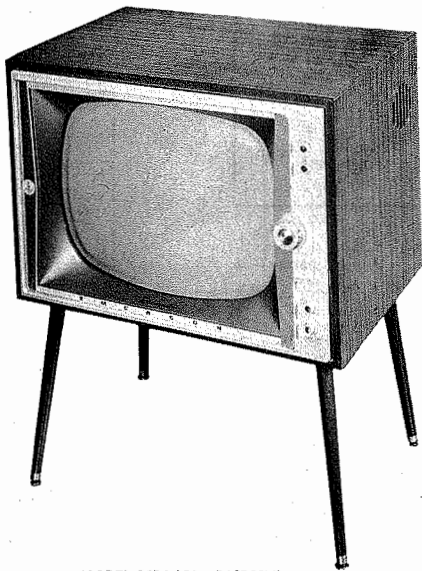




DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 8 push-on type knobs from the front.
2. Remove 8 wood screws holding rear cover. Remove rear cover.
3. Remove speaker leads.
4. Remove 2 wood screws holding antenna terminal board.
5. Remove 2 metal and 4 wood screws holding chassis support brackets.
6. Remove 2 metal screws holding power transformer bracket to cabinet.
7. Remove the 4 front corner screws (inside front of cabinet) holding die cast front to cabinet brackets.
8. Remove chassis from front of cabinet.



MODEL 1216 (Ch. 120322V)

EMERSON MODELS 1214, 1215, 1216, 1217,  
1218, 1219, 1224, 1225, 1226, 1227, 1248  
(Ch. 120322E, V, 120323T, 120329V, 120330T)

| TRADE NAME   | Emerson   | MODELS                 | CHASSIS                            |
|--------------|---|------------------------|------------------------------------|
|              |   | 1248 .....             | 120322E                            |
|              |   | 1214, 1216, 1218 ..... | 120322V                            |
|              |   | 1215, 1217, 1219 ..... | 120323T                            |
|              |   | 1224, 1226 .....       | 120329V                            |
|              |   | 1225, 1227 .....       | 120330T                            |
| MANUFACTURER | Emerson Radio & Phonograph Corp., 14th. & Coles Sts., Jersey City 2, N.J.                 |                        |                                    |
| TYPE SET     | Television Receiver   |                        |                                    |
| TUBES        | Twenty  |                        |                                    |
| POWER SUPPLY | 110-120 Volts AC, 60 Cycle  |                        |                                    |
| TUNING RANGE | Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier) |                        |                                    |
|              |   | RATING                 | 195 Watts, 1.7 Amp. @ 117 Volts AC |

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the Channel Selector and Fine Tuning knobs. Set the Fine Tuning at the center of its range. The adjustments are accessible, one at a time, as the Channel Selector is rotated. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove the Channel Selector and Fine Tuning knobs. Insert fingers behind retainer strip and pull out. Remove bottom and top metal retaining strips by pulling out. Remove 2 metal screws holding safety glass brackets. Move right side of glass outward to clear shafts and remove.

SPECIAL ADJUSTMENTS

- A. Local-Distant  
Observe the picture and advance the Local-Distant control to a point where the picture distorts or a buzz is heard in the sound. Back off from this setting until the picture becomes stable with no noise in the sound.
- B. Focus  
Adjust the Ion Trap for the best focus consistent with maximum brightness.

C. Width  
The width may be varied by means of a metallic sleeve located between the Yoke and the Picture Tube neck. Adjust sleeve in or out of the yoke for a picture slightly larger than necessary to fill the screen.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

Set the Horizontal Hold to center of its range and adjust the Horizontal Balance until picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Discriminator Secondary (A10) located on top of chassis.

FUSE

One fuse is used for low voltage supply protection. (For location, see tube placement chart.)

CENTERING

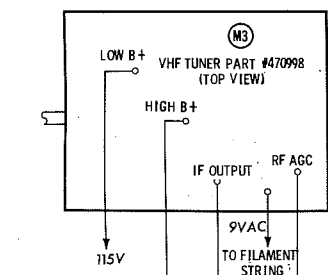
Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered. In addition, a Horizontal Centering Control is provided. (See tube placement chart for location.)

HOWARD W. SAM'S & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H654

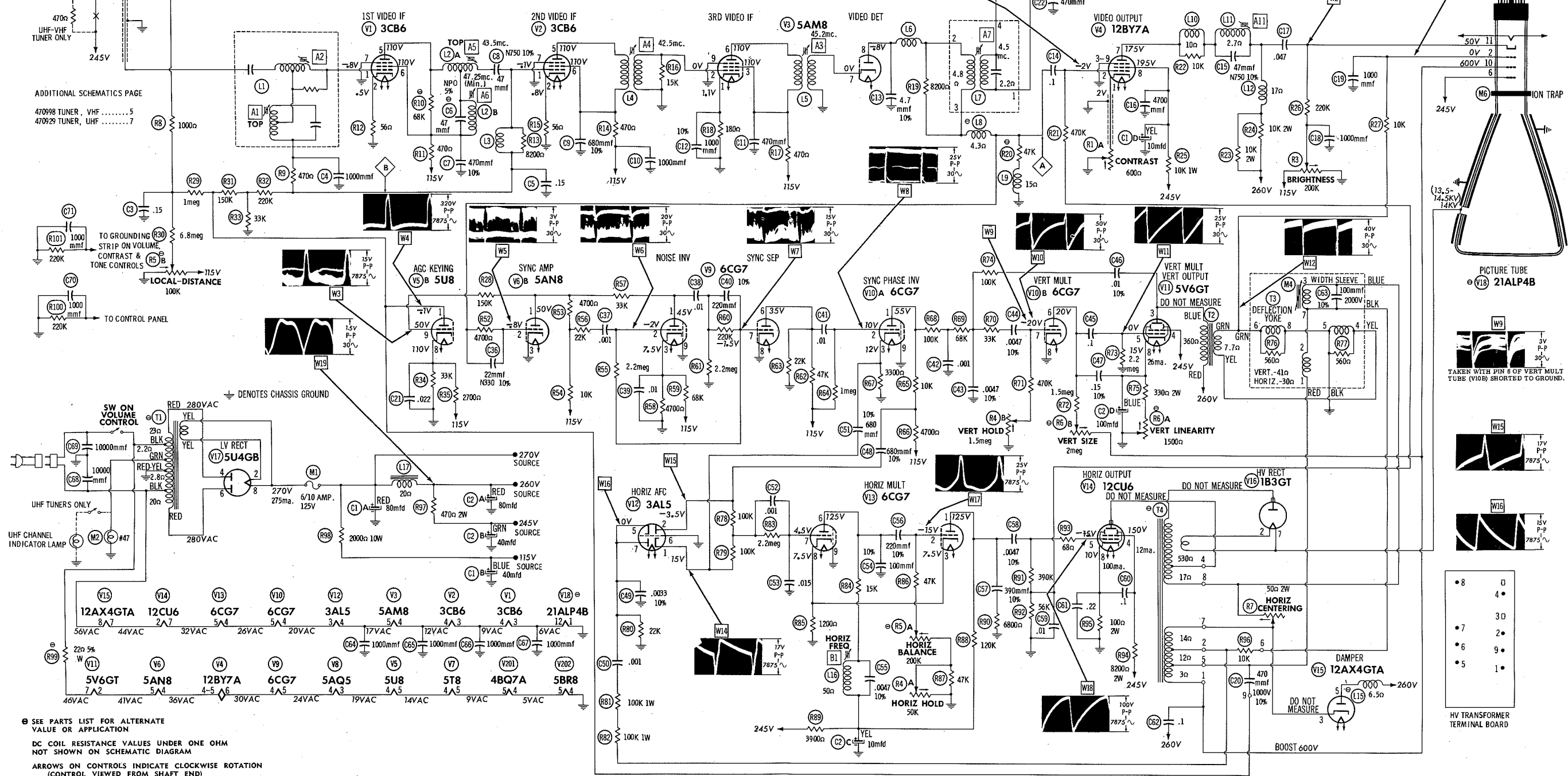
the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

EMERSON MODELS 1214, 1215, 1216, 1217,  
1218, 1219, 1224, 1225, 1226, 1227, 1248  
(Ch. 120322E, V, 120323T, 120329V, 120330T)



ADDITIONAL SCHEMATICS PAGE

470998 TUNER, VHF ..... 5  
470929 TUNER, UHF ..... 7



SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC  
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EMERSON MODELS 1214, 1215, 1216, 1217, 1218, 1219, 1224, 1225, 1226, 1227, 1248 (Ch. 120322E, V, 120323T, 120329V, 120330T)

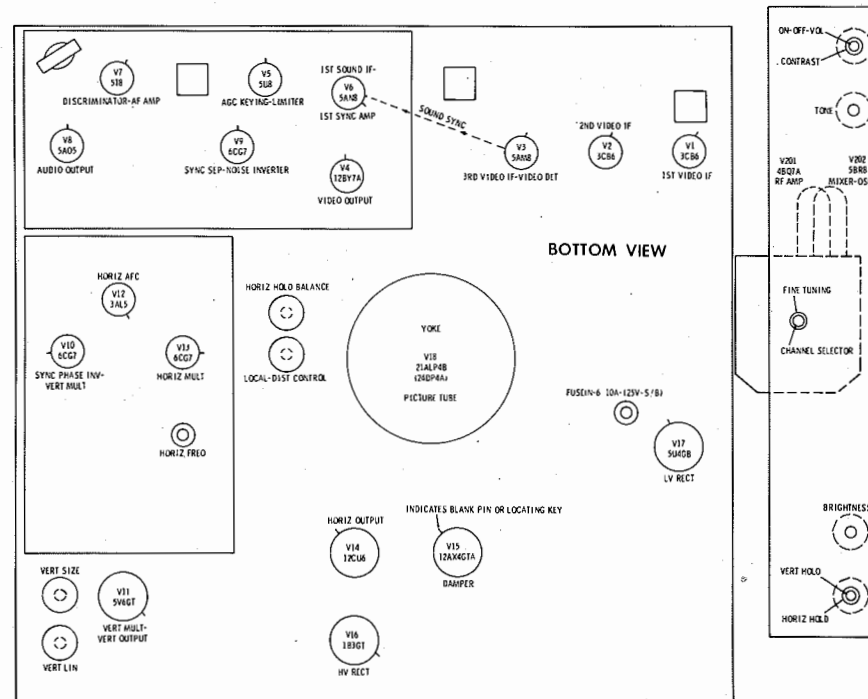
EMERSON MODELS 1214, 1215, 1216, 1217, 1218, 1219, 1224, 1225, 1226, 1227, 1248 (Ch. 120322E, V, 120323T, 120329V, 120330T)

FOLDER 1

## RESISTANCE MEASUREMENTS

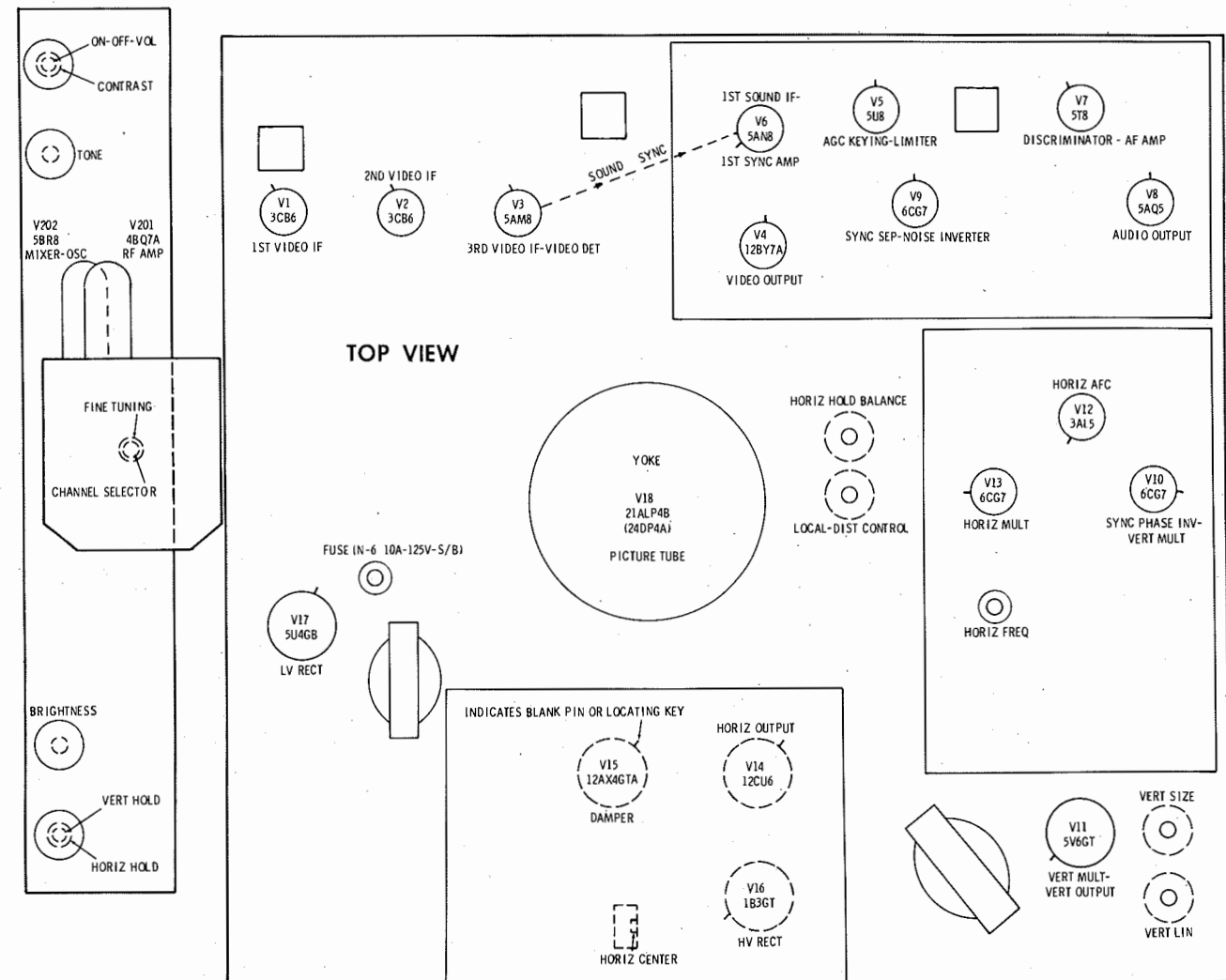
| ITEM | TUBE    | Pin 1 | Pin 2   | Pin 3          | Pin 4          | Pin 5          | Pin 6          | Pin 7  | Pin 8  | Pin 9             |
|------|---------|-------|---------|----------------|----------------|----------------|----------------|--------|--------|-------------------|
| V1   | 3CB6    | 250K  | 56Ω     | 1.5Ω           | 2Ω             | †2500Ω         | †2500Ω         | 0Ω     |        |                   |
| V2   | 3CB6    | 250K  | 56Ω     | 2Ω             | 2.5Ω           | †2500Ω         | †2500Ω         | 0Ω     |        |                   |
| V3   | 5AM8    | 180Ω  | .1Ω     | †2500Ω         | 2.5Ω           | .3Ω            | †2500Ω         | .1Ω    | 48K    | 0Ω                |
| V4   | 12BY7A  | •170Ω | 520K    | 0Ω             | 7.5Ω           | 7.5Ω           | 7Ω             | †5000Ω | †10K   | 0Ω                |
| V5   | 5U8     | 170K  | 47K     | †12K           | 5.5Ω           | 4.5Ω           | †2500Ω         | 0Ω     | †4500Ω | †150K             |
| V6   | 5AN8    | †15K  | 52K     | 0Ω             | 7.5Ω           | 7.7Ω           | †2500Ω         | †2500Ω | 1meg   | 56Ω               |
| V7   | 5T8     | 80K   | 80K     | 150K           | 4.5Ω           | 3Ω             | 0Ω             | 0Ω     | 10meg  | †220K             |
| V8   | 5AQ5    | 470K  | 130Ω    | 5.5Ω           | 6Ω             | †1900Ω         | †1500Ω         | 470K   |        |                   |
| V9   | 6CG7    | †49K  | 4.6meg  | 4700Ω          | 7Ω             | 6Ω             | †20K           | 2.4meg | 0Ω     | 0Ω                |
| V10  | 6CG7    | †17K  | †1meg   | 3300Ω          | 3.5Ω           | 4Ω             | •†3meg         | •700K  | 0Ω     | 0Ω                |
| V11  | 5V6GT   | NC    | 7.7Ω    | †380Ω          | †490Ω          | 2.2meg         | NC             | 8Ω     | •550Ω  |                   |
| V12  | 3AL5    | INF   | INF     | 3.7Ω           | 3Ω             | 22K            | 0Ω             | 22K    |        |                   |
| V13  | 6CG7    | †120K | •140K   | 1200Ω          | 3.7Ω           | 3.5Ω           | †20K           | INF    | 1200Ω  | 0Ω                |
| V14  | 12CU6   | NC    | 3.5Ω    | NC             | †8700Ω         | 450K           | NC             | 3.2Ω   | 100Ω   | TOP CAP<br>•†40Ω  |
| V15  | 12AX4GT | NC    | NC      | INF            | NC             | †26.5Ω         | NC             | 3.2Ω   | 2Ω     |                   |
| V16  | 1B3GT   |       | PINS    | 1 THRU 8       | HAVE           | INFINITE       | RESISTANCE     |        |        | TOP CAP<br>•†550Ω |
| V17  | 5U4GB   | NC    | †       | NC             | 22.8Ω          | NC             | 25.2Ω          | NC     | †      |                   |
| V18  | 21ALP4B | 0Ω    | 10K     | Pin 6<br>†490Ω | Pin 10<br>†20Ω | Pin 11<br>250K | Pin 12<br>1.5Ω |        |        |                   |
| V201 | 4BQ7A   | †500Ω | †2.2meg | 100K           | 1.5Ω           | 3Ω             | 100K           | 1meg   | 0Ω     | 0Ω                |
| V202 | 5BR8    | 10K   | †6700Ω  | 0Ω             | 0Ω             | 1.5Ω           | †1500Ω         | †10K   | 100K   | 325K              |

THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.  
 THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.  
 MEASURED FROM 270V SOURCE.  
 MEASURED FROM PIN 3 OF V15.  
 NC NO CONNECTION.



## TUBE PLACEMENT CHART

## TUBE PLACEMENT CHART



## TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

### POWER SUPPLY FAILURE

No raster, no sound Fuse (M1), V17

### SWEEP FAILURE

No raster, has sound V12, V13, V14, V15, V16, V18  
 No vertical deflection V10, V11  
 Poor vert. linearity or foldover V10, V11  
 Poor horiz. linearity or foldover V13, V14, V15  
 Narrow picture V13, V14, V15, V17  
 Vert. off freq. V10, V11  
 Horiz. off freq. V13

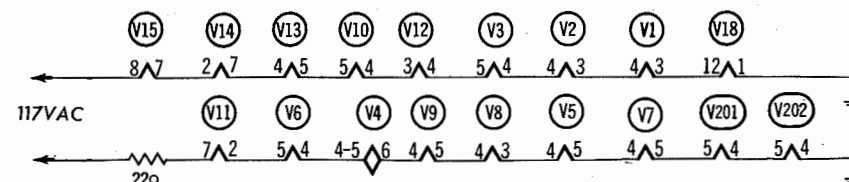
### LOSS OF PICTURE OR SOUND

No pic, no sound, has raster V1, V2, V3,  
 No pic, no sound, has snow V201, V202, V1  
 No pic, has sound, has raster V4, V18  
 Has pic, no sound V5, V6, V7, V8  
 Overloaded picture V5

### SYNC FAILURE

No vert. sync V8, V9, V10  
 No horiz. sync V6, V8, V10, V12  
 No vert. or horiz. sync V8, V9, V10

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



EMERSON MODELS 1214, 1215, 1216, 1217,  
 1218, 1219, 1224, 1225, 1226, 1227, 1248  
 (Ch. 120322E, V, 120323T, 120329V, 120330T)

FOLDER 1




ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS



USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.  
The High Voltage lead should be securely taped and kept away from the chassis.  
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Set "Local-Distant" control (R5B) fully counterclockwise.  
Short pin 1 (grid) of the 3CB6 (V2) to chassis for steps 1, 2 and 3 below.  
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.  
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.  
Use only enough generator output to provide a usable indication on VTVM.

| DUMMY ANTENNA                | SWEEP GENERATOR COUPLING  | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY             | CHANNEL                     | CONNECT SCOPE  | ADJUST           | REMARKS  |
|------------------------------|---|---------------------------|--|-----------------------------|--|------------------|--|
| 1. Direct                    | Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis. | 44.0MC (10MC Swp)         | 45.0MC                                 | Any non-interfering channel | Vert. Amp. thru detector probe to pin 5 (plate) of 3CB6 (V1). Low side to chassis.   | Mixer Plate Coil | Adjust for maximum gain at marker. Use only enough sweep generator output to provide a usable pattern on scope.  |
| 2. "                         | "   | "                         | 41.25MC                                | "                           | "  | A1               | Adjust to place marker in trap notch.  |
| 3. "                         | "   | "                         | 42.6MC<br>45.0MC                       | "                           | "  | A2               | Adjust for flat response similar to Fig. 1.  |
| 4. 1500mmf Ceramic Capacitor | High side to pin 1 (grid) of 3CB6 (V1). Low side to chassis.  | Not used                  | 45.2MC                                 | "                           | USE VTVM. DC probe to point  . Common to chassis. (Across Video Detector load). | A3               | Connect the negative lead of a 3 volt bias supply to point  . Positive to chassis. Remove short from pin 1 of V2. Adjust generator output to maintain no more than 2 volts at all times. Adjust A3 for maximum deflection. If two peaks occur, use one with the slug furthest counterclockwise. |
| 5. "                         | "   | "                         | 42.5MC                                 | "                           | "  | A4               | Adjust for maximum deflection.   |
| 6. "                         | "   | "                         | 43.5MC                                 | "                           | "  | A5               | Preset A6 so that slug is all the way out of the coil. Adjust A5 for maximum deflection.   |
| 7. "                         | "   | "                         | 47.25MC                                | "                           | "  | A6               | Adjust for MINIMUM deflection.   |
| 8. Direct                    | Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis. | 44.0MC (10MC Swp)         | 41.25MC<br>42.0MC<br>45.0MC<br>45.75MC | "                           | Vert. Amp. thru 20K to point  . Low side to chassis. (Across Video Det. load)   |                  | Check for response similar to Fig. 2. If necessary, retouch A3 to position 45.75 MC marker, A2 for correct tilt and A4 for proper bandwidth.   |

SOUND IF ALIGNMENT

| DUMMY ANTENNA | SIGNAL GENERATOR COUPLING   | SIGNAL GENERATOR FREQUENCY | CHANNEL                     | CONNECT VTVM   | ADJUST     | REMARKS  |
|---------------|---|----------------------------|-----------------------------|--|------------|--|
| 9. .01mf      | High side to point  . Low side to chassis. | 4.5MC (Unmod)              | Any non-interfering channel | DC probe to point  . Common to chassis. | A7, A8, A9 | Detune A10 for maximum negative deflection. Adjust A7, A8 and A9 for maximum deflection.                         |
| 10. "         | "   | "                          | "                           | "  | A10        | Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. |

4.5MC TRAP ALIGNMENT

4.5MC beat interference may be eliminated by adjusting the Fine Tuning until a beat pattern is visible in the picture. Adjust A11 for MINIMUM beat interference.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6.

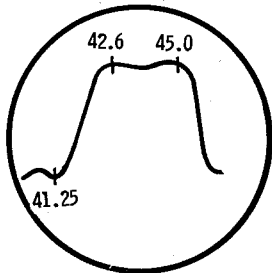


FIG. 1

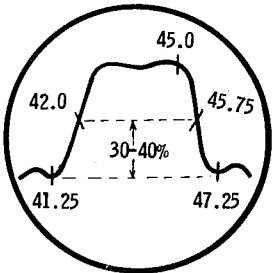
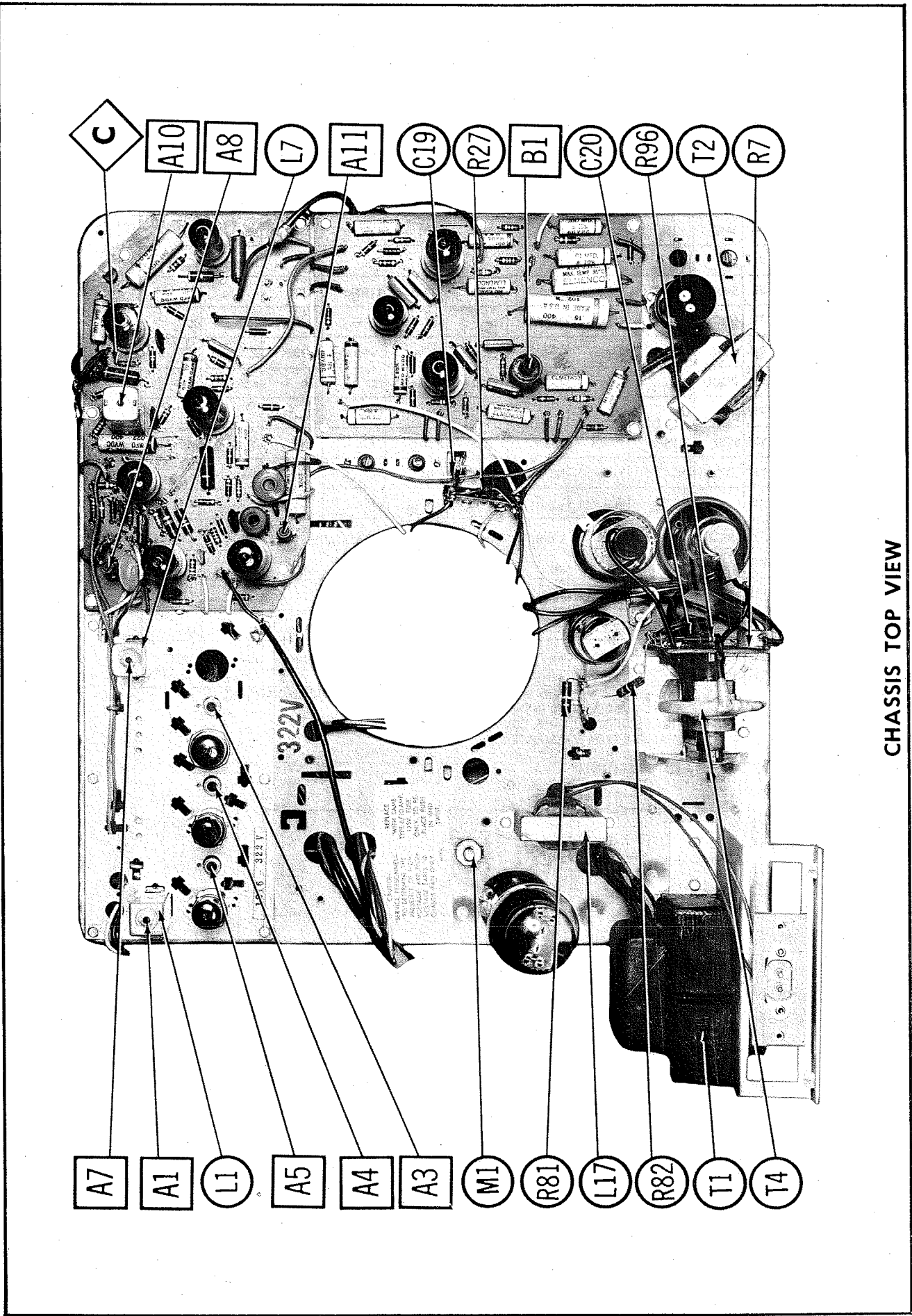


FIG. 2

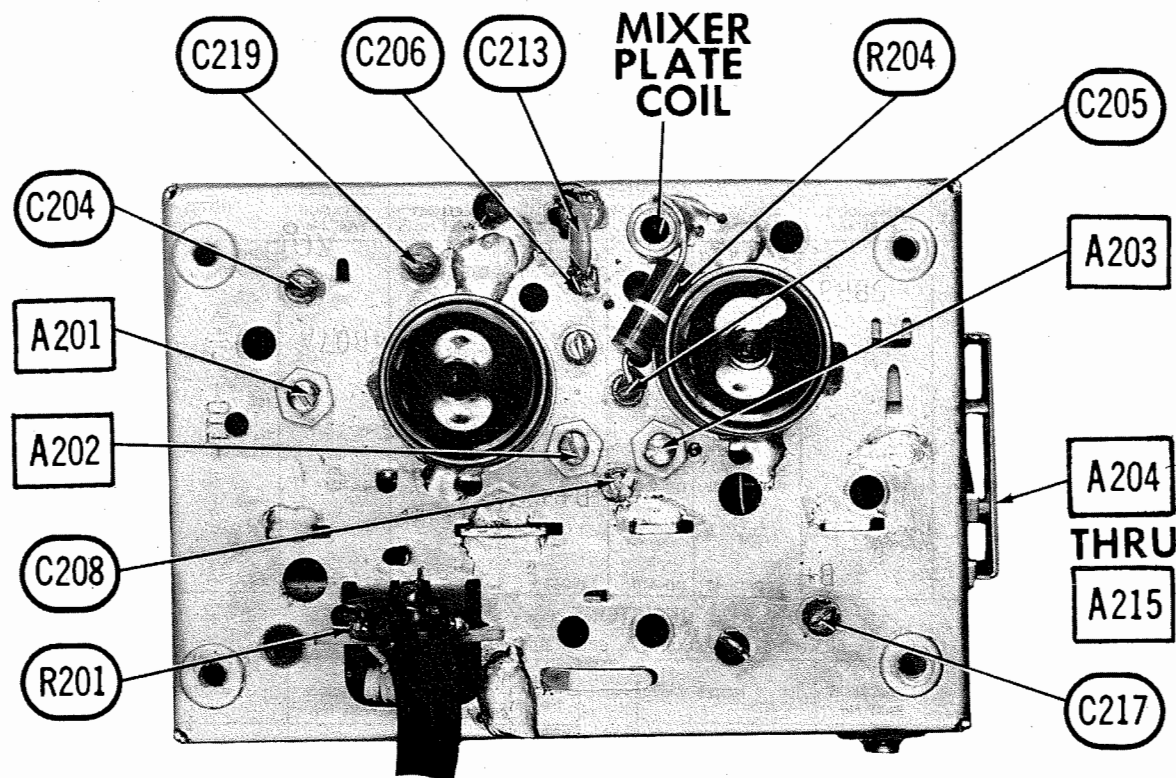


EMERSON MODELS 1214, 1215, 1216, 1217, 1218, 1219,  
1224, 1225, 1226, 1227, 1248 (Ch. 120322E,  
V. 120323I, 120329V, 120330I)

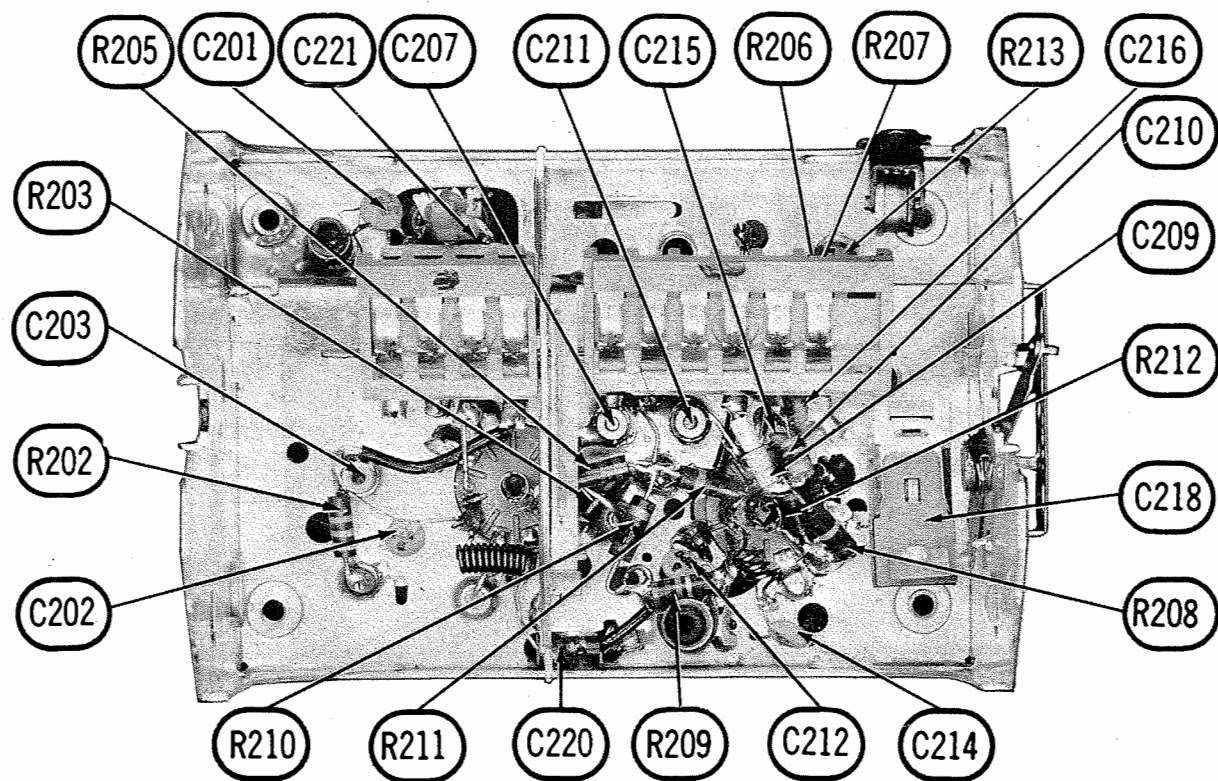
VIEW TOP CHASSIS

FOLDER 1

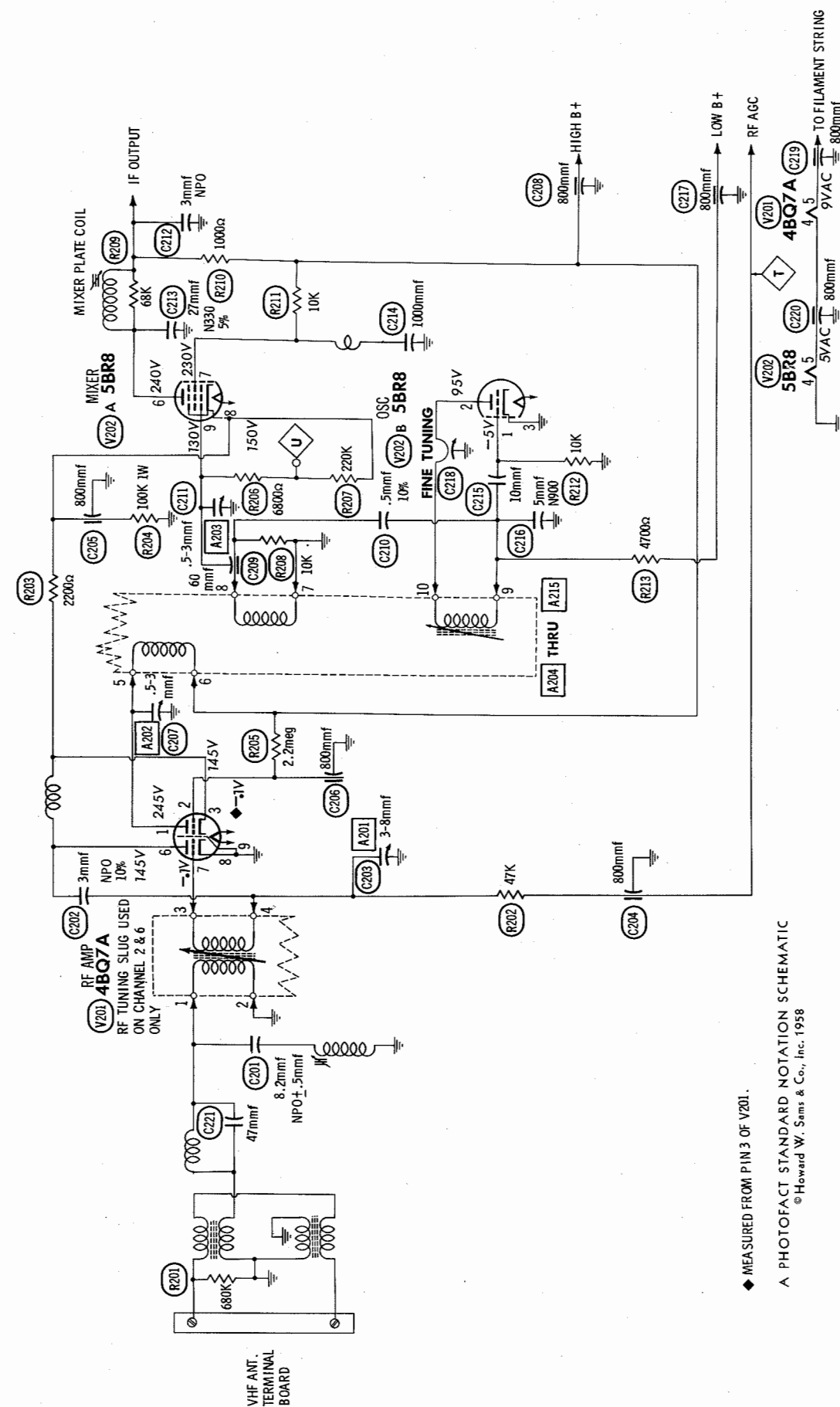




RF TUNER-TOP VIEW



RF TUNER-BOTTOM VIEW



VHF TUNER #470998

EMERSON MODELS 1214, 1215, 1216, 1217, 1218, 1219,  
1224, 1225, 1226, 1227, 1248 (Ch. 120322E,  
V. 120323T, 120329V, 120330T)

FOLDER 1

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.  
The High Voltage lead should be securely taped and kept away from the chassis.  
Allow a 20 minute warm-up period for the receiver and test equipment.

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point  $\diamond$ . Positive to chassis.  
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.  
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.  
Use only enough sweep generator output to provide a usable pattern on scope.  
Use 10MC sweep unless otherwise noted.

| DUMMY ANTENNA                        | SWEEP GENERATOR COUPLING                                 | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE  | ADJUST           | REMARKS   |
|--------------------------------------|--|---------------------------|----------------------------|---------|--|------------------|---|
| 1. Two 120 $\Omega$ Carbon Resistors | Across antenna terminals with 120 $\Omega$ in each lead. | 207MC                     | 205.25MC<br>209.75MC       | 12      | Vert. Amp. thru 10K to point $\diamond$ . Low side to chassis. | A201, A202, A203 | Adjust for response curve similar to Fig. 201 with markers above 90%.   |
| 2. "                                 | "  | 213MC                     | 211.25MC<br>215.75MC       | 13      | "  |                  | Check for response similar to Fig. 201. If markers fall below 70% on any channel, make compromise adjustments of A201, A202 and A203 with channel switch set to that channel. Check all other channels to see that they have not been seriously affected. |
|                                      |  | 201MC                     | 199.25MC<br>203.75MC       | 11      |  |                  |   |
|                                      |  | 195MC                     | 193.25MC<br>197.75MC       | 10      |  |                  |   |
|                                      |  | 189MC                     | 187.25MC<br>191.75MC       | 9       |  |                  |   |
|                                      |  | 183MC                     | 181.25MC<br>185.75MC       | 8       |  |                  |   |
|                                      |  | 177MC                     | 175.25MC<br>179.75MC       | 7       |  |                  |   |
|                                      |  | 85MC                      | 83.25MC<br>87.75MC         | 6       |  |                  |   |
|                                      |  | 79MC                      | 77.25MC<br>81.75MC         | 5       |  |                  |   |
|                                      |  | 69MC                      | 67.25MC<br>71.75MC         | 4       |  |                  |   |
|                                      |  | 63MC                      | 61.25MC<br>65.75MC         | 3       |  |                  |   |
|                                      |  | 57MC                      | 55.25MC<br>59.75MC         | 2       |  |                  |   |

VHF OSCILLATOR ALIGNMENT

Leave bias connect as under RF and Mixer Alignment.  
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.  
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.  
Set the Fine Tuning to the center of its range.  
Use only enough sweep generator output to provide a usable pattern on scope.  
Use 10MC sweep unless otherwise designated.

| DUMMY ANTENNA                        | SWEEP GENERATOR COUPLING                                 | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE                                | ADJUST | REMARKS   |
|--------------------------------------|--|---------------------------|----------------------------|---------|--|--------|---|
| 3. Two 120 $\Omega$ Carbon Resistors | Across antenna terminals with 120 $\Omega$ in each lead. | 213MC                     | 211.25MC<br>215.75MC       | 13      | Vert. Amp. thru 47K. Across Video Det. load. | A204   | Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%. |
|                                      |  | 207MC                     | 205.25MC<br>209.75MC       | 12      |  | A205   |   |
|                                      |  | 201MC                     | 199.25MC<br>203.75MC       | 11      |  | A206   |   |
|                                      |  | 195MC                     | 193.25MC<br>197.75MC       | 10      |  | A207   |   |
|                                      |  | 189MC                     | 187.25MC<br>191.75MC       | 9       |  | A208   |   |
|                                      |  | 183MC                     | 181.25MC<br>185.75MC       | 8       |  | A209   |   |
|                                      |  | 177MC                     | 175.25MC<br>179.75MC       | 7       |  | A210   |   |
|                                      |  | 85MC                      | 83.25MC<br>87.75MC         | 6       |  | A211   |   |
|                                      |  | 79MC                      | 77.25MC<br>81.75MC         | 5       |  | A212   |   |
|                                      |  | 69MC                      | 67.25MC<br>71.75MC         | 4       |  | A213   |   |
|                                      |  | 63MC                      | 61.25MC<br>65.75MC         | 3       |  | A214   |   |
|                                      |  | 57MC                      | 55.25MC<br>59.75MC         | 2       |  | A215   |   |

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

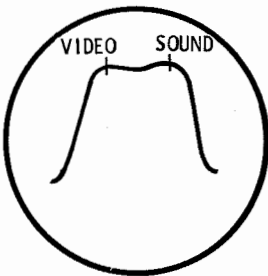


FIG. 201

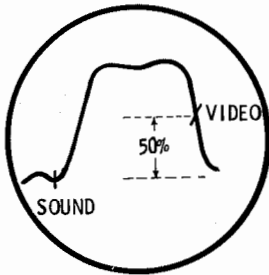


FIG. 202

TUNER PARTS LIST AND DESCRIPTIONS  
TUBES ( GENERAL ELECTRIC, SYLVANIA )

| ITEM No. | USE     | TYPE  | NOTES | ITEM No. | USE        | TYPE | NOTES |
|----------|---------|-------|-------|----------|------------|------|-------|
| V201     | RF Amp. | 4BQ7A |       | V202     | Mixer-Osc. | 5BR8 |       |

FIXED CAPACITORS

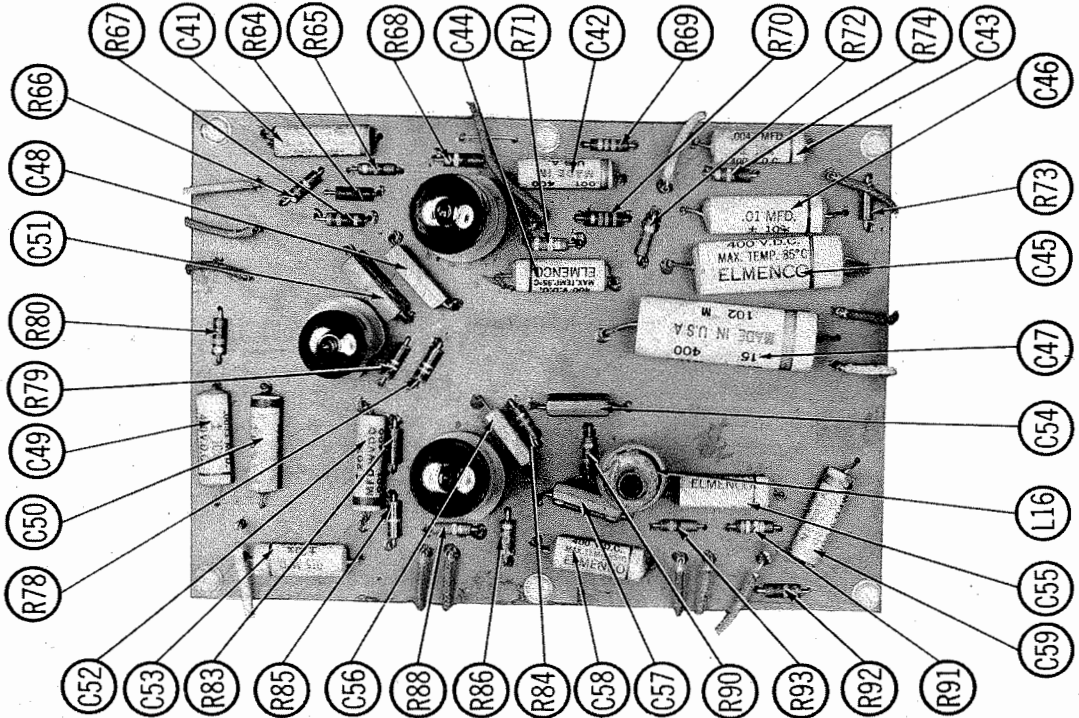
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

| ITEM No. | RATING CAP. VOLT | REPLACEMENT DATA |                  |                    |                           |                  |                  | NOTES                      |
|----------|------------------|------------------|------------------|--------------------|---------------------------|------------------|------------------|----------------------------|
|          |                  | EMERSON PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | SPRAGUE PART No. |                            |
| C201     | 8.2              |                  | NPO-DI 8.2       |                    | C10V82C                   |                  |                  | NPO $\pm$ .5mmf<br>NPO 10% |
| C202     | 3                |                  | NPO-DI 3         |                    | C10V3C                    | ZT-553           |                  |                            |
| C203     | 3-8              |                  |                  |                    |                           |                  |                  |                            |
| C204     | 800              |                  |                  |                    |                           |                  |                  |                            |
| C205     | 800              |                  |                  | 829.3              |                           | CT565A           |                  |                            |
| C206     | 800              |                  |                  |                    |                           |                  |                  |                            |
| C207     | .5-3             |                  |                  |                    |                           |                  |                  |                            |
| C208     | 800              |                  |                  |                    |                           |                  |                  |                            |
| C209     | 60               |                  |                  |                    |                           |                  |                  |                            |
| C210     | .5               |                  | NPO-SI .5        | TCZ-R5             |                           |                  |                  | 10%                        |
| C211     | .5-3             |                  |                  | 829-3              |                           |                  |                  |                            |
| C212     | 3                |                  | NPO-DI 3         |                    | C10V3C                    | CT565A<br>ZT-553 |                  | NPO<br>N330 5%             |
| C213     | 27               |                  |                  |                    |                           |                  |                  |                            |
| C214     | 1000             |                  | BPD-001          | DD-102             | BYA6DI                    | DC521            | 5HK-DI           |                            |
| C215     | 10               |                  | BPD-00001        | DD-100             | L10Q1                     | UC-541           | 5GA-Q1           |                            |
| C216     | 5                |                  |                  |                    |                           |                  |                  | N900                       |
| C217     | 800              |                  |                  |                    |                           |                  |                  |                            |
| C218     |                  |                  |                  |                    |                           |                  |                  |                            |
| C219     | 800              |                  |                  |                    |                           |                  |                  |                            |
| C220     | 800              |                  |                  |                    |                           |                  |                  |                            |
| C221     | 47               |                  | NPO-DI 47        | DD-470             | L10Q47                    |                  | 5TCC-Q47         | 10%                        |

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING        |      | EMERSON PART No. | NOTES | ITEM No. | RATING        |      | EMERSON PART No. | NOTES |
|----------|---------------|------|------------------|-------|----------|---------------|------|------------------|-------|
|          | OHMS          | WATT |                  |       |          | OHMS          | WATT |                  |       |
| R201     | 680K          |      |                  |       | R208     | 10K           |      |                  |       |
| R202     | 47K           |      |                  |       | R209     | 68K           |      |                  |       |
| R203     | 2200 $\Omega$ |      |                  |       | R210     | 1000 $\Omega$ |      |                  |       |
| R204     | 100K          |      |                  |       | R211     | 10K           |      |                  |       |
| R205     | 2.2meg        | 1    |                  |       | R212     | 10K           |      |                  |       |
| R206     | 6800 $\Omega$ |      |                  |       | R213     | 4700 $\Omega$ |      |                  |       |
| R207     | 220K          |      |                  |       |          |               |      |                  |       |



EMERSON MODELS 1214, 1215, 1216, 1217,  
1218, 1219, 1224, 1225, 1226, 1227, 1248  
(Ch. 120322E, V, 120323T, 120329V, 120330T)

PRINTED BOARD

FOLDER 1









PARTS LIST AND DESCRIPTIONS (Continued)  
MISCELLANEOUS

| ITEM No. | PART NAME        | EMERSON PART No. | NOTES                           |
|----------|------------------|------------------|---------------------------------|
| M2       | Lamp             | 807000           | #47                             |
| M3       | Tuner            | 470998           | VHF, Ch. 120322-V, 120329-V     |
|          | Tuner            | 470929           | UHF-VHF, Ch. 120323-T, 120330-T |
|          | Tuner            | 470928           | UHF-VHF, Ch. 120323-T, 120330-T |
| M4       | Width Sleeve     | 708277           |                                 |
| M5       | Centering Device | 708129           |                                 |
| M6       | Ion Trap         | 630171           | Sync, Osc.                      |
|          | Printed Board    | 630172           | Sound, Video                    |

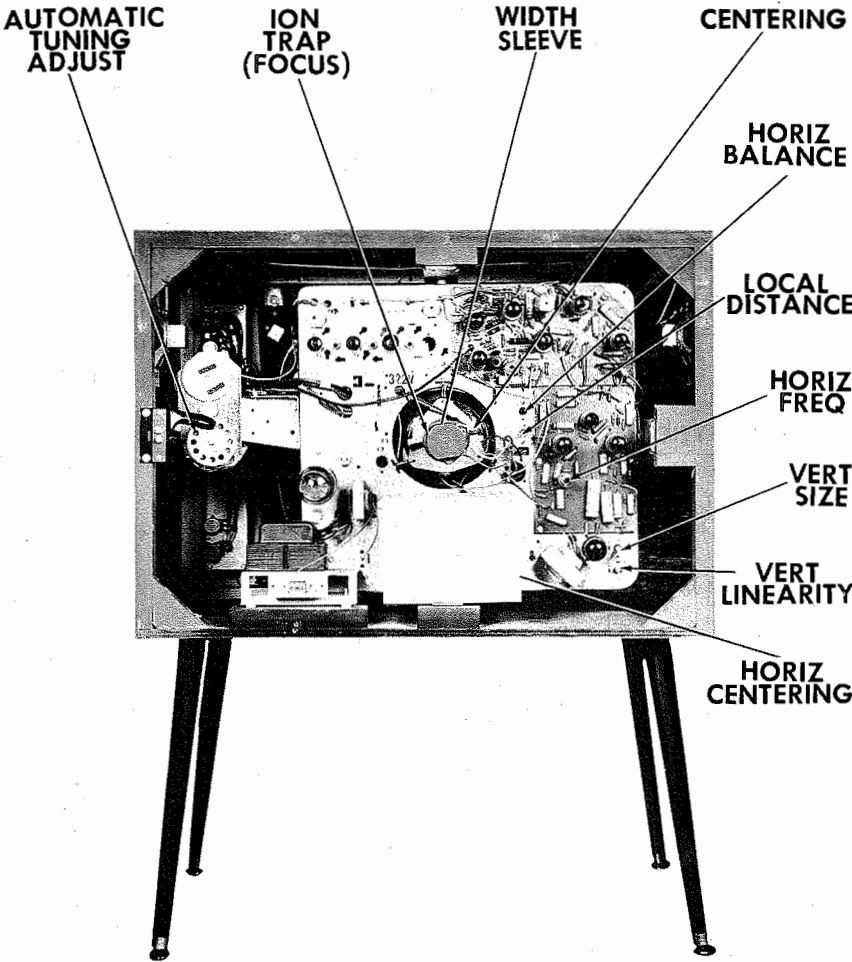
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

| NAME         | PART NO. | DESCRIPTION   |
|--------------|----------|---|
| Safety Glass | 520246   | Models 1214, 1215, 1216, 1217, 1218, 1219                 |
| Safety Glass | 520232   | Models 1224, 1225, 1226, 1227                             |
| Mask         | 460688E  | Green, Models 1224, 1225, 1226, 1227                      |
| Knob         | 460692   | Fine Tuning, Models 1215, 1217, 1219, 1225, 1227          |
| Knob         | 460765   | Fine Tuning, Models 1214, 1216, 1218, 1224, 1226          |
| Knob         | 460764   | Channel Selector, Models 1214, 1216, 1218, 1224, 1226     |
| Knob         | 460690B  | VHF Channel Selector, Models 1215, 1217, 1219, 1225, 1227 |
| Knob         | 460691B  | UHF Channel Selector, Models 1215, 1217, 1219, 1225, 1227 |
| Knob         | 460766   | On-Off-Volume, Vert. Hold                                 |
| Knob         | 460767   | Contrast, Horiz. Hold                                     |
| Knob         | 460768   | Tone, Brightness  |
| Dial         | 460756   | VHF, Models 1214, 1216, 1218, 1224, 1226                  |
| Dial         | 460757   | VHF, Models 1215, 1217, 1219, 1225, 1227                  |
| Dial         | 460758   | UHF, Models 1215, 1217, 1219, 1225, 1227                  |
| Cabinet      | 140778   | Mahogany, Models 1216, 1217                               |
| Cabinet      | 140778A  | Blond, Models 1216, 1217                                  |
| Cabinet      | 140778B  | Walnut, Models 1216, 1217                                 |
| Cabinet      | 140800A  | Blond, Console, Models 1224, 1225                         |
| Cabinet      | 140800B  | Walnut, Console, Models 1224, 1225                        |
| Cabinet      | 140801   | Mahogany, Console, Models 1226, 1227                      |
| Cabinet      | 140801A  | Blond, Console, Models 1226, 1227                         |
| Cabinet      | 140801B  | Walnut, Console, Models 1226, 1227                        |
| Leg          | 620275   | Mahogany, Models 1216, 1217, 1224, 1225                   |
| Leg          | 620275A  | Blond, Models 1216, 1217, 1224, 1225                      |
| Leg          | 620275B  | Walnut, Models 1216, 1217, 1224, 1225                     |
| Leg          | 412546   | Brass, Models 1218, 1219                                  |

WIRING DATA

|   |  |
|---|--|
| High Voltage Lead .....                   | Use BELDEN No. 8869                                      |
| Shielded Hook-up Wire .....               | Use BELDEN No. 8885 (Single Conductor)                   |
|   | 8738 (Two Conductor)                                     |
| General-use Unshielded Hook-up Wire ..... | Use BELDEN No. 8530 (Solid) Available in Ten Colors      |
|   | 8524 (Stranded) Available in Ten Colors                  |
| Power Cord (Interlock Type) .....         | Use BELDEN No. 8874                                      |
| 3000Ω Tuner Input Lead .....              | Use BELDEN No. 8225                                      |
| 3000Ω Antenna Lead-in .....               | Use BELDEN No. 8230 or 8275                              |
| Antenna Rotor Cable .....                 | Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor |
|   | 8485 (Round) - 5 Conductor                               |
|   | 8488 (Round) - 8 Conductor                               |



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Tune in a good TV signal and turn Local-Distant Control just below overload.

Place a jumper across C55 which is in parallel with the Horizontal Frequency Coll. Connect a clip lead from pin 7 (grid) of the Horizontal Multivibrator (V13) to chassis.

Set the Horizontal Hold to the center of its range.

Adjust the Horizontal Balance (R5A) until the picture falls into sync (it may sway back and forth).

Remove the short from C55 and adjust the Horizontal Frequency slug (B1) for same sync condition as in preceding step.

Remove the short from the grid. The picture should be in sync.

EMERSON MODELS 1214, 1215, 1216, 1217,  
1218, 1219, 1224, 1225, 1226, 1227, 1248  
(Ch. 120322E, V, 120323T, 120329V, 120330T)

## TUBES (GENERAL ELECTRIC, SYLVANIA)

| ITEM No. | USE                   | TYPE   | NOTES | ITEM No. | USE                        | TYPE     | NOTES |
|----------|-----------------------|--------|-------|----------|----------------------------|----------|-------|
| V1       | 1st. Video IF Amp.    | 3CB6   |       | V9       | Sync Sep. - Noise Inv.     | 6CG7     |       |
| V2       | 2nd. Video IF Amp.    | 3CB6   |       | V10      | Sync Phase Inv. -          |          |       |
| V3       | 3rd. Video IF Amp. -  |        |       | V11      | Vert. Mult. - Vert. Output | 6CG7     |       |
| V4       | Video Det.            | 5AM8   |       | V12      | Horiz. AFC                 | 5V8GT    |       |
| V5       | Video Output          | 12BY7A |       | V13      | Horiz. Mult.               | 3AL5     |       |
| V6       | AGC Keying-Limiter    | 5U8    |       | V14      | Horiz. Output              | 6CG7     |       |
| V7       | 1st. Sound IF Amp. -  | 5AN8   |       | V15      | Damper                     | 12AX4GTA |       |
| V8       | 1st. Sync Amp.        | 5T8    |       | V16      | HV Rect.                   | 1B3GT    |       |
|          | Discriminator-AF Amp. | 5A95   |       | V17      | LV Rect.                   | 5U4GB    |       |
|          | Audio Output          |        |       |          |                            |          |       |

## PICTURE TUBE

| ITEM No. | REPLACEMENT DATA  |   |   |   | NOTES   |
|----------|-------------------|---|---|---|---|
|          | EMERSON PART No.  | GENERAL ELECTRIC PART No.                   | RCA PART No.                                    | SYLVANIA PART No.                           |   |
| V18      | 21ALP4B<br>24DP4A | 21ALP4B/<br>21ALP4A ①<br>24DP4A/<br>24YP4 ① | 21ALP4-B/<br>21ALP4-A ②<br>24DP4A-A/<br>24YP4 ② | 21ALP4A/<br>21ALP4B ③<br>24DP4A/<br>24YP4 ③ | ① "Aluminized"<br>② "Silverama" ②<br>③ "Silver Screen 85" |

## ELECTROLYTIC CAPACITORS

| RATING   |      |       | REPLACEMENT DATA |                  |                           |                 |                  |                   |                  |
|----------|------|-------|------------------|------------------|---------------------------|-----------------|------------------|-------------------|------------------|
| ITEM No. | CAP. | VOLT. | EMERSON PART No. | AEROVOX PART No. | CORNELL DUBILIER PART No. | MALLOY PART No. | PYRAMID PART No. | SANGAMO PART No.  | SPRAGUE PART No. |
| C1A      | 80   | 300   | 925340           | PR4-800          | BBRQ926.5                 | WQ410           |                  | Q-011<br>MT-4510  | TVA-4708         |
| E        | 40   | 250   |                  |                  |                           |                 |                  |                   |                  |
| C        | 40   | 300   |                  |                  |                           |                 |                  |                   |                  |
| D        | 10   | 300   |                  |                  |                           |                 |                  |                   |                  |
| C2A      | 80   | 300   | 925349           | PR4-700          | BBRQ805                   | WQ650           |                  | Q-191<br>MTD-4510 | TVA-4659         |
| B        | 40   | 300   |                  |                  |                           |                 |                  |                   |                  |
| C        | 10   | 300   |                  |                  |                           |                 |                  |                   |                  |
| D        | 100  | 50    |                  |                  |                           |                 |                  |                   |                  |

## FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

| ITEM No. | RATING |      | REPLACEMENT DATA |                  |                    |                           |                  |                  | NOTES                              |
|----------|--------|------|------------------|------------------|--------------------|---------------------------|------------------|------------------|------------------------------------|
|          | CAP.   | VOLT | EMERSON PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | SPRAGUE PART No. |                                    |
| C3       | .15    | 200  | 924321           | P288N-15         | DD-102             | CUB2P15                   | GEM-2015         | 2TM-P15          | NPO 5% ①<br>10%<br>NT50 10%<br>10% |
| C4       | 1000   |      | 928933           | BPD-001          |                    | BYA6D1                    | DC521            | 5HK-D1           |                                    |
| C5       | .15    | 200  | 924321           | P288N-15         |                    | CUB2P15                   | GEM-2015         | 2TM-P15          |                                    |
| C6       | 47     |      |                  |                  |                    |                           |                  |                  |                                    |
| C7       | 470    |      | 928907           | N750-DI 47       | MD-471             | CTCZ-47                   |                  |                  |                                    |
| C8       | 47     |      | 928895           |                  | MD-681             | C10Q47U                   | NT-5447          | 5TCU-Q47         |                                    |
| C9       | 680    |      | 928909           |                  |                    |                           |                  |                  |                                    |
| C10      | 1000   |      | 928933           | BPD-001          | DD-102             | BYA6D1                    | DC521            | 5HK-D1           | 10%                                |
| C11      | 470    |      | 928907           | BPD-00047        | DD-471             | L10747                    | UC-5347          | 5GA-T47          | 10%                                |
| C12      | 1000   |      | 928911           |                  |                    |                           |                  |                  | 10%                                |
| C13      | 4.7    |      | 928212           | NPO-SI 4.7       | TCZ-4R7            | CTA6V47C                  | ZT-5447          | 5TCCB-V47        | 10%                                |
| C14      | .1     | 200  | 924315           | P288N-1          | DF-104             | CUB2P1                    | GEM-201          | 2TM-P1           | 10%                                |
| C15      | 47     |      |                  | N750-DI 47       | DTN-47             | C10Q47U                   | NT-5447          | 5TCU-Q47         | N750 10%                           |
| C16      | 4700   |      | 928923           | BPD-0047         | DD-472             | BYA10D47M                 | UC-5247          | 5HK-D47          |                                    |
| C17      | .047   | 400  | 924554           | P488N-047        | DF-503             | CUB4S1                    | GEM-4147         | 4TM-S47          |                                    |
| C18      | 1000   |      | 928933           | BPD-001          | DD-102             | BYA6D1                    | DC521            | 5HK-D1           |                                    |
| C19      | 1000   |      | 928933           | BPD-001          | DD-102             | BYA6D1                    | DC521            | 5HK-D1           |                                    |
| C20      | 470    | 1000 | 911476           | P488N-022        | MD-471             | CUB4S22                   | GEM-4122         | 4TM-S22          | 10%                                |
| C21      | .022   | 400  | 924524           | BPD-00047        | DD-471             | L10747                    | UC-5347          | 5GA-T47          |                                    |
| C22      | 470    |      | 928916           |                  |                    |                           |                  |                  | N330 10%                           |
| C23      | 180    |      | 928865           |                  |                    |                           |                  |                  | 10%                                |
| C24      | 680    |      | 928909           |                  | MD-681             |                           |                  |                  |                                    |
| C25      | 4700   |      | 928923           | BPD-0047         | DD-472             | BYA10D47M                 | UC-5247          | 5HK-D47          |                                    |
| C26      | 47     |      | 928895           | 1469-000047      | DD-470             | 22R5Q47                   | MS-447           |                  | 10%                                |
| C27      | 4700   |      | 928923           | BPD-0047         | DD-472             | BYA10D47M                 | UC-5247          | 5HK-D47          |                                    |
| C28      | 4700   |      | 928923           | BPD-0047         | DD-472             | BYA10D47M                 | UC-5247          | 5HK-D47          |                                    |
| C29      | 100    |      | 928897           | NPO-DI 100       | DD-101             | L1071                     | ZT-531           | 5TCC-T1          | 10%                                |
| C30      | .001   | 400  | 924513           | P488N-001        | D6-102             | CUB6D1                    | GEM-421          | 6TM-D1           |                                    |
| C31      | .0047  | 400  | 924553           | P488N-0047       | D6-472             | CUB6D47                   | GEM-6247         | 6TM-D47          |                                    |
| C32      | .01    | 400  | 924514           | P488N-01         | D6-103             | CUB4S1                    | GEM-411          | 4TM-S1           |                                    |
| C33      | 470    |      | 928916           | BPD-00047        | DD-471             | L10747                    | UC-5347          | 5GA-T47          |                                    |
| C34      | .047   | 400  | 924554           | P488N-047        | DF-503             | CUB4S47                   | GEM-4147         | 4TM-S47          |                                    |
| C35      | .0047  | 600  | 924753           | P688N-0047       | D6-472             | CUB6D47                   | GEM-6247         | 6TM-D47          |                                    |
| C36      | 22     |      | 928857           |                  |                    |                           |                  |                  |                                    |
| C37      | .001   | 400  | 924513           | P488N-001        | D6-102             | CUB6D1                    | GEM-421          | 6TM-D1           |                                    |
| C38      | .01    | 400  | 924514           | P488N-01         | DF-103             | CUB4S1                    | GEM-411          | 4TM-S1           |                                    |
| C39      | .01    | 400  | 924514           | P488N-01         | DF-103             | CUB4S1                    | GEM-411          | 4TM-S1           |                                    |
| C40      | 220    |      | 911165           | 1469-00022       | MD-221             | 22R5T22                   | MS-322           | 4TM-S1           | 10%                                |
| C41      | .01    | 400  | 924514           | P488N-01         | D6-103             | CUB4S1                    | GEM-411          | 4TM-S1           |                                    |
| C42      | .001   | 400  | 924513           | P488N-001        | D6-102             | CUB6D1                    | GEM-421          | 6TM-D1           |                                    |
| C43      | .0047  | 400  | 924553           |                  |                    |                           | GEM-16247        |                  | 10%                                |
| C44      | .0047  | 400  | 924553           |                  |                    |                           | GEM-16247        |                  | 10%                                |
| C45      | .1     | 400  | 924515           | P488N-1          | DF-104             | CUB4P1                    | GEM-401          | 4TM-P1           | 10%                                |
| C46      | .01    | 600  | 924604           |                  |                    |                           | GEM-1611         |                  | 10%                                |
| C47      | .15    | 400  | 924421           |                  |                    |                           |                  |                  | 10%                                |
| C48      | 680    |      | 911171           | 1464-00068       | MD-681             | IR5T68                    |                  | MS-368           | 10%                                |
| C49      | .0033  | 400  | 924433           |                  |                    |                           | GEM-16233        |                  | 10%                                |
| C50      | .001   | 400  | 924513           | P488N-001        | D6-102             | CUB6D1                    | GEM-1621         | 6TM-D1           | 10%                                |
| C51      | 680    |      | 911171           | 1464-00068       | MD-681             | IR5T68                    |                  | MS-368           |                                    |
| C52      | .001   | 400  | 924513           | P488N-001        | D6-102             | CUB6D1                    | GEM-421          | 6TM-D1           |                                    |
| C53      | .015   | 200  | 924320           | P288N-015        | DD-101             | CUB6S15                   | GEM-4115         | 4TM-S15          |                                    |
| C54      | 100    |      | 911161           | 1469-0001        | DD-101             | 22R5T1                    | MCB235           | MS-31            | 10%                                |
| C55      | .0047  | 600  | 924653           |                  |                    |                           | GEM-16247        |                  | 10%                                |
| C56      | 220    |      | 911165           | 1469-00022       | MD-221             | 22R5T22                   |                  | MS-322           | 10%                                |
| C57      | 390    |      | 911168           | 1469-00039       | MD-391             | 5R5T39                    |                  | MS-339           | 10%                                |
| C58      | .0047  | 400  | 924433           |                  |                    |                           | GEM-16247        |                  | 10%                                |
| C59      | .01    | 200  | 924314           | P288N-01         | D6-103             | CUB4S1                    | GEM-411          | 4TM-S1           |                                    |
| C60      | .1     | 400  | 924515           | P488N-1          | DF-104             | CUB4P1                    | GEM-401          | 4TM-P1           |                                    |
| C61      | .22    | 200  | 924325           | P288N-22         |                    | CUB2P22                   | GEM-2022         | 2TM-P22          |                                    |
| C62      | .1     | 600  | 924715           | P688N-1          | DF-104             | CUB6P1                    | GEM-601          | 6TM-P1           |                                    |
| C63      | 100    | 2000 | 928932           |                  |                    |                           |                  |                  | 10%                                |
| C64      | 1000   |      | 928933           | BPD-001          | DD-102             | BYA6D1                    | DC521            | 5HK-D1           |                                    |
| C65      | 1000   |      | 928933           | BPD-001          | DD-102             | BYA6D1                    | DC521            | 5HK-D1           |                                    |
| C66      | 1000   |      | 928933           | BPD-001          | DD-102             | BYA6D1                    | DC521            | 5HK-D1           |                                    |
| C67      | 1000   |      | 928933           | BPD-001          | DD-102             | BYA6D1                    | DC521            | 5HK-D1           |                                    |
| C68      | 10000  | 400  | 922201           | 1467-01          | DD-103             |                           | MC475            |                  |                                    |
| C69      | 10000  | 400  | 922201           | 1467-01          | DD-103             |                           | MC475            |                  |                                    |
| C70      | 1000   |      | 928927           | BPD-001          | DD-102             | BYA6D1                    | DC521            | 5HK-D1           |                                    |
| C71      | 1000   |      | 928927           | BPD-001          | DD-102             | BYA6D1                    | DC521            | 5HK-D1           |                                    |

① Not used in some versions.

## PARTS LIST AND DESCRIPTIONS CONTROLS

| ITEM No. | RATING          |       | REPLACEMENT DATA    |                       |                       |                 |                     | INSTALLATION NOTES     |
|----------|-----------------|-------|---------------------|-----------------------|-----------------------|-----------------|---------------------|------------------------|
|          | RESIST-<br>ANCE | WATTS | EMERSON<br>PART No. | CENTRALAB<br>PART No. | CLAROSTAT<br>PART No. | IRC<br>PART No. | MALLORY<br>PART No. |                        |
| R1A      | 600Ω            | 1/2   | 390435              | F3-2                  | RTV-666               |                 |                     | Contrast               |
| B        | 1meg            | 1/2   |                     | R2-52                 | Not Req.              |                 | ■ UE3848S           | Volume                 |
| C        | Switch          | 1/2   |                     | KB-1 or KR-1 *        | Not Req.              |                 |                     |                        |
| R2A      | 1meg            | 1/2   | 390434              | B-70                  | A47-1meg-Z            | Q13-137         | U53                 | Tone                   |
| B        | Shaft           | 1/2   |                     | Not Req.              | F3-3                  | Not Req.        | Not Req.            |                        |
| R3A      | 200K            | 1/2   | 390436              | B-46                  | A47-200K-S            | Q11-129         | U43                 | Brightness             |
| B        | Shaft           | 1/2   |                     | Not Req.              | F3-3                  | Not Req.        | Not Req.            |                        |
| R4A      | 50K             | 1/2   | 390437              | F1-29                 | RTV-651               |                 | ♦ UE3841            | Horiz. Hold            |
| B        | 1.5meg          | 1/2   |                     | R2-64                 | Not Req.              |                 |                     | Vert. Hold             |
| R5A      | 200K            | 1/2   | 390431              |                       |                       |                 |                     | Horiz. Balance, Note 1 |
| B        | 100K            | 1/2   |                     |                       |                       |                 |                     | Local-Distant, Note 1  |
|          | 200K            | 1/2   | 390243              | AB-46                 | A47-200K-S            | Q11-129         | TA254L              | Horiz. Balance, Note 1 |
|          | Shaft           | 1/2   |                     | AK-19                 | RN-3                  | TQ              | Not Req.            |                        |
|          | 100K            | 1/2   | 390287              | AB-40                 | A47-100K-S            | Q11-128         | PTA15L              | Local-Distant, Note 1  |
|          | Shaft           | 1/2   |                     | AK-19                 | RN-3                  | TQ              | Not Req.            |                        |
| R6A      | 1500Ω           | 1/2   | 390411              |                       |                       |                 |                     | Vert. Lin., Note 1     |
| B        | 2meg            | 1/2   |                     |                       |                       |                 |                     | Vert. Size, Note 1     |
|          | 1500Ω           | 1/2   | 390343              | AB-6                  | A47-1500-S            | Q11-109         | PTA150L             | Vert. Lin., Note 1     |
|          | Shaft           | 1/2   |                     | AK-19                 | RN-3                  | TQ              | Not Req.            |                        |
|          | 2meg            | 1/2   | 390275              | AB-75                 | A47-2meg-S            | Q11-139         | PTA26L              | Vert. Size, Note 1     |
|          | Shaft           | 1/2   |                     | AK-19                 | RN-3                  | TQ              | Not Req.            |                        |
| R7       | 50Ω             | 2     |                     |                       | 39-50                 |                 | FL-75               | Horiz. Center          |

\* Use KR-1 on CRL "red label" controls and KB-1 on "blue label" controls.  
 \* "STA-LOC" Equivalent : FD62R, OF2250, RU16A, IS2812, US41.  
 \* "STA-LOC" Equivalent : FC54L, OF2187, RU155L, IS2750.  
 Note 1. Some versions use individual controls in this application.

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REPLACEMENT DATA | NOTES  |
|----------|--------|------------------|--------|
| OHMS     | WATT   | EMERSON PART No. |        |
| R8       | 1000Ω  | 350492           |        |
| R9       | 470Ω   | 350412           |        |
| R10      | 68K    |                  | Note 1 |
| R11      | 470Ω   | 350412           |        |
| R12      | 56Ω    | 340192           |        |
| R13      | 8200Ω  | 340712           |        |
| R14      | 470Ω   | 350412           |        |
| R15      | 56Ω    | 340192           |        |
| R16      | 15K    | 340772           |        |
| R17      | 470Ω   | 350412           |        |
| R18      | 180Ω   | 340312           |        |
| R19      | 8200Ω  | 340712           |        |
| R20      | 47K    |                  |        |
| R21      | 470K   | 351132           |        |
| R22      | 10K    | 340732           |        |
| R23      | 10K    | 780732           |        |
| R24      | 10K    | 2                |        |
| R25      | 10K    | 370732           |        |
| R26      | 220K   | 351052           |        |
| R27      | 10K    | 350732           |        |
| R28      | 150K   | 341012           |        |
| R29      | 1meg   | 341212           |        |
| R30      | 6.8meg | 341412           |        |
| R31      | 150K   | 341012           |        |
| R32      | 220K   | 341052           |        |
| R33      | 33K    | 340852           |        |
| R34      | 33K    | 340852           |        |
| R35      | 2700Ω  | 340592           |        |
| R36      | 1meg   | 351212           |        |
| R37      | 470Ω   | 350412           |        |
| R38      | 56Ω    | 340192           |        |
| R39      | 47K    | 340892           |        |
| R40      | 470Ω   | 350412           |        |
| R41      | 22K    | 370812           |        |
| R42      | 10K    | 370732           |        |
| R43      | 100K   | 340652           |        |
| R44      | 68K    | 350932           |        |
| R45      | 100K   | 340972           |        |
| R46      | 10meg  | 351452           |        |
| R47      | 220K   | 351052           |        |
| R48      | 470K   | 351132           |        |
| R49      | 1500Ω  | 780532           |        |
| R50      | 470Ω   | 370412           |        |
| R51      | 220Ω   |                  |        |
| R52      | 4700Ω  | 340652           |        |
| R53      | 4700Ω  | 340732           |        |
| R54      | 10K    |                  |        |

Note 1. Not used in some versions.  
 Note 2. Some versions may use 4700Ω in this application (Part #340652).  
 Note 3. Ch. 120323T, 120330T use 18Ω 10W 5% in this application (Part #394174).

## TRANSFORMER (POWER)

| ITEM No. | RATING  |               |        | REPLACEMENT DATA |                     |                |              |                  |                     |                |
|----------|---|---------------|--------|------------------|---------------------|----------------|--------------|------------------|---------------------|----------------|
|          | PRI.  | SEC. 1        | SEC. 2 | EMERSON PART No. | Holldorson PART No. | Merit PART No. | Rom PART No. | Stancor PART No. | Thordorson PART No. | Triod PART No. |
| TI       | 510VCT<br>@.250A<br>tap @<br>117VCT<br>@1.7A<br>tap @<br>6.3VAC<br>@.2A | 5VAC<br>@2.6A |        | 730064 ①         |                     |                |              |                  |                     |                |