

## 18. CONTROL BOX - GENERAL DESCRIPTION

The control box comprises the voltage regulator and the cut-out. The voltage regulator controls the output from the dynamo depending on the state of the battery and the demands of the electrical equipment and ensures that the battery is not overcharged. The cut-out is really an automatic switch and connects the dynamo to the battery when the dynamo is turning fast enough to produce a charge. Similarly it disconnects the battery from the dynamo when the engine is idling or stationary so that the battery does not discharge through the dynamo.

## 19. CUT-OUT & REGULATOR CONTACTS - MAINTENANCE

1. Every 12,000 miles check the cut-out and regulator contacts. If they are dirty or rough or burnt, place a piece of fine glass paper (DO NOT USE EMERY PAPER OR CARBORUNDUM PAPER) between the cut-out contacts, close them manually and draw the glass paper through several times.

2. Clean the regulator contacts in exactly the same way, but use emery or carborundum paper and not glass paper. Carefully clean both sets of contacts from all traces of dust with a rag moistened in methylated spirits.

## 20. VOLTAGE REGULATOR ADJUSTMENT

1. If the battery is in sound condition, but is not holding its charge, or is being continually overcharged and the dynamo is in sound condition, then the voltage regulator in the control box must be adjusted.

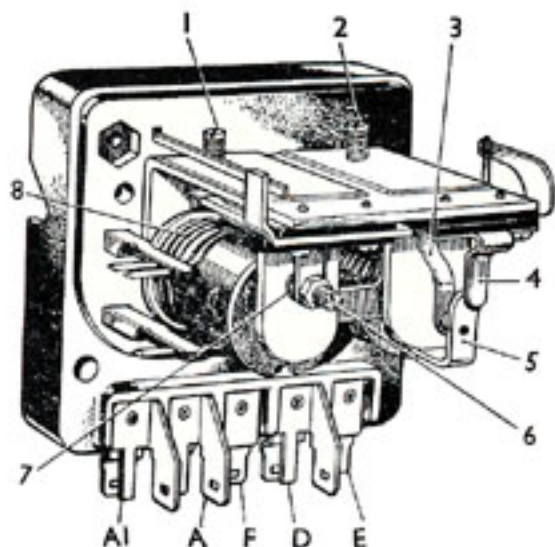


Fig. 10.4. VIEW OF THE REGULATOR & CONTROL BOX  
1 Regulator adjusting screw. 2 Cut-out adjusting screw. 3 Fixed contact blade. 4 Stoparm. 5 Armature tongue and moving contact. 6 Regulator fixed contact screw. 7 Regulator moving contact. 8 Windings

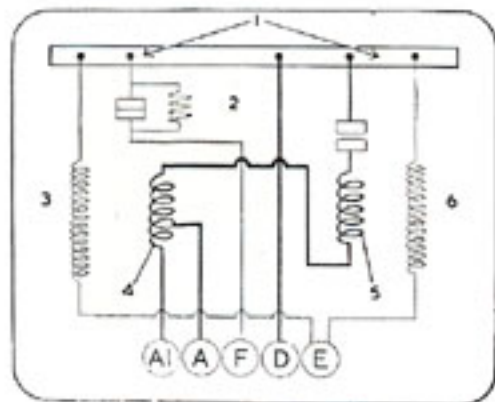


Fig. 10.5. PLAN OF THE REGULATOR & CUT-OUT. 1 Regulator and cut-out frame. 2 Field resistance. 3 Shunt coil. 4 Tapped series coil. 5 Series coil. 6 Shunt coil

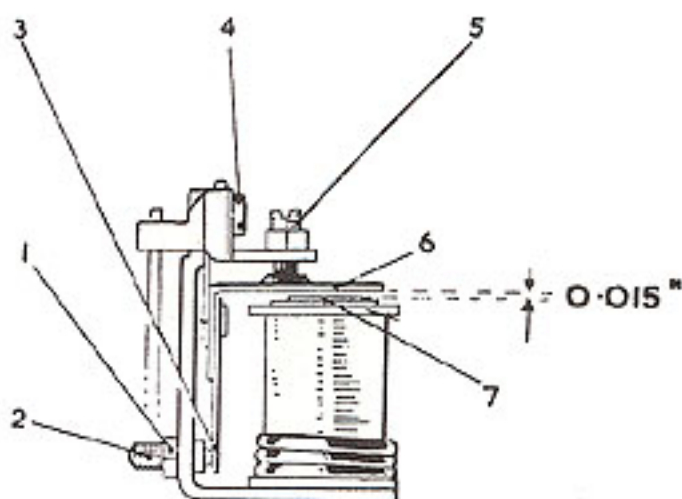


Fig. 10.6. SETTING THE REGULATOR MECHANICALLY  
 1 Locknut. 2 Voltage adjusting screw. 3 Armature tension spring.  
 4 Armature securing screws. 5 Fixed contact adjustment screw.  
 6 Armature. 7 Core face and shim

2. Check the regulator setting by removing and joining together the cables from the control box terminals A1 and A. Then connect the negative lead of a 20-volt voltmeter to the 'D' terminal on the dynamo and the positive lead to a good earth. Start the engine and increase its speed until the voltmeter needle flicks and then steadies. This should occur at about 2,000 r.p.m. If the voltage at which the needle steadies is outside the limits listed below, then remove the control box cover and turn the adjusting screw, (1) in Fig. 10.4, clockwise a quarter of a turn at a time to raise the setting and a similar amount, anti-clockwise, to lower it.

Air Temperature	Type RB 106/2 Open circuit voltage
10°C or 50°F	16.1 to 16.7
20°C or 68°F	16.0 to 16.6
30°C or 86°F	15.9 to 16.5
40°C or 104°F	15.8 to 16.4

3. It is vital that the adjustments be completed within 30 seconds of starting the engine as otherwise the heat from the shunt coil will affect the readings.

## 21. CUT-OUT ADJUSTMENT

1. Check the voltage required to operate the cut-out by connecting a voltmeter between the control box terminals 'D' and 'E'.

2. Remove the control box cover, start the engine and gradually increase its speed until the cut-outs close. This should occur when the reading is between 12.7 to 13.3 volts.

3. If the reading is outside these limits turn the cut-out adjusting screw, (2) in Fig. 10.4, a fraction at a time clockwise to raise the voltage, and anti-clockwise to lower it. To adjust the drop off voltage bend the fixed contact blade carefully. The adjustment to the cut-out should be completed within 30 seconds of starting the engine as otherwise heat build-up from the shunt coil will affect the readings.

4. If the cut-out fails to work, clean the contacts, and, if there is still no response, renew the cut-out and regulator unit.