

CONVERSION OF 10 AND 12 INCH RECEIVERS TO 14 AND 16 INCH



RADIO TUBES

Techni-talk

on AM, FM, TV Servicing

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A relatively large number of TV set owners are not completely satisfied with their ten and twelve inch receivers after comparing them with the current fourteen, sixteen and nineteen inch sets. Most service technicians have been queried by their customers regarding the conversion of their present receiver to produce a larger size picture. Prior to the advent of rectangular picture tubes this conversion was in many cases impossible unless the cabinet was replaced. This usually increased the total cost beyond the point where it was an economically sound investment.

It is now possible to convert most ten or twelve inch receivers to fourteen or sixteen inch sets using the new rectangular filter-face or *aluminized* picture tubes together with one or more of the General Electric matched components which are now available through your General Electric or Ken-Rad Tube and Parts Distributor.

Very little information has been published on conversions and because of this a number of technicians have not attempted to "cash in" on this phase of service work. Beginning with this issue conversion information on at least two receivers will be included. In this issue the conversion of a ten inch GE Model 811 to both a twelve inch round picture tube using the "expanded" mask and a sixteen inch rectangular tube will be described. Also included is conversion information on an Admiral Model 4H16S from a ten inch round to a fourteen inch rectangular picture tube.

The first consideration is space. This will determine whether a conversion can be made as well as the largest size conversion possible. Generally a ten inch set can be converted at least to a fourteen and a twelve inch to a sixteen. A check of several service companies indicates that the average charge for a conversion to a twelve inch receiver is about \$60.00, to a fourteen inch receiver is about \$75.00 and to a sixteen or seventeen inch receiver about \$100.00. These prices will vary, however, depending upon the amount of material and labor required.

It is advisable, though not always necessary, to bring the complete receiver to the shop. In this way the customer sees only the completed conversion and does not witness the changes necessary to the cabinet. In some cases it may not be practical to remove a heavy combination or large cabinet from the customer's residence and in these cases the outside front panel must be removed together with the chassis and speaker (unless PM type). Some combinations, like the Admiral described in this issue, require the radio chassis also. This can be determined by trying the TV portion after disconnecting all leads except the power cord running to the radio chassis. Always check the complete receiver to make sure it is operating satisfactorily before disassembling. The reason for this is obvious and it may save you a "free" repair job and considerable time when checking the receiver after the conversion has been made.

It is suggested that the electrical changes be made first and then the cabinet changes whenever a conversion is made on a new model. In this way, if any difficulty is experienced which might make the conversion impractical, the

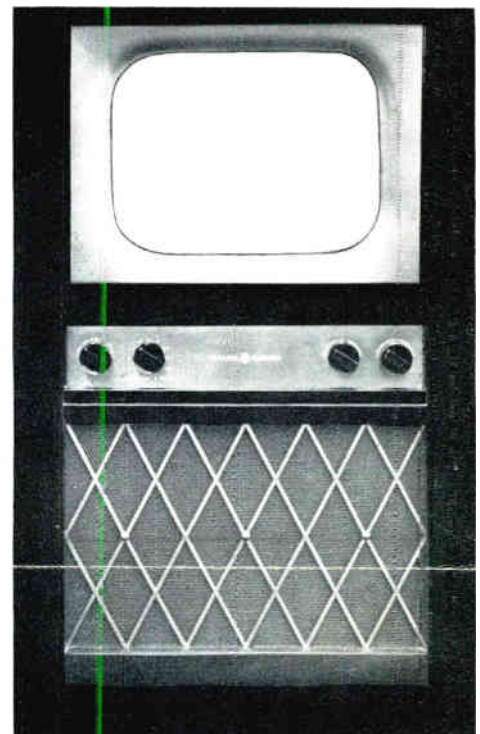
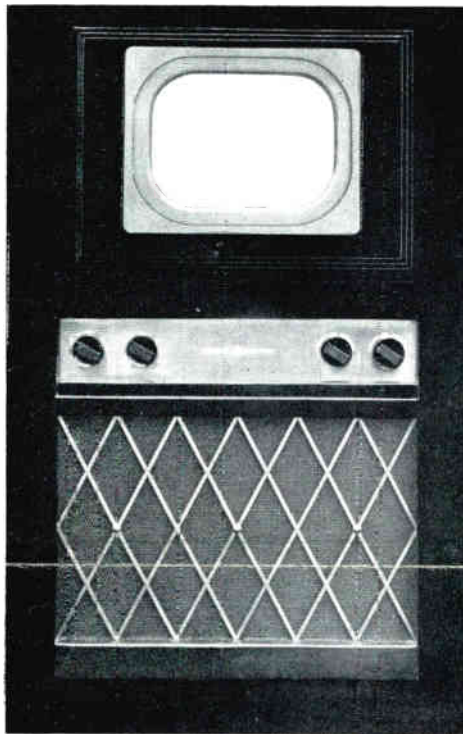


Fig. 1A. General Electric Model 811 receiver before conversion. Fig. 1B is the same receiver converted to use a 16KP4 rectangular picture tube.

electrical changes can be returned to their original location. It will be considerably more difficult, however, to return the cabinet to its original condition.

Some additional tools and equipment may be required such as the following:

Hand Saw	Hand or electric drill
Keyhole Saw	$\frac{1}{4}$ "
Half-round	Hand or electric jig saw
Bastard File	Dark Walnut Stain
Wood Chisel	Adhesive rubber cushion $\frac{1}{2}$ " wide.
Plastic Wood	

Jig saw blades for plastic, metal and wood.
Source of schematic diagrams such as the Rider TV Manuals.

Resistance boxes described on page 5 of this issue.

Capacitance boxes to be described in the December-January issue.

GENERAL ELECTRIC MODEL 811

The first model to be converted is the GE Model 811. This model is shown before conversion in Fig. 1A and after conversion in Fig. 1B. The complete receiver should be brought into the shop for this conversion. The cabinet is sufficiently large to accommodate either a twelve inch round or a fourteen, sixteen or seventeen inch rectangular picture tube. Due to the relatively little difference between the "expanded" twelve inch mask and the rectangular fourteen inch mask as shown in Fig. 2, it is both cheaper and easier to convert this re-

ceiver to the General Electric twelve inch 12LP4-A round tube instead of the General Electric fourteen inch 14CP4 rectangular tube. This is due to the deflection angle of the 14CP4 being 70 degrees whereas the 12LP4-A is the same as the 10BP4 tube originally used in this receiver. Whenever a 70 degree picture tube is used to replace a 50 degree picture tube the yoke must be replaced. Otherwise neck shadows similar to those shown in Tele-Chue No. 49 cannot be eliminated.

TWELVE INCH CHASSIS CHANGES

The chassis should be removed to the service bench and the following changes made:

1. Disconnect the white lead of the Horizontal Size Control (L18) where it connects to pins #4 and #6 of V15. Tape this end using HV insulating tape.

2. Short out the series coil of the size control by shunting R64 with a jumper wire.

3. Connect a .25 mfd 600 volt capacitor across C55 in the 5V4-G cathode circuit.

4. Connect a 500 mmfd 1000V capacitor across the secondary of T17 or across the horizontal deflection coils whichever is easier to locate. Assemble and connect the yoke, focus coil, socket, etc. onto the 12LP4-A and observe a test pattern. Adjust the horizontal linearity, height, vertical linearity and focus controls for the best test pattern. If the focus control range is insufficient, short out the 560 ohm resistor (R70) which is in series with the focus control (R72).

TECHNI-TALK

on AM, FM, TV Servicing

Published by

TUBE DIVISIONS, ELECTRONICS DEPARTMENT

GENERAL ELECTRIC

SCHENECTADY 5, N. Y.

R. G. KEMPTON—Editor

If the width is insufficient increase the 500 mmfd capacitance across the horizontal deflection coils and if too wide reduce this same capacitance. The vertical linearity may require some correction which can be made by shunting R30 in the plate circuit of the 6SN7-GT Vertical Sweep Generator tube with a 4.7 megohm resistor. The vertical linearity and height controls must then be readjusted.

SIXTEEN INCH CHASSIS CHANGES

If this receiver is to be converted to use either a 16KP4 or 17BP4-A rectangular tube the following General Electric "TV Service Components" are required:

- 1—RTD-085 Horizontal Sweep Transformer
- 1—RLD-024 Deflection Yoke
- 1—RLF-038 Focus Coil
- 1—RET-003 Ion Trap Magnet

The following changes should then be made to the horizontal output circuit as shown in Fig. 3.

1. Disconnect leads of defective sweep output transformer, including filament loop for 1B3-GT tube. Mount new transformer on chassis and wire into circuit.

2. Disconnect the white lead of the Horizontal Size Control (L18) where it connects to pins #4 and #6 of V15, and reconnect it to terminal #8 of the sweep transformer. Make sure the leads from the Horizontal Size coil do not short to the frame of the sweep transformer. Connections from terminals #4 and #8 of the sweep transformer should be made with HV insulation wire. Short out series coil in size control by shunting resistor, R64, with a jumper wire. Terminal #5 on the transformer is not used.

3. Remove 4700 ohm resistor (R65) from across horizontal linearity control (L19).

4. Connect the new Deflection Yoke and Focus Coil into the circuit using the old components as a wiring guide.

Assemble and connect the 16KP4 picture tube to the chassis and turn the receiver on. Adjust the focus coil and ion trap for brightness

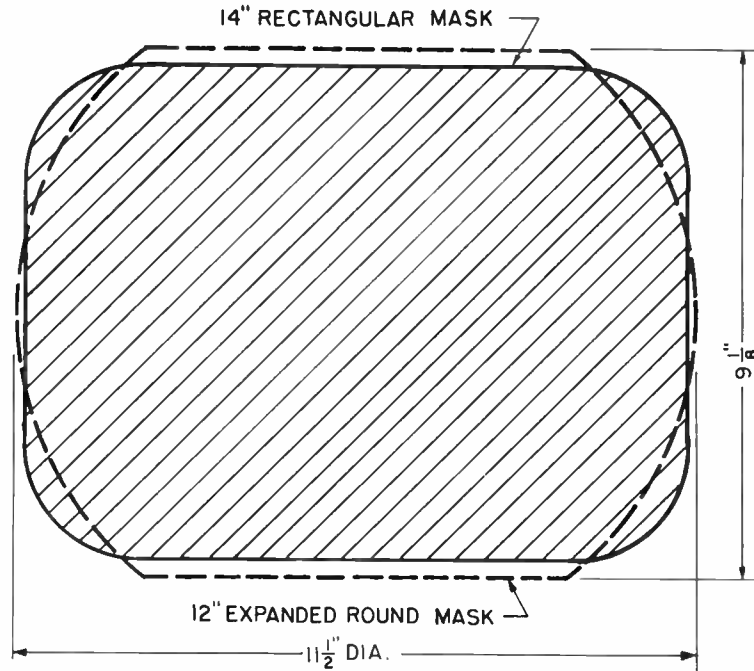


Fig. 2. Area of twelve inch "expanded" mask compared with fourteen inch rectangular mask.

and the width, horizontal linearity, height and vertical linearity controls for the most linear test pattern. The results should appear similar to Tele-Cluc No. 50. The height can be corrected by connecting the resistance box described on page 7 across the 2.2 megohm resistor (R30) connected between pin #5 of the 6SN7-GT Vertical Sweep Generator (V9) and the vertical size control. The resistance should then be varied together with the vertical size and height controls until a linear pattern is obtained. Either the shunt resistance or total resistance can be measured with an ohmmeter and the necessary change made. It was necessary to reduce the value of this resistor to 1.3 megohm on this particular receiver; however this resistance may vary somewhat in different receivers.

TWELVE INCH CABINET CHANGES

Remove the mask and safety glass assembly which is held by several wood screws accessible from the inside of the cabinet. If a 12LP4-A picture tube is to be used, the wooden panel in back of the safety glass can be angle cut with

a jig saw to make a twelve inch "expanded" mask. A template can be made from the dimensions shown in Fig. 2. This should be centered on the panel as the original opening was above center. The angle cut should be approximately the same as the original mask. The four angle brackets can be relocated so that the springs on the "grounding" ring will hold the 12LP4-A in place. The front of this panel should be painted with a paint similar to that originally used. It was found that "Sunlit Green" in the Dutch Boy Wonsover brand paint was a very close match.

The brown paint backing between the mask opening and the inside bronze border on the safety glass must be removed. A razor blade or some other sharp instrument can be used for this purpose. The wooden block which holds the deflection yoke assembly will have to be moved about one and one half inches toward the back of the cabinet. This is held by two wood screws and glue and can be removed by using a wood chisel to loosen the edges and then tapping with a hammer after the screws are removed. The complete receiver can now be

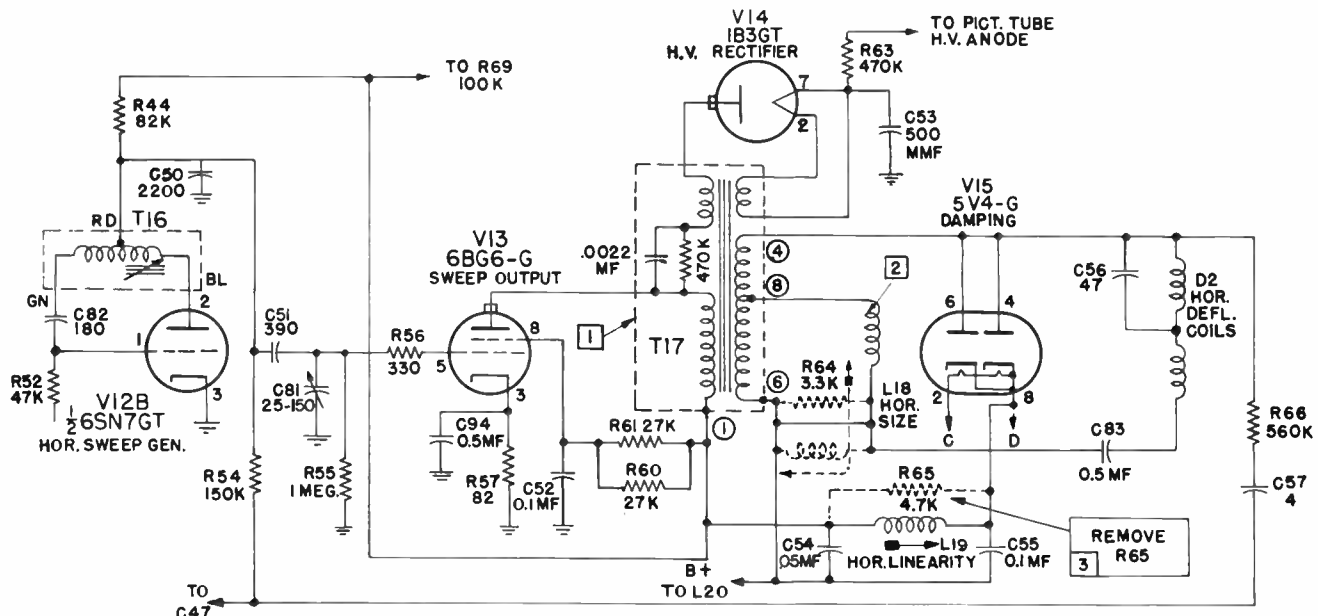


Fig. 3. Horizontal output circuit of General Electric Model 811 after conversion to use a 16KP4 rectangular picture tube.

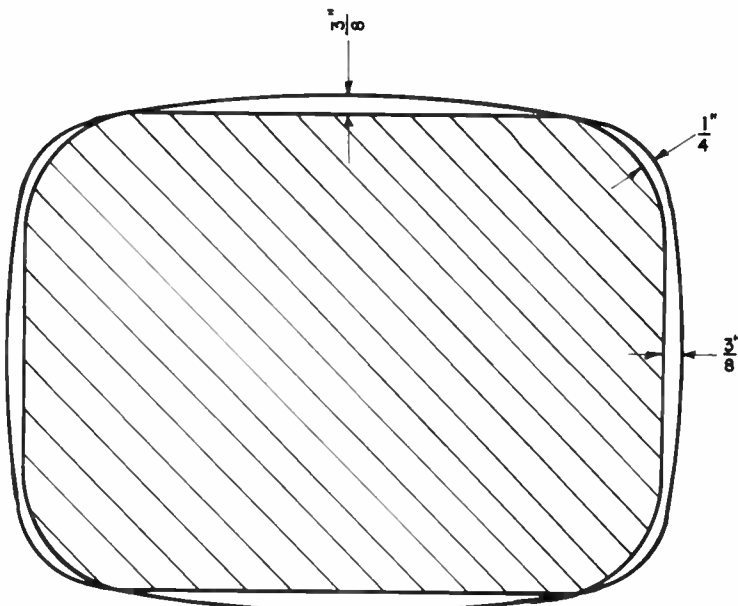


Fig. 4. Useful screen area of the 16KP4 rectangular picture tube as compared with the 17BP4-A rectangular picture tube.

reassembled and the twelve inch conversion is completed.

SIXTEEN INCH CABINET CHANGES

In making the necessary cabinet changes the safety glass and wooden panel was removed and discarded. Due to the slight difference between the 16KP4 and the 17BP4-A faceplate as shown in Fig. 4 either type tube or mask can be used. A sixteen inch mask measuring $13\frac{1}{2}$ " x 17" outside diameter was used. This mask filled the vertical opening completely and came with-in one quarter inch on each side. The mask used was manufactured by the Tele-Plastics Co. and can be obtained through local radio parts distributors. The name of a distributor near you can be obtained by writing Tele-Plastics Co., Division of Willmax Mfg. Co., 177 South 8th St., Brooklyn 11, N. Y. Two pieces of wood $1\frac{3}{4}$ " x 1" x $\frac{3}{4}$ " was cut to fill the side openings and hold the mask in place. These pieces were sanded and stained a dark walnut. Two $\frac{1}{4}$ " holes were drilled through the side of each piece about two inches from the top and

bottom and mounted to each side of the cabinet in back of the mask using $1\frac{1}{4}$ " wood screws. Two 2" angles were fastened to the cabinet below the picture tube. A piece of $\frac{1}{2}$ " rubber cushion was attached to the top surface which provided a "shock" mount and held the picture tube in the correct horizontal position. The "grounding" ring was used to hold the tube to the cabinet by using only two of the four springs. The mounting block for the deflection yoke assembly was moved back about one and one half inches as described in the twelve inch conversion. The complete receiver was then reassembled and appeared as shown in Fig. 1B.

ADMIRAL MODEL 4H165

The second receiver to be converted is the Admiral Model 4H165 which is a ten inch combination. Due to the interior cabinet space being considerably smaller this set will be converted to use a 14CP4 picture tube instead of the 10BP1. The front panel of this receiver is shown before conversion in Fig. 6A and after converting to a fourteen inch mask in Fig. 6B. There

are several other model numbers using the same chassis and front panel. The same conversion information will of course also apply to these models. As mentioned previously it will be necessary to remove the radio chassis as well as the television chassis in order to operate the television section.

CHASSIS CHANGES

The first step is to remove the picture tube. A one inch long piece of rubber cushion is then fastened to the top of the tube support brackets. This provides a shock mounting for the front portion of the 14CP4 picture tube. The deflection yoke and focus coil should then be removed from the mounting bracket. Loosen each of the two screws which holds this bracket to the chassis and insert a $\frac{1}{4}$ " spacer, which may be made up of washers or oversize nuts, between the bracket and the chassis. This raises the rear of the picture tube and keeps it level. Move the bracket as far to the rear of the chassis as possible before tightening.

The next step is to replace the 50 degree deflection yoke with a 70 degree deflection yoke. At the present time the General Electric line of "TV Service Components" does not contain a 70 degree yoke which will match the impedance of the horizontal output transformer used in this receiver. A very efficient replacement yoke, however, is under development and will be available at your General Electric or Ken-Rad Tube and Parts Distributor in the very near future. In the meantime a Todd Type J-70, a Merit Type MD-1 or a Stancor DY-7 yoke may be used.

The focus coil can now be remounted and the picture tube inserted. Due to the 14CP4 requiring a single magnet Ion Trap instead of a double magnet type, this should be replaced with a General Electric Cat. No. RET-003 Ion Trap Magnet. All other electrical connections to the picture tube should be made and the black fabric strap refastened to hold the 14CP4 picture tube in place. Now turn the receiver on and adjust focus coil and ion trap for brightest picture and removal of any neck shadow.

The range of the focus coil will be inadequate. To correct this remove the 3900 ohm resistor (R439) connected across the focus coil and short out the 1200 ohm resistor (R437) connected in series with the focus control as shown in Fig. 5. The resulting raster size will be as shown in Tele-Clue No. 51. At this time place a chalk mark or piece of scotch tape at the edges of the raster. Replace the 5U4G tube (V501) with a new tube. If the width is increased more than $\frac{1}{8}$ " on each side the new tube should be used.

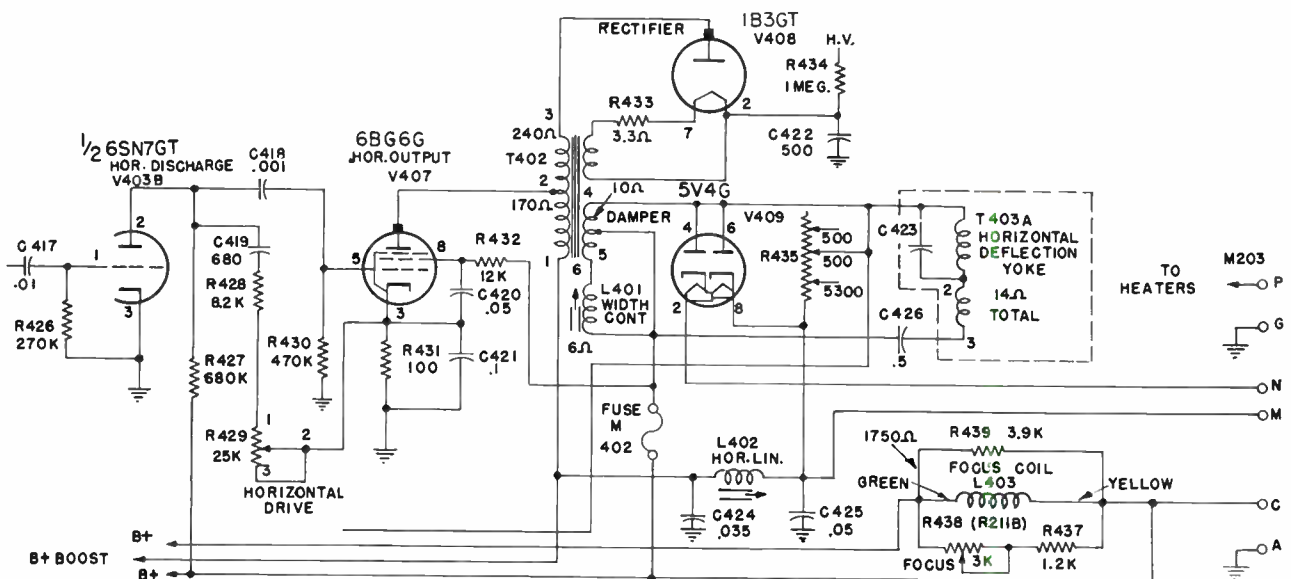


Fig. 5. Horizontal output circuit of Admiral Model 4H165 before conversion.

The width can be increased by disconnecting and taping both leads of the width control L401 which is located in the HV shielded compartment. The result of this change is shown in Tele-Clue No. 52.

The width and height can be extended by connecting a condenser across terminals #4 and #5 of the horizontal output transformer. As this capacitance is increased the high voltage decreases which causes the picture size to increase and the brightness to decrease. The change in brightness will therefore limit the amount of capacitance which can be used. Tele-Clue No. 53 shows the result of adding 500 mmfd across this winding. When this capacitance was increased to 750 mmfd the size was more than adequate, however, the brightness was reduced below the usable level resulting in a picture that was similar to Tele-Clue No. 48 in Vol. 2 No. 4. The width can also be extended by opening the damping resistor (R435) across the 5V4-G tube in Fig. 5. This results in the horizontal non-linearity shown in Tele-Clue No. 54.

It was therefore necessary to change the horizontal output transformer which increased both the high voltage and sweep width. A Stancor No. A-8128 horizontal output transformer which will fit into the same mounting holes was used for replacement. The result of this change is shown in Tele-Clue No. 55.

It was necessary to insert a 500 mmfd capacitor across terminals #4 and #5 to obtain the horizontal size shown in Tele-Clue No. 56. It may not be necessary to use this much capacitance. The sides, however, should extend at least $\frac{1}{4}$ " beyond the edge of the tube screen. Otherwise variations in the line voltage may result in a service call due to insufficient width.

CABINET CHANGES

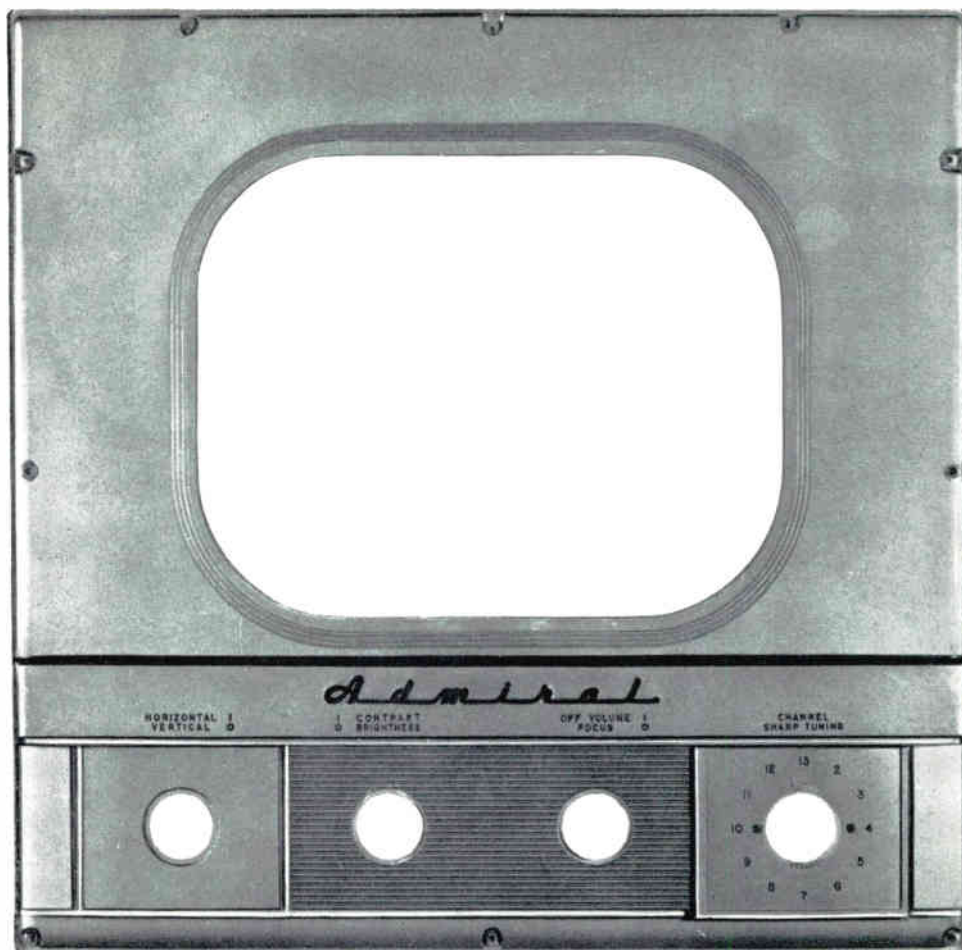
There are at least two ways in which the front panel can be changed. The first is to cut the panel along the dark line which shows below the picture tube mask in Fig. 6A. The rib which extends to the back along this line must then be recessed so that the fourteen inch mask will mount flush on the cabinet. The second is to obtain a Cat. No. 23D48-2 escutcheon from the local Admiral distributor. This is the bottom section of a two piece front panel used on the twelve inch model and is already recessed so that the fourteen inch mask will mount flush on the cabinet. This is shown in Fig. 6B. The latter method is to be preferred as sawing and filing plastic can be a time consuming operation. The mask used was a No. 14SG manufactured by the Deitz Miracle Lens Co., 141 President St., Passaic, N. J.

A template should then be made using the larger perimeter of the beveled portion of the mask for size. This template should be used to mark the wooden panel of the cabinet. The panel should be marked so that the top of the mask will be flush with the top of the panel. Cut out this section of the panel with a keyhole saw. The plastic mask can now be mounted by drilling a hole in each corner and attaching the mask and escutcheon to the cabinet using the screws which were originally removed.

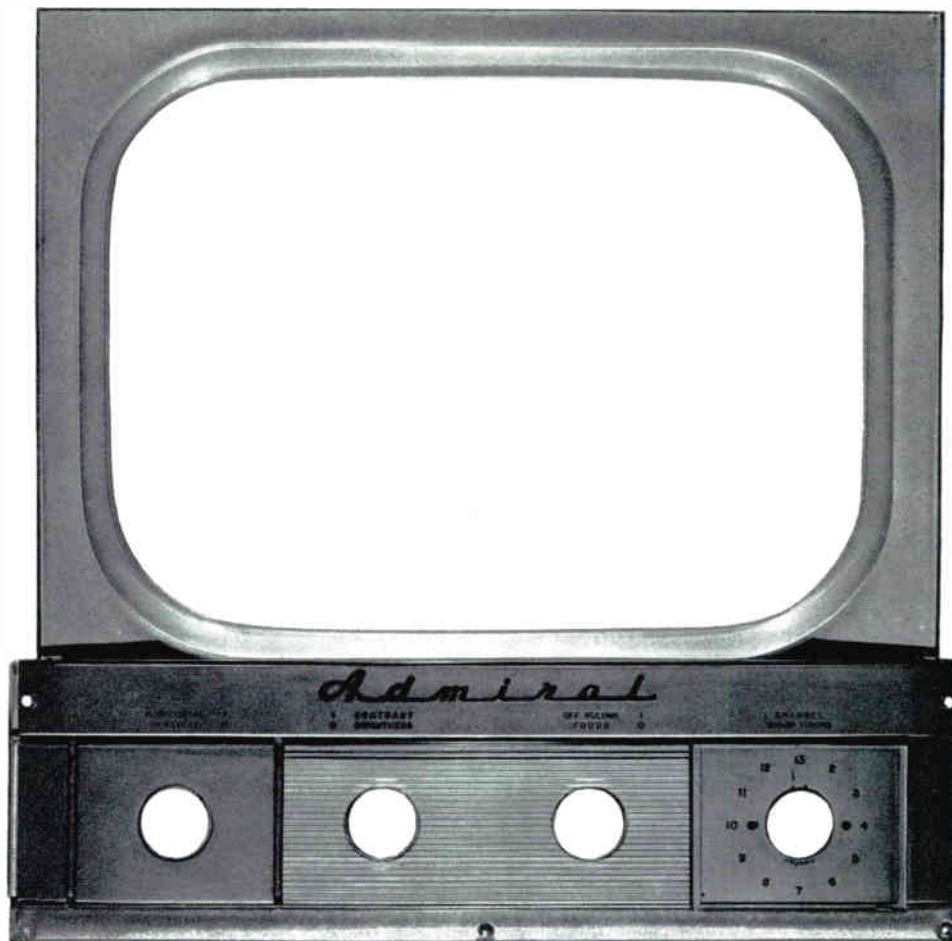
The plastic mask used was not quite as wide as the original. The difference in size is visible in Fig. 6B. This is not serious due to the wooden panel being already stained. It is only necessary to fill the visible holes with Plastic Wood and to touch up these spots with a little dark stain. The receiver can now be reassembled and the conversion is 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.

In the next issue conversion information on two additional models will be included.



6A



6B

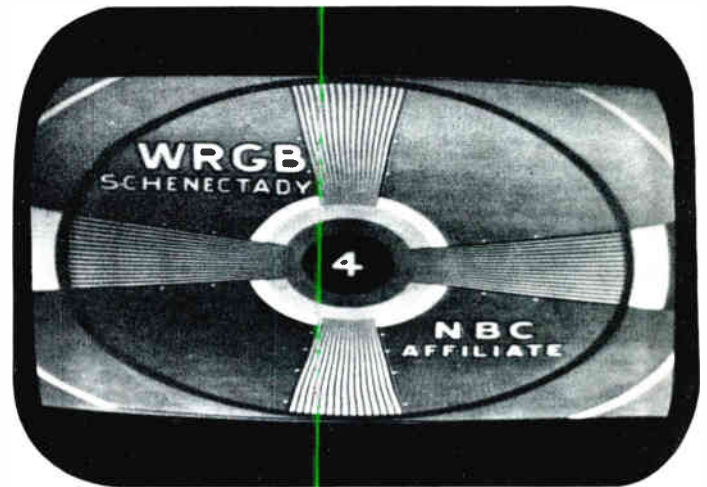
Fig. 6A. Front panel of an Admiral Model 4H165 before conversion. Fig. 6B is the front panel converted to use a 14CP4 rectangular picture tube.

Tele-Clues

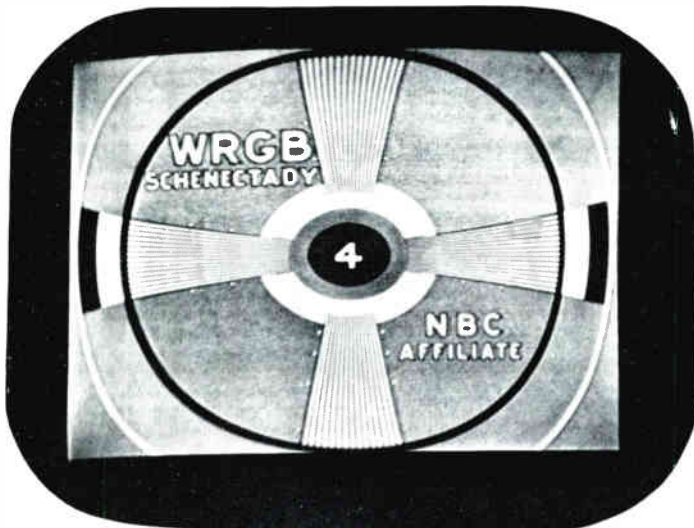
The Tele-Clues in this issue indicate typical defects which may be encountered when converting ten or twelve inch receivers to use fourteen or sixteen inch rectangular tubes. Although the circuit changes which resulted in increased width apply specifically to the conversions discussed on pages one through four, they should be considered as general changes which can be used when converting other makes and models of TV receivers.



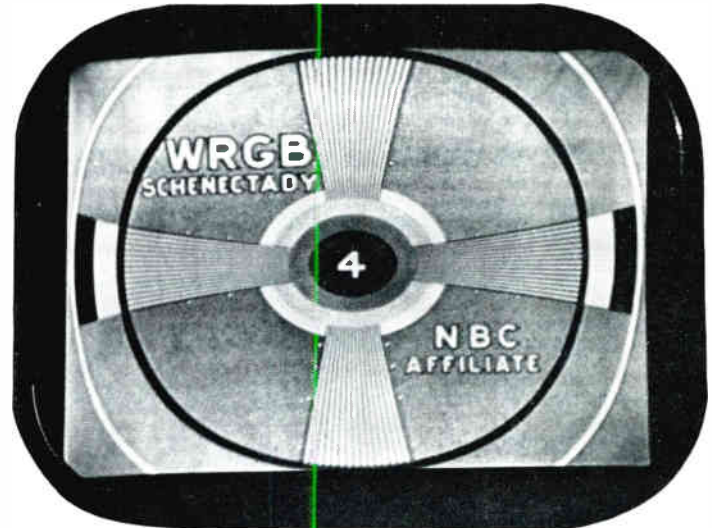
Tele-Clue No. 49—The neck shadows which appear in this photograph are due to a 50° deflection yoke being used on a picture tube which requires a 70° deflection yoke.



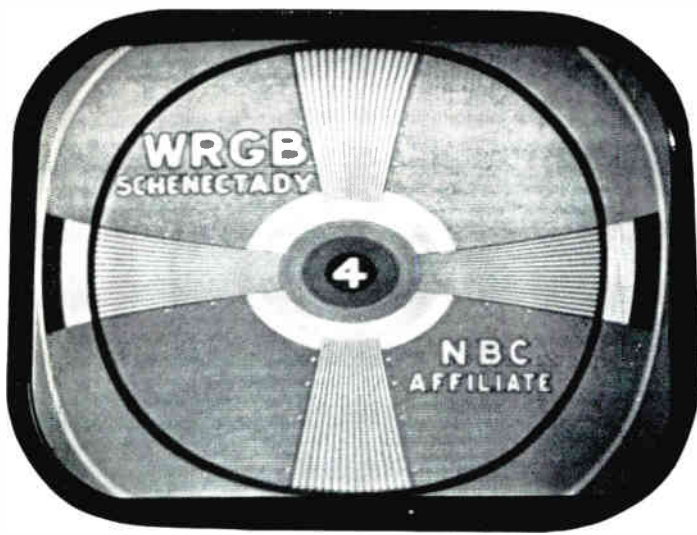
Tele-Clue No. 50—This photograph illustrates the reduction in vertical size after changing the horizontal output transformer and the deflection yoke in the conversion of a GE Model 811 from a ten inch to a sixteen inch receiver. The height can be increased by changing the vertical sweep generator plate resistor R30 from 2.2 megohm to 1.3 megohm as explained in the text on page 2.



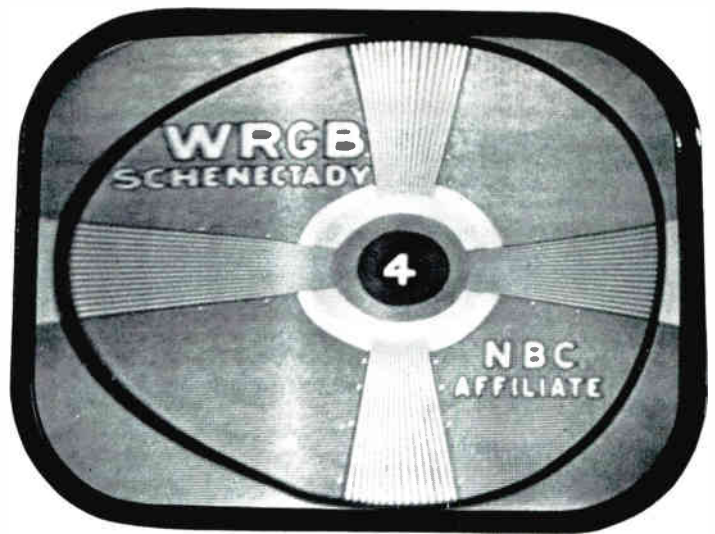
Tele-Clue No. 51—This photograph illustrates the test pattern size on a 14CP4 picture tube when converting an Admiral Model 4H165. A 70° deflection yoke has been substituted for the original and the focus circuit changed. The controls have also been adjusted to obtain a linear test pattern.



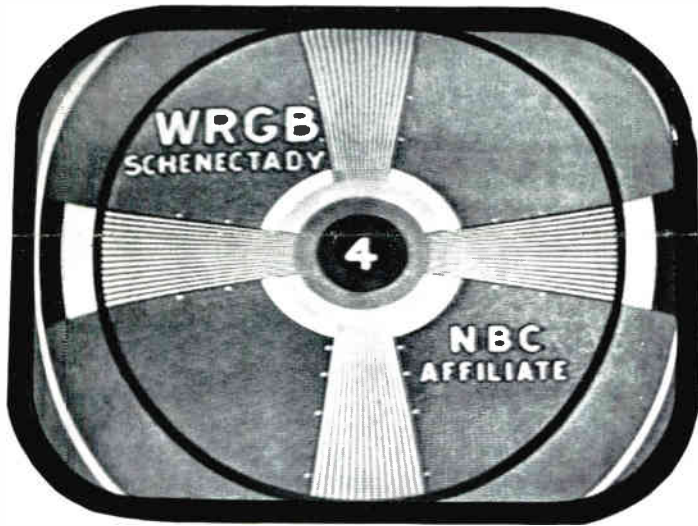
Tele-Clue No. 52—This illustrates the change in both width and height when the width control is disconnected.



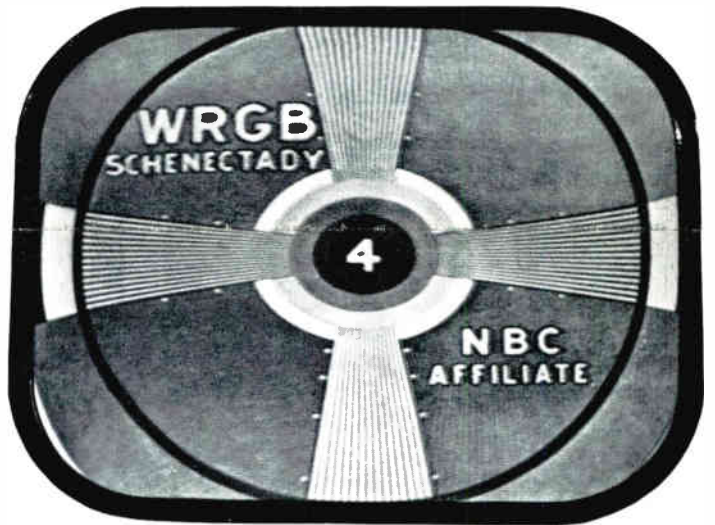
Tele-Clue No. 53—The effect of adding 500 mmfd across terminals #4 and #5 of the horizontal output transformer is illustrated here. The width and height are almost adequate. When additional capacitance was added the brightness was reduced below a usable level and appeared similar to Tele-Clue No. 48 in the August-September issue.



Tele-Clue No. 54—The width was extended by disconnecting one end of the damping resistor R435 in Fig. 5 on page 3 which was across the 5V4-G damper tube. This resulted in the poor horizontal linearity indicated in this photograph. The horizontal linearity control has been adjusted for best linearity.



Tele-Clue No. 55—The capacitance used for Tele-Clue No. 53 was removed and the horizontal output transformer was replaced with a Stancor No. A8128. This increased both the high voltage and sweep width as shown in this photograph.



Tele-Clue No. 56—A 500 mmfd capacitor was connected across terminals #4 and #5 to obtain the additional sweep width shown in this photograph. This additional width is necessary to compensate for line voltage variations.

TELE-TIPS

21. A motorboating which occurs when the receiver is first turned on is usually due to a defective oscillator-converter tube such as the 12AT7 or 7F8. Try a new tube even though the old one tests OK.

22. A defective oscillator-converter tube may also cause a high frequency audio whine when the receiver is first turned on. This sounds like the horizontal oscillator starting to operate and being picked up by the audio system. A new oscillator-converter tube will usually rectify this condition.

23. An audio buzz which is temporarily cured by adjust-

ment of the discriminator transformer but reoccurs a short time later may be due to the tube used in this circuit such as a 6T8, 6S8-GT or 6AL5. Even though the old tube tests OK, try a new one.

24. An audio howl may be due to a microphonic converter tube such as the 6J6, 12AT7 or 7F8. This would not apply to intercarrier sets.

25. Good HV insulated wire can be obtained by purchasing a few feet of 300 ohm shielded twin lead such as Federal K-111. Remove the shielding and use only the two inside conductors.

RESISTOR SUBSTITUTION BOXES



Fig. 1. Photograph showing the completed resistor substitution boxes.

Here are a couple of gadgets which should prove quite useful around the service shop and soon pay for their modest cost in time saved. While there is nothing new in resistor substitution boxes, not too many of the profession ever bother to avail themselves of them. It was decided that in the course of general service work on TV receivers they would be useful, but in making conversions they are invaluable. One should be a high resistance model running up to perhaps 20 megohms and the other should be of a lower range but capable of handling reasonably high currents such as are encountered in the cathode circuits of output stages. Fig. 1 is a photograph of the completed units.

In order to gain maximum usefulness from the boxes they should be continuously variable from zero to their full value. The high resistance unit shown on the right was made to give 0-20 megohms in four steps, 0-5 meg., 5-10 meg., 10-15 meg., and 15-20 meg. An Ohmite linear, 2 watt composition control was selected as the variable resistor as these units have proven to be able to take a lot of abuse and to withstand reasonable over-loads. The other three resistors

are ordinary 2 watt, 5 megohm fixed resistors. The switch used was a Centralab number 2542 rotary switch with a 90° index but any single pole, four position switch will serve. The unit was built in a 4" x 4" x 2" utility box and wired as shown in Fig. 2. The switch positions should be marked to correspond to their resistance ranges and the variable resistor may be calibrated against an ohmmeter. The calibration could be marked in white ink on the box or a paper scale drawn up and pasted on under the knob. This scale should be given a coat of clear lacquer to protect it.

The low resistance unit was made up of the four Mallory wire-wound controls specified in the parts list. It was found desirable to make this box have a range of from 0-100,000 ohms and to make it cover this range in four steps. By doing it in this manner it allows each resistor to be calibrated accurately and in small enough steps to be easily read. This method also helps to keep the current carrying capacity of the unit high on the low values of resistance where the capacity is most needed. The same type switch was used in this unit as was used in the high resistance box and in this case is wired to

make the switch knob point to the resistor in use and each resistor has a paper scale marked in resistance and pasted on as previously explained. This unit was built in a 6" x 6" x 6" utility box but a smaller one would serve if available. The parts list and circuit diagram is shown in Fig. 3.

The uses of these two pieces of equipment should be obvious and will be referred to from time to time in Techni-talk articles. However, one word of caution concerning their use is in order. Do not attempt to use these substitution boxes in circuits where resistor lead length and placement is critical such as in RF, IF and video circuits as instability will often result and in video circuits the response may suffer. They will prove most useful in circuits carrying DC of low frequency, AC such as power supplies and audio amplifiers but other uses will soon suggest themselves and so do away with a good deal of time spent searching for the correct value of resistor and soldering it in the circuit temporarily. The November-December issue will contain construction information on two Capacitor Substitution Boxes.

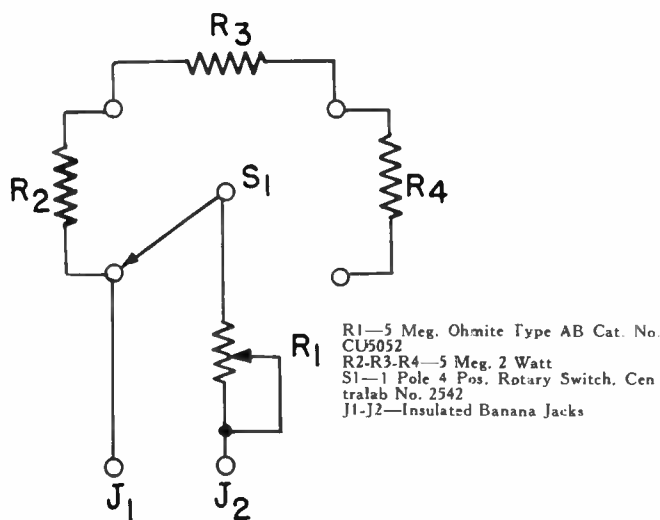


Fig. 2. Circuit diagram and parts list for high range resistance substitution box.

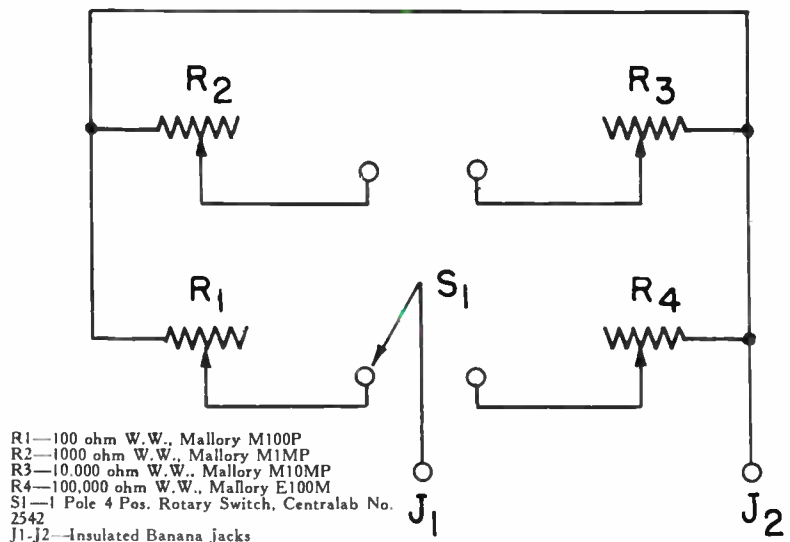


Fig. 3. Circuit diagram and parts list for low range resistance substitution box.

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.

FUSE SUBSTITUTE

A #44 or #46 dial lite in place of the ¼ amp fuse will do as a substitute or show when a leak in a condenser is beginning to build up.

—Mr. Walter L. Stone
Stone's Television & Radio
5170 Melrose Ave.
Los Angeles 38, Calif.

RECORD CHANGER STAND

The following is a rather simple and cheap method of making a stand for servicing all sizes and shapes of record changers:

First get a 2 inch thick board, about 12 inches in width is plenty, and about 14 inches long. Then from an old damaged TV antenna reflector cut 4 pieces about 7 inches long. In my case these made ½ inch dowels of aluminum, but any sort of material may be used. I then proceeded to drill my 2 inch board at various width and length spacings with a ½ inch drill bit. Into these I fit my 4 dowels to support any size record changer I may be called upon to service. This allows me to watch the mechanism work without fear of collapse.

—Mr. Robert Arnold,
Cape Communications Service
214 Harris Building
Cape Girardeau, Mo.

EDITOR'S NOTE: Some care should be exercised when drilling to make all holes equal in depth.

SERVICING M-20 RECORD CHANGERS

We have found in servicing the M-20 Philco record changer that much difficulty exists in getting the pickup to stay on the lead in groove on 45 R.P.M. records. This difficulty may be overcome by simply soldering the magnetic index stop (part no. 76-5497) to trip receiver (part no. 56-7491). Just solder the brass frame of the magnetic index stop to the trip receiver

frame. Just a very small amount of solder is needed.

The elimination of the spring action in the magnetic index stop will keep the tone arm from bouncing off the 45 R.P.M. records at the start of the record. This does not in any way harm the indexing on any of the other size records.

—Harold Rogers and Kenneth Walker
Beets Appliance Company
Kirksville, Missouri

RENEWING PLASTIC MASKS

The protective plastic screen in front of many current TV sets often gets cloudy or covered with slight scratches. Most fine abrasives will damage the screen still further. The best way to remove them is to use a tooth powder as an abrasive. It isn't gritty enough to leave perceptible scratches itself but will quickly remove surface defects from the screen.

—Mr. James Farlekas
2211 Westchester Ave.
Bronx 61, New York

NON-KINKING TEST LEADS

Excellent non-kinking test leads may be made from a spare three foot length of 300 ohm lead. Split the lead at each end for two or three inches and make a hole with a paper punch at the end of the slit to prevent further tearing. Terminate the conductors with phone tips, spade lugs, etc.

—Mr. Jeffrey Lowenthal
657 W. Buena Ave.
Chicago 18, Ill.

ELIMINATING VERTICAL VIBRATIONS

Just conquered 60 cycle vibrations in the vertical output transformer on an RCA type TV receiver.

After using all conventional methods, including hammer and chisel, I finally wrapped the transformer in sponge rubber from a Buick vibrator. Really quiets things down fine.

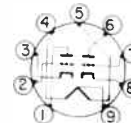
—Mr. C. Davidson
Bowyer Radio Sales & Service
Curtis & Kemper Lane
Cincinnati, Ohio

What's new!

12BH7

The 12BH7 is a miniature medium-mu twin-triode, each section of which exhibits semi-high-perveance characteristics. The increased perveance over such tubes as the 6SN7-GT or the 12AU7 and the relatively high surge-plate voltage rating makes either section suitable for use as the vertical-deflection amplifier in television receivers using large-deflection-angle picture tubes. When operated from a 350 volt plate supply, one section of this tube is capable of sweeping a 16KP4 picture tube having a 14KV anode supply.

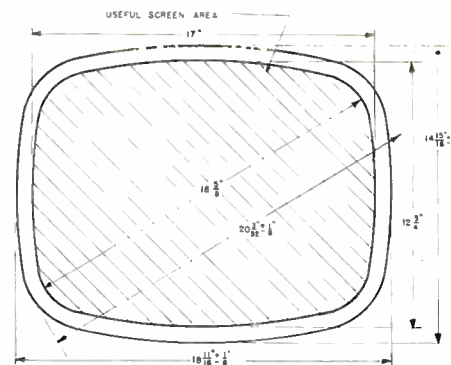
Heater Voltage (A-C or D-C) 6.3/12.6 Volts
Heater Current 0.6/0.3 Amp.



20CP4

The 20CP4 is a magnetic-focus and -deflection, direct-view, all-glass picture tube for television applications. It provides a 12¾" by 17" picture. Features of this tube are an electron gun designed to be used with an external single-field ion-trap magnet and a neutral-density faceplate.

Deflecting Angle, approximate:
Horizontal 65 Degrees
Diagonal 70 Degrees
Over-all Length 21 1/8 ± 3/8 Inches



NEWS!

on TV Receiver Conversions

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