POWER SUPPLY—This television receiver must be operated on a power supply of 110-120 volts AC, 60 cycles only.

TUBES—All the tubes, including the picture tube, are properly mounted in their sockets when the receiver is shipped. There is a possibility, however, that (except for the picture tube) they have worked loose during shipment. The tubes are accessible through the back of the cabinet; press them (except the picture tube) firmly into the sockets.

ANTENNA—The wires of the antenna lead-in must be connected to the two posts marked "A" mounted on the cabinet back. When the installation is close to sources of man-made interference, a reduction in this interference may be made by attaching a ground to the post marked "G" on the chassis.

TELEVISION ANTENNA

A portable antenna which in many locations will eliminate the need of a permanent television antenna is supplied for use with this receiver. Since the results obtained with an indoor antenna will be determined by the type of building and the distance from the television station, it is important that you understand the proper use and limitations of a portable indoor antenna.

Unless the television station signal reaches the area in which the indoor portable antenna is located, NO television receiver can reproduce the picture. Due to the high frequencies used by television stations, television signals reach only to the "line of sight." The actual area covered by the television station is from 20 to 30 miles, depending upon the height of the station and receiver antennas. In addition, steel constructed buildings, mountains, etc., reflect television signals so that in some locations the portable antenna will not function satisfactorily indoors even though the television station is only a short distance away.

The two arms of the antenna should be placed in a horizontal position. (See instructions packed with antenna.) In general, the best results will be obtained when the antenna is broadside to the television station; however, always slowly rotate the antenna and adjust the length of the arms to the position of the best picture. The lower the channel number of the station tuned in, the greater the length of the two antenna arms will have to be. In changing from one television station to another, it may be necessary to readjust the antenna, as to length and position.

Placing the antenna near a window is ordinarily best, although sometimes better results will be obtained when it is in the center of the room, along one wall or mounted on the wall near near the ceiling. Two convenient brackets for wall mounting can be extended by loosening a screw in the antenna base.

In locations where it is impossible to obtain satisfactory results with the indoor portable antenna, (because the signal is blocked or reflected by buildings, mountains, etc., or when located too far from the television stations) it will be necessary to use an outdoor television antenna.

GENERAL

WHILE EACH RECEIVER IS CORRECTLY ALIGNED AT THE FACTORY, ROUGH HANDLING in transit, ageing, drift, etc., MAY THROW THE RECEIVER OFF, so we suggest that the proper oscillator trimmers and the discriminator secondary adjustment—be checked for correct adjustment with a transmitted television station pattern, in the customer's home at the time of installation. Be sure to have the set operating for one-half to one hour before making these adjustment checks.

TO CHECK OSCILLATOR TRIMMER ADJUSTMENTS:

(A) Pull off the four front panel control knobs and remove the escutcheon by unscrewing the 6 screws holding this to the front panel of the cabinet. This will expose the 12 Oscillator Trimmer adjustment screws located around the Channel Selector Switch shaft. Starting with the first adjustment screw at the upper right side of the shaft and reading from right to left (clockwise), the first slotted round-head screw is Channel 13 Oscillator Trimmer adjustment screw. The second screw from the right is Channel 12 Oscillator Trimmer adjustment screw, the third is Channel 11, etc.

(B) Turn receiver Channel Selector Switch to channel on which TV station is transmitting its modulated test pattern and adjust "Contrast" and "Brightness" control for best definition of pattern. IMPORTANT—There are 14 positions on the Channel Selector Switch. The MAXIMUM RIGHT and LEFT positions are NOT USED.

(C) Turn proper Oscillator Trimmer adjustment Screw clockwise until sound appears on pattern—indicated by bars across pattern and/or the lower vertical lines in pattern becoming wavy—then turn SAME Oscillator Trimmer adjustment screw counter-clockwise just to the point where the sound bars and/or wavy lines in pattern disappear.

IF STATION BUZZ is excessive and is NOT DUE to "Contrast" control being too far advanced in clockwise direction, adjust Discriminator Secondary adjustment screw for MINIMUM buzz. MAKE SURE THAT THIS POSITION IS BETWEEN the two MAXIMUM buzz peaks that will be noticed when adjusting screw is turned to the right and left of the MINIMUM buzz position. This screw is located on top of the Discriminator Coil Shield Can which is mounted on Tuner Chassis between 6AL5 Sound Detector tube and 6AU6 Sound I.F. Amplifier tube.

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ALIGNMENT INFORMATION

TWO alignment methods are shown — Procedures listed in Paragraphs (1), (2) and (3) require the use of a Marker Generator, Sweep Generator and Oscilloscope; procedures shown in Paragraphs (4), (5) and (6) require equipment more generally available to the service men.

DO NOT re-align receiver unless it has been definitely determined that this is necessary. When re-aligning, there are several precautions that should be kept in mind.

BE CAREFUL—Avoid contact with high voltage circuits. Provide a good metal to metal bond between television receiver and test equipment. Keep output of Signal Generator as low as possible to avoid circuit overload. The test equipment calibration MUST have the accuracy specified. If accuracy of Signal Generator is in doubt, *be sure to check calibration.*

ALIGNMENT DATA

Alignment instructions in Paragraphs (1) to (6) inclusive cover procedure for alignment with the following equipment:

D.C. VACUUM TUBE VOLTMETER OF THE VOLTOHMIST TYPE.

MARKER GENERATOR having a coverage from 25.75 M.C. to 23.4 M.C. and 50 M.C. to 216 M.C.

SWEEP GENERATOR capable of covering from 20 M.C. to 30 M.C. and 50 M.C. to 216 M.C. with a 10 M.C. sweep.

OSCILLOSCOPE.

ACCURATELY CALIBRATED AM SIGNAL GENERATOR that will supply a 4.5 M.C. modulated signal **within ¼ of 1% of this frequency.**

6AG5 MODULATOR TUBE ADAPTER with a 1½ volt battery. This adapter may be obtained from the Service Department, Sentinel Radio Corporation, Evanston, Illinois, or one may be made by following construction details in Fig. #1.

(1) **PROCEDURE FOR VIDEO I.F. ALIGNMENT:**

(A) Connect the Vacuum Tube Voltmeter across the 6AL5 video second dectector 8200 Ohm load resistor. This resistor is in the Tuner Chasis and is attached to the center terminal of the 5-terminal tie-lug strip mounted on underside of chasis alongside of power transformer.

(B) Attach the flexible wire of the 6AG5 Adapter to the Grid (Pin #1) of the 6AG5 Modulator tube. Then press adapter down so that ground contact on bottom of adapter clamps to chassis—this will hold adapter in place and provide ground connection.

(C) Connect the Marker Generator leads to the two 6AG5 adapter leads. This adapter will then feed the output of the Marker Generator between the grid (Pin #1) of the 6AG5 Modulator tube and ground, and will apply a 1½ volt negative bias on grid of the 6AG5 Modulator tube.

(D) Set Marker Generator to deliver a 25.75 M.C. signal. KEEP OUTPUT OF GENERATOR SO THAT A READING OF APPROXIMATELY 3 VOLTS IS OBTAINED ON V.T.V.M.

(E) Adjust the fourth (4th) and second (2nd) Video I.F. adjustment screws (in that order) for maximum reading on the V.T.V.M.

The Video I.F. adjustment screws are mounted on top of the Tuner Chassis, adjacent to the three (3) 6AG5 and one (1) 6AL5 tubes. Looking at the front of the Tuner chassis, the first trimmer is the one to use for adjusting the first (1st) Video I.F., the second one for the second (2nd) Video I.F., the third one for the third (3rd) Video I.F. and the fourth one for the fourth (4th) Video I.F.

(F) Set Marker Generator to deliver a 23.4 M.C. signal. KEEP OUTPUT OF GENERATOR SO THAT A READING OF APPROXIMATELY 3 VOLTS IS OBTAINED ON V.T.V.M.

(G) Adjust the third (3rd) and first (1st) Video I.F. adjustment screws (in that order) for maximum reading on the V.T.V.M.

After these adjustments have been completed, remove the 6AG5 Modulator tube adapter.

(2) **PROCEDURE FOR SOUND I.F. ALIGNMENT:**

(A) Connect the V.T.V.M. across the 10 Mfd. electrolytic capacitor. This capacitor is connected between Pin #7 of the 6AL5 Sound Detector (Discriminator) tube sound and ground.

(B) Connect the output leads of an AM Signal Generator to Pin #5 (Plate) of the 6AU6 Video Amplifier tube socket, through a .01 Mfd. capacitor, and to chasis.

(C) Set AM Signal Generator to deliver a modulated 4.5 M.C. signal.

IMPORTANT: **This *must* be within ¼ of 1% of 4.5 M.C.**

(D) Adjust the 4.5 M.C. input coil trimmer adjustment screw (this is mounted on top of Tuner Chassis adjacent to the 6AU6 Sound I.F. tube) for maximum reading on the V.T.V.M.

(E) Next adjust the 4.5 M.C. discriminator primary adjustment screw (this is located below the Discriminator Coil shield can and is accessible from bottom side of Tuner Chassis) for maximum V.T.V.M. reading.

(F) Remove the V.T.V.M. leads from the 10 Mfd. electrolytic capacitor and connect these leads between the terminal connected end of the 39,000 ohm discriminator secondary resistor and the center tap of the two resistors in the output of the 6AL5 Sound Detector tube. Looking at the bottom from the rear of the Tuner Chassis, the 39,000 ohm resistor is connected to the third (3rd) terminal of the 6-terminal tie-lug strip that is attached to the right chassis flange below the 6AL5 Sound Detector tube socket. The center tap of the two resistors in the output of the 6AL5 Sound Detector tube is connected to the second (2nd) terminal of the same tie-lug strip. In early production, these were 15,000 ohm resistors—in later production, two 6800 ohm resistors were used. Chassis using the 15,000 ohm resistors can be identified by the letter "A" after the number 20E365 that is stamped in ink on the rear of Tuner Chassis. Chassis having the two 6800 ohm resistors will have the letter "B" after this number.

(G) Adjust the discriminator Secondary adjustment screw for zero V.T.V.M. reading. Make sure that this zero reading is *between* the two peaks that will be noticed when adjustment screw is turned to the right and left of the zero point. This screw is on top of the Discriminator Coil shield can—the shield can is mounted on top of the Tuner Chassis between the 6AL5 Sound Detector tube and 6AU6 Sound I.F. Amplifier tube.

PROCEDURE FOR OSCILLATOR ALIGNMENT:

(A) Remove the V.T.V.M. leads from the 39,000 ohm resistor and center tap of the two resistors in the output of the 6AL5 Sound Detector tube.

(B) Connect the Sweep Generator leads to the 300 ohm receiver antenna terminals.

(C) Loosely couple the Marker Generator leads to the Sweep Generator leads—always keep coupling as loose as possible.

(D) Connect the Oscilloscope across the Video second detector 8200 ohm load resistor. This resistor is in the Tuner Chassis and is attached to the center terminal of the 5-terminal tie-lug strip mounted on underside of chassis alongside of power transformer.

(E) Set receiver Channel Switch and Sweep Generator Switch for channel to be aligned.

(F) Set Marker Generator to deliver the proper marker pip for the channel to be aligned. See Fig. #3 for proper marker frequency to be used for each of the 12 television channels.

(G) Adjust the proper Oscillator Trimmer screw so that the picture marker pip is 6DB (50%) down from the top peak of the Sweep Generator curve and the sound marker pip is approximately 26DB (95%) down on the opposite side of the curve. See Fig. #2 for correct positions of pips. The twelve (12) Oscillator Trimmer adjustment screws are located around the Channel Selector Switch shaft, and are accessible through holes in the front of the Tuner Chassis. Looking at the front of the Tuner chassis, and reading from right to left, (clockwise), the first slotted round-head screw is Channel 13 oscillator trimmer adjustment screw. The second screw from the right is Channel 12 oscillator trimmer adjustment screw, the third is Channel 11, etc. The individual channel oscillator trimmer adjustments are independent of each other and can be aligned in any order. However, if any channel cannot be aligned properly, because of insufficient range of its oscillator trimmer adjustment screw, it can be brought in by means of the Padder Trimmer screw located above the Channel Selector Switch shaft. It is very important to remember that adjusting this Padder will necessitate the re-alignment of ALL of the oscillator trimmers.

ALTERNATE ALIGNMENT

This receiver can be aligned WITHOUT the use of a Marker Generator, Sweep Generator and Oscilloscope. However, to do this correctly, the AM Signal Generator MUST be accurate within ¼ of 1% at 4.5 M.C., and within 1% at 25.75 M.C. and 23.4 M.C.

Required equipment:

Vacuum Tube Voltmeter of the Voltohmist type.

AM Signal Generator that will supply a 4.5 M.C. signal within ¼ of 1% of this frequency and 23.4 M.C. and 25.75 M.C. signals within 1% of these frequencies.

6AG5 Modulator Tube Adapter with a 1½ volt battery. This adapter may be obtained from the Service Department, Sentinel Radio Corporation, Evanston, Illinois, or one may be made by following construction details in Fig. #1.

(4) PROCEDURE FOR VIDEO I.F. ALIGNMENT:

(A) Connect the V.T.V.M. across the Video Second Detector 8200 ohm load resistor. This resistor is in the Tuner Chassis and is attached to the center terminal of the 5-terminal tie-lug strip mounted on underside of chassis alongside of power transformer.

(B) Attach the flexible wire of the 6AG5 Adapter to the grid (pin #1) of the 6AG5 Modulator tube. Then press adapter down so that ground contact on bottom of adapter clamps to chassis—this will hold adapter in place and provide ground connection.

(C) Connect the AM Signal Generator leads to the two 6AG5 Adapter leads. This adapter will then feed the output of the Signal Generator between the grid (Pin #1) of the 6AG5 Modulator tube and ground, and will apply a 1½ volt negative bias on grid of the 6AG5 tube.

(D) Set AM Signal Generator to deliver a 25.75 M.C. signal. IMPORTANT—this *must* be within 1% of 25.75 M.C. KEEP OUTPUT OF GENERATOR SO THAT A READING OF APPROXIMATELY 3 VOLTS IS OBTAINED ON V.T.V.M.

(E) Adjust the fourth (4th) and second (2nd) Video I.F. adjustment screws (in that order) for maximum reading on the V.T.V.M.

The Video I.F. adjustment screws are mounted on top of the Tuner Chassis, adjacent to the three (3) 6AG5 and one (1) 6AL5 tubes. Looking at the front of the Tuner Chassis, the first trimmer is the one to use for adjusting the first (1st) Video I.F., the second one for the second (2nd) Video I.F., the third one for the third (3rd) Video I.F., and the fourth one for the fourth (4th) Video I.F.

(F) Set AM Signal Generator to deliver a 23.4 M.C. signal. IMPORTANT—this *must* be within 1% of 23.4 M.C. KEEP OUTPUT OF GENERATOR SO THAT A READING OF APPROXIMATELY 3 VOLTS IS OBTAINED ON V.T.V.M.

(G) Adjust the third (3rd) and first (1st) Video I.F. adjustment screws (in that order) for maximum reading on the V.T.V.M.

(H) Check Video bandwidth by setting the AM Signal Generator first to 25.75 M.C. and then to 23.4 M.C. and noting the reading on the V.T.V.M. obtained with each of these signals. Voltage reading should be approximately the same for both. If the band width is not correct, as indicated by substantially different V.T.V.M. readings, a slight adjustment of the first (1st) Video I.F. adjustment screw probably will be sufficient to improve the band width.

NOTE: Slight differences in VTVM readings may be due to difference in AM Signal Generator output at 25.75 M.C. and 23.4 M.C. Always adjust AM Signal Generator output to same level for each frequency.

After these adjustments have been completed, remove the 6AG5 Modulator tube adapter.

(5) PROCEDURE FOR SOUND I.F. ALIGNMENT:

Follow same procedure given in visual alignment Paragraph (2) "Procedure for Sound I.F. Alignment."

(6) PROCEDURE FOR OSCILLATOR ALIGNMENT:

For Oscillator Alignment, the television station operating on the channel to be aligned must be transmitting its test pattern and modulating its sound carrier.

(A) Turn receiver Channel Selector Switch to the channel requiring alignment.

(B) Turn proper Oscillator Trimmer adjustment screw clockwise until sound appears on pattern—indicated by bars across pattern and/or the lower vertical lines in pattern become wavy.—then turn SAME Oscillator Trimmer Adjustment screw counter-clockwise just to the point where the sound bars and/or wavy lines in pattern disappear.

The twelve (12) Oscillator Trimmer adjustment screws are located around the Channel Selector Switch shaft and are accessible through holes in the front of the Tuner Chassis. Looking at the front of the Tuner Chassis, and reading from right to left (clockwise), the first slotted round-head screw is Channel 13 Oscillator Trimmer adjustment screw. The second screw from the right is Channel 12 Oscillator Trimmer adjustment screw; the third is Channel 11, etc.

The individual channel oscillator trimmer adjustments are independent of each other and can be aligned in any order. However, if any channel cannot be aligned properly, because of insufficient range of its oscillator trimmer adjustment screw, it can be brought in by means of the Padder Trimmer Screw, located above the Channel Selector Switch shaft. It is very important to remember that adjusting this Padder will necessitate the re-alignment of ALL of the Oscillator Trimmers.

THE ABOVE PROCEDURES COVER ALL ADJUSTMENTS. THE ANTENNA AND R.F. STAGES ARE FACTORY PRE-SET AND BECAUSE THEY ARE SUFFICIENTLY BROAD WILL NOT REQUIRE ADJUSTMENT

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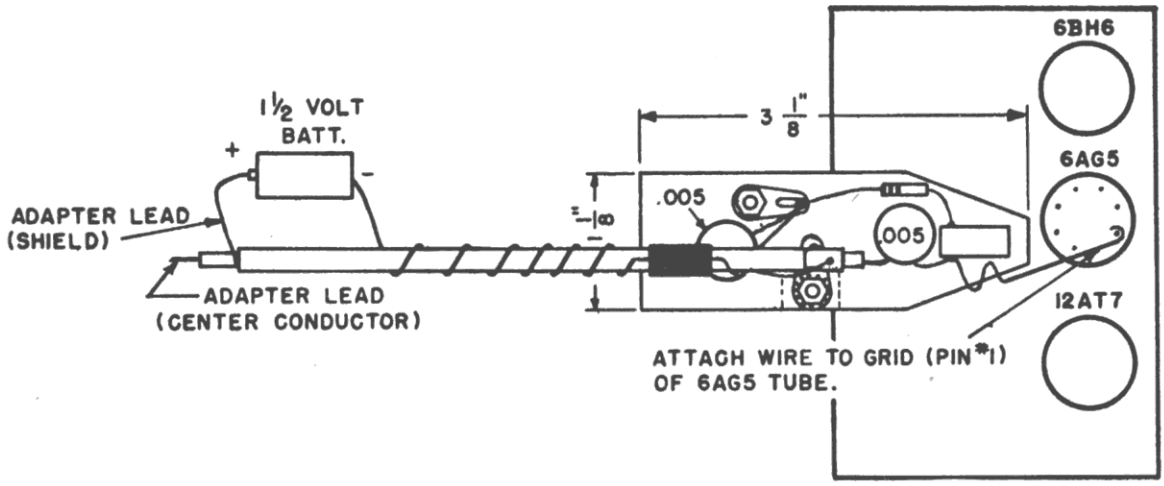


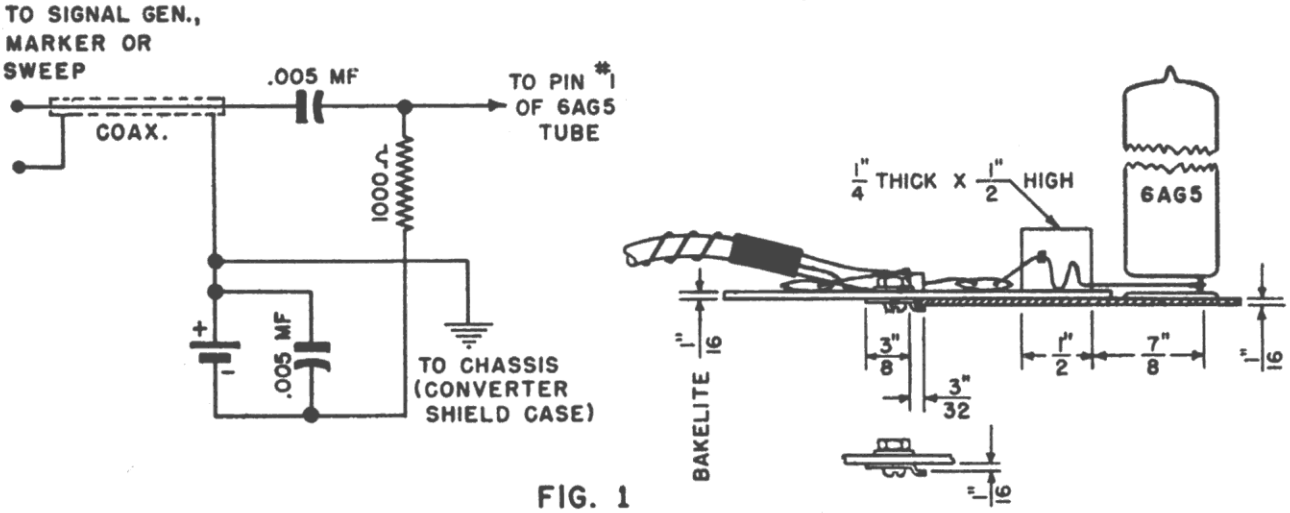
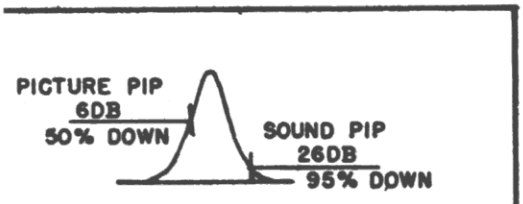


FIG. 1



PICTURE OVERALL RESPONSE CURVE WITH PICTURE AND SOUND CARRIER MARKER PIPS.

FIG. 2

Channel Number	Channel Freq. (Mc)	Picture Carrier Freq. (Mc)	Sound Carrier Freq. (Mc)
1	44-50	45.25	49.75
2	54-60	55.25	59.75
3	60-66	61.25	65.75
4	66-72	67.25	71.75
5	76-82	77.25	81.75
6	82-88	83.25	87.75
7	174-180	175.25	179.75
8	180-186	181.25	185.75
9	186-192	187.25	191.75
10	192-198	193.25	197.75
11	198-204	199.25	203.75
12	204-210	205.25	209.75
13	210-216	211.25	215.75

FIG. 3

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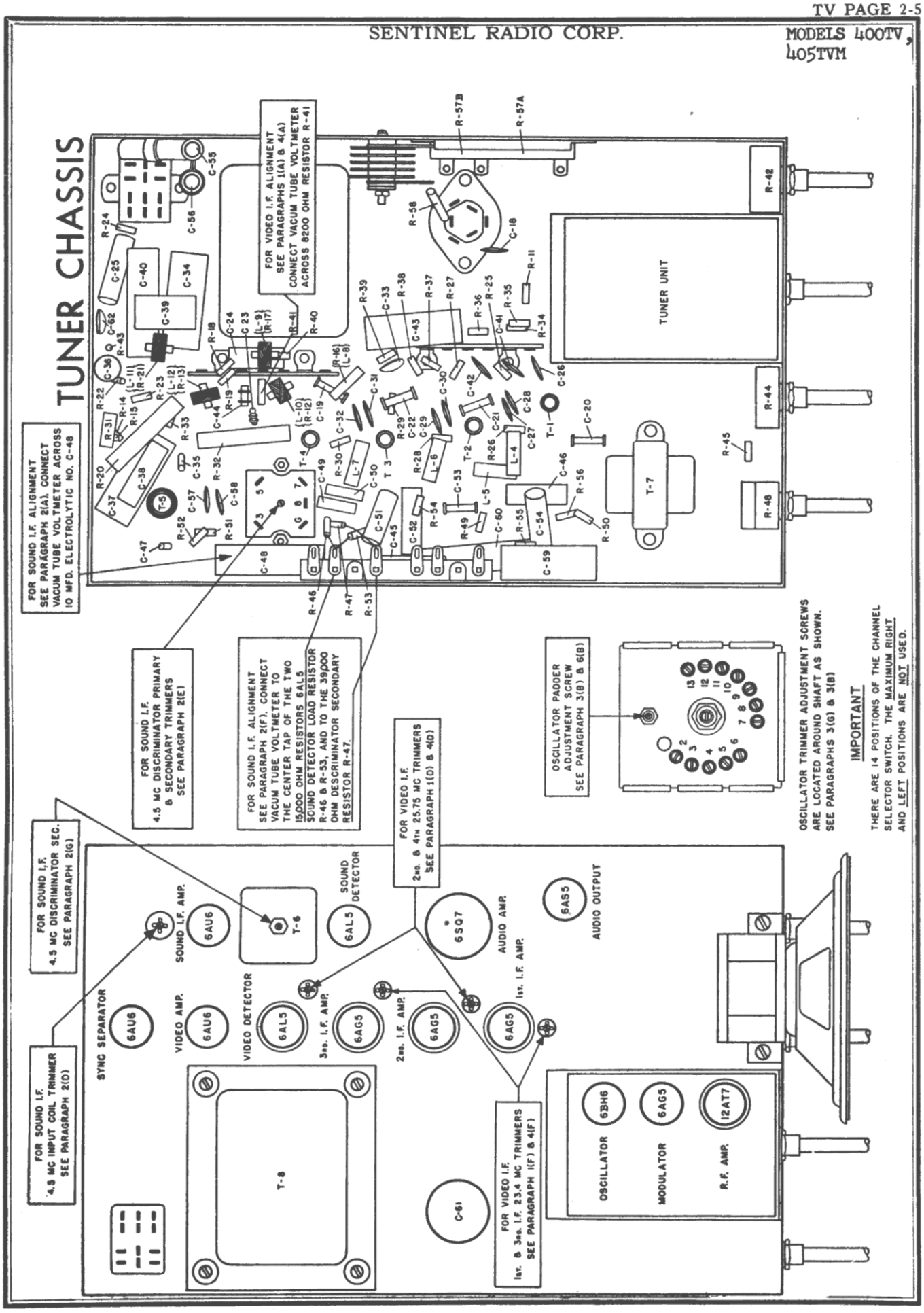

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REAR PANEL CONTROL ADJUSTMENTS

Normally, after the receiver has been properly installed, only the front panel controls need be adjusted by the owner.

ONLY when the picture is too high or too low or too far to the right or left on the screen, or does not stay locked in the center of the screen, or is egg-shaped or very fuzzy, will it be necessary to adjust one of the rear controls.

IMPORTANT: Interference caused by electrical equipment, flashing signs, auto ignition systems, electric razors and medical short-wave diathermy machines may cause white streaks or herringbone bands across the picture. Aircraft in the immediate vicinity can cause fluctation in sound volume and picture brightness. Double images on the screen can be caused by reflections from buildings, mountains, etc. **NONE OF THESE DISTURBANCES CAN BE ELIMINATED BY ADJUSTMENT OF THE FRONT OR REAR CONTROLS.** Illustrations of these types of disturbances are shown in "Interference Patterns" on the following page.

If you experience a poor quality television picture, do not immediately assume that the difficulty is in your receiver. The cause may be due to temporary station transmitter difficulties.

If a poor picture is noticed when a motion picture is being telecast, the difficulty may be due to the quality of the film being used by the station. Turn the "Channel Selector" knob to a different television station or wait until the end of the movie program. If there is no noticeable improvement in the picture, then adjustment of one or more of the controls on the back of the cabinet may be necessary.

Before adjusting any of the rear controls, study the picture you are receiving and compare it with one of the illustrative patterns below having similar characteristics. If you find one similar to the picture you are receiving, ADJUST ONLY THE CONTROL INDICATED AS THE ONE TO BE USED to correct that particular type of mis-adjustment.

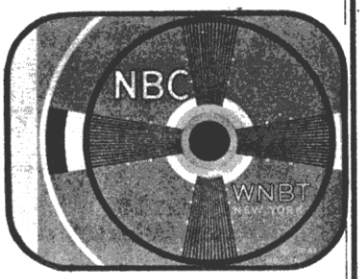
By placing the arm around the cabinet it is possible to adjust the required control and still look at the screen while making the adjustment. Turn the proper control slowly to the right or left until the picture is centered on the screen, stops rolling, becomes clear, etc.

DON'T FOOL WITH THE REAR PANEL CONTROLS UNNECESSARILY—IF THE PICTURE IS GOOD, LEAVE THEM ALONE.

IF PATTERN IS TOO HIGH OR TOO LOW ON SCREEN, adjust VERTICAL CENTERING CONTROL to move pattern either up or down.

HORIZ. CENTERING ⊖

IF PATTERN IS TOO FAR TO THE RIGHT OR LEFT ON SCREEN, adjust HORIZONTAL CENTERING CONTROL to move pattern to either right or left.

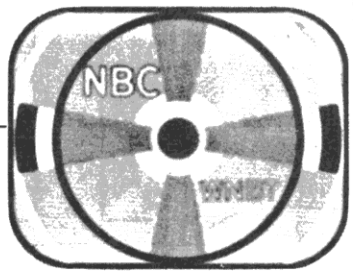


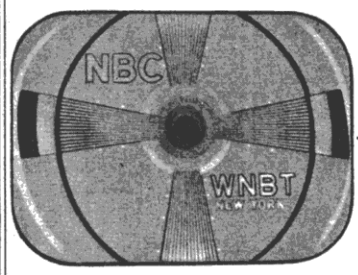
VERT. CENTERING ⊖

FOCUS ⊖

IF PATTERN IF FUZZY, ADJUST FOCUS CONTROL for sharpest definition.

NOTE: Have "Brightness" and "Contrast" controls on front of cabinet properly adjusted before adjusting Focus Control.





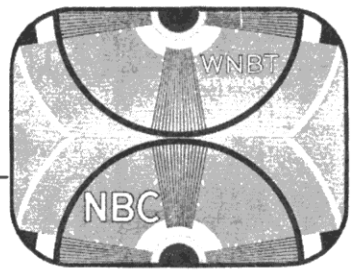
IF PATTERN extends over the top and bottom edge of the screen, adjust VERTICAL SIZE CONTROL to make circle fit on screen.

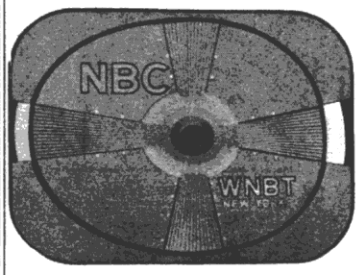
Sometimes the vertical shape of the pattern can be improved by reversing the set power cord plug in the electric outlet.

VERT. SIZE ⊖

VERT. HOLD ⊖

IF PATTERN continuously rolls across screen in vertical direction (up or down) ADJUST VERTICAL HOLD CONTROL so that pattern stops rolling and remains stationary on screen.



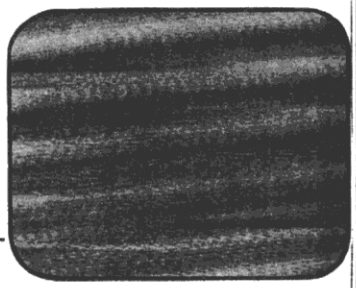


IF PATTERN extends over the right and left edge of the screen, adjust HORIZONTAL SIZE CONTROL to make circle fit on screen.

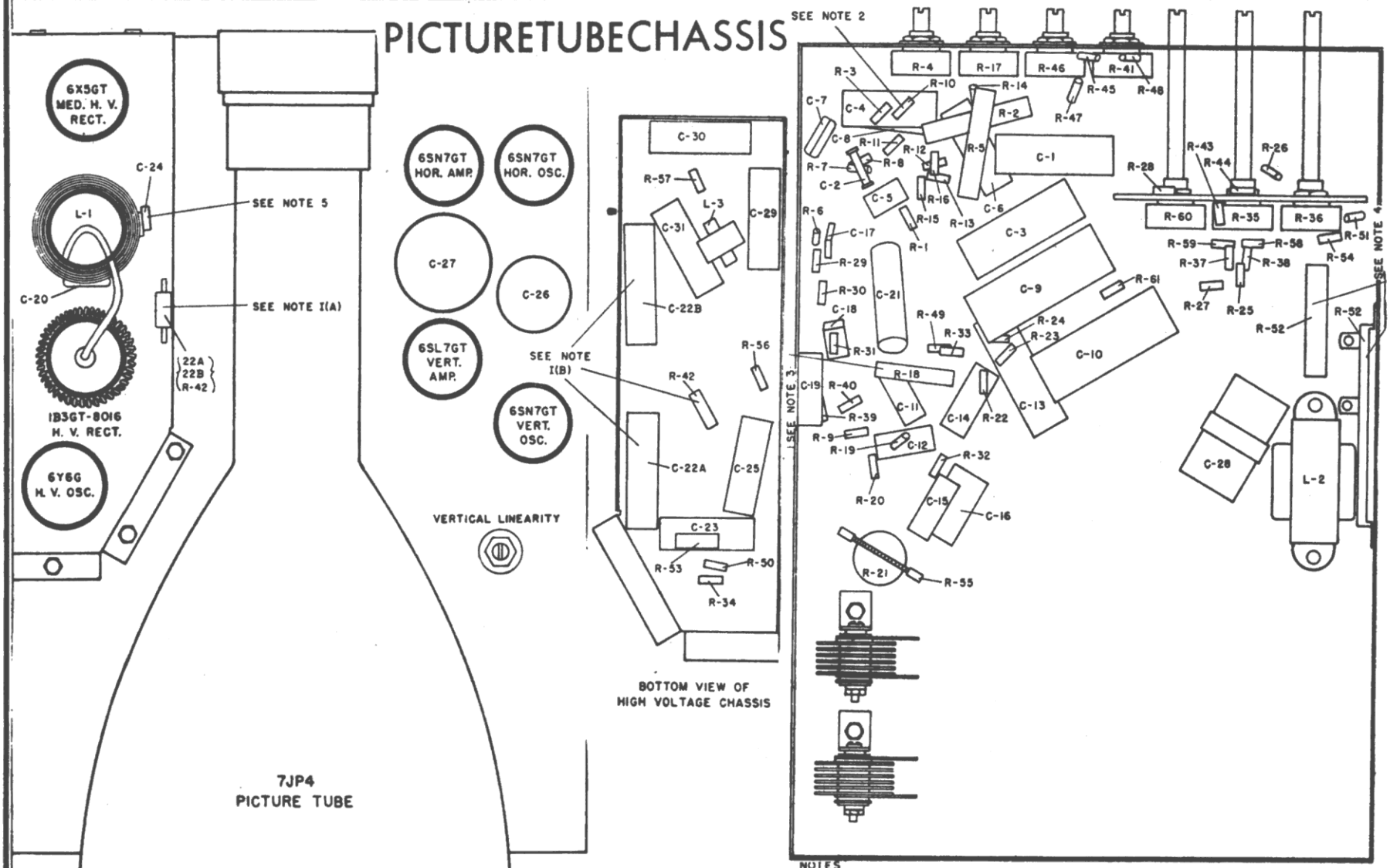
HORIZ. SIZE ⊖

HORIZ. HOLD ⊖

IF PATTERN continuously breaks up in horizontal direction (LEFT TO RIGHT) ACROSS SCREEN, adjust HORIZONTAL HOLD CONTROL to bring pattern to stationary position on screen.



PICTURETUBECHASSIS



NOTES

I(A) USED IN PICTURE TUBE CHASSIS STAMPED 20E374A ONLY.

I(B) PICTURE TUBE CHASSIS STAMPED 20E374B HAVE SEPARATE .001 MFD. 6000V. CAPACITORS, C-22A & C-22B ALSO A SEPARATE 100,000 OHM RESISTOR R-42.

2. SOME CHASSIS USED A 1 MEG OHM 1/2W. RESISTOR, SOME HAVE 3 330,000 OHM RESISTORS IN SERIES. AND SOME HAVE A 1 MEG OHM 2W. RESISTOR. WHEN REPLACING ALWAYS USE 1 MEG OHM 2W. RESISTOR.

3. SOME CHASSIS USED A 47,000 OHM 1W. RESISTOR, OTHERS HAVE 2 100,000 OHM 1/2W. RESISTORS IN PARALLEL.

4. SOME MODELS USE A CANDOHM RESISTOR, OTHERS USE WIRE WOUND RESISTOR.

5. SOME MODELS USE A 72 MMF CAPACITOR, OTHERS USE 82 MMF CAPACITOR. WHEN REPLACING USE EXACT VALUE.

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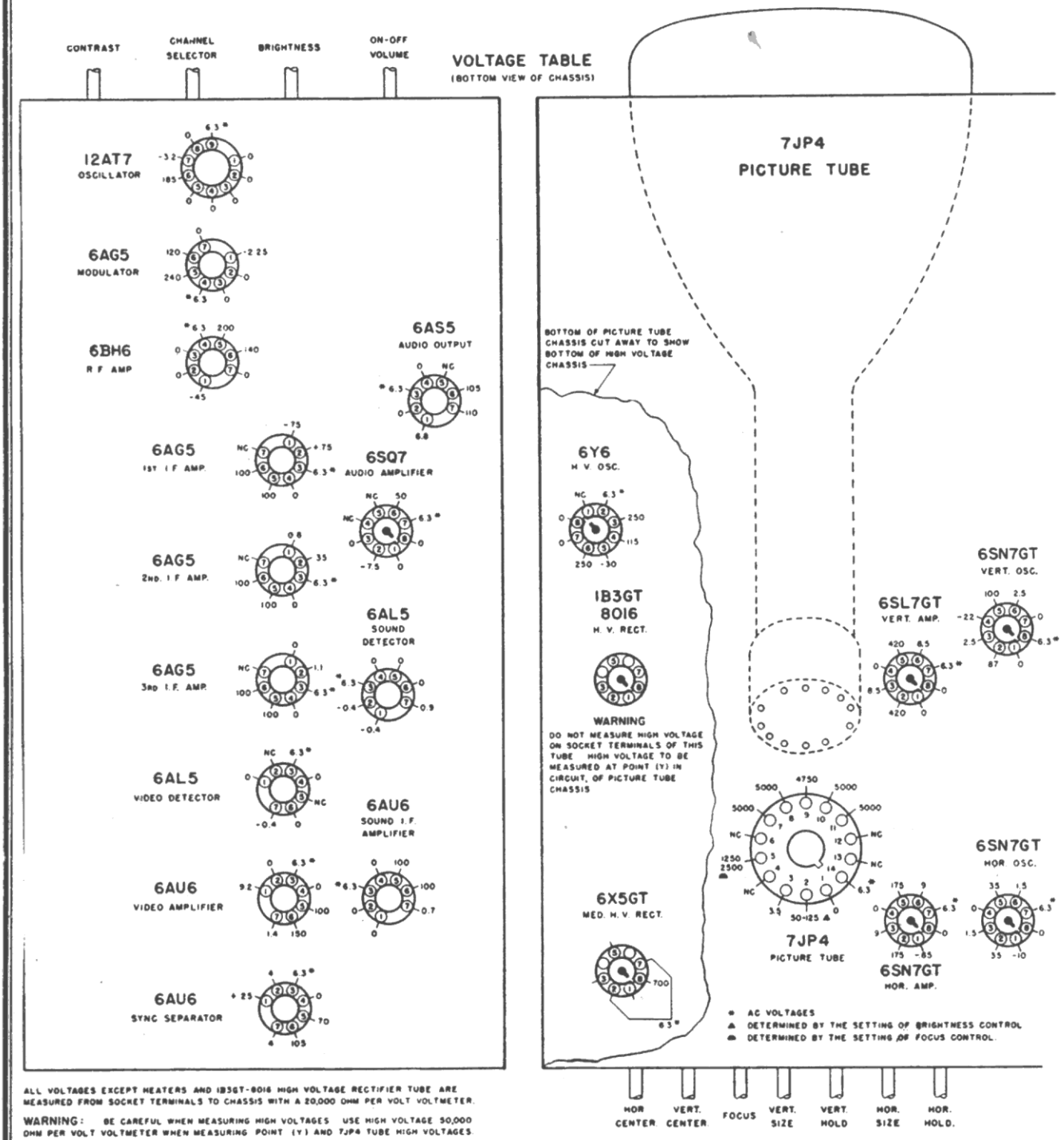
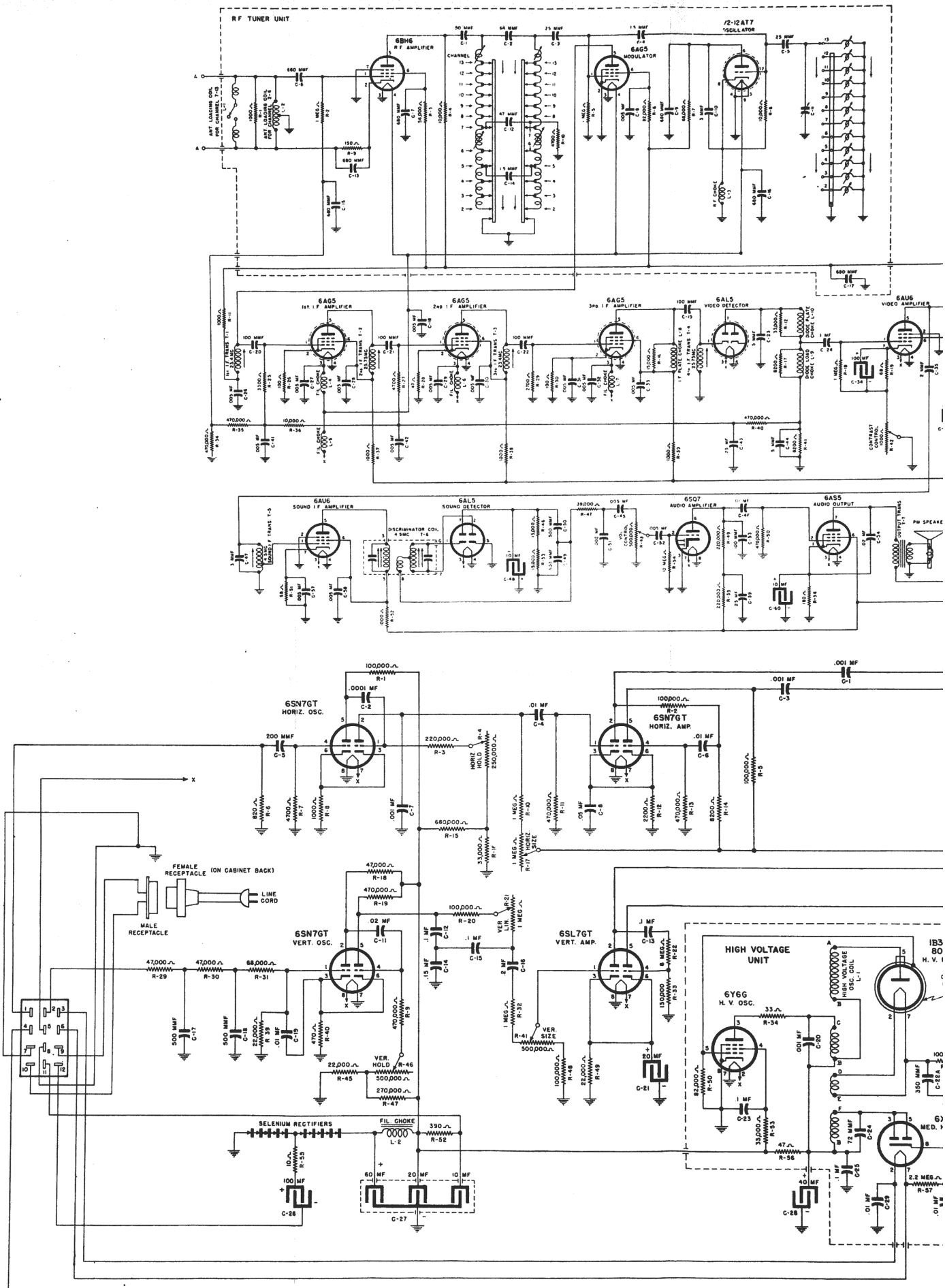
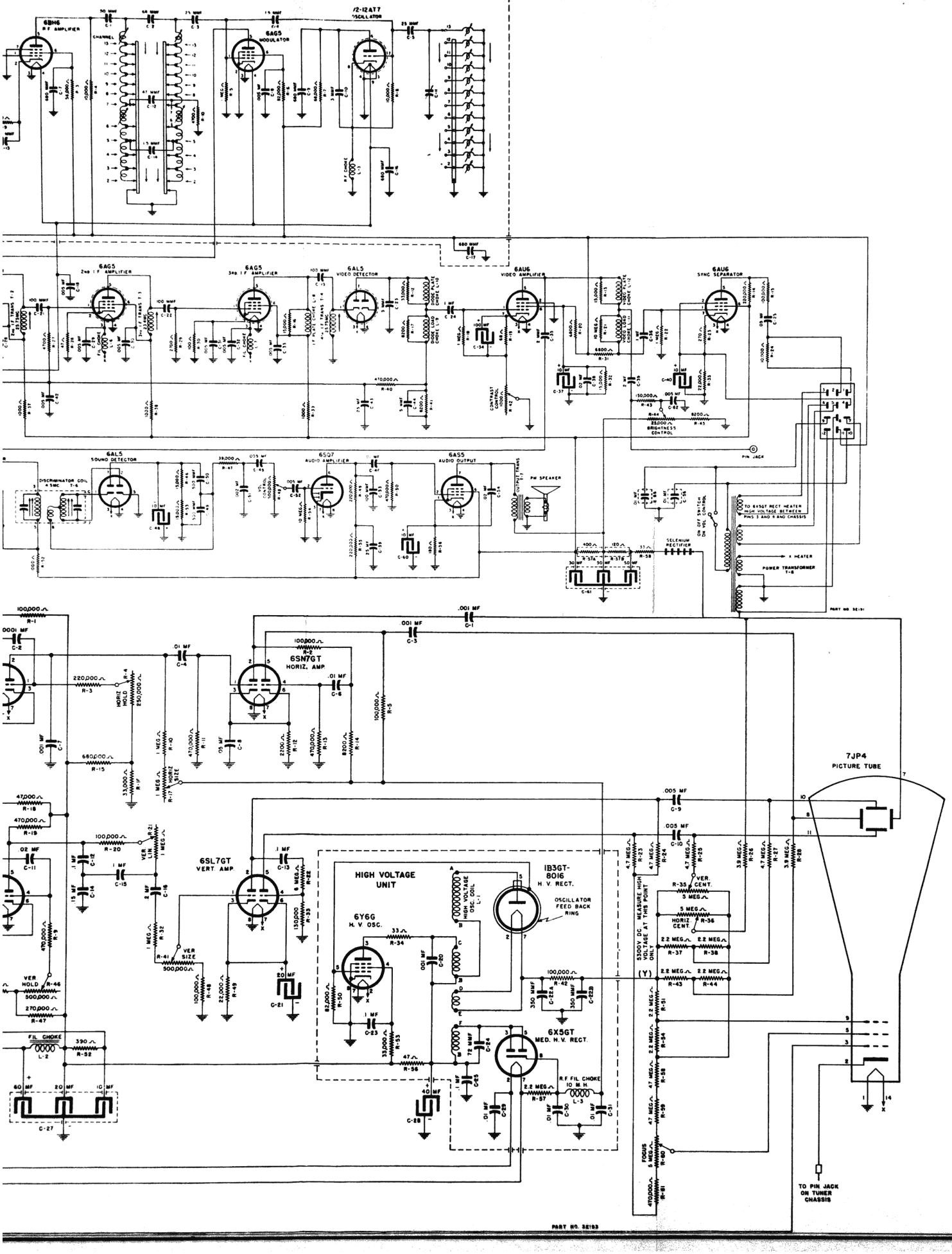


ALL VOLTAGES EXCEPT HEATERS AND 1B3GT-8016 HIGH VOLTAGE RECTIFIER TUBE ARE MEASURED FROM SOCKET TERMINALS TO CHASSIS WITH A 20,000 OHM PER VOLT VOLTMETER.

WARNING: BE CAREFUL WHEN MEASURING HIGH VOLTAGES USE HIGH VOLTAGE 50,000 OHM PER VOLT VOLTMETER WHEN MEASURING POINT (Y) AND 7JP4 TUBE HIGH VOLTAGES.


RF TUNER UNIT
6BH6 RF AMPLIFIER
6AG5 MODULATOR
12AT7 OSCILLATOR
6AG5 1st I F AMPLIFIER
6AG5 2nd I F AMPLIFIER
6AG5 3rd I F AMPLIFIER
6AL5 VIDEO DETECTOR
6AU6 VIDEO AMPLIFIER
6AU6 SOUND I F AMPLIFIER
6AL5 SOUND DETECTOR
6SQ7 AUDIO AMPLIFIER
6AS5 AUDIO OUTPUT
6SN7GT HORIZ. OSC.
6SN7GT HORIZ. AMP.
6SN7GT VERT. OSC.
6SL7GT VERT. AMP.
6Y6G H. V. OSC.
HIGH VOLTAGE UNIT
FEMALE RECEPTACLE (ON CABINET BACK)
MALE RECEPTACLE
LINE CORD
SELENIUM RECTIFIERS
FIL. CHOKE



PART NO. 32193

SENTINEL RADIO CORP. MODELS 400TV, 405TVM

The following changes have been made in current models 400TV and 405TVM:

1. TO INCREASE THE AMOUNT OF VERTICAL SYNC VOLTAGE

(a) The 4700 ohm resistor R24, located in the sync separator output circuit on the tuner chassis has been changed to a 10,000 ohm resistor, part number 27E103.

2. TO PREVENT TURNOVER OF EXTREME TOP OF PICTURE - (indicated by top portion of center vertical lines of test pattern curving to the left).

(a) The 470 ohm resistor R6 in the input circuit of the horizontal oscillator on the picture chassis has been replaced with a 820 ohm resistor, part number 27E821.

(b) The .005 MFD mica coupling condenser C5 in the input circuit of the horizontal oscillator on the picture chassis has been replaced with a 200 MMF mica or ceramic, part number 23E41.

(c) The 12,000 ohm resistor R7 in the input circuit of the horizontal oscillator on the picture chassis has been replaced with a 4,700 ohm resistor, part number 27E472.

3. TO PREVENT PICTURE WIDTH CHANGING WITH AN INCREASE IN AMBIENT TEMPERATURE

(a) The 1 megohm resistor R10 in series with the horizontal size control on the picture chassis has been replaced with a 1 megohm 2 watt resistor, part number 27E105-5.

4. TO ELIMINATE TOO BROAD PEAKS IN THE SOUND I.F. TRANSFORMER T5, in the tuner chassis, caused by variations in 6AU6 tube in the sound I.F. amplifier circuit.

(a) The 68 ohm resistor R51 in the cathode circuit of the 6AU6 sound I.F. amplifier tube on the tuner chassis has been changed to a 180 ohm 1/3 watt resistor, part number 27E181.

MODELS 400TV, 405TVM

SENTINEL RADIO CORP.

PARTS LIST

CAPACITORS

Illus. No.	Our Part No.	DESCRIPTION
C-1		Ceramic, 50 MMF
C-2		Ceramic, .68 MMF
C-3		Ceramic, .25 MMF
C-5		Ceramic, 25 MMF
C-4		Ceramic, 1.5 MMF
C-14		Ceramic, 1.5 MMF
C-6		Ceramic, 680 MMF
C-7	Part of Tuner	Ceramic, 680 MMF
C-9	Unit 20E364—	Ceramic, 680 MMF
C-13	See Misc. Parts	Ceramic, 680 MMF
C-15		Ceramic, 680 MMF
C-16		Ceramic, 680 MMF
C-7		Ceramic, 680 MMF
C-8		Ceramic, .005 MF
C-10		Ceramic, 3 MMF
C-11		Ceramic, Trimmer
C-12		Ceramic, .47 MMF
C-18		
C-26		
C-27		
C-28		
C-29		
C-30		
C-31	23E2025	Fixed Ceramic, .005 MFD
C-32		
C-33		
C-41		
C-42		
C-57		
C-58		
C-62		
C-19		
C-20		
C-21	23E11	Fixed Ceramic, 100 MMF 500 V.
C-22		
C-53		
C-23	23E28	Fixed Ceramic, 5 MMF 500 V.
C-44		
C-24	23E2014-9	Fixed Paper, .1 Mfd. 200 V.
C-25	23E216	Fixed Paper, .05 Mfd. 200 V.
C-34	25E12	Dry Electrolytic, 100 Mfd. 10 V.
C-35	23E21	Fixed Ceramic, 2 MMF 500 V.
C-36	23E2014-23	Fixed Paper, .1 MF 400 V.
C-37	25E35	Dry Electrolytic, 10 MFD 250 V.
C-38	23E413	Fixed Paper, .02 MFD 400 V.
C-54		
C-39	23E2014-22	Fixed Paper, .2 MFD 400 V.
C-40		
C-48	25E8	Dry Electrolytic, 10 MFD 25 V.
C-60		
C-45	23E408	Fixed Paper, .005 MFD 400 V.
C-52		
C-43	23E222	Fixed Paper, .25 MFD 200 V.
C-59		
C-46	23E411	Fixed Paper, .01 MFD 400 V.
C-47	23E13	Fixed Ceramic, 3 MMF 500 V.
C-49	23E45	Fixed Mica, 500 MMF 500 V.
C-50		
C-51	23E405	Fixed Paper, .002 MFD 400 V.
C-55	23E250	Fixed Paper, .01 MFD 220 V. AC
C-56		
C-61	25E30	Dry Electrolytic, 50-50-30 MFD 150 V.

RESISTORS

R-1		Carbon, 1,000 Ohm
R-2		Carbon, 1 Megohm
R-5		Carbon, 1 Megohm
R-3		Carbon, 56,000 Ohm
R-4	Part of Tuner	Carbon, 10,000 Ohm
R-8	Unit 20E364—	Carbon, 10,000 Ohm
R-6	See Misc. Parts	Carbon, 82,000 Ohm
R-7		Carbon, 68,000 Ohm
R-9		Carbon, 150 Ohm
R-10		Carbon, 4,700 Ohm

TUNER CHASSIS

Illus. No.	Our Part No.	DESCRIPTION
R-11		
R-37		
R-38	27E102	Carbon, 1000 Ohm 1/3 W.
R-39		
R-52		
R-12	Part of 20E363-2	Diode Plate Choke Assembly—see Misc. Parts
R-13	Part of 20E363-3	Video Plate Choke Assembly—see Misc. Parts
R-14		
R-49	27E224	Carbon, 220,000 Ohm 1/3 W.
R-55		
R-15	27E104	Carbon, 100,000 Ohm 1/3 W.
R-16	Part of 2E79 I.F.	Plate Choke Assembly—see Misc. Parts
R-17	Part of 20E363-4	Diode Load Choke Assembly—see Misc. Parts
R-18	27E105	Carbon, 1 Megohm, 1/3 W.
R-22		
R-19	27E680	Carbon, 68 Ohm 1/3 W.
R-51		
R-20	27E682-3	Carbon, 6800 Ohm 1 W.
R-21	Part of 20E363-5	Video Load Choke Assembly—see Misc. Parts
R-23	27E271	Carbon, 270 Ohm 1/3 W.
R-24	27E472	Carbon, 4,700 Ohm 1/3 W.
R-27		
R-25	27E332	Carbon, 3,300 Ohm 1/3 W.
R-26	27E101	Carbon, 100 Ohm 1/3 W.
R-30		
R-28	27E470	Carbon, 47 Ohm 1/3 W.
R-29	27E272	Carbon, 2,700 Ohm 1/3 W.
R-31	27E682-5	Carbon, 6,800 Ohm 2 W.
R-32	27E153-5	Carbon, 15,000 Ohm 2 W.
R-33	27E223	Carbon, 22,000 Ohm 1/3 W.
R-34		
R-35	27E474	Carbon, 470,000 Ohm 1/3 W.
R-40		
R-50		
R-36	27E103	Carbon, 10,000 Ohm 1/3 W.
R-41	27E822	Carbon, 8,200 Ohm 1/3 W.
R-45		
R-42	28E31	Contrast Control, 1000 Ohm
R-43	27E154	Carbon, 150,000 Ohm 1/3 W.
R-44	28E32	Brightness Control, 25,000 Ohm
R-46	27E153	Carbon, 15,000 Ohm 1/3 W.
R-53		
R-47	27E393	Carbon, 39,000 Ohm 1/3 W.
R-48	28E33	Vol. Control, 500,000 Ohm and On-Off Switch
R-54	27E106	Carbon, 10 Megohm 1/3 W.
R-56	27E181-2	Carbon, 180 Ohm 1/2 W.
R-57A, R-57B	Part of 27E1006	Wire Wound Resistor—See Misc. Parts
R-58	27E330-3	Carbon, 33 Ohm 1 W.

COILS and TRANSFORMERS

L-1	Part of Tuner	Ant. Loading Coil for 7-13 Channel
L-2	Unit 20E364—	Ant. Loading Coil for 2-6 Channel
L-3	See Misc. Parts	R. F. Choke
L-4		
L-5		
L-6	2E78	Coil, Filament Choke Assembly
L-7		
L-8	Part of 2E79 I.F.	Plate Choke Assembly—See Misc. Parts
L-9	Part of 20E363-4	Diode Load Choke Assembly—See Misc. Parts
L-10	Part of 20E363-2	Diode Plate Choke Assembly—See Misc. Parts
L-11	Part of 20E363-5	Video Load Choke Assembly—See Misc. Parts
L-12	Part of 20E363-3	Video Plate Choke Assembly—See Misc. Parts
T-1	20E360	Transformer, 1st I.F.
T-2		Transformer, 2nd I.F.
T-3		Transformer, 3rd I.F.
T-4		Transformer, 4th I.F.
T-5	20E361	Transformer, Sound I.F.
T-6	20E362	Transformer, Discriminator Coil
T-7	22E28	Transformer, Output
T-8	22E27	Transformer, Power

SENTINEL RADIO CORP.

MODELS 400TV, 405TVM

CAPACITORS

Illus. No.	Our Part No.	DESCRIPTION
C-1, C-3	23E2026-2	Fixed Paper, .001 MFD 6000 V.
C-2	23E11	Fixed Ceramic, .0001 MFD 500 V.
C-4, C-6, C-29, C-30, C-31	23E1211	Fixed Paper, .01 MFD 1200 V.
C-5	23E41 OR 23E2027-3	Fixed Mica, 200 MMF 500 V. / Fixed Ceramic, 200 MMF 350 V.
C-7, C-20	23E50-10	Fixed Mica, .001 MFD 500 V.
C-8	23E216	Fixed Paper, .05 MFD 200 V.
C-9, C-10	23E2026-3	Fixed Paper, .005 MFD. 6000 V.
C-11	23E2014-19	Fixed Paper, .02 MFD 400 V.
C-12, C-15	23E2014-9	Fixed Paper, .1 MFD 200 V.
C-13	23E618	Fixed Paper, .1 MFD 600 V.
C-14	23E2014-21	Fixed Paper, .15 MFD 200 V.
C-16	23E421	Fixed Paper, .2 MFD 400 V.
C-17, C-18	23E45	Fixed Mica, 500 MMF.
C-19	23E211	Fixed Paper, .01 MFD 200 V.
C-21	25E3	Dry Electrolytic, 20 MFD 25 V.
C-22A, C-22B	Part of 23E2022-3 Ceramic Filter Plate—See Misc. Parts	
C-23, C-25	23E418	Fixed Paper, .1 MFD 400 V.
C-24	23E29	Fixed Ceramic, 72 MMF 1000 V.
C-26	25E32	Dry Electrolytic, 100 MFD 150 V.
C-27	25E33	Dry Electrolytic, 60-20-10 MFD 300 V.
C-28	25E31	Dry Electrolytic, 40 MFD 300 V.

RESISTORS

R-1, R-20, R-48	27E104	Carbon, 100,000 Ohm 1/3 W.
R-2, R-5	27E104-5	Carbon, 100,000 Ohm 2 W.
R-3	27E224	Carbon, 220,000 Ohm 1/3 W.
R-4	28E45	Horiz. Hold Control, 250,000 Ohm.
R-6	27E821	Carbon, 820 Ohm 1/3 W.
R-7	27E472	Carbon, 4700 Ohm 1/3 W.
R-8	27E102	Carbon, 1000 Ohm 1/3 W.
R-9, R-11, R-13, R-19	27E474	Carbon, 470,000 Ohm 1/3 W.
R-10	27E105-5	Carbon, 1 Megohm 1 W.

MISCELLANEOUS PARTS

Our Part No.	DESCRIPTION
1E31	Speaker, 5" P.M.
64E24	Portable Antenna
20E364	Tuner Unit, Channel Switch and Multiple Resistor-Capacitor Combination
20E363-2	Diode Plate Choke Assembly
20E363-3	Video Plate Choke Assembly
2E79	I.F. Plate Choke Assembly
20E363-4	Diode Load Choke Assembly
20E363-5	Video Load Choke Assembly
27E1006	Wire Wound Resistor
23E2022-3	Ceramic Filter Plate
17E31	Jack, Single Contact
20E427	Knob, with pointer

CABINET MISCELLANEOUS

Our Part No.	DESCRIPTION
5E40	Cabinet Escutcheon, metal front plate
9E15	Cabinet Crystal, used in front of 7JP4 tube
33E80	Cabinet Gasket, pastel colored chipboard
33E83	Gasket, rubber, used in some models
54E34	Gasket, felt, used in some models

PICTURE CHASSIS

Illus. No.	Our Part No.	DESCRIPTION
R-32	27E105	Carbon, 1 Megohm 1/3 W.
R-12	27E222	Carbon, 2,200 Ohm 1/3 W.
R-14	27E822	Carbon, 8,200 Ohm 1/3 W.
R-15	27E684	Carbon, 680,000 Ohm 1/3 W.
R-16	27E333	Carbon, 33,000 Ohm 1/3 W.
R-17	28E36	Horiz. Size Control, 1 Megohm.
R-18	27E473-3	Carbon, 47,000 Ohm 1 W.
R-21	28E36	Vert. Linear Control, 1 Megohm.
R-22	27E1009-4	Insulated Carbon, 6 Megohm 1/2 W.
R-23, R-24, R-58, R-59	27E1017	Carbon, 4.7 Megohm High Volt.
R-25, R-27	27E475	Carbon, 4.7 Megohm 1/3 W.
R-26, R-28	27E395-2	Carbon, 3.9 Megohm 1/2 W.
R-29, R-30	27E473	Carbon, 47,000 Ohm 1/3 W.
R-31	27E683	Carbon, 68,000 Ohm 1/3 W.
R-33	27E1009-2	Insulated Carbon, 130,000 Ohm 1/3 W.
R-34	27E330-2	Carbon, 33 Ohm 1/2 W.
R-35	28E34	Vert. Cent. Control, 5 Megohm.
R-36	28E34	Horiz. Cent. Control, 5 Megohm.
R-37, R-38, R-43, R-44, R-51, R-54	27E225-2	Carbon, 2.2 Megohm 1/2 W.
R-39, R-45, R-49	27E223	Carbon, 22,000 Ohm 1/3 W.
R-40	27E471	Carbon, 470 Ohm 1/3 W.
R-41	28E37	Vert. Size Control, 500,000 Ohm.
R-42	Part of 23E2022-3 Ceramic Filter Plate—See Misc. Parts	
R-46	28E37	Vert. Hold Control, 500,000 Ohm.
R-47	27E274	Carbon, 270,000 Ohm 1/3 W.
R-50	27E823	Carbon, 82,000 Ohm 1/3 W.
R-52	27E1015	Wire Wound, 390 Ohm 2 W.
R-53	27E333-3	Carbon, 33,000 Ohm 1 W.
R-55	27E1014	Wire Wound, 10 Ohm 2 W.
R-56	27E470-2	Carbon, 47 Ohm 1/2 W.
R-60	28E34	Focus Control, 5 Megohm.
R-61	27E474-2	Carbon, 470,000 Ohm 1/2 W.

COILS and TRANSFORMERS

L-1	20E370	Coil, High Vol. Osc. Coil.
L-2	22E36	Coil, Filter Choke.
L-3	2E75	Coil, R.F. Filter Choke.

Our Part No.	DESCRIPTION
37E54	Knob
41E16	Line Cord, A.C. cord with female receptacle
17E30	Plug, 12 contact male.
20E373	Tube Clamp, Front 7JP4 Tube Clamp.
20E372	Tube Clamp, Rear 7JP4 Tube Clamp.
57E3	Rectifier, Selenium
17E32	Receptacle, A.C. 2 contact male.
30E108	Shield, for 7JP4—cone shaped.
50E67-2	Shield, for 7JP4—round electrostatic.
17E33	Socket, 12 contact female.
17E1-25	Socket, Diheptal for 7JP4 picture tube.
17E1-24	Socket, for 1B3GT-8016.
17E1-27	Socket, for tubes.

Our Part No.	DESCRIPTION
7E184	Cabinet, wood table model, less front plate
20E430	Cabt. Door, wood table model.
7E179	Cabinet, portable, complete cabinet less front plate
20E449	Cabinet Door, rear door with hinges, antenna posts & line cord for portable.