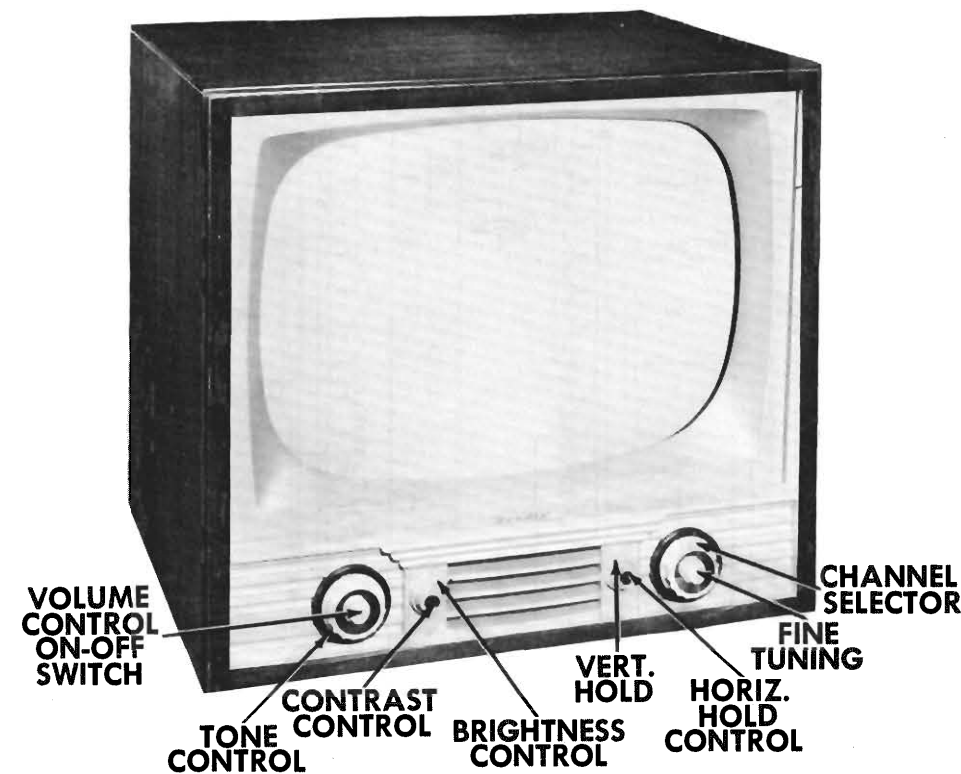


IEW-RESISTOR IDENTIFICATION



BENDIX MODEL TM21E			
TRADE NAME	Bendix	MODELS	CHASSIS
		KM21E, KMT21E, TB21E, TM21E	T14-15
		KM21EU, KMT21EU, TB21EU, TM21EU	T14-16
MANUFACTURER	Bendix Radio, Division of Bendix Aviation Corp., Baltimore, Md.		
TYPE SET	Television Receiver		
TUBES	Twenty-three		
POWER SUPPLY	110-120 Volts AC-60 Cycles		RATING 1.7 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		
INDEX			
Alignment Instructions	6	Photographs (Cont)	
Disassembly Instructions	18	Trans., Inductor & Alignment Identification	7
Horizontal Sweep Circuit Adjustments	11	Resistance Measurements	8
Parts List and Descriptions	13 thru 16	Servicing in the Field	18
Photographs		Schematic (TV)	2
Cabinet-Rear View	11	Schematic (UHF Tuner)	17
Capacitor Identification	4, 9	Trouble Shooting Aids	12, 17
Chassis-Top View	3	Tube Failure Check Chart	5
RF Tuner	10	Tube Placement Chart (Bottom View)	8
Resistor Identification	19, 20	Tube Placement Chart (Top View)	5

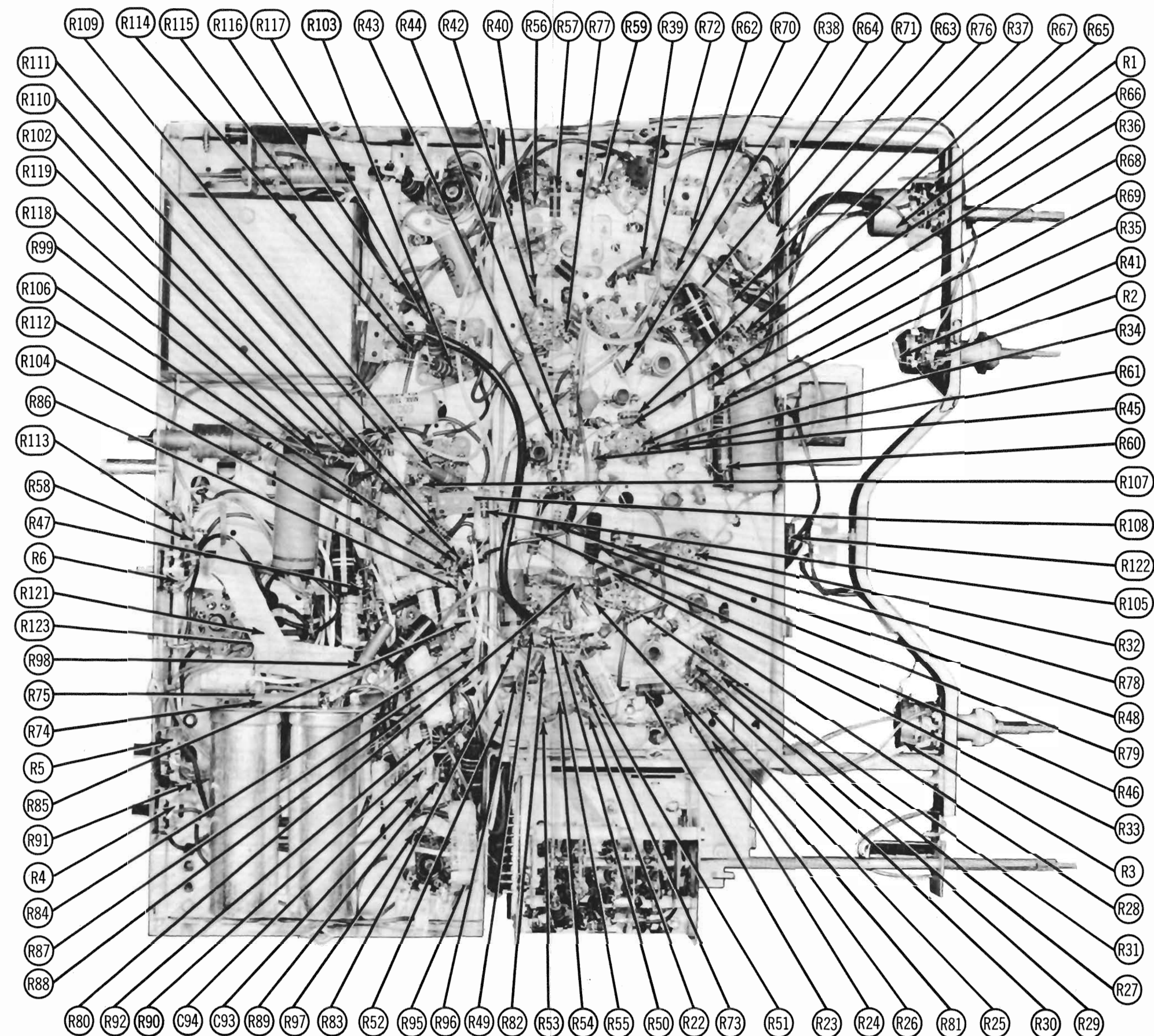
HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"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 the particular type of replacement part listed."

tent, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1955 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

BENDIX MODELS KM21E, EU, KMT21E, EU, TB21E, EU, TM21E, EU (Ch. T14-15, T14-16)

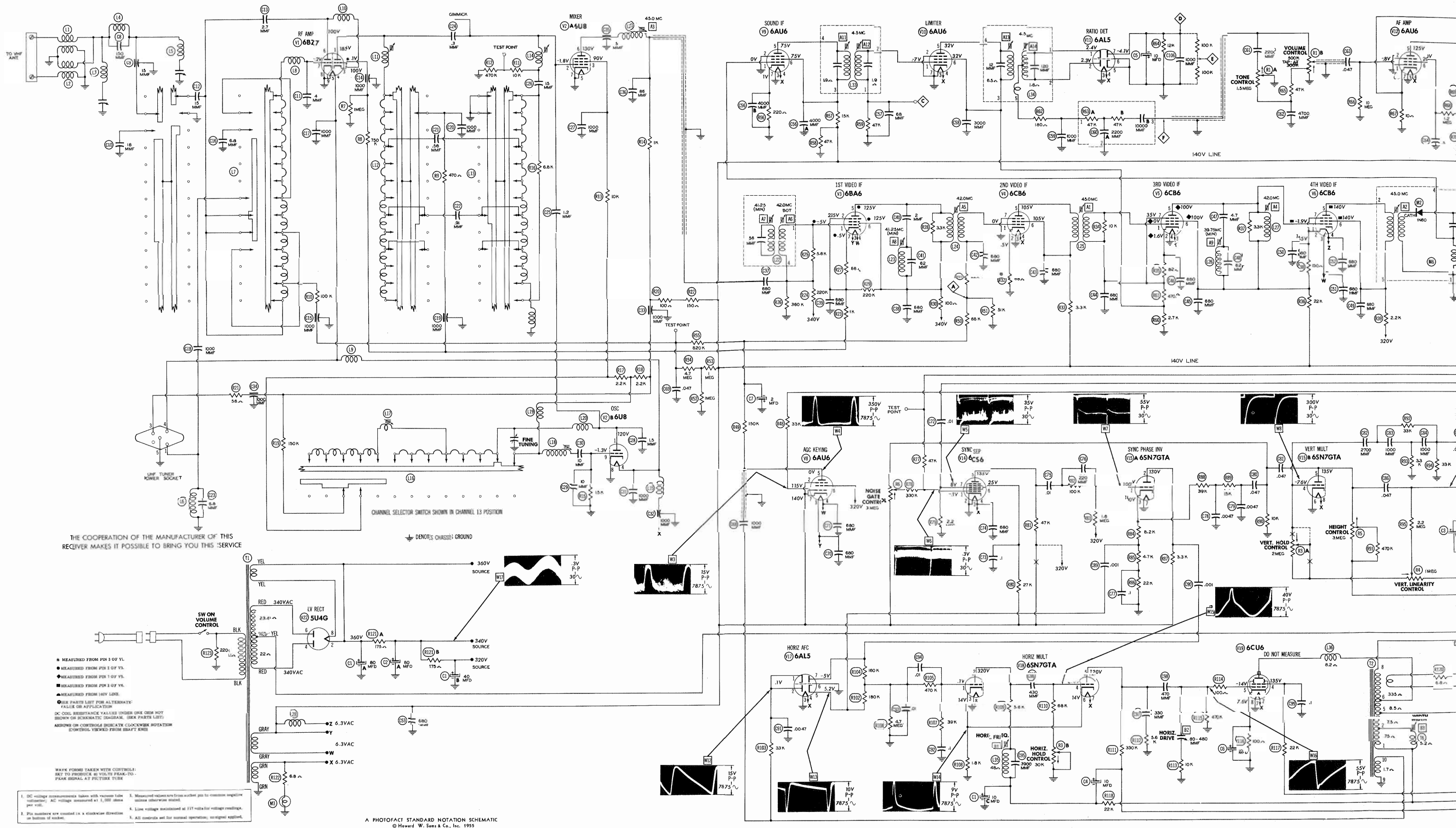
VOLU
CONT
ON-C
SWIT

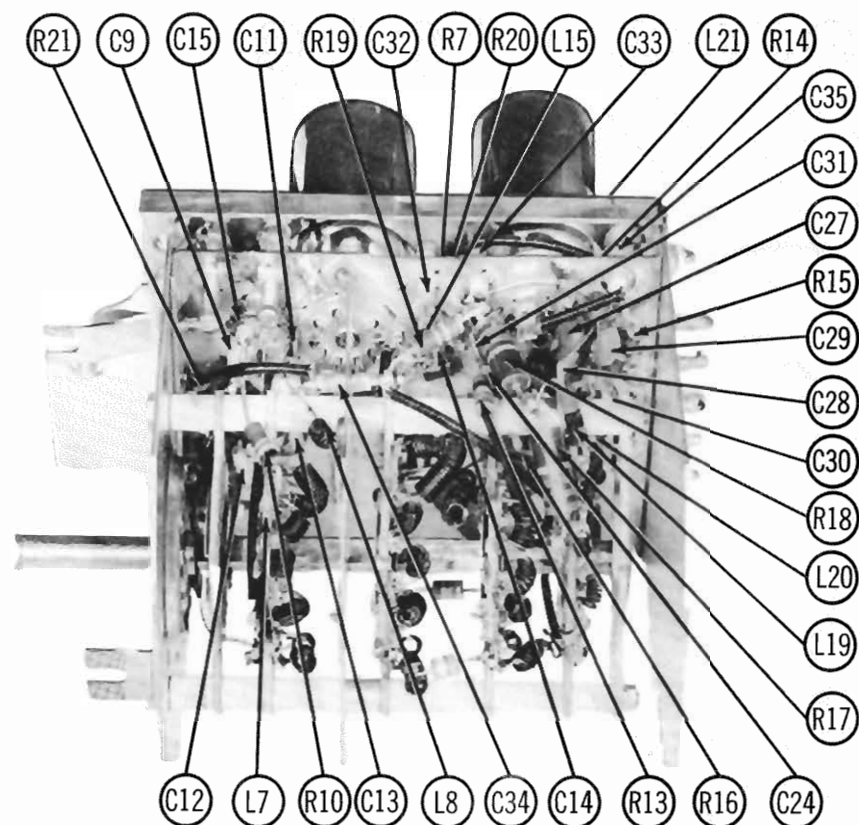


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

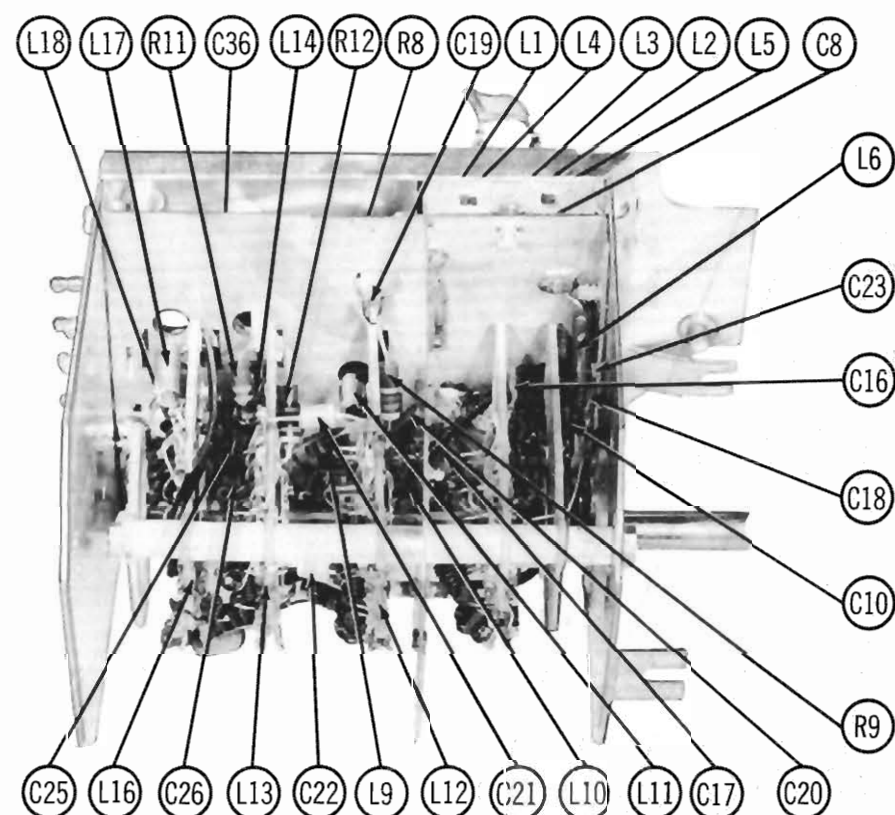
TRADE NAME	Ber
MANUFACTURER Ber	
TYPE SET	Tel
TUBES	Tw
POWER SUPPLY	110-
TUNING RANGE	Cha
Alignment Instructio	
Disassembly Instruc	
Horizontal Sweep Ci	
Parts List and Desc	
Photographs	
Cabinet-Rear V	
Capacitor Identif	
Chassis-Top Vi	
RF Tuner	
Resistor Identif	

H
"The listing of any available re
case a recommendation, warra
as to the quality and suitability
parts have been compiled from
Inc., by the manufacturers of tl
"Reproduction or use, without

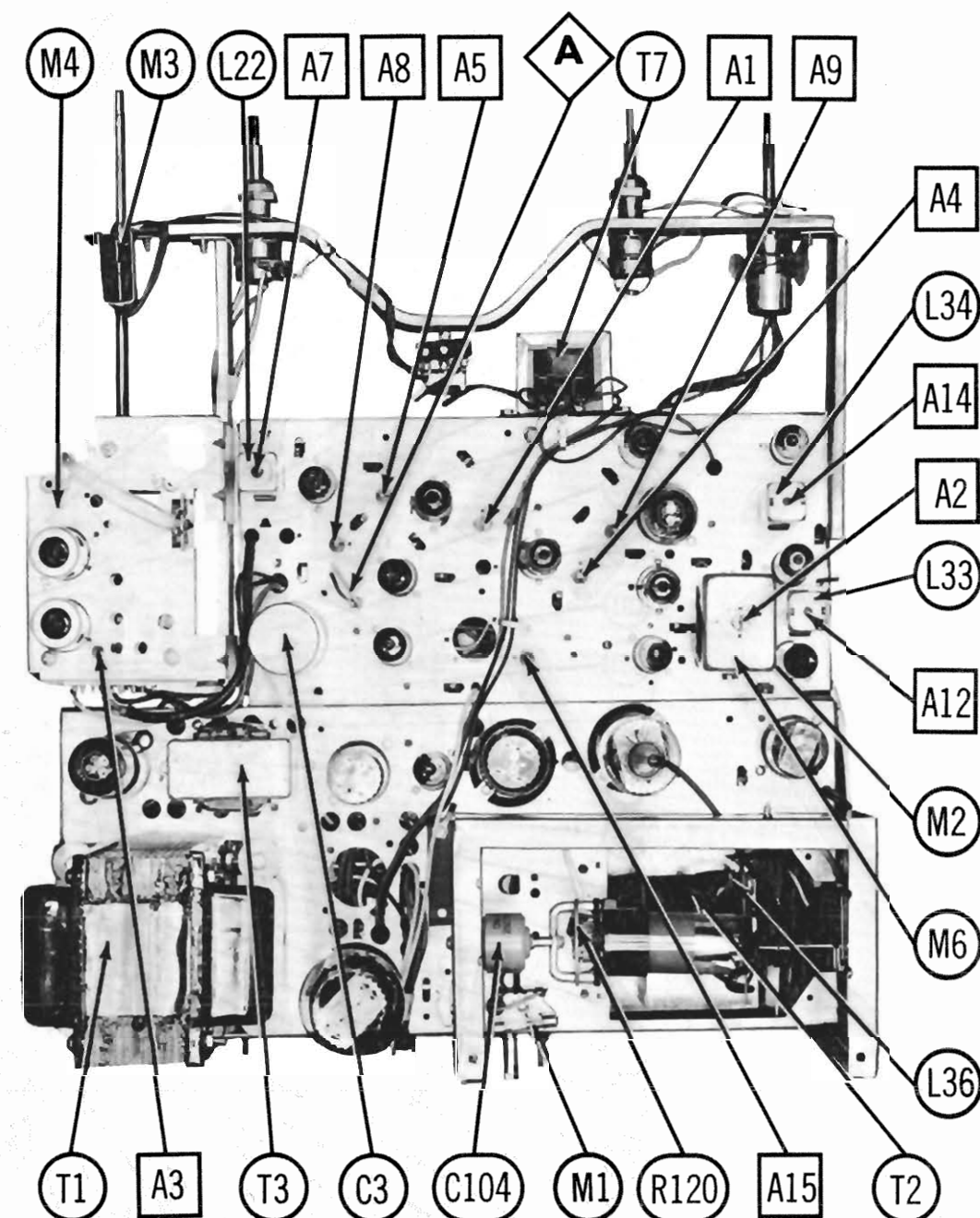




RF TUNER-RIGHT SIDE



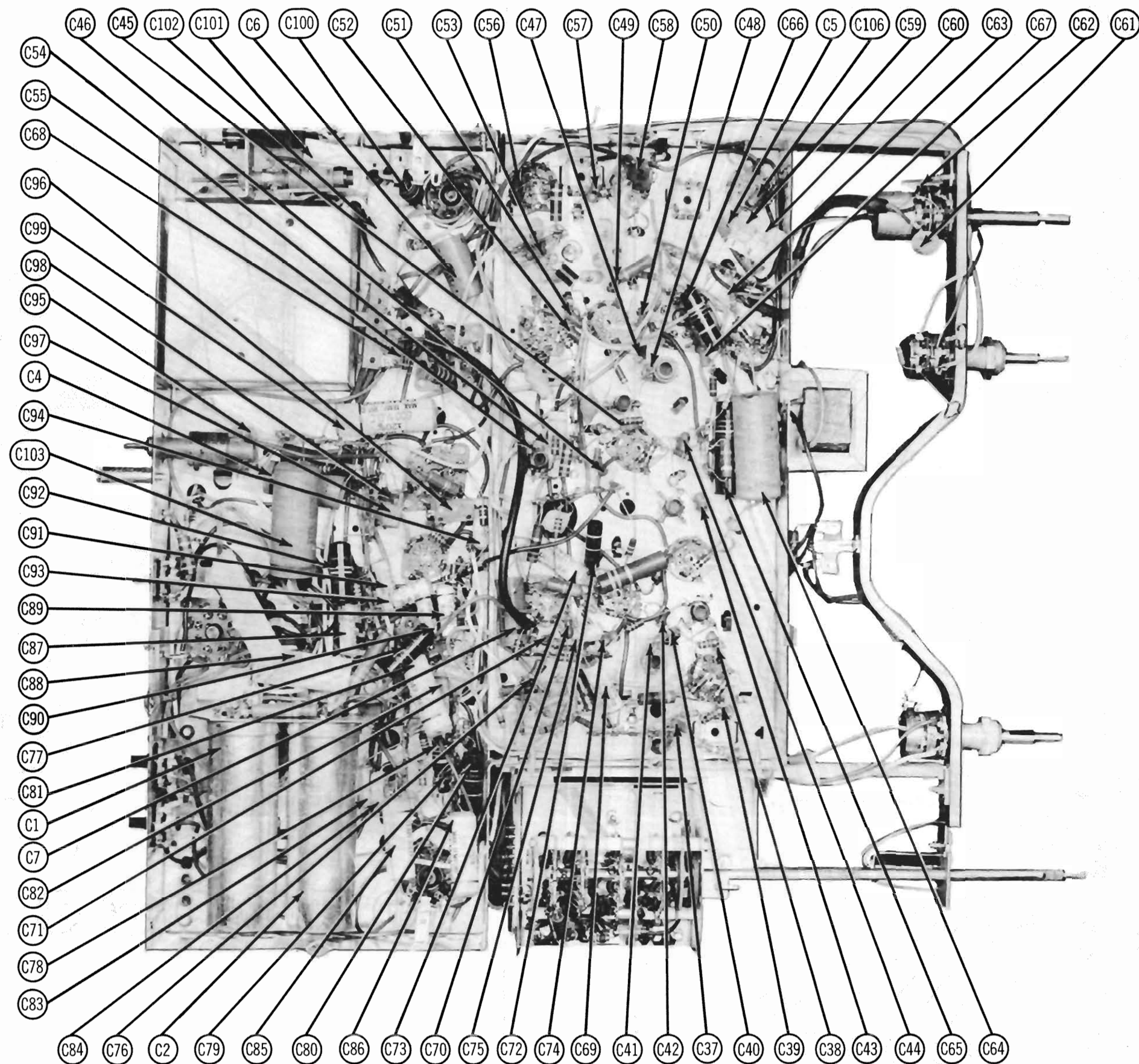
RF TUNER-LEFT SIDE



CHASSIS TOP VIEW

SET 268 FOLDER 3

BENDIX MODELS KM21E,
EU, KM21E, EU, TB21E, EU,
TM21E, EU (Ch. 11A-15, 11A-16)



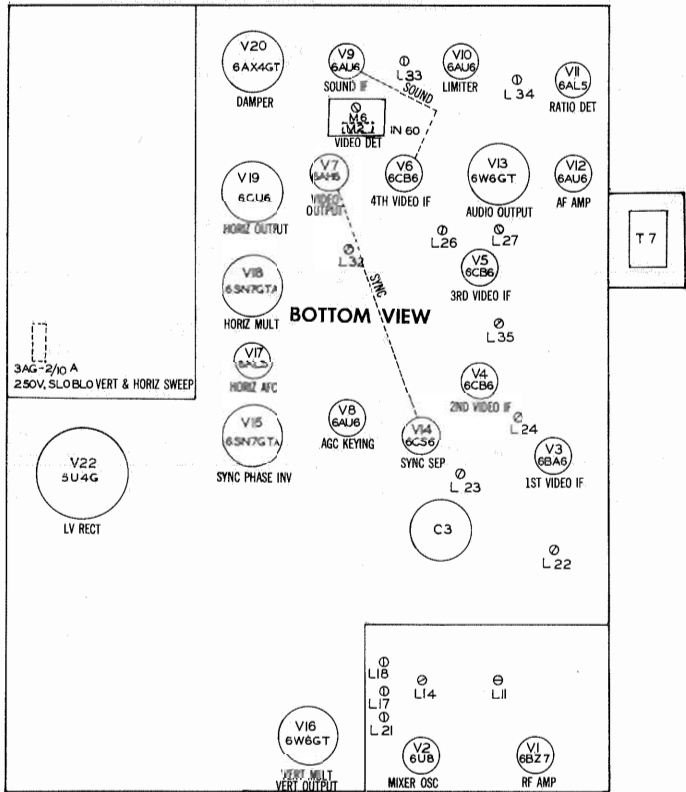
CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

BENDIX MODELS KM21E,
EU, KM21E, EU, TB21E, EU,
TM21E, EU (Ch. 114-15, 114-16)

RESISTANCE MEASUREMENTS

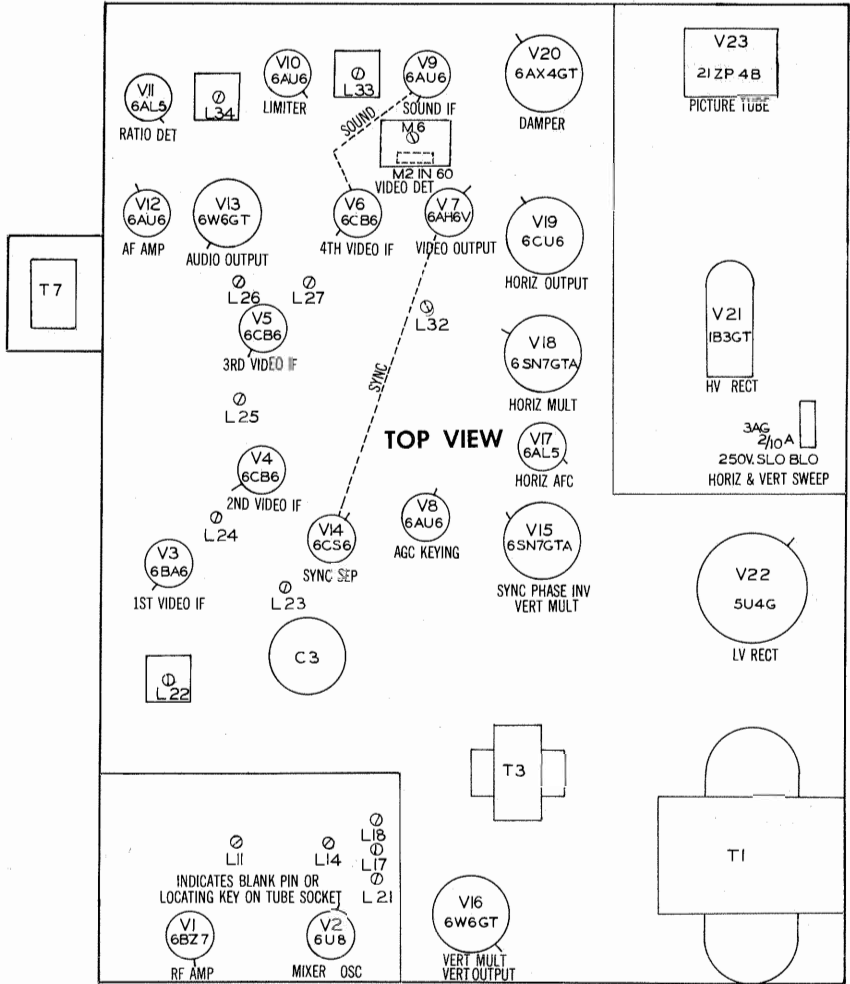
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BZ7	■1.5KΩ	■460KΩ	INF	.1Ω	0Ω	INF	700KΩ	0Ω	0Ω
V 2	6U8	▲2.5KΩ	480KΩ	▲15KΩ	.1Ω	0Ω	▲1.3KΩ	0Ω	0Ω	15KΩ
V 3	6BA6	130KΩ	200KΩ	30KΩ	30KΩ	†300Ω	†300Ω	■68Ω		
V 4	6CB6	50KΩ	68Ω	0Ω	.1Ω	▲3.3KΩ	▲3.3KΩ	0Ω		
V 5	6CB6	3.2KΩ	3.3KΩ	.1Ω	0Ω	▲22KΩ	▲22KΩ	3.2KΩ		
V 6	6CB6	▲22KΩ	50KΩ	30KΩ	30KΩ	†2.6KΩ	†2.6KΩ	50KΩ		
V 7	6AH6	1.2KΩ	60Ω	0Ω	.1Ω	▲5.4KΩ	▲12KΩ	60Ω		
V 8	6AU6	▲35KΩ	▲0Ω	30KΩ	30KΩ	200KΩ	†350Ω	▲0Ω		
V 9	6AU6	2.6Ω	0Ω	0Ω	.1Ω	▲15KΩ	▲15KΩ	220Ω		
V 10	6AU6	47KΩ	0Ω	0Ω	.1Ω	◆500Ω	◆500Ω	0Ω		
V 11	6AL5	INF	INF	0Ω	.1Ω	0Ω	0Ω	12KΩ		
V 12	6AU6	10Meg	0Ω	0Ω	.1Ω	†280KΩ	†1.3Meg	10Ω		
V 13	6W6GT	INF	30KΩ	†350Ω	†4.3KΩ	460KΩ	†68KΩ	30KΩ	▲150Ω	
V 14	6CS6	40KΩ	0Ω	0Ω	.1Ω	▲47KΩ	▲27KΩ	2.2Meg		
V 15	6SN7GTA	▲1.8Meg	▲3.3KΩ	35KΩ	2Meg	▲1.8Meg	0Ω	0Ω	.1Ω	
V 16	6W6GT	INF	.1Ω	†3.5KΩ	†3.6KΩ	2.5Meg	240KΩ	0Ω	1KΩ	
V 17	6AL5	33KΩ	33KΩ	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V 18	6SN7GTA	5Meg	▲27KΩ	1.8KΩ	60KΩ	▲380KΩ	1.8KΩ	.1Ω	0Ω	
V 19	6CU6	INF	.1Ω	33KΩ	†22KΩ	470KΩ	470KΩ	0Ω	100Ω	Top Cap ▲8.5Ω
V 20	6AX4GT	INF	INF	INF	INF	†400Ω	INF	30KΩ	30KΩ	
V 21	1B3GT		PINS	1-8	HAVE	INFINITE	RESISTANCE			Top Cap ▲340Ω
V 22	5U4G	INF	40KΩ	0Ω	22Ω	†175Ω	24Ω	INF	40KΩ	
V 23	21ZP4B	0Ω	▲310KΩ	PIN 10 ▲47KΩ	PIN 11 ▲240KΩ	PIN 12 .1Ω				

■ MEASURED FROM PIN 2 OF V3
▲ MEASURED FROM 140V LINE
† MEASURED FROM PIN 2 OF V22
◆ MEASURED FROM PIN 7 OF V5
▲ MEASURED FROM PIN 3 OF V20



TUBE PLACEMENT CHART

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

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

POWER SUPPLY FAILURE

No raster, no sound - V22

LOSS OF PICTURE OR SOUND

No pic, no sound, has raster - V2, V3, V4, V5, V6, V13

No pic, no sound, has snow - V1, V2, V3

No pic, has sound, has raster - V7, V8, V23

Has pic, no sound - V9, V10, V11, V12, V13

Overloaded picture - V8

SYNC FAILURE

No vert. sync - V15, V16

No horiz. sync - V15, V17, V18

No vert. or horiz. sync - V14, V15

SWEEP FAILURE

No raster, has sound - V18, V19, V20, V21, V23, Fuse (M1)

No vertical deflection - V15, V16

Poor vert. linearity or foldover - V15, V16

Poor horiz. linearity or foldover - V18, V19, V20

Narrow picture - V18, V19, V20, V21, V22

Vert. off freq. - V15, V16

Horiz. off freq. - V15, V17, V18

BENDIX MODELS KM21E,
EU, KM121E, EU, TB21E, EU,
TM21E, EU (Ch. T14-15, T14-16)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT							
The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal mult. tube V18 to disable the high voltage.							
VIDEO IF ALIGNMENT							
Remove the AGC keying tube (V8) from its socket. Connect the negative lead of a 3 volt battery to point Ⓐ. Connect the positive lead to chassis. Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.							
DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
Direct	High side to an ungrounded tube shield floating over mixer-osc. tube (V2). Low side to chassis.	Not used	45MC	Any unused channel.	Use VTVM DC probe to point Ⓑ. Common to chassis.	A1, A2, A3	Adjust for maximum deflection.
"	"	"	42MC	"	"	A4, A5, A6	"
"	"	"	41.25MC	"	"	A7, A8	Turn marker generator output to maximum. Adjust for MINIMUM deflection.
"	"	"	39.75MC	"	"	A9	"
"	"	43MC (10MC Swp)	39.75MC 41.25MC 45.75MC	Any channel that causes no interference.	Vertical amp. to point Ⓒ. Low side to chassis.		Check for response curve similar to Fig. 1. If necessary, SLIGHTLY retouch A1 thru A6 for proper response.
SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM							
Connect the negative lead of a 9 volt battery to point Ⓓ. Connect the positive lead to chassis. Connect two matched 100KΩ (1%) resistors in series from point Ⓓ to chassis. The junction of these two resistors is alignment point Ⓔ as shown on the schematic.							
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS	
.01MFD	High side to pin 1 (grid) of video amp. (V7). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point Ⓔ. Common to chassis.	A10, A11, A12	Adjust for maximum deflection.	
"	"	"	"	DC probe to point Ⓕ. Common to chassis.	A13	"	
"	"	"	"	DC probe to point Ⓖ. Common to point Ⓖ.	A14	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.	
SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE							
Connect the negative lead of a 9 volt battery to point Ⓓ. Connect the positive lead to chassis. Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120V sawtooth voltage in scope for horizontal deflection.							
DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
.01MFD	High side to pin 1 (grid) of video amp. (V7). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp. to point Ⓖ. Low side to chassis.	A10, A11, A12	Adjust for response curve similar to Fig. 2.
"	"	"	"	"	Vert. amp. to point Ⓖ. Low side to chassis.	A13, A14	Adjust A14 until 4.5MC occurs at center of crossover lines as shown in Fig. 3. Adjust A13 for maximum amplitude and symmetry of crossover lines.
TUNER ALIGNMENT							
The RF tuner in this set has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.							
4.5MC TRAP ADJUSTMENT							
Tune in a TV station and examine the picture for evidence of 4.5MC interference (grain effect in horizontal lines). If 4.5MC interference is encountered, adjust 4.5MC trap (A15) for minimum interference.							

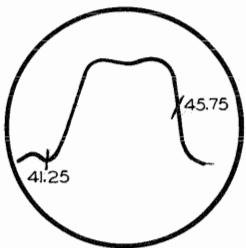


FIG. 1

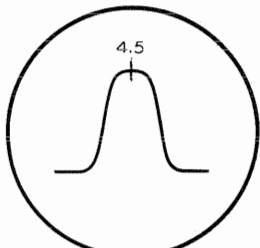


FIG. 2

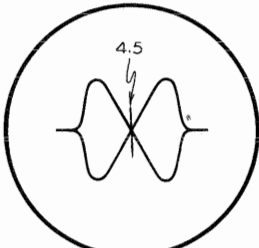
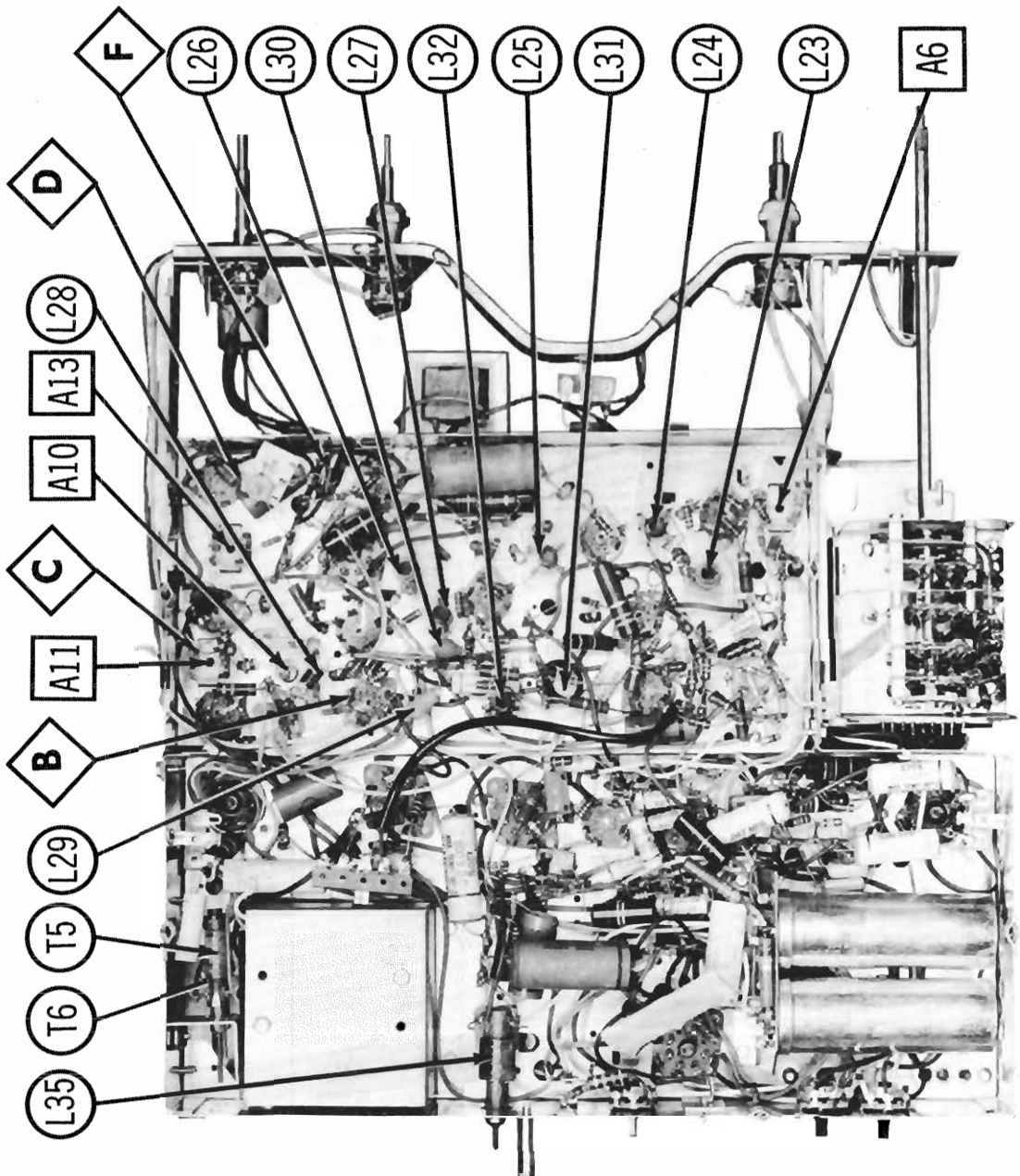


FIG. 3



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

BENDIX MODELS KM21E,
EU, KM21E, EU, TB21E, EU,
TM21E, EU (Ch. 114-15, 114-16)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

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

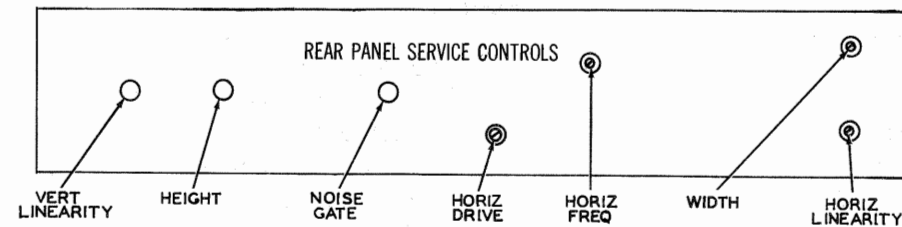
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, remove volume, tone, channel selector and fine tuning control knobs. Loosen 2 screws so safety glass and mask can be lowered to "fall" forward and out of set. Lift safety glass and mask out. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS - NOISE GATE CONTROL

Tune in the strongest station available.

Turn the contrast control to maximum.

With the noise gate control at maximum counter clockwise slowly turn the control clockwise until a horizontal shift is noted in the picture. Back off (counter clockwise) the control 1/8 turn.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal frequency slug (L35) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L34) located on top of chassis. (See tube placement chart).

FUSES

One fuse is used for horizontal sweep circuit protection. (For location see tube placement chart).

CENTERING

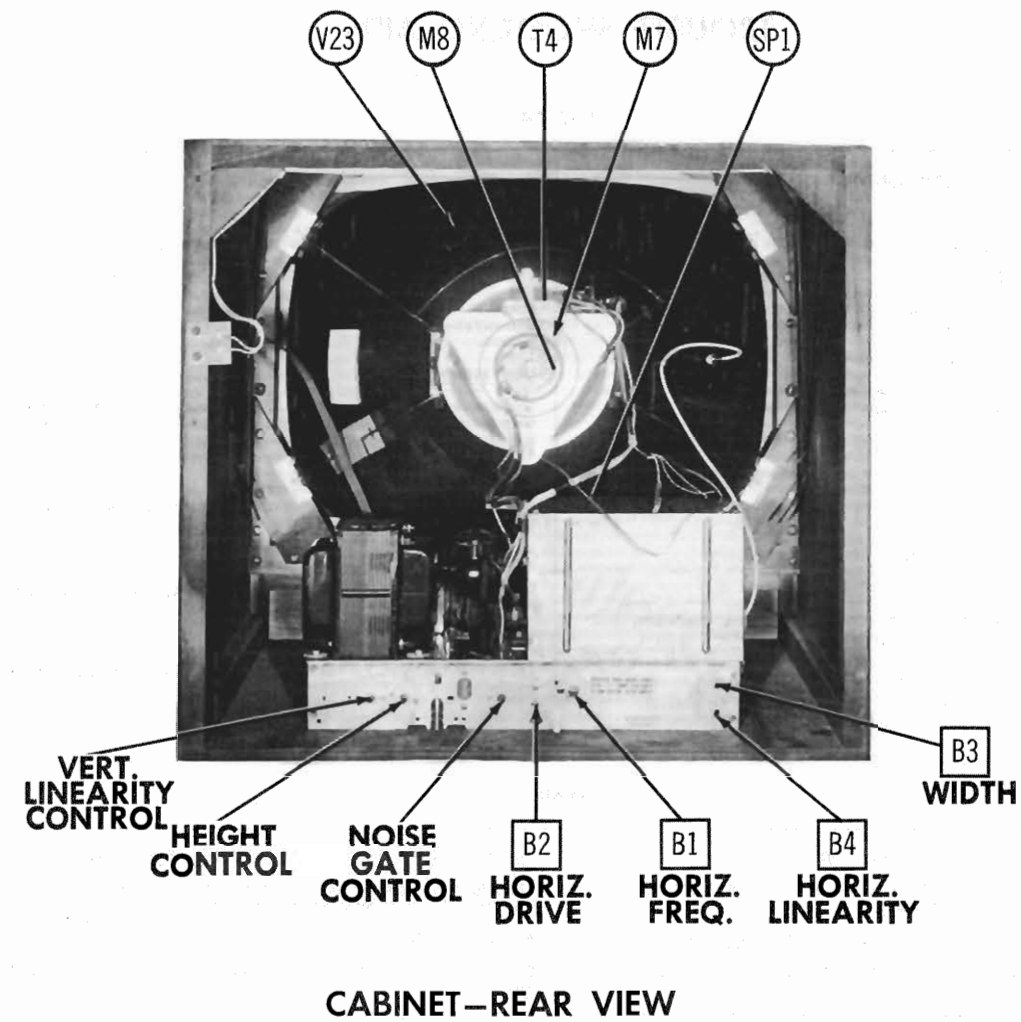
Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 8 push-on type control knobs from front panel.
2. Remove 6 metal screws. Remove rear cover.
3. Remove 2 metal screws from antenna bracket.
4. Disconnect picture tube socket, deflection yoke socket, HV lead and 2 speaker leads.
5. Remove 1 metal screw from yoke grounding lead.
6. Remove 5 chassis bolts. Remove chassis.
7. Remove 2 wood screws. Remove speaker.

PICTURE TUBE REMOVAL

1. Remove chassis. Gently lay cabinet face down.
2. Remove 2 bolts located in front of deflection yoke.
3. Remove yoke assembly.
4. Remove picture tube.



HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the center of its range.

Adjust the horizontal frequency slug (B1) to the center of the range over which the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) counter clockwise as far as possible without the presence of a white line or foldover occurring in the picture.

Adjust the width slug (B3) until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug (B4) until the picture is symmetrical from left to right.

BENDIX MODELS KM21E,
EU, KMT21E, EU, TB21E, EU,
TM21E, EU (Ch. 11A-15, 11A-16)

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL	VERTICAL				
<p>LOSS OF SWEEP</p> <p>Follow procedure outlined under "Loss of High Voltage".</p> <p>INSUFFICIENT SWEEP</p> <p>Check by substitution V19, V20 and V22. Check adjustments B2, B3 and B4. Check T2, T4A, C98, R117, R116 and other associated components.</p> <p>DRIVE LINES</p> <p>Check by substitution V19 and V20. Check adjustments B2 and B4. Check C98, C97, R117, R116, R112 and other associated components.</p> <p>COMPRESSED LEFT SIDE</p> <p>Check by substitution V19 and V20. Check horizontal output and damper stages for component failure or change of value.</p> <p>FOLDS</p> <p>Follow procedure outlined under "Drive Lines".</p> <p>PIE CRUST EFFECT</p> <p>Check by substitution V18, V19 and V20. Check C92 for open. Check L35, C95, R108 and other associated components.</p> <p>XMAS TREE EFFECT</p> <p>Check by substitution V18, V19 and V20. Check T2 and T4A for internal arcing. Check L35, C95, C96, C98, R109, R111 and other associated components.</p>	<p>LOSS OF SWEEP</p> <p>Check by substitution V15 and V16. Check waveform W9.</p> <table border="1"> <tr> <th>If Satisfactory</th><th>If Unsatisfactory</th></tr> <tr> <td>Check T3, T4B, C87, C2B, C103, R98 and other associated components.</td><td>Check C86, C81, C82, R5, R99 and other associated components.</td></tr> </table> <p>INSUFFICIENT SWEEP</p> <p>Check by substitution V15 and V16. Check height and vertical linearity controls for proper operation. Check T3, T4B, R99 and other associated components.</p> <p>COMPRESSED AT BOTTOM</p> <p>Check by substitution V15 and V16. Check R99, R91, R5 and other associated components.</p> <p>COMPRESSED AT TOP</p> <p>Check by substitution V15 and V16. Check R4, R95, R96, C3D and other associated components.</p> <p>FOLDS</p> <p>Check by substitution V15 and V16. Check C84, R94 and other associated components.</p>	If Satisfactory	If Unsatisfactory	Check T3, T4B, C87, C2B, C103, R98 and other associated components.	Check C86, C81, C82, R5, R99 and other associated components.
If Satisfactory	If Unsatisfactory				
Check T3, T4B, C87, C2B, C103, R98 and other associated components.	Check C86, C81, C82, R5, R99 and other associated components.				

SYNC

<p>LOSS OF VERTICAL AND HORIZONTAL SYNC</p> <p>Check by substitution V14 and V15. Check C72, C75, C76, R81, R87, R83, R80 and other associated components.</p> <p>LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY</p> <p>Substitute V15. Check C80, C81, C84, R3A, R89, R88 and other associated components.</p>	<p>LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY</p> <p>Check by substitution V17 and V18. Check C93, C96, C95, L35, R109, R108, R110 and R3B. Check horizontal AFC network.</p> <p>HORIZONTAL BENDING</p> <p>Check by substitution V8, V14, V15, V17 and V18. Check horizontal AFC network.</p>
---	---

VIDEO

<p>LOSS OF VIDEO</p> <p>Substitute V7. Check L29, L30, L31, R44, R42, C54 and other associated components.</p> <p>SOUND BARS (4.5MC BEAT)</p> <p>Adjust tuner fine tuning for best sound and picture. Check adjustment A15. Check video IF alignment.</p> <p>POOR CONTRAST</p> <p>Substitute V7. Check contrast control. Check video crystal detector network. Check R51, R43, C54 and other associated components.</p>	<p>NEGATIVE PICTURE</p> <p>Substitute V7. Check picture tube. Check video crystal detector network. Check L29, R43, C54 and other associated components.</p> <p>SMEAR</p> <p>Substitute V7. Check video crystal detector network. Check L29, L31, L32, R43, C54 and other associated components.</p> <p>WIDE BLACK BAR ACROSS PICTURE</p> <p>Check by substitution V1, V3, V4, V5, V6 and V7 for heater to cathode leakage.</p>
--	--

AUDIO

<p>WEAK OR NO SOUND</p> <p>Check by substitution V9, V10, V11, V12 and V13. Check stages V12 and V13 using audio signal generator. Apply audio signal across R1B.</p> <table border="1"> <tr> <th>If Satisfactory</th><th>If Unsatisfactory</th></tr> <tr> <td>Check ratio detector and audio IF stages for component failure or change of value. Check R60 and C46.</td><td>Check C63, C66, C2C, C3A, R68, R69, R70, R73, R75, T7, speaker and other associated components.</td></tr> </table>	If Satisfactory	If Unsatisfactory	Check ratio detector and audio IF stages for component failure or change of value. Check R60 and C46.	Check C63, C66, C2C, C3A, R68, R69, R70, R73, R75, T7, speaker and other associated components.	<p>BUZZ</p> <p>Adjust tuner fine tuning for best sound and picture. Check adjustment A14. If still unsatisfactory, check audio IF alignment.</p> <p>DISTORTED</p> <p>Follow procedure outlined under "Weak or No Sound".</p>
If Satisfactory	If Unsatisfactory				
Check ratio detector and audio IF stages for component failure or change of value. Check R60 and C46.	Check C63, C66, C2C, C3A, R68, R69, R70, R73, R75, T7, speaker and other associated components.				

POWER

<p>DEAD SET</p> <p>If filaments fail to light, check AC interlock assembly. Check switch on volume control and T1. If filaments light, substitute V22. Check V13. Check B+ filter and decoupling network.</p>	<p>SMALL AND/OR DIM PICTURE</p> <p>Substitute V22. Check B+ filter and decoupling network.</p>
--	---

TROUBLE SHOOTING AIDS (cont)

HIGH VOLTAGE

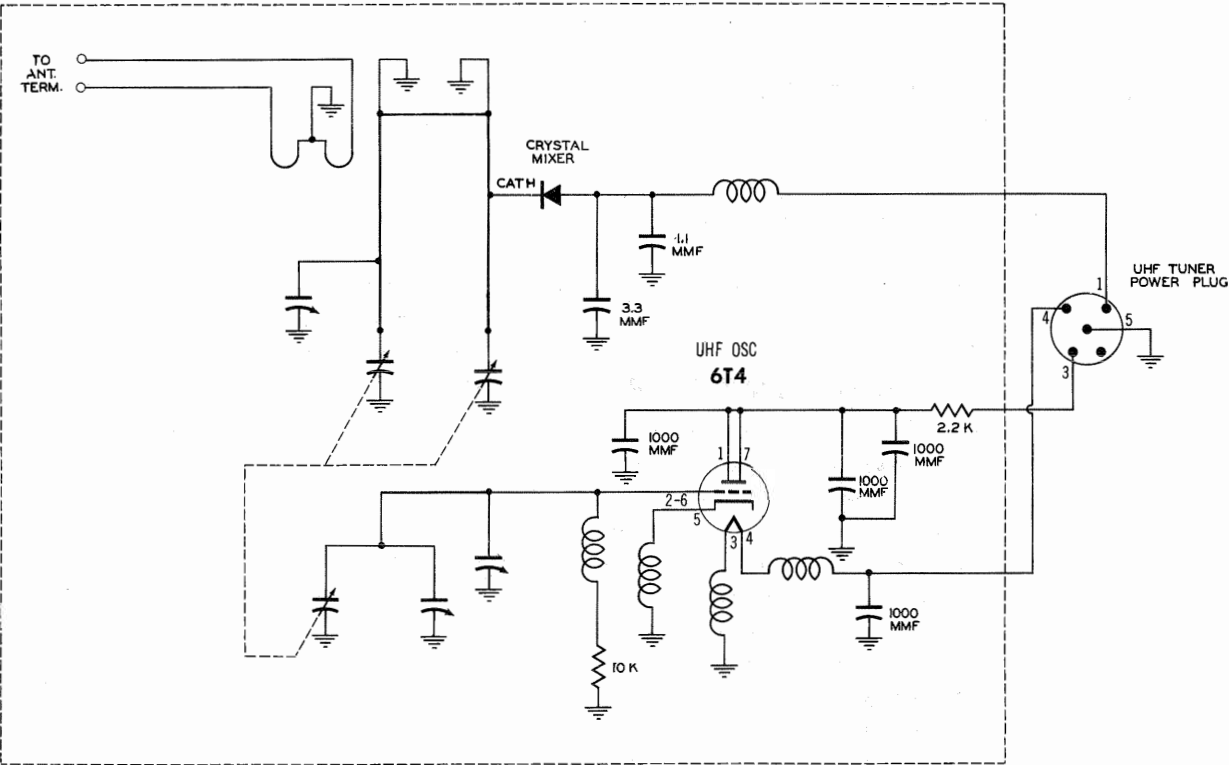
<p>LOSS OF HIGH VOLTAGE</p> <p>Check by substitution V18, V19, V20 and V21. Check M1 fuse. Check waveform W16.</p> <table border="1"> <tr> <th>If Satisfactory</th><th>If Unsatisfactory</th></tr> <tr> <td>Check T2, T4A, T5, T6, C100, C99, C101, C6, R119, R117, R116 and other associated components.</td><td>Check L35, C95, C96, C98, R108, R109, R111 and other associated components.</td></tr> </table>	If Satisfactory	If Unsatisfactory	Check T2, T4A, T5, T6, C100, C99, C101, C6, R119, R117, R116 and other associated components.	Check L35, C95, C96, C98, R108, R109, R111 and other associated components.	<p>INSUFFICIENT HIGH VOLTAGE</p> <p>Check by substitution V19, V20 and V22. Check C98, C97, R112, R116, R117 and other associated components.</p> <p>BLOOMING</p> <p>Check by substitution V19, V20, V21 and V22. Check C98, R119, R117 and other associated components.</p>
If Satisfactory	If Unsatisfactory				
Check T2, T4A, T5, T6, C100, C99, C101, C6, R119, R117, R116 and other associated components.	Check L35, C95, C96, C98, R108, R109, R111 and other associated components.				

GENERAL

<p>RASTER, SOUND, NO PICTURE</p> <p>Follow procedure outlined under "Loss of Video".</p> <p>RASTER, PICTURE, NO SOUND</p> <p>Follow procedure outlined under "Weak or No Sound".</p> <p>RASTER, NO SOUND, NO PICTURE</p> <p>Check by substitution V1, V2, V3, V4, V5, V6, V7, V8 and V13. Check video IF components for failure or change of value.</p>	<p>NO RASTER, NO SOUND</p> <p>Follow procedure outlined under "Dead Set".</p> <p>KEYSTONE EFFECT</p> <p>Check T4 and its associated components.</p> <p>INTERMITTENT STREAKS</p> <p>Check high voltage section for corona discharge and arcing.</p>
--	---

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.

BENDIX MODELS KM21E, EU, KM721E, EU, TB21E, EU, TM21E, EU (Ch. T14-15, T14-16)



UHF TUNER USE WITH SOME VERSIONS

A PHOTOFAC STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1955

UHF TUNER SCHEMATIC

PARTS LIST AND DESCRIPTIONS (Continued)
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BENDIX PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG S/B	2/10A 250V	266164-5201		310125 (3AG-2/10A)		MDV 2/10	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		BENDIX PART No.	FEDERAL PART No.	SYLVANIA PART No.	
M2	1N60	1N60	1N64A	1N60 or 1N132	Video Det.

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M3	Dial Light	258061-2	#47, Bayonet
M4	Tuner	258061-3	VHF - Chassis T14-15, T14-16
M5	Tuner	258061-3	UHF - Chassis T14-16 only
M6	Video Det. Assy.	259158-1	Includes M2, capacitors, coils and resistor
M7	Focus Magnet	274282-3	Includes centering device
M8	Ion Trap	274197-11	
B2	Trimmer Cap.	260009-11	Horiz. Drive (80-480MMF)
	Cabinet	255157-1	Models TM21E, TM21EU
	Cabinet	255157-2	Models TB21E, TB21EU
	Cabinet	255158-1	Models KM21E, KM21EU
	Cabinet	255161-1	Models KMT21E, KMT21EU
	Knob	269107-1	Contrast and horizontal hold - All models
	Knob	269108-1	Brightness and vertical hold - All models
	Knob	269109-1	On-off-volume - All models
	Knob	269110-1	Tone - All models
	Knob	269111-1	VHF Fine tuning - All models
	Knob	269112-1	VHF Channel Selector - UHF Prism-Models TM21EU, TB21EU, KM21EU, KMT21EU
	Knob	269113-1	UHF Channel Selector - Models TM21EU, TB21EU, KM21EU, KMT21EU
	Dial	269114-1	UHF - Models TM21EU, TB21EU, KM21EU, KMT21EU
	Knob	269115-1	Dummy (VHF Channel Selector) - Models TM21E, TB21E, KMT21E, KM21E
	Safety Glass	257609-6	All models
	Mask	269106-1	All models
	Name Plate	269075-1	Models KMT21E, KMT21EU

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

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		BENDIX PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6BZ7	6BZ7	9AJ	
V2	Osc-Mixer	6U8	6U8	9AE	
V3	1st Video IF Amp.	6BA6	6BA6	7BK	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	4th Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Output	6AH6	6AH6	7BK	
V8	AGC Keying	6AU6	6AU6	7BK	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Limiter	6AU6	6AU6	7BK	
V11	Ratio Det	6AL5	6AL5	6BT	
V12	AF Amp.	6AU6	6AU6	7BK	
V13	Audio Output	6W6GT	6W6GT	7S	
V14	Sync Sep.	6CS6	6CS6	7CH	
V15	Sync Phase Inv. - Vert. Mult.	6SN7GTA	6SN7GTA	8BD	
V16	Vert. Mult. Vert. Output	6W6GT	6W6GT	7S	
V17	Horiz. AFC	6AL5	6AL5	6BT	
V18	Horiz. Mult.	6SN7GTA	6SN7GTA	8BD	
V19	Horiz. Output	6CU6	6CU6	6AM	
V20	Damper	6AX4GT	6AX4GT	4CG	
V21	HV Rectifier	1B3GT	1B3GT	3C	
V22	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA					RETMA BASE TYPE	NOTES
	BENDIX PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.		
V23	21ZP4B	21ZP4B 21ZP4A	21ZP4B 21ZP4A	21ZP4B 21ZP4A 21ZP4 ①	21ZP4B 21ZP4A	12N 12N 12D	① Circuit changes necessary.

CAPACITORS

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

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	BENDIX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲80	450	267005-8	AFH3-46		C037		FP378	TVL-3792	
B	▲40	450								
C	▲10	450								
C2A	▲80	450	267005-8	AFH3-46		C037		FP378	TVL-3792	
B	▲40	450								
C	▲10	450								
C3A	▲100	200	267005-14	AFH4-41		D036		FP423.4	TVL-4516	
B	▲40	200								
C	▲10	200								
D	100	50								
C4	10	250	267024-14	PRS350/10		BR1225		TC52	TVA-1504	
C5	10	50	267024-26	PRS50/10		BR105		TC32	TVA-1304	
C6	10	50	267024-16	PRS50/10		BR105		TC32	TVA-1304	
C7	2	50	267024-27	PRS150/4		BRR-2-50T		TC302	TVA-1301	
C8	150			SI150	D6-151	G046	GPIK-151	UC-5315	5GA-T15	
C9	15			SI15	D6-150	G021	GPIK-150	UC-5415	5GA-Q15	
C10	18			SI18	D6-180	G022	GPIK-180	UC-5418	5GA-Q18	
C11	4									
C12	15									
C13	2.7									
C14	1000			EF-001	MFT-1000				503C-D1	
C15	1000			EF-001	MFT-1000				530C-D1	
C16	6.8			SI6.8NP0	TCZ-6.8	TZ08	NP0K-6R8	ZT-5568	5TCCB-V68	
C17	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C18	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C19	1000			EF-001	MFT-1000				503C-D1	
C20	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C21	.56									
C22	.91									
C23	6.8			SI6.8NP0	TCZ-6.8	TZ08	NP0K-6R8	ZT-5568	5TCCB-V68	
C24	.3									
C25	1.2									
C26	15			SI15	D6-150	G021	GPIK-150	UC-5415	5GA-Q15	
C27	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C28	1.5									
C29	10			SI10	D6-100	G018	GPIK-100	UC-5410	5GA-Q10	
C30	10			SI10	D6-100	G018	GPIK-100	UC-5410	5GA-Q10	
C31	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C32	1000			EF-001	MFT-1000				503C-D1	
C33	1000			EF-001	MFT-1000				503C-D1	
C34	1000			EF-001	MFT-1000				503C-D1	
C35	5			SI5	D6-050	TP06	GPIK-050	NT-555	5TCUB-V5	
C36	82			SI82	D6-820	TZ28	GPIK-820	UC-5482	5GA-Q82	
C37	680		CC222Y5Y681M	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68	
C38	680		CC222Y5Y681M	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68	
C39	680		CC222Y5Y681M	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68	
C40	2									
C41	62					22R5Q62				
C42	680		CC222Y5Y681M	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68	
C43	680		CC222Y5Y681M	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68	
C44	680		CC222Y5Y681M	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68	
C45	680		CC222Y5Y681M	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68	
C46	680		CC222Y5Y681M	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68	
C47	4.7			SI4.7NP0	TCZ-4.7	TZ07	NP0K-4.7	ZT-5547	5TCCB-V47	
C48	62					22R5Q62				
C49	680		CC222Y5Y681M	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68	
C50	680		CC222Y5Y681M	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68	
C51	680		CC222Y5Y681M	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68	

BENDIX MODELS KM21E,
EU, KMT21E, EU, TB21E, EU,
TM21E, EU (Ch. T14-15, T14-16)

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING		BENDIX PART No.	AEROVOX PART No.	REPLACEMENT DATA						NOTES
	CAP.	VOLT			CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.		
C52	680	200 500	CC222Y5Y681M	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68		
C53	680		CC222Y5Y681M	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68		
C54	.047		267056-473	P288-047	DF-503	PJ2S47		PT4147	2TM-S47		
C55	82					22R5Q82					
C56A	4000			267052-402	BPD-2X004	DD2-402	DK078	822-004	DCD-524	5HK-2D4	
C57	F 4000										
C58	3000		CC131S2L680K	SI688	D6-680	TP32	GP2K-680	UC-5468	5GA-Q68		
C59	1000		CC262Y5Y302M	BPD-003	DD-302	K076	801-003	DC-523	5HK-D3		
C60A	2200		267072-102	BPD-001	DD-102	K069	801-002	DC-522	5HK-D2		
C61	2200		*274291-1	*PA-259	D6-222	K073	801-0022	DC-5222	5HK-D22		
C62	F 10000				DD-103	K082	81L-01	DC-511	5HK-S1		
C63	.047	200	267073-222	BPD-0022	DD-222	K073	801-0022	DC-5222	5HK-D22		
C64	.5	400	267073-472	BPD-0047	DD-472	K079	801-0047	DC-5247	5HK-D47		
C65	.22	400	267056-473	P288-047	DF-503	PJ2S47		PT4147	2TM-S47		
C66	.033	400	267036-474	P488-.5		CUB4P5		PT405	4TM-P5		
C67	680		267036-224	P488-.22		CUB4P22		PT4022	4TM-P22		
C68	.033	400	267036-333	P488-033		CUB4S33		PT4133	4TM-S33		
C69	1000	500	CC222Y5Y681M	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68		
C70	.047	200	CM24B102M	1468-001	IR5D1			MCB251	MS-21		
C71	680		CC222Y5Y681M	P288-047	DF-503	PJ2S47		PT4147	2TM-S47		
C72	.01	400	CC222Y5Y681M	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68		
C73	.1	200	CC222Y5Y681M	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68		
C74	680		267036-103	P488-01	D6-103	CUB4S1	GP2-333-103	PT41	4TM-S1		
C75	.01	400	267056-104	P288-1	DF-104	PJ2P1		PT401	2TM-P1		
C76	220		CC222Y5Y681M	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68		
C77	.1	200	267036-103	P488-01	D6-103	CUB4S1	GP2-333-103	PT41	4TM-S1		
C78	.0047	800	CC222Y5Y221M	SI220	D6-221	TP39	GP2K-221	UC-5322	5GA-T22		
C79	.0047	800	267056-104	P288-1	DF-104	PJ2P1		PT401	2TM-P1		
C80	.047	800	267060-472	P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47		
C81	.047	400	267060-472	P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47		
C82	2700	500	267056-473	P688-047	DF-503	CUB6S47		PT6147	6TM-S47		
C83	1000	500	267055-473	P488-047	DF-503	CUB4S47		PT4147	4TM-S47		
C84	1000	500	CM24B272K			IR5D27					
C85	.033	600	CM24B102K	1468-001	IR5D1			MCB251	MS-21		
C86	.047	600	CM24B102K	1468-001	IR5D1			MCB251	MS-21		
C87	.0033	400	267055-333	P688-033		CUB6S33		PT6133	6TM-S33		
C88	.22	200	267055-473	P688-047	DF-503	CUB6S47		PT6147	6TM-S47		
C89	.001	400	267056-224	P488-0033	D6-332	CUB6D33		PT6233	4TM-D33		
C90	.001	400	267036-332	P288-.22		PJ2P22		PT4022	2TM-P22		
C91	.0047	400	267036-102	P488-001	DD-102	CUB4D1	801-001	PT421	4TM-D1		
C92	.1	200	267036-102	P488-001	DD-102	CUB4D1	801-001	PT421	4TM-D1		
C93	.01	400	267056-472	P488-0047	DF-472	CUB4D47	GP2-333-472	PT4247	4TM-D47		
C94	.01	400	267056-104	P288-1	DF-104	CUB2P1		PT401	2TM-P1		
C95	3900	500	267058-103	P488-01	D6-103	CUB4S1	GP2-333-103	PT41	4TM-S1		
C96	430	500	267059-103	P488-01	D6-103	CUB4S1	GP2-333-103	PT41	4TM-S1		
C97	330	500	CM24J392K	1468-004		IR5D39		MCB243	MS-24		
C98	470		CM22B431K			5R5T43					
C99	.1	800	CM22B331K			5R5T33					
C100	.047	400	CC222Y5Y471M	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47		
C101	.047	400	267055-104	P688-1	DF-104	CUB6P1		PT601	6TM-P1		
C102	.47	200	267059-473	P488-047	DF-503	CUB4S47		PT4147	4TM-S47		
C103	.5	400	267056-473	P488-047	DF-503	CUB4S47		PT4147	4TM-S47		
C104	250	20000	267056-474	P288-.47		PJ2P47		PT4047	2TM-P47		
C105	62	2000		P488-5		CUB4P5		PT405	4TM-P5		
C106	1000		267065-2								
C107	1000		CC222Z5Z102P	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1		

* Items C60A, C60B, R63A, R63B are combined in one unit.

CONTROLS

ITEM No.	RATING RESISTANCE	WATTS	REPLACEMENT DATA					INSTALLATION NOTES
			BENDIX PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1.5M Ω		LH262037-3		RTV-495	F1-65	UF155L	Tone Panel
R2	500K Ω					R2-46	UR55-T254	Volume tapped at 300K Ω -Rear
C Switch						KB-1	US-24	Attach to R1B
R2A	100K Ω		LH262045-45		RTV-497	F1-31	UF15L	Brightness Panel
B	1200 Ω					R2-7	UR152L	Contrast-Rear
R3A	2Meg		LH262049-1		RTV-496	F1-67	UF26L	Vert. Hold-Panel
B	30K Ω					R2-28	UR54L	Horiz. Hold-Rear
R4A	1Meg		OCH262025-28P	Q11-137	A47-1Meg-S	BX-69	U-54	Vert. Linearity
B Shaft			Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R4A
R5A	3Meg		OCH262025-27P	Q11-140	A47-3Meg-S	BX-84	U-59	Height
B Shaft			Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R5A
R6A	3Meg		OCH262025-27P	Q11-140	A47-3Meg-S	BX-84	U-59	Noise Gate
B Shaft			Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R6A

† Universal Replacement (Mallory exact duplicate part no. UE16975).

†† Universal Replacement (Mallory exact duplicate part no. UE1125).

* Universal Replacement (Mallory exact duplicate part no. UE1735).

RESISTORS

ITEM No.	RATING OHMS	WATT	REPLACEMENT DATA		NOTES
			BENDIX PART No.	IRC PART No.	
R7	1Meg			BTS-1Meg	
R8	750K Ω			BTS-750K	
R9	470 Ω			BTS-470	
R10	100K Ω			BTS-100K	
R11	10K Ω			BTS-10K	
R12	470K Ω			BTS-470K	
R13	10K Ω			BTS-10K	
R14	1000 Ω			BTS-1000	
R15	15K Ω			BTS-15K	
R16	6800 Ω			BTS-6800	
R17	2200 Ω	1		BTA-2200	
R18	2200 Ω	1		BTA-2200	
R19	150K Ω			BTS-150K	
R20	100 Ω			BTS-100	
R21	50 Ω			BTS-50	
R22	150 Ω		RC23A151K	BTS-150	
R23	1000 Ω	1	RC24A102K	BTA-1000	
R24	220K Ω		RC23A224K	BTS-220K	
R25	5000 Ω 5%		RC23A592J	BTS-5000 5%	
R26	300K Ω 5%		RC23A364J	BTS-300K 5%	
R27	68 Ω 5%		RC23A680J	BTS-68 5%	
R28	3300 Ω 5%		RC23A332J	BTS-3300 5%	
R29	220K Ω		RC23A224K	BTS-220K	
R30	100 Ω		RC23A101K	BTS-100	

RESISTORS (cont)

ITEM No.	RATING OHMS	WATT	REPLACEMENT DATA		NOTES
			BENDIX PART No.	IRC PART No.	
R31	680 Ω		RC23A681K	BTS-680	Note 1
R32	680 5%		RC23A332K	BTS-68 5%	
R33	3300 Ω	2	RC23A103J	BTS-10K 5%	
R34	10K Ω 5%		RC23A820K	BTS-82	
R35	82 Ω		RC23A223K	BTS-22K	
R36	22K Ω		RC23A151K	BTS-150	
R37	3300 Ω 5%		RC24A222K	BTA-2200	
R38	1500		RC23A101K	BTS-100	
R39	2200 Ω	1	RC23A821K	BTS-820	
R40	100 Ω		RC23A123K	BTS-12K	
R41	820 Ω		RC23A224K	BTS-220K	
R42	12K Ω		RC24A272K	BTA-2700	
R43	220K Ω		RC23A562K	BTS-5600	
R44	2700 Ω	1	RC23A333K	BTS-33K	
R45	5600 Ω		RC23A334K	BTS-330K	
R46	2700 Ω	1	RC23A333K	BTS-33K	
R47	33K Ω		RC23A154K	BTS-150K	
R48	330K Ω		RC23A683J	BTS-68K 5%	
R49	150K Ω		RC23A513J	BTS-51K 5%	
R50	68K Ω 5%		RC23A105J	BTS-1M 5%	
R51	51K Ω 5%		RC23A105J	BTS-1M 5%	
R52	1M 5%		RC23A105J	BTS-1M 5%	
R53	1M 5%		RC23A475J	BTS-4.7M 5%	
R54	4.7M 5%				
R55	620K Ω 5%		RC23A624J	BTS-620K 5%	
R56	220 Ω		RC23A221K	BTS-220	
R57	15K Ω	1	RC24A153K	BTA-15K	
R58	47K Ω	1	RC24A473K	BTA-47K	
R59	47K Ω	1	RC23A473K	BTS-47K	
R60	2700 Ω	1	RC24A272K	BTA-2700	
R61	470 Ω		RC23A471K	BTS-470	
R62	180 Ω		RC23A181K	BTS-180	
R63A	47K Ω				
B	47K Ω		*274291-1	BTS-47K	
R64	12K Ω		RC23A123K	BTS-12K	
R65	47K Ω		RC23A473K	BTS-47K	
R66	10M 5%		RC23A106K	BTS-10M 5%	
R67	10 Ω		RC23A100K	BTS-10	
R68	1.2Meg		RC23A125K	BTS-1.2Meg	
R69	220K Ω		RC23A224K	BTS-220K	
R70	68K Ω		RC23A683K	BTS-68K	
R71	820K Ω 5%		RC23A824J	BTS-820K 5%	
R72	1M 5%		RC23A105J	BTS-1M 5%	
R73	150 Ω	1	RC24A151K	BTA-150	
R74	56K Ω	2	RC25A563K	BTA-56K	
R75	3900 Ω	1	RC24A392K	BTA-3900	
R76	390 Ω	1	RC23A391K	BTS-390	

* Items R63A, R63B, C60A, and C60B are combined in one unit.
Note 1: Some versions may use a 47 Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	BENDIX PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC ⓐ 1.7A	725VCT 190ADC	5VAC ⓐ 3A	265048-1	P-8170 ①		R-35A		P9708 ①	
	SEC. 3	SEC. 4	SEC. 5							
	6.3VAC ⓐ 1.2A	6.3VAC ⓐ 7.6A								