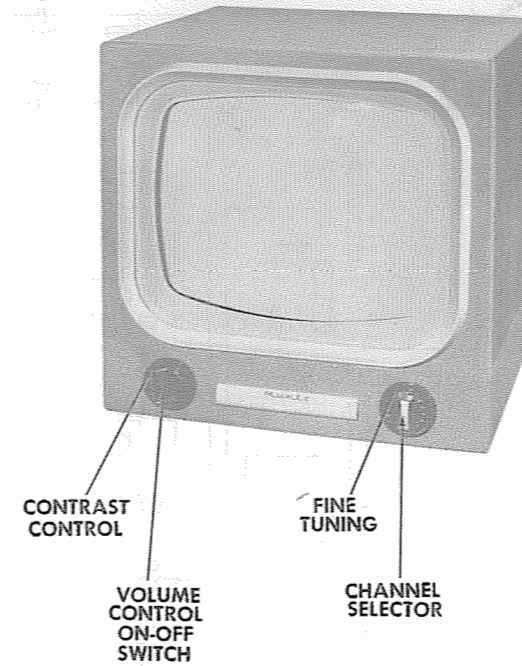


PHOTOFACT\* Folder



MUNTZ MODELS 317T1, 321C1, 321D1,  
321T3, 321T4, 321T5 (Ch. 37A4, 37B4, 37C4)



MUNTZ MODEL 321T3				
DE NAME	Muntz	MODELS	CHASSIS	
		317T1 .....	37C4	
		321C1, 321D1, 321T4 .....	37A4	
		321T3, 321T5 .....	34B4	
UFACTURER	Muntz TV Inc., 1000 Grey Ave., Evanston, Ill.			
PE SET	Television Receiver			
IES	Seventeen			
VER SUPPLY	110-120 Volts AC-60 Cycle		RATING 1.52 Amp. @ 117 Volts AC	
ING RANGE	Channel 2 thru 13, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)			
INDEX				
ment Instructions .....	5, 6, 7	Photographs (Cont)		
assembly Instructions .....	22	Trans., Inductor & Alignment Identification .....		20
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Resistor Identification .....	14, 19	Tube Placement Chart (Top View) .....		10

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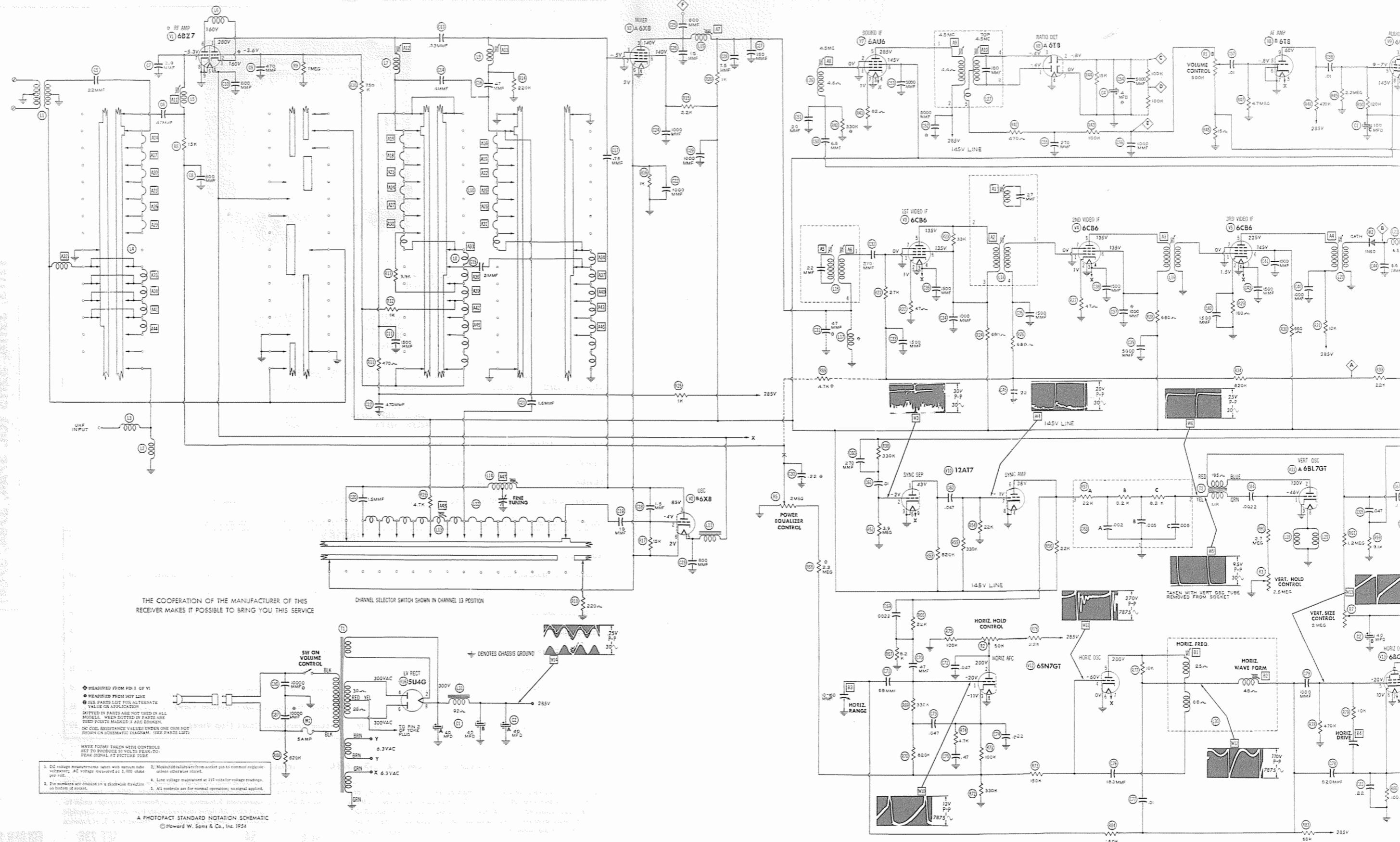
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DATE 4-54

SET 236

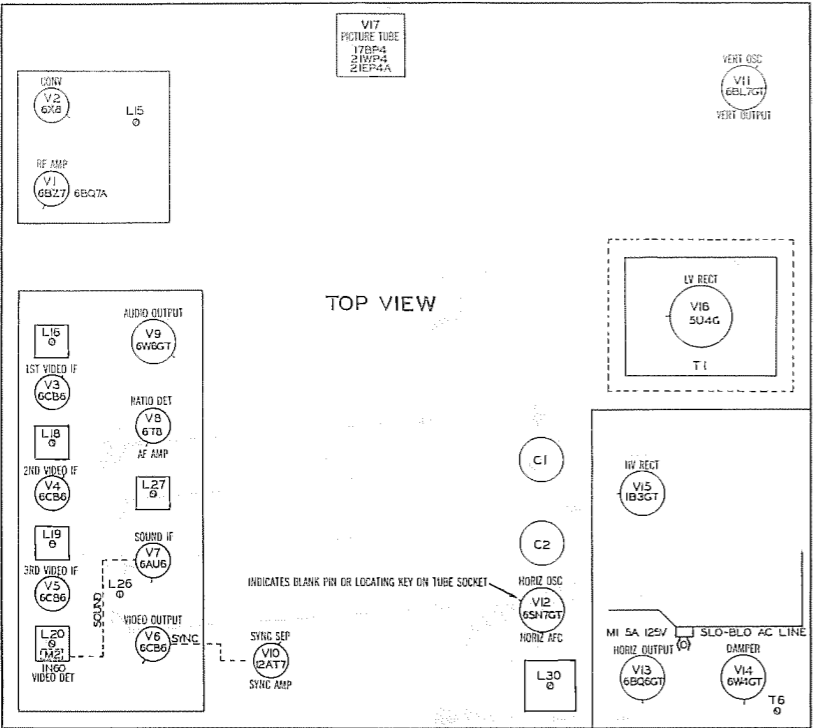
FOLDER 9

MUNTZ MODELS 317T1, 321C1, 321D1,  
321T3, 321T4, 321T5 (Ch. 37A4, 37B4, 37C4)





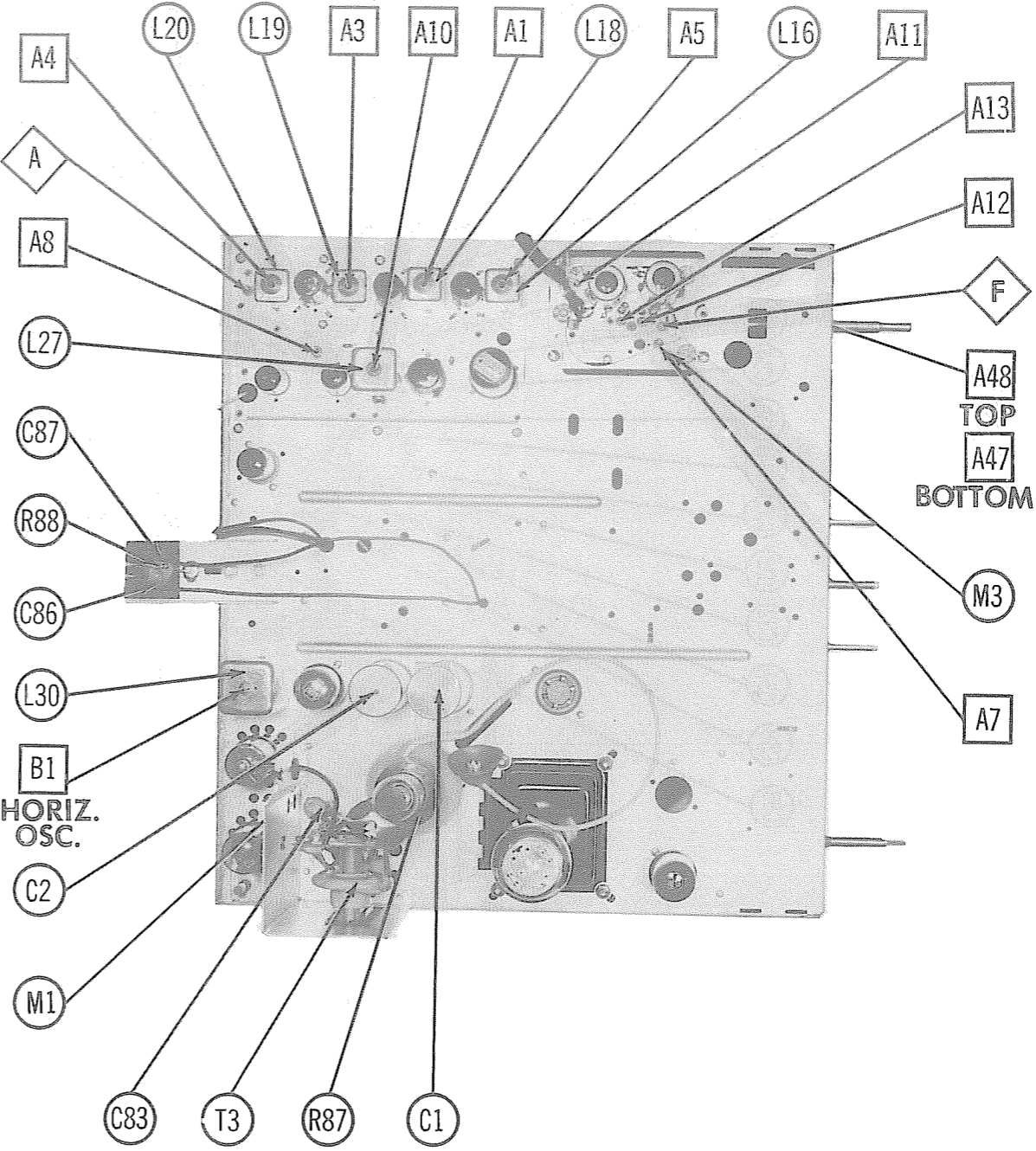
TUBE PLACEMENT CHART



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.

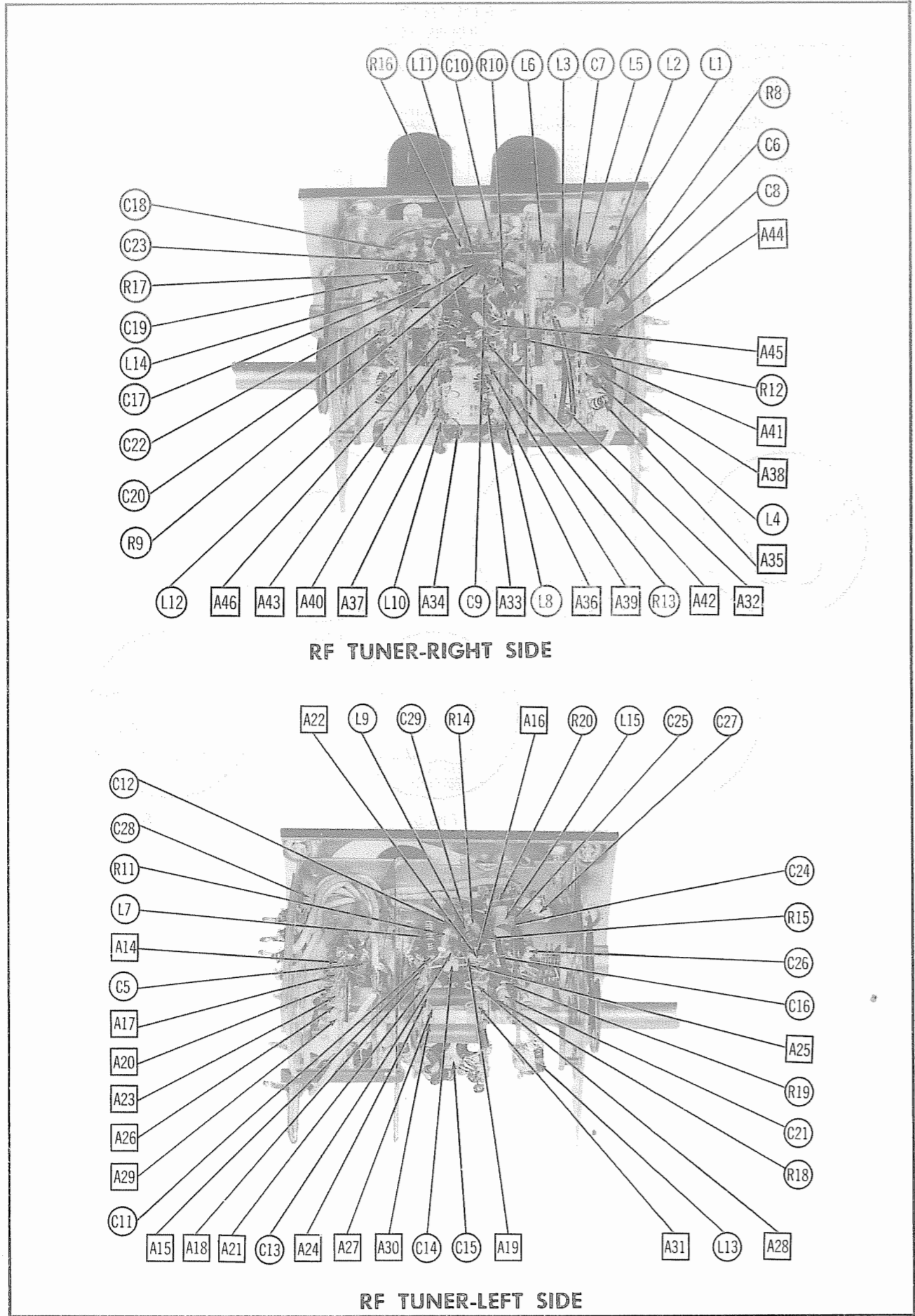
- POWER SUPPLY FAILURE**  
No raster, no sound - V16, Fuse (M1)
- LOSS OF PICTURE OR SOUND**  
No pic, no sound, has raster - V2, V3, V4, V5, V9  
No pic, no sound, has snow - V1, V2, V3  
No pic, has sound, has raster - V6, V17  
Has pic, no sound - V7, V8, V9
- SYNC FAILURE**  
No vert. sync - V10, V11  
No horiz. sync - V10, V12  
No vert. or horiz. sync - V10
- SWEEP FAILURE**  
No raster, has sound - V12, V13, V14, V15, V17  
No vertical deflection - V11  
Poor vert. linearity or foldover - V11  
Poor horiz. linearity or foldover - V12, V13, V14  
Narrow picture - V12, V13, V14, V15, V16  
Vert. off freq. - V10, V11  
Horiz. off freq. - V10, V12












CHASSIS TOP VIEW

SET 236 FOLDER 9

MUNIZ MODELS 317T1, 321C1, 321D1,  
321T3, 321T4, 321T5 (Ch. 37A4, 37B4, 37C4)



# ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT							
The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube (V12).							
VIDEO IF ALIGNMENT							
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The marker and sweep generator outputs should be attenuated if the output voltage alters the shape of the response curve.							
DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
.01MFD	High side to pin 1 (grid) of 6CB6 (V3). Low side to chassis.	44MC (10MC Swp)	41.25MC 43.0MC 45.0MC	12	Vert. Amp. to point  . Low side to chassis.	A1, A2, A3, A4	Adjust for response curve similar to Fig.1. Adjust A1 for MINIMUM marker amplitude at 41.25MC. A2 affects 43MC marker position, A3 affects 45MC marker position, Adjust A4 for proper tilt.
Direct	High side to an un-grounded tube shield floating over converter tube. Low side to chassis.	44MC (10MC Swp)	41.25MC 43.0MC 45.0MC 45.75MC 47.25MC	"	"	A5, A6, A7	Adjust for response curve similar to Fig.2. Adjust A5 for MINIMUM marker amplitude at 47.25MC. Simultaneously adjust A6 and A7 (on tuner) to place 45.75MC marker at 50%.
SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM							
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. Remove 6CB6 (V5) from socket.							
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS	
.1MFD	High side thru .1MFD to point B. Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point  . Common to chassis.	A8, A9	Adjust for maximum deflection.	
"	"	"	"	DC probe to point  . Common to point  .	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Replace V5 in its socket.	
SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND OSCILLOSCOPE							
Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120v sawtooth voltage in scope for horizontal deflection. Remove 6CB6 (V5) from its socket.							
DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
.1MFD	High side thru .1MFD to point B. Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point  . Low side to chassis.	A8, A9	Disconnect stabilizing capacitor C4. Adjust for curve of maximum amplitude and symmetry similar to Fig. 3.
"	"	"	"	"	Vert. Amp. to point  . Low side to chassis.	A10	Reconnect stabilizing capacitor C4. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 4. SLIGHTLY re-touch A9 for maximum amplitude and straightness of crossover lines.
TUNER IDENTIFICATION							
Note the code letter following the run number stamped on the rear of the chassis. Code letter "T" indicates tuner PR-0212 is used. Code letter "G" indicates tuner PR-0206 is used. Code letter "S" indicates tuner PR-0207 is used. These tuners should not be interchanged.							
PR-0212 TUNER RF 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. Remove 6CB6 (V3) from its socket.							
DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (20MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point  . Low side to tuner chassis.	A11, A12 A13	Adjust for response curve similar to Fig. 5.
"	"	207MC (20MC Swp)	205.25MC 209.75MC	12	"	A14, A15 A16	Adjust by compressing or expanding incremental loops in order given. Adjust for response curve similar to Fig. 5.
"	"	201MC (20MC Swp)	199.25MC 203.75MC	11	"	A17, A18, A19	"
"	"	195MC (20MC Swp)	193.25MC 197.75MC	10	"	A20, A21, A22	"
"	"	189MC (20MC Swp)	187.25MC 191.75MC	9	"	A23, A24 A25	"
"	"	183MC (20MC Swp)	181.25MC 185.75MC	8	"	A26, A27 A28	"
"	"	177MC (20MC Swp)	175.25MC 179.75MC	7	"	A29, A30 A31	"
"	"	185MC (20MC Swp)	183.25MC 187.75MC	6	"	A32, A33 A34	"
"	"	179MC (20MC Swp)	177.25MC 181.75MC	5	"	A35, A36 A37	"
"	"	169MC (20MC Swp)	167.25MC 171.75MC	4	"	A38, A39 A40	"
"	"	163MC (20MC Swp)	161.25MC 165.75MC	3	"	A41, A43 A43	"
"	"	157MC (20MC Swp)	155.25MC 159.75MC	2	"	A44, A45 A46	Adjust by compress or expanding incremental loops in order given. Adjust for response curve similar to Fig. 5. Replace V3 in its socket.

MUNIZ MODELS 317T, 321C, 321D, 321S, 321T, 321S (Ch. 37A, 37B, 37C)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removing the Channel Selector and Fine Tuning knobs.

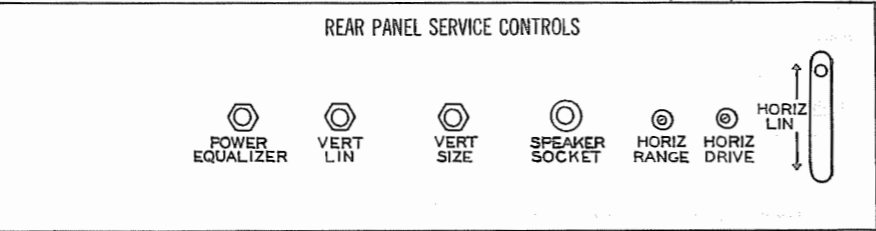
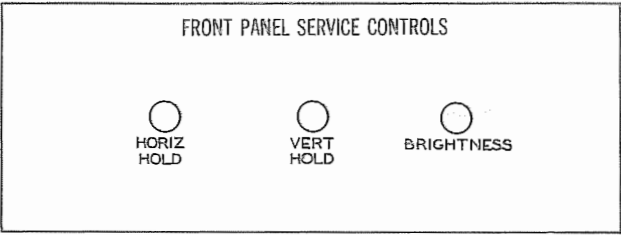
PICTURE TUBE SAFETY GLASS CLEANING

For picture tube safety Glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

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

SERVICE ADJUSTMENT LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the Horiz. Oscillator, it is necessary to remove the rear cover and supply power to set. Adjustment is located on top of chassis. Set the Horiz. Hold Control at the center of its range and adjust the Horiz. Freq. slug (L30) until picture synchronizes horizontally. (For location see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector Buzz, adjust the Ratio Detector Secondary (27) located on top of chassis. (See tube placement chart).

FUSES

One fuse is used for L. V. Power Supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by means of a centering lever on the P. M. Focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

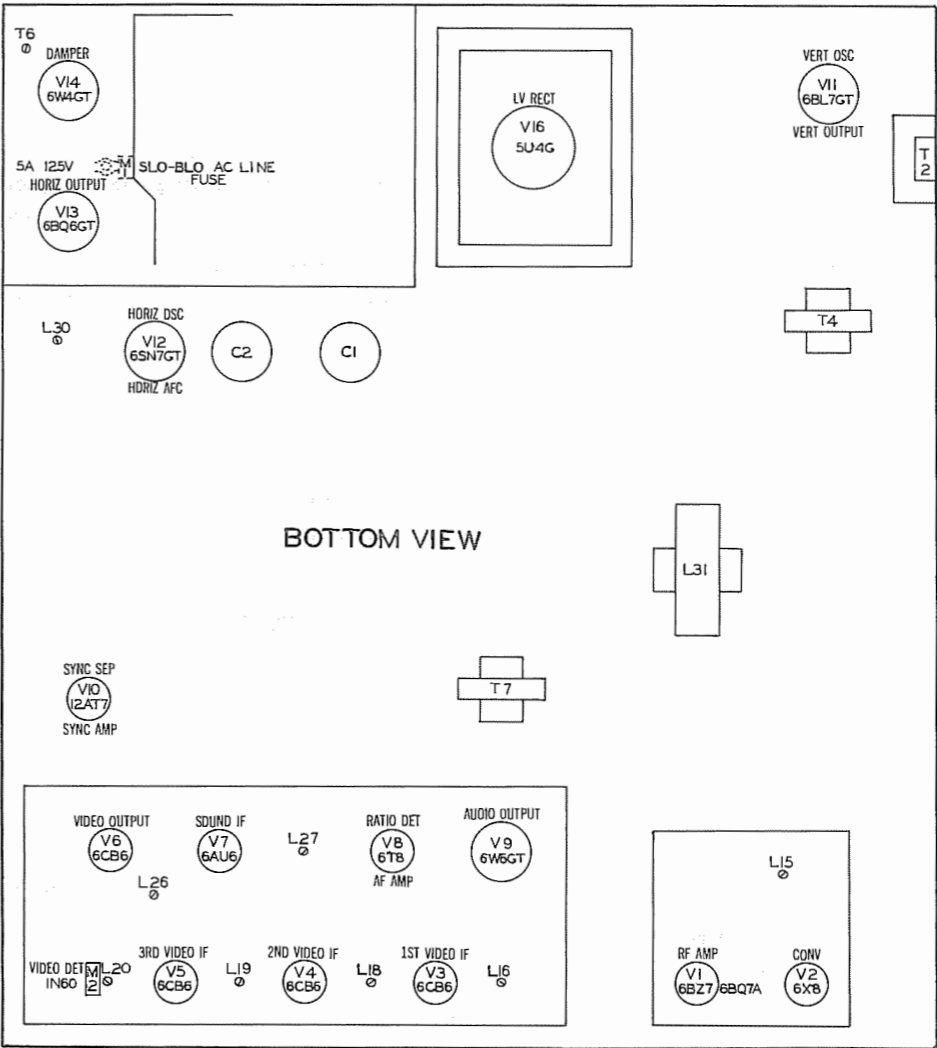
DISASSEMBLY INSTRUCTIONS

- Remove 4 push on type control knobs from front panel.
- Disconnect built-in antenna and speaker plug.
- Remove 2 wood screws. Remove antenna bracket.
- Remove 7 wood screws. Remove rear cover.
- Remove 4 chassis bolts. Remove chassis.
- Remove 4 speaker nuts. Remove speaker.

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	†1.6KΩ	†500KΩ	INF	.1Ω	0Ω	INF	680KΩ	0Ω	0Ω
V 2	6X8	0Ω	15KΩ	≈4.7 KΩ	0Ω	.1Ω	220 Ω	220KΩ	≈2.2KΩ	≈1KΩ
V 3	6CB6	875KΩ	47Ω	0Ω	.1Ω	≈680Ω	≈680Ω	0Ω		
V 4	6CB6	850KΩ	47Ω	0Ω	.1Ω	≈680Ω	≈680Ω	0Ω		
V 5	6CB6	.1Ω	180Ω	.1Ω	0Ω	†10KΩ	≈680Ω	0Ω		
V 6	6CB6	1.2Meg	320Ω	0Ω	.1Ω	†5.6KΩ	≈0Ω	320Ω		
V 7	6AU6	330KΩ	0Ω	0Ω	.1Ω	†92Ω	≈ 0Ω	82Ω		
V 8	6T8	600KΩ	15KΩ	600KΩ	0Ω	.1Ω	0Ω	0Ω	4.7Meg	†470KΩ
V 9	6W6GT	INF	0Ω	†410Ω	†360Ω	≈120KΩ	INF	.1Ω	22KΩ	
V 10	12AT7	≈820KΩ	3.9Meg	0Ω	0Ω	≈22KΩ	22KΩ	0Ω	.1Ω	
V 11	6BL7GT	3.5Meg	≈2.4Meg	0Ω	2.7Meg	≈6.6KΩ	1.4KΩ	.1Ω	0Ω	
V 12	6SN7GT	1.5Meg	†38KΩ	430KΩ	480KΩ	†68KΩ	0Ω	.1Ω	0Ω	
V 13	6BQ6GT	INF	.1Ω	INF	†9KΩ	470KΩ	†68KΩ	0Ω	100Ω	TOP CAP ≈16Ω
V 14	6W4GT	INF	INF	5Meg	INF	†02Ω	INF	≈9Ω	≈9Ω	
V 15	1B3GT		PINS 1 - 8	HAVE	INF	RESISTANCE				TOP CAP ≈265Ω
V 16	5U4G	INF	300KΩ	INF	30Ω	INF	28Ω	INF	300KΩ	
V 17	21WP4	0Ω	160KΩ	PIN 10 ≈5.6KΩ	PIN 11 ≈170KΩ	PIN 12 .1Ω				

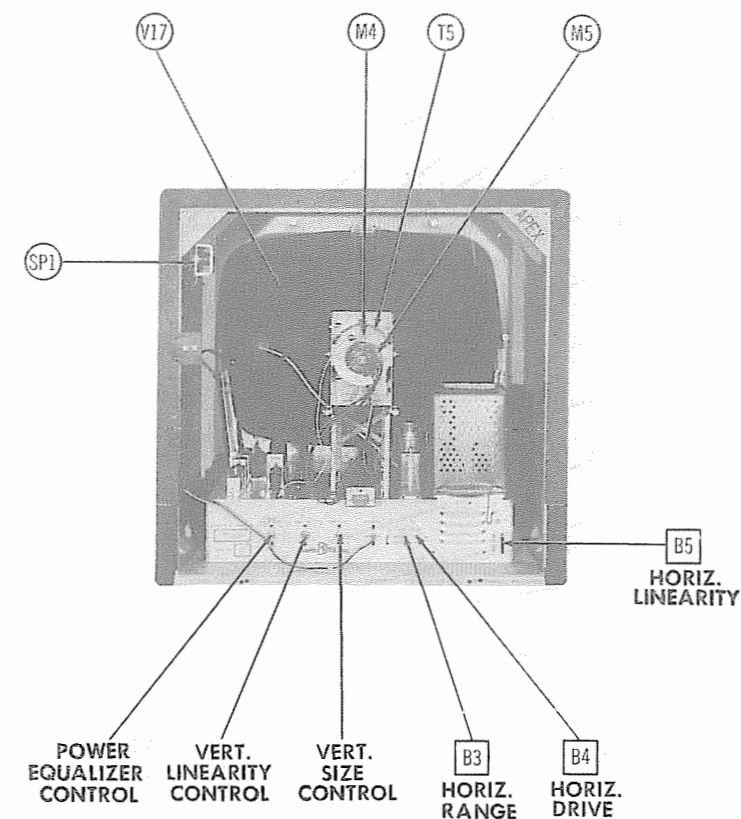
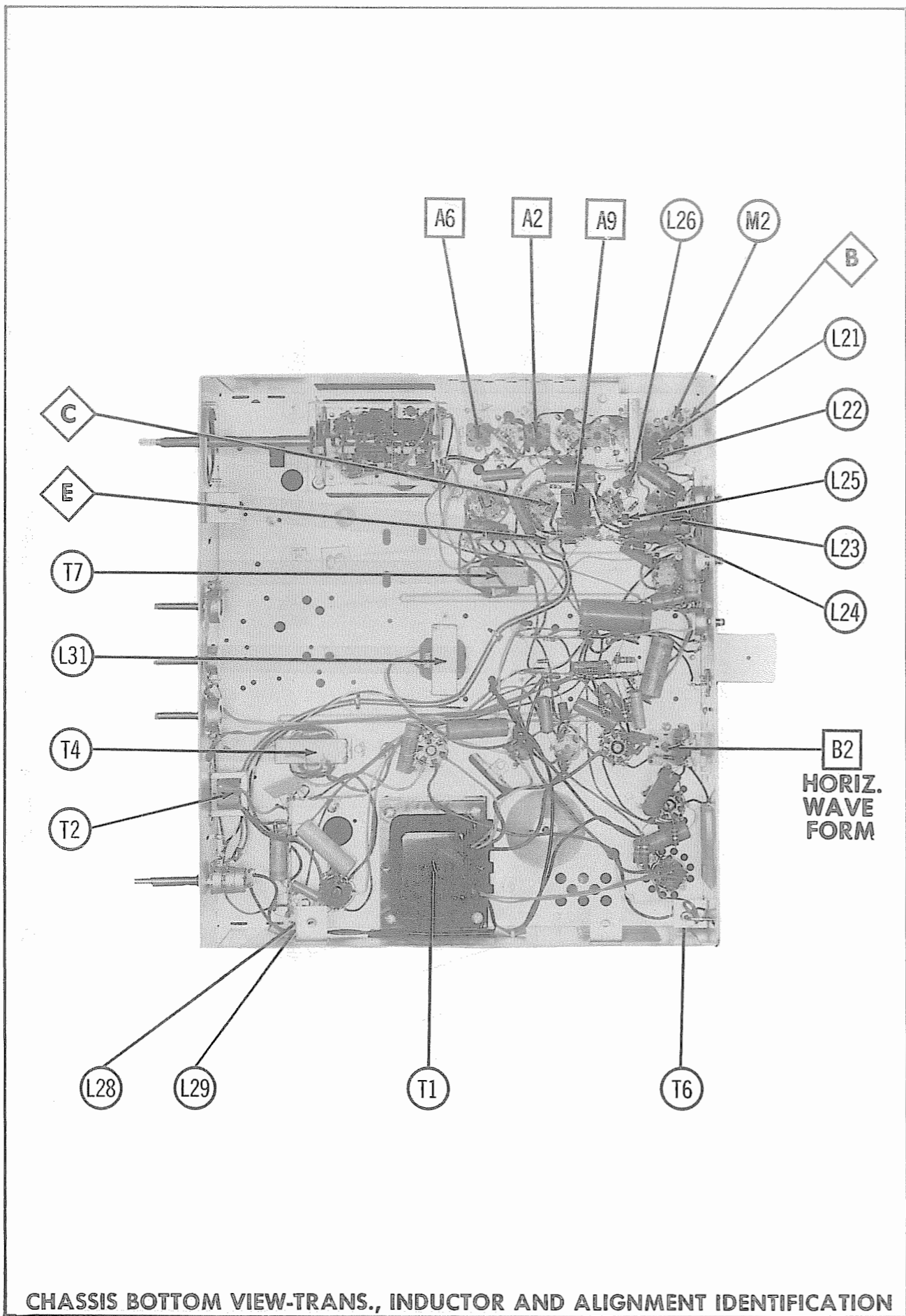
† MEASURED FROM YELLOW LEAD OF L31  
□ MEASURED FROM PIN 8 OF V9  
△ MEASURED FROM PIN 3 OF V14



TUBE PLACEMENT CHART

SET 236 FOLDER 9

MUNTZ MODELS 317T, 321C1, 321D1, 321T3, 321T4, 321T5 (Ch. 37A4, 37B4, 37C4)



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

Preset the horizontal frequency slug (B1) and the horizontal waveform slug (B2) in maximum counter clockwise direction.

Short terminals "C" and "D" of L30 (horizontal oscillator coil) with a jumper wire.

Preset the horizontal range trimmer (B3) 1/4 turn from fully clockwise.

Turn the horizontal hold control fully clockwise.

Adjust B1 until picture synchronizes, retouching B3 slightly if necessary.

Remove the short from terminals "C" and "D" of L30. The picture should remain in sync. If it does not, readjust B3 or B1 to sync the picture. Connect an oscilloscope through a 5 MMF capacitor to terminal "C" on L30. Connect the low side to chassis.

Adjust B2 for a waveform as in Fig. 7 with broad and narrow peaks of equal height. Be sure to keep picture in sync while adjusting B2. Remove the scope. Set the horizontal hold control to fully clockwise position. Adjust B1 for 1 vertical blanking bar. Rotate the horizontal hold control fully counter clockwise. The picture should remain in sync.

Adjust the horizontal drive trimmer (B4) counter clockwise as far as possible without the presence of vertical white lines or compression near the center of the picture. (Note: If B4 is adjusted the Ion trap setting should be checked).

Adjust the linearity coil slug (B5) for a picture that is symmetrical from left to right.

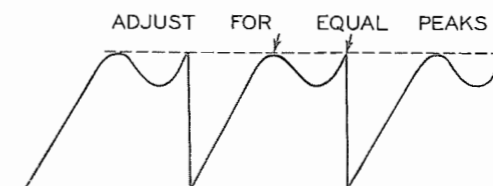


FIG. 7  
SET 236 FOLDER 9

MUNIZ MODELS 317T1, 321C1, 321D1,  
321T3, 321T4, 321T5 (Ch. 37A4, 37B4, 37C4)

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	MUNTZ PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L30	Horiz. Osc.	85Ω		LO-0039	20-1402 A	TV-162 A	61B3 A	Pri. tapped @ 60Ω; Horiz. Wave Form Winding= 48Ω

‡ Use secondary and trap windings, drill one new mounting hole and use adaptor plate.  
\*\* Tune trap winding to 45MC.  
\* Detune trap windings, drill one new mounting hole and use adaptor plate.  
Δ Drill one new mounting hole and use adaptor plate.  
† Parallel with 10KΩ resistor.  
⊞ Drill mounting hole.  
\* Drill mounting holes.  
Δ Reverse coil mounting in can.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 Cycles)	MUNTZ PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Holldorson PART No.	Thordarson PART No.
L31	.200A	92Ω	2.8 Hy.	LC-0050-1	C-2325Q	C-2074	C-21X	C5030	

① Drill one new mounting hole.

FUSES

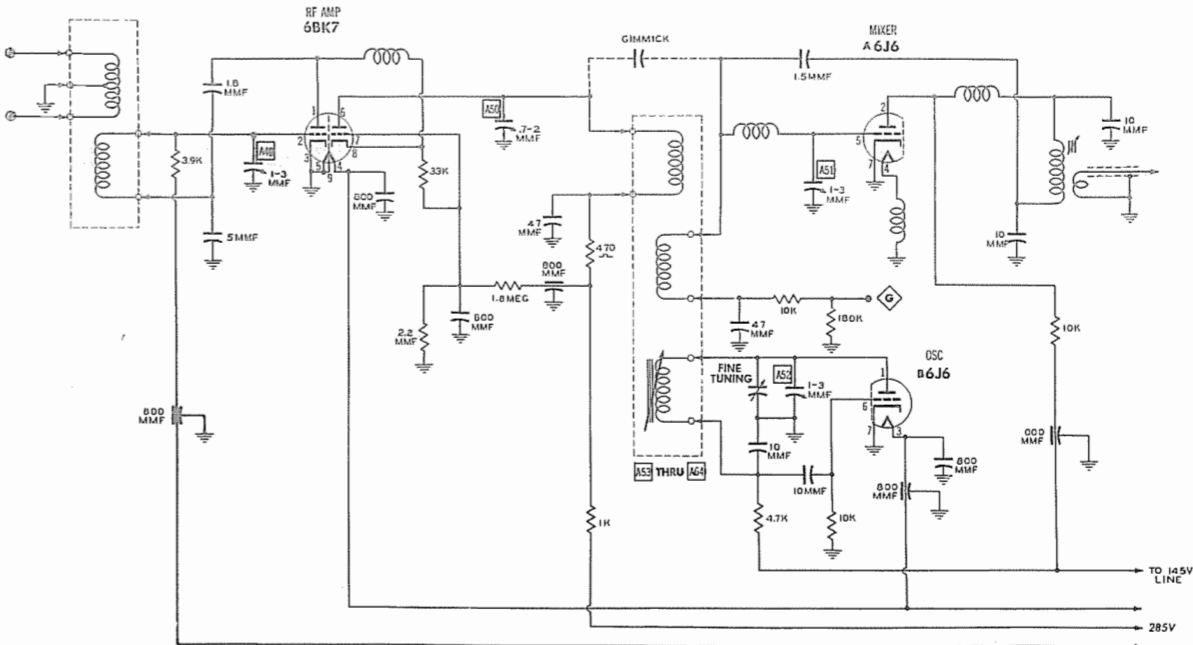
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MUNTZ PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AGS/B	5A 125V	FU-0005-2		313005. (3AG S/B-5A)	357001	MDX5	4405

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA		NOTES
		MUNTZ PART No.	SYLVANIA PART No.	
M2	1N60	CX-0028	1N60	

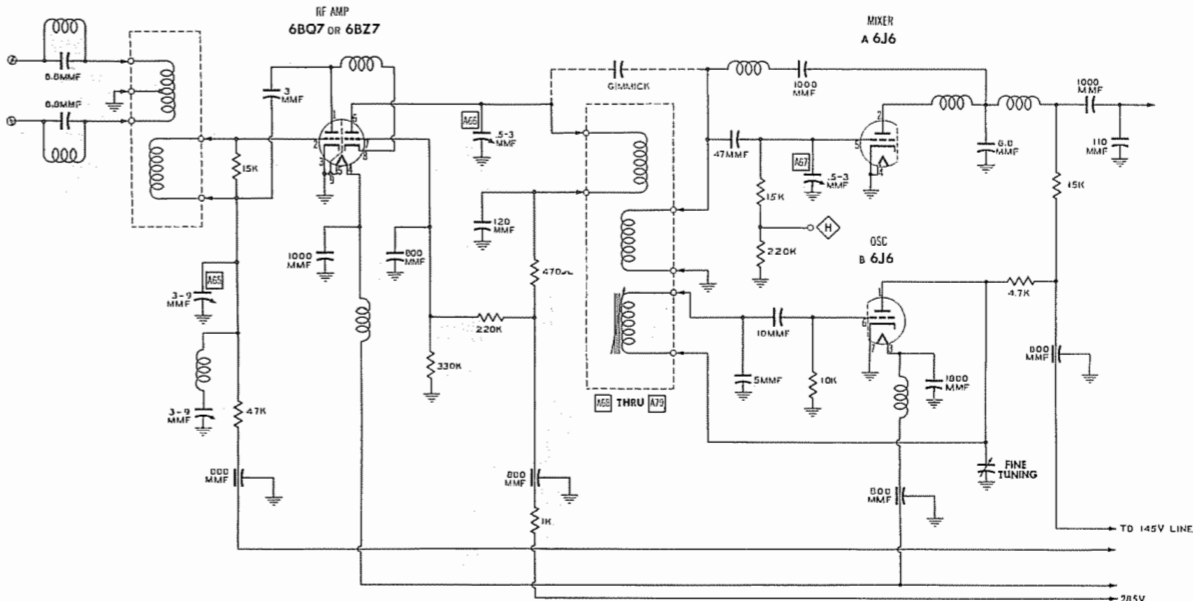
MISCELLANEOUS

ITEM No.	PART NAME	MUNTZ PART No.	NOTES
M3A	Tuner	PR-0206	Used in chassis with code "G" following RUN number
B	Tuner	PR-0207	Used in chassis with code "S" following RUN number
C	Tuner	PR-0212	Used in chassis with code "T" following RUN number
M4A	Focus magnet	PR-0185	Chassis 37B4, 37C4
B	Focus magnet	PR-0218	Chassis 37A4
M5	Ion trap	PR-0172	
B3, B4	Trimmer cap	CT-0012	Dual 10-160 MMF (Horiz. drive and range adj.)
	Cabinet	CW-0052	Model 317T1 table, leatherette
	Cabinet	CW-0034-6	Model 321T3 table, leatherette brown levant
	Cabinet	CW-0040-1	Model 321T4 table, walnut
	Cabinet	CW-0040-3	Model 321T4 table, mahogany
	Cabinet	CW-0040-4	Model 321T4 table, oak-blond
	Cabinet	CW-0045	Model 321T5 table, spatter tone
	Cabinet	CW-0039-1	Model 321C1 console, walnut
	Cabinet	CW-0039-3	Model 321C1 console, mahogany
	Cabinet	CW-0039-4	Model 321C1 console, oak-blond
	Cabinet	CW-0038-1	Model 321D1 console, walnut, with doors
	Cabinet	CW-0038-3	Model 321D1 console, mahogany with doors
	Cabinet	CW-0038-4	Model 321D1 console, oak blond with doors
	Knob	KB-0040	Chan. select. PR0207 tuner mahogany
	Knob	KB-0040-1	Chan. select. PR0207 tuner tan
	Knob	KB-0043	Chan. select. PR0206 tuner mahogany
	Knob	KB-0043-1	Chan. select. PR0206 tuner tan
	Knob	KB-0044	Chan. select. PR0212 tuner mahogany
	Knob	KB-0044-1	Chan. select. PR0212 tuner tan
	Knob	KB-0039	Fine tuning-mahogany
	Knob	KB-0039-1	Fine tuning-gold
	Knob	KB-0041	Picture control (Mahogany)
	Knob	KB-0041-1	Picture control (Gold)
	Knob	KB-0042	Volume (Mahogany)
	Knob	KB-0042-1	Volume (Tan)
	Knob	KB-0036	Chan. select (Brown and gold)
	Knob	KB-0037	Fine tuning (Clear)
	Knob	KB-0038	Picture control (Gold and Clear)
	Knob	KB-0032	Volume (Brown and Gold)
	Safety glass	WG-0009	17 inch
	Safety glass	WG-0011	21 inch-used with Z1WP4 kinescope
	Safety glass	WG-0014	21 inch-used with Z1EP4A kinescope



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ALTERNATE TUNER SCHEMATIC



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ALTERNATE TUNER SCHEMATIC

SET 236 FOLDER 9

MUNTZ MODELS 317T1, 321C1, 321D1,  
321T3, 321T4, 321T5 (Ch. 37A4, 37B4, 37C4)

## TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETA BASE TYPE	NOTES
		MUNTZ PART No.	STANDARD REPLACEMENT		
V1A	RF Amplifier	6BZ7	6BZ7	9AJ	
B	RF Amplifier	6BQ7A	6BQ7A	9AJ	
V2	Converter	6X8	6X8	9AK	
V3	1st Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	6CB6	6CB6	7CM	
V7	Sound IF Amp.	6AU6	6AU6	7BK	
V8	Ratio Detector - AF Amplifier	6T8	6T8	9E	
V9	Audio Output	6W6GT	6W6GT	7S	
V10	Sync Amplifier - Sync Separator	12AT7	12AT7	9A	
V11	Vert. Oscillator - Vert. Output	6BL7GT	6BL7GT	8BD	
V12	Horiz. AFC	6SN7GT	6SN7GT	8BD	
V13	Horiz. Oscillator	6BQ8GT	6BQ8GT	8AM	
V14	Damper	6W4GT	6W4GT	4CG	
V15	HV Rectifier	1B3GT	1B3GT	3C	
V16	LV Rectifier	5U4G	5U4G	5T	

## CATHODE-RAY TUBE

ITEM No.	MUNTZ PART No.	REPLACEMENT DATA			RETA BASE TYPE	NOTES
		SYLVANIA PART No.	GENERAL ELECTRIC PART No.	WESTINGHOUSE PART No.		
V17A	21WP4	21EP4A	21EP4A	21EP4A	12N	① Circuit change necessary
B	21EP4A				12N	
C		21XP4 ①			12L	
D	17BP4A	17BP4A	17BP4A	17BP4A	12N	

## 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	MUNTZ PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	
C1A	.40	450	CE-0020	AFH3-159		C118		FP375	TVL-3764
B	.40	450							
C	.100	200	CE-0033	AFH3-142		C109		FP375	TVL-3764
C2A	.40	450							
B	.40	450							
C	.100	50	CE-0034	PRS250/40		BR4035		TC50	TVA-1511
C3	.40	250	CE-0031	PRS150/4		BR415		TC30	TVA-1402
C4	.40	50						UC-5422	5GA-Q22
C5	.40	50						UC-5447	5GA-Q47
C6	.40	50							
C7	.40	50							
C8	.40	50							
C9	.40	50							
C10	.40	50							
C11	.40	50							
C12	.40	50							
C13	.40	50							
C14	.40	50							
C15	.40	50							
C16	.40	50							
C17	.40	50							
C18	.40	50							
C19	.40	50							
C20	.40	50							
C21	.40	50							
C22	.40	50							
C23	.40	50							
C24	.40	50							
C25	.40	50							
C26	.40	50							
C27	.40	50							
C28	.40	50							
C29	.40	50							
C30	.40	50							
C31	.40	50							
C32	.40	50							
C33	.40	50							
C34	.40	50							
C35	.40	50							
C36	.40	50							
C37	.40	50							
C38	.40	50							
C39	.40	50							
C40	.40	50							
C41	.40	50							
C42	.40	50							
C43	.40	50							
C44	.40	50							
C45	.40	50							
C46	.40	50							
C47	.40	50							
C48	.40	50							
C49	.40	50							
C50	.40	50							
C51	.40	50							
C52	.40	50							
C53	.40	50							
C54	.40	50							
C55	.40	50							
C56	.40	50							
C57	.40	50							
C58	.40	50							
C59	.40	50							
C60	.40	50							

## PARTS LIST AND DESCRIPTIONS

## CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MUNTZ PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C61	.01	600	CPM-0101	P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C62	.047	600	CPM-0105	P688-047	DF-503	CUB6S47		PT6147	6TM-S47	
C63A	.002			PA-110-2	PC-100	115TM1	1405-01	PT622	10IC1	
B	.005							PT625		
C	.005							PT625		
C64	.0022	600	CPM-0100							
C65	.047	600	CP-0049							
C66	.1000		CC-0061	S11000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C67	.1	600	CP-0013	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C68	.1	600	CP-0013	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C69	.0022	600	CP-0056	P688-0022	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	
C70	.47	500	CM-0044	1469-00005		22R5Q47		MCB225	MS-45	
C71	.68	1080	CM-0047							
C72	.047	600	CPM-0104	P688-047	DF-503	CUB6S47		PT6147	6TM-S47	
C73	.047	600	CPM-0105							
C74	.022	200	CP-0052	P408-022		CUB4S22		PT4122	4TM-S22	
C75	.47	200	CP-0045	P288-47		CUB2P47		PT4047	2TM-P47	
C76	.180		CC-0113							
C77	.01	600	CPM-0101	P688-01		CUB6S1		PT611	6TM-S1	
C78	.820	500	CM-0046			IR5T82				
C79	.1000	1000	CC-0112	HVD15-001		VD1	IR5KV-102	MCK210	10GA-D1	
C80	.1	600	CP-0013	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C81	.22	200	CPM-0106	P288-22		CUB6P22		PT4022	2TM-P22	
C82	.1	600	CP-0013	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C83	.047	600	CP-0049	P688-047		CUB6S47		PT0147	6TM-S47	
C84	.033	600	CPM-0103	P688-033				PT0133		
C85	.50	2000								
C86	10000	1000								
C87	10000	1000								

Note 1. Some Models use 6MFD in this application (part #CE-0835).

Note 2. Not used in all Models.

Note 3. Run 1 chassis use 470MMF in this application.

Note 4. Some Models use 18000MMF ④ 1500VAC in this application (part #CC-0128).

\* Items C63A, C63B, C63C, R57A, R57B, R57C are combined in one unit.

## CONTROLS

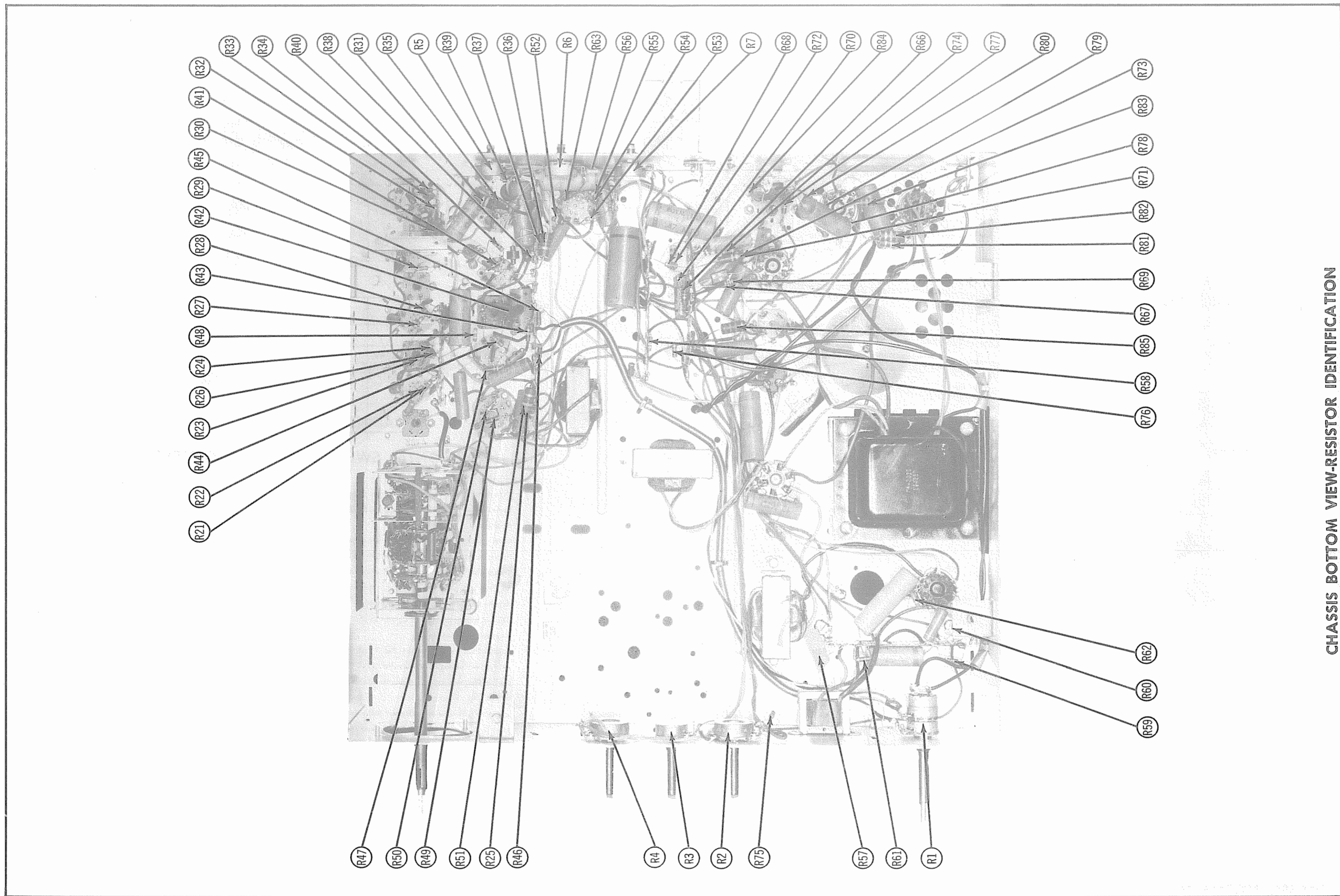
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MUNTZ PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1500Ω		VC-0040-C		RTV-316		UF152L	Contrast (Panel)
B	500KΩ		Not Req.				UR55A	Volume (Rear)
C	Switch		Not Req.				US-26	Attach to R1B
R2A	50KΩ		VC-0036E	Q11-123	AG-44-S	AB-31	U-35	Attach to R1B
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A
R3A	2.5Meg		VC-0040	Q11-239	AG-04-S	AB-03	U-255	Attach to R3A
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R3A
R4A	50KΩ		VC-0036E	Q11-123	AG-44-S	AB-31	U-35	Attach to R4A
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R4A
R5A	2 Meg		VC-0034F	Q11-139	AG-03-S	AB-75	SU-56	Power equalizer Note 1
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	2500Ω		VC-0037	Q11-112	AG-15-S	AB-7	U-8	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7A	2 Meg		VC-0034F	Q11-139	AG-03-S	AB-75	SU-56	Vert. Size
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R7A

Note 1. Not used in all models.

† Universal replacement (Mallory exact duplicate Part No. UE1705).

## RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES	ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MUNTZ PART No.	IRC PART No.			OHMS	WATT	MUNTZ PART No.	IRC PART No.	
R8	15KΩ		RC-1502-18	BTS-15K		R50	120KΩ 5%		RC-1203-50	BTS-120K 5%	
R9	1 Meg	5%	RC-1004-50	BTS-1 Meg 5%		R51	270Ω		RC-270-12		
R10	750KΩ	5%	RC-7503-50	BTS-750K 5%		R52	3.9Meg		RC-3904-18	BTS-3.9Meg	
R11	470Ω		RC-470-18	BTS-470		R53	820KΩ		RC-8203-18	BTS-820K	
R12	1000Ω		RC-1001-18	BTS-1000		R54	22KΩ		RC-2202-18	BTS-22K	
R13	3900Ω		RC-3901-18	BTS-3900		R55	330KΩ		RC-3303-18	BTS-330K	
R14	220KΩ		RC-2203-18	BTS-220K		R56	22KΩ		RC-2202-18	BTS-22K	
R15	2200Ω		RC-2201-18	BTS-2200		R57	22KΩ				
R16	1000Ω		RC-1001-18	BTS-1000		R58	8200Ω				
R17	15KΩ		RC-1502-18	BTS-15K		R59	150KΩ		BTS-150K		
R18	220Ω		RC-220-18	BTS-220		R59	910Ω 5%		RC-9101-50	BTS-910 5%	
R19	4700Ω		RC-4701-18	BTS-4700		R60	2.7 Meg		RC-2704-18	BTS-2.7 Meg	
R20	1000Ω		RC-1001-18	BTS-1000		R61	1.2Meg		RC-1204-18	BTS-1.2 Meg	
R21	27KΩ		RC-2702-18	BTS-27K		R62	2.7Meg		RC-2701-18	BTS-2.7Meg	
R22	47Ω		RC-47-18	BTS-47		R63	680Ω		RC-680-18	BTS-680	
R23	33KΩ		RC-3302-18	BTS-33K		R64	560Ω		BTS-560		
R24	680Ω		RC-680-18	BTS-680		R65	560Ω		BTS-560		
R25	1000Ω		RC-1001-18	BTS-1000		R66	22KΩ		RC-2202-18	BTS-22K	
R26	680Ω		RC-680-18	BTS-680		R67	8200Ω		RC-8201-18	BTS-8200	
R27	47Ω		RC-47-18	BTS-47		R68	2.2Meg		RC-2204-18	BTS-2.2Meg	Note 1
R28	680Ω		RC-680-18	BTS-680		R69	330KΩ		RC-3303-18	BTS-330K	
R29	180Ω		RC-180-18	BTS-180		R70	820KΩ		RC-8203-18	BTS-820K	
R30	680Ω		RC-680-18	BTS-680		R71	100KΩ		RC-1003-18	BTS-100K	
R31	10KΩ		RC-1002-12	BTS-10K		R72	330KΩ		RC-3303-11	BTA-330K	
R32	4700Ω		RC-4701-18	BTS-4700		R73	150KΩ		RC-1503-11	BTA-150K	
R33	22KΩ		RC-2202-18	BTS-22K		R74	4700Ω		RC-4701-18	BTS-4700	
R34	820KΩ		RC-8203-18	BTS-820K		R75	100KΩ		RC-1003-12	BTS-100K	
R35	1.2Meg		RC-1204-18	BTS-1.2Meg		R76	22KΩ		RC-2202-18	BTS-22K	
R36	5600Ω		RC-5601-12	BTB-5600		R77	10KΩ		RC-1602-18	BTS-10K	
R37	10KΩ		RC-1002-12	BTS-10K		R78	470KΩ		RC-4703-18	BTS-470K	
R38	330KΩ		RC-3303-18	BTS-330K		R79	100Ω		RC-1002-18	BTS-10K	
R39	100KΩ		RC-1003-18	BTS-100K		R80	100Ω		RC-100-12		
R40	330KΩ		RC-3303-18	BTS-330K	Note 1	R81	18KΩ		RC-1802-12	BTB-18K	
R41	82Ω		RC-82-18	BTS-82			R82	18KΩ		RC-1802-12	BTB-18K
R42	470Ω		RC-470-18	BTS-470		R83	68KΩ		RC-6802-11	BTA-68K	
R43	100KΩ		RC-1003-18	BTS-100K		R84	150KΩ		RC-1503-11	BTA-150K	
R44	15KΩ		RC-1502-18	BTS-15K		R85	5600Ω		RC-5601-12	BTB-5600	
R45	15Ω		RC-015-20	BTS-15		R86	1000Ω		BTS-1000		
R46	270Ω		RC-270-18	BTS-270		R87	3.9Ω		RC-004-18		
R47	4.7Meg		RC-1704-28	BTS-4.7Meg		R88	820KΩ		RC-8203-18	BTS-820K	
R48	470KΩ		RC-4703-18	BTS-470K		R89	4700Ω		BTS-4700		Note 2
R49	2.2Meg		RC-2204-58	BTS-2.2Meg							



MUNTZ MODELS 317T1, 321G1, 321D1,  
321T3, 321T4, 321T5 (Ch. 37A4, 37B4, 37C4)  
WOLLOM BOTTOM VIEW-RESISTOR IDENTIFICATION

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL	VERTICAL								
<p><u>LOSS OF SWEEP</u></p> <p>Follow procedure outlined under "Loss of High Voltage".</p> <p><u>INSUFFICIENT SWEEP</u></p> <p>Check by substitution V12, V13, V14 and V16. Check adjustments B4 and B5. Check waveform W13.</p> <table> <tr> <td>If Satisfactory</td><td>If Unsatisfactory</td></tr> <tr> <td>Check T3, T5A, C80, C82, C83, C84, R81, R82 and other associated components.</td><td>Check C77, C78, C79, C81, R73, R78, R79, L30 and other associated components.</td></tr> </table> <p><u>DRIVE LINES</u></p> <p>Check adjustment B4. Check by substitution V13 and V14. Check C83, C84, T3, T5A and other associated components for failure or change of value.</p> <p><u>COMPRESSED LEFT SIDE</u></p> <p>Check by substitution V13 and V14. Check components associated with the horizontal output and damper stages, especially T3 and T5A.</p> <p><u>FOLDS</u></p> <p>Follow procedure outlined under "Drive Lines".</p> <p><u>PIE CRUST EFFECT</u></p> <p>Check by substitution V13 and V14. Check T3, T5A, T8 and other associated components.</p> <p><u>XMAS TREE EFFECT</u></p> <p>Substitute V12. Check adjustments B1 and B2. Check L30, C76, C77, C79 and other associated components.</p>	If Satisfactory	If Unsatisfactory	Check T3, T5A, C80, C82, C83, C84, R81, R82 and other associated components.	Check C77, C78, C79, C81, R73, R78, R79, L30 and other associated components.	<p><u>LOSS OF SWEEP</u></p> <p>Substitute V11. Check waveform W7.</p> <table> <tr> <td>If Satisfactory</td><td>If Unsatisfactory</td></tr> <tr> <td>Check T4, T5B, R63, R6A and other associated components.</td><td>Check T2, C67, R62, R61, R7 and other associated circuit components.</td></tr> </table> <p><u>INSUFFICIENT SWEEP</u></p> <p>Check adjustment of height and vertical linearity controls. Proceed as outlined under "Loss of Sweep".</p> <p><u>COMPRESSED AT BOTTOM</u></p> <p>Substitute V11. Check T4, T5B, C2C and other associated components.</p> <p><u>COMPRESSED AT TOP</u></p> <p>Substitute V11. Check T2, C67, R62 and other associated components.</p> <p><u>FOLDS</u></p> <p>Substitute V11. Check associated components for failure or change of value.</p>	If Satisfactory	If Unsatisfactory	Check T4, T5B, R63, R6A and other associated components.	Check T2, C67, R62, R61, R7 and other associated circuit components.
If Satisfactory	If Unsatisfactory								
Check T3, T5A, C80, C82, C83, C84, R81, R82 and other associated components.	Check C77, C78, C79, C81, R73, R78, R79, L30 and other associated components.								
If Satisfactory	If Unsatisfactory								
Check T4, T5B, R63, R6A and other associated components.	Check T2, C67, R62, R61, R7 and other associated circuit components.								

SYNC

<p><u>LOSS OF VERTICAL AND HORIZONTAL SYNC</u></p> <p>Substitute V10. Check associated components especially C61, R53, R56, C62 and R52.</p> <p><u>LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY</u></p> <p>Check by substitution V10 and V11. Check waveform W5.</p> <table> <tr> <td>If Satisfactory</td><td>If Unsatisfactory</td></tr> <tr> <td>Check components associated with V11B.</td><td>Check vertical integrator and other associated circuit components.</td></tr> </table>	If Satisfactory	If Unsatisfactory	Check components associated with V11B.	Check vertical integrator and other associated circuit components.	<p><u>LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY</u></p> <p>Substitute V12. Check adjustments B1, B2 and B3. Check L30, C76, C79, C77 and other associated circuit components.</p> <p><u>HORIZONTAL BENDING</u></p> <p>Substitute V12 and V13. Check C73, C74 and C75. Check sync signal for low frequency modulation.</p>
If Satisfactory	If Unsatisfactory				
Check components associated with V11B.	Check vertical integrator and other associated circuit components.				

VIDEO

<p><u>LOSS OF VIDEO</u></p> <p>Substitute V6. Check C49. C46, R36, R39, R1A, R4A, L23, L25, L24, picture tube and other associated circuit components.</p> <p><u>SOUND BARS (4.5MC BEAT)</u></p> <p>Adjust tuner fine tuning for best picture and sound. Check video IF alignment.</p> <p><u>POOR CONTRAST</u></p> <p>Substitute V6. Check contrast control, C46, C49, L23, L25, picture tube and other associated circuit components.</p>	<p><u>NEGATIVE PICTURE</u></p> <p>Substitute V6. Check video detector crystal and assembly. Check AGC network for component failure. Check picture tube.</p> <p><u>SMEAR</u></p> <p>Substitute V6. Check video detector crystal and assembly. Check C46, C49, R36, R39, R1A, R4A, L23, L25, picture tube and other associated components for failure or change of value.</p> <p><u>WIDE BLACK BAR ACROSS PICTURE</u></p> <p>Check V1, V2, V3, V4, V5 and V6 for heater to cathode leakage. Check B+ filter capacitors for open.</p>
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AUDIO

<p><u>WEAK OR NO SOUND</u></p> <p>Check by substitution V7, V8, V9. Check stages V8B and V9 using audio signal generator. Apply audio signal across R47.</p> <table> <tr> <td>If Satisfactory</td><td>If Unsatisfactory</td></tr> <tr> <td>Check ratio detector and audio IF alignment and components.</td><td>Check components associated with V8B and V9.</td></tr> </table>	If Satisfactory	If Unsatisfactory	Check ratio detector and audio IF alignment and components.	Check components associated with V8B and V9.	<p><u>BUZZ</u></p> <p>Adjust tuner fine tuning for best picture and sound. Check adjustment A10. If still unsatisfactory substitute V8 and realign ratio detector and audio IF stages.</p> <p><u>DISTORTED</u></p> <p>Follow procedure outlined under "Weak or No Sound".</p>
If Satisfactory	If Unsatisfactory				
Check ratio detector and audio IF alignment and components.	Check components associated with V8B and V9.				

TROUBLE SHOOTING AIDS (cont)

POWER

<p><u>DEAD SET</u></p> <p>If filaments fail to light, check fuse M1, switch on volume control, AC interlock assembly and T1. If filaments light, substitute V16. Check B+ filter and decoupling network components.</p>	<p><u>SMALL AND/OR DIM PICTURE</u></p> <p>Substitute V16 and V9. Check B+ filter and decoupling network components.</p>
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HIGH VOLTAGE

<p><u>LOSS OF HIGH VOLTAGE</u></p> <p>Check by substitution V12, V13, V14 and V15. Check waveform W13.</p> <table> <tr> <td>If Satisfactory</td><td>If Unsatisfactory</td></tr> <tr> <td>Check R87, T3, T5A and other associated circuit components.</td><td>Check R78, C79, L30 and other associated circuit components.</td></tr> </table>	If Satisfactory	If Unsatisfactory	Check R87, T3, T5A and other associated circuit components.	Check R78, C79, L30 and other associated circuit components.	<p><u>INSUFFICIENT HIGH VOLTAGE</u></p> <p>Check by substitution V12, V13, V14 V15 and V16. Follow procedure outlined under "Loss of High Voltage". Check picture tube.</p> <p><u>BLOOMING</u></p> <p>Check by substitution V12, V13, V14, V15 and V16. Check R87, T3, T5A, C80, R81, R82 picture tube and other associated circuit components.</p>
If Satisfactory	If Unsatisfactory				
Check R87, T3, T5A and other associated circuit components.	Check R78, C79, L30 and other associated circuit components.				

GENERAL

<p><u>RASTER SOUND NO PICTURE</u></p> <p>Follow procedure outlined under "Loss of Video".</p> <p><u>RASTER PICTURE NO SOUND</u></p> <p>Follow procedure outlined under "Weak or No Sound".</p> <p><u>RASTER NO SOUND NO PICTURE</u></p> <p>Check by substitution V1, V2, V3, V4, and V5. Check associated circuit components.</p>	<p><u>NO RASTER NO SOUND</u></p> <p>Follow procedure outlined under "Dead Set".</p> <p><u>INTERMITTENT STREAKS</u></p> <p>Check video signal for interference pulses. Check high voltage section for corona discharge and arcing.</p>
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Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.

MUNIZ MODELS 317T1, 321C1, 321D1, 321T3, 321T4, 321T5 (Ch. 37A4, 37B4, 37C4)

## ALIGNMENT INSTRUCTIONS (cont)

### PR-0212 TUNER OSCILLATOR ALIGNMENT

Tune in a TV station on the highest channel available between channels 7 and 13 and adjust A47 for clearest picture with best sound. Tune in a TV station on the highest channel available between channels 2 and 6 and adjust A48 for clearest picture with best sound.

### PR-0206 TUNER RF 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. Remove 6CB6 (V3) from its socket.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
17. Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC (20MC Swp)	193.25MC 197.75MC	10	Vert. Amp. to point $\odot$ . Low side to chassis.	A49, A50 A51	Adjust for curve of maximum amplitude and symmetry similar to Fig. 5.
18. "	"	213MC (20MC Swp)	211.25MC 215.75MC	13	"	"	Check for response similar to Fig. 5. If markers fall below 70% on any channel make compromise adjustments of A49, A50 and A51 with channel switch set to that channel, then recheck on all other channels to see that they have not been seriously affected. Replace V3 in its socket.
		207MC (20MC Swp)	205.25MC 209.75MC	12			
		201MC (20MC Swp)	199.25MC 203.75MC	11			
		189MC (20MC Swp)	187.25MC 191.75MC	9			
		183MC (20MC Swp)	181.25MC 185.75MC	8			
		177MC (20MC Swp)	175.25MC 179.75MC	7			
		85MC (20MC Swp)	83.25MC 87.75MC	6			
		79MC (20MC Swp)	77.25MC 81.75MC	5			
		69MC (20MC Swp)	67.25MC 71.75MC	4			
		63MC (20MC Swp)	61.25MC 65.75MC	3			
		57MC (20MC Swp)	55.25MC 59.75MC	2			

### PR-0206 TUNER OSCILLATOR ALIGNMENT

Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of channels, it may be possible to correct them in one step using A52. It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct any individual channel. If adjustment of A52 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.

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 control to the mid-position of its range.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
19. Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point $\odot$ . Low side to chassis.	A53	Adjust to place sound marker in trap notch as in Fig. 6. Video marker should be at 50%.
		207MC (10MC Swp)	205.25MC 209.75MC	12		A54	
		201MC (10MC Swp)	199.25MC 203.75MC	11		A55	
		195MC (10MC Swp)	193.25MC 197.75MC	10		A56	
		189MC (10MC Swp)	187.25MC 191.75MC	9		A57	
		183MC (10MC Swp)	181.25MC 185.75MC	8		A58	
		177MC (10MC Swp)	175.25MC 179.75MC	7		A59	
		85MC (10MC Swp)	83.25MC 87.75MC	6		A60	
		79MC (10MC Swp)	77.25MC 81.75MC	5		A61	
		69MC (10MC Swp)	67.25MC 71.75MC	4		A62	
		63MC (10MC Swp)	61.25MC 65.75MC	3		A63	
		57MC (10MC Swp)	55.25MC 59.75MC	2		A64	

### PR-0207 TUNER RF 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.

Remove 6CB6 (V3) from its socket.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
20. Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC (20MC Swp)	193.25MC 197.75MC	10	Vert. Amp. to point $\odot$ . Low side to chassis.	A65, A66 A67	Adjust for curve of maximum amplitude and symmetry similar to Fig. 5.
21. "	"	213MC (20MC Swp)	211.25MC 215.75MC	13			Check for response similar to Fig. 5. If markers fall below 70% on any channel make compromise adjustments of A65, A66 and A67 with channel switch set to that channel, then recheck on all other channels to see that they have not been seriously affected. Replace V3 in its socket.
		207MC (20MC Swp)	205.25MC 209.75MC	12			
		201MC (20MC Swp)	199.25MC 203.75MC	11			
		189MC (20MC Swp)	187.25MC 191.75MC	9			
		183MC (20MC Swp)	181.25MC 185.75MC	8			
		177MC (20MC Swp)	175.25MC 179.75MC	7			
		85MC (20MC Swp)	83.25MC 87.75MC	6			
		79MC (20MC Swp)	77.25MC 81.75MC	5			
		69MC (20MC Swp)	67.25MC 71.75MC	4			
		63MC (20MC Swp)	61.25MC 65.75MC	3			
		57MC (20MC Swp)	55.25MC 59.75MC	2			

## ALIGNMENT INSTRUCTIONS (cont)

### PR-0207 TUNER OSCILLATOR ALIGNMENT

The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.

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 control to the mid-position of its range.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
22. Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point $\odot$ . Low side to chassis.	A68	Adjust to place sound marker in trap notch as in Fig. 6. Video marker should be at 50%.
		207MC (10MC Swp)	205.25MC 209.75MC	12		A69	
		201MC (10MC Swp)	199.25MC 203.75MC	11		A70	
		195MC (10MC Swp)	193.25MC 197.75MC	10		A71	
		189MC (10MC Swp)	187.25MC 191.75MC	9		A72	
		183MC (10MC Swp)	181.25MC 185.75MC	8		A73	
		177MC (10MC Swp)	175.25MC 179.75MC	7		A74	
		85MC (10MC Swp)	83.25MC 87.75MC	6		A75	
		79MC (10MC Swp)	77.25MC 81.75MC	5		A76	
		69MC (10MC Swp)	67.25MC 71.75MC	4		A77	
		63MC (10MC Swp)	61.25MC 65.75MC	3		A78	
		57MC (10MC Swp)	55.25MC 59.75MC	2		A79	

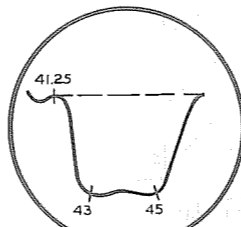


FIG. 1

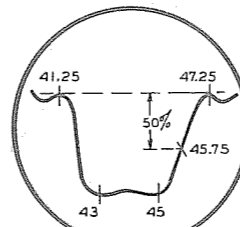


FIG. 2

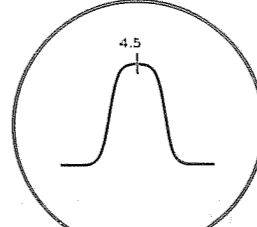


FIG. 3

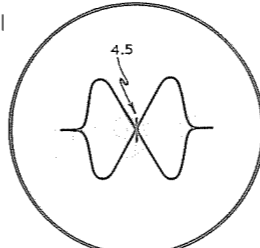


FIG. 4

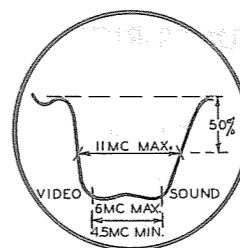


FIG. 5

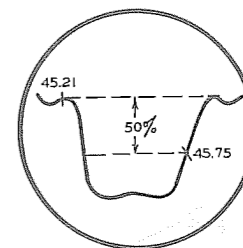


FIG. 6

MUNIZ MODELS 317T, 321C1, 321D1,  
321T3, 321T4, 321T5 (Ch. 37A4, 37B4, 37C4)

MUNIZ MODELS 317T1, 321C1, 321D1,  
321T3, 321T4, 321T5 (Ch. 37A4, 37B4, 37C4)

NOTIFICATION IDENTIFICATION CAPACITOR-NEW

