Addison TELEVISION

SERIES 717, 721 CHASSIS

SERVICE & PARTS MANUAL

MODELS

THE VOYAGEUR-113 THE RANCHER-113X

THE YORK-173 THE STAMPEDER-173X

THE INVINCIBLE-213

THE WINCHESTER-273

THE ARLINGTON-413

ADDISONS LIMITED

HALIFAX • MONTREAL • TORONTO • WINNIPEG • CALGARY • VANCOUVER

Form 717—2M-12-53—R.P.

NOTES

SERIES 717,721 CHASSIS

GENERAL

The above series Television chassis is basically a universal superheterodyne receiver. This chassis incorporates the latest advances in television circuitry, also adaptation of new tubes of greater efficiency, has improved the performance, while simplifying the chassis. Examples of these improvements are:

Greater hold range and increased stability of the horizontal oscillator and phase detector circuits, eliminating the need for a horizontal hold control.

The application of a relatively simple, but highly effective automatic sync separation and noise elimination circuit.

The most outstanding example, is the adaptation of the 6BN6 Gated Beam Discriminator, which replaces three tubes. The unusual construction and unique characteristics of this tube with its related circuit functions as an A.M. limiter, F.M. Discriminator, and Audio Driver.

Due to its constant contrast in the face of strong fading, reduction of aircraft flutter and noise, our system of Automatic Gated A.G.C. has been retained, in preference to a non-gated A.G.C. System with a local distance switch.

SPECIFICATIONS

Power requirements:
117 Volts A.C., 200 Watts.

T.V. Fine tuning range:
Low band .5 MC average.
High band 1.6 MC average.

Loud Speaker:
Permanent magnet.

Audio Power output:
2 Watt, 5% distortion.

Scanning: 525 lines interlaced.
Horizontal freq. 15,750 CPS.
Vertical freq. 60 CPS.
Frame freq. 30 CPS.

Band Width:
Antenna input to picture tube
3.25 MC at 6 D.B.

Deflection:
Horizontal and vertical, Magnetic.

Focus: Magnetic.

TUBE COMPLEMENT

Tube	Function	Tube	Function
6BZ7 or 6BQ7A	R.F. Amplifier (Cascode Tuner)	12AU7	Gated A.G.C. and Sync Phase Inverter
6J6	Oscillator and Mixer (Cascode Tuner)	12BH7	Vertical Oscillator and Vertical Output
6CB6	1st I.F. Amplifier	6SN7GT	Horizontal Osc. and Phase Detector
6CB6	2nd I.F. Amplifier	6BQ6GT	Horizontal Output
6CB6	3rd I.F. Amplifier	6W4GT	Damper
12BY7	Video Amplifier	1B3GT	Hi-Volt rectifier
6BN6	Gated Beam Discriminator	5U4G	Lo-Volt rectifier
6W6GT	Audio Output	17BP4A	Picture Tube
6BE6	Sync Separator	21ZP4A	Picture Tube

ALIGNMENT PROCEDURE

Horizontal Stabilizer:

Proper alignment of the Horizontal stabilizing coil is very important. With an oscilloscope connected to the junction between the Horizontal oscillator transformer and the Horizontal stabilizing coil and ground, adjust the stabilizing coil for correct waveform. (Fig. 2) while receiving T.V. picture in sync.

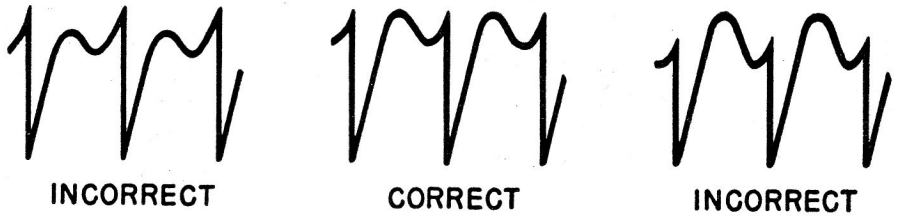


Figure 2

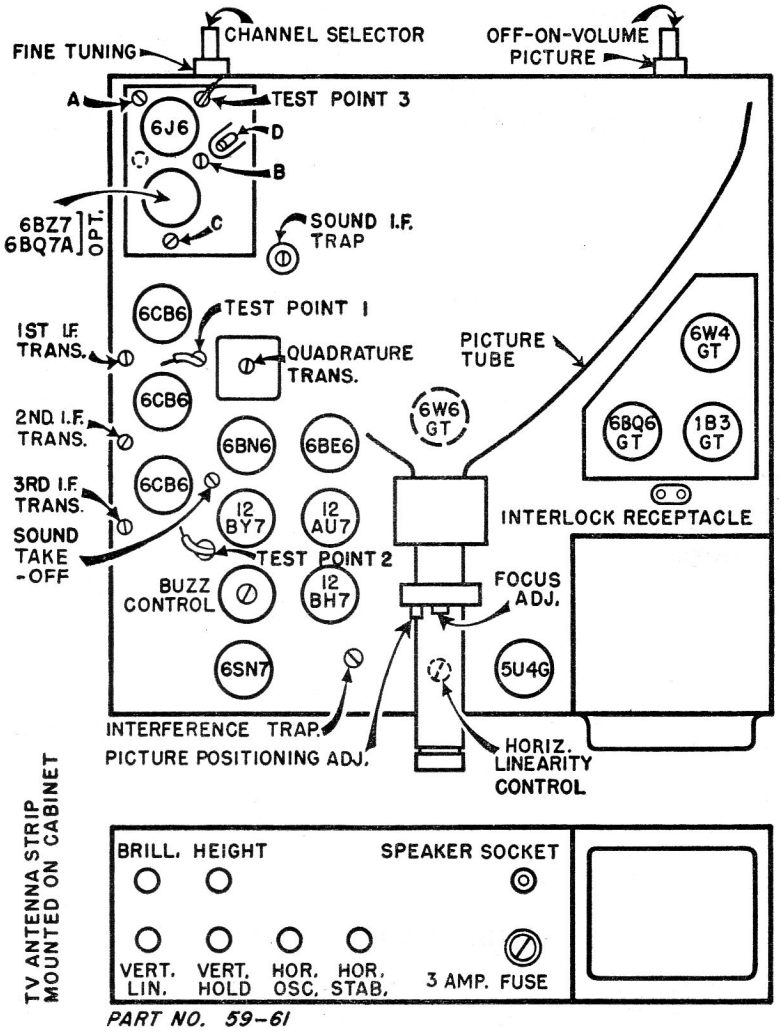


Figure 1

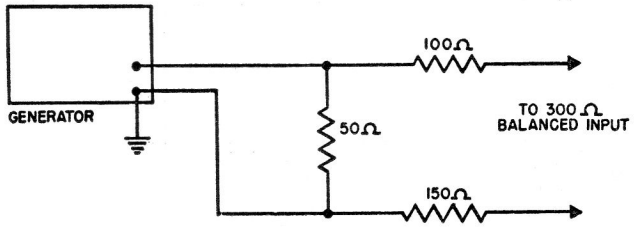


Figure 3

TEST EQUIPMENT

The following equipment is essential for proper alignment:

1. A Signal Generator capable of delivering signals from 4 to 30 MC. with good accuracy and at least .1 volts output.

2. A Vacuum Tube Voltmeter. A 20,000 ohm per volt meter will do as a substitute but the vacuum tube voltmeter is preferred.

3. A 3 Volt battery (two 1.5 Volt batteries connected in series).

In addition to the above, the following is desirable but not essential:

4. A sweep generator with accurate markers. This generator should be capable of large output with good linearity, and cover all the television channels and I.F. Bands.

5. An oscilloscope with wide band vertical amplifier and good vertical gain.

6. A resistive pad to match the signal generator output to the 300 ohm antenna input.

   A pad that will work well with most generators may be made using CARBON resistors as shown in Fig. 3.

Note: Before attempting to align R.F., I.F., or sound circuits, try to make absolutely sure that alignment is necessary. The Alignment and test points are shown in Fig. 1.

I.F. ALIGNMENT

1. Raise the shield from the 6J6 oscillator-mixer tube so that it is not grounded.

2. Connect signal generator output to the ungrounded shield. Connect low side to ground. (No pad is required.)

3. Connect 3 Volt bias battery between test point 1 and ground. (Negative to test point.)

4. Turn Contrast control fully clockwise.

5. Set vacuum tube voltmeter to read negative D.C. volts on a low range, and connect between test point 2 and ground.

6. Use only enough signal to give a reading of approximately 1 volt and proceed according to the following chart, Fig. 4.

Note: Repeat the procedure to insure accurate alignment. If a sweep generator and oscilloscope are available the curve in Fig. 5 should be obtained.

Set Generator	Connect V.T.V.M.	Adjust	Remarks
23.0 MC.	Test point 2 and ground	"D"	Tune for maximum output
25.5 MC.	Test point 2 and ground	1st I.F. Trans.	Tune for maximum output
25.5 MC.	Test point 2 and ground	2nd I.F. Trans.	Tune for maximum output
23.0 MC.	Test point 2 and ground	3rd I.F. Trans.	Tune for maximum output
21.25 MC.	Test point 2 and ground	Sound I.F. Trap	Tune for minimum output

Figure 4

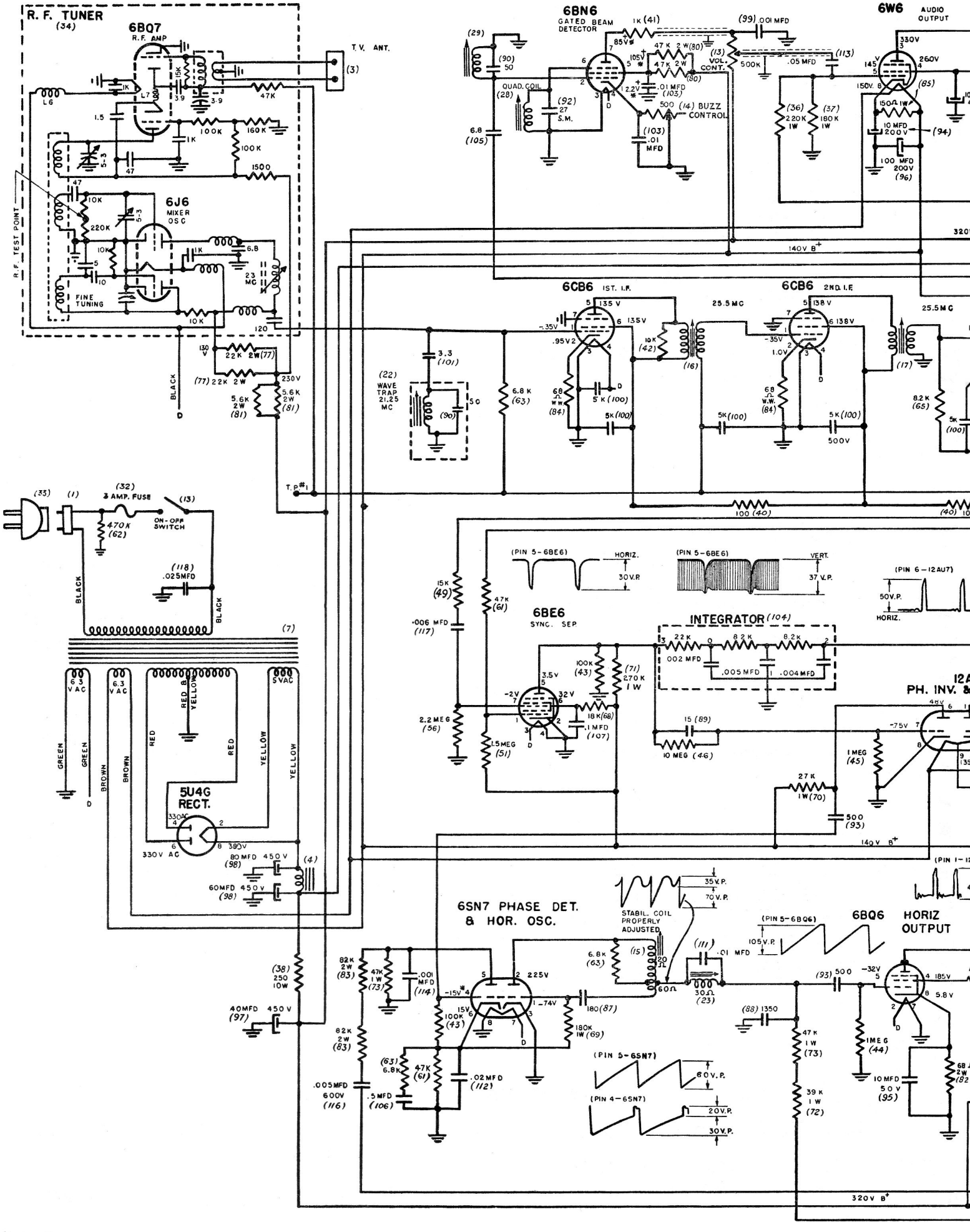
INTERFERENCE TRAP ADJUSTMENT

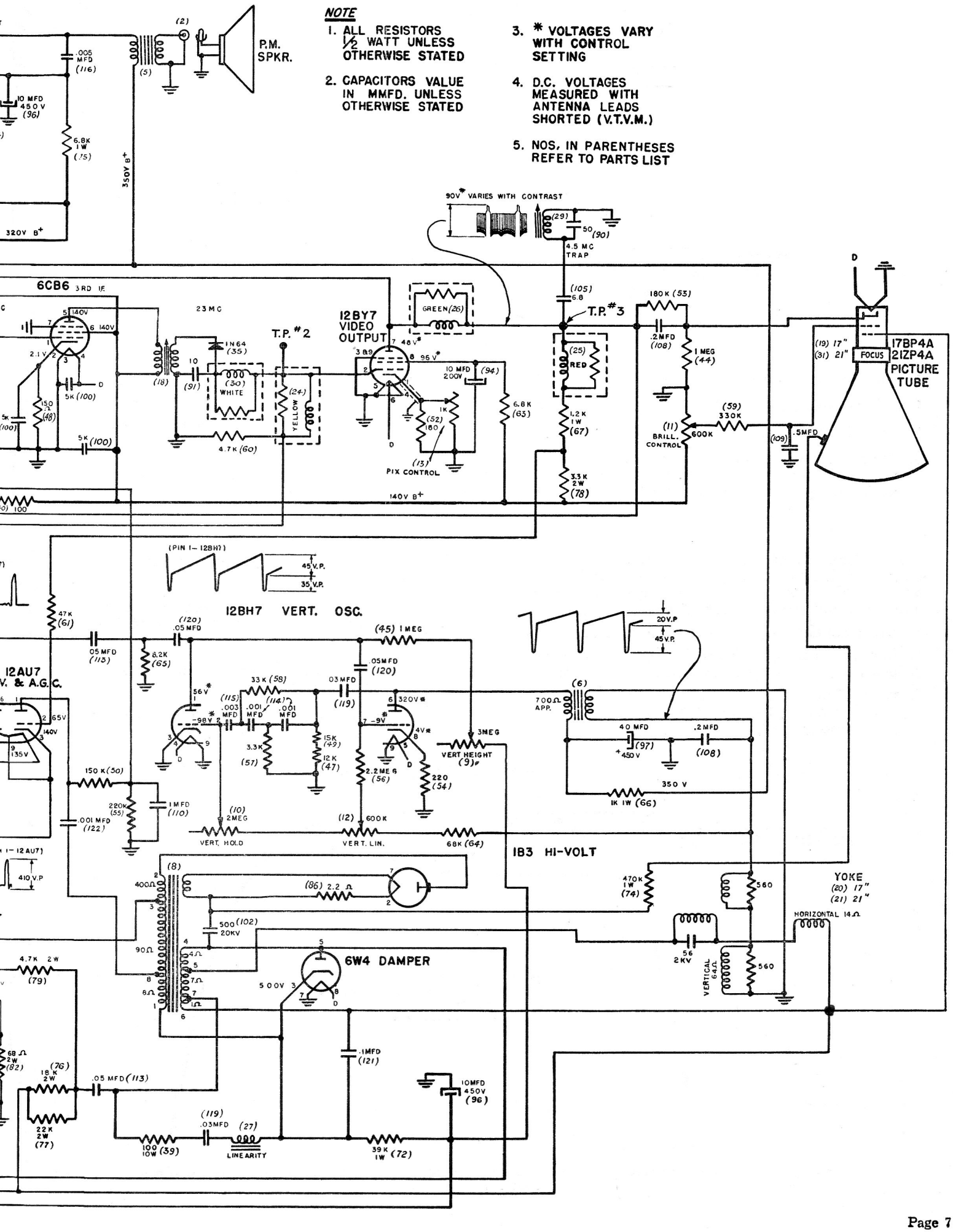
1. Set Signal Generator to 4.5 MC.

2. Connect O/P of generator to Test point 2 (Generator output maximum).

3. Connect V.T.V.M. set at 3V., A.C. to Test point 3 and ground.

4. Adjust interference trap for minimum output.


R. F. TUNER
(34)
6BQ7
R. F. AMP
T. V. ANT.
(3)
L6
L7
1K
15K
3.9
47K
1.5
100K
160K
1K
100K
5-3
47
1500
47
10K
6J6
MIXER
OSC
220K
5-3
10K
5
10
6.8
1K
23 MC
FINE TUNING
10K
120
R. F. TEST POINT
130 V
22K 2W (77)
230V
(77) 22K 2W
5.6K 2W (81)
5.6K 2W (81)
BLACK
D
6BN6
GATED BEAM DETECTOR
1K (41)
85V
105V
47K 2W (80)
47K 2W
(80)
(13) VOL. CONT.
500K
(99) .001 MFD
(29)
(90) 50
QUAD. COIL
(28)
(92) 27 S.M.
6.8
(105)
2.2V
.01 MFD (103)
500 (14) BUZZ CONTROL
(103) .01 MFD
6W6
AUDIO OUTPUT
330V
260V
145
150V.
(85)
150Ω 1W
10 MFD 200V
(94)
100 MFD 200V (96)
.05 MFD
(113)
(36) 220K 1W
(37) 180K 1W
140V B+
6CB6 IST. I.F.
135 V
-.35V
.95V
2
6 135V
10K (42)
(16)
25.5 MC
3.3 (101)
(22) WAVE TRAP 21.25 MC
50
(90)
6.8 K (63)
68 Ω W.W. (84)
5K (100)
5K (100)
6CB6 2ND I.F.
138 V
-.35V
1.0V
6 138V
25.5 MC
(17)
68 Ω W.W. (84)
5K (100)
5K (100)
500V
8.2K (65)
5K (100)
100 (40)
T.P.#1
(35)
(1)
(32) 3 AMP. FUSE
(13) ON-OFF SWITCH
470K (62)
(118) .025MFD
BLACK
BLACK
(7)
6.3 VAC
6.3 VAC
5VAC
GREEN
GREEN
BROWN
RED
RED B
YELLOW
RED
YELLOW
YELLOW
5U4G RECT.
330AC
330 V AC
390V
80 MFD 450 V (98)
60MFD 450 V (98)
(4)
(38) 250 10W
40MFD 450 V (97)
(PIN 5-6BE6)
HORIZ.
30V.P.
(PIN 5-6BE6)
VERT.
37 V.P.
(PIN 6-12AU7)
50V.P.
HORIZ.
15K (49)
47K (61)
.006 MFD (117)
6BE6
SYNC. SEP.
INTEGRATOR (104)
22K
8.2K
8.2K
.002 MFD
.005 MFD
.004 MFD
100K (43)
270K 1W (71)
3.5V
-2V
7
32V
6
18K (68)
.1 MFD (107)
2.2 MEG (56)
1.5 MEG (51)
15 (89)
10 MEG (46)
1 MEG (45)
27 K 1W (70)
500 (93)
-75V
140V B+
6SN7 PHASE DET. & HOR. OSC.
STABIL. COIL PROPERLY ADJUSTED
35V.P.
70V.P.
(PIN 5-6BQ6)
105V.P.
6BQ6 HORIZ OUTPUT
82K 2W (83)
47K 1W (73)
.001 MFD (114)
-15V
225V
-74V
180 (87)
100K (43)
15V
180K 1W (69)
82K 2W (83)
(63) 6.8K
47K (61)
.02 MFD (112)
.005 MFD 600V (116)
.5 MFD (106)
6.8K (63)
(15) 20Ω
(111) .01 MFD
60Ω
30Ω (23)
(93) 500
-32V
185V
5.8V
(88) 1350
47K 1W (73)
39K 1W (72)
1 MEG (44)
10 MFD 50V (95)
(PIN 5-6SN7)
60V.P.
(PIN 4-6SN7)
20V.P.
30V.P.
320V B+


NOTE
1. ALL RESISTORS ½ WATT UNLESS OTHERWISE STATED
2. CAPACITORS VALUE IN MMFD. UNLESS OTHERWISE STATED
3. * VOLTAGES VARY WITH CONTROL SETTING
4. D.C. VOLTAGES MEASURED WITH ANTENNA LEADS SHORTED (V.T.V.M.)
5. NOS. IN PARENTHESES REFER TO PARTS LIST
P.M. SPKR.
90V* VARIES WITH CONTRAST
4.5 MC TRAP
6CB6 3RD I.F.
12BY7 VIDEO OUTPUT
T.P. #2
T.P. #3
PIX CONTROL
BRILL. CONTROL
17BP4A 21ZP4A PICTURE TUBE
FOCUS
12BH7 VERT. OSC.
12AU7
VERT. HOLD
VERT. LIN.
VERT HEIGHT
1B3 HI-VOLT
6W4 DAMPER
LINEARITY
YOKE
HORIZONTAL 14Ω
VERTICAL 64Ω
320V B+
350V B+
140V B+

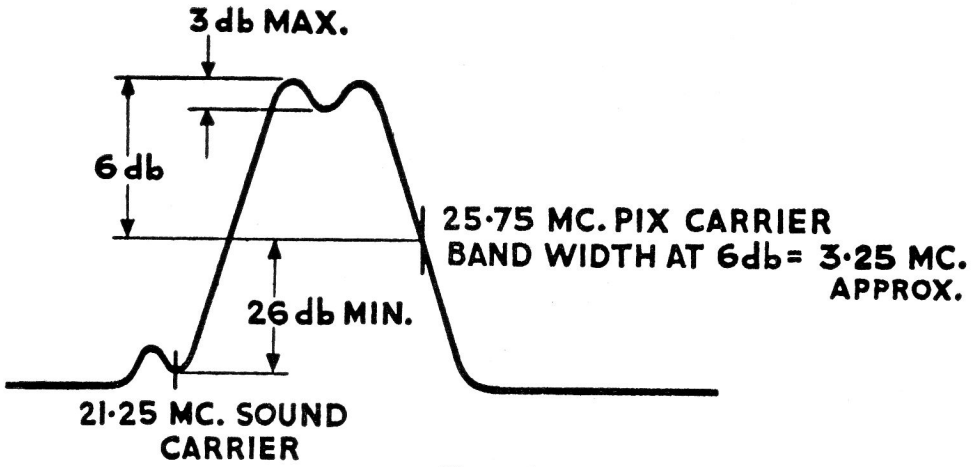


Figure 5

SOUND ALIGNMENT

1. Connect Output meter across voice coil.
2. Adjust channel selector for Test pattern signal.
3. Turn Contrast control on full.
4. Tune quadrature coil and sound takeoff coil for maximum indication on output meter. (Two peaks are possible during adjustment of quadrature coil. Proper adjustment is with slug farthest in transformer).
5. Adjust buzz control for cleanest sound and least buzz.

If Test pattern signal is not available adjust sound by ear.

R.F. AND MIXER ALIGNMENT

The alignment of the R.F. and mixer circuits is only possible if a sweep generator and oscilloscope are available. Normally these circuits do not require alignment and should be left alone.

1. Set channel selector switch to channel 12.
2. Connect oscilloscope through 10,000 ohms to test point 3 (wire loop on top of tuner) and ground.
3. Connect bias battery (1.5 or 3 volts) to test point 1 and ground. (Negative terminal to test point, positive to ground).
4. Set fine tuning control at approximately midpoint of its range.
5. Feed sweep generator into antenna terminals, sweeping channel 12. Use pad illustrated in Fig 3 if necessary.
6. Adjust (A), (B), and (C) on tuner for the response curve shown in Fig. 6.
7. Check all channels. Markers should automatically fall in on the peaks shown.

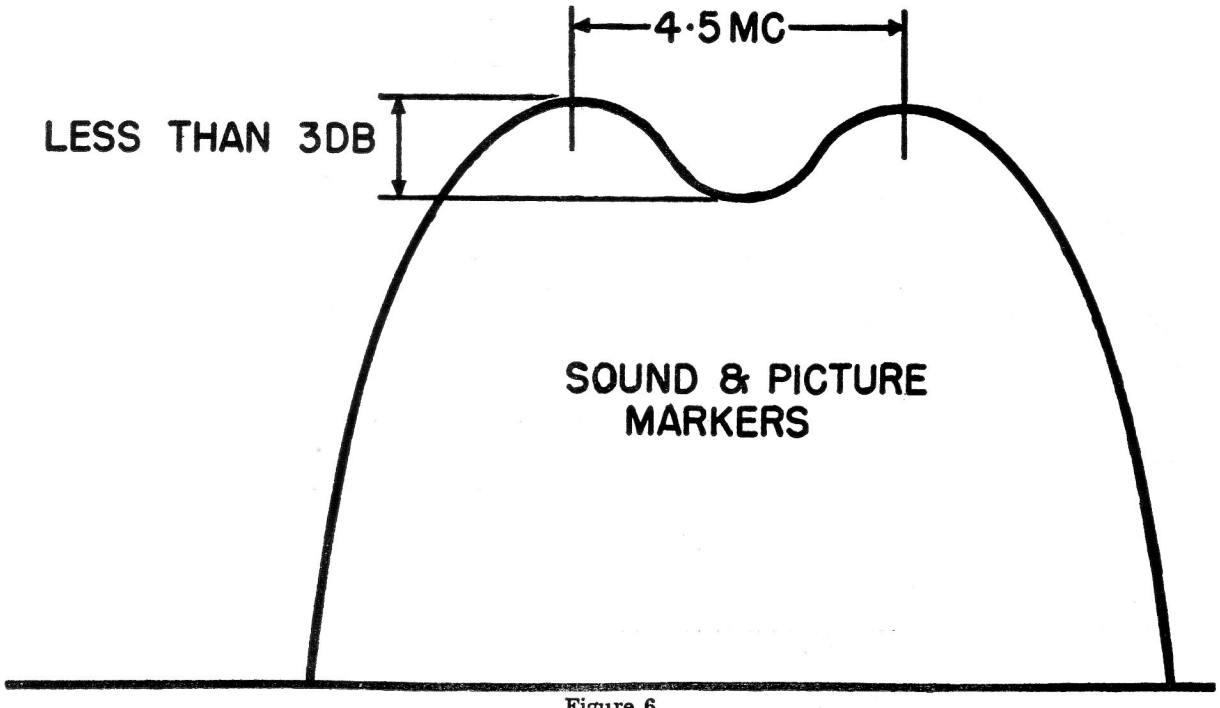


Figure 6

ION TRAP ADJUSTMENT:

With Contrast control at maximum, adjust Ion trap by rotating and moving it forward and backward until maximum brightness is obtained.
Caution: Never adjust Ion trap to remove neck shadows as this may injure picture tube.

FOCALIZER ADJUSTMENTS:

The Focalizer unit should be located centrally around picture tube and within ¼" of the deflection yoke.

Centering of picture is done by adjusting the centering ring.

Focusing the picture is accomplished by adjustment of the large screw located on back of Focalizer unit.

BRILLIANCE ADJUSTMENT:

Turn contrast down to minimum and adjust brilliance control until blanking traces are eliminated.

CHASSIS SERVICE PARTS

NOVEMBER 5, 1953

Ref. No.	Part No.	Description
1	12-19	A.C. Receptacle
	12-21	Tube Socket. Miniture. 7 pin
	12-26	Tube Socket. Octal
	12-28	Tube Socket. Miniture. 9 pin
	12-50	Socket (Yoke Leads) 21"
	12-51	Socket (Yoke Leads) 21"
	12-61	Socket Pic. Tube 17"
	12-62	Socket Pic. Tube 21"
	12-63	Fuse Holder
	12-64	Socket. Moulded Mica
2	13-18B	Speaker Connector
3	13-26	Terminal Strip — Antenna
	13-34	Terminal Strip — 3 lug.
	13-40	Terminal Strip — 7 lug.
	13-41	Terminal Strip — 4 lug.
	13-42	Terminal Strip — 6 lug.
	13-43	Terminal Strip — 5 lug.
	13-44	Terminal Strip — 2 lug.
	13-46	Terminal Strip
4	23-21	Filter Choke
5	23-28	Tranformer — Audio O.P.
6	23-33-1	Transformer — Vert. O.P.
7	23-36A	Transformer — Power 25 cy.
7	23-36B	Transformer — Power 60 cy.
8	23-43	Transformer — Horiz. O.P. Hi-Volt
9	27-20	Control — Vert. Height. 3 Meg. ¼ Watt
10	27-27	Control — Vert. Hold. 2 Meg. ¼ Watt
11	27-28	Control — Brilliance. 600 K. OHM ¼ Watt
12	27-28	Control — Vert. Line. 600 K. OHM ¼ Watt
13	27-54	Control — Dual. on-off-vol. Picture
14	27-55	Control — Buzz 500 OHM.
15	29-24	Coil Assy. Horiz. Osc.
16	29-37	Coil — 1st I.F.
17	29-38	Coil — 2nd I.F.
18	29-39	Coil — 3rd I.F.
19	29-43	Focalizer Unit 17"
20	29-44	Deflection Yoke 17"
21	29-54	Deflection Yoke 21"
22	29-57	Coil — Wave Trap
23	29-58	Coil — Stabilizer
24	29-60	Coil — Shunt Input Peaking
25	29-62	Coil — Shunt Output Peaking
26	29-63	Coil — Series Output Peaking
27	29-64	Coil — Linearity
28	29-69	Coil — Quadrature
29	29-70	Coil — Sound Take Off
30	29-71	Coil — Series Input Peaking
31	29-72	Focalizer Unit 21"
32	32-13	Fuse — 3 AG. 3 AMP. 25 cy.
33	40-93	Hi-Volt Box Cover Assy.
	40-212	Hi-Volt Stand-Off Assy.
	40-213	Hi-Volt Socket Assy.
34	40-268	Cascode Tuner
	47-22	Grounding Spring
	87-22	Anode Connector Assy.
	88-12	Ion Trap
35	93-48	Germanium Diode (1 N 64)

RESISTORS

36	14-22	220,000 Ohms.	1 Watt	5%	Tol.
37	14-23	180,000 Ohms.	1 Watt	5%	Tol.
38	14-24	250 Ohms.	10 Watt	10%	Tol.
39	14-25	100 Ohms.	10 Watt	10%	Tol.
40	14C-1012	100 Ohms.	½ Watt	20%	Tol.
41	14C-1022	1,000 Ohms.	½ Watt	20%	Tol.
42	14C-1031	10,000 Ohms.	½ Watt	10%	Tol.
43	14C-1041	100,000 Ohms.	½ Watt	10%	Tol.
44	14C-1051	1 Meg. Ohms.	½ Watt	10%	Tol.
45	14C-1052	1 Meg. Ohms.	½ Watt	20%	Tol.
46	14C-1062	10 Meg. Ohms.	½ Watt	20%	Tol.
47	14C-1231	12,000 Ohms.	½ Watt	10%	Tol.
48	14C-1511	150 Ohms.	½ Watt	10%	Tol.
49	14C-1531	15,000 Ohms.	½ Watt	10%	Tol.
50	14C-1541	150,000 Ohms.	½ Watt	10%	Tol.
51	14C-1551	1.5 Meg. Ohms.	½ Watt	10%	Tol.
52	14C-1811	180 Ohms.	½ Watt	10%	Tol.
53	14C-1841	180,000 Ohms.	½ Watt	10%	Tol.
54	14C-2211	220 Ohms.	½ Watt	20%	Tol.
55	14C-2242	220,000 Ohms.	½ Watt	20%	Tol.
56	14C-2252	2.2 Meg. Ohms.	½ Watt	20%	Tol.
57	14C-3321	3,300 Ohms.	½ Watt	10%	Tol.
58	14C-3331	33,000 Ohms.	½ Watt	10%	Tol.
59	14C-3342	330,000 Ohms.	½ Watt	20%	Tol.
60	14C-4721	4,700 Ohms.	½ Watt	10%	Tol.
61	14C-4731	47,000 Ohms.	½ Watt	10%	Tol.
62	14C-4742	470,000 Ohms.	½ Watt	20%	Tol.
63	14C-6821	6,800 Ohms.	½ Watt	10%	Tol.
64	14C-6831	68,000 Ohms.	½ Watt	10%	Tol.
65	14C-8221	8,200 Ohms.	½ Watt	10%	Tol.
66	14D-1021	1,000 Ohms.	1 Watt	10%	Tol.
67	14D-1221	1,200 Ohms.	1 Watt	10%	Tol.
68	14D-1831	18,000 Ohms.	1 Watt	10%	Tol.
69	14D-1841	180,000 Ohms.	1 Watt	10%	Tol.
70	14D-2731	27,000 Ohms.	1 Watt	10%	Tol.
71	14D-2741	270,000 Ohms.	1 Watt	10%	Tol.
72	14D-3931	39,000 Ohms.	1 Watt	10%	Tol.
73	14D-4731	47,000 Ohms.	1 Watt	10%	Tol.
74	14D-4742	470,000 Ohms.	1 Watt	20%	Tol.
75	14D-6822	6,800 Ohms.	1 Watt	20%	Tol.
76	14E-1831	18,000 Ohms.	2 Watt	10%	Tol.
77	14E-2231	22,000 Ohms.	2 Watt	10%	Tol.
78	14E-3321	3,300 Ohms.	2 Watt	10%	Tol.
79	14E-4721	4,700 Ohms.	2 Watt	10%	Tol.
80	14E-4732	47,000 Ohms.	2 Watt	10%	Tol.
81	14E-5621	5,600 Ohms.	2 Watt	10%	Tol.
82	14E-6801	68 Ohms.	2 Watt	10%	Tol.
83	14E-8231	82,000 Ohms.	2 Watt	10%	Tol.
84	14G-6801	68 Ohms.	½ Watt	10%	Tol.
85	14H-1511	150 Ohms.	1 Watt	10%	Tol.
86	14-21	2.2 Ohms.	½ Watt	10%	Tol.

CONDENSERS

Ref. No.	Part No.	Description
87	16-3	Mica Cond. 180 MMfd. 500V. 5%
88	16-5	Mica Cond. 1350 MMfd. 500V. 5%
89	16-12	Mica Cond. 15 MMfd. 500V. 10%
90	16-13	Mica Cond. 50 MMfd. 500V. 10%
91	16-14	Mica Cond. 10 MMfd. 500V. 10%
92	16-17	Mica Cond. 27 MMfd. 500V. 10%
93	16-18	Mica Cond. 500 MMfd. 500V. 10%
94	18-23	Tubular Cond. 10 Mfd. 200 W.V.
95	18-24	Tubular Cond. 10 Mfd. 50 W.V.
96	18-25	Elect. Cond. 100 Mfd. 200V.
		Elect. Cond. 100 Mfd. 200V.
		Elect. Cond. 10 Mfd. 450V.
		Elect. Cond. 10 Mfd. 450V.
97	18-26	Elect. Cond. 40 Mfd. 450V.
		Elect. Cond. 40 Mfd. 450V.
98	18-27	Elect. Cond. 80 Mfd. 450V.
		Elect. Cond. 60 Mfd. 450V.
99	83-6	Tub. Cer. Cond. 1000 MMfd. 500V. 20%
100	83-10	Disc. Cer. Cond. 5000 MMfd. 500V. 20%+20%
101	83-14	Cer. Cond. 3.3 MMfd. 500V. Minus 0%
102	83-26	Ceramic Cond. 500 MMfd. 20,000V.

Ref. No.	Part No.	Description
103	83-27	Disc. Cer. Cond. .01 Mfd. 500V.
104	83-28	Vert. Integrater Plate
105	83-30	Ceramic Cond. 6.8 MMfd. 500V. 10%
106	96A17	Paper Tubular Cond. .5 Mfd. 100V.
107	96B13	Paper Tubular Cond. .1 Mfd. 200V.
108	96B15	Paper Tubular Cond. .2 Mfd. 200V.
109	96B17	Paper Tubular Cond. .5 Mfd. 200V.
110	96B18	Paper Tubular Cond. 1.0 Mfd. 200V.
111	96C7	Paper Tubular Cond. .01 Mfd. 400V.
112	96C9	Paper Tubular Cond. .02 Mfd. 400V.
113	96C12	Paper Tubular Cond. .05 Mfd. 400V.
114	96D1	Paper Tubular Cond. .001 Mfd. 600V.
116	96D3	Paper Tubular Cond. .003 Mfd. 600V.
116	96D4	Paper Tubular Cond. .005 Mfd. 600V.
117	96D5	Paper Tubular Cond. .006 Mfd. 600V.
118	96D10	Paper Tubular Cond. .025 Mfd. 600V.
119	96D11	Paper Tubular Cond. .03 Mfd. 600V.
120	96D12	Paper Tubular Cond. .05 Mfd. 600V.
121	96D13	Paper Tubular Cond. .1 Mfd. 600V.
122	96F1	Paper Tubular Cond. .001 Mfd. 1600V.

ACCESSORIES

Part No.	Description	Model
13-21	Speaker Connector	All
21-81E	T.V. Aerial 16'	273–213–173–113
21-65B	T.V. Aerial 16'	413
24-15	Speaker P.M. 10"	273–213
24-18	Speaker P.M. 6" x 4"	173-113
24-22	Speaker P.M. 9" x 6"	413
30-19A	Addison Decal Gold	413
30-19B	Addison Decal Bronze	413
36-13	Felt Ring	413
36-14	Felt Ring	273–213–173–113
51-39A	Knob, Channel Sel.	413
51-39C	Knob, Channel Sel.	413
51-41	Knob, Picture (Gilt)	413
51-42	Knob, Fine Tuning (Gilt)	413
51-46A	Knob, Radio-Phono-T.V.	413
51-46C	Knob, Radio-Phono-T.V.	413
51-47	Knob, Radio Tuning (Gilt)	413
51-62A	Knob, On-Off-Vol.	413
51-62C	Knob, On-Off-Vol.	413
51-63	Knob, Vertical Hold (Gilt)	413
51-64A	Knob, Horizontal Hold	413
51-64C	Knob, Horizontal Hold	413
51-65	Knob, Channel Selector	273–213–173–113
51-66	Knob, On-Off-Vol.	273–213–173–113
51-68	Knob, Fine Tuning	273–213–173–113
51-70	Knob, Picture Control	273–213–173–113
51-71A	Door Pull (Bronze)	413

Part No.	Description	Model
51-71B	Door Pull (Gold)	413
56-22	Mask 21"	413
56-25	Escutcheon	413
56-27	Addison Nameplate (Gold)	173–273–113–213
56-28	Escutcheon Plate	173X
56-29	Mask 17"	173–273
56-30	Mask 21"	113–213
56-31A	Addison Nameplate Walnut	173
56-31B	Addison Nameplate Mahogany	173
56-31C	Addison Nameplate Ivory	173
58-29	Cabinet Back	173–273
58-32	Cabinet Back	413
58-38	Cabinet Back	113–213
73-14	Cabinet Glass 17"	173–273
73-15	Cabinet Glass 21"	413
73-16	Cabinet Glass 21"	113–213
93-18	Bullet Catch Assy.	413
93-23A	Hinge, Bronze	413
93-23B	Hinge, Brass	413
93-38	Drawer Slide	413
93-42	Trim Strip	113X
93-43	Caster	273–213–413
93-44	Cup Cabt. Back 17"	173–273
93-45	Cup Cabt. Back 21"	113–213–413

Note: For Service Alignment and Parts for the following models, refer to: the 618 and 621 Series Manual.

Model 2763 similar to Model 2782

Model 2163 similar to Model 2182

For Service and Alignment on Model 413 use the 618,621 Schematic.