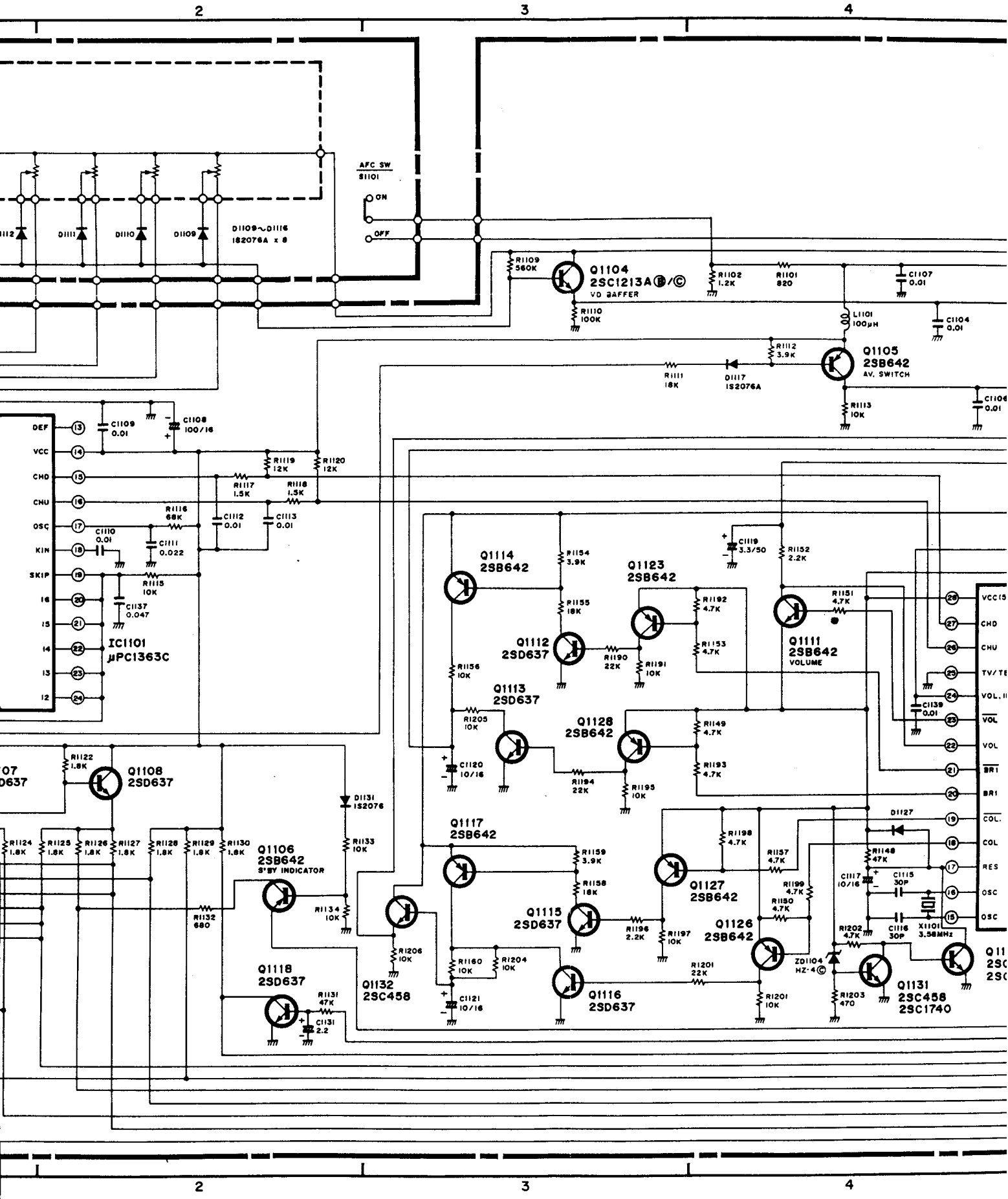
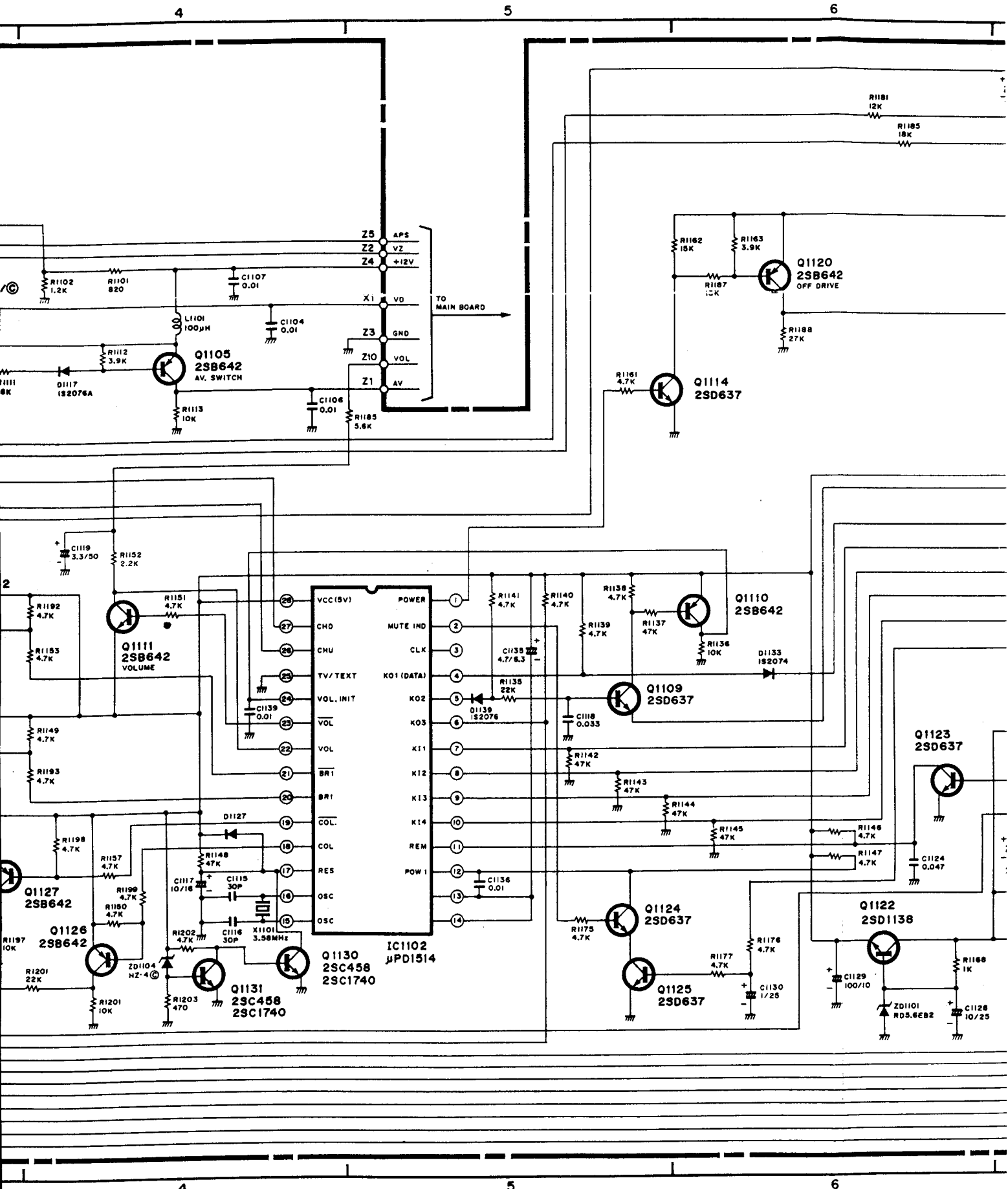

2
3
4
AFC SW
S1101
ON
OFF
D1109~D1116
1S2076A x 8
Q1104
2SC1213A B/C
VD BAFFER
Q1105
2SB642
AV. SWITCH
D1117
1S2076A
IC1101
μPC1363C
Q1106
2SB642
STBY INDICATOR
Q1108
2SD637
Q1111
2SB642
VOLUME
Q1112
2SD637
Q1113
2SD637
Q1114
2SB642
Q1115
2SD637
Q1116
2SD637
Q1117
2SB642
Q1118
2SD637
Q1123
2SB642
Q1126
2SB642
Q1127
2SB642
Q1128
2SB642
Q1131
2SC458
2SC1740
Q1132
2SC458
D1131
1S2076
D1127
ZD1104
HZ-4C
X1101
3.58MHz
DEF
VCC
CHD
CHU
OSC
KIN
SKIP
VCC(5
TV/TE
VOL.I
VOL
BRT
BRI
COL.
COL
RES
OSC
R1109 560K
R1110 100K
R1101 820
R1102 1.2K
R1111 18K
R1112 3.9K
R1113 10K
L1101 100μH
C1104 0.01
C1107 0.01
C1108 100/16
C1109 0.01
R1119 12K
R1120 12K
R1117 1.5K
R1118 1.5K
R1116 68K
C1110 0.01
C1111 0.022
C1112 0.01
C1113 0.01
R1115 10K
C1137 0.047
R1122 1.8K
R1124 1.8K
R1125 1.8K
R1126 1.8K
R1127 1.8K
R1128 1.8K
R1129 1.8K
R1130 1.8K
R1132 680
R1133 10K
R1134 10K
R1131 47K
C1131 2.2
R1206 10K
R1160 10K
R1204 10K
C1121 10/16
R1154 3.9K
R1155 18K
R1156 10K
R1205 10K
C1120 10/16
R1159 3.9K
R1158 18K
R1196 2.2K
R1197 10K
R1190 22K
R1191 10K
R1194 22K
R1195 10K
C1119 3.3/50
R1152 2.2K
R1192 4.7K
R1153 4.7K
R1151 4.7K
R1149 4.7K
R1193 4.7K
R1198 4.7K
R1157 4.7K
R1150 4.7K
R1199 4.7K
R1148 47K
C1117 10/16
C1115 30P
C1116 30P
R1202 4.7K
R1203 470
R1201 22K
R1201 10K
C1139 0.01

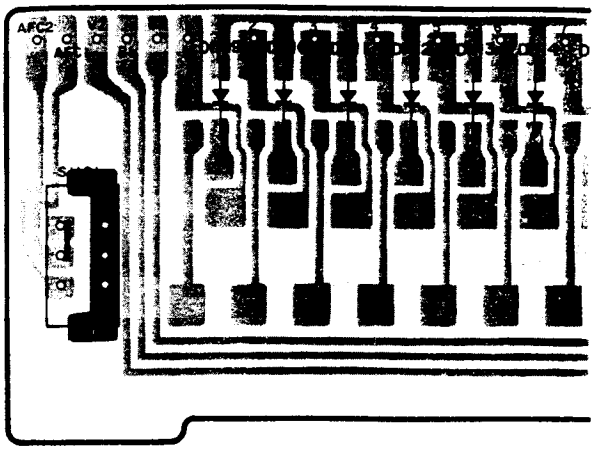
REMOTE CONTROL/PROGRAMME SELECTOR CIRCUIT DIAGRAMME (CPT 1473)

PRODUCT SAFETY N
safety. Before replacir
Manual. Don't degrade



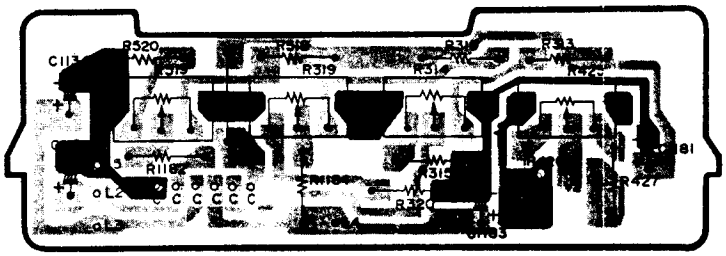
• Si
• Al
Vo

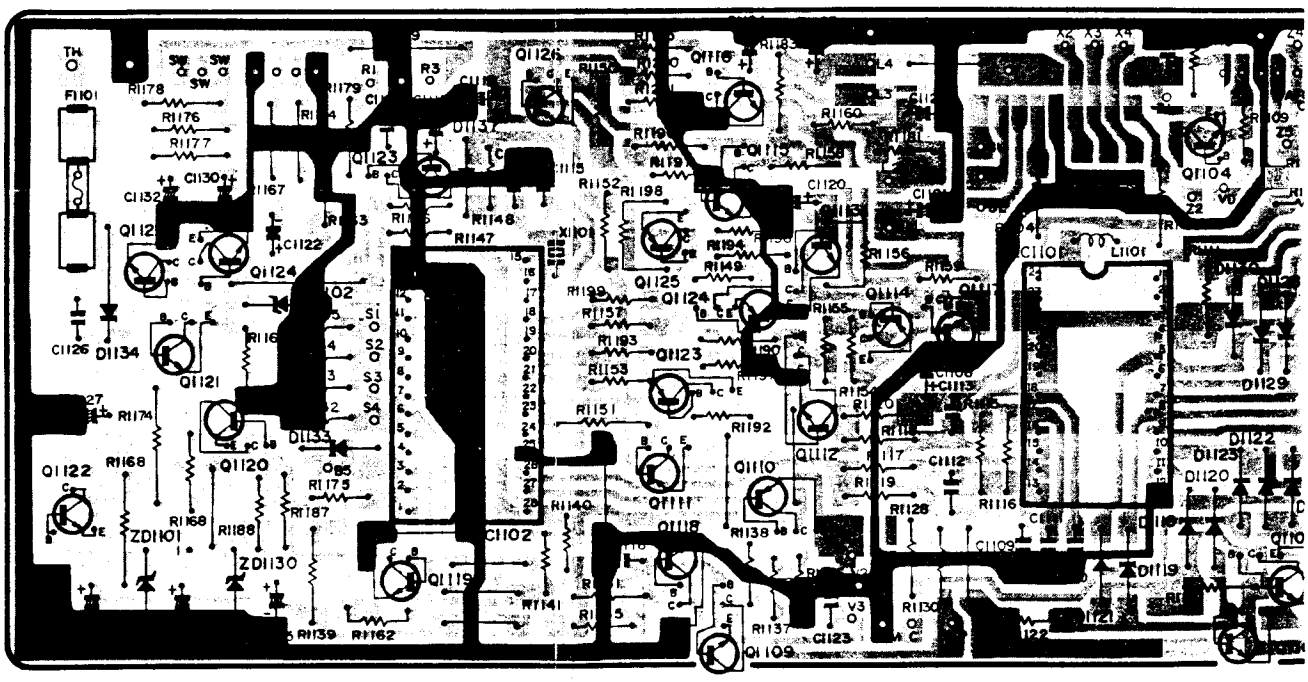
PRESET P.W. BOARD



ROL
BOARD

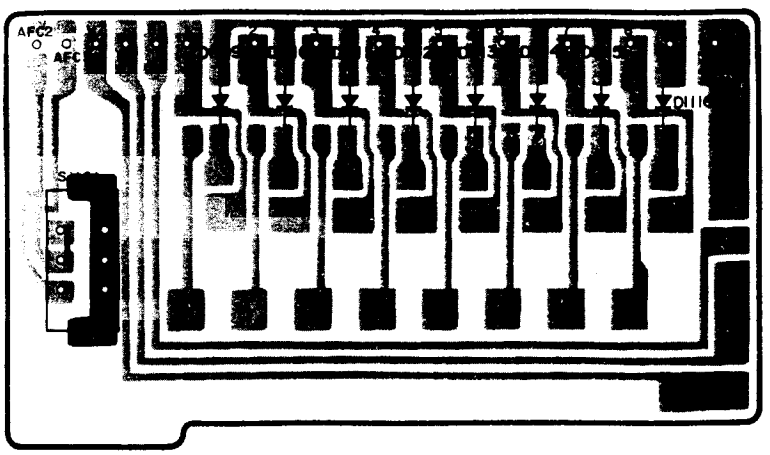
CONTROL P.W. BOARD

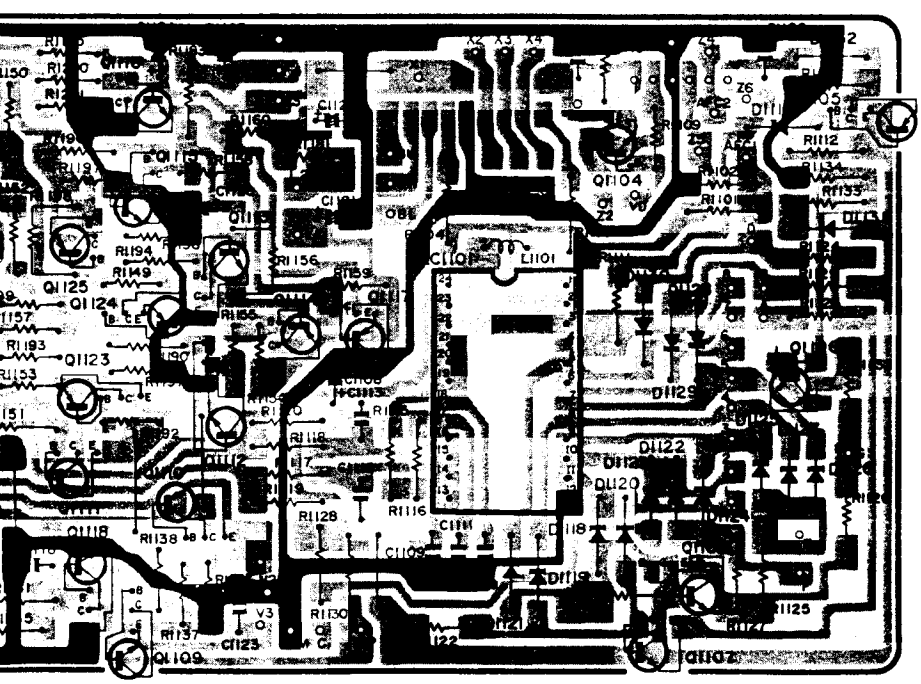




REMOTE CONTROL/ PROGRAMME SELECTOR P

PRESET P.W. BOARD





REMOTE CONTROL/ PROGRAMME SELECTOR P.W. BOARD

Mains Supplies: 220–240 volts, 50Hz.

Cathode Ray Tubes: 14-ins. 370-HUB22-TC-02, 16-ins. 420-GAB22-TC-01.

Loudspeaker: 16 ohms impedance.

Chassis/Module Identification

Model No.	*Type No.*	*Chassis Modules*					
		Power Board	*C.R.T. Base*	*H.F. Module*	*Video Decoder*	*Text Decoder*	*Control Panel*
CP3200/2	CVC1110	CMP1110	CMB1100	CMR800/3	—	—	CMC205
CT2500/2	CVC1175	CMP1175	CMB1170	CMR800/3	—	—	CMC216
CT2512/2	CVC1200	CMP1200/1	CMB1170	CMR803/3	CMD1201	—	CMC302
TX2512/2	CVC1200/1	CMP1200/1	CMB1170	CMR803/3	CMD1201	TMN20	CMC302
CT2600	CVC1210	CMP1210	CMB1170	CMR800/3	CMD1201	—	CMC216
CT2612/2	CVC1215	CMP1210/1	CMB1170	CMR803/3	CMD1201	—	CMC302
TC2612/2	CVC1215/1	CMP1210/1	CMB1170	CMR803/3	CMD1201	TMN20	CMC302

Critical (Safety) Components

General: Certain components and the fitting and positioning of certain components are critical to the accepted standard of safety of this receiver (B.S. 415). These components are denoted by the symbol '⚠' on the relevant circuit diagrams. In particular all wires and cableforms must be correctly located after any repair or maintenance and must not foul components which dissipate significant heat (e.g. resistors above 0·5W dissipation).

Safety Components:

Chassis CVC1100

Circuit ref. or type	*Description*	*Mounting*
TR500	Diode-split E.H.T. transformer including anode cap and lead	—
TR712	Driver transformer	—
TR711	Output transformer S.M.P.S.	—
TR1801	Headphone transformer	—
25002	Headphone socket	—
L503	Linearity Coil	—
	Degaussing Coil assembly	—
R403	1 Ω 10% 0·4W Metal film	—
R405	10 Ω 10% 0·4W Metal film	Vertical
R508	3·3K 5% 0·33W Carbon film	Stand off
R511	1K 10% 0·33W Carbon film	Stand off
R512	100 Ω 5% 0·33W Carbon film	Stand off
R513	1·5 Ω 5% 0·5W Metal film	Stand off
R514	0·33 Ω 10% 0·5W Metal film	Stand off
R515	0·47 Ω 10% 0·5W Metal film	Stand off
R652	5·1 Ω 5% 5W Wire wound ceramic	Mounted on pillars
R728	1·5K 10% 0·33W Carbon film	—
R1001	Focus Control	—

Circuit ref. or type	*Description*	*Mounting*
R1075	10 Ω 10% 0·5W Metal film	Stand off
R1081	4·7M Ω 5% 1W 10% Carbon film	—
Si651	1 amp. quick blow	—
C651	0·1μF metallised poly foil 250V A.C.	—
C655	0·1μF metallised poly foil 250V A.C.	—
C727	3·9nF Mixed foil 1·5kV	—
CV1100	Chassis assy.	—

Control Unit CMC201

Circuit ref. or type	*Description*
—	Mains lead
Fu 1101	Fuse, 2A delay
—	On/off switch
CMC201	Control unit

R.F./I.F. Module CMR800/1

Circuit ref. or type	*Description*
R239	Resistor, 22kΩ
25005	Aerial isolator
CMR800/1	R.F./I.F. Module

Miscellaneous Items

Circuit ref. or type	*Description*
—	Cathode ray tube

Chassis Removal (CVC1100): The main chassis is secured with plastic lugs that slide into slots at the bottom of the cabinet moulding. Before commencing maintenance work, switch off the mains supply. Discharge the E.H.T. connector to the aquadag earthing braid before removing the chassis. The chassis can be pulled backwards and then lifted out from the cabinet taking care not to strain the connecting leads. To gain access to the back of the P.C.B., the chassis can be tilted through 90°, and stood on the bench. Great care should be taken to ensure it does not touch the C.R.T. P.C.B. If necessary the entire chassis can be removed as follows:

Unplug all the inter-connecting plugs and sockets between the chassis and cabinet-mounted components. Withdraw the chassis away from the cabinet.

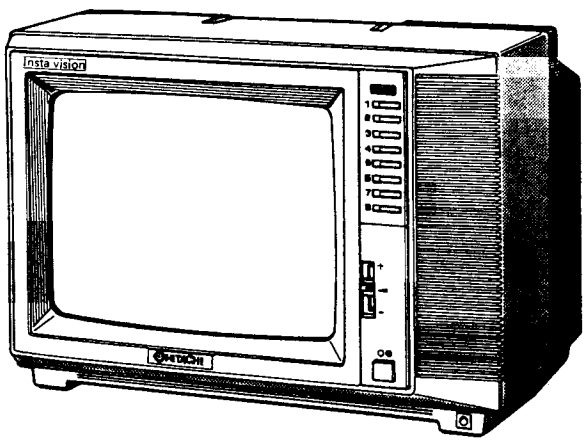
Module Removal: There is one plug-in module only that can be removed from the chassis—the R.F./I.F. module.

To remove the R.F./I.F. module first disconnect the aerial socket and isolator from its moulded supporting bracket. This has a bayonet type fitting and must be rotated through approximately 90°. Then remove the two

HITACHI
SERVICE MANUAL

YK | No. 818E

CPT1471
CPT1473



(CPT1471)

CONTENTS

CAUTION: Before servicing this chassis, it is important that the service technician read the "Safety Precaution" and "Product Safety Notices" in this Service Manual.

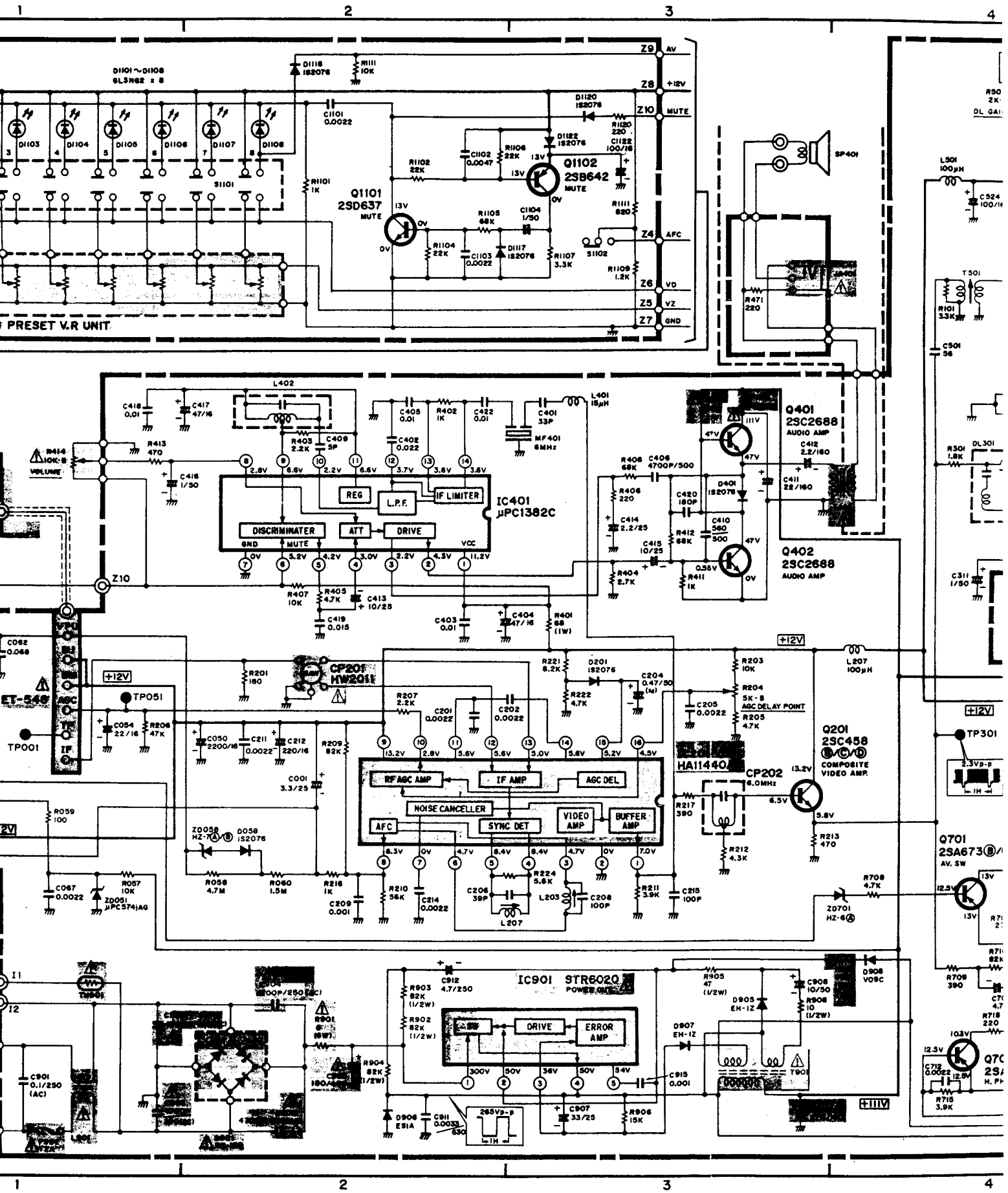
TECHNICAL SPECIFICATIONS

TV standard	625-line single standard
Channel coverage	UHF channels 21 ~ 68
Aerial input impedance	75-ohm unbalanced
Intermediate frequencies	
I.F. Luminance	39.50 MHz
I.F. Sound	33.50 MHz
I.F. Chrominance	35.07 MHz
F.M. Sound	6.0 MHz
Colour subcarrie	4.43 MHz
Convergence	Self-convergence
Focusing	Electro-static
Mains voltage	240V ~ 50 Hz
Dimension	
W	46.8 cm
H	32.6 cm
D	39.0 cm
Weight	appr 12kg (CPT1471)/ 13kg (CPT1473)
Fuse	
Mains input	T2.0A x 1 (CPT1471/CPT1473)
Remote control	T315mA x 1 (CPT1473 only)
Picture tube	14", 370 LHB22(E)
Programme selectors	8 Soft-push buttons selector (CPT1471) UP/DOWN programme selector (CPT1473)
Speaker	8 x 12 cm (CPT1471), 8 x 12 cm, 3ϕ (CPT1473)
Sound output	1.7W at 400 Hz
Power consumption	52W (CPT1471) 56W (CPT1473)

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

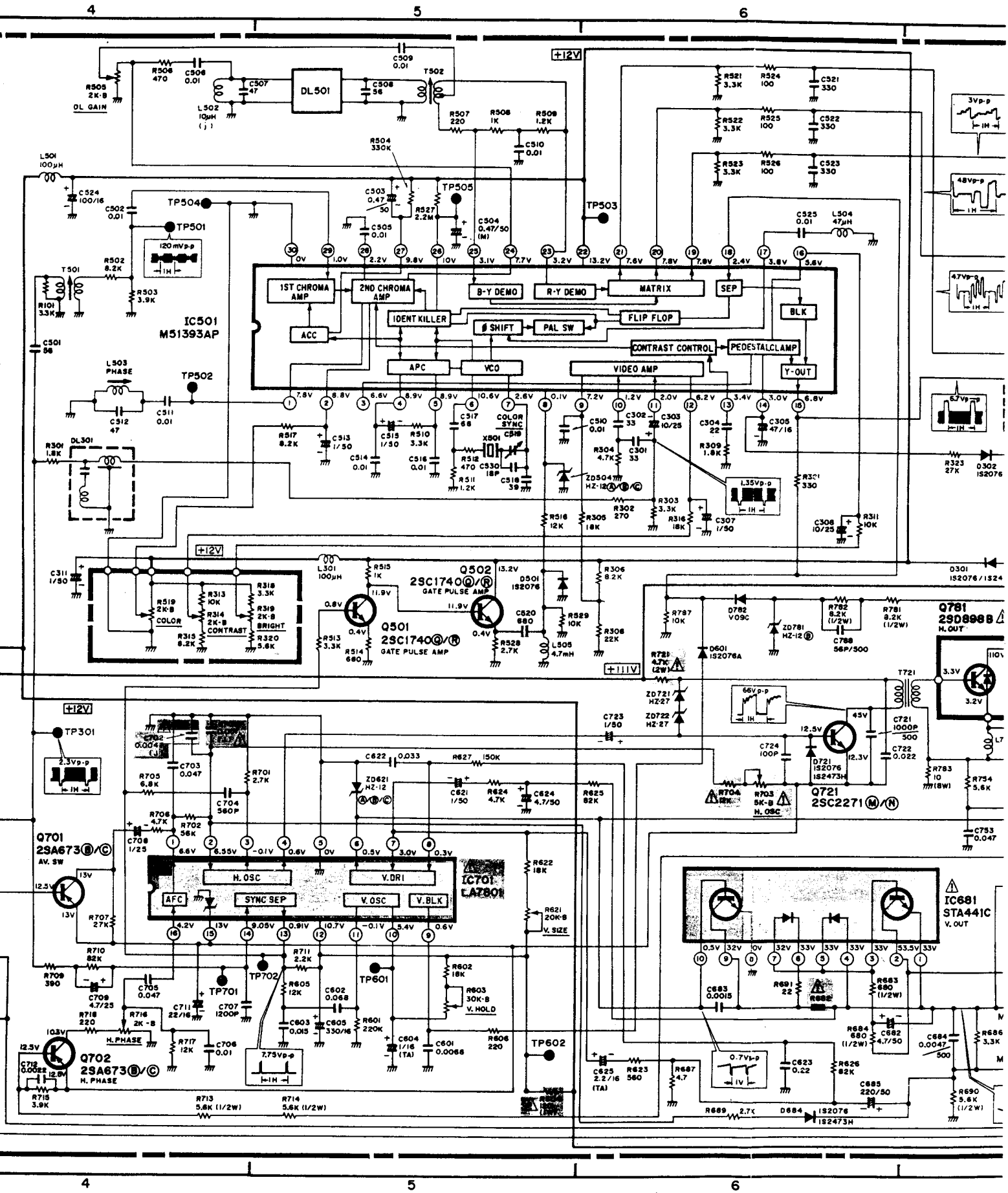
SOLID STATE COLOUR TELEVISION

May 1982 **YOKOHAMA WORKS**


PRESET V.R UNIT
Q1101 2SD637 MUTE
Q1102 2SB642 MUTE
IC401 μPC1382C
REG
L.P.F.
IF LIMITER
DISCRIMINATER
ATT
DRIVE
Q401 2SC2688 AUDIO AMP
Q402 2SC2688 AUDIO AMP
CP201 HW2011
CP202
HA11440
RF AGC AMP
IF AMP
AGC DEL
NOISE CANCELLER
AFC
SYNC DET
VIDEO AMP
BUFFER AMP
Q201 2SC458 COMPOSITE VIDEO AMP.
IC901 STR6020
DRIVE
ERROR AMP
Q701 2SA673 AV. SW
+12V
+111V
Z10
TP001
TP051
TP301

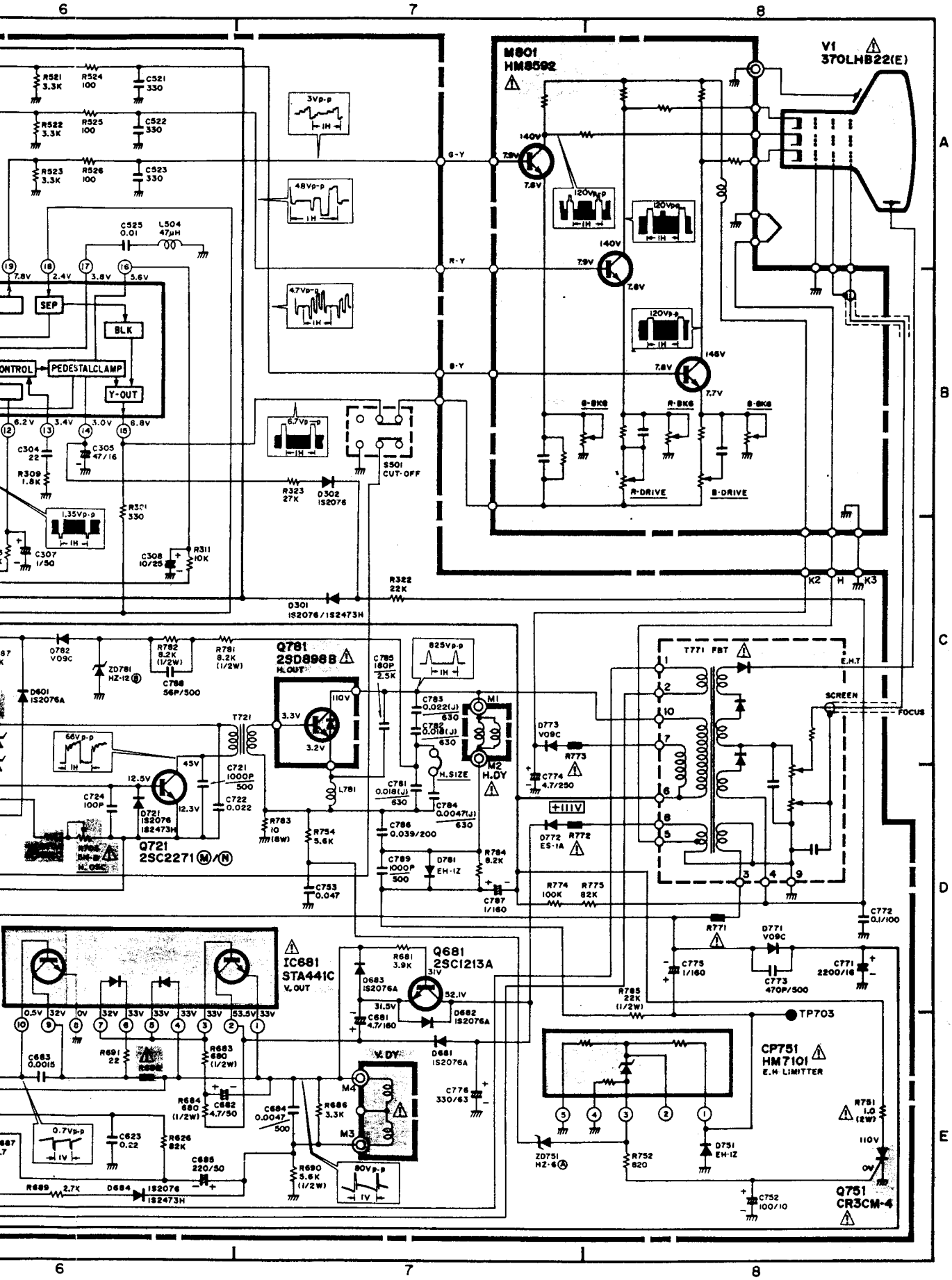
BASIC CIRCUIT DIAGRAMME (CPT1471)

PRODUCT SAFETY NOTE: Compo
safety. Before replacing any of thes
Manual. Don't degrade the safety of t

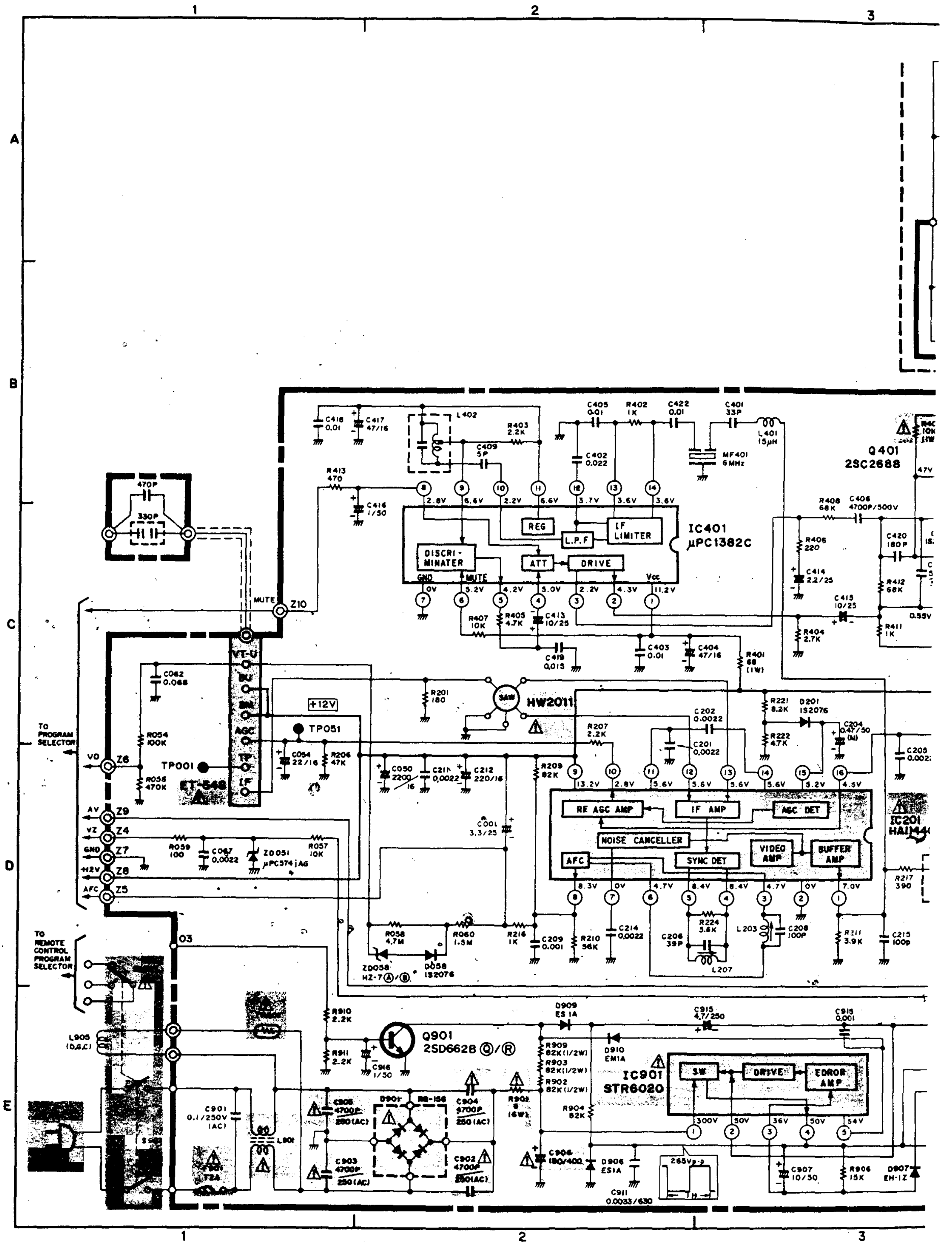


- Since this is a bas
- All DC voltage to
  Voltage taken on

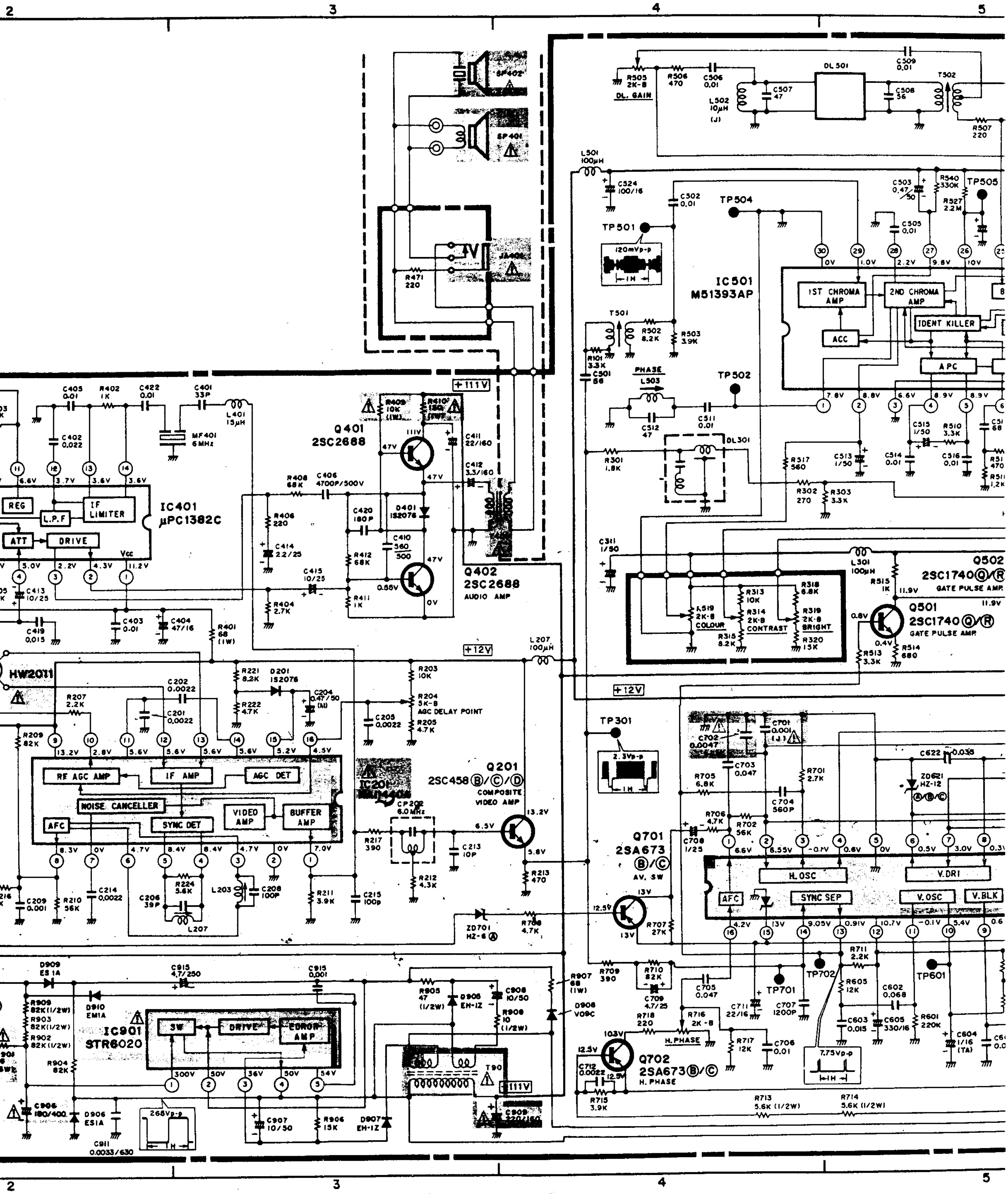
PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver though improper servicing.



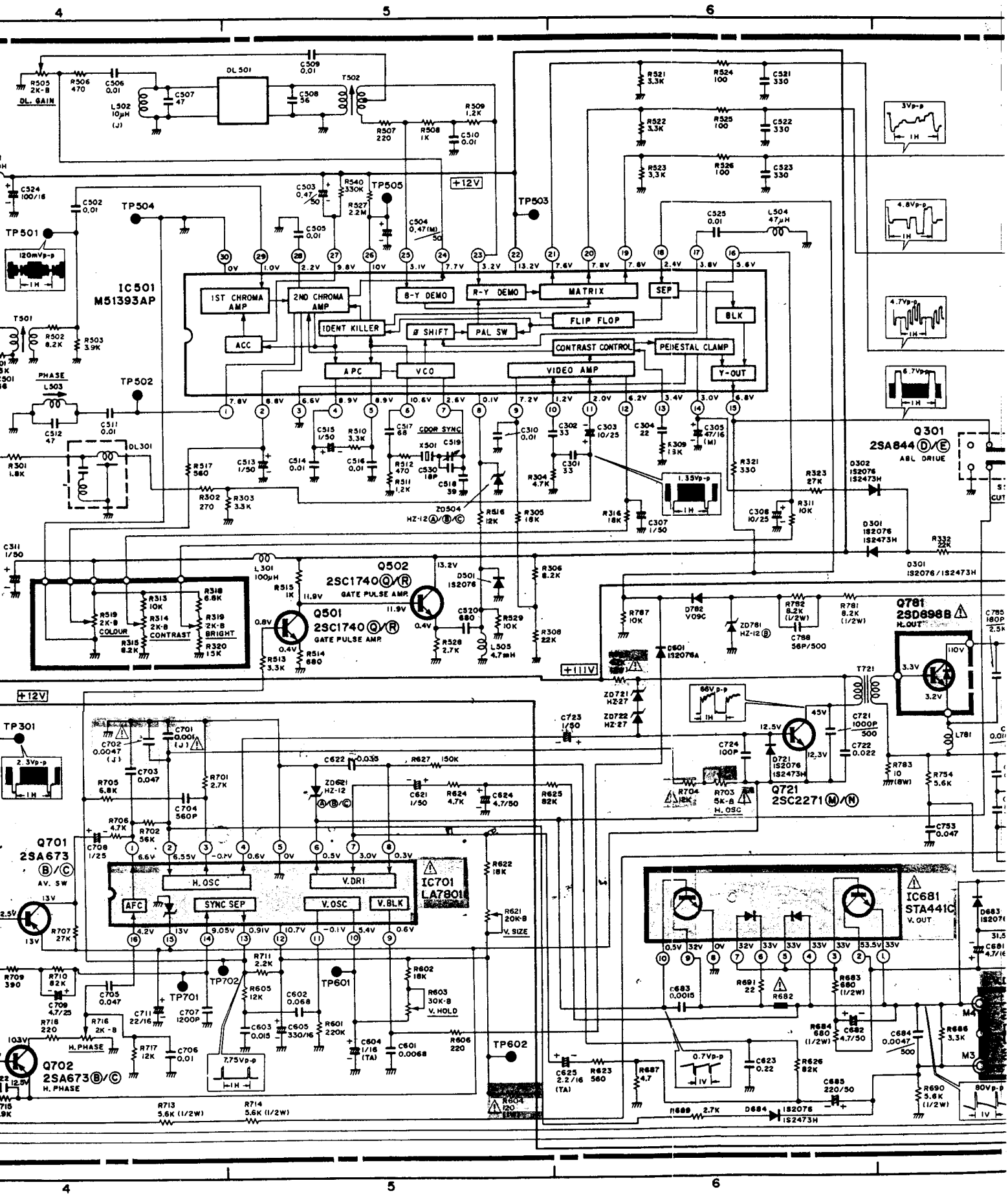
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100kΩ/V).
  Voltage taken on a complex color bar signal including a standard color bar signal.

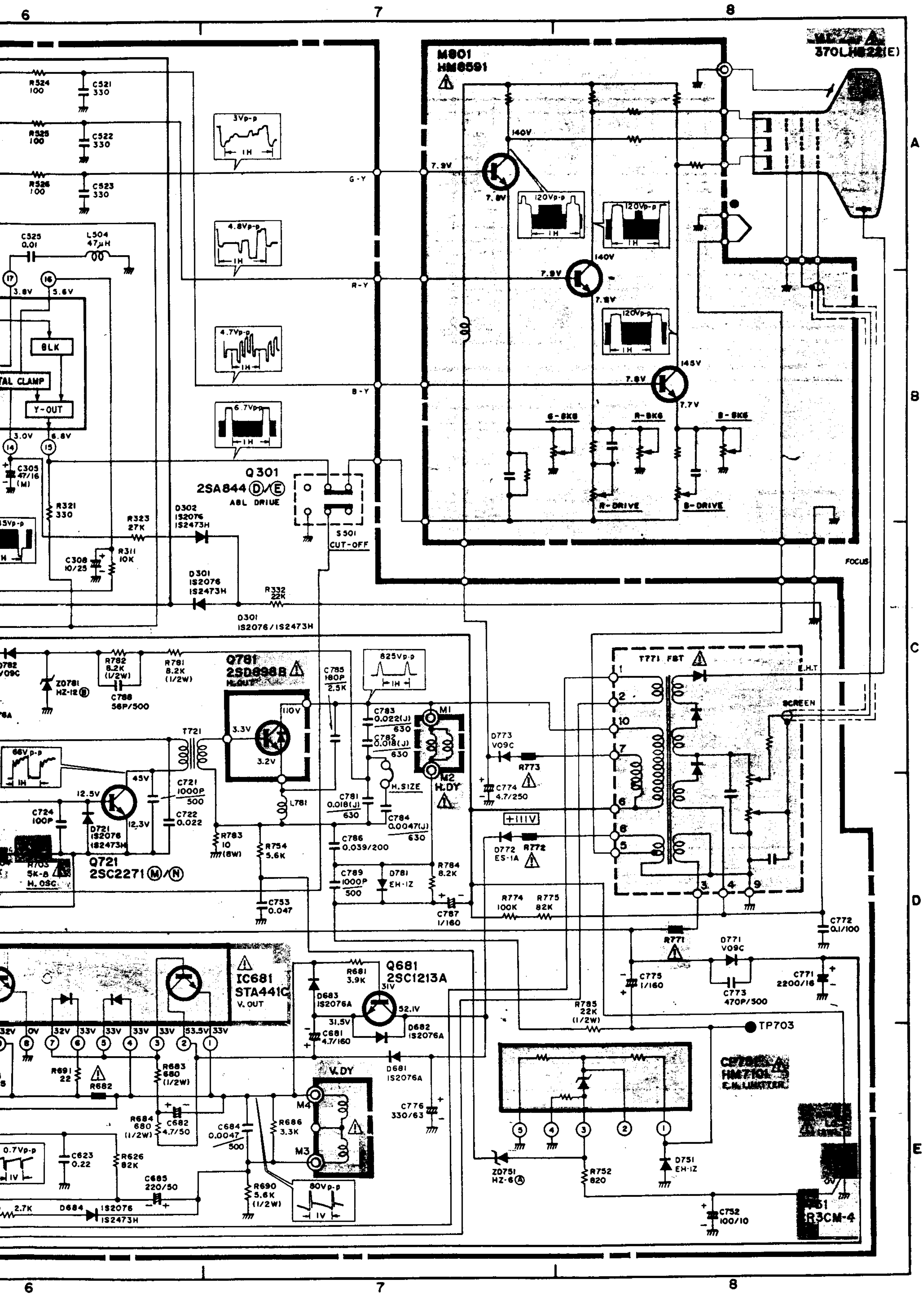


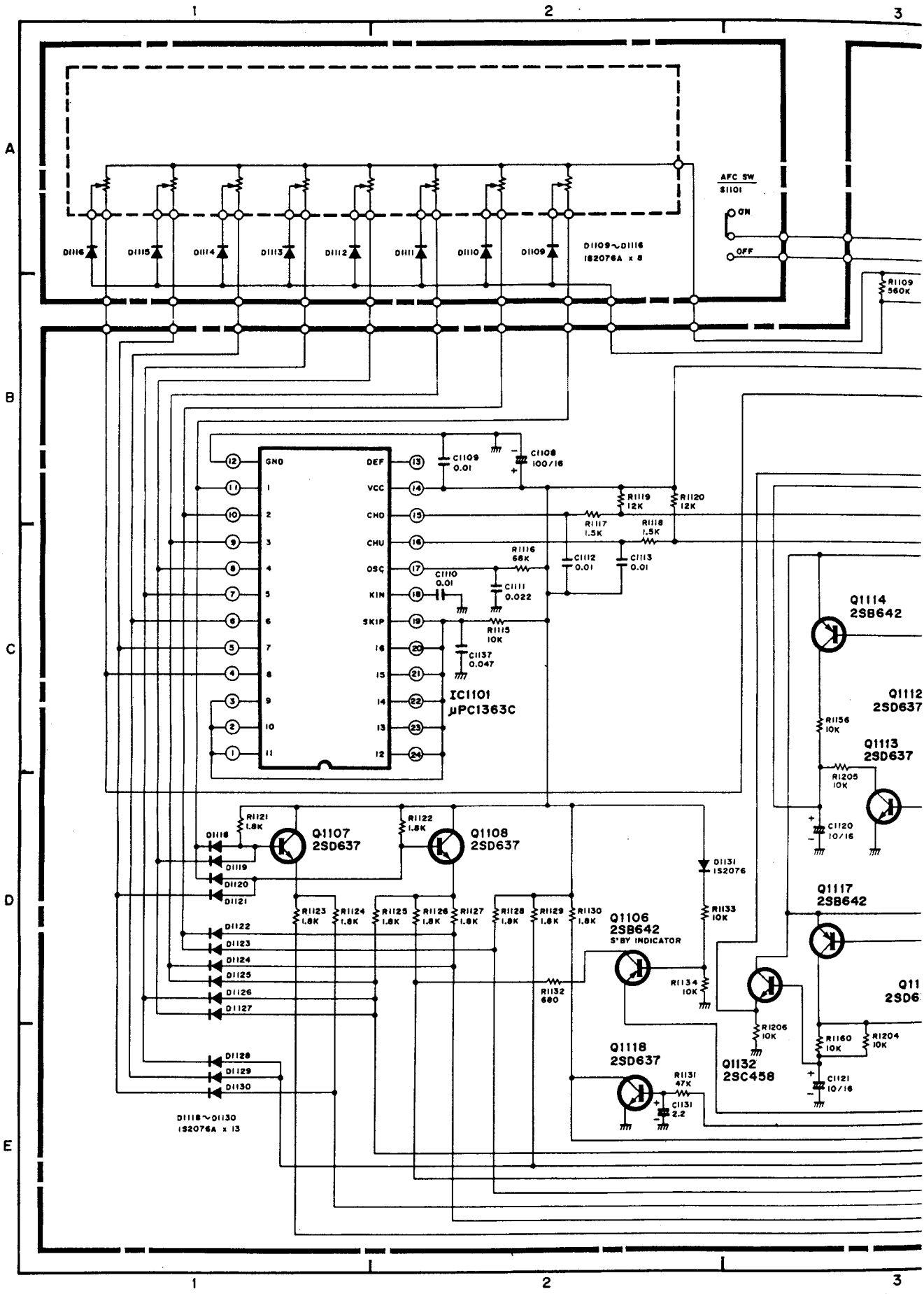
IC401
μPC1382C
REG
L.P.F
IF LIMITER
DISCRI-MINATER
ATT
DRIVE
Q401
2SC2688
HW2011
SAW
IC201
RF AGC AMP
IF AMP
AGC DET
NOISE CANCELLER
AFC
SYNC DET
VIDEO AMP
BUFFER AMP
TO PROGRAM SELECTOR
TO REMOTE CONTROL PROGRAM SELECTOR
VD
Z6
AV
Z9
VZ
Z4
GND
Z7
+12V
Z8
AFC
Z5
MUTE
Z10
TP001
TP051
+12V
ET-548
Q901
2SD662B Q/R
IC901
STR6020
SW
DRIVE
ERROR AMP
D901
RB-156
L901
L905
265Vp-p
H


IC401
µPC1382C
IC501
M51393AP
IC201
IC901
STR6020
Q401
2SC2688
Q402
2SC2688
AUDIO AMP
Q201
2SC458Ⓑ/Ⓒ/Ⓓ
COMPOSITE VIDEO AMP
Q501
2SC1740Ⓠ/Ⓡ
GATE PULSE AMP
Q502
2SC1740Ⓠ/Ⓡ
GATE PULSE AMP
Q701
2SA673
Ⓑ/Ⓒ
AV. SW
Q702
2SA673Ⓑ/Ⓒ
H. PHASE
REG
IF LIMITER
L.P.F
ATT
DRIVE
RF AGC AMP
IF AMP
AGC DET
NOISE CANCELLER
AFC
SYNC DET
VIDEO AMP
BUFFER AMP
1ST CHROMA AMP
2ND CHROMA AMP
IDENT KILLER
ACC
APC
H. OSC
SYNC SEP
V.DRI
V.OSC
V.BLK
SW
DRIVE
ERROR AMP
DL. GAIN
COLOUR
CONTRAST
BRIGHT
AGC DELAY POINT
H. PHASE
TP501
TP502
TP504
TP505
TP301
TP601
TP701
TP702
120mVp-p
2.3Vp-p
7.75Vp-p
265Vp-p
+111V
+12V

BASIC CIRCUIT DIAGRAMME (CPT1473)




M801
HM6591
370LHB22(E)
G-Y
R-Y
B-Y
G-BKG
R-BKG
B-BKG
R-DRIVE
B-DRIVE
Q301
2SA844 Ⓓ/Ⓔ
ABL DRIVE
S501
CUT-OFF
FOCUS
T771 FBT
E.H.T
SCREEN
Q781
2SD898B
H.OUT
Q721
2SC2271 Ⓜ/Ⓝ
H.SIZE
H.DY
V.DY
IC681
STA441C
V.OUT
Q681
2SC1213A
TP703
CP701
HM7101
E.H.LIMITTER
BLK
Y-OUT
R3CM-4
+111V


AFC SW
S1101
ON
OFF
D1109~D1116
1S2076A x 8
R1109
560K
IC1101
μPC1363C
GND
DEF
VCC
CHD
CHU
OSC
KIN
SKIP
C1109
0.01
C1108
100/16
R1119
12K
R1120
12K
R1117
1.5K
R1118
1.5K
R1116
68K
C1112
0.01
C1113
0.01
C1110
0.01
C1111
0.022
R1115
10K
C1137
0.047
Q1114
2SB642
Q1112
2SD637
R1156
10K
Q1113
2SD637
R1205
10K
C1120
10/16
Q1107
2SD637
Q1108
2SD637
R1121
1.8K
R1122
1.8K
D1118
D1119
D1120
D1121
D1131
1S2076
R1123
1.8K
R1124
1.8K
R1125
1.8K
R1126
1.8K
R1127
1.8K
R1128
1.8K
R1129
1.8K
R1130
1.8K
R1133
10K
Q1106
2SB642
S'BY INDICATOR
Q1117
2SB642
D1122
D1123
D1124
D1125
D1126
D1127
R1132
680
R1134
10K
Q11
2SD6
R1206
10K
R1160
10K
R1204
10K
Q1118
2SD637
Q1132
2SC458
R1131
47K
C1131
2.2
C1121
10/16
D1128
D1129
D1130
D1118~D1130
1S2076A x 13

SAFETY PRECAUTIONS

WARNING : Since the chassis of this receiver is connected to one side of the Mains Supply during operation, service should not be attempted by anyone unfamiliar with the precautions necessary when working on this type of equipment. The following precautions should be observed.

1. Do not install, remove, or handle the picture tube in any manner unless shatter-proof goggles are worn. People not so equipped should be kept away while picture tubes are handled. Keep picture tube away from the body while handling.
2. When service is required, an isolation transformer should be inserted between power line and the reciver before any service is performed on a "HOT" chassis receiver.
3. When replacing chassis in the cabinet, all the protective devices are put back in place, such as; barriers, non-metallic knobs, adjustment and compartment cover or shields, isolation resistor-capacitor, etc.
4. When service is required, observe the original lead dress. Extra precaution should be taken to assure correct lead dress in the high voltage circuitry area.
5. Always use the manufacturer's replacement components. Especially critical components as indicated on the circuit diagram should not be replaced by other markes.
   Furthermore where a short circuit has occurred, replace those components that indicate evidence of overheating.
6. Before returning a serviced receiver to the customer, the service technical must throughtly test the unit to be certain that it is completely safe to operate without danger of electrical shock, and be sure that no protective device built into the instrument by the manufacture has become defective, or inadvertenly defeated during servicing.
   Therefore, the following checks are recommended for the continued protection of the customers and service technicians.

INSULATION

Insulation resistance should not be less than 7MΩ at 500V DC between the mains poles and any accessible metal parts.

Also, No flashover or breakdown should occur during the dielectric strength test, to apply 4KV AC for one minute between the mains poles and any accessible metal parts.

HIGH VOLTAGE

High voltage should always be kept at rated value of the chassis-no-higher. Operating at higher voltage may cause a failure of the picture tube or high voltage supply and, also, under certain circumstances could produce X-radiation moderately in excess of design levels. The high voltage must not, under.any circumstances, exceed 26KV on the chassis.

X-RADIATION

TUBES : The primary source of X-radiation in this receiver is the picture tube. The tube utilized for the above mentioned function in this chassis is specially constructed to limit X-radiation.

For continued X-radiation protection, the replacement tube must be the same type as the original, HITACHI approved type.

PRODUCT SAFETY NOTICE

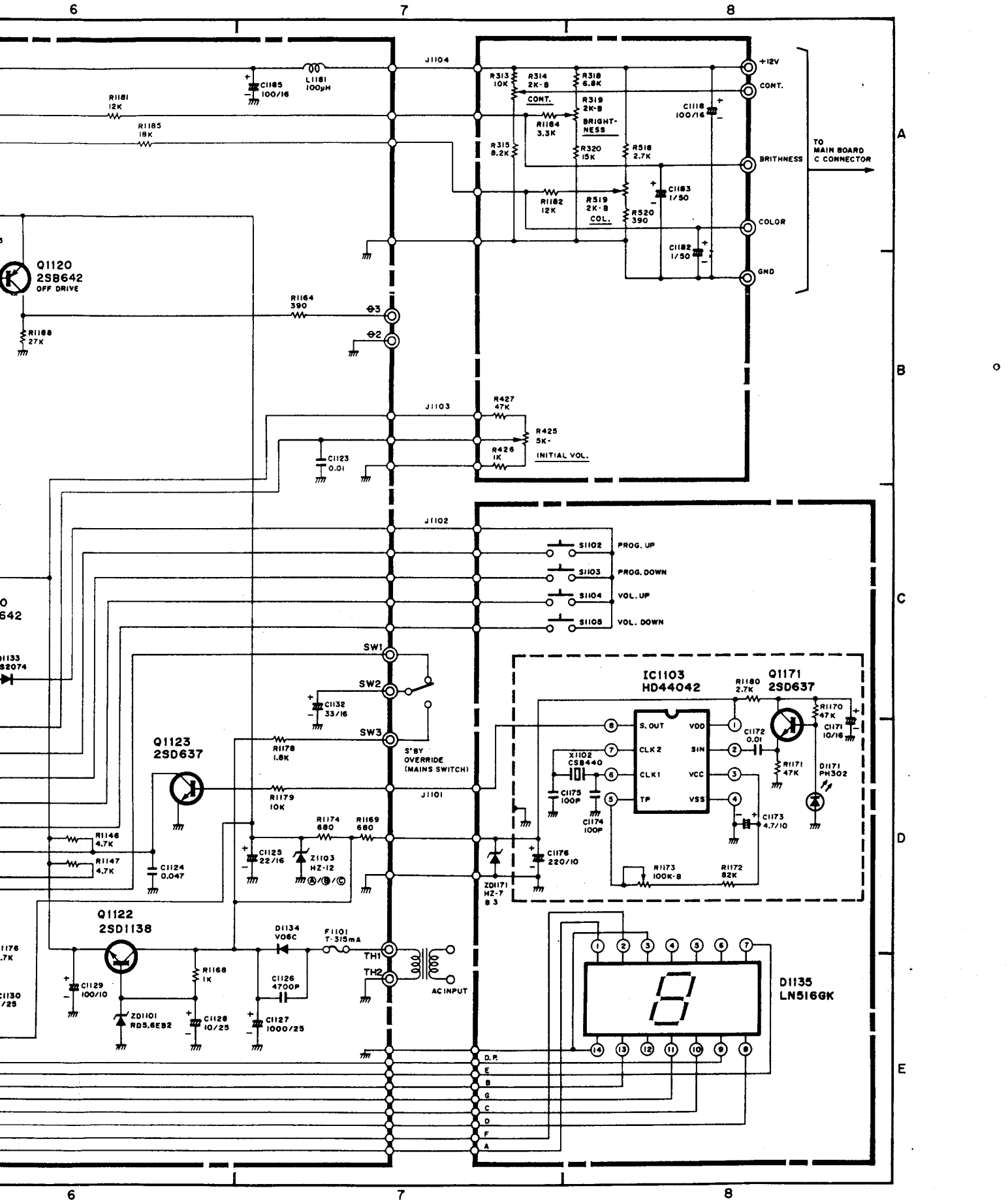
Many electrical and mechanical parts in HITACHI television receiver have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components lated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the replacement parts list in this Service Manual.

The use of a substitute replacement components which does not have the same safety characteristics as the HITACHI recommended replacement one, shown in the parts list in this Service Manual, may create electrical shock, fire, X-radiation, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current HITACHI Service Manual. A subscription to, or additional copies of, HITACHI Service Manual may be obtained at a nominal charge from your HITACHI SALES CORPORATION.

PRODUCT SAFETY NOTE: Components marked with a ⚠ and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver though improper servicing.



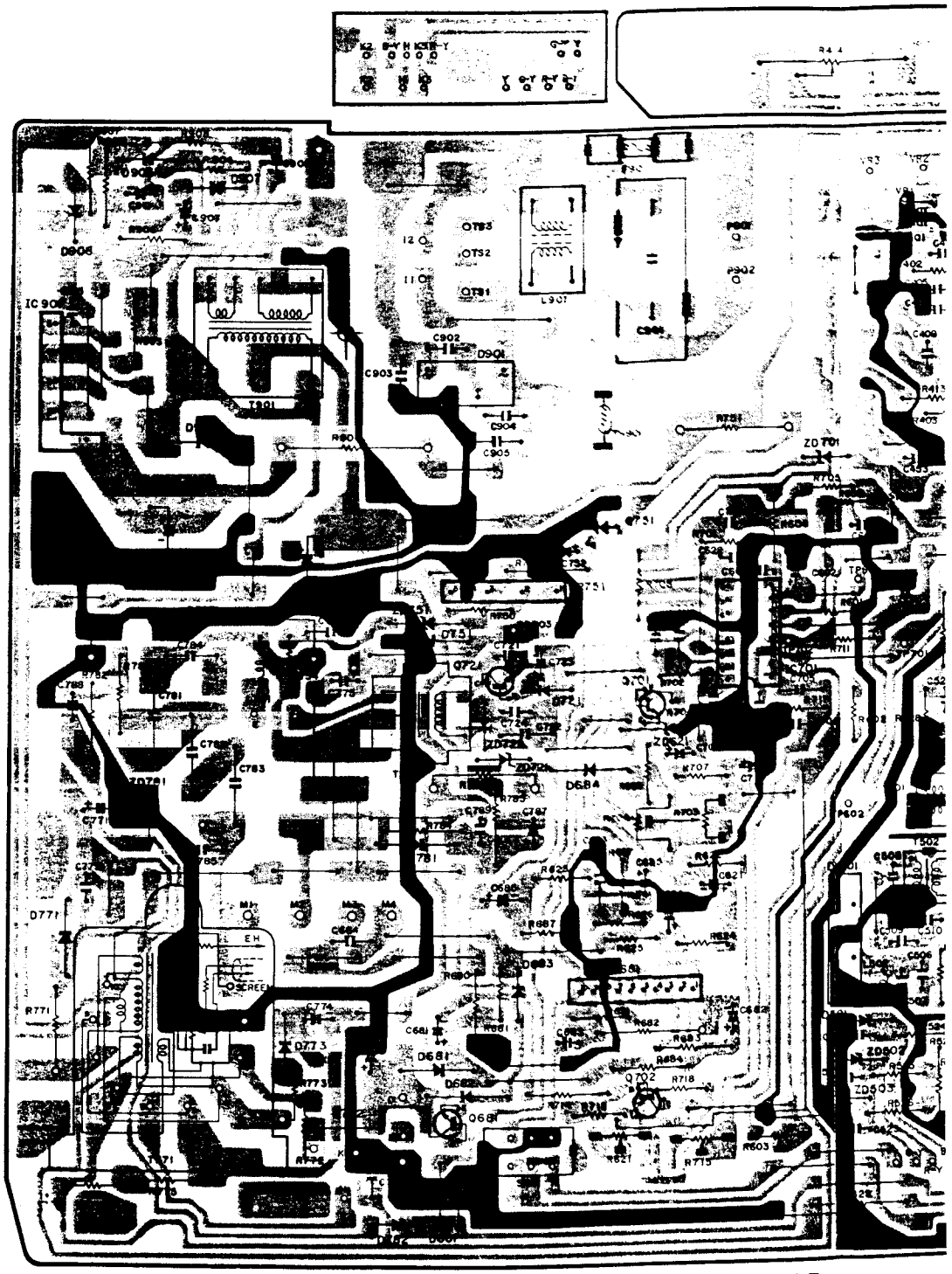
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100kΩ/V).
  Voltage taken on a complex color bar signal including a standard color bar signal.

PRINTED WIRING BOARD

1. MAIN P.W. BOARD (CPT1471)

CPT SUB P.W.B.

VOLUME P.W.B



MAIN P.W.B

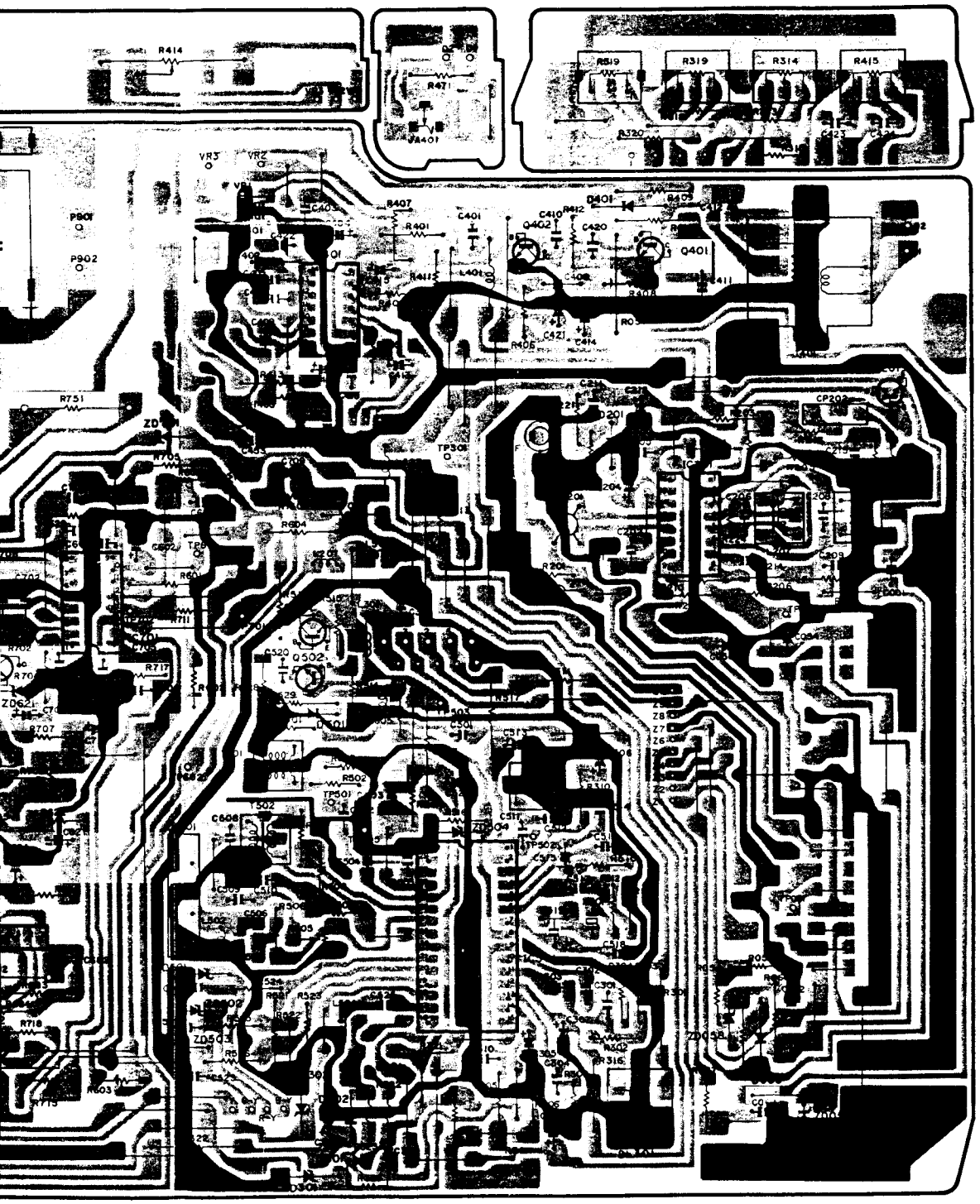
. . . SIGNAL PATTERN

. . . GROUND PATTERN

LUME P.W.B

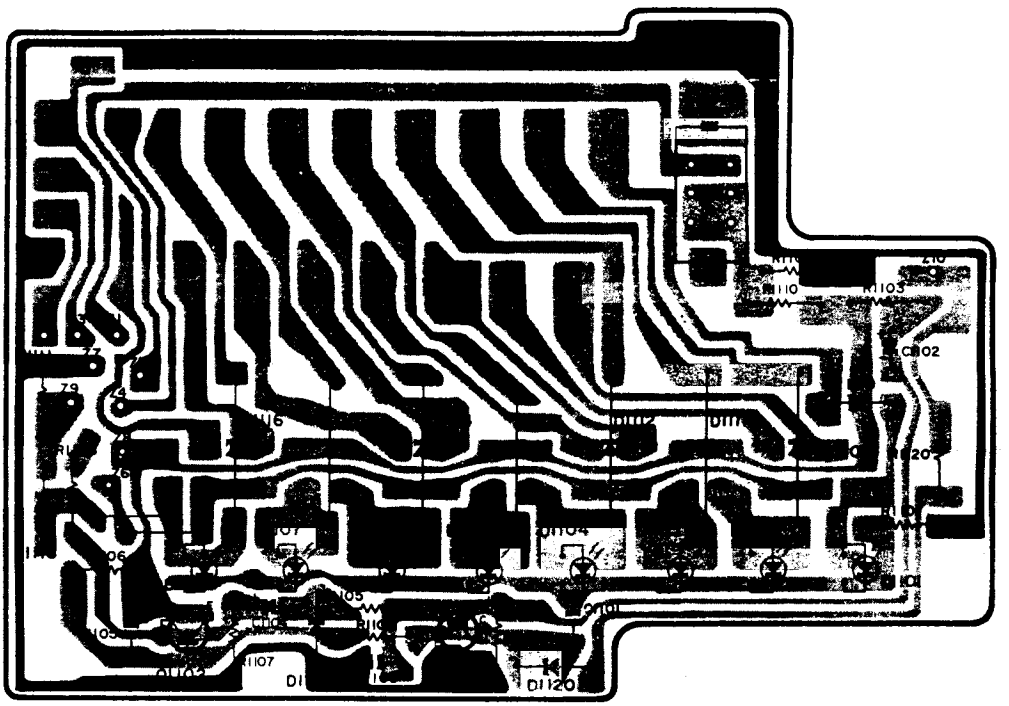
HEADPHONE P.W.B.

CONTROL VR P.W.B



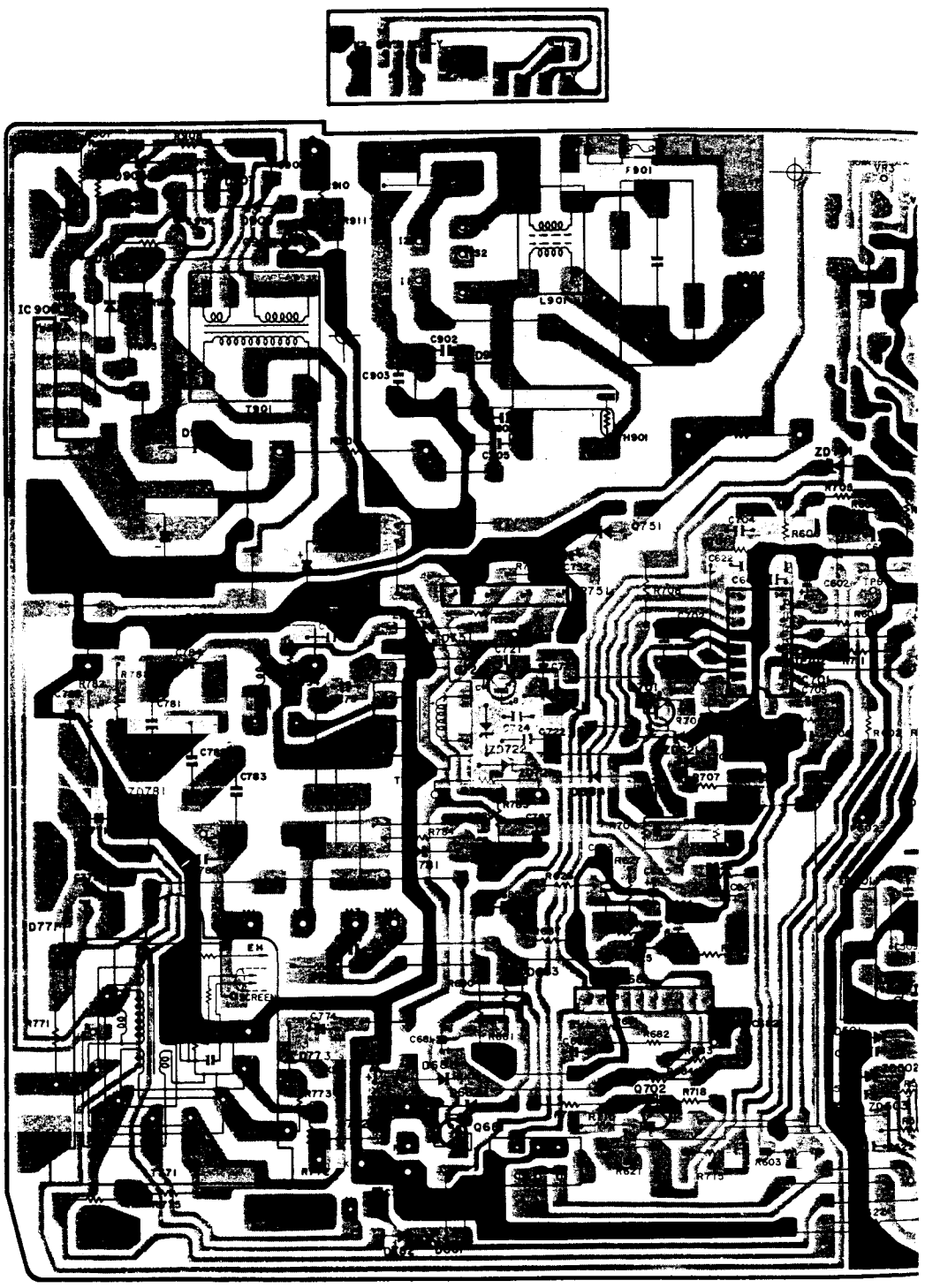
MAIN P.W.B

2. PROGRAMME SELECTOR P.W. BOARD (CPT1471)



3. MAIN P.W. BOARD (CPT1473)

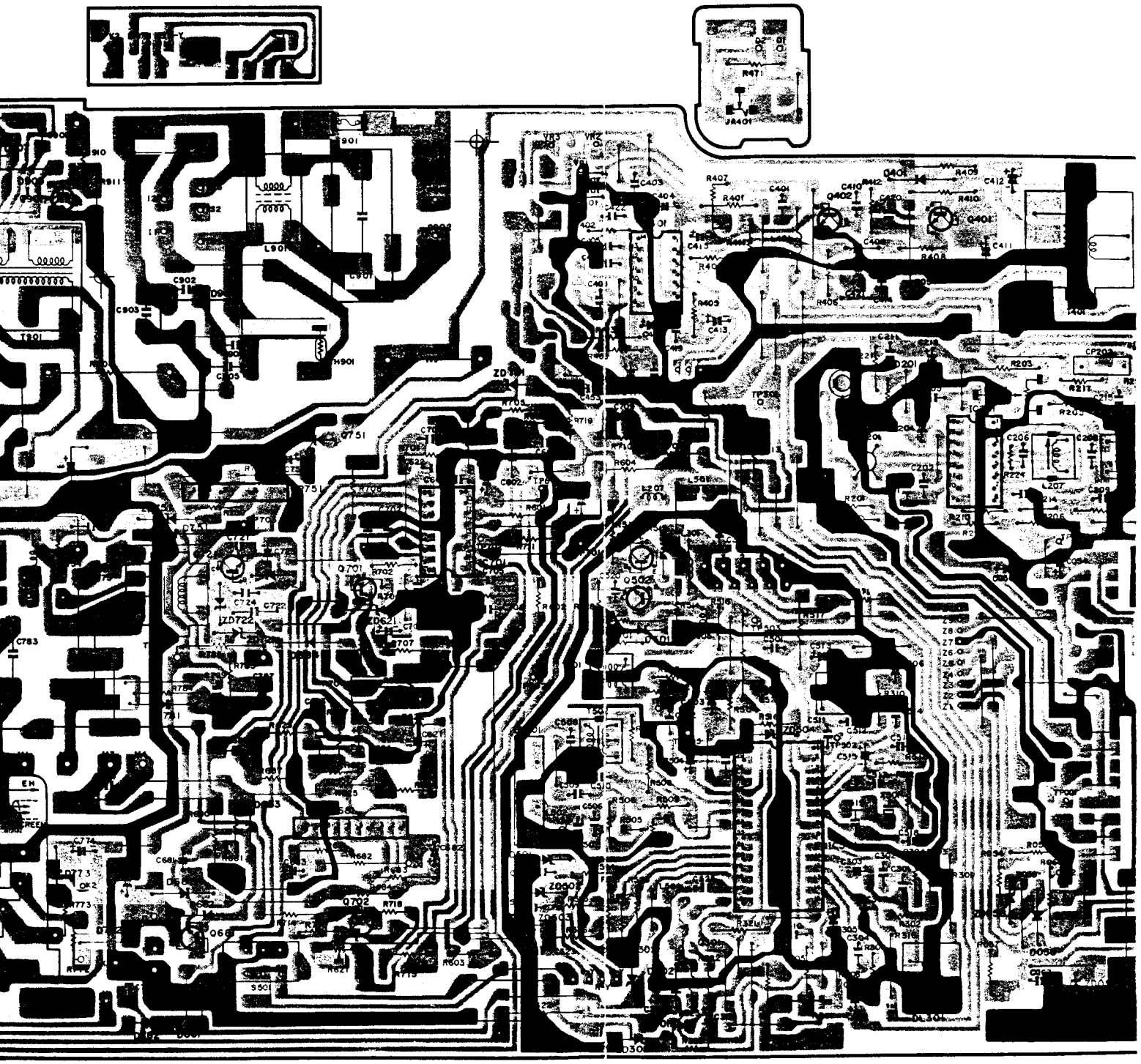
CPT SUB P.W.B.



MAIN P.W.B

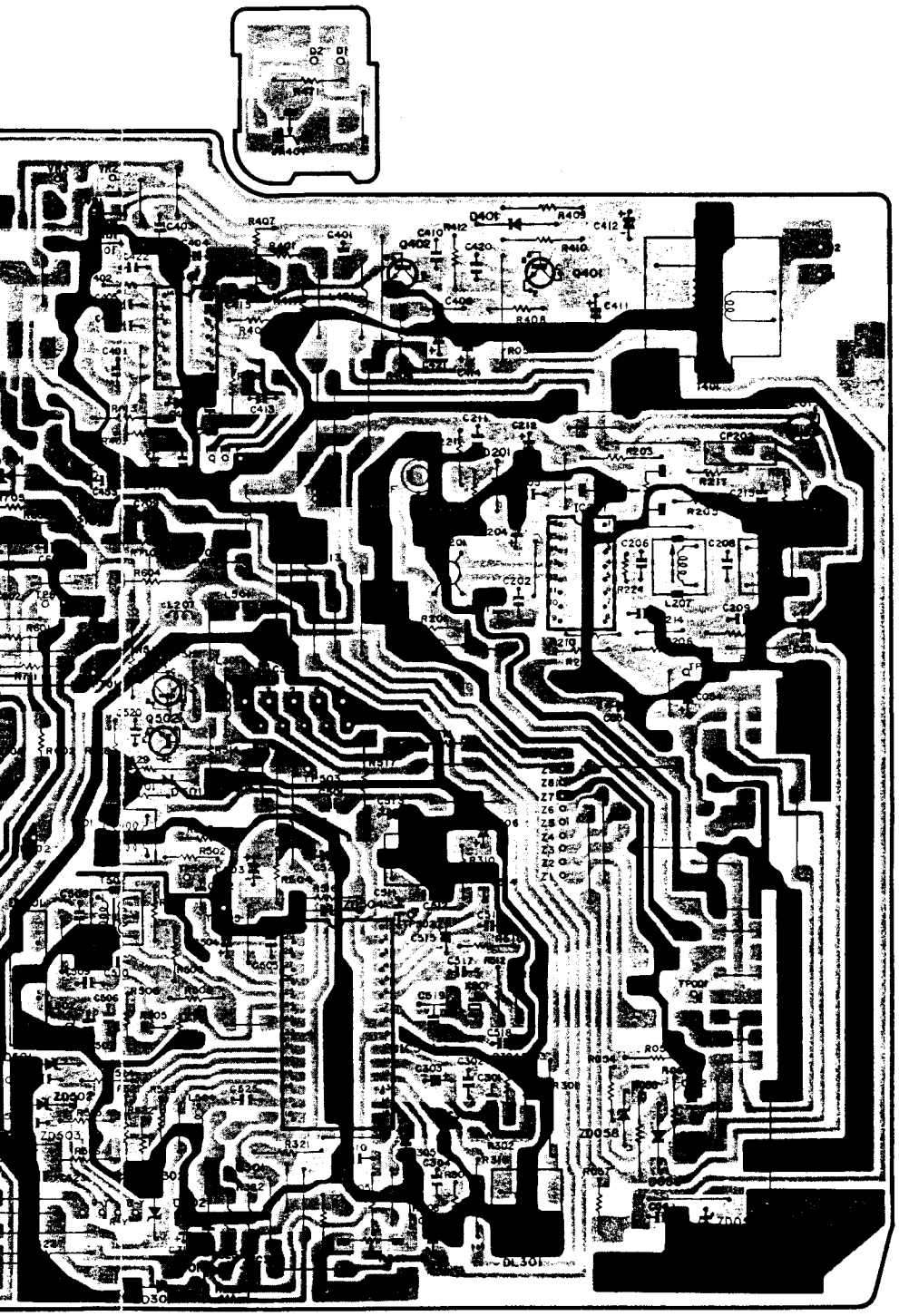
CPT SUB P.W.B.

HEADPHONE
P.W.B.



MAIN P.W.B

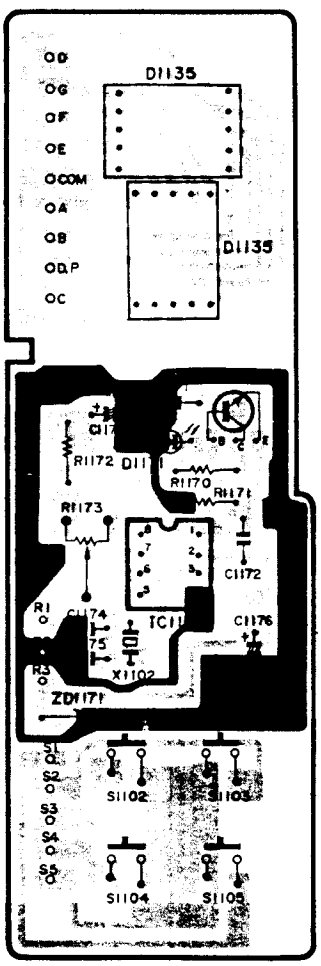
HEADPHONE
P.W.B.



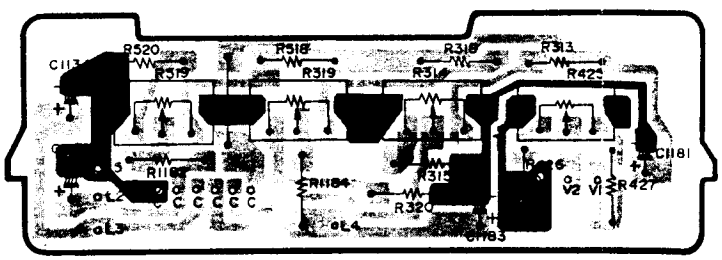
P.W.B

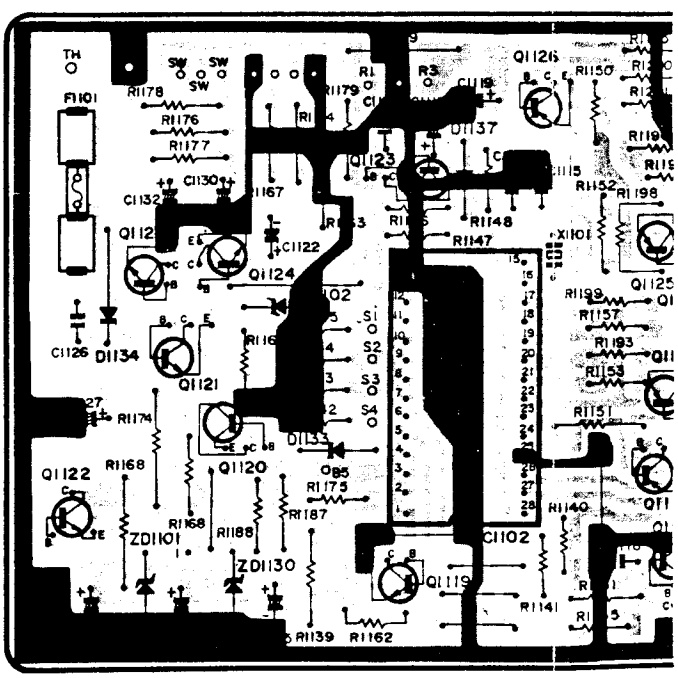
4. REMOTE CONTROL & PROGRAMME SELECTOR P.W. BOARDS (CPT1473)

REMOTE CONTROL
RECEIVER P.W. BOARD



CONTROL P.W. BOARD

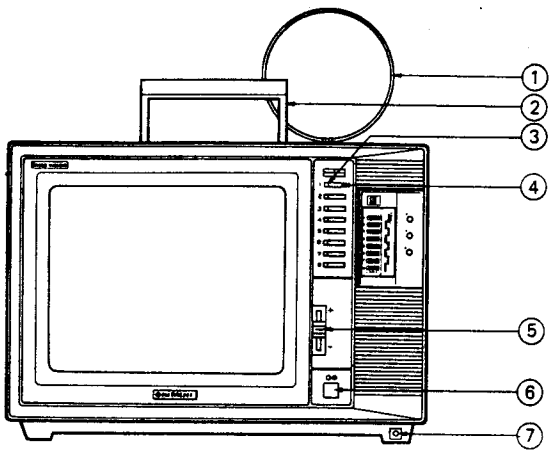


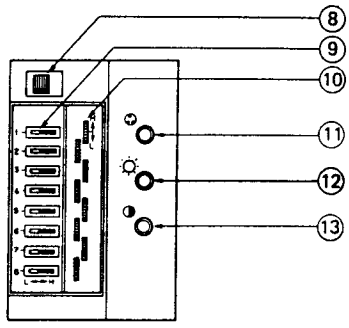


REM

CONTROLS

CPT1471

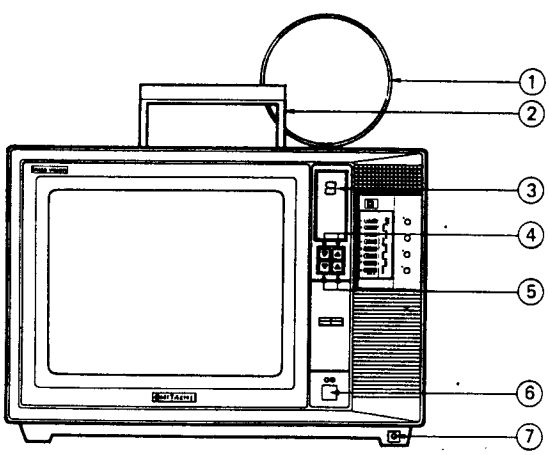


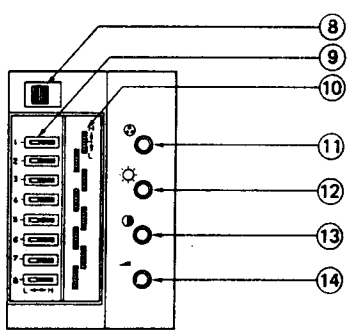


1. LOOP AERIAL
2. CARRYING HANDLE
3. PROGRAMME INDICATOR (GREEN LIGHT)
4. PROGRAMME SELECTOR BUTTON
5. VOLUME CONTROL
6. MAINS SWITCH
7. HEADPHONE JACK

8. AFC SWITCH
9. CHANNEL POINTER
10. CHANNEL TUNING KNOB
11. COLOUR CONTROL
12. BRIGHTNESS CONTROL
13. CONTRAST CONTROL

CPT1473





1. LOOP AERIAL
2. CARRYING HANDLE
3. PROGRAMME INDICATOR
4. PROGRAMME SELECTOR BUTTON (UP/DOWN)
5. VOLUME CONTROL (UP/DOWN)
6. MAINS SWITCH
7. HEADPHONE JACK

8. AFC SWITCH
9. CHANNEL POINTER
10. CHANNEL TUNING KNOB
11. COLOUR CONTROL
12. BRIGHTNESS CONTROL
13. CONTRAST CONTROL
14. INITIAL VOLUME CONTROL

REPLACEMENT PARTS LIST

PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

ABBREVIATIONS: Capacitors . . . . . CD: Ceramic disk, PF: Polyester film, EL: Electrolytic, PP: Polypropylene, PR: Paper, TA: Tantalum
Resistors . . . . . CF: Carbon film, CC: Carbon composition, OMF: Metal oxide film, VR: Variable resistor, WW: Wire wound, FR: Fuse resistor, MG: Metal glase
[All CD, PF and PP capacitors are ±5%, 50V and all resistors, ±5%, 1/4W unless otherwise noted.]

*; CPT1473ONLY: ○; CPT1471 ONLY

SYMBOL NO.	PARTS NO.	DESCRIPTION
CAPACITORS		
C001	0252613	EL, 3.3mfd, 25V
C050	0253055	EL, 2200mfd, 16V
C054	0253047	EL, 22mfd, 16V
C062	0277023	PF, 0.068mfd, ±10%
C067	0244105	CD, 2200pF, ±10%
C201	0274755	PF, 2200pF, ±10%
C202	0274755	PF, 2200pF, ±10%
C204	0251087	EL, 1mfd, 25V
C205	0274755	PF, 2200pF, ±10%
C206	0246454	CD, 39pF
C208	0246464	CD, 100pF
C209	0277001	PF, 1000pF, ±10%
C211	0274005	PF, 2200pF, ±10%
C212	0253051	EL, 220mfd, 16V
C214	0274767	PF, 0.022mfd, ±10%
C215	0248684	CD, 100pF
C301	0248672	CD, 33pF
C302	0248672	CD, 33pF
C303	0253066	EL, 10mfd, 25V
C304	0248668	CD, 22pF
C305	0253047	EL, 22mfd, 25V
C307	0253082	EL, 1mfd, 50V
C308	0253066	EL, 10mfd, 25V
C310	0274763	PF, 1000pF, ±10%
C311	0253082	EL, 1mfd, 50V
C312	0253083	EL, 2.2mfd
C313	0253066	EL, 10mfd, 25V
C401	0248672	CD, 33pF
C402	0244173	CD, 0.022mfd, $^{+80}_{-10}$ %
C403	0244171	CD, 0.01mfd, $^{+80}_{-20}$ %
C404	0253049	EL, 47mfd, 16V
C405	0244171	CD, 0.01mfd, $^{+80}_{-20}$ %
C406	0244509	CD, 4700pF, ±10%
C409	0246415	CD, 5pF, ±0.25pF
C410	0243510	CD, 560pF, ±10%
C411	0258585	EL, 22mfd, 160V
C412	0257523	EL, 2.2mfd, 160V
C413	0253066	EL, 10mfd, 25V
C414	0253083	EL, 2.2mfd
C415	0253066	EL, 10mfd, 25V
C416	0253082	EL, 1mfd, 50V
C417	0253049	EL, 47mfd, 16V
C418	0244171	CD, 0.01mfd, $^{+80}_{-20}$ %
C419	0274765	PF, 0.015mfd, ±10%
C420	0244116	CD, 180pF, ±10%
C422	0277013	PF, 0.01mfd, ±10%
C501	0248678	CD, 56pF
C502	0274763	PF, 1000pF, ±10%
C503	0253081	EL, 0.47mfd, 50V
C504	0259958	EL, 0.47mfd, 50V
C505	0274763	PF, 1000pF, ±10%
C506	0274763	PF, 1000pF, ±10%
C507	0248676	CD, 47pF
C508	0248678	CD, 56pF
C509	0274763	PF, 1000pF, ±10%
C510	0274763	PF, 1000pF, ±10%
C511	0274763	PF, 1000pF, ±10%
C512	0248046	CD, 47pF
C513	0253082	EL, 1mfd, 50V
C514	0274763	PF, 1000pF, ±10%
C515	0253082	EL, 1mfd, 50V
C516	0274763	PF, 1000pF, ±10%
C517	0246460	CD, 68pF
C519	2784693	TRIMMER, 30pF
C519	2784693	TRIMMER, 30pF
C520	0244113	CD, 330pF, ±10%
C521	0244113	CD, 330pF, ±10%
C522	0244113	CD, 330pF, ±10%
C523	0244113	CD, 330pF, ±10%
C524	0253050	EL, 100mfd, 16V
C525	0277013	PF, 0.01mfd, ±10%
C601	0274761	PF, 6800pF, ±10%
C602	0277023	PF, 0.068mfd, ±10%
C603	0274765	PF, 0.015mfd, ±10%
C604	0292706	PP, 1mfd, 25V
C605	0253052	EL, 330mfd, 16V
C621	0253082	EL, 1mfd, 50V
C622	0277019	PF, 0.033mfd, ±10%
C623	0277029	PF, 0.22mfd, ±10%
C624	0253085	EL, 4.7mfd, 50V
C625	0292710	TA, 2.2mfd, 20V
C681	0257537	EL, 4.7mfd, 63V
C682	0253085	EL, 4.7mfd, 50V
C683	0244503	CD, 1500pF, ±10%
C684	0244509	CD, 4700pF, ±10%
C695	0253091	EL, 220mfd, 50V
⚠C701	0274651	PF, 1000pF
⚠C702	0299977	PP, 4700pF, 630V
C703	0274759	PF, 4700pF, ±10%
C704	0244115	CD, 560pF, ±10%
C705	0274771	PF, 4700pF, ±10%
C706	0274767	PF, 0.022mfd, ±10%
C707	0244102	CD, 1200pF, ±10%
C708	0251087	EL, 1mfd, 25V
C709	0253065	EL, 4.7mfd, 25V
C711	0253047	EL, 22mfd, 16V
*C718	0246454	CD, 39pF
C721	0244501	CD, 1000pF, ±10%, 500V
C722	0299918	PP, 0.022mfd, ±10% 200V
C723	0253082	EL, 1mfd, 50V
C724	0248684	CD, 100pF
C752	0253030	EL, 100mfd, 10V
C753	0274771	PF, 4700pF, ±10%
C771	0253055	EL, 2200mfd, 16V
C772	0277025	PF, 0.1mfd, ±10%, 200V
C773	0243509	CD, 470pF, ±10%, 500V
C774	0257540	EL, 4.7mfd, 250V
C775	0257535	EL, 1mfd, 160V
C776	0253272	EL, 330mfd, 63V
C781	0299983	PP, 0.018mfd, 630V
C782	0299984	PF, 0.022mfd, 630V
C783	0299984	PF, 0.022mfd, 630V
C784	0299977	PP, 4700pF, 630V
C785	0243839	CD, 180pF, ±10%, 2.5KV
C786	0299933	PP, 0.39mfd, ±10%, 200V
C787	0257535	EL, 1mfd, 160V
C788	0247888	CD, 56pF, ±10%, 500V
C789	0244501	CD, 1000pF, ±10%, 500V
C901	0279753	PF, 0.1mfd, ±20%, AC250V
⚠C902	0249159	CD, 4700pF, $^{+100}_{-0}$%, AC125V
⚠C903	0249159	CD, 4700pF, $^{+100}_{-0}$%, AC125V
⚠C904	0249159	CD, 4700pF, $^{+100}_{-0}$%, AC125V
⚠C905	0249159	CD, 4700pF, $^{+100}_{-0}$%, AC125V
C907	0253068	EL, 33mfd, 25V
C908	0253086	EL, 10mfd, 50V
C909	0259979	EL, 220mfd, 160V
C912	0257540	EL, 4.7mfd, 250V
○C1101	0244163	CD, 2200pF, $^{+80}_{-20}$ %
○C1103	0244163	CD, 2200pF, $^{+80}_{-20}$ %
C1104	0244171	CD, 0.01mfd, $^{+80}_{-20}$ %
○C1105	0274771	PF, 4700pF, ±10%
*C1106	0244171	CD, 0.01mfd, $^{+80}_{-20}$ %
*C1107	0244171	CD, 0.01mfd, $^{+80}_{-20}$ %
*C1108	0253050	EL, 100mfd, 16V
*C1109	0244171	CD, 0.01mfd, $^{+80}_{-20}$ %
*C1110	0244171	CD, 0.01mfd, $^{+80}_{-20}$ %
*C1111	0274767	PF, 0.022mfd, ±10%

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SYMBOL NO.	PARTS NO.	DESCRIPTION
* C1112	0244171	CD, 0.01mfd, $^{+80}_{-20}$ %
* C1113	0244171	CD, 0.01mfd, $^{+80}_{-20}$ %
* C1114	0244171	CD, 0.01mfd, $^{+80}_{-20}$ %
* C1115	0248684	CD, 100pF
* C1116	0248684	CD, 100pF
* C1117	0253046	EL, 10mfd, 16V
* C1118	0277025	PF, 0.1mfd, ±10% 200V
* C1119	0253084	EL, 3.3mfd, 50V
* C1120	0253046	EL, 10mfd, 16V
* C1121	0253046	EL, 10mfd, 16V
○ C1122	0253051	EL, 220mfd, 16V
* C1123	0244171	CD, 0.03mfd, $^{+80}_{-20}$ %
* C1124	0244171	CD, 0.01mfd, $^{+80}_{-20}$ %
* C1125	0253047	EL, 22mfd, 16V
* C1126	0244165	CD, 0.0047mfd
* C1127	0253074	EL 1000mfd, 25V
* C1128	0253066	EL, 10mfd, 25V
* C1129	0253030	EL, 100mfd, 10V
* C1130	0253082	EL, 1mfd, 50V
* C1131	0253083	EL, 2.2mfd, 50V
* C1132	0253068	EL, 33mfd, 25V
* C1171	0277013	PF, 0.01mfd, ±10%
* C1172	0277013	PF, 0.01mfd, ±10%
* C1173	0253065	EL, 4.7mfd, 25V
* C1174	0248684	CD, 100pF
* C1175	0248684	CD, 100pF
* C1176	0253031	EL, 220mfd, 10V
* C1184	0253082	EL, 1mfd, 50V

RESISTOR

R054	0100113	CF, 100K ohm, 1/8W
R056	0179532	CC, 470K ohm, 1/8W
R057	0110271	OMF, 12K ohm, 1W
R058	0179538	OMF, 4.7M ohm
R059	0100041	CF, 100 ohm, 1/8W
R060	0179533	MG, 1.5M ohm, 1/8W
R201	0100047	CF, 180 ohm, 1/8W
R203	0100089	CF, 10K ohm, 1/8W
R204	0151187	VR, 5K ohm-B
R205	0100081	CF, 4.7K ohm, 1/8W
R206	0100105	CF, 47K ohm, 1/8W
R207	0100073	CF, 2.2K ohm, 1/8W
R209	0100111	CF, 82K ohm, 1/8W
R210	0100107	CF, 56K ohm, 1/8W
R211	0100079	CF, 3.9K ohm, 1/8W
R212	0100080	CF, 4.3K ohm, 1/8W
R213	0100057	CF, 470 ohm, 1/8W
R216	0100065	CF, 1K ohm, 1/8W
R217	0100055	CF, 390 ohm, 1/8W
R221	0100087	CF, 8.2K ohm, 1/8W
R222	0100081	CF, 4.7K ohm, 1/8W
R224	0100083	CF, 5.6K ohm, 1/8W
R301	0100071	CF, 1.8K ohm, 1/8W
R303	0100077	CF, 3.3K ohm, 1/8W
R304	0100081	CF, 4.7K ohm, 1/8W
R305	0100095	CF, 18K ohm, 1/8W
R306	0100073	CF, 2.2K ohm, 1/8W
R308	0100095	CF, 18K ohm, 1/8W
R309	0100071	CF, 1.8K ohm, 1/8W
R311	0100089	CF, 10K ohm, 1/8W
R313	0100089	CF, 10K ohm, 1/8W
R315	0100087	CF, 8.2K ohm, 1/8W
R316	0100095	CF, 18K ohm, 1/8W
R318	0100081	CF, 4.7K ohm, 1/8W
R320	0100083	CF, 5.6K ohm, 1/8W
R321	0114143	CF, 330 ohm
R322	0100097	CF, 22K ohm, 1/8W
R323	0100099	CF, 27K ohm, 1/8W
R323	0150425	VR, 20K ohm-B
R324	0100089	CF, 10K ohm, 1/8W
R324	0150425	VR, 20K ohm-B
R325	0100089	CF, 10K ohm, 1/8W
R326	0100103	CF, 39K ohm, 1/8W
R401	0110117	OMF, 68 ohm, 1W
R402	0100065	CF, 1K ohm, 1/8W
R403	0100105	CF, 47K ohm, 1/8W
R404	0100075	CF, 2.7K ohm, 1/8W
R405	0100081	CF, 4.7K ohm, 1/8W
R406	0100065	CF, 1K ohm, 1/8W
R407	0100089	CF, 10K ohm, 1/8W
R408	0100109	CF, 68K ohm, 1/8W
⚠R409	0110169	OMF, 10K ohm, 1W
⚠R410	0110125	OMF, 150 ohm, 1W
R411	0100065	CF, 1K ohm, 1/8W
R412	0100109	CF, 68K ohm, 1/8W
R413	0100057	CF, 470 ohm, 1/8W
○R414	0166683	VR, 10K ohm, 1/8W
R471	0113733	CF, 220 ohm, 1/2W
R501	0100077	CF, 3.3K ohm, 1/8W
R502	0100087	CF, 8.2K ohm, 1/8W
R503	0100079	CF, 3.9K ohm, 1/8W
R504	0100125	CF, 330K ohm, 1/8W
R505	0150036	VR, 2K ohm-B
R506	0100057	CF, 470 ohm, 1/8W
R507	0100049	CF, 220 ohm, 1/8W
R508	0100065	CF, 220 ohm, 1/8W
R509	0100067	CF, 1.2K ohm, 1/8W
R510	0100073	CF, 2.2K ohm, 1/8W
R511	0100067	CF, 1.2K ohm, 1/8W
R512	0100057	CF, 470 ohm, 1/8W
R513	0100097	CF, 22K ohm, 1/8W
R514	0100061	CF, 680 ohm, 1/8W
R515	0100065	CF, 1K ohm, 1/8W
R516	0100089	CF, 10K ohm, 1/8W
R517	0100087	CF, 8.2K ohm, 1/8W
R521	0100077	CF, 3.3K ohm, 1/8W
R522	0100077	CF, 3.3K ohm, 1/8W
R523	0100077	CF, 3.3K ohm, 1/8W
R524	0100041	CF, 100 ohm, 1/8W
R525	0100041	CF, 100 ohm, 1/8W
R526	0100041	CF, 100 ohm, 1/8W
R527	0179561	CC, 2.2M ohm, 1/8W
R538	0150455	VR, 2K ohm-B
R601	0100121	CF, 220K ohm, 1/8W
R602	0100095	CF, 18K ohm, 1/8W
R603	0151284	OMF, 30K ohm
⚠R604	0110123	OMF, 120 ohm, 1W
R605	0100091	CF, 12K ohm, 1/8W
R606	0100049	CF, 220 ohm, 1/8W
R621	0151683	VR, 20K ohm-B
R622	0100095	CF, 18K ohm, 1/8W
R623	0100059	CF, 560 ohm, 1/8W
R624	0100081	CF, 4.7K ohm, 1/8W
R625	0114223	CF, 82K ohm
R626	0100108	CF, 62K ohm, 1/8W
R627	0100117	CF, 150K ohm, 1/8W
R680	0100017	CF, 10 ohm, 1/8W
R681	0100079	CF, 3.9K ohm, 1/8W
R682	0113705	CF, 15 ohm, 1/2W
R683	0113746	CF, 680 ohm, 1/2W
R684	0113746	CF, 680 ohm, 1/2W
R686	0114173	CF, 3.3K ohm
R687	010009	CF, 4.7 ohm, 1/8W
R689	0100076	CF, 2.7K ohm, 1/8W
R690	0100082	CF, 5.1K ohm, 1/8W
R691	0114049	CF, 22 ohm
R701	0100075	CF, 2.7K ohm, 1/8W
R702	0100107	CF, 56K ohm, 1/8W
⚠R703	0151676	VR, 5K ohm-B
⚠R704	0100091	CF, 12K ohm, 1/8W
R705	0100085	CF, 6.8K ohm, 1/8W
R706	0100081	CF, 4.7K ohm, 1/8W
R707	0100099	CF, 27K ohm, 1/8W
R708	0100081	CF, 4.7K ohm, 1/8W
R709	0100055	CF, 390 ohm, 1/8W
R710	0100111	CF, 82K ohm, 1/8W
R711	0100073	CF, 2.2K ohm, 1/8W
R713	0113768	CF, 5.6K ohm, 1/2W
R714	0113768	CF, 5.6K ohm, 1/2W
R715	0100079	CF, 3.9K ohm, 1/8W
R716	0151282	OMF, 500 ohm
R717	0100091	CF, 12K ohm, 1/8W
R718	0100049	CF, 220 ohm, 1/8W
⚠R721	0110261	OMF, 4.7K oh, 2W
⚠R751	0190014	WW, 1 ohm, 5W
R752	0114153	CF, 820 ohm
R754	0100083	CF, 5.6K ohm, 1/8W
⚠R771	0119512	FR, 1 ohm
⚠R772	0119514	FR, 10 ohm
⚠R773	0119505	FR, 2.2 ohm
R774	0114221	CF, 68K ohm
R775	0114223	CF, 82K ohm
R781	0113772	CF, 8.2K ohm, 1/2W
R782	0113772	CF, 8.2K ohm, 1/2W
R783	0141065	WW, 10 ohm, 8W
R784	0114183	CF, 8.2K ohm
R785	0113783	CF, 22K ohm, 1/2W
R787	0100089	CF, 10K ohm, 1/8W
⚠R901	0141082	WW, 6 ohm, 8W
R902	0114223	CF, 82K ohm
R903	0114223	CF, 82K ohm
R904	0114223	CF, 82K ohm
R905	0113717	CF, 47 ohm, 1/2W
R906	0100093	CF, 15K ohm, 1/8W
⚠R907	0110117	OMF, 68 ohm, 1W
R908	0113701	CF, 10 ohm, 1/2W
* R909	0114223	CF, 82K ohm
* R910	0100073	CF, 2.2K ohm, 1/8W
* R911	0100073	CF, 2.2K ohm, 1/8W
* R1101	0100063	CF, 820 ohm, 1/8W
○ R1101	0114161	CF, 1K ohm
* R1102	0100067	CF, 1.2K ohm, 1/8W
○ R1102	0100097	CF, 22K ohm

SYMBOL NO.	PARTS NO.	DESCRIPTION
○ R1104	0100097	CF, 22K ohm
○ R1105	0100109	CF, 68K ohm
○ R1106	0100097	CF, 22K ohm
○ R1107	0100077	CF, 33K ohm, 1/8W
○ R1109	0100067	CF, 1.2K ohm, 1/8W
* R1109	0187113	CF, 100K ohm, 1/16W
* R1110	0187097	CF, 22K ohm, 1/16W
○ R1110	0100063	CF, 820 ohm, 1/8W
* R1111	0187095	CF, 18K ohm, 1/16W
○ R1111	0100089	CF, 10K ohm, 1/8W
* R1112	0100079	CF, 3.9K ohm, 1/8W
* R1113	0187089	CF, 10K ohm, 1/16W
* R1115	0187089	CF, 10K ohm, 1/16W
* R1116	0187109	CF, 68K ohm, 1/16W
* R1117	0100069	CF, 1.5K ohm, 1/8W
* R1118	0100069	CF, 1.5K ohm, 1/8W
* R1119	0187091	CF, 12K ohm, 1/16W
* R1120	0187091	CF, 12K ohm, 1/16W
○ R1120	0100049	CF, 220 ohm
* R1121	0100071	CF, 1.8K ohm, 1/8W
* R1122	0100071	CF, 1.8K ohm, 1/8W
* R1123	0100071	CF, 1.8K ohm, 1/8W
* R1124	0100071	CF, 1.8K ohm, 1/8W
* R1125	0100071	CF, 1.8K ohm, 1/8W
* R1126	0100071	CF, 1.8K ohm, 1/8W
* R1127	0100071	CF, 1.8K ohm, 1/8W
* R1128	0100071	CF, 1.8K ohm, 1/8W
* R1129	0100071	CF, 1.8K ohm, 1/8W
* R1130	0100071	CF, 1.8K ohm, 1/8W
* R1131	0187081	CF, 4.7K ohm, 1/16W
* R1132	0100061	CF, 680 ohm, 1/8W
* R1133	0187099	CF, 27K ohm, 1/16W
* R1134	0187099	CF, 27K ohm, 1/16W
* R1135	0187097	CF, 22K ohm, 1/16W
* R1136	0187089	CF, 10K ohm, 1/16W
* R1137	0187105	CF, 47K ohm, 1/16W
* R1138	0187081	CF, 4.7K ohm, 1/16W
* R1139	0187081	CF, 4.7K ohm, 1/16W
* R1140	0187081	CF, 4.7K ohm, 1/16W
* R1141	0187105	CF, 47K ohm, 1/16W
* R1142	0187105	CF, 47K ohm, 1/16W
* R1143	0187105	CF, 47K ohm, 1/16W
* R1144	0187105	CF, 47K ohm, 1/16W
* R1145	0187105	CF, 47K ohm, 1/16W
* R1146	0187081	CF, 4.7K ohm, 1/16W
* R1147	0187081	CF, 4.7K ohm, 1/16W
* R1148	0187081	CF, 4.7K ohm, 1/16W
* R1149	0187081	CF, 4.7K ohm, 1/16W
* R1150	0187081	CF, 4.7K ohm, 1/16W
* R1151	0187081	CF, 4.7K ohm, 1/16W
* R1152	0187073	CF, 2.2K ohm, 1/16W
* R1153	0187081	CF, 4.7K ohm, 1/16W
* R1154	0187079	CF, 3.9K ohm, 1/16W
* R1155	0187095	CF, 18K ohm, 1/16W
* R1156	0187089	CF, 10K ohm, 1/16W
* R1157	0187081	CF, 4.7K ohm, 1/16W
* R1158	0187095	CF, 18K ohm, 1/16W
* R1159	0187979	CF, 3.9K ohm, 1/16W
* R1160	0187089	CF, 10K ohm, 1/16W
* R1161	0187093	CF, 15K ohm, 1/16W
* R1162	0187093	CF, 15K ohm, 1/16W
* R1163	0100073	CF, 2.2K ohm, 1/8W
* R1164	0100055	CF, 390 ohm, 1/8W
* R1165	0100073	CF, 2.2K ohm, 1/8W
* R1166	0100073	CF, 2.2K ohm, 1/8W
* R1167	0100055	CF, 390 ohm, 1/8W
* R1168	0113750	CF, 1K ohm, 1/2W
* R1169	0113746	CF, 680 ohm, 1/2W
* R1170	0187105	CF, 47K ohm, 1/16W
* R1171	0187105	CF, 47K ohm, 1/16W
* R1172	0187111	CF, 82K ohm, 1/16W
* R1173	0150041	VR, 100K ohm-B
* R1174	0113746	CF, 680 ohm, 1/2W
* R1175	0187081	CF, 4.7K ohm, 1/16W
* R1176	0187081	CF, 4.7K ohm, 1/16W
* R1177	0187081	CF, 4.7K ohm, 1/16W
* R1178	0187071	CF, 1.8K ohm, 1/16W
* R1179	0187089	CF, 10K ohm, 1/16W
* R1181	0187095	CF, 18K ohm, 1/16W
* R1182	0187097	CF, 22K ohm, 1/16W
* R1183	0187083	CF, 5.6K ohm, 1/16W
* R1184	0187091	CF, 12K ohm, 1/16W
* R1185	0187083	CF, 5.6K ohm, 1/16W
* R1187	0187093	CF, 15K ohm, 1/16W
* R1188	0187097	CF, 22K ohm, 1/16W
* R1190	0187073	CF, 2.2K ohm, 1/16W
* R1191	0187089	CF, 10K ohm, 1/16W
* R1192	0187081	CF, 4.7K ohm, 1/16W
* R1193	0187081	CF, 4.7K ohm, 1/16W
* R1194	0187073	CF, 2.2K ohm, 1/16W
* R1195	0187089	CF, 10K ohm, 1/16W
* R1196	0187073	CF, 2.2K ohm, 1/16W
* R1197	0187089	CF, 10K ohm, 1/16W
* R1198	0187081	CF, 4.7K ohm, 1/16W
* R1199	0187081	CF, 4.7K ohm, 1/16W
* R1200	0187073	CF, 2.2K ohm, 1/16W
* R1201	0187089	CF, 10K ohm, 1/16W

SEMICONDUCTOR

D058	2330351	1S2076
D201	2330351	1S2076
D301	2330351	1S2076
D302	2330351	1S2076
D401	2330351	1S2076
D601	2330352	1S2076A
D681	2330352	1S2076A
D682	2330352	1S2076A
D683	2330352	1S2076A
D684	2330251	VO6C
D721	2330351	1S2076
D751	2332851	EH-1Z
D771	2330551	VO9C
D772	2334581	ES-1A
D773	2330551	VO9C
D781	2332851	EH-1Z
D782	2330351	1S2076
⚠D901	2332792	RB-156
D905	2332851	EH-1Z
D906	2334581	ES-1A
D907	2332851	EH-1Z
D908	2330551	VO9C
D909	2334591	EM1A
D910	2334591	EM1A
○ D1101	2334601	LED, GL3-NG2
○ D1102	2334601	LED, GL3-NG2
○ D1103	2334601	LED, GL3-NG2
○ D1104	2334601	LED, GL3-NG2
○ D1105	2334601	LED, GL3-NG2
○ D1106	2334601	LED, GL3-NG2
○ D1107	2334601	LED, GL3-NG2
○ D1108	2334601	LED, GL3-NG2
D1109	2330352	1S2076A
D1110	2330352	1S2076A
D1111	2330352	1S2076A
D1112	2330352	1S2076A
D1113	2330352	1S2076A
D1114	2330352	1S2076A
D1115	2330352	1S2076A
D1116	2330352	1S2076A
○ D1117	2330351	1S2076
* D1117	2330351	1S2076
○ D1118	2330351	1S2076
* D1118	2330351	1S2076
○ D1119	2330351	1S2076
* D1119	2330352	1S2076A
○ D1120	2330351	1S2076
* D1120	2330351	1S2076
○ D1121	2330351	1S2076
* D1121	2330352	1S2076A
○ D1122	2330351	1S2076
* D1122	2330352	1S2076A
D1123	2330352	1S2076A
D1124	2330352	1S2076A
D1125	2330352	1S2076A
D1126	2330352	1S2076A
D1127	2330352	1S2076A
D1128	2330352	1S2076A
D1129	2330352	1S2076A
D1130	2330352	1S2076A
D1131	2330351	1S2076
D1132	2330351	1S2076
D1133	2330351	1S2076
D1134	2330251	VO6C
D1135	2334571	LN516GK
D1137	2330351	1S2076
D1171	2332431	PH-320
Q201	2320598	2SC458 (B)/(C)/(D)
Q301	2320631	2SA673 (B)/(C)
Q401	2322562	2SC688 (K)/(L)
Q402	2322562	2SC688 (K)/(L)
Q501	2321541	2SC1740 (Q)/(R)
Q681	2320664	2SC1213A (B)/(C)
Q701	2320631	2SA673 (B)/(C)
Q702	2320631	2SA673 (B)/(C)
Q721	2321992	2SC2271 (M)/(N)
⚠Q751	2322941	CR3CM-4

PRODUCT SAFETY NOTE: Components marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PARTS NO.	DESCRIPTION
⚠Q781	2323021	2SD898 (B)
○ Q1101	2321621	2SC458 (B)/(C)
○ Q1102	2320638	2SA673 (B)/(C)
* Q1104	2320664	2SC1213A (B)/(C)
* Q1105	2323353	2SB642 (R)/(S)
* Q1106	2323353	2SB642 (R)/(S)
* Q1107	2323341	2SD637 (R)/(S)
* Q1108	2323341	1SD637 (R)/(S)
* Q1109	2323341	2SD637 (R)/(S)
* Q1110	2323353	2SB642 (R)/(S)
* Q1111	2323353	2SB642 (R)/(S)
* Q1112	2323341	2SD637 (R)/(S)
* Q1113	2323341	2SD637 (R)/(S)
* Q1114	2323353	2SB642 (R)/(S)
* Q1115	2323341	2SD637 (R)/(S)
* Q1116	2323341	2SD637 (R)/(S)
* Q1117	2323353	2SB642 (R)/(S)
* Q1118	2323341	2SD637 (R)/(S)
* Q1119	2323341	2SD637 (R)/(S)
* Q1120	2323353	2SB642 (R)/(S)
* Q1121	2323341	2SD637 (R)/(S)
* Q1122	2320846	2SC1162WT (B)/(C)
* Q1123	2323341	2SD637 (R)/(S)
* Q1124	2323341	2SD637 (R)/(S)
* Q1125	2323341	2SD637 (R)/(S)
* Q1126	2323353	2SB642 (R)/(S)
* Q1127	2323353	2SB642 (R)/(S)
* Q1128	2323353	2SB642 (R)/(S)
* Q1129	2323353	2SB642 (R)/(S)
* Q1171	2323341	2SD637 (R)/(S)
IC201	2364432	HA11440A
IC401	2366431	μPC1382C
IC501	2366441	M5139AP
⚠IC681	2366401	STA4410
⚠IC701	2364291	LA7801
⚠IC901	2366451	STR6020
* IC1101	2364081	μPD1363 (C)
* IC1102	2366581	μPD1514C-32
* IC1103	2365531	HD44042
ZD051	2331084	μPC-574J (AG)
ZD058	2330634	HZ-7 (A)/(B)
ZD504	2331154	HZ-12 (A)/(B)/(C)
ZD621	2331154	HZ-12 (A)/(B)/(C)
ZD701	2331001	HZ-6 (A)
ZD721	2332161	HZ-27
ZD722	2332161	HZ-27
ZD751	2331001	HZ-6 (A)
ZD781	2331173	HZ-11 (C)
* ZD1101	2334121	RD5.1EB
ZD1102	2331154	HZ-12 (A)/(B)/(C)
* ZD1103	2331154	HZ-12 (A)/(B)/(C)
* ZD1171	2331816	HZ-7B3

COIL/TRANSFORMER

L202	2142065	Filter coil
L203	2142019	Mold IFT
L207	2120482	Filter coil
L301	2122253	Filter coil
L401	2121225	Peaking coil
L402	2142197	Sound IF trans.
L501	2120482	Filter coil
L502	2122821	Peaking coil
L504	2121701	Peaking coil
L781	2120333	Filter coil
⚠L901	2122691	Line filter
L1101	2120482	Filter coil
⚠T401	2250355	Sound output trans.
T501	2161284	Trans.
T502	2141367	Trans.
T721	2260021	H.Drive trans.
⚠T771	2433301	Flyback trans.
⚠T901	2213121	Switching trans.

MISCELLANEOUS

* S1101	2620281	Slide switch
S1102	2631721	Key switch
S1103	2631721	Key switch
S1104	2631721	Key switch
* S1005	2531721	Key switch
*	2720221	Fuse holder
⚠*	2720253	Fuse 315mA
	4614001	Wedge
	3767511	Handle
SP401	2411292	Speaker 120 mm X 80 mm
* SP402	2785531	Piezoelectric speaker
⚠	2441532	Deflection yoke
	3332031	Erth spring
⚠	2980191	Antenna terminal board
	2750051	Loop antenna
⚠CP751	2370152	Module HM7101
⚠CP201	2300031	SAW Filter
CP202	2161503	Compound component
DL301	2162292	Delay line coile
MF401	2142603	Ceramic filter
DL501	2790271	Delay line coile
X501	2784801	Crystal
S501	2620281	Slide switch
⚠TH901	2340471	PTC Thermistor
⚠F901	2720173	Fuse 2.0 A
⚠	2720221	Fuse holder
⚠*S901	2631591	Power switch-push
⚠M801	2370592	CRT Module HM8592
⚠	2741744	AC line cord
⚠	2724311	Tuner ET-548
JA401	2671151	Jack
⚠V1	2353531	370 LHB22
○ S1101	2631415	8 key pushlock switch
S1102	2620281	Slide switch
○ S901	2631551	Power switch-push
○	2790732	VR unit
*	2790734	VR unit
○	3228351	Front frame
*	3228371	Front frame
○	3264901	Slide knob
○	3264911	Touch knob
○	3774211	Knob-push
S1105	2631721	Key switch
* X1101	2790771	Crystal
*	2582131	Remo. con. transmitter
	2750051	UHF Loop antenna

HITACHI Models CPT1471, CPT1472, CPT1473, CPT1474, CPT1475, CPT1476, CPT1477, CPT1478, CPT1479, NP82C-2 Chassis

General Description: A series of mains operated colour television receivers incorporating the same NP82C-2 chassis. The circuit for the basic model is given here as a guide together with initial adjustments. The procedures for setting up the cathode ray tube are similar to those outlined for the G.E.C. Model 2089 described elsewhere in this volume.

Adjustments

A.G.C. Delay: Warm-up the set at least 2 minutes. Connect a D.C. voltmeter to the TP051. Adjust the input R.F. (U.H.F.) level to −47 dBm. (66 dBμ 50Ω Open).

Channel adjustment must be correct or A.F.C. switched On.

Align R204 so that the meter reads 8·0± 0·5V with signal.

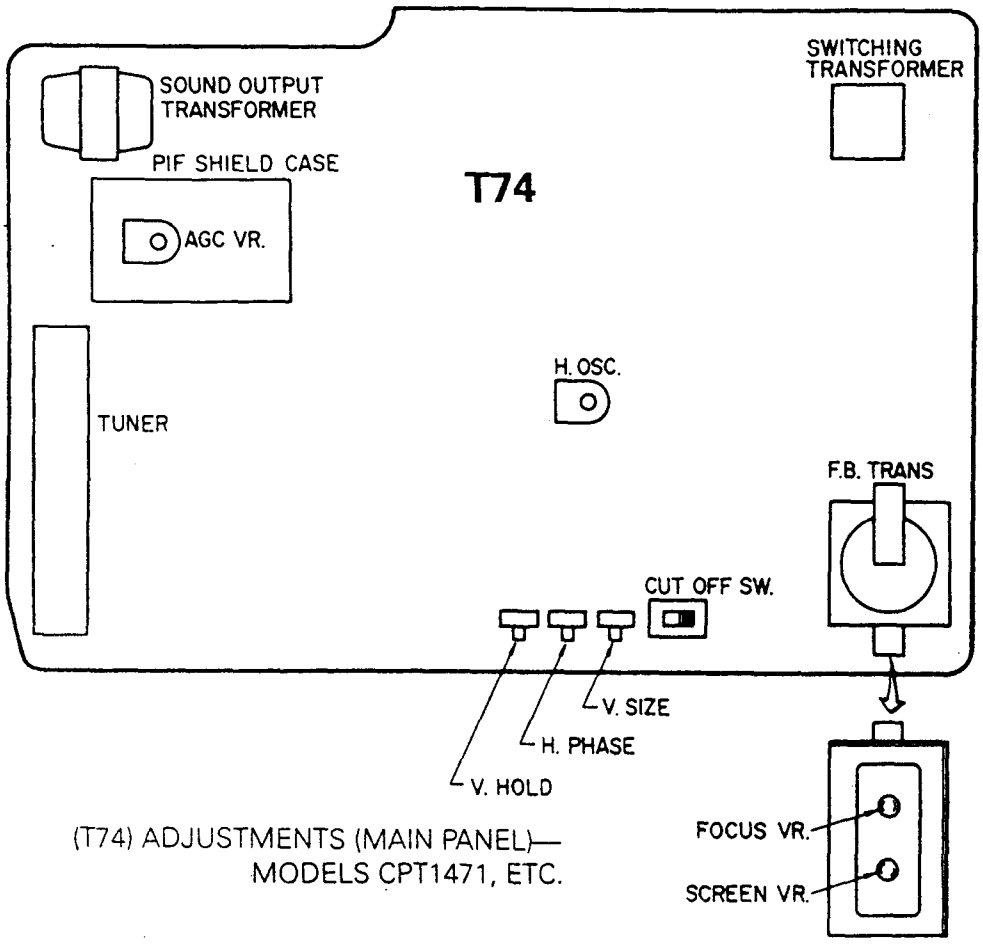
Horizontal (Line) Frequency: Connect pin 3 of IC701 and chassis by a capacitor 10 μF /50V. Align R703 so as to obtain the correct line frequency.

Horizontal Centring: Align R716 to obtain the correct horizontal centring.

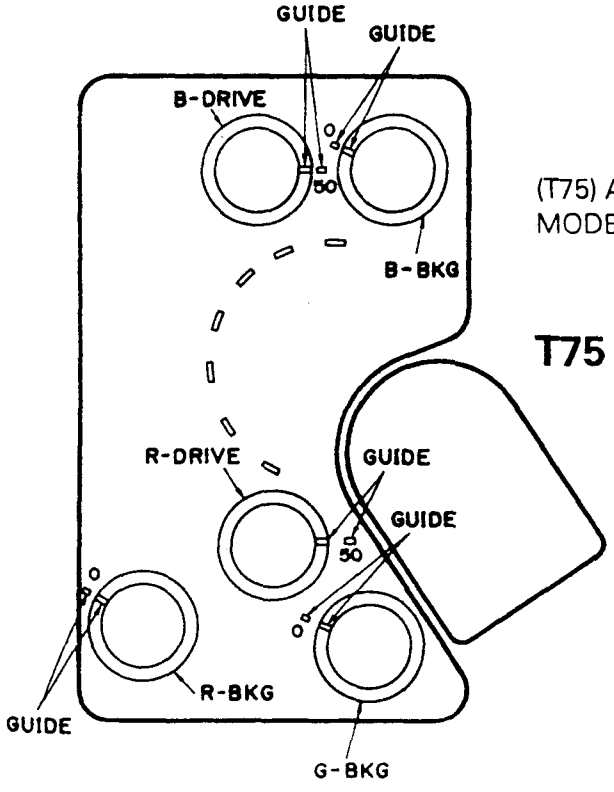
Horizontal Picture Width: Align the H. size jumper wire (cut or resolder) to obtain the correct picture width.

Vertical (Field) Frequency: Connect TP601 and TP602 by a resistor 240 kΩ. Adjust R603 so as to obtain the correct field frequency. Remove the resistor.

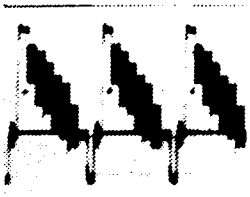
Picture Height: Adjust R621 so as to obtain the correct picture height.



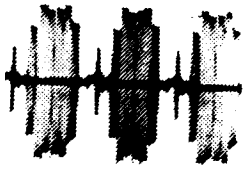
(T74) ADJUSTMENTS (MAIN PANEL)—
MODELS CPT1471, ETC.



(T75) ADJUSTMENTS (C.R.T. PANEL)—
MODELS CPT1471, ETC.



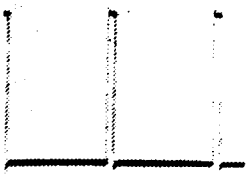
(850) 2,5V_{ss} PAL H



(857) 250mV_{ss} PAL H

(865) 400mV_{ss} H

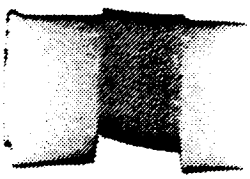
(870) 11V_{ss} H



(870) 2,5V_{ss} V

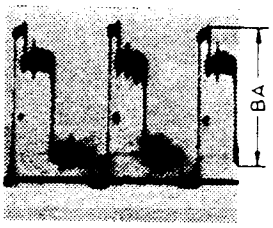
(873) 150mV_{ss} H PAL B-Y

(874) 200mV_{ss} H PAL R-Y

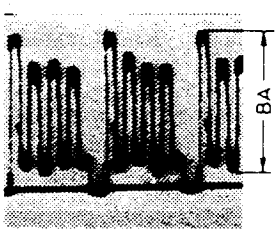


(877) 900mV_{ss} H PAL

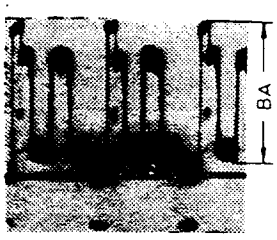
(880) 600mV_{ss} H PAL 60V BA



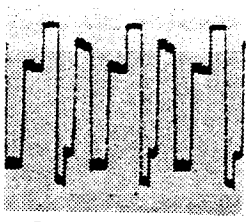
(911) 3,5V BA H PAL



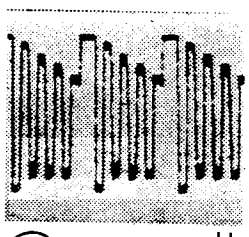
(912) 3,5V BA H PAL



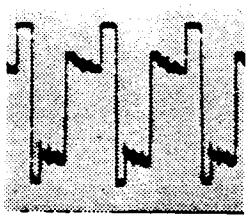
(914) 3,5V BA H PAL



(1011) 25V_{ss}–80V_{ss} H



(1021) 25V_{ss}–80V_{ss} H

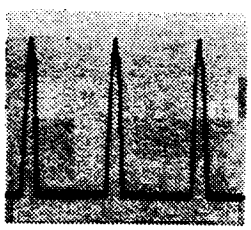


(1031) 25V_{ss}–80V_{ss} H

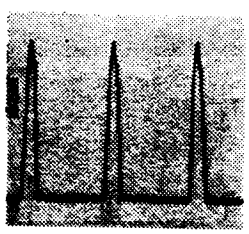
T199b

110° Waveforms

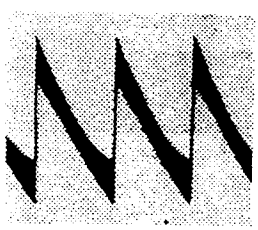
as 90° except for:—



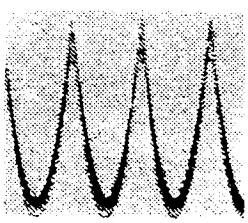
(501) 1200V_{ss} H



(502) 150V_{ss} H

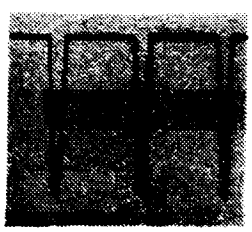


(503) 1,2V_{ss} V



(504) 11V_{ss} V

(506) 140V_{ss} H



(507) 80V_{ss} H

(T199b) CIRCUIT WAVEFORMS—CVC1200 (90° and 110°) SERIES (*CONTINUED*)
(*Note:* Waveforms 711 to 715 inc. are referred to SMPS negative rail. DO NOT EARTH!)

J.V.C. Model 7255GB

General Description: A mains-operated colour television receiver with infra-red remote control and incorporating a 14-in. In-line, Black Stripe, Quick-start cathode ray tube.

Mains Supplies: 200–240 volts, 50Hz.

Cathode Ray Tube: 370KRB22P-AL.

E.H.T.: 24KV

Loudspeaker: 8 ohms impedance.

Access for Service

To remove back cover, take out 6 screws (2 top, 2 bottom, 2 aerial panel). The main printed circuit board may be pulled out after releasing wires from the panel clamps and removing two screws which secure the manual control assembly to the front panel.

Adjustments

Power Supply: The adjusting VR and the voltage test point are located within the power supply P.C.B. assembly.

D.C.12V Voltage: Adjust the 12V ADJ. VR (R20) to obtain D.C.12V between TP-99 and chassis.

D.C.110V Voltage: Confirm that 110V exists between the chassis and the TP-92 or the K1 connector.

Vertical Height: Adjust the V. Height VR (R403) to obtain the optimum size of vertical height.

Horizontal Oscillator: Set the H. Hold VR (R505) to the mechanical centre position.

Short TP-33 and chassis with a jump wire.

Adjust H. Hold VR (R505) until picture is in view and locks or drift slowly back and forth.

Remove the jump wire.

Make sure that the set maintains horizontal sync. when channels are switched.

Sub-Brightness: Set the Bright and Contrast VR knobs to central position. Adjust the Sub-Bright VR (R219) to obtain the optimum brightness.

Noise (R.F. A.G.C. Delay): This control is set at the factory and rarely requires any adjustment. If a snowy picture appears on a medium to weak station, adjust the Noise VR (R119).

Turn Noise VR (R119) fully anti-clockwise, maximum noise in picture.

TECHNICAL FEATURES

1. Newly developed, stabilized power supply
   This unit is provided with a newly developed power supply and the wide range voltage regulator.
   1) Adjustment for +B output is not necessary.
   2) Large operating range (the unit can be operated at 200, 220 or 240V without the adjustment of a voltage selector).
   3) Very low power consumption.
   4) High reliability.

2. New colour-tube
   The precision technology of HITACHI has lead to the development of a new colour-tube, the advantages of which are:
   1) CPT and DY system with superb convergence performance.
   2) Extermely sharp picture due to precision electron gun and powerful electron lens.
   3) Bright picture and excellent contrast with the black-matrix tube.
   4) CPT with excellent focussing and high quality picture.

3. Quick start
   The new picture tube, with its quick start, gives the picture within five seconds of switching on without preheating.

4. New diode SPRIT type F.B.T
   The focus VR and screen VR are incorporated in the newly developed diode SPRIT type F.B.T. The improves safety and performance.

5. New IC
   A monolithic single-chip PIF-IC provide excellent picture reproduction and stabilized performance. The deflection IC and monolithic single-chip video chroma IC with high integration density provide for improved reliability and easy maintenance.

6. AV position
   Set the 8-position to AV position because prevent the pictures way on the CRT when connect a VTR.

7. High reliability and operational safety
   Printed circuits, stabilized power supply and a number of protection circuits provide the television set with high reliability.
   Adjustment free aspect on stabilized high tension and excessive high voltage limit circuit assure highly safe operation.

8. Remote control system (CPT1473)
   Newly developed full remote control system.

DIFFERENCE BETWEEN CPT1351

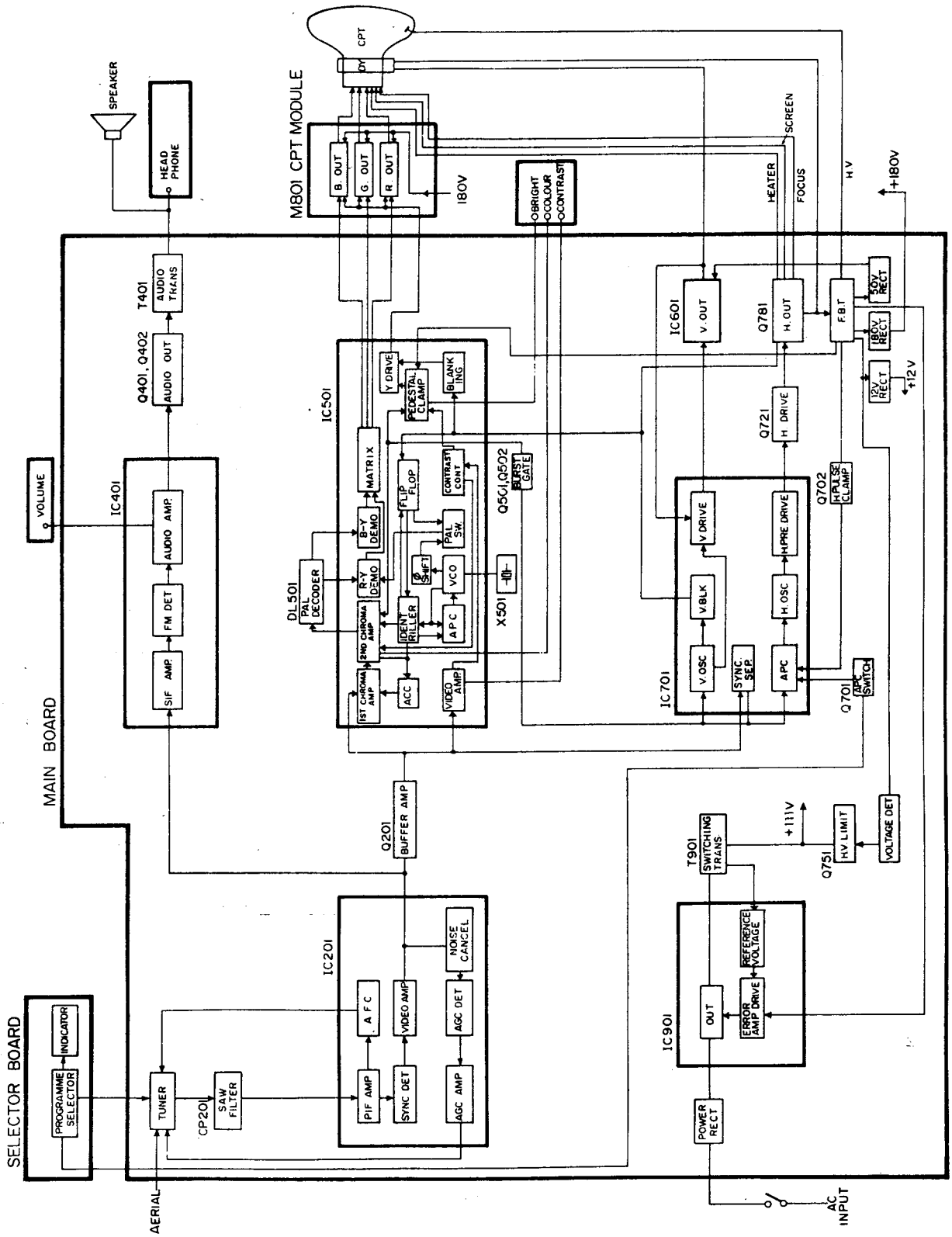
1. DIFFERENCE

	ITEM	CPT1351	CPT1471/CPT1473	REMARKS
1	PIF IC	HA11440	HA11440 A	* 3. VIDEO/CHROMA IC "Original color system (CPT1351)→ Color difference" drive system (CPT1471/1473)
2	SIF IC	HA1124A/LA1363	μPC 1382C	
3	VIDEO/CHROMA IC	μPC 1365C	M51393AP	
4	VERTICAL OUTPUT	Transistor composition	STA441C	
5	POWER CONTROL IC	STR450	STR6020	
6	CPT	320CDB22	370LHB22	
7	CHANNEL SELECTION INDICATOR	Mechanical	Green light (LED)	
8	CPT PW BOARD	PW Board type	CPT Module HM8592	
9	CUT OFF SW	–	S501	

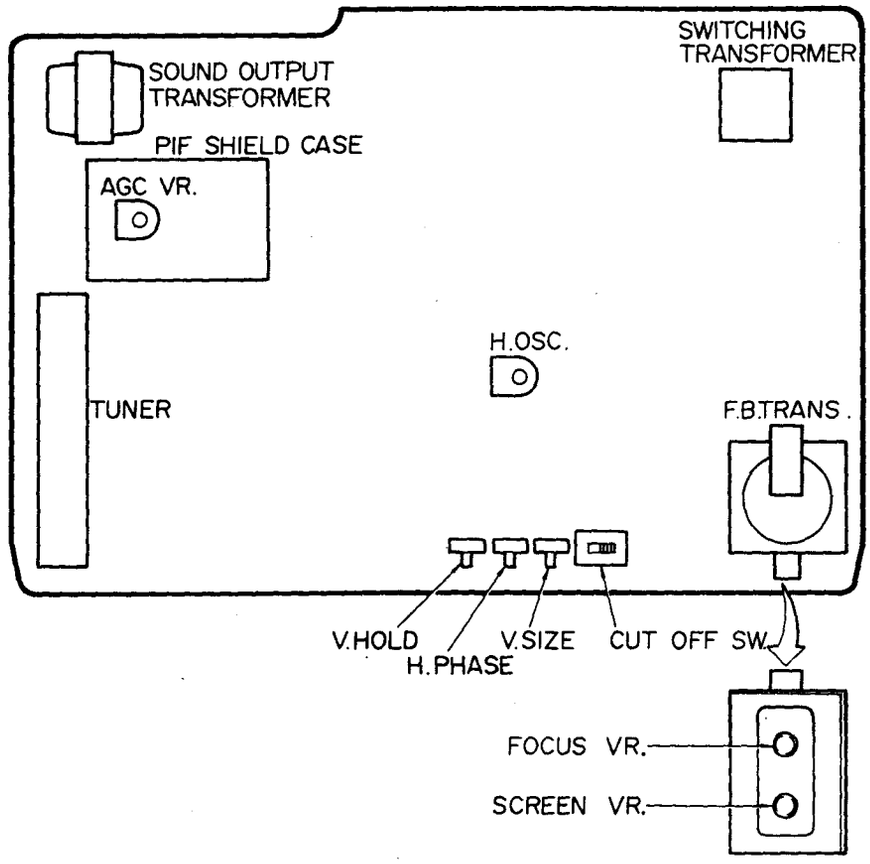
2. DETAILS

Use S501 when ajusting Cut-off in . . . . . Grey scale tracking.
Refer to the "NP8C chassis Grey scale tracking adjustment" for other items.

NP82C2 CHASSIS BLOCK DIAGRAMME (CPT1471)

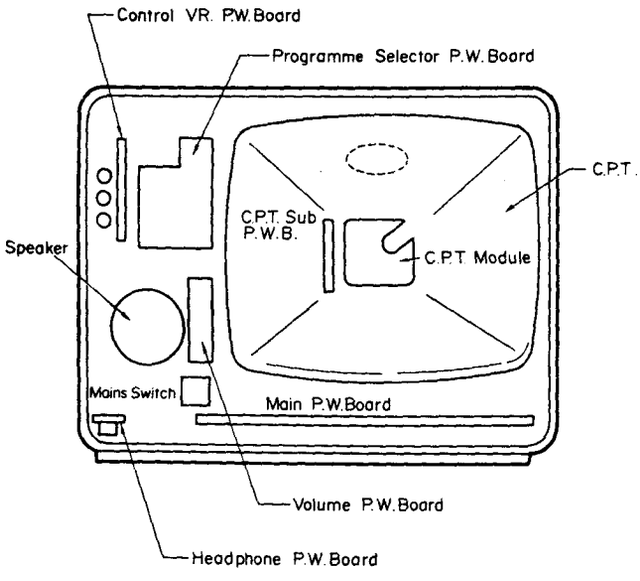


LOCATION DIAGRAMME ON NP82C2 MAIN P.W.BOARD.

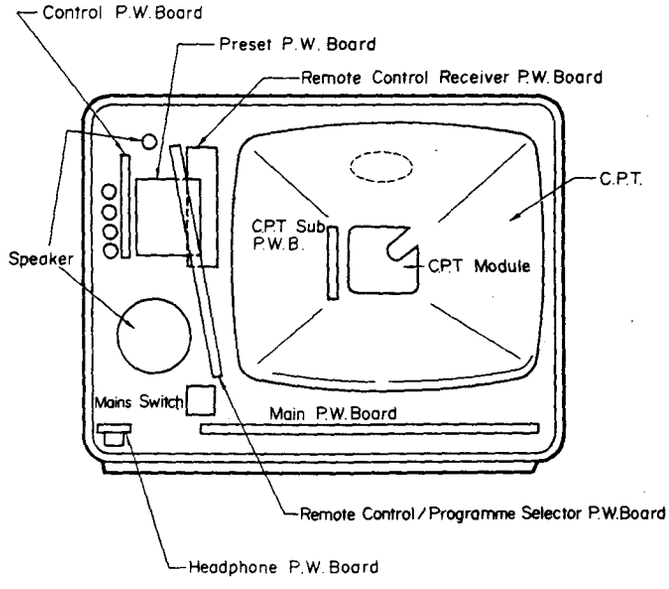


P.W. BOARD ARRENGEMENT DIAGRAMME VIEWED FROM THE REAR INSIDE THE SET

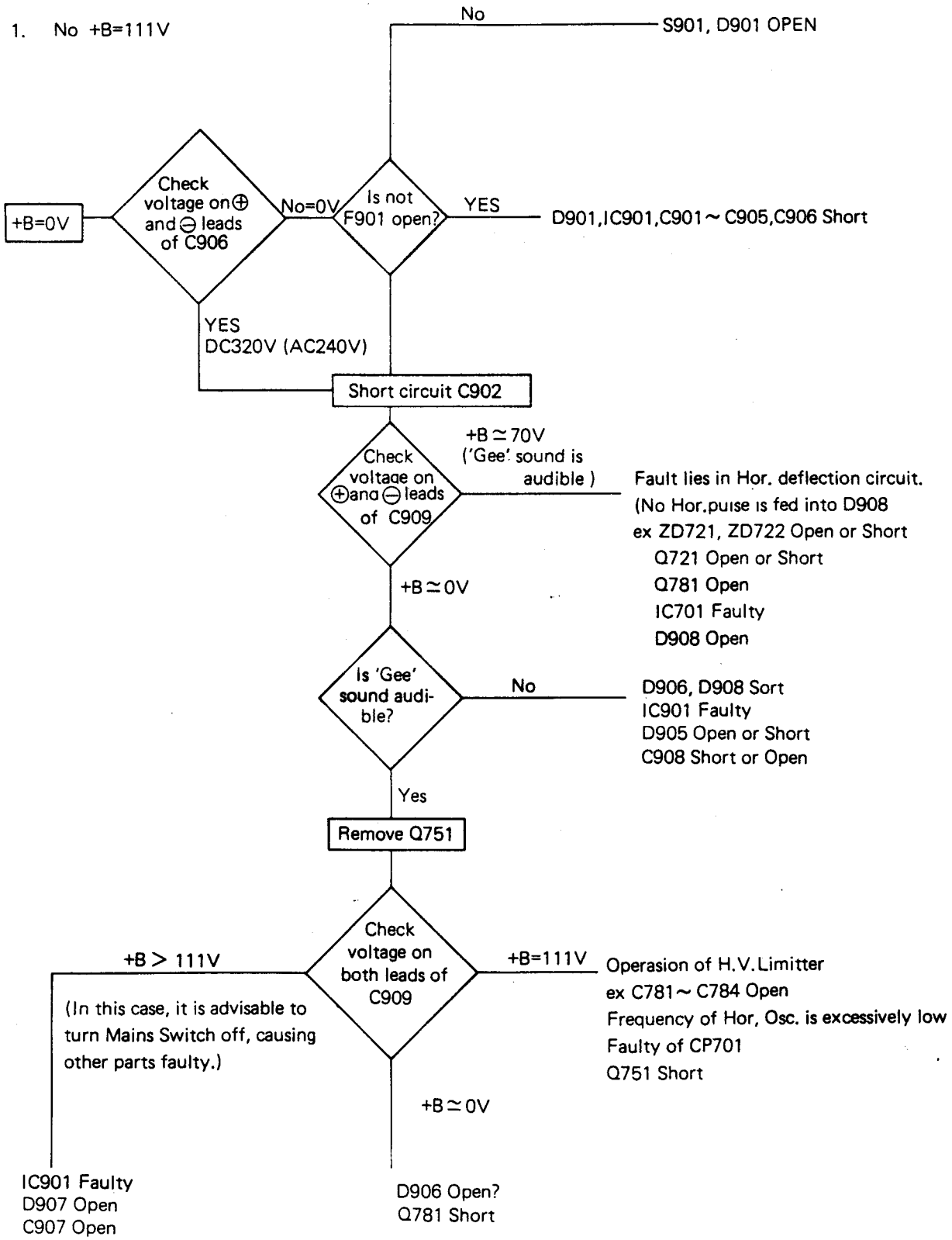
CPT1471



CPT1473

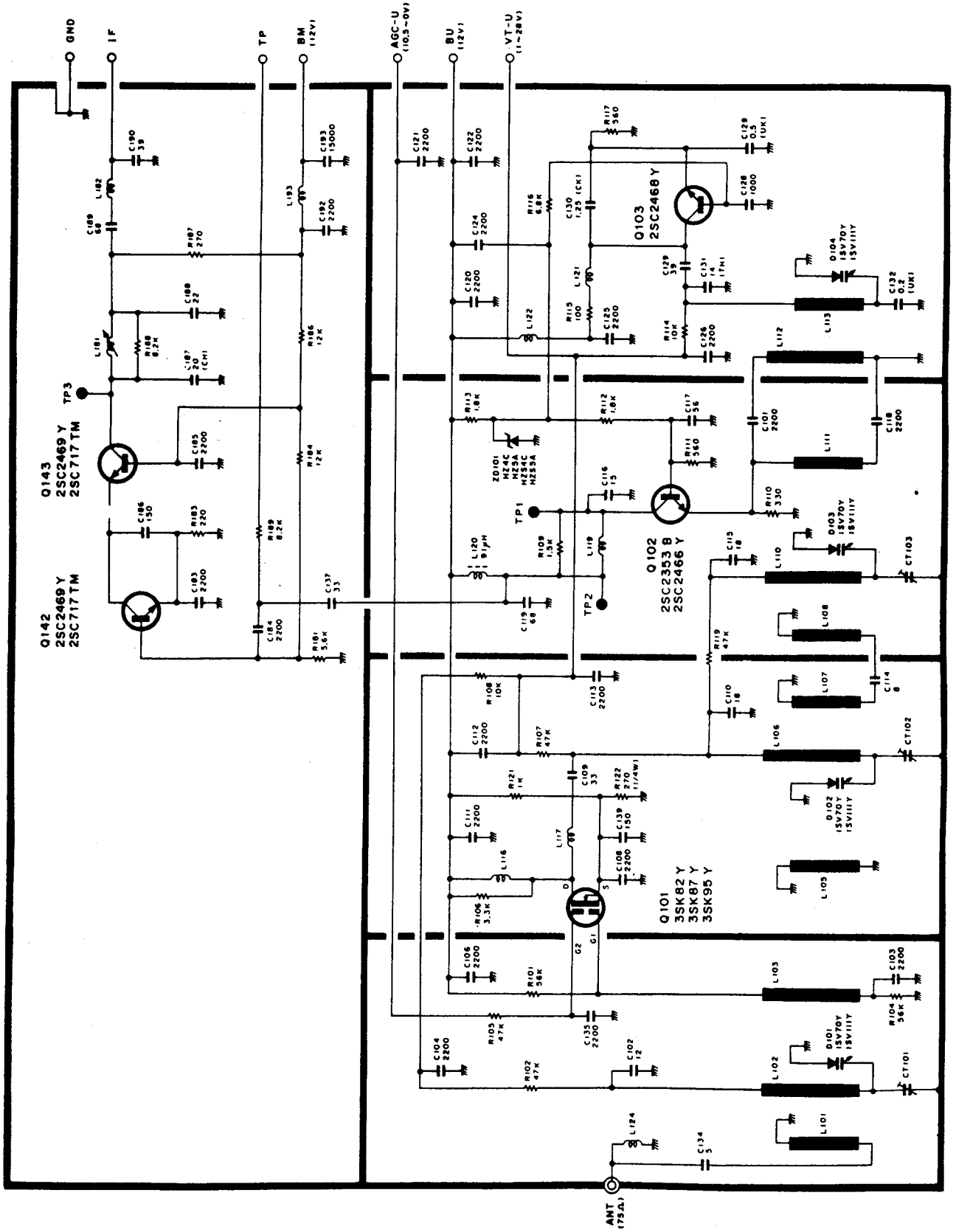


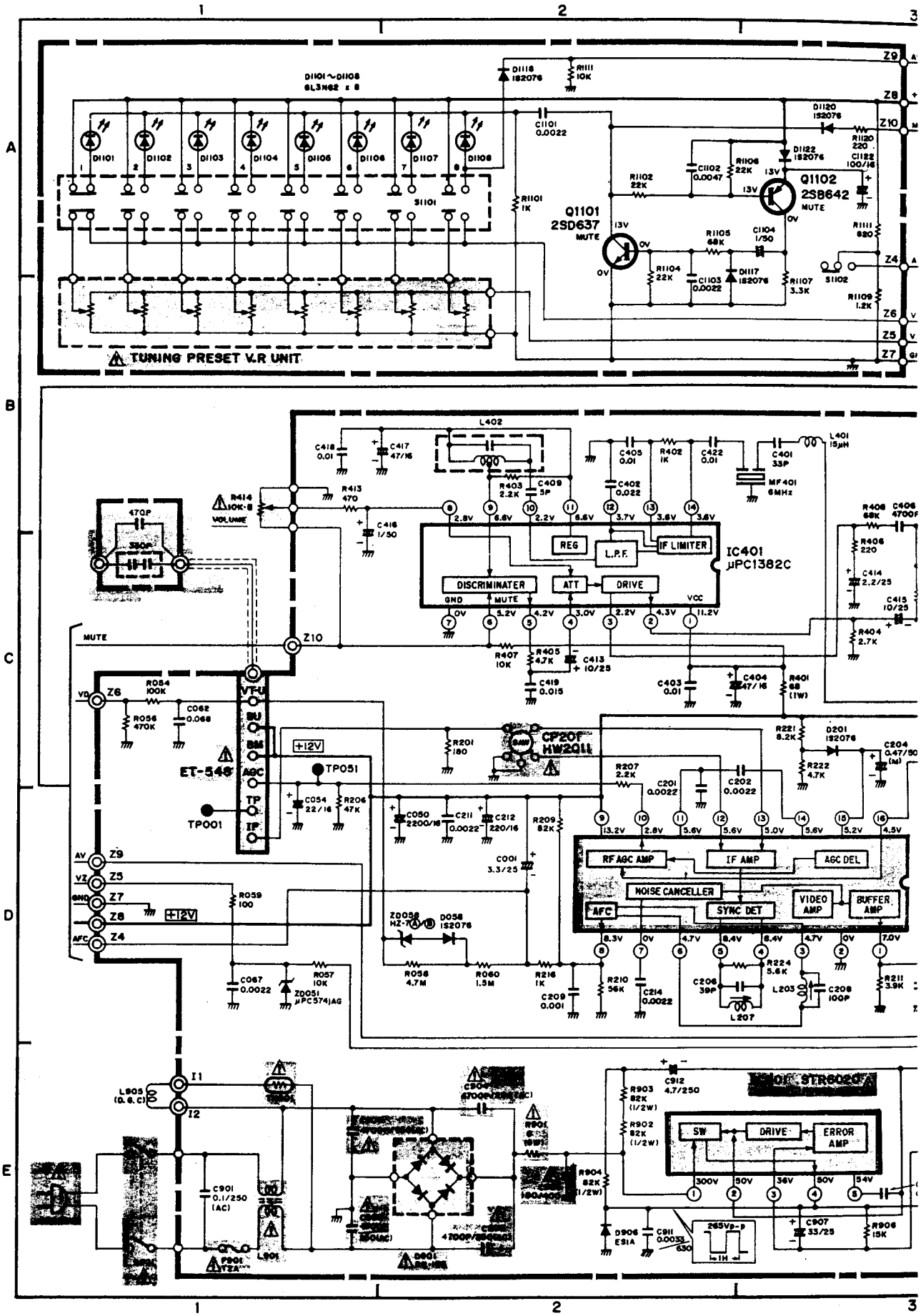
TROUBLE SHOOTING



TUNER CIRCUIT DIAGRAMME (CPT1471/CPT1473)

UHF TUNER (ET-548)




TUNING PRESET V.R UNIT
IC401 μPC1382C
REG
L.P.F.
IF LIMITER
DISCRIMINATER
ATT
DRIVE
RF AGC AMP
IF AMP
AGC DEL
NOISE CANCELLER
AFC
SYNC DET
VIDEO AMP
BUFFER AMP
Q1101 2SD637 MUTE
Q1102 2SB642 MUTE
ET-548
CP201 HW2QLL
IC901 STR6020
SW
DRIVE
ERROR AMP
+12V
MUTE
VOLUME