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Electronic TUBES
Techni-talk
on AM, FM, TV Servicing

CONVERSION OF 10 AND 12 INCH RECEIVERS TO USE LARGER SIZE PICTURE TUBES

This is the third of a series of articles on converting ten and twelve inch TV receivers to use fourteen, sixteen or seventeen inch rectangular picture tubes. In this issue a General Electric twelve inch Model 820 was converted to use a General Electric 16KP4-A aluminized picture tube and a Philco ten inch Model 48-1001 was converted to use a General Electric 14CP4 picture tube.

The following discussion is a description of the procedure followed which produced satisfactory results with respect to the particular model converted. If a conversion is attempted on a similar model of an earlier or later date or on a different model from the same manufacturer, then additional adjustments and steps may be necessary. The changes which were made have not been approved by the manufacturer and may therefore invalidate the manufacturer's warranty.

GENERAL ELECTRIC MODEL 820

The General Electric Model 820 which is shown in Fig. 1 was originally a twelve inch TV, AM, FM radio combination. This was converted to use a General Electric 16KP4-A picture tube. Adequate cabinet space was available to use a 17BP4-A picture tube; however in this conversion a 16KP4-A was used.

The following parts were used in making this conversion:

1—General Electric 16KP4-A aluminized picture tube.
1—General Electric RLD-024 Deflection Yoke.
1—General Electric RLF-038 Focus Coil.
1—General Electric RET-003 Ion Trap Magnet.
1—15,000 ohm 2 watt resistor.
1—400 mmfd 1000 volt capacitor.
1—16 in. plastic picture tube mask.

The chassis and picture tube together with the deflection yoke mounting assembly were removed from the cabinet. The cabinet was not removed from the customer's home due to its size and weight.

The following circuit changes were made to adapt this chassis to use a 16KP4-A picture tube:

1. Replaced the original deflection yoke with a General Electric RLD-024. The blue wire which was connected to the center top of the vertical deflection coils was connected to the number eight terminal on the new yoke. All other terminal connections remained the same.
2. The focus coil was replaced with a new General Electric RLF-038.
3. A 15,000 ohm resistor was connected across R 60 and R 61 which are the screen resistors for the 6BG6-G tube.
4. A jumper was placed across R 64 which shorted out one section of the width coil.
5. A 400 mmfd 1000 volt capacitor was connected across the horizontal deflection coils. This provided adequate sweep width without disconnecting the other section of the width coil. If, however, additional sweep width is required this section may be disconnected.
6. The 16KP4-A picture tube was inserted into the yoke mounting assembly and a new General Electric RET-003 ion trap magnet was placed on the neck.

All electrical connections were made between the picture tube assembly and the chassis, and the set was turned on. The horizontal linearity and the horizontal drive controls were adjusted for best linearity. A slight fold-over was noticed on the left-hand side which was eliminated by using the horizontal retrace elimination circuit described on page 4 of the Vol. 2 No. 6 issue of Techni-talk. A piece of 75 ohm twin-lead eighteen inches long was used in place of an eight inch piece of outside insulated shielded wire.

In this particular conversion it was not necessary to change the horizontal sweep transformer. This chassis used a molded type sweep transformer which provided sufficient sweep width and high voltage. Some chassis, however, may require a new General Electric RTO-085 horizontal sweep transformer in order to obtain adequate sweep width and high voltage. In this case it is suggested that the Model 811 horizontal output circuit described in the Vol. 2 No. 5 issue of Techni-talk be used. The vertical circuit change should not be made unless the vertical size is inadequate.

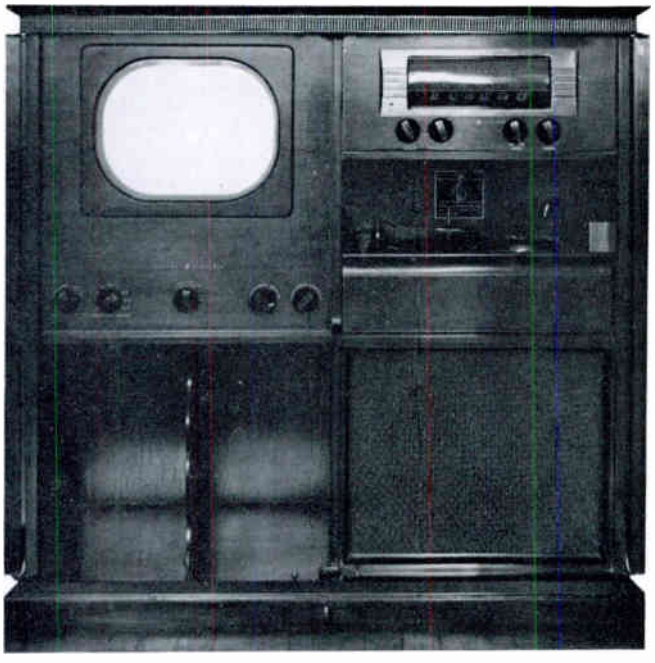

Fig. 1. General Electric twelve inch Model 820 before conversion.

Fig. 2. General Electric Model 820 after being converted to use a 16KP4 picture tube.

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GENERAL ELECTRIC

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CABINET CHANGES

The wooden frame which holds the safety glass in place was removed from the front panel of the cabinet. The four angles to which the grounding ring was fastened and the two wooden tube support blocks were also removed.

A sixteen inch template described in previous issues was used for marking the front panel. The approximate position can be seen in Fig. 2. Due to the front panel being hard wood one-half inch thick it was almost impossible to saw around the new mask area using only a keyhole saw. Therefore an electric drill was used to drill $\frac{3}{16}$ inch holes about $\frac{1}{4}$ inch apart along the template mark and a keyhole saw was then used to complete the operation.

The plastic mask was drilled and mounted to the front panel. The two wooden tube support brackets were relocated and mounted in position to support the bottom of the 16KP4-A picture tube. Two of the four metal angles previously used to fasten the grounding ring were reused. Two springs were used at the top and one at the bottom which held the picture tube securely against the mask. The block which held the yoke assembly did not have to be relocated; however, the screws holding the yoke assembly had to be lowered slightly.

The chassis was then placed into the cabinet and all electrical connections were made including the connection between the grounding ring and chassis. Two of the wires running to the socket had to be lengthened by adding a one inch piece to the socket end.

Before the back cover could be replaced, it was necessary to enlarge the hole in the back cover through which the socket of the picture tube extended. Final adjustments were then made with the receiver in operation. This completed the conversion of the General Electric Model 820 receiver.

PHILCO MODEL 48-1001

The next receiver converted was a Philco Model 48-1001, Code 122. This was a 10 inch table model shown in Fig. 3 and was converted to use a fourteen inch General Electric 14CP4 picture tube as shown in Fig. 4.

The following parts were used in making this conversion:

1—General Electric 14CP4 picture tube.

1—General Electric RET-003 Ion Trap Magnet.

1—Todd Type J-70 Deflection Yoke (a Stancor DY-7, Merit MD-1 or equivalent may also be used).

1—Stancor A-8128 Horizontal sweep transformer (a Stanwyck 998 transformer or equivalent may also be used).

1—120 ohm 2 watt resistor.

1—2200 ohm 2 watt resistor.

1—Mallory Type M10P 10 ohm wirewound potentiometer (arm insulated from shaft).

1—200 mmfd 1000 V capacitor (2-400 mmfd 500 V connected in series may also be used).

1—.1 mfd 600 V capacitor

1—70-480 mmfd padder type variable capacitor (the range limits are not critical as long as 300 ± 100 is available).

1—14 in. Dietz mask No. 14SG measuring 10½ x 13½ outside dimension (a mask of some other manufacture may be used, however the O.D. is important as the mask used just fits as can be seen in Fig. 4).

1—Guy wire turnbuckle (5½ in. long closed).

First the chassis and picture tube mounting cradle were removed from the cabinet. The picture tube and deflection yoke were then removed from the picture tube mounting frame and the new yoke wired in, using the old yoke as a wiring guide. The new yoke was held in place by the same mounting strap used on the old yoke. The new General Electric 14CP4 picture tube was then inserted into the mounting frame. Since the mounting frame was originally round it had to be bent to conform with the outside of the new picture tube faceplate keeping in mind that the opening in the frame should still be at the bottom. A turnbuckle five and one-half inches long when closed was used to connect and hold the mounting frame to the tube. This can be seen in the rear view photograph of the completed conversion in Fig. 5.

The high voltage compartment shield was removed and the following circuit changes were then made as shown in Fig. 6:

1. The horizontal sweep transformer was replaced with a Stancor No. A-8128. It was necessary to use three small right-angle brackets to hold the new transformer in place as the original mounting holes could not be used. The horizontal deflection coils were connected across terminals 4 and 6 and a 200 mmfd 1000 V capacitor was connected across these two terminals.

2. The top section of the width control L 505A was shorted out. On this chassis the three width control connections were connected to the terminal board which has a swing connector. This can be seen at the right side of the chassis in Fig. 5. In the up position L 505B— is shorted out and in the down position L 505A— is shorted out.

3. R541 was removed and a 10 ohm wire wound potentiometer was substituted and connected as shown. This acts as a horizontal centering control and can be seen in Fig. 5.

4. C522 was changed to .1 mfd and C520 to .05.

5. R540 was changed to 2200 ohms.

6. The cathode of the 6BG6-G was grounded.

7. A 120 ohm resistor was inserted in series with the focus control.

8. A 70-480 mmfd padder capacitor was inserted at the junction of C518 and R537. This acts as a horizontal drive control and was required to correct the horizontal linearity which was stretched on the left side. This padder capacitor can be seen in Fig. 5.

9. R545 and R546 were removed and R549 was connected directly across the damper tube.

10. A new G-E RET-003 ion trap was positioned on the neck of the 14CP4 picture tube.

All connections were made between the picture tube assembly and the chassis and the set was turned on. The horizontal linearity and the horizontal drive controls were adjusted for best linearity. The horizontal centering control was required because of a neck shadow which could not be eliminated by adjusting the centering magnet and ion trap.

CABINET CHANGES

To start the cabinet changes the safety glass together with the brass frame which held it in place were removed. The square speaker panel which contained the speaker mounting

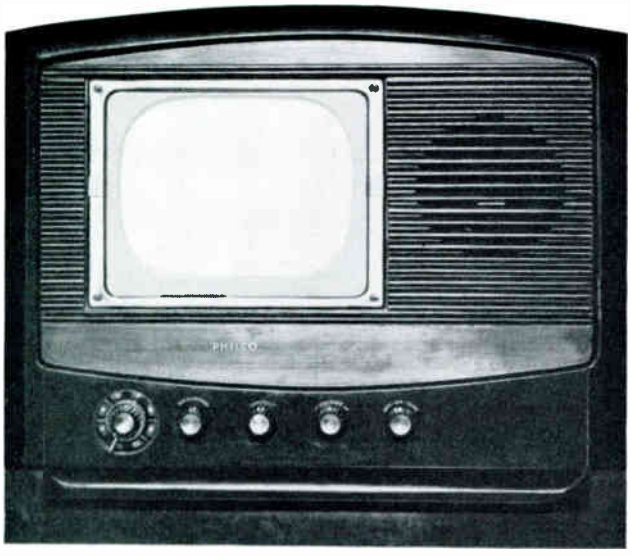


Fig. 3. Philco ten inch Model 48-1001 before conversion.

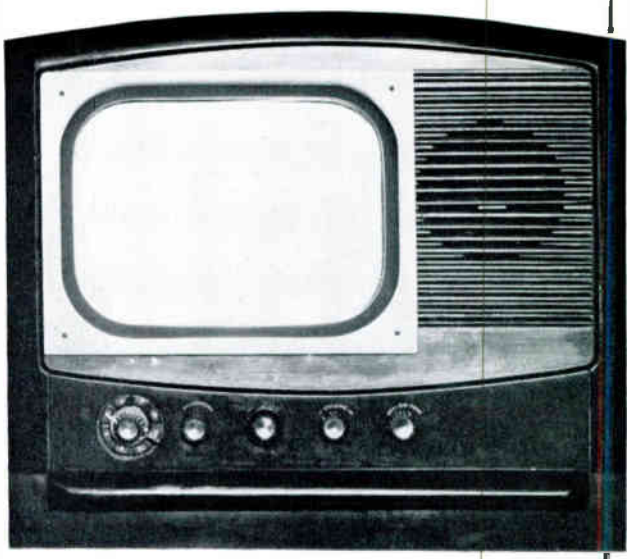


Fig. 4. Philco Model 48-1001 after being converted to use a General Electric 14CP4 picture tube.

bolts was also removed. A number of small wood screws also had to be taken out as they were in the area that had to be sawed.

A mask was positioned on the cabinet for best appearance and it was found that one measuring 10½ x 13½, manufactured by the Dietz Manufacturing Co., was the best fit. The only change necessary was to round off the upper left-hand corner with a file as shown in Fig. 4. A template slightly larger than the outside faceplate area of the 14CP4 was placed in position and marked off with a scriber using the new mask as a guide. This was not centered over the old opening but was slightly to the left and considerably lower.

The area marked off was then sawed out using a $\frac{3}{16}$ in. drill first and then a keyhole saw, as previously described. This was somewhat more difficult than most cabinets as the wood was one and one-half inches thick over a good portion of the area. The edges of the wood were then stained a dark walnut as this area could be seen if closely inspected, since the picture tube faceplate was not flush with the inside of the mask.

The mask was placed in position with the upper left-hand corner rounded to fit as previously mentioned. A hole was drilled and countersunk in each corner and the mask was mounted to the cabinet. The picture tube and mounting frame were positioned and mounted to the inside of the cabinet with two wood screws—one top and one bottom—to hold this assembly in place. The two original brackets which can be seen in Fig. 5 were reused to hold the back of the picture tube in place. It was necessary to bend the mounting angles on both the left and right sides in order to clear the speaker on the left and the cabinet on the right. The picture tube faceplate did not mount flush with the inside of the mask; however this space was very slight and was not considered objectionable.

The speaker was mounted flush with the front panel using wood screws instead of the mounting bolts used on the original wooden speaker panel. This was necessary because the picture tube mounting frame interfered with the speaker.

The front portion of the chassis also interfered with the picture tube and had to be bent down as can also be seen in Fig. 5. The shield enclosing the high voltage compartment would not fit beneath the centering magnet positioning bar. This however, was corrected by folding the bottom edge up on both the left side and the back so that it reduced the height by one inch. The right edge was not bent as it was fastened to the chassis. This can be seen at the right of Fig. 2. The compartment height could not be reduced too much as sufficient clearance had to be left between the cap of the 6BG6-G and the shield to prevent any arc-over or short circuit. Small sections of the shield were cut using side-cutting pliers and bent in the form of an angle. These were used to fasten the shield to the chassis at the same points previously used. The back plate of this compartment was cut off and redrilled to match the original chassis holes.

The chassis was then placed in the cabinet and the chassis bolts, knobs, and back replaced. After final adjustments were made with a test pattern on, the conversion was complete.

While these circuit modifications have been carefully tested, the General Electric Company can, of course, assume no responsibility for the application of these suggestions to the conversion of any particular receiver. General Electric offers this article as a suggestion of one possible way of making the conversion but it does not represent that this is the only way or the best way of accomplishing the conversion.

In the next issue conversion information on two more television receivers will be included.

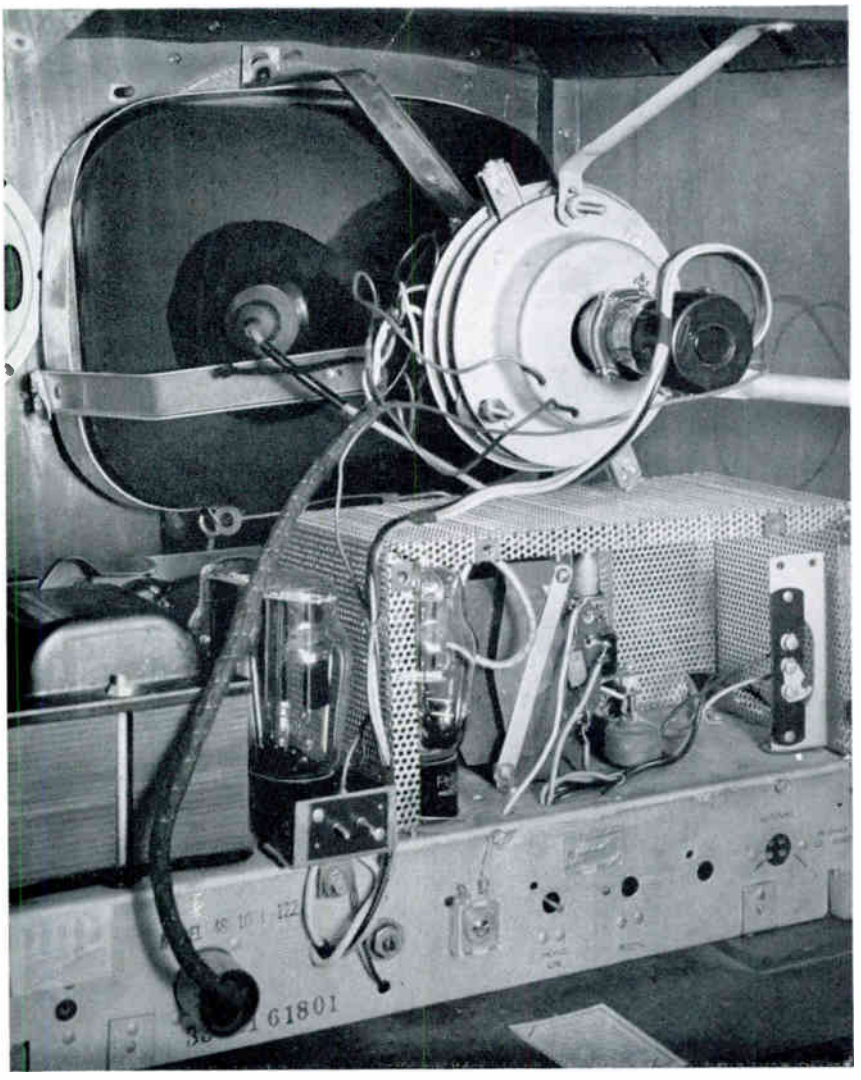


Fig. 5. Rear view of Philco receiver after conversion. The horizontal drive control can be seen just below the 6BG6-G tube and the horizontal centering control slightly to the left of the drive control.

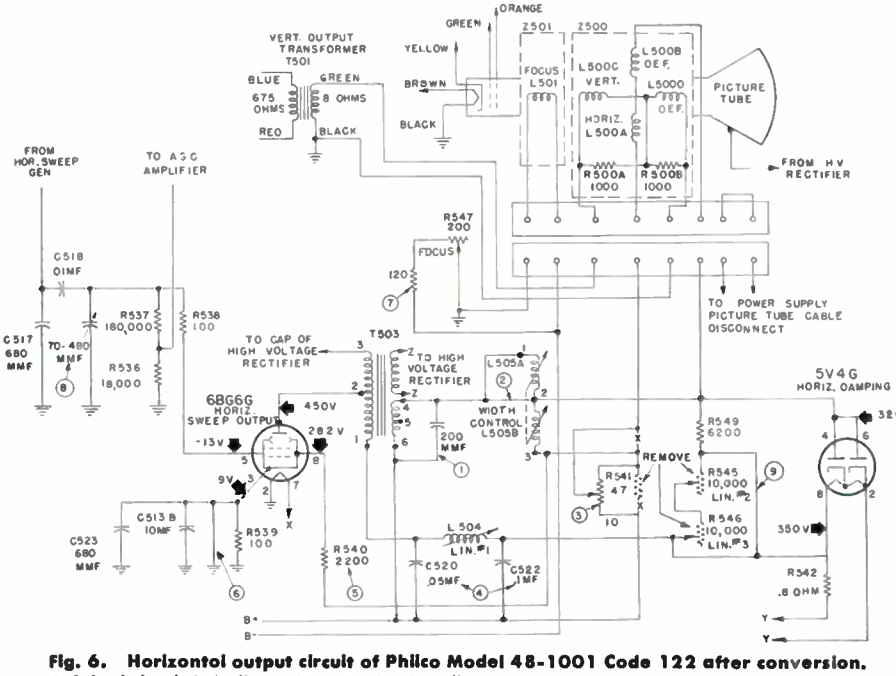


Fig. 6. Horizontal output circuit of Philco Model 48-1001 Code 122 after conversion. Original circuit is indicated by the broken lines.

MAKE YOUR OWN SERVICE BENCH

The service bench shown in Figs. 1 and 2 was designed to provide the service technician with practical work space as well as adequate shelf space and electrical outlets to accommodate the necessary equipment required to service both radio and TV receivers. The center section will accommodate most Cathode Ray Oscilloscopes. This bench can be constructed with only a hammer and nails providing the lumber is cut to dimension by a local lumber yard. If screws and glue are used instead of nails the bench will be somewhat sturdier.

A drawing and bill of materials for the bench with side cabinets are shown in Fig. 3 and a similar drawing without the side cabinets is shown in Fig. 4. Quotations obtained on the Fig. 4 bench ranged from approximately forty to eighty dollars depending upon location, grade of lumber and the service which the lumber yard renders. Cabinets shown in Figs. 1, 2 and 3 are available on order through your local Sears, Roebuck and Co. retail store at approximately $19.00 each plus shipping charges. Of course, you may find some other unpainted wood cabinet better suited to your particular needs, in which case it is only necessary to change the length of the appropriate pieces in the base structure and bottom shelf. If height differs it will be necessary to alter the lengths of the legs.

If the lumber used is properly dried and seasoned, no difficulty should be experienced due to pull or warping. If fir is used instead of pine for the dimensional lumber, it may be necessary to drill leader holes to avoid splitting where nails are near a butt end.

Our method of construction was first to assemble the base and bench top and then cement the masonite to the top. Half-inch wire nails were used to hold the masonite in place while the cement was drying. Weights were also used to assure good adhesion. The cabinets less tops were positioned and fastened at the top and bottom with screws. The instrument shelves were assembled next and the masonite facing cemented to the top of each shelf. This assembly was then wired and attached to the base. The bench and the plywood back were then painted separately and assembled when dry.

The electrical material used had a list price of $39.30. A wiring diagram was not considered necessary due to the simplicity of the circuit. The left-hand switch, with pilot light, is a master switch which controls all outlets on the wiremold conduit. The right-hand switch controls the two side panel outlets and was wired separately to accommodate a battery charger, or any other electrical equipment which might be operated irrespective of the other equipment.

Fig. 1. Front view of completely assembled Service Bench with side cabinets.

Fig. 2. Angle view of the completely assembled Service Bench shown in Fig. 1.

BILL OF MATERIALS

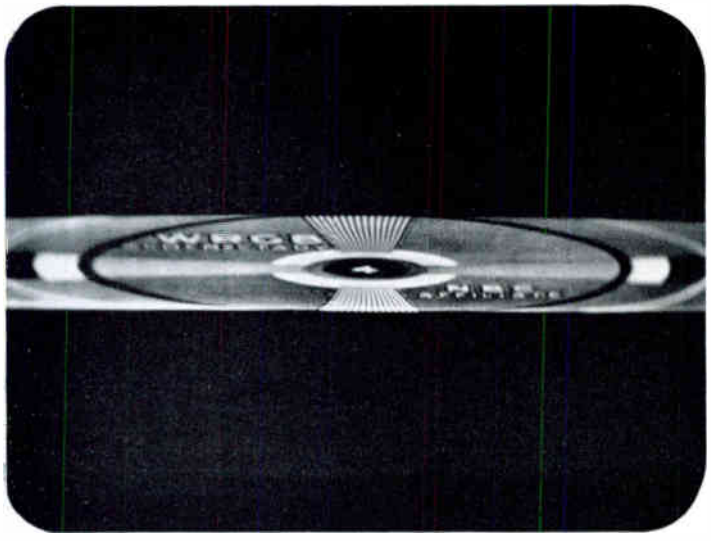
ELECTRICAL EQUIPMENT

Quantity	Number	Description
4	#SP6974D	G.E. Switch Boxes
1	#SP54151-CD	G.E. Junction Box
2	#4026-1	Manowatt Switch and Pilot Combinations
2	#1225-1	Monolite Quintet Receptacles
6	#19306	Wire Mold Plug-in Conduit
6	⅛" pipe x 1"	Bushings
12	⅛" pipe	Lock Nuts
12′	#18	Insulated Wire
10′ (or to suit)	#14-2	Rubber Covered Heavy Duty Line Cord

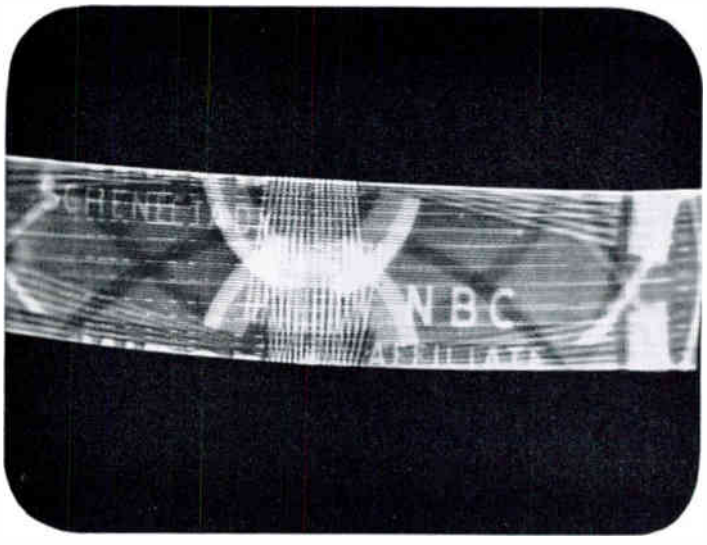
Please turn to Page 7 for Figs. 3 & 4

Tele-Clues

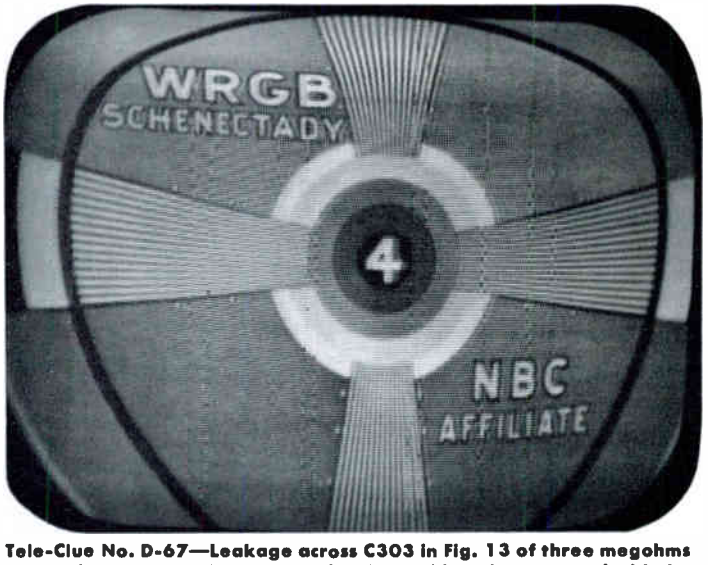
The Tele-Clues in this issue indicate eight more defects which may occur in various circuits of a TV receiver.



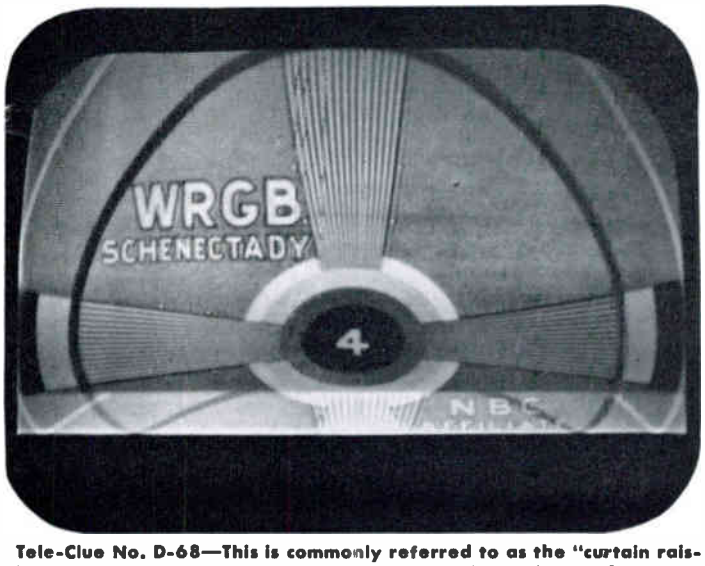
Tele-Clue No. D-65—This shows the result of leakage across either C38 or C39 in Fig. 12. The picture height will be reduced as the amount of leakage across either capacitor increases. A short usually results in a straight narrow horizontal line. Leakage across C301 or C302 in the circuit shown in Fig. 13 will not affect picture height but will result in loss of vertical synchronization.



Tele-Clue No. D-66—This illustrates the result of leakage across the C37 shown in Fig. 12. This circuit is part of the vertical integrating circuit used in the General Electric Model 810 type receiver. This is a reasonably common defect and when C37 is replaced it is advisable to replace C38 and C39 also.



Tele-Clue No. D-67—Leakage across C303 in Fig. 13 of three megohms resulted in the top being squeezed which could not be corrected with the height or vertical linearity controls. Leakage of more than three megohms could be corrected by readjustment of the height and linearity controls. Additional leakage resulted in a further reduction of the top half.



Tele-Clue No. D-68—This is commonly referred to as the "curtain raising" effect and may be due to leakage in capacitors C304 or C312 or a reduction in the resistance value of R303 in Fig. 13.

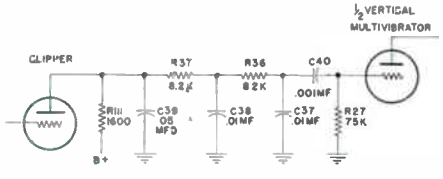


Fig. 12. Vertical integrating circuit used in the General Electric Model 810 line of receivers.

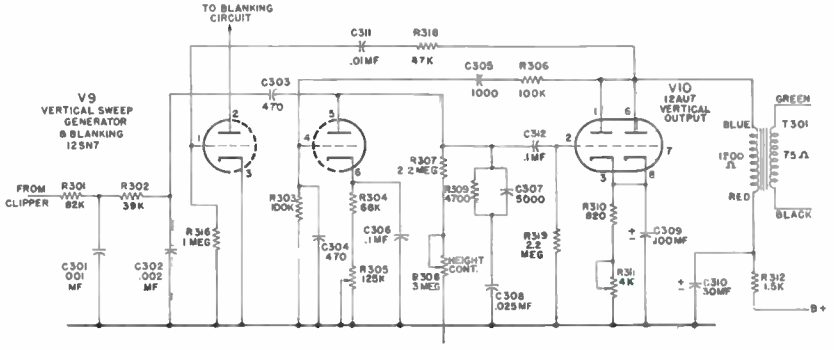
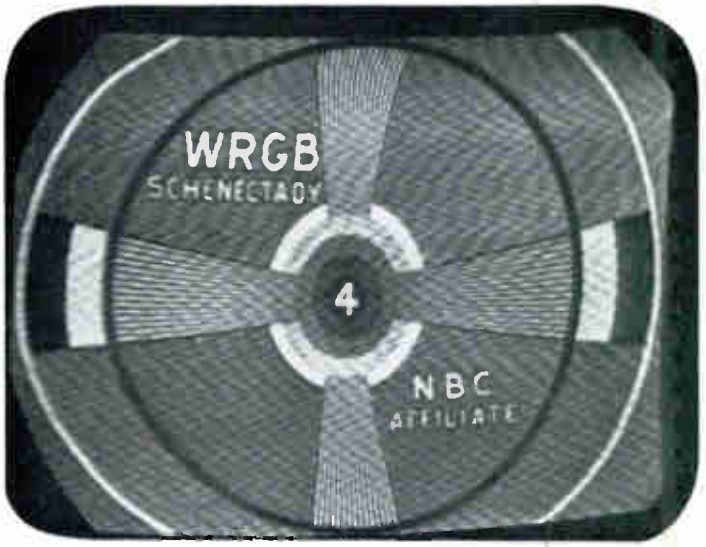


Fig. 13. Vertical Sweep Generator, Blanking and Output circuit used in the current General Electric sixteen and seventeen inch receivers.

Tele-Clue No. D-69—Leakage across C308 in Fig. 13 of one megohm resulted in the bottom being squeezed which could not be corrected by adjusting the height or vertical linearity controls. Leakage of more than one megohm could be corrected by readjustment of the height and linearity controls. Additional leakage resulted in a further reduction of the lower half.

Tele-Clue No. D-70—Leakage across C311 in Fig. 12 of three megohm resulted in the top portion of the picture being darkened. As this resistance was increased the depth of the dark area decreased and as the resistance was decreased the depth of this area was increased as shown in Tele-Clue No. 71. Due to this section of V9 being part of the blanking circuit, a gassy tube will result in a reduction of screen voltage on the picture tube thereby blanking out the picture tube completely.

Tele-Clue No. D-71—This illustrates the result of one and one-half megohm leakage across C311. The brightness and contrast controls were advanced.



Tele-Clue No. J-72—This type of interference known as oscillator radiation is due to the oscillator in some nearby receiver acting like a miniature transmitter and radiating a signal. This signal is picked up by the antenna or lead-in together with the desired signal and amplified resulting in the interference pattern shown above.

It is usually necessary to shield the receiver which is radiating the signal and/or prevent the signal from reaching the antenna by using a "Booster" as close to the receiver as possible.

TELE-TIPS

31. A leaky coupling capacitor between the plate and grid of a video amplifier stage will reduce the negative bias or cause a positive bias on the grid of one or more IF tubes. If the defective capacitor is located in the grid circuit of a tube supplied from the contrast control the range of this control will be reduced. This can be located by checking the voltage at each grid with a VTVM.

32. A smoothing plane can be used instead of a saw to reduce the size of a plastic mask. This will result in a good clean edge and is much easier to use.

33. Centering difficulties on receivers having the focus coil in the cathode circuit of the 25L6-GT may be corrected by changing this tube even though it may test OK and operate satisfactorily on audio.

34. Instability of vertical sync resulting in the vertical oscillator slipping a frame occasionally can usually be traced to some defect in the clipper or vertical integrating circuits. If the trouble cannot be located in these circuits and the video IF alignment curve appears normal try changing the 1N64 germanium diode. Occasionally the low frequency response of the germanium diode will drop off resulting in a partial loss of the vertical sync pulses thereby affecting the stability of the vertical oscillator.

35. If a 5V4-G is used in place of a 5U4-G be sure the line is fused with a 3 amp fuse. Otherwise there is a possibility of burning out the power transformer if a cathode-plate short developes within the 5V4-G tube.

Continued from Page 4

SERVICE BENCH WITH CABINETS

BILL OF MATERIALS

DIMENSIONAL LUMBER FOR FRAME—Pine or Fir (Std. 2"x4")

A. Rear Top Support
1 piece . . . . . 1¾" x 3¾" x 9' 7"

B. Rear Base Support
1 piece . . . . . 1¾" x 3¾" x 9' 7"

C & D. Front Top and Base Supports
2 pieces . . . . 1¾" x 3¾" x 5' 6"

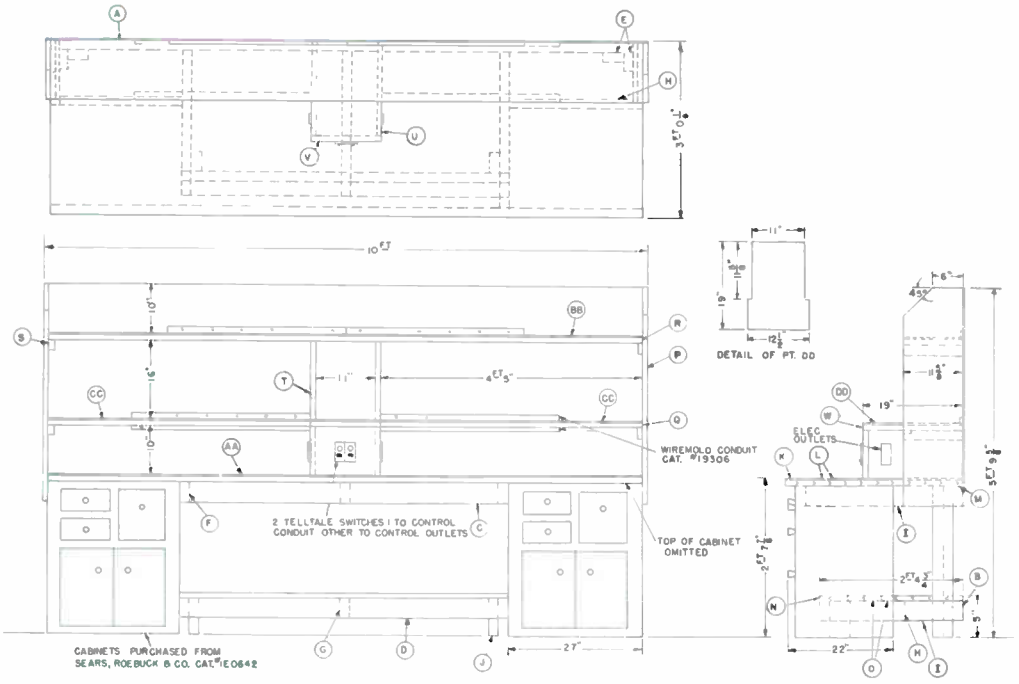


Fig. 3. Detail drawing of Service Bench with side cabinets showing location of parts listed under bill of materials.

E. Rear Legs
4 pieces . . . . 1¾" x 3¾" x 2' 7"

F. Top Shelf Supports
3 pieces . . . . 1¾" x 3¾" x 2' 8½"

G. Base Shelf Supports
3 pieces . . . . 1¾" x 3¾" x 2' 1¼"

H. Top and Base Cabinet Frame
4 pieces . . . . 1¾" x 3¾" x 2' 1¼"

I. Top and Base End Supports
4 pieces . . . . 1¾" x 3¾" x 1' 2"

J. Front Legs
2 pieces . . . . 1¾" x 3¾" x 4¼"

BENCH TOP—1" x 4" fir flooring T & G (3¼" face)

K. Front Board
1 piece . . . . . Cut to 2½" face (plus tongue left on) 9' 10½" long

L. Center Boards
10 pieces . . . 9' 10½" long

M. Rear Board
1 piece . . . . . Cut to 1" face (including groove) 9' 10½" long

TOP FOR BASE SHELF—1" x 4" fir flooring T & G (3¼" face— $\frac{13}{16}$" thick)

N. Front Board
1 piece . . . . . Cut to 2¾" face (groove left on) 5' 6" long

O. Center and Rear Boards
8 pieces . . . . 5' 6" long

UPPER SHELF ASSEMBLY—PINE PLANKING

P. Shelf Ends
2 pieces . . . . ¾" x 11⅜" x 3' 6⅜"

Q & R. Shelves
2 pieces . . . . ¾" x 11⅜" x 9' 10½"

S. Shelf Rails
4 pieces . . . . ¾" x 2" x 11⅜"

T. Shelf Spacers
2 pieces . . . . ¾" x 11⅜" x 16⅛"

U. Shelf Supports
2 pieces . . . . ¾" x 10" x 18¼"

V. Extension Face
1 piece . . . . . ¾" x 10" x 12½"

W. Extension Cap
1 piece . . . . . ¾" x 7⅜" x 12½"

SHELF BACK—¼" plywood

X. 1 piece . . . . . 3' 6⅜" x 10'

TOP AND SHELF FACING—⅛" tempered masonite

AA. Top Facing
1 piece . . . . . 3' x 9' 10½"

BB. Shelf Facing
1 piece . . . . . 11⅜" x 9' 10½"

CC. Shelf Facing
2 pieces . . . . 11⅜" x 4' 5"

DD. Extension Facing
1 piece . . . . . { 11" x 11⅜" (see drawing) / 12½" x 7⅜"

SERVICE BENCH WITHOUT CABINETS

BILL OF MATERIALS

DIMENSIONAL LUMBER FOR FRAME—Pine or Fir

A. Front and Rear Top Support
2 pieces . . . . 1¾" x 3¾" (Nom 2 x 4) x 9' 7¼"

B. Rear Base Support
1 piece . . . . . 1¾" x 3¾" (Nom 2 x 4) x 9' 7¼"

C. Front Base Support
1 piece . . . . . 1¾" x 3¾" (Nom 2 x 4) x 9'

D. Legs
8 pieces . . . . 1¾" x 3¾" (Nom 2 x 4) x 2' 7"

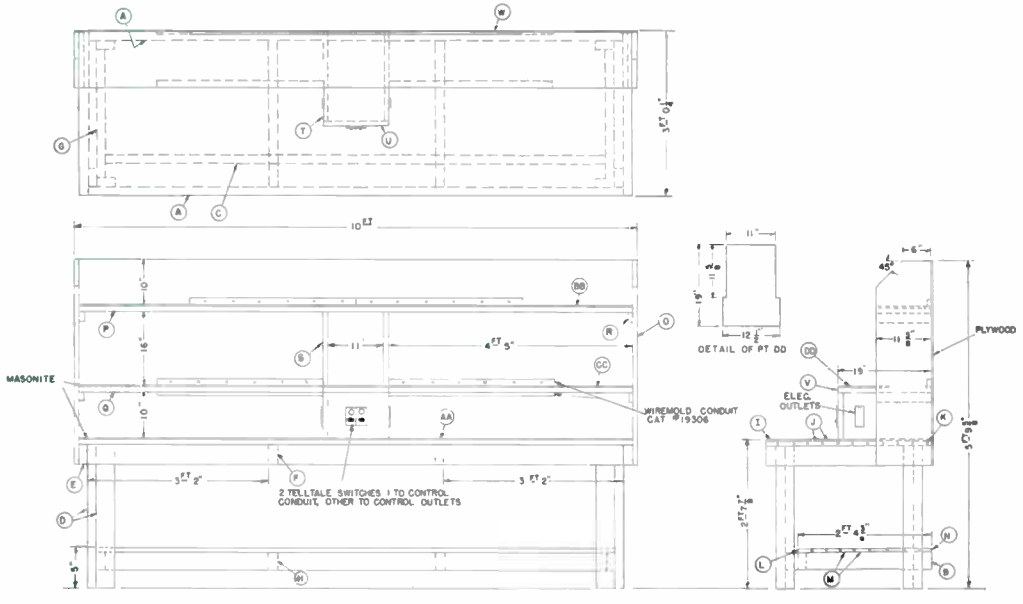


Fig. 4. Detail drawing of Service Bench without side cabinets showing location of parts listed under bill of materials.

E. Top End Supports
2 pieces . . . . 1¾" x 3¾" (Nom 2 x 4) x 3'

F. Top Center Support
2 pieces . . . . 1¾" x 3¾" (Nom 2 x 4) x 2' 8½"

G. Base End Supports
2 pieces . . . . 1¾" x 3¾" (Nom 2 x 4) x 2' 5"

H. Base Center Supports
2 pieces . . . . 1¾" x 3¾" (Nom 2 x 4) x 2' 1¼"

BENCH TOP—1" x 4" fir flooring T & G (3¼" face— $\frac{13}{16}$" thick)

I. Front Board
1 piece . . . . . Cut to 2½" face (plus tongue left on) 9' 10½" long

J. Center Boards
10 pieces . . . 9' 10½" long

K. Rear Board
1 peice . . . . Cut to 1" face (including groove) 9' 10½" long

TOP FOR BASE SHELF—1" x 4" fir flooring T & G (3¼" face— $\frac{13}{16}$" thick))

L. Front Board
1 piece . . . . . (tongue planed off) 9' 3½" long

M. Center Boards
7 pieces . . . . (3¾" x ¾" notch removed from each end of 1 board to fit rear legs) 9' 3½" long

N. Rear Board
1 piece . . . . . Cut to 2¾" face (plus tongue left on) 8' 8" long

UPPER SHELF ASSEMBLY—PINE PLANKING

O. Shelf Ends
2 pieces . . . . ¾" x 11⅜" x 3' 6⅜"

P & Q. Shelves
2 pieces . . . . ¾" x 11⅜" x 9' 10½"

R. Shelf Rails
4 pieces . . . . ¾" x 2" x 11⅜"

S. Shelf Spacers
2 pieces . . . . ¾" x 11⅜" x 16⅛"

T. Shelf Supports
2 pieces . . . . ¾" x 10" x 18¼"

U. Extension Face
1 piece . . . . . ¾" x 10" x 12½"

V. Extension Cap
1 piece . . . . . ¾" x 7⅜" x 12½"

SHELF BACK—¼" plywood

W. 1 piece . . . . . 3' 6⅜" x 10'

TOP AND SHELF FACING—⅛" tempered masonite

AA. Top Facing
1 piece . . . . . 3' x 9' 10½"

BB. Shelf Facing
1 piece . . . . . 11⅜" x 9' 10½"

CC. Shelf Facing
2 pieces . . . . 11⅜" x 4' 5"

DD. Extension Facing
1 piece . . . . . { 11" x 11⅜" (see drowing) / 12½" x 7⅜"

BENCH NOTES

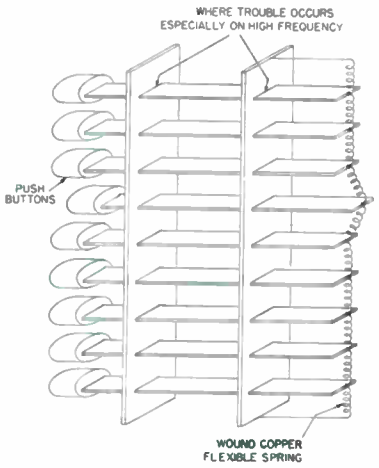
Contributions to this column are solicited. For each question, short cut or chronic-trouble note selected for publication, you will receive $10.00 worth of electronic tubes. In the event of duplicate or similar items, selection will be made by the editor and his decision will be final. Send contributions to The Editor, Techni-talk, Tube Division, General Electric Company, Schenectady 5, New York.

TV PUSH-BUTTON TROUBLE

I have had quite a few service calls on TV receivers using a push-button type channel selector. The complaint was oscillator drift which resulted in the loss of either picture, sound or both. This drift was caused by an accumulation of dust and dirt between the push-button rods and the frame assembly resulting in a faulty ground connection.

This trouble was cured by winding 62 turns of bare stranded wire on a ⅛ in. diameter alignment tool and then soldering every fourth turn to the end of each slide as shown in the illustration. I have found that the type of flexible antenna wire used on a-c d-c sets works best for this purpose. This procedure apparently results in a permanent cure as I have not had a return call for this type of trouble in the past year and a half.

Miguel Koty
485 East 21st St.
Brooklyn, New York



Editor's Note: The bench note "Cleaning TV Masks" which appeared in the Vol. 2 No. 6 issue applies to rubber masking only. Use alcohol on plastic masks as carbon tet will dissolve some plastics.

CABINET SAVER

Many customers, particularly those who own television sets with custom cabinets, are considerably disturbed if so much as a tiny scratch appears on the cabinet after being serviced. Occasionally a cabinet is marred while trying to remove control knobs which are stuck. I have found in this case, that the best device is an untipped shoelace, which, when slipped in back of the offending knob can be gently but firmly pulled forward without marring the cabinet finish.

William J. Ryan
1053 Bryant Ave.
Bronx 59, New York, N. Y.

PHILCO TV TROUBLES

I have found that if microphonic noise is present in Philco TV receiver Model 1001, it usually is caused by the 7B4 (resistance coupled amp) in the sound strip. If tube replacement will not correct this, wedge a piece of wood or cardboard between the tube and the I.F. can and this will definitely eliminate the noise.

Also on the same sets I have found that all channels may receive the transmitted pictures, but without sound on the higher channels. To correct this try several 6J6's in the tuner, even if the original tube checks good.

Henry Van Batenburg
116-A No. Ulmer Drive
Brooklyn 14, New York

TV FUSE REPLACEMENT

The 630TS type television set uses a pigtail-type ¼ amp fuse. This fuse is not always on hand and serviceman may replace it with standard cartridge type of fuse by means of the following expedient: Snip off the pigtail close to the fuse, then solder a small-sized grid clip (like that used for 6K7) to each of the remaining pig-tail leads. The standard fuse is then inserted using grid clips as a fuse retainer.

Paul Silverman
1633 Sheepshead Bay Rd.
Brooklyn, New York

What's new!

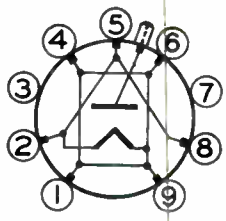
1X2-A

The 1X2-A is a miniature half-wave rectifier designed for use in television receivers as the high-voltage rectifier to supply power to the anode of the television picture tube. The 1X2-A is intended primarily for use in fly-back types of power supplies.

Filament Voltage	1.25 Volts
Filament Current	0.20 Ampere

DESIGN CENTER VALUES:

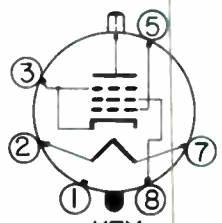
Peak Inverse Plate Voltage (Maximum)	20,000 Volts
Peak Plate Current (Maximum)	10 Milliamperes
D-C Output Current (Maximum)	1.0 Milliampere
Tube Voltage Drop: Measured with Applied D-C at 7 Milliamperes	100 Volts



6CD6-G

The 6CD6-G is a double-ended beam-power amplifier designed for use as the horizontal-deflection amplifier in television receivers. When used with suitable components, one 6CD6-G is capable of deflecting fully any picture tube having a deflection angle up to 70° and operating at anode voltages up to 14 kilovolts.

Heater Voltage (A-C or D-C)	6.3 Volts
Heater Current	2.5 Amperes



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