Do not use emery cloth or carborundum stone for cleaning cut-out contacts.