FIG. 1 — CABINET

SPECIFICATIONS

- Height: 41 1/2”
- Width: 24”
- Depth: 24 1/2”
- Weight: 364 lbs.

Electrical Ratings:
- Line Voltage: 110-120 volts, 60 cycle A.C.
- Power Consumption: 480 watts

Tuning Frequency Ranges:
- Broadcast Broadcast: 340 to 1220 KC
- Intermediate Frequency: 455 KC
- Teletion: 10.7 MC

Intermediate Frequency:
- Sensitivity Broadcast: 340 to 1220 KC
- Sensitivity Teletion: 10.7 MC

Television:
- Refer to Televisions servicing section

Specifications:

- Tube Complement:
  - Television Tuner
  - Power Supply and Audio Amplifier

- Television Tuner:
  - Tube:
    - 6B6 V-1: Function
    - 6B5 V-3: Convection
    - 6B5 V-3: Oscillator, R.F.
    - 6R6A V-4: 1st Sound F.T.
    - 6R6A V-5: 2nd Sound F.T.
    - 6R6A V-6: 3rd Sound F.T.
    - 6AS5 V-7: F.T. 1st Detector
    - 6AS5 V-9: 2nd Detector
    - 6AS5 V-10: 3rd Detector
    - 6AS5 V-11: 4th Detector
    - 6AS5 V-12: 5th Detector
    - 6AS5 V-13: Audio Amplifier
    - 6AS5 V-14: Audio Amplifier
    - 6AS5 V-15: Audio Amplifier
    - 6AS5 V-16: Audio Amplifier
    - 6AS5 V-17: Audio Amplifier

- Power Supply and Audio Amplifier:
  - Tube:
    - 6527GT V-1: Phase Inverter
    - 6AS7-GT V-2: Auxiliary Amplifier
    - 6AS7-GT V-3: Audio Amplifier
    - 6AS7-GT V-4: Audio Amplifier
    - 6AS7-GT V-5: Audio Amplifier
    - 6AS7-GT V-6: Audio Amplifier
    - 6AS7-GT V-7: Audio Amplifier
    - 6AS7-GT V-8: Audio Amplifier
    - 6AS7-GT V-9: Audio Amplifier
    - 6AS7-GT V-10: Audio Amplifier
    - 6AS7-GT V-11: Audio Amplifier
    - 6AS7-GT V-12: Audio Amplifier
    - 6AS7-GT V-13: Audio Amplifier
    - 6AS7-GT V-14: Audio Amplifier
    - 6AS7-GT V-15: Audio Amplifier
    - 6AS7-GT V-16: Audio Amplifier
    - 6AS7-GT V-17: Audio Amplifier

- Phono and Mechanical Specifications:
  - Picture Size: 7 1/2” x 10” (min)
  - Visible Screen Area: 7 1/4” x 10”
  - Brightness: 20,000 lux (min)

- TV MODELS:
  - Model 5850 TV
  - Model 5855 TV
  - Model 5860 TV

- Antenna:
  - Indoor Antenna: 4 dBi
  - Outdoor Antenna: 8 dBi
  - Cable Antenna: 10 dBi

-での性能: 最も優れた性能は次の通りです。

- Picture Frequency:
  - Picture Carrier Frequency: 35.75 Mc
  - Adjacent Channel Sound Carrier: 27.25 Mc
  - Accompanying Sound Tone: 21.25 Mc
  - Sound Carrier Frequency: 21.25 Mc
  - Adjacent Channel Sound Carrier: 19.75 Mc

- Vertical Frequency:
  - Vertical Scanning Frequency: 15750 C.P.S.
  - Frame Frequency: 16 C.P.S.

- Operating Information:
  - PC-1001 Deterioration: 200 km
  - PC-1002 Deterioration: 200 km

- Notes:
  - The Model 5850 TV is not equipped with a built-in FM receiver.
  - The Model 5855 TV is equipped with a built-in FM receiver.
  - The Model 5860 TV is equipped with a built-in FM receiver.

- TV MODELS:
  - Model 5850 TV
  - Model 5855 TV
  - Model 5860 TV

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FIG. 2 - TELEVISION CONTROLS
The following controls, also used for Television operation, are located on the AM/FM Radio instrument panel.
Volume Control—For adjusting the sound volume.
Tone Controls, Bass and Treble—for obtaining the desired balance between high and low frequency response of the
sound. The Bass control also serves as the master power switch to the entire instrument.
Selector Switch—For selecting Radio, Television, or Phono/Ocro operation.

FIG. 3 - RADIO CONTROLS
SERVICE INSTRUCTIONS - GENERAL
Equipment Requirements:
1. R.F. Sweep Generator with the following ranges:
18 to 30 MC, 10 MC sweep width.
40 to 90 MC, 10 MC sweep.

FIG. 4 - TELEVISION BLOCK DIAGRAM
R.F. AMP, CONV, OSC. 4 TUBES
6J6, 6J6, 6J6
SOUND I.F. AMPLIFIER
DISCRIMINATOR, 4 TUBES
6B9G, 6A9G, 6A9G, 6A9G
PICTURE I.F. AMPLIFIER
DETECTOR, AGC. 5 TUBES
VERTICAL OSCILLATOR
DISCHARGE 4 OUTPUT 2 TUBES
6J5, 6K6/G
PULLDOWN DISCHARGE
OUTPUT OF RECOIL SCANNING 2 TUBES
6B9G, 6B6G, 5V4L, 5V4L
HORIZONTAL SYNCH. 1 TUBE
6A9G
HORIZONTAL DISCHARGE
OUTPUT OF RECOIL SCANNING 2 TUBES
6B9G, 6B6G, 5V4L, 5V4L
HORIZONTAL osc. 1 TUBE
6K6/G
HORIZONTAL OSC. CONTROL 1 TUBE
6AC7

FIG. 5 - 4580 TV BLOCK DIAGRAM
4. Heterodyne Frequency Meter with a crystal calibrator if the
signal generator is not crystal controlled.
5. Electronic Voltmeter similar to the RCA "Voltohmew" or
the Sylvania Voltmeter.

Most service failures in TV receivers are from component
designs rather than misalignment difficulties. The technician
should check carefully through the chassis referring to the volt-
age charts and observing the appearance of the raster.
Adjustment should only be attempted when it is established that all
circuits are functioning properly. Insufficient or misaligned
circuits have quite broadly, a considerable degree of misalignment
will not noticeably affect the picture quality.

In order to properly service the Model 4580 TV it is necessary to
remove from the cabinet and examine the service bench:
1. The Television Chassis
2. The AM-FM Chassis
3. The Picture Tube Assembly
4. The Power Supply and Audio Chassis
5. Speakers and Baffle Board
6. Interconnecting Cables

Interconnecting Cables:
Check all cables for breaks or shorts making certain that con-
nections are made where each plug is inserted in proper socket.

Further Installation Instructions:
After the Model 4580 TV has been repaired and properly in-
 stalled in the desired location, certain adjustments may be
necessary.
1. Focus Control Adjustment
Turn Vertical and Horizontal controls to approximately their
mid-position, observing the appearance of the raster. If a
corner appears dark, this indicates that the electron beam is
striking the neck of the tube. Loosen the Focus screw wing nuts
and rotate coil around horizontal and vertical axis until entire
screen is visible on face of tube. The raster should be centered
and there should be no dark corners visible. Tighten Focus
screw wing nuts with coil in this position.
DEFLECTION COIL
FOCUS COIL
GROUNDING SPRING
CUSHION ADJ.
FOCUS VERTE CENT.
TO VIDEO OUTPU
FIG. 6 - PICTURE TUBE YOKE

1. Deflection Yoke Adjustment
   If the lines on the raster are not straight and square with the picture frame, the magnetic yoke must be reset. Loosen yoke wing nut (see Fig. 6) and rotate yoke until desired condition is observed. Tighten wing nut.

2. Horizontal Oscillator Alignment
   (a) Observe either a picture or test pattern on the screen, preferably the latter.
   (b) Turn Horizontal Hold control to full clockwise position, and turn Band Switch, momentarily, to another channel. Picture should remain in sync.
   (c) Turn Horizontal Hold control to full clockwise position, and switch on before Picture should stay in sync.

3. Horizontal Oscillator Alignment
   (a) Obtain a picture or test pattern on picture tube.
   (b) Adjust the Time Tuning control for best sound quality.
   (c) Adjust Contrast control until picture is slightly below average contrast level.
   (d) Turn the Horizontal Phase adjustment ("C") Fig. 8) until the blinking bar which may appear in the picture moves to the right and off the raster.

4. Horizontal Oscillator, Complete Alignment
   (a) Obtain a picture or test pattern on picture tube.
   (b) Adjust Contrast control until picture is slightly below average contrast level.
   (c) Turn the Horizontal Phase adjustment ("C") Fig. 8) until the blinking bar which may appear in the picture moves to the right and off the raster.
   (d) The range of this adjustment is such that it is possible to hit an unstable condition, or indicated by a ripple in the raster. Turn screen clockwise from the unstable condition.
   (e) Turn Horizontal Hold control to extreme counter-clockwise position.
   (f) Turn Frequency adjustment (G) until picture falls out of sync.

5. Vertical Synchronism
   (a) If picture fails to sync vertically, adjust Vertical Hold control.

6. Vertical and Vertical Linearity Adjustment
   (a) Adjust Vertical control (near TV chassis) until picture fills the frame vertically.
   (b) Adjust Vertical Linearity control (near TV chassis) until picture is symmetrical from top to bottom. Note that any adjustment of either control requires a re-adjustment of the other.
   (c) Adjust Vertical Centering control (near TV chassis) to align the picture in the frame.

7. Width and Horizontal Linearity Adjustment
   (a) Turn the Horizontal Drive (near Power Supply chassis) clockwise or as far as possible without crowding right side of picture. This position provides maximum voltage to the picture tube.
   (b) Adjust Width control (top, Power Supply chassis) until picture last fills the frame horizontally.
   (c) Adjust the Horizontal Linearity control (top, Power Supply chassis) until pattern is symmetrical from left to right. A slight adjustment of the Horizontal Drive control may be necessary when the Linearity control is used.
   (d) Adjust the Horizontal Centering control (near, Power Supply chassis) to center picture in frame.

8. R/F Oscillator Adjustment
   (a) Check all connectors for oscillator adjustment, preferably by method outlined under Adjustment Instructions.

9. Picture Observation
   Tune-in all available TV stations and observe:
   1. Picture Detail
   2. Proper Interface
   3. Interference
   4. Reflections

John F. Rider

Fig. 8 - TV RF Tuner

Fig. 10 - Power Supply

Model 4580 TV

Note Position of Fine Tuning Drive Wheel During Osc. Alignment.

Note Position of Flat when set for Channel L

Fig. 8 - TV RF Tuner

Fig. 10 - Power Supply

End and Top
### ALIGNMENT CHART - MODEL 4550TV

#### (3) DISCRIMINATOR AND SOUND IF ALIGNMENT

<table>
<thead>
<tr>
<th>Step No.</th>
<th>Connect Signal Generator To</th>
<th>Signal Amp. Freq. To</th>
<th>Connect Frequency Generator To</th>
<th>Connect Oscillator To</th>
<th>Connect Voltmeter To</th>
<th>Miscellaneous Connections and Instructions</th>
<th>Adjust</th>
<th>Refer To</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Actuall T (F 4) top for maximum output</td>
<td></td>
<td>Fig. 7</td>
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<td>1</td>
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<td>Fig. 32</td>
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<td>Adjust T (F 4) for max. output</td>
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<td>Fig. 32</td>
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<td></td>
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<td>Fig. 32</td>
</tr>
</tbody>
</table>

#### (2) PICTURE IF AND TRAP ADJUSTMENT

<table>
<thead>
<tr>
<th>Step No.</th>
<th>Connect Signal Generator To</th>
<th>Signal Amp. Freq. To</th>
<th>Connect Frequency Generator To</th>
<th>Connect Oscillator To</th>
<th>Connect Voltmeter To</th>
<th>Miscellaneous Connections and Instructions</th>
<th>Adjust</th>
<th>Refer To</th>
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<tbody>
<tr>
<td>2</td>
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<td></td>
<td></td>
<td>Actuator T (F 7) top for min. output</td>
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<td>Fig. 7</td>
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<td>Fig. 32</td>
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<td>Fig. 32</td>
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<td>Fig. 32</td>
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#### (5) FINAL PICTURE IF ADJUSTMENT

<table>
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<th>Step No.</th>
<th>Connect Signal Generator To</th>
<th>Signal Amp. Freq. To</th>
<th>Connect Frequency Generator To</th>
<th>Connect Oscillator To</th>
<th>Connect Voltmeter To</th>
<th>Miscellaneous Connections and Instructions</th>
<th>Adjust</th>
<th>Refer To</th>
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<td>2</td>
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<td>Actuator T (F 6) top for min. output</td>
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<td>Fig. 7</td>
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<td>Fig. 32</td>
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<td>Fig. 32</td>
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<td>Fig. 32</td>
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</tbody>
</table>

### (B) R.F. OSCILLATOR ALIGNMENT

<table>
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<tr>
<th>Step No.</th>
<th>Connect Signal Generator To</th>
<th>Signal Amp. Freq. To</th>
<th>Connect Frequency Generator To</th>
<th>Connect Oscillator To</th>
<th>Connect Voltmeter To</th>
<th>Miscellaneous Connections and Instructions</th>
<th>Adjust</th>
<th>Refer To</th>
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<tbody>
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<td>Actuator T (F 5) top for max. output</td>
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<td>Fig. 32</td>
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<td>Fig. 32</td>
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<td>Fig. 32</td>
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</tbody>
</table>

### (F) P.M. TRAP ADJUSTMENT

<table>
<thead>
<tr>
<th>Step No.</th>
<th>Connect Signal Generator To</th>
<th>Signal Amp. Freq. To</th>
<th>Connect Frequency Generator To</th>
<th>Connect Oscillator To</th>
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<th>Miscellaneous Connections and Instructions</th>
<th>Adjust</th>
<th>Refer To</th>
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<td>Fig. 7</td>
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<td>Fig. 32</td>
</tr>
</tbody>
</table>

**NOTE:** Whenever an R.F. trap is adjusted, the associated test must be made.

There is no interaction which requires adjustment; too further change is necessary.

### 4) R.F. AND CONVERTER ADJUSTMENT

<table>
<thead>
<tr>
<th>Step No.</th>
<th>Connect Signal Generator To</th>
<th>Signal Amp. Freq. To</th>
<th>Connect Frequency Generator To</th>
<th>Connect Oscillator To</th>
<th>Connect Voltmeter To</th>
<th>Miscellaneous Connections and Instructions</th>
<th>Adjust</th>
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<td>Fig. 7</td>
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<td>Fig. 32</td>
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<td>Fig. 32</td>
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<td>Fig. 32</td>
</tr>
</tbody>
</table>

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**NOTE:** Repeat steps 1 thru 23 as a check.

---

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### Alignment Chart — AM

<table>
<thead>
<tr>
<th>STEP</th>
<th>CONNECT TEST OSC. TO</th>
<th>TEST OSC. SETTING</th>
<th>POINTER SETTING</th>
<th>ADJUST FOR MAX. OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Liner Grid &amp; Ground</td>
<td>600 Kc</td>
<td>Trimmer 1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>R.F. Grid &amp; Ground</td>
<td>150 Kc</td>
<td>Trimmer T &amp; H</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>R.F. Grid &amp; Ground</td>
<td>600 Kc</td>
<td>Trimmer G</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Repeat Step 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Standard Test Loop</td>
<td>1500 Kc</td>
<td>Trimmer G</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Check orientation, slide pointer on string if stations are uniformly off in one direction.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**NOTE:** Rock variable condenser for step No. 4.

### Equipment Required for FM Alignment:
1. Signal generator capable of generating signals at 10.7 MC and from 88 to 108 MC.
2. Standard Test Loop in Resistance No. 1116 or a reasonable substitute.

### Alignment Chart — FM

<table>
<thead>
<tr>
<th>STEP</th>
<th>CONNECT TEST OSC. TO</th>
<th>TEST OSC. SETTING</th>
<th>POINTER SETTING</th>
<th>ADJUST FOR MAX. OUTPUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>R.F. Grid &amp; Ground</td>
<td>10.7 MC</td>
<td>Trimmer 1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>R.F. Grid &amp; Ground</td>
<td>10.7 MC</td>
<td>Trimmer P, E, D</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Doublet Terminals</td>
<td>100 MC</td>
<td>Trimmer G, B, A</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Repeat Step 2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** Rock variable condenser for step No. 4.

### Fig. 19 — AM-FM Chassis Socket Voltages

<table>
<thead>
<tr>
<th>Socket Voltages</th>
</tr>
</thead>
<tbody>
<tr>
<td>All voltages shown are positive D.C. unless otherwise noted.</td>
</tr>
<tr>
<td>D.C. voltages measured with a vacuum tube voltmeter from socket contacts to chassis.</td>
</tr>
</tbody>
</table>

### Special Recording Service Information

**Recording Head Pressure:**
- The proper recording head pressure is 1.4 ounces. In the event this has varied due to shipping vibrations, it may be re-set with the aid of an ordinary socket type plug angle.
- **To Increase Pressure Turn Adjusting Screw Clockwise.**
- **To Decrease Pressure Turn Adjusting Screw Counterclockwise.**

**Brief Description of Compensating Circuit:**
- One diode section of the GMS serves as the compensator section.
- Delay is accomplished by applying a positive potential to the cathode of the 6BE. A portion of the output voltage is rectified by the 6SH and varies the grid bias of the 1st audio tube, 6077.

**How to Check Recording Level (Radio Record):**
- Substitute a 0.01 ohm resistor in place of the cutting head and with the same test setup as outlined in the preceding paragraph, the voltages across this resistor should be between 1.1 and 1.5 volts A.C.

**How to Check Recording Level (Record Phonos):**
- Turn the Selector Switch to RC position and press the push-button labeled Record Phonos. Feed a 2 volt (6MS) 1000 cycle signal into the 2nd detector diode return between the 36K and 220K ohm resistors. Connect a V.T.V.M. to the termination of the 0.5 megohm resistor and 0.1 Meg. condenser in the control grid circuit of the 6077. This should read between 2.5 and 3.2 volts negative.

**How to Check Recording Level (Radio Record):**
- Substitute a 0.01 ohm resistor in place of the cutting head and with the same test setup as outlined in the procedure paragraph, the voltages across this resistor should be between 1.1 and 1.5 volts A.C.