

Philips Consumer Electronics

Technical Service Data

Service and Quality
Service Publications Dept.
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Manual 7553

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Parts List

REFER TO SAFETY GUIDELINES

SAFETY NOTICE: ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING

CRT's

A	13" CRT 370KSB22			
B	13" CRT 370KSB22			
C	13" CRT A34JLL40X69.	4835	131	27113
D	13" CRT A34JLL40X69.	4835	310	57301
E	13" CRT A34EEC36X101	4835	310	57302
F	19" CRT A48JLL40X40.	4835	131	27103
G	19" CRT A48ACB02X.	4835	131	27109
H	19" CRT A48AFN36X.	4835	131	27128
I	19" CRT A48AFN86X.	4835	131	27143
J	19" CRT A48K2L70X.	4835	131	27141
K	19" CRT A48KRD89X.	4835	131	27139
L	19" CRT A48AFN36X.	4835	131	27142
M	19" CRT A48AFN86X.	4835	131	27143
N	20" CRT A51AFJ32X.	4835	131	27055
O	20" CRT A51JAR76X.	4835	131	27116
P	20" CRT A51JAR70X.	4835	131	27121
Q	20" CRT A51JAR72X.	4835	131	27132
R	20" CRT A51K2R50X.	4835	131	27129
S	25" CRT A63AFW36X.	4835	131	27127
T	25" CRT A63AFW35X.	4835	131	27126
U	25" CRT A63AFW86X.	4835	131	27131
V	27" CRT A68AGN32X.	4835	131	27123
W	27" CRT A68AGN82X.	4835	131	27138
X	27" CRT A68KRQ88X.	4835	131	27119

X6 MAIN CHASSIS

CAPACITORS				
C206	0.01uF., 10%, 50V, Ceramic	4835	122	47098
C208	4.7uF., 50V, Electrolytic.	4835	124	47506
C209	100pF., 10%, 50V, Ceramic, Tubular	4835	122	17032
C210	270pF., 10%, 50V, Ceramic.	4835	122	47008
C211	0.047uF., +80-20%, 50V, Ceramic.	4835	122	47083
C214	680pF., 10%, 50V, Ceramic.	4835	122	47187
C215	0.047uF., +80-20%, 50V, Ceramic.	4835	122	47083
C217	1000pF., 10%, 50V, Ceramic	4835	122	47004
C222	47pF., 5%, 50V, Ceramic (Stereo Models)	4835	122	47051
C222	5600pF., 10%, 50V, Ceramic (Mono Models)	4835	122	47011
C223	1uF., 50V, Electrolytic.	4835	121	47406
C231	2200uF., 16V, Electrolytic	4835	124	47585
C232	10uF., 50V, Electrolytic	4835	124	47499
C234	6800pF., 10%, 25V, Ceramic, Tubular (Mono Models)	4835	122	17023
C235	0.12uF., 10%, 63V, Polyester	4835	121	47149
C238	0.12uF., 10%, 63V, Polyester (Stereo Models)	4835	121	47149
C239	1000uF., 16V, Electrolytic (Stereo Models)	4835	124	47497
C242	10uF., 50V, Electrolytic (Stereo Models)	4835	124	47499
C246	2.2uF., 50V, Electrolytic.	4835	124	47502
C250	4700pF., 10%, 50V, Ceramic	4835	122	47104
C251	0.1uF., 10%, 100V, Polyester	4822	121	41608
C252	0.1uF., 10%, 100V, Polyester	4822	121	41608
C253	0.022uF., +80-20%, 50V, Ceramic.	4835	122	47013
C254	0.47uF., 50V, Electrolytic	4835	124	47508
C255	10uF., 50V, Electrolytic	4835	124	47499
C256	1uF., 50V, Electrolytic.	4835	121	47406
C257	4700pF., 10%, 50V, Ceramic	4835	122	47104
C258	0.1uF., 10%, 100V, Polyester	4822	121	41608
C262	2.2uF., 50V, Electrolytic (Stereo Model s).	4835	124	47502
C266	2.2uF., 50V, Electrolytic (Stereo Model s).	4835	124	47502
C268	4.7uF., 50V, Electrolytic (Stereo Model s).	4835	124	47506
C270	4.7uF., 50V, Electrolytic (Stereo Model s).	4835	124	47506
C271	0.22uF., 10%, 63V, Polyester (Stereo Models)	4835	121	47002
C272	.47uF., 10%, 63V, Polyethylene (Stereo Models).	4822	121	41757
C273	0.22uF., 10%, 63V, Polyester (Stereo Models)	4835	121	47002
C275	1uF., 50V, Electrolytic (Mono Models).	4835	121	47406
C278	0.047uF., +80-20%, 50V, Ceramic.	4835	122	47083
C279	4.7uF., 50V, Electrolytic (Stereo Model s).	4835	124	47506
C280	10uF., 50V, Electrolytic (Stereo Models)	4835	124	47499
C281	10uF., 50V, Electrolytic (Stereo Models)	4835	124	47499
C282	100uF., 10V, Electrolytic (Stereo Model s).	4835	124	47532
C283	4.7uF., 50V, Electrolytic (Stereo Model s).	4835	124	47506
C284	0.1uF., 10%, 100V, Polyester (Stereo Models)	4822	121	41608
C285	10uF., 50V, Electrolytic (Stereo Models)	4835	124	47499
C286	0.047uF., 10%, 100V, Polyester	4835	121	47005
C287	1uF., 50V, Electrolytic (Stereo Models)	4835	121	47406
C288	1uF., 50V, Electrolytic (Stereo Models)	4835	121	47406
C289	10uF., 50V, Electrolytic (Stereo Models)	4835	124	47095
C290	10uF., 50V, Electrolytic (Stereo Models)	4835	124	47095
C291	1000pF., 10%, 50V, Ceramic (Stereo Models)	4835	122	47004

S = Safety Part Be sure to use exact replacement part.

C293	2.2uF., 50V, Electrolytic (Stereo Model s).	4835	124	47502
C294	10uF., 50V, Electrolytic (Stereo Models)	4835	124	47499
C295	4.7uF., 50V, Electrolytic (Stereo Model s).	4835	124	47506
C298	2.2uF., 50V, Electrolytic (Stereo Model s).	4835	124	47502
C306	1000pF., 10%, 50V, Ceramic	4835	122	47004
C307	0.047uF., +80-20%, 50V, Ceramic.	4835	122	47083
C310	100pF., 10%, 50V, Ceramic.	4835	122	47045
C311	100pF., 10%, 50V, Ceramic.	4835	122	47045
C312	1000pF., 10%, 50V, Ceramic	4835	122	47004
C314	0.022uF., +80-20%, 50V, Ceramic.	4835	122	47013
C315	0.022uF., +80-20%, 50V, Ceramic.	4835	122	47013
C320	47pF., 5%, 50V, Cer(13", 19 Models W/Clock)	4835	122	47051
C322	47pF., 5%, 50V, Ceramic(13", 19 Models" W/Clock).	4835	122	47051
C323	100pF., 10%, 50V, Ceramic, Tubular	4835	122	17032
C330	1uF., 50V, Electrolytic (Mono Models).	4835	121	47406
C334	1uF., 50V, Electrolytic (Mono Models).	4835	121	47406
C340	100pF., 10%, 50V, Ceramic, Tubular	4835	122	17032
C341	100pF., 10%, 50V, Ceramic, Tubular	4835	122	17032
C342	100pF., 10%, 50V, Ceramic, Tubular	4835	122	17032
C343	100pF., 10%, 50V, Ceramic, Tubular	4835	122	17032
C344	0.01uF., 10%, 25V, Ceramic, Tubular.	4835	122	17026
C345	0.01uF., 10%, 25V, Ceramic, Tubular.	4835	122	17026
C346	0.01uF., 10%, 25V, Ceramic, Tubular.	4835	122	17026
C347	.01 uF., 10%, 25V, Ceramic, Tubular.	4835	122	17026
C348	.01 uF., 10%, 25V, Ceramic, Tubular.	4835	122	17026
C349	.01 uF., 10%, 25V, Ceramic, Tubular.	4835	122	17026
C350	47uF., 16V, Electrolytic	4835	124	47567
C355	2.2uF., 50V, Electrolytic.	4835	124	47502
C357	39pF., 5%, 50V, Ceramic.	4835	122	47021
C358	27pF., 5%, 50V, Ceramic.	4835	122	47018
C360	470uF., 16V, Electrolytic.	4835	121	47387
C361	22uF., 50V, Electrolytic	4835	124	47503
C362	1000pF., 10%, 50V, Ceramic	4835	122	47004
C365	100uF., 10V, Electrolytic.	4835	124	47532
C370	0.01 uF., 10%, 50V, Ceramic.	4835	122	47098
C371	100uF., 25V, Electrolytic.	4835	124	47501
C377	1000pF., 10%, 50V, Ceramic	4835	122	47004
C379	2.2uF., 50V, Electrolytic.	4835	124	47502
C382	220pF., 10%, 50V, Ceramic.	4835	122	47006
C383	1uF., 50V, Electrolytic.	4835	121	47406
C385	470pF., 10%, 50V, Ceramic	4835	122	47009
S C400	0.22uF., 20%, 250Vac, Metal Film(Canada Only)	4835	122	97047
C401	1000pF., 10%, 500V, Ceramic(Not Canada Models)	4835	122	47384
C402	1000pF., 10%, 500V, Ceramic(Not Canada Models)	4835	122	47384
C403	1000pF., 10%, 500V, Ceramic(Not Canada Models)	4835	122	47384
C404	1000pF., 10%, 500V, Ceramic(Not Canada Models)	4835	122	47384
S C405	680uF., 200V, Electrolytic(25", 27" Model s).	4835	124	47064
S C405	470uF., 200V, Electrolytic(19" Models)	4835	124	47097
S C405	330uF., 200V, Electrolytic(13" Models)	4835	124	47297
C406	100uF., 10V, Electrolytic.	4835	124	47532
S C407	0.33uF., 20%, 250Vac, Metal Film(Not Canada)	4835	121	47463
C408	1000pF., 10%, 500V, Ceramic.	4835	122	47384
C413	47uF., 16V, Electrolytic	4835	124	47567
C415	100uF., 10V, Electrolytic.	4835	124	47532
C417	1000pF., 10%, 500V, Ceramic.	4835	122	47384
C419	2200uF., 16V, Electrolytic	4835	124	47585
C421	0.015uF., 10%, 400V, Polyester(Canada Only)	4835	121	47203
C422	0.015uF., 10%, 400V, Polyester(Canada Only)	4835	121	47203
C423	0.015uF., 10%, 400V, Polyester(Canada Only)	4835	121	47203
C424	0.015uF., 10%, 400V, Polyester(Canada Only)	4835	121	47203
C431	1uF., 250V, Electrolytic	4835	124	47121
C432	100uF., 200V, Electrolytic	4835	124	47255
C433	1000pF., 10%, 500V, Ceramic.	4835	122	47384
C445	1000pF., 10%, 500V, Ceramic.	4835	122	47384
C447	1000uF., 35V, Electrolytic	4835	124	47498
C460	1000pF., 10%, 500V, Ceramic.	4835	122	47384
C461	1uF., 20V, Electrolytic.	4835	124	47121
C463	.1uF., 10%, 250V, Polyester.	4835	121	47278
C464	330uF., 10V, Electrolytic.	4835	124	47603
C465	.33uF., 63V, Polyester	4835	121	47117
C466	1000pF., 10%, 50V, Ceramic	4835	122	47004
C470	47uF., 16V, Electrolytic	4835	124	47567
C475	1000pF., 10%, 500V, Ceramic.	4835	122	47384
C500	.01uF., 10%, 50V, Ceramic.	4835	122	47098
C502	470pF., 10%, 500V, Ceramic	4835	122	47211
C503	1000pF., 10%, 500V, Ceramic.	4835	122	47384
C504	.1uF., 10%, 250V, Polyester.	4835	121	47278

S C505	4700pF., 5%, 1500V, Polypro(19" Using T 502)	4835 121 47026	R252	1 Meg, 5%, 1/4W, Metal Film	4835 116 57322
S C505	3900pF., 5%, 1500, Polypro(13" +19" Using T501)	4835 121 47242	R254	1 0k, 5%, 1/4W, Metal Film.	4835 116 57321
S C505	9100pF., 5%, 1500V, Polypro(25", 27" Models)	4835 121 47197	R255	1 00 ohm, 5%, 1/4W, Metal Film.	4835 116 57318
S C505	5600pF., 5%, 1500V, Poly(19" using CRT's F, J, G & K)	4835 121 47101	R256	16k, 5%, 1/4W, Metal Film.	4835 116 57492
S C506	270pF., 10%, 2kV, Ceramic(19" Mdls using CRT J)	4835 122 47075	R264	51k, 5%, 1/4W, Metal Film.	4835 116 57499
S C506	330pF., 2kV, 20%, Cer(13"+19" using CRT G)	4835 122 47058	R273	2.2k, 5%, 1/4W, Metal Film (Stereo Models)	4835 116 57411
S C506	820pF., 10%, 2kV, Cer(19" using H, I, K, L & M)	4835 122 57004	S R282	56 ohm, 5%, 2W, Metal Film (Stereo Models)	4835 116 67187
S C506	560pF., 10%, 2kV, Ceramic (19" Mdls using T501)	4835 122 57007	R286	160 ohm, 2%, 1/8W, Carbon Film (Stereo Models)	4835 110 67219
S C506	680pF., 10%, 2kV, Ceramic (25", 27" Models)	4835 122 47037	R287	8.2k, 2%, 1/8W, Carbon Film (Stereo Models)	4835 110 67232
C507	0.33uF., 200V, Polypropylene (19" using CRT J)	4835 121 47555	R301	15k, 5%, 1/4W, Metal Film.	4835 116 57402
C507	0.47uF., 5%, 200V, Poly(25" & 19" using CRT K)	4835 121 47256	R302	75k, 5%, 1/4W, Metal Film.	4835 116 57479
C507	0.43uF., 5%, 200V, Polypropylene (27" Models)	4835 121 47047	R303	10k, 5%, 1/4W, Metal Film.	4835 116 57321
C507	0.51uF., 5%, 200V, Polypro(19" using CRT's F & G)	4835 121 47046	R304	5.6k, 5%, 1/4W, Metal Film.	4835 116 57434
C507	0.36uF., 5%, 200V, Polypro(13"+19"CRT's H, I, J, L&M)	4835 121 47126	S R305	10 ohm, 5%, 1/4W, Metal Film.	4835 116 57362
C511	39pF., 5%, 1kV, Ceramic.	4835 122 47224	R306	43k, 5%, 1/4W, Metal Film.	4835 116 57531
C512	10uF., 50V, Electrolytic.	4835 124 47499	R307	3.3k, 5%, 1/4W, Metal Film.	4835 116 57422
S C529	10uF., 50V, Electrolytic.	4835 124 47499	R308	1k, 5%, 1/4W, Metal Film.	4835 116 57319
C530	10uF., 50V, Electrolytic.	4835 124 47499	R309	10k, 1%, 1/8W, Metal Film.	4835 116 57481
C548	0.01uF., 5%, 50V, Polyester.	4835 121 47461	R310	2.2k, 5%, 1/4W, Metal Film.	4835 116 57411
C549	1uF., 10%, 63V, Polyester.	4835 121 47427	R311	330 ohm, 5%, 1/4W, Metal Film.	4835 116 57421
C550	100uF., 35V, Electrolytic.	4835 124 47584	R312	330 ohm, 5%, 1/4W, Metal Film.	4835 116 57421
C552	0.12uF., 10%, 63V, Polyester.	4835 121 47149	R314	0 ohm, 1/8W, Jumper, Carbon Film . . .	4835 110 67173
C553	4.7pF., 10%, 500V, Ceramic.	4835 122 47452	R318	330 ohm, 5%, 1/4W, Metal Film.	4835 116 57421
C554	470uF., 16V, Electrolytic.	4835 121 47387	R319	4.7k, 5%, 1/4W, Metal Film.	4835 116 57427
C556	22uF., 50V, Electrolytic, (13", 19" Models)	4835 124 47505	R320	330 ohm, 5%, 1/4W, Metal Film.	4835 116 57421
C556	33uF., 50V, (25", 27" Models).	4835 124 47505	R323	10k, 5%, 1/4W, Metal Film.	4835 116 57321
C558	1000uF., 25V, Electrolytic.	4835 124 47583	R324	100k, 5%, 1/4W, Metal Film (Not in 13" Models)	4835 116 57395
C563	0.12uF., 10%, 63V, Polyester.	4835 121 47149	R324	47k, 5%, 1/4W, Metal Film (13" Models)	4835 116 57428
C616	4.7uF., 50V, Electrolytic.	4835 124 47506	R325	2.2k, 5%, 1/4W, Metal Film.	4835 116 57411
C617	2.2uF., 50V, Electrolytic.	4835 124 47502	R328	22k, 5%, 1/4W, Metal Film.	4835 116 57412
C618	4.7uF., 50V, Electrolytic.	4835 124 47506	R330	4.7k, 5%, 1/4W, Metal Film.	4835 116 57427
C620	100pF., 10%, 50V, Ceramic.	4835 122 47045	R331	16k, 5%, 1/4W, Metal Film (Mono Models)	4835 116 57492
C621	2.2uF., 50V, Electrolytic.	4835 124 47502	R332	100k, 5%, 1/4W, Metal Film (Mono Models)	4835 116 57395
C633	270pF., 10%, 50V, Ceramic.	4835 122 47008	R333	220k, 5%, 1/4W, Metal Film.	4835 116 57325
C634	270pF., 10%, 50V, Ceramic.	4835 122 47008	R334	82k, 5%, 1/4W, Metal Film (Mono Models)	4835 116 57506
C635	270pF., 10%, 50V, Ceramic.	4835 122 47008	R335	120k, 5%, 1/4W, Metal Film.	4835 116 57398
C661	0.22uF., 50V, Electrolytic.	4835 124 47565	R336	100k, 5%, 1/4W, Metal Film (13", 19" Models)	4835 116 57395
C663	0.033uF., 10%, 400V, Polyester.	4835 121 47035	R342	120k, 5%, 1/4W, Metal Film.	4835 116 57398
C668	2.2uF., 50V, Electrolytic.	4835 124 47502	R343	10k, 5%, 1/4W, Metal Film.	4835 116 57321
C672	0.01uF., 10%, 50V, Ceramic.	4835 122 47098	R344	100k, 5%, 1/4W, Metal Film.	4835 116 57395
C674	0.01uF., 10%, 50V, Ceramic.	4835 122 47098	R347	16k, 5%, 1/4W, Metal Film (Mono Models)	4835 116 57492
C675	0.01uF., 10%, 50V, Ceramic.	4835 122 47098	R348	1k, 5%, 1/4W, Metal Film.	4835 116 57319
C682	0.1uF., 50V, Electrolytic.	4835 124 47595	R349	10k, 5%, 1/4W, Metal Film.	4835 116 57321
R203	10k, 5%, 1/4W, Metal Film.	4835 116 57321	S R350	47 ohm, 5%, 1/3W, Metal Film.	4835 116 57069
R204	16k, 5%, 1/4W, Metal Film (19" Models)	4835 116 57492	R351	27k, 5%, 1/4W, Metal Film.	4835 116 57416
R204	10k, 5%, 1/4W, Metal Film (25", 27" Models)	4835 116 57321	R352	22k, 5%, 1/4W, Metal Film.	4835 116 57412
R204	18k, 5%, 1/4W, Metal Film (13" Models)	4835 116 57323	R353	22k, 5%, 1/4W, Metal Film.	4835 116 57412
R206	50k, Control Adj. RF AGC	4835 100 17064	R354	22k, 5%, 1/4W, Metal Film.	4835 116 57412
R209	430 ohm, 5%, 1/4W, Metal Film.	4835 116 57496	R355	33k, 5%, 1/4W, Metal Film.	4835 116 57423
R212	120 ohm, 5%, 1/4W, Metal Film.	4835 116 57489	R356	22k, 5%, 1/4W, Metal Film.	4835 116 57412
R213	1.2k, 5%, 1/4W, Metal Film.	4835 116 57396	R357	22k, 5%, 1/4W, Metal Film (Mono Models)	4835 116 57412
R214	150 ohm, 5%, 1/4W, Metal Film.	4835 116 57399	R358	22k, 5%, 1/4W, Metal Film.	4835 116 57412
R216	150 ohm, 5%, 1/4W, Metal Film.	4835 116 57399	S R359	33 ohm, 5%, 1/3W, Metal Film.	4835 116 57159
R217	220 ohm, 5%, 1/4W, Metal Film.	4835 116 57324	R360	15k, 5%, 1/2W, Metal Film.	4835 116 57275
R218	1 @8k, 5%, 1/4W, Metal Film.	4835 116 57406	R361	15k, 5%, 1/2W, Metal Film.	4835 116 57275
R219	20k, 5%, 1/4W, Metal Film.	4835 116 57468	R362	10k, 5%, 1/4W, Metal Film.	4835 116 57321
R222	12k, 5%, 1/4W, Metal Film.	4835 116 57397	R363	10k, 5%, 1/4W, Metal Film.	4835 116 57321
R224	10k, 5%, 1/4W, Metal Film.	4835 116 57321	R364	10k, 5%, 1/4W, Metal Film.	4835 116 57321
R230	20k, 5%, 1/4W, Metal Film (Stereo Models)	4835 116 57468	R365	10k, 5%, 1/4W, Metal Film.	4835 116 57321
R230	18k, 5%, 1/4W, Metal Film (Mono Models)	4835 116 57323	R366	22k, 5%, 1/4W, Metal Film.	4835 116 57412
S R231	27 ohm, 5%, 3W, Metal Film (Mono Models)	4835 116 67159	R367	3.3k, 5%, 1/4W, Metal Film.	4835 116 57422
S R231	6.8 ohm, 5%, 3W, Metal Film (Stereo Models)	4835 116 67088	R368	3.3k, 5%, 1/4W, Metal Film.	4835 116 57422
R232	4.7k, 5%, 1/4W, Metal Film.	4835 116 57427	R371	3.3k, 5%, 1/4W, Metal Film.	4835 116 57422
R233	1.5k, 5%, 1/4W, Metal Film (Stereo Models)	4835 116 57401	R372	3.3k, 5%, 1/4W, Metal Film.	4835 116 57422
R233	4.7k, 5%, 1/4W, Metal Film (Mono Models)	4835 116 57427	R373	3.3k, 5%, 1/4W, Metal Film.	4835 116 57422
S R239	5.6 ohm, 5%, 3W, Metal Film (Stereo Models)	4835 116 67191	R374	3.3k, 5%, 1/4W, Metal Film.	4835 116 57422
R241	20k, 5%, 1/4W, Metal Film.	4835 116 57468	R375	3.3k, 5%, 1/4W, Metal Film.	4835 116 57422
R242	1.5k, 5%, 1/4W, Metal Film.	4835 116 57401	R376	1 Meg, 5%, 1/4W, Metal Film.	4835 116 57322
R243	4.7k, 5%, 1/4W, Metal Film.	4835 116 57427	R379	10k, 5%, 1/4W, Metal Film.	4835 116 57321
R246	470k, 5%, 1/4W, Metal Film.	4835 116 57498	R380	100k, 5%, 1/4W, Metal Film.	4835 116 57395
R250	100k, 5%, 1/4W, Metal Film.	4835 116 57395	R381	100k, 5%, 1/4W, Metal Film.	4835 116 57395
R251	390 ohm, 5%, 1/4W, Metal Film.	4835 116 57424	R382	1.8 Meg, 5%, 1/4W, Metal Film.	4835 116 57605
			R383	220 ohm, 5%, 1/4W, Metal Film.	4835 116 57324
			R384	1k, 5%, 1/4W, Metal Film.	4835 116 57319
			S R400	Thermistor, FTC (13", 19", 25" Models)	4835 116 47001
			S R401	4.7 Meg, 5%, 1/2W, Metal Film.	4835 116 57009
			R402	27k, 5%, 1/2W, Carbon Film.	4835 110 47136
			S R403	1.5 ohm, 10%, 10W, Wire Wound.	4835 112 37024
			R404	1k, 5%, 1/4W, Metal Film.	4835 116 57319
			R405	220k, 5%, 1/2W, Metal Film.	4835 116 57018
			R406	47k, 5%, 1/2W, Carbon Film.	4835 110 47042
			R408	100 ohm, 5%, 1/4W, Metal Film.	4835 116 57318
			R409	120k, 5%, 1/4W, Metal Film.	4835 116 57398
			S R410	Thermistor, Degauss (27" Model).	4835 116 57193
			S R411	100 ohm, 5%, 1/3W, Metal Film.	4835 116 87002
			R413	5.6k, 5%, 1/4W, Metal Film.	4835 116 57434

S = Safety Part Be sure to use exact replacement part.

R415	270 ohm, 5%, 1/4W, Metal Film.	4835 116 57414	S R533	0.36 ohm, 1%, 1/4W, Metal Film (13" Mod	4835 116 57555
R416	100 ohm, 5%, 1/4W, Metal Film.	4835 116 57318		els).	4835 116 57553
S R417	6.8 ohm, 5%, 1/4W, Metal Film.	4835 116 57559	S R534	3k, 1%, 1/4W, Metal Film.	4835 116 57553
R418	100k, 5%, 1/4W, Metal Film.	4835 116 57395	S R536	10k, 5%, 1/4W, Metal Film (13", 19" Mod	4835 116 57321
S R419	1 ohm, 5%, 1/3W, Metal Film.	4822 111 30483		els).	4835 116 57319
S R420	0.51 ohm, 5%, 1/2W, Metal Film.	4835 116 67001	R537	1k, 5%, 1/4W, Metal Film.	4835 116 57427
S R421	1 ohm, 5%, 1/3W, Metal Film (Stereo Mod		R538	4.7k, 5%, 1/4W, Metal Film.	4835 116 57471
	els).	4822 111 30483	R539	24k, 5%, 1/4W, Metal Film (13" Models)	4835 116 57425
R422	4.7k, 5%, 1/2W, Carbon Film.	4835 110 47052	S R540	3.9k, 5%, 1/4W, Metal Film (13", 19" Mo	4835 116 57322
R423	4.7k, 5%, 1/2W, Carbon Film.	4835 110 47052		dels).	4835 116 57604
R424	220k, 5%, 1/2W, Metal Film.	4835 116 57018	R543	1 Meg, 5%, 1/4W, Metal Film (25", 27" M	4835 116 57428
R431	47 ohm, 5%, 1/2W, Carbon Film.	4835 110 47041		odels).	4835 116 57428
R432	1k, 5%, 1/2W, Metal Film.	4835 116 57582	R543	1.3 Meg, 5%, 1/4W, Metal Film (13", 19"	4835 116 57428
R436	470k, 5%, 1/4W, Metal Film.	4835 116 57498		Models).	4835 116 57428
R437	4.7 ohm, 5%, 1/2W, Carbon Film.	4835 110 47046	R544	47k, 5%, 1/4W, Metal Film (13", 19" Mode	4835 116 57428
R438	680k, 5%, 1/2W, Metal Film.	4835 116 57518		ls).	4835 116 57428
S R441	36 ohm, 5%, 10W, Wire Wound (19" Models	4835 112 37022	R544	51k, 2%, 1/8W, Carbon Film (25", 27" Mo	4835 110 67237
S R441	75 ohm, 5%, 10W, Wire Wound (13" Models	4835 112 37023		dels).	4835 116 67144
S R442	36 ohm, 5%, 10W, Wire Wound (19" Models	4835 112 37022	S R545	680 ohm, 5%, 1W, Metal Film.	4835 116 67093
S R442	75 ohm, 5%, 10W, Wire Wound (13" Models	4835 112 37023	R552	6.2k, 2%, 1/8W, Carbon Film (13" Models	4835 110 67225
S R443	36 ohm, 5%, 10W, Wire Wound (19" Models	4835 112 37022	R552	5.1k, 2%, 1/8W, Carbon Film (19" Models	4835 110 67208
S R445	1 ohm, 5%, 1/3W, Metal Film.	4822 111 30483	R552	3.6k, 2%, 1/8W, Carbon Film (25", 27" M	4835 116 57382
R448	47 ohm, 5%, 30W, Wire Wound (25", 27" M		S R555	odels).	4835 116 57603
	odels).	4835 112 37021		odels).	4835 116 57603
S R459	100 ohm, 5%, 2W, Metal Film.	4835 116 57132	S R555	220 ohm, 5%, 1W, Metal Film (25", 27" M	4835 116 57603
S R460	2.2 ohm, 5%, 1/3W, Metal Film.	4822 111 30492		odels).	4835 116 57603
R461	1k, 5%, 1/4W, Metal Film.	4835 116 57319	R556	160 ohm, 2%, 1/8W, Carbon Film (19" Mod	4835 116 57603
S R462	680 ohm, 5%, 1/4W, Metal Film.	4835 116 57477		els).	4835 116 57603
R463	330k, 1%, 1/8W, Metal Film.	4835 116 57558	R556	200 ohm, 2%, 1/8W, Carbon Film (13" Mod	4835 116 57603
S R464	68 ohm, 5%, 1W, Metal Film.	4835 116 57279		els).	4835 116 57603
R465	100 ohm, 5%, 1/4W, Metal Film.	4835 116 57318	R556	24 ohm, 2%, 1/8W, Carbon Film (27" Mode	4835 116 57603
S R466	47 ohm, 5%, 1/3W, Metal Film (Not in 13			l).	4835 116 57603
	").	4835 116 57069	R556	8.2 ohm, 5%, 1/8W, Carbon Film (25" Mod	4835 116 57603
S R468	1 ohm, 5%, 1/3W, Metal Film.	4822 111 30483		els).	4835 116 57603
S R469	8.2 ohm, 5%, 1/3W, Metal Film (Stereo M		R557	1 Meg, Control Adj., Vertical Size.	4835 116 57603
	odels).	4822 111 30506	R558	6.8k, Control Adj., Vertical Center.	4835 116 57603
S R470	6.8 ohm, 5%, 1/4W, Metal Film.	4835 116 57559	R559	910 ohm, 2%, 1/8W, Carbon Film (13", 19	4835 116 57603
S R475	0.51 ohm, 5%, 1/2W, Metal Film.	4835 116 67001		").	4835 116 57603
R491	1.8k, 5%, 1/4W, Metal Film (Stereo Mode		R559	1.5k, 2%, 1/8W, Carbon Film (25", 27" M	4835 116 57603
	ls).	4835 116 57406		odels).	4835 116 57603
R500	470k, 5%, 1/4W, Metal Film.	4835 116 57498	R560	0.75 ohm, 5%, 1/2W, Metal Film (25", 27	4835 116 57603
R501	200 ohm, 5%, 1/4W, Metal Film.	4835 116 57408		").	4835 116 57603
R502	2k, 5%, 1/4W, Metal Film (13", 19" Mode		R560	1.3 ohm, 5%, 1/2W, Metal Film (13", 19"	4835 116 57603
	ls).	4835 116 57409		Models).	4835 116 57603
R502	3k, 5%, 1/4W, Metal Film (25", 27" Mode		R561	470 ohm, 5%, 1W, Metal Film.	4835 116 57603
	ls).	4835 116 57418	R562	0 ohm, 1/8W, Jumper, Carbon Film.	4835 116 57603
R503	5.1k, 5%, 1/2W, Carbon Film.	4835 110 47188	R563	2.2 ohm, 5%, 1/4W, Metal Film.	4835 116 57603
S R504	7.5k, 5%, 2W, Metal Film (19" Mdls w/CR		R564	10 Meg, 5%, 1/4W, Metal Film.	4835 116 57603
	T's G&K).	4835 116 57286	R568	1.2k, 2%, 1/8W, Carbon Film (13" Models	4835 116 57603
S R504	3.6k, 5%, 2W, Metal Film (25", 27" Mode		R568	1.3k, 2%, 1/8W, Carbon Film (19" Models	4835 116 57603
	ls).	4835 116 57155	R568	5.6k, 2%, 1/8W, Carbon Film (25", 27" M	4835 116 57603
S R504	11k, 5%, 2W, MF(13"+19"using T502 not w/CR			odels).	4835 116 57603
	T's G&K).	4835 116 67167	R569	15k, 5%, 1/4W, Carbon Comp. (13" Models	4835 116 57603
S R504	10k, 5%, 2W, Metal Film (13" + 19" usin		R569	3.3k, 5%, 1/4W, Carbon Comp.(25", 27" M	4835 116 57603
	g T505).	4835 116 57179		odels).	4835 116 57603
R505	0.47 ohm, 5%, 1/2W, Metal Film.	4835 116 57139	R569	6.8k, 5%, 1/4W, Carbon Comp. (19" Model	4835 116 57603
S R507	680 ohm, 5%, 2W, Metal Film (27" Model)			s).	4835 116 57603
S R507	1k, 5%, 2W, Metal Film (25" Models).	4835 116 57057	R630	1k, 5%, 1/4W, Metal Film.	4835 116 57603
R508	560 ohm, 5%, 1/4W, Metal Film.	4835 116 57326	R631	1k, 5%, 1/4W, Metal Film.	4835 116 57603
R509	430 ohm, 5%, 1/4W, Metal Film.	4835 116 57496	R632	1k, 5%, 1/4W, Metal Film.	4835 116 57603
R510	39k. 5%, 1/4W, Metal Film.	4835 116 57475	R633	100 ohm, 5%, 1/4W, Metal Film.	4835 116 57603
R511	300k, 5%, 1/2W, Metal Film.	4835 116 57211	R634	100 ohm, 5%, 1/4W, Metal Film.	4835 116 57603
R512	300k, 5%, 1/2W, Metal Film.	4835 116 57211	R635	100 ohm, 5%, 1/4W, Metal Film.	4835 116 57603
R513	3.3k, 5%, 1/4W, Metal Film.	4835 116 57422	R636	330 ohm, 5%, 1/4W, Metal Film.	4835 116 57603
S R515	20 ohm, 5%, 1/3W, Metal Film (Used with		R637	330 ohm, 5%, 1/4W, Metal Film.	4835 116 57603
	T504).	4835 116 57065	R638	330 ohm, 5%, 1/4W, Metal Film.	4835 116 57603
S R515	43 ohm, 5%, 1/3W, Metal Film (Used with		R639	820 ohm, 5%, 1/4W, Metal Film.	4835 116 57603
	T505).	4835 116 57613	R642	2k, Control Adj., Blue Drive Adj.	4835 116 57603
R517	27k, 5%, 1/4W, Metal Film.	4835 116 57416	R643	2k, Control Adj., Green Drive Adj.	4835 116 57603
R519	1k, 5%, 1/4W, Metal Film.	4835 116 57319	R645	1 Meg, 5%, 1/4W, Metal Film.	4835 116 57603
R520	50k, Control Adj., Horz. Centering.	4835 100 17064	R648	5k, Control Adj., Blue Cutoff Adj.	4835 116 57603
R521	10k, 5%, 1/4W, Metal Film (25", 27" Mod		R649	5k, Control Adj., Green Cutoff Adj.	4835 116 57603
	els).	4835 116 57321	R650	5k, Control Adj., Red Cutoff Adj.	4835 116 57603
R522	10k, 5%, 1/4W, Metal Film (25", 27" Mod		R651	3.6k, 5%, 1/4W, Metal Film.	4835 116 57603
	els).	4835 116 57321	R652	3.6k, 5%, 1/4W, Metal Film.	4835 116 57603
R523	30k, 5%, 1/4W, Metal Film (25", 27" Mod		R653	3.6k, 5%, 1/4W, Metal Film.	4835 116 57603
	els).	4835 116 57494	R654	150 ohm, 5%, 1/4W, Metal Film.	4835 116 57603
S R524	10k, 5%, 2W, Metal Film (13" + 19" usin		R655	150 ohm, 5%, 1/4W, Metal Film.	4835 116 57603
	g T505).	4835 116 57179	R656	150 ohm, 5%, 1/4W, Metal Film.	4835 116 57603
S R524	3.6k, 5%, 2W, Metal Film (25", 27" Mode		R662	5.6k, 5%, 1/4W, Metal Film (13", 19" Mo	4835 116 57603
	ls).	4835 116 57155		dels).	4835 116 57603
S R524	11 k, 5%, 2W, Metal Film (13"+19" using		R662	1k, 5%, 1/4W, Metal Film (25", 27" Mode	4835 116 57603
	T504.	4835 116 67167		ls).	4835 116 57603
S R524	7.5k, 5%, 2W, MF(For Mdls which use CRT's		R663	10k, 5%, 1/4W, Carbon Film (13", 19" Mo	4835 116 57603
	G & K).	4835 116 57286		dels).	4835 116 57603
S R525	10k, 5%, 1/4W, Metal Film (25", 27" Mod		R663	1k, 5%, 1/4W, Carbon Film (25", 27" Mod	4835 116 57603
	els).	4835 116 57321		els).	4835 116 57603
R528	100k, 5%, 1/4W, Metal Film (25", 27" Mo		R671	0 ohm, 1/8W, Jumper, Carbon Film.	4835 116 57603
	dels).	4835 116 57395	R672	10k, 5%, 1/4W, Metal Film.	4835 116 57603
S R529	100k, 5%, 1/4W, Metal Film.	4835 116 57321	R673	10k, 5%, 1/4W, Metal Film.	4835 116 57603
S R530	1 ohm, 5%, 1/3W, Metal Film.	4822 111 30483	R674	10k, 5%, 1/4W, Metal Film.	4835 116 57603
S R533	442 ohm, 1%, 1/4W, Metal Film (Not in 1				4835 116 57603
	3").	4835 116 57601			4835 116 57603

S = Safety Part Be sure to use exact replacement part.

R675	10k, 5%, 1/4W, Metal Film.	4835	116	57321					DIODES				
R676	16k, 5%, 1/4W, Metal Film.	4835	116	57492					D224	Diode, Silicon	4835	130	37048
R677	100k, 5%, 1/4W, Metal Film	4835	116	57395					D225	Diode, Silicon	4835	130	37048
R678	330k, 1%, 1/8W, Metal Film (13", 19" Mo dels).	4835	116	57558					D280	Diode, Silicon (Stereo Models).	4835	130	37048
R678	820k, 5%, 1/4W, Metal Film (25", 27" Mo dels).	4835	116	57507					D345	Diode, Silicon	4835	130	37048
R679	22k, 5%, 1/4W, Metal Film.	4835	116	57412					D346	Diode, Silicon	4835	130	37048
R681	20k, 5%, 1/4W, Metal Film.	4835	116	57468					D401	Diode, Silicon	4835	130	37829
R682	30k, 5%, 1/4W, Metal Film.	4835	116	57494					D402	Diode, Silicon	4835	130	37829
R685	18k, 5%, 1/4W, Metal Film.	4835	116	57323					D403	Diode, Silicon	4835	130	37829
R686	18k, 5%, 1/4W, Metal Film.	4835	116	57323					D404	Diode, Silicon	4835	130	37829
R687	18k, 5%, 1/4W, Metal Film.	4835	116	57323					D405	Diode, Fast, Soft Recovery	4835	130	37094
R688	270k, 5%, 1/4W, Metal Film	4835	116	57417					D406	Diode, Silicon	4835	130	37048
	IC'S & TRANSISTORS								D409	Diode, Fast, Soft Recovery	4835	130	37094
IC200	IC TDA9852 (Stereo Models)	4835	209	88386					D410	Diode, Silicon	4822	130	41275
IC230	IC TDA7052/N2, Audio Amp	4835	209	47005					D411	Diode, Silicon	4822	130	41275
IC240	IC TDA7052/N2, Audio Amp (Stereo Models	4835	209	47005					D413	Diode, Silicon	4835	130	37048
IC270	IC, Signal Processor	4835	209	88379					D415	Diode, Silicon	4835	130	37048
IC341	IC, Data Slicer.	4835	209	88189					D416	Diode, Silicon	4835	130	37048
IC345	Microprocessor (Canada Models)	4835	209	17556					D420	Diode, Silicon	4835	130	37048
IC345	16K Microprocessor (Non Canada Models)	4835	209	17557					D421	Diode, Silicon	4835	130	37048
IC345	20K Microprocessor (Non Canada Models)	4835	209	17559					D445	Diode, Silicon (25", 27" Models)	4835	130	37052
IC346	IC, Memory	4835	209	88108					D445	Diode, Fast, Soft Recovery (13", 19" Mo dels).	4835	130	37094
IC410	IC, Regulator	4835	209	47056					D460	Diode, Fast, Soft Recovery	4835	130	37094
IC530	IC, Shutdown Switch.	4835	209	87838					D475	Diode, Silicon	4835	130	37052
IC550	IC, Vertical (13", 19" Models)	4835	209	88188					D491	LED, Green(19",25" Jack Panel Mdls & AL L 27")	4835	130	87001
IC550	IC, Vertical (25", 27" Models)	4835	209	88003					D492	LED, Green (13" Jack Panel Models)	4835	130	87001
Q324	Transistor, NPN, Vertical Pulse.	4835	130	47064					D508	Diode, Silicon	4835	130	37048
Q381	Transistor, NPN, Video Buffer.	4835	130	47064					D509	Diode, Silicon	4835	130	37048
Q382	Transistor, PNP, Video Buffer.	4835	130	47058					D510	Diode, Silicon	4835	130	37048
Q400	Transistor, NPN, 129V Source (13", 19" Models).	4835	130	47072					D511	Diode, Silicon	4835	130	37052
Q400	Transistor, 129V Source (25", 27" Mode ls).	4835	130	48059					D519	Diode, Silicon	4835	130	37048
Q402	Transistor, NPN, On/Off Switch	4835	130	47059					S D530	Diode, Silicon	4835	130	37048
Q403	Transistor, NPN, 8V Stand By Switch.	4835	130	47892					D550	Diode, Fast, Soft Recovery	4835	130	37094
Q404	Transistor, NPN, 8V Stand By Switch Pro tector	4835	130	47064					D629	Diode, Silicon	4835	130	37048
Q410	Transistor, NPN, 5V Stand By Switch Reg ulator	4835	130	47051					D630	Diode, Silicon	4835	130	37058
Q420	Transistor, NPN, Start Up Swtich	4835	130	47059					D661	Diode, Fast, Soft Recovery	4835	130	37094
Q461	Transistor, NPN, 5V Tuner Source	4835	130	47051					Z282	Zener Diode, 8.2V (Stereo Models).	4822	130	34382
Q462	Transistor, NPN, 8V Source	4835	130	47892					Z361	Zener Diode, 33V	4835	130	37502
Q464	Transistor, NPN, 8V Regulator.	4835	130	47064					Z402	Zener Diode, 33V	4835	130	37003
Q501	Transistor, NPN, Horizontal Driver (13" , 19")	4822	130	41782					Z405	Zener Diode, 16V	4835	130	37501
Q501	Transistor, NPN, Horizontal Driver (25" , 27")	4835	130	47892					Z406	Zener Diode, 6.2V.	4835	130	37121
S Q502	Transistor, NPN, Horizontal Output	4835	130	47897					Z415	Zener Diode, 5.1 V	4835	130	37119
Q510	Transistor, NPN.	4835	130	47064					Z461	Zener Diode, 5.6V.	4835	130	37068
Q521	Transistor, NPN (25", 27" Models).	4835	130	47064					Z462	Zener Diode, 10V	4835	130	37203
S Q530	Transistor, PNP (13", 19" Models).	4835	130	47126					Z512	Zener Diode, 7.5V.	4835	130	37016
Q630	Transistor, NPN.	4835	130	47064					S Z530	Zener Diode, 4.3V (13", 19" Models).	4835	130	37015
Q631	Transistor, NPN.	4835	130	47064					Z540	Zener Diode, 5.1V.	4835	130	37119
Q632	Transistor, NPN.	4835	130	47064					Z541	Zener Diode, 5.1V.	4835	130	37119
Q661	Transistor, NPN.	4835	130	47051						MISCELLANEOUS			
	COILS & TRANSFORMERS								S F400	Fuse, 2A	4835	253	97122
L210	Adjustable LC Coil, 91.50.	4835	150	57067					S F401	Fuse, Pico, 2.5A	4835	253	97031
L212	Peaking Coil, 4.7uH. 5%	4835	157	67011					HS410	Heatsink, Reg.(25", 27" Models).	0073	615	00001
L214	Peaking Coil, 1.0uH., 5%	4835	150	57006					HS410	Heatsink, (13", 19" Models).	0073	590	30001
L315	Peaking Coil, 2.7uH. 5%.	4835	157	67006					HS502	Solder Lug (25", 27" Models)	0020	100	70001
L316	Peaking Coil, 1.80uH. 5%	4835	157	67033					HS502	Support f/Horiz. Reg.	4835	432	17643
L317	Peaking Coil, 1.80uH. 5%	4835	157	67033					HS502	Heatsink, (25", 27" Models).	0073	586	10004
L318	Peaking Coil, 1.80uH. 5%	4835	157	67033					HS550	Solder Lug (25", 27" Models)	0020	100	70001
L341	Peaking Coil, 3.9uH. 5%.	4835	157	67007					HS550	Support f/Vert. Reg.	4835	256	97278
L348	Peaking Coil, 2.7uH. 5%.	4835	157	67006					HS550	Heatsink, (13", 19" Models).	0073	590	40002
L351	Peaking Coil, 3.9uH. 5%.	4835	157	67007					HS551	Heatsink-I.C. (25", 27" Models).	0073	597	80008
L352	Peaking Coil, 3.9uH. 5%.	4835	157	67007					IR91	Mini IR Receiver	4835	219	47281
L353	Peaking Coil, 3.9uH. 5%.	4835	157	67007					J2	3 Pin Connector			
L357	Peaking Coil, 8.2uH., 2%	4835	150	57068					J4	2 Pin Connector			
L382	Peaking Coil, 22uH.	4835	150	57007					J7	2 Pin Connector, White (Mono Models)	0018	169	30002
L400	Line Choke (Canada Models Only).	4835	157	57077					J27	4 Pin Board Connector (Stereo Models).	0018	169	30004
L417	Peaking Coil, 2.7uH. 5%.	4835	157	67006					J40	7 Pin Connector			
L418	Peaking Coil, 2.7uH. 5%.	4835	157	67006					J401	Contact Pins	4835	265	97017
L501	Peaking Coil, 2.7uH. 5%.	4835	157	67006					J410	Contact Pins (25", 27" Models)	4835	265	97017
S L517	Linearity Coil (27" Models).	4835	150	57034					J500	Contact Pins	4835	265	97017
S L517	Linearity Coil (25" and 27" Models).	4835	150	57002					J501	Contact Pins	4835	265	97017
L630	Peaking Coil, 2.2uH. 5%.	4835	157	67005					J550	Contact Pins	4835	265	97017
S T501	Flyback Transformr(13"+19" Using 3900pF ,C505)	4835	140	67133					S K400	Relay, Degauss (Not in 13" Models)	4835	277	27073
S T502	Flyback Transformer (19" Using CRT's G & K)	4835	140	67134					N401	Neon Lamp.	4835	134	27001
S T502	Flyback Transformer (25" Model).	4835	140	67126					S79	Key Switch	4835	276	57004
S T502	Flyback Transformer (19" Using 4700pF, C505).	4835	140	67154					SH200	IC Shield (Stereo Models).	0073	590	60002
S T502	Flyback Transformer (19" Orig. part ma rked 364093-4)	4835	140	67161					SH341	Shield VIC	0073	595	90002
S T503	Flyback Maxslot (27" Models).	4835	140	67142					SH345	IC Shield.	0073	590	60003
T504	Transformer, Horz. Driver (using, 20ohm , R515).	4835	142	47021					T300	Cable Tuner (Not in 13" Models).	4835	210	47058
T505	Transformer, Horz. Driver (using, 43ohm , R515).	4835	148	27047					T300	UV Tuner (13" Models).	4835	210	47072
	S = Safety Part Be sure to use exact replacement part.								V275	1uF.,50V,Elect (Used in EMX694,EMX695,E MX69	4835	121	47406
									V505	Buss Wire (Used with T505)	0046	012	60001
									V505	.47 ohm, 5%,1/2W, Metal Film (Used with T505).	4835	116	57139
									V547	Buss Wire (Used in EMX694, EMX695, EMX6 Peaking Coil, 2.2uH. 5%.	0046	012	60001
									V620	Filter SAW, Video.	4835	153	97022
									Y200	Ceramic Resonator, 503.5KHz. (Stereo Mo dels).	4835	153	97042
									Y209	Ceramic Filter 4.5MHz. (Mono Models)	4835	158	97009
									Y220				

Y220	Ceramic Filter 4.5MHz. (Stereo Models)	4835 153 57004	L1	Peaking Coil, 100uH., 5%	4835 157 57141
Y221	Ceramic Filter, Trap, 4.5MHz.	4835 154 17001		MISCELLANEOUS	
Y320	Ceramic Resonator, 12MHz. (Non Clock Models).	4835 157 57129	S CRT21	CRT Socket	4835 265 97332
Y321	Crystal, 12.288MHz. (13", 19" Models W/ Clock)	4835 242 77251	J51	Cable Assembly (25", 27" Models) . . .	0046 232 20006
Y620	Crystal, 3.579MHz.	4835 242 77215	J52	4 Pin Cable Assembly (25", 27" Models)	0046 216 40008
	Plastic Mount for R448 (25", 27" Models)	4835 402 57062	J53	3 Pin Connector (25", 27" Models). . .	0018 222 20203
	Silicon Pad for IC410.	4835 255 47004	J410	Cable Assembly (25", 27" Models) . . .	0046 170 20007
	Spring Clip for IC410.	4835 290 47003	P500	Cable Assembly	4835 265 97017
	Spring Clip for IC550 (25", 27" Models)	4835 290 47003	P501	Cable Assembly	4835 265 97017
	Silicon Insulator for 0400	4835 255 47003	P550	Cable Assembly	4835 265 97017
	Spring Clip for Q400	4835 290 47008			
	Spring Clip for Q502	4835 290 47003			
APT143 CRT BOARD (13", 19" & 20" ONLY)					
	CAPACITORS			Complete Panel	4835 219 57546
S C2	0.01uF., 10%, 630V, Metalized Film . .	4835 121 47335		CAPACITORS	
C3	1uF., 50V, Electrolytic.	4835 121 47406	C30	220uF., 16V, Electrolytic.	4835 124 47494
	RESISTORS		C31	2200pF., 10%, 500V, Ceramic.	4835 122 47057
S R1	3.6 ohm, 5%, 1/2W, Metal Film (13" with CRT F)	4835 116 67182	C32	220uF., 16V, Electrolytic.	4835 124 47494
S R1	1.1 ohm, 5%, 1/2W, Metal Film (13" Mono Only).	4835 116 67158	S C33	4700pF., 20%, 250Vac, Ceramic.	4835 122 97023
S R1	1.2 ohm, 5%, 1/2W, Metal Film (13" Stereo).	4835 116 67077	C41	47uF., 16V, Electrolytic.	4835 124 47567
S R1	3 ohm, 5%, 1/2W, MF(All Other 19" CRT's). .	4835 116 57025	C42	1000uF., 16V, Electrolytic.	4835 124 47497
S R3	3.6 ohm, 5%, 1/2W, Metal Film (19" Models Only)	4835 116 67182	C43	220uF., 16V, Electrolytic.	4835 124 47494
S R3	1.1 ohm, 5%, 1/2W, Metal Film (13" Models Only)	4835 116 67158	C45	100uF., 25V, Electrolytic.	4835 124 47501
R4	1.5k, 20%, 1/2W, Carbon Comp.	4835 110 47034	C46	82pF., 5%, 50V, Ceramic.	4835 122 87038
R5	1.5k, 20%, 1/2W, Carbon Comp.	4835 110 47034	C61	1uF., 50V, Electrolytic.	4835 121 47406
S R6	100 ohm, 5%, 1/4W, Metal Film.	4835 116 57318	C62	1uF., 50V, Electrolytic.	4835 121 47406
R7	51 ohm, 5%, 1/4W, Metal Film	4835 116 57501	C63	220uF., 16V, Electrolytic.	4835 124 47494
R8	51 ohm, 5%, 1/4W, Metal Film	4835 116 57501	C81	1uF., 50V, Electrolytic.	4835 121 47406
R9	51 ohm, 5%, 1/4W, Metal Film	4835 116 57501	C82	1uF., 50V, Electrolytic.	4835 121 47406
S R10	15k, 5%, 3W, Metal Film.	4835 116 67018	C83	220uF., 16V, Electrolytic.	4835 124 47494
S R11	15k, 5%, 3W, Metal Film.	4835 116 67018		RESISTORS	
S R12	15k, 5%, 3W, Metal Film.	4835 116 67018	R15	100 ohm, 5%, 1/2W, Carbon Film	4835 111 57006
R13	1.5k, 20%, 1/2W, Carbon Comp.	4835 110 47034	R16	100 ohm, 5%, 1/2W, Carbon Film	4835 111 57006
R14	1.5k, 20%, 1/2W, Carbon Comp.	4835 110 47034	R17	200 ohm, 5%, 1/2W, Carbon Film	4835 110 47182
R15	1.5k, 20%, 1/2W, Carbon Comp.	4835 110 47034	R18	200 ohm, 5%, 1/2W, Carbon Film	4835 110 47182
	TRANSISTORS		S R30	51 ohm, 5%, 1/2W, Metal Film	4835 116 67086
Q1	Transistor, NPN.	4835 130 47059	S R31	4.7 Meg, 5%, 1/2W, Metal Film.	4835 116 57009
Q2	Transistor, NPN.	4835 130 47059	R40	1k, Control Adj.	4835 100 17014
Q3	Transistor, NPN.	4835 130 47059	R41	75 ohm, 5%, 1/4W, Metal Film	4835 111 37042
	COILS		R42	4.7k, 5%, 1/10W, Metal Film.	4835 111 37444
L1	Peaking Coil, 100uH., 10% (13", 19") .	4835 157 57047	R43	20k, 5%, 1/10W, Metal Film	4835 111 37313
	MISCELLANEOUS		R44	200 ohm, 5%, 1/10W, Metal Film	4835 111 37233
S CRT1	CRT Socket	4835 265 97331	R45	15k, 5%, 1/10W, Metal Film 9	4835 111 37006
J3	Contact Pins	4835 265 97017	R46	82 ohm, 5%, 1/10W, Metal Film.	4835 111 37278
J21	Cable Assembly (13" Models).	0046 232 20003	R47	15k, 5%, 1/10W, Metal Film.	4835 111 37006
J22	4 Pin Cable Assembly (13" Models). . . .	0046 216 40005	R48	1k, 5%, 1/10W, Metal Film.	4835 111 37433
J22	4 Pin Cable Assembly (19" Models). . . .	0046 216 40008	S R49	82 ohm, 5%, 1/3, Metal Film.	4822 111 30533
J27	4 Pin Board Connector (Stereo Models). .	0018 169 30004	R50	300 ohm, 5%, 1/4W, Carbon Film	4835 110 57221
P500	Cable Assembly	4835 265 97017	R51	51 ohm, 5%, 1/4W, Metal Film	4835 111 37138
P501	Cable Assembly	4835 265 97017	R52	150 ohm, 5%, 1/10W, Metal Film	4835 111 37334
P550	Cable Assembly	4835 265 97017	R53	150 ohm, 5%, 1/4W, Metal Film.	4835 116 57399
			R54	1k, 5%, 1/10W, Metal Film e.	4835 111 37433
			R60	500 ohm, Control Adj.	4835 100 17063
			R61	47k, 5%, 1/4W, Metal Film o.	4835 111 37038
			R62	3.3k, 5%, 1/10W, Metal Film	4835 111 37247
			R63	30k, 5%, 1/10W, Metal Film	4835 111 37246
			R64	150 ohm, 5%, 1/10W, Metal Film	4835 111 37334
			R65	4.7k, 5%, 1/10W, Metal Film.	4835 111 37444
			S R66	100 ohm, 5%, 1/10W, Metal Film	4835 111 37432
			R67	2.2k, 5%, 1/10W, Metal Film.	4835 111 37234
			R68	10k, 5%, 1/10W, Metal Film	4835 111 37216
			R69	1k, 5%, 1/10W, Metal Film.	4835 111 37433
			R70	18k, 5%, 1/10W, Metal Film	4835 111 37232
			R71	3k, 5%, 1/10W, Metal Film.	4835 111 37245
			R80	500 ohm, Control Adj.	4835 100 17063
			R81	47k, 5%, 1/4W, Metal Film.	4835 111 37038
			R82	3.3k, 5%, 1/10W, Metal Film	4835 111 37247
			R83	30k, 5%, 1/10W, Metal Film	4835 111 37246
			R84	150ohm, 5%, 1/10W, Metal Film.	4835 111 37334
			R85	4.7k, 5%, 1/10W, Metal Film.	4835 111 37444
			S R86	100 ohm, 5%, 1/10W, Metal Film	4835 111 37432
			R87	2.2k, 5%, 1/10W, Metal Film.	4835 111 37234
			R88	10k, 5%, 1/10W, Metal Film	4835 111 37216
			R89	1k, 5%, 1/10W, Metal Film.	4835 111 37433
			R90	18k, 5%, 1/10W, Metal Film	4835 111 37232
			R91	3k, 5%, 1/10W, Metal Film.	4835 111 37245
				MISCELLANEOUS	
			D30	Diode, Silicon	4835 130 37052
			D41	Diode, Silicon	4835 130 37066
			D61	Diode, Silicon	4835 130 37066
			D81	Diode, Silicon	4835 130 37066
			S IC41	Optical Coupler.	4835 130 97058
			S IC61	Optical Coupler.	4835 130 47903
			S IC81	Optical Coupler.	4835 130 47903
			J5	3 Pin Board Connector.	0018 169 30003
			J9	2 Pin Connector, White	0018 169 30002
			J45	Phono Jack Assembly.	0018 225 80001
			J80	4 Pin Board Connector.	0018 169 30004
			J85	4 Pin Connector, Red	0018 223 40004
			S L30	Isolation Transformer, 15kHz.	4835 148 27042
			P40	7 Pin Connector.	0018 220 38007
			Q41	Transistor, NPN.	4835 130 47094
			Q42	Transistor, NPN.	4835 130 47094

S = Safety Part Be sure to use exact replacement part.

Q43	Transistor, NPN.	4835 130 47751
Q44	Transistor, NPN.	4835 130 47094
Q61	Transistor, NPN.	4835 130 47094
Q62	Transistor, NPN.	4835 130 47094
Q63	Transistor, NPN.	4835 130 47094
Q81	Transistor, NPN.	4835 130 47094
Q82	Transistor, NPN.	4835 130 47094
Q83	Transistor, NPN.	4835 130 47094
S S15	Switch Slide Dpdt.	4835 276 17248
S T15	Audio Transformer.	4835 148 87282
S T16	Audio Transformer.	4835 148 87282
Z30	Zener Diode, 12V	4835 130 37423

AVJ179A001 & AVJ180A001 AUDIO/VIDEO JACK PANELS

	Complete Panel	4835 219 57537
CAPACITORS		
C30	220uF., 16V, Electrolytic.	4835 124 47494
S C31	2200pF., 10%, 500V, Ceramic.	4835 122 47057
C32	220uF., 16V, Electrolytic.	4835 124 47494
S C33	4700pF., 20%, 250Vac, Ceramic.	4835 122 97023
C41	47uF., 16V, Electrolytic	4835 124 47567
C42	1000uF., 16V, Electrolytic	4835 124 47497
C43	220uF., 16V, Electrolytic.	4835 124 47494
C45	100uF., 25V, Electrolytic.	4835 124 47501
C46	82pF., 5%, 50V, Cerarnic	4835 122 87038
C61	1uF., 50V, Electrolytic.	4835 121 47406
C62	1uF., 50V, Electrolytic.	4835 121 47406
C63	220uF., 16V, Electrolytic.	4835 124 47494
C81	1uF., 50V, Electrolytic (AVJ180 Only).	4835 121 47406
C82	1uF., 50V, Electrolytic (AVJ180 Only).	4835 121 47406
C83	220uF., 16V, Electrolytic (AVJ180 Only)	4835 124 47494
RESISTORS		
S R30	51 ohm, 5%, 1/2W, Metal Film	4835 116 67086
S R31	4.7 Meg, 5%, 1/2W, Metal Film.	4835 116 57009
R40	1k, Control Adj.	4835 100 17014
R41	75 ohm, 5%, 1/4W, Metal Film	4835 111 37042
R42	4.7k, 5%, 1/10W, Metal Film.	4835 111 37444
R43	20k, 5%, 1/10W, Metal Film	4835 111 37313
R44	200 ohm, 5%, 1/10W, Metal Film	4835 111 37233
R45	15k, 5%, 1/10W, Metal Film	4835 111 37006
R46	82 ohm, 5%, 1/10W, Metal Film.	4835 111 37278
R47	15k, 5%, 1/10W, Metal Film	4835 111 37006
R48	1k, 5%, 1/10W, Metal Film.	4835 111 37433
S R49	82 ohm, 5%, 1/4W, Metal Film	4835 111 37126
R50	300 ohm, 5%, 1/4W, Carbon Film	4835 110 57221
R51	51 ohm, 5%, 1/4W, Metal Film	4835 111 37138
R52	150 ohm, 5%, 1/10W, Metal Film	4835 111 37334
R53	150 ohm, 5%, 1/10W, Metal Film	4835 111 37334
R54	1k, 5%, 1/10W, Metal Film.	4835 111 37433
R60	500 ohm, Control Adj.	4835 100 17063
R61	47k, 5%, 1/4W, Metal Film	4835 111 37038
R62	3.3k, 5%, 1/10W, Metal Film.	4835 111 37247
R63	30k, 5%, 1/10W, Metal Film	4835 111 37246
R64	150 ohm, 5%, 1/10W, Metal Film	4835 111 37334
R65	4.7k, 5%, 1/10W, Metal Film.	4835 111 37444
S R66	100 ohm, 5%, 1/10W, Metal Film	4835 111 37432
R67	2.2k, 5%, 1/10W, Metal Film	4835 111 37234
R68	10k, 5%, 1/10W, Metal Film	4835 111 37216
R69	1k, 5%, 1/10W, Metal Film.	4835 111 37433
R70	18k, 5%, 1/10W, Metal Film	4835 111 37232
R71	3k, 5%, 1/10W, Metal Film.	4835 111 37245
R80	500 ohm, Control Adj. (AVJ180 Only)	4835 100 17063
R81	47k, 5%, 1/4W, Metal Film (AVJ180 Only)	4835 111 37038
R82	3.3k, 5%, 1/10W, Metal Film (AVJ180 Onl y).	4835 111 37247
R83	30k, 5%, 1/10W, Metal Film (AVJ180 Only)	4835 111 37246
R84	150 ohm, 5%, 1/10W, Metal Film (AVJ180 Only).	4835 111 37334
R85	4.7k, 5%, 1/10W, Metal Film (AVJ180 Onl y).	4835 111 37444
R86	100 ohm, 5%, 1/10W, Metal Film (AVJ180 Only).	4835 111 37432
R87	2.2k, 5%, 1/10W, Metal Film (AVJ180 Onl y).	4835 111 37234
R88	10k, 5%, 1/10W, Metal Film (AVJ180 Only)	4835 111 37216
R89	1k, 5%, 1/10W, Metal Film (AVJ180 Only)	4835 111 37433
R90	18k, 5%, 1/10W, Metal Film (AVJ180 Only)	4835 111 37232
MISCELLANEOUS		
D30	Diode, Silicon	4835 130 37052
D41	Diode, Silicone.	4835 130 37066
D61	Diode, Silicon	4835 130 37066
D81	Diode, Silicone (AVJ180 Only).	4835 130 37066
S IC41	Optical Couple	4835 130 97058
S IC61	Optical Coupler.	4835 130 47903
S IC81	OpticalCoupler (AVJ180Only).	4835 130 47903
J5	3 Pin Board Connector (AVJ180 Only).	0018 169 30003
J9	2 Pin Connector, White	0018 169 30002
J45	3 Pin Phono Assembly (AVJ180 Only)	0018 220 40423
J45	3 Pin Phono Assembly (AVJ179 Only)	0018 220 40420
S L30	Isolation Transformer, 15kHz.	4835 148 27042
P40	7 Pin Connector.	0018 220 38007
Q41	Transistor, NPN.	4835 130 47094

S = Safety Part Be sure to use exact replacement part.

Q42	Transistor, NPN.	4835 130 47094
Q43	Transistor, NPN.	4835 130 47751
Q44	Transistor, NPN.	4835 130 47094
Q61	Transistor, NPN.	4835 130 47094
Q62	Transistor, NPN.	4835 130 47094
Q63	Transistor, NPN.	4835 130 47094
Q81	Transistor, NPN (AVJ180 Only).	4835 130 47094
Q82	Transistor, NPN (AVJ180 Only).	4835 130 47094
Q83	Transistor, NPN (AVJ180 Only).	4835 130 47094
R91	3k, 5%, 1/10W, Metal Film (AVJ180 Only)	4835 111 37245
Z30	Zener Diode, 12V	4835 130 37423

A10438B002 DATA TERMINAL INTERFACE

	Complete Panel	4835 219 57352
RESISTORS		
R22	68 ohm, 5%, 1/4W, Carbon Film.	4835 110 57248
R23	100 ohm, 5%, 1/4W, Carbon Film	4835 110 57247
R25	47k, 5%, 1/4W, Carbon Film	4835 110 57095
R26	43k, 5%, 1/4W, Carbon Film	4835 110 57277
R27	43k, 5%, 1/4W, Carbon Film	4835 110 57277
R28	43k, 5%, 1/4W, Carbon Film	4835 110 57277
R29	100 ohm, 5%, 1/4W, Carbon Film	4835 110 57247
R31	47k, 5%, 1/4W, Carbon Film	4835 110 57095
R32	10k, 5%, 1/4W, Carbon Film	4835 110 57015
R33	200 ohm, 5%, 1/4W, Carbon Film	4835 110 57203
R34	43k, 5%, 1/4W, Carbon Film	4835 110 57277
R36	200 ohm, 5%, 1/4W, Carbon Film	4835 110 57203
MISCELLANEOUS		
S C20	1000uF., 16Vdc, Electrolytic	4835 124 47271
S IC20	Opto Isolator, PS2021 L.	4835 130 37057
S IC22	Opto Isolator, PS2021 L.	4835 130 37057
S IC24	Opto Isolator, PS2021 L.	4835 130 37057
S IC26	Opto Isolator, PS2021 L.	4835 130 37057
Q24	Transistor, PNP.	4835 130 47053
J32	Phone Jack, RJ6.	0018 221 20006
J34	4 Pin, Header Connector.	0018 169 30004
J35	2 Pin, Header Connector.	0018 169 30002
J36	3 Pin, Header Connector.	0018 169 30003

Contents

X6 CHASSIS SERVICE ADJUSTMENTS

Caution: The X6 Chassis incorporates a **"HOT"** ground system. Always use a separate isolation transformer when applying power to the exposed chassis.

IMPORTANT NOTES	2
FOCUS	2
R.F. AGC DELAY	2
VCO ADJUSTMENT	2
VERTICAL SIZE AND VERTICAL CENTERING	2
HORIZONTAL CENTERING ADJUSTMENT	2
ADJUSTING THE PICTURE	2
DEGAUSSING THE RECEIVER	2
CONVERGENCE AND PURITY ADJUSTMENT PROCEDURE	2
STEREO ALIGNMENT (FOR STEREO MODELS ONLY)	5
AUDIO/VIDEO JACK PANEL ALIGNMENT	5
SERVICE TEST MODE PROCEDURES	6
CLOCK CALIBRATION	7
PRACTICAL SERVICE PRECAUTIONS	

IMPORTANT NOTES

Unless otherwise Specified:

1. All service adjustments are "HOT" voltagewise. For maximum safety, ensure the use of properly insulated tools.
2. Refer to the X6 Chassis Layout Diagram (Figure 1)for quick location of test points or service adjustment controls.
3. Grid locations (Ex. D-2) next to control reference numbers refer to the Printed Circuit Board Illustrations.

FOCUS

1. Tune in a local station and adjust the Focus Control(located on Flyback) for best picture details at high light condition.

R.F. AGC DELAY

1. Tune to a weak station, or loosely couple the antenna to observe a snowy picture.
 2. Set the R.F. AGC delay (R206, E-1) to its fully clockwise (CW) position.
 3. Slowly turn R206 counterclockwise (CCW) to a point slightly beyond the point of minimum snow.
- NOTE:** Do not turn the control any further as it may result in an overloaded picture on the face of the CRT(caused by a strong station signal).

VCO ADJUSTMENT

1. Ensure the set is in the Antenna mode (not Cable) and tune the receiver to a good local air signal.
2. Temporally place a jumper from pin 5 (Coincidence) of IC270 (D-2) to ground.
3. Connect a DC voltmeter (input impedance 10 Megohms or more) to Test Point 2 (AFT D-1).
4. Adjust L210 (D-2) to 2.5Vdc exactly.
5. Remove the jumper from pin 5 of IC270 to ground.

VERTICAL SIZE AND VERTICAL CENTERING

1. Apply a Crosshatch pattern to the antenna input terminal.
2. Adjust the Vertical Size Control (R557 J-2) to obtain a slight underscan of the raster at the top and bottom portions of the screen.
3. If the raster is not centered, adjust the Vertical Centering Control (R558 J-2) to center the raster properly on the screen.
4. Adjust the Vertical Size Control (R557) to obtain a slight overscan at the top and bottom of the screen(approximately 8% overscan total).

HORIZONTAL CENTERING ADJUSTMENT

1. Apply a crosshatch pattern to the antenna terminal.
2. Adjust the Horizontal Centering Control (R520 D-1) to obtain proper horizontal centering of the crosshatch pattern at the left and right of the screen.

ADJUSTING THE PICTURE

NOTE: The Color Purity and Convergence Adjustments described below should be performed onlyafter installation of a new CRT or Deflection Yoke Assembly; otherwise, it will not be necessary to remove the rubber wedges. Minor corrections for purity and convergence can be acomplished through the use of the Purity and Convergence Assembly located on the neck of the CRT.

DEGAUSSING THE RECEIVER

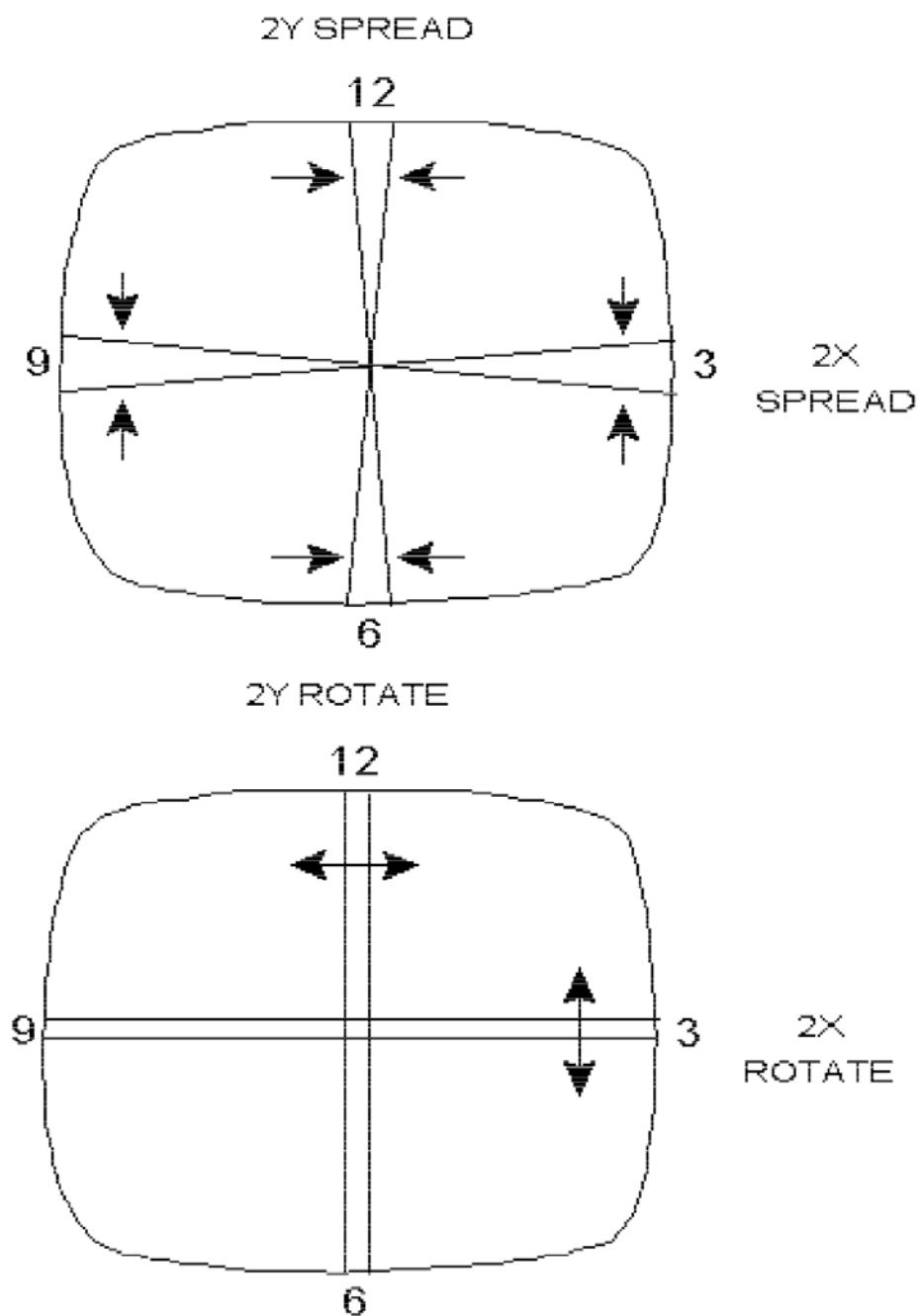
1. Position the TV receiver so that the screen faces the direction it will be facing, while in use.
2. Before the set is turned on, thoroughly degauss the entire receiver.
 - a. Move a Degaussing Coil in a circular motion slowly around the sides and the front face plate of the receiver.
 - b. Withdraw the Degaussing Coil at least six feet before disconnecting it from its power source.

CONVERGENCE AND PURITY ADJUSTMENT PROCEDURE

PRE CONVERGENCE PROCEDURE:

(Perform the DEGAUSS PROCEDURE first.)

1. Place the multi-pole Purity and Convergence Assembly with the 2-Y pole Purity Rings directly in the gap between the G2 and G3 (Focus) Grids. (As shown in graphic).
2. Connect a Center Cross pattern or a Crosshatch pattern to the antenna terminals.
3. Set the Green Cutoff control (R649) to its fully clockwise (CW) position.
4. Set the Green Drive control (R643) to its fully counterclockwise (CCW) position.
5. Loosen the Yoke Clamp screws, pull the Yoke back and remove the three Yoke wedges.
6. Slide the Yoke all the way forward so that it rests against the bell of the CRT.
7. Tighten the Yoke Clamp screw so that the Yoke doesn't drop away from the bell of the CRT.
8. Slowly spread and, if necessary, rotate the 2-Y pole purity rings so that the red and blue lines are at least parallel and preferably coincide at the 6:00 and 12:00 o'clock position. (Refer to graphic) .



Proceed to **COLOR PURITY ADJUSTMENT**

COLOR PURITY ADJUSTMENT

1. Connect a White Screen signal to the Antenna terminals.
2. Set the **Red Cutoff (R650)** and **Blue Cutoff (R648)** controls fully clockwise (CW). Then set the **Blue Drive (R642)** fully counterclockwise (CCW).
3. Set the **Green Cutoff control (R649)** fully counterclockwise (CCW) and the **Green Drive control (R643)** Fully clockwise (CW).
4. Slowly spread the 2-X Pole Purity Rings to center the Green portion of the screen leaving the same amount of Red on the left side as there is blue on the right.
5. Loosen the Yoke Clamp screws and slide the Yoke back to the point of best Green Purity.
6. Tighten the Yoke Clamp screw slightly so that the Yoke can still be moved with some friction.
7. Proceed to **STATIC CENTER CONVERGENCE**.

STATIC CENTER CONVERGENCE

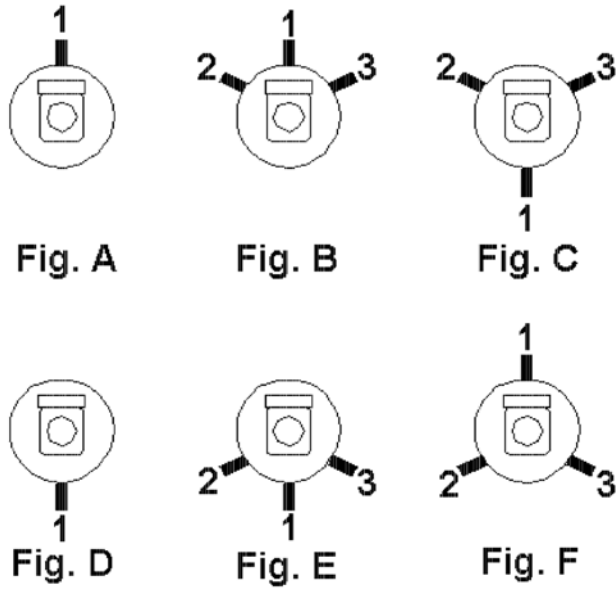
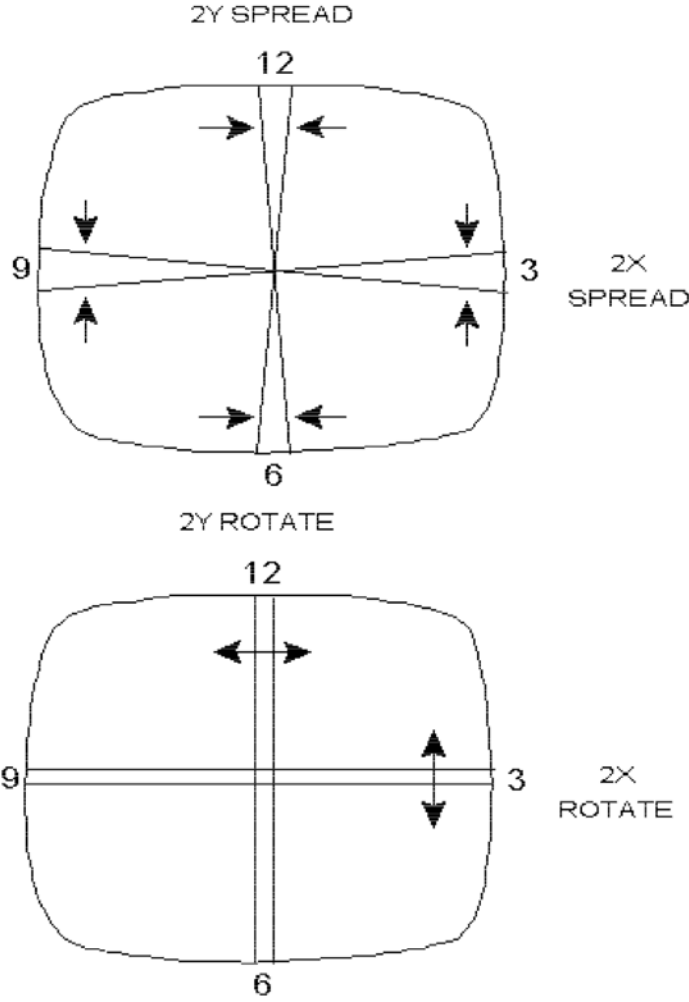
1. Connect a Center Cross pattern or a Crosshatch pattern to the Antenna terminals to ensure that the yoke is not tilted. Rotate the yoke, if necessary, to obtain a level raster.
2. Set the **Green Cutoff control (R649)** to its fully clockwise (CW) position.
3. Set the **Green Drive control (R643)** to its fully counterclockwise (CCW) position.
4. Set the **Red Cutoff (R650)** and **Blue Cutoff (R648)** controls to their midrange positions. Then set the **Blue Drive (R642)** control fully clockwise (CW).
5. Slowly spread and, if necessary, rotate the 4-Pole Magnetic Rings to converge Red and Blue lines at the center of the screen.
6. Set the **Green Drive control (R643)** to its maximum clockwise (CW) position.
7. Adjust the **Green Cutoff control (R649)** to bring its Gun back up to approximately the same intensity as the Red and Blue Guns.
8. Slowly spread and, if necessary, rotate the 6-Pole Magnetic Rings to converge Red/Blue on Green lines at the center of the screen.
9. Repeat steps 5 through 8 for optimum performance.

Proceed to **DYNAMIC EDGE CONVERGENCE**

DYNAMIC EDGE CONVERGENCE

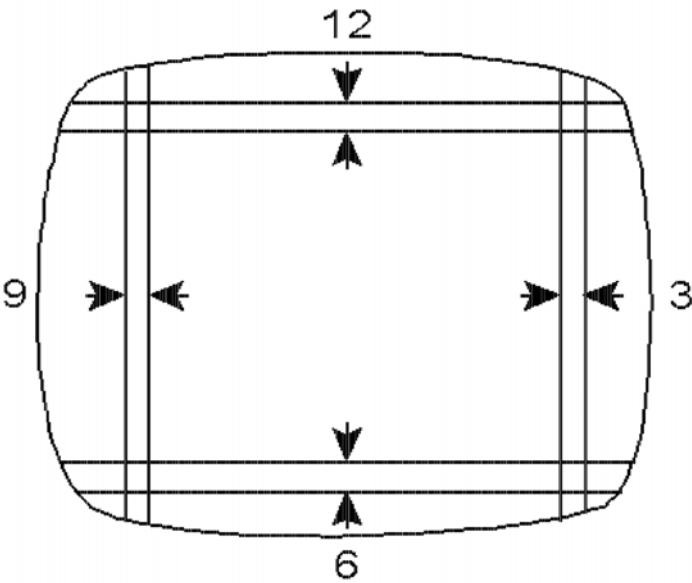
Note: To secure the correct position of the Deflection Yoke, three rubber wedges are used. They are ultimately to be placed as shown in Figure 4c or 5c.

- 1. Apply a crosshatch pattern signal to the Antenna terminals and set the Green Drive control (R643) to its fully counter-clockwise (CCW) position.
- 2. Set the Green Cutoff control (R649) to its fully clockwise (CW) position.
- 3. Tilt the Yoke up and down to converge the Red and Blue vertical lines at the 6 and 12 o'clock positions, and the Red and Blue horizontal lines at the 3 and 9 o'clock (Refer to graphic).



When the correct position has been found, place a rubber wedge between the Yoke and the CRT. If the Yoke is tilted UP, place wedge 1 as shown in Figure D; if it is tilted DOWN, place wedge 1 as shown in Figure A .

- 4. Tilt the Yolk to the left and right to find the point of best possible convergence of the Red and Blue lines at the edges, top and bottom of the screen as seen in Figure 7 . When the correct position is located, place wedges 2 and 3 as seen in Figure B or E .



- 5. Now, remove wedge 1 and place it in the final position as shown in Figure C or F .
- 6. Set the Green Drive control (R643) to its fully clockwise (CW) position.
- 7. Adjust the Green Cutoff control (R649) to bring its Gun back up to approximately the same intensity as the Red and Blue Guns.
- 8. Proceed to the WHITE BALANCE ADJUSTMENT .

WHITE BALANCE ADJUSTMENT

1. Turn the set on.
2. Using the on screen Customer Menu, set the Color, Brightness, Picture and Sharpness controls to Minimum. Select Antenna Input and disconnect the antenna input.
3. Set G2 Control (on flyback transformer) to minimum (counterclockwise).
4. Set Green and Blue Drive Controls to mid-range. Red Drive is fixed at mid-range.
5. Set all three Cutoff controls to their fully clockwise positions.
6. Turn the set off with the Remote Transmitter (do not unplug set).
7. Disconnect the vertical yoke plug (P/J550).
8. Turn the set on.
9. Adjust G2 (Screen) clockwise until a line just becomes visible. This line will be the color of the dominant gun.
10. Adjust the other two cutoff controls to achieve a low-level white line.
11. Turn the set off with the Remote Transmitter.
12. Reconnect the yoke plug (P/J550).
13. Turn the set On.
14. Set on screen Customer Controls back to original position (or activate the reset fuction/personal preference).
15. If necessary, adjust Green and Blue Drive Controls to achieve a white raster.
16. Connect a television signal (CATV or Air) to the antenna input.
17. Adjust G2 to attain the best black level with the ptcture diplayed.

STEREO ALIGNMENT (FOR STEREO MODELS ONLY)

Note: The following procedure was performed with a Sencore VG91 Universal Video Generator and must be done while the set is in the Service Mode.

1. Enter the Service Mode by pressing **06-25-96-Menu** on the Remote Transmitter, and scan to channel 3.
Do not mute sound during the following adjustments.

Input Level Adjust

1. Set the VG91 to 300Hz, L+R, No Pilot (Mono), Channel 3. Video Pattern = Raster, R-G-B raster colors off.
2. Connect the RF output of the generator to the Television Antenna Input, adjust the VG91 level to remove any snow from the raster.
3. Enter 81 with the remote for Input Level.
4. Adjust Input Level to 1.4Vp-p on scope at Test Point 52 (Pin 10 of IC200) using the +/- controls on the remote.

Wide Band Adjustment

1. Change VG91 to L (only), normal (100%) pilot.
2. Enter 83 with remote for Wide Band/ Spectrum adjustments.
3. Adjust Wide Band for a Null reading on the oscilloscope at **Test Point 53** (Pin 33 of IC200) using the menu +/- buttons on the Remote Transmitter.

Spectrum

1. Change VG91 setting to 3kHz.
2. Adjust Spectrun for Null on scope at **Test Point 53** (Pin 33, IC200) using menu up/down buttons on remote.
3. Repeat Wide Band & Spectrum Adjustments again.

AUDIO/VIDEO JACK PANEL ALIGNMENT

Video Alignment

1. Connect an oscilloscope to Test Point 52 (or pin 2 of P40).
2. Apply a composite video signal of 1 Vp-p to the Aux Video Input.
NOTE: Leader model LCG-396 has a composite video signal output with a preset level of 1Vp-p.
3. Turn the set on and adjust the following.
For AVJ180 and AVJ183 - Turn R40 fully clockwise, then adjust R40 for 1Vp-p at TP52. Make sure the adjustment is on the correct slope of the response curve, this will be the first point to reach 1Vp-p going from the clockwise stop.

Audio Alignment

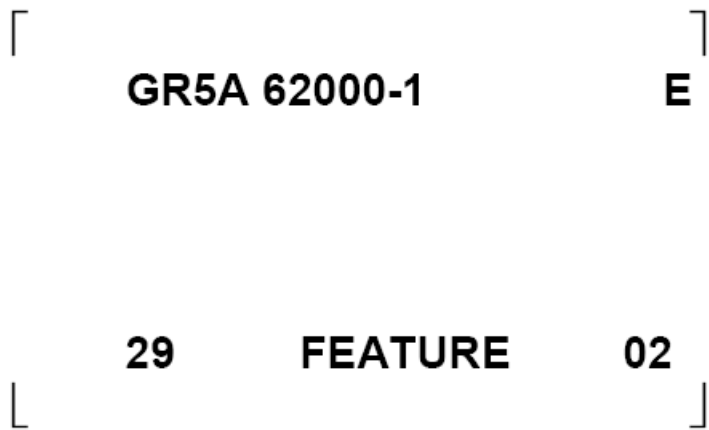
1. Connect an audio signal source (Example: B&K 3011) to the Right/Mono input to the jack panel.
With the signal source connected adjust the signal to 500mVrms (check at J45).
2. Connect an oscilloscope to Test Point 53 and adjust R60 to 1.5Vp-p.
3. Move the audio source to the Left audio input.
4. Connect an oscilloscope to Test Point 54 and adjust R80 to 1.5Vp-p.

SERVICE TEST MODE PROCEDURES

1. Press the following transmitter keys without allowing the on screen display to time out between entries.
NOTE: The transmitter supplied with the set may not perform this task properly, if the word "MENU" appears on screen at the end of the following sequence. A UR14, T251, or other similar transmitter with channel and volume keys separate from the menu keys must be acquired.

0-6-2-5-9-6-Menu

2. The Following is an example of what will be displayed on the screen and an explanation of the characters shown.



Top Line

62000-1 = Microprocessor part number
E = Error Codes will be displayed here if a communication error exists (i.e.A = tuner error)
Error Codes:
A = Tuner not responding.
B = Memory
D = Automatic Volume Limiter (Smart Sound)

Bottom Line

[] = Corner Marks
29 = Current Channel
FEATURE = Indicates Current Register
02 = Current register value in Hexadecimal format.

By pressing the STATUS/EXIT button on the transmitter, the run timer will be displayed in the upper left corner, also in Hexadecimal.
To select another register, press the menu button on the transmitter until the desired register is displayed, or each register may be accessed directly by entering the register number.
NOTE: SETS WITH VOLUME LIMITER

1. ENTER THE FOLLOWING NUMBERS WITHOUT LETTING THE ON-SCREEN DISPLAY TIMEOUT.
07-20-91-"MENU"
2. USE THE "+/-" KEYS TO SET THE VOLUME LIMIT.
3. PRESS THE "STATUS" KEY TO SAVE THE VOLUME LIMIT. (WHEN THE "STATUS" KEY IS DEPRESSED, THE BAR GRAPH WILL APPEAR TO DROP TO ZERO BEFORE DISAPPEARING-THIS IS NORMAL).
NOTE: THIS PROCEDURE IS NOT DONE IN SERVICE MODE.

REGISTER	VAL.(HEX)	- Notes -
*81 INPUT LEVEL	7	
*83 W-BAND/SPECT	10 10	mid-range
*84 CALIBRATION	80	mid-range
*88 DEMO OPTION	-	mid-range
90 FEATURE	SEE CHASSIS FEATURE CHART	
91 BRIGHTNESS	1F	mid-range
92 PICTURE	1F	mid-range
93 COLOR	1F	mid-range
94 TINT	1F	mid-range
95 SHARPNESS	1F	mid-range
96 OSD	14	mid-range
99 VOLINC	08	mid-range

Cannot enter by pressing menu button. Cannot exit without pressing another register number.
NOTE: DO NOT enter register 82. This is a factory stereo alignment, if register 82 is adjusted a full stereo alignment will be required.

Smart Picture Registers

To enter the Smart Picture Registers, press the smart picture button on the remote. To scroll through the registers, depress the smart picture button again. To change the value, depress the "+" and "-" keys on the remote transmitter.

The following registers are accessible:

REGISTER	VAL.(HEX)
SPORTS PICTURE	2F
SPORTS COLOR	27
SPORTS SHARPNESS	1F
MOVIES PICTURE	1F
MOVIES COLOR	1F
MOVIES SHARPNEW	1F
WEAK PICTURE	0F
WEAK COLOR	10
WEAK SHARPNESS	0F
GAMES PICTURE	17
GAMES COLOR	1F
GAMES SHARPNESS	1F

To exit Smart Picture Registers, press the STATUS/EXIT button on the remote transmitter. This will return you to the service test mode.

To Exit the Field Service Mode:

To exit the field service mode depress the PWR button on the local keyboard or remove the AC power from the set.
NOTE: Data may only be saved to the memory when exiting the mode through the PWR button on the local keyboard. All video controls shall be saved locally to the customer set up registers in the EEPROM. Customer status/setup and favorite station information will not be altered by exiting the field service mode.

CLOCK CALIBRATION

The microcomputer's crystal oscillator frequency of approx. 12MHz is applied to a divider program (within the micro) in order to supply a frequency of 2403.846153846Hz. The 12MHz oscillator frequency cannot be adjusted or measured (it is internal to the IC), however, a correction factor may be input in to the divider program in order to adjust for a slow or fast clock reading.

This correction factor is selected in the Service Mode by changing the value held in register 17. The data within this register can range from 00 (none) to 7F max. (for a fast clock) or FF (for a slow clock). Models are shipped from the factory with a default value of 00 or 80 for NO correction.

The more practical method is to simply question the customer on the number of minutes per month the clock is off (assuming the time error has been checked against a known accurate time source). Calculate using the formula below:

Minutes of error per month X 2 = Sec. of error per day. Is it losing (slow) or gaining (fast)?

Enter the Service Mode and look at register 17. If it is 00 or 80 the task is easy. Look up (use Table) the seconds of correction needed, fast or slow, and enter its "calibration byte" in for the data held by register 17.

Click [here if clock is fast](#) to see appropriate table.

CALIBRATION TABLE FOR FAST CLOCK

CLOCK CALIBRATION CODES CHART

IF CLOCK IS FAST -

Cal.			Cal.		
Freq., Hz.	Byte	(sec./day)	Freq, Hz.	Byte	(sec./day)
[- Comp.]	(Hex)		[- Comp.]	(Hex)	
2403.84615	00	0.00	2404.00641	40	5.76
2403.84866	01	0.09	2404.00891	41	5.85
2403.85116	02	0.18	2404.01142	42	5.94
2403.85367	03	0.27	2404.01392	43	6.03
2403.85617	04	0.36	2404.01643	44	6.12
2403.85867	05	0.45	2404.01893	45	6.21
2403.86118	06	0.54	2404.02143	46	6.30
2403.86368	07	0.63	2404.02394	47	6.39
2403.86619	08	0.72	2404.02644	48	6.48
2403.86869	09	0.81	2404.02895	49	6.57
2403.87119	0A	0.90	2404.03145	4A	6.66
2403.87370	0B	0.99	2404.03395	4B	6.75
2403.87620	0C	1.08	2404.03646	4C	6.84
2403.87871	0D	1.17	2404.03896	4D	6.93
2403.88121	0E	1.26	2404.04147	4E	7.02
2403.88371	0F	1.35	2404.04397	4F	7.11
2403.88622	10	1.44	2404.04647	50	7.20
2403.88872	11	1.53	2404.04898	51	7.29
2403.89123	12	1.62	2404.05148	52	7.38
2403.89373	13	1.71	2404.05399	53	7.47
2403.89623	14	1.80	2404.05649	54	7.56
2403.89874	15	1.89	2404.05899	55	7.65
2403.90124	16	1.98	2404.06150	56	7.74
2403.90375	17	2.07	2404.06400	57	7.83
2403.90625	18	2.16	2404.06651	58	7.92
2403.90875	19	2.25	2404.06901	59	8.01
2403.91126	1A	2.34	2404.07151	5A	8.10
2403.91376	1B	2.43	2404.07402	5B	8.19
2403.91627	1C	2.52	2404.07652	5C	8.28
2403.91877	1D	2.61	2404.07903	5D	8.37
2403.92127	1E	2.70	2404.08153	5E	8.46
2403.92378	1F	2.79	2404.08403	5F	8.55
2403.92628	20	2.88	2404.08654	60	8.64
2403.92879	21	2.97	2404.08904	61	8.73
2403.93129	22	3.06	2404.09155	62	8.82
2403.93379	23	3.15	2404.09405	63	8.91
2403.93630	24	3.24	2404.09655	64	9.00
2403.93880	25	3.33	2404.09906	65	9.18
2403.94131	26	3.42	2404.10156	66	9.27
2403.94381	27	3.51	2404.10407	67	9.36
2403.94631	28	3.60	2404.10657	68	9.45
2403.94882	29	3.69	2404.10907	69	9.54
2403.95132	2A	3.78	2404.11158	6A	9.63
2403.95383	2B	3.87	2404.11408	6B	9.72
2403.95633	2C	3.96	2404.11659	6C	9.81
2403.95883	2D	4.05	2404.11909	6D	9.90
2403.96134	2E	4.14	2404.12159	6E	9.99
2403.96384	2F	4.23	2404.12410	6F	10.08
2403.96635	30	4.32	2404.12660	70	10.17
2403.96885	31	4.41	2404.12911	71	10.26
2403.97135	32	4.50	2404.13161	72	10.35
2403.97386	33	4.59	2404.13411	73	10.44
2403.97636	34	4.68	2404.13662	74	10.53
2403.97887	35	4.77	2404.13912	75	10.62
2403.98137	36	4.86	2404.14163	76	10.71
2403.98387	37	4.95	2404.14413	77	10.80
2403.98638	38	5.04	2404.14663	78	10.89
2403.98888	39	5.13	2404.14914	79	10.98
2403.99139	3A	5.22	2404.15164	7A	11.07
2403.99389	3B	5.31	2404.15415	7B	11.16
2403.99639	3C	5.40	2404.15665	7C	11.25
2403.99890	3D	5.49	2404.15915	7D	11.34
2404.00140	3E	5.58	2404.16166	7E	11.43
2404.00391	3F	5.67	2404.16416	7F	11.52

Click [here if clock is slow](#) to see appropriate table.

CALIBRATION CHART FOR SLOW CLOCK

IF CLOCK IS SLOW -

Freq., Hz. [+ Comp.]	Cal. Byte (Hex)	(sec./day)	Freq., Hz. [+ Comp.]	Cal. Byte (Hex)	(sec./day)
2403.84615	80	0.00	2403.68590	C0	5.76
2403.84365	81	0.09	2403.68339	C1	5.85
2403.84115	82	0.18	2403.68089	C2	5.94
2403.83864	83	0.27	2403.67839	C3	6.03
2403.83614	84	0.36	2403.67588	C4	6.12
2403.83363	85	0.45	2403.67338	C5	6.21
2403.83113	86	0.54	2403.67087	C6	6.30
2403.82863	87	0.63	2403.66837	C7	6.39
2403.82612	88	0.72	2403.66587	C8	6.48
2403.82362	89	0.81	2403.66336	C9	6.57
2403.82111	8A	0.90	2403.66086	CA	6.66
2403.81861	8B	0.99	2403.65835	CB	6.75
2403.81611	8C	1.08	2403.65585	CC	6.84
2403.81360	8D	1.17	2403.65335	CD	6.93
2403.81110	8E	1.26	2403.65084	CE	7.02
2403.80859	8F	1.35	2403.64834	CF	7.11
2403.80609	90	1.44	2403.64583	D0	7.20
2403.80359	91	1.53	2403.64333	D1	7.29
2403.80108	92	1.62	2403.64083	D2	7.38
2403.79858	93	1.71	2403.63832	D3	7.47
2403.79607	94	1.80	2403.63582	D4	7.56
2403.79357	95	1.89	2403.63331	D5	7.65
2403.79107	96	1.98	2403.63081	D6	7.74
2403.78856	97	2.07	2403.62831	D7	7.83
2403.78606	98	2.16	2403.62580	D8	7.92
2403.78355	99	2.25	2403.62330	D9	8.01
2403.78105	9A	2.34	2403.62079	DA	8.10
2403.77855	9B	2.43	2403.61829	DB	8.19
2403.77604	9C	2.52	2403.61579	DC	8.28
2403.77354	9D	2.61	2403.61328	DD	8.37
2403.77103	9E	2.70	2403.61078	DE	8.46
2403.76853	9F	2.79	2403.60827	DF	8.55
2403.76603	A0	2.88	2403.60577	E0	8.64
2403.76352	A1	2.97	2403.60327	E1	8.73
2403.76102	A2	3.06	2403.60076	E2	8.82
2403.75851	A3	3.15	2403.59826	E3	8.91
2403.75601	A4	3.24	2403.59575	E4	9.09
2403.75351	A5	3.33	2403.59325	E5	9.18
2403.75100	A6	3.42	2403.59075	E6	9.27
2403.74850	A7	3.51	2403.58824	E7	9.36
2403.74599	A8	3.60	2403.58574	E8	9.45
2403.74349	A9	3.69	2403.58323	E9	9.54
2403.74099	AA	3.78	2403.58073	EA	9.63
2403.73848	AB	3.87	2403.57823	EB	9.72
2403.73598	AC	3.96	2403.57572	EC	9.81
2403.73347	AD	4.05	2403.57322	ED	9.90
2403.73097	AE	4.14	2403.57071	EE	9.99
2403.72847	AF	4.23	2403.56821	EF	10.08
2403.72596	B0	4.32	2403.56571	F0	10.17
2403.72346	B1	4.41	2403.56320	F1	10.26
2403.72095	B2	4.50	2403.56070	F2	10.35
2403.71845	B3	4.59	2403.55819	F3	10.44
2403.71595	B4	4.68	2403.55569	F4	10.53
2403.71344	B5	4.77	2403.55319	F5	10.62
2403.71094	B6	4.86	2403.55068	F6	10.71
2403.70843	B7	4.95	2403.54818	F7	10.80
2403.70593	B8	5.04	2403.54567	F8	10.89
2403.70343	B9	5.13	2403.54317	F9	10.98
2403.70092	BA	5.22	2403.54067	FA	11.07
2403.69842	BB	5.31	2403.53816	FB	11.16
2403.69591	BC	5.40	2403.53566	FC	11.25
2403.69341	BD	5.49	2403.53315	FD	11.34
2403.69091	BE	5.58	2403.53065	FE	11.43
2403.68840	BF	5.67	2403.52815	FF	11.52

Normal Example:

4 minutes fast a month X 2 = 8 seconds a day fast.
The Chart says if the clock is 8 seconds a day fast without correction, then use 59. Change register 17 from 00 to 59. If there is a calibration byte in register 17 other than 00 or 80 then the job gets a bit more complex.

Note: Modifying the value held in this register does not change the oscillator frequency

Complex Example #1

Using the error from the "normal example", 8 seconds fast a day, you find the register 17 the data value of 16. Look up 16 and you find that there is already a correction for 2 seconds fast a day. You need 8 seconds fast more correction (2 + 8 = 10) or a total of 10 seconds fast correction which is 6E. Enter 6E for the data held by register 17.

Complex Example #2:

If the clock is 8 seconds fast a day and you find register 17 holds the data value of 96 you have 2 seconds a day correction in the wrong direction (slow). You need to "back up" 8 seconds. First, if you back up to 80 (no correction) you have used 2 of the 8 seconds leaving 6. Then go 6 seconds in the fast column, from no correction to 6 seconds (43). Enter 43 for the data held by register 17.

PRACTICAL SERVICE PRECAUTIONS

It makes sense to avoid exposure to electrical shock. While some sources are expected to have a possible dangerous impact, others of quite high potential are of limited current and are sometimes held in less regard.

Always respect voltages. While some may not be dangerous in themselves, they can cause unexpected reactions, reactions that are best avoided. Before reaching into the powered color TV set, it is best to test the high voltage insulation. It's easy to do and is just a good service precaution.

Before powering up the TV with the back off (or on a test fixture), attach a clip lead to the CRT DAG ground and to a screwdriver blade whose handle is well insulated. After the TV is powered on and high voltage has developed, probe the anode lead with the blade starting at the case of the High Voltage Transformer (flyback-IFT). Move the blade to within two inches of the connector of the CRT.
If there is an arc, you found it the easy way, without getting a shock! If there is an arc to the screwdriver blade, replace the High Voltage Transformer (or the lead, if removable) whichever is causing the problem.

Contents of Known Faults for: 13X6

1. - Chassis frame part # for 25" and 27"
2. - Dead
3. - Dead, Q502 shorted, possible repeat failure
4. - Intermittent loss of sync
5. - Model 19PR17 extra remote
6. - Model PL6125 dark blob/circle in center of video
7. - Model PX6119 width problem
8. - No memory after power loss
9. - R505 and V505 information
10. - Snowy video
11. - Vertical size will not adjust correctly

No. 1 *****

Manual Number: 7553

Chassis frame part # for 25" and 27"

Information: The chassis frame for the 25X6 and 27X6 (147192-0008) has been assigned a Service Code. The Service Code number will be loaded into the system within the first week of June. Parts will be available shortly after the number becomes active. Service Code 4835 432 17953

No. 2 *****

Manual Number: 7553

Dead

Symptom: Dead set, open F401, suspect 130 volt regulator shorted.

Cause: Metal scrap or Heat Sink burr behind regulator IC, possibly embedded in mica or Sil-Pad insulator.

Cure: Replace Regulator IC using 4835 310 57401 Kit. Kit contains replacement Sil-Pad for all applications.

No. 3 *****

Manual Number: 7553

Dead, Q502 shorted, possible repeat failure

Symptom: Dead set, Q502 shorted, possible repeat failure.

Check: R505 for correct value (.47 ohm). A very small number may have 4.7 ohm in R505.

Note: If Q502 is shorted you can not check R505 in circuit. With Q502 removed (or good) R505 should measure about .4 ohms in-circuit. Also, check R501 (200 ohms) and R502 (2K-13/19" and 3K 25/27").

No. 4 *****

Manual Number: 7553
Intermittent loss of sync

Symptom: Intermittent loss of sync, most evident by loss of horizontal sync.
Cause: Y620, 3.58 crystal may be locking to either the 3rd harmonic or 3rd overtone.
Cure: Replace Y620 - 4835 242 77215

No. 5 *****

Manual Number: 7553
Model 19PR17 extra remote

Information: The model, 19PR17, uses an extra remote packed for special promotions. All versions are packed with T216EG-MA01, (4835 219 17641). C521 versions are packed with extra RG9168-GN01, (4835 219 17689). C621, C622, C625 are packed with extra T216JG-MA01, (4835 219 17642).

No. 6 *****

Manual Number: 7553
Model PL6125 dark blob/circle in center of video

Symptom: A dark round blob or circle in the center of the picture.
Cure: Insure that R505 is a 0.47 ohm 5%,Watt Metal Film, P/N 4835 116 57139 and that R501 is a 200 Ohm 5%, 1/4W Metal Film P/N 4835 116 57408.

No. 7 *****

Manual Number: 7553
Model PX6119 width problem

To correct marginal width in a PX6119 equipped with a EMX633-A004 chassis replace C507 with 4835 121 47126, .36 uf (360nf).

No. 8 *****

Manual Number: 7553
No memory after power loss

The following models have no memory when they are unplugged (or power lost):

13" CT1301, PR1301, XR1301

19" CT1901, PR1901, XR1901, HD1917

25" CT2501, TR2501, XR2501, HD2517

Items lost: Last channel viewed

Favorite station memory

Control settings

This is by design intent, they are designed and manufactured to be a leader model. There is no

smart sound or smart picture even if the display appears. These units all use a 20 button remote. This remote has NO Smart button. Use of a different (21 button) remote will put the Smart functions on the screen but they will not work and will disappear when the set is unplugged. ALL memory functions (controls-stations-functions) are forgotten when the AC power is lost.

No. 9 *****

Manual Number: 7553
R505 and V505 information

Information: The location marked R505 or V505 may be a resistor or a jumper wire. This is based on the Horizontal driver transformer. There are 2 outlines on the PCB for the driver transformer, T504 and T505. T504 is the larger outline and uses R505. T505 is the smaller size and uses V505, a wire, in place of R505. When R505 is used, ONLY a .47 ohm resistor is correct.

No. 10 *****

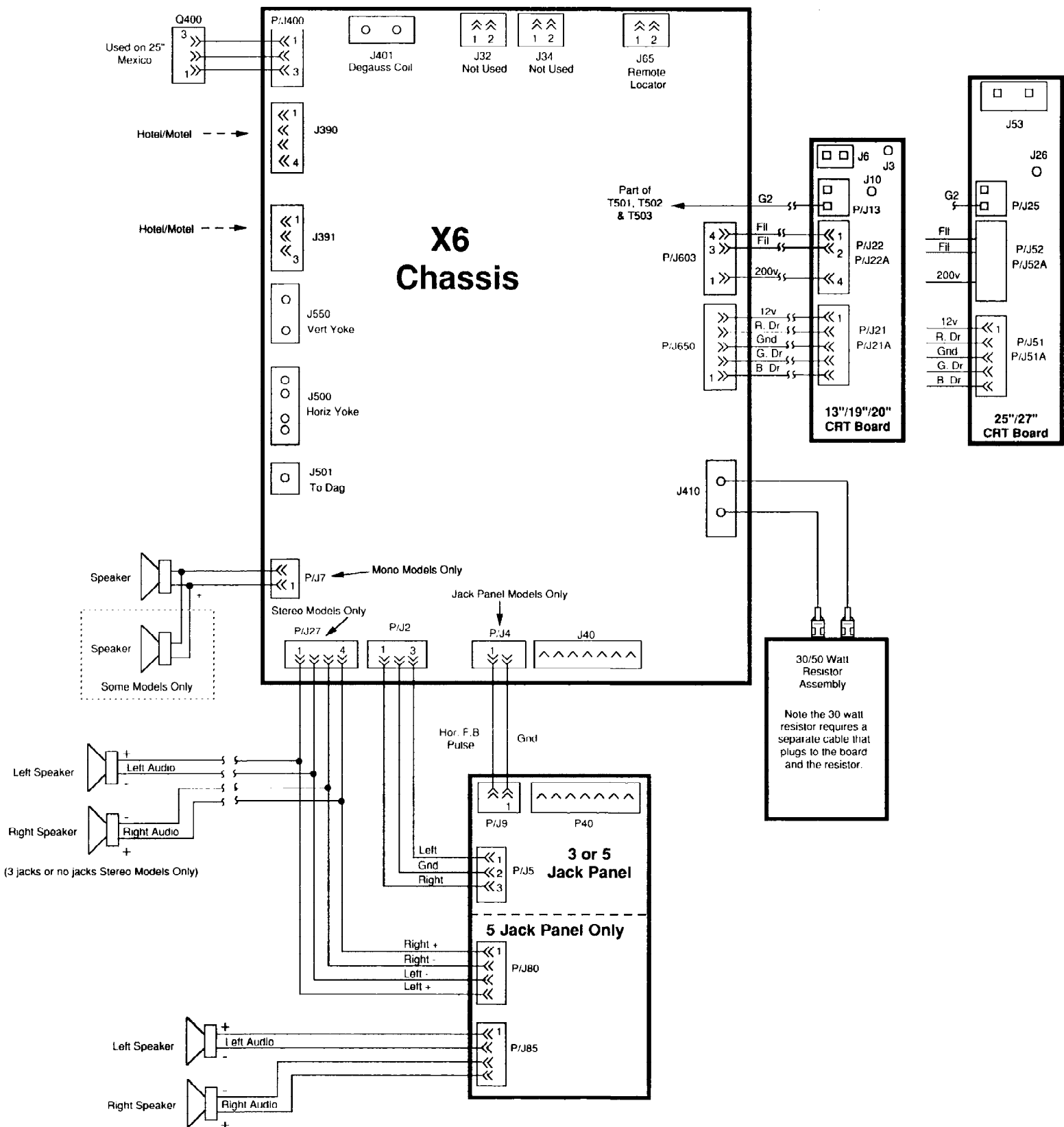
Manual Number: 7553
Snowy video

SYMPTOM: Very snowy picture at 0 db signal level input.
CAUSE: No positive AGC voltage on tuner. R222 is open.
CURE: Replace R222, 12K - 1/4 w - MF resistor. Use 4835 116 57397.

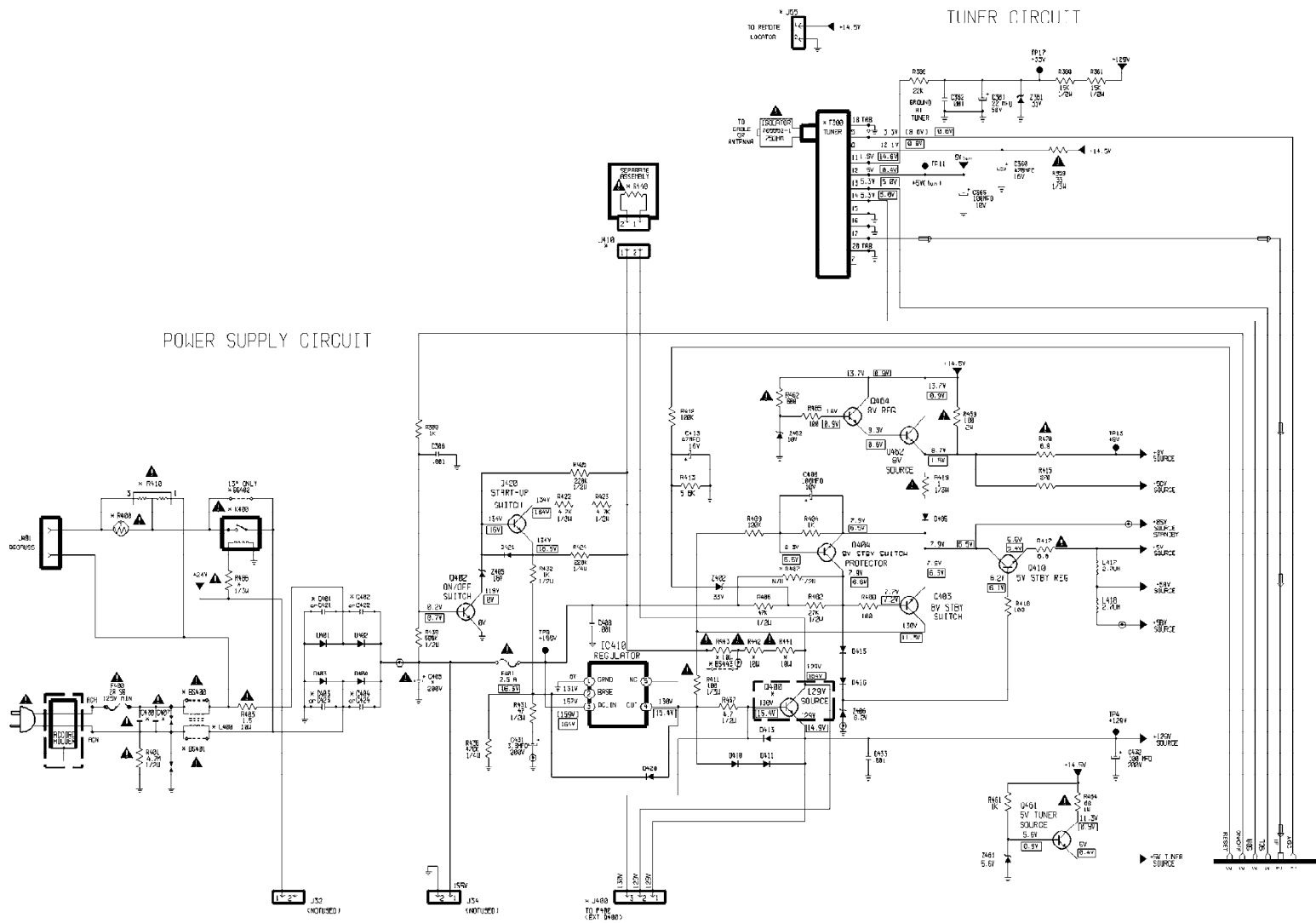
No. 11 *****

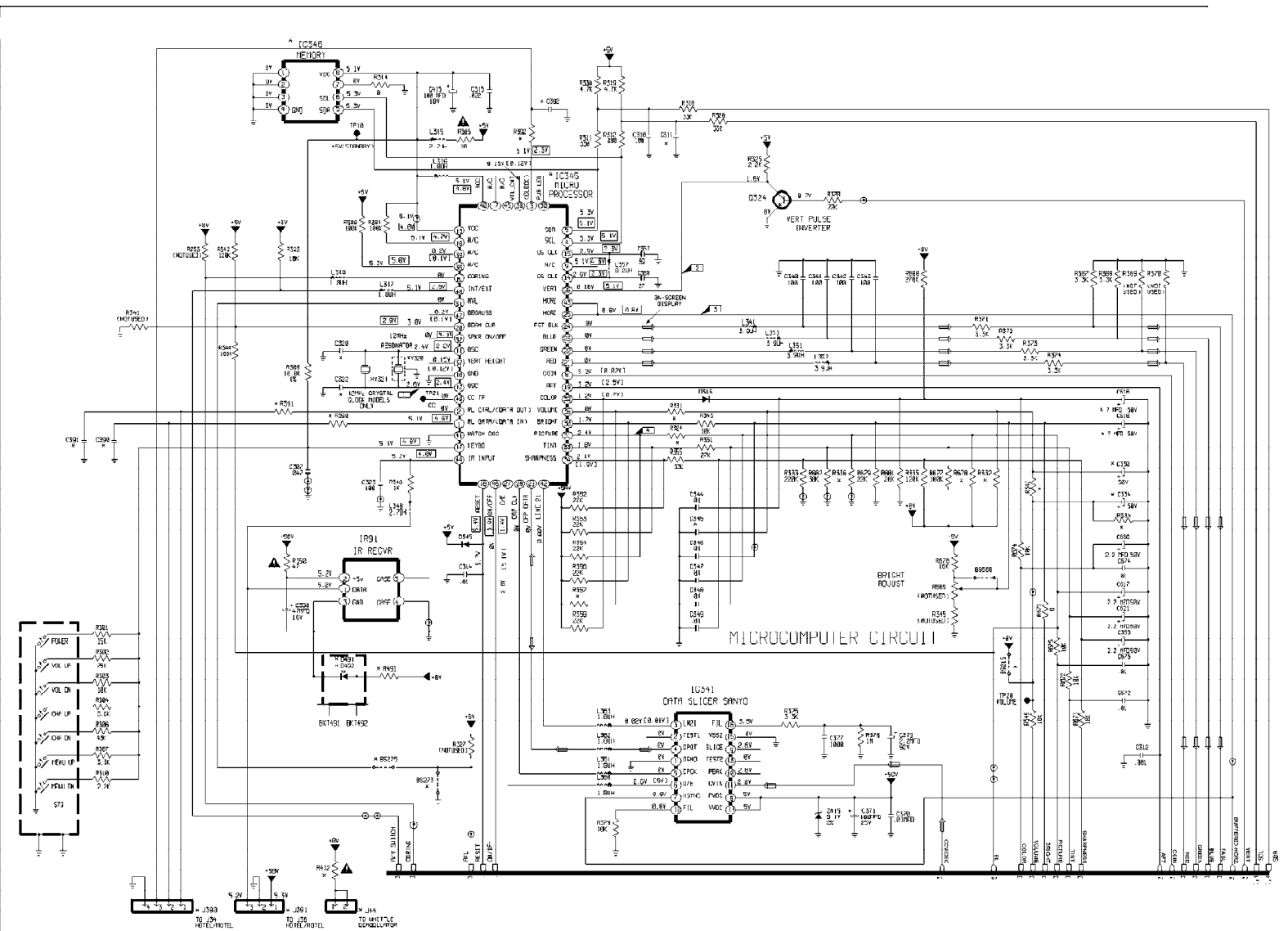
Manual Number: 7553
Vertical size will not adjust correctly

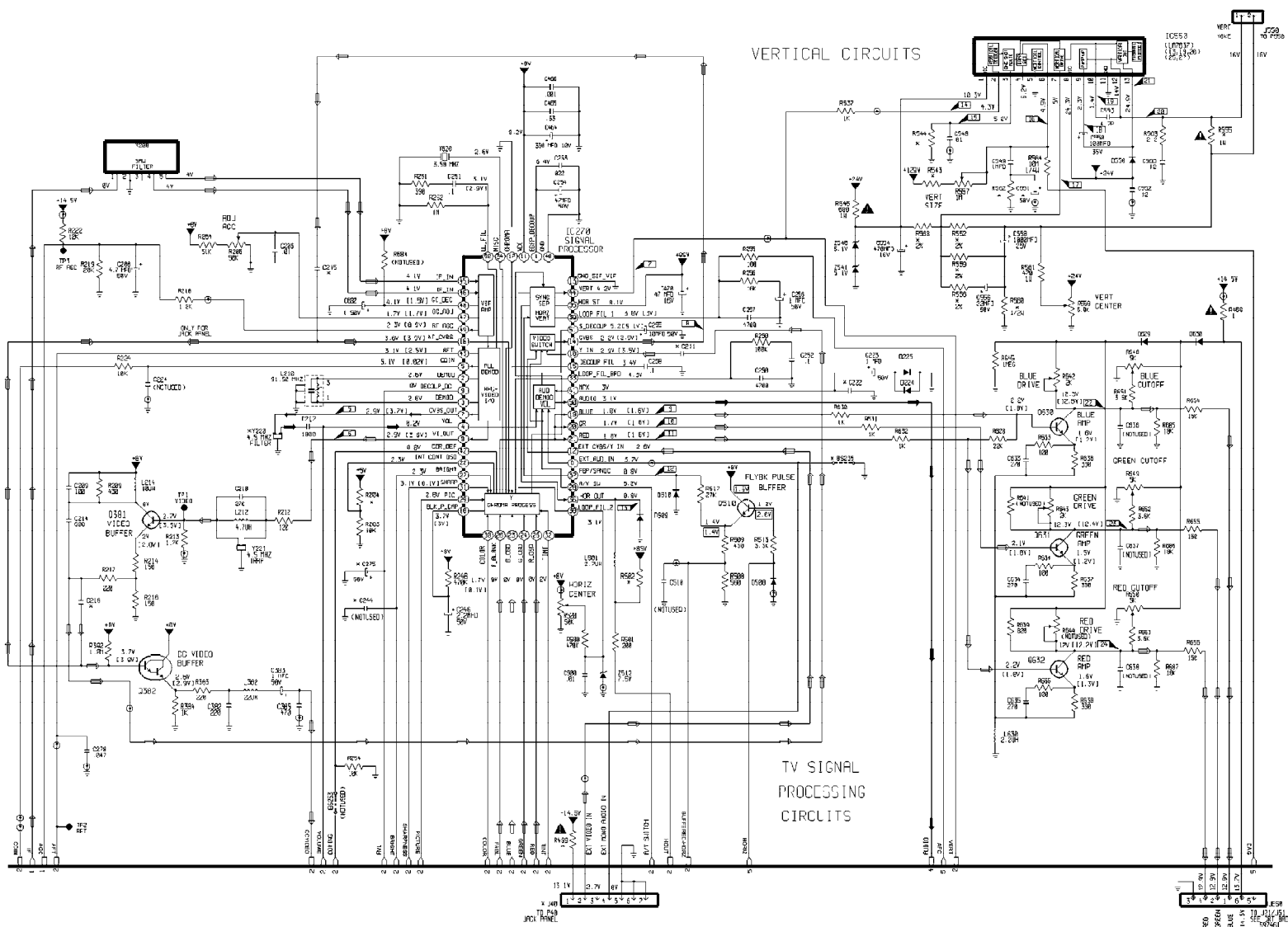
CHASSIS AFFECTED: 13X6, 19X6, 20X6
SYMPTOM: Inability to adjust vertical correctly, may show only when "hot".
CURE: Replace R559 with 910 ohm, 1/8 watt, CF, 4835 110 67238.
NOTE: This applies to all 13X6 and 20X6. In 19X6 this applies to all EXCEPT EMX683/684/685.

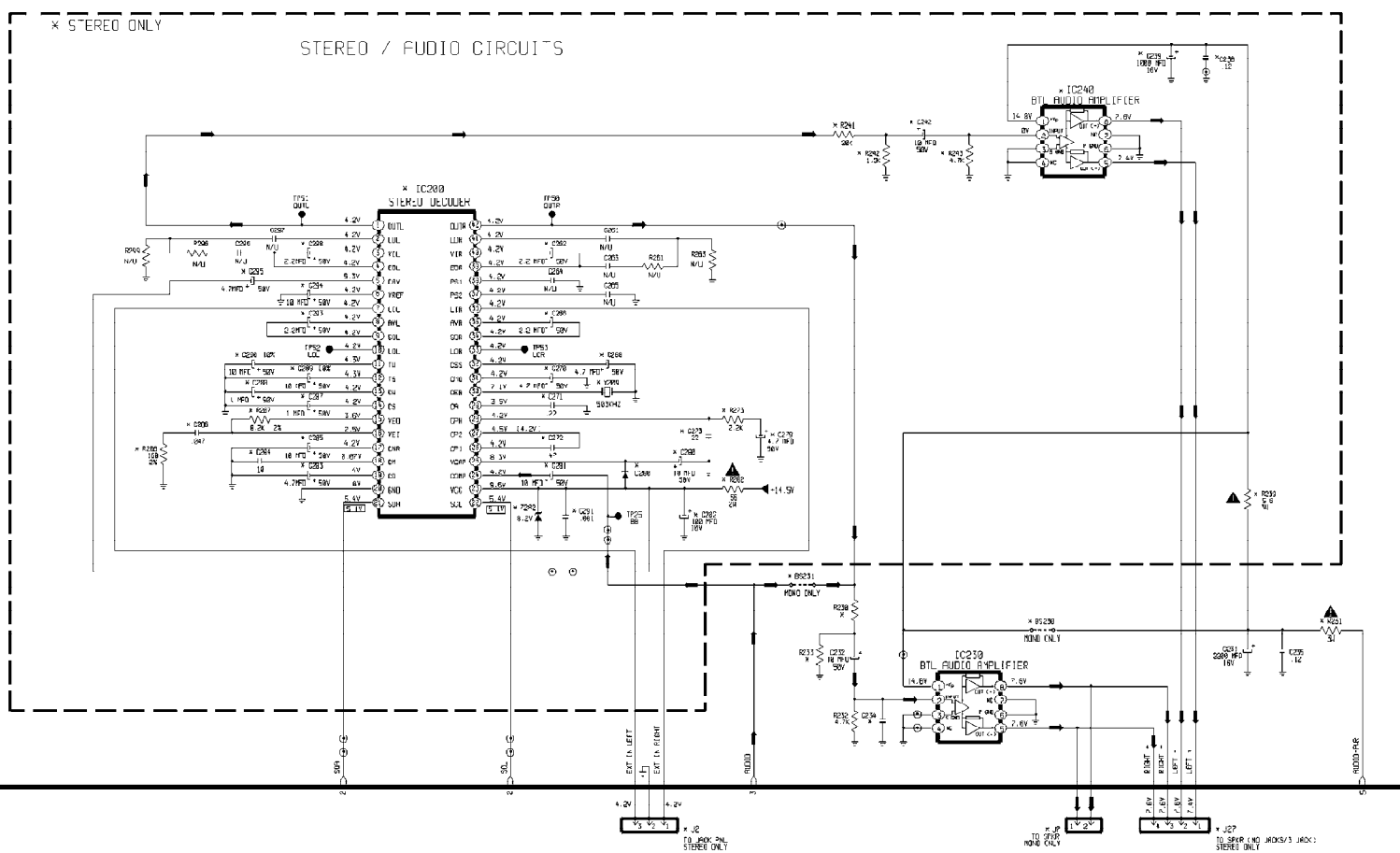


POWER SUPPLY CIRCUIT









HIGH VOLTAGE CIRCUITS

