

## HINTS FROM AUSTIN'S MORRIS GARAGE

On the next pages are the tests I promised at the last tech session. If you follow these tests, I'm sure you can trace out any fault in your charging system. First, for those of you who are participating in a rallye and whose speedometer doesn't work, the following table may be of some help in using your tachometer as a guide. Additionally, a few comments on clutch adjustment and brake fluid.

### REAR AXLE RATIO 5.125 to 1 (Stock TC)

GEAR	MPH-per-1000 rpm
Top	15.84
3rd	11.74
2nd	8.13
1st	4.68

### REAR AXLE RATIO 5.125 to 1 (Stock TD & TF)

Top	14.42
3rd	10.41
2nd	6.97
1st	4.12

### REAR AXLE RATIO 4.55 to 1 (MGA Ratio)

Top	15.20
3rd	10.97
2nd	7.34
1st	4.34

These charts are good only with the following size tires:

TC	4.50 X 19
TD/TF	5.50 or 5.60 x 15
MGA	5.50 or 5.60 x 15

Also, for those of you with metric size tires (radials), you'll have to consult a tire store size chart and pick the nearest size to the above.

You may wish to make a chart of what speeds your vehicle will be traveling at a given tachometer reading.

You may need MPH in tenths, too, and you will probably have to correct your calculations, based on the first checkpoint, which is placed there by the rallyemaster whose speedometer reads whatever the point should be; this is usually discernible as a 10-mile post or other such marker.

I'm sure anyone who participates in a rallye will have barrels of fun.

### Clutch Rod Adjustment

For those of you who have a problem with your clutch adjustment: it may be necessary to lengthen the upper solid rod anywhere from 3/8 to one inch. The rod is hollow, so it must be cut in two with a hacksaw, a bolt of the proper size inserted, and the rod welded back together, making sure the clevises at each end are lined up properly. This operation will give the proper free play and throw by adjusting the lower rod correctly.

### To clear up some confusion on types of brake fluid

Girling or Dunlop systems require the use of genuine Girling brake fluid. The reason being that the rubber parts in these systems are usually of the natural type; the fluid must be of a different base than that used for other systems that have synthetic rubber parts. So, for your 'T' or other British car with Lockheed brakes, you may use any good brake fluid that meets specs of S.A.E. 70 R5 or greater.

**Go to the next page for the generator and voltage regulator tests.**

## GENERATOR and VOLTAGE REGULATOR TESTS

The following tests should be carried out with a good-quality 0 to 20 VDC voltmeter.

	READING	ACTION
<p><b>Test 1.</b></p> <p>Disconnect the leads from the generator.</p> <p>Connect one lead of the voltmeter to the D terminal and the other to a good ground.</p> <p>Start the engine, and raise the speed to about 3,000 rpm.</p>	<p>A. 2–4 volts as the generator gets up to charging speed (about 3,000 rpm).</p> <p>B. Zero reading.</p> <p>C. Rising volts with rising speed.</p>	<p>Armature connection OK. Proceed to Test 2.</p> <p>Check brushes to assure they are free and making good contact on the commutator. If still zero, the fault is in the armature, which has to be rebuilt or replaced.</p> <p>Internal short between D and F terminals. Examine field coils and repair or replace.</p>
<p><b>Test 2.</b></p> <p>Connect meter as in Test 1. Connect the D and F terminals on the generator.</p> <p>Gradually increase engine speed to fast idle (2,000 to 2,500 rpm).</p>	<p>A. Rising volts with rising speed – full-scale reading (12 to 13.5 V) at fast idle.</p> <p>B. 2–4 volts as the engine is revved.</p> <p>C. Zero volts.</p>	<p>Generator OK. Go to Test 3.</p> <p>Open circuit in field coils. Replace coils.</p> <p>Grounded fields. Repair or replace.</p>
<p><b>Test 3.</b></p> <p>Reconnect generator leads. Remove leads from D and F terminals at the regulator.</p> <p>Connect one side of the voltmeter to the end of the D wire and the other meter lead to ground.</p> <p>Raise engine speed to about 3,000 rpm.</p>	<p>A. 2–4 volts.</p> <p>B. Zero reading.</p> <p>C. Rising volts with rising speed.</p>	<p>D lead from generator to regulator is OK.</p> <p>Wire is open. Replace.</p> <p>Short between D and F wires. Locate and repair.</p>
<p><b>Test 4.</b></p> <p>Same meter connections as in Test 3.</p> <p>Join the D and F wires together.</p> <p>Gradually raise engine speed to fast idle.</p>	<p>A. Rising volts with rising speed.</p> <p>B. Zero reading.</p> <p>C. 2–4 volts.</p>	<p>D and F leads OK. Go to Test 5.</p> <p>F lead grounded.</p> <p>Open field lead.</p>

### CAUTION

Under no circumstances must tests 5 or 6 be made with the battery in circuit.

## GENERATOR AND VOLTAGE REGULATOR TESTS (Cont.)

To isolate the battery from the generator, place a piece of dry cardboard between the output points of the regulator. Remember, the output of the generator, that is, the current in amps, flowing from the generator to the battery is dependent on the state of the charge of the battery. The generator will

give a high output when the battery is in a low state of charge and a low output when the battery is fully charged. Regulators must therefore always be set on open circuit, a condition that is most easily attained by inserting the cardboard as above. See the illustrations for reference.

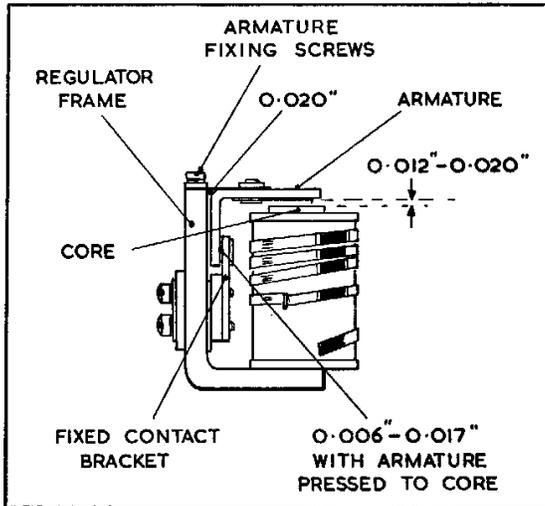
### Test 5.

Reconnect all wires.

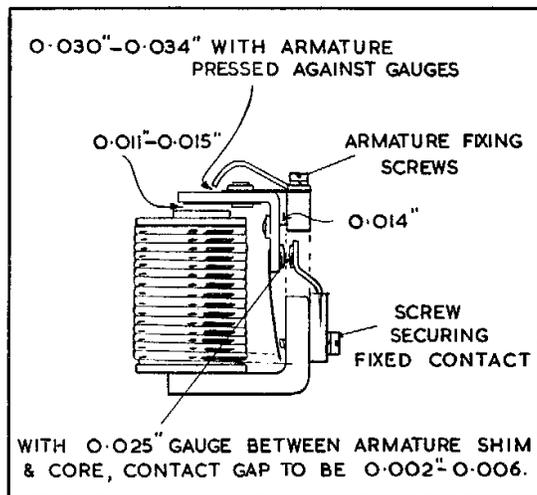
Connect one lead of the voltmeter to regulator terminal A, the other lead to E, with the engine not running.

### Test 6.

With cover removed and cardboard inserted, connect one voltmeter lead to the D terminal and the other lead to ground.



**Early Regulators**



**Late Regulators**

### READING

### ACTION

- A. Battery voltage.
- B. Less than battery voltage or zero reading.
- A. At about 3,000 rpm, voltage should remain constant within the following limits:

Ambient Temp	Volts
50-68 °F	16.0-16.5
86-104 °F	15.5-16.0

- B. Voltage remains constant but outside given limits.
- C. Rising volts with rising engine speed up to 3,000 rpm and beyond.
- D. Reading about one-half.

- Regulator ground connection OK. Go to Test 6.
- Repair bad or broken ground wire between E terminal and chassis.
- Regulator OK. Go to Test 7.

- Regulator requires adjusting.
- Suspect broken shunt winding in the regulator bobbin.
- Suspect regulator contacts not passing current. To test, bridge the contacts with a screwdriver. This closes the circuit between D and F, and you should get rising volts with rising speed, proving contacts are burnt or corroded.

- E. Voltage does not rise with engine speed, or is erratic.

- Air gap setting is incorrect.

## GENERATOR AND VOLTAGE REGULATOR TESTS (Cont.)

### Test 7.

Remove card from cutout.

Connect the meter to terminal A on the regulator and a good ground. Engine off.

### Test 8.

Leaving meter connected as in Test 7, start engine and watch the meter.

### Test 9.

Connect one meter lead to the regulator D post and the other to ground.

### READING

A. Battery voltage.

A. Battery voltage.

B. No voltage or very low voltage when cutout points close.

A. Cutout points close 12.7 to 13.3 volts.

B. Points close outside above limits.

C. Cutout does not close.

### ACTION

Circuit from battery through the ammeter to terminal A is OK. Go to Test 8.

Cutout is OK. Go to Test 9.

Clean and adjust cutout contacts so they meet correctly. Go to test 9.

Cutout OK.

Clean and adjust cutout contacts so they meet correctly.

Install a new regulator.

As for the fuses at the control box (regulator)—the main feed is via the ammeter to the A terminal on the regulator, then through the series winding in the regulator to the A1 terminal.

A1 is also the feed to the ignition switch, and from there, to A3 via internal connections in the regulator through the A4 terminal.

Any accessories connected to A2 will work irrespective of the ignition switch position. Accessories connected to A4 will operate only with the ignition switched on.

That's all for this time. Best regards to all,  
Jerry

E-mail [jdaustinmg@cyberhotline.com](mailto:jdaustinmg@cyberhotline.com)