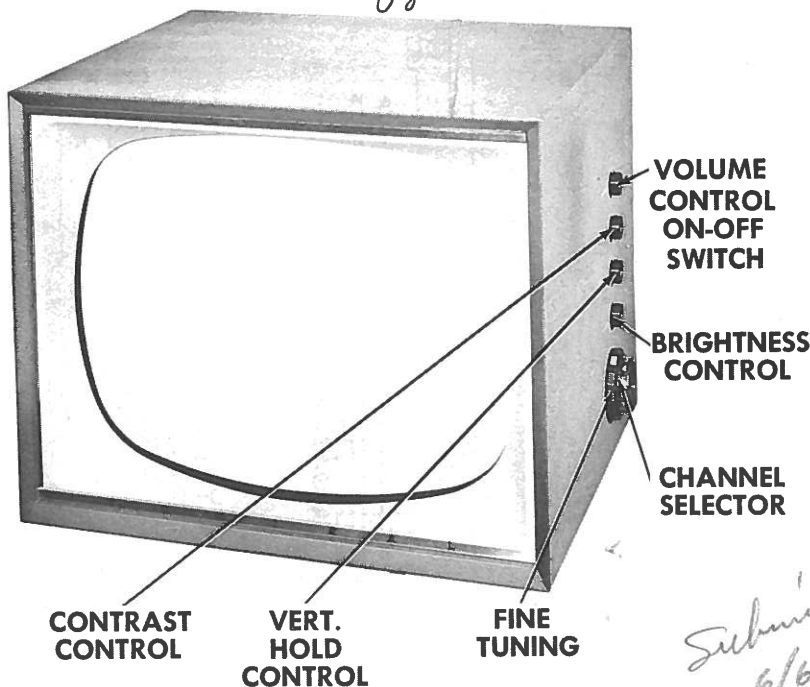




22pgs



Submitted
6/6/56

ADMIRAL MODEL T2302ZN

TRADE NAME	Admiral	MODELS	CHASSIS	TUNER
		T2301Z, ZN, T2302Z, ZN, T2326Z, ZN, T2327Z, ZN.....	18XP4BZ.....	94D77-1 (VHF only)
		TS2301Z, ZN, TS2302Z, ZN, TS2326Z, ZN, TS2327Z, ZN.....	18SX4BZ.....	94E75-2 (VHF-UHF)
			18X4CZ.....	94D46-5 (VHF only)
			18X4EZ.....	94D46-6, -7, -8 (VHF only)
			18X4FZ.....	94D46-6, -7, -8 (VHF only)
			18X4GZ.....	94D46-6, -7, -8 (VHF only)
			18XP4BZ.....	94D77-1 (VHF only)
			18X4EZ.....	94E75-2 (VHF-UHF)
			18X4FZ.....	94E75-2 (VHF-UHF)
			18X4GZ.....	94E75-2 (VHF-UHF)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Ill.			
TYPE SET	Television Receiver			
TUBES	Eighteen			
POWER SUPPLY	110-120 Volts AC - 60 Cycles			
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 25.75MC (VHF Models) 45.75MC (VHF-UHF Models) Sound IF 21.25MC (VHF Models) 41.25MC (VHF-UHF Models) (Intercarrier)			

18SX

INDEX

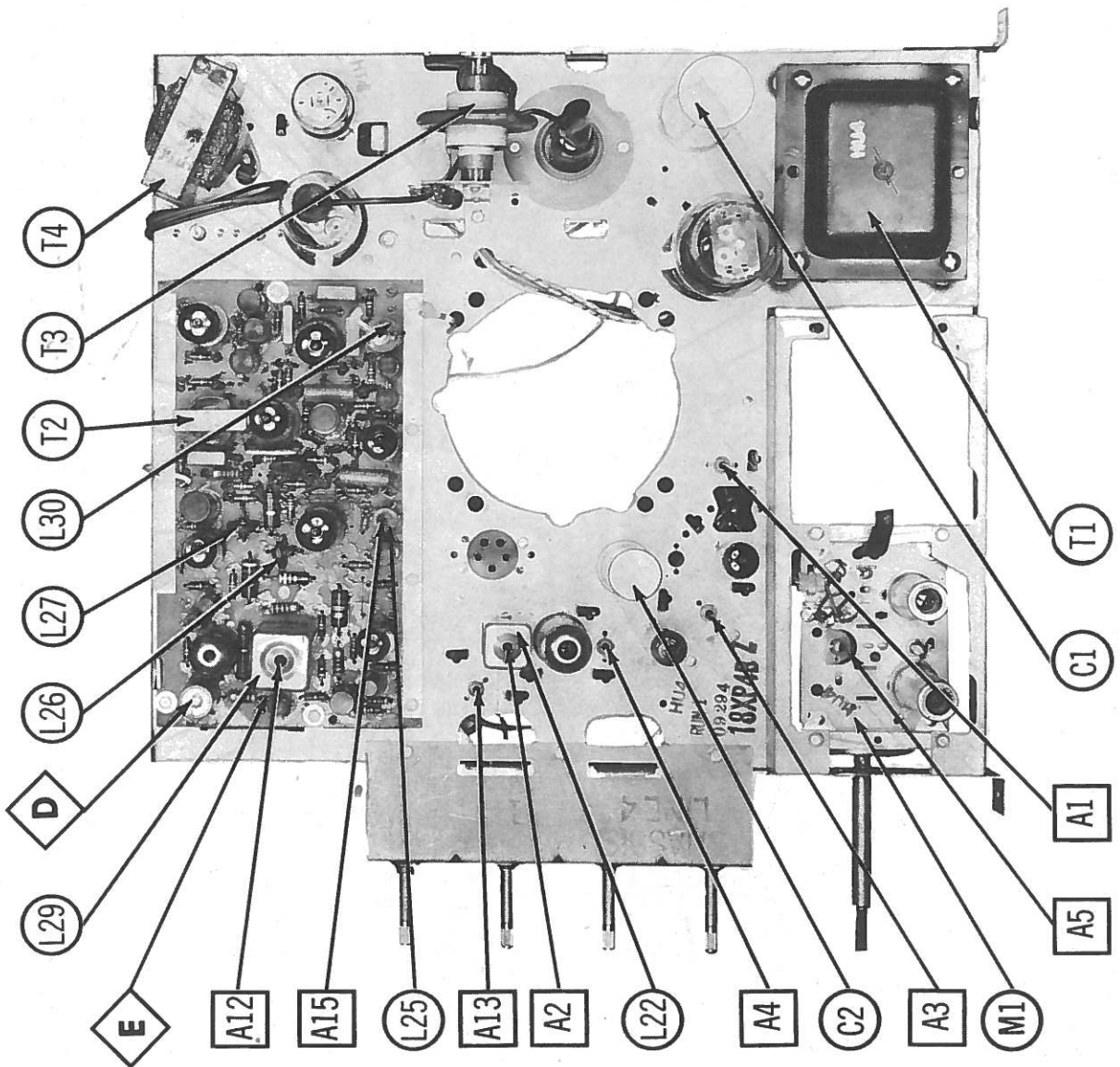
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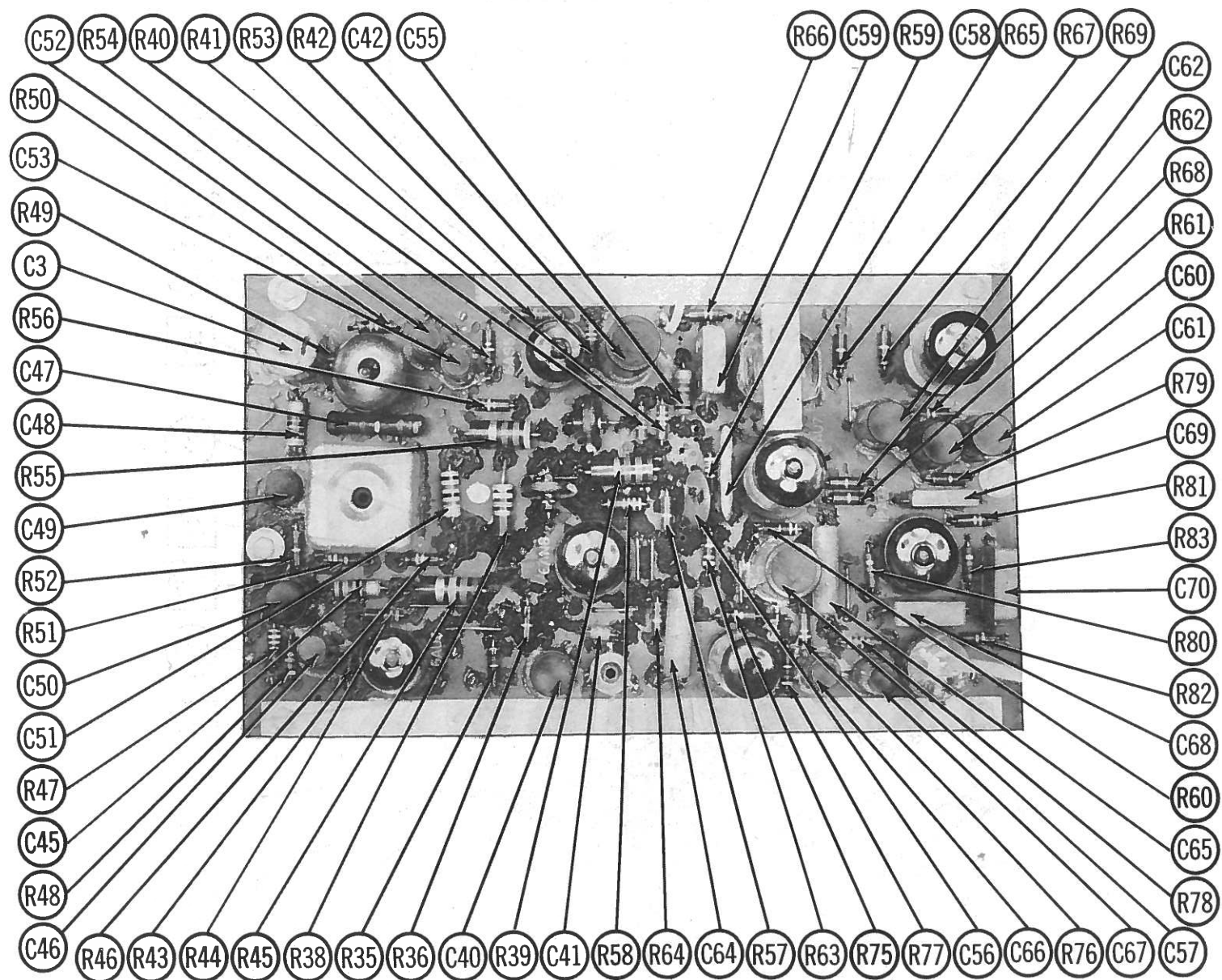
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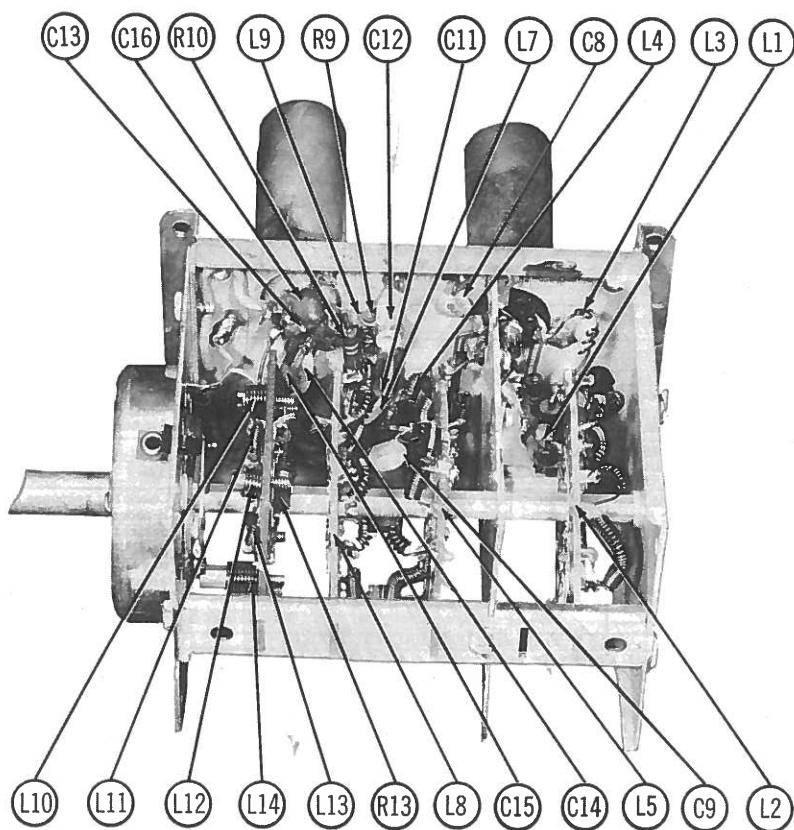
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ADMIRAL CHASSIS 18SX4BZ, 18X4CZ,
18X4EZ, 18X4FZ, 18Z4GZ, 18XP4BZ

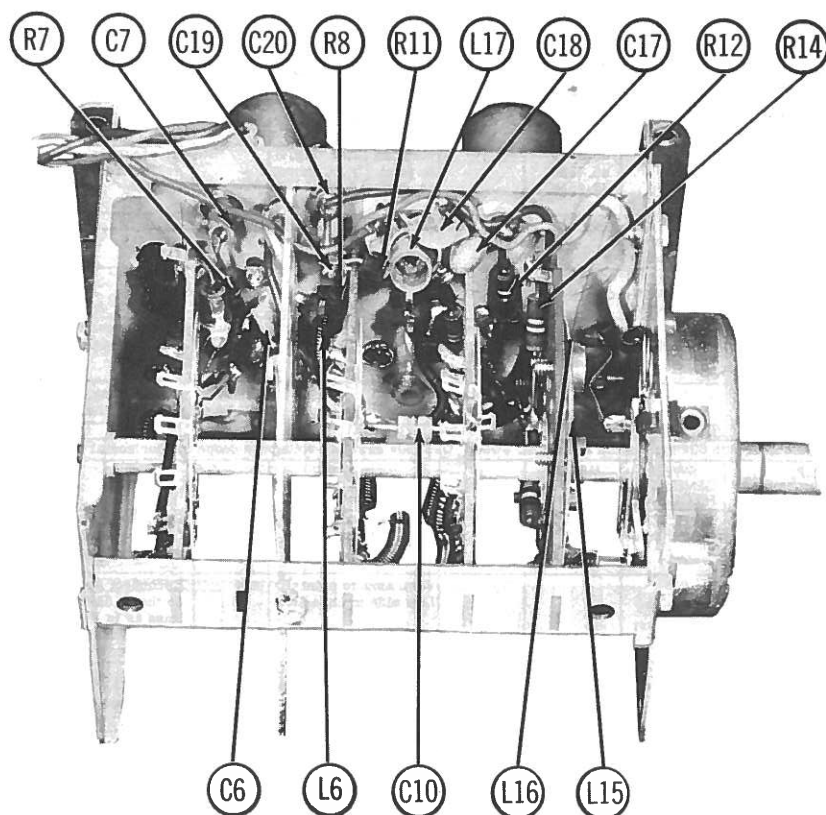




PRINTED CIRCUIT SUB-CHASSIS - RESISTOR & CAPACITOR IDENTIFICATION



RF TUNER-RIGHT SIDE









RF TUNER-LEFT SIDE

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT							
The high voltage lead should be securely taped and kept away from chassis.							
VIDEO IF ALIGNMENT FOR VHF MODELS							
Remove the converter tube (V2) from its socket and replace with a 6J6 with pin 1 removed. Disconnect antenna and short antenna terminals with a short jumper. Set the contrast control for minimum contrast. Connect the negative lead of a 3 volt battery thru 10KΩ to the ungrounded side of C24. Positive lead to chassis. Use only enough generator output to provide a usable indication on VTVM. (1 volt maximum.) Allow about 15 to 20 minutes for test equipment and receiver warm-up time.							
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS	
Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	27.25MC (Unmod)	Any unused high band channel.	DC probe thru de-coupling filter (Fig. 1) to point \odot . Common to chassis.	A1	Adjust for MINIMUM deflection.	
"	"	25.3MC	"	"	A2, A3	Adjust for maximum deflection.	
"	"	23.1MC	"	"	A4, A5	"	
OVERALL VIDEO IF RESPONSE CHECK FOR VHF MODELS							
Leave bias battery connected as under "Video IF Alignment". Use only enough sweep generator output to provide usable indication on scope. 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 ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	21.25MC 22.0MC 24.3MC 25.75MC 27.25MC	Any unused high band channel.	Vert. amp. thru de-coupling filter (Fig. 1) to point \odot . Low side to chassis.		Check for response curve similar to Fig. 2. If necessary, retouch A1 thru A5 to obtain desired response. Adjust A2 and A3 for position of 25.75MC marker and amplitude of response curve on high frequency side. Adjust A4 and A5 for position of 22MC marker and amplitude of response curve on low frequency side.
VIDEO IF ALIGNMENT FOR UHF-VHF MODELS							
Set the contrast control for minimum contrast. Connect the negative lead of a 3 volt battery to point \odot . Positive lead to chassis. Use only enough generator output to provide a usable indication on VTVM. (2 volt maximum.)							
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS	
Direct	High side to an ungrounded tube shield floating over converter tube (6U8). Low side to chassis.	47.25MC	12	DC probe thru de-coupling filter (Fig. 1) to point \odot . Common to chassis.	A6	Adjust for MINIMUM deflection. If necessary, reduce bias to -1.5 volts to provide reading on VTVM.	
"	"	43.5MC	"	"	A7, A8	Adjust bias back to -3 volt if reduced for adjustment of A6. Adjust A7 and A8 for maximum deflection.	
"	"	45.3MC	"	"	A7, A9, A10	Adjust for maximum deflection.	
"	"	43.3MC	"	"	All	"	
OVERALL VIDEO IF ALIGNMENT FOR UHF-VHF MODELS							
Leave bias connected as under "Video IF Alignment For UHF-VHF Models". Use only enough sweep generator output to provide usable indication on scope. 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 converter tube (6U8). Low side to chassis.	44MC (10MC Swp)	43.0MC 45.0MC 45.75MC 47.25MC	12	Vert. amp. thru de-coupling filter (Fig. 1) to point \odot . Common to chassis.		Check for response curve similar to Fig. 3. If necessary, retouch A6 thru A11 to obtain desired response.
SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM							
Disconnect antenna and short terminals together. Set the contrast control for minimum contrast.							
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS	
.01MFD	High side to pin 8 (plate) of 6AM8 (V5). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel.	DC probe to point \odot . Common to chassis.	A12, A13	Attenuate generator output to maintain 1 volt at VTVM. Adjust for maximum deflection.	
"	"	"	"	DC probe to point \odot . Common to chassis.	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							
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 8 (plate) of 6AM8 (V5). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp. to point \odot . Low side to chassis.	A12, A13	Disconnect stabilizing capacitor C3. Adjust for curve of maximum amplitude and symmetry similar to Fig. 4.
"	"	"	"	"	Vert. amp. to point \odot . Low side to chassis.	A14	Reconnect stabilizing capacitor (C3). Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 5. SLIGHTLY retouch A12 for maximum amplitude and straightness of crossover lines.
SOUND IF ALIGNMENT USING ON THE AIR SIGNAL							
Remove bias battery and replace original tuner oscillator tube in its socket. Tune in a TV station. Adjust A12 and A13. VTVM connected as in step 10 of "Sound IF Alignment Using AM Signal Generator and VTVM". Adjust A14 for best program sound with minimum buzz. This point will be found between two maximum buzz peaks.							
4.5MC TRAP ALIGNMENT							
Short L23 with a short jumper wire.							
DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS	
.01MFD	High side to pin 8 (plate) of 6AM8 (V5). Low side to chassis.	4.5MC	Any	DC probe to point \odot . Common to chassis.	A15	Connect a 10MMF capacitor from pin 6 (plate) of 6AU6 (V6) to pin 7 (cathode) of 6AU6 (V7). Use lowest scale on VTVM and adjust for MINIMUM deflection.	

ALIGNMENT INSTRUCTIONS (cont)

ALTERNATE 4.5MC TRAP ALIGNMENT							
Tune in a TV station and adjust A15 for minimum 4.5MC beat interference in picture.							
VHF TUNER 94D77-1 ALIGNMENT							
This tuner has been properly aligned at the factory. Alignment is not recommended in the field.							
OSCILLATOR ALIGNMENT FOR VHF TUNER 94D46-6-7 or-8							
Replace original tuner oscillator tube in its socket. The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screws are accessible through this hole as the channel switch is turned to each channel. Leave bias battery connected as under "Video IF Alignment". Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms. Set the fine tuning control to the mid-position of its range.							
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 (10MC Swp)	211.25MC	13	Vert. amp. thru de-coupling filter to point  . (Point  as shown on VHF chassis.) Low side to chassis.	A16	Adjust to place video marker at 50% as in Fig. 6. Sound marker should not exceed 5% on response curve.
		207MC (10MC Swp)	205.25MC	12		A17	
		201MC (10MC Swp)	209.75MC	11		A18	
		195MC (10MC Swp)	199.25MC	10		A19	
		189MC (10MC Swp)	197.75MC	9		A20	
		183MC (10MC Swp)	181.75MC	8		A21	
		177MC (10MC Swp)	175.25MC	7		A22	
		85MC (10MC Swp)	83.25MC	6		A23	
		79MC (10MC Swp)	87.75MC	5		A24	
		69MC (10MC Swp)	77.25MC	4		A25	
		63MC (10MC Swp)	71.75MC	3		A26	
		57MC (10MC Swp)	65.75MC	2		A27	
				59.75MC			
RF ALIGNMENT FOR VHF TUNER 94D46-6-7 or -8							
Leave bias connected as under "Video IF Alignment". The bias supply may be removed if it is difficult to obtain a response of sufficient amplitude. If bias is removed, short out to chassis point where bias supply was connected.							
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.	195MC (10MC Swp)	193.25MC 197.75MC	10	Vert. amp. thru 10KΩ to point  . Low side to chassis.	A28, A29 A30	Adjust for response curve similar to Fig. 7 with markers above 90%.
"	"	213MC (10MC Swp) 207MC (10MC Swp) 201MC (10MC Swp) 195MC (10MC Swp) 189MC (10MC Swp) 183MC (10MC Swp) 177MC (10MC Swp) 85MC (10MC Swp) 79MC (10MC Swp) 69MC (10MC Swp) 63MC (10MC Swp) 57MC (10MC Swp)	211.25MC 215.75MC 205.25MC 209.75MC 199.25MC 203.75MC 189.25MC 193.75MC 181.25MC 185.75MC 175.25MC 179.75MC 83.25MC 87.75MC 77.25MC 81.75MC 67.25MC 71.75MC 61.25MC 65.75MC 55.25MC 59.75MC	13 12 11 10 9 8 7 6 5 4 3 2	"		Check for response similar to Fig. 7. If markers fall below 70% on any channel, make slight compromise adjustments of A28, A29 and A30 with channel switch set to that channel. Recheck all other channels to see that they have not been seriously affected.
OSCILLATOR ALIGNMENT FOR VHF PORTION OF UHF-VHF TUNER 94E75-2							
Switch tuner to VHF position and remove tuner knobs. With the fine tuning control near the center of its range, the VHF channel oscillator adjustment screws are accessible thru a hole just above and slightly to the left of the channel switch shaft. This hole extends thru the UHF tuner only when the channel switch is turned to each channel. Connect the negative lead of a 3 volt battery to point  . Positive lead 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. 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
Two 120Ω carbon resistors	Across VHF antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC	13	Vert. amp. thru 10KΩ to point  . (Point  as shown on UHF-VHF chassis using 41MC IF.) Low side to chassis.	A31	Adjust to place sound marker in trap notch as shown in Fig. 6. Video marker should be at 50%.
		207MC (10MC Swp)	205.25MC	12		A32	
		201MC (10MC Swp)	209.75MC	11		A33	
		195MC (10MC Swp)	199.25MC	10		A34	
		189MC (10MC Swp)	197.75MC	9		A35	
		183MC (10MC Swp)	181.25MC	8		A36	
		177MC (10MC Swp)	175.25MC	7		A37	
		85MC (10MC Swp)	83.25MC	6		A38	
		79MC (10MC Swp)	87.75MC	5		A39	
		69MC (10MC Swp)	77.25MC	4		A40	
		63MC (10MC Swp)	71.75MC	3		A41	
		57MC (10MC Swp)	65.75MC	2		A42	
				59.75MC			

ADMIRAL CHASSIS 18SX4BZ, 18X4CZ, 18X4EZ, 18X4FZ, 18Z4GZ, 18XP4BZ

ALIGNMENT INSTRUCTIONS (cont)

OSCILLATOR ALIGNMENT FOR UHF PORTION OF UHF-VHF TUNER 94E75-2

Switch tuner to UHF position and remove tuner knobs. The UHF channel oscillator adjustment screws are reached thru a hold just above and slightly to the left of the channel switch shaft. The correct adjustment screw is accessible thru this hole as the channel switch is turned to each channel.
Leave bias connect as under "VHF Oscillator Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
17. Two 120Ω carbon resistors	Across UHF antenna terminals with 120Ω in each lead.	473MC (10MC Swp)	471.25MC	14	Vert. amp. thru 10KΩ to point C. (Point C as shown on UHF-VHF chassis using 41MC IF.) Low side to chassis.	A43	Adjust bias to place sound marker in trap notch as in Fig. 6. Video should be at 50%.
		515MC (10MC Swp)	513.25MC	21		A44	
		575MC (10MC Swp)	573.25MC	31		A45	
		635MC (10MC Swp)	633.25MC	41		A46	
		695MC (10MC Swp)	693.25MC	51		A47	
		755MC (10MC Swp)	753.25MC	61		A48	
		815MC (10MC Swp)	813.25MC	71		A49	
		875MC (10MC Swp)	873.25MC	81		A50	

RF AND MIXER ALIGNMENT FOR VHF PORTION OF UHF-VHF TUNER 94E75-2

Connect the negative lead of a 3 volt battery to point G. Positive lead 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.

DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
17. Two 120Ω carbon resistors	Across VHF antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp. thru 10KΩ to point H. Low side to chassis.	A51, A52, A53	Adjust generator to provide a readable marker, but does not distort response curve. Adjust for response similar to Fig. 7.
18. "	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to Fig. 7. If markers fall below 70% on any channel, make compromise adjustments of A51, A52 and A53 with channel switch set to that channel. Then recheck all other channels to see that they have not been seriously affected.
		201MC (10MC Swp)	199.25MC 203.75MC	11			
		195MC (10MC Swp)	193.25MC 197.75MC	10			
		189MC (10MC Swp)	187.25MC 191.75MC	9			
		183MC (10MC Swp)	181.25MC 185.75MC	8			
		177MC (10MC Swp)	175.25MC 179.75MC	7			
		171MC (10MC Swp)	169.25MC 173.75MC	6			
		165MC (10MC Swp)	163.25MC 167.75MC	5			
		159MC (10MC Swp)	157.25MC 161.75MC	4			
		153MC (10MC Swp)	151.25MC 155.75MC	3			
		147MC (10MC Swp)	145.25MC 149.75MC	2			

RF AND MIXER ALIGNMENT FOR UHF PORTION OF UHF-VHF TUNER 94E75-2

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

IF TRAP ADJUSTMENT

The IF trap adjustment (A54) is for the purpose of eliminating any IF interference from nearby transmitters operating in the 40MC band. If the IF interference is noted, turn to channel 2 and adjust A54 to minimize interference.

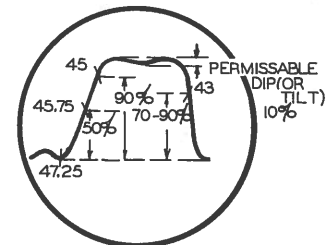
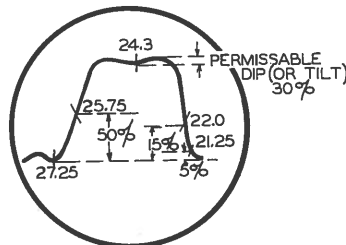
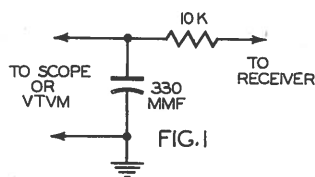


FIG. 2

FIG. 3

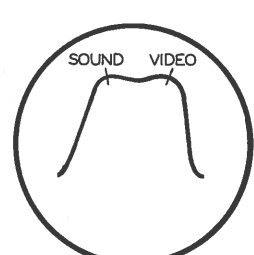
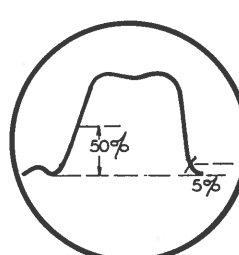
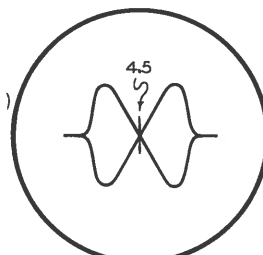
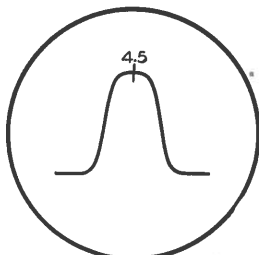


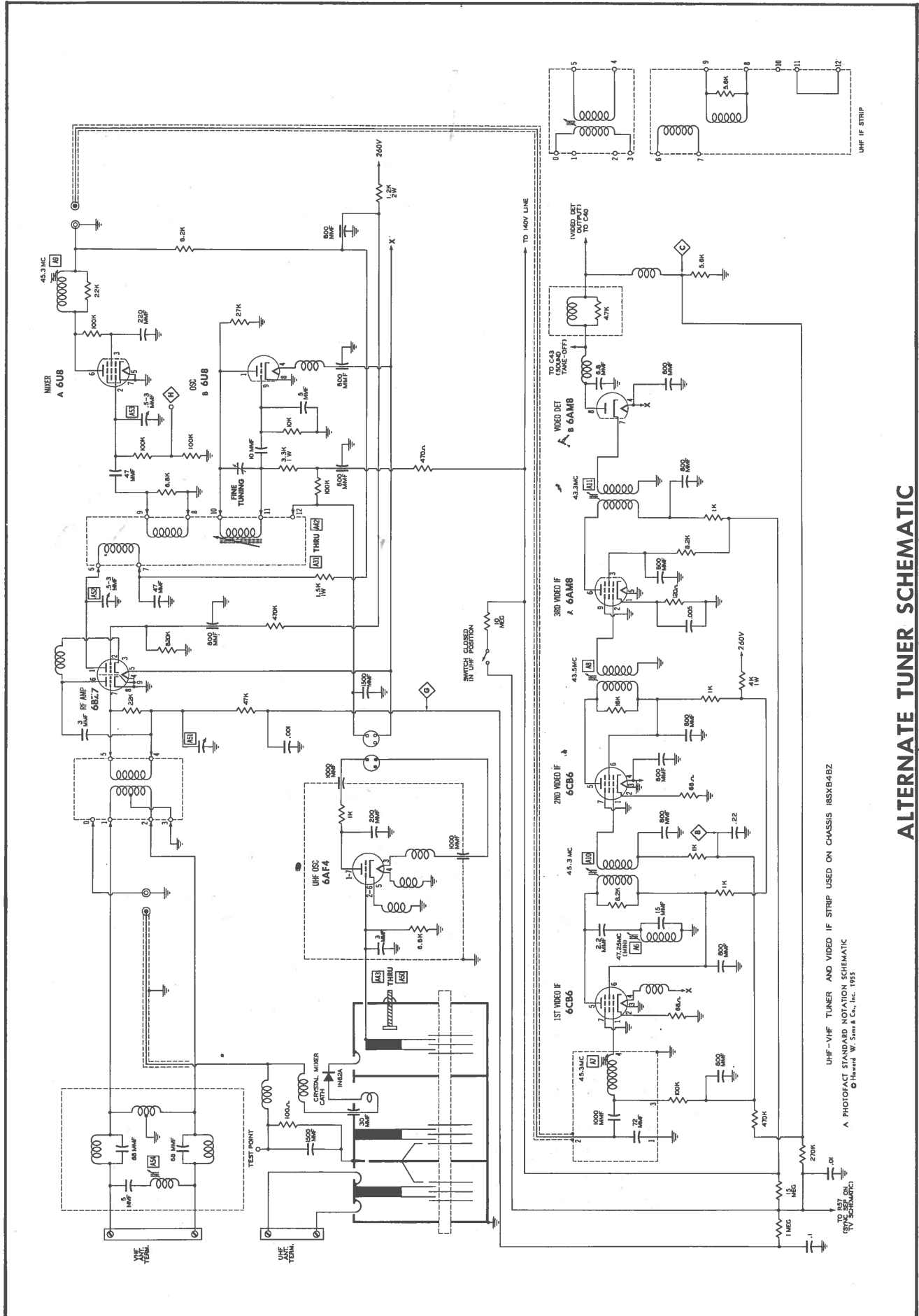
FIG. 4

FIG. 5

FIG. 6

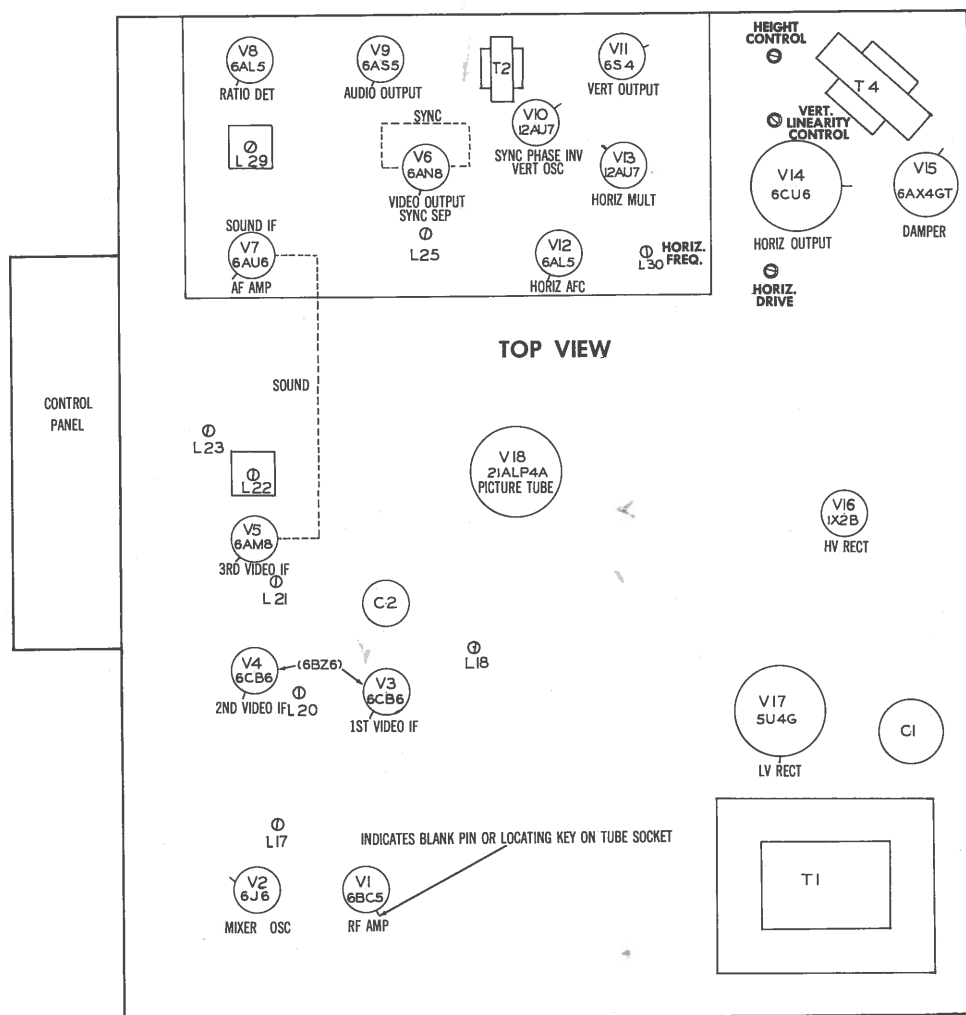
FIG. 7

ADMIRAL CHASSIS 18SXB4BZ, 18X4CZ, 18X4EZ, 18X4FZ, 18Z4GZ, 18XP4BZ C1LW4EHS RENN1 ETATN1LT1V



UHF-VHF TUNER AND VIDEO IF STRIP USED ON CHASSIS 18SXB4BZ
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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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 - V17

LOSS OF PICTURE OR SOUND

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

No pic, no sound, has snow - V1, V2, V8

No pic, has sound, has raster - V6, V18

Has pic, no sound - V7, V8, V9

SYNC FAILURE

No vert. sync - V10

No horiz. sync - V10, V12, V13

No vert. or horiz. sync - V6, V10

SWEEP FAILURE

No raster, has sound - V13, V14, V15, V16, V18

No vertical deflection - V10, V11

Poor vert. linearity or foldover - V10, V11

Poor horiz. linearity or foldover - V13, V14, V15

Narrow picture - V10, V13, V14, V15, V16, V17

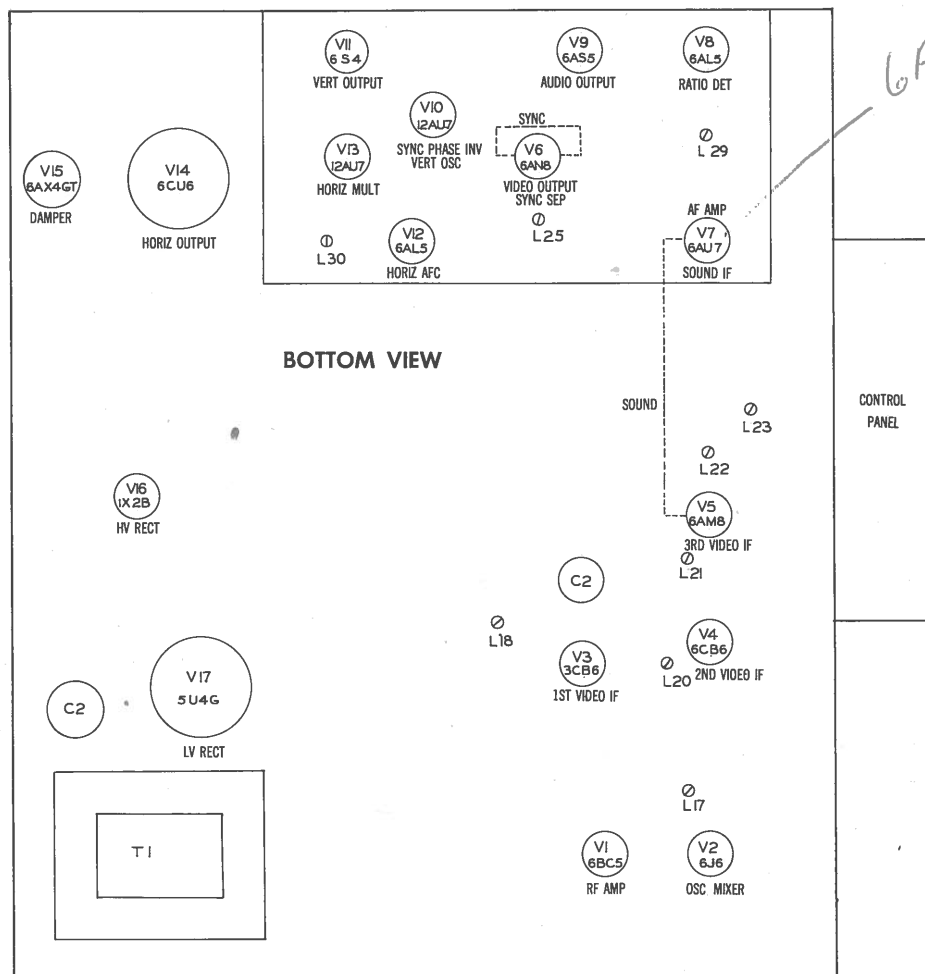
Vert. off freq. - V10

Horiz. off freq. - V10, V12, V13

RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	1.3Meg	0Ω	.1Ω	0Ω	≈500Ω	≈1.5KΩ	0Ω		
V 2	6J6	≈15KΩ	≈7KΩ	.1Ω	0Ω	235KΩ	10KΩ	0Ω		
V 3	6CB6	470KΩ	47Ω	0Ω	.1Ω	≈1KΩ	≈1KΩ	0Ω		
V 4	6CB6	100KΩ	≈68Ω	0Ω	.1Ω	↑1KΩ	↑1KΩ	INF		
V 5	6AM8	120Ω	.4Ω	≈8.2KΩ	0Ω	.1Ω	≈1KΩ	.2Ω	5.6KΩ	0Ω
V 6	6AN8	↑130KΩ	2.5Meg	0Ω	.1Ω	0Ω	↑5.6KΩ	↑40KΩ	1Meg	300Ω
V 7	6AU6	90KΩ	0Ω	.1Ω	0Ω	↑27KΩ	≈330Ω	220Ω		
V 8	6AL5	INF	INF	.1Ω	0Ω	10KΩ	0Ω	10KΩ		
V 9	6AS5	40KΩ	350KΩ	.1Ω	0Ω	350KΩ	↑550Ω	↑800Ω		
V 10	12AU7	≈1.5Meg	1.5Meg	0Ω	0Ω	0Ω	↑7KΩ	800KΩ	2.2KΩ	.1Ω
V 11	6S4	NC	2.2KΩ	1Meg	0Ω	.1Ω	1Meg	NC	NC	≈5KΩ
V 12	6AL5	15Ω	15Ω	.1Ω	0Ω	4.8Meg	0Ω	4.8Meg		
V 13	12AU7	↑5.7KΩ	5Meg	1.5KΩ	.1Ω	.1Ω	↑100KΩ	150KΩ	1.5KΩ	0Ω
V 14	6CU6	TP	.1Ω	NC	↑15KΩ	470KΩ	NC	0Ω	0Ω	Top Cap ≈11.5Ω
V 15	6AX4GT	TP	NC	140KΩ	NC	↑55Ω	NC	.1Ω	0Ω	
V 16	1X2B	PINS 1 - 8 HAVE INFINITE RESISTANCE								
V 17	5U4G	NC	60KΩ	NC	23Ω	TP	25Ω	TP	60KΩ	
V 18	21ALP4A	0Ω	56KΩ	Pin 6 0Ω	Pin 10 ≈4.7KΩ	Pin 11 ≈200KΩ	Pin 12 .1Ω			

▲ MEASURED FROM 140V LINE
 ▲ MEASURED FROM PIN 7 OF V4
 ↑ MEASURED FROM PIN 8 OF V17
 ▲ MEASURED FROM PIN 3 OF V15
 NC - NO CONNECTION
 TP - TIE POINT



TUBE PLACEMENT CHART

SET 280 FOLDER 2

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 V14, V15 and V17. Check adjustment B2. Check C72, C69, R87, T3, T5A and other associated components.</p> <p><u>DRIVE LINES</u></p> <p>Check by substitution V14 and V15. Check adjustment B2. Check T3, T5A, R82, R87 and other associated components.</p> <p><u>COMPRESSED LEFT SIDE</u></p> <p>Check by substitution V14 and V15. Check horizontal output and damper stages for component failure or change of value.</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, V14 and V15. Check C67 for open. Check L30, R80, C68, C69 and other associated components.</p> <p><u>XMAS TREE EFFECT</u></p> <p>Check by substitution V13, V14 and V15. Check T3 and T5 for internal arcing. Check L30, C74, C69, C68, R80, R82, R90 and other associated components.</p>	<p><u>LOSS OF SWEEP</u></p> <p>Check by substitution V10 and V11. Check waveform W7.</p> <table border="1"> <tr> <td>If Satisfactory</td><td>If Unsatisfactory</td></tr> <tr> <td>Check T4, T5B, R71, C5 and other associated components.</td><td>Check T2, R66, R67, R5, C62 and other associated components.</td></tr> </table> <p><u>INSUFFICIENT SWEEP</u></p> <p>Check by substitution V10 and V11. Check height and vertical linearity controls for proper operation. Check R67, T4 and other associated components.</p> <p><u>COMPRESSED AT BOTTOM</u></p> <p>Check by substitution V10 and V11. Check R67, R5, R70, R71, C62 and other associated components.</p> <p><u>COMPRESSED AT TOP</u></p> <p>Check by substitution V10 and V11. Check R6, R70, R71, T4 and other associated components.</p> <p><u>FOLDS</u></p> <p>Check by substitution V10 and V11. Check C60, C61, C62, T4, R68, R71 and other associated components.</p>	If Satisfactory	If Unsatisfactory	Check T4, T5B, R71, C5 and other associated components.	Check T2, R66, R67, R5, C62 and other associated components.
If Satisfactory	If Unsatisfactory				
Check T4, T5B, R71, C5 and other associated components.	Check T2, R66, R67, R5, C62 and other associated components.				

SYNC

<p><u>LOSS OF VERTICAL AND HORIZONTAL SYNC</u></p> <p>Check by substitution V6 and V10. Check C55, C56, C57, R63, R58, R59 and other associated components.</p> <p><u>LOSS OF VERTICAL SYNC - HORIZONTAL SYNC SATISFACTORY</u></p> <p>Substitute V10. Check vertical integrator network. Check C59, T2, R66, R3 and other associated components.</p>	<p><u>LOSS OF HORIZONTAL SYNC - VERTICAL SYNC SATISFACTORY</u></p> <p>Check by substitution V12 and V13. Check C64, C65, C68, C69, L30, R75, R76, R80 and other associated components.</p> <p><u>HORIZONTAL BENDING</u></p> <p>Check by substitution V6, V10, V12 and V13. Check horizontal AFC network.</p>
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VIDEO

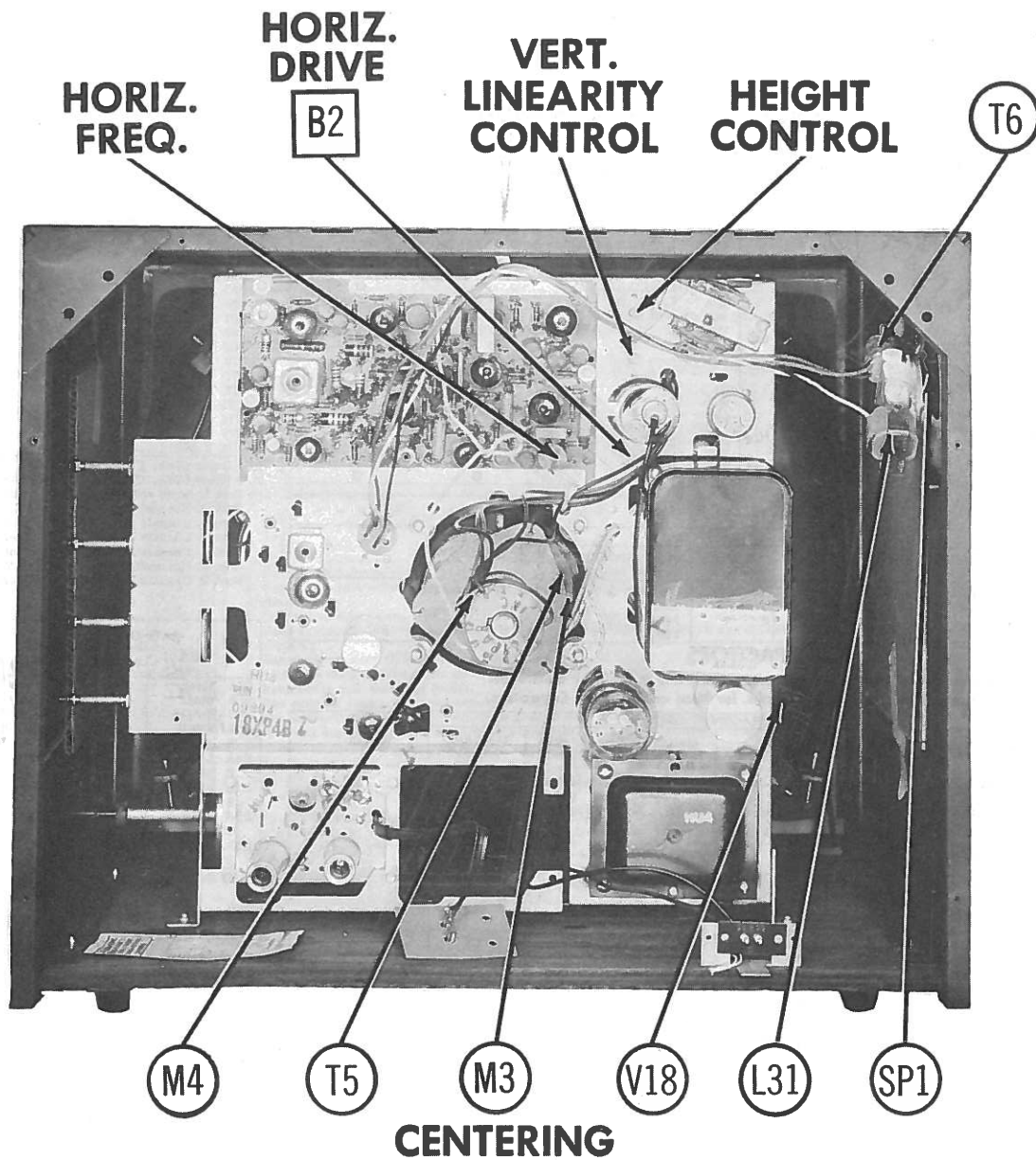
<p><u>LOSS OF VIDEO</u></p> <p>Substitute V6. Check C40, C42, R38, R40, R37 and other associated components.</p> <p><u>SOUND BARS (4.5MC BEAT)</u></p> <p>Adjust tuner fine tuning for best sound and picture. Check adjustment A15. Check video IF alignment.</p> <p><u>POOR CONTRAST</u></p> <p>Substitute V6. Check contrast control. Check L26, L27, C40, C42 and other associated components.</p>	<p><u>NEGATIVE PICTURE</u></p> <p>Substitute V6. Check picture tube. Check L23, R34, C40, C42 and other associated components.</p> <p><u>SMEAR</u></p> <p>Substitute V6. Check L23, L24, L26, L27, C40, C42 and other associated components.</p> <p><u>WIDE BLACK BAR ACROSS PICTURE</u></p> <p>Check by substitution V1, V3, V4, V5 and V6 for heater to cathode leakage.</p>
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AUDIO

<p><u>WEAK OR NO SOUND</u></p> <p>Check by substitution V7, V8 and V9. Check stage V9 using audio signal generator. Apply audio signal across R1.</p> <table border="1"> <tr> <td>If Satisfactory</td><td>If Unsatisfactory</td></tr> <tr> <td>Check ratio detector and audio IF stages for component failure or change of value.</td><td>Check C52, C53, C54, C4, C2B, R55, R53, T6, 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 C52, C53, C54, C4, C2B, R55, R53, T6, speaker and other associated components.	<p><u>BUZZ</u></p> <p>Adjust tuner fine tuning for best sound and picture. Check adjustment A14 for minimum buzz. If still unsatisfactory, check audio IF alignment.</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 stages for component failure or change of value.	Check C52, C53, C54, C4, C2B, R55, R53, T6, speaker and other associated components.				

POWER

<p><u>DEAD SET</u></p> <p>If filaments fail to light, check AC interlock assembly. Check switch on volume control and T1. If filaments light, substitute V17. Check B+ filter and decoupling network.</p>	<p><u>SMALL AND/OR DIM PICTURE</u></p> <p>Substitute V17. Check B+ filter and decoupling network.</p>
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CENTERING

CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Turn the set on and tune in a TV station, preferably a test pattern.
2. Set the brightness and contrast control for normal picture.
3. Turn the horizontal oscillator slug (B1) clockwise until the picture loses sync. It may be necessary to switch off channel momentarily for picture to lose sync.
4. Turn B1 slowly counter clockwise until picture just falls into sync.
5. Turn to an unusual channel. If vertical lines appear near the center of the screen slowly adjust the horizontal drive trimmer (B2) until the white lines disappear.
6. If in step 5 the horizontal drive was adjusted, tune in a station and repeat steps 3 and 4. Check horizontal sync by switching off channel, then back.

ADMIRAL CHASSIS 18SX4BZ, 18X4CZ,
18X4EZ, 18X4FZ, 18Z4GZ, 18XP4BZ

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETM BASE TYPE	NOTES
		ADMIRAL PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BC5	6BC5	7BD	6BZ6 used in chassis 18X4EZ, 18X4FZ, 18X4GZ 6BZ6 used in chassis 18X4EZ, 18X4FZ, 18X4GZ
V2	Osc.-Mixer	616	616	7BF	
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 Detector	6AM8	6AM8	9CY	9A
V7	Video Output-Sync Separator	6AN8	6AN8	9DA	
V8	Sound IF Amp.-AF Amplifier	6AU6	6AU6	7BK	
V9	Ratio Detector	6AL5	6AL5	6BT	
V10	Audio Output	6AS5	6AS5	7CV	
V11	Vert. Osc.	12AU7	12AU7	9A	9A
V12	Vert. Output	684	684	9AC	
V13	Horiz. AFC	6AL5	6AL5	6BT	
V14	Horiz. Mult.	12AU7	12AU7	9A	
V15	Horiz. Output	6CU6	6CU6	8BD	
V16	Damper	6AX4GT	6AX4GT	4CG	4CG
V17	RV Rectifier	1X2B	1X2B	8Y	
V17	LV Rectifier	5U4G	5U4G	5T	5T

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA					RETM BASE TYPE	NOTES
	ADMIRAL PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.		
V18	21ALP4A ① 24DP4A	21ALP4A ① 21ALP4	21ALP4A ① 21ALP4	21ALP4A ① 21ALP4	21ALP4A ① 24DP4A ① 24DP4	12L 12L 12L	① Aluminized

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	ADMIRAL PART No.	CENTRALAB PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	
C1A	100	350	67D15-110				TM-808060-350	D-177	Note 1
B	100	350							
C2A	100	200	67D15-109			FP217.8	TM-3123	T-395	
B	100	200				TC50X		MT-2508	
C	20	50							
C3	4	50	67A4-9			TC30	TD-4-50	FM-1504	
C4	40	200	67A4-21			TC58	TD-40-250	FM-2540	
C5	10	475	67A4-22			TC82	TD-10-475	S-310	
C6	7.5		94D77-78						
C7	1000		94D77-88						
C8	800		94D77-84	DD-801	801-001	DC-521			
C9	150		94D77-81	D6-151	811-151	UC-5315			
C10	1		94D77-86	TCZ-1	NP0A-010				
C11	47		94D77-77	D6-470	831-470	UC-5447			
C12	.5-3		94D77-83	829-3	3115-01-0R5	CT565A			
C13	1.2		94D77-87	TCZ-1.2	NP0A-1R2				
C14	27		94D77-79						
C15	27		94D77-79						
C16	800		94D77-84	DD-801	801-001	DC-521			
C17	10		94D77-76	TCN-10	N750K-100	NT-541			
C18	150		94D77-81	D6-151	811-151	UC-5315			
C19	1000		94D77-88						
C20	1000		94D77-88						
C21	2.2			TCZ-2.2	NP0A-2R2	ZT-5522			
C22	15		65C6-90	TCZ-15	NP0K-150	ZT-5415			
C23	5000			DD-502	811-005	DC-525			
C24	.22	100				PT4022	IMP2-P22	3302022	
C25	.01	400		D6-103	GP2-333-103	PT411	IMP4-S1	330411	
C26	.1	200		DF-104		PT401	IMP2-P1	330201	
C27	5000			DD-502	811-005	DC-525			
C28	5000			DD-502	811-005	DC-525			
C29	.22	200				PT4022	IMP2-P22	3302022	
C30	1000			DD-102	801-001	DC-521			
C31	5000			DD-502	811-005	DC-525			
C32	5000			DD-502	811-005	DC-525			
C33	5000			DD-502	811-005	DC-525			
C34	5000			DD-502	811-005	DC-525			
C35	5000			DD-502	811-005	DC-525			
C36	5000			DD-502	811-005	DC-525			
C37	5000			DD-502	811-005	DC-525			
C38	5000			DD-502	811-005	DC-525			
C39	7		65B28-068	TCZ-6.8	NP0A-6R8	ZT-5568			
C40	.1	200	64B16-30					360004	
C41	7		65B28-068	TCZ-6.8	NP0A-6R8	ZT-5568			
C42	.22	400	64B16-28					360008	
C43	10		65C6-44	TCZ-10	NP0K-100	ZT-541			
C44	20		65C6-51	TCZ-20	NP0K-200	ZT-542			
C45	1000		64B16-42	D6-102	GP2L-102	UC-521		K-1210	
C46	.0047	400	64B16-38					360006	
C47	180		65C6-59						
C48	500		65C39-3	D6-501	GP2K-501	UC-535		K-1350	
C49	.001	400	65C39-1					360005	
C50	.047	200	64B16-32					360003	
C51	1000		65C39-1	D6-102	GP2L-102	UC-521		K-1210	
C52	.01	600	64B16-36					360009	
C53	.01	400	64B16-38					360007	
C54	5000			DD-502	811-005	DC-525		C-1250	
C55	150		65C39-4	D6-151	GP2K-151	UC-5315		K-1315	
C56	10000			DD-103	811-01	DC-511			
C57	.1	400						360001	
C58A	2000					DC-522			
B	5000		*63B6-9		*1405-01	DC-525			
C	5000					DC-525			
						DC-525			

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ADMIRAL PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L24	Shunt Peak- ing Coil	16Ω		73A5-15	19-3500		6174	510 Microhenries
L25	4.5MC Trap	4.6Ω		72A132				
L26	Series Peak- ing Coil	6.5Ω		73B5-21	19-3300	TV-185	6155	280 Microhenries, wound on 33KΩ resistor
L27	Shunt Peak- ing Coil	8Ω		73B5-22	19-4412	TV-190	4648	375 Microhenries, wound on 10KΩ resistor
L28	Sound IF	4.4Ω		72B99-14	20-1005	TV-151	1470	
L29	Ratio Det.	3.6Ω	.3ΩCT	72C68-4	17-1033	TV-110	1468	
L30	Horiz. Osc.	53Ω		94C17-4				Tertiary winding-.8Ω

* Enlarge mounting hole.

■ Detune trap winding.

▲ Parallel with 4.7KΩ resistor.

△ Parallel with 33KΩ resistor.

† Parallel with 10KΩ resistor.

◆ Remove spade bolts.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	ADMIRAL PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L31	.230ADC	54.5Ω	1.3 Hy.	Part of Spkr.					

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M1	Tuner	94D77-1	VHF - Chassis 18XP4BZ, 18XP4HZ
	Tuner	94D46-5	VHF - Chassis 18X4CZ
	Tuner	94D46-6	VHF - Chassis 18X4EZ, 18X4FZ, 18X4GZ
	Tuner	94D46-7	VHF - Chassis 18X4EZ, 18X4FZ, 18X4GZ
	Tuner	94D46-8	VHF - Chassis 18X4EZ, 18X4FZ, 18X4GZ
M2	Tuner	94E75-2	VHF-UHF - Chassis 18SX4BZ, 18SX4EZ, 18SX4FZ, 18SX4GZ
M3	Centering Device	94A71-1	
M4	Ion Trap	94A15-4	
B2	Trimmer Cap.	66A30-3	Horiz. Drive (178-780MMF)
	Cabinet	34E83-1	Models T2301Z, TS2301Z, TS2302Z, TS2326Z, TS2327Z
	Cabinet	34E83-2	Model T2302Z
	Cabinet	35E316-2	Model T2326Z
	Cabinet	35E316-3	Model T2327Z
	Knob	33A143-1	On-Off-Volume, Contrast, Vert. and Brightness - Model T2301Z
	Knob	33A143-5	On-Off-Volume, Contrast, Vert. and Brightness - Model T2302Z
	Knob	33A143-3	On-Off-Volume, Contrast, Vert. and Brightness - Model T2326Z
	Knob	33A143-2	On-Off-Volume, Contrast, Vert. and Brightness - Model T2327Z
	Knob	33D143-1	On-Off-Volume, Contrast, Vert. and Brightness - Model TS2301Z
	Knob	33D143-5	On-Off-Volume, Contrast, Vert. and Brightness - Model TS2302Z
	Knob	33D143-3	On-Off-Volume, Contrast, Vert. and Brightness - Model TS2326Z
	Knob	33D143-2	On-Off-Volume, Contrast, Vert. and Brightness - Model TS2327Z
	Knob	33D144-1	VHF Channel Sel. - Model T2301Z, T2327Z
	Knob	33D144-6	VHF Channel Sel. - Models T2302Z, T2326Z
	Knob	33D144-2	VHF Fine Tuning - Models T2301Z, T2327Z
	Knob	33D144-7	VHF Fine Tuning - Models T2302Z, T2326Z
	Knob	33B146	UHF Channel Sel. - Models TS2301Z, TS2302Z, TS2326Z, TS2327Z
	Knob	33D144-3	VHF Channel Sel. - Models TS2301Z, TS2327Z
	Knob	33D144-8	VHF Channel Sel. - Models TS2302Z, TS2326Z
	Knob	33D144-4	Fine Tuning - Models TS2301Z, TS2327Z
	Knob	33D144-9	Fine Tuning - Models TS2302Z, TS2326Z
	Safety Glass	21B62-11	All Models (21" tubes)
	Mask	23D205-2	All Models (21" tubes)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, thru the small hole in the cabinet to the right of the channel selector shaft.

PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, remove 4 wood screws holding metal strip at the top of safety glass. Remove metal strip and safety glass. 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

See tube placement chart on page 10.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made by adjusting the flexible shaft at back of set. Adjust horizontal frequency slug of L30 until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate "Sound IF Detector Buzz" adjust the Ratio Detector Secondary (L29) located on bottom of chassis.

Adjustment can be made from top of chassis by inserting alignment tool thru hollow hex slug (primary adjustment) to bottom adjustment (A8) on L29.

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 6 push-on type control knobs from side panel of cabinet.
2. Remove 7 wood screws. Remove rear cover.
3. Remove 2 metal screws from antenna bracket.
4. Remove 2 metal screws from interlock bracket.
5. Disconnect speaker plug.
6. Remove 5 chassis bolts. Lift cabinet from mounting board and slide forward.
7. Remove 2 speaker nuts. Remove speaker.

NOTE: If it is necessary to remove the chassis for servicing, it is also necessary to remove the speaker. The filter choke and the audio output transformer is mounted on the speaker and must be connected to receiver for proper operation.

PRODUCTION CHANGES

Admiral chassis 18XP4HZ is identical to chassis 18XP4BZ, except for the changes listed below.

R17 is omitted.

C27 is omitted.

R22 is increased from 2K Ω to 3.9K Ω .

R24 is decreased from 18K Ω to 12K Ω .

C30 is increased from 1000MMF to 5000MMF.

R28 is decreased from 68 Ω to 47 Ω .

R29 is decreased from 10K Ω to 6.2K Ω .

C31 is omitted.

R37 is increased from 470 Ω to 1K Ω .

R38 is decreased from 39K Ω to 33K Ω .

C57 is decreased from .1MFD to .01MFD.

R87 is decreased from 15K Ω to 8.2K Ω .

C75 is increased from 75MMF to 230MMF.

R88 is decreased from 750 Ω to 270 Ω .

L19 is omitted.

A 5000MMF capacitor is added from pin 4 of V3 to ground.

A high voltage filament resistor (4.7 Ω) is added.

C73 is increased from 75MMF to 150MMF and is disconnected from pin 3 of V15, and reconnected to the junction of C75 and R88.

The 2nd. video IF coil (L20) is changed to part #72C132-2.

The 3rd. video IF coil (L21) is changed to part #72C132-2.

The 4th. video IF coil (L22) is changed to part #72B152-2.

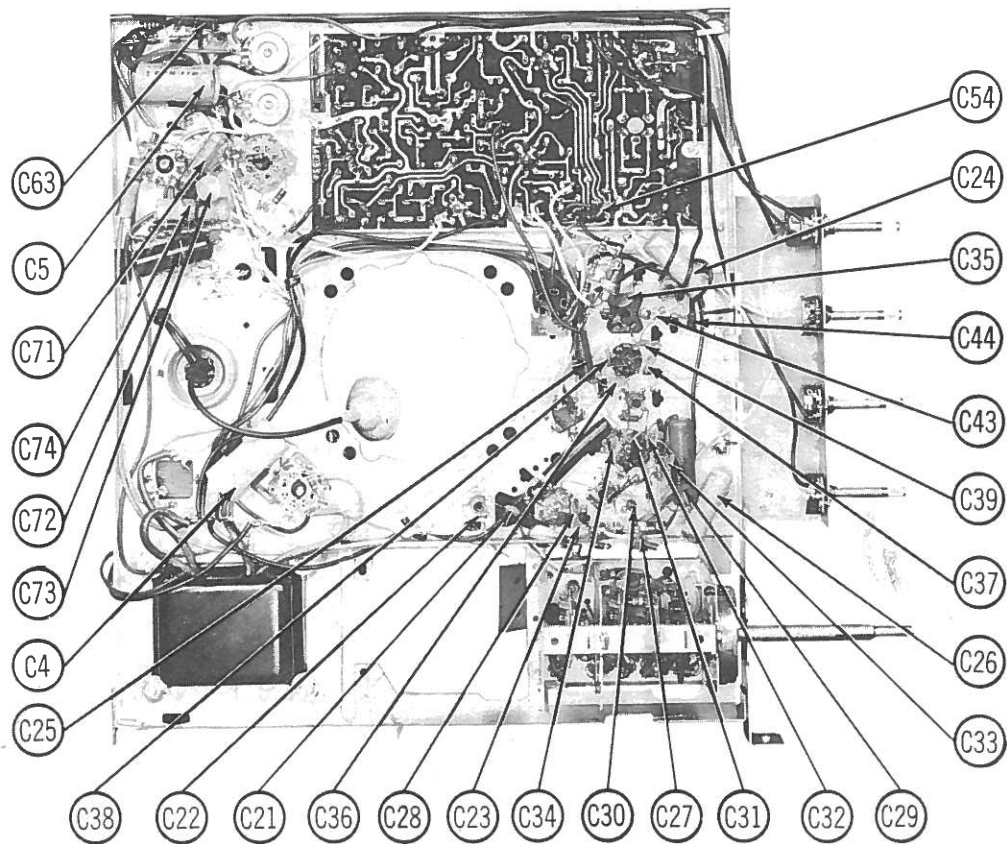
The vertical oscillator transformer (T1) is changed to part #79B63-3.

The deflection yoke (T5A, T5B) changed to part #94D87-1.

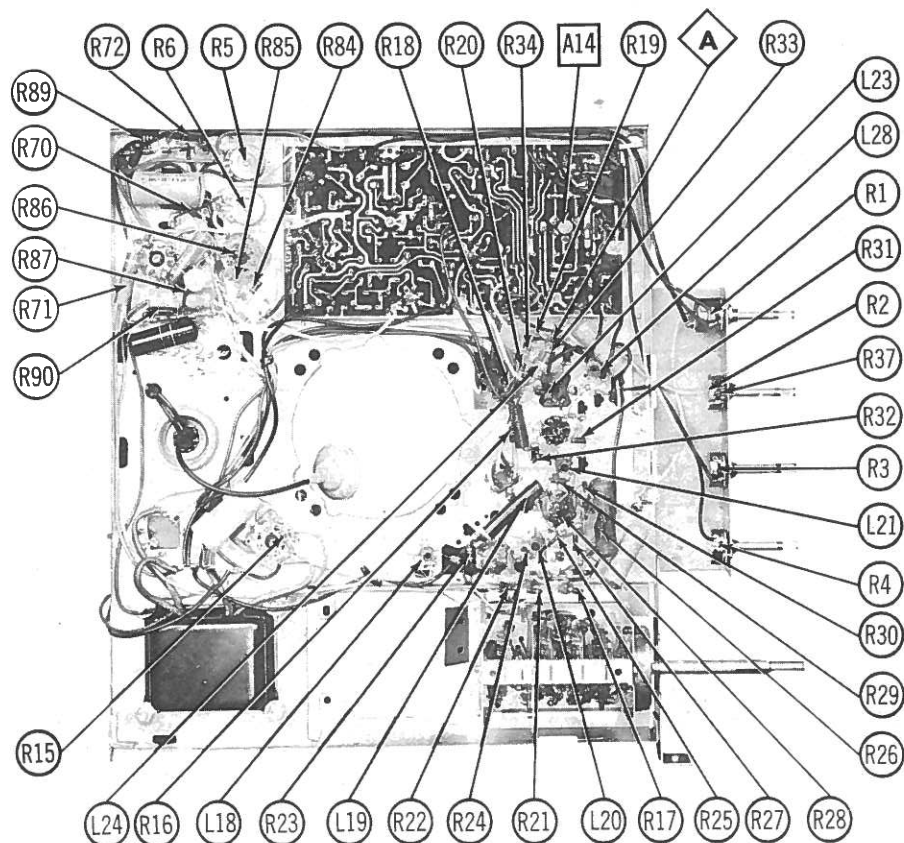
The horizontal output transformer (T3) is changed to part #79C60-6.

A PM speaker may be used in some models.

A peaking coil (part #73A24-2) is added between pin 8 of V5 and L23.



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION