

**CABINET—REAR VIEW**

## HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern. Set the contrast control for a normal picture.

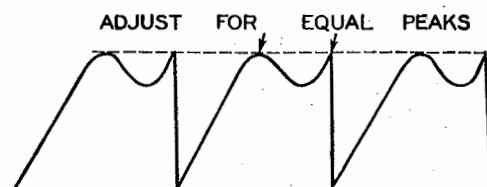
Set the horizontal hold control to the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Connect the vertical amplifier of the scope thru a low capacity probe to point  $\odot$ . Low side to chassis. Adjust the horizontal waveform slug (B2) until the waveform is similar to Fig. 4. While making this adjustment, keep the picture in sync with the horizontal hold control.

Turn the horizontal hold control fully clockwise. Turn B1 clockwise until the picture is just ready to pull in sync.

Turn the horizontal hold control fully counter clockwise. The picture should remain in sync. Switch off channel and back again. Retouch B1 if necessary.

While receiving a signal from a station, turn the contrast control fully counter clockwise and turn the brightness up so that the picture appears to be washed out. Turn the horizontal drive trimmer (B3) clockwise until white vertical bars appear in the left center of the raster, then slowly turn B3 counter clockwise until the bars disappear.



**FIG. 4**

FOLDER 3

SET 408

WELLS-GARDNER MODELS 321N72-A-3730, 321N72-A-3791, 2321N72-A-3732, 2321N72-A-3793

**PHOTOFACT\* Folder**



## DISASSEMBLY INSTRUCTIONS

### CHASSIS REMOVAL

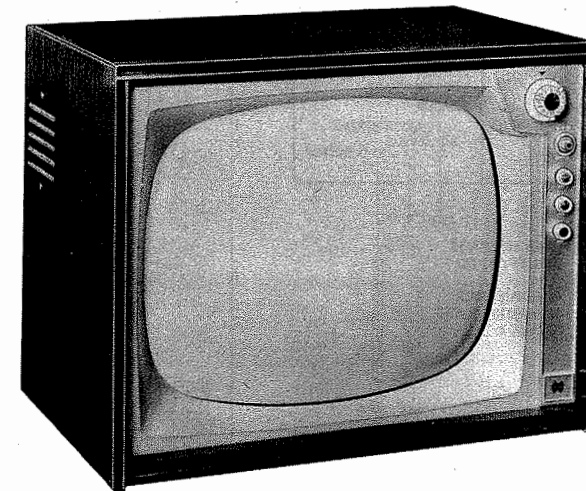
1. Remove 7 push-on type knobs from the front.
2. Remove 5 wood screws from the rear cover. Remove the rear cover.
3. Remove 2 wood screws holding the antenna terminal board.
4. Remove the speaker leads, picture tube socket, HV lead and yoke clamp.
5. Remove 2 wood screws holding the top chassis brace.
6. Remove 4 chassis bolts from the bottom.
7. Remove the chassis.

### CAUTION NOTE

#### ONE SIDE OF AC LINE CONNECTED TO CHASSIS

Care should be exercised when connecting test equipment or physically contacting the chassis.

TRADE NAME	Wells-Gardner	MODELS	321N72-A-3730, 321N72-A-3791, 2321N72-A-3732, 2321N72-A-3793
MANUFACTURER	Wells-Gardner Co.,		2701 N. Kildare Avenue, Chicago 39, Illinois
TYPE SET	Television Receiver		
TUBES	Fourteen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING	145 Watts, 1.3 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		



MODEL 321N72-A-3730

WELLS-GARDNER MODELS 321N72-A-3730, 321N72-A-3791, 2321N72-A-3732, 2321N72-A-3793

## SERVICING IN THE FIELD

### TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the rear cover. Supply power to the receiver. Set the fine tuning at the center of its range. The adjustments are accessible, one at a time, through a hole in the right side of the tuner rear cover as viewed from the rear. Adjust for best picture and sound.

### PICTURE TUBE SAFETY GLASS CLEANING

Remove 5 wood screws from the trim at the top of the safety glass. Tilt glass out at the top and lift up to remove.

### FOCUS

Adjust the beam alignment magnet on the neck of the picture tube for best focus.

### HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the

horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart).

### SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate audio detector buzz, adjust the buzz control for MINIMUM buzz and maximum sound. (For location, see tube placement chart).

### FUSE DEVICE

A 7.5Ω fusible resistor (R62) is used for LV power 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.

### 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 H402R

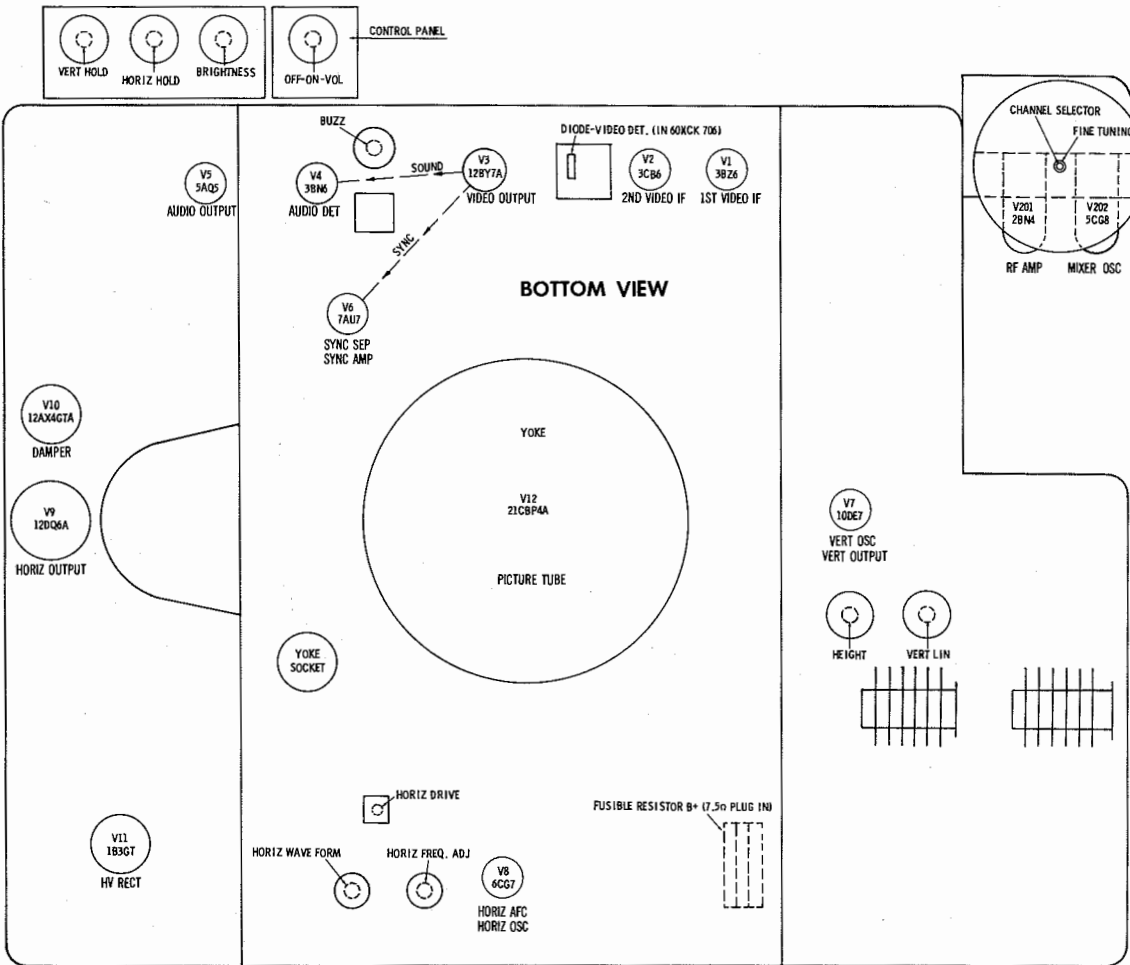
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RESISTANCE MEASUREMENTS

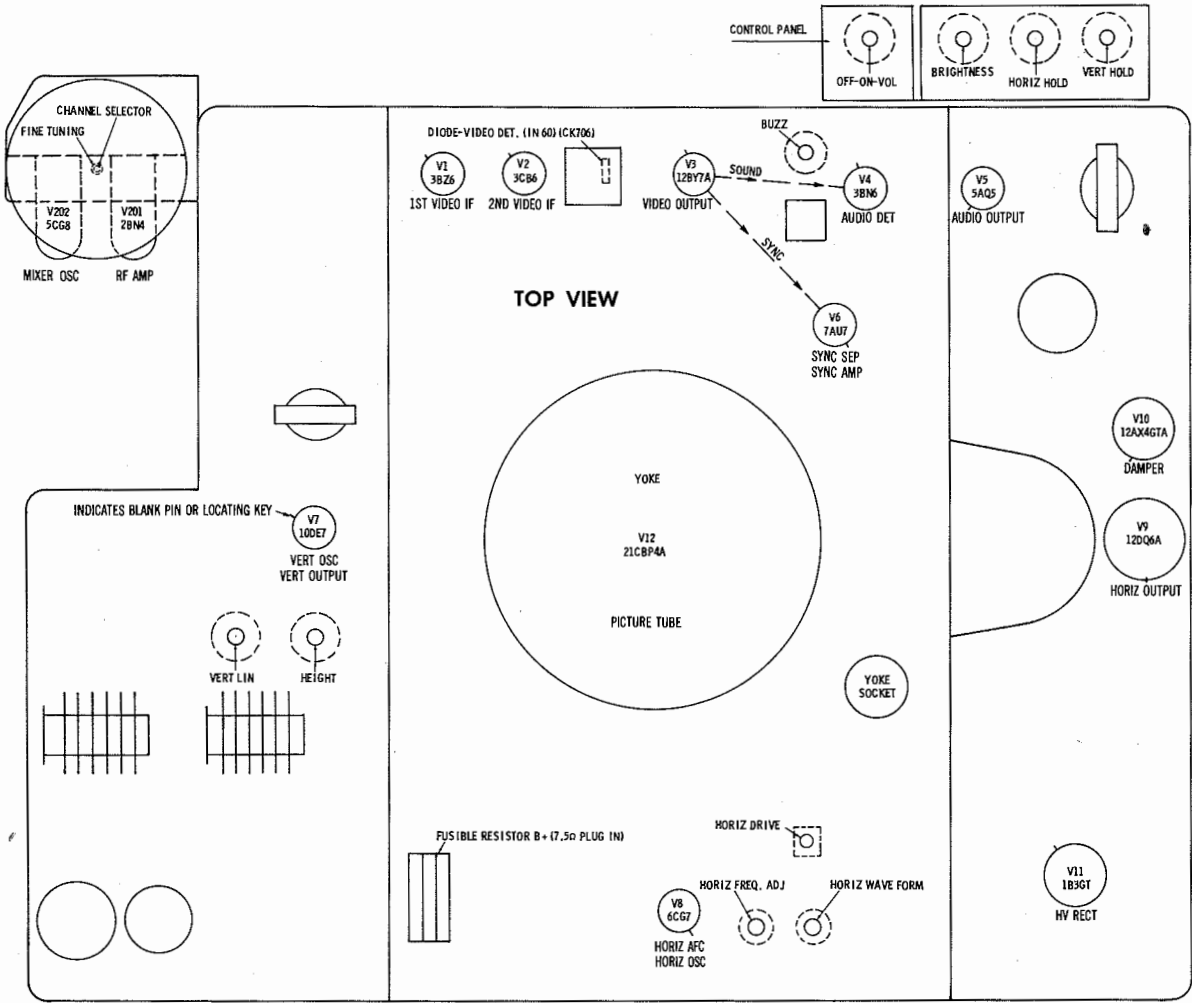
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	1meg	47Ω	10Ω	11Ω	†2200Ω	†2200Ω	0Ω		
V2	6CB6	.1Ω	180Ω	11Ω	12Ω	†2200Ω	†2200Ω	0Ω		
V3	12BY7A	•230Ω	1meg	0Ω	17Ω	17Ω	14Ω	†3600Ω	†1700Ω	0Ω
V4	3BN6	•290Ω	2.8Ω	10Ω	9.5Ω	†6400Ω	5.8Ω	†330K		
V5	5AQ5	0Ω	330Ω	13Ω	12Ω	†880Ω	†470Ω	0Ω		
V6	7AU7	†820K	2.2meg	0Ω	13Ω	13Ω	†13K	47K	0Ω	14Ω
V7	10DE7	†400Ω	2.2meg	2.2meg	18Ω	17Ω	•†1.6meg	•850K	170Ω	1600Ω
V8	6CG7	†56K	410K	0Ω	9.5Ω	8.5Ω	•†220Ω	1.4meg	410K	0Ω
V9	12DQ6A	TP	4Ω	NC	†10K	470K	NC	7Ω	100Ω	TOP CAP †10Ω
V10	12AX4GT	NC	NC	†	NC	†.1Ω	NC	4Ω	1.5Ω	
V11	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †320Ω
V12	21CBP4A	7Ω	•23K	PIN 6 †100K	PIN 10 †10meg	PIN 11 •290K	PIN 12 8.5Ω			
V201	2BN4	0Ω	1meg	0Ω	.5Ω	†2700Ω	0Ω	1meg		
V202	5CG8	10K	†7300Ω	0Ω	1.5Ω	.5Ω	†2700Ω	†12K	0Ω	230K

THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.  
THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.  
MEASURED FROM 255V SOURCE.  
MEASURED FROM PIN 3 OF V10.  
NC NO CONNECTION.  
TP TIE POINT.



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.

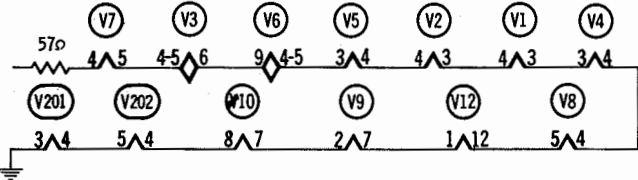
**POWER SUPPLY FAILURE**  
No raster, no sound - Fusible Resistor (R62), Rectifier (M1, M2)

**LOSS OF PICTURE OR SOUND**  
No pic, no sound, has raster - V1, V2, Diode (M3), V3  
No pic, no sound, has snow - V201, V202  
No pic, has sound, has raster - V3, V12  
Has pic, no sound - V4, V5

**SYNC FAILURE**  
No vert. sync - V6  
No horiz. sync - V6, V8  
No vert. or horiz. sync - V6

**SWEEP FAILURE**  
No raster, has sound - V8, V9, V10, V11, V12  
No vertical deflection - V7  
Poor vert. linearity or foldover - V7  
Poor horiz. linearity or foldover - V8, V9, V10  
Narrow picture - V8, V9, V10, M1, M2  
Vert. off freq. - V7  
Horiz. off freq. - V8

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.



SET 408 FOLDER 3

WELLS-GARDNER MODELS 321N72-A-3730, 321N72-A-3791,  
2321N72-A-3732, 2321N72-A-3793

FOLDER 3

# 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

Connect the negative lead of a 4 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.  
Keep sweep generator output set for approximately 4 volts peak to peak on the scope throughout the "Video IF Alignment".

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1. .001mfd	High side to pin 1 (grid) of 3CB6 (V2). Low side to chassis.	44.0MC (10MC Swp)	42.8MC 45.75MC	Any non-interfering channel	Vert. Amp. thru 10K to point $\diamond$ . Low side to chassis. (Across video det. load).	A1, A2	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
2. "	High side to pin 1 (grid) of 3BZ6 (V1). Low side to chassis.	"	42.8MC 43.9MC 44.5MC 45.75MC	"	"	A3, A4	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown.
3. Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	"	"	"	"	A5, Mixer Plate Coll	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. If necessary, repeat steps 1, 2, and 3.

## 4.5MC TRAP ALIGNMENT

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4. .005mfd	High side to point $\diamond$ . Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	RF probe to pin 11 (cathode) of picture tube. Common to chassis.	A8	Adjust for MINIMUM deflection.

## SOUND IF ALIGNMENT

Tune in a TV station and reduce the signal strength by use of an attenuator, or similar device, until a hiss is heard in the sound.  
Adjust A7, A8 and buzz control (R7) for maximum undistorted sound and MINIMUM buzz. If the hiss disappears during alignment, further reduce the signal until the hiss returns.

FOR TUNER ALIGNMENT INSTRUCTIONS SEE PAGE 6.

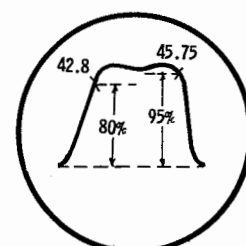


FIG. 1

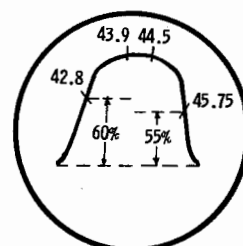


FIG. 2

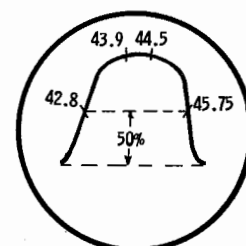
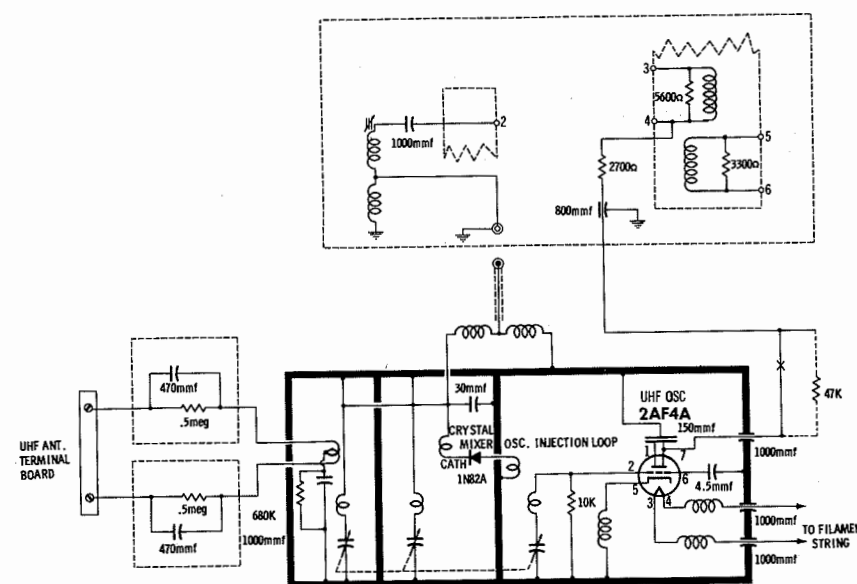
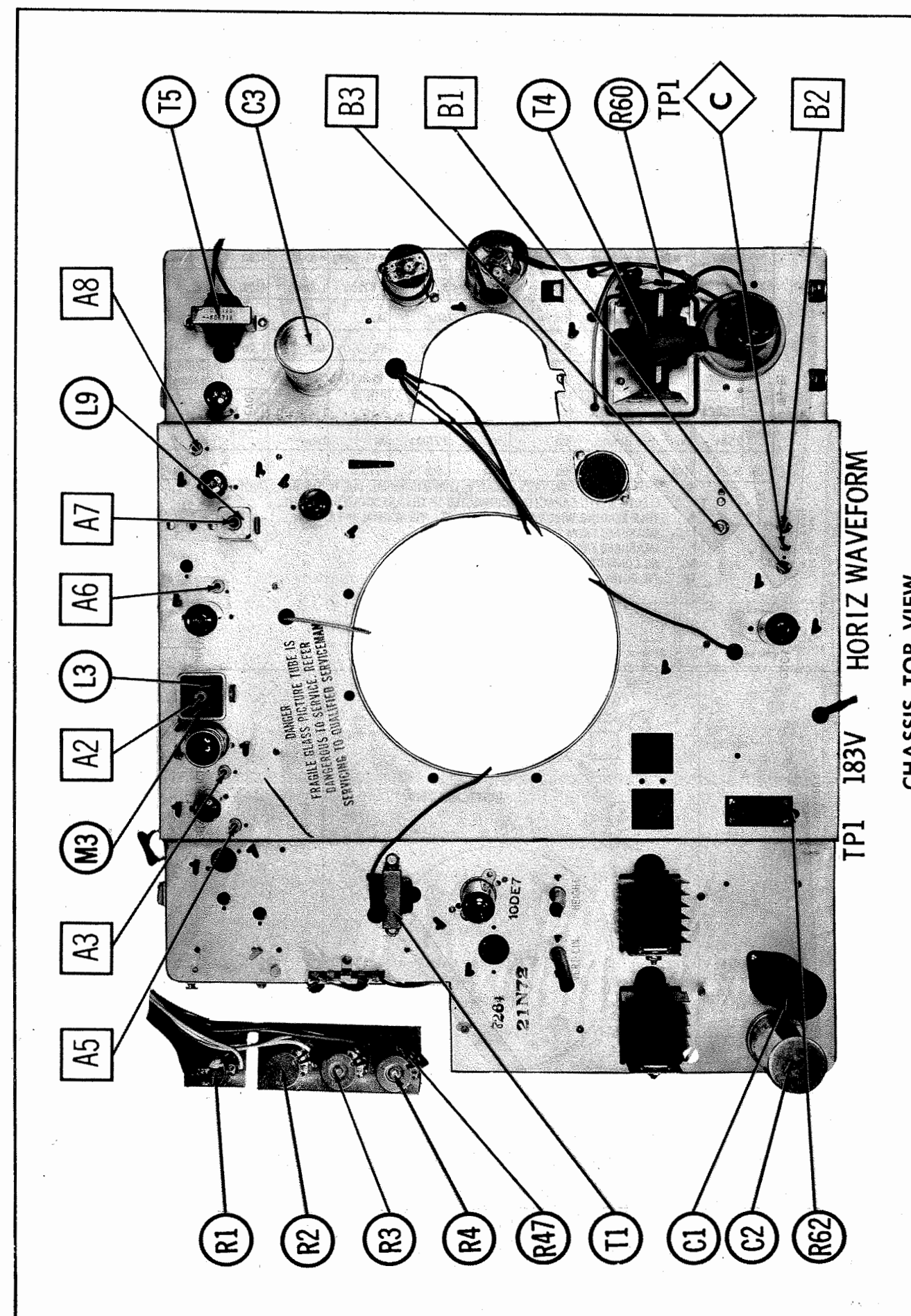


FIG. 3



A PHOTOFAC STANDARD NOTATION SCHEMATIC  
Howard W. Sams & Co., Inc. 1958

UHF TUNER #25A1159



WELLS-GARDNER MODELS 321N72-A-3730, 321N72-A-3791,  
2321N72-A-3732, 2321N72-A-3793  
WELLS DO NOT SERVICE HERE

FOLDER 3



# TUNER PARTS LIST AND DESCRIPTIONS

## TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	2BN4	
V202	Mixer-Osc.	5CG8	

### 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		PART No.	REPLACEMENT DATA						NOTES
	CAP.	VOLT		AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	120			NPO-DI 120	DD-121	L10T12	ED-120		5TCC-T12	10%
C202	30			NPO-DI 15	DD-150	L10Q15	ED-15		5TCC-Q15	10%
C203	15				TCZ-15		TCO-15			5%
C204	2-8			NPO-DI 5	DD-050	C10V5C	ED-5	ZT-555	5TCC-Q5	10%
C205	5									10%
C206	800									
C207	2-6									
C208	47									
C209	800									
C210	2-6									
C211	51									
C212	1.5			NPO-SI 1.5	TCZ-1R5	CTA6V15C	TCO-1.5	ZT-5515	5TCCB-V15	N1400
C213	10			N750-SI 10	TCN-10	CTA6QU	TC7-10	NT-541	5TCU-Q1	N750
C214	10									N900
C215	1500			BPD-0015	DD-152	BYA10D15	ED-1500	DC5215	5HK-D15	
C216	30			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C217	1000									
C218	800									
C219	43									
C220	43									NPO 5%

① Some versions may use 1000mmf in this application.

### RESISTORS

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

ITEM No.	RATING		PART No.	NOTES
	OHMS	WATT		
R201	47000			
R202	10000			
R203	10K			
R204	220K			
ITEM No.	RATING		PART No.	NOTES
	OHMS	WATT		
R205	10000			
R206	10K			
R207	10K			
R208	56000			

### COILS (RF-IF)

ITEM No.	USE	PART No.	NOTES
L201	Ant. Trans.	31T-3066	
L202	IF Trap Coil	34A763	
L203	IF Trap Coil	34A762	
ITEM No.	USE	PART No.	NOTES
L204	Coil Assy.	31T-3066-004	Includes rotor
L205	Osc. Plate Coil	25A-211-01	
L206	Mixer Plate Coil	31U-580	

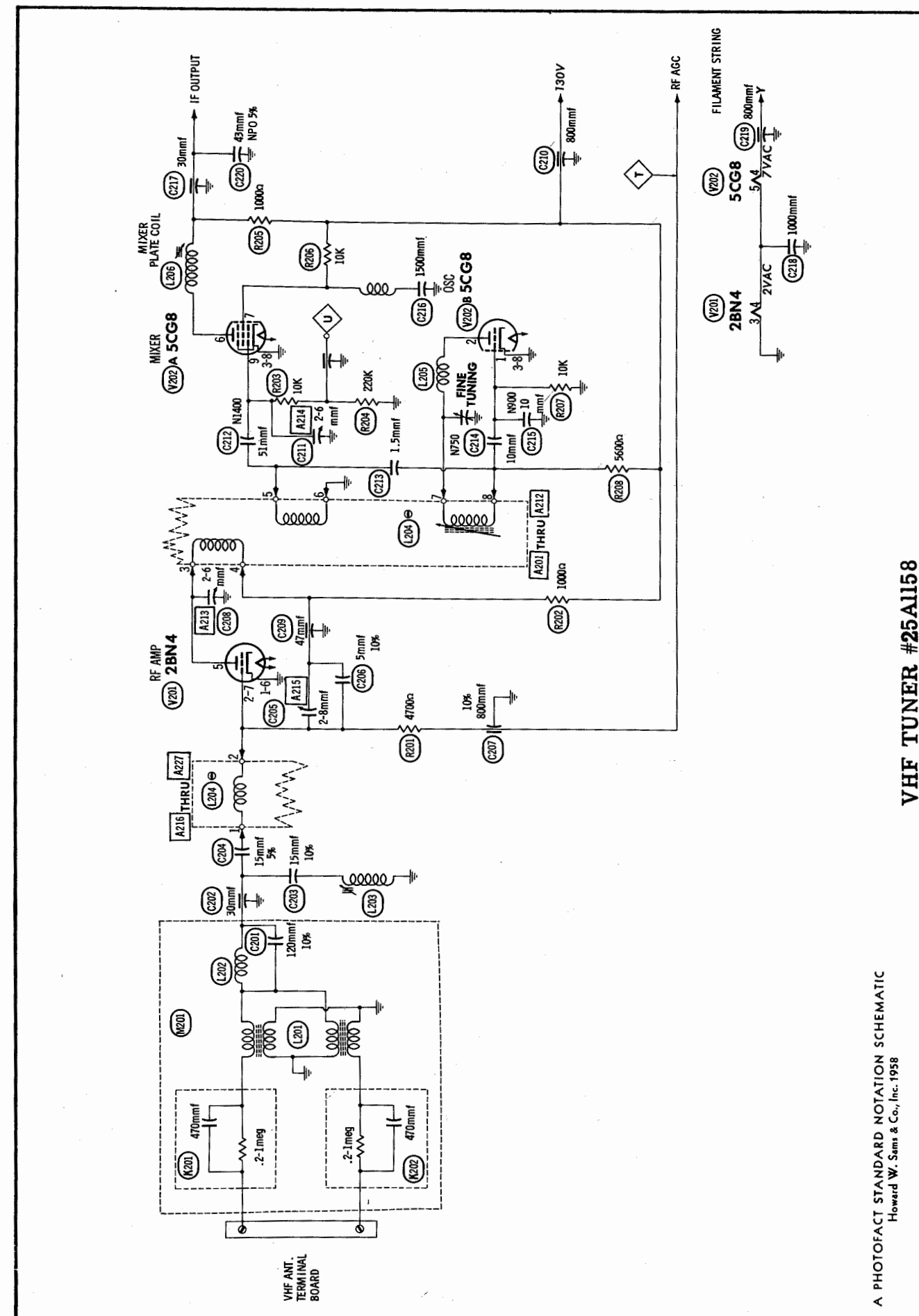
### COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PART No.	REPLACEMENT DATA
K201	Antenna Isolation	470mmf, .2-1meg	13P-198	
K202	Antenna Isolation	470mmf, .2-1meg	13P-198	

### MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M201	Antenna Input Assy.	31T-2086-01	Includes L201, L202, K201, K202
	Osc. Slug	15A-276	(12 Used)
	Contact Spring	23A-132	(6 Used)

NOTE: PART NUMBERS LISTED ABOVE ARE "STANDARD COIL" PART NO.



WELLS-GARDNER MODELS 321N72-A-3730, 321N72-A-3791,  
2321N72-A-3732, 2321N72-A-3793  
8511V52# RENUM. FHA

A PHOTOFAC STANDARD NOTATION SCHEMATIC  
Howard W. Sams & Co., Inc. 1958

FOLDER 3

# 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 OSCILLATOR ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.  
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 noted.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1. Two 1200 Carbon Resistors	Across antenna terminals with 1200 in each lead.	213MC	211. 25MC	13	Vert. Amp. thru 47K across video detector load.	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
		207MC	205. 25MC	12		A202	
		201MC	199. 25MC	11		A203	
		195MC	193. 25MC	10		A204	
		189MC	187. 25MC	9		A205	
		183MC	181. 25MC	8		A206	
		177MC	175. 25MC	7		A207	
		171MC	169. 25MC	6		A208	
		165MC	163. 25MC	5		A209	
		159MC	157. 25MC	4		A210	
		153MC	151. 25MC	3		A211	
		147MC	145. 25MC	2		A212	
		141MC	139. 25MC	1			
		135MC	133. 25MC				

## VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point  $\nabla$ . 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
2. Two 1200 Carbon Resistors	Across antenna terminals with 1200 in each lead.	195MC	193. 25MC	10	Vert. Amp. thru 10K to point $\nabla$ . Low side to chassis.	A213, A214	Adjust A213 and A214 for maximum amplitude and symmetry with markers as shown in Fig. 202.
			187. 25MC				
3. "	"	213MC	211. 25MC	13	Vert. Amp. thru detector (Fig. 203) to plate of 1st. video IF tube. Low side to chassis.	A215	Reduce bias to -1.5 volts. Adjust for MINIMUM response.
		207MC	205. 25MC	12			
		201MC	199. 25MC	11			
		195MC	193. 25MC	10			
		189MC	187. 25MC	9			
		183MC	181. 25MC	8			
		177MC	175. 25MC	7			
		171MC	169. 25MC	6			
		165MC	163. 25MC	5			
		159MC	157. 25MC	4			
		153MC	151. 25MC	3			
		147MC	145. 25MC	2			
		141MC	139. 25MC	1			
		135MC	133. 25MC				
4. "	"	213MC	211. 25MC	13	"	A216	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by expanding or compressing coil turns.
		207MC	205. 25MC	12		A217	
		201MC	199. 25MC	11		A218	
		195MC	193. 25MC	10		A219	
		189MC	187. 25MC	9		A220	
		183MC	181. 25MC	8		A221	
		177MC	175. 25MC	7		A222	
		171MC	169. 25MC	6		A223	
		165MC	163. 25MC	5		A224	
		159MC	157. 25MC	4		A225	
		153MC	151. 25MC	3		A226	
		147MC	145. 25MC	2		A227	
		141MC	139. 25MC	1			
		135MC	133. 25MC				

## ANTENNA TRAP ALIGNMENT

Some types of interference can be reduced by adjusting A228. Observe the picture and adjust A228 for MINIMUM interference.

## UHF 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.

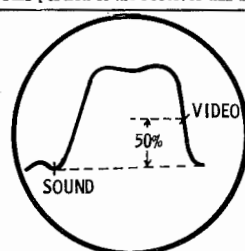


FIG. 201

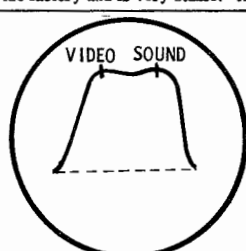


FIG. 202

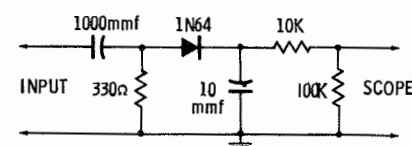
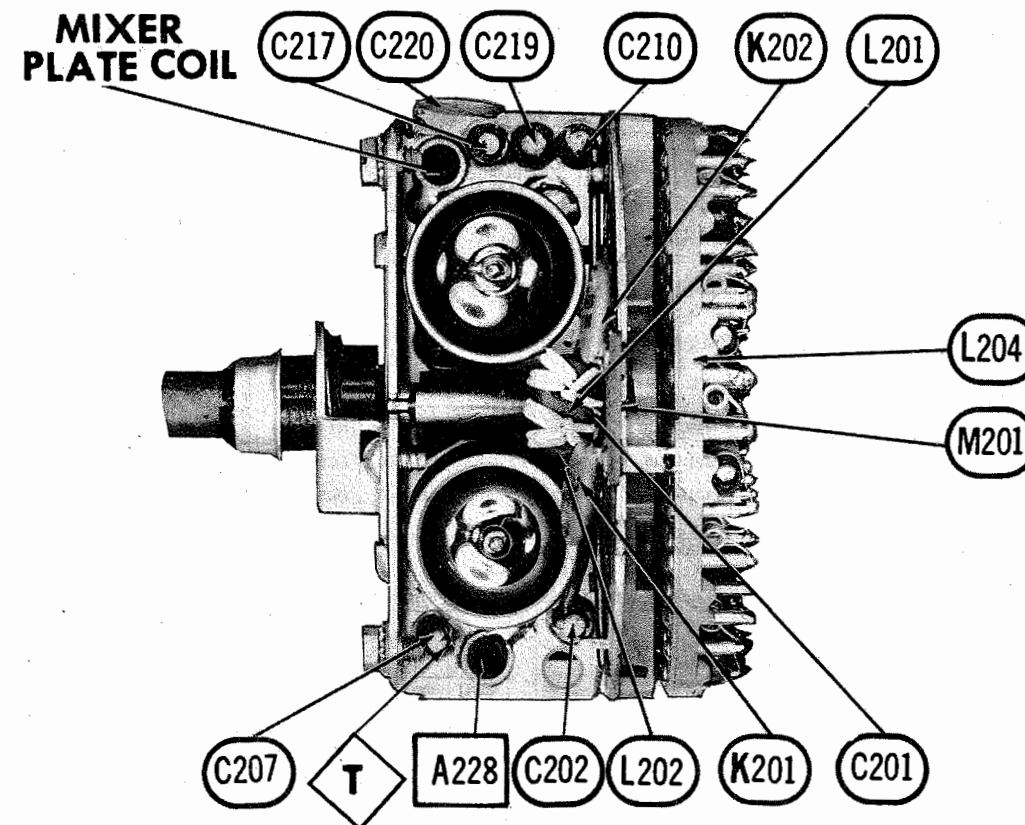
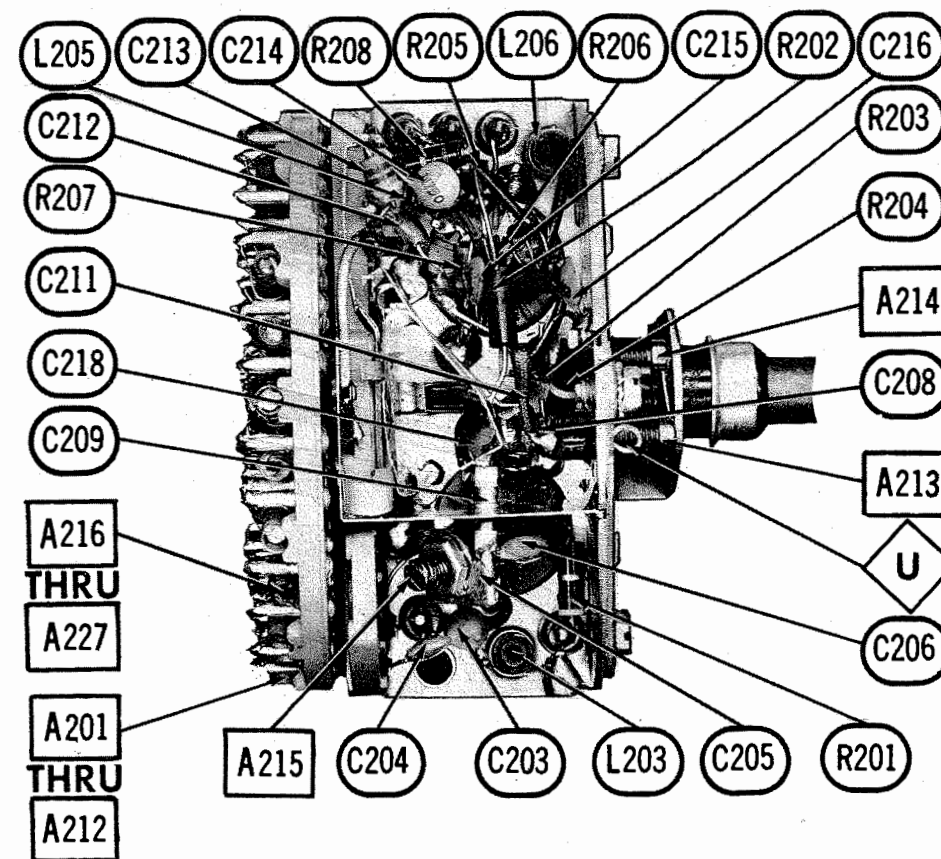


FIG. 203



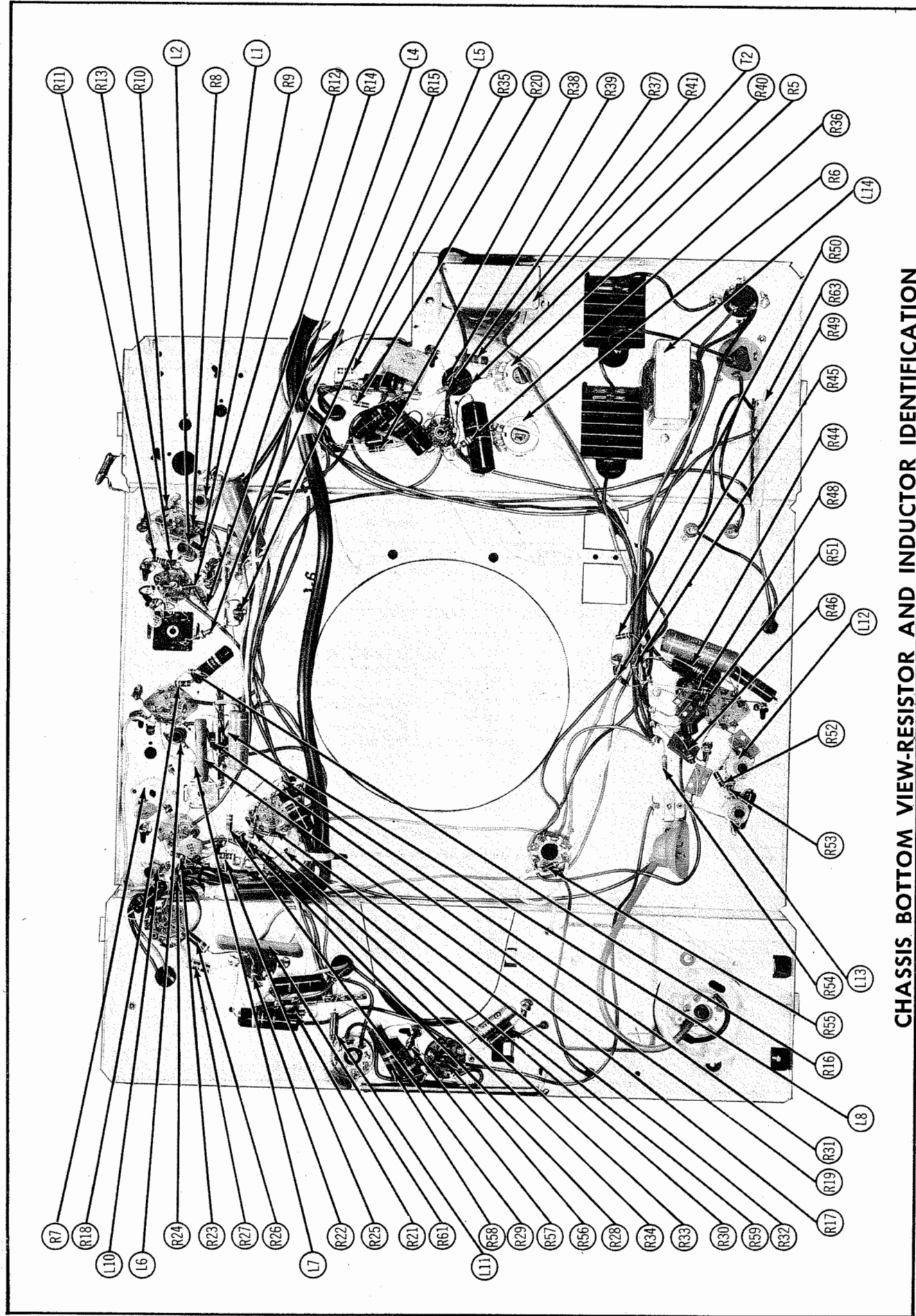
RF TUNER-TOP VIEW



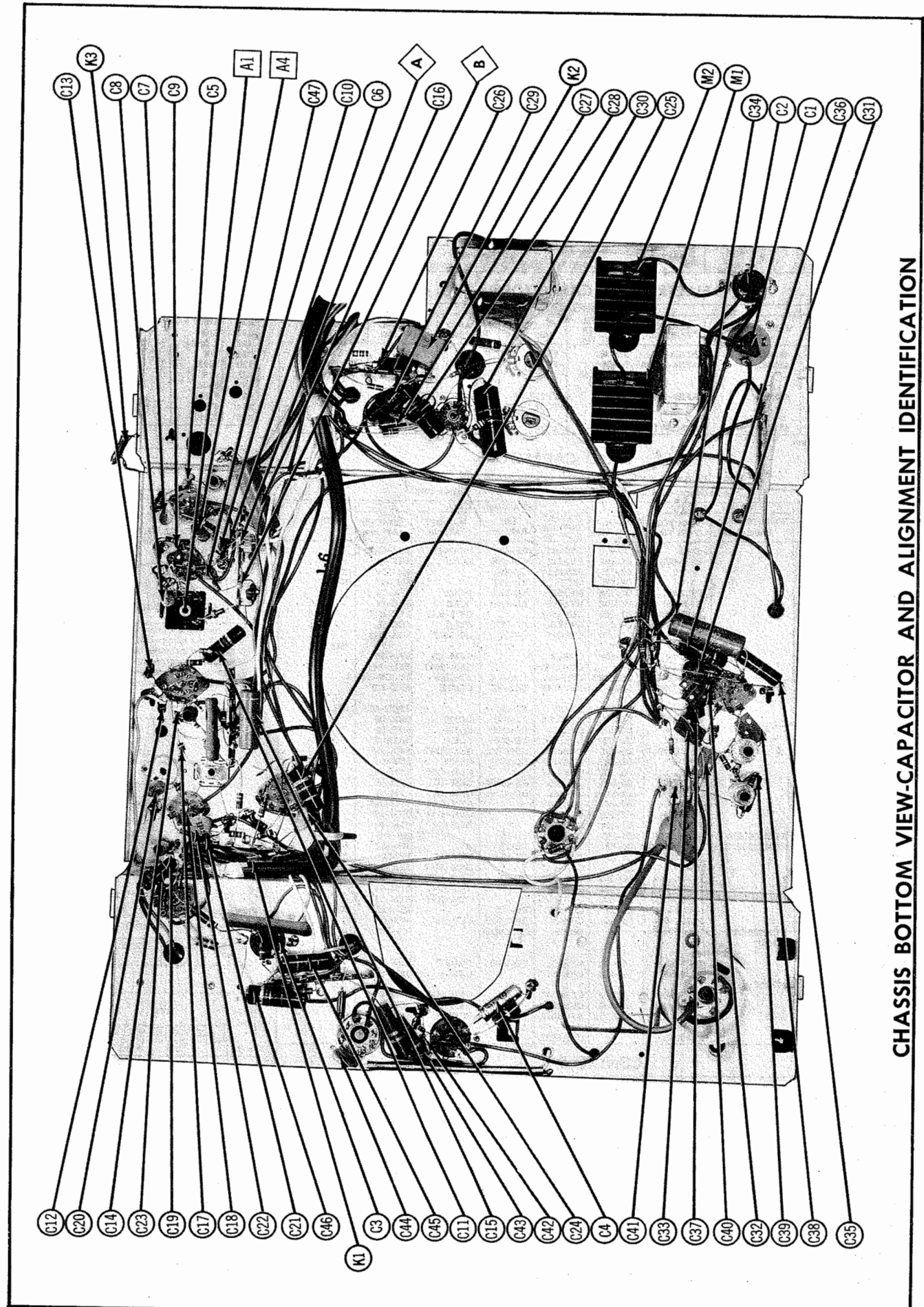
RF TUNER-BOTTOM VIEW

WELLS-GARDNER MODELS 321N72-A-3730, 321N72-A-3791,  
2321N72-A-3732, 2321N72-A-3793

FOLDER 3



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



WELLS-GARDNER MODELS 321N72-A-3730, 321N72-A-3791,  
2321N72-A-3732, 2321N72-A-3793



# PARTS LIST AND DESCRIPTIONS RESISTORS

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

ITEM No.	RATING		Wells-Gardner PART No.	NOTES
	OHMS	WATT		
R8	10K			
R9	470Ω			
R10	470 5%			
R11	47K			
R12	470Ω			
R13	180Ω			
R14	5600Ω			
R15	1meg			
R16	1meg			
R17	3800Ω 5%	4	43X331	
R18	47Ω			
R19	180K			
R20	15K			
R21	10meg			
R22	100K			
R23	680Ω			
R24	330K			
R25	4700Ω			
R26	470Ω	1		
R27	330Ω	1		
R28	2.2meg			
R29	10K			
R30	820K			
R31	47K			
R32	680K			
R33	6800Ω			
R34	4700Ω			
R35	470K			
R36	390K			
R37	6800Ω			
R38	22K			
R39	2.2meg			
R40	180Ω			
R41	1000Ω	1		
R42	560Ω			
R43	560Ω			
R44	330K			
R45	820K			
R46	220K			
R47	120K			
R48	82K			
R49	330K			
R50	3900Ω			
R51	82K			
R52	22K			
R53	10K			
R54	56K			
R55	1meg			
R56	68Ω			
R57	470K			
R58	10K	2		
R59	100Ω	2		
R60	5600Ω			
R61	1700Ω	10	43X294	
R62	7.5Ω		43X380	
R63	57Ω	10	43X301	

## TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA							NOTES
		Wells-Gardner PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	Vert. Osc.	54X19-A	B6702	A-3003	V402	A-8125	26A03	A-97X	
T2	Alt. Vert. Osc.	54X19							
T3A	Vert. Output	51X188							
T3B	Yoke-Horiz. (24.5MHZ)	9A2403 ④	DF607 ⑤	Z1900 ①②	V307 ①③	YO-100 ③	28S73 ③	A-118X ③	
M5	Rear Cover & Centering Device	2A435							
T4	Yoke Clamp	53X381							
	Horiz. Output	53X382C	FB419 ③ * ②	HVO-36 ③ * ③	XO94 ③ * ③	HO-283 * ③ * ③	FLY-16 ③ * ③	D-121 * ③ * ③	
	Alt. Horiz. Output	53X382	FB419 ③ * ②	HVO-36 ③ * ③	XO94 ③ * ③	HO-283 * ③ * ③	FLY-16 ③ * ③	D-121 * ③ * ③	

- ① Connect as autotransformer.
  - ② Use 9 to 1 turns ratio.
  - ③ Drill new mounting hole(s).
  - ④ Includes resistors (R42, R43).
  - ⑤ Use original rear cover, centering device and horizontal damping network. Connect same as original.
- † This part may be superseded by Parts Manufacturer's introduction of special unit for this application.

## \* HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Holldorson Replacement Connections	Merit Replacement Connections	Rom Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
4	9	9	9	8	9	4
7	7	7	7	3	7	3
6	See Note ⑥	See Note ⑥	See Note ⑥	NC	See Note ⑥	2
5	1	1	1	1	1	1

- ⑥ Install new damping network consisting of approximately 50mmf in series with resistor (R60) across horizontal yoke terminals #3 and #7.

## TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA							NOTES
		Wells-Gardner PART No.	Holldorson PART No.	Merit PART No.	Rom PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T5	6100Ω 3-4Ω	51X185	Z1110	A-3028	AU-602 ①	A-3877 ①	24848	S-8X	① Drill new mounting hole.

## SPEAKER

ITEM No.	TYPE	REPLACEMENT DATA		NOTES
		Wells-Gardner PART No.	QUAM PART No.	
SP1	5" PM	12A527	5A07	

## COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Wells-Gardner PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	1st. Video IF	9A2389	17-4534	TV-131	4202	VF-4	
L2	2nd. Video IF	9A2390					
L3	3rd. Video IF	9A2391					
L4	Resonant Choke	9A2375					
L5	Shunt Peaking Coil	36A22	19-3300 *	TV-198 *	6155 *		Complete Assy. 30 Microhenries, wound 22K resistor
L6	4.5MC Trap	9A2366	20-1004	TV-151	1469 *	SF-3	
L7	Series Peaking Coil	36A28	19-4400 *	TV-190 *	6132 *	VP-7 *	
L8	Shunt Peaking Coil	36A38	19-4201 †	TV-197 †	6154 †		350 Microhenries, wound on 6800Ω resistor
L9	Sound IF	9A2400	17-1026	TV-154	1470A *		
L10	Quadrature Coil	9A2367	20-1005	TV-121	1480		
L11	RF Choke	9A2380	19-1001	BC-562	4804		1.5 Microhenries

- \* Parallel with 22K resistor.
- † Parallel with 6800Ω resistor.
- ‡ Parallel with 470Ω resistor.
- ▲ Disregard tap.
- Drill mounting holes

## TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.	REPLACEMENT DATA						NOTES
		Wells-Gardner PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	
L12	74Ω *	9A2371		TV-165	6211 *		HS-7	Horiz. Freq. * Tapped @ 53Ω
L13	56Ω	9A2372			6315		HS-5	Horiz. Waveform. * Enlarge mounting hole

## FILTER CHOKE

ITEM No.	RATINGS		REPLACEMENT DATA					
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 Hz)	Wells-Gardner PART No.	Holldorson PART No.	Merit PART No.	Ram PART No.	Thordarson PART No.
L14	.250A	40Ω	1 Hy.	52X95-6	C5037 ①	C-2981 ①		C-2326 ①

① Drill new mounting hole.

## RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
		Wells-Gardner PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TAZIAN PART No.	
M1	.250A	66X14-C ①	1090A ①	1N1007 ②	RS300SL ①	300 ①	① Selenium type.
M2	.250A	66X14-C ①	1090A ①	1N1007 ②	SD94A ③	M500 ③	② Germanium type.
					SD94A ③	300 ①	③ Silicon type.

## CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		Wells-Gardner PART No.	CBS PART No.	SYLVANIA PART No.	
M3	1N60 *		1N60	1N60	Video Detector (Pigtail)

\* Some versions may use CK706 in this application.

## COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Wells-Gardner PART No.	REPLACEMENT DATA
K1	Sync Coupling	330mmf, 150K	76X13	Sprague PRC-5
K2	Vert. Integrator	2000mmf, 5000mmf, 5000mmf, 22K, 8200Ω 8200Ω	76X7	Aerovox PA-110 Centralab PC-104 Cornell-Dubilier 115TMI Erie 1405-01 Sprague V-1
K3	Chassis Isolation	470mmf, .3-1meg	76X11	Centralab RC-471 Sprague R-9177

## MISCELLANEOUS

ITEM No.	PART NAME	Wells-Gardner PART No.	NOTES
M4	Tuner	25A1156 25A1159	VHF Standard Coil Part #FNS-007
M5	Centering Device Magnet	2A435 2A476	UHF Includes Yoke Rear Cover Beam alignment used in some versions

## CABINETS & CABINET PARTS

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

NAME	PART NO.	DESCRIPTION
Safety Glass Knob	17X194-1	Channel Selector (Brown)
Knob	10A863-1	Fine Tuning (Brown)
Knob	10A857-2	On-Off-Volume (Brown)
Knob	10A897-6	Contrast (Brown)
Knob	10A896-1	Secondary Controls (Brown)
Knob	10A898-5	

## WIRING DATA

High Voltage Lead .....	Use BELDEN No. 8889
Shielded Hook-up Wire .....	Use BELDEN No. 8885 (Single Conductor)
General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8738 (Two Conductor)
Power Cord (Interlock Type) .....	Use BELDEN No. 8550 (Solid) Available in Ten Colors
300Ω Tuner Input Lead .....	Use BELDEN No. 8874 (Stranded) Available in Ten Colors
300Ω Antenna Lead-in .....	Use BELDEN No. 8225
Antenna Rotor Cable .....	Use BELDEN No. 8230 or 8275
	8464 (Flat) or 8484 (Round) - 4 Conductor
	8485 (Round) - 5 Conductor
	8486 (Round) - 8 Conductor

## TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st. Video IF Amp.	3BZ6	
V2	2nd. Video IF Amp.	3CB8	
V3	Video Output	12BY7A	
V4	Audio Det.	3BN6	
V5	Audio Output	5AQ5	
V6	Sync Sep. - Sync Amp.	7AU7	

## PICTURE TUBE

ITEM No.	REPLACEMENT DATA				NOTES
	Wells-Gardner PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	
V12	21CBP4A		21CBP4-A ①	21CBP4/ 21CBP4A ②	① "Silverama" ③ ② "Silver Screen 85"

## ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT.	Wells-Gardner PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.	
C1	140	150	45X421	AFH31-23	XA0261	FP117	TMS-24	T-055	TVL-1428	
C2A	125	300	45X431	AFH4-02-80	B0280	FP218		Q-248	*R2376	
C2B	20	300			BBR20-150	TC95		MT-3516		
C2C	20	50								
C3A	125	300	45X420	AFH3-99-82	D0046	FP420.76	TMT-26	T-115	TVL-3574.6	
C3B	60	300			BR505	TC65		MT-0550		
C3C	40	50								
C4	4	50	45X418	PR5150V4	BBR4-50	TC30	TD-4-50	MT-0504	TE-1303	

\* Non-catalog item.

## 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	Wells-Gardner PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	47			SI 47	D6-470	LT6Q47	GP-47	UC-5447	5GA-Q47	
C6	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C7	390				D6-391	SR5T39	ED-390		MS-339	10%
C8	470				D6-471	SR5T47	ED-470		MS-347	10%
C9	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C10	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C11	.047	200		P288N-047	DF-503	CUB4S47		GEM-4147	2TM-S47	
C12	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C13	47			SI 47	D6-470	LT6Q47	GP-47	UC-5447	5GA-Q47	
C14	30									
C15	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	N83 10%
C16	.47	200		P288N-47		CUB2P47		GEM-2047	2TM-P47	
C17	1.5			NPO-SI 1.5	TCZ-1R5	CIOV15C	TCO-1.5	ZT-5515	5TCCB-V15	
C18A	1000		80X3	BPD-2X001	DD2-102	BYC6DD1	ED2-001	DCD521	5HK-2D1	
C19	15									
C20	5000			NPO-DI 15	DD-150	L10Q15	ED-15		5TCC-Q15	10%
C21	1000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C22	5000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C23	1000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C23	.0047			P688N-0047	D6-472	CUB6D47	GP-4700	GEM-6247	6TM-D47	
C24	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C25	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C26	.01	400		P488N-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C27	.01	400		P488N-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C28	.047	800		P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C29	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C30	.1	800		P688N-1	DF-104	CUB6P1		GEM-601	6TM-P1	
C31	18		RCM20B180K	1469-000018	D6-180	22R5Q18	ED-18		MS-418	10%
C32	82		RCM20B820K	1469-000082	D6-820	22R5Q82	ED-82		MS-482	10%
C33	100			1469-0901	D6-101	22R5T1	ED-100	MCB235	MS-31	10%
C34	.47	200		P288N-47		CUB2P47		GEM-2047	2TM-P47	
C35	.022	200		P288N-022	DD-203	CUB4S22	ED-02	GEM-4122	2TM-S22	
C36	.047	200		P288N-047	DF-503	CUB2S47		GEM-4147	2TM-S47	
C37	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C38	220			1469-00022	D6-221	22R5T22	ED-220		MS-322	10%
C39	.01	400		P488N-01	D6-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C40	820		RCM20B821K	1464-00082		1R5T82	CY1S C821K		MS-382	10%
C41	170		17A271							
C42	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C43	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C44	.56	5000	47X755							
C45	.047	800		P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	10%
C46	.047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C47A	1000		80X3	BPD-2X001	DD2-102	BYC6DD1	ED2-001	DCD521	5HK-2D1	
C48	.22	400		P488N-22		CUB4P22		GEM-4022	4TM-P22	