

# DU MONT

*First with the Finest in Television*

**SERVICE NOTES**

**FOR**

**DU MONT TELESETS**



**ALLEN B. DU MONT LABORATORIES, INC.**

*Teleset Service Control Department*

**MARKET STREET**

**EAST PATERSON, N. J.**

RA-103C

### RA-103C SECTION

This section is devoted to problems concerned with the installation and service of the RA-103 Telesets prior to the RA-103D model. A special section will be devoted to the RA-103D models.

Schematic diagrams for the RA-103C models are available at a cost of \$0.15 each.

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Magnet Fastened to the Inside Cover Over  
the H.V. Power Supply in the RA-103 Models

Fastened to the inside of the cover over the Flyback H.V. Power Supply is a small permanent magnet. The purpose of this magnet is to suppress an electronic or Barkhausen type of oscillation in the Horizontal Deflection Amplifier V221. This condition is prevalent on all television receivers using the same type of deflection amplifier circuit.

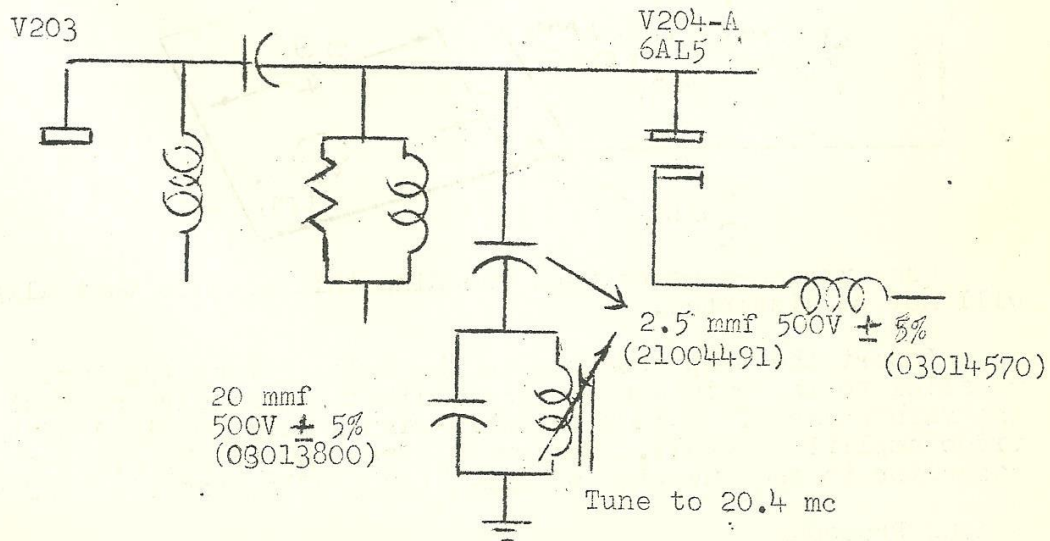
Upon removal of the cover over the flyback power supply, you will observe that a dark vertical streak approximately 1 inch from the left side of the picture will become visible on some of the high frequency channels.

All Du Mont Model RA-103 television receivers contain this magnet with the exception of a few very early production models.

Adjacent Channel Video Trap

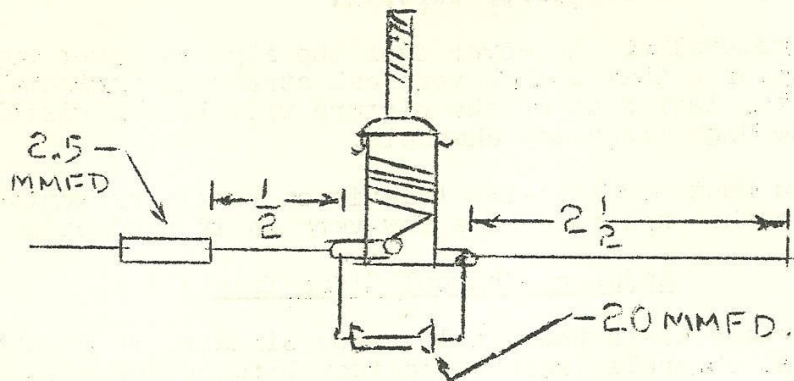
In certain areas where television signals are received on two adjacent channels (such as halfway between two cities having television stations), adjacent channel video interference has been observed on RA-103 Telesets. When tuned to the lower frequency channel of two such adjacent channels, interference is experienced from the video carrier in the higher frequency channel. This interference is usually seen as horizontal lines running back and forth through the desired signal.

This may be corrected in the field, by the addition of a series-parallel resonant trap in the third video IF amplifier as illustrated in the sketch below:



### Trap Assembly:

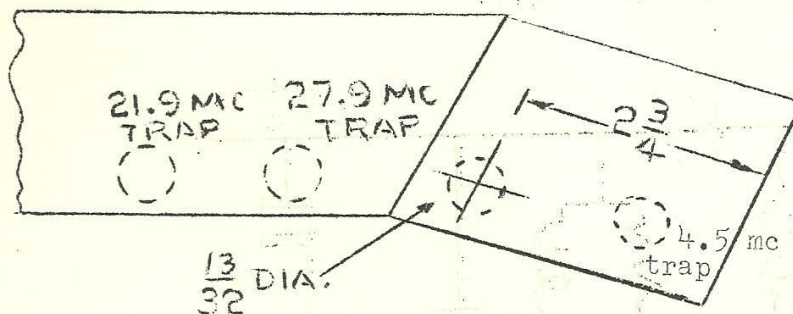
The parts required are one 2.5 uuf, part #03014570, one 20 uuf, part #03013800 and one inductor assembly, part #21004491. Connect the 2.5 uuf capacitor to the lug to which the end of the winding closest the lug is soldered, leaving  $\frac{1}{2}$ " of wire between the body of the capacitor and the lug.



Connect a  $2\frac{1}{8}$ " length of #18 bare-tinned copper wire to the other lug of the inductor. Connect the 20 uuf capacitor across both of the lugs of the inductor.

### Installation:

A  $\frac{13}{32}$  diameter hole should be carefully punched (using a Parker-Kalon Metal Punch XX) in the video IF amplifier shield plate as shown in the sketch below:



Use extreme caution when punching this hole so that alignment will not be disturbed.

Insert the trap assembly in the hole so that the lugs are parallel to the main chassis, and with the bare wire closest to the main chassis. Solder the bare-tinned wire to pin 3 of the video amplifier (V205). Solder the free end of the 2.5 uuf capacitor to the junction of L212, C288, R218, and Pin 2 of V204-A.

### Tuning Procedure:

The trap may be tuned using a signal generator or by utilizing the interfering station.

#### A. Setting the trap by signal generator:

Turn the contrast control to the extreme right. Connect a signal generator, 30% modulated at a carrier frequency 1.5 mc below the sound IF frequency, to pin 1 (grid) of V201 and chassis. Connect an oscillograph between pin 4 (grid) V205 and ground. Adjust coil for minimum deflection of the oscillograph.

#### P. Setting trap using two adjacent stations:

Tune receiver to sound of lower channel. Adjust contrast and brightness controls for best picture. Observe picture and watch for the interference. Tune trap from maximum inductance toward minimum inductance until the interference disappears. Rock trap tuning back and forth to be certain that trap is correctly set.

#### ADJUSTMENT OF ION TRAP MAGNET ON 12QP4 CATHODE-RAY TUBES

(Refer to page G-4 in the General Section. The procedure applies to all tubes using bent guns.)

#### REPLACEMENT OF 12JP4 CATHODE-RAY TUBES

All 12JP4's replaced under the warranty are being replaced by the 12RP4. The 12RP4 is physically the same as the 12JP4, with the exception of the gun, which is bent. Thus, an ion trap magnet must be used with this tube. The part number of the magnet used with the 12RP4 is 21004471.

#### RA-103 VERTICAL SYNC CIRCUIT MODIFICATION

Tests in the laboratory and field have indicated that the following circuit changes give a very substantial improvement in sync noise immunity. These changes are recommended for use in areas where noise causes the Teleset to lose vertical sync. These changes should be especially valuable in weak signal and high noise areas.

Refer to Fig. 1A showing the old or unmodified circuit and Fig. 1B showing the new or modified circuit when making the following changes:

1. Replace V205 the 6AC7 Video amplifier tube with a type 6AG7 tube.
2. Disconnect the low side of R219 (the 4.7K resistor in the grid circuit of V205) from the junction of R216 (120 $\Omega$ ) and R220 (15 $\Omega$ ).
3. Connect a 12K  $\frac{1}{2}$  watt resistor from the low side of R219 (just disconnected) to ground. Place a 25 mfd 25V capacitor in parallel with this resistor. Be sure to connect the positive side of the capacitor to ground.
4. Add a 27K  $\frac{1}{2}$  watt resistor between the junction of R219 (4.7K) and the 25mfd capacitor and 12K resistor added in step 3 and the junction of the -12.5 volt line and R216.

5. Remove R223 (3.6K) (the plate load resistor of the video amplifier) and replace with the two 6.8K 2 watt resistors connected in parallel. Connect one end of this combination to the low end of L215 and run a lead from the other end of this combination to the junction of R288 (the focus control) and R286B (the candohm strip resistor).
6. Remove R222 (3.3K, connected to C216B).
7. Add an 18K  $\frac{1}{2}$  watt resistor between the junction of L215, C217 and L216, and capacitor C283.
8. Remove capacitor C282 (connected from pin #7 V204B to ground). Remove capacitor C219 (located between pin #7 of V204B and pin #1 of V212A) and replace with a short lead, using pin #7 terminal lug to which C219 was connected.
9. Remove resistor R224 (located between pin #1 of V212A and ground).

Refer to Fig. 2A showing the old or unmodified circuit and Fig. 2B showing the new or modified circuit when making the following changes:

10. Add a 27K  $\frac{1}{2}$  watt resistor between the junction of C244 and R259 and pin #4 of V213.
11. Remove capacitor C252 (between pin #8 V213 and pin #4 V216A) and replace with 0.1 mf capacitor.
12. Disconnect the ground side of R269 (grid circuit of V216A). This will be connected in step #17.
13. Connect an 82 mmf capacitor between pins #4 and #5 of V216A.
14. Disconnect R271 (10K) from pin #5 of V216A. (This resistor will be replaced in step #18).
15. Connect a 5.6K  $\frac{1}{2}$  watt resistor to pin #5 V216A.
16. Connect the other end of the 5.6K resistor just added to a 27K 2 watt resistor. Run a lead from the junction of these two resistors to C216B.
17. The other end of the 27K 2 watt resistor is to be connected to the junction of R262 and R261 and to the low side of R269 the 1.2M resistor in the grid circuit of V216A.
18. Replace R271 with a 47K  $\frac{1}{2}$  watt resistor.
19. Connect a .1 mfd capacitor between pin #5 of V216A and the 47K just added.
20. Disconnect the blue lead of the primary of T201 from the +175 volt line and run directly to ground.
21. Remove R270 (the 12K resistor connected across the Brown Black winding of T201)
22. Remove R274, the 750K resistor located between pin #1 of V216B and the vertical hold control and replace with a 470K  $\frac{1}{2}$  watt resistor.

This completes the changes.

List of Parts Used in Modification

Quantity	Number	Description
1	25C00580	6AG7 amplifier tube
2	02037870	6.8K, 2 watt resistor
2	RC20BF273K	27K, $\frac{1}{2}$ watt resistor
1	RC21BF123K	12K, $\frac{1}{2}$ watt resistor
1	RC20BF183K	18K, $\frac{1}{2}$ watt resistor
1	RC21BF474K	470K, $\frac{1}{2}$ watt resistor
1	RC21BF562K	5.6K, $\frac{1}{2}$ watt resistor
1	RC41BF273K	27K, 2 watt resistor
1	03020420	82 uuf 500 volt capacitor, either mica or ceramic
1	03015310	25 uf 25 volt electrolytic capacitor
2	3-1391	0.1 uf 200 volt capacitor
1	RC21BF473K	47K, $\frac{1}{2}$ watt resistor.

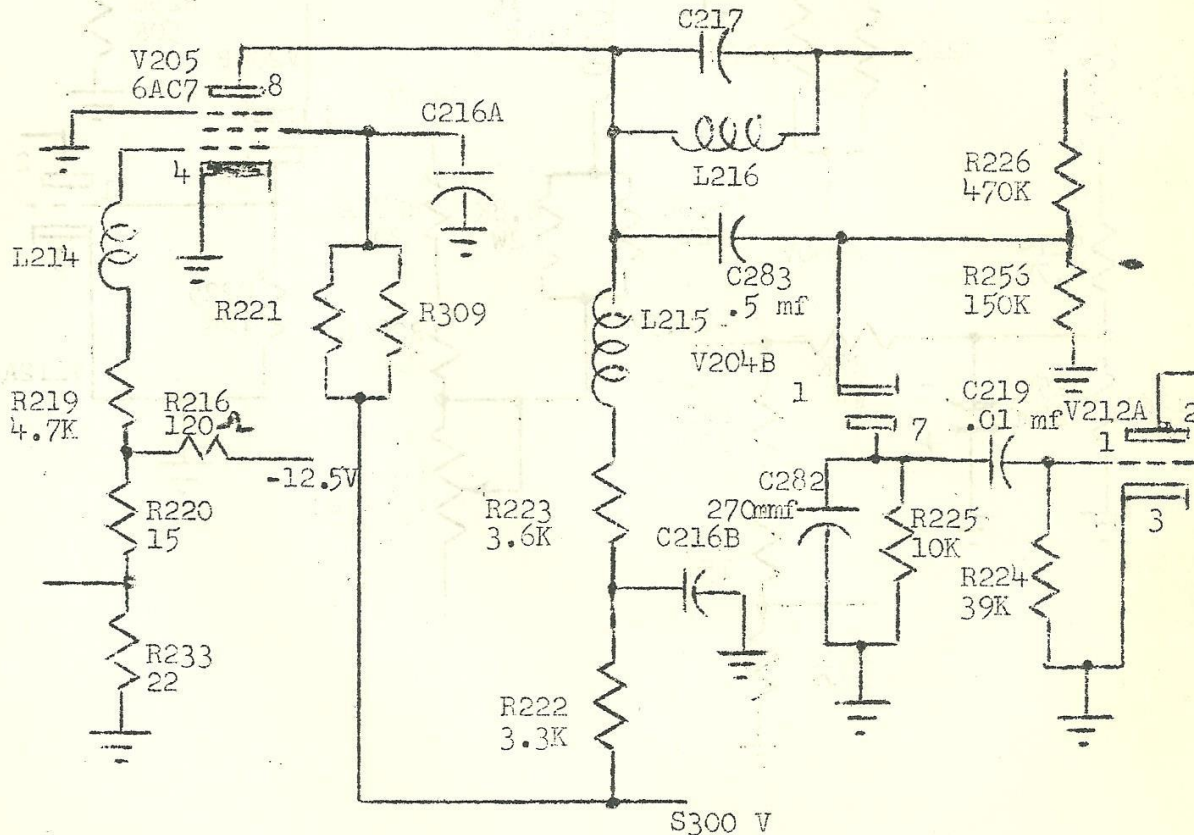


Fig. 1A OLD CIRCUIT



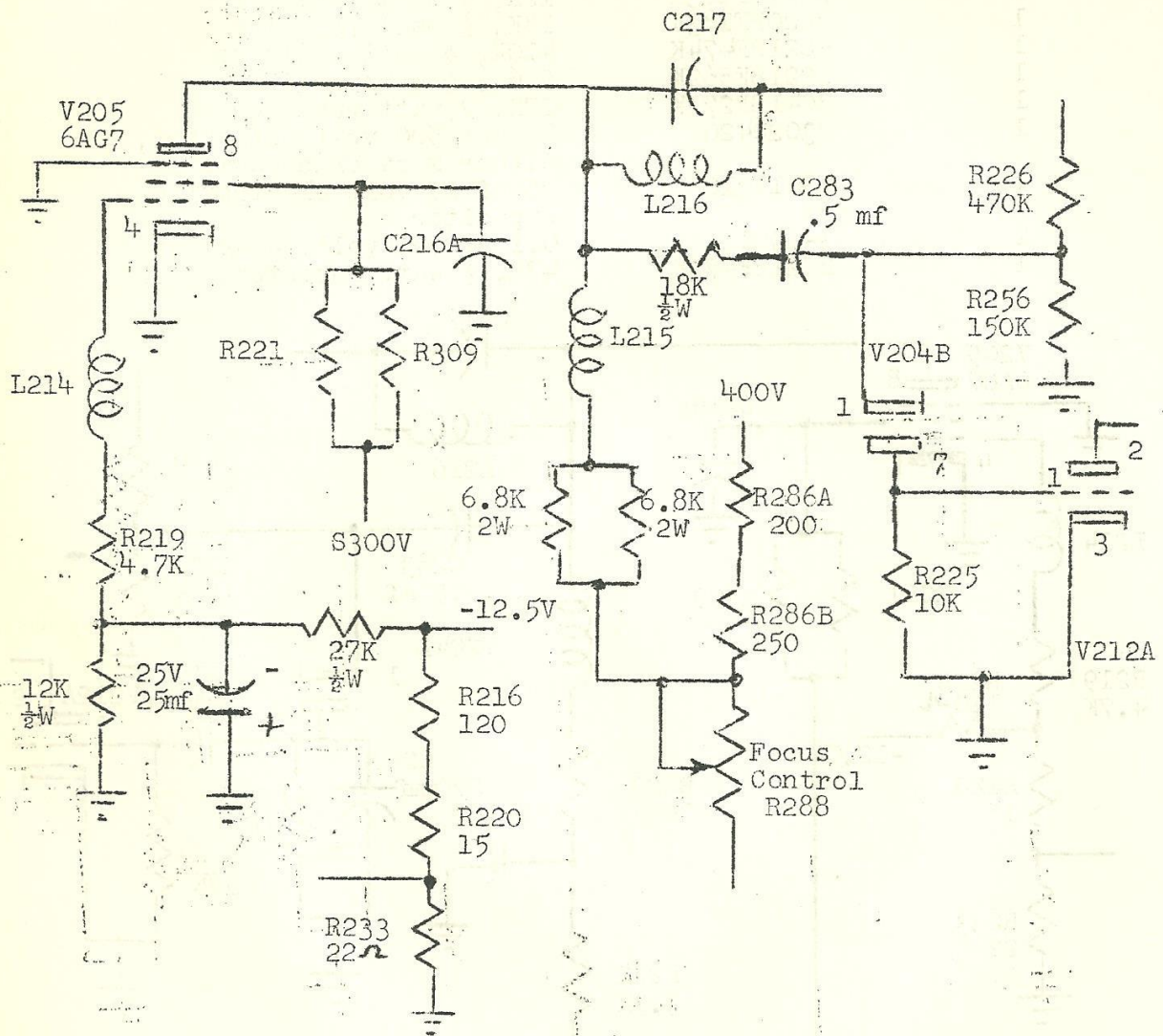


Fig. 1B NEW CIRCUIT

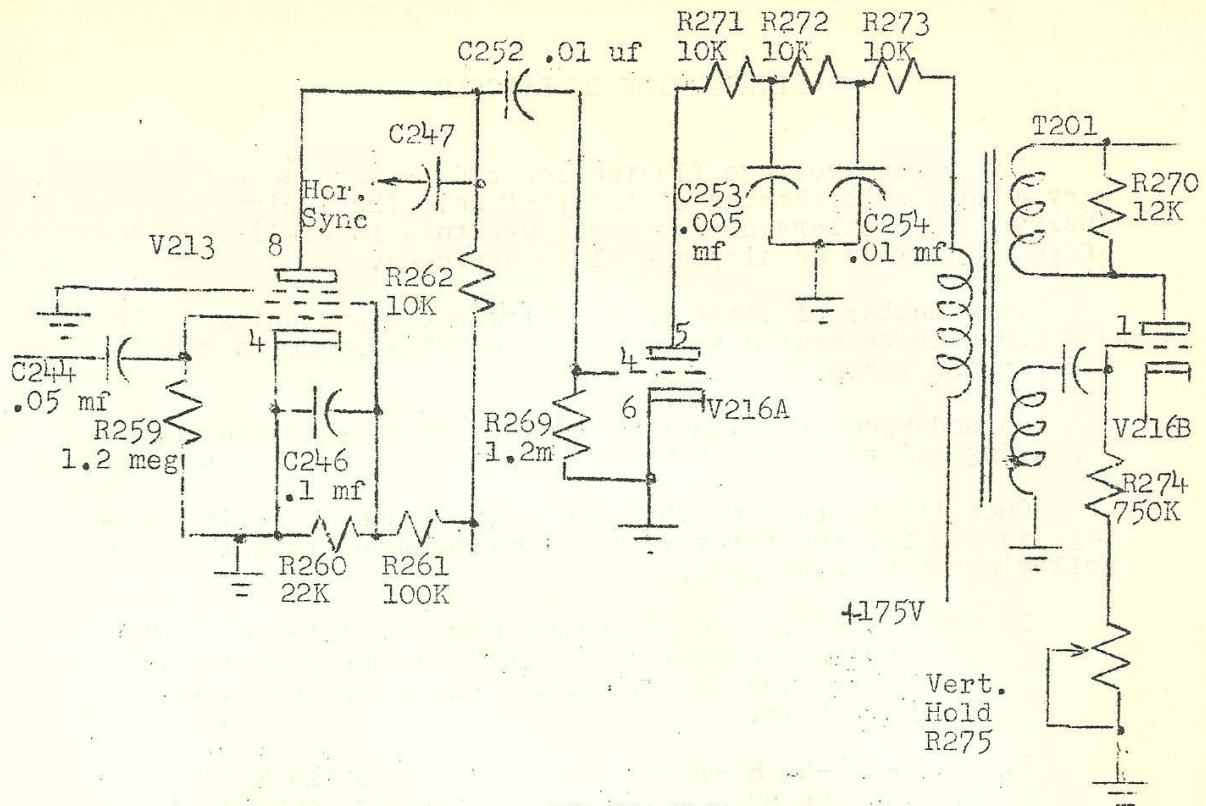


Fig. 2A OLD CIRCUIT

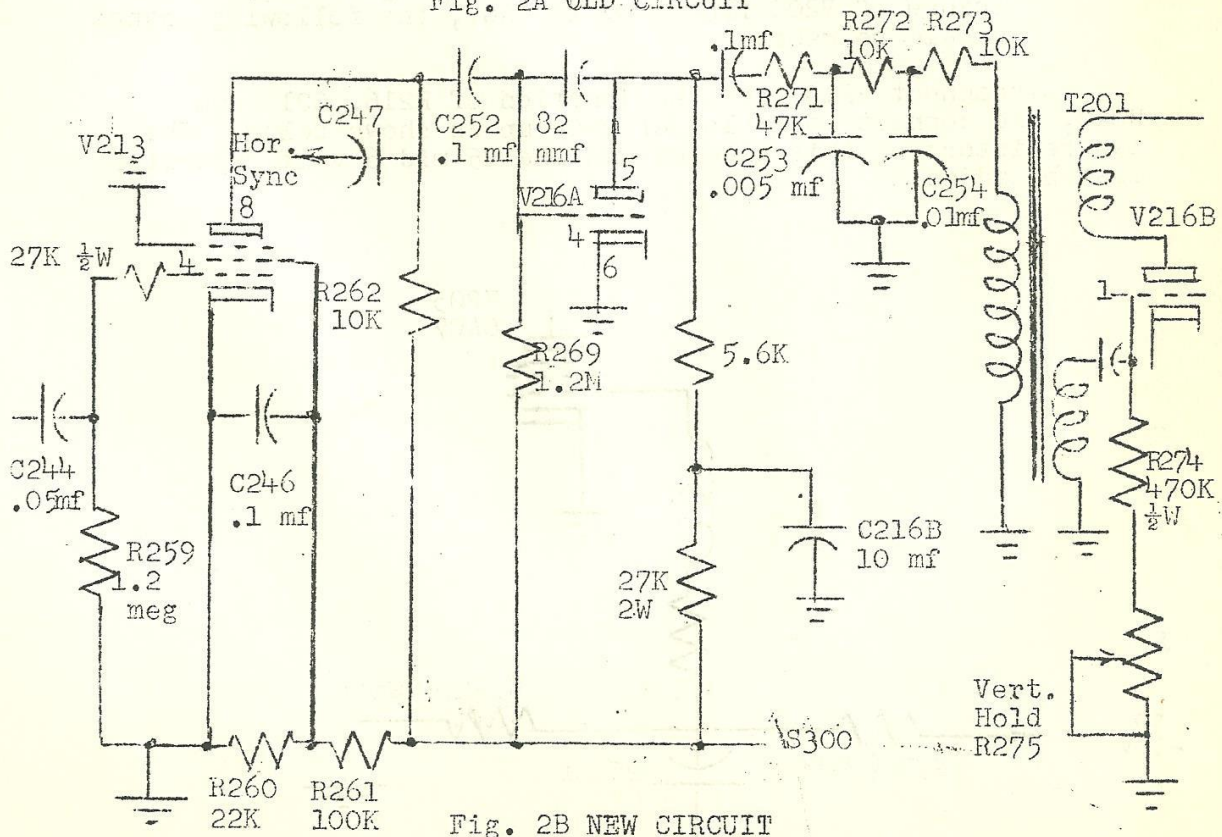


Fig. 2B NEW CIRCUIT

## ELIMINATION OF FLICKER

Power line voltage fluctuation can be the cause of a very annoying flickering of the picture. The indication observed on the screen of the picture tube is similar to the effect seen when an airplane flies overhead.

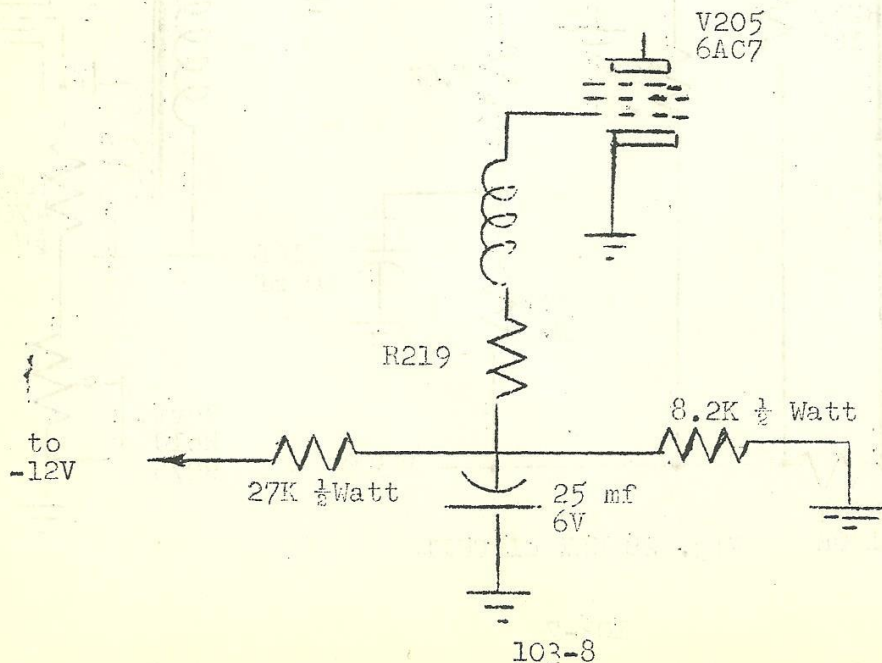
In a number of cases where flicker was encountered, it was found to be caused by a faulty installation or a bad 6AG5 in the video IF strip.

An undamped AC voltmeter having a range suitable for measuring 117 volts can be used to check the AC line voltage.

Once it has been established that fluctuating line voltage is causing the flicker, it is recommended that the following changes be made:

1. Connect a 0.5 mfd capacitor from the cathode of the CRT (arm of potentiometer R227) to the junction of R222, R223 and C216B. This change applies to all RA-103 models.
2. On RA-103-A, RA-103-B and RA-103-C models which have not had the sync noise immunity change involving the change of V205 from 6AC7 to 6AG7, the following change should be made:

Disconnect R219 from the junction of R216, C215 and R220, and connect to a bleeder made up as shown below. The two resistors of this bleeder and the 25 mfd 6 volt capacitor must be added.



This change will make a considerable reduction of the flicker for small amounts of line variation (well under one volt). For larger amounts of line variation, size fluctuation becomes as objectionable as brightness fluctuation and the only effective solution is to use a regulated transformer.

The Sola model CVA regulated transformer is recommended for use with the RA-103 Telesets. The list price of this item is \$37.50.