



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

FEBRUARY 1960

VOL. 2 NO. 2

## SPECIAL COMPONENTS IN TELEVISION RECEIVERS

An examination of the so-called "special" capacitors listed in television service manuals today is apt to prove very confusing to the average serviceman. This is understandable, unless he has taken the trouble to investigate the significance of the various designations which are used. The natural outcome of this condition results in the use of some capacitor close to the specified value, which happens to be handy and is assumed to be "just as good". This practice frequently leads to the addition of a new fault in the receiver although it may have corrected the original problem.

When a manufacturer specifies a particular type or characteristic for a capacitor, he has excellent reasons for doing so. As a serviceman, if you replace one of these components with an improper unit, you are in some manner degrading the performance capabilities of the receiver and, at the same time, you are not doing the proper job for your customer. A few of the problems which may be introduced by this practice are:

1. Regeneration or oscillation in I-F or R-F circuits.
2. Loss of sensitivity at certain frequencies.
3. Frequency drift in critical circuits.
4. Changes in some performance factors with changes in operating temperatures.

There are several designations which may be applied to "special" capacitors, and which may require some clarification. The most commonly used designations and their meanings are listed below.

Designation	Type	Capacity change with increased temp.
HiK	Tubular Disc Feed Thru	Up to 50% change
Semi-HiK	Tubular Disc	Up to 35% change
Semi-Stab. HiK	Tubular Disc	Up to 15% change
Stab. HiK	Tubular	Up to 7 1/2% change
NPO		Zero change
N750		Negative temperature co-efficient of 750 parts per million, per degree increase
P100		Positive temperature co-efficient of 100 parts per million, per degree increase
P100-N750		Range from positive 100 to negative 750 parts per million, per degree increase

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# Service Talk

FROM  
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ELECTRONICS PARK SYRACUSE, N. Y.

MARCH 1960

VOL. 2 NO. 3

## AUDIO BUZZ IN 17 INCH M5 CHASSIS TELEVISION MODELS

Residual audio buzz in the 17 inch M5 chassis models may be caused by the leads from the vertical hold control running too close to the volume control terminals. This vertical pick-up on the volume control terminals appears as a buzz in the speaker which may be changed in pitch by the vertical hold control.

The simple cure is to dress the gray and yellow vertical hold control leads away from the volume control terminals to eliminate the buzz condition.

## USE OF 6GH8 TUBE TO REPLACE 6EA8 TUBE IN 4-CHANNEL WIRELESS REMOTE RECEIVERS (M5 AND U4 CHASSIS MODELS)

When it becomes necessary to replace the 6EA8 tube in wireless remote receivers for any reason, it is recommended that a 6GH8 tube be used as a direct replacement.

The 6GH8 is an improved tube developed to replace the 6EA8 where gain is a factor.

This recommendation, as a direct replacement, is only for this one application and not for replacement as a chassis tuner tube.

## INSTALLING KNOB COMPRESSION RINGS

An easy way to place the knob compression ring on a TV knob shank is to use an installation tool available from Snap-On Tools Corporation. This pair of pliers is used to expand the ring for quick insertion on the knob and bears the Snap-On catalog number 70A.

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# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

APRIL 1960

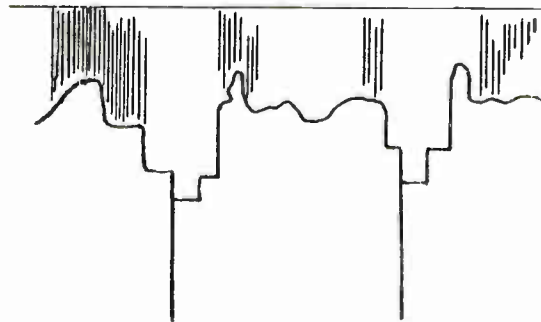
VOL. 2 NO. 4

## "U4" Chassis Sync Instability

Certain instances of poor horizontal sync stability and a soft vertical hold condition may be traced to the AGC filter capacitor C252. This condition results from the capacitor becoming open.

When measured with a VTVM, the average AGC voltage may be normal but examining the waveform at Test Point VII (AGC line) shows the presence of the Keyer pulse. The scope should be set to give two waveforms of 60 cycle sync. Further checking of Test Point IV at the video detector shows an excessively peaked and narrowed sync pulse as shown below. This waveform results from the cancelling of AGC at pulse time by the keying pulse and therefore produces greatly exaggerated sync spikes which cause the sync instability.

The cure for this condition is to replace the capacitor, G-E catalog number WT25X23. The red durez dipped type capacitor should be used as a replacement rather than those with a black molded case.



TV Service Guides

New editions of Volume 1 and Volume 2 Service Guides are now being made available. These Guides have been well accepted as a reference for service schematics and parts information. Both volumes have been completely revised and corrected and have a parts cross reference section to convert old catalog numbers to the new "WT" system. Each guide carries a price of \$2.50. Combined, they cover years 1947 thru 1955.

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# Service Talk

FROM  
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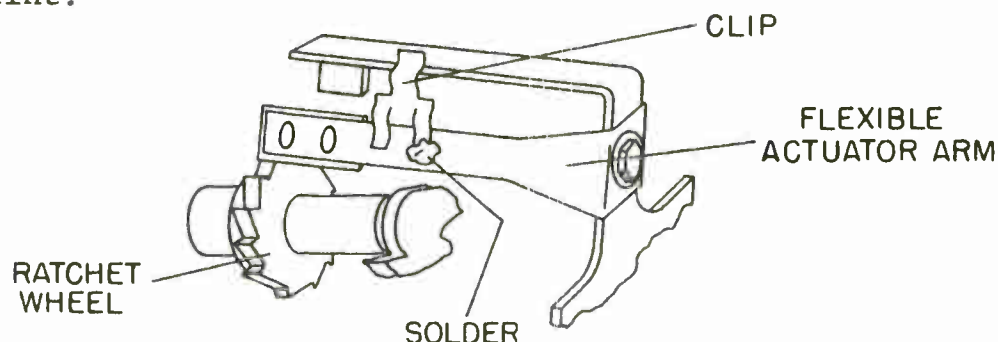
MAY 1960

VOL. 2 NO. 5

## M6 Chassis Stepping Relay Service

The remote control system, being introduced to the field presently, employs a stepping type relay for volume level selection. It has been noted on some early shipments that the flexible actuating arm of this relay may become stuck during shipping or when the receiver is subjected to a sudden jar. If this condition occurs, it is necessary to open the remote receiver chassis and move the flexible arm away from the ratchet wheel to its natural position. This will clear the condition as long as the receiver is not transported. However, to permanently remove the possibility of a sticking relay, a detector mounting clip (WT3X48) may be installed and soldered to the actuator arm as shown below. It is not necessary to remove the relay from the unit to make this modification.

Relays now supplied have been modified to prevent future complaint.



## The Danger of Anode Grounding

Every General Electric receiver carries a label warning persons not to discharge the anode to earth ground. Always discharge the anode lead to the main chassis to prevent shock hazard.

Should a bench ground or water pipe be used for grounding, there is a possibility of breaking down the insulation between the primary and secondary of the power transformer. While the effect may not be noticeable in the operation of the receiver, this does remove the secondary isolation and places the chassis at line potential thus creating the shock hazard.

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ELECTRONICS PARK SYRACUSE, N. Y.

INSIDETV

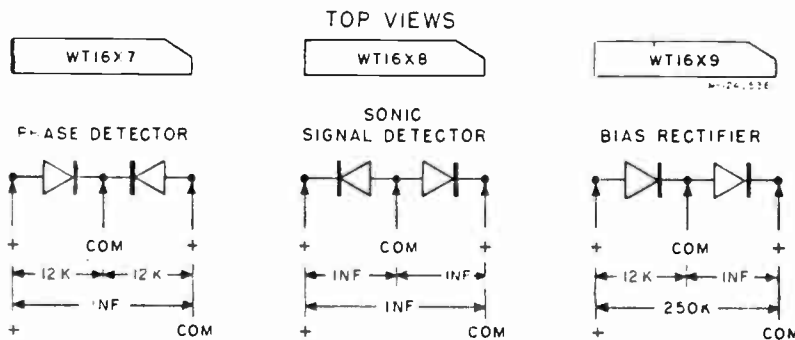
JUNE 1960

VOL. 2 NO. 6

## Identifying Dual Diodes

The new line of General Electric television receivers employs three dual diode combinations. One is employed as the horizontal phase detector (WT16X7). Two are used in the Sonic Remote Receiver Circuitry, the first as a Signal Detector (WT16X8) and the other as a Bias Rectifier (WT16X9). Physically these diodes appear to be much the same but electrically they differ greatly. The Phase Detector has common anodes, and the Bias Rectifier is series connected. While each diode is plainly marked, a simple ohmmeter check can eliminate any confusion with these components.

The diagram below shows the measurements taken with a Simpson 260 meter. A VTVM may be used and the polarities of conduction shown will remain the same; however, the values may differ with meters as is the case of using other VOM types.



SIMPSON 260 METER SET FOR HIGH OHMS (RX 10,000)

## Tube Saver

A note of caution for those not already informed about breakage of new 6CD6 horizontal output tubes on "EE" chassis television receivers. The new design of the glass on the 6CD6GA tube interferes with the tube retainer causing glass breakage.

The tube retainer is primarily a shipping security device; therefore, it is of little consequence to remove the retainer. Bending the retainer back and forth to break it off is all that is necessary and the new tube will not be subject to damage.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

INSIDE TV

JULY 1960

VOL. 2 NO. 7

## SONIC REMOTE CONTROL

These corrections and additions to the sonic remote control system alignment, covered in the M6 preliminary 32-2000-60 should be noted. The receiver adjustment location view Figure 20 on Page 13 should be changed to show the positions of L702 and L703 reversed with L703 located above L702.

Under Remote Receiver Alignment on Page 13, Step 6 sets the sensitivity control to give a -10 volt reading at test points II or III. This setting should be made before Step 2 in order to provide alignment free of voltage variations.

Step 9 states: Reset the sensitivity control to where the relays operate properly with the desired push buttons.

The sensitivity control R720 should be set to provide proper operation of each push button function under the noise conditions of the location of final installation. In most cases this control may be set to provide a static bias voltage at test points II or III of -6.5 to -8 volts.

Under some noise conditions, intermittent bells or chimes, a bias slightly higher than normal should be used.

## TV "HOT LIST"

Initiating a new service to subscribers in this issue is the TV Hot List for "strayed" General Electric TV receivers. Service dealers and technicians should always keep a record of model number and serial number of each receiver accepted for service. Lost, strayed or stolen sets may then be reported to law enforcing agencies for recovery. A quick check of serial numbers listed as "Hot" against those taken in for service may help some brother technician to recover a serious loss.

Whenever a receiver is found to have a serial number appearing on the "Hot List" report this information to the dealer reporting the loss. Your cooperation is requested in an attempt to locate the following TV receiver reported missing:

Model	Serial No.	Contact
M300TGR	518146	Ted J. Krasinski Aliquippa Radio, Inc. 3986 Bradford Road Aliquippa, Pennsylvania



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

INSIDE TV

AUGUST, 1960

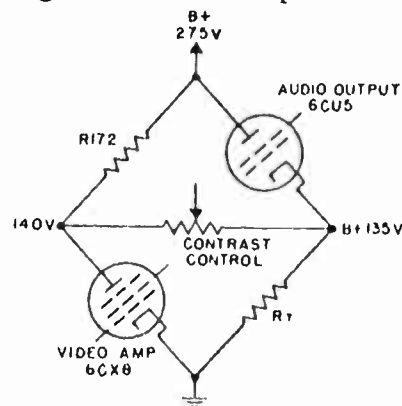
VOL. 2 NO. 8

## Servicing The M-6 Contrast Control Circuit

One of the problems encountered in servicing television receivers is secondary component failures. By this we mean the failure of a component not associated with the original problem. This condition appears as a result of a redistribution of current when some radical circuit change occurs due to shorting or opening of a component. Since it is not economically sound to design a television chassis to prevent all secondary component failures, this problem will occur at times.

The contrast control circuit used in the M6 and several other chassis may exhibit a secondary failure under certain conditions. This is most easily shown by re-arranging the video amplifier and contrast control circuit as follows:

As shown at the right, R T (representing all circuits appearing between ground and B+ 135V) together with the audio output tube, form a voltage divider. Likewise, the video amplifier tube and its plate load R172 form another divider. The contrast control connects from the plate of the video amplifier to the B+ 135 or to about 5 volts difference in potential. It is readily seen that if the video amplifier tube opens, the plate assumes a potential of 275V and places 140 volts across the contrast control. Similarly, if for some reason the B+ 135V becomes shorted to ground, the control has 140 volts applied. Again if the 6CU5 shorts or R172 opens, excessive voltage appears across the contrast control. Its wattage dissipation is exceeded under these conditions and may result in damage, if continued.



To avoid setting up the above condition, the receiver should be turned off before changing tubes, particularly the 6CX8 and 6CU5. The contrast control should be checked through its range for proper operation, following any condition of overload. Any sudden change of contrast or erratic video when the control is rotated indicates burned spots. An open control will result in a very little change of contrast, but will introduce a progressive smear as the control is rotated toward the counter-clockwise end.





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

SEPTEMBER 1960

VOL. 2 NO. 9

## REMOTE TRANSMITTER ALIGNMENT

The alignment procedure for the sonic remote transmitter shown on page 13 of the M6 preliminary manual 32-2000-60 may be confusing in some steps. For this reason an improved procedure to follow is outlined here. The alignment point location diagrams for the receiver and transmitter are also shown to correct those shown in the manual.

### Required Equipment:

- (a) An operating remote control receiver
- (b) A VTVM with at least ~~100~~<sup>10</sup> megohms input impedance.

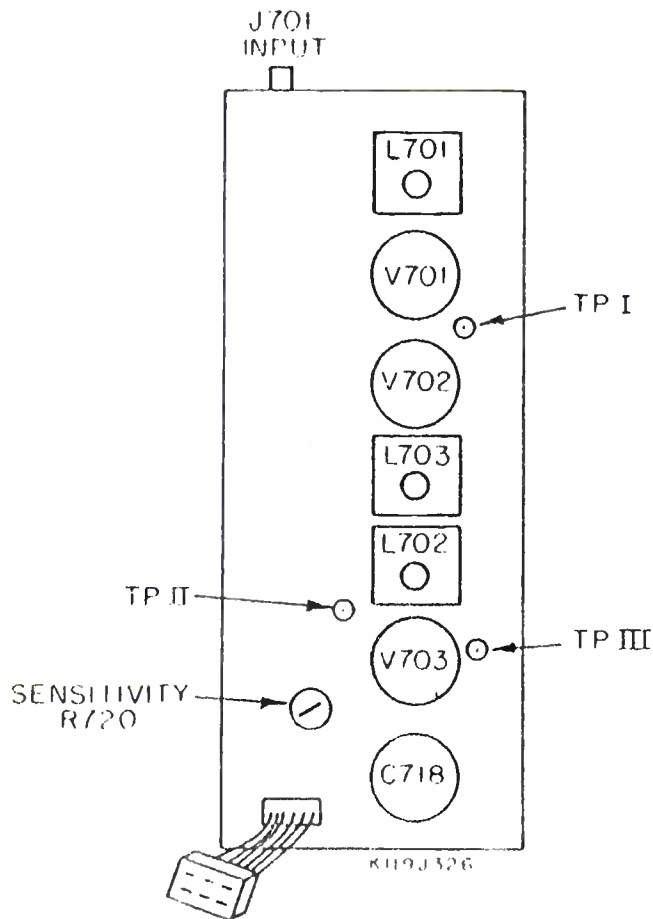
### Procedure:

Place the remote transmitter facing the remote receiver pickup with the transducers approximately one foot apart. Set the sensitivity control on the receiver (R720) to its maximum counter-clockwise setting.

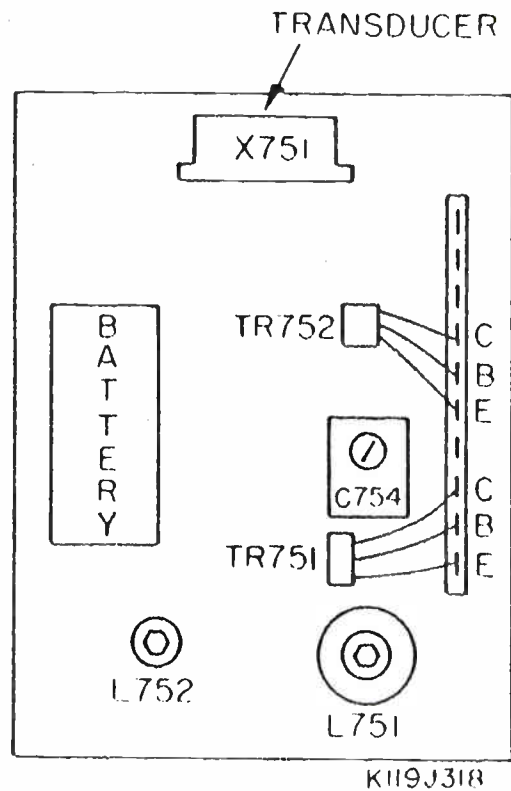
1. With the VTVM connected to Test Point III, press the select button and tune L751 for a minimum negative reading.
2. With the VTVM connected to Test Point ~~III~~<sup>II</sup>, press the volume button and adjust C754 for a minimum negative reading.
3. Select the button with the greater negative reading and hold this function while adjusting L752 for minimum negative reading.
4. Re-check the output of each function. If the same function as in 3 is the weaker, no further alignment is necessary. If, however, the situation is reversed, repeat steps 1 thru 4.

(Over)

INSIDE TV



SONIC REMOTE RECEIVER



SONIC REMOTE TRANSMITTER

- Reset the sensitivity control on the receiver (R720) to provide proper operation of each push button function under the noise conditions of the location of final installation. In most cases this control may be set to provide a static bias voltage at Test Point II or III of -6.5 to -8 volts. Under some noise conditions (intermittent bells or chimes) a bias slightly higher than normal should be used.

NOTE:

It is sometimes possible to obtain increased range by repeating steps 1 through 4 with increased space between the transducers.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

OCTOBER 1960

VOL. 2 NO. 10

## ERRATA

The following corrections and additions should be recorded in the appropriate publications for future reference.

Refer to September 1960 issue of Service Talk covering the alignment of the ceramic transducer type Sonic Remote Transmitter. In Step 2 of the Procedure, the VTVM should be connected to Test Point II of the receiver.

Refer to the M4 chassis final service manual 32-258, page 33. The chart at the top of the page listing wire wrap interconnections, \*4 should read: \*4. to R302 and \*6 on the IF board.

Refer to the M5 chassis final service manual 32-259.

1. Page 70, Replacement Parts List; WT86X82, WT86X88, WT86X91, and WT86X94 VHF Tuners; Coils and Transformers - WT37X26 - T101 - Antenna Transformer is the only part used on WT86X91 and WT86X94 tuners. No mention of these two tuners is carried on the VHF tuner production changes on page 35, in as much as the tuners mentioned used only late production components.
2. Page 71, Replacement Parts List, Main Chassis, Potentiometers; Add: WT49X333 -R319, S401 - 1 Meg 30%, Volume w/push-pull switch for models M300T, M301T, M302T, M303T

## "HOT LIST"

The July issue of Service Talk carried a new service to the industry by publishing serial numbers of lost, strayed or stolen receivers. This "Hot List" is being favorably received by our readers and will be continued when such incidents are brought to our attention.

OVER-

For the interest of those involved, it should be remembered that the General Electric Company is performing a service for which there is no check on the accuracy of the information supplied. The General Electric Company, therefore, cannot be held legally responsible for any error in information or incident that may occur from such error. All correspondence regarding items listed on the "Hot List" should be directed to the persons listed with the lost receiver information, not to the General Electric Company.

The following list of receivers has been submitted for "Hot List" inclusion. Contact the person listed if any information is available on these receivers.

<u>MODEL</u>	<u>SERIAL NUMBER</u>	<u>CONTACT</u>	
M300TGR	214989	Mr. I. Lawton Eastland Furniture 4242 E. 8 Mile Rd. Detroit 34, Mich.	
M310VEB	928836		
M310VVY	926997		
R306VWD	957059	956664	Mr. Ray Latesky R & L TV 912 N. Saginaw Flint, Mich.
	956605	956902	
	956906	957164	
	956852	957086	
	956830	956804	
	956975	957200	
	956840	956947	
	956815	957127	
	957072	957184	
M302TBN	160684	Mr. Jack Dawson Auburn Radio Co. 516 Pontiac Ave. Cranston, R. I.	
17P1330	217403	Courtnage & Sons Box 207 Big Sandy, Montana	





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

NOVEMBER 1960

VOL. 2 NO. 11

## BARS OF INTERFERENCE

Certain receivers equipped with M4, M5, and early M6 chassis will display an interference pattern similar to two hum bars when receiving extremely weak signals. This condition will not be apparent on normal or strong signal operations.

Basically, the cause of this interference has been traced to the re-radiation of the RF signal from the receiver power supply. A simple change will eliminate the interference. Disconnect the grounded end of the capacitor connected to pin 4 of the 5U4GB low voltage rectifier and connect it to pin 2. This change has been incorporated in recent M6 chassis.

## CHANGES AND CORRECTIONS

Those perfectionists who are hunting for a VTVM with a 100 megohm input impedance to align sonic remote receivers and transmitters as described on page 13 of the M6 preliminary service notes 32-2000-60 can stop looking. Any good VTVM with a 10-25 megohm input impedance will be perfectly suitable for the measurements required. This error is also carried in the Service Talk letter Vol. 2 #9.

M6 and U5 preliminary service notes covering the replacement parts for the power tuning and AFT unit contain an error in parts cataloging. Symbol (5)-CLIP-retainer (fine tuning knob) should be listed as WT3X325 and not as WT3X335. Please make an extra effort to correct this error in your copy of the service notes to prevent ordering an incorrect part.

Some confusion has been made in ordering new picture tube masks for models M740, M741, M750, M751, M782, M783. Note that the WT96X58 mask described in the M6 preliminary Service Notes 32-2000-60 should include in the description "with gold frame." The gold frame is an integral part of the mask.

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# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

DECEMBER 1960

VOL. 2 NO. 12

## SEASONS GREETINGS

The members of the Product Service Section of the Television Receiver Department wish to extend to each and everyone a Very Merry Christmas and a Happy and Prosperous New Year. May our association in the years to come have mutual understanding in our common goal to service and satisfy our customers.

## WT86X81 TUNER COMPONENTS CHANGE

One of two types of oscillator trimmer capacitors (C123) was used on the WT86X81 found with the M5 chassis tuner. On the early version tuners this capacitor was mounted on the top deck of the tuner by forcing the capacitor body into a cylindrical metal shield. Late version capacitors are a ceramic type mounted to the top deck with a serrated nut. Only the early version type of replacement capacitor is shown in the parts list of the M5 chassis service notes. For late version tuners the complete assembly--CAPACITOR-TRIMMER, .5-3 $\mu$ f., with screw and tension nut is now available under part number WT30X48.

To prevent time consuming errors in parts ordering, write the above information in the back of your copy of the M5 Service Manual and make a reference note on the page with the WT86X81 tuner replacement parts.

## "HOT LIST" ADDITIONS

The following missing receiver should be added to your "Hot List":

Receiver	Contact
Model M302TBN Serial No. 160684	Jack Dawson Auburn Radio Company 516 Pontiac Avenue Cranston, Rhode Island

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# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JANUARY 1961

VOL. 3 NO. 1

## DIODE TEST PROCEDURES

Starting in this issue is a simplified, in circuit, test for semi-conductor diodes used as phase detectors, bias rectifiers and signal detectors. Don't miss the in circuit phase detector diode test appearing on the reverse side of this page. Next months issue of "Service Talk" will cover wireless remote diode checking.

## "HOT LIST" ADDITIONS

The acceptability of the General Electric "Designers" in the black market must be good judging from the number of sets "missing" in the field. The following receivers, models and serial numbers should be posted with the previously published "Hot Lists."

<u>MODEL</u>	<u>SERIAL NUMBER</u>		<u>CONTACT</u>
M310VVY	897230		H. P. Johnson & Co. 209 S. Fourth Street Ann Arbor, Michigan NOrmandy 3-4124
M306VWD	553312		
M310VEB	020177	020263	Walker Martin, Inc. Operating Manager Charlotte, N. C. Phone ED 4-4613
"	009815	020184	
"	020055	020192	
"	009958	020179	
"	020079	020011	
"	020135	007926	
"	020095	009985	
"	020142	009889	
"	020062		
M306VWD	553304	553132	Beacon Inc. 651 W. 12th Street Flint 3, Michigan
M310VEB	929053	929327	
"	928957	928911	
M310VVY	925944	926995	
"	926955	926838	
"	01074		

(over)

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## TESTING HORIZONTAL PHASE DETECTOR DIODES

IN CIRCUIT ON THE

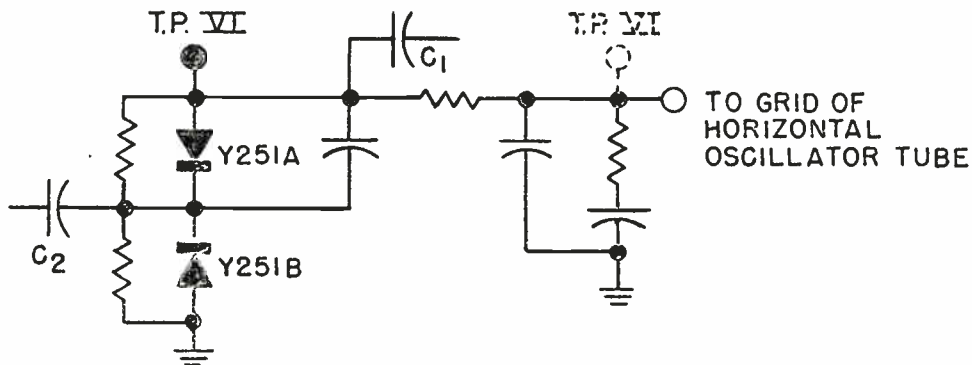
M4, M5, M6, U4, & U5 CHASSIS

Symptom: Horizontal frequency off - may be readjusted by hold control but sync is soft or absent.

The majority of phase detector defects is an open or a shorted diode condition. A VTVM connected to T.P.VI of the diagram below should show about -1.0 volt with a signal present on a normally operating receiver. If the voltage at T.P.VI is quite far off, a bad diode can be suspected. Obviously, horizontal circuit tubes should be tried first. Other receiver components can also cause the frequency to be far off.

To make an initial check to determine whether the horizontal oscillator system is on frequency, place a short circuit across both diodes. Adjustment of the horizontal hold control and stabilizer coil should cause the horizontal oscillator to produce one upright picture on the screen, although not locked in sync. If this is the case, then the oscillator circuit can be considered operating properly. Remove the short from across the diodes. The diodes should next be tested in circuit as described.

With the VTVM connected to T.P.VI, measure the voltage available. If the voltage rises to -6 to -8 volts, diode Y251B is open. If the voltage is +6 to +8 volts, diode Y251A is open. A reading of -10 to -12 volts at T.P.VI indicates a shorted Y251B. Positive readings of the same magnitude indicate a shorted diode Y251A. If  $C_1$ , or  $C_2$  are shorted, a positive voltage will be present at T.P.VI. The probability of a reading of +6 to +12 volts is very small, however.



In some early General Electric receivers, the anode of Y251B is raised above ground by some fixed positive voltage. The method of testing described above can still be used if the fixed voltage is factored into the VTVM readings. This value can be determined by placing a short across the two diodes and reading the voltage at the test point.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

INSIDE TV

FEBRUARY 1961

VOL. 3, NO. 2.

## MORE ON DIODE TESTING

Continuing the semiconductor diode service story from the January issue, this month we present service hints for "in circuit" checking the dual diodes in the Sonic Remote receiver currently in use.

I. Symptom: Remote control inoperative, relays remain closed continuously. VTVM readings on T.P.II or T.P.III of the diagram show no DC bias voltage.

Depending on the sensitivity control setting, the DC bias voltage measured with a VTVM at T.P.II or T.P.III will be -4.5 volts to -11 volts in a properly operating unit.

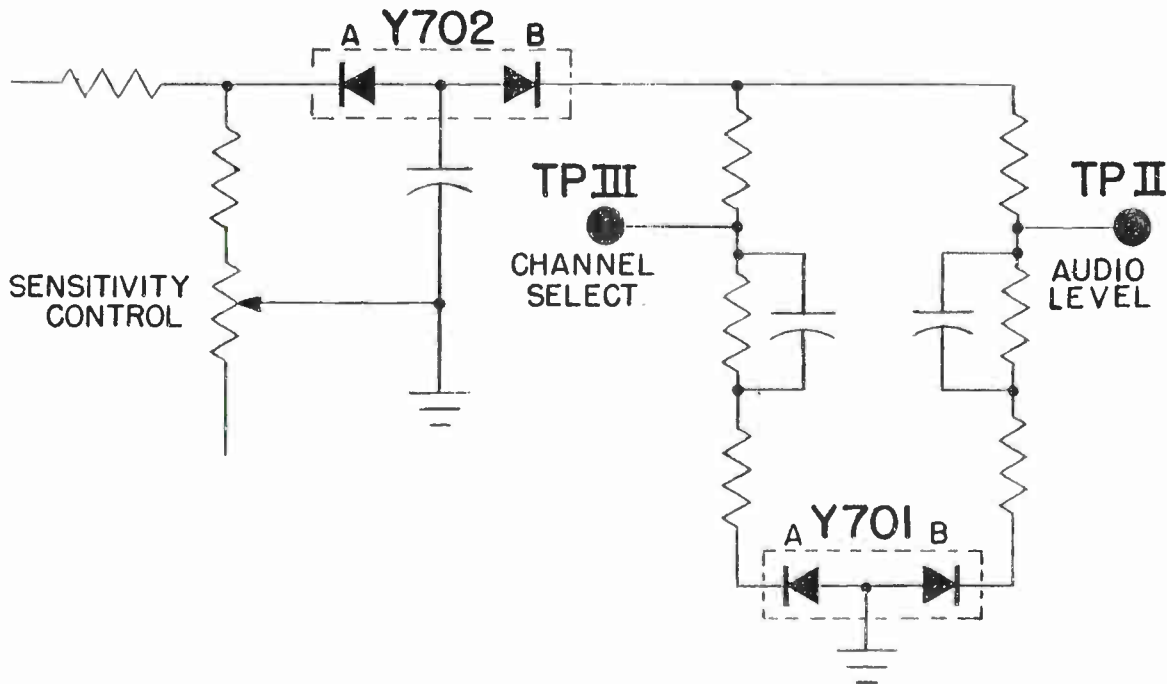


Diagram showing Bias and Signal Detector Diodes in the Sonic Remote Receiver System.

1. Check for 5 to 12 volts AC at cathode of Y702A as sensitivity control is turned from maximum clockwise to maximum counterclockwise. If proper AC voltage is present, place a short across Y702A. Should DC bias now appear at T.P.II or T.P.III, Y702A is open.
2. If bias does not appear, remove short from Y702A and short across Y702B. If bias now appears, Y702B is open.
3. If bias still fails to be present, diodes Y702A and B can be assumed to be good, and fault lies within the other circuitry.

II Symptom: Audio level and/or channel select functions operate intermittently without direction from the transmitter.

Using a VTVM where the DC bias measured at T.P.II and/or T.P. III is about -7 volts, place a short across Y702A. If DC bias disappears, Y702B is shorted. Check Y702A for a short condition by shorting across Y702B. If Y702A is shorted, noise immunity of sonic receiver is eliminated, and even the television receiver's horizontal pulses will trigger the remote control functions.

III Symptom: Audio level or channel select functions do not operate when transmitter buttons are depressed.

1. When channel selection is not possible, using a .1 mfd capacitor attached to a tube filament terminal (6.3v AC) feed the 6.3v AC to the cathode of Y701A. The DC bias reading at T.P.III should move 2.5 to 3.0 volts closer to zero proving Y701A is good.
2. To determine whether the audio level detector diode is good, feed the 6.3v AC to the cathode of Y701B. A normal diode Y701B will cause the DC bias at T.P.II to be brought 2.5 to 3 volts closer to zero volts bias.

#### WIRELESS REMOTE BATTERY REPLACEMENT

Batteries used in all models of General Electric Remote Control Transmitter units should be the same type 8.4 volt unit - Mallory No. TR 146. Regardless of the type number listed for replacement in the hand unit or printed on the battery, the Mallory TR 146 or equivalent should be used. This battery carries the General Electric part number

WT15X2

WT58X1





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

MARCH 1961

VOL. 3 NO. 3

## LW CHASSIS SERVICEABILITY

The General Electric CELEBRITY Portable TV is powered by the new LW chassis which sets a new standard of serviceability in portable TV receivers. Removal of the cabinet back on the LW chassis receivers provides complete accessibility to most components.

1. TUNER--Tuner cover easily removable for complete service.
2. I.F. BOARD--This board swings out, still in operating condition, by removing five screws holding it to the main chassis. With the board swung back over the chassis edge it may be captivated in this open position by replacing one screw in the hole at the left bottom edge of the board.
3. VIDEO DETECTOR--Assembly plugs into I.F. board for maximum accessibility.
4. FUSES (3)--Both line and B plus boost fuses are N type. The wire filament fuse is located on the I.F. board and is also easy to replace.
5. SWEEP BOARD--This board may be tilted up, still in operating position, by removing the three screws holding it on top of the high voltage assembly.
6. HIGH VOLTAGE TRANSFORMER--Replacement requires only the removal of the cabinet back and mechanical disconnection of the front assembly. The transformer may then be replaced by following the M4-M5-M6 chassis basic procedure after removing the screws holding the high voltage assembly rear cover plate.

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Front assembly mechanical separation provides access for servicing the few components not accessible from the rear. Removing the four 5/16 inch screws holding the front assembly at the chassis corners and swinging the assembly out at the speaker end is all that is necessary. The receiver remains in operating position.

The front assembly (mask, safety window and picture tube) may be partially or completely dismantled as servicing requires. Only when the picture tube must be removed does complete electrical disconnection and withdrawal of the tube become necessary.

For complete removal of the front assembly, the picture tube socket, yoke clamp, yoke and anode lead also must be removed. The assembly can be withdrawn and placed face down on a soft cloth to protect the curved safety window and picture tube.

#### ERRATA

The February issue of Service Talk incorrectly lists the part number for the 8.4 volt battery used in all battery operated remote transmitters. This battery should be listed with General Electric part number WT58X1.

Y702, the bias rectifier diode, is incorrectly drawn on the diagram of the February Service Talk. Y702 is a series type semiconductor dual diode with Y702B reversed from that as shown.

#### "HOTLIST" ADDITIONS

Latest members to join the "Hot List" are noted below. Please add the following to those already announced in earlier Service Talk issues.

MODEL	SERIAL NUMBER	CONTACT
GE TV 21C1563	310391	Mr. A. Minoff
" " 21C2443	930900	Capitol Wholesale Corp.
" " 21T3432	745811	87-40 121st
" " 17T3316	935046	Richmond Hill 18, N. Y.
" " 17T3320	440650	
" " 17T3321	420789	
" " 17T3331	420804	
" " 17T3305	411972	
" " 17T3332	353573	



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

APRIL 1961

VOL.3 NO.4

## A FINE TUNING PROBLEM ON M6 & U5 POWERED SELECTOR SETS

**The Problem:** No fine adjustment is observed when turning the fine tuning knob on a powered selector receiver.

**The Reason:** There is insufficient gripping or clutch action between the fine tuning gear shaft and the butterfly. This loss of drive in the clutch, means the butterfly will not raise the gear shaft to allow the gear to engage the tuning gears.

**The Cause:** Listed here are four possible causes for this problem. First, the application of the materials used in this assembly requires that no lubricant should be used. Should oil or grease be applied to these particular parts, there is excessive slipping and, therefore, poor clutch action.

Second, when the butterfly compression ring has been weakened or distorted, insufficient pressure is exerted to create good clutch action.

Third, improper assembly of the butterfly compression ring on the butterfly will cause a weak clamping action and associated poor clutching.

Fourth, over-tightening the nut at the front of the gear shaft, securing this assembly in the tubular shaft, will prevent full movement of the shaft within the tubular shaft and restrict the raising action, thus preventing the engagement of the gears.

**The Cure:** In all cases, it will be necessary to remove the chassis or power selector assembly from the cabinet. Likewise, the gear box will require disassembly for access to the butterfly and gear shaft. The next problem, is to remove the gear shaft and butterfly assembly from the tubular

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A PLAN "D" PUBLICATION

INSIDETV

shaft. This requires removing the nut at the front of the assembly. Care must be taken not to destroy the threads on the end of the shaft.

The butterfly must be removed from the shaft, but it will be necessary to pry off the splined washer at the rear of the shaft. In most cases, this will destroy or seriously damage the washer and require a new washer in reassembly. Great care must be taken not to damage the shaft when removing the washer. The butterfly may now be removed from the shaft.

Having removed the gear shaft and butterfly assembly from the tubular shaft, and after removing the butterfly from the rear of the gear shaft as outlined, it is now necessary to remove the lubricant on the shaft or butterfly. Due to the nature of the material, normal solvents should not be used, but the parts should be wiped clean with a cloth.

To reassemble the components, a new butterfly compression ring is required in many cases to eliminate weakened or distorted compression rings.

A final analysis of the overall service problem reveals then, that the most effective procedure to follow would be to replace the assembly with the following inexpensive new parts which will greatly improve the operation of the fine tuning and also reduce the service time required.

These new items include:

1-WT69X210	Fine tuning gear and shaft
1-WT3X323	Butterfly
1-WT3X352	Butterfly compression ring
1-WT3X42	Retainer washer, splined

To prevent damage to the butterfly or the butterfly compression ring, the simplest method of applying the ring is to lay the ring flat on a hard surface and press the butterfly into the ring with the thumb over the flats of the butterfly, compressing the split shaft section slightly to fit the compression ring.

Precaution should be taken when forcing the splined washer on the shaft so as not to gouge the end of the shaft excessively, and do not over tighten the nut when assembling the nut at the front of the assembly.

The shaft should have sufficient play to be able to rise to the extent of the slot in the tubular shaft retainer throughout the 360° rotation of the fine tuning gear shaft.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

MAY 1961

VOL. 3 NO. 5

## CORONA DISCHARGE

Spring is that time of the year when high humidity creates the extra problem of high voltage corona discharge. The usual complaints of snapping sounds and flashing streaks through the picture, indicates the need to reduce the arcing around the high voltage transformer and picture tube anode. General Electric has two excellent aids to solving the problem.

WT90X23 ANTI CORONA COMPOUND--This silicone jelly may be smeared around the picture tube anode and associated parts to reduce discharge in this area. Be sure the anode area of the tube and high voltage lead are clean before applying.

WT90X24 CORONA SEAL--A semi-plastic material supplied in convenient strips, Corona Seal may be formed around the high voltage connections on the transformer to seal out moist air, eliminate sharp solder points, and prevent corona arc at these points.

## HOT LIST

Since the beginning of the "Hot List" last July, a large number of "lost" sets have been reported. Some of these were reported in the October, December, January, and the March issues. The following sets, serial numbers and persons to whom the information should be directed, should be added to your growing list:

<u>Model</u>	<u>Serial Number</u>	<u>Contact</u>
SDM304VVY	121615	C. E. Bragan Television Rcv'r. Dept. General Electric Co. Syracuse, New York

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INSIDETV



<u>Model</u>	<u>Serial Number</u>	<u>Contact</u>
M306VWD	954871	Miller-Rolland 226 South 13th Blair, Nebraska
M720VBZ	556947	Epperson's Appliance Dept. Court and College St. Woodlaned, California
SEM304VVY	128082	Olga Hlavka Town House Motel South 49th and L Street Omaha, Nebraska
SEM304VVY	127966	
M310VVY	927141	Clark's Plaza Appliance 6125 Blue Ridge Blvd. Ray Town, Missouri
M604VBG	900184	
M610VGR	944956	
17T3315	352248	
21T3429	758403	
M308VBG	981952	Wm. Weingarten 815 O'Farrell St. San Francisco, California
M734VMD	692426	A. Gibson Union Truck Depot 4701 Calhoun Houston 4, Texas
M203WGN	742847	Leo Weller King Stores Inc. 2040 W. Fond du Lac Milwaukee, Wisconsin



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JUNE 1961

VOL. 3 NO. 6

REPLACEMENT PARTS CATALOG NUMBERS

To simplify and speed the handling of parts orders, the catalog numbers assigned previously to all TV parts are being changed. All parts previously assigned the WT prefix will now carry an ET prefix. In nearly all categories the numbers following this prefix will remain the same. In other words, a part previously assigned WT62X54 will carry the catalog number ET62X54.

The system will now contain only 99 categories and, therefore, items which were previously cataloged WT101X will carry ET91X catalog numbers, and those items which were assigned WT103X are changed to ET97X.

To speed parts handling use the new catalog numbers when ordering or referring to parts for description. Service manuals issued after this date will carry the new system of catalog numbers.

## SUBSTITUTE POWER BOX FOR THE POWER TUNING RECEIVER RW362 ON MW CHASSIS RECEIVERS

If it is necessary to service the remote receiver in the service shop, or for any reason remove the remote unit, the TV receiver should be left in an operating condition for the customer's use. This may be done in two ways. The first method is to replace the non-operating remote receiver with an operating one. This allows complete normal operation of the TV receiver. The second method is to replace the remote receiver with a jumper device which will allow the TV receiver to be operated only from the manual push-button on the front of the TV receiver.

The jumper device must complete the DC circuit through the push button and should include a power source for the illuminated channel indicator. Such a device is shown in the diagram, with the list of parts required on the reverse side.

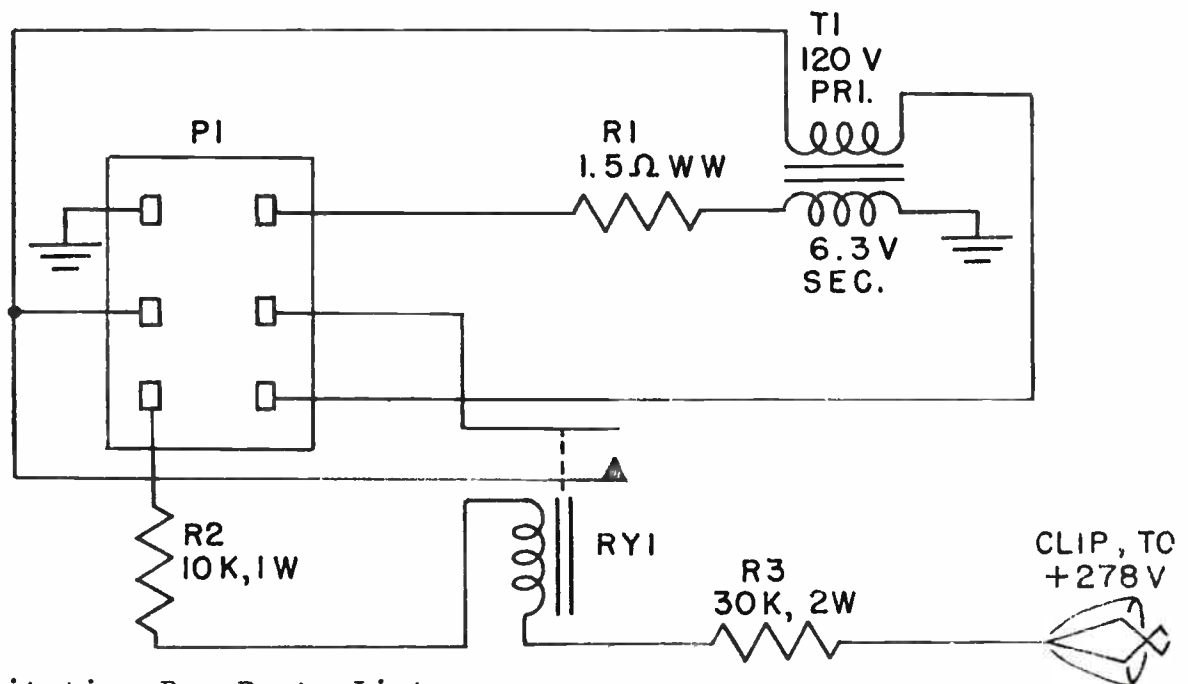
The relay is a channel select replacement relay used in the remote receiver, and P702 is a replacement plug the same as that used on the receiver.

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The parts should be assembled in a utility box with the maximum size of 3 In. x 4 In. x 5 In. This box will fit into the space provided for the remote receiver. Assembly of the power box is not critical except that the sensitive relay should be mounted so that the moving contact arm is in a vertical plane when in use.

To use the unit, locate it in the position of the removed remote receiver within the TV cabinet, and attach the plug to the TV chassis remote cable plug. The alligator clip is then clamped to the wire wrap terminal on the main chassis "sweep" board where L407, the filter choke of the TV power supply, is connected. This supplies the +278 volts for the relay operation. Remove the hairpin cotter and slide the program wheel from the rear of the VHF tuner shaft to disable the "automatic off" position.



#### Substitution Box Parts List:

- |           |                                                           |
|-----------|-----------------------------------------------------------|
| 1-ET8X84  | PLUG -6 prong plastic w/contacts P2                       |
| 1-ET62X54 | RELAY -Sensitive RY1                                      |
| 1-ET14X87 | RESISTOR -1.5Ω, 1/2W, wire wound R1                       |
| 1-*       | RESISTOR -10,000Ω, 1W, carbon R2                          |
| 1-*       | RESISTOR -30,000Ω, 2W, carbon R3                          |
| 1-        | TRANSFORMER -120V, Pri. 6.3V, 1 Amp. Sec.; T1             |
| 1-        | CHASSIS -Utility box -3" x 4" x 5"                        |
| 1-        | CLIP -Insulated alligator w/approx. 30" flexible #20 wire |
|           | Assorted Hardware                                         |

\*NOTE: R2 and R3 may be combined into a single 40K Ω, 5W resistor



# Service Talk

FROM

TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JULY 1961

VOL. 3. NO. 7

## COLOR BALANCE STABILIZER

The General Electric Ultra-Color Television Receiver chassis has an interesting circuit called a Color Balance Stabilizer. General Electric developed this feature that automatically maintains correct color values even though picture brightness and contrast vary.

For a faithful reproduction of colors in a color TV receiver, color hues should not change with changes in brightness and contrast. The unique General Electric Color Balance Stabilizer provides correct color hues by maintaining the proper ratio of DC bias voltages applied to the picture tube cathodes in a constant ratio. This regulates the levels of the signal DC component at each cathode so that a constant ratio exists between the AC and DC components of the video signal with changes in brightness and/or contrast.

Refer to the schematic diagram and let's see how the Color Balance Stabilizer circuit works. Let's look at the DC circuit first. Notice that the green drive control, R181, and the blue drive control, R182, are connected in parallel. Also the two equal value resistors R162 and R188, are in series — parallel with R181 and R182 with B+ connected to the junction of R162 and R188. There are two loads connected to this network. R163, the first load, is connected between the bottom end of our parallel circuit and ground. The second load is at the top end of the parallel network and is connected to ground through R164 and the primary of T106 which are in series with R161, the 2nd video amplifier tube, V402, and the contrast control R144A. The red gun cathode current, although small, is also part of this load. The load connected to the top of the network is approximately equal to R163 which is the load at the bottom of the network.

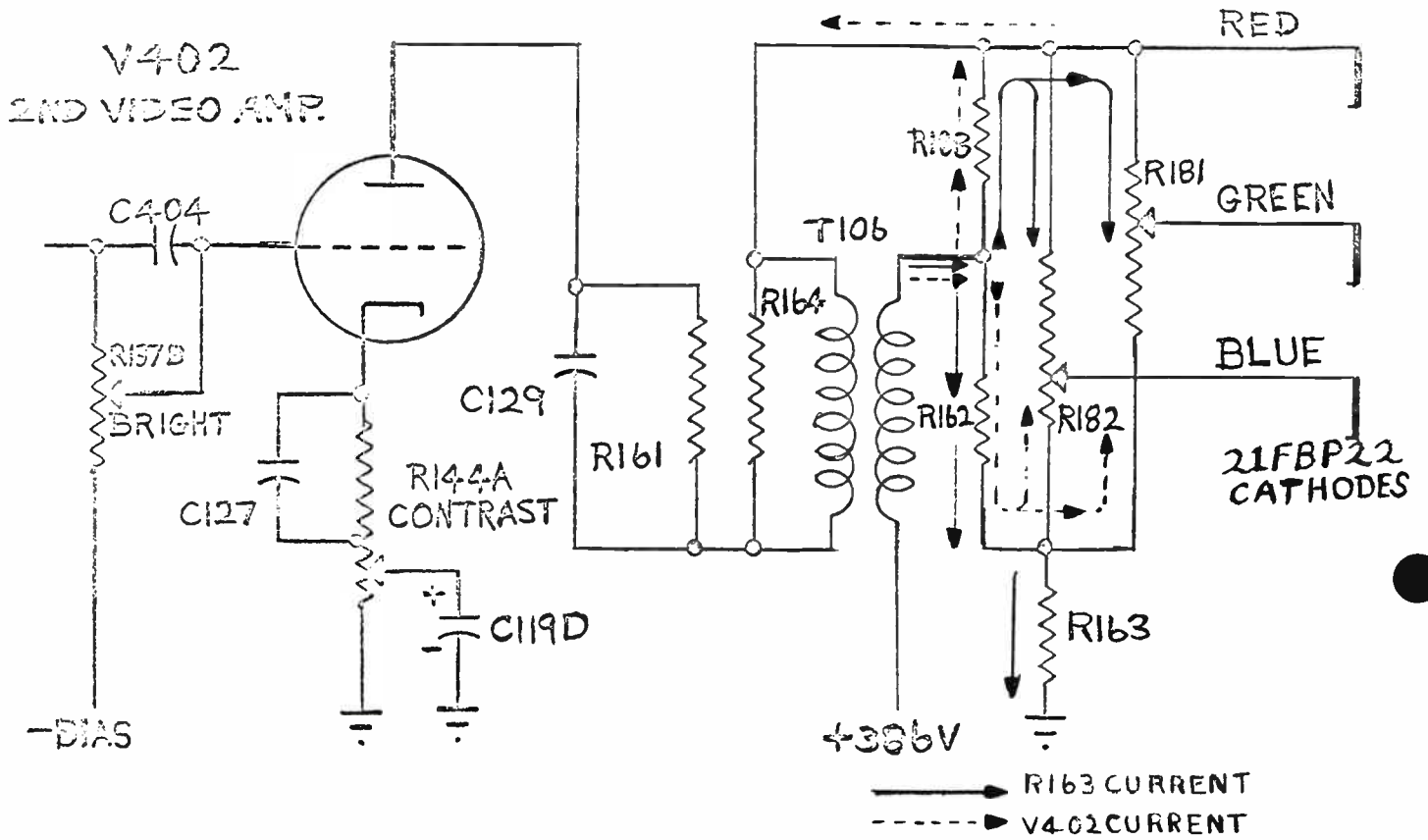
Now we can see two DC current paths through the drive controls from B+ to ground. From B+ the current flows through all the resistors in the network to ground through that load which includes V402. An equal current flows through all the resistors to ground through R163. As shown in the schematic diagram, currents flow in the same direction through R162 and R188 but in opposite directions through R181 and R182. The opposing currents flowing through the drive controls effectively cancel and there is no DC voltage drop across R181 and R182. With no voltage drop, the voltages are the same at each end of R181 and R182. The green and blue cathode biasing voltages are now stabilized because the only effective currents through R181 and R182 are the respective cathode currents for the green and blue guns.

Now that regulated picture tube cathode bias voltages have been established, let's see what happens to the video signal and its DC component. The DC component, which has been preserved by virtue of the DC coupling, is fed through R161, R164 and T106 primary to combine with the regulated picture tube cathode bias voltages at the respective cathodes. The AC component of the video signal is coupled through the primary of T106 to the red cathode and the top ends of our drive controls, R181 and R182. It is also inductively coupled to the secondary of T106 which is a step-down transformer. This signal, which is 180° out of phase with the primary, appears at the bottom ends of R181 and R182 and also cancels some of the signal at the top ends of R181 and R182. The AC component of the video signal now appears across the two drive controls, R181 and R182, with a small potential difference existing between the ends of the controls allowing a fine adjustment to be made. If the transformer secondary were eliminated, a large AC potential difference would occur, making the control adjustments very critical.

After properly adjusting the drive controls we have, at the picture tube cathodes, the AC component of the video signal with its DC component which is held constant for a given signal by the regulated DC bias voltages. Under these conditions a constant ratio exists between the AC and DC components of the video signal, with changes in brightness and contrast of the televised scene. The same conditions are maintained with any pre-set adjustments of the brightness and/or contrast controls. The brightness control, R137B, in parallel with C404, maintains a constant ratio between the AC and DC components of the video signal so that if the brightness is changed manually, proper contrast is maintained as pre-determined by the setting of the contrast control, R144A.

(over)

Thus, we have seen that the General Electric Color Balance Stabilizer maintains a regulated DC bias and a constant ratio between the AC and DC components of the video signal on each picture tube cathode for any given color hue, and the hue is maintained even with changes in brightness and contrast.







# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

AUGUST 1961

VOL. 3 NO. 8

## ANNOUNCING VOLUME 4 GENERAL ELECTRIC TELEVISION SERVICE GUIDE

Consistent with our policy of providing the service technician with the finest of service aids, we wish to announce that Volume 4 of the General Electric Service Guide is now available from television receiver and tube distributors. This latest edition covers all General Electric models produced in 1958 through the 1961 line of M6 receivers. Complete with schematics, waveshapes, tuner information, component wiring, and parts lists, the service guide offers condensed information most used in the servicing of television sets. Every service shop can use at least two Guides; one for bench work (has a handy ring binding that allows the schematic to lie flat on the bench) and one for the service truck (contains all parts required for each set and allows the outside serviceman to carry complete information of recent sets in one handy book).

This latest Guide contains 82 pages and sells for the low price of \$3.00. Why not order yours today? While you're ordering, look over your copies of Volume one, two, and three, and replace those Guides lost or worn with the latest updated editions.

1947 - 1952	Volume I	Fourth Edition	Price	\$2.50
1953 - 1955	Volume II	Third Edition	Price	\$2.50
1956 - 1957	Volume III	First Edition	Price	\$1.75
1958 - 1961	Volume IV	First Edition	Price	\$3.00

### REPLACING HORIZONTAL OUTPUT TRANSFORMERS

Commencing with the MW chassis, the coil and form only will be supplied as a replacement part for the horizontal output transformer and the method of installation outlined in the M5, U5, and M6 Final Service Manuals should be followed. Following this method will greatly reduce the labor required for replacing this part and lower the cost of the part itself. Core halves and the brass U-bolt clamp are also being made available as separate items when required. The new stocking method will also reduce the number of transformers required to service General Electric receivers.

INSIDE TV

## TUBE CHANGE ON MW CHASSIS RECEIVERS

Receivers now being produced with MW chassis will have a 3A3 high voltage rectifier replacing the 1J3 formerly used. This change necessitates the use of a different filament winding on the horizontal sweep transformer and a series resistor in the filament circuit. When replacing horizontal sweep transformers in receivers with the 3A3 tube, be sure the correct windings are on the core. New parts now available for horizontal output transformer replacement are shown below.

ET14X139	R268	RESISTOR -3.6Ω 1/2W, wire wound, for use with 3A3 rectifier
ET12X85		CORE -Powdered iron, for ET77X64 coils (2 required)
ET2X223		U CLAMP -Brass for ET77X64
ET77X64	T251	TRANSFORMER -Horizontal output coil and form only, less core and Mtg. clamp

### THOSE ELUSIVE TV'S

Additional receivers are being supplied for inclusion with the TV "Hot List" as the following number of missing sets are added to the already large list. These sets are reported as missing and any information about these receivers should be forwarded to the persons listed to contact.

RECEIVER MODEL	SERIAL NUMBER	CONTACT
M204WBN	409594	Mr. Meckley A & SP Section General Electric Company Nela Park Cleveland, Ohio
M734VMD	816431	Mr. George F. Himsel Eazor Express, Inc. 15-26th Street Pittsburgh 22, Penna.
21L3456	449312	Mr. Edgar E. Scott Deputy Chief of Police Metropolitan Police Dept. P. O. Box 1606 Washington 13, D. C.
21L3456	449941	



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

SEPTEMBER 1961

VOL. 3, NO. 9

## Easy Solder Removal

Al Sahn of the G.E. TV Engineering Dept. has offered the following suggestion for removing solder from around component leads in circuit boards.

Tin a short section of the end of an eight inch strip of half-inch copper braid. Heat the area at the connection of the part to be removed and at the same time hold the tinned braid against the joint until the solder is drawn into the braid by capillary action.

The braid may be used over and over by heating the solder filled portion and striking the end against the bench to expel the solder. Caution should be observed not to splash the hot solder on exposed areas of the body or into the eyes.

## Gone But Not Forgotten

Make note of the latest addition to the TV "Hot List" as recently received.

<u>Model</u>	<u>Serial No.</u>	<u>Contact</u>
M306VWD	126864	John E. Webb Jr. Bel Air Lodge 1811 N. Mesa El Paso, Texas

(OVER)

## To Err is Human

The new M6 Chassis Final Manual 32-2005-61, has a few corrections that should be noted. Referring to Page 28, under "M6 Remote Control", last paragraph; delete the last sentence which describes the jumper plug required when the remote receiver is removed.

The correct procedure is to use a three prong socket, ET34X132, and wire as shown in figure 44. Change figure 44 caption to read, "Jumper Socket Connections". Change the caption under figure 58, page 38, to read, "CAM602VVY, SFM304VVY music switch and audio circuit variations."

Changes in the parts list should be made as follows:

### "Cabinet and Appearance Items", page 83

Model CAM602VVY delete referral to WT43X322  
Model CBM602VVG delete referral to WT43X320  
Model CBM620VVY delete referral to WT43X316  
Model CCM620VVY delete referral to WT43X316  
Model CDM620VVY delete referral to WT43X316

Add to Page 84:

L-ET54X52 - Grille Cloth-speaker grilles for models  
M782VWD and M783VWD  
L-ET54X53 - Grille Cloth-speaker grilles for models  
M782VMD and M783VMD

## How Time Flies

It may seem like only yesterday that you renewed the subscription for Service Notes, but it is time to think about next year. Nowhere can so much information be purchased for so little and so timely too, because each mailing is direct from factory to you. Why not ask your distributor salesman next time you see him, to be sure you're on the list for 1962, and not be without the important changes that are in the mailing. Ask for "Plan D", providing Television information only, or "Plan E", which includes Television and Audio Products service material.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

OCTOBER 1961

VOL. 3, NO. 10

## Correcting a UHF Tuning Problem

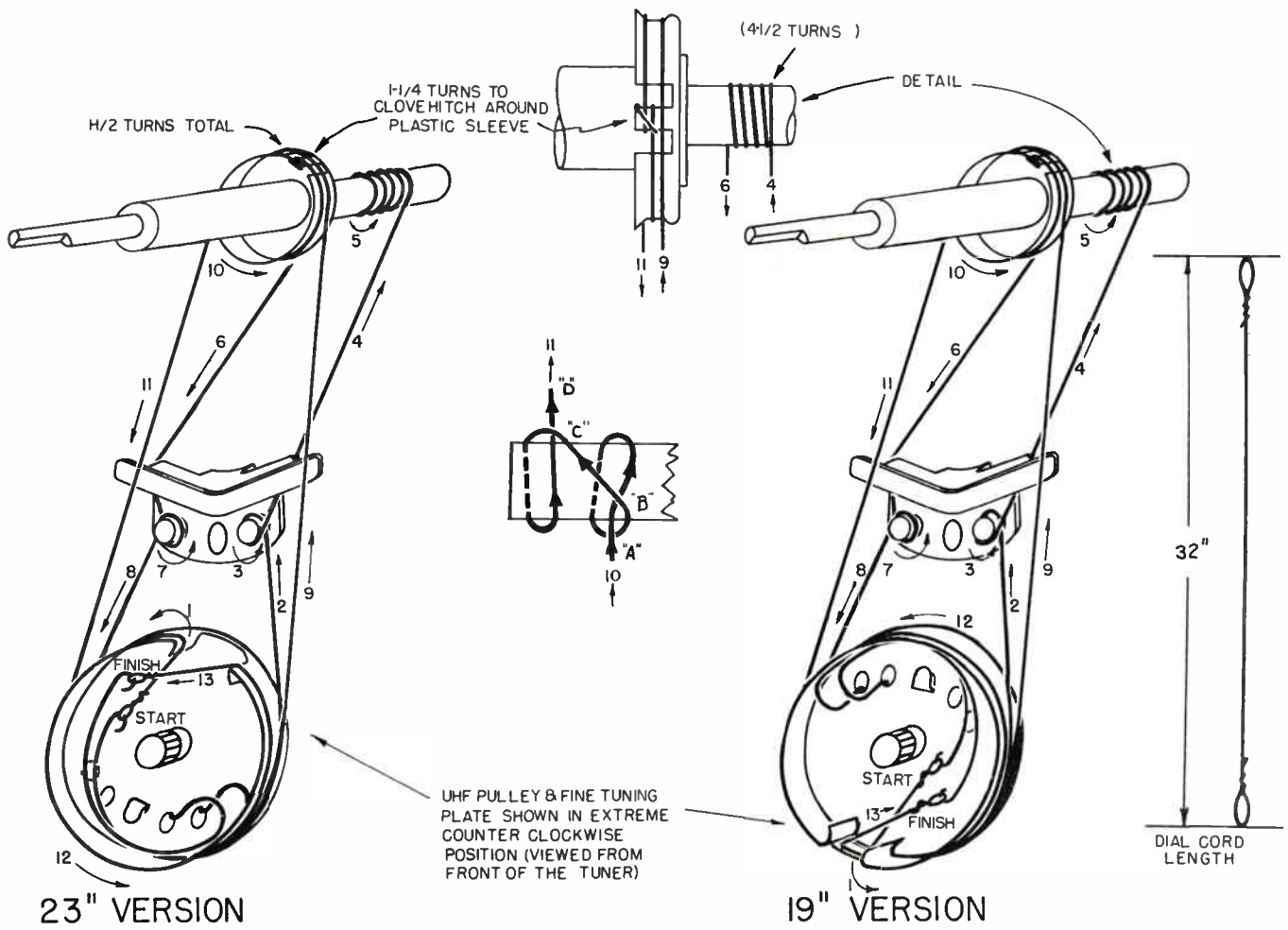
Recently it was noted that there have been instances where fine tuning of the UHF on receivers with an MW Chassis has been difficult. The problem stems from the dial cord slipping on the fine tuning plate and not allowing for fine adjustment of the UHF Tuner. The direct drive operation will operate normally; only the fine vernier tuning is affected.

Should service of this condition be brought to your attention, we offer a cure which has proved to be so successful, that all future production UHF Tuners may be similarly modified. Basically, the fix is a matter of restringing the assembly to provide more tension on the fine tuning plate. The revision also requires the addition of a tension spring to the UHF pulley, identical to the one already used, and the use of a slightly longer dial cord.

Referring to the two diagrams on the back of this page, you will note the position of the two springs on the UHF pulley, one for start and the other for finish, placing tension at each end of the dial string. Note that the springs are placed in separate holes in the pulley. Correct looping of the dial string around the ears on the fine tuning plate is important, to provide the necessary increase of drag on the fine tuning plate. Both the 19" models and the 23" set require the same length of dial cording. However, the placement of the opening in the pulley in the start position differs.

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# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

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NOVEMBER 1961

VOL. 3 NO. 11

## QUADRATURE SOUND ADJUSTMENT

Should an early production LW or MW receiver show a tendency to develop sound distortion after some period of use, drift of the quadrature coil alignment is most likely at fault. Our factory has taken steps to prevent this in future production.

In most cases the distortion will be eliminated by re-tuning the quadrature coil on an "off the air" signal. The signal used should be as strong as is available. Only a slight clockwise turn (approximately 1/8 turn) of the quadrature coil slug will return the sound to normal. Actually alignment is somewhat critical and the loudest output obtainable with the least distortion should be achieved.

## CW COLOR CHASSIS CHANGES

Two changes have been made in late production CW Chassis. These changes consist of a new type RF amplifier tube, and a new orientation of the dynamic convergence board.

A 6DS4 is the new tube type, which replaces the 6CW4 for V1 in VHF tuners ET86X125 and ET86X128. When the 6DS4 tube is used, the AGC bleeder resistor in each tuner is deleted. The AGC bleeder resistor is R20 in ET86X125 Tuner and R14 in ET86X128 Tuner.

The dynamic convergence board, PW800, has been turned around so that the controls face the rear of the receiver. Dynamic convergence can now be attained without removing the convergence board from the cabinet and "touch-up" adjustments can be made without removing the cabinet back, by inserting a screw driver or alignment tool through the holes in the back.

(OVER)

## "HOT LIST" ADDITIONS

The following receivers should be added to those already carried on the "Hot list". Persons finding any of the listed receivers should directly contact the person designated.

<u>Model</u>	<u>Serial</u>	<u>Contact</u>
21C3585	996232	Henry Pratt 615 R. R. Avenue Pittsburg, California
M204WVY	90200	
M604WBG	541358	Lt. Robert Bishop
SAM604WVY	541325	Eastchester Police
R606VVY	947988	Department
M606WGN	499428	40 Mill Road
SAM608WGR	547970	Eastchester, New York
M606WEB	458046	



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

DECEMBER 1961

VOL. 3 NO. 12

SEASON'S GREETINGS

We of the Product Service Section of the General Electric Television Department wish to extend to all, a very Merry Christmas and with the passing of another year a most Happy New Year. Let the spirit of Peace and Prosperity reign with us throughout the coming year and let our goal remain, as in the past, one of the mutual interest--the rendering of the best possible service to the products of our customers.

ALL NEW IN 1962

Take note of the enclosed loose leaf sheets covering the New General Electric LX Chassis. These sheets are the first of a new style of manual to be offered to the service industry by the Television Department.

Beginning with the 1962 manuals, all information will be printed in loose leaf form, allowing the data to be filed by sections; one for model information, one for chassis, one for tuners, one for accessories, and one for general information. As models or chassis are announced, sheets will be distributed to the field. Changes and revisions will be sent out as they occur, and will supersede pages already in existence. An index covering all information distributed will be included.

This new system will speed information, allow for more up-to-date data, and provide for easier filing of pertinent data. Subscribers to the 1962 subscription plans will receive new data as it is published, and a set of filing tab cards for separating the sections will be mailed in the January distribution. These sheets are designed to be inserted in the new vinyl covered service manual binders available from your General Electric distributor. Ask for Service Manual Binder 32-0800-60, priced at the low cost of \$1.25.

NOTE: Be sure to file the enclosed LX Chassis Sheets in your new binder. Pages covering additional information preceding that enclosed will be mailed in January.

A PLAN "D" PUBLICATION

INSIDE TV

# GENERAL ELECTRIC

## 1962 SUBSCRIPTION PLANS

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### PLAN E

FACTORY SERVICE MANUAL COVERAGE for

**\$8<sup>00</sup>**

- COLOR and MONOCHROME TV
- CONSOLE PHONOGRAPHS
- AM-FM TUNERS
- RECORD CHANGERS
- FM STEREO ADAPTOR

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YOU WILL RECEIVE . . .

- Up-to-date Parts Price Listings
- "Service Talk"
- "Techni-Talk"
- "Audio Notes"
- Special Publications



- Alignment Charts and Waveforms
- Replacement Parts Lists
- Schematic Diagrams
- Circuit Board Layouts
- Exploded Views

---

### COLOR and MONOCHROME TELEVISION SERVICE MANUALS

**Plan D**  
**\$5<sup>00</sup>**

- REPLACEMENT PARTS LISTS
- SCHEMATIC DIAGRAMS
- ALIGNMENT DATA
- EXPLODED VIEWS
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PERIODIC MAILINGS OF . . .

- Up-to-date Parts Price Listings
- "Techni-Talk"
- Special Publications
- "Service Talk"





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JANUARY 1962

VOL. 4, NO. 1

## A NEW YEAR, A NEW MANUAL

While reading this issue of Service Talk, take note of the information you have received in the January Subscription Plan mailing. First, you'll find new sheets of additions and supersedures for the "Used On" Parts Catalog. Then, take special notice of the new loose leaf service manual pages.

This new service publication will include all model and chassis information within one manual. Sheets of the loose leaf variety will be distributed as soon as the information is available for release. This will keep your service manual current and more complete. Note that each page is dated so that supersedures will carry the same publication number but will have current dating.

The manual is divided into five sections with model sheets filed in Section A. These sheets will list television models by families (similar construction, features, appearance, etc.) and the tuners, chassis and accessories required for the particular models. For convenience, tab cards are also supplied to separate the sections.

Section B contains Tuner Information, both VHF and UHF. These will be listed by part number, which may be found stamped on each tuner.

Section C is for Chassis Information; that is, all of the electrical data on the main chassis such as alignment, schematics, wave shapes and voltages, etc. These pages will be filed by page number, and chassis types will be listed in the index. The chassis type is stamped on the chassis along with the date code.

(OVER)

A fourth section, D, will contain special accessories used with certain models, such as remote control, record players, audio amplifiers, etc. These items will be listed by an assigned designation and referred to on the model sheet.

The Miscellaneous Section, E, will be devoted to new circuit explanations, servicing tips and methods, etc.

The pages of each section will be numbered with the section letter and page number. The index at the front of the manual will contain a cross reference of all information. All pertinent information for a given model will be found by first examining the index to find the model sheet page number. On this page a list of tuners, chassis and accessories for the model will be listed. Refer again to the index for the page number of these items.

All of the information is provided on 8 1/2 x 11 inch sheets, or folded to this size and 5-hole punched to fit the General Electric Service Manual Binder. This binder is available from General Electric Television distributors as Publication No. 32-0800-60. A standard three-ring binder may be used if desired.

To start your new manual the following sheets are enclosed this month:

Index,	Page 1
Section A,	Pages 1 and 2
Section B,	Pages 1 thru 17
Section C,	Pages 1 thru 12

In December, pages A3, A4, & C13 thru C19 were delivered and these should be filed in the correct sequence.

To provide full coverage for the coming year, it is also suggested that the following information distributed during the past year also be filed in the manual:

In Section A, Service Publication 32-4000-61 and the Addenda 32-4001-61, covering the CW Chassis Color Models.

In Section D, Publication 32-2007-60 and 32-2017-61, covering the RC100 and RC101 Record Changers. Also 32-2006-60 covering the AM-FM100, AM-FM101 and AM-FM200 Tuners and the MA2F Stereo Adapter.

DON'T THROW IT AWAY

Service Talk will now carry the monthly list of additions and supersedures for the General Electric Service Manual. This along with the other special features carried each month makes Service Talk a valuable reference. Therefore, beginning with the February issue, the paper will be 5-hole punched and it is suggested that each letter be filed in Section E of the Service Manual for at least the current year.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

FEBRUARY 1962

VOL. 4, NO. 2

## TROUBLESHOOTING THE CW COLOR CHASSIS

Problems in the color circuits of the General Electric CW Chassis can be solved more easily if a color bar display on the picture tube is observed and analyzed before actual troubleshooting of the circuitry is attempted. This procedure will localize the general area in the color circuits where the troubleshooting should be performed--even before the cabinet back is removed.

The receiver should be checked with known color bars from a reliable source. For convenience, a white bar should be included in the display. If a white bar is not available, a white raster or monochrome picture may be used. It is assumed in the following discussion that the grey scale controls have not been misadjusted.

Defects in the color bar display seen on the picture tube can be broken down into five main problems: COLORIMETRY, CHROMINANCE, PHASING, COLOR SYNC, and NO COLOR.

1. COLORIMETRY: This problem is recognized when the white bar, white raster, or monochrome picture is some color other than white (assuming that the grey scale has not been misadjusted). Of course, the other color bars will be incorrect but the key point is the improper color of the white bar.

The trouble is caused by an incorrect bias on one of the picture tube control grids, probably due to one of the following component failures.

- a. V706A, V706B, or V707A.
- b. Off value resistor in the plate circuit of one of the tubes in (a).
- c. Shorted C726, C731, C732, C733, C734, C735, or C736.
- d. Picture tube.
- e. Open R726.

Of course the white bar or raster would appear as above if the grey scale were misadjusted or if one of the screen or drive controls were defective. However, this is the least likely to occur and the problem usually resolves itself into one of colorimetry.

2. CHROMINANCE: This problem is recognized when the white bar remains white but the other colors are incorrect due to a loss of one of the chrominance signals. A lack of R-Y, for instance, will cause a loss of the red bar and the yellow bar will appear as a desaturated green.

A lack of B-Y will cause a loss of the blue bar and the cyan bar will be a desaturated green.

This is an AC signal problem where the lack of one of the chrominance signals causes incorrect colors. The trouble will probably be due to one of the following component failures.

- a. Open C726, C731, L704, L705, R723A, or R723B.
  - b. V701, V704A or V704B.
3. PHASING: If all the colors are present but cannot be adjusted to the correct hue with the hue control, a phasing problem exists. This may be due to any of the component failures below.
- a. V702, V705.
  - b. Off value components in V705 circuits.
  - c. Off value, open or shorted L703.
  - d. Off value R725, R729, C728, C730.
4. COLOR SYNC: If the color bars continuously change colors, the phase of the 3.58 MC oscillator is not being controlled by the voltage from the phase detector. This is probably due to one of the following:
- a. Test Point 701 grounded to the chassis. This test point is the bare unconnected end of a brown wire. The wire is located on the top rear of the chassis and must not touch the chassis or any components.
  - b. V703A failure.
  - c. Shorted C703.
5. NO COLOR:
- a. Horizontal hold control not adjusted properly.
  - b. Lack of subcarrier due to failure of V703, V705, 3.58 MC crystal, or T703.
  - c. Improper alignment of the video I-F or chroma channels due to failure of tubes or components.
  - d. Color killer control, R159-B, misadjusted.
  - e. Fine tuning improperly adjusted.
  - f. Failure of V401B, V702, or V707B.
  - g. Loss of gate pulse at V702 Pin 1.
  - h. Incorrect orientation or defective antenna system.

Full color illustrations of colorimetry and chrominance problems appear in Publication RSM-4-CLTR-S. This was originally published for General Electric color receiver models 21T500, 21C700, and 21C701, and is excellent supplementary material for the above text. Copies are available through your General Electric Distributor at \$.20 per copy.

#### UP-TO-DATE RELEASES

Twenty new pages are released this month to be filed in your service manual. There is only one supersedure (the index page). Therefore, all others should be filed by the page number assigned. For those who have inquired, the new service manual binder is available now at all distributors under Publication No. 32-0800-60.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

MARCH 1962

VOL. 4, NO. 3

## TV "HOT" LIST

The new Television Service Manual provides a section for retaining monthly copies of Service Talk--Section E, Miscellaneous Data, and it is felt that an old feature, TV "Hot" List, should be continued with renewed effort. General Electric dealers or service dealers with lost, strayed or stolen General Electric television sets may submit the model number, serial number and person to be contacted; to Product Service Publication Office, Television Receiver Department, General Electric Company, Syracuse, New York. This information will be published in Service Talk and dealers can then check the serial numbers listed against those of sets received for service. If information regarding any of the listed sets is available contact the person listed. Further instructions will be handled directly. We are confident that your support of this program will be rewarded. The General Electric Company takes no responsibility for the information published. Any dealer who has already listed sets in the "Hot" List may submit the information for republishing at a later date in this new series.

Latest listings of sets for "Hot" List inclusion are noted below.

<u>MODEL</u>	<u>SERIAL</u>	<u>CONTACT</u>
M202WGN	407500	Mr. G. L. Green
M204WBN	72104	Dependable Refrigeration, Inc.
M204WEB	808833	1641 No. Main Street
M204WVY	100240	Box 5124 Emerywood Station
M608WBN	434594	High Point, North Carolina
SAM602VVY	118293	

## LW INFORMATION FINAL

Subscribers to the service manual subscription plan now have their LW chassis service information complete and final in the loose leaf manual. Early preliminary publications are considered to be obsolete and superseded and, therefore, may be disposed.

**A SUBSCRIPTION PLAN PUBLICATION**

(OVER)



This is not true of the MW chassis series, however, and preliminary schematics and parts information should be retained until all information regarding the MW chassis series can be finalized. It is suggested that the preliminary publications 32-2000-62, 32-2001-62, and 32-2002-62 be retained in Section C of the loose leaf manual until notice is given in Service Talk that these publications have been superseded.

The information released for those models listed in the index pages as MW chassis models is complete as far as the subject covered and is, therefore, the latest available. Always refer to the index first for model or accessory information. If there is no listing in the index then the preliminary information should be referred to for service and parts.

Upon completion of the MW chassis series, notice will be made to remove the preliminary information. All data distributed after MW completion date will be automatically handled by the filing system already explained.

New pages for the loose leaf manual mailed with this issue of Service Talk are listed below. These should be filed according to section and page number. Notice, however, there is no superseding issue of the index page. Please enter the page reference information for the pages being added on page one of the Index Section. A new index sheet will be issued with the next mailing.

Note also an addenda page, C16A, to be listed with Page C16. These pages will be superseded at a later date, but it is felt this information will be welcomed as early as possible.

#### New Loose Leaf Pages

<u>Subject</u>	<u>Page No.</u>	<u>Publication No.</u>
ET86X131	B23-B30	32-1102-62 32-1103-62 32-1104-62 32-1105-62
ET86X112 ET86X114 ET86X127 ET86X145	B31-B34	32-2109-61 32-2110-61
ET86X111 ET86X113 ET86X115	B35-B40	32-2111-61 32-2112-61 32-2113-61
RC362	D13	32-2309-61 32-2310-61



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

APRIL, 1962

VOL. 4, NO. 4

### WE NEED YOUR HELP!

Along with the regular material mailed this month is a survey card. This survey is being taken to help us determine the needs of the servicemen in the field for certain test equipment. To be most effective, we need this information right away. Why not pick up the self-addressed, postage free card now and fill in the information requested.

Don't forget to drop the completed card in the mail tonight.

### HAVE YOU SEEN THESE SETS?

Latest additions to the "Hot List" are shown below. Information regarding these sets when found should be reported to the person listed to be contacted.

<u>Model</u>	<u>Serial Number</u>	<u>Contact</u>
M202WGN	407618	Mr. Harold Kirtley Kirtley TV & Appliance 215 N. Central Avenue Campbellsville, Kentucky
CBM602WVY	502413	Mr. Ray O. Myers Holiday Inn Frankfort, Kentucky
CBM602WVY	476751	
CBM602WVY	551278	
CBM602WVY	551899	
M304VGR	022430	Lois Wudir Brown Motors, Inc. P.O. Box 232 Grangeville, Idaho

<u>Model</u>	<u>Serial Number</u>	<u>Contact</u>
17T3311	93841	Mr. Ralph Falcone Buzzard Electric Co., Inc. 121 Broadway Bangor, Pennsylvania
M205WBN M607VVY	720278 923830	Mr. Edwin H. Harwell Gibsonton Appliance Store P.O. Box 297 Gibsonton, Florida

#### NEW ANTI-STATIC PLASTIC POLISH

What with the increase in the use of plastics for cabinets and safety windows, it is necessary to have a cleaner and polish which will really do the job. General Electric has had Anti-Static polish on the market for some time now. Now to improve the speed and quality of this proven product, it has been reformulated and comes a new spill proof, break proof container. For all plastic surfaces, use a polish which will restore the original luster and provide the anti-dust collection static elimination provided by General Electric polish.

Order General Electric ET90X25 Anti-Static Plastic polish from your distributor today. Start your profit rise by making this product available to your customers.

#### THE CASE OF THE MISSING PAGES

A number of inquiries have been made as to what happened to the three sheets with Pages 35-40 listed in the March mailing. After a close look at our mailing it was found that these were missing. Have no fear, we never sent them so they are included with this months mailing. Along with these, you should find a new index page, 19 sheets for Section A and 5 for Section C, a total of 28 sheets of television information. Pages C15 through C20 are supersedures for the LX chassis information previously mailed. The original pages along with Page 16A (voltage chart) should be destroyed.

File this issue of Service Talk in Section E for future reference.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

MAY, 1962

VOL. 4, NO. 5

## REMOTE CONTROL ADJUSTMENTS

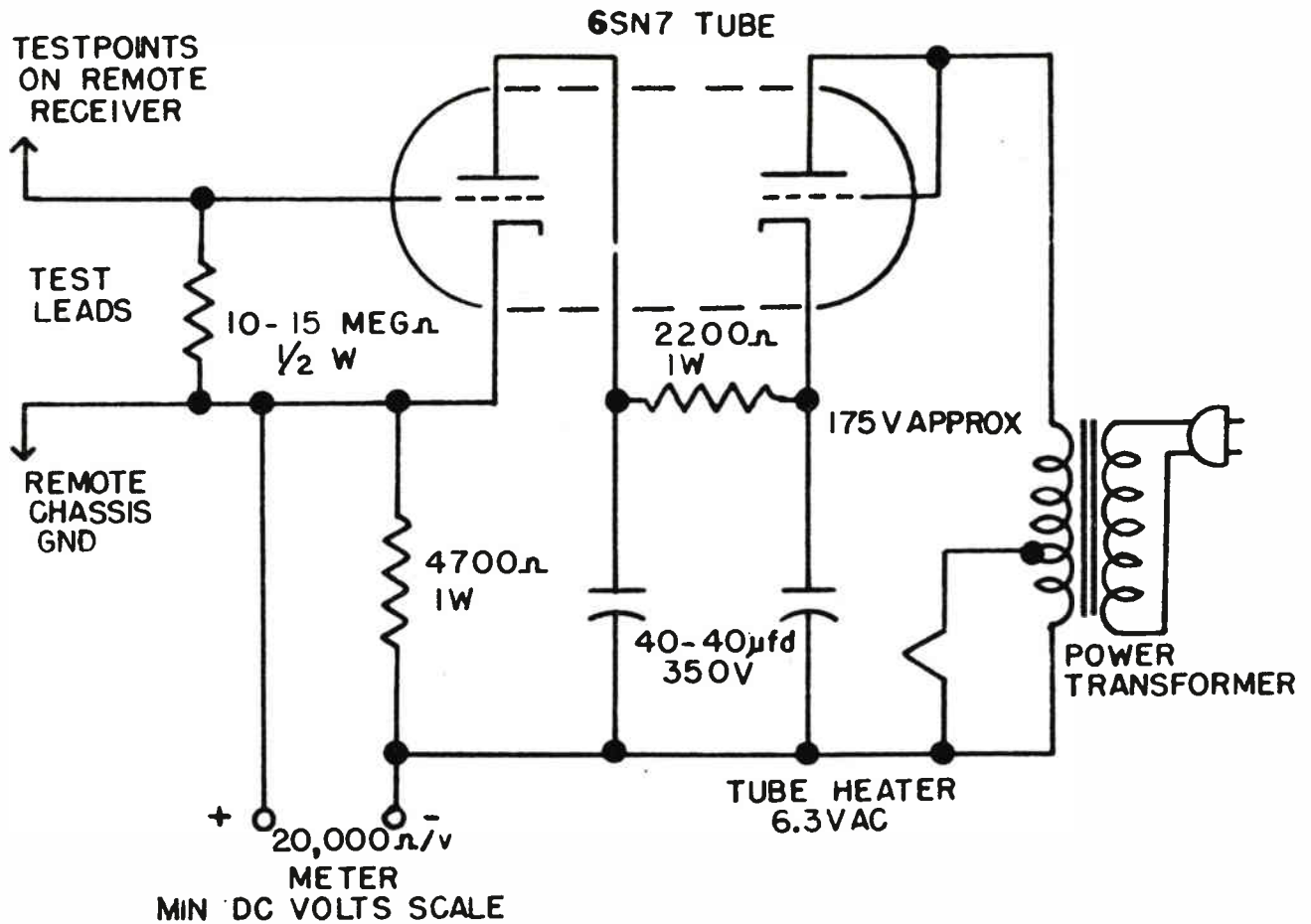
The service manual clearly states that a VTVM (Vacuum Tube Volt Meter) is necessary for the satisfactory alignment of the remote control receivers and transmitters used with General Electric Television Receivers. There have been a number of instances noted where a VTVM was not available and the remote unit not properly aligned thus decreasing the range of the remote operation.

An inexpensive metering device has been constructed and suggested by Mr. B. E. Raistrict of General Electric Sales and Distribution Service Department in Miami, Florida. The simple circuit is shown here and the parts used are common items of low cost. While this device is not intended to provide regular VTVM type of accuracy, it does isolate the meter from the source of voltage to provide relative readings which may be used to peak a remote system. The unit is used with a standard 20,000 ohm/volt meter usually available at any service shop. With the meter connected as shown and set for the lowest voltage scale, increasing positive readings will indicate the less negative voltage desired in the alignment procedure. As noted earlier, the readings will not be accurate measurements but relative readings providing ample isolation and good alignment data. The General Electric Service Manual should be consulted for the proper procedures to use.

### A Note on Construction:

The components shown are values used in a pilot model and have proven usable. There are no critical values, and refinement of the circuit may be possible to provide additional accuracy. The power transformer used was taken from an early UHF converter and is available from General Electric-Parts Distribution as Part # ET88X14. All other items should be available locally.

(OVER)



SCHEMATIC DIAGRAM FOR REMOTE CONTROL TEST ADAPTOR

LATEST RELEASES

New pages for the General Electric Service Manual, which are included in this month's mailing, should be immediately filed in order to keep your manual up to date.

The new manual has been designed to provide the fastest and most accurate information possible, but this does require filing the pages as soon as they reach you. This month there are 17 sheets in all, 4 are superseded. (These four replace previous information which should be destroyed). New models added this month will not show in the index; however, a new index will be provided in June.





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JUNE 1962

VOL. 4 NO. 6

## MW CHASSIS INFORMATION COMPLETE

The June mailing loose leaf Service Manual pages accompanying this letter complete the information covering the MW Chassis series models. Approximately 144 models are covered on 18 pages of the "A" section of the manual. Section "B" covers the tuners with 18 pages of information. There are 24 pages in Section "C" covering the main chassis and 15 pages and 3 special publications (32-2006-60 tuners, 32-2007-60 and 32-2017-61 record changers) in Section "D" covering the special tuning assemblies, AM-FM tuner, record changer assembly and stereo amplifier used in MW Chassis equipped combinations. These pages then supersede and conclude the need of the preliminary publications covering these models. It is recommended that all preliminary publications and bulletins received prior to this date be destroyed. Refer to the pages of the loose leaf Service Manual for all service information regarding the current chassis.

It is again stressed that each of the loose leaf pages be filed as soon as received according to page number to provide the information available. Pages may be superseded from time to time in the future to provide additional information when necessary for better service. The superseded pages are then destroyed. Always refer to the index by the model number of the set to be serviced; the model page will provide the ready reference to tuner, chassis and additional assembly data sheets needed for the complete service information of the model.

## BRING YOUR MANUAL UP TO DATE

With this month's mailing, the loose leaf manual will completely cover 1962 and 1963 released models and the information required to service the chassis, tuners and sub-assemblies. A list of page numbers by section is provided here to check your manual. If you have lost or mislaid any pages, ask your distributor to bring your manual up to date. Single pages sell for \$.05, foldout pages \$.15. Extra pages for bench or truck reference can also be purchased. Order your pages by publication or page number.

**A SUBSCRIPTION PLAN PUBLICATION**

(OVER)

- Index - Pages 1 - 3
- Section "A" - Pages A1 - A81 except A51 & A52  
CW Chassis Manuals 32-4000-61 & 32-4001-61
- Section "B" - Pages B1 - B41
- Section "C" - C1 - C76
- Section "D" - D1 - D16 plus booklets 32-2006-60, 32-2007-60,  
32-2017-61
- Section "E" - Service Talk Vol. 4 - No.1 thru 6

#### COLOR RECEIVER DATA

These late revisions in color receiver information should be noted in the color service portion of the loose leaf Service Manual. On page 35 of publication 32-4000-61 in Replacement Parts, Capacitors, refer to C507: Change the Catalog number to read - ET31X216. On page C37 (publication 32-4002-61) add the following Production Charge:

8. Chassis with code 217CW and above use C502 and a purple wire to point D on PW-500 circuit board. Refer to Production Change No. 5 above.

#### THE TV HOT LIST

As you can well see, some dealers have experienced substantial losses of TV sets and would appreciate any information a service dealer may provide concerning the listed set. When providing information, direct your replies to the person listed to be contacted.

#### "HOT LIST"

<u>Model Number</u>	<u>Serial No.</u>	<u>Contact</u>
1-17T2407	555625	Herman Krangel
1-17T3315	325404	Array Appliance Center
1-17T3321	328184	MacDade Blvd. &
1-M300TGR	512871	Kedron Ave.
1-M310VEB	09059	Folsom, Penna.
1-M310VEB	09033	
1-M310VEB	08948	
1-M602VGR	18849	
1-M602VGR	18833	
1-M602VGR	18832	
1-M604VBN	128229	
1-M608WBN	447391	
1-M608WBN	58342	
1-M614VWD	966555	
1-17T3311	431782	
1-17T3311	368804	
1-17T3319	421316	

"HOT LIST" (CONT'D)

<u>Model Number</u>	<u>Serial No.</u>	<u>Contact</u>
1-17T3319	421273	Herman Krangel Array Appliance Center MacDade Blvd. & Kedron Ave. Folsom, Penna.
1-17T3319	421170	
1-17T3319	421308	
1-17T3319	421289	
1-M202XBN	338872	
1-M202XBN	302338	
1-M202WBN	835196	
1-SAM204XVY	469076	
1-SAM204XVY	349771	
1-SAM206WBG	336941	
1-SAM206WBG	384343	
1-SAM206WBG	384302	
1-SAM206WBG	336716	
1-SAM206WBG	335219	
1-M608WVY	461845	
1-M608WVY	461821	
1-M608WVY	461899	
1-M608WVY	461549	
1-M608WVY	461842	
1-M608WVY	461890	
1-M608WVY	461849	
1-M608WVY	461626	
1-SAM608WGR	547202	
1-SAM608WGR	548076	
1-SAM608WGR	548096	
1-SAM608WGR	547988	
1-SAM608WGR	548104	
1-SAM608WGR	548121	
1-SAM608WGR	548035	
1-SAM608WGR	548058	
1-SAM608WGR	541987	
1-SAM608WGR	548105	
1-SAM608WGR	548056	
1-SAM608WGR	548114	
1-M735WOA	841932	Van's Appliances 2005 W. Front St. Berwick, Pa.
1-M737WWD	193089	
1-SAM733WWD	598431	
1-SAM735WWD	601070	
1-SAM735WWD	808848	
1-SAM609WGR	479954	
1-17T3315	352088	Ted Fadrow Dreamland Motel 6461 S. 27th St. Milwaukee, Wisconsin

"HOT LIST" (CONT'D)

<u>Model Number</u>	<u>Serial No.</u>	<u>Contact</u>
1-M202WGN Stereo-phono RP1551	366147 165687	H. A. Wenzel 833-835 Maine St. Quincy, Illinois
1-CAM602WVY	51608	Ralph Mitchell, Jr.
1-CAM602WVY	51873	General Electric Co.
1-CAM602WVY	51822	S & D Department
1-CAM602WVY	51978	Nashville, Tenn.
1-CAM602WVY	51591	
1-CAM602WVY	51895	



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JULY 1962

VOL. 4, NO. 7

## MX TUNER SERVICE

Thus far it has not been possible to publish all the information for the MX chassis tuners. One of these the ET86X140 is included with this mailing, the others have insufficient information available to produce the desired publication. There are, however, similarities between tuners used in the MX chassis models with those used with MW chassis equipped models. A listing of these tuners is given below to aid in the servicing of the tuners until such time as final information for the specific tuner is available. In most cases the main differences between comparable tuners are mechanical while the electrical circuitry and alignment procedure remain nearly the same. With the MX chassis tuners versus the MW chassis counterpart this is true in all but one case, the ET86X140, a 12 position, manually-tuned tuner having Automatic Fine Tuning and manufactured by Oak, which as noted before is included in the July mailing package. The following list describes the MX chassis tuner by number and manufacturer and lists a comparable tuner for which information is already available in the Service Manual.

ET86X139	12 Position, Manually tuned, without AFT, Manufactured by Oak - See ET86X112
ET86X141	12 Position, Manually tuned, without AFT, Manufactured by Sarkes Tarzian - See ET86X111
ET86X142	13 Position, Manually tuned, without AFT, Manufactured by Sarkes Tarzian - See ET86X115
ET86X143	12 Position, Used with Power Selector, Manufactured by Oak - See ET86X114
ET86X152	12 Position, Manually tuned, with Automatic Fine Tuning, by Sarkes Tarzian - See ET86X113
ET86X153	13 Position, Manually tuned, with Automatic Fine Tuning, by Sarkes Tarzian - See ET86X115

The last two tuners shown contain the new AFT mechanism which differs from all previous models....Complete information for these tuners will be available in the near future.

(over)



## CW CHASSIS REVISIONS

In the CW Television Service Manual 32-4000-61, the value of C101 is incorrect. Refer to the main schematic diagram on page 31 and change the value of C101 from .01 $\mu$ fd. to 0.1 $\mu$ fd. Also add "C101, 0.1 $\mu$ fd., 20%, 600V" to the capacitors under "Main Chassis" on page 34.

## HOT LIST ADDITIONS

The following group of models should be added to your growing "Hot List" Address all information, if available, directly to the person listed to be contacted.

<u>MODEL</u>	<u>SERIAL</u>	<u>PERSON TO CONTACT</u>
M604WGL	469875	Bill Colesberry
M604WBG	488351	Sunnyvale Hardware Co., Inc.
M604WBG	31906	175 El Camino Real
M606WGN	543405	Sunnyvale, California
M606WBN	506032	
M426WGL	637487	

## ONE MOMENT, PLEASE

Due to technical difficulties beyond our control, we were unable to bring you Index Pages 1-3 and Pages C33-C36. Index Pages 1-2 are included with this mailing. The other pages will be available at a future time. Also included with this mailing are Pages B27-B30 and B43-B46.

## REDUCTION OF PAGE TEARS

One way to help prevent the pages of your manual from tearing at the punch is to add a stiff cardboard insert at the front and rear of the binder. Any stiff material will do. Cut the insert to about 11" x 3" and punch the three holes to align with the rings of the binder. Future loose-leaf sheets will have smaller holes in an effort to provide a stronger page.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

AUG 1962

VOL.4 NO.8

## NEW MXT CHASSIS

In view of the continuing improvement program followed by General Electric, models formerly supplied with the MX Chassis will now come equipped with the new MXT Chassis. This version has many similarities to the MX but employs a toroidal wound yoke (vertical coils only). This improvement coupled with others sufficiently changed the original chassis to require a new designation. This designation MXT will be stamped on the chassis along with the chassis code numbers.

The Schematic and parts list for the MXT Chassis version is provided for inclusion in the Service Manual. Reference to this chassis does not appear on the model pages of Section A but the service technician should be aware of the fact that any model calling for the MX Chassis may come equipped with an MXT Chassis version. Reference to this chassis should be included on pages A53, A57, A61, A63, A65, A67, A69, A71 and A73. Any page revised in the future will carry this addition and the new Index available in September, will also point out this information.

## CORRECTIONS PLEASE

The Service Manual carries the following incorrect parts listings. Each of these pages will be re-issued at a later date, however, the corrections are noted here to prevent wrong material from being delivered causing needless delays in service. Please note these corrections on the appropriate pages.

Page A76

QX Chassis models - replacement parts

SPEAKER-2"x6"; should be Catalog No. ET95X40

Page C19

LX Chassis - Misc. Electrical Replacement Parts

SPEAKER-4"; should be Catalog No. ET95X6

Note: The speaker will be carried only on model pages (section A) in future issues.

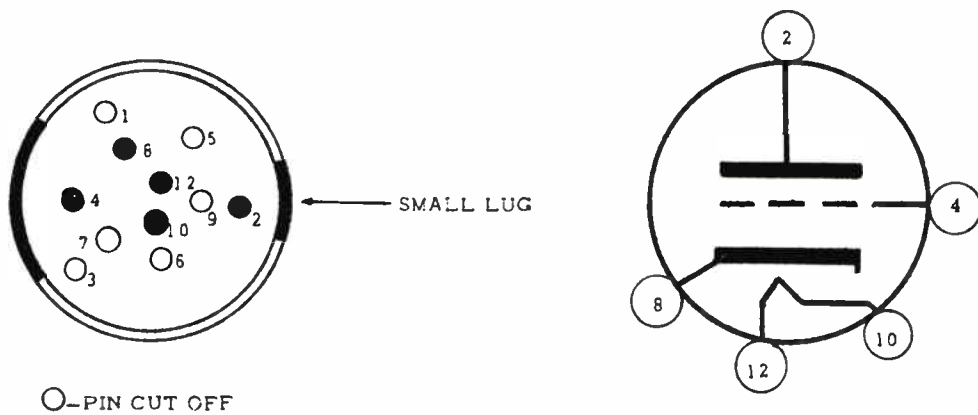
ONE MORE STRAY

The following set has been added to the "Hot List" and servicemen are asked to be on the lookout for this and others previously published.

MODEL	SERIAL NUMBER	CONTACT
M204 XBN	469805	T. Shields Buy Rite Furniture Co. 209 Park Avenue Hereford, Texas

TUBE BASE DIAGRAM

Difficulty in locating pins of the RF Amplifiers 6CW4, 6DS4, and 2DS4 has been noted and is mostly due to lack of the base diagrams being published with the schematic. The diagram below shows only these particular tubes. The tube is keyed to the socket by wide and narrow skirt areas around the pins and these are shown by the heavy areas in the shield line of the diagram.





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

SEPT.-OCT. 1962

VOL. 4, NO. 9

## DUE TO CIRCUMSTANCES BEYOND

This issue of Service Talk combines the mailings of September and October. Due to the tardy delivery of the August material and in order to provide the field with a complete package covering the new CX Chassis color receivers, the September mailing was postponed indefinitely.

Note that there are thirty-two sheets of Television material for filing this month. These are all new pages covering MX Chassis receivers as well as the CX Chassis release. Many comments received on the new service information format prove out the desirability of our new loose leaf manual; however, each stressed the need for immediate filing of pages. Less than three minutes spent at the time the pages are received will provide an up-to-date and complete manual.

A new index will be available at the next mailing. The increased number of pages mailed this month prevented including this information.

## CONTROL BREAKAGE

Service of the "Escort" models, the new General Electric light weight portable, usually requires the removal of the cabinet back as is true of any receiver, however, assembly of the back if improperly performed will result in damage to the Vertical size control at the rear. Always be sure that the shafts of the rear controls line up with the access holes in the cabinet before completing the assembly. A new shorter shaft control will be used in the future to prevent this breakage.







# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

NOVEMBER 1962

VOL. 4 NO. 11

## DO IT NOW

All Service Manual Subscriptions will expire on December 31. Your distributor is soliciting renewals and new subscriptions now for 1963 mailings. The new year promises to be filled with many changes and improvements both in publications and the new line of television receivers. Keep up to date with current information mailed monthly from the factory.

Only one plan for renewal subscription will be available for 1963. Plan E will renew present subscriptions to December 1963 providing all technical information covering Television Receiver Department and Audio Department goods products. Plan F has been added for new subscribers. This plan will provide the Service Manual pages up to date with a Vinyl binder. Contact your distributor today and enjoy the benefits of uninterrupted service information.

## "HOT LIST" ADDITIONS

Two organizations report losses and would appreciate any information you can provide to the whereabouts of the following television sets.

<u>MODEL NO.</u>	<u>SERIAL NO.</u>	<u>CONTACT</u>
M720XEB	591616	Patrick McVicker
M720XEB	592213	The Commercial Electric Co.
M720XEB	815534	3300 Summit Street Toledo 11, Ohio
CBM602WVY	535287	B. I. Bridgewater
CBM602WVY	535233	General Electric Co.
CBM602WVY	535196	8401 Carpenter Freeway
CBM602WVY	535229	Dallas, Texas

(over)

## SOME ADDITIONS & CORRECTIONS

To bring your Service Manual up to date the following changes should be noted on the appropriate pages.

### Page A24, CAM726WEB CHASSIS SPECIAL COMPONENTS

Change:           Cat. No. for the Coil, Horizontal Linearity  
                      (L256) to read ET36X22

### Under: CAM726WEB CABINET AND APPEARANCE ITEMS

Add:               ET41X3    -   Pilot Lamp Assembly  
                      ET3X477   -   Clip, Pilot Lamp Retainer

### Page B60

The caption on figure B60 should be changed to read:  
ET86X178 VHF TUNER SCHEMATIC DIAGRAM

### Page B61

Figure B61 has the transposed caption and should read:  
ET86X177 VHF TUNER SCHEMATIC DIAGRAM

Making these changes immediately will prevent confusion and error in parts being ordered.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

DECEMBER 1962

VOL. 4, NO. 12

## SEASON'S GREETINGS

The entire staff of the Product Service group at Electronics Park wishes each and every one the Merriest Christmas and may the new year be more prosperous than ever. Let us ever be mindful of our mutual aim; to please our customer and perform for him the services needed.

## 1963 SUBSCRIPTIONS

This marks the close of Subscription Plan mailings for 1962. If you have renewed your subscription, Service Manual pages for the CX, LY, MX and QX chassis and models will continue in 1963, until all information is complete. At that time your binder will contain all "W" and "X" line material and will be filled to capacity.

Included in this mailing are the sheets covering the new "LY" chassis and models. This is the first release of a new page numbering system, which we believe you will prefer. In this system, all models, tuner and chassis information for a given chassis type will be grouped together, and pages will be numbered in order. For instance, you will note the first model pages are LY1-1 and LY1-2. The next model pages will be LY1-3 and LY1-4, etc. Similarly, tuner pages will be LY2-1, LY2-2, LY2-3, etc. Future pages will be numbered in sequence for their sections, which makes it very simple to keep all information in order. A tab page will be furnished for each chassis type to further simplify the use of the manual.

When changes or additions occur, superseding pages will be mailed to all subscribers. These pages will have the same page number, but a new date. Simply destroy the old page and replace with the latest issue, thus keeping up to date.

Attractive vinyl covered binders are available at low cost through your General Electric Television Receiver Distributor. We suggest that you install these "LY" pages in a new binder right away before they become misplaced. If you continue to place each mailing in the binder when it arrives, you will always have it available for instant use.

(over)

## CORRECTIONS PLEASE

Refer to page D21 of the Service Manual covering the replacement parts for the SA310 Stereo Amplifier. Change the Catalog Number for Transformer, Power T801 to read ET88X71.

On page A100 the Catalog Numbers for the Door Pull should read L-ET78X184 and L-ET78X185.

## HOT LIST ADDITIONS

One TV Set is added to those "strayed" from their owners.

<u>MODEL NO.</u>	<u>SERIAL NO.</u>	<u>CONTACT</u>
M720XMD	670283	C. A. Hobert Coiner's Dept. Store Berryville, Virginia

## THE LAST FOR '62

The December Television mailing includes seven new sheets and three revised sheets for your service manual. This does not include the ten sheets covering the LY Chassis which will begin the new series.

Naturally errors have appeared in some of the pages produced and as these are discovered the pages will be superseded. Two corrections that do not appear with the erratta this month are listed here because it is not anticipated to reprint these sheets. The Service Talk letter for November was numbered Vol. 4 No. 11 and should have been Vol. 4 No. 10 due to the combined mailing for September and October. We have, therefore, numbered this letter Vol. 4 No. 12 but note there will be no number 10. Note sheets having pages 41-42 and 49-50 have the same publication numbers. For your records pages 49-50 will remain 32-2032-61 and pages 41-42 should be marked 32-2036-61. Marking your copy with these changes will provide accurate information.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JANUARY 1963

VOL. 5, NO. 1

## A FEW SERVICE TIPS

Once in a while a service tip comes our way that we believe should be passed along. Among those included this month are some which may save a service technician considerable time. If you have a tip that might help, why not pass it along for everyone to enjoy.

### MX-MXT Chassis

When installing a set employing the MX or MXT Chassis having the Automatic Brightness Control feature (ABC), the following tip might help in getting the correct setting of the AGC.

The Automatic Brightness Control (ABC) unit performs two functions, one of which may not always be recognized. In addition to changing the brightness level, it also changes contrast level by varying the AGC voltage.

As a result of the AGC change created by the ABC function, it is possible that correct AGC setting in a darkened room will result in a signal overload when the room is brighter. To minimize this possibility, the ABC switch should be set to the "Off" position when setting up AGC.

### LX Chassis Models

Some early LX Chassis portable sets were released with the wrong fuse number printed on the tube location label. The correct fuse for these sets is the ET10X39. When a label showing an incorrect number is found, make a change on the label to correct the number. This may save time at some future date.

### Portable Models

Servicemen at dealer locations should check around the shop for the plastic sponge pads packed in the cartons with the M502X line of portables. Our distributor at Pittsburgh suggests that these will make excellent pads for the bench to save scratches on picture tube faces.

(over)



## Lead Dress

One of the precautions to be observed in general servicing is that of wiring dress. Care should be taken to assure that all plastic insulated wires are dressed at least 1/8" from any resistors which may be expected to heat up in operation. This is particularly true in the case of metal film or glass type resistors, since they will ultimately fail if subjected to melted plastic insulation of the polyvinyl chloride variety used on most of the interconnecting wiring on the chassis. In most cases it is also advisable to dress large wattage resistors as far from the surface of the circuit board as possible to provide surface cooling for the resistor.

## THE HOT LIST

One TV set turns up missing this month and should be noted on your personal "Hot List."

<u>Model</u>	<u>Serial No.</u>	<u>Contact</u>
SBM204XBG	468199	Hospital TV Company of America 1911 S. Shepherd Houston 19, Texas

## THE SERVICE MANUAL

Included in this month's mailing are five new pages for the General Electric Television Service Manual for 1962. There is also eight pages that have been updated with late information. These supersedures should always be used for latest information and the earlier pages destroyed.

One supersedure is included for the 1963 manual which adds new models to those announced last month.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

FEBRUARY 1963

VOL. 5, NO. 2

## SHOW YOUR COLORS

Since you have taken the trouble to assure that your shop is equipped with the latest and complete information on G-E Television and Console Phonographs, shouldn't you make your customers aware of this? Many of them may have had the unfortunate experience of over-priced or poor service by an uninformed technician.

The colorful wall certificate included in your January mailing is designed to attract attention. If you haven't already done so - type or print in your name on the blank line, then hang in a prominent place. The proof that you have a direct information source from the factory is most important to your customers.

## THE HOT LIST




















Three more G-E television sets have disappeared in the past month.

<u>MODEL</u>	<u>SERIAL NO.</u>	<u>CONTACT</u>
CBM602WVY	461443	Mr. B.I. Bridgewater
CBM602WVY	461489	General Electric Co.
CBM602WVY	460723	8401 Carpenter Freeway Dallas 7, Texas

A supersedure for Pages C77-C82, the MXT schematic, was planned for this mailing. Certain production change schedules have made this impractical, so we are including the usual trouble shooting wave forms in this issue of Service Talk. They will then be available for use until the regular supersedure is issued.

(over)

MXT CHASSIS ON-SIGNAL WAVESHAPES

<p>UNFILTERED B+</p>  <p>120~ 15V</p>	<p>FILTERED B+</p>  <p>120~ 1.0V</p>	<p>TEST POINT III</p>  <p>*** 2.5V</p>	<p>TEST POINT IV</p>  <p>*** 20/120V</p>
<p>** SIGNIFIES SCOPE SYNCHED AT 1/2 VERTICAL FREQUENCY.                      *** SIGNIFIES SCOPE SYNCHED AT 1/2 HORIZONTAL FREQUENCY.</p>			
<p>V5B Pin 3</p>  <p>*** 60V</p>	<p>V5B Pin 4</p>  <p>** 50V</p>	<p>V5B Pin 4</p>  <p>*** 50V</p>	<p>V5C Pin 8</p>  <p>*** 140V</p>
<p>V8A Pin 10</p>  <p>** 270V</p>	<p>V8B Pin 3</p>  <p>** 130V</p>	<p>V8B Pin 5</p>  <p>** 1200V</p>	<p>V9A Pin 9</p>  <p>*** 13V</p>
<p>V9A Pin 10</p>  <p>*** 25V</p>	<p>V9B Pin 2</p>  <p>*** 15V</p>	<p>V9B Pin 4</p>  <p>*** 50V</p>	<p>V9C Pin 6</p>  <p>*** 150V</p>
<p>V10 Pin 5</p>  <p>*** 150V</p>	<p>V13 Pin 3</p>  <p>** 100V</p>	<p>V13 Pin 6</p>  <p>*** 30V</p>	<p>NOTES:                      WAVESHAPES TAKEN WITH NOISE-FREE SIGNAL; -1.5/-3V AGC AT TUNER; CONTROLS SET FOR NORMAL OPERATION. VOLTAGES SHOWN ARE APPROXIMATE PEAK-TO-PEAK.</p>



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

MARCH 1963

VOL. 5, NO. 3

## SERVICING COLOR RECEIVERS

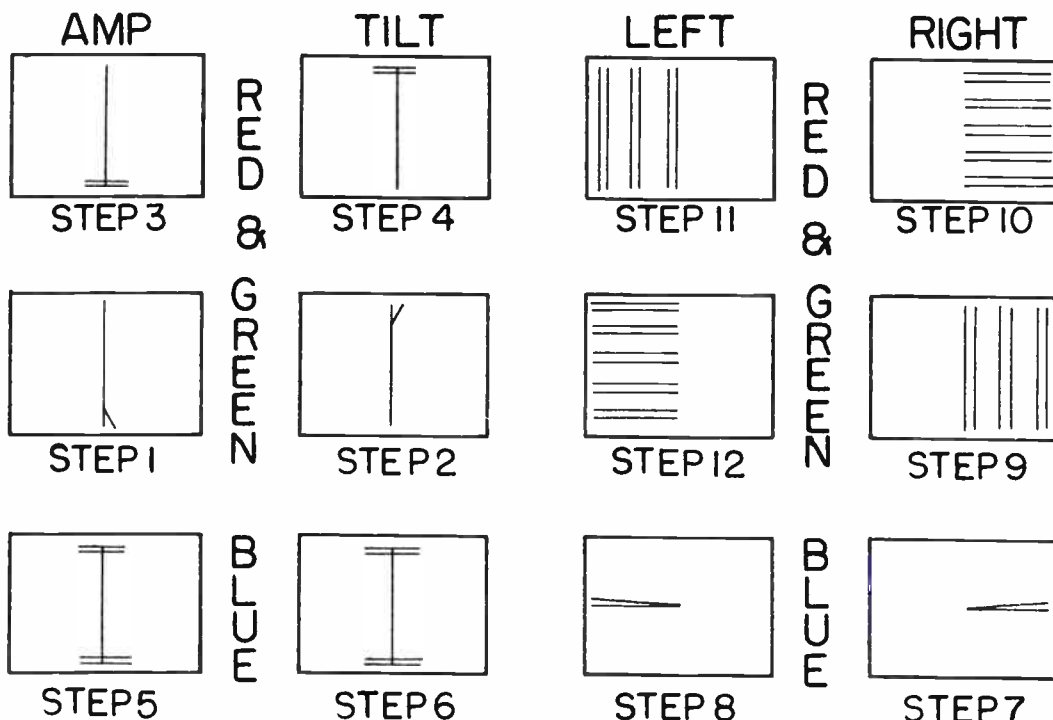
The servicing of color receivers is a constantly growing business, and will continue to increase in the months to come. If this additional work is to be profitable to you, it must be accomplished efficiently and expertly.

Dynamic convergence adjustments frequently consume more time than they should, particularly when it is not being done everyday. To expedite convergence set up, our Field Service Specialists have developed a pocket size chart which may be used for both CW and CX Models.

An explanation of the use of the chart is given on the reverse side, so we suggest you clip it out and carry it with you on all color service calls. It will save you much time, and convergence will be just a routine job....If you need extra charts, they may be made by copying this original.

### VERTICAL

### HORIZONTAL



(over)

## CONVERGENCE CHART

### General Electric - CW & CX Chassis

Each of the small rectangles on this chart shows the portion of the raster affected by the convergence board control which is located in that position. The convergence steps are numbered to show the correct sequence of adjustments.





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

APRIL 1963

VOL. 5, NO. 4

## CORRECTIONS TO SERVICE MANUAL INFORMATION

### CX Chassis

Page C111 - Replacement Parts List under "Coils & Transformers"

Change: T105 TRANSFORMER-Power

from: Cat. No. ET88X76

to: Cat. No. ET88X77

### CH49 Record Changer

Page D29 - Replacement Parts List

Change Item No. 24: KNOB-Speed Selector, Brown

from: Cat. No. EA97X434

to: Cat. No. ET43X483

### M6, MW, MX-MXT Power Tuning Assemblies

If difficulty is experienced with loosening of the pin upon which the intermediate gear (Item 25) revolves, it is not necessary to replace the entire gear case. A replacement pin, with mating gear, retaining ring and installation instructions, is available from your General Electric Television Receiver distributor under the Cat. No. ET5X52.

In most of the cases where a power tuning motor fails to operate satisfactorily, the problem is due to stripping of the nylon pinion gear on the end of the rotor shaft. Replacement rotors are now available from your distributor and are identified on the reverse side of this sheet. (Motor number is stamped on motor bracket.) Three (3) different types were used, so be sure to check for correct motor number.

(over)

<u>MOTOR</u> <u>CAT. NO.</u>		<u>ROTOR</u> <u>CAT. NO.</u>
ET72X9	Early Motor Production (M6, U5) Rotor is 3/4" long	ET41X32
ET72X9	Late Motor Production (M6, U5) Rotor is 1/2" long	ET41X33
ET72X10	All Motor Production (M6, U5)	ET41X35
ET72X13	MW, MX-MXT	ET41X36

QX Chassis

If you should encounter a problem of flashing in the picture of any QX Chassis model, it is probably due to poor contact between the aluminum foil strip, located on the left side of the cabinet back, and some of the grounding clips which press against it. In servicing, care should be taken to be sure that all three (3) clips press firmly against the foil when the cabinet back is installed.

THE HOT LIST

We have been notified that the following receivers are presumed to be stolen. If you should locate one, please contact the individual listed.

<u>Model</u>	<u>Serial No.</u>	<u>Contact</u>
M502XEB	658849	Home Supply 202 E. Pearl P. O. Box 67 Harrisonville, Mo.
PAM202YVY	201330	Root Appliance
R608XVY	602214	1794 S. Taylor Rd.
M500XRD	238275	Cleveland, Ohio
M200YBM	223508	
M204YGR	206404	



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

MAY 1963

VOL. 5, NO. 5

## SOMETHING NEW

Once in the proverbial "blue moon" something really new happens in the Television business. General Electric has again become the leader in introducing a truly Personal Portable.

The new 11-Inch Personal Portable weighs only 13 pounds, but performs like a "heavyweight." A choice of several models is available, all utilizing the SY Chassis, which features a new method of construction. The "SY" brings you once again, the famous General Electric Reliability, Performance and Serviceability.

Your General Electric Television Receiver Distributor will soon be conducting service meetings featuring the SY Chassis. If you are not on his mailing list, be sure to contact him for meeting dates in your area.

Your Plan E mailing this month contains superseding Index Pages to bring your "W" and "X" Line Service Manual up to date. Replace your outdated Index with these sheets, which list all models.

The new "LY Chassis" Tab is furnished this month. Replace your original with this new one which matches other tabs to be issued.

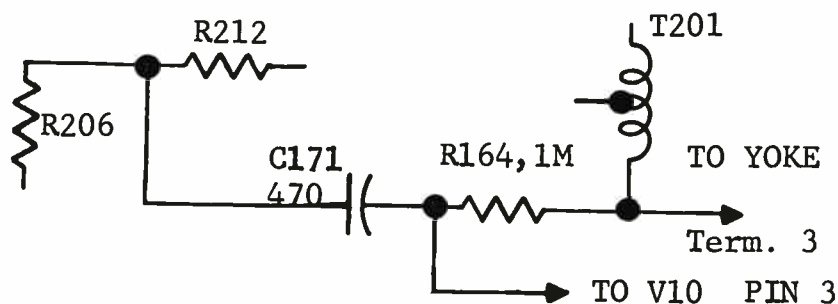
This mailing includes information on the "MY" and "SY" Chassis just being introduced. These pages and tabs are arranged in order and you need only place them in your binder, following the last LY Chassis page (LY4-1).

## IMPORTANT SERVICE INFORMATION

As is frequently the case, when a new chassis is introduced, some last minute improvements were developed which occurred after preparation of the Service Information. Please make the following additions and changes to your "SY" pages as indicated.

PAGE SY3-7 SCHEMATIC DIAGRAM

1. Add circuit change as follows:



2. Delete C408.
3. Change C407 from 10 $\mu\mu\text{f}$  to 22 $\mu\mu\text{f}$ .  
Change C411 from 10 $\mu\mu\text{f}$  to 22 $\mu\mu\text{f}$ .
4. Reverse filament pin numbers on V9 (1X2B). 2,5,8 should be 1,4,6,9 and 1,4,6,9 should be 2,5,8. (R270 is actually a resistance wire filament winding of the HV transformer.)

PAGE SY3-8 CHASSIS REPLACEMENT PARTS LIST

Common Resistors

Add: R164 1 Meg., 1/2W, 10%

Resistors - Special

Add: ET65X32 R270 2.4 ohm resistance wire for V9 filament winding on T251

Capacitors - Disc Ceramic

Delete: C408 800 $\mu\mu\text{f}$ , 20%, 500V

Add: ET22X90 C171 470 $\mu\mu\text{f}$ , 20%, 500V  
ET22X151 C400 470 $\mu\mu\text{f}$ , GMV, 1400V, HiK  
ET118X422 C407 22 $\mu\mu\text{f}$ , 5%, 500V, N750  
C411 22 $\mu\mu\text{f}$ , 5%, 500V, N750

MY CHASSIS SCHEMATIC

Change 6GE5 filament connections from pins 2 and 7 to 12 and 1 respectively.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JUNE 1963

VOL.5,NO.6

## SERVICING HINTS

Preventing damage to a receiver through improper servicing methods is of major interest to all servicemen. In certain cases, such damage may occur through lack of knowledge. The following information concerning semi-conductor power supply rectifiers is a good example.

It is not generally understood that under certain conditions, semi-conductor rectifiers, silicon, germanium or selenium may be subjected to destructive voltages by repetitive switching on and off of the AC power switch.

The following conditions must all be present for this type of damage to occur:

1. The rectifier circuit must be of the half wave type.
2. The rectifier must be supplied from a power transformer or isolation transformer, which has the on-off switch in its primary circuit.
3. The power transformer must be unloaded at the time. This may occur from an open filament fuse in a parallel filament circuit or an open heater in a series filament string, which is supplied from the power transformer.
4. The power switch must be opened at the instant of peak line voltage.

The rectifier damage is a result of the inductive kick from the unloaded power transformer when the primary is interrupted. This high transient voltage may far exceed the inverse peak rating of the rectifier and cause it to short.

(over)







# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JULY—AUGUST 1963

VOL. 5, NO. 7

## SERVICE MANUAL PAGES

Your service plan mailing this month contains information for four different chassis. Be sure to file these sheets at once as instructed below.

### CY Chassis

All pages and separator tab are in order and should be placed in your binder between the last LY page and the MY tab.

### LY Chassis

Insert the supersedure sheets LY1-1, LY1-3, LY1-5 and LY3-5 in place of the same numbered sheets issued previously. Destroy the old sheets.

(over)

## CONVERGENCE CHART

### General Electric - CY Chassis

A convergence setup chart for the CY Chassis color receiver is shown on the reverse side and is used in exactly the same manner as the previous chart for the CW and CX Chassis.

Each of the small rectangles on this chart shows the portion of the raster affected by the convergence board control which is located in that position. The convergence steps are numbered to show the correct sequence of adjustments.

MY Chassis

Insert the tuner sheets between pages MY2-6 and MY3-1.

SY Chassis

Insert the two VHF tuner sheets between pages SY2-8 and SY3-1

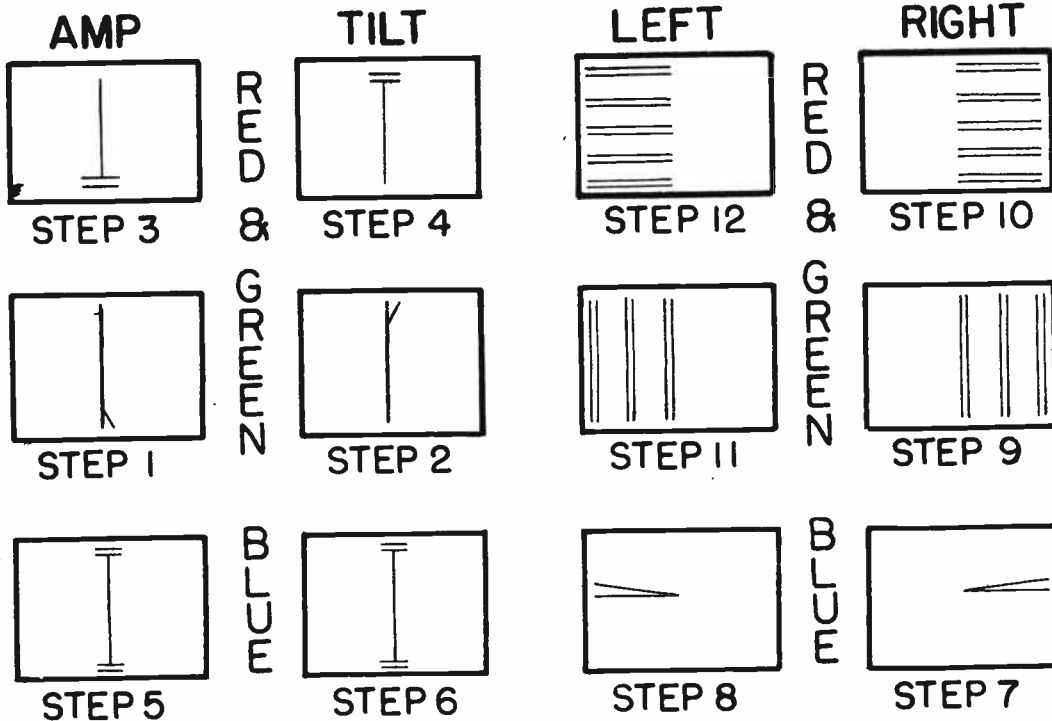
THE HOT LIST

Any information concerning the following stolen receiver should be referred to the dealer listed.

Model M500XRD Ser. #252331 Crawford Furniture Co.  
Pikerville, N. C.

VERTICAL

HORIZONTAL





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

SEPTEMBER 1963

VOL. 5, NO. 8

## UHF CONVERSION - TURRET TUNERS

Although turret type tuners using UHF strips no longer appear in new receivers, there are thousands in use by customers. A great many of these tuners may require the installation of one or more UHF strips in the future, as UHF service is expanded to new areas. Therefore, a few hints and precautions may be useful to those of you who may be experiencing UHF for the first time.

In the majority of General Electric receivers which have used Standard Kollsman turret tuners, only the back half of the cabinet need be removed to gain access to the tuner. The turret type tuners are equipped with a split shield, only one half of which is removed to install strips, since the turret rotates to any desired position. In removing the tuner half shield, care should be taken not to press the release in too far. The mixer plate coil is under the top edge of this shield and may be damaged when the cover is pressed in and slid out from the retaining slot.

Up to four UHF strips may be installed in a turret tuner, one in the blank position and three in place of VHF channel strips which are not used in the area. A spacing of at least two channel positions should be maintained between UHF strips, to prevent interaction. It is also advisable to remove the VHF strips on either side of the UHF position to permit installing the UHF strip without damage. In handling and installing the UHF strips, care must be taken not to bind or change the physical position of any components, or the performance of the strip may be affected. When all UHF strips are in position the adjoining VHF strips may be re-installed. Installation and adjustment instructions are packed with each UHF strip.

The correct type of UHF strip must be used with each tuner. In ordering be sure to specify both the type and UHF channel number. Where cross modulation and overload problems have been encountered on certain channels, special dual pre-selector strips are available at slightly higher prices. These should be used for the tuners specified in areas where the problem exists. The various type numbers of strips for General Electric tuners are as follows:

(over)

UHF Strip Type GW4, (prefixed by channel number) used with tuners:

ET86X103	ET86X126	ET86X130	ET86X166
ET86X124	ET86X129	ET86X138	ET86X167

Regular UHF Strip Type P4 (prefixed by channel number) and dual pre-selector strips type P4A (prefixed by channel number) for channels 16, 21, 22, 28, 31, 33 and 43 are used with tuners:

ET86X156	ET86X159	ET86X162	ET86X165
ET86X158	ET86X160	ET86X164	

### SERVICE MANUAL PAGES

Your service plan mailing this month contains information for five different chassis. Be sure to file these sheets at once as instructed below.

The following sheets should be inserted in the 1964 "Y" Line Service Manual.

#### AY Chassis

Sheets AY1-43 and AY1-44 follow Page AY1-42.

#### LY Chassis

Supersedure Sheet LY4-1. Destroy the old sheet.

#### MY Chassis

Sheets MY4-1, MY4-3, MY4-5, MY4-7 and MY4-9 follow Page MY3-10.

#### SY Chassis

Sheets SY1-5 and SY1-7 follow Page SY1-2. Sheets SY4-1 and SY4-3 follow Page SY3-8. Supersedure Sheet SY3-7. Destroy the old page.

Due to a schedule change, Sheet SY1-3 will appear in the October Plan E Mailing.

-----  
The following sheets should be inserted in the 1963 "X" Line Service Manual.

#### CX Chassis

Supersedure Sheet C105 in the "C" section. Destroy the old sheet.

#### MXT Chassis

Sheets A127 and A129 follow Page A126 in the "A" section. Supersedure Sheets A105, A123 and A125. Destroy the old sheets.





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

OCTOBER 1963

VOL. 5, NO. 9

## HORIZONTAL DEFLECTION ALIGNMENT IN COLOR TELEVISION RECEIVERS

A pilot light bulb is not a good substitute for a meter!

The horizontal efficiency coil in the CW, CX and CY chassis of General Electric color television receivers is adjusted to attain a specific horizontal amplifier cathode current. The cathode current is specified in the Service Manual and is observed on a milliammeter inserted in series with the cathode to ground connection.

Some service technicians have been substituting a pilot bulb as an indicating device, placing it between the plate cap and connector on the top of the horizontal amplifier tube. Using this method, the horizontal efficiency coil has been adjusted for minimum brilliance from the bulb to indicate minimum plate current.

THE BULB METHOD IS NOT RECOMMENDED for the following reasons:

1. Minimum plate current does not necessarily mean maximum output from a screen grid tube. Maximum output from the horizontal amplifier tube can be attained only by adjusting the horizontal efficiency coil for the horizontal amplifier cathode current specified in the Service Manual. Of course maximum output should be produced to attain maximum efficiency from the horizontal system (boost, brightness, focus, sweep).
2. The eye cannot see small changes in brightness from the pilot bulb due to a change in current of a few milliamperes. Therefore critical adjustments which can be observed on the milliammeter cannot be seen with the pilot bulb.
3. If the pilot bulb represents any significant capacity, it could result in detuning of the flyback transformer when the bulb is removed from the circuit.

Always follow the instructions in the Service Manual for maximum receiver performance and customer satisfaction.

(over)

## SERVICE MANUAL PAGES

Your television service plan mailing this month contains an Index Tab, a Foreword, the Nomenclature for Television Receivers and an Index, plus service information for five different chassis. Be sure to file these sheets at once as instructed below. Destroy all old sheets which have been superseded by new sheets.

The following sheets should be inserted in the 1964 "Y" Line Service Manual.

Insert the Index Tab, Foreword and Nomenclature - Pages 1 and 2, and the Index-Pages 3 and 4 in the front of the Service Manual.

CY Chassis            Supersedure sheet CY3-23.

LY Chassis            Sheets LY2-11, LY2-13, LY2-15 follow Page LY2-10.

QY Chassis            Insert QY Tab after Page MY4-10. Following the QY Tab, insert in order sheets QY1-1, QY2-1, QY2-3, QY2-5, QY2-7, QY2-9, QY3-1, QY3-3, QY3-5, QY3-7 and QY3-9.

SY Chassis            Supersedure sheet SY1-1. Sheet SY1-3 follows Page SY1-2.

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The following sheets should be inserted in the 1963 "X" Line Service Manual.

MX/MXT Chassis      Supersedure sheets A53, A57, A59, A61, A65, A67, A71, A83, A117, B69 and B71. Sheet B85 follows Page B84.

## THE HOT LIST

We have been notified that the following receivers are presumed to be stolen. If you should locate one, please contact the individual listed.

<u>Model</u>	<u>Serial No.</u>	<u>Contact</u>
CBM602WVY	535333	Mr. B.I. Bridgewater General Electric Co. 8401 Carpenter Freeway Dallas 7, Texas
CBM602WVY	535556	
M502XVY	975689	McDonald Refrigeration 307 W. Bremer Avenue Waverly, Iowa. 50677

Erratum: September 1963 Service Talk was incorrectly numbered Vol.5, No.7. Please change this to Vol.5, No.8.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

NOVEMBER 1963

VOL. 5, NO. 10

## THE PINK PAGE

A Pink Tab Page has been added to the AY Service Manual this month. It is titled "AY CABINET AND APPEARANCE REPLACEMENT PARTS CHANGES." File this Pink Page directly behind the last AY model sheet and refer to it for the latest changes each time that you are selecting a Cabinet and Appearance Item Replacement Part for AY models. You don't have to read the entire page to do this. Just look at the left side of the Pink Page to see if there is any item in which you are interested, such as "UHF TUNER" or "UHF KNOBS." A description of the change appears to the right of the subject.

Why did we do this? To speed up the flow of information to you. When we receive parts information too late to incorporate in the Service Manual pages for the current Plan E mailing, it must be held up until the next mailing. The Pink Page gets the information to you pronto. For instance, to incorporate the Pink Page changes into the Service Manual this month would require revising 21 model sheets and printing 210,000 copies. This could not have been done in time for the Plan E mailing. Instead, the information was consolidated on the Pink Page, 10,000 copies printed---and you have it. Of course the Pink Page changes will be incorporated into the regular Service Manual pages at a later date.

Let us know how you like this new Plan E service.

## SY CHASSIS CIRCUIT BOARDS AND TUBE CHANGE

Latest production SY chassis use a 33GY7 for V8, the horizontal driver-damper compactron, in place of the 33GT7 used previously.

THESE TUBES ARE NOT INTERCHANGEABLE. The 33GY7 has the screen connected to pin 11. The 33GT7 has its screen connected to pin 10. Replace defective tubes only with those shown on the tube label attached to the cabinet, or damage may result.

During production the copper patterns on the I-F and Sweep etched circuit boards were revised. The major revision was changing the connection of the boost capacitor C261 from B/ to ground. C261 is still physically in the same place. The other revisions consisted of minor changes in the shape of the "islands" so that the locations of some components on the board may be shifted a fraction of an inch.

CORRECTION TO SERVICE MANUAL INFORMATION CX CHASSIS.

Page C111 under "COILS & TRANSFORMERS."

Change: T105 TRANSFORMER-POWER  
from Cat. No. ET86X77  
to Cat. No. ET88X77

The Service Manual page will not be re-issued at this time.

SERVICE MANUAL PAGES

File the new sheets at once as instructed below. Destroy all old sheets which have been superseded by new sheets.

Insert the following sheets in the "Y" line Service Manual.

<u>AY CHASSIS</u>	Sheets AY3-5 and the Pink Tab Page.
<u>CY CHASSIS</u>	Supersedure sheets CY3-1 and CY3-23.
<u>LY CHASSIS</u>	Sheets LY2-17 and LY2-19.
<u>MY CHASSIS</u>	Supersedure sheets MY3-3, MY3-5 and MY3-7.
<u>SY CHASSIS</u>	Supersedure sheets SY1-5, SY1-7, SY2-11, SY3-1, SY3-7.

Insert the following sheets in the "W" line Service Manual.

<u>MW CHASSIS</u>	Supersedure sheets A21, A23, B41 and D9.
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# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

DECEMBER 1963

VOL.5, NO.11

## SERVICING HINTS - YOKES

When you are faced with a service problem which appears to be due to a yoke failure, check the yoke before condemning it. A little extra checking will frequently save you the time and expense of replacement.

The most obvious test is to check for correct resistance of the winding which is in question, after isolating it from the balance of the circuit. Usually, individual resistances will be shown in the service notes. Any wide deviation from the published values should be investigated, although shorted turns can rarely be determined in this manner.

Of course, the most common type of yoke failure is found in the horizontal portion. The symptoms may be loss of brightness, horizontal keystoneing, or complete loss of high voltage.

In yokes using series connected coils, an open circuit may occur due to wire breakage at any of the terminal lugs. This is easily determined by a resistance check or visual inspection. If the lead is broken short, it should be spliced before attempting to resolder to the lug. You should also check for internal shorts between horizontal and vertical windings, although in some cases the breakdown occurs only under high pulse voltages.

Failure of the small capacitor located across one section of the horizontal winding is frequently mistaken for a shorted winding, since it also causes loss of brightness and keystoneing. In some cases the capacitor will also exhibit a burned spot. Be sure to replace only with the exact part specified in the service manual. These capacitors are critical in value, usually having about a 2KV rating and an N2200 temperature coefficient.

Parallel connected windings may become broken at the lugs, thus opening one or both coils. Again, a resistance check will determine this problem and the repair is simple.

(over)

Due to their nature and the lower peak voltages present, vertical windings rarely cause problems. When a vertical problem does exist, the windings should be checked for resistance and damage at the lugs. In saddle wound yokes, resistors of about 1000 ohms are located across the coils preventing an open coil from showing as a complete open circuit.

When you are handling or repairing any yoke you should always observe the following precautions:

1. Do not change the dress of windings or permit any leads to cross over others.
2. Handle yokes with care to prevent movement or misplacement of turns when passing over the tube base and neck.
3. Be sure that leads to the yoke are kept away from tubes, hot resistors, or any points likely to induce corona from the yoke leads.

#### SERVICE MANUAL PAGES

The Service Manual sheets which you have received should be filed at once as instructed below. Destroy all old sheets which have been superseded by new sheets.

Insert the following sheets in the "Y" line Service Manual.

AY CHASSIS      Supersedure sheet AY2-5 and new sheets AY2-11, AY2-13 and AY2-15.

MY CHASSIS      Supersedure sheets MY2-5, MY3-1, MY3-9. New sheets MY2-19, MY2-21, MY2-23, MY2-25.

#### HOLIDAY GREETINGS

The folks in Television Product Service wish you a very Merry Christmas and a Happy and Prosperous New Year.



P. D. Wexler  
Manager - Product Service





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JANUARY 1964

VOL. 6, NO. 1

## YOUR 1964 SERVICE MANUAL SUBSCRIPTION PLAN

Have you renewed your Television Console-Phonograph Service Manual subscription for 1964? If not, we urge you to fill out the flyer coupon which you received in your November mail and send it with your remittance to your General Electric Television Receiver Distributor. Do it today so that you will not miss any of the valuable material to come.

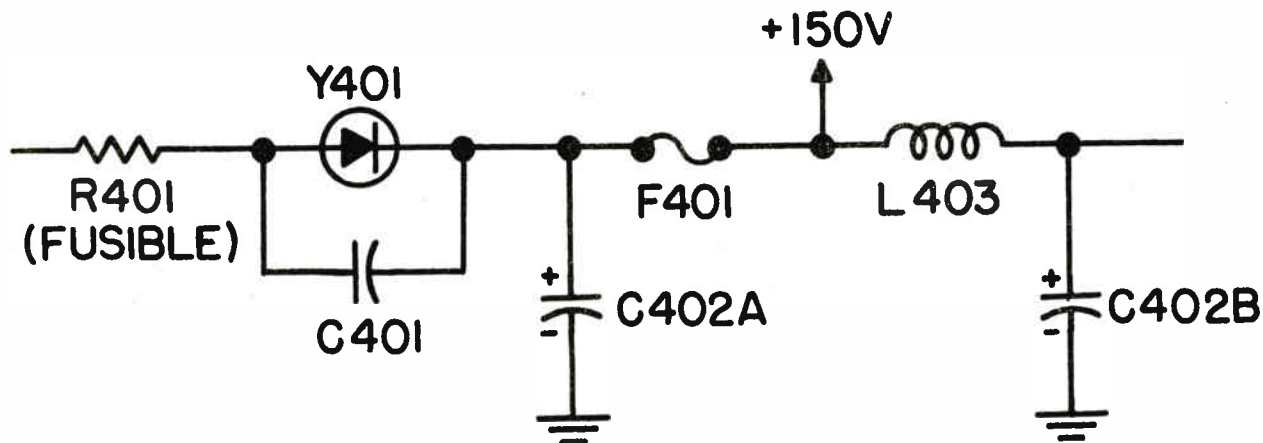
All 1964 subscriptions will include a loose-leaf binder for forthcoming TV service manuals. The binder will be mailed to you in February since our new subscription mailing list will not be completed until mid-January.

### FUSE ADDED TO THE SY CHASSIS

A fuse, F401, has been added to the B+ power supply in the 11 inch portable SY Chassis. The fuse is between C402A and L403 as illustrated below and is included in all chassis beginning with chassis code 347.

F401 is rated 0.5 amp. and is a fast-blo pigtail type. The replacement part is Cat. No. ET10X43.

The new fuse is mounted on a terminal strip at the top corner of the signal board adjacent to the picture tube.



(over)

MY CHASSIS PARTS LIST REVISION

Make the following revision to Page MY3-10 in the "Y" line Service Manual.

Page MY3-10 Under "COILS AND TRANSFORMERS"

Change the Catalog Number of T251 from ET77X71 to ET77X74.

SERVICE MANUAL PAGES

The Service Manual sheets which you have received should be filed at once as instructed below. Destroy all old sheets which have been superseded by new sheets.

Insert the following sheets in the "Y" line Service Manual.

AY CHASSIS

Supersedure sheet AY1-11.

LY CHASSIS

Supersedure sheets LY1-3 and LY1-5.

SY CHASSIS

Supersedure sheets SY1-1, SY1-3, SY1-5, SY1-7, SY2-1, SY2-3, SY2-11, SY4-1 and SY4-3.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

FEBRUARY 1964

VOL.6, NO. 2

We thank you for your 1964 subscription to General Electric Factory Service Information. It gives us great pleasure and satisfaction to know that you will be receiving the latest up-to-date service information for General Electric Television Receivers, Tape Recorders, Stereo-Phono and AM-FM Tuners. We hope that its use will help you attain a most prosperous year in 1964.

Today you are receiving the first issue of your new subscription. It contains the following material and information.

## BINDER

The new dark blue vinyl binder is to be used for filing service manuals which you will be receiving soon for the 1965 "A" Line of Television Receivers.

## CERTIFICATE

Prominently display your 1964 General Electric Factory Service Information Certificate so that your customers will know who the General Electric expert is. Of course, the certificate should be inscribed with a signature on the line provided and then framed appropriately.

## TV USED ON CATALOG SUPPLEMENT

This supplement includes a new index and a replacement parts list of the most used electrical and appearance items in the "W", "X" and "Y" chassis lines. The format has been revised so that appearance items only are shown opposite each cabinet model number and listings are consistent for all models and chassis. Electrical items are listed by chassis types at the end of each section in the catalog.

File your new supplement in the Used On Catalog as follows:

Replace Index Pages VII, VIII, IX, and X respectively with new

pages having the same page numbers.

Under "SECTION A COLOR RECEIVERS"

Replace Pages A1 and A2 with revised pages. Add Pages A3, A4, and A5 after Page A2.

Under "SECTION B MONOCHROME RECEIVERS"

Add Pages B53 through B76 after Page B52.

SERVICE MANUAL PAGES

Add the following new pages to the "Y" Line Service Manual.

MY Chassis File sheets MY2-27 and MY2-29 after Page MY2-26.

HOT LIST

We have been notified that the following receivers are presumed to be stolen. If you should locate one, please contact the individual listed.

<u>Model</u>	<u>Serial No.</u>	<u>Contact</u>
M112YVY	112595	Foutz Stoves and Appliances
M112YVY	182293	510 Tuscarawas Ave.
M110YBG	137568	New Philadelphia, Ohio
M200YBN	3881100	
M202YVY	404610	
M501XBG	677086	
M501XBG	719799	
M113YRD	012446	Plaza TV
PAM113YVY	031064	1421 West King Street
M111YBG	80607 or 32853	Decatur, Illinois



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

MARCH 1964

VOL. 6, NO. 3

## A NEW LINE OF G-E COLOR RECEIVERS

Your Subscription Plan mailing this month includes the Service Manual pages covering the new FY color chassis. This chassis features a new horizontal oscillator and AFC circuit for improved horizontal stability and performance.

## THE NEW DA CHASSIS LINE

Also included in this mailing are the Service Manual pages for the latest monochrome chassis. The DA is the first 1965 Line all channel chassis. All models will be VHF-UHF and will utilize the transistorized UHF tuner. Cabinets will feature the "Designer" and "Custom Designer" styling which has proven so popular.

Both the FY and DA chassis models incorporate new tuning systems for increased ease of tuning both VHF and UHF.

Your General Electric Television Receiver Distributor will be conducting service meetings on these chassis in the near future. Contact him for location and date of the meeting nearest to you.

To assist you in convergence set up of the FY receivers, a new Handy-Chart is included on this sheet.

32-0014-64B

SERVICE MANUAL PAGES

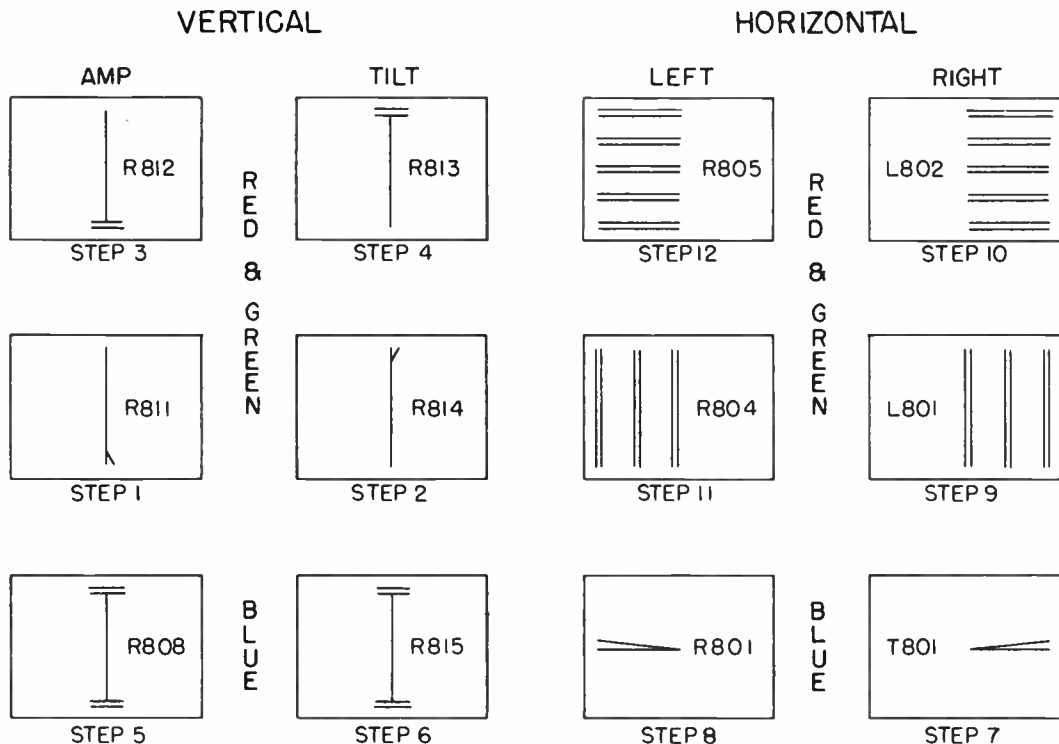
Add the following new pages to the "Y" Line Service Manual.

FY Chassis File the "FY" tab; Pages FY1-1 thru FY1-6, FY2-1 thru FY2-3 and FY3-1 thru FY3-30 after Page SY4-4.

MY Chassis Sheets MY1-9 and MY1-11 after Page MY1-8.

File the following pages in the new "A" Line Service Manual binder.

DA Chassis Sheets DA1-1, DA2-1, 3, 5, 7 and DA3-1, 3 and 5.



*FY Chassis—Sequence of Convergence Steps with Patterns*





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

APRIL 1964

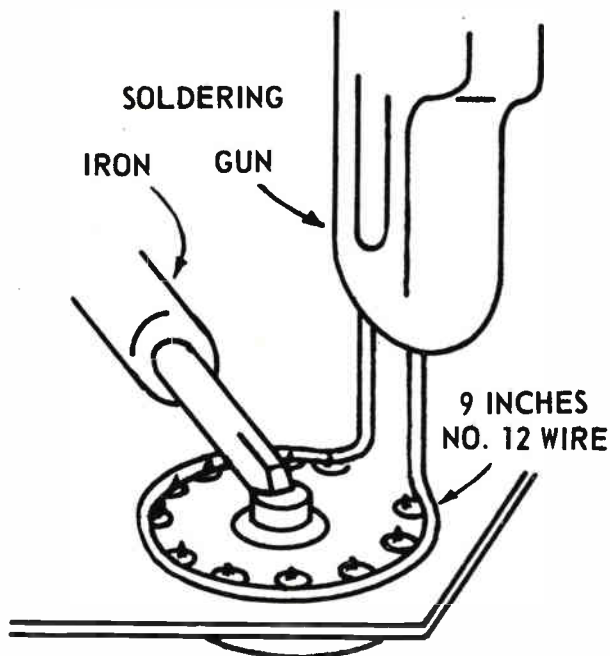
VOL. 6, NO. 4

## REPLACING COMPACTRON SOCKETS ON ETCHED CIRCUIT BOARDS

"Compactron sockets can be removed easily from an etched circuit board with a piece of #12 wire and a Weller soldering gun," says Bob Whitaker, Gould-Farmer Company, Inc., Binghamton, New York.

Fashion a 9" length of #12 bare copper wire to encircle the pins of a compactron socket on the solder side of an etched circuit board. This formed wire can then be used as the "tip" of a soldering gun as illustrated below.

When the soldering gun is energized, the solder is melted at all socket pins simultaneously and the socket is easily removed from the circuit board.



If the compactron has a center ground post, remove as much solder as possible from the post. Then apply the loop to the socket pins and place a General Electric pencil iron with a 30 watt chisel tip against the ground post. When the solder in both areas is melted, the chisel tip is then used to gently push the socket from the board. If the socket is of the type with thin terminals, the terminals should all be perpendicular to the board before socket removal is attempted.

32-0014-64C

(more)

Of course, any tube shield should be removed from the circuit board before unsoldering the socket.

After removing the socket, clean all rosin and sludge from the board before soldering the new socket in place.

A variety of "tips" can also be made to facilitate removal of smaller sockets, coils, etc.

#### SERVICE MANUAL PAGES

File the following pages in the "A" Line Service Manual.

DA Chassis File the DA Tab Card before Page DA1-1; Sheet DA1-3 after Page DA1-2; Sheets DA4-1, DA4-3, DA4-5, DA4-7 after Page DA3-5.

EA Chassis File the EA Tab Card and all EA sheets in numerical order by pages after Page DA4-8.

File the following pages in the "Y" Line Service Manual. Destroy all old sheets that have been superseded by new sheets.

INDEX Supersedure Pages 3 and 4.

CY CHASSIS Supersedure Sheet CY1-3.

FY CHASSIS File Sheets FY2-7 and FY2-9 after Page FY2-2. Destroy Page FY2-3. NOTE: You will receive Pages FY2-3 through FY2-6 in the May mailing.

MY CHASSIS Supersedure Sheet MY1-1.

SY CHASSIS Supersedure Sheets SY3-5 and SY3-7.

#### HOT LIST

We have been notified that the following receivers are presumed to be stolen. If you should locate one, please contact the individual listed.

<u>MODEL</u>	<u>SERIAL NO.</u>	<u>CONTACT</u>
M206XVY	424616	Raes' TV
PAM426XWD	893460	114 N. Main Street
M504YBG	904358	Emporia, Virginia
M110YBG	931041	
PAM202YVY	333235	
M200YBN	417203	



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

MAY 1964

VOL. 6, NO. 5

## USE YOUR FINGER TO FIND SHORTED YOKES

Although there are certain instances when the chassis has to be removed and taken to the service shop, most technicians prefer to repair a television set in the customer's home whenever this is possible. One of the service techniques which works very well without removing the chassis is determining whether the horizontal windings of the deflection yoke are defective.

Quite often a television set will be encountered which has little or no high voltage. Through routine checks it is discovered that the set has no B+ boost voltage. Through experience you know that this can be caused by a shorted horizontal winding in the deflection yoke. Now if you could only determine in the customer's home that the yoke is the culprit, you wouldn't have to pull the chassis.

There is a sure fine way to tell if the yoke is defective. Remove the yoke from the neck of the picture tube and with it still electrically connected to the set, lay it down beside the chassis where it will not accidentally short against the chassis or some component. Plug the power cord into the chassis and let it warm up for two or three minutes. Remove the power plug from the chassis and feel around on the inside of the yoke windings. If a definite hot spot is found, the yoke has internal shorted turns and needs to be replaced.

**CAUTION!** Never touch the yoke or any high voltage component with power applied to the chassis.

Now you may wish to go one step further to definitely prove that the yoke is defective. Disconnect one of the wires going to the horizontal yoke windings to remove these windings from the

32-0014-64D

A SUBSCRIPTION PLAN PUBLICATION

circuit. Measure the B+ boost voltage and you will find that it has returned to normal or possibly higher since the deflection yoke has been removed from the circuit and normally is a load on the high voltage transformer.

The above is just another simple method of performing service in the customer's home with the least inconvenience to the customer and a minimum of work for you, the service technician.

#### CY CHASSIS HORIZONTAL AMPLIFIER V105

Some tube location diagrams which were installed in CY model cabinets indicated V105 as a Type 6JE5. This should be changed to Type 6JE6.

#### SERVICE MANUAL PAGES

File the following pages in the "A" Line Service Manual.

DA Chassis                      Sheet DA2-9 after Page DA2-8.

EA Chassis                      Sheet EA1-3 after Page EA1-2.

File the following pages in the "Y" Line Service Manual.

SY Chassis                      Supersedure Sheet SY3-5. The supersedure date is the same as the sheet on file which had no printing on Page SY3-6. Destroy Sheet SY3-5 which is printed on one side only.

The April issue of Service Talk noted that you would receive Pages FY2-3 through FY2-6 in this mailing. You will not receive these pages until June - sorry.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JUNE 1964

VOL.6, NO.6

## FY, CY AND CX CHASSIS VERTICAL DYNAMIC CONVERGENCE

When performing convergence adjustments on some of the subject television receivers, you may have had some difficulty in attaining vertical dynamic convergence. Specifically, a red-green crossover occurs which cannot be corrected by the normal adjustment of either R811 or R814. Sometimes R814 even reaches its extreme clockwise position. These two controls converge the red and green vertical lines located at the center of the cross-hatch display.

Inability to converge is due to improper phase of the vertical correction voltage. This may be improved by making the following minor changes to connections from the vertical output transformer T104.

1. Disconnect the center tap lead (black/green) from ground and tape the uninsulated end.
2. Ground the outside winding lead (black/red) and leave it connected to Terminal 4 of J101.
3. If Steps 1 and 2 do not give the required improvement, ground the opposite winding (green/red) and leave connected to Terminal 5 of J101. If Step 3 is used, ignore Step 2, as only one side of the winding should be grounded.

SERVICE MANUAL PAGES

File the following pages in the "A" Line Service Manual.  
Destroy old sheets which have been superseded.

DA Chassis        Supersedure sheet DA2-9 and sheets DA2-11, DA2-13,  
DA2-15.

EA Chassis        Sheet EA1-5.

File the following pages in the "Y" Line Service Manual.

FY Chassis        Supersedure sheets FY2-1, FY2-3 and sheet FY2-5.

MY Chassis        Supersedure sheets MY2-23 and MY3-9.





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JULY 1964

VOL. 6, NO. 7

## AY CHASSIS, MY CHASSIS - DIODE FAILURE

Video detector diode failure in AY and MY Chassis can be minimized by adding a small resistor to the circuit board.

It is recommended that you make this simple change on any AY or MY receivers which pass thru your shop. You will find this small effort to be eminently worthwhile in the prevention of future diode failures.

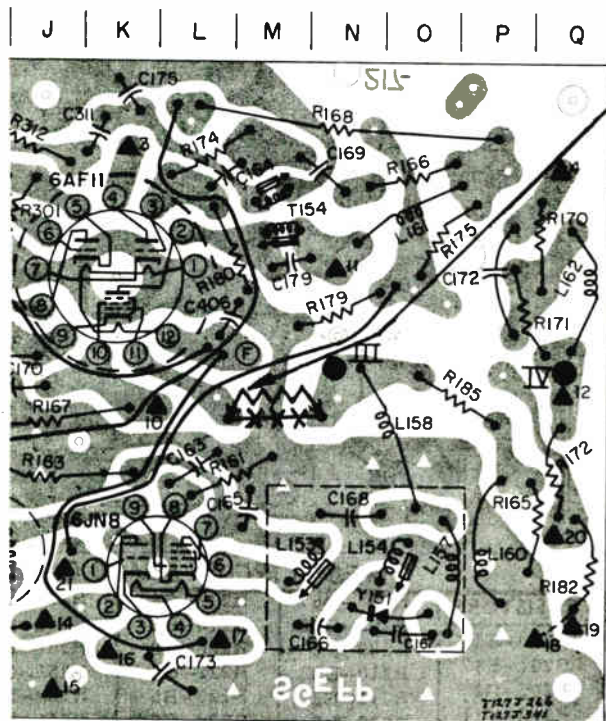
### INSTRUCTIONS

Remove the jumper wire which connects lug 11 of V5A to TP III and replace with a 470Ω 1/2 watt resistor.

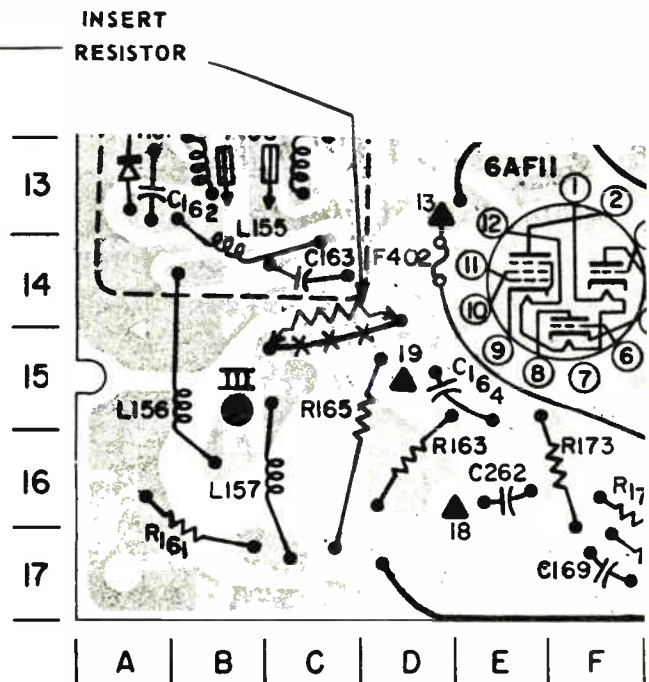
See circuit board layouts below for location in specific chassis.

### IF BOARDS

AS VIEWED FROM COMPONENT SIDE OF BOARDS



AY CHASSIS



MY CHASSIS

SERVICE MANUAL PAGES

File the following pages in the "A" Line Service Manual.

AA Chassis      File the AA Tab Card and all AA sheets in numerical order after the front cover.

CA Chassis      File the CA Tab Card and all CA sheets in numerical order by pages after Page AA4-7.

File the following supersedure sheet in the "Y" Line Service Manual. Destroy the old sheet.

QY Chassis      Supersedure sheet QY2-5.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

AUGUST 1964

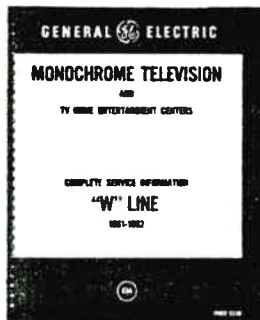
VOL. 6, NO. 8

## TV CONSOLIDATED SERVICE MANUALS

Television Service Manuals, for models no longer in production, will be published in consolidated form shortly after the expiration of each model year. These Service Manuals will serve the same function as the former Service Guides which are no longer published. The loose-leaf manuals will continue to be published for models in current production.

Each Consolidated Service Manual will contain complete Service Information for all chassis built in a given model year. Each manual will be 8-1/2" x 11" in size with full fold-out schematics and bound in spiral or plastic binding.

The first two of the consolidated manuals are now available from your General Electric Distributor under the following titles and Publication Numbers:



PUB. NO.	TITLE	PRICE
32-0010-64	"W" Line Manual (Monochrome Only)	\$3.00 Each



32-0011-64	"X" Line Manual (Monochrome & Color)	\$4.50 Each
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This is your opportunity to replace your old dog-eared, solder burned manuals with new permanent manuals.

TRANSISTORIZED UHF TUNERS  
ALL TYPES USING CALIBRATION DIAL ON TUNER SHAFT

When replacing the UHF channel indicator dial, set the tuner to a known calibration point or UHF channel and push the indicator dial on to the shaft with the proper channel number opposite the UHF channel indicator.

DO NOT slip the indicator dial around on the shaft to position for calibration as the tuner gears may be damaged.

SERVICE MANUAL PAGES

File the following pages in the "A" Line Service Manual. Destroy old sheets which have been superseded.

AA Chassis      Supersedure sheet AA2-1 and sheet AA2-3.  
~~Supersedure sheet AA4-5.~~

CA Chassis      Supersedure sheet CA1-1.

DA Chassis      Supersedure sheets DA1-1 and DA1-3.  
Sheet DA1-5 after page DA1-4.  
Supersedure sheets DA2-5, DA2-7, DA2-9, DA2-11 and DA3-3.

SA Chassis      File the SA Tab Card and all SA sheets in numerical order after page EA3-10.

File the following supersedure sheet in the "Y" Line Service Manual. Destroy the old sheet.

CY Chassis      Supersedure sheet CY3-21.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

SEPTEMBER 1964

VOL.6, NO.9

## NEW PERSONAL PORTABLE TV -TRANSISTORIZED-

Once again General Electric leads the TV field with an all transistorized, American built, personal portable at a price below smaller screen imports.

The Model TR805 has a 9 inch (diagonal measurement) picture tube and weighs only 13 pounds. It is provided with a steel cabinet, covered with cushioned vinyl. Two power cords are included, one for operation from 120 volts AC line and the other for plugging into the cigar lighter of any car having a 12 volt negative ground electrical system.

Your TA Chassis Service Manual pages covering this new transistorized receiver are included in this mailing. To assist you in servicing this new product, several additional aids are included in the Service Manual. Please read the entire manual before attempting any service.

The Service Template, which is included in this mailing, is to be placed over the bottom of the etched circuit board and secured by the board mounting screws as indicated on the template. The individual elements of each transistor are shown and voltage readings may be made through the holes in the template without having to trace the location of a particular transistor element.

Your General Electric Television Receiver Distributor will be conducting service meetings on the TA Chassis in the near future. Be sure to contact him to learn the location and date of the service meeting nearest your location.

## SERVICE MANUAL PAGES

File the following pages in the "A" Line Service Manual. Destroy old sheets which have been superseded.

AA Chassis           Supersedure sheet AA4-7.

CA Chassis           Supersedure sheet CA3-1.   File sheet CA3-23 after CA3-1.

DA Chassis           Supersedure sheet DA4-7.

TA Chassis           File the TA Tab Card and all TA sheets in numerical order after page SA3-8.





# Service Talk

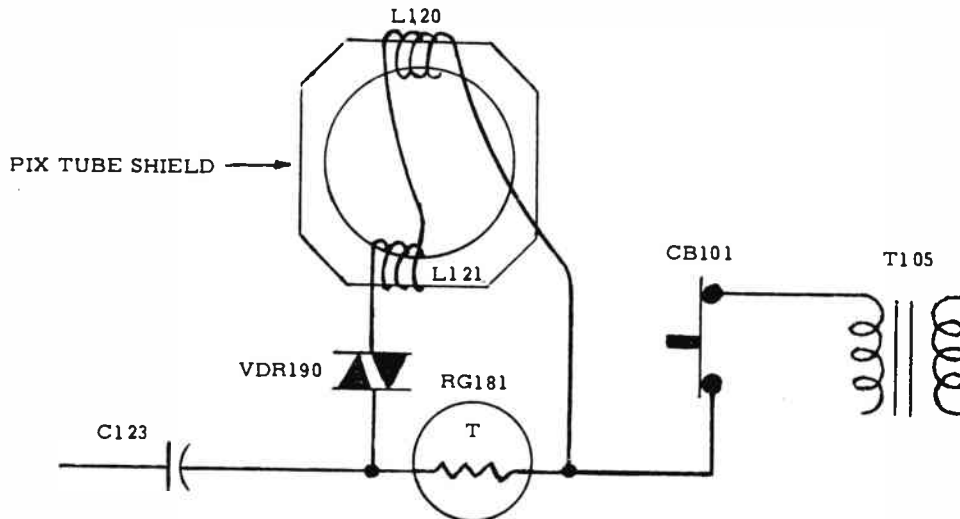
FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

OCTOBER 1964

VOL. 6, NO. 10

## AUTOMATIC DEGAUSSING OF CA COLOR RECEIVERS

An automatic degaussing circuit is being incorporated into all CA color chassis (except Models M919A and M921A). The purpose of the circuit is to automatically demagnetize the aperture mask in the picture tube each time the receiver is turned on.



Two coils, L120 and L121, are assembled to the picture tube shield. One coil is at the top of the shield and the other at the bottom. The coils are connected so that the fields produced are in the same direction at any instant.

The voltage dependent resistor, VDR190, is made of a special carbon. It is a symmetrical (current flows equally in either direction) and non-linear device which changes its resistance instantaneously with any instantaneous change in applied voltage (resistance goes down with increased voltage). Although the VDR is a type of resistor, it has the characteristics of two diodes connected as shown by the symbol of VDR 190.

The thermistor, RG181, has a resistance of 120 ohms when cold and 2 ohms when hot.

The circuit operates in the following manner. At the instant the receiver is turned on (from a cold start), the resistance of RG181 is high and 60V AC is present at the junction of L121 and VDR190. With 60V applied, the resistance of VDR190 is very low and approximately 2 amperes of current flows for an instant through L120, L121 and VDR190 to produce a maximum field in the coils and aperture mask.

At the same instant as the above, the current flowing through the thermistor, RG181, is causing RG181 to heat, thus lowering its resistance and the voltage applied to VDR190. The resistance of RG181 continues to reduce with increased heating until its resistance is 2 ohms. The voltage on VDR190 has now been reduced to approximately 1 volt and the current through it and coils L120, L121 is about 0.5 ma.

It takes about 20 seconds to go from a maximum field at 60 volts 2 amperes to a zero field at 1 volt 0.5 milliampere.

#### SERVICE MANUAL PAGES

Destroy all old sheets that have been superseded by new sheets. File the following pages in the "Y" Line Service Manual.

#### CY Chassis

Supersedure sheet CY2-5.

#### FY Chassis

Supersedure sheet FY2-3, FY2-5.

File the following pages in the "A" Line Service Manual.

#### EA Chassis

Supersedure sheets EA1-1, EA1-5. New sheet EA1-7 after Page EA1-6.

#### SA Chassis

Supersedure sheet SA1-1. File new sheets SA1-3, SA1-5, SA1-7 after Page SA1-2; SA4-1, SA4-3 after SA3-8.

#### TA Chassis

Supersedure sheets TA3-3, TA3-5, TA3-9, TA3-11. File new sheets TA4-1, TA4-3 after Page TA3-12.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

NOVEMBER 1964

VOL.6, NO.11

## GENERAL INFORMATION

### CW, CX, CY, FY and CA COLOR CHASSIS

We have recently been advised of a peculiar type of problem which may be found in color receivers using any of the subject chassis.

The usual complaint is poor or incorrect color and the hue control will not operate properly. The screen controls appear to operate on a different gun; for instance the red screen control may operate the green or blue gun.

This problem is due to a magnetized aperture mask resulting from a near by lightning strike.

The remedy is to degauss the tube which will restore normal operation.

### TA CHASSIS ACCESSORIES

Some rumors have been investigated recently that the TA chassis auto cigarette lighter cord does not fit some American cars.

These rumors are entirely false since as far as we are able to determine the TA plug will fit virtually every American twelve volt system.

However, there may be occasions when the receiver will fail to operate when plugged into some cars due to one of the following reasons:

1. Accumulation of dirt or ashes or corrosion in lighter receptacle causing poor or intermittent connection. (Clean out receptacle.)

2. Lighter wired to operate only when ignition switch is on.
3. Defect in wiring or receptacle. (Lighter will not work in this case.)

#### EA CHASSIS - HORIZONTAL OUTPUT TRANSFORMER

All EA Chassis built before Chassis Code EA439 were stamped with an incorrect Horizontal Output Transformer Catalog Number.

The transformer mounting bracket was incorrectly stamped ET77X81. The correct number is ET77X82 as listed in the Service Manual.

---

#### 1965 SERVICE MANUAL SUBSCRIPTION PLAN

Now is the time to renew your subscription to the General Electric Factory Service Manual Plan for 1965. A renewal coupon, attached to the descriptive flyer, is enclosed for your convenience. Note the various types of equipment and features that will be covered in the 1965 Service Manuals and renew your subscription plan now!

---

#### SERVICE MANUAL PAGES

File the following pages in the "A" Line Service Manual in numerical order. Destroy old pages which have been superseded.

AA Chassis      Supersedure page AA1-3.

CA Chassis      Page CA1-7.

DA Chassis      Supersedure page DA1-1.

EA Chassis      Supersedure page EA1-5.

SA Chassis      Supersedure page SA1-1.

File the following pages in the "Y" Line Service Manual in numerical order. Destroy old pages which have been superseded.

LY Chassis      Supersedure pages LY1-1, LY1-3, LY1-5, LY2-1, LY2-5, LY2-15.

MY Chassis      Supersedure page MY1-5 and pages MY1-13, MY1-15, MY1-17, MY1-19, MY1-21, MY1-23, MY2-31 and MY2-33.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

DECEMBER 1964

VOL.6, NO.12

## SAFETY TESTS - ANTENNA ISOLATION

Because of the increasing portability of TV receivers and their use on porches, patios and similar locations where dampness may exist, the prevention of any shock hazard becomes even more important than in the past.

We recommend that you advise your service men that, following ANY service, a safety check of the receiver should be made in accordance with the instructions contained in the service manual for the particular receiver.

As instructed in the safety test procedures, all exposed metal parts should be checked. Special emphasis should be placed on the checking of pole or loop antennas. These items are frequently adjusted by hand and maintenance of isolation is particularly important.

As you are aware, there are many variations in vendor design of tuners and different types of antenna isolation which, if not recognized, could lead to unsafe conditions.

For instance, in the DA, EA and SY Chassis, a portion of the VHF tuners have the antenna isolation network built into or mounted on the input assembly of the tuner rather than the more usual network external to the tuner. However, the majority of receivers do contain external isolation in addition to that built into the tuner.

Where external isolation is not present, the tuner isolation may be defeated and a hazardous condition may develop if the tuner isolation components become damaged or shorted out by accidental solder splashes or other careless servicing.

If it becomes necessary to replace a tuner, only the factory

recommended replacement tuner should be used.

From these examples, we believe you will recognize the importance of establishing proper safety test practices.

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#### SERVICE MANUAL PAGES

File the following pages in the "Y" Line Service Manual in numerical order. Destroy old pages which have been superseded.

- AY Chassis      Supersedure page AY1-1.
- BY Chassis      BY Tab and pages in numerical order after page LY4-1. Includes supersedure pages BY1-1, BY1-3, BY1-5, BY1-7, BY2-7, BY2-9 and BY3-5.
- LY Chassis      Supersedure pages LY2-1, LY3-3 and LY3-5. Page LY2-1 was listed prematurely last month.
- MY Chassis      Pages MY2-31 and MY2-33 which were listed prematurely last month.
- SY Chassis      Supersedure pages SY1-1, SY1-3, SY1-5, SY1-7, SY3-1, SY4-3.

File the following pages in the "A" Line Service Manual in numerical order. Destroy old pages which have been superseded.

- Foreword and Index      File pages 1 and 3 after the Index Tab.
- AA Chassis      Pages AA2-13 and AA2-15.
- DA Chassis      Pages DA2-17 and DA2-19.
- EA Chassis      Supersedure pages EA2-5 and EA2-7.
- TA Chassis      Supersedure pages TA3-5, TA3-9, TA3-11 and TA4-3.

#### HOLIDAY GREETINGS

The folks in Television Product Service wish you a very Merry Christmas and a Happy and Prosperous New Year.



P. D. Wexler  
Manager - Product Service





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JANUARY 1965

VOL.7, NO.1

## YOUR 1965 SERVICE MANUAL SUBSCRIPTION PLAN

Have you renewed your subscription to the General Electric Factory Service Manual Plan for 1965? If not, we urge you to fill out the flyer coupon which you received in your November mail and send it with your remittance to your General Electric Television Receiver Distributor. Do it today so that you will not miss any of the valuable material to come.

All 1965 subscriptions will include a loose-leaf binder for forthcoming "B" Line TV service manuals. The binder will be mailed to you in February since our new subscription mailing list will not be completed until mid-January.

### "TRANSISTORS & TROUBLESHOOTING IN HOME ENTERTAINMENT EQUIPMENT"

Volume I of this three volume course is now off the press and being distributed. Volumes II and III are coming up fast. Have you signed up yet? If not, SIGN UP NOW! Contact your General Electric Distributor for details. Your investment and follow through will ensure your position in the electronic's service industry.

### CLEANING CONTACTS ON TRANSISTORIZED VHF TUNER ET86X229

VHF tuner ET86X229 is used in Models TR803 and TR805 transistorized portable television receivers. This tuner may, under certain climatic conditions (seashore, fog, etc.) exhibit intermittent, weak, or no-signal reception due to film on the tuner bandswitch contacts.

To correct any of the above conditions, merely rotate the VHF selector switch about ten complete revolutions in both the clockwise and counterclockwise directions. This will wipe off the contacts and it will not be necessary to clean or lubricate them.

## SERVICE MANUAL PAGES

File the following pages in the "Y" Line Service Manual in numerical order. Destroy old pages which have been superseded.

AY Chassis Supersedure pages AY1-19, AY1-23, AY1-25, AY2-7, AY2-9, AY2-15 and AY3-5.

CY Chassis Supersedure page CY2-5.

FY Chassis Supersedure pages FY2-7 and FY2-9.

MY Chassis Page MY1-25.

File the following pages in the "A" Line Service Manual in numerical order. Destroy old pages which have been superseded.

EA Chassis Supersedure page EA1-7.

SA Chassis Supersedure page SA1-1.

TA Chassis Supersedure pages TA1-1, TA2-5, TA3-1, TA4-3 and pages TA4-5 and TA4-7.

## HOT LIST

We have been notified that the following receivers are presumed to be stolen. If you should locate any, please contact the company listed.

MODEL	SERIAL NOS.	CONTACT
TR805	202202	McCarley Furniture Co. Columbus, Georgia
ML11ASD	108968	
ML13AVY	211235	
ML13ARD	160237	
M206YTS	081631	
M403AVY	802731	
M205AVY	613499, 613577, 524900, 582761, 600797	
ML11ASD	598152, 598019, 597980, 514718, 598159, 597987, 512874	Station WTVM Television Columbus, Georgia
PAM719AWD	970886	Floyd E. Drake Chief of Police Alameda, California



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

FEBRUARY 1965

VOL. 7, NO. 2

We thank you for your 1965 subscription to General Electric Factory Service Information. It gives us great pleasure and satisfaction to know that you will be receiving the latest up-to-date service information for General Electric Consumer Electronics Products--Audio, Intercom and Television. We hope that its use will help you attain a most prosperous year in 1965.

Today you are receiving the first issue of your new subscription. It contains the following material and information.

## BINDER

The new dark blue vinyl binder is to be used for filing service manuals which you will be receiving for the 1966 "B" Line of Television Receivers.

## CERTIFICATE

Prominently display your 1965 General Electric Factory Service Information Certificate so that your customers will know who the General Electric expert is. Of course, the certificate should be inscribed with a signature on the line provided and then framed appropriately.

## SERVICE MANUAL PAGES

File the following pages in the "Y" Line Service Manual in numerical order. Destroy old pages which have been superseded.

AY Chassis           Supersedure page AY3-3.

FY Chassis           Supersedure pages FY3-11, FY3-17.

SY Chassis           Pages SY2-13, SY2-15.

File the following pages in the "A" Line Service Manual in numerical order. Destroy old pages which have been superseded.

AA Chassis      Supersedure pages AA1-1, AA1-7, AA3-5 and page AA3-7.

CA Chassis      Supersedure pages CA1-7 and CA3-1. Pages CA2-1 through CA2-13, CA3-1 through CA3-22 and CA4-1.

DA Chassis      Supersedure page DA1-3.

TA Chassis      Page TA4-9.

File the following pages in the "B" Line Service Manual in numerical order.

DB Chassis      Pages DB1-1, DB1-3, DB2-1 through DB2-12, DB3-1 through DB3-6 and DB4-1 through DB4-6.

We have been notified that the following receivers are presumed to be stolen. If you should locate any, please contact the company listed.

MODEL	SERIAL NOS.	CONTACT
M501AVY	515635, 516848, 516825, 516155, 516407, 516026, 809764	Starnes Gas & Electric Co. Columbus, Georgia
M113ABN	106040	
M113ARD	160337	
M413ABG	878762, 806242	
M207AEB	595181	
M207ABG	524436	
TR805AEB	221927, 201352, 202904, 202820, 238162	
M111YSD	098508	
M413AWD	740609, 815518, 740558	
CBM603AVY	648745, 381550, 380337 593842, 380769, 380565 381243, 380266, 381065 648540, 381529	Larry V. Eckhoff General Electric Company 1720 Dana Avenue Cincinnati, Ohio 45207



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK  
SYRACUSE, N. Y.

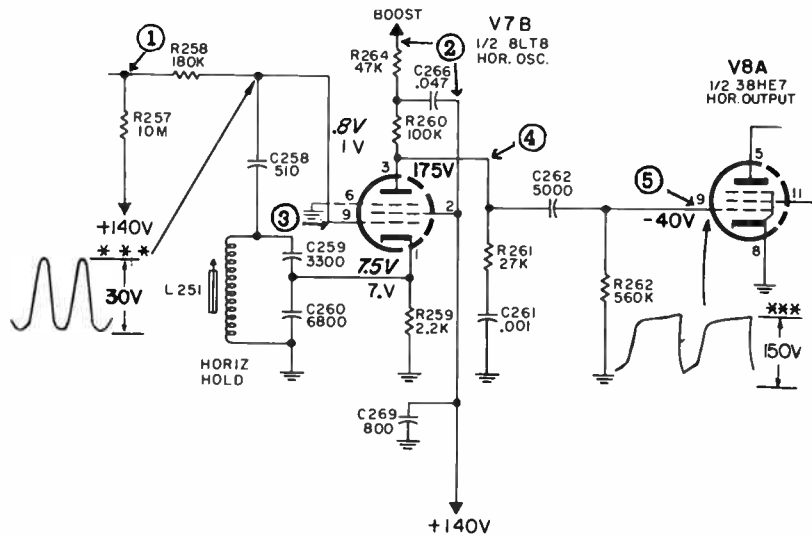
MARCH 1965

VOL. 7, NO. 3

## DB CHASSIS HORIZONTAL OSCILLATOR

The following procedure may be used by the service technician in checking the sine-wave horizontal oscillator of the DB Chassis while troubleshooting the horizontal-high voltage system. It may also be applied to other new G-E chassis incorporating the same type of horizontal circuitry.

The partial schematic diagram below shows the oscillator circuitry with circled numbers identifying areas referred to in the step-by-step procedure. In actual troubleshooting, the DB (or other chassis) main-chassis schematic diagram should be used, and common-sense troubleshooting practice followed; for example, in the event of a failure in the horizontal or high-voltage area, a preliminary visual inspection and a check of circuit voltages may furnish immediate clues to the trouble source.



1. Connect a jumper between chassis ground and the junction of R257-R258. If high voltage becomes operative as shown by the raster, it can be assumed that the difficulty is in the

phase detector or another stage on that side of the oscillator. In this case, normal troubleshooting practices should be applied beginning with the phase detector output and working back.

- ②. If the oscillator remains suspect after Step 1, check DC voltages at the 8LT8 screen (Pin 2) and the boost end of R264. Voltage at both points should be approximately 140V without boost. If voltages are in this range, proceed to Step 3. (No voltage at the end of R264 indicates failure in the damper or flyback circuitry.)
- ③. Using an oscilloscope, check at the control grid (Pin 9) for a horizontal-frequency sine-wave indicating that the oscillator is functioning. If the waveform does not appear, or appears at considerably smaller amplitude than indicated on the schematic, troubleshoot the oscillator stage for possible tube or component failure. If the waveform appears normal, proceed to Step 4.
- ④. Connect the scope to the 8LT8 plate (Pin 3). If the scope does not show a trapezoidal waveform of approximately 100V amplitude, check for a short or open in the plate circuitry. Otherwise, go on to Step 5.
- ⑤. Connect the scope to the driver control grid (Pin 9 of the 38HE7). The display and approximate voltage reading should conform to that obtained at the plate of the 8LT8 in Step 4. If not, the coupling capacitor C262 may be at fault.

If the oscillator is operating and properly driving the horizontal output stage, a high-voltage failure indicates trouble--probably a tube or component failure--in the high voltage area itself.

#### DB CHASSIS HORIZONTAL HOLD

Adjustment of the horizontal hold is considerably simpler in the DB Chassis than in previous chassis using multivibrator horizontal circuitry. The set-up procedure follows:

With controls set for normal operation, short Test Point V (clipper grid) to chassis ground and adjust L251 for the point where the picture just "floats" horizontally across the screen. (Vertical roll during this operation may be corrected by slight readjustment of the vertical hold control.)





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

APRIL 1965

VOL. 7, NO. 4

## AA, AY CHASSIS - OPEN PICTURE TUBE FILAMENTS

A percentage of the 23DYP4 or 23FVP4 picture tubes which fail in the above chassis have been found to have open filaments. Investigation has shown the following cause.

As in the case with any type of electrostatic focus tube, occasional arcing occurs, mainly during the early life or break-in period. This arcing is normally discharged across the spark gap from G2 to ground and no harm results.

On the sweep board, there are a couple of locations in the copper pattern where the islands connected to G1 and G2 are spaced close to a B<sup>+</sup> island. If a slight misregistration of the copper pattern occurs, the reduced spacing may allow an arc over to occur simultaneously with a discharge across the spark gap. If this should occur a heavy B<sup>+</sup> current flows into G1 or G2 and follows the HV arc to the filament causing burnout.

This type of failure may be prevented by increasing the spacing of critical conductor points according to the following instructions.

We suggest you make these changes whenever an "open filament" picture tube failure has occurred in an AA or AY Chassis, to prevent a repetition of the failure. Chassis passing through your shop for other service should also be inspected for this condition.

AA receivers built after Chassis Date Code 504 have the circuit corrections incorporated.

### AA Chassis - (See Illustration)

(Both early and late production boards)

1. The junction of R216 and the yellow wire to terminal 5 of

the yoke should be lifted from the copper island and reconnected in open space.

2. Increase the clearance between the following two copper islands.

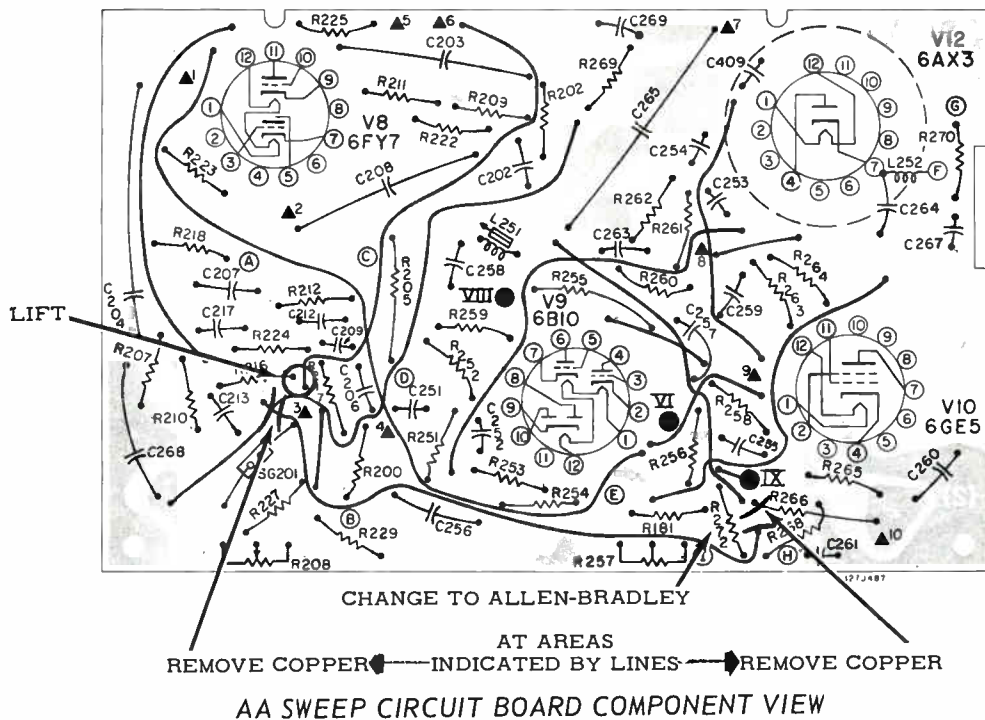
- a. Junction of spark gap and lead to pin 3 of CRT.
- b. Junction C213 and lead to R268.

Note: Use a stiff knife blade or G-E cutting tool ETR-3896. Score and remove the copper pattern and solder fillet to allow maximum clearance between the islands.

3. Increase clearance between the following two islands:

- a. B+ end of R266.
- b. Junction R268 and C272.

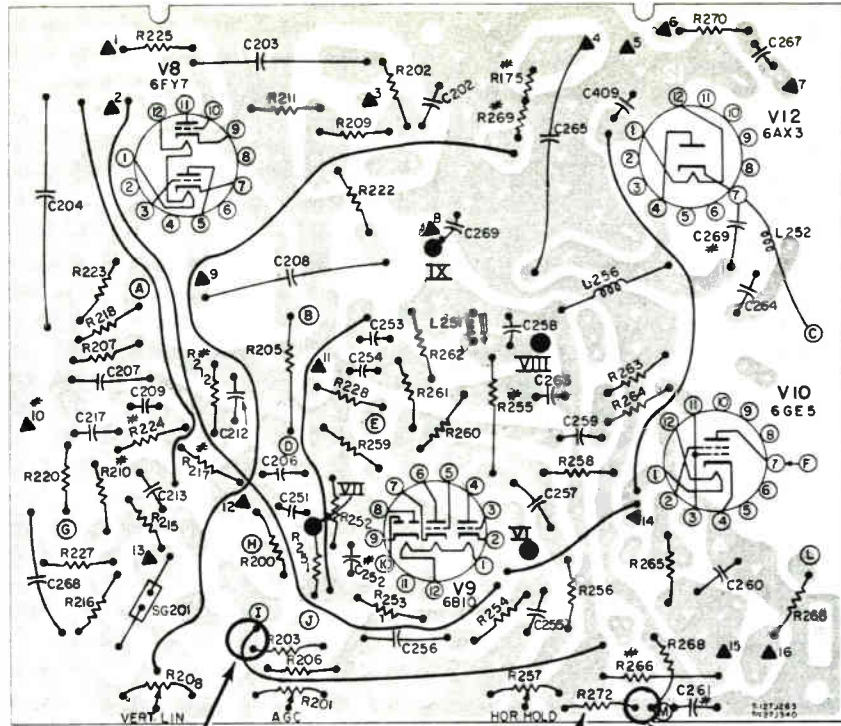
4. Change R272, 330K to an Allen-Bradley. The Allen-Bradley will have a smooth body surface.



AY Chassis - (See Illustration)

1. Lift the junction of R203 and B+ lead from the island and reconnect. This clears the island of all connections.
2. Lift R272 and lead connecting to R268 above island and reconnect. This clears island of all connections.
3. Change R272, 470K to Allen-Bradley. The Allen-Bradley has a

smooth body surface.



AY SWEEP CIRCUIT BOARD COMPONENT VIEW

### DB CHASSIS CLOCK REPLACEMENT

Removal of the clock assembly from receivers of the DB Chassis 415 model series can be facilitated by following this procedure.

Carefully clip or break the two tabs by which the assembly is clip-mounted to the plastic back plate. Remove the mounting clips, and use them to fasten the assembly to the remaining pair of mounting tabs during reassembly.

(The plastic back plate, which attaches to the die-cast front of the receiver, is equipped with a spare set of tabs for clock mounting--one tab at the top and another at the bottom diagonally opposite it.)

SERVICE MANUAL PAGES

File the following pages in the "B" Line Service Manual. Destroy old pages which have been superseded.

DB Chassis           Supersedure sheets DB1-1, DB2-1, DB2-3 and sheets DB2-13, DB2-15 and DB3-7.

HOT LIST

We have been notified that the following receivers are presumed to be stolen. If you should locate any, please contact the company listed.

MODEL	SERIAL NOS.	CONTACT
TR805AEB	229622	Stephenson Electronic Service 1004 Commerce Liberty, Texas
ML10YBG	077420	
R413AWD	803866	
R413ABG	690900	
PAM758AWD	387052	
M733AMP	858206	
ML81YWD	517750	
ML81AVY	068889	
RC4235	76065	
RC4652	251002	
M932YWD	538119	B. I. Bridgewater General Electric Company 8401 Carpenter Freeway Dallas, Texas
M962YWD	030335	
SAM332YWD	695809	

Contact Appliance Sales and Rental, Colombus, Georgia for the following receivers:

MODEL	SERIAL NOS.
ML11ASD	333137, 159787, 231092, 230957, 230883, 230755, 231078, 230997, 230031, 121180, 231960, 230808, 230261, 231091.
ML13AVY	114313
M205AVY	522287, 522107, 596626, 524177, 523885, 587568, 586530, 598931.
TR805AEB	202803, 200795, 200120, 244570, 244363, 244999
M501AVY	515582, 594603, 518381, 516951, 518261, 516813, 517197.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

MAY 1965

VOL.7, NO.5

## TA CHASSIS - ZENER DIODE SERVICING AID

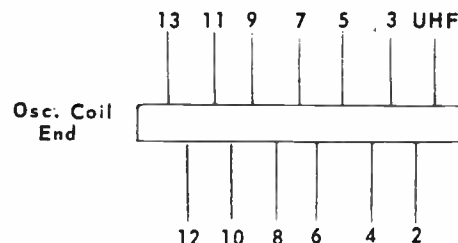
While servicing or testing a TA Chassis, a 130 Volt,  $\pm 10\%$ , 10 watt Zener diode must always be connected across the emitter and collector of Q24, the horizontal output transistor. This is to prevent damage or failure of Q24 due to high amplitude transient pulses that may occur accidentally while testing the receiver. These pulses can occur due to any circuit interruption caused by accidentally shorting the anode lead to the chassis or shorting out the horizontal oscillator or buffer circuits, etc. When a pulse in excess of 130 volts is developed, the Zener diode will conduct and protect Q24.

Contact your General Electric Distributor for information on where the Zener diode may be obtained.

## TA CHASSIS - VHF CHANNEL STRIP IDENTIFICATION

In the event that channel strips are removed from the VHF tuner in the TA Chassis, it will be necessary to identify each strip so that it may be placed in its proper position on the channel switch. Use the following method to assist you in identifying the strips.

- A. Lay the strip down on the accompanying drawing with the oscillator winding on the left (this is the hollow end of the coil form) and the ends of the form aligned with the ends of the drawing.



- B. The black point dot on the strip will now lineup with one of the vertical lines extending above or below the drawing.
- C. Read the channel number of the particular strip at the end of this vertical line.

#### CA CHASSIS - DESATURATED RED

It has been reported that a few CA Chassis have exhibited a desaturated Red shaded towards Magenta but Green and Blue appear to be OK. The trouble was caused by shorted turns in L703. Change L703 to correct the condition.

#### SERVICE MANUAL PAGES

File the following pages in the "A" Line Service Manual in numerical order. Destroy old pages which have been superseded.

AA Chassis Sheet AA2-15 Supersedures

CA Chassis Sheets CA3-21, CA3-23 Supersedures

DA Chassis Sheet DA2-3 Supersedure

TA Chassis Supersedure Sheets TA1-1, TA2-1, TA2-3, TA2-7, TA2-9 and TA3-7.

File the following pages in the "B" Line Service Manual.

DB Chassis Sheets DB2-17, DB2-19.

SB Chassis TAB card and Sheets SB1-1, SB2-1, SB2-3, SB3-1, SB3-3 and SB3-5.

#### APRIL SERVICE TALK ADDENDUM

Due to a change in planned clock mounting procedure in the DB Chassis 415 models, the item on clock replacement in the April Service Talk should be amended to read as follows:

(Paragraph 2) Carefully clip the ends of the four tabs by which the assembly is clip-mounted to the plastic back plate. This will simplify the task of removing the mounting clips without breaking the tabs. Should one tab be broken in the process, the three remaining tabs will still provide adequate support for the clock assembly.

(Delete Paragraph 3. All four tabs, instead of only two, now are used for clock mounting.)





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JUNE 1965

VOL. 7, NO. 6

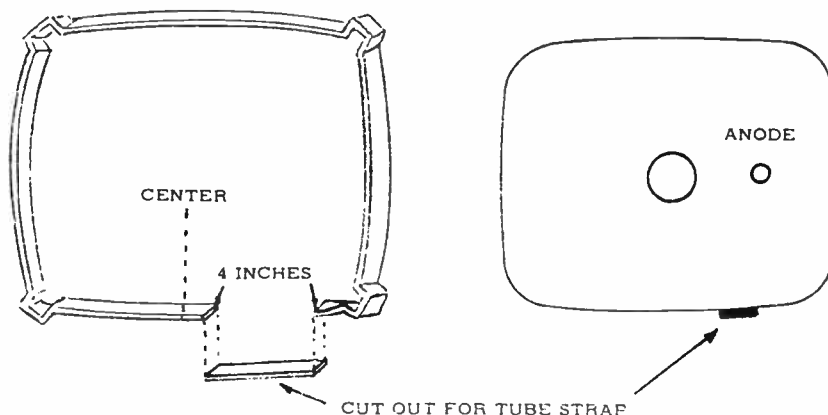
## PICTURE TUBE REPLACEMENT IN QX, QY AND EARLY 16 INCH RECEIVERS.

The following 16 inch picture tubes, with bonded plastic implosion plates, will not be manufactured when current stocks are exhausted.

TUBE TYPE	MODELS
16ATP4	ALL QX
16AZP4	ALL QY
16BUP4	EARLY EA MODELS M501A, M505A

Replace the above tubes with Type 16BYP4. This tube is equipped with tension band implosion protection. Use of this tube requires a minor alteration to the plastic cabinet.

To alter the cabinet, remove approximately 4 inches of the plastic rib which surrounds the picture tube. This allows the clamp on the tension band to fit properly into the cabinet. The illustration below shows the area to be cut out and the dimension. The plastic can be easily snapped out with side cutters.



SERVICE MANUAL PAGES

All pages in this issue of Plan E are for the "B" Line Service Manual. Included is complete service information for the AB Chassis and CB Chassis.

A new UHF section has been established in the "B" Line Manual since the UHF tuners for most chassis are the same.

File the following pages in the "B" Line Service Manual in alphabetical and numerical order. Destroy old pages which have been superseded.

AB Chassis Sheets AB1-1 thru AB1-7, AB2-1 thru AB2-7, AB3-1 thru AB3-5 and AB4-1.

CB Chassis Sheets CB1-1 thru CB1-3, CB2-1 thru CB2-9, CB3-1 thru thru CB3-27 and CB4-1.

DB Chassis Supersedure sheet DB1-1 and sheets DB1-5, DB2-22 and DB2-23.

SB Chassis Supersedure sheet SB1-1 and sheets SB1-3, SB2-5, SB2-7 and SB3-4A.

UHF Tuners Sheets UHF1 and UHF 3. File these sheets and the UHF Tab after the SB Chassis information.

In addition to the UHF Tab, tabs are also included for the AB, CB and DB service information sections of the manual.

HOT LIST

We have been notified that the following receivers are presumed to be stolen. If you should locate any, please contact the company listed.

MODEL	SERIAL NO.	CONTACT
TR805AEB	494187	JAYCEE ELECTRIC CO.
M113AVY	138364	JOSEPH J. CAMPUS JR.
SAM209AGL	397345	345 SCHOONMAKER AVE.
M403AEB	745238	MONESSEN, PENNA.
M403AVY	834095	15062
M403AVY	834338	
M403AWD	779049	



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JULY 1965

VOL 7, NO. 7

## TUNER CONTACT LUBRICANT-CAT. No. ET90X33

Your General Electric Distributor has available an approved contact lubricant. It has been specially selected by our factory for use on tuner assembly lines and we recommend its use to anyone doing tuner service.

Investigation has shown that some of the "squirt" and "spray" cleaner-lubes can damage tuner components. In use, ET90X33 Contact lube can be confined to the contact surfaces only since it has the consistency of a light grease. Also, because of its heavier viscosity, it remains effective far longer than liquid lubricants.

ET90X33 contact lube is the recommended lubricant for VHF tuner ET86X229 used in the transistorized TA Chassis. Most of the spray type lubricants will damage components in this tuner.

## AA CHASSIS - HORIZONTAL WEAVE OR HUM

Some AA Receivers have exhibited a horizontal weaving, hum or intermittent streaking in the picture. These symptoms may result from a poor 6GE5 pin 12 filament ground return at the circuit board mounting screw. The filament return circuit for the 6GE5 depends entirely on this board mounting screw being tight. Even a tight ground screw may at times develop a poor connection and result in voltage drop.

We suggest that an additional #20 gauge ground wire be added between lug 12 of the 6GE5 socket and lug 12 of the 6B10 socket. This may be done more conveniently from the copper side of the board. An alternate method is to run a wire from lug 12 of the 6GE5 socket to the filament ground at the power transformer. Be sure and tighten all of the sweep and power supply board mounting screws, as an additional precaution.

ALL COLOR CHASSIS - DRIFT IN PURITY

As a result of a few field reports, a study has been conducted to determine the cause of this rare problem.

In brief, the problem appears as a drift in color purity after two or three hours of operation. Usually this condition results in a pink area on the right side of the tube.

The cause of this problem has been determined to be due to insufficient warm-up time prior to set up. Every receiver should be given 20-minute warm-up, with the back in place before making any purity adjustments to components mounted on the neck of the picture tube.

SERVICE MANUAL PAGES

File the following pages in the "B" Line Service Manual in numerical order.

DB Chassis Sheets DB1-7, DB1-9, DB2-25 and DB2-27.

HOT LIST

We have been notified that the following receivers are presumed to be stolen. If you should locate any, please contact:

OUTTEN BROS., INC.  
U.S. 13 SOUTH DOVER BY-PASS  
DOVER, DELAWARE, 19901

MODEL	SERIAL NO.	MODEL	SERIAL NO.
PAM109ABG	345510	M401BBG	602725
M505AVY	169966	SAM211AWD	399031
M113BRD	275528	M205AVY	401918
PAM119AVY	276490	M111ASD	327569
M505AEB	169734	RC4672	D72008
M205AVY	159420	(STEREO)	

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MODEL	SERIAL NO.	CONTACT
TR805AEB	501678	HAMILTON FARM BUREAU APPL. HAMILTON, MICH. 49419



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

AUG-SEPT 1965

VOL 7, NO.8

## SERVICING INTERMITTENTS

Historically, one of the most difficult types of TV or radio service problems is that of the thermal intermittent. Usually this is the type of intermittent which either appears or disappears with the normal temperature changes found in the equipment during warm-up.

A common means of locating this type of problem is by additional heat induced either by covering up the set or using a heat lamp. While this method will frequently locate the bad component, it may also damage others by excessive heat and thus bring on other failures.

Reducing the temperature of specific parts which are suspected is a much safer and usually more effective approach. This is easily and economically done by using some low cost refrigeration servicing items which are available from your General Electric TV distributor. Ask him for a 15-oz. can of Freon, Cat. No. WR97X84, and a No. 12505 Robinair valve, which attaches to the can.

By soldering a 6-inch length of small-diameter tubing (refrigeration capillary tube) to the #12505 valve outlet you will be able to reach just about any point in a TV chassis. With the Freon can inverted, open the valve slightly and aim the gas jet squarely on the suspected part. The sudden chilling will readily show up a thermal intermittent condition. If the particular part proves OK, try the next most likely one. You will find this approach a great time-saver and will avoid random and unnecessary changing of parts which always results from guesswork.

## TRANSISTORIZED RECEIVERS

Does this type of equipment represent an added source of service income to you, or is it so unfamiliar that you pass up profitable service jobs?

The new General Electric programmed instruction course "Transistors and Circuit Troubleshooting in Home Entertainment Equipment" is the ideal way to gain that extra training needed to handle modern transistorized receivers of all types. All three volumes are now available as a set. The price is a real bargain at \$14.25 for the complete package including examinations which allow you to check on your own progress.

See your General Electric Television Receiver Distributor today and order your course.

#### SERVICE PUBLICATIONS

This month's Plan E mailing includes the complete HB and VB Chassis Service Information (10 sheets for each chassis including schematic foldouts) and the HB and VB Chassis tabs. Insert the HB tab and sheets in your "B" Line Manual following the last DB Chassis sheet; place the VB tab and sheets at the end of the manual, after the SB Chassis pages.

The following sheets are included:

HB CHASSIS		VB CHASSIS	
Tab		Tab	
HB1-1	HB3-5	VB1-1	VB3-3
HB2-1	HB3-7	VB1-3	VB3-5
HB2-3	HB3-9	VB2-1	VB3-7
HB3-1	HB3-11	VB2-3	VB4-1
HB3-3	HB3-14	VB3-1	VB4-3

Insert the following sheets in the "B" Line Service Manual. Destroy old sheets which have been superseded.

AB CHASSIS		DB CHASSIS
AB1-9	AB2-11	DB1-5 (Supersedure)
AB1-11	AB2-13	
AB2-9	AB2-15	

Insert the following sheets in the "A" Line Service Manual. Destroy old sheets which have been superseded.

DA CHASSIS	EA CHASSIS
DA2-9 (Supersedure)	EA2-9
DA2-11 (Supersedure)	EA2-11





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

OCTOBER 1965

VOL. 7, NO. 9

## SERVICE INFORMATION

### TIPS ON CB CHASSIS TINT CONTROL AND 3.58MC SUBCARRIER ALIGNMENT

1. In performing 3.58MC subcarrier alignment on 21-inch and 25-inch CB Chassis, it is very important that each coil or transformer is tuned to the proper peak as indicated on the meter connected to Test Point 701.

As the core in each coil or transformer is adjusted, two definite peaks (dips for T704) will be seen on the meter. Tune the coils and transformers as follows:

- a. For T702 Crystal Filter and L705 Crystal Tuning, turn the core counterclockwise to the TOP of the shield can. Now rotate the core clockwise towards the chassis and the meter indication will increase to the first peak. If the clockwise rotation of the core is continued, the meter indication will drop slightly and then increase to a second peak. THE FIRST PEAK IS THE CORRECT TUNING POINT.
- b. For T703, the R-Y Transformer, turn the core clockwise towards the circuit board and the bottom of the shield can. Now rotate the core counterclockwise until the meter indicates the FIRST PEAK which is the correct one. Again, further adjustment in the same direction will indicate a second peak which is the incorrect one.

32-1700-65I

- c. For T704, the B-Y Transformer, rotate the core clockwise to the bottom of the shield can (same as T703). Now rotate the core counterclockwise until a point of MINIMUM voltage (dip) is indicated on the meter. If the counterclockwise rotation of the core is continued, the meter indication will rise slightly and then decrease to a second dip. THE FIRST DIP FROM THE BOTTOM OF THE SHIELD CAN IS THE CORRECT TUNING POINT.

The above information should be filed with Page CB3-18 in the "B" Line Service Manual. This page will be revised in the near future to include this information.

2. If adjustment of the Tint Control will not produce correct flesh tones, refer to Page CB3-18 in the "B" Line Service Manual and perform 3.58MC Subcarrier Alignment Steps 1 through 4 making sure that the Tint Control is properly preset, the color control is fully counterclockwise and that the proper peak (or dip) is attained when each coil is adjusted. A station signal or color bar generator may be used as the signal source for alignment. After performing the above steps, check the DC balance, Steps 8 through 10, to make sure that zero volts (0 volts) is attained at each color difference amplifier grid.
3. In multi-channel areas a condition may exist, due to transmission difficulties, where the 3.58MC burst phase of a particular station has been shifted sufficiently so that normal flesh tones are not attained. This would occur, of course, with the Tint Control placed at the end of its range for the nearest approach to correct fleshtones.

Using a hypothetical example of a three-channel area, the following conditions might exist.

One channel - Flesh tones at center of Tint Control range.

Second channel - Flesh tones  $\pm 10$  degrees from center.

Third channel - Tint control at end of range and flesh tones not attained (flesh tones either green or magenta depending on which end of range the Tint Control is set).

The cure for this condition would be to correctly tune in the third channel and preset the Tint Control about ten degrees in from the end of the control range which is nearest to flesh tones (turning towards the center of the range). Leave the Tint Control in this position and realign the 3.58MC subcarrier channel using the

offending station signal as a signal source. After re-alignment it should be possible to get correct flesh tones within the range of the Tint Control for all of the above channels. Similar adjustments can be made if you have multi-channel peculiarities in your area.

#### CB CHASSIS-TINT CONTROL CHANGE

The TINT CONTROL in the 21-Inch and 25-Inch CB Chassis was changed from a capacitor (C125) to a potentiometer (R165) beginning with Chassis stamped "EN106". C720 (24pf) was also deleted at this time.

The new schematic diagrams on Pages CB3-29 and CB3-31 show a Variable Capacitor Diode, CR710. This is a special semiconductor diode which, when reverse biased, acts like a capacitor. If the reverse bias applied to the diode is changed, the capacity of the diode will change. CR710 has a capacity range of approximately 5pf. to 25pf. when the applied reverse bias is changed from +90 volts to +2 volts. The capacitance is low when the voltage is high and vice versa. The function of the new Tint Control R165 is to produce the change in voltage to vary the capacity of the diode CR710.

R726, R165 and R166 form a voltage divider between B+ 270 volts and ground. B+ is connected to the cathode of CR710 through R725. CR710 is connected to L705 and the grid of the subcarrier amplifier V702B through the DC blocking capacitor C717. R725 isolates the grid circuit from the voltage divider to eliminate stray capacity effects.

Adjustment of the Tint Control R165 produces a change in voltage at point T and CR710 which changes the capacity of CR710. CR710 then acting as a variable capacitor, changes the phase of the subcarrier at the grid of V702B.

With the above change it was necessary to readjust the neutralization. C721 was changed to 1.1pf and the connections were reversed at the secondary of the R-Y transformer T703. Since this reversed the phase of the subcarrier at the R-Y synchronous detectors, it was also necessary to reverse the polarity of the diodes CR705 and CR706.

Another change was also made beginning with chassis stamped "EN106", which makes it easier to attain DC balance at the grids of the color difference amplifiers. R767 at the grid of V703B was changed from 1800 ohms to 1200 ohms and two 5600 ohm resistors, R766 and R771, were added respectively to the grids of V703A and V703C.

To perform subcarrier alignment, adjust the Tint Control R165 and align the subcarrier channel as described in the "B" Line Service Manual on Page CB3-18.

In receivers stamped "EN121" and higher, the G-Y balance capacitor C730 has been changed from a trimmer to a 20pf fixed capacitor. In these receivers, follow the alignment instructions on Page CB3-18 and disregard STEP 7.

#### SERVICE MANUAL PAGES

File the following pages in the "A" Line Service Manual in alphabetical and numerical order. Destroy old pages which have been superseded. Page TA3-11 is new and replaces the old schematic diagram in the numerical order. The TA schematic diagram is now Page TA3-13.

TA CHASSIS Supersedure pages TA1-1, TA2-5, TA2-9, TA3-9, TA3-13 and new page TA3-11.

File the following pages in the "B" Line Service Manual and destroy old pages which have been superseded.

CB CHASSIS Supersedure pages CB1-1, CB1-3, CB2-9, CB3-1, CB3-3, CB3-5, CB3-17, CB3-19, CB3-21, CB3-23, CB3-25, CB3-27, CE4-1 and new pages CB3-29, CB3-31.

DB CHASSIS Supersedure pages DB1-1, DB1-5, DB1-7, DB3-5, DB3-7 and new pages DB2-29, DB2-31.

SB CHASSIS Supersedure pages SB1-1, SB1-3.

Last month's (Aug.-Sept.) issue listed Page VB1-1. This was listed in error since this page is not yet ready for release.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

NOVEMBER 1965

VOL 7, NO.10

## HORIZONTAL OSCILLATOR-MULTIVIBRATOR TYPE

Reports from the field indicate that the Stabilizer Coil is being adjusted to try and correct instability and off-frequency operation of the multivibrator type horizontal oscillators used in General Electric monochrome television receivers. This is, of course, an incorrect procedure since it does not correct the trouble and leaves the oscillator in an unstable condition, creating an unsatisfactory customer reaction.

The first step in troubleshooting the horizontal oscillator is to analyze and correct the trouble.

The second step is then to adjust the Stabilizer Coil and the Horizontal Hold Control using the correct set-up procedure as described in the Service Manual and repeated below.

The following set-up procedure must be used to correctly adjust the horizontal frequency in all monochrome chassis in the W, X and Y Chassis Lines and in the AB Chassis.

1. With the cabinet back removed and the power connected, tune the receiver to a weak signal and adjust controls for normal operation.
2. Ground Test Point VI (first triode grid).
3. Connect a 1000 ohm resistor from Test Point VIII to Test Point IX (in parallel with Stabilizer Coil).
4. Adjust the Horizontal Hold Control until the picture just "floats" back and forth across the screen. Leave the Horizontal Hold Control set in this position.
5. Remove the 1000 ohm resistor from Test Points VIII and IX. Adjust the Stabilizer Coil, turning the core towards the circuit board, until the picture again just "floats" across the screen. Leave the Stabilizer Coil adjustment in this position.

6. Remove the jumper wire from Test Point VI and ground and the picture should "lock in". Repeat the adjustment if the picture does not "lock".

Never adjust the Stabilizer Coil by itself to set the Horizontal frequency.

---

### 1966 SERVICE MANUAL SUBSCRIPTION PLAN

Now is the time to renew your subscription to the General Electric Factory Service Manual Plan for 1966. A renewal coupon, attached to the descriptive flyer, is enclosed for your convenience. Note the various types of equipment and features that will be covered in the 1966 Service Manuals and renew your subscription plan now!

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### SERVICE MANUAL PAGES

This month's Plan E Mailing includes the complete TB Chassis Service Manual and temporary Page DB3-4A which provides a schematic diagram and parts information for late production DB Chassis circuits. Also included is a "B" Line Index and an updated "A" Line Index.

File the following page in the "A" Line Service Manual and destroy the superseded page.

Page 3, "A" Line Index.

File the following pages in the "B" Line Service Manual. TB Chassis information should be filed after Page SB3-6.

Index Tab At front of manual

Index Page 3. (Pages 1 and 2 will be in a future issue.)

DB Chassis Page DB3-4A. File after Page DB3-4.

TB Chassis Tab and Pages TB1-1, TB2-1, TB2-3, TB2-5, TB3-1, TB3-3, TB3-5, TB3-7, TB3-9, TB3-11, TB4-1, TB4-3, TB4-5, TB4-7, TB4-9.

### LATEST PARTS INFORMATION CHANGES

In the "B" Line Service Manual Pages CB3-26, CB3-28, CB3-30 and CB3-32 under "Miscellaneous," change:

Cat. No. ET34X175 to ET34X165 for V102, V103, V104, 12-Pin Socket

Cat. No. ET41X27 to ET41X47 for CRYSTAL-3.58 MC, Y701





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

DECEMBER 1965

VOL. 7, NO. 11

## ALL COLOR CHASSIS -- 3.5MC CRYSTALS

We have recently learned of a problem involving 3.58MC subcarrier crystals used in "B" Line and previous color Television Chassis. This problem concerns crystal characteristics and obtaining the proper crystal for a given chassis.

ET41X27 crystal should be used in CW, CX, FY, CY and CA Chassis since a shunt resonant circuit is used in these Chassis.

ET41X47 should be used in the CB and HB Chassis since these chassis use a series resonant crystal circuit and require different crystal characteristics for proper operation.

A short time ago the two types became mixed in stock so you may have received either type on orders for ET41X27. Also the catalog number in the CB and HB Service Manual is incorrect.

We recommend that you check any crystals for correct units and segregate by the drawing identification numbers which appear on the crystals.

ET41X27 is marked either 126J370-1 or 1107 863-1  
Use in CW, CX, CY, FY or CA Chassis.

ET41X47 is marked 210,067-2  
Use in CB or HB Chassis.

Also make the following changes in the "B" Line Service Manual. On Pages CB3-26, CB3-28, CB3-30, CB3-32 and HB3-14 under "MISCELLANEOUS":

Change ET41X27 CRYSTAL-3.58MC  
To: ET41X47 CRYSTAL-3.58MC

## SERVICE MANUAL PAGES

This month's Plan E Mailing consists mostly of up-dating the "A" Line Service Manual with the latest service information. Also included are the Service Manual Pages UHF-5 and UHF-7, for a new UHF tuner with Hi-Ratio Two Speed Tuning. This tuner is used in some late production 21-inch CB Chassis.

File the following pages in the "A" Line Service Manual. Destroy old pages that have been superseded.

AA Chassis Supersedure Pages AA1-1, AA1-3, AA1-5, AA1-7, AA2-3, AA2-7, AA2-11, AA2-15, AA3-1, and AA4-5.

DA Chassis Supersedure Pages DA1-1, DA1-3, DA1-5, DA2-3, DA2-5, DA2-7, DA2-11, DA2-15, DA3-1, DA3-5, DA3-7, DA4-1, DA4-5, DA4-7, and new Pages DA1-7 and DA1-9.

EA Chassis Supersedure Pages EA1-1, EA1-3, EA1-5, EA3-1 and EA3-5.

SA Chassis Supersedure Pages SA1-1, SA1-3, SA1-5, SA1-7, SA2-7, SA3-5, SA3-7, SA4-1 and SA4-3.

File the following pages in the "B" Line Service Manual. Destroy pages that have been superseded.

CB Chassis Supersedure Page CB2-9.

UHF Tuner Supersedure Pages UHF-1, UHF-3 and new pages UHF-5, UHF-7 and UHF-9.

## HOLIDAY GREETINGS

The folks in Television Product Service wish you a very Merry Christmas and a Happy and Prosperous New Year.



P. D. Wexler  
Manager - Product Service



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK  
SYRACUSE, N. Y.

JANUARY 1966

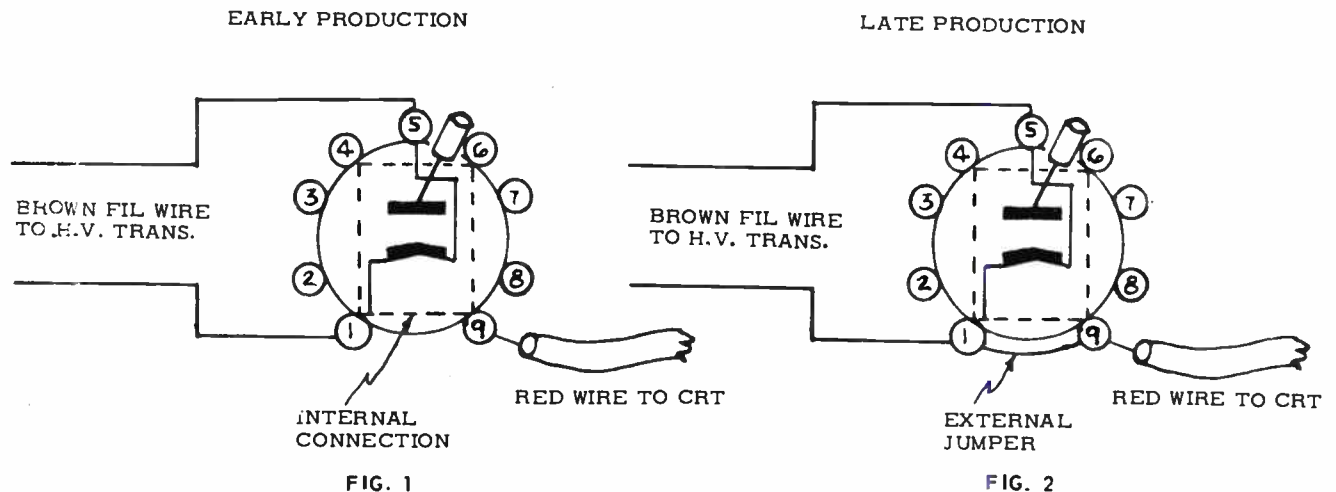
VOL.8NO.1

## CHASSIS SERVICE INFORMATION

### SB CHASSIS -- High Voltage Rectifier Failures

We have found a few cases of 1BC2 rectifier failures attributable to the socket connections used in early production receivers.

The internal construction of the 1BC2 includes a corona shield which is supported by welding to the inner ends of pins 1, 4, 6 and 9. For convenience in assembly, early production sets were connected as shown in Fig. 1.



It is apparent that the HV connections must pass through the internal connections in the tube and may be opened in the event of a weld failure in the tube.

Late production receivers are connected as in Fig. 2, which provides a positive H.V. connection to the tube filament and increases reliability.

If you encounter any 1BC2 failures, you should install a jumper between lugs 1 and 9 of the tube socket. If the tube has failed due to opening of a weld, it may then operate without replacement. This jumper will also eliminate any possibility of subsequent tube failure from this cause.

#### SB CHASSIS -- Intermittent Start of Horizontal Oscillator.

Some cases of intermittent starting of the horizontal oscillator were experienced in early production sets. This was due to a problem in the 8LT8 oscillator tube, which was subsequently improved to reduce the problem.

In addition to the improvement in the 8LT8, R257 was reduced from 180K to 150K,  $\pm 20\%$  to increase the plate voltage.

If you should experience this problem replace the 8LT8 and check for the value of R257. If this resistor is 180K replace with a 100K  $\pm 10\%$ , measuring to be sure that it is not less than 90K, which is the low limit. The use of 150K  $\pm 20\%$  in production assures the same low limit.

A final check to assure that the problem is corrected may be made as follows:

1. Allow set to cool off for 15 minutes.
2. Plug receiver in to a Variac and set at 100 volts input. The horizontal oscillator should always start from cold at this line voltage.

#### SB CHASSIS -- Fuse Failure

We have received some reports of unexplained fuse failure in SB 12" receivers. This usually happens when the set is turned on for the first time.

We have found this to be caused by a current surge due to insufficient dielectric forming of C401-ET31X254, B+ electrolytic capacitor. After a few hours of operation the electrolytic will usually form and function normally.

The recommended cure is to replace the 1.5 Amp. fast blow fuse with a 1.5 Amp. slow blow fuse - ET10X38 (BUSS-MDL1 1/2 or equivalent). In rare cases the fuse may not hold and the electrolytic may have to be replaced. Do not use fuses of higher value than outlined above.

Production will continue to use the 1.5 Amp fast blow fuses since the problem has been identified and corrected.

AB, AA Chassis -- Horizontal Hold

This information is for the purpose of clarifying some aspects of the horizontal system of the subject chassis. In general, it is also applicable to other chassis using this phase detector and multivibrator horizontal oscillator. It may be considered to be an elaboration on the article in the November 1965 "Service Talk".

The horizontal pull-in range of the AB Chassis is normally 3 to 5 bars from either side. On some receivers this range may be less, due to accumulated tolerances of components. This may create a problem of frequent hold control re-adjustment in critical reception areas, so we are furnishing additional information to assist you in correcting any complaints of this nature.

Basically proper pull-in range is dependent upon proper adjustment of the horizontal frequency circuit and proper balance of the phase detector.

The horizontal frequency adjustment should be performed according to the Service Manual or the "Service Talk" article. If the receiver has insufficient pull-in range after completing the frequency adjustment, the following is recommended.

Change capacitor C252 from 47 to 68mmf to correct the balance of the phase detector. This capacitor is available from the top of the chassis and it will usually be more convenient to add an extra capacitor of from 18-24mmf. across the existing C-252.

If a soldering iron and extra capacitor are not available, the following, slightly less effective cure (which will probably prove adequate in the majority of cases), may be used.

As an additional step to the routine set-up of horizontal frequency, short the clipper grid to ground and adjust the horizontal hold R257 until the picture floats across the screen. Remove the short and check performance.

Note A.

The method used for determining a receiver pull-in range is as follows:

1. Set up horizontal frequency according to Service Manual, and tune in a moderately weak signal.
2. Turn the horizontal hold control completely counter-clockwise until station falls out of sync. (It may be necessary to switch off and back on channel to show sync. fall out.)

3. Turn hold control slowly clockwise and count the number of bars from which the picture snaps into sync.
4. Repeat step 2 in the full clockwise direction and step 3 in the counter-clockwise direction. Again, the number of bars showing when the picture snaps into sync is the pull-in range.

Note B.

1. Each bar represents 60 cycles off horizontal frequency.
2. Bars sloping downward left to right indicate frequency is too high.
3. Bars sloping downward, right to left indicate frequency is too low.

SERVICE MANUAL PAGES

File the following pages in the "A" Line Service Manual. Destroy old pages which have been superseded.

AA Chassis Pages AA1-9, AA1-11, AA3-3, AA3-5, AA3-7, AA4-1, AA4-7

CA Chassis Pages CA1-1, CA1-3, CA1-5, CA1-7, CA2-5, CA2-9, CA2-11, CA2-13, CA3-1, CA3-23, CA4-1

EA Chassis Page EA2-3

SA Chassis Page SA3-3

The following pages are the first issue of the "C" Line Service Manual. You will receive the binder for this manual early in February (if you have renewed your Plan E Subscription).

DC Chassis Pages DC1-1, DC1-3, DC2-1, DC2-3, DC3-1, DC3-3, DC3-5.





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK  
SYRACUSE, N. Y.

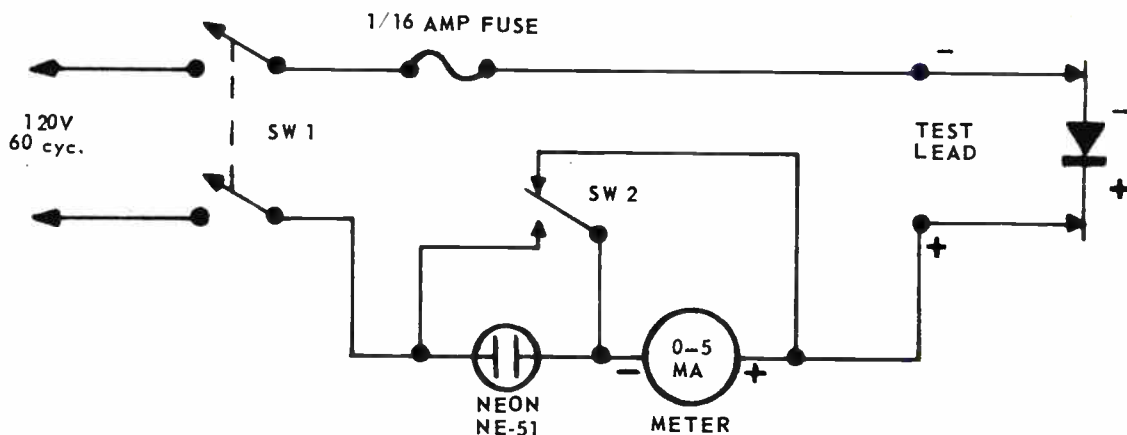
FEBRUARY 1966

VOL. 8, NO 2

## TA CHASSIS - H.V. RECTIFIER TEST

Since it has been difficult to determine which semi-conductor H.V. rectifier is responsible for the loss of HV, many good rectifiers are being swapped.

The following simple test circuit has been developed to permit accurate testing of these units.



The test unit may be enclosed in a small metal box with the meter. Sw. 1 should be a spring return, to assure an open circuit during hook-up. Sw. 2 is for meter protection in the event of excessive leakage and should also be spring return. The neon bulb should be mounted in an enclosed neon light assembly similar to Allied 7E852 (has no built-in resistor).

Since the unit is connected to the power line, it should either be operated through an isolation transformer or have a 1 to 1 transformer built in to the case.

### To test ET57X36 HV Rectifiers:

1. Disconnect one side of the rectifier and check for a shorted rectifier using an ohmmeter.

CAUTION: If a shorted rectifier is connected in the test circuit, it is possible for the neon bulb to explode. That is why the enclosed neon bulb assembly should be used.

2. Connect test leads of unit to rectifier, observing proper polarity.
3. Depress Sw. 1 and observe neon lamp. Proper rectifier action will produce DC and light only one element of the neon lamp. If both elements light, AC is indicated and the rectifier is defective.
4. Assuming proper neon indication is obtained, depress Sw. 2 (Sw. 1 also remains closed), the meter should read over 0.5MA for a good rectifier. Readings of 0.5MA or less indicate a defective rectifier.

To test ET57X32 HV Rectifiers:

This test unit will also test the semi-conductor rectifier ET57X32 used in late model color receivers.

The ET57X32 is tested in exactly the same manner as the ET57X36, excepting that the meter should read over 1.0MA for a good rectifier.

SERVICE MANUAL PAGES

This month's Plan E issue includes your 1966 SUBSCRIBERS CERTIFICATE and the binder for your "C" Line Service Manual.

File the following pages as indicated:

- A-Line Manual: Pages CA1-1, CA1-3, CA1-5, EA1-1, SA3-5, SA4-3  
B-Line Manual: Pages AB1-1, AB3-3, AB3-5, AB3-7, CB1-1, CB1-5,  
DB1-1, DB1-5, DB1-7, DB3-1, DB3-9, DB3-11,  
Destroy DB-4A.  
C-Line Manual: Pages DC1-1, DC1-3, DC3-3, DC3-5.

Destroy old pages which have been superseded.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

MARCH 1966

VOL. 8, NO. 3

## CAPACITOR HEAT DAMAGE

When servicing a recently manufactured receiver, you should be alert to the possibility of damaging certain capacitor types due to excessive soldering iron heat.

Capacitors that exhibit this characteristic have the appearance of miniature silver colored paper capacitors with axial leads and are generally mounted away from the circuit board by long leads.

These capacitors are prone to heat damage because of the polystyrene dielectric and covering material which has a comparatively low melting temperature. You should therefore use a heat sink for removal or replacement and you should not allow a hot soldering iron to come in contact with the capacitor body.

A few typical circuit applications where these capacitors may be found are as follows:

1. C257 in the AB Chassis sine wave oscillator circuit.
2. C258 in the DB or HB Chassis sine wave oscillator circuit.
3. C303, C307 or C310 in the TA or TB Chassis audio circuitry.

The large silver colored capacitors, used for applications such as C176 & C152 in the AB Chassis, are mylar covered and are not categorized with the more fragile units outlined above. On the other hand, one of these units can also be damaged if a hot soldering iron is allowed to come in contact with the capacitor body, but heat sinking the leads is not required.

## 21" CB CHASSIS - GROUND OF H.V. TRANS. PULSE WINDING

We have received reports of unusual and erratic receiver performance due to poor contact on the ground connection of the pulse winding on the 21-inch CB H.V. transformer

32-1700-66C

**A SUBSCRIPTION PLAN PUBLICATION**

Since this pulse winding supplies the burst gate, several different effects are possible, when a poor ground exists. These may appear as any of the following:

1. Colored horizontal bars in the picture. - (May be intermittent.)
2. No Color.
3. Intermittent Color.
4. Greenish cast at lower portion of picture.
5. Neon light (N701) may be intermittent or not light at all.

CORRECTION:

1. Place a ground lug under the self-tapping screw which secures the H.V. transformer to the Chassis. This is located at the bottom and rear of the H.V. cage.
2. Install a short wire between this ground lug and the eyelet which secures the end of the pulse winding, and solder well at both ends.

SERVICE MANUAL PAGES

File the following pages in the Service Manual indicated. Destroy old pages which have been superseded.

A-Line Manual: Pages TA3-1, TA3-13.

B-Line Manual: Pages HB2-5, HB2-7, SB1-1, SB1-3, SB3-1, SB3-3,  
SB3-5, TB1-1, TB3-7.

C-Line Manual: Pages DC1-5, DC2-5, DC2-7, DC3-7.

OOPS!

We goofed in calling the February 1966 Service Talk Vol. 8, No. 1. Please change this to Vol. 8, No. 2.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK  
SYRACUSE, N. Y.

APRIL 1966

VOL. 8, NO. 4

## CB CHASSIS - FLESHTONE COLOR REPRODUCTION

Reports have been received of some flesh tone problems with certain color transmissions. During these transmissions, flesh tone areas appear greenish in low light portions. This may also be described as greenish blotches or spots in shadowed areas which will vary with program material.

It has been determined that this problem can be cured and more pleasing flesh tones developed by opening the demodulation angle between R-Y and B-Y from 90 degrees to  $107 \pm 3$  degrees. Starting with February 1966 production, the factory alignment incorporates this change.

We recommend that whenever receivers built prior to Feb. '66 (Chassis Code 605 CB or earlier) require sub-carrier adjustment or have a complaint concerning flesh tones, the following procedure be followed:

1. Peak sub-carrier as described in the CB Service Manual.
2. After completing sub-carrier peaking, remove the meter from the test point and readjust the B-Y tuning core  $1/6$  of a turn counter-clockwise. This is the direction which moves the core up and away from the board. The R-Y, B-Y angle will then be  $105-110^\circ$  and within the new limits. (The angle must not be increased beyond this point.)
3. Carefully check for AC and DC balance. (See Service Manual.) Unbalance on any of the three color difference amplifier grids must not exceed .05 volts (50 millivolts). Due to the accuracy of adjustment required, you should set the VTVM either to center scale or to some arbitrary calibration above 0 before connecting to the test points. Using the lowest scale, this will permit an accurate reading for balance. As a final check remove the meter probe from the test point, then reconnect it. There should be no movement of the meter pointer, if adjustments are correct.

4. As a final check on sub-carrier and balance adjustments, a color bar signal should be used to determine the following conditions.
  - a) All primary colors, Red, Blue and Green, should be accurately reproduced.
  - b) The yellow bar or yellow-orange bar will be shifted very slightly toward orange.
  - c) The cyan bar will be shifted very slightly in the blueish direction. If the cyan bar is too blue the (R-Y) -- (B-Y) angle has been increased a little too far. Close up (B-Y) adjustment slightly toward original setting.
5. If any of the above conditions cannot be obtained, repeat steps 1, 2, and 3.

SERVICE MANUAL PAGES

File the following pages and index tabs in the Service Manual indicated. Destroy old pages which have been superseded.

A-Line Manual: Pages TA1-1, TA3-1.

B-Line Manual: Pages CB3-25, CB3-27, CB3-29, CB3-31, CB3-33, DB1-1, DB1-11, DB2-33, DB2-35, DB3-5, DB3-7, DB4-1, HB1-1, HB3-13, TB3-1, TB3-11.

C-Line Manual: Index Tab, DC Chassis Tab, Pages DC1-7, DC3-3, SC Chassis Tab, Pages SC1-1, SC2-1, SC2-3, SC2-5, SC2-7, SC3-1, SC3-3, SC3-5, SC3-7, UHF Tab, Pages UHF-1, UHF-3, UHF-5.





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

MAY 1966

VOL. 8, NO. 5

## CB CHASSIS - NEON BULB FAILURES

Recent reports indicate some cases of erratic or unusual color reception which have been traced to failure of the neon bulb N701 in the grid circuit of the burst gate.

This problem appears similar to a poor ground connection on the H. V. transformer pulse winding and may result in:

1. No Color
2. Intermittent color
3. Incorrect color

The neon bulb will fail to light or flicker and will usually appear black on the internal electrodes. Also, in some cases, color will not appear until the receiver has been operating for several minutes.

The original equipment is a type NE2 (ET41X6). Production is changing over to an improved type NE2H.

Your G.E. distributor's stock of (ET41X6) is being changed from NE2 to a more rugged type NE-83/5AH.

Until you are able to get NE-83/5AH from your distributor, we recommend that you purchase either NE2H or NE-83/5AH from local jobbers to meet your replacement needs.

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## 9-inch Picture Tubes - Transistorized TA and TB Chassis

The 9-inch picture tube, Cat. No. ET44X100, has now been registered by the General Electric Tube Department as a Type 9VP4. The replacement type 9VP4 will not carry the Lamilite faceplate protection. A separate 9-inch safety plate (similar to the one used with the 11-inch tube) will be packed with each 9VP4.

32-1700-66E

(OVER)

A SUBSCRIPTION PLAN PUBLICATION

This safety plate must always be installed with the 9VP4. Failure to do this, leaves the picture tube unprotected and therefore hazardous.

---

#### SERVICE MANUAL PAGES

File the following pages in the Service Manual indicated. Destroy old pages which have been superseded.

B-Line Manual: Pages AB1-9, AB1-11, CB1-1, CB1-3, CB1-5,  
CB2-7, CB2-9, CB3-1, CB3-3, CB3-5,  
CB3-9, CB3-13, CB3-15, CB3-17,  
CB3-19, CB3-21, CB3-23, CB3-29,  
CB3-31, CB3-33,  
SB3-5, SB3-7,  
TB2-5, TB3-9

C-Line Manual: Pages DC3-3, DC3-5, SC1-3, SC3-7



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JUNE 1966

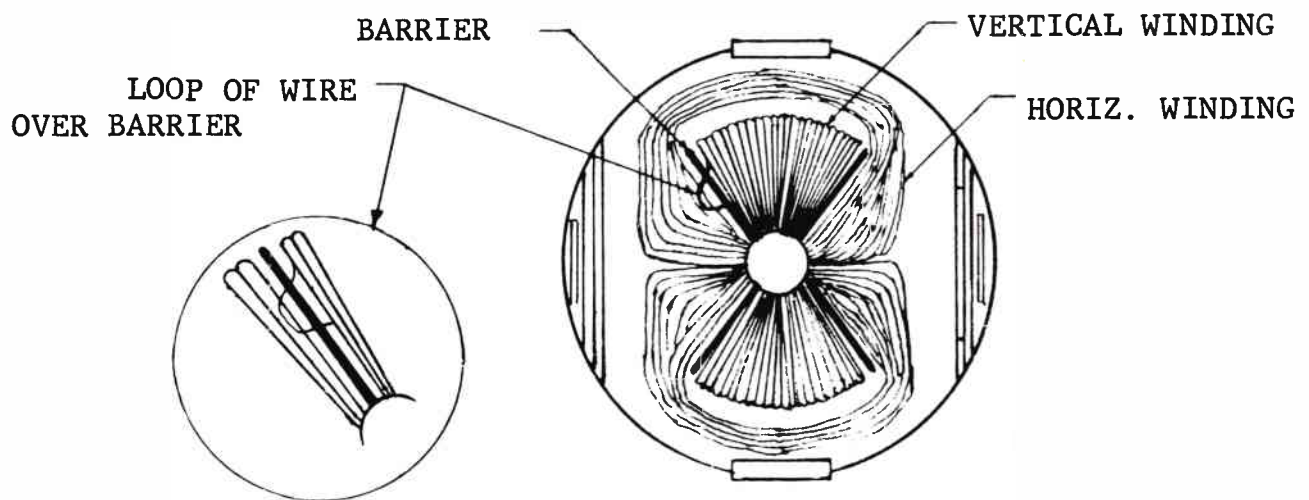
VOL. 8, NO. 6

## SB CHASSIS - YOKE FAILURE

Evaluation of several yokes returned from the field indicate that most SB yoke failures occur due to a turn of the vertical winding looped over the barrier and touching a horizontal winding.

This may show up as a loss of high voltage or a trapezoidal raster.

A visual inspection of the inside of the yoke may reveal a loop of wire from a vertical winding looped over the barrier and touching the horizontal winding. Redressing the wire to the correct side of the barrier will restore normal operation. See illustration below. (over)



Any SB yokes which appear to be defective, should be inspected and redressed rather than replacing.

SERVICE MANUAL PAGES

No new pages or supersedure pages for the TV Service Manuals are included in this month's Plan E Mailing. The July issue will contain the new "C" Line Service Manuals.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JULY 1966

Vol. 8, No. 7

## SB - SC CHASSIS--SOUND DISTORTION

Buzz in sound, distortion, or a narrow sound fine tuning range can be caused by a poor crimp on the seams of the shield cans surrounding L-302 quadrature coil or L-301 interstage coil. The poor crimp can cause detuning of the stage involved and may vary with heat, age, and the looseness of the crimp.

It is recommended that prior to sound alignment, and in all cases of sound problems outlined above, a bead of solder be run up the seam of the quadrature and interstage shield cans.

The shield can seams are now being soldered on our production lines. Our thanks to Frank Dugas, General Electric Company, Pittsburgh, for bringing this to our attention.

## "A" LINE SERVICE MANUAL

The new "A" Line Bound Service Manual is now available from your General Electric Distributor. The 245-page manual contains all "A" Line Service Information for monochrome and color.

This is your opportunity to replace your "dog-eared" manual with a brand new bound volume. You will recognize the "A" Line Manual by its attractive red cover and black plastic comb binding. Order the manual as follows: Pub. No. 32-0007-66 "A" Line Service Manual, each \$4.50 (plus state or local taxes).

(over)

### SERVICE MANUAL PAGES

All pages in this issue of Plan E are for the "C" Line Service Manual binder. Included are complete service manuals for the following new chassis: AC, HC, KC, TC, and VC.

June 1966 Service Talk stated that no new TV service information was included in the June mailing. However, at the last minute, we did sneak in some new publications. Included were the index tab cards for the AC, HC, KC, TC, VC, ETV, and a complete service manual for the ETV-AC Chassis. The ETV manual consists of sheets ETV1-1, ETV2-1, ETV2-3, ETV3-1, ETV3-3, and ETV3-5. All tab cards should be inserted alphabetically in the "C" Line Binder with "UHF TUNERS" and "ETC-AC CHASSIS" following the "VC CHASSIS" tab.

File the following pages in the "C" Line Service Manual Binder in alphabetical and numerical order. Destroy old pages which have been superseded.

<u>AB Chassis</u>	Sheets AC1-1, AC1-3, AC2-1, AC2-3, AC3-1, through AC3-5, and AC4-1.
<u>DC Chassis</u>	Supersedure sheet DC1-5.
<u>HC Chassis</u>	Sheets HC1-1, HC2-1, HC2-3, HC3-1, through HC3-13.
<u>KC Chassis</u>	Sheets KC1-1 through KC1-5, KC2-1, KC2-3, KC3-1 through KC3-25, and KC4-1.
<u>TC Chassis</u>	Sheets TC1-1, TC1-3, TC2-1 through TC2-5, TC3-1 through TC3-9.
<u>VC Chassis</u>	Sheets VC1-1, VC2-1, VC2-3, VC3-1 through VC3-7, VC4-1 and VC4-3.





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

AUGUST-SEPTEMBER

Vol. 8, No. 8

## HC CHASSIS, RESISTOR R402

We have found that some 680 ohm resistors were used in place of the 300 ohm 3-watt resistor which is the correct value for R402. It is also possible that some incorrect resistors may have been used in HB Chassis production.

Use of the 680 ohm resistor results in lowering the B+ 135 volts to 100 volts. This is known to produce an audio beat in the picture which varies with modulation.

We suggest that you measure the B+ line for 135 volts whenever an HB or HC Chassis is serviced.

## TB CHASSIS - AUDIO DISTORTION

An audio distortion, resembling a raspy speaker, has been reported from some areas. This has been traced to crossover distortion occurring in Q15 and Q16 due to component tolerance buildup.

The correction is to replace R322 180 ohm  $\pm 10\%$  with a 220 ohm  $\pm 10\%$  1/2 watt resistor. If a 10% tolerance resistor is not readily available, select the proper value using an accurate ohmmeter.

Do not increase the value of R322 over 240 ohms or the ratings of the output transistors will be exceeded.

(more)

## HC CHASSIS - PURITY AND CONVERGENCE

The step-by-step purity and convergence procedure has been revised in the HC Service Manual, pages HC3-2 and HC3-3, to simplify the picture tube setup. These pages are included in this month's issue.

Read the new procedure thoroughly to familiarize yourself with the new steps. Note particularly the two new key points described in Steps 3 and 4. Step 3 describes the preliminary adjustment of the purity magnet to produce zero field and Step 4 points out the positioning of the static convergence magnets using the reference line marked on the end of each magnet.

The new procedure may also be used for the HB Chassis. The HB Service Manual will be revised and appear in the October issue of service manual pages.

### SERVICE MANUAL PAGES

File the following pages in the "B" Line Service Manual. Destroy old pages which have been superseded.

<u>Index:</u>	Page 3.
<u>SB Chassis:</u>	Pages SB1-1, SB1-3.
<u>TB Chassis:</u>	Pages TB2-3, TB3-3, TB3-5.

File the following pages in the "C" Line Service Manual.

<u>AC Chassis:</u>	Page AC1-3
<u>DC Chassis:</u>	Pages DC1-7, DC2-9, DC2-11, DC3-7, DC4-1.
<u>HC Chassis:</u>	Pages HC3-1, HC3-3.
<u>KC Chassis:</u>	Pages KC2-1, KC2-3, KC3-13, KC3-15.
<u>SC Chassis:</u>	Page SC1-1.
<u>TC Chassis:</u>	Pages TC4-1, TC4-3.



# Service Talk

FROM

TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

OCTOBER 1966

VOL. 8, NO. 9

## AC CHASSIS - TUBE TYPE CHANGE

To improve reliability, the "AC" Chassis vertical multivibrator V8 has been changed from a 6FY7 to a 6FM7.

To accommodate this change, the sweep board copper pattern that grounds pin 8 of the vertical compactor socket will be removed, thus allowing pin 8 to "float".

This is necessary because, unlike the 6FY7 where pin 8 has no internal connection, the 6FM7 has pin 8 -- as well as pin 3 -- internally connected to the control grid of the amplifier triode.

No other circuit modifications are necessary for the change-over from a 6FY7 to a 6FM7. Therefore, on receivers that are originally equipped with a 6FM7, a 6FY7 may be used as a substitute replacement; but conversely, a 6FM7 may not be used as a substitute replacement in a receiver that was originally equipped with a 6FY7 unless the pin 8 ground return (copper pattern) is removed.

32-1700-66I

A SUBSCRIPTION PLAN PUBLICATION

SERVICE MANUAL PAGES

File the following pages in the "B" Line Service Manual. Destroy old pages which have been superseded.

AB Chassis Supersedure sheets AB1-1, AB1-3, AB2-3, AB2-7, AB2-9.

DB Chassis Supersedure sheet DB2-23.

HB Chassis Supersedure sheets HB3-1, HB3-3, HB3-5.

File the following pages in the "C" Line Service Manual. Destroy old pages which have been superseded.

"C" Line Index. File after "Index" Tab.

AC Chassis Supersedure sheets AC1-1, AC2-3, AC4-1.

DC Chassis Supersedure sheets DC1-1, DC4-1.

HC Chassis New sheets HC2-5, HC2-7.

KC Chassis Supersedure sheet KC1-1 and new sheets KC1-7, KC1-9.

SC Chassis New sheets SC1-3, SC1-5.

ETV Chassis New sheets ETV2-5, ETV2-7.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

NOVEMBER 1966

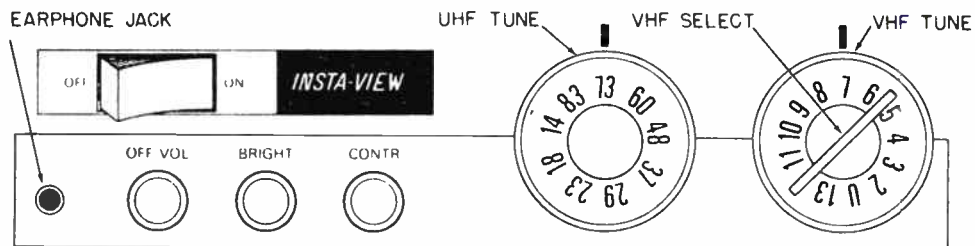
VOL. 8, NO. 10

## INSTA-VIEW CIRCUITRY

The Insta-View circuitry featured in several General Electric "C" Line television models is a means by which the tube filaments may be kept in a pre-heated standby condition when the receiver is not being used. This provides instant viewing when the set is turned on instead of having to wait for the usual warm up period.

There is a special Insta-View switch located on the front control panel. For normal receiver operation, this switch is left in the ON position and the receiver is turned on and off with the main AC switch on the volume control.

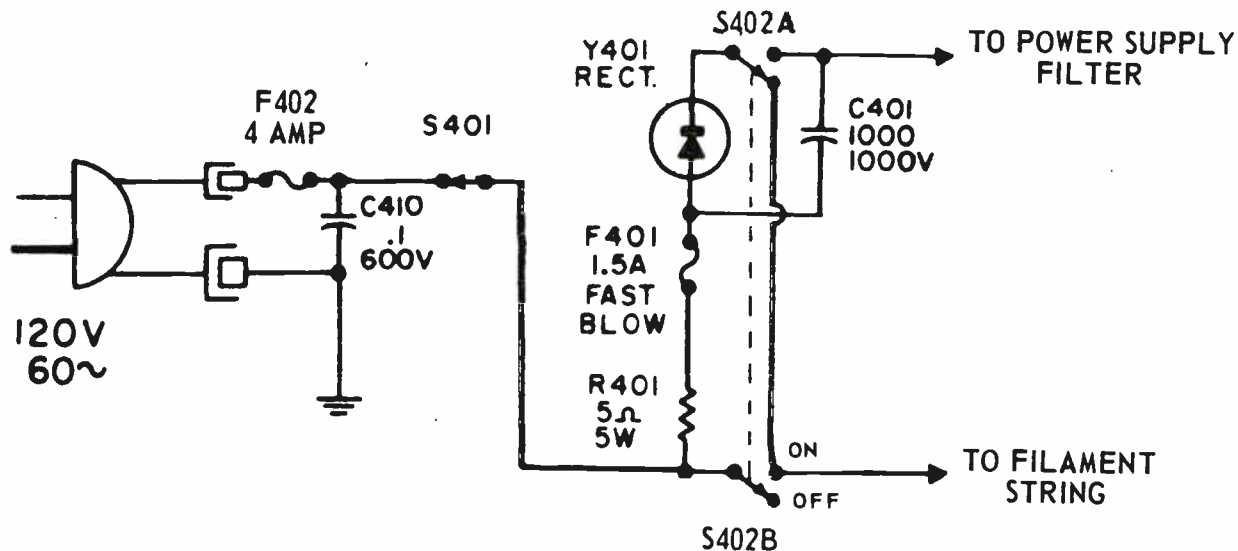
For Insta-View operation, the AC power switch on the volume control is left in the ON position. The receiver is now turned on and off with the Insta-View switch.



TYPICAL CONTROL PANEL WITH INSTA-VIEW SWITCH

Refer to the schematic diagram on the back of this page. A double-pole, double-throw switch (S402) is used to provide the stand-by condition. With the AC power switch (S401) in the closed position (ON), switch S402 provides a means of switching both the filament string and the rectifier output.

32-1700-66J



INSTA-VIEW CIRCUIT SCHEMATIC DIAGRAM

In the OFF position, S402B removes the normal AC line voltage from the tube filaments. At the same time, S402A removes the rectifier output from the B+ power supply filter circuit and connects it directly to the filament string, applying a pulsating DC voltage to the tube filaments. The average voltage will be much lower than the normal filament string voltage, but it is sufficient to maintain the tubes in a partially heated condition.

When the Insta-View switch on the front control panel (S402) is pushed to the ON position, the rectifier output is connected to the power supply filter circuit, supplying B+ voltage to the chassis, and the full AC line voltage is applied to the filament string.

It is recommended that the receiver be turned completely OFF if it is to be left unattended for an extended period of time. To turn the receiver OFF completely, rotate the OFF-VOL. knob fully counter-clockwise to the stop.

\*\*\*

File the following pages in the Service Manual indicated. Destroy old pages which have been superseded.

B-Line Manual: Pages AB3-7, SB2-7

C-Line Manual: Pages DC2-13, DC2-15, KC1-5, KC1-9, KC3-1, KC3-15, KC3-17, KC3-19, KC3-23, KC3-25, KC4-1, SC2-3, TC1-1, TC1-3, TC2-1, TC2-3, TC2-5, VC1-3, VC2-5, VC2-7, VC4-3, UHF-1, UHF-3.





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

DECEMBER 1966

VOL. 8, NO. 11

## CB CHASSIS-HORIZONTAL OUTPUT CIRCUIT

\*\*\*\*\*

### NEW PROCEDURE FOR REPLACING T101 NEW ADJUSTMENTS FOR EFFICIENCY AND HIGH VOLTAGE

New procedures have been developed for use when replacing the horizontal output transformer T101 and/or making efficiency coil and high voltage adjustments in the CB Chassis. Effective at once the procedures and adjustments outlined below are to be used. Service Manual instructions will be up-dated to include these changes. When replacing the horizontal output transformer in any CB 21", 23" or 25" chassis the following sequence should be observed.

1. Spread a coat of G-E Silicone Heat Compound No. 641 between the chassis and the base of the replacement transformer. The No. 641 compound will soon be available from your General Electric Distributor under Catalog Number ET90X23.
2. Replacement transformer must be securely mounted to chassis (use all screws and tighten thoroughly).
3. Check or replace any defective or doubtful horizontal output, damper, high voltage rectifier or high voltage regulator tubes.
4. Change horizontal output V103 screen resistor R133 from 13K to 17K ohms.
5. On 23" and 25" chassis, add an 82pf, 6KV capacitor ET18X579 from terminal 4 of horizontal output transformer T101 to chassis ground to increase width.
6. Check values of yoke capacitors C121 and C122 in 23" and 25" chassis as called for in the production change chart on Page CB3-32 in the "B" Line Service Manual.
7. Adjust line voltage input to 117V.
8. Horizontal Efficiency Coil -- Adjust horizontal efficiency coil L520 for minimum cathode current dip of the horizontal output tube V103. (Do not adjust for any specific current

reading as previously requested.)

9. High-Voltage Adjustment -- Adjust R140 (High Voltage adjustment pot.) to obtain 25KV (as read on a good H.V. meter) at a minimum brightness. (Do not adjust R140 for any specific regulator current.)
10. The regulator circuit may be checked for proper operation by observing the H.V. meter reading as the brightness is adjusted from minimum to normal. The H.V. should not vary more than 300-400 volts over this range.

NOTE: The adjustments in steps 7 through 10 should also be made whenever it is necessary to service the high voltage circuits in any CB Chassis (whether T101 has been changed or not).

#### 1967 SERVICE MANUAL SUBSCRIPTION PLAN

Now is the time to renew your subscription to the General Electric Factory Service Manual Plan for 1967. A renewal coupon, attached to the descriptive flyer, is enclosed for your convenience. Note the various types of equipment and features that will be covered in the 1967 Service Manuals and renew your subscription plan now!

#### SERVICE MANUAL PAGES

File the following pages in the Service Manual indicated. Destroy old pages which have been superseded.

B-Line Manual: Pages AB1-5, AB1-7, AB3-1, CB1-1, CB1-3, CB1-5, CB3-9, CB3-11, HB3-7, HB3-9, HB3-13, VB4-3.

C-Line Manual: Pages AC4-1, DC1-3, DC1-9, DC2-3, DC2-7, DC3-1, DC3-3, DC3-5, DC3-9, DC4-1, TC3-1, TC3-5, TC3-7.

\*\*\*\*\*

#### HOLIDAY GREETINGS

The folks in Television Product Service wish you a very Merry Christmas and a Happy and Prosperous New Year.



*W. H. Meyer*

W. H. Meyer  
Manager - Product Service



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JANUARY 1967

VOL. 9, NO. 1

## KC CHASSIS - NEW INFORMATION

### 1. Replacement Of Horizontal Output Transformer Coil, T104

The KC Chassis uses two different types of horizontal output transformer coils for T104. They are Cat. Nos. ET77X99 and ET77X102. The difference is in the type of wax used on the coil.

The KC Chassis also uses two different types of high voltage compartments. One type is completely enclosed without ventilation. The other type has large ventilation holes located in three sides of the compartment, near the top, and also in the compartment bottom plate.

SPECIAL PRECAUTION MUST BE OBSERVED, when replacing T104, to select the proper transformer coil for the type of high voltage compartment used.

Cat. No. ET77X99 Coil may be used ONLY in the unventilated (no holes) high voltage compartment.

Cat. No. ET77X102 Coil may be used in either the unventilated or ventilated compartments.

For improved heat dissipation it is recommended that a coating of Silicone Compound, Cat. No. ET90X23, should be applied to the sides of the transformer core where contact is made with the high voltage compartment. Also make sure that the mounting nuts are tightened securely.

### 2. B+ Fuse -- F101

Some early production receivers used a 3/8 amp. slo-blo fuse in the B+ line. This was found to be unnecessary and deleted early in production. If a fuse failure occurs, it should be bridged with a plain buss wire. This will avoid call backs resulting from fuse failure.

### 3. Filament Fuse -- F103

If a failure of filament fuse F-103 should occur, it is im-

portant that it be replaced properly.

Use either an ET10X33 fuse or a length of No. 22 bare copper wire. The most important point is to be sure that it is run inside the 3-inch fiber glass tubing. This fuse is intended to burn off in the event of a filament circuit short in the chassis. The fiber-glass tubing contains the heat of a burn off and prevents other receiver damage. Therefore, it is important that the proper gauge of wire be used and that it is run inside the tubing.

4. H.V. Regulator Tube

The tube location label in KC Chassis cabinets indicates the V17 regulator tube as 6EA4/6EF4. This is an error since the 6EA4 has too low a dissipation capability. Use only 6EF4 as a replacement. The label is being changed.

\*\*\*\*\*

CX CHASSIS-REPLACEMENT PARTS CHANGE

Change the Catalog Number of L710 Horizontal Efficiency Coil from ET36X640 to ET36X537.

This item will be found under "COILS & TRANSFORMERS" on Page C109 in the CX Chassis Service Manual and on Page 55 in the "X" Line Service Manual Pub. No. 32-0011-64.

\*\*\*\*\*

SERVICE MANUAL PAGES

File the following pages in the Service Manual indicated. Destroy old pages which have been superseded

B-Line Manual: Pages CB3-15, CB3-17, CB3-23, CB3-25, CB3-27,  
CB3-29, CB3-31, CB3-33, DB3-7, DB3-11.

C-Line Manual: Pages DC1-3, DC1-7.

The following pages are the first issue of the Volume "D" Service Manual. You will receive the binder for this manual early in February (if you have renewed your Plan E Subscription).

DD-Chassis: Pages DD1-1, DD1-3, DD2-1, DD2-3, DD3-1, DD3-3,  
DD3-5.



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

FEBRUARY 1967

VOL. 9, NO. 2

## AN ADAPTER SOCKET FOR MEASURING HORIZONTAL AMPLIFIER CATHODE CURRENT IN COLOR RECEIVERS

When servicing the horizontal and high voltage circuits in color receivers, it occasionally becomes necessary to measure the horizontal driver current. In most instances the receiver chassis must be removed to make this measurement.

For compactron equipped receivers, an adapter is described below that will make chassis removal unnecessary.

The adaptor is constructed from two compactron sockets (ET34X166) and provides the necessary "open" cathode circuit for meter connection.

Pins for the male end of the adapter are cut from ordinary No. 1 (.036" dia.) paper clips.

After accumulating parts the assembly procedure will take less than 10 minutes, a fraction of time required to remove and replace one chassis.

### ASSEMBLY:

1. Select one of the compactron sockets and bend the mounting lugs up toward the top of the socket (Fig. A). This socket will act as the male end of the adapter.
2. Cut 12 lengths of wire  $\frac{3}{4}$  inches long from paper clips. These are used for the male pins of the adapter.
3. Remove the center shield from both sockets and place the two sockets together as in Fig. B. Insert the 12 lengths of wire through the top socket until wires are flush with the top surface of the socket. The bottom socket will act as a guide to maintain pin alignment until pins are soldered.
4. Flow a drop of solder in each pin and receptacle of the top socket only. Do not allow excess solder to flow through the bottom socket.

32-1700-67B

A SUBSCRIPTION PLAN PUBLICATION



FIGURE A

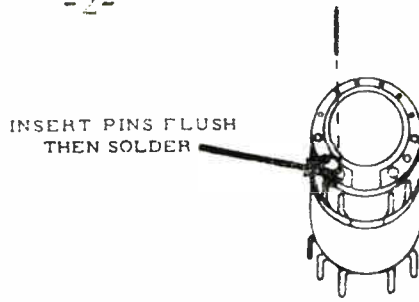


FIGURE B

5. Separate the completed plug end of the adapter from the bottom socket that was used as a pin positioning guide. This completes construction of the plug end of the adapter.
6. Place the socket that was previously used as a pin positioning guide on top of the plug and align the respective pin numbers of the plug with those of the socket, Fig. C.

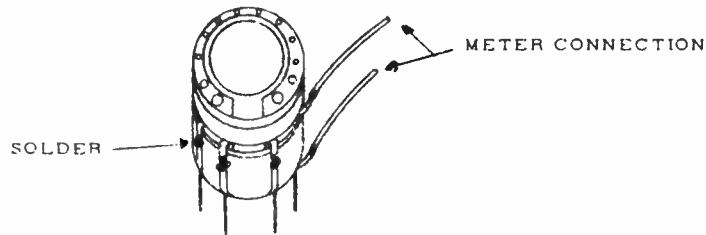


FIGURE C

7. Except for the cathode lugs that correspond to the compactron for which the adapter is built, solder all socket lugs to those of the plug. If the adapter is built for a 6JS6, Pin 2 would be left unsoldered and for a 6HF5 it would be Pins 4,10.
8. Using long nose pliers bend the unsoldered cathode tabs parallel to the plug and socket. Solder a length of wire to each of these tabs for meter connection. Wrap tape around the completed adapter to cover the exposed lugs.

SERVICE MANUAL PAGES

This month's Plan E issue includes your 1967 SUBSCRIBER'S CERTIFICATE and two binders. - One for Vol. D, TV Service Manuals and one for Audio Products Service Manuals.

File the following pages as indicated. - Destroy old pages.

B-Line Manual: Pages CB1-3, DB1-5, DB1-7, DB1-13, DB1-15, DB1-17, DB1-19, DB2-27, DB2-31, DB3-1, DB3-5, DB3-9, SB1-1, SB1-3, SB2-1, SB2-9, SB2-11, SB2-13, SB2-15, SB3-3, SB3-5, SB3-7.

C-Line Manual: Pages DC1-5, DC3-1, KC1-5, KC1-7, TC1-1, TC3-3, TC3-5, TC3-9.





# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

MARCH 1967

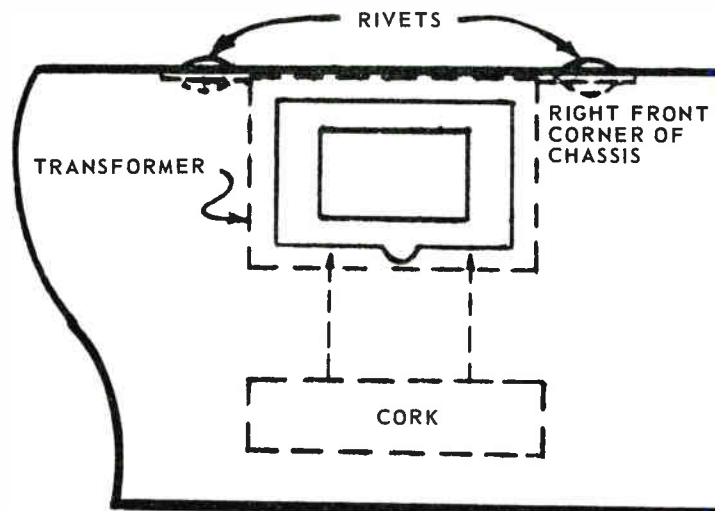
VOL. 9, NO. 3

## LOW VOLUME BUZZ OR HUM - KC CHASSIS

There have been a few scattered complaints of hum or buzz at low volume, which have been traced to vertical output transformer buzz.

This condition may be cured very quickly by inserting a piece of cork gasket or other soft non-perishable packing between the vertical transformer core frame and the underside of the chassis as shown in the accompanying sketch.

Only those sets having a complaint of low volume hum should have the packing added.



TOP VIEW LOOKING  
DOWN ON CHASSIS

## IMPURITY - KC AND CB CHASSIS

A few reports have been received of both CB and KC sets which do not maintain purity. In most cases this is a very severe impurity condition and is repetitive.

In these cases the impurity is corrected by manual degaussing, but, if the set is allowed to cool off thoroughly and then turned on, the impurity will return. The more times the receiver is cycled off and on, the worse the impurity becomes.

This problem has been traced to the B+ Power rectifiers which are used in a full wave bridge circuit. In every case an open rectifier or a cold soldered joint on one has been found. This condition cannot be determined by measuring the B+ as it will drop only about 25 - 30 volts. The rectifiers should be checked with an ohmmeter and inspected for cold solder on all terminals.

This problem results in unbalance of the bridge rectifier circuit and spurious pulses through the degaussing coil. Other minor performance defects may occur, but the impurity condition is the most pronounced.

CORRECTION-CX CHASSIS-REPLACEMENT PARTS CHANGE

January 1967, Vol. 9, No. 1-SERVICE TALK - listed an incorrect Catalog No. ET36X537 for L710.

Change the Catalog Number of L710 Horizontal Efficiency Coil to ET36X875.

This item will be found under "Coils & Transformers" on Page C109 in the CX Chassis Service Manual and on Page 55 in the "X" Line Service Manual Pub. No. 32-0011-64.

SERVICE MANUAL PAGES

File the following pages as indicated. - Destroy old pages.

B-Line Manual: Pages TB1-1, TB4-9, VB3-7.

C-Line Manual: Pages HC1-1, HC2-3, HC3-1, HC3-3, HC3-5, HC3-7,  
HC3-13, KC1-11, SC1-1, SC1-7, SC3-7, TC3-11.

Vol. D Manual: "DD" Chassis Index Tab.

**GENERAL**  **ELECTRIC**  
COMPANY

CONSUMER ELECTRONICS

DIVISION

ELECTRONICS PARK, SYRACUSE, N. Y. 13201 . . . TEL. AREA 315 . . . DIAL 456 Plus EXT.\*

MAJOR TELEVISION DEPARTMENT

May 19, 1967

TO: ALL TELEVISION SERVICE DEALERS

The following press release was made public May 18, 1967.

General Electric's Major Television Department has announced a program to modify some of its large screen color TV. The program is being carried out on a national basis and should be completed by July 31.

Modification involves replacement of the regulator tube and adjustment of the power supply. Quality control tests indicate that some of the sets produced between June of 1966 and February 1967 may emit soft X-radiation in excess of desirable levels. At present, this emission is directed toward the floor and not toward the viewer. The picture tube is not involved.

Nationally recognized radiological health experts have confirmed preliminary Company findings that emissions have not been sufficient to cause harm to viewers. However, in view of its 26 year effort in providing customers with reliable and safe television receivers, the Company has a program under way to make appropriate changes in the models involved. These changes will resolve any problems that may exist as well as materially improving performance and reliability.

Approximately 90,000 of these models have been sold. Sets currently available will be modified before sale. For sets already sold, General Electric service representatives are contacting customers who purchased these specific models since last June and are willing to make the modification without charge at the customer's convenience.

Owner identification is being achieved through mobilization of General Electric's entire distributor-dealer organization. Factory records, dealer sales records, warranty cards, service records and contracts and finance records are among the many sources being used to derive this information. It is estimated that the program will be complete by July 31, 1967. Set owners



may wish to contact their dealer or serviceman if the modification of their sets has not been completed by that time. No black and white sets, no Porta-Color sets and no sets purchased before June 1966 are involved in the modification.

These color television receivers are those involved in our present field rework program. By now all dealers should have received the details of the program; if by any chance there are any who have not yet been notified of the details of the Program, they will receive detailed instructions very shortly.

In response to customers inquiries which will probably result from the above release, Dealers are advised to assure the customer that since the emission is directed toward the floor and not toward the viewer, they can continue normal viewing without concern. At the time of the call Dealers should obtain the name and address of the customer as well as the model and serial number of their set if possible.

Then assure the customer that if theirs happens to be one of the sets involved they will be contacted shortly and arrangements will be made to correct this condition at no charge to them.

Dealers should refer Press inquiries to T. M. Egbert, Consumer Electronics Division, Electronics Park, Syracuse, New York, Area Code 315, 456-2292.

Extracted with permission from  
the New York Times - 5/19/67

Quote from Mr. Terrill of the Public Health Service,  
Washington, D.C.

Mr. Terrill said that he found it hard to visualize any way in which a television viewer could get exposed to enough radiation from such a set to constitute a health problem.

The radiation that the defective sets leak is in the form of low energy X-rays.

Handwritten signature of W. H. Meyer in cursive script, with a small '10' and '23' written below it.

W. H. Meyer  
Manager Product Service

WHM:cld







# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

APRIL-MAY 1967

VOL. 9, NO. 4

To: All Servicemen Servicing G-E Color TV Receivers.

Regardless of the type of service being done on KC Chassis color receivers, the High Voltage regulator tube V17, with white printed code (white branding) is to be changed to a new type, as detailed below. Tubes with yellow code and branding are not to be changed. Receivers stamped EN378 or higher do not require this change.

This tube type change should be performed regardless of whether the receiver is in warranty or out of warranty. The old tube removed from the receiver is to be tagged with customer's name and address, along with the model and serial number of the receiver. Return the tagged tube to the nearest General Electric Television Distributor for a credit or exchange.

For 6EA4.....use 6EH6  
For 6EF4.....use 6EJ4  
For 6LC6.....use 6LH6

After installing the new tube type, attach one of the new tube type labels (packed with the tube) to the rear wall of the High Voltage compartment and the other label to the outside of the cabinet back -- near the top. The information on the label will then indicate that the new type tube has been installed to anyone subsequently servicing the receiver.

Operate receiver and adjust the High Voltage as instructed on Page KC3-14, dated 5/67, in the KC Service Manual. Refer to Steps 4A and 4B. The marking (or lack of marking) on the High Voltage Shield determines if Step 4A or Step 4B should be selected for the High Voltage adjustment.

- over -

The High Voltage should never be adjusted to exceed the voltages in the charts in Steps 4A and 4B as read on a High Voltage meter.

Page KC3-14 dated "5/67 (Supersedes 9/66)" is included in this issue of your Plan E subscription.

SERVICE MANUAL PAGES

File the following pages and index tab in the Service Manuals indicated. Destroy old pages which have been superseded.

C-Line Manual: Pages DC2-7, DC2-11, DC2-15, DC3-7, KC1-13, KC2-1, KC2-3, KC2-5, KC2-7, KC2-9, KC3-13.

Volume D Manual: File in the back of the manual --  
UHF Tab and "D" Line Pages UHF-1, UHF-3, UHF-5.

**GENERAL ELECTRIC**  
COMPANY

316 EAST NINTH STREET, OWENSBORO, KENTUCKY . . . CODE 502, TELEPHONE 683-2401

**ELECTRONIC  
COMPONENTS  
SALES  
OPERATION**

June 21, 1967

TO: ALL TELEVISION SERVICE DEALERS

We advised you on May 3 of our intention to obsolete from our entertainment receiving tube line the following three tube types which were manufactured exclusively by General Electric Company and are replaced with the types indicated at the list prices suggested below:

<u>OBSOLETE TYPES</u>	<u>REPLACE WITH</u>	<u>SUGG'D. LIST PRICE</u>
6EA4	6EH4	\$ 7.30
6EF4	6EJ4	7.60
6LC6	6LH6	6.80

These are the types involved in General Electric's Major Television Department program for modification of some of its large screen color television sets. This program is referenced in the attached news release, which appeared in daily news media all over the United States on or about May 18, 1967.

As indicated in the news release, the General Electric Company is making scrupulous efforts to insure the reliability and safety of all its television receivers. Consequently, in addition to the set modification alluded to in the news release, maximum effort is being made to recall every tube of the above-listed obsolete types that may now exist in the market place. Only by doing this can we eliminate the possibility of continued utilization of these tubes in those chassis where soft x-radiation might be emitted in excess of desirable levels because of inadequate shielding in those sets. Therefore, we are again most urgently requesting that you immediately return to your nearest General Electric distributor, all stock which you may have in the obsolete types (regardless of domestic brand name or trade mark) for reimbursement.

All General Electric tube distributors have been advised of our message to you concerning the return of these tubes, and we urge that these returns be made promptly since the U. S. Department of Health has been assured that General Electric will exert every effort to do this without any delay. Should you be uncertain as to your nearest franchised



Page Two  
June 21, 1967

GE distributor, please advise me of your name and address, and I will send you a list of the General Electric tube distributors in your area.

If you desire or prefer to return these three obsoleted types directly, they may be sent to General Electric Company, Return Tube Section, P. O. Box 1008, Old Hartford Road, Owensboro, Kentucky 42301, by July 1, 1967. A check will be mailed to you for your returns in an amount equal to 50% of the suggested list price, and your postage expense in making the return.

<u>OBSOLETE TYPES</u>	<u>REIMBURSEMENT CREDIT TO TV SERVICE DEALERS WHEN RETURNED TO OWENSBORO</u>
6EA4	\$ 3.65
6EF4	3.80
6LC6	3.40

Your full and immediate cooperation will be most appreciated.

Very truly yours,



Charles A. Richardson  
ACTING MANAGER-DISTRIBUTOR SALES OPERATION

jh





N E W S   R E L E A S E

May 18, 1967

General Electric's Major Television Department has announced a program to modify some of its large screen color television sets. The program is being carried out on a national basis and should be completed by July 31.

Modification involves replacement of the regulator tube and adjustment of the power supply. Quality control tests indicate that some of the sets produced between June of 1966 and February 1967 may emit soft X-radiation in excess of desirable levels. When present, this emission is directed toward the floor and not toward the viewer. The picture tube is not involved.

Nationally recognized experts have confirmed preliminary Company findings that emissions have not been sufficient to cause harm to viewers. However, in view of its 26-year effort in providing customers with reliable and safe television receivers, the Company has a program under way to make appropriate changes in the models involved. These changes will resolve any problems that may exist as well as materially improving performance and reliability.

Approximately 90,000 of these models have been sold. Sets currently available will be modified before sale. For sets already sold, General Electric service representatives are contacting customers who purchased these specific models since last June and are willing to make the modification without charge at the customer's convenience.

Owner identification is being achieved through mobilization of General Electric's entire distributor-dealer organization. Factory records, dealer sales records, warranty cards, service records and contracts, and finance records are among the many sources being used to derive this information. It is estimated that the program will be completed by July 31, 1967. Set owners may wish to contact their dealer or service man if the modification of their sets has not been completed by that time. No black and white sets, no portacolor and no sets purchased before June 1966 are involved in the modification.

# # #



GENERAL  ELECTRIC  
COMPANY

CONSUMER ELECTRONICS  
DIVISION

ELECTRONICS PARK, SYRACUSE, N. Y. 13201 . . . TEL. AREA 315 . . . DIAL 456 Plus EXT.\*  
CABLE . . . "GECOTELREC—SYRACUSE"

MAJOR TELEVISION DEPARTMENT

July 17, 1967

To all Electronic Service Technicians:

On May 19, I wrote you regarding General Electric's nationwide program designed to track down and modify a certain number of its large-screen color receivers. I explained at that time that the high-voltage regulator tube in some of these sets can emit soft X-radiation in excess of desirable levels.

During the past few months we have been able to identify and modify most of these sets. However, there are still some unmodified sets we have not been able to locate from sales and service records.

General Electric Company desires to replace all of these obsolete regulator tubes with a new type which does not require external shielding. We have already taken steps to eliminate obsolete types from the replacement market.

To aid in identifying and modifying as many remaining sets as possible and help assure that obsolete tubes can no longer be used in any application, General Electric is offering a special incentive to servicemen. We would like you to take advantage of every opportunity to seek out and replace all regulator tubes of the following types:

6EA4

6EF4

6LC6 with white ink printing only

For each one of these tubes mailed or presented to any General Electric TV Distributor (list attached) you will receive \$5.00 plus a free regulator tube of the new replacement type. To qualify, you need only provide the customer's name and address and the model and serial number of the set. A list of model numbers of GE receivers which may contain these obsolete tube types is also attached for your convenience.



Receivers which have already been modified with new tube types are readily identifiable by a red and white label pasted on the back concerning regulator-tube replacement. You should also note that 6LC6's printed with yellow ink are not included.

This incentive offer provides a unique opportunity for you to perform a free customer service and pick up some extra money at the same time. The faster you replace these obsolete tube types, the sooner we can send you a check.

<u>Obsolete Type</u>		<u>New Replacement Type</u>
6EA4	use	6EH4
6EF4	use	6EJ4
6LC6	use	6LH6

Very truly yours,

  
W.H. Meyer  
Manager-Product Service

WHM:dv  
Attachments





GE MODELS WHICH MAY CONTAIN OBSOLETE REGULATOR TUBES

M920BWD	M268CWD
M930BWD	M278CWD
M931BMD	M280CWD
M932BMP	M281CMP
M936BWD	M942CMP
M938BWD	M945CWD
M940BWD	M946CMP
M941BMP	M947CCL
M942BCL	M950CWD
M950BWD	M951CMP
M951BMP	M953CCL
M952BCL	M954CPN
M960BWD	M960CWD
M961BCD	M962CMP
CBM961BCD	M964CPN
M970BWD	M966CWD
M971BMP	M970CWD
M980BWD	M971CMP
M258CWD	M980CWD
CBM258CWD	M981CCD
	M984CPN

General Electric Television Receiver Distributors

General Electric Co.  
6555 Penn Avenue  
Pittsburgh, Pennsylvania 15206  
Area Code 412  
361-6000

General Electric Co.  
1720 Dana Avenue  
Cincinnati, Ohio 45207  
Area Code 513  
351-1450

General Electric Co.  
3535 V Street, N.E.  
Washington, D.C. 20018  
Area Code 202  
526-2620

General Electric Co.  
20600 Sheldon Road  
Cleveland, Ohio 44142  
Area Code 216  
243-4040

General Electric Co.  
336 S. Service Road  
Melville, L.I., New York 11746  
Area Code 516  
694-8100

General Electric Co.  
6501 E. Nevada  
Detroit, Michigan 48234  
Area Code 313  
892-7600

General Electric Co.  
5660 Rising Sun Avenue  
Philadelphia, Pennsylvania 19120  
Area Code 215  
PI 2-2880

General Electric Co.  
P.O. Box 18260  
Memphis, Tennessee 38118  
Area Code 901  
363-2530

General Electric Co.  
5 Fairfield Road  
North Caldwell, New Jersey 07007  
Area Code 201  
256-8770

General Electric Co.  
55 Cambridge Parkway  
Cambridge, Massachusetts 02142  
Area Code 617  
864-9630

General Electric Co.  
4421 Bishop Lane  
Louisville, Kentucky 40218  
Area Code 502  
451-9611

General Electric Co.  
5266 Highway Avenue  
P.O. Box 6519  
Jacksonville, Florida 32205  
Area Code 305  
387-3571

General Electric Co.  
940 West St. Paul Avenue  
Milwaukee, Wisconsin 53233  
Area Code 819  
276-8010

General Electric Co.  
P.O. Box 19567  
New Orleans, Louisiana 70119  
Area Code 504  
486-6171

General Electric Television Receiver Distributors (con't.)

General Electric Co.  
3260 N. 7th St. Trafficway  
Kansas City, Kansas 66115  
Area Code 913  
MA 1-3700

General Electric Co.  
542 North Fairview Avenue  
St. Paul, Minnesota 55104  
Area Code 612  
645-2772

General Electric Co.  
P.O. Box 10514  
Dallas, Texas 75207  
Area Code 214  
ME 1-6640

General Electric Co.  
1649 Adrian Road  
Burlingame, California 94010  
Area Code 415  
697-3411

General Electric Co.  
P.O. Box 6265  
Seattle, Washington 98177  
Area Code 206  
CH 4-4400

General Electric Co.  
5390 E. 39th Street  
Denver, Colorado 80207  
Area Code 303  
388-5533

General Electric Co.  
P.O. Box 848  
Houston, Texas 77001  
Area Code 713  
MI 4-5401

General Electric Co.  
2957 East 46th Street  
Los Angeles, California 90058  
Area Code 213  
583-6211

General Electric Co.  
1355 Warson Road, N.  
St. Louis, Missouri 63132  
Area Code 314  
WY 3-3000

W.D. Alexander Company  
1225 Chattahoochee Avenue  
Atlanta, Georgia 30325  
Area Code 404  
355-2680

Arizona Wholesale Supply Co., Inc.  
1333 North 21st Avenue  
Phoenix, Arizona 85002  
Area Code 602  
258-7901

Bard, Inc.  
1155 West 5th Avenue  
Columbus, Ohio 43212  
Area Code 614  
294-2561

Commercial Electric Co.  
3300 Summit Street  
P.O. Box 573  
Toledo, Ohio 43611  
Area Code 419  
729-1651

R. Cooper, Jr., Inc.  
5600 W. 73rd Street  
Bedford Park, Illinois 60608  
Area Code 312  
458-8600

7/19/67

General Electric Television Receiver Distributors (con't.)

Crescent Electric Supply Co.  
1074 South Dittmer  
Davenport, Iowa 52801  
Area Code 319  
323-9973

Crescent Electric Supply Co.  
1211 Third Street  
Sioux City, Iowa 51101  
Area Code 712  
255-0642

Gould-Farmer Co., Inc.  
1020 West Genesee Street  
Syracuse, New York  
Area Code 315  
471-9121

Langdon & Hughes Electric Div.  
Gould-Farmer Company, Inc.  
233 Elizabeth Street  
Utica, New York 13501  
Area Code 315  
797-0870

Lowry Electric Co., Inc.  
643 Elmira Street  
Williamsport, Pennsylvania 17704  
Area Code 717  
326-2631

Walker Martin, Inc.  
P.O. Box 391  
Raleigh, North Carolina 27602  
Area Code 919  
833-3631

AMFAC, Ltd.  
651 S. Queen Street  
P.O. Box 3230  
Honolulu, Hawaii 96801  
Phone: 58-511

IGE Puerto Rico, Inc.  
P.O. Box 1086  
Hato Rey, Puerto Rico 00919  
Area Code 809  
767-2100 - Ext. 468 or 469



# Service Talk

FROM  
MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JUNE 1967

VOL. 9, NO. 5

## KC CHASSIS RECEIVERS-SERVICING H.V. POWER SUPPLY

The reliability and performance of color television receivers is greatly affected by any adjustment of the High Voltage Regulator Circuit which results in excessive high voltage. On the other hand, if high voltage is low, poor brightness and performance will result.

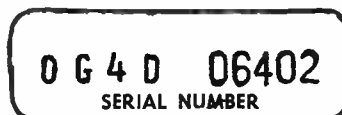
To assure your customers of maximum reliability and performance, you should follow the specific instructions for adjusting the horizontal deflection system including the H.V. regulator, as given on page KC3-14 of the KC Chassis Service Manual.

Although it is not necessary to perform all of these steps to adjust the H.V. regulator, you should remember that the receiver must be locked in on a station signal as stated in the service manual.

## TELEVISION RECEIVER SERIAL NUMBERS

The Serial Numbers have been relocated on General Electric television receivers and a new numbering sequence is being used.

The new Serial Number is imprinted on a small label located adjacent to the antenna terminal board on the back of the TV set.



The label is the destructible type and will be destroyed if removal is attempted.

Whenever it is necessary to communicate information about a particular television receiver, always include the Serial Number in the communication.

over

In the transition to the new type Serial Number, some receivers have both the new label number on the back and the old die-stamped number on the chassis rear apron. Whenever both Serial Numbers appear, ignore the chassis die-stamped number. Use the die-stamped number only if the label number is not present.

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CORRECTION

The APRIL-MAY issue of Service Talk (VOL. 9, NO. 4) has an incorrectly listed tube type number in the replacement tube list.

CHANGE 6EH6 TO 6EH4.

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SERVICE MANUAL PAGES

File the following pages in the Service Manuals indicated. Destroy old pages which have been superseded.

C-Line Manual: Pages KC1-1, KC1-3, KC1-5, KC1-7, KC1-9, KC1-11,  
KC3-1, KC3-24, KC3-25, KC3-27, VC3-3, VC3-5,  
VC3-7, VC4-3.

Volume D-Manual: Pages DD2-5, DD2-7, DD3-7.





# Service Talk

FROM  
MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JULY 1967

VOL. 9, NO. 6

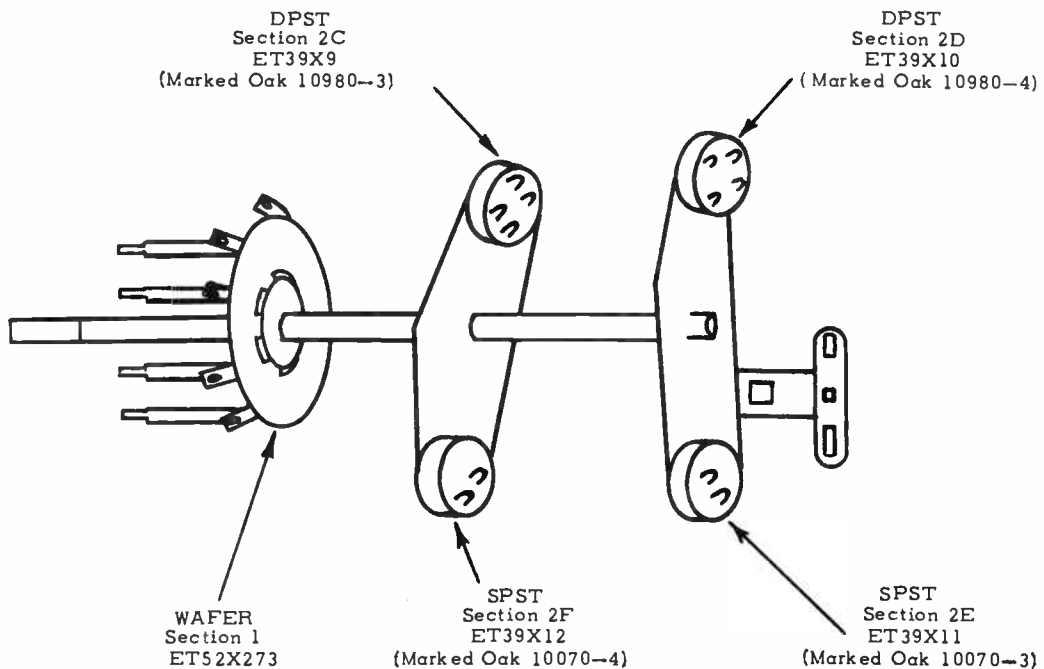
## FUNCTION SWITCH AVAILABILITY FOR TV-PHONO COMBINATION MODELS

Replacement function switch assemblies, used in M6 and MW chassis TV-Phono combination models, will soon become "No Longer Available". The switch assembly Catalog Numbers are ET55X35 for the M6 chassis models and ET55X41 for the MW chassis models.

Each switch assembly includes one wafer switch, two single pole single throw switches and two double pole single throw switches. Each switch section is cataloged separately.

Nearly all defective switch assemblies can be repaired by replacing the faulty switch section or sections.

The illustration identifies the various individual switch



section Catalog Numbers which are the same for all models listed below.

Please make suitable notations in the M6 Chassis and "W" Line Service Manuals for the models listed.

M6 CHASSIS MODELS

M782VMD

M782VWD

M783VWD

MW CHASSIS MODELS

M780WCL

M780WMD

M780WWD

M781WCL

M781WMD

M781WWD

"B" LINE SERVICE MANUAL

The new "B" Line Bound Service Manual is now available from your General Electric Distributor. The 345-page manual contains all "B" Line Service Information for monochrome and color.

This is your opportunity to replace your "dog-eared" manual with a brand new bound volume. You will recognize the "B" Line Manual by its attractive purple cover and black plastic comb binding. Order the manual as follows: Pub. No. 32-0006-67 "B" Line Service Manual, each \$4.75 (plus state or local taxes).

SERVICE MANUAL PAGES

This issue of Plan E includes the complete new AD and KD chassis service manuals.

File the following pages in the Vol. D Service Manual in alphabetical and numerical order. Destroy old pages which have been superseded.

AD Chassis AD Tab, AD1-1, AD1-3, AD2-1, AD2-3, AD3-1, AD3-3, AD3-5, AD4-1.

DD Chassis DD1-1 thru DD1-11, DD2-9 thru DD2-15, DD4-1, DD4-3, DD4-5.

KD Chassis KD Tab, KD1-1 thru KD1-7, KD2-1 thru KD2-11, KD3-1 thru KD3-25, KD4-1.

File the following pages in the "C" Line Service Manual  
C-Line Manual Supersedure pages AC4-1, DC4-1, KC3-15.



# Service Talk

FROM  
MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

SEPTEMBER 1967

VOL. 9, NO. 8

## TUNER REPAIR SERVICE HINTS FROM STANDARD KOLLSMAN

This is a description of a number of service hints that may assist in the diagnosis and repair of television tuners. Many of the hints may be very familiar. Others may be new or offer a different viewpoint.

The tuners specifically mentioned are those Standard Kollsman VHF tuners bearing part numbers with the prefix letters ARS, ARC, SAR, SARC, AR, ARP, ARPC, SBR. This part number appears just below the television receiver manufacturer's part number on the rear of the tuner chassis. Most of the information would apply to any VHF tuner.

Most tuner faults can be found by thorough visual inspection. The reliability of the component parts used in modern tuners has improved to the point where an electrical breakdown or fault is rare. The faults are usually mechanical in nature and can be seen. Once the receiver trouble has been traced to the tuner, save time .... look first.

### WHAT TO LOOK FOR

The most common symptom of trouble is either no picture or a weak snowy picture, either all the time or intermittently.

- 1) Try tapping the tuner chassis with moderate force.
- 2) Carefully rotate the channel selector shaft slightly out of its detented position in both directions. If a picture appears even momentarily, the oscillator may be faulty. Wiggle the tubes in their sockets. Poor tube socket contact is a frequent tuner trouble, especially when the fault is intermittent. There is a reason for this. To reduce lead inductance, connections to the socket must be kept very short, and this does not allow the contacts to "float" as freely as those in receiver sockets where lead inductance is not the factor it is at VHF. Thus, the tuner socket contacts may be deformed as tubes are changed.
- 3) Tap the tubes.
- 4) Try substituting tubes.
- 5) Is the trouble on more than one channel?
- 6) Look at the trimmer adjustment screws. Sometimes the nuts are loose.
- 7) Look at the feed through capacitors. Sometimes they break. Sometimes there is excessive solder which shorts the terminal to the outer conductive coating on the capacitor.
- 8) With the cover removed, rotate the channel selector while observing the stator contacts.
- 9) Look inside for poorly soldered connections, lead dress shorts or burned resistors.
- 10) Bypass the antenna input assembly. Connect the antenna transmission line to the output of the filter assembly.
- 11) Try a substitute channel strip -- sometimes called arbors or sticks.
- 12) If the picture is weak or snowy, alternately touch

each antenna terminal with each side of the transmission line. If this makes a significant change in the picture, the antenna input assembly may be at fault.

- 13) Remove the RF amplifier tube. If a reasonably strong signal is available, a picture will be present without the RF amplifier tube. On strong signals picture contrast may increase. If this happens it means the tuner AGC is functioning. Operating without the RF amplifier tube is often helpful in finding intermittents.
- 14) Short the AGC terminal to the chassis. Maybe there is too much AGC bias or not enough.
- 15) Move the channel selector shaft up and down and sideways. Does either end of the shaft easily move out of the slots in the tuner chassis? Sometimes the turret retaining springs don't do their job.
- 16) Is the detent spring loose?

### CLEANING CONTACTS

Intermittent tuner operation can be caused by dirt on the contacts. There are many tuner contact cleaning solutions available, but the one favored is the Standard Kollsman Conta Care Kit II, available from most electronic parts distributors. This kit includes a cleaning solution especially formulated for the cleaning of television tuner contacts, an applicator cloth and a proven tuner contact lubricant.

If a Conta Care kit II is not available, an excellent contact lubricant is American Oil Company's Rykon #2 EP. Other commercially available contact cleaners are satisfactory if their use is followed by contact cleaning with a cloth and adequate contact lubrication. Do not use a buffing cloth that is apt to leave lint in the tuner. It is best not to use a rubber eraser to clean contacts.

The use of aerosol spray cans containing various solvents to clean contacts, while convenient, presents disadvantages. First, wetting the contacts does not necessarily remove any dirt from the tuner, but just moves it around. Second, the lubrication of the contact is often inadequate. A dry, non-lubricated contact will generally become noisy in a relatively short time.

Before cleaning television tuner contacts, inspect to make certain there is a good mechanical contact on all channels. If there isn't, methods of contact repair are described below.

### INSTRUCTIONS FOR USE OF CONTA CARE II.

- 1) Remove sufficient channel strips or the complete rotor assembly to permit access to the stator contact springs.
- 2) Shake the solution well.
- 3) Moisten portion of applicator cloth with cleaning solution.
- 4) Gently rub stator contact springs with moistened applicator cloth until clean, being careful not to deform contacts.
- 5) Lightly buff contacts with dry cloth.

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A SUBSCRIPTION PLAN PUBLICATION

- 6) Replace strips or rotor assembly and clean all rotor contacts in the same manner.
- 7) Apply small amount of lubricant to each contact of at least four channel strips including the active channels. Lubricant is also excellent for use on mechanical bearing points.
- 8) Turn channel selector several times in each direction to spread lubricant.

### SERVICING CONTACTS

Standard Kollsman tuners have for many years used a preloaded cantilever stator contact spring. By preloading the contact spring (having the spring under tension before making contact with the rotor contacts), the amount of additional contact deflection is not critical. Most of the available contact pressure is available in the first small amount of deflection and additional deflection does not greatly increase contact pressure.

But, there must be some movement of the stator contact.

If there is no deflection of the stator contact, it may be that one or more rotor contacts has been mashed down. The individual rotor contacts can be raised in height by bending them. A small screwdriver can be used for this purpose. Use care.

Sometimes one or more of the stator contacts may be weak and not present enough pressure, even with adequate deflection. This can be detected by gently pressing the springs with the fingers or a small tool.

With care, the stator springs can be reformed to increase pressure. Using a tool with a hook on the end (a common paper clip can be re-bent for this purpose) gently lift the contact spring until the free end becomes disengaged from the plastic stator support board. Reform the contact and carefully tuck free end under plastic stator board.

### SERVICING TUBE SOCKETS

Intermittent tube sockets can result from dirt or deformed contacts. Dirt can usually be removed with any one of many solvents. If the socket contact is loose, insert a sharp pick between the body of the socket and the contact. If only one or two contacts are adjusted, insert the pick equally on both sides of the contact. If all contacts are tightened, insert the pick on one side only and the same

side for all contacts.

If one or two contacts seems beyond repair, it is usually easier to replace the contacts rather than the entire tube socket. Flatten the contact lug, using long nose pliers, and push the contact through the socket. Obtain spare contacts from spare sockets.

### CHANNEL STRIP TROUBLES

If it is determined that an individual strip is faulty, try to find out why. If the strip can be repaired, the alignment of the tuner is less apt to be disturbed than if a replacement strip is installed.

Take a good look at the solder connections on the channel strips. At times wire soldering can be improved by a touch of the soldering iron which will repair an otherwise weak, dead, or intermittent channel strip.

If the oscillator tuning screw is either too loose or binding, the screw and its holder can be repaired or replaced without changing the channel strip.

### PHONO JACKS

Phono jacks are used for the input from the UHF tuner and for the IF output on some tuners. It is often difficult to see if the phono jack contact is making good contact to the plug. Take the center pin from a phono plug and make a gauge so the firmness of contact can be felt.

### DRUM RETAINING SPRINGS

The wire springs used to hold the drum or rotor assembly are sometimes overformed or bent when servicing tuner. Make certain the rotor assembly does not move easily when lateral pressure is put on the channel selector shaft. The spring must return the shaft to the bearing "vee". If it does not, reform the retaining springs, or better yet, replace them.

### HOT SOLDERING IRON

The leakage of some soldering irons is often great enough to damage transistors and diodes. Check with an AC voltmeter or milliammeter. Use an isolation transformer after checking to make certain it is not leaky and/or ground the tip of the iron.

## SERVICE MANUAL PAGES

File the following pages in the Volume D Service Manual. Destroy old pages which have been superseded.

KD CHASSIS Pages KD2-13, KD2-15, KD4-1, KD4-3, KD4-5, KD4-7, KD4-9



# Service Talk

FROM  
TELEVISION RECEIVER PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

OCTOBER-NOVEMBER

VOL. 9, NO.9

## METER ACCURACY IN COLOR TV SERVICING

One of the most important color TV servicing adjustments that you must perform is the accurate setting the regulated High Voltage to eliminate the possibility of developing X-radiation in excess of desirable levels.

To properly perform this adjustment, a known accurate meter must be used to measure the High Voltage and an accurate AC meter must also be used to monitor the AC power line voltage. With accurate instruments the value of high voltage can then be adjusted to correspond to a given value of power line voltage as outlined in the Factory Service Manual.

The most accurate instrument for measuring high voltage is an electrostatic voltmeter, but since this type of meter is expensive and unwieldy, the usual practice is to use a high voltage probe with either a VOM or a VTVM. When using either of these meters with a probe, two precautions should be taken as follows:

1. The high voltage probe should be the one designed by the meter manufacturer especially for the particular meter being used.
2. The meter with probe should be calibrated even though the correct probe is used. This is due to tolerance build-up that may add in the wrong direction to produce inaccurate readings.

The importance of instrument accuracy becomes apparent when you consider that the proportional increase in X-radiation when operated above correct voltage is much higher than for a given increase in high voltage. Therefore, if a meter reading on the low side were used, the technician would unknowingly adjust the high voltage higher than specified.

Your General Electric Television Distributor is equipped with calibrated meter standards. Contact him and arrange to have both your High Voltage and AC voltmeter calibrated free of charge.

The meters should also be recalibrated at least once a year or more often if it is suspected that the meter and/or probe have been subjected to physical or electrical abuse.

SERVICE MANUAL PAGES

File the following pages in the Service Manuals indicated. Destroy old pages which have been superseded.

C-Line Manual: Pages KC3-23, KC3-29.

Volume D-Manual: Pages DD4-3, DD4-5, KD3-23, KD3-27.





# Service Talk

FROM  
MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

DECEMBER

VOL. 9, No. 10

## USING PICTURE TUBE TYPE 25XP22 TO REPLACE TYPE 25AP22A IN THE KC AND KD COLOR CHASSIS

Color picture tube Type 25XP22 may be used to replace type 25AP22A in the KC and KD Chassis. When this is done, the 25XP22 may not match the drive ranges in the KC and KD Chassis.

The 25XP22 is made to match the drive ranges in the KC and KD Chassis by interchanging the red cathode lead with either the blue or green cathode lead, when necessary.

The need to interchange leads is determined only after the picture tube has been installed and the grey scale (color temperature) adjustments have been completed.

If the grey scale is incorrect after the adjustments have been completed, interchange the leads according to the following rules:

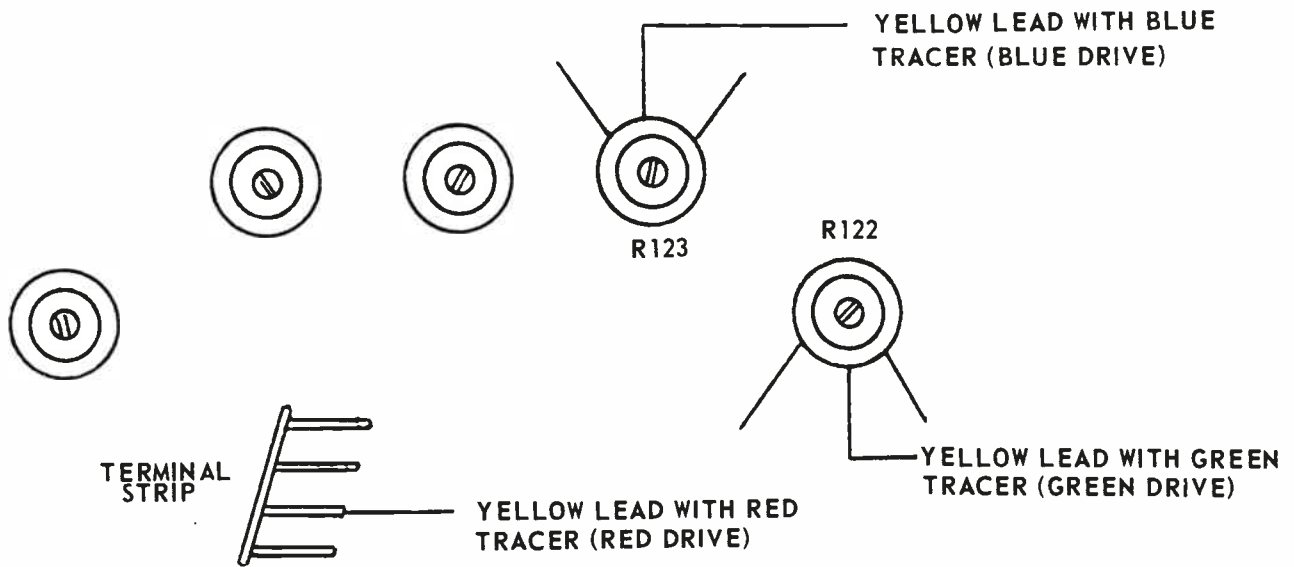
1. If the completed grey scale is yellowish in the highlight areas, interchange the red and blue cathode leads at the drive control bracket. In this instance the blue control adjusts the red drive and the blue drive is not adjustable. Green drive is normal.
2. If the completed grey scale is reddish-purple in the highlight areas, interchange the red and green cathode leads at the drive control bracket. In this instance the green control adjusts the red drive and the green drive is not adjustable. Blue drive is normal.

It is suggested, if the drive control leads are interchanged, that the drive controls be marked with the correct color for the future use of technicians who may subsequently service the receiver.

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The diagram below shows the rear view of the drive control bracket with the drive leads normally connected.



#### SERVICE HINT-HIGH VOLTAGE PROBES

It has been noted that some high voltage meters have probes with negative coefficient resistors. Tests have shown some probes to be 1500 volts low at 25° Fahrenheit. A meter used with a probe containing such a high resistance would cause you to adjust the high voltage 1500 volts higher than the correct voltage in a color receiver.

In cold weather areas, carry your high voltage meter and probe in a warm section of your service truck and, in any event, make sure the probe is approximately at normal room temperature before measurements and adjustments are made.

#### SERVICE MANUAL PAGES

File the following pages in the Volume D Service Manual. Destroy old pages which have been superseded.

DD Chassis Pages DD1-1, DD1-5, DD1-7, DD2-17, DD2-19, DD4-1, DD4-5.

KD Chassis Pages KD1-1, KD1-3, KD1-5, KD1-7, KD3-26B, KD3-29, KD4-7, KD4-9.

#### HOLIDAY GREETINGS

The folks in Major Television Product Service wish you a very Merry Christmas and a Happy and Prosperous New Year.



*W. H. Meyer*

W. H. Meyer  
Manager - Product Service



# Service Talk

FROM

MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JANUARY-FEBRUARY 1968

VOL. 10, NO. 1

## KC & KD CHASSIS---SERVICING INFORMATION

### 1. Failure of R801 Blue-Left Convergence Potentiometer

Any failure of this component is probably due to overloading which may occur in rare cases, due to tolerance build-up in other circuit components.

#### CORRECTION:

When replacing R801, change value of C801 from .1 mfd. to .082 mfd.  $\pm 20\%$ , 200V. This corrects tolerance build up and will reduce current through R801.

### 2. Insufficient Width

Measure the grid voltage on V14, the horizontal output tube. This is normally about  $-67V \pm 20\%$ . If it reads higher than normal, sometimes as high as -100 volts, output will be substantially reduced.

#### CORRECTION:

Disconnect R517, 3.6 megohms and measure its value. If it is off value, sometimes as high as 6.0 megohms, it must be replaced. While disconnected also check value of R518 which should be 2.2 megohms. Replace with correct value Stackpole or Allen Bradley resistor.

### 3. Excess Stiffness or Drag in Fine Tuning of ET86X263 and ET86X274 VHF Tuners.

If fine tuning shows excessive stiffness, item No. 22 and 23 in the exploded view (Service Manual Page KC2-3), require lubrication.

#### CORRECTION:

Apply to Item 23, a small dot of "Molyube" made by Bel-Ray Company, Inc., Farmingdale N.J. (or some equivalent

containing Molybdenum Disulfide,) which prevents seizing and galling. (Do not use tuner lube or oil, since excessive slipping will result.)

#### 4. VERTICAL SWEEP FAILURES

You should be aware of secondary component damage which may occur in a color set when a 6FM7 vertical tube fails. The extent and nature of the secondary damage will vary, depending upon the nature of the tube failure.

In case of a failure of the 6FM7 the following components should be checked for damage and replaced if necessary.

1. R130-680 ohms may be overheated
2. R611-1000 ohms " " "
3. R613-5600 ohms " " "
4. C614-50mfd. may be showing leakage at lugs.

In addition, it should be noted that a color tube phosphor may be damaged in 3-4 minutes if the set is operated at high brightness without vertical sweep.

#### SERVICE MANUAL PAGES

This issue of Plan E includes your 1968 SUBSCRIBER'S CERTIFICATE and two binders--One for Vol. E, TV Service Manuals and one for Audio Products Service Manuals.

File the following pages in the Service Manual indicated. Destroy old pages that have been superseded.

C-Line Manual: Pages KC3-19, KC3-31

Vol. D Manual: Pages KD1-3, KD1-9. File the Index Page behind the index tab at the front of the binder.



# Service Talk

FROM  
MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

MARCH 1968

VOL.10, NO.2

## KC-KD CHASSIS SERVICE INFORMATION

### CORE SPACERS IN HIGH VOLTAGE TRANSFORMERS

If the Horizontal Output Transformer T104 becomes defective, the correct repair procedure is to separate the ferrite core halves and replace the defective coil instead of replacing the complete transformer. In making the repair, certain precautions should be taken to make sure that the rebuilt transformer will operate properly and reliably, thus preventing call backs.

Two very thin plastic spacers are assembled between the ferrite core halves as illustrated on Page 2. Each spacer forms an air gap between the ends of the core halves. The air gaps tune the transformer.

IT IS ABSOLUTELY ESSENTIAL THAT THE AIR GAP SPACERS ARE REPLACED WHEN THE TRANSFORMER IS REASSEMBLED.

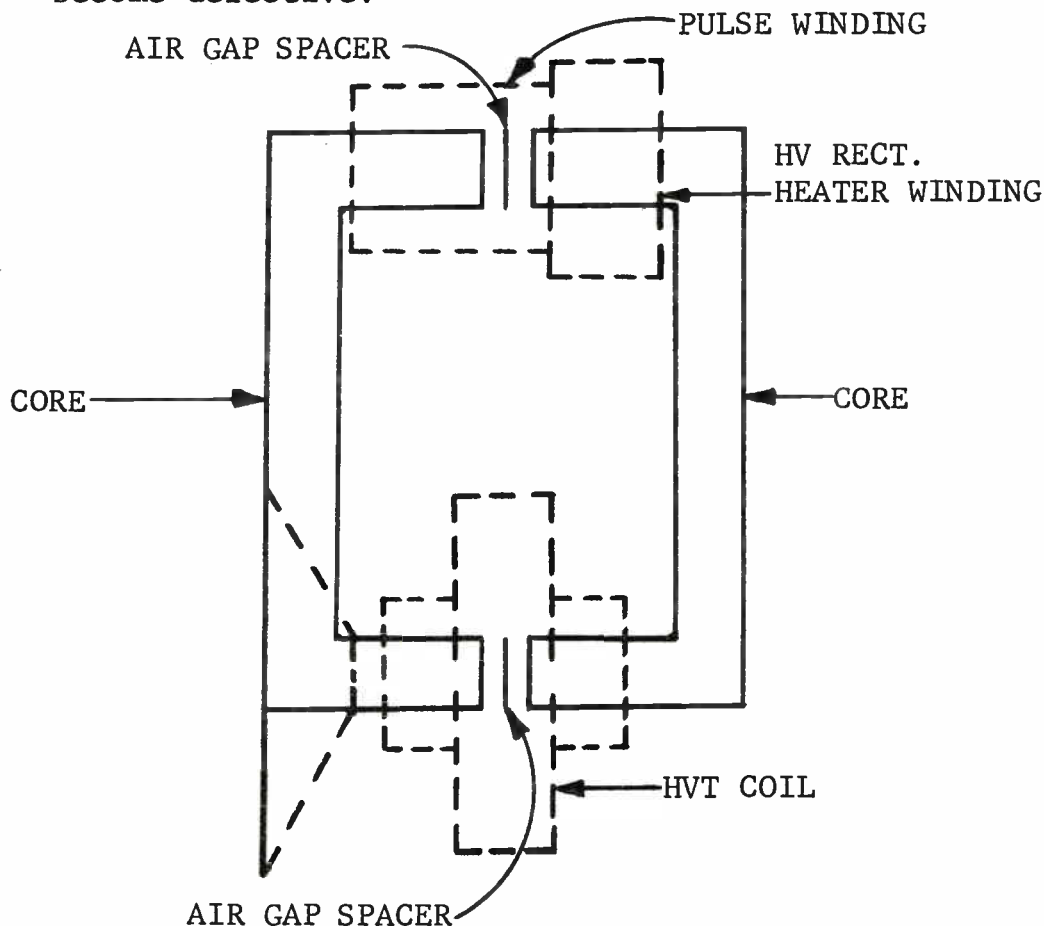
If you lose the spacers, replace only with the correct spacers since the dimensions are critical. Order Catalog No. ET41X52 SPACER-Air Gap.

Failure to replace the air gap spacers will create the following problems.

1. The transformer will be mistuned and retrace timing will be incorrect.
2. Excessive heat will be generated.
3. The width of the picture may be too narrow.
4. A white vertical line or bar may appear in the center of the picture or raster.

### ADDITIONAL PRECAUTIONS

1. After the transformer is reassembled, apply a coating of silicone grease, Catalog No. ET90X23, to the sides of the transformer core where contact is made with the metal high voltage compartment. This helps in dissipating heat to the outside of the compartment.
2. Tighten the mounting nuts securely so that the sides of the transformer core make good contact with the sides of the metal compartment (make sure the grease is applied). This dissipates the heat efficiently to the outside.
3. Finally, make a good ground connection to the ground end of the pulse winding T104A. If this connection is not made there is a possibility of excessive high voltage if the high voltage regulator tube V17 should become defective.



### SERVICE MANUAL PAGES

File the following pages in the C-Line Service Manual. Destroy old pages that have been superseded.

Pages AC1-1, AC1-3, AC3-1, AC3-3, AC3-5, DC1-1, DC1-3, DC1-5, DC1-7, DC1-11, DC1-13, DC1-15, DC1-17, KC1-1, KC1-2A, KC1-5, KC1-9, KC2-5, KC2-9, KC3-1, KC3-15, KC3-21, ETV1-1, ETV3-1.



# Service Talk

FROM  
MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK  
SYRACUSE, N. Y.

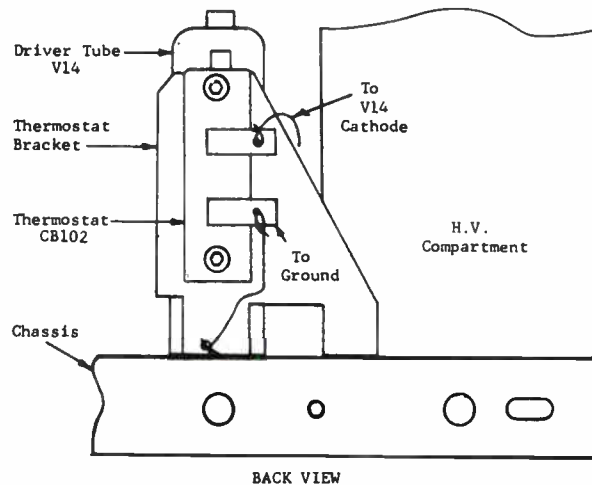
APRIL 1968

VOL.10, NO.3

## THERMOSTAT ADDED TO KD CHASSIS

Beginning with chassis date code 0A2E, the KD Chassis features a new safety thermostat.

The thermostat CB102 is mounted adjacent to the glass envelope of the horizontal output tube V14 and directly above the rear apron as illustrated.



The thermostat is connected in series with the grounded cathode lead of V14. The cathode is connected to the top terminal of CB102 and the bottom terminal is connected to chassis ground.

Abnormal heat from the glass envelope of V14 will cause the thermostat to open and V14 will become inoperative due to its open cathode circuit. Abnormal heat would be due to excessive plate and/or screen current which in turn could be caused by either a failure of V14 itself or a malfunction in its input or output circuits such as loss of grid drive from the horizontal oscillator, a defective regulator tube, sweep transformer, etc.

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When the temperature of V14 returns to normal, the thermostat will close and activate the horizontal output circuit. The thermostat will continue to cycle on and off until the trouble in the horizontal circuits is corrected.

Observe the precautions and suggestions listed below when troubleshooting a KD Chassis that has a thermostat.

1. To keep V14 cathode circuit closed while troubleshooting, clip a jumper lead across the thermostat terminals. Do not try to manually reset an open thermostat, since this is a true thermostat and operates only on temperature changes. Any attempt to manually reset the thermostat will ruin the original temperature calibration and destroy the safety feature. Make sure the clip lead is removed after completing work on the set.
2. If an operating chassis is tipped up on its front edge, the thermostat will open since it will be oriented horizontally above V14 and receiving its full heat, even on a correctly operating chassis. When this happens, clip a jumper lead across the thermostat terminals to activate the horizontal circuit. Make sure the clip lead is removed after completing work on the set.
3. CAUTION-B+. When the thermostat is open, the terminal connected to the cathode of V14 has a DC potential to ground of 200 to 300 volts. This terminal should be treated with the same respect that other B+ points in the chassis receive.

Two thermostats are used in the KD Chassis:

ET10X62 Thermal Cutout (Thermostat) in 22 KV Chassis.

ET10X63 Thermal Cutout (Thermostat) in 25 KV Chassis.

NEITHER THERMOSTAT SHOULD BE SUBSTITUTED FOR THE OTHER.

#### SERVICE MANUAL PAGES

File the following pages in the Service Manual indicated. Destroy old pages that have been superseded.

C-Line Manual: Pages KC3-21, KC3-23, KC3-25, KC3-27, KC3-29, ETV3-3 and ETV3-5.

Vol. D Manual: Pages AD3-5, DD3-3, DD3-5, KD3-21 and KD3-26B.





# Service Talk

FROM  
MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

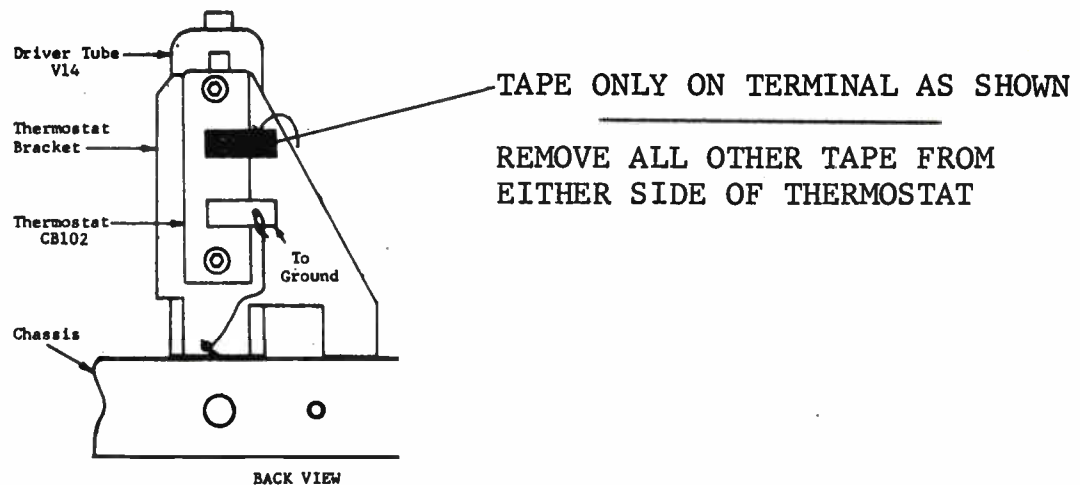
MAY 1968

VOL.10, NO.4

## KD CHASSIS---TAPE ON THERMOSTAT SURFACE

Some KD Chassis have tape applied to the surface of the Thermostat (Thermal Cutout CB102 described in April 1968 Service Talk, Vol.10, No. 3).

This tape should be removed, whenever it is found, since it may result in tripping of the cutout when there is no fault in the set. The only tape required is around the top terminal, as illustrated, to prevent shock. The top terminal is at B+ potential when the cutout is open.



Whenever the cutout trips and no circuit trouble can be found, check the following:

1. Is there any tape on either side of the cutout?
2. Space between the Thermostat and a properly seated horizontal output tube V14 should be  $3/4" \pm 1/8"$ .

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### KC CHASSIS MODEL M278CWD---LOOSE ANTENNA

We have received a few reports of loose VHF antennas on the subject model.

If you encounter such a complaint, it may usually be cured by pushing the barbed retaining clip tight up to the underside of the cabinet. This is best done by using a length of metal tubing which slides over the antenna cartridge and presses evenly against the barbed retaining clip.

If the antenna is still loose, use another clip (Catalog Number ET3X618) inserted on the top of the original one and pressed up tight against it.

### AY THROUGH AD CHASSIS---B+FUUSE

It has come to our attention that some service technicians are replacing the B+ fuse in "A" Line Chassis (AY through AD) with a Slo-Blow type. This type of fuse will not protect the set from damage in the event of a B+ short.

Whenever an "A" chassis ("AY" through "AD") is serviced for any reason, the B+ fuse should be checked to be sure that it is a 2 Amp, Fast Blow type, Catalog Number ET10X41.

### SERVICE MANUAL PAGES

File the following pages in the Volume D Service Manual. Destroy old pages which have been superseded.

Pages: KD1-1, KD1-3, KD1-5, KD1-7, KD1-9, KD2-1, KD2-3, KD2-5, KD2-9, KD2-13, KD2-15, KD3-1, KD3-3, KD3-23, KD3-25, KD3-27, KD4-1, "D" Line UHF-3.



# Service Talk

FROM  
MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JUNE-JULY

VOL.10, NO.5

## CONTROL OF CORONA WITH ET90X24 CORONA-SEAL

The correction of Corona discharge has generally been difficult for Field Servicemen. The use of Catalog Number ET90X24 CORONA-SEAL has proven an extremely valuable tool in such repairs.

In the design and manufacture of our TV Receivers, all possible precautions are taken to avoid conditions which would contribute to Corona discharge. However, careless servicing or adverse, environmental operating conditions can bring on Corona problems. High humidity, salt air, high altitude and air contaminants; dust, cooking fumes and smoke are a few of the more common contributors. Unchecked, Corona can rapidly destroy expensive components, over-load circuits and literally etch its way through glass tube envelopes.

The trade marks of Corona are; odor of ozone, bluish halo and hissing. As soon as detected, the source should be determined and the Corona eliminated before component damage occurs.

Corona discharge around connections, terminations and sharp metal edges, can in most instances be eliminated by blanketing the area with Corona-Seal. Specific instructions are included with the material.

In some instances, the removal of a "Solder Spike", a metal burr or an unraveled strand of wire will correct the problem. A component which has become cracked, etched or carbonized by Corona must be replaced.

Order Catalog Number ET90X24 Corona Seal from your General Electric Television Distributor.

SERVICE MANUAL PAGES

This issue of Plan E includes the complete new KE chassis service manual.

File the following pages in the Vol. E Service Manual in numerical order.

KE CHASSIS: KE Tab, KE1-3 thru KE1-9 KE2-1 thru KE2-5,  
KE3-1 thru KE3-23, UHF tab, "E" UHF-1 thru  
UHF-3.



# Service Talk

FROM  
MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

AUGUST 1968

VOL. 10, NO.6

## KC-KD CHASSIS - RASTER SHADING, RETRACE SNAKE, VERTICAL BLANKING

You may have a few complaints concerning raster shading in the KC or KD Chassis. This shading usually appears during periods of no video modulation (camera changes etc). The right half of the raster appears substantially darker than the left half, with a gradual shading from the center toward the right hand side.

This raster shading may or may not be accompanied by retrace "snake". In either case the following cure will be found very effective. (Refer to the schematic diagram on the back.)

1. Change diode CR102 to an ET57X40 type. Move anode (ground) end of diode to + side (no code lug) of C-132 electrolytic capacitor.
2. Disconnect end of R153 (47K) going to junction of C136 and C138. Now connect the open end of R153 to lug 8 of J101.

### Vertical Retrace Blanking

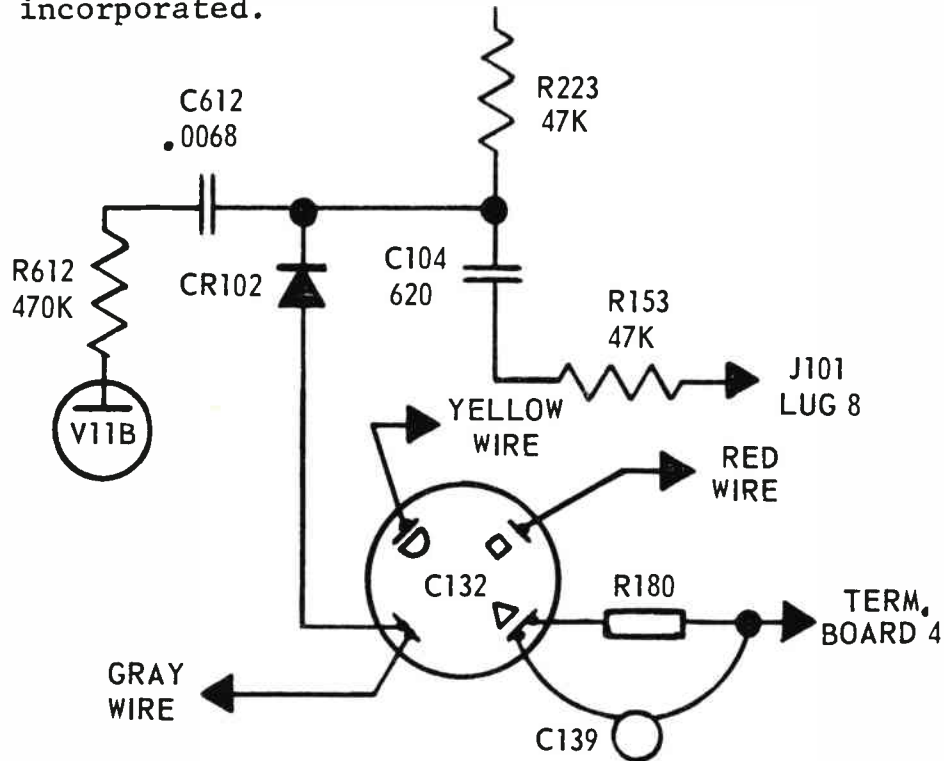
Should you encounter any complaints of vertical retrace lines, install the following changes:

1. Change R612 from 47K to 470K (1/2 watt). Disconnect wire going from circuit board terminal VB (or C-612) to R154 at R154 end.
2. Reconnect wire to cathode side of CR-102.

NOTE: R154 is now excess and may be removed.

Care should be taken to insulate splices and prevent any dress shorts.

The following schematic shows the circuits with all above changes incorporated.



KE CHASSIS MEETINGS

Training meetings on the new General Electric KE color television chassis will be held by your area distributor in the near future. Watch for announcements!

SERVICE MANUAL PAGES

This issue of Plan E includes the complete Service Manuals for the new A1 and D1 chassis. You will receive index tabs in the next mailing.

File the following pages in the Vol. E Service Manual.

A1 Chassis Pages A1-1-1, A1-2-1, A1-2-3, A1-3-1, A1-3-3, A1-3-5.

D1 Chassis Pages D1-1-1, D1-1-3, D1-1-5, D1-2-1, D1-2-3, D1-2-5, D1-2-7, D1-2-9, D1-2-11, D1-2-13, D1-3-1, D1-3-3, D1-3-5, D1-3-7, D1-4-1, D1-4-3, D1-4-5

KE Chassis Pages KE1-1, KE2-7

UHF Pages A1, D1, UHF-5; A1, D1, UHF-7



# Service Talk

FROM  
MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

SEPTEMBER-OCTOBER, 1968

VOL. 10, NO. 7

## HIGH LINE VOLTAGE TAP ON KC POWER TRANSFORMER

All KC Chassis power transformers are provided with a primary high line voltage tap which is identified on the schematic diagram as "WH/BLK 128 VOLT TAP".

It has been determined, through recent tests, that for maximum reliability and minimum service, the high line voltage tap should be used whenever either of the following conditions exist.

1. Average line voltage equals or exceeds 123 volts.
2. Line voltage equals or exceeds 128 volts for a period of 15 minutes or more during normal viewing hours (even though the average may be less than 123 volts).

Whenever a KC Chassis is serviced for any reason, measure the line voltage and change the primary tap if either of the above conditions exist.

NOTE: NEVER attempt this on ANY KD Chassis since the tap on the KD Chassis transformer primary is for Insta-View and not high line voltage.

### Procedures For Changing Primary Tap

1. Untape the White/Black transformer primary lead (this is the 128 volt tap which was taped to the Red/Black lead at the factory).
2. Clip the Red/Black lead from the terminal board and tape over the end of the lead.
3. Connect the White/Black lead to the terminal board lug previously occupied by the Red/Black lead.

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SERVICE MANUAL PAGES

This month's issue of Plan E includes the A1 and D1 file tabs and the SPRING-SUMMER issue of TECHNI-TALK.

File the following pages in the Vol. E Service Manual. Destroy old pages which have been superseded.

A1 Chassis A1 Tab

D1 Chassis Page D1-1-7, D1 Tab

KE Chassis Pages KE1-3, KE1-5, KE1-7, KE1-9, KE2-3,  
KE2-5, KE3-17, and KE3-23.

File the following page in the C-Line Service Manual.

DC Chassis Page DC3-5.



# Service Talk

FROM  
MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

NOVEMBER 1968

VOL.10, NO.8

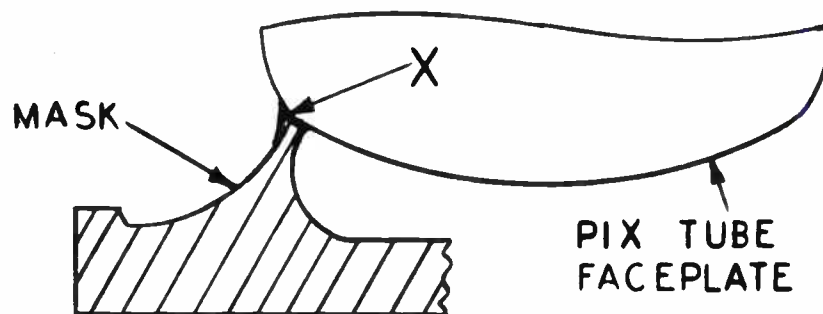
## CRACKED FACEPLATE ON COLOR PICTURE TUBES

The picture tube faceplate has cracked in service in some models of the KC, KD and KE chassis.

In every case, the receiver has been one using the diecast metal mask, (usually a 23" receiver). The diecast metal masks have shown rough spots, flash or protrusions on the mask surfaces against which the picture tube faceplate rests. These rough areas create local stress on the glass which ultimately cracks. Replacing the picture tube without correcting the condition will result in cracking the new tube.

### Correction:

With the picture tube removed, examine surface X (See sketch) of the diecast metal mask for roughness, bumps or "flash".



Remove any roughness with a scraper, knife blade or fine file. Follow by smoothing with fine emery cloth.

Caution: Do not allow scraper or emery cloth to go over the edge and damage the painted surface.

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SERVICE MANUAL PAGES

File the following pages in the Vol E Service Manual. Destroy old pages which have been superseded.

A1 Chassis Pages A1-2-1, A1-2-3, A1-2-5

D1 Chassis Pages D1-2-3, D1-2-5, D1-2-7, D1-2-9, D1-2-15,  
D1-2-17



# Service Talk

FROM  
MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

DECEMBER 1968

VOL.10, NO.9

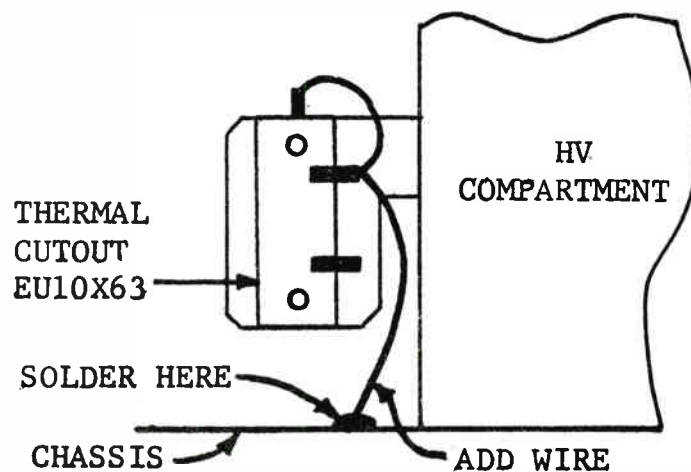
## KC-KD CHASSIS SERVICE INFORMATION NEW REPLACEMENT HORIZONTAL OUTPUT TRANSFORMER ASSEMBLY

Horizontal Output Transformer replacement coils ET/EU77X99, ET/EU77X102 and ET/EU77X106, for the KC and KD chassis, have been obsoleted. In the future, when you order the above coils, you will receive Catalog Number EU77X5 High Voltage Assembly.

The new assembly is pretested and includes the latest features for improved reliability such as a thermal protective switch for the horizontal output tube. All installation steps are thoroughly covered in an instruction sheet packed with each replacement unit.

Since starting production of the EU77X5 assembly unit, a direct ground wire has been added from the thermal cutout switch to chassis ground to assure a better ground.

Some of the first production units do not have this ground wire to the chassis. If you receive any EU77X5 unit which does not have the wire, you should add the ground wire as shown below when installing the unit in a set.



32-1700-68I

(over)

A SUBSCRIPTION PLAN PUBLICATION

A new page is being added to each of the KC and KD Chassis Service Manuals. This page is especially designed to assist you in selecting the correct replacement horizontal output transformer and/or pulse winding for a particular chassis model.

SERVICE MANUAL PAGES

File the following pages in the Service Manual indicated. Destroy old pages which have been superseded.

C-Line Manual Pages KC1-3, KC1-5, KC1-9, KC1-11, KC2-3, KC2-5, KC3-23, KC3-29, KC3-33.

Volume D Manual Pages DD1-1, KD3-26A

Volume E Manual Pages KE1-11, KE2-9, KE2-11

HOLIDAY GREETINGS

The folks in Major Television Product Service wish you a very Merry Christmas and a Happy and Prosperous New Year.



W.H. Meyer  
Manager-Product Service



# Service Talk

FROM  
MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JANUARY 1969

VOL.11, NO.1

## KE CHASSIS SERVICE INFORMATION

### KE CHASSIS-POWER SUPPLY DIODE FAILURES

Whenever a CR109 or CR110 power supply diode failure occurs, you should add .001 mfd., 1KV (ET22X58) capacitors across both CR109 and CR110 diodes. (One of these capacitors is packed with each replacement diode). This provides added protection against voltage surges which may damage the diode.

These capacitors were added to production sets starting with Ser. No. OS4E.

### PRE-SET FINE TUNING ADJUSTMENT SHIFTS IN KE CHASSIS MODELS

Investigation has shown that some complaints of this nature are caused by interference between the channel selector and fine tuning knobs, due to the selector knob being pushed on too far.

At present, the production line is adding a thin washer between these knobs to prevent the interference. In later production, the knobs will be revised to prevent the condition and eliminate the washer.

The simplest cure is to pull the selector knob out slightly so it does not rub on the fine tuning knob. (Your call takers may be able to eliminate some service calls by instructing the customer to do this).

In the event that you find cases where the above cure does not last, contact your General Electric Television Distributor for washers to be placed between the knobs.

(over)

1969 SUBSCRIPTION PLAN

You will receive your 1969 SUBSCRIBER'S CERTIFICATE and two binders in the February Plan E Mailing (if you have renewed your Plan E Subscription). One binder is for 1969 TV Service Manuals and the other binder is for Audio Products Service Manuals.

SERVICE MANUAL PAGES

File the following pages in the Service Manuals indicated. Destroy old pages which have been superseded.

C-Line Manual Page KC3-15

Volume D Manual Pages KD1-3, KD1-9, KD3-11, KD3-13, KD3-15, KD3-21, KD3-23, KD3-27.

Volume E Manual Pages D1-1-7, D1-3-5, KE3-9, KE3-11, KE3-15, KE3-23.

NOTE: Destroy Pub. No. 32-0003-68 Titled "Corrections to the KE Service Manual Replacement Parts Lists."





# Service Talk

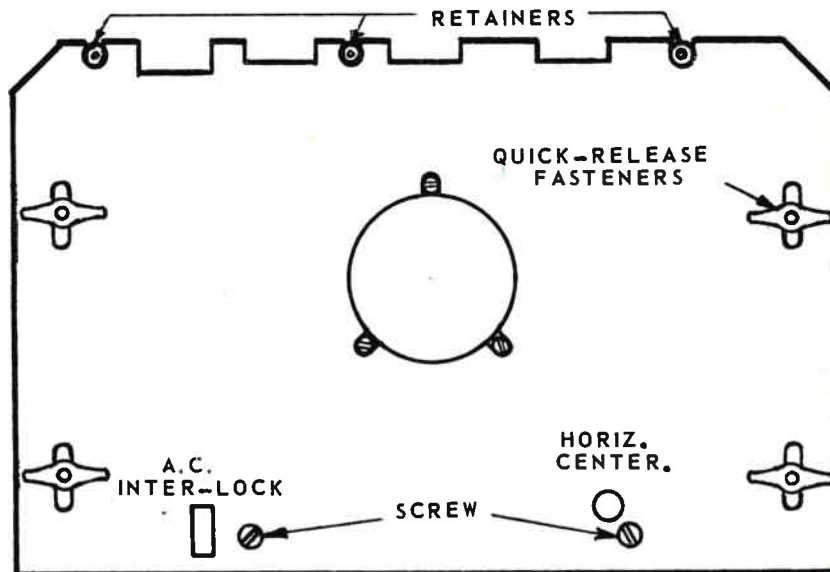
FROM  
MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

FEBRUARY 1969

VOL. 11, NO. 2

## QUICK REMOVAL OF CABINET BACKS

We are pleased to announce another contribution to the ease of servicing General Electric Color receivers. In the near future you will be able to quickly remove the masonite backs from KE Line color television cabinets by removing only two screws instead of the usual nine screws. To accomplish this, the masonite cabinet backs have been redesigned to use four quick-release fasteners (2 at each side) and three permanently positioned retainers at the top rear of the cabinet. One screw is located adjacent to the AC Interlock and the other screw is near the Horizontal Centering Control.



QUICK-RELEASE CABINET BACK

### TO REMOVE THE BACK:

1. Remove the two screws.
2. Rotate the quick-release fasteners until they are vertical (parallel with opening).

32-1700-69B

(over)

3. Remove the masonite back by pulling out at the bottom to disconnect the AC Interlock and then carefully pull down about one half inch (1/2") to release the top of the cabinet back from the three retainers. Now pull the back straight out and away from the cabinet.

PRECAUTION: ALWAYS HOLD THE CABINET BACK FIRMLY DURING DISASSEMBLY TO PREVENT THE BACK FROM DROPPING AND HITTING THE PICTURE TUBE NECK CAUSING DAMAGE TO THE PICTURE TUBE. THIS PRECAUTION ALSO APPLIES TO THE DISASSEMBLY OF ANY CABINET BACK.

TO REPLACE THE BACK:

1. Push the back under the three retainers at the top of the cabinet.
2. Push in at the bottom and connect the AC Interlock
3. Rotate the four quick-release fasteners to a horizontal position (across the holes).
4. Replace the two screws.

SERVICE MANUAL PAGES

This issue of Plan E contains your 1969 SUBSCRIBER'S CERTIFICATE and two binders--One for 1969 TV Service Manuals and one for Audio Products Service Manuals.

File the following pages in the Service Manual indicated. Destroy old pages that have been superseded.

C Line Manual-----Page 3. File behind Index Tab.

Volume E Manual---Page A1-3-5, KE1-7.



# Service Talk

FROM  
MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

MARCH-APRIL 1969

VOL. 11, NO. 3

## KE CHASSIS---SERVICE INFORMATION

### VIDEO PEAKING COIL L203

An open Video Peaking Coil L203, which feeds B + to the plate of the Video Amplifier Tube V6A, may be due to a shorted 6AG9 Tube.

If L203 opens, the B + 320 volts on the cathodes of the picture tube is reduced to a much lower level, which results in insufficient bias on the picture tube. This condition overloads V16, the High Voltage Rectifier, which usually fails. In addition the extra heat may damage the High Voltage Rectifier Socket and Cup.

Whenever you encounter an open L203 you should check the condition of the HV Rectifier and Cup.

### OBSCURE PROBLEMS

One of the most difficult problems to troubleshoot is the intermittent. A few of these have been reported as having occurred infrequently in the KE Chassis and are listed below. Product Service has verified the symptoms and cures and we are passing them along to expedite your repairs if these symptoms should occur. It should be understood, of course, that other components may also cause the same effects.

<u>Problem</u>	<u>Cure</u>
1. Intermittent slight audio background buzz and distortion.	Replace C904 (Open or Intermittent)
2. Intermittent very weak audio and loud buzz.	Replace C909 (Open or Intermittent)

32-1700-69C

(over)

<u>Problem</u>	<u>Cure</u>
3. No H. V., Damper red hot, horizontal frequency very low.	Replace C507 (Open or Intermittent)
4. Intermittent, gear tooth effect, pie-crust, or horizontal pulling.	Replace C506 (Open or Intermittent)

\*\*\*\*\*

### "C" LINE SERVICE MANUAL

The new "C" Line Bound Service Manual is now available from your General Electric Distributor. The 322-page manual contains all "C" Line Service information for monochrome and color.

This is your opportunity to replace your "dog-eared" manual with a brand new bound volume. You will recognize the "C" Line Manual by its attractive blue cover and black plastic comb binding. Order the manual as follows: Pub. No. 32-0002-69 "C" Line Service Manual, each \$4.75 (plus state or local taxes).

\*\*\*\*\*

### SERVICE MANUAL PAGES

File the following pages in the Service Manual indicated. Destroy the old pages that have been superseded.

Vol. D Manual: Pages DD1-9, DD3-7, KD3-15, KD3-19.

Vol. E Manual: Pages KE1-1, KE1-3, KE1-5, KE1-7, KE1-9, KE1-11, KE2-1, KE3-1, KE3-19, KE3-21, KE3-23, KE4-1.



# Service Talk

FROM  
MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

MAY 1969

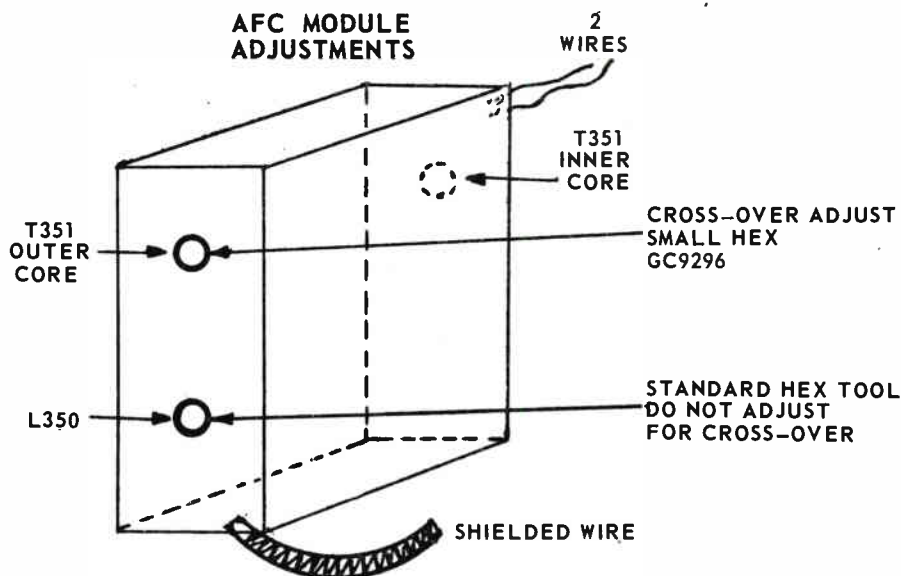
VOL. 11, NO. 4

## KE CHASSIS--AFC MODULE--FIELD ALIGNMENT

We have received several AFC Modules from the field in which L350 was badly out of alignment, possibly due to mistaking this coil for the T351 cross-over adjustment.

We would like to re-emphasize that the T351 cross-over tuning core requires the use of a special small hex alignment tool (General Cement Company GC9296 or equivalent). In contrast, L350 requires the standard hex alignment tool which is carried by all service men.

Since the standard hex tool fits only L350, it is our feeling that this may account for the mis-alignment.



## SPECIAL CAPACITORS--AC POWER LINE

Our Underwriters Laboratories Inc. listing requires that only specific types of capacitors be used for line filters which are connected directly to the power line. If failure occurs due

32-1700-69D

(more)

A SUBSCRIPTION PLAN PUBLICATION

to lightning or power line surges, these capacitors have a failure characteristic which does not create any hazard.

We are cataloging several of these special capacitors for replacement use. This announcement supersedes any previous Service Manual listings of "COMMON" capacitors for power line application in the chassis noted. Current Service Manuals are being updated.

For: C130 in the CB, KC and KD Chassis and  
C155 in the KE Chassis  
Use: EU25X4 .047  $\mu$ f Special Mylar Capacitor

For: C403 in the DD and D1 Chassis and  
C404 in the A1 Special Markets Chassis  
Use: ET25X78 .022  $\mu$ f Special Mylar Capacitor

For: C403 and C414 in the DD and D1 Special Markets Chassis  
Use: ET25X79 .01  $\mu$ f Special Mylar Capacitor

#### SERVICE MANUAL PAGES

File the following pages in the Volume D Service Manual. Destroy old pages which have been superseded.

Pages DD1-1, DD1-3, DD1-5, DD1-7, DD1-11, DD1-13, DD1-15  
DD1-17, DD1-19, DD2-1, DD2-5, DD2-7, DD2-9, DD2-11, DD2-13,  
DD2-15, DD2-17, DD2-19, DD3-1, DD3-3, DD4-1, ETV1-1, ETV2-7,  
ETV3-5, ETV3-11.



# Service Talk

FROM  
MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK SYRACUSE, N. Y.

JUNE, 1969

VOL.11, NO. 5

## KE Chassis--HV Arcing to Pix Tube Shield or Neck

If you should encounter a complaint of HV arcing from the picture tube aquadag coating to the tube shield or through the neck to the guns, the picture tube should not be replaced, unless it is defective for other reasons.

### Correction of Problem

1. Inspect the grounding springs at the points where they contact the aquadag coating. Aquadag will probably be burned enough to destroy contact.
2. Bend or reform ground springs to contact a fresh spot on the aquadag coating and be sure a good contact is made.
3. Replace the 6LJ6 regulator tube since arcing in this tube is usually responsible for the burned spots on the aquadag.

Failures of B+ power supply rectifiers may also be due to the above arcing problems, since heavy transients always result from HV arcing.

## NEW KE, A1 AND D1 CHASSIS SERVICE MANUALS

Due to its excellent acceptance, performance and reliability, the General Electric KE Chassis, for large screen color TV, is continuing for another year! For the same reason, the A1 and D1 monochrome chassis will also be continued in production.

32-1700-69E

(over)



So that the new 1969 subscribers to Plan "E" Publications have complete service information, the Service Manuals for the above chassis are being completely revised and reprinted. Renewal subscribers will also receive these complete new Service Manuals.

As you receive each new revised Service Manual, INSERT IT IN THE NEW 1969 TV SERVICE MANUAL BINDER and DESTROY THE OLD SERVICE MANUAL IN THE VOLUME "E" BINDER. This will assure that only one Service Manual is in use containing the latest service information.

#### SERVICE MANUALS IN THIS PLAN E ISSUE

This issue of Plan E contains complete new Service Manuals for the KE and A1 Television Chassis. Also included is Page A1-D1-UHF 9. Insert these manuals and Page A1-D1-UHF 9 in the new 1969 TV Service Manual Binder. DESTROY the KE and A1 Chassis Service Manuals in the VOLUME E TV SERVICE MANUAL BINDER.

A new D1 Chassis Service Manual, the remainder of the UHF Tuner Pages plus Index Tabs will appear in the next issue of Plan E.

# Service talk



MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK, SYRACUSE, N. Y.

JULY 1969

Vol.11, No. 6

## KE CHASSIS--SERVICE INFORMATION

### HIGH VOLTAGE ARCING

A few reports have been received concerning intermittent high voltage arcing in the KE Chassis. In some cases this did not occur when the service man was present, hence repeat calls were sometimes necessary to discover the defect.

If you should encounter such a condition, the receiver should be inspected for evidence of high voltage arcing in the most likely places such as defective spark gaps, spark gap capacitors C116 or C117 damaged, anode lead and connector, or arcing to the picture tube shield or neck (See Service Talk June 1969--Vol. 11, No.5). If no indication of a defect is found, the 6LJ6 High Voltage Regulator Tube V17 should be replaced. Some cases of intermittent high voltage arcing have been traced to this tube.

After the problem has been rectified, it is very important that the high voltage be adjusted to the correct value for the particular receiver as described in the KE Chassis Service Manual, Page KE3-14. If the high voltage can not be adjusted, it is probable that the arcing has opened cathode resistor R132. The spark-gap capacitors C116 and C117 should also be checked for damage.

### SOME MORE OBSCURE PROBLEMS

In Service Talk for March-April 1969 (Vol.11, No.3) some difficult intermittent problems were described. Three more are described below. These have been reported as occurring infrequently in the KE Chassis. Product Service has verified the symptoms and cures. It should be understood, of course, that other components may also cause the same effects.

<u>Problem</u>	<u>Cure</u>
1. Grayish hum bar floating vertically at low brightness.	Replace C201 and/or C202 (Either may be open)
2. No Video, Vertical retrace lines, no audio. (Short surge of normal audio immediately after set is turned off.)	Replace C202 (shorted)
3. Horizontal bending or pulling, black floating hum bar.	Replace C152 ("B" Section Open)

#### DIG THE NEW THREADS, MAN

Once in a while we need a new suit to sorta get dressed up again. How do you like our new headliner?-----Comments?

#### SERVICE MANUAL PAGES

A new D1 Chassis Service Manual is in this issue of Plan E along with new UHF Tuner pages and Index Tabs plus Index pages for Volume D and Volume E Service Manuals.

File the above publications as indicated and destroy old pages as instructed below.

Volume D:       Insert INDEX at front.

Volume E:       Insert INDEX at front. DESTROY old D1 Chassis Service Manual,

Volume 1969:   Insert Page A1-1-7 and A1 Chassis Tab in the A1 Service Manual. Insert D1 Service Manual and Tab after the A1 Service Manual. Insert UHF Pages 1, 3, 5 and 7 and the UHF Tab behind the KE Chassis Service Manual in front of UHF Page 9 from the June issue.

# Service talk



MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK, SYRACUSE, N. Y.

AUGUST 1969

VOL.11, NO. 7

## KE CHASSIS UPDATE-1970 TRAINING MEETINGS

During the time that the General Electric large screen KE Color Chassis has been produced, production changes have been made to improve its performance and reliability. With the KE Chassis continuing for another year, as announced in June 1969 Service Talk, you will want to be brought up to date on these changes.

The General Electric Television Distributor in your area will give you this information at meetings to be held in the near future. Watch for announcements!

## WE GOOFED

In the 1964 "Y" Line Consolidated Service Manual, Pub. No. 32-0006-65, we printed the wrong parts list on Page 131. The correct parts list is printed on the back of this Service Talk. Please tape or paste this parts list over the parts list on Page 131.

## SERVICE MANUAL PAGES

File the following Service Manual pages in the 1969 Service Manual Binder as instructed below. Destroy old pages which have been superseded.

## FILE IN 1969 BINDER

INDEX TAB-----At front of Binder  
D1 Chassis-----Pages D1-2-15, D1-2-23  
KE Chassis-----Pages KE1-23  
ETV A1 Chassis-Insert Tab and Complete Service Manual in front of "UHF" Tab. Destroy ETV A1 Service Manual in the Volume E Binder.

32-1700-69G

CABINET AND APPEARANCE REPLACEMENT PARTS

L--Denotes limited stock; order only as demand indicates.

CAT. NO.	DESCRIPTION	MODELS						
		M960YMD	M960YWD	M960YWL	M961YMP	M961YMD	M961YWD	M961YWL
L-ET98X285	BACK-Cabinet, Brown Metal and Masonite	•	•	•	•	•	•	•
L-ET91X395	BASE AND LEG ASSEMBLY-Mahogany, Includes Frame	•						
L-ET91X396	BASE AND LEG ASSEMBLY-Walnut, Includes Frame		•					
L-ET91X394	BASE AND LEG ASSEMBLY-Maple, Includes Frame			•				•
ET97X641	CABINET-Wood Mahogany	•			•			
ET97X642	CABINET-Wood Walnut		•			•		
ET97X640	CABINET-Wood Maple			•				•
ET97X658	CABINET-Wood, Light Walnut			•			•	
L-ET91X355	CAP-Cabinet Back	•	•	•	•	•	•	•
ET3X456	CLIP-Cabinet Back, Near Interlock	•	•	•	•	•	•	•
ET3X518	CLIP-U-Type, For Pix Tube Shield Mounting	•	•	•	•	•	•	•
ET3X251	CLIP-U-Type, For Pix Tube Strap	•	•	•	•	•	•	•
ET3X545	CLIP-Push-On, For UHF Plug				•	•	•	•
ET3X222	COMPRESSION RING-Knob, For Hor. Hold, Vert. Hold, Contrast, Tone	•	•	•	•	•	•	•
ET3X151	COMPRESSION RING-UHF Indicator, VHF Tuning	•	•	•	•	•	•	•
ET3X165	COMPRESSION RING-UHF Tuning Knob				•	•	•	•
ET66X8	CORD-Power	•	•	•	•	•	•	•
ET54X134	DOOR-Trap, Gold, w/Spring and Spring Retainer	•	•	•	•	•	•	•
ET89X274	ESCUTCHEON-Selector, Gold	•	•	•	•	•	•	•
L-ET54X165	GRILLE CLOTH-20 1/4 In. x 10 In.			•			•	
L-ET54X163	GRILLE CLOTH-20 1/4 In. x 8 3/4 In.				•			•
L-ET54X164	GRILLE CLOTH-20 1/4 In. x 8 1/2 In.	•			•			
L-ET54X165	GRILLE CLOTH-20 In. x 8 In.		•			•		
ET43X488	KNOB-VHF Selector w/Retainer, Gold Die-Cast	•	•	•	•	•	•	•
ET43X465	KNOB-Vol., Color, Bright, Tint w/Retainer	•	•	•	•	•	•	•
ET43X424	KNOB-Hor. Hold, Vert. Hold, Contrast, Tone w/Retaining Ring	•	•	•	•	•	•	•
ET43X489	KNOB-VHF Tuning, Clear w/Compression Spring	•			•	•	•	•
ET43X289	KNOB-UHF Tuning, Clear w/Insert and Compression Ring				•	•	•	•
ET43X403	KNOB-UHF Indicator, Black w/Compression Ring				•	•	•	•
ET96X75	MASK-Cabinet, Gray, Gold & Brown	•	•	•	•	•	•	•
ET4X200	NAMEPLATE-Insert, General Electric	•	•	•	•	•	•	•
ET3X518	NUT-Speed #8, For Cabinet Back Cap	•	•	•	•	•	•	•
ET54X179	OVERLAY-Escutcheon, Gold	•	•	•	•	•	•	•
ET54X178	PANEL-Control Well, Gold	•	•	•	•	•	•	•
ET4X189	PLUG-UHF, Gold	•	•	•	•	•	•	•
L-ET4X197	PULL-Door, Brass w/Hardware			•			•	
L-ET4X192	PULL-Door (Ornamental) w/Hardware				•			•
L-ET4X193	PULL-Door (Ornamental) w/Hardware	•			•			
ET3X517	RETAINER-Overlay	•	•	•	•	•	•	•
ET2X122	RETAINER-Power Cord	•	•	•	•	•	•	•
ET3X135	RETAINER-Knob Spring, For Vol., Color, Bright, Tint	•	•	•	•	•	•	•
ET1X203	SCREW-10x16x1 1/4 In. w/Cut Lockwasher, Mask to Cabinet	•	•	•	•	•	•	•
ET1X202	SCREW-10-16x5/8" w/Cut Lockwasher, Pix Tube Brackets to Mask	•	•	•	•	•	•	•
ET1X88	SCREW-For Pix Tube Support Strap	•	•	•	•	•	•	•
ET1X188	SCREW-8-18x5/16" Thread Cutting, For Knob Escutcheon and Control Well	•	•	•	•	•	•	•
L-ET92X304	SHIELD-Picture Tube Assembly	•	•	•	•	•	•	•
ET95X7	SPEAKER-8 In., Imp. 3.2 Ohms	•	•	•	•	•	•	•
ET3X436	SPRING AND RETAINER-For Trap Door	•	•	•	•	•	•	•
L-ET3X558	SPRING-Aquadag Ground	•	•	•	•	•	•	•
L-ET92X303	STRAP-Pix Tube Support w/Brackets, Bumper & Rivet	•	•	•	•	•	•	•



# Service talk



MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK, SYRACUSE, N. Y.

SEPTEMBER 1969

VOL. 11, NO. 8

## ETCHED SURFACE ON PICTURE TUBE FACE-PLATES

Some television picture tubes, both color and monochrome, have etched face-plates to minimize glare and reflections. The etching process produces random microscopic depressions in the face-plate surface. If any foreign adhesive material becomes embedded in the depressions of the etched surface, it is virtually impossible to remove. This will cause light refractions which will be noticed principally on color programs. It is very important, therefore, that the following cautions be observed.

CAUTION:-NEVER stick tags, banners or labels to an etched face-plate with tape, glue or other means. In addition, NEVER write or mark on the etched surface with any writing devices. These include wax crayons, felt-tipped marking pens and the common graphite pencils.

## RETURNING TUNERS FOR REPAIRS

We wish to stress the importance of proper handling of VHF Tuners (and UHF Tuners) which you return for repairs. Improper or careless handling and packing of tuners means additional work for the repair service plus the possible introduction of extra defects, including intermittents. Therefore, in the interest of improving the quality and prompt return of tuners from the repair service, the following points should always be observed.

1. Clip all wires at feed-through capacitors. (unsoldering frequently damages the feed-through capacitor).
2. Do not clip IF link cables. Unsolder carefully to preserve the cable length and prevent damage to tuner feed-through. (Unsolder at Tuner end).

32-1700-69H

(over)

3. Tag each and every tuner and state the defect.
4. Return all tubes with tuner.
5. Pack all tuners carefully to prevent further damage in transit.

SERVICE MANUAL PAGES

File the following pages in the Service Manual indicated. Destroy old pages that have been superseded.

Vol. D Manual: Pages D-Line UHF 1, D-Line UHF 3

Vol. 1969 Manual: Pages D1-1-5, KE1-4A, KE1-5, KE1-6A,  
KE1-7, KE1-9, KE1-11, A1-D1  
Line UHF 5.



# Service talk



MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK, SYRACUSE, N. Y.

OCTOBER 1969

VOL. 11, NO. 9

## REPRISE

Recently, we have had several requests for information about the operation of the horizontal phase detector in a television receiver.

Ten years ago, General Electric published "UNDERSTANDING GENERAL ELECTRIC HORIZONTAL PHASE DETECTOR OPERATION" which was received enthusiastically by television service technicians who attended General Electric service seminars throughout the United States.

Now we are republishing the article, beginning with this issue of Service Talk, for the benefit of new technicians and those who may have missed it the first time around. Watch for the conclusion in a future issue of Service Talk.

## SERVICE MANUAL PAGES

File the following pages in the Service Manual indicated. Destroy old pages that have been superseded.

Vol. D Manual: Pages KD1-11, KD1-13, KD1-15, KD1-17,  
KD2-9, KD2-15, KD3-23, KD3-27.

Vol. 1969 Manual: Pages KE1-5, KE1-6A, KE1-13, KE1-15,  
KE2-9, KE2-13,

# UNDERSTANDING GENERAL ELECTRIC HORIZONTAL PHASE DETECTOR OPERATION

## INTRODUCTION

The least understood area of a modern television receiver appears to be that portion of the receiver most subject to strange symptoms and hard to analyze phenomena. This is the horizontal synchronizing circuit in general, and the horizontal frequency control in particular.

The following text is written in a serious attempt to clarify this subject. Here, theory has been reduced from the mathematical jargon of the engineer to the every day language and normal technical terms used and understood by the television service technician.

Soon after the inception of television, it became obvious that the synchronization of the horizontal oscillator in the receiver by the direct application of transmitted sync pulses was unsatisfactory.

The amplitude of the sync pulses required is quite critical and the wide variation in signal strengths of the received channels gives anything but consistent results. Furthermore, the normal noise pulses encountered in fringe or electrically saturated areas, because of their random character, intrude themselves at inopportune times. This then results in anything from tearing out portions of the picture to a complete disarrangement of the entire raster.

Obviously, as the horizontal oscillator can not discriminate between wanted and unwanted pulses, some other approach is required.

It is not the scope of this text to compare or even comment on the evaluation of some of the many methods used. Instead, the discussion will be confined to the circuitry found in the "Designer Series" of the General Electric receivers. This will avoid the natural confusion resulting from trying to completely understand too many systems at once.

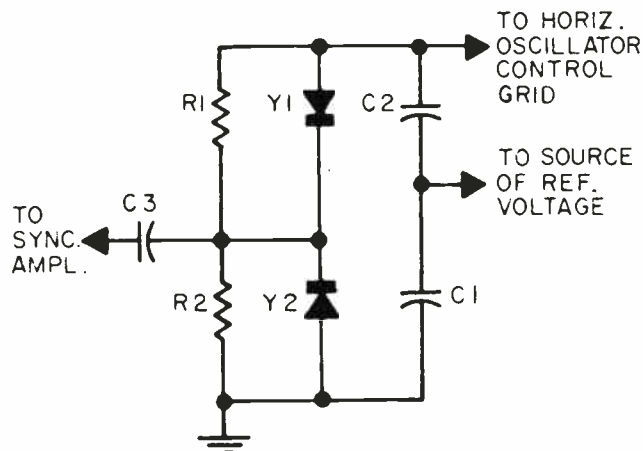


FIG. 1 BASIC PHASE DETECTOR

### BASIC DIODE OPERATION

Although for simplicity, the circuits to be analyzed are constructed around semi-conductor diodes, it must be positively appreciated that this fact has no real bearing on the operation of the

circuits. Unless, therefore, specific comments appear pertaining to semi-conductors, it should be assumed that any form of diode will give the results being discussed.

Figure 1 illustrates the basic phase detector to be discussed.

Instead of starting with this, however, let's begin with something more basic, such as Figure 2.

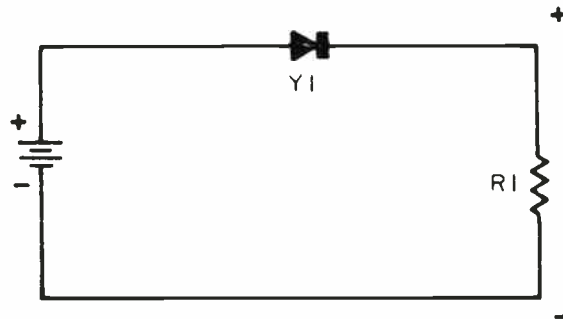


FIG. 2 DC APPLIED

In this circuit, with the battery polarity as shown, it is obvious that the diode will pass current thus allowing a voltage drop to appear across the resistive load as indicated. It would be equally obvious that if the battery polarity is reversed, no current will flow and, of course, no voltage drop will occur across the resistive load. At this point, in order to make our theory realistic, it should be pointed out that in the case of semi-conductors, the last statement is not literally true. Some conduction does take place but this is normally of such insignificant value as opposed to the forward conduction that it may be completely disregarded in practical application.

The next logical step is illustrated in Figure 3 which shows an AC source of voltage substituted for the battery.

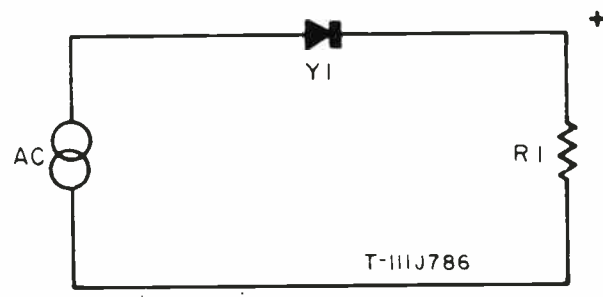


FIG. 3 AC APPLIED

During the positive excursions of each cycle, current will flow and a voltage will appear across the resistor. During the negative half of the cycle, except in the case of semi-conductors, no current will flow.

Examination with an oscilloscope would reveal that we do not have pure DC, however. If we assume that the source provides a sine wave, the ripple seen across the load resistor might appear as in Figure 4.

HORIZONTAL PHASE DETECTOR OPERATION

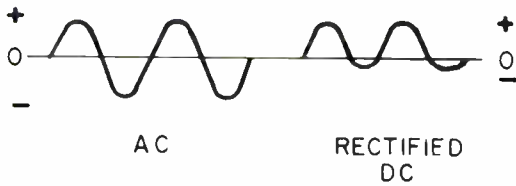


FIG. 4 ZERO AXIS

From this, it can be seen that in reality, we have taken an AC waveform and merely shifted its zero axis so that although it is still AC, most of it is positive with a little negative component. A tube type diode, of course, would not have this negative portion as in the reverse direction the resistance is infinite allowing no conduction at all.

By the simple application of a capacitor across the resistive load, however, as in Figure 5, this negative component is also raised above the base line and we have a DC voltage, whose ripple content depends on the ratio of capacitor to load. In other words, the higher the value of the load and capacity used, the lower the ripple will be and stated another way, the purer the DC will be. Figure 6 illustrates the effect of the capacitor across the load resistor.

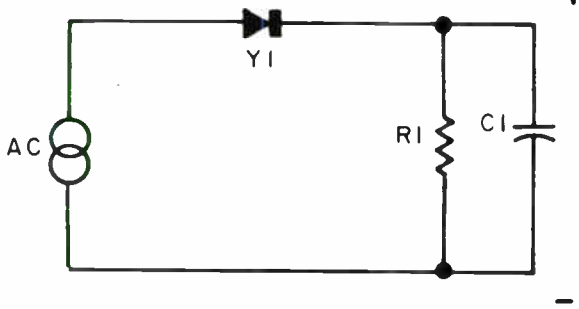


FIG. 5 ADDED CAPACITOR

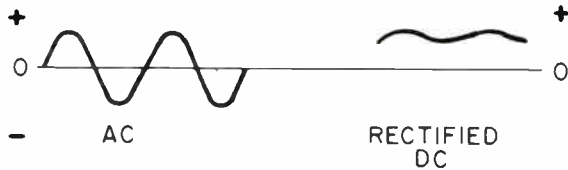


FIG. 6 EFFECT OF CAPACITOR

So far, the discussion has concerned itself with what is called a "series circuit". For some applications, however, it is better to use a "shunt circuit", as illustrated in Figure 7.

During the positive halves of each cycle in this configuration, no voltage will appear across the load resistor because all of the current is short circuited through the diode. On the negative halves, however, the major portion of the current flows through the load thus resulting in a voltage drop of negative polarity as shown.

At this point, we come to a portion of our story which is not always recognized. Any attempt to filter the ripple in this circuit by the application of a capacitor across the load resistor as was done in the series circuit will, depending on its size, reduce the DC as in this form it will

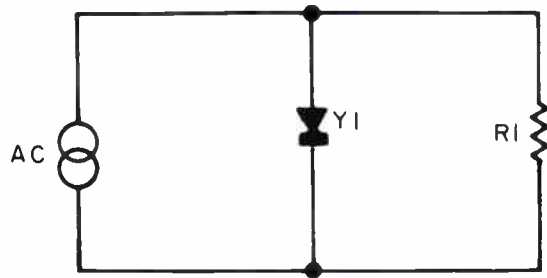


FIG. 7 SHUNT CIRCUIT

also represent an AC short across the voltage source as shown in Figure 8. The circuit shown in Figure 9 overcomes this difficulty.

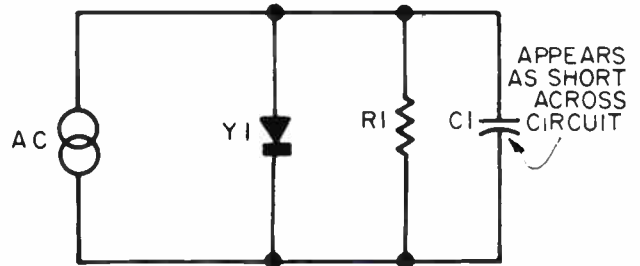


FIG. 8 SHUNT CAPACITY

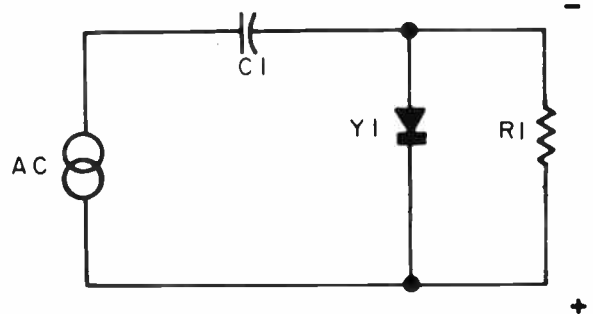


FIG. 9 BLOCKING CAPACITOR

Here the capacitor is connected as a coupling or blocking capacitor. In order that you may appreciate its function as a filter capacitor, it is necessary to visualize the voltage source as being a very low impedance as referred to the load resistor. If the source of voltage was for example zero impedance, we could then say that the capacitor was attached in parallel with the load resistor as shown in Figure 10. As long as the load value is high, we may still assume this condition.

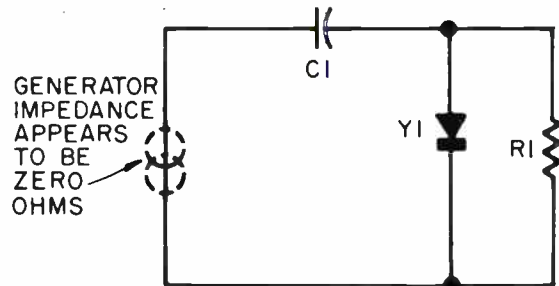


FIG. 10 PARALLEL CAPACITY

## HORIZONTAL PHASE DETECTOR OPERATION

Because, however, the capacitor is in series with rather than in parallel with the source, we have eliminated the disadvantage of the AC loading which would have resulted with the parallel arrangement. Close scrutiny will show that the capacitor appears as a load on the source only during the positive half cycles, during which time the diode offers a low series impedance with the capacitor.

At this point, it appears that a complete explanation of the operation of this apparently simple circuit would be helpful as upon this background much of the phase detector theory depends.

Referring further to Figure 9, assume that the generator is supplying an AC waveform. The frequency and shape are not important to this discussion so for ease in thinking, consider a sine wave.

During the positive half of a cycle, it is agreed that the diode conducts. The diode then looks like a very low impedance. In fact, for practical purposes, we may look at this as a short circuit as shown in Figure 11. In other words, during the positive half cycles, the diode becomes a switch which connects the capacitor across the AC source. The capacitor then charges as shown.

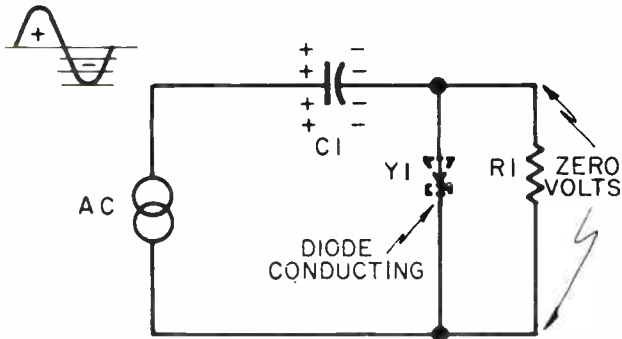


FIG. 11 POSITIVE HALF-CYCLE

During the negative half cycles, the diode cannot conduct which is like opening the switch. Referring to Figure 12, we have the effect of the charged capacitor being clamped across the load resistor through which it discharges. Note that in this drawing, the diode is indicated as non-conducting and the source represents a low impedance.

Another way of looking at this is to realize that during the positive half cycle, there is no voltage across the resistor as it is shorted out

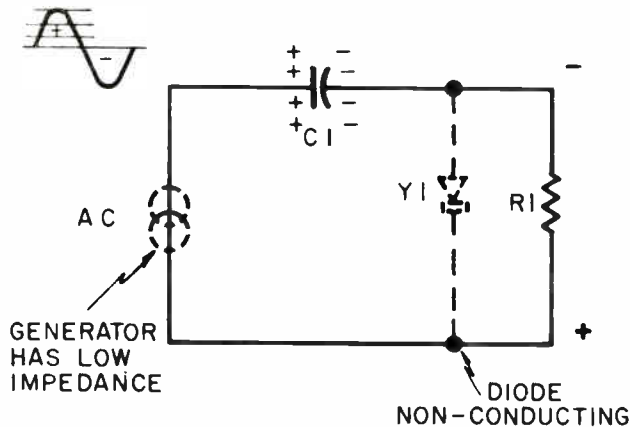


FIG. 12 NEGATIVE HALF-CYCLE

by the diode which is busily charging the capacitor. During the negative half cycle, the charged capacitor is then applied across the load, supplying it with the energy received during the positive half.

If now, the ratio of capacity and resistance provides a discharging time that is longer than the time it takes for the AC to switch direction, the capacitor never completely discharges. This means that during successive cycles of charging time, the current required to fill the capacitor becomes only that necessary to replace the amount lost through the load during the negative or discharge time. Carried to extreme, if the capacitor could be made perfect and the load was infinite, it would be possible to reach a point where no further current could flow through the diode because the capacitor would maintain a charge which would just equal the source voltage. This may be considered as a reverse bias to the diode which cannot conduct until either the source voltage becomes greater than the bias or the bias itself is reduced by discharging through the load.

With the foregoing as background, it is now possible to examine the creation of the phase detector circuit.

### PRACTICAL APPLICATION

First - the phase detector is necessitated because it is desired to control the horizontal oscillator by DC means rather than direct application of sync pulses for the reasons given in the introduction to this text.

Simply expressed, a sample of the receiver-generated horizontal frequency is compared with the transmitted sync pulses. As long as they are in proper relationship time-wise, no correction voltage is generated. It is important that the last statement be absorbed literally. The basic intent of any synchronizing circuit is not to change the frequency but rather to bring two things which are already on the same frequency into step so that each one starts and stops at the same time. Although, over a limited range, it is possible for the synchronizing source to pull an oscillator into frequency, this is not its real purpose. Two wheels with equal size holes and revolving at the same speed in front of a light source will not allow the light to pass through unless they are in sync - i.e., the holes of each must pass the light at the same time.

It is important, therefore, when confronted with a sync problem, to always determine first that the local oscillator is operating in a free running state at the correct frequency. Until this is achieved, it cannot reasonably be expected that the application of sync signals will consistently be successful in maintaining the desired stability. As the procedures necessary for establishing these conditions are already outlined in the service notes pertinent to the various receivers, no further mention of this will be made. Instead, we will proceed with the study of the phase detector.

WATCH FOR CONCLUSION  
IN A FUTURE ISSUE

# Service talk



MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK, SYRACUSE, N. Y.

NOVEMBER-DECEMBER 1969

VOL. 11, NO. 10

## UNDERSTANDING GENERAL ELECTRIC HORIZONTAL PHASE DETECTOR OPERATION

This is the second and concluding part of this subject. The first part appeared in October 1969 Service Talk, Vol. 11, No. 9.

In the "Designer Series" of General Electric television receivers, a sample of the output of the horizontal oscillator is used for a reference voltage. In Figure 13 is shown the beginning of the creation of this circuit. In Figure 14 another diode and similar load are added. This time, however, the second diode is reversed. Now each half of the AC wave supplied by the generator is rectified resulting in current flows through R1 and R2 as shown. This configuration is not quite what we want, however. By transposing the positions of Y2 and R2 (maintaining the diode polarity) we arrive at a circuit as shown in Figure 15.

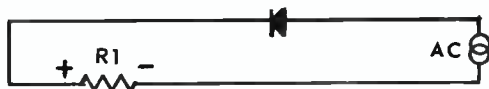


FIG. 13 BEGINNING CIRCUIT

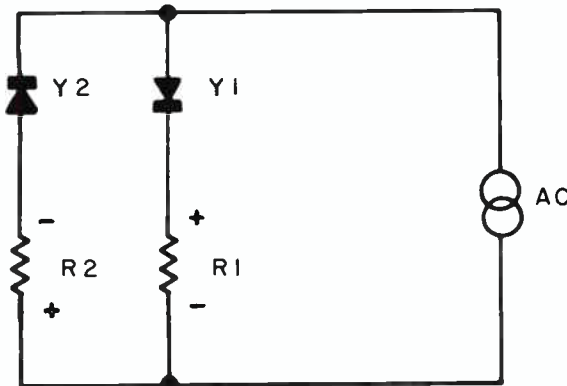


FIG. 14 ADDING A SECOND DIODE

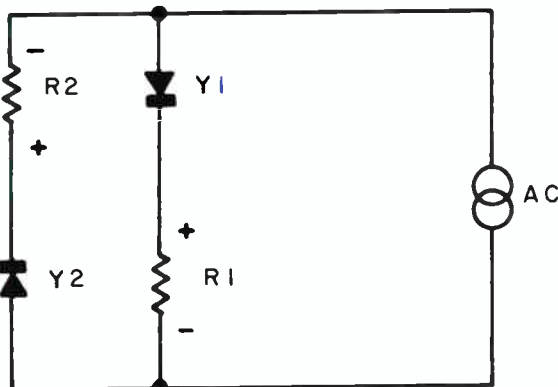


FIG. 15 TRANSPOSED R2 AND Y2

Now we have a circuit with which we can work. Notice that the positive half cycle pushes current through Y1 and R1, while the negative half cycle pushes current through Y2 and R2. The important point here is to understand that the load associated with each diode is in series with, not in shunt with it.

A comparison of Figure 1 and Figure 15 should reveal similarities not previously noted. Y1 and Y2, being normally physically constructed as a single component, are shown that way in Figure 1. This standard practice has to quite a degree obscured the literal interpretation of the circuit's exact function as illustrated in Figure 15. By adding the tie between the two diodes and resistors, and capacitors C1 and C2, we can complete the circuitry necessary for the reference voltage portion of the phase detector. This is shown in Figure 16.

It is possible to make the tie between the elements because they are both at positive potential so there will be no short circuit as there would have been had we tried this with the circuit in Figure 14.

C1 is required for wave shaping (integrating) purposes while C2 is needed as a coupling and DC blocking medium.

Both capacitors together also serve another function to be discussed later.

The addition of C3 completes the basic circuit by providing a means of injecting the incoming sync pulses to the network. This is shown in Figure 17.

C3 also serves another function not perhaps immediately obvious. Prior to its addition, each diode passed current during the proper half cycle, causing a continuous voltage drop across their load resistors. C3 changes all that. After some

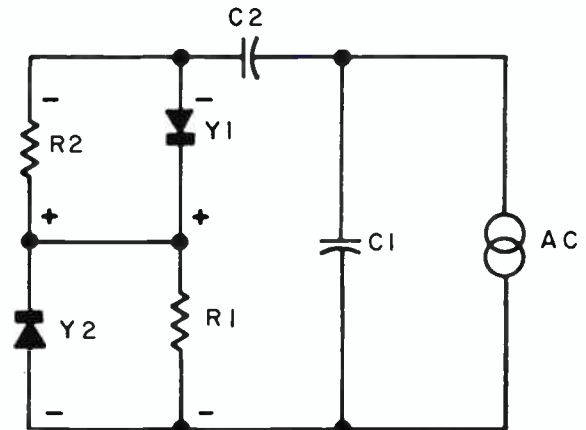


FIG. 16 COMMON DIODE TIE



## HORIZONTAL PHASE DETECTOR OPERATION

few cycles, this capacitor becomes fully charged by this current as does a filter capacitor. This charge, you will note, is positive. Until either the reference voltage increases in amplitude or the capacitor is relieved of some of its charge neither diode may any longer conduct.

Before examining the effect of introducing sync pulses, it should pay to once more review the action of the reference voltage circuit. To do this let us assume that the receiver has been turned on but is off channel, completely free of any incoming signals other than random noise.

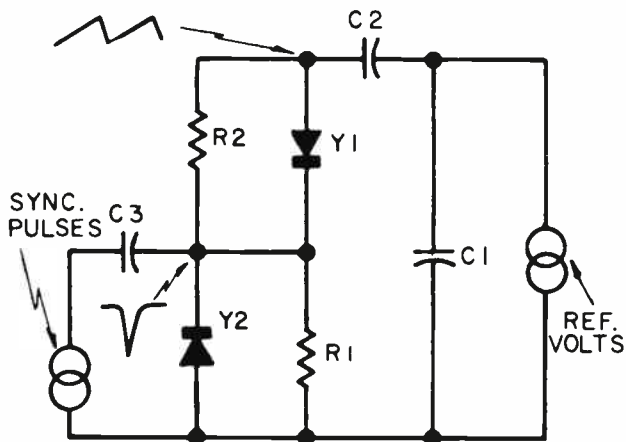


FIG. 17 COMPLETE BASIC CIRCUIT

As the oscillator commences to furnish this reference voltage, a sample is wave shaped by C1 and coupled to Y1 by C2. The positive half cycle causes Y1 to conduct through R1 back to the source, thus completing the circuit. As this occurs, the voltage drop across R1 also appears across C3, which stores some of the positive charge. As the negative half cycle appears, conduction through Y2 does not start until the amplitude of the negative swing exceeds the positive charge already built up in C3. When this occurs, of course, Y2 conducts through R2 and C2 back to the source completing the entire operation. At this time, the positive potential across R2 contributes further to the accumulation of positive charge stored in C3. Eventually (probably some fraction of a second) the capacitor becomes fully charged so that no further conduction can take place except at the extreme peaks of the half cycles. This amount would represent the leakage represented by R1 and R2, which as far as C3 is concerned are connected in parallel.

In order to understand this last statement, we now arrive at the secondary purpose of C1 and C2 about which we hinted earlier. The actual values of C1 is 820  $\mu\text{fd}$  and C2 is 1000  $\mu\text{fd}$ . In series across the network they represent 450  $\mu\text{fd}$ ., which as far as the short duration sync pulses coupled through C3 are concerned looks like a short circuit.

Looking at Figure 18, we can see that this AC short circuit in effect has taken R2 and Y1 and folded them over into the same configuration as Y2 and R1. This association is only true as far as the sync pulses are concerned.

There are four factors that contribute to this:

1. The negative pulses are coupled to the cathodes of both diodes as these are definitely tied together.
2. These pulses are short-duration pieces of information.
3. C3 is small - 39  $\mu\text{fd}$ .
4. The effective capacity of C1 and C2 is 450  $\mu\text{fd}$  -- a ratio of at least 10 to 1 with C3.

If we apply negative going sync pulses to this

circuit, (with reference voltage in step), we cause both diodes to again draw equal current, re-biasing the diodes.

This will occur in spite of the back bias created by the reference voltage because the sync pulses are somewhat greater in amplitude than the reference voltage. As the pulse amplitude exceeds this bias, current can flow for that short duration only. Referring again to Figure 17, it may be seen that now the diodes become more positively biased by the sync pulses which assume control of the circuit because of their greater amplitude. As they cause current to flow in either or both di-

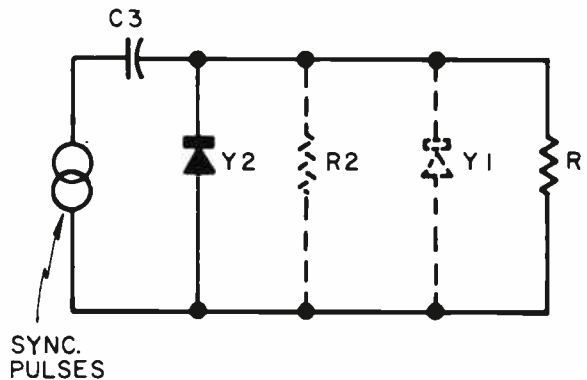


FIG. 18 APPARENT EFFECT OF C1 AND C2

odes, a positive back bias is created at the cathodes cutting off conduction except on the very tips.

This positive charge is developed across C3 by the negative-going sync pulses in exactly the same manner as the negative charge was developed across the capacitor in the discussion of Figure 11 and Figure 12.

Let's examine some waveforms now in order to see exactly how this takes place.

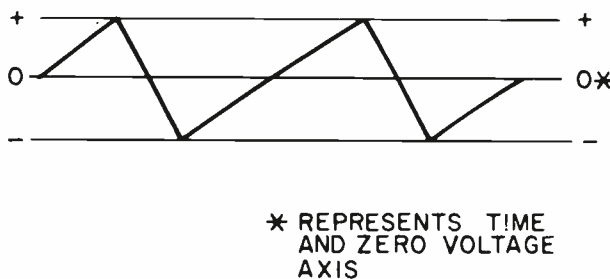


FIG. 19 OSCILLATOR SAWTOOTH

Figure 19 represents two cycles of saw-tooth reference voltage. The center zero line is the axis about which the sawtooth occurs. At the extreme left, it is zero voltage and time. As time commences, the voltage rises gradually to a positive peak and then decays, falling through the zero voltage axis to a negative peak and then returning to zero, whereupon the cycle is continuously repeated. It is very important to remember that the axis line represents time as well as zero voltage. As we are speaking of the horizontal frequency, for example, the point at which the first waveform cycle is completed represents one fifteen-thousand - seven-hundred - and - fiftieth of a second later than the point where it began (63.5 micro - seconds).

Referring to Figure 17, we can say that during the positive half of the waveform shown in Figure 19, Y1 conducts, and during the negative half Y2 conducts.

In order to accurately visualize this phenomenon, it is necessary to understand that the AC waveform must be viewed from two perspectives. The

HORIZONTAL PHASE DETECTOR OPERATION

appearance of the front of an automobile bears little or no resemblance to what is seen in the back.

The positive half of the waveform seen by Y1 appears to be negative to Y2. Conversely the negative half as applied to Y1 appears positive to Y2.

Assuming that we have finally adjusted the receiver to a picture and that everything is such that no correction is required, Figure 20 shows what is taking place.

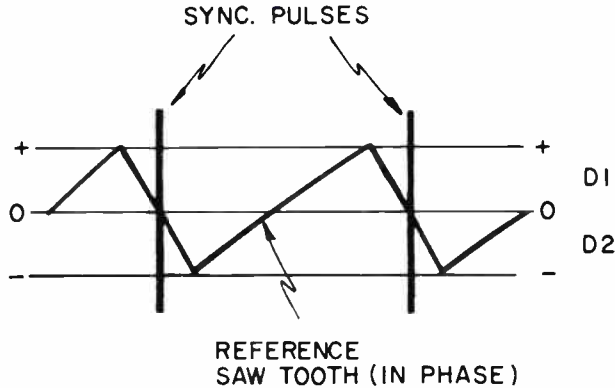


FIG. 20 SYNC PULSES AND SAWTOOTH IN PHASE

ACTUAL OPERATION

As the sync pulse arrives at the same time that the reference voltage crosses the zero axis, the same amount of current flows in each diode so everything cancels out and we have zero. This probably seems like a lot of work to get nothing. It should be remembered, however, that the complicated system of brakes on an automobile has no function until it is desired to stop.

It should be remembered that conduction only takes place now during the short intervals that the sync tips exceed the reference voltage peaks. As the sync pulse is applied to both diodes at the same time, only the one whose reference voltage is of the correct polarity to cause conduction at that instant will be affected. As an analogy - a vacuum tube cannot be made to draw current by reducing the bias unless there is also a positive voltage on the plate at the same time.

Examination of the waveforms in Figure 21 will show the action when the oscillator is slow.

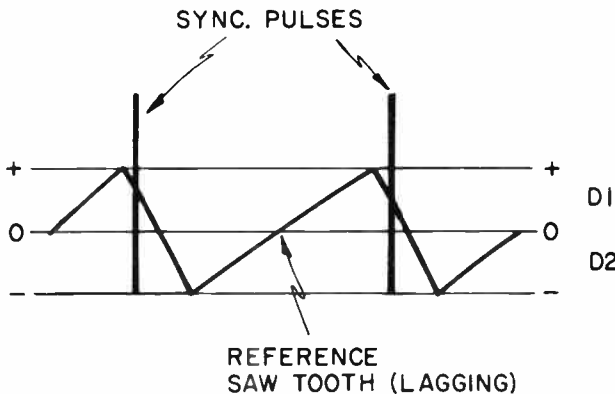


FIG. 21 LAGGING SAWTOOTH PULSES

In this instance, the sync pulse occurs before the reference voltage crosses the zero voltage axis. This, of course, means that the sync pulse will be added to the voltage level that it crosses. This means, then, that Y1 will pass more current than Y2, again referring to Figure 17.

As Y2 passes less current, the opposing voltage

will be less so that the resultant across the entire network becomes more negative.

Perhaps a clearer analogy would be to picture the voltage drop across the entire network with Y2 removed, which illustrates the maximum extreme to which the circuit could be driven. Y1 then looks like a shunt rectifier across which a negative voltage may be built up.

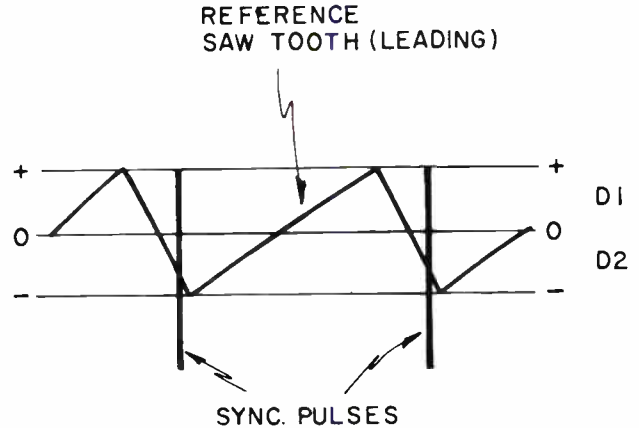


FIG. 22 LEADING SAWTOOTH PULSES

Conversely, if the oscillator were fast, we would get the opposite condition of a positive voltage across the network. Figure 22 shows the waveform of the oscillator leading the sync pulses.

It must be remembered that although the changes in phasing of the sync and reference voltage may appear rapidly, the actual change in the control voltage is slowed down by the integration (or filtering) action of C2 and C1 in series. This feature adds in reducing noise pulse interference and is further augmented by applying the control voltage to the horizontal oscillator through an "anti hunt" circuit not shown.

CIRCUIT VARIATIONS

So much for the basic theory. In addition to this, there are several possible variations or additional refinements which an engineer may choose to use. A look at Figure 23 shows two of these. Note the 68μfd capacitor across the top diode. This represents the amount of capacity that the sync amplifier circuit reflects across the lower diode as shown in Figure 24.

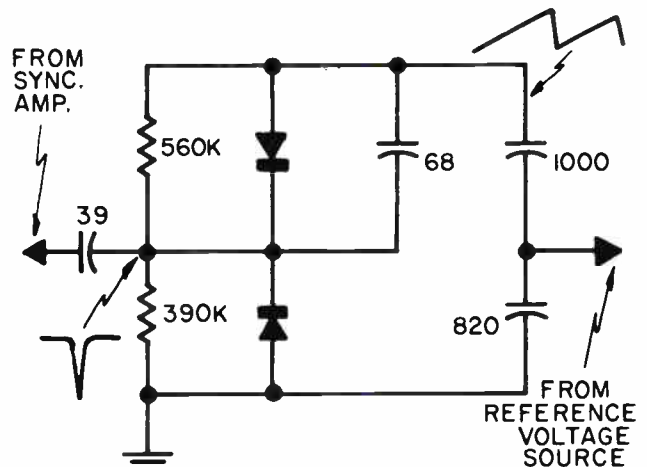


FIG. 23 ADDITIONAL REFINEMENTS



## HORIZONTAL PHASE DETECTOR OPERATION

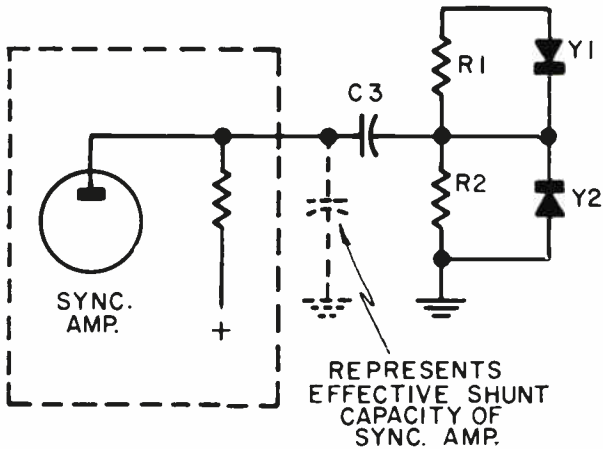


FIG. 24 EFFECTIVE CAPACITY

The second thing that is different is that the load resistors are not equal. As you will note (referring again to Figure 23), the top one is 560K while the lower one is 390K. This is necessary because both diodes do not see the exact same waveform. Diode Y1 (top) sees a sawtooth, but diode Y2 (bottom) sees a reverse sawtooth. In other words, Y1 sees the trace time portion of the wave as the leading edge while Y2 sees the retrace portion as the leading edge. If this were not taken into account, equal voltages could not be built up as the charging and discharging rate of the capacitors are affected by the waveshape.

Some designers desire that the local oscillator rest on frequency with an externally-applied bias. This may be inserted in series with the phase detector as in Figure 25, and has no bearing on its operation.

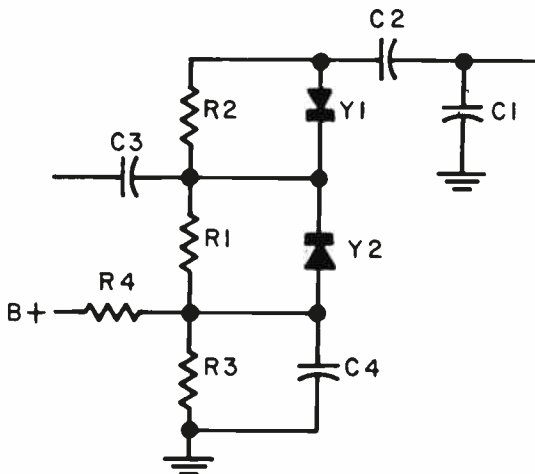


FIG. 25 EXTERNALLY APPLIED BIAS

There are, of course, as many modifications of this basic subject as there are design engineers concerned with this phase of television circuitry.

A careful examination of circuit deviations encountered in daily service work, keeping the above principles in mind, will pay off in the long run with less time being required for defect analyses. The illustration in Figure 26 serves as an excellent example of this.

At first glance, it appears to be the same circuit as shown in Figure 23. Closer inspection, however, will show that the reference voltage is fed to the bottom of the circuit rather than the top. Further study shows that the reference voltage is taken from the horizontal flyback transformer rather than the oscillator as in previous circuits. This voltage is fed through R4 and R5 and divided and wave-shaped by C2 and C4 and presented to the phase detector across R3. This last resistor is required only to provide a DC path to ground for the grid of the horizontal oscillator which is attached at R6.

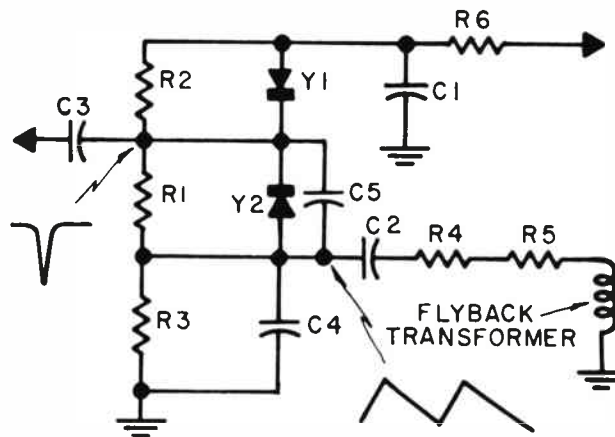


FIG. 26 A COMMON CIRCUIT VARIATION

Looking at the waveform developed across R3, it can be seen that it is a reverse sawtooth. This, then, is the reason why it is inserted at this point rather than at the top as in the previous circuits.

This booklet has covered mainly the theoretical background of the phase detector operation and may be used as an aid to understanding General Electric receiver phase detectors. Having a good basic knowledge of the subject material covered should make the technician more proficient in his trouble shooting analysis.

### SERVICE MANUAL PAGES

File the following pages in the Service Manual indicated. Destroy old pages which have been superseded.

Volume D Manual Page KD3-1

Volume 1969 Manual Pages A1-3-1, D1-1-1, D1-1-9, D1-1-15,  
KE3-1, KE3-23, KE3-25.

# Service talk



MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK, SYRACUSE, N. Y.

JANUARY-FEBRUARY 1970

VOL. 12, No. 1.

## KC & KD CHASSIS REPLACEMENT HIGH VOLTAGE TRANSFORMERS AND PULSE WINDINGS

Revised replacement parts lists are included in this Plan E Issue for KC and KD Chassis High Voltage Transformers and Pulse Windings.

IMPORTANT: INSERT THE NEW PAGES IN YOUR SERVICE MANUALS IMMEDIATELY using the following instructions.

### KC CHASSIS SERVICE MANUALS

If you are using the 1967 "C" Line Consolidated Service Manual, Pub. No. 32-0002-69, paste or staple the new KC Chassis page to Page 213.

If you are still using the loose-leaf Plan E KC Chassis Service Manual, use the new KC Chassis page to replace Page KC3-33, Pub. No. 32-4216-66, dated 12/68. Destroy the old page.

### KD CHASSIS SERVICE MANUAL

Replace Page KD3-26A dated 12/68 (supersedes 4/68) with the new Page KD3-26A dated 2/70 (supersedes 12/68). Destroy the old page.

---

### KD CHASSIS - NARROW WIDTH

We have had several complaints of narrow width which developed after a year or so of use.

The complaint in these cases was not due to any of the usual types of component or tube failures.

32-1700-70-A

(over)

The problem is due to low heater voltage on the 6CG3 damper tube. (In some cases it has measured only 5 volts). This low heater voltage is caused by a poor contact in the riveted ground on Terminal Board 2 which carries the filament ground return from pin 12 of the damper.

Adding a length of buss wire from the ground lug of the terminal board to the nearest solder "lance" on the chassis, (being sure to get a good solder joint) will cure the problem.

#### SERVICE MANUAL PAGES

File the following pages in the Volume D Service Manual. Destroy the old pages that have been superseded.

<u>AD CHASSIS</u>	Pages AD1-1, AD3-3
<u>DD CHASSIS</u>	Pages DD2-15, DD4-5
<u>KD CHASSIS</u>	Page KD3-26A
<u>AD ETV CHASSIS</u>	Pages ETV1-1, ETV1-3, ETV1-5, ETV1-11, ETV2-3, ETV3-9.

File KC Chassis Page Pub. No. 32-0002-70 according to the instructions on the front of this Service Talk.

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Your 1970 Plan E subscription certificate is enclosed so that you may display it in a prominent place in your shop.

The 1970 Service Manual binders for TV and Audio will be in the next issue of Plan E.

# Service talk



MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK, SYRACUSE, N. Y.

MARCH-APRIL 1970

VOL. 12, NO. 2

## WHY MAKE A TV SERVICE SAFETY CHECK?

.....to protect your customers from the hazards of fire and shock. You can do this by performing a safety check on each and every television receiver that you service in the shop or in the home.

General Electric TV Service Manuals contain Safety Check instructions on the page which identifies the TV model. The instructions are also printed on a label which is attached to the high voltage cage on the chassis.

The Safety Check instructions generally consist of two steps to be performed after all repairs have been made and before the set is put into operation.

- Step 1. Inspect wire dress inside the receiver. Wires should not be pinched by the chassis and should not touch receiving tubes, power resistors or any other heat producing sources. All factory installed shields must be in place.
- Step 2. Measure the resistance (with cabinet back assembled) from shorted blades of the power plug to specific points on the chassis and cabinet as specified in the Service Manual. If reading is outside this limit, locate and correct cause before operating the set.

The safety checks outlined in Step 1 are fairly obvious. If a wire is pinched by the chassis, the wire insulation can become broken causing a short circuit between the bare wire and the chassis. Wires touching tubes or hot power resistors can melt the wire insulation and result in bare wires that can create short circuits. Shields must be in place to prevent any possibility of x-radiation.

32-1700-70-B

(over)

The reasons for performing Step 2 are not quite as obvious since this is a safety check of the receiver circuitry. To explain Step 2 it is necessary to analyze two different chassis--one with a power transformer and one without a power transformer.

### RECEIVERS WITH POWER TRANSFORMERS

In this case, Step 2 is a simple test. With the cabinet back assembled, measure the resistance between the two shorted blades of the power plug and the chassis. Using the KE Chassis as an example, this measurement should read between 1.5 and 4 megohms. If the measurement reads outside these limits, the cause must be located and corrected before operating the set. The actual measurement being made in this test is the resistance of R156 which is connected between one side of the AC power line and chassis ground. The resistance range of the test includes the percent tolerance of the resistor. If the resistance is above 4 megohms, check for an open or off value resistor. If the resistance is less than 1.5 megohms, check the resistor but also look for other causes such as a pinched wire or other type of short circuit.

It is MOST IMPORTANT THAT R156 (and its equivalent in other chassis) is connected in the circuit at all times and is the correct value. The purpose of R156 in the KE Chassis (and other chassis) is to discharge to earth ground, through the power line, the high static voltage which can accumulate on the antenna due to lightning storms or friction from the wind blowing across the antenna. This voltage can be high. See Figure 1.

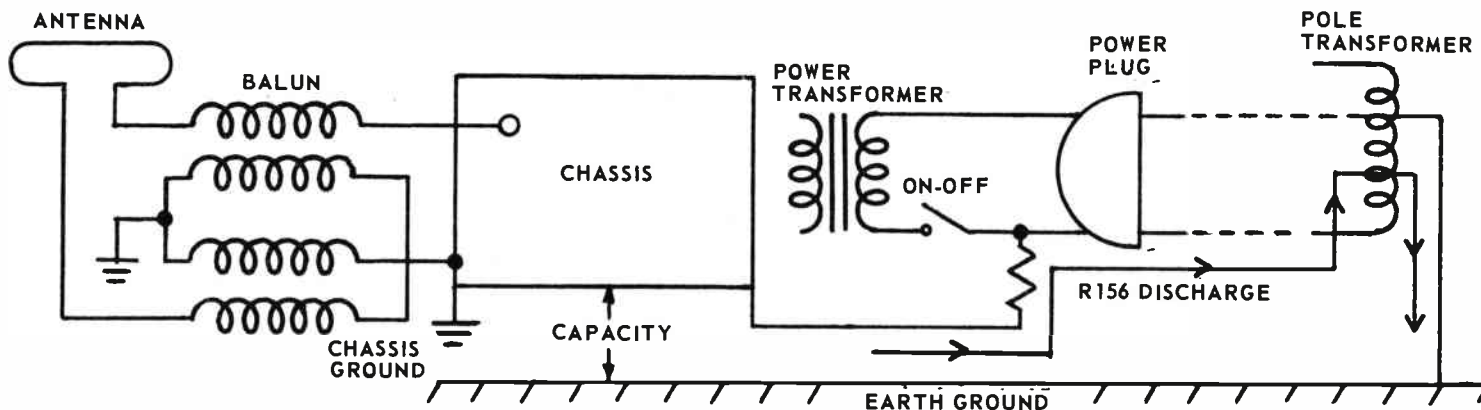


Figure 1

The capacity existing between the chassis and earth ground is charged by the static voltage on the antenna since the an-



tenna is connected to the chassis through the antenna balun transformer. R156 connected between chassis ground and earth ground (through the power line) dissipates this charge. If R156 is not in the circuit or is too high in value, the accumulated static charge will seek another path to earth ground, usually through the capacity that exists between the primary and secondary windings of the power transformer. When this happens, the insulation on the transformer windings breaks down and a shock hazard is created since it is now possible for the AC line voltage to be connected to the chassis through shorted transformer windings. In addition, if the discharge does not take place, a shock hazard is created between chassis and earth ground, particularly in receivers which have a metal cabinet.

### RECEIVERS WITHOUT POWER TRANSFORMERS

For this type of receiver (such as the D1 Chassis), Step 2 tells you to assemble the cabinet back and switch the ON-OFF switch to ON. Then measure the resistance from the two shorted blades of the power plug to all exposed metal parts and screws on the cabinet. Measurement must not read less than 400,000 ohms. If the reading is outside this limit, locate and correct the cause before operating the set.

Resistance measurements for each model are shown in a safety check chart in the Service Manual. Some measurements will show open circuits. Others will be between 400K ohms and 3 megohms such as the antenna terminals and certain cabinet screws and handle brackets.

The accumulated static voltage on the VHF antenna is discharged through the antenna isolation network resistors, the antenna balun transformer and the chassis, to earth ground. The chassis is connected directly to earth ground (through the power line) in this type of receiver since there is no power transformer. See Figure 2.

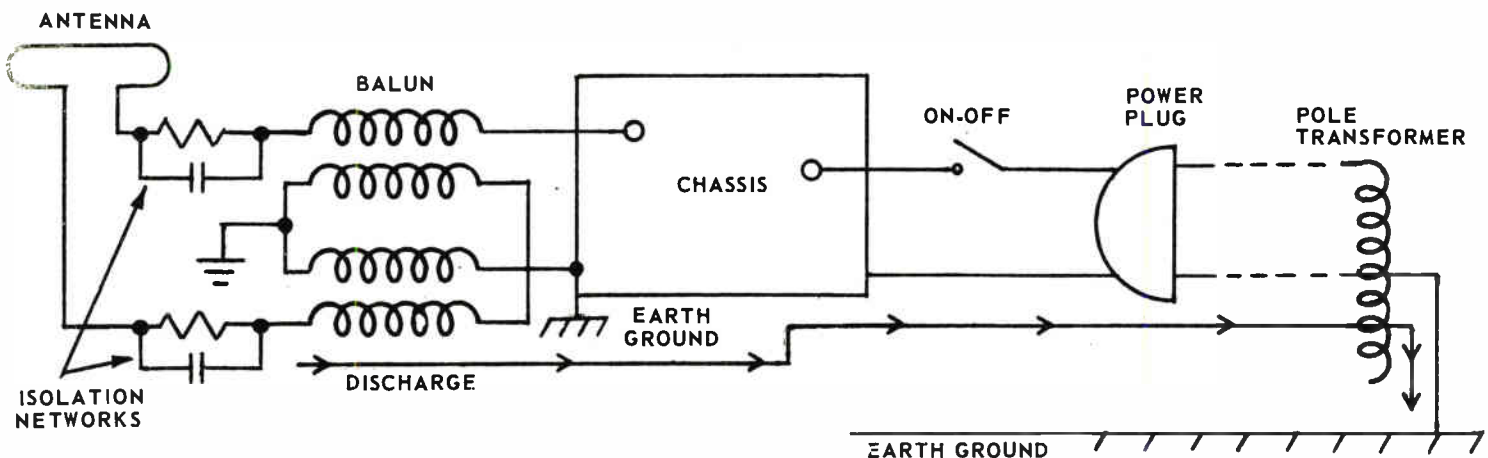


Figure 2

Any accumulated voltage on the UHF antenna is discharged through separate isolation resistors (same as VHF) or through a resistor built into the UHF tuner and connected from the primary of the UHF input transformer to the chassis (through the UHF tuner case).

If the resistances measured are outside the stated limits, measure the antenna isolation resistors but also look for a pinched wire or other type of short circuit.

When a cabinet screw should have an open circuit to ground but a resistance or short circuit shows on the meter, check for a defective assembly of the screws to the nylon insulating screwmounts. A screw which should be insulated may be touching the chassis.

In certain models (noted in the Service Manual safety chart) additional discharge networks are provided at handle end caps and metal cabinets. The resistors in these networks should also be checked if other than the correct reading is noted.

Make SAFETY your business! Your customers are relying on you, the service technician, to perform service in a manner that will leave the TV set in a safe operating condition when service repairs are completed.

PUT SAFETY FIRST EVEN THOUGH THE FINAL SAFETY CHECK IS LAST ON YOUR REPAIR LIST.

#### ADIEU TO PORTAFAX

Beginning with this mailing, all articles and filing instructions from the Portable Television Department will be included in Service Talk.

#### SERVICE MANUAL PAGES

File the following pages in the Service Manual binder indicated. Destroy old pages which have been superseded.

1969 VOL. BINDER:Pages D1-1-1, D1-3-1, KE1-3, KE1-4A,  
KE1-5, KE1-6A, N-CHASSIS TAB, Pages N1-1  
N2-1, N2-3, N3-1, N3-3, N3-5, N3-7, N3-9  
N3-11, N3-13, N3-15, N3-17, N3-19

VOL. E BINDER:Pages G3-11, G3-13, G3-17, G3-19, G4-3.

VOL. D BINDER:Page DD1-5.



# Service talk



MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK, SYRACUSE, N. Y.

MAY-JUNE 1970

VOL. 12, NO. 3

## FOR SAFETY – NO SUBSTITUTES ALLOWED!

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*To build a safe, quality product continues to be General Electric's goal. To retain this safety is the goal of the professional service technician. And where certain replacement parts are concerned – for safety, there can be no substitutes!*

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Safety depends not only on a product's design and manufacture, but also on the use, care and service the product receives. While TV manufacturers are busy designing safety into their products, let's see what you – the service technician – can do to keep the product safe.

Much of a service technician's concern with product safety centers on replacement parts. Specifically, safety-related parts. These special parts are special because of: (1) their unique physical construction; or (2) their application in a circuit.

To identify these special parts, General Electric has introduced a new feature in TV service literature. You've already seen this in service manuals for the KE and N-1 chassis. Special safety-related parts are listed in the parts list and shown on the schematic with a shaded gray tone; the significance of this shading is clearly stated in an accompanying notice: "Product safety should be considered when a component replacement is made in any area of a receiver. The shaded areas of this parts list and the schematic diagram designate components in which safety can be of special significance. It is particularly recommended that General Electric cataloged parts be used for component replacement in the shaded areas of this schematic. Use of substitute replacement parts which do not have the same safety characteristics as recommended in factory service information may create shock, fire or other hazards."

Of the two aforementioned features of safety-related parts, physical construction can be more easily understood. For example, a flame-proof resistor, constructed with glass and metal, would in some applications obviously be safer (during overload or failure) than a regular carbon composition type. Equally important is a power transformer constructed with a certain wire size for proper amperage handling and with adequate insulation for voltage ratings and heat dissipation.

32-1700-70-C

Now consider what this means. For instance, if a glass-metal resistor is mistakenly replaced with, say, a common carbon resistor, a possible safety hazard exists in the TV set. Or if a substitute transformer is used instead of the manufacturer's recommended type, too small a wire size or inferior insulation could mean overheating . . . insulation breakdown . . . a fire hazard! Furthermore, a primary-to-secondary short could create a shock hazard.

It can be easily recognized, therefore, that certain replacement parts must be the exact type as given in manufacturer's service literature; substitute parts just won't always do the job.

The second consideration of these special parts is the application of a part in a given circuit. This application and safety relationship may not be as easy to realize as was physical construction. The following example shows this application safety feature:

Cathode bias on a power tube can produce up to 30 volts across a bias resistor and parallel electrolytic capacitor. You might expect, therefore, that the voltage rating on this capacitor would be a little more than 30 volts. And you might replace such a capacitor with, say a 50-volt type.

But herein lies the significance of a safety-related part from an application point of view: namely, there is more to consider in the part's application than just its immediate circuit. That cathode capacitor which normally has 30 volts could, under a plate-to-cathode tube short, receive a large B+ voltage! Such a possibility is considered when General Electric designs circuits, and that cathode electrolytic would be rated at a high enough voltage to withstand this voltage.

Without awareness of safety and part application considerations, however, a technician might replace a high voltage-rated electrolytic with a lower-rated capacitor. Resultantly, a possible hazard could occur!

Keeping these safety considerations in mind when servicing your next TV set will help assure your customer's safety. General Electric has made it easy for you to identify Special safety-related parts: it is our hope that other manufacturers will adopt this effective means of communication on this important subject.

#### SERVICE HINTS – TR100 (T5 CHASSIS)

The following service hints may save you time in making repairs. You may wish to mark these on your schematic:

SYMPTOM : No AGC action  
CAUSE : Shorted C802

SYMPTOM : No horizontal oscillation  
CAUSE : Shorted C709

SYMPTOM : No sound  
CAUSE : Shorted C404

## SEVERAL ITEMS WHICH MAY BE OF USE TO YOU

- EP90X1 : Heat shrinkable tubing – 2 pcs., 24-inches long, 12KV rating
- EP90X3 : Wire Ties – Standard package of 100; order in multiples of 100 (e.g., if you want 100 ties, order the quantity 100 – not 1 package).
- EP90X4 : Chrome Hot Stamp tape for cabinet repairs – complete with instructions (200 ft. roll)
- EP90X5 : Copper ground strap – 1/2-inch wide, 10 ft. roll
- ET90X32 : Polarized extension cord, 12 ft. long

You may order these items from your G. E. distributor.

## SERVICE MANUAL PAGE NUMBERING

The Service Manuals for each TV chassis are filed in several different loose-leaf volumes: Vol. D, Vol. E, 1969 and 1970 are the current ones. In the near future VOL D will be consolidated and bound and the loose-leaf Volume D will be replaced by the bound Volume D.

The page number on each Service Manual page consists of a chassis indicator, a "section" number, and a sequential number. The "section" numbers follow this pattern:

- Section 1 – Models – Information peculiar to certain models; e.g. different features, disassembly, replacement parts, etc.
- Section 2 – Tuners – Information pertaining to VHF tuners used on the particular chassis.
- Section 3 – Chassis – Installation and service information for the indicated chassis.
- Section 4 – Accessories- Information pertaining to accessories on certain models; e.g. clock timers, remote control systems, etc.

To provide greater ease in identifying chassis and volumes, a new page numbering system is being instituted. As an example, for the S-2 chassis in the 1969 Volume, page 3 of the model section will be numbered <sup>VOL 1969</sup> (S2) 1-3 instead of S1-3. The new numbering system will permit immediate identification of the chassis.

## SERVICE MANUAL PAGES

File the following pages in the proper section of the Service Manual binder indicated. Destroy old pages which have been superseded.

### 1969 VOL BINDER

C-1 Chassis: Pages (C-1)1-5, (C-1)1-7

S-2 Chassis: Pages (S-2)1-1, (S-2)1-3, (S-2)1-5, (S-2)1-7, (S-2)3-1, (S-2)3-3, (S-2)3-5, (S-2)3-7, (S-2)3-9

1

2

3

4

5

6

# Service talk



MAJOR TELEVISION PRODUCT SERVICE  
ELECTRONICS PARK, SYRACUSE, N. Y.

JULY-AUGUST-SEPTEMBER 1970

VOL. 12, NO. 4

## S-CHASSIS SYMPTOM-CURE CHART

In the interest of faster, more efficient service, a chart has been compiled of troubles and associated cures for S-Chassis receivers. The chart is on the back of this sheet.

The "SYMPTOM" and "MOST LIKELY CURE" are listed in the frequency of occurrence. It is important that the serviceman find the FIRST SYMPTOM on the list that fits the diagnosis and then test the FIRST CURE associated with the symptom, progressing down the list until the cure is found.

This chart will be updated periodically to include the latest reported symptoms and cures. Information of this type on other chassis will be provided in the subscription plan for your use in the near future.

Hang this chart near your work bench or file it in your Service Manual opposite the S-Chassis schematic diagram.

## SERVICE MANUAL PAGES

File the following pages in the Service Manual binder indicated. Destroy old pages which have been superseded. The chassis section of the KE-II Chassis Service Manual is included in this issue. The remainder of this manual will be in the next issue.

VOL. 1970 BINDER:KE-II Chassis Pages 3-1, 3-3, 3-5, 3-9, 3-11, 3-13, 3-15, 3-17, 3-19, 3-21, 3-23, 3-25, 3-27.

VOL. 1969 BINDER:C-1 Chassis Pages 1-3, 1-13, 1-15, 1-17, 1-19, 3-7, 3-13, 3-15, 3-17, 3-19, 3-21, 3-23.

H-3 Chassis Page 1-15.

S-2 Chassis Pages 1-9, 1-11, 1-13, 1-15, 1-17.

### S-CHASSIS SYMPTOM-CURE CHART

SYMPTOM	MOST LIKELY CURE	SYMPTOM	MOST LIKELY CURE
DEAD--TUBES NOT LIT	AC Switch Tubes: 23Z9 17BF11 15BD11 33GY7 3GK5 8LT8 Line Fuse: W101 Filament fuse AC power cord Bad connections: Filament string AC switch	NO VIDEO	15BD11 11BQ11 6CG8 Tuner L160 Solder: L155 L160
		WEAK VIDEO	15BD11 VHF Antenna Picture Tube 11BQ11
NO RASTER -- B+ OK	Bad connection on HV rect. filament 1BC2; Yoke HVT Horiz. Osc. caps; C254; C255 C256; C258 8LT8 Picture Tube 33GY7 Horiz. Osc. Coil Solder connections: HVT Horiz. Osc. 15BD11	NO SYNC/LINES IN PICTURE	23Z9 8LT8 15BD11 33GY7 T201
		NO VERTICAL DEFL/ NOT ENOUGH HEIGHT	23Z9 T201
		NARROW PICTURE/ NOT ENOUGH WIDTH	Deflection yoke 33GY7
DEAD--TUBES LIT	R401; 5 ohm, 5 watt fusistor R402; 100 ohm, 5 watt Y401 R403; 130 ohm, 5 watt Bad connections in power supply Tuner (shorted feed thru)	ARCING	HVT Core HVT Picture Tube 1BC2 Bad connection; 1BC2 fil.
NO AUDIO POOR AUDIO	17BF11 Alignment R310 Speaker 15BD11 T301; quad coil C309 Earphone jack Bad connections: T301 Vol. Control		

# Service talk



TELEVISION DIVISION PRODUCT SERVICE  
COLLEGE BOULEVARD, PORTSMOUTH, VA.

MARCH – APRIL 1971

VOL. 13, NO. 2

## 23EGP22 PICTURE TUBE HIGH VOLTAGE ADJUSTMENT

Replacement color picture tube types 23EGP22 and 23EGP22A have been re-registered and now carry the following warning notice.

### ATTENTION SERVICEMAN

### X–RADIATION WARNING

THIS REBUILT 23EGP22 OR 23EGP22A, WHICH USES THE GLASS ENVELOPE OF THE ORIGINAL MANUFACTURER, MAY PRODUCE X–RADIATION IN EXCESS OF THE RECOMMENDED LIMIT IF OPERATED ABOVE 23.5 KV ANODE VOLTAGE. EQUIPMENT USING THIS TUBE MUST BE ADJUSTED SO THAT THE ANODE VOLTAGE DOES NOT EXCEED 23.5 KV UNDER NORMAL CONDITIONS OF OPERATION. DISREGARD VOLTAGE RECOMMENDATIONS IN ORIGINAL EQUIPMENT INSTRUCTIONS. IN ADDITION, ALL SHIELDING MUST BE REPLACED TO ITS INTENDED POSITION BEFORE THE EQUIPMENT IS OPERATED.

The CB and KC Chassis models listed below used Type 23EGP22 picture tube. Therefore, when you replace the picture tube, you should be sure to adjust the high voltage so that it does not exceed 23.5 KV under normal conditions of operation.

#### CB CHASSIS MODELS

M970BWD                      M971BMP

#### KC CHASSIS MODELS

M942CMP                      M950CWD  
M945CWD                      M951CMP  
M946CMP                      M953CCL  
M947CCL                      M954CPN

To remind you of this revised adjustment, four labels are printed on the back of this page. Cut them out and tape to the following Service Manual Pages.

### CB CHASSIS

1. Tape to "REMARKS" for Step 4 on Page 78 of the "B" Line bound manual or Page CB3–16 in the CB Chassis loose-leaf manual.
2. Tape to the CB Chassis schematic diagram on Page 114 in the "B" Line bound manual or Page CB3–31 in the CB Chassis loose-leaf manual.

(OVER)

29-1700-71B



## KC CHASSIS

1. Tape to "REMARKS" for Step 4A on Page 178 in the "C" Line bound manual or Page KC3-14 in the KC Chassis loose-leaf manual.
2. Tape to the KC Chassis schematic diagram on Page 192 in the "C" Line bound manual or Page KC3-23 in the KC Chassis loose-leaf manual.

FOR REPLACEMENT  
TUBE 23EGP22/A  
ADJUST HIGH VOLTAGE  
NOT TO EXCEED  
23.5KV  
TO FURTHER MINIMIZE  
X-RADIATION

FOR REPLACEMENT  
TUBE 23EGP22/A  
ADJUST HIGH VOLTAGE  
NOT TO EXCEED  
23.5KV  
TO FURTHER MINIMIZE  
X-RADIATION

FOR REPLACEMENT  
TUBE 23EGP22/A  
ADJUST HIGH VOLTAGE  
NOT TO EXCEED  
23.5KV  
TO FURTHER MINIMIZE  
X-RADIATION

FOR REPLACEMENT  
TUBE 23EGP22/A  
ADJUST HIGH VOLTAGE  
NOT TO EXCEED  
23.5KV  
TO FURTHER MINIMIZE  
X-RADIATION

## WHAT HAPPENED TO VOLUMES F & G ?

Your new binder for TV Service Manuals is designated Volume H. We have reverted to the alphabet so that all of the consolidated service manuals will have the alpha designation. When Volume 1969 is consolidated and bound, it will be Volume F and, in the same manner, Volume 1970 will be Volume G.

## N-2 CHASSIS PICTURE TUBE

In Volume 1970, Page (N-2) 1-1, change the picture tube type from 17JFP22 to 17FJP22

## SERVICE MANUAL PAGES

This issue includes the following features:

1. S-3 Chassis Preliminary Schematic Diagram & Parts List
2. Complete C-2 Service Manual
3. Troubleshooting Guides for C-2, H-3, N-1, & KE-II Chassis
4. Analyses of KE-II Chassis Tint Lock and Clamp circuits

File the following pages in the Service Manual binder indicated. Destroy old pages which have been superseded.

### VOLUME 1969

H-3 Chassis	-	Page H3-19
KE Chassis	-	Pages 3-1, 3-3
N-1 Chassis	-	Page (N-1) 3-21
S-2 Chassis	-	Page (S-2) 1-13

### VOLUME 1970

KE-II Chassis	-	Pages 1-3, 3-29, 3-31, 3-33, 3-35
W-1 Chassis	-	Page 1-1

### VOLUME H

C-2 Chassis	-	Tab plus Pages 1-1 through 1-16, 2-1 through 2-6, 3-1 through 3-26 and 4-1
S-3 Chassis	-	Tab plus Page (S-3) 3-7

PORTAFAX INDEX

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# Service talk



TELEVISION DIVISION PRODUCT SERVICE  
COLLEGE BOULEVARD, PORTSMOUTH, VA.

MAY—JUNE, 1971

VOL. 13, NO. 3

## U-1 CHASSIS NEW SOLID STATE MONOCHROME TV

The solid state set that services like a tube set - that's what the new General Electric U-1 Chassis is all about. After listening to service technicians around the country, GE has built the most serviceable set you have ever seen.

Model TR465UWD-1, with the new U-1 Chassis, will be sold in your area in the near future so you need to learn now how to service the U-1 Chassis speedily and efficiently with the latest servicing techniques such as step-by-step troubleshooting charts and transistor curve tracing.

Now we could tell you, right here, how you can service the solid state U-1 Chassis like a tube set; or that the U-1 Chassis has twenty-one transistors, sixteen diodes and one integrated circuit; or why seven of the transistors are mounted in sockets along with a plug-in audio module; or that most of the components are mounted on the spacious circuit board; or why grouping by circuit and marking by function as well as symbol speeds up servicing. Yes, we could tell you all this and more. But we're going to do better than that.

The Technical Training Manual for the U-1 Chassis is enclosed with this issue as a Plan E bonus. Read it and learn how the circuits work. Build the curve tracer and become familiar with its operation by testing some known good and bad transistors both in and out of circuit. Study the troubleshooting charts and see how a simple step-by-step procedure can lead you quickly to the source of the problem.

Using the Technical Training Manual will pay off in two ways. You'll be ready if a U-1 Chassis receiver ever comes your way and you'll get the jump on the other guys at service meetings.

A U-1 Chassis service meeting and clinic will be held in your area soon. Watch for the announcement from your General Electric Television Distributor. Make sure you go and see the U-1 Chassis in action and get your hands on it and test it at the clinic. You'll be amazed at its performance, simplicity and ease of servicing.

29-1700-71C

(OVER)

A SUBSCRIPTION PLAN PUBLICATION

## C1/L1 AND C2/L2 CHASSIS PARTS LIST REVISIONS

Please make the following revisions to the C1/L1 and C2/L2 Replacement Parts Lists.

In Volume 1969, Page (C-1)3-16 and in Volume H, Page (C-2)3-20 under "COILS AND TRANSFORMERS":

Add: EP77X9 T252 TRANSFORMER—Horiz. Sweep (HVT) 23-inch Sets Only  
Add: "18-inch Sets Only" to EP77X1 T252 TRANSFORMER—Horiz. Sweep (HVT)

The T252 connections as shown in the main schematic diagram are for 18-inch sets. The connections for 23-inch sets are the same except that the connection to Terminal 8 on 18-inch sets goes to Terminal 7 on 23-inch sets.

In Volume 1969, Page (C-1)3-17 and in Volume H (C-2)3-20 under "MISCELLANEOUS":

Add: EP76X6 YOKE—Deflection, 23-inch Sets only  
Add: "18-inch Sets Only" to EP76X2 YOKE—Deflection

## SERVICE MANUAL PAGES

This issue includes the complete S-3 Chassis Service Manual plus Preliminary Schematic Diagrams and Parts Lists for the H-4 and U-1 Chassis. Complete Service Manuals for H-4 and U-1 Chassis will be in the next issue.

File the following pages in the Volume H Binder. Destroy the S-3 Chassis Preliminary Schematic Diagram.

H-4 Chassis – H-4 Tab plus Page (H-4)3-9.

S-3 Chassis – Pages 1-1 through 1-12, 2-1 through 2-4 and  
3-1 through 3-9.

U-1 Chassis – U-1 Tab plus Pages (U-1)1-1 and (U-1)3-7.

UHF – UHF Tab plus Pages UHF-1 through UHF-4.