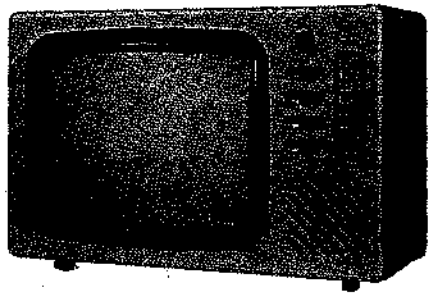
HITACHI

CRP-146 CTP-205
CRP-147 CEP-385
CRP-148

SERVICE MANUAL No.290 PAL-4 Chassis



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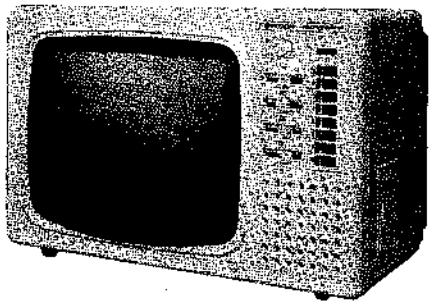
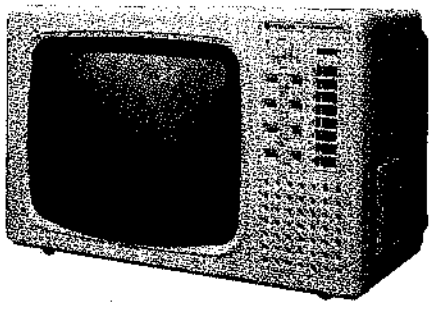


CRP-147



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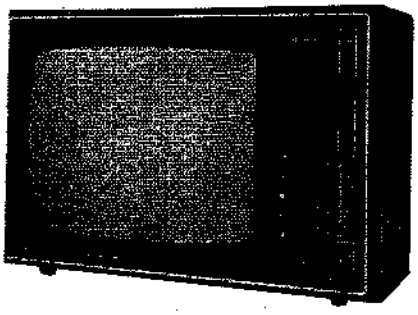
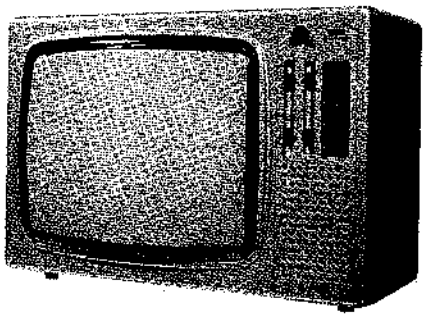


CTP-205

This is a preliminary service manual that shows only essential items.
Our complete service manual including "alignment procedure", "printed circuit boards" and "replacement parts list" will be published soon.
We hope you will make the best of this for the time being.

CONTENTS



CEP-385

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 receiver before any service is performed on a "HOT" chassis receiver.
3. When replacing a chassis in the cabinet, always replace 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 component. Especially critical components as indicated on the circuit diagram should not be replaced by other makes.
   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 technician must thoroughly test the unit to be certain tha it is completely safe to operate without danger of electrical shock, and be sure that no protective device built into the instrument by the manufacturer 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 2kV 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-ray radiation moderately in excess of design levels. The high voltage must not, under any circumstances, exceed 27kV on the chassis.

X-RAY RADIATION

TUBES: The primary source of X-RAY 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–RAY Radiation emissions.

For continued X-RAY 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 safetyrelated characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated 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 parts the parts list in this Service Manual.

The use of a substitute replacement component 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 shock, fire, X-Ray 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.

SPECIFICATIONS

CRP-146/CRP-148

Colour system	PAL-Original
System of reception	625-line, VHF/UHF
Channel coverage	I (K2-4) VHF
	III (K5-12) VHF
	IV/V (K21-68) UHF
Channel selection	Tuner-sensor for 8 programmes
Antenna input	75 ohms asynmetrical
Picture tube	14" (37 cm)
IC	4
Transistor	74
Diodes	100
Audio output	1.5 Watt
Power supply	AC220V, 50Hz
Power consumption	98W
Weight	18kg
Dimension	51.5 x 34.5 x 36 cm

CRP-147

Colour system	PAL-Original
System of reception	625-line, CCIR
Channel coverage	I (K2-4) VHF
	III (K5-12)VHF
	IV/V (K21-68) UHF
Channel selection	Tuner-sensor for 8 programmes
Antenna input	75 ohms asymmetrical
Picture tube	14" (37cm)
IC	4
Transistor	71
Diode	99
Audio output	1.5 Watt
Power supply	AC220V, 50Hz
Power consumption	98W
Weight	18kg
Dimension	51.5 x 43.5 x 36cm

CET-205

Colour system	PAL-Original
System of reception	625-line CCIR
Channel coverage	I (K2-4) VHF
	III (K5-12) VHF
	IV/V (K21-68) UHF
Channel selection	Tuner-sensor for 8 programmes
Antenna input	75 ohms asymmetirical
Picture tube	20" (51 cm)
IC	4
Transistor	71
Diode	99
Audio output	2 Watt
Power supply	AC 220V, 50Hz
Power consumption	98W
Weight	27.5kg
Dimension	65.5 x 45.5 x 45cm

CEP-385

Colour system	PAL-Original
System of reception	625-line CCIR
Channel coverage	I (K2-4) VHF
	III (K5-12) VHF
	IV/V (K21-68) UHF
Channel selection	Tuner-sensor for 8 programmes
Antenna input	75 ohms asymmetrical
Picture tube	18" (47cm)
IC	4
Transistor	71
Diode	99
Audio output	2 Watt
Power supply	AC 220V, 50Hz
Power consumption	98W
Weight	24kg
Dimension	60 x 41 x 43.5cm

TECHNICAL FEATURES

1. ALL TRANSISTORIZED CIRCUIT

HITACHI transistor television has always taken the lead in black and white TV and established its high reliability in the market.

With this experience of solid state technology and the developments of colour television skill, HITACHI present the finest colour television in the solid state world.

2. NEW COLOUR PICTURE TUBE

New HITACHI Inline colour picture tube has been developed with high-precision technology and skill. Precision gun, whose grids are unitized in a one piece, incorporates large-diameter lens in narrow neck picture tube.

This picture tube presents a crisp (with its unitized gun and large lenses) and bright (with its Black-Matrix) picture.

3. ELECTRONIC TUNER WITH 8 PROGRAMMES

4. LOW POWER CONSUMPTION

Power consumption is only 98 watts.

5. QUICK START CPT

Quick start CPT succeeds "QUICK START" feature without preheating method.

After turning on the mains switch, the picture comes out in five seconds.

6. HIGH QUALITY CIRCUITS

a. Newly designed scanning system and thoroughly studied circuitry produce the beautiful picture and minimize the geometrical picture distortion.

b. Cathode drive circuit by primary colour (R.G.B.) signals assures fine picture.

c. High-performance AGC circuit and noise canceller circuit need no adjustment against a change of field strength. Furthermore, these circuits stabilize the receiver under the most difficult reception conditions and minimize aeroplane flutter and signal fading.

d. AV function (for audio visual equipment, e.g. VCR, Teldec) is provided at programme no.8.

7. HIGH RELIABILITY

8. HIGH SERVICEABILITY

1. PURITY ALIGNMENT ... Fig. 1, 2.

As Before preceeding the below, please undergo preliminary static convergence adjustment on this page.

1) Push the Scan coil fully up to funnel part of the picture tube. Disconnect the (G-Y) plug from the signal panel, and see the broad mazenta belt appears on the screen....Fig. 1 (a)
2) Pull out the Scancoil gradually towards you and see that two oval parts (coloured pale yellow and light blue) appear on each side of the screen....Fig. 1(b)
3) Rotate the Purity magnet (C) (Fig. 2), and set two coloured parts to become equal in area...Fig. 1(c)
4) Insert Preliminary rubber wedge between the funnel and the Scancoil at the top position, and tilt the scan coil backward at the top.
5) Pull out the Scan coil gradually towards you again until two coloured parts disappear simultaneously. See that the white purity---Connect (G-Y) plug--- is all right, if not, pull out the Scan coil until ideal white purity is obtained. Fasten the Scancoil securety by tightening the Screw (D).
6) Unless the red purity (disconnect both (G-Y) (B-Y) plugs) is obtained, repeat the steps 2) ~ 5) again.

NOTE)
Put the Purity-Convergence magnet assembly on the picture tube neck, so that the edge of Thightning ring isolated 33mm (1¼") from the tip of the neck. .. Fig. 2
Secure it firmly by tightning the Screw(D).

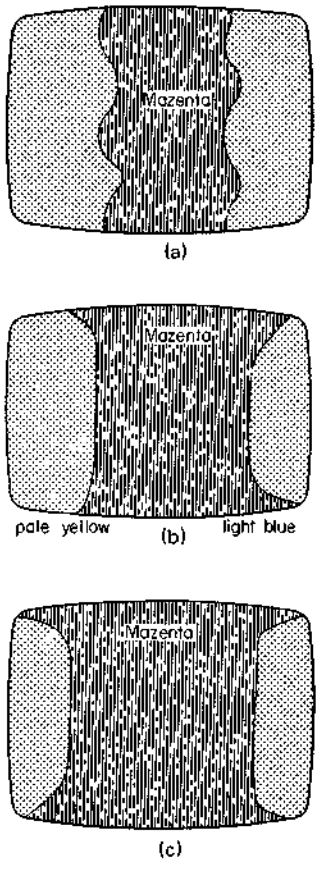
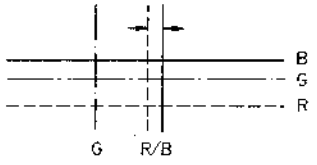
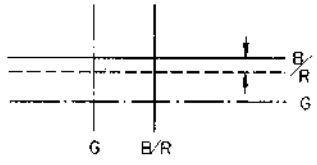
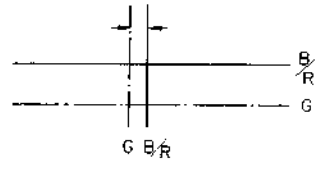
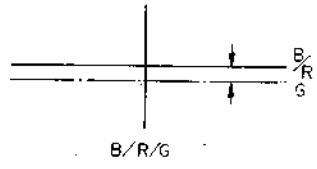


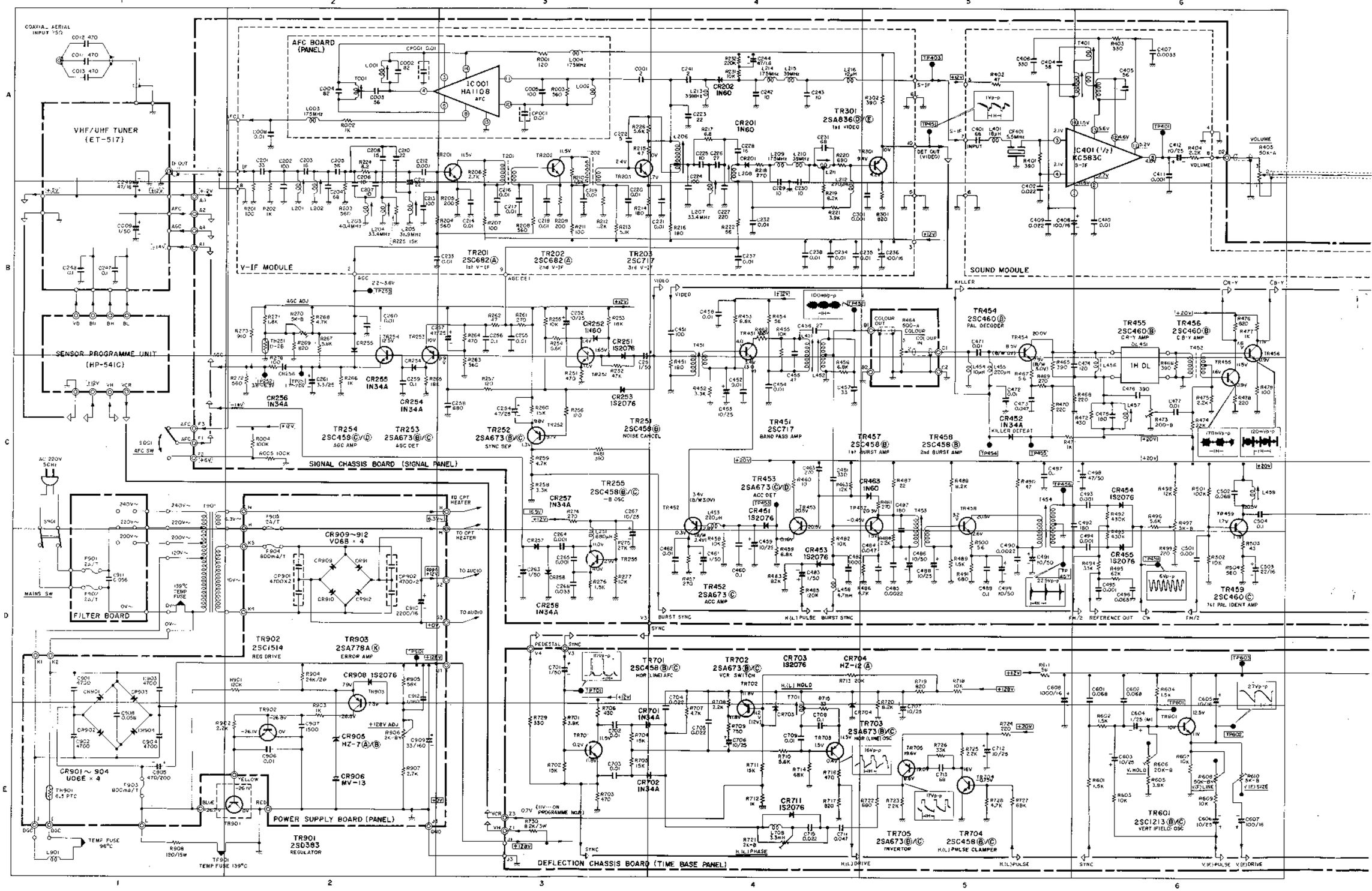
Fig. 1

2. STATIC CONVERGENCE ALIGNMENT Fig. 4, 5.

1) Observe the centre part of the screen.

Step	Converging lines	Magnet (Fig. 2)	Movement (Fig. 3)	Centre of the screen
1	Vertical Blue and Red	4 poles (A)	sliding (a)	
2	Horizontal Blue and Red	4 poles (A)	rotating (b)	
3	Vertical B/R and Green	6 poles (B)	sliding (a)	
4	Horizontal B/R and Green	6 poles (B)	rotating (b)	
5	See that all the lines are converged, at the centre part, if not repeat step 1 and 2. (Secure the magnets by fastening Magnet locking ring (E)).			

BASIC CIRCUIT SCHEMATIC DIAGRAM (CRP 147)



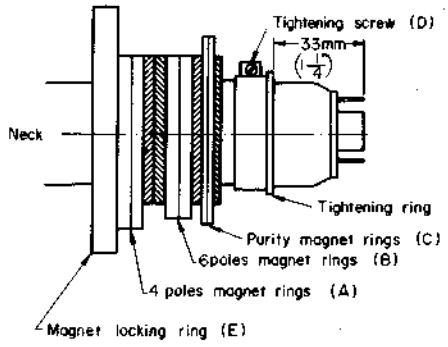


Fig. 2

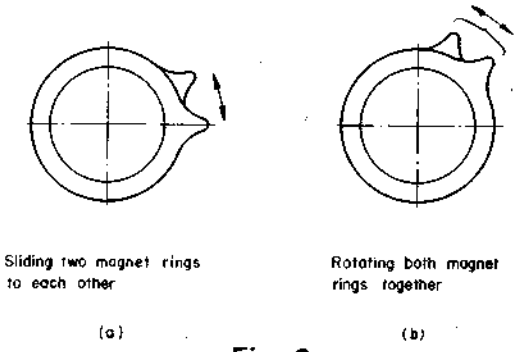


Fig. 3

3. DYNAMIC CONVERGENCE ALIGNMENT

Observe the circumference of the screen.

1) Push in the Preliminary rubber wedge between the funnel part and Scancoil gradually until both holizontal and vertical lines are converged at the circumference of the screen.... Fig.4.

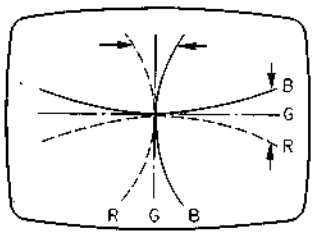
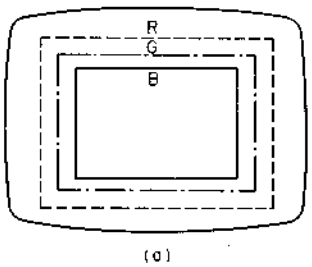


Fig. 4

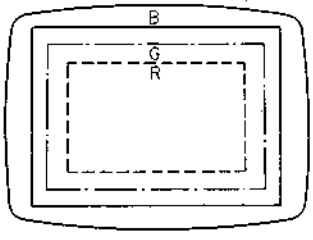
2) Proceed the either case according to the arrangements on the screen.... Fig. 3 (a) and (b)

CASE (a)



(a)

CASE (b)



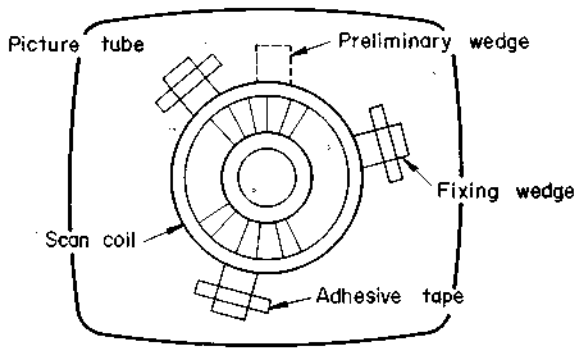
(b)

Fig. 5

CASE (a)

i) Insert Fixing wedge at 3 o'clock position, until three coloured squares are converged.

ii) Insert two Fixing wedge at 7 and 11 o'clock positions and fix three wedges by highly Adhesive tape. Then pull up the Preliminery wedge.

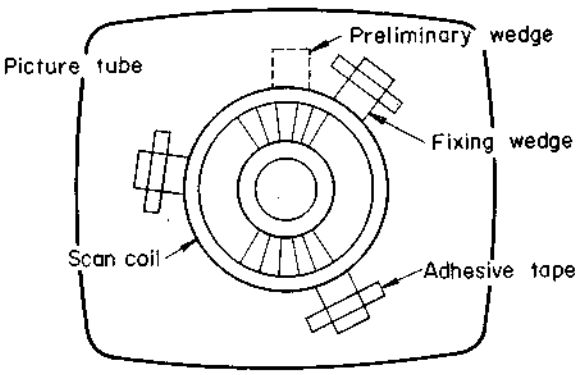


(a)

CASE (b)

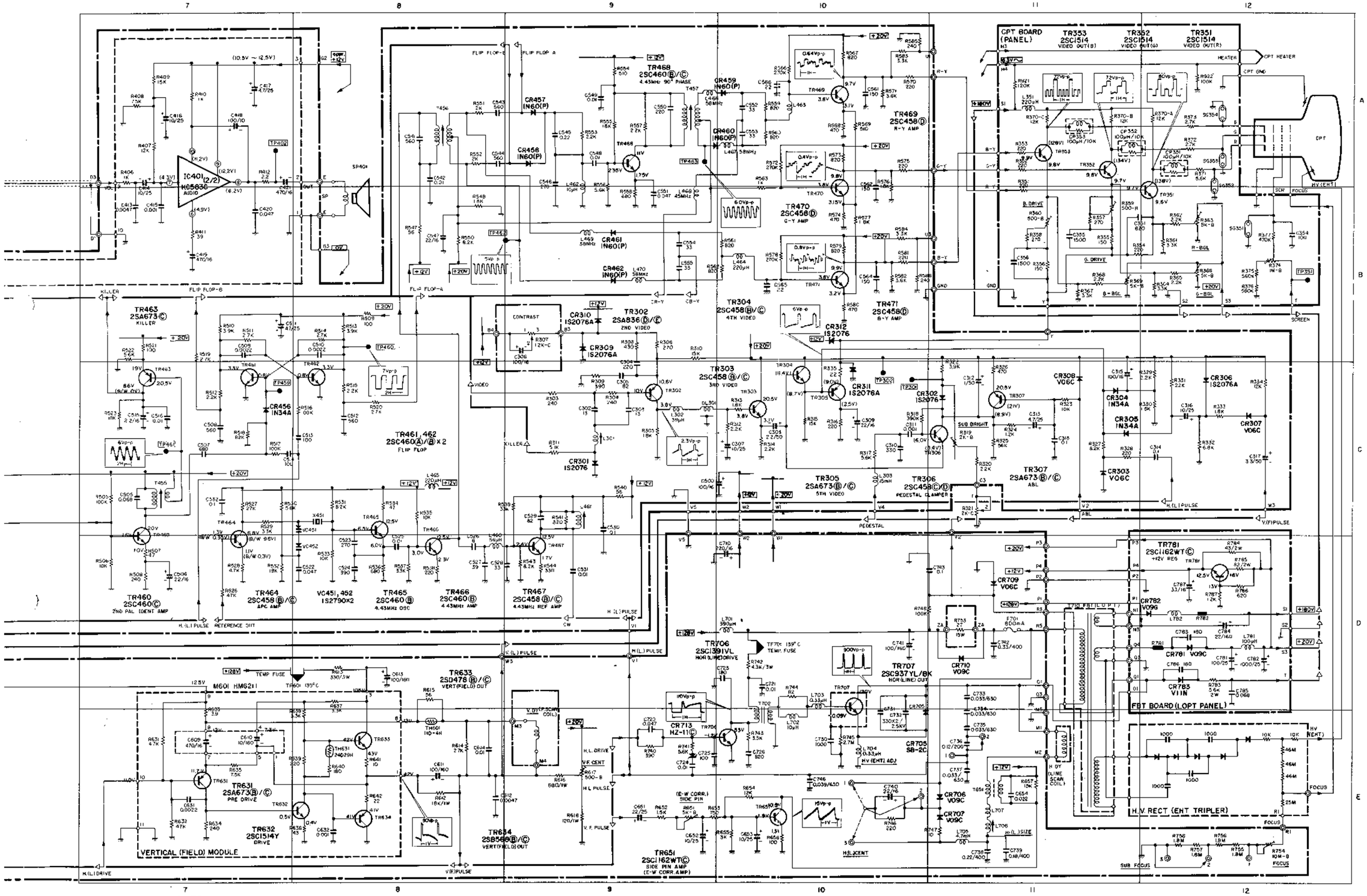
i) Insert Fixing wedge at 9 o'clock position, until three coloured squares are converged.

ii) Insert Two Fixing wedge at 1 and 6 o'clock positions and fix three wedges by highly Adhesive tape. Then pull up Preliminary wedge.



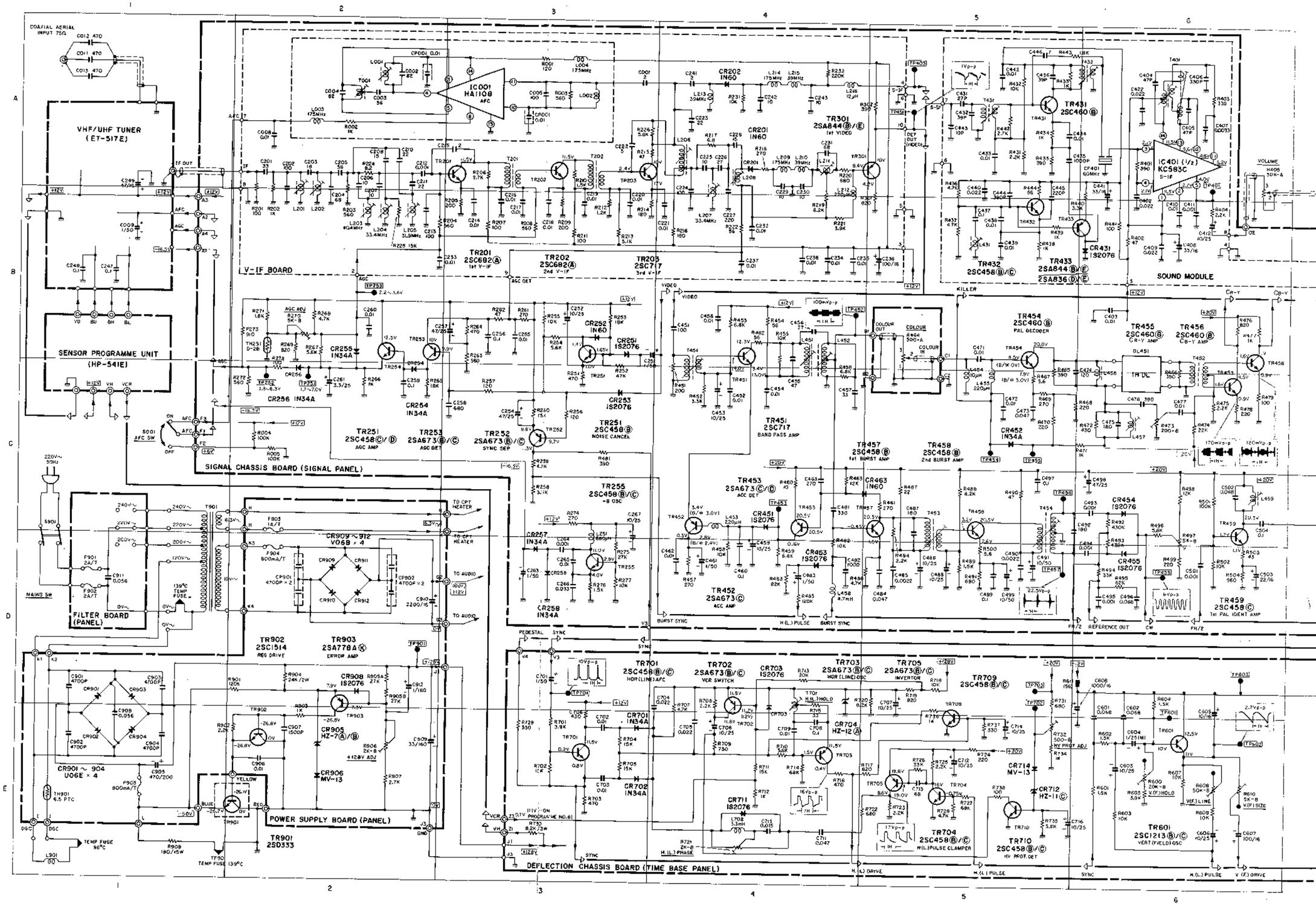
(b)

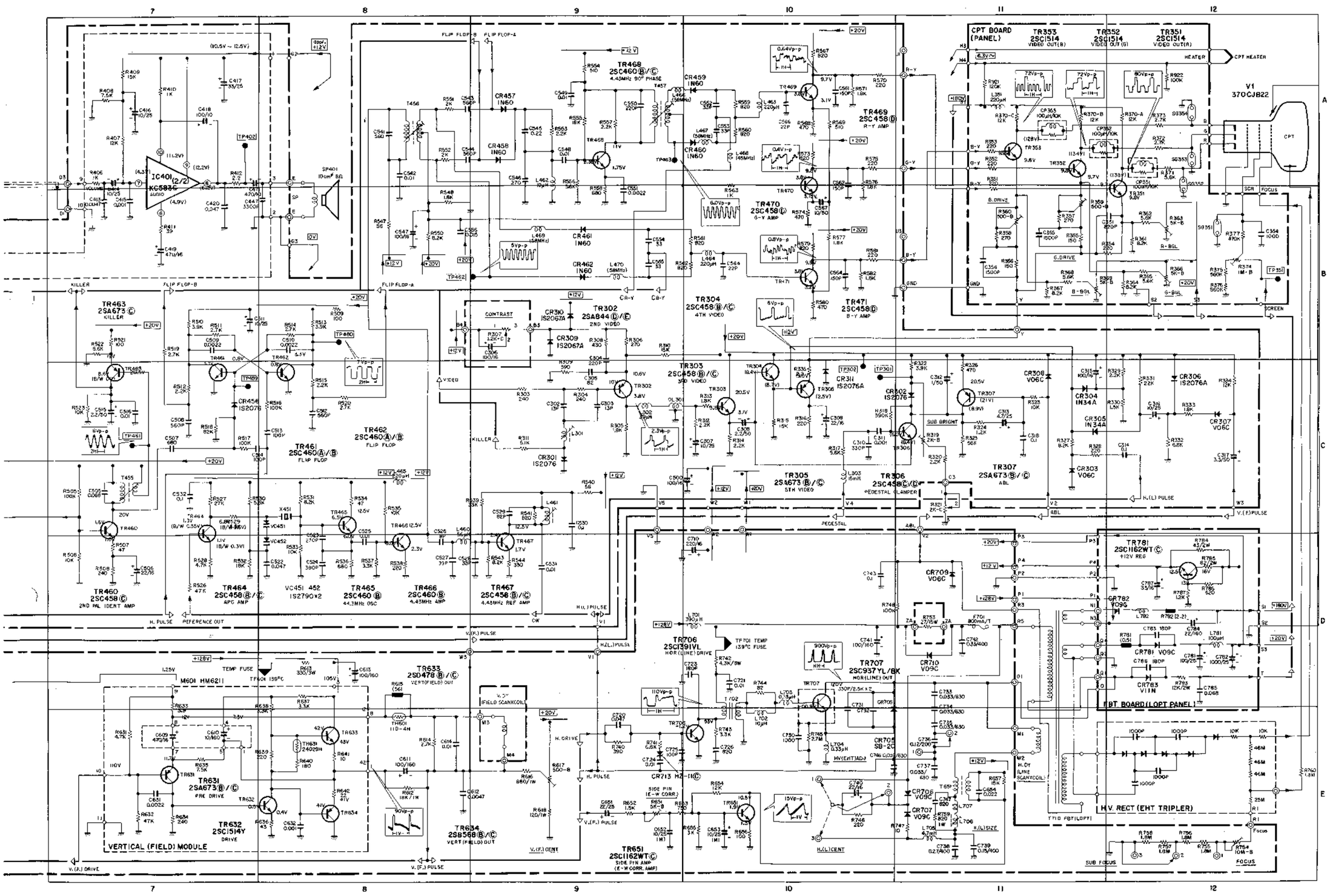
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100KΩ/V).
  Voltages taken on a complex colour bar signal including a standard colour bar signal.



NOTES
1. RESISTORS R781, R782 SHOULD BE REPLACED ONLY BY THE GENUINE HITACHI SPARE PARTS.
2. FOR SAFETY FUSES, F701, F901, F902, F903, F904, F905 SHOULD BE REPLACED BY HITACHI APPROVED TYPE.
3. FOR SAFETY AERIAL CAPACITORS C011, C012, C013 SHOULD BE REPLACED ONLY BY THE GENUINE HITACHI SPARE PARTS.

BASIC CIRCUIT SCHEMATIC DIAGRAM (CRP-146/CRP-148)




IC401 (2/2) KC5836 audio
TR468 2SC460Ⓑ/Ⓒ 4.43MHz 90° PHASE
TR469 2SC458Ⓓ R-Y AMP
TR470 2SC458Ⓔ G-Y AMP
TR471 2SC458Ⓓ B-Y AMP
TR304 2SC458Ⓑ/Ⓒ 4TH VIDEO
TR302 2SA844Ⓓ/Ⓔ 2ND VIDEO
TR303 2SC458Ⓑ/Ⓒ 3RD VIDEO
TR305 2SA673Ⓑ/Ⓒ 5TH VIDEO
TR306 2SC458Ⓒ/Ⓓ PEDESTAL CLAMPER
TR307 2SA673Ⓑ/Ⓒ ABL
TR463 2SA673Ⓒ KILLER
TR462 2SC460Ⓐ/Ⓑ FLIP FLOP
TR461 2SC460Ⓐ/Ⓑ FLIP FLOP
TR460 2SC458Ⓒ 2ND PAL IDENT AMP
TR464 2SC458Ⓑ/Ⓒ APC AMP
TR465 2SC460Ⓑ 44.3MHz OSC
TR466 2SC460Ⓑ 4.43MHz AMP
TR467 2SC458Ⓑ/Ⓒ 4.43MHz REF AMP
TR631 2SA673Ⓑ/Ⓒ PRE DRIVE
TR632 2SC1514Y DRIVE
TR633 2SD478Ⓑ/Ⓒ VERT(FIELD) OUT
TR634 2SB568Ⓑ/Ⓒ VERT(FIELD) OUT
TR651 2SC1162WTⓒ SIDE PIN AMP (E-W CORR. AMP)
TR706 2SC1391VL HOR(LINE) DRIVE
TR707 2SC937YL/6K HOR(LINE) OUT
TR781 2SC1162WTⓒ +12V REG
TR353 2SC1514 VIDEO OUT(B)
TR352 2SC1514 VIDEO OUT(G)
TR351 2SC1514 VIDEO OUT(R)
V1 370CJB22
CPT
CPT BOARD (PANEL)
CPT HEATER
SCR
FOCUS
SCREEN
CONTRAST
KILLER
FLIP FLOP-A
FLIP FLOP-B
VIDEO
H. DRIVE
H. PULSE
REFERENCE OUT
V.(F) PULSE
H.(L) PULSE
V.(F) DRIVE
V.(F) CENT
H.(L) CENT
H.(L) SIZE
PEDESTAL
ABL
SUB BRIGHT
B. DRIVE
G. DRIVE
R-BGL
G-BGL
B-BGL
SUB FOCUS
FBT BOARD (LOPT PANEL)
H.V. RECT (EHT TRIPLER)
VERTICAL (FIELD) MODULE
SP401 10cm² 8Ω
TEMP FUSE
TF601 139°C
TF701 TEMP 139°C FUSE
M601 HM6211
TH631 240Ω9H
TH601 110-4N
CR456 IS2076
CR457 IN60
CR458 IN60
CR459 IN60
CR460 IN60
CR461 IN60
CR462 IN60
CR302 IS2067A
CR309 IS2067A
CR301 IS2076
CR311 IS2076A
CR302 IS2076
CR308 V06C
CR304 IN34A
CR305 IN34A
CR303 V06C
CR306 IS2076A
CR307 V06C
CR709 V06C
CR710 V09C
CR782 V09C
CR781 V09C
CR783 V11N
CR705 SB-20
CR706 V09C
CR707 V09C
CR713 HZ-11C
T456
T457
T455
T651
T701
T702
L461
L462 (10μH)
L463 220μH
L464 220μH
L466 (455kHz)
L467 (58MHz)
L468 (58MHz)
L469 (58MHz)
L470 (58MHz)
L471
L501 15mH
L502 15mH
L503 15mH
L701 390μH
L702 10μH
L703 0.15μH
L704 0.33μH
L705 0.15μH
L706 4.7mH
L707 4.7mH
L781 100μH
L782
X451 6.88529 (B/W 0.35V)
VC451 452 IS2790×2
VC452
SG351
SG352
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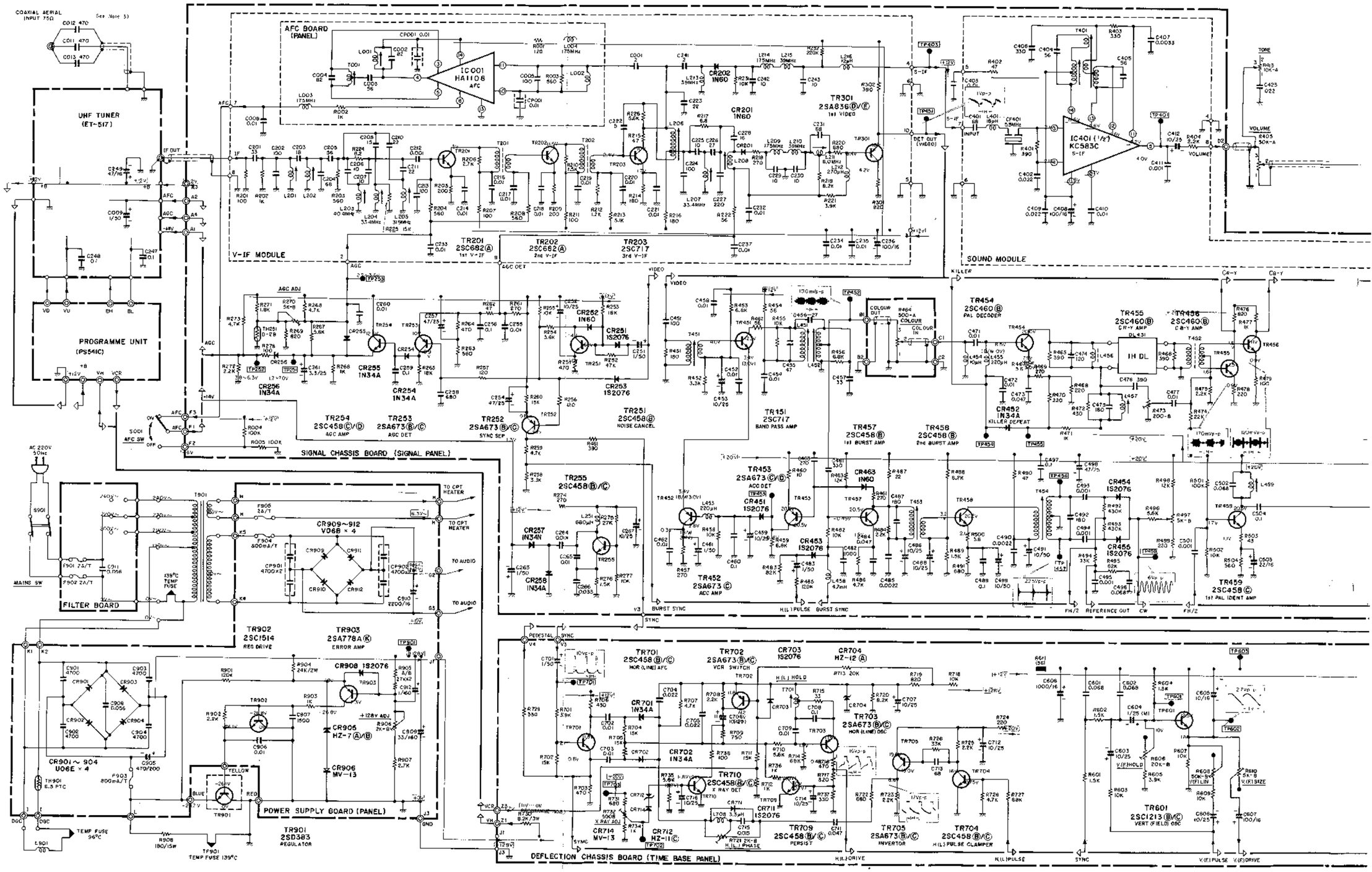
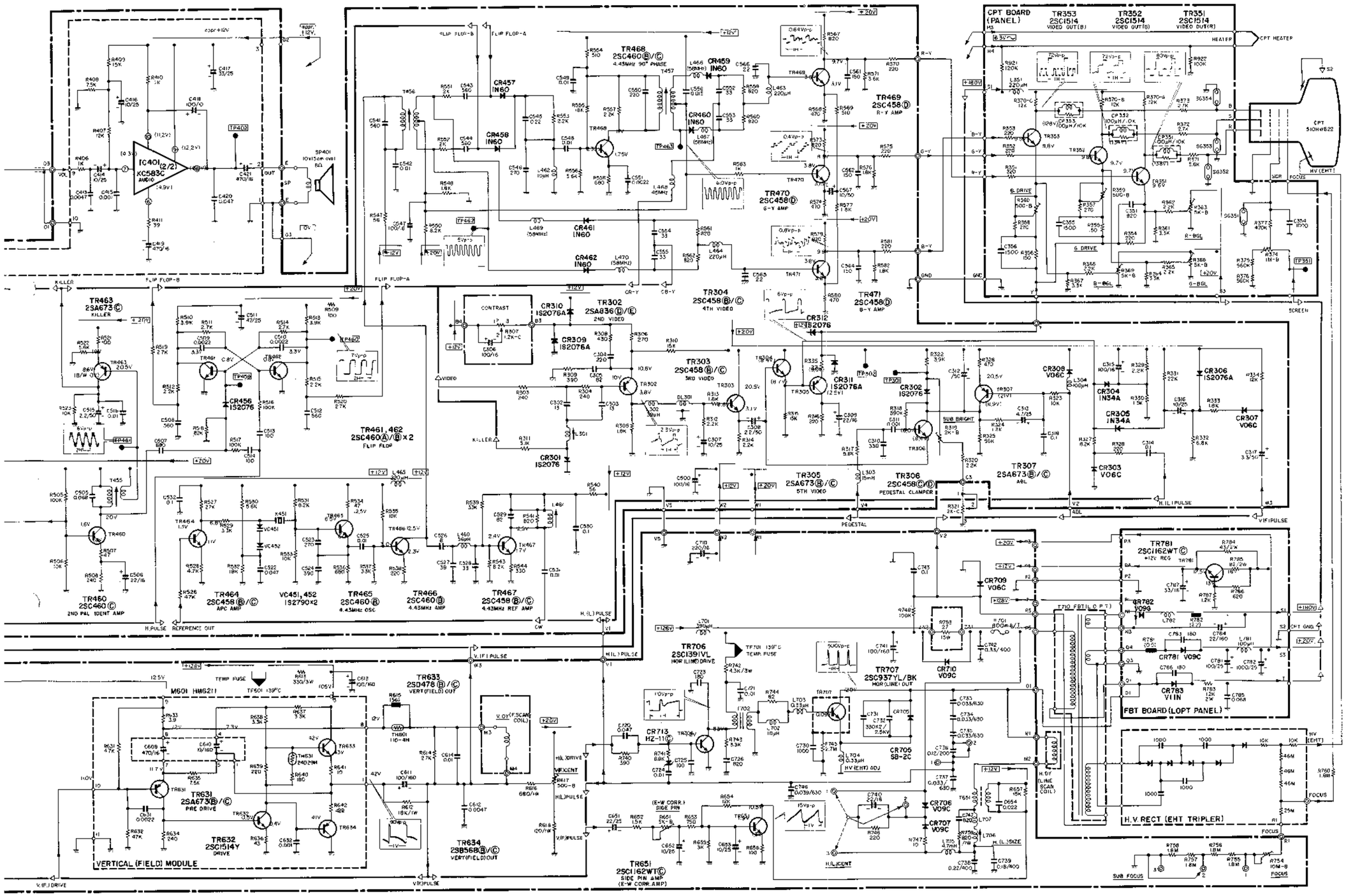
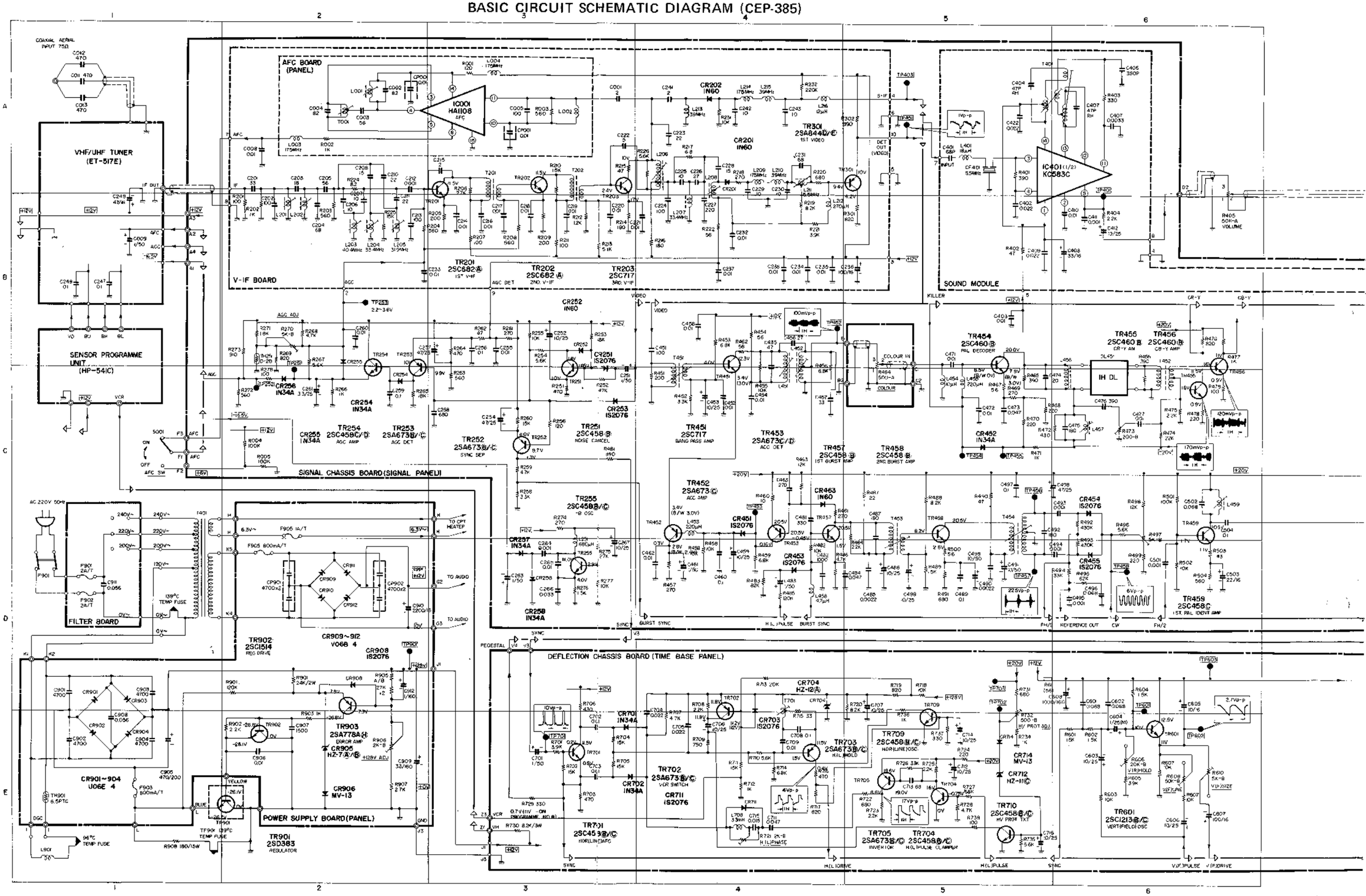
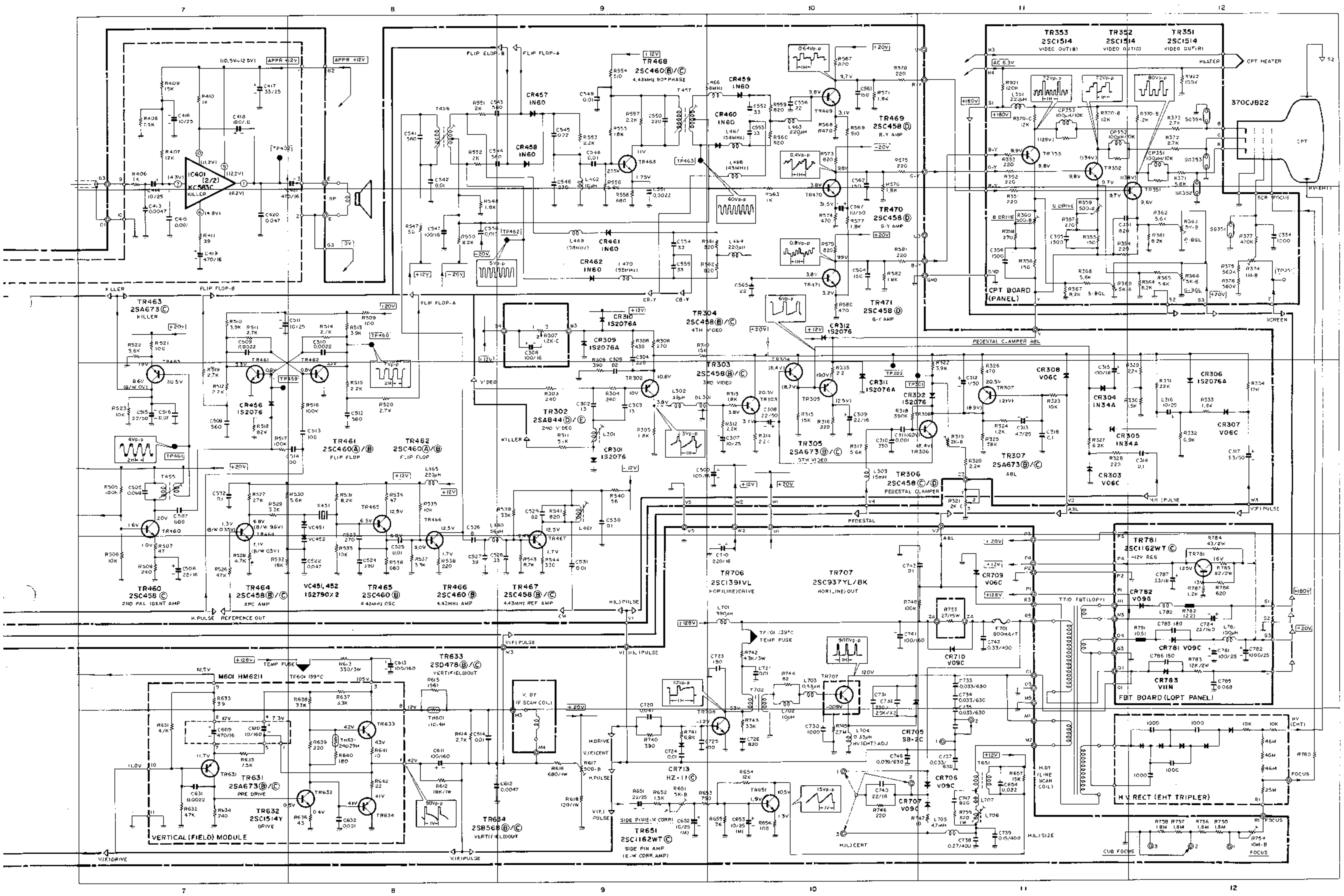
BASIC CIRCUIT SCHEMATIC DIAGRAM (CTP-205)




IC401 (2/2) KC583C AUDIO
SP401
TR463 2SA673Ⓒ KILLER
TR468 2SC460Ⓑ/Ⓒ 4.43MHz 90° PHASE
TR469 2SC458Ⓓ R-Y AMP
TR470 2SC458Ⓓ G-Y AMP
TR471 2SC458Ⓓ B-Y AMP
CPT BOARD (PANEL)
TR353 2SC1514 VIDEO OUT(B)
TR352 2SC1514 VIDEO OUT(G)
TR351 2SC1514 VIDEO OUT(R)
CPT HEATER
CPT
CONTRAST
TR302 2SA836Ⓓ/Ⓔ 2ND VIDEO
TR304 2SC458Ⓑ/Ⓒ 4TH VIDEO
TR303 2SC458Ⓑ/Ⓒ 3RD VIDEO
TR461, 462 2SC460Ⓐ/Ⓑ×2 FLIP FLOP
TR305 2SA673Ⓑ/Ⓒ 5TH VIDEO
TR306 2SC458Ⓒ/Ⓓ PEDESTAL CLAMPER
TR307 2SA673Ⓑ/Ⓒ ABL
TR460 2SC460Ⓒ 2ND PAL IDENT AMP
TR464 2SC458Ⓑ/Ⓒ APC AMP
VC451, 452 1S2790×2
TR465 2SC460Ⓑ 4.43MHz OSC
TR466 2SC460Ⓑ 4.43MHz AMP
TR467 2SC458Ⓑ/Ⓒ 4.43MHz REF AMP
TR781 2SC1162WTⒸ +12V REG
FBT BOARD (LOPT PANEL)
H.V. RECT (EHT TRIPLER)
TR706 2SC1391VL HOR(LINE) DRIVE
TR707 2SC937YL/BK HOR(LINE) OUT
TR633 2SD478Ⓑ/Ⓒ VERT(FIELD) OUT
M601 HM6211
VERTICAL (FIELD) MODULE
TR631 2SA673Ⓑ/Ⓒ PRE DRIVE
TR632 2SC1514Y DRIVE
TR634 2SB568Ⓑ/Ⓒ VERT(FIELD) OUT
TR651 2SC1162WTⒸ SIDE PIN AMP (E-W CORR. AMP)
SUB FOCUS
FOCUS
SCREEN
HV (EHT)

BASIC CIRCUIT SCHEMATIC DIAGRAM (CEP-385)




TR468 2SC460(B)/(C) 4.43MHz 90° PHASE
TR469 2SC458(D) R-Y AMP
TR470 2SC458(D) G-Y AMP
TR471 2SC458(D) B-Y AMP
TR353 2SC1514 VIDEO OUT(B)
TR352 2SC1514 VIDEO OUT(G)
TR351 2SC1514 VIDEO OUT(R)
370CJB22
CPT HEATER
CPT BOARD (PANEL)
IC401 (2/2) KC583C KILLER
TR463 2SA673(C) KILLER
TR461 2SC460(A)/(B) FLIP FLOP
TR462 2SC460(A)/(B) FLIP FLOP
TR460 2SC458(C) 2ND PAL IDENT AMP
TR464 2SC458(B)/(C) APC AMP
VC451, 452 1S2790×2
TR465 2SC460(B) 4.43MHz OSC
TR466 2SC460(B) 4.43MHz AMP
TR467 2SC458(B)/(C) 4.43MHz REF AMP
TR302 2SA844(D)/(E) 2ND VIDEO
TR303 2SC458(B)/(C) 3RD VIDEO
TR304 2SC458(B)/(C) 4TH VIDEO
TR305 2SA673(B)/(C) 5TH VIDEO
TR306 2SC458(C)/(D) PEDESTAL CLAMPER
TR307 2SA673(B)/(C) ABL
TR781 2SC1162WT(C) +12V REG
FBT BOARD (LOPT PANEL)
H.V. RECT (EHT TRIPLER)
TR706 2SC1391VL HORI(LINE) DRIVE
TR707 2SC937YL/BK HORI(LINE) OUT
TR633 2SD478(B)/(C) VERT(FIELD) OUT
TR631 2SA673(B)/(C) PRE DRIVE
TR632 2SC1514Y DRIVE
TR634 2SB568(B)/(C) VERT(FIELD) OUT
M601 HM6211
VERTICAL (FIELD) MODULE
TR651 2SC1162WT(C) SIDE PIN AMP (E-W CORR. AMP)
CR713 HZ-11(C)
CR705 SB-2C
CR706 V09C
CR707 V09C
CR710 V09C
T701 FBT (LOPT)
CUB FOCUS
FOCUS
SCREEN
PEDESTAL CLAMPER ABL
H(L) SIZE
H(L) CENT
V(F) DRIVE
V(F) PULSE
H. PULSE
REFERENCE OUT
FLIP FLOP-A
FLIP FLOP-B
KILLER

REPLACEMENT PARTS LIST (only for CTP-205 HITACHI SALES EUROPA GMBH)

CAPACITORS

SYMBOL NO.	STOCK NO.	DESCRIPTION		
C001	0248632	Ceramic	2pF ±0.25pF	DC50WV
C002	0249030	Ceramic	82pF ±5%	DC50WV
C003	0246458	Ceramic	56pF ±5%	DC50WV
C004	0249030	Ceramic	82pF ±5%	DC50WV
C005	0248684	Ceramic	100pF ±5%	DC50WV
C008	0244171	Ceramic	0.01μF $\pm^{80}_{20}$%	DC50WV
C009	0252811	Electrolytic	1μF	DC50WV
C201	0248672	Ceramic	33pF ±5%	DC50WV
C202	0246464	Ceramic	100pF ±5%	DC50WV
C203	0246446	Ceramic	18pF ±5%	DC50WV
C204	0246460	Ceramic	68pF ±5%	DC50WV
C205	0248678	Ceramic	56pF ±5%	DC50WV
C206	0248010	Ceramic	10pF ±0.25pF	DC50WV
C207	0248010	Ceramic	10pF ±0.25pF	DC50WV
C208	0248034	Ceramic	15pF ±5%	DC50WV
C210	0248038	Ceramic	22pF ±5%	DC50WV
C211	0248038	Ceramic	22pF ±5%	DC50WV
C212	0244101	Ceramic	0.001μF ±10%	DC50WV
C213	0248684	Ceramic	100pF ±5%	DC50WV
C214	0277013	Polyester film	0.01μF ±10%	DC50WV
C215	0248002	Ceramic	2pF ±0.25pF	DC50WV
C216	0277013	Polyester film	0.01μF ±10%	DC50WV
C217	0277013	Polyester film	0.01μF ±10%	DC50WV
C218	0277013	Polyester film	0.01μF ±10%	DC50WV
C219	0277013	Polyester film	0.01μF ±10%	DC50WV
C220	0277013	Polyester film	0.01μF ±10%	DC50WV
C221	0277013	Polyester film	0.01μF ±10%	DC50WV
C222	0248005	Ceramic	5pF ±0.25pF	DC50WV
C223	0248038	Ceramic	22pF ±5%	DC50WV
C224	0248054	Ceramic	100pF ±5%	DC50WV
C225	0248010	Ceramic	10pF ±0.25pF	DC50WV
C226	0248040	Ceramic	27pF ±5%	DC30WV
C227	0248692	Ceramic	220pF ±5%	DC50WV
C228	0248034	Ceramic	15pF ±5%	DC50WV
C229	0248640	Ceramic	10pF ±0.25pF	DC50WV
C230	0248640	Ceramic	10pF ±0.25pF	DC50WV
C231	0248050	Ceramic	68pF ±5%	DC50WV
C232	0244171	Ceramic	0.01μF $\pm^{80}_{20}$%	DC50WV
C233	0244171	Ceramic	0.01μF $\pm^{80}_{20}$%	DC50WV
C234	0244171	Ceramic	0.01μF $\pm^{80}_{20}$%	DC50WV
C235	0277013	Polyester film	0.01μF ±10%	DC50WV
C236	0252531	Electrolytic	100μF	DC16WV
C237	0244171	Ceramic	0.01μF $\pm^{80}_{20}$%	DC50WV
C241	0248632	Ceramic	2pF ±0.25pF	DC50WV
C242	0248640	Ceramic	10pF ±0.25pF	DC50WV
C243	0248640	Ceramic	10pF ±0.25pF	DC50WV
C248	0274490	Polyester film	0.1μF ±10%	DC100WV
C249	0252525	Electrolytic	47μF	DC16WV
C251	0252811	Electrolytic	1μF	DC50WV
C252	0252621	Electrolytic	10μF	DC25WV
C254	0252625	Electrolytic	47μF	DC25WV
C255	0275011	Polyester film	0.01μF ±10%	DC50WV
C256	0274490	Polyester film	0.1μF ±10%	DC100WV
C253	0244102	Ceramic	0.0012μF ±10%	DC50WV
C257	0252625	Electrolytic	47μF	DC25WV
C258	0244117	Ceramic	680pF ±10%	DC50WV
C259	0275823	Polyester film	0.1μF ±10%	DC100WV
C261	0252613	Electrolytic	3.3μF	DC25WV
C268	0277029	Polyester film	0.22μF ±10%	DC50WV
C302	0248663	Ceramic	13pF ±5%	DC50WV
C303	0248663	Ceramic	13pF ±5%	DC50WV
C304	0248692	Ceramic	220pF ±5%	DC50WV
C305	0248682	Ceramic	82pF ±5%	DC50WV
C306	0252531	Electrolytic	100μF	DC16WV
C307	0252621	Electrolytic	10μF	DC25WV
C308	0252817	Electrolytic	2.2μF	DC50WV
C309	0252522	Electrolytic	22μF	DC16WV
C310	0244113	Ceramic	330pF ±10%	DC50WV
C311	0244101	Ceramic	0.001μF ±10%	DC50WV
C312	0252811	Electrolytic	1μF	DC50WV
C313	0252615	Electrolytic	4.7μF	DC25WV
C314	0274490	Polyester film	0.1μF ±10%	DC100WV
C315	0252531	Electrolytic	100μF	DC16WV
C316	0252621	Electrolytic	10μF	DC25WV
C317	0252813	Electrolytic	3.3μF	DC50WV
C318	0274490	Polyester film	0.1μF ±10%	DC100WV
C351	0244120	Ceramic	820pF ±10%	DC50WV
C354	0244436	Ceramic	1000pF ±20%	DC1KWV
C355	0274012	Polyester film	1500pF ±10%	DC50WV
C356	0274012	Polyester film	1500pF ±10%	DC50WV
C401	0248680	Ceramic	68pF ±5%	DC50WV
C402	0275013	Polyester film	0.022μF ±10%	DC50WV
C403	0244171	Ceramic	0.01μF $\pm^{80}_{20}$%	DC50WV
C404	0248046	Ceramic	47pF ±5%	DC50WV
C405	0248046	Ceramic	47pF ±5%	DC50WV
C406	0248696	Ceramic	330pF ±5%	DC50WV
C407	0277007	Polyester film	0.0033μF ±10%	DC50WV
C408	0252531	Electrolytic	100μF	DC16WV
C409	0277017	Polyester film	0.022μF ±10%	DC50WV
C410	0277013	Polyester film	0.01μF ±10%	DC50WV
C411	0244101	Ceramic	0.001μF ±10%	DC50WV
C412	0252621	Electrolytic	10μF	DC25WV
C413	0244109	Ceramic	0.0047μF±10%	DC50WV
C414	0252621	Electrolytic	10μF	DC25WV
C415	0244101	Ceramic	0.001μF ±10%	DC50WV
C416	0252621	Electrolytic	10μF	DC25WV
C417	0252623	Electrolytic	33μF	DC25WV
C418	0252331	Electrolytic	100μF	DC10WV
C419	0252565	Electrolytic	470μF	DC16WV
C420	0275015	Polyester film	0.047μF ±10%	DC50WV
C421	0252565	Electrolytic	470μF	DC16WV
C422	0277017	Polyester film	0.022μF ±10%	DC50WV
C451	0248684	Ceramic	100pF ±5%	DC50WV
C452	0277013	Polyester film	0.01μF ±10%	DC50WV
C453	0252621	Electrolytic	10μF	DC25WV
C454	0277013	Polyester film	0.01μF ±10%	DC50WV
C455	0246456	Ceramic	47pF ±5%	DC50WV
C456	0246450	Ceramic	27pF ±5%	DC50WV
C457	0246452	Ceramic	33pF ±5%	DC50WV
C458	0277013	Polyester film	0.01μF ±10%	DC50WV
C459	0252621	Electrolytic	10μF	DC25WV
C460	0274490	Polyester film	0.1μF ±10%	DC100WV
C461	0252811	Electrolytic	1μF	DC50WV
C462	0277013	Polyester film	0.01μF ±10%	DC50WV
C463	0248694	Ceramic	270pF ±5%	DC50WV
C471	0277013	Polyester film	0.01μF ±10%	DC50WV
C472	0275011	Polyester film	0.01μF ±10%	DC50WV
C473	0277021	Polyester film	0.047μF ±10%	DC50WV
C474	0246596	Ceramic	120pF ±5%	DC50WV
C475	0248106	Ceramic	180pF ±5%	DC50WV
C476	0244119	Ceramic	390pF ±10%	DC50WV
C477	0277013	Polyester film	0.01μF ±10%	DC50WV
C481	0244113	Ceramic	330pF ±10%	DC50WV
C482	0244101	Ceramic	0.001μF ±10%	DC50WV
C483	0252811	Electrolytic	1μF	DC50WV
C484	0277021	Polyester film	0.047μF ±10%	DC50WV
C485	0274013	Polyester film	0.0022μF±19%	DC50WV
C486	0252621	Electrolytic	10μF	DC25WV
C487	0248106	Ceramic	180pF ±5%	DC50WV
C488	0252621	Electrolytic	10μF	DC25WV
C489	0274490	Polyester film	0.1μF ±10%	DC100WV
C490	0274013	Polyester film	0.0022μF±10%	DC50WV
C491	0252821	Electrolytic	10μF	DC50WV
C492	0248106	Ceramic	180pF ±5%	DC50WV
C493	0244101	Ceramic	0.001μF ±10%	DC50WV
C494	0244101	Ceramic	0.001μF ±10%	DC50WV
C495	0277001	Polyester film	0.001μF ±10%	DC50WV
C496	0277023	Polyester film	0.068μF ±10%	DC50WV
C497	0274490	Polyester film	0.1μF ±10%	DC100WV
C498	0252625	Electrolytic	47μF	DC25WV
C499	0252821	Electrolytic	10μF	DC50WV
C500	0252531	Electrolytic	100μF	DC16WV
C501	0244101	Ceramic	0.001μF ±10%	DC50WV
C502	0277023	Polyester film	0.068μF ±10%	DC50WV
C503	0251079	Electrolytic	22μF	DC16WV
C504	0275823	Polyester film	0.1μF ±10%	DC100WV
C505	0277023	Polyester film	0.068μF ±10%	DC50WV
C506	0251079	Electrolytic	22μF	DC16WV
C507	0244117	Ceramic	680pF ±10%	DC50WV
C508	0244115	Ceramic	560pF ±10%	DC50WV
C509	0244105	Ceramic	0.0022μF±10%	DC50WV
C510	0244105	Ceramic	0.0022μF±10%	DC50WV
C511	0252621	Electrolytic	10μF	DC25WV
C512	0244115	Ceramic	560pF ±10%	DC50WV
C513	0248684	Ceramic	100pF ±5%	DC50WV
C514	0248684	Ceramic	100pF ±5%	DC50WV
C515	0252817	Electrolytic	2.2μF	DC50WV
C516	0277013	Polyester film	0.01μF ±10%	DC50WV
C522	0277021	Polyester film	0.047μF ±10%	DC50WV
C523	0248694	Ceramic	270pF ±5%	DC50WV
C524	0248699	Ceramic	390pF ±5%	DC50WV
C525	0277013	Polyester film	0.01μF ±10%	DC50WV
C526	0248638	Ceramic	8pF ±0.25pF	DC50WV
C527	0248674	Ceramic	39pF ±5%	DC50WV
C528	0248672	Ceramic	33pF ±5%	DC50WV
C529	0246592	Ceramic	82pF ±5%	DC50WV
C530	0274490	Polyester film	0.1μF ±10%	DC100WV
C531	0277013	Polyester film	0.01μF ±10%	DC50WV
C532	0274490	Polyester film	0.1μF ±10%	DC100WV
C541	0248698	Ceramic	560pF ±5%	DC50WV
C542	0277013	Polyester film	0.01μF ±10%	DC50WV
C543	0244115	Ceramic	560pF ±10%	DC50WV
C544	0244115	Ceramic	560pF ±10%	DC50WV
C545	0277029	Polyester film	0.22μF ±10%	DC50WV
C546	0248694	Ceramic	270pF ±5%	DC50WV
C547	0252531	Electrolytic	100μF	DC16WV
C548	0244171	Ceramic	0.01μF $\pm^{80}_{20}$%	DC50WV
C549	0277013	Polyester film	0.01μF ±10%	DC50WV
C550	0248107	Ceramic	220pF ±5%	DC50WV
C551	0277005	Polyester film	0.0022μF±10%	DC50WV
C552	0248672	Ceramic	33pF ±5%	DC50WV
C553	0248672	Ceramic	33pF ±5%	DC50WV
C554	0248672	Ceramic	33pF ±5%	DC50WV
C555	0248672	Ceramic	33pF ±5%	DC50WV
C556	0277015	Polyester film	0.015μF ±10%	DC50WV
C561	0248688	Ceramic	150pF ±5%	DC50WV
C562	0248688	Ceramic	150pF ±5%	DC50WV
C564	0248688	Ceramic	150pF ±5%	DC50WV
C565	0248668	Ceramic	22pF ±5%	DC50WV
C566	0248668	Ceramic	22pF ±5%	DC50WV
C601	0277023	Polyester film	0.068μF ±10%	DC50WV
C602	0277023	Polyester film	0.068μF ±10%	DC50WV
C603	0252621	Electrolytic	10μF	DC25WV
C604	0251087	Electrolytic	1μF	DC25WV
C605	0292709	Tantal	10μF ±20%	DC16WV
C606	0252621	Electrolytic	10μF	DC25WV
C607	0252531	Electrolytic	100μF	DC16WV
C608	0252536	Electrolytic	1000μF	DC16WV
C609	0252565	Electrolytic	470μF	DC16WV
C610	0258584	Electrolytic	10μF	DC160WV
C611	0258589	Electrolytic	100μF	DC160WV
C612	0244565	Ceramic	0.0047μF $\pm^{100}_{0}$%	DC500WV
C613	0258589	Electrolytic	100μF	DC160WV
C614	0244541	Ceramic	0.01μF ±10%	DC500WV
C651	0252622	Electrolytic	22μF	DC25WV
C652	0251090	Electrolytic	10μF	DC25WV
C653	0251090	Electrolytic	10μF	DC25WV
0654	0275013	Polyester film	0.022μF ±10%	DC50WV
C701	0252811	Electrolytic	1μF	DC50WV
C702	0277013	Polyester film	0.01μF ±10%	DC50WV
C703	0277013	Polyester film	0.01μF ±10%	DC50WV
C704	0277017	Polyester film	0.022μF ±10%	DC50WV
C705	0277017	Polyester film	0.022μF ±10%	DC50WV
C706	0252621	Electrolytic	10μF	DC25WV
C707	0252621	Electrolytic	10μF	DC25WV
C708	0299961	Polypropylene	0.1μF ±5%	DC200WV
C709	0275021	Polyester film	0.01μF ±5%	DC50WV

SYMBOL NO.	STOCK NO.	DESCRIPTION		
C710	0252532	Electrolytic	220μF	DC16WV
C711	0275015	Polyester film	0.047μF ±10%	DC50WV
C712	0252621	Electrolytic	10μF	DC25WV
C713	0248720	Ceramic	68pF ±10%	DC50WV
C714	0252621	Electrolytic	10μF	DC25WV
C715	0275013	Polyester film	0.022μF ±10%	DC50WV
C716	0252621	Electrolytic	10μF	DC25WV
C720	0277021	Polyester film	0.047μF ±10%	DC50WV
C721	0299914	Polypropylene	0.01μF ±10%	DC200WV
C723	0243504	Ceramic	180pF ±10%	DC500WV
C724	0277013	Polyester film	0.01μF ±10%	DC50WV
C725	0248684	Ceramic	100pF ±5%	DC50WV
C726	0243512	Ceramic	820pF ±10%	DC500WV
C730	0244436	Ceramic	0.001μF ±20%	DC1KWV
C731	0243837	Ceramic	330pF ±10%	DC2.5KWV
C732	0243837	Ceramic	330pF ±10%	DC2.5KWV
C733	0299632	Polypropylene	0.033μF ±10%	DC630WV
C734	0299632	Polypropylene	0.033μF ±10%	DC630WV
C735	0299632	Polypropylene	0.033μF ±10%	DC630WV
C736	0299927	Polypropylene	0.12μF ±10%	DC200WV
C737	0299632	Polypropylene	0.033μF ±10%	DC630WV
C738	0299607	Polypropylene	0.22μF ±10%	DC400WV
C739	0299606	Polypropylene	0.18μF ±10%	DC400WV
C740	0252522	Electrolytic	22μF	DC16WV
C741	0258589	Electrolytic	100μF	DC160WV
C742	0299609	Polypropylene	0.33μF ±10%	DC400WV
C743	0277025	Polyester film	0.1μF ±10%	DC50WV
C746	0299633	Polypropylene	0.039μF ±10%	DC630WV
C747	0243512	Ceramic	820pF ±10%	DC500WV
C781	0252631	Electrolytic	100μF	DC25WV
C782	0252636	Electrolytic	1000μF	DC25WV
C783	0243504	Ceramic	180pF ±10%	DC500WV
C784	0258585	Electrolytic	22μF	DC160WV
C785	0215296	Paper	0.068μF ±10%	DC1KWV
C786	0243839	Ceramic	180pF ±10%	DC2.5KWV
C787	0252523	Electrolytic	33μF	DC16WV
C901	0244565	Ceramic	0.0047μF $\pm^{100}_{0}$%	DC500WV
C902	0244565	Ceramic	0.0047μF $\pm^{100}_{0}$%	DC500WV
C903	0244565	Ceramic	0.0047μF $\pm^{100}_{0}$%	DC500WV
C904	0244565	Ceramic	0.0047μF $\pm^{100}_{0}$%	DC500WV
C905	0259832	Electrolytic	470μF	DC200WV
C906	0299947	Polypropylene	0.01μF ±20%	DC630WV
C907	0244523	Ceramic	0.0015μF ±20%	DC500WV
C908	0214478	Paper	0.056μF ±20%	DC800WV
C909	0258586	Electrolytic	33μF	DC160WV
C910	0252537	Electrolytic	2200μF	DC16WV
C911	0214478	Paper	0.056μF ±20%	DC800WV
C912	0257535	Electrolytic	1μF	DC160WV

RESISTORS

R001	0137553	Carbon film	120Ω ±5%	SRD¼SD
R002	0137601	Carbon film	1KΩ ±5%	SRD¼SD
R003	0131643	Composition	560Ω ±5%	RC¼GF
R004	0114281	Carbon film	100KΩ ±5%	SRD¼P
R005	0114281	Carbon film	100KΩ ±5%	SRD¼P

SYMBOL NO.	STOCK NO.	DESCRIPTION		
R201	0131625	Composition	100Ω ±5%	RC¼GF
R202	0131667	Composition	1KΩ ±5%	RC¼GF
R203	0131643	Composition	560Ω ±5%	RC¼GF
R204	0131643	Composition	560Ω ±5%	RC¼GF
R205	0131632	Composition	200Ω ±5%	RC¼GF
R206	0131677	Composition	2.7KΩ ±5%	RC¼GF
R207	0131625	Composition	100Ω ±5%	RC¼GF
R208	0131643	Composition	560Ω ±5%	RC¼GF
R209	0131632	Composition	200Ω ±5%	RC¼GF
R210	0131671	Composition	1.5KΩ ±5%	RC¼GF
R211	0131625	Composition	100Ω ±5%	RC¼GF
R212	0131669	Composition	1.2KΩ ±5%	RC¼GF
R213	0131684	Composition	5.1KΩ ±5%	RC¼GF
R214	0131631	Composition	180Ω ±5%	RC¼GF
R215	0131587	Composition	47Ω ±5%	RC¼GF
R216	0131631	Composition	180Ω ±5%	RC¼GF
R217	0114013	Carbon film	6.8Ω ±5%	SRD¼P
R218	0131635	Composition	270Ω ±5%	RC¼GF
R219	0131689	Composition	8.2KΩ ±5%	RC¼GF
R220	0131645	Composition	680Ω ±5%	RC¼GF
R221	0131681	Composition	3.9KΩ ±5%	RC¼GF
R222	0131589	Composition	56Ω ±5%	RC¼GF
R224	0114015	Carbon film	8.2Ω ±5%	SRD¼P
R225	0131713	Composition	15KΩ ±5%	RC¼GF
R226	0131685	Composition	5.6KΩ ±5%	RC¼GF
R231	0131709	Composition	10KΩ ±5%	RC¼GF
R232	0131759	Composition	220KΩ ±5%	RC¼GF
R251	0114147	Carbon film	470Ω ±5%	SRD¼P
R252	0114217	Carbon film	47KΩ ±5%	SRD¼P
R253	0114207	Carbon film	18KΩ ±5%	SRD¼P
R254	0114179	Carbon film	5.6KΩ ±5%	SRD¼P
R255	0114201	Carbon film	10KΩ ±5%	SRD¼P
R256	0114133	Carbon film	120Ω ±5%	SRD¼P
R257	0114133	Carbon film	120Ω ±5%	SRD¼P
R258	0114173	Carbon film	3.3KΩ ±5%	SRD¼P
R259	0114177	Carbon film	4.7KΩ ±5%	SRD¼P
R260	0114205	Carbon film	15KΩ ±5%	SRD¼P
R261	0114141	Carbon film	270Ω ±5%	SRD¼P
R262	0114057	Carbon film	47Ω ±5%	SRD¼P
R263	0114149	Carbon film	560Ω ±5%	SRD¼P
R264	0114147	Carbon film	470Ω ±5%	SRD¼P
R265	0131715	Composition	18KΩ ±5%	RC¼GF
R266	0114161	Carbon film	1KΩ ±5%	SRD¼P
R267	0114179	Carbon film	5.6KΩ ±5%	SRD¼P
R268	0114177	Carbon film	4.7KΩ ±5%	SRD¼P
R269	0114153	Carbon film	820Ω ±5%	SRD¼P
R270	0151187	Control	5KΩ −B	A.G.C
R271	0114167	Carbon film	1.8KΩ ±5%	SRD¼P
R272	0114149	Carbon film	560Ω ±5%	SRD¼P
R273	0114154	Carbon film	910Ω ±5%	SRD¼P
R278	0114131	Carbon film	100Ω ±5%	SRD¼P
R279	0110163	Metal oxide	5.6KΩ ±5%	RD1PB
R301	0131647	Composition	820Ω ±5%	RC¼GF
R302	0131639	Composition	390Ω ±5%	RC¼GF

SYMBOL NO.	STOCK NO.	DESCRIPTION		
R303	0114140	Carbon film	240Ω ±5%	SRD¼P
R304	0131634	Composition	240Ω ±5%	RC¼GF
R305	0131673	Composition	1.8KΩ ±5%	RC¼GF
R306	0114141	Carbon film	270Ω ±5%	SRD¼P
R307	0166654	Control	1.2KΩ – C	CONT.
R308	0114146	Carbon film	430Ω ±5%	SRD¼P
R309	0114145	Carbon film	390Ω ±5%	SRD¼P
R310	0114205	Carbon film	15KΩ ±5%	SRD¼P
R311	0114178	Carbon film	5.1KΩ ±5%	SRD¼P
R312	0114169	Carbon film	2.2KΩ ±5%	SRD¼P
R313	0114167	Carbon film	1.8KΩ ±5%	SRD¼P
R314	0114169	Carbon film	2.2KΩ ±5%	SRD¼P
R315	0114205	Carbon film	15KΩ ±5%	SRD¼P
R316	0131633	Composition	220Ω ±5%	RC¼GF
R317	0114179	Carbon film	5.6KΩ ±5%	SRD¼P
R318	0131765	Composition	390KΩ ±5%	RC¼GF
R319	0151209	Control	2KΩ – B	SUB. BRIGHT
R320	0114169	Carbon film	2.2KΩ ±5%	SRD¼P
R321	0166649	Control	2KΩ – C	BRIGHT
R322	0114175	Carbon film	3.9KΩ ±5%	SRD¼P
R323	0131709	Composition	10KΩ ±5%	RC¼GF
R324	0131669	Composition	1.2KΩ ±5%	RC¼GF
R325	0131727	Composition	56KΩ ±5%	RC¼GF
R326	0131641	Composition	470Ω ±5%	RC¼GF
R327	0114183	Carbon film	8.2KΩ ±5%	SRD¼P
R328	0114139	Carbon film	220Ω ±5%	SRD¼P
R329	0114169	Carbon film	2.2KΩ ±5%	SRD¼P
R330	0114165	Carbon film	1.5KΩ ±5%	SRD¼P
R331	0131717	Composition	22KΩ ±5%	RC¼GF
R332	0114181	Carbon film	6.8KΩ ±5%	SRD¼P
R333	0131673	Composition	1.8KΩ ±5%	RC¼GF
R334	0131711	Composition	12KΩ ±5%	RC¼GF
R335	0114001	Carbon film	2.2Ω ±5%	SRD¼P
R351	0131633	Composition	220Ω ±5%	RC¼GF
R352	0131633	Composition	220Ω ±5%	RC¼GF
R353	0131633	Composition	220Ω ±5%	RC¼GF
R354	0114139	Carbon film	220Ω ±5%	SRD¼P
R355	0114135	Carbon film	150Ω ±5%	SRD¼P
R356	0114135	Carbon film	150Ω ±5%	SRD¼P
R357	0114141	Carbon film	270Ω ±5%	SRD¼P
R358	0114141	Carbon film	270Ω ±5%	SRD¼P
R359	0151286	Control	500Ω – B	G.DRIVE
R360	0151286	Control	500Ω – B	B.DRIVE
R361	0114173	Carbon film	3.3KΩ ±5%	SRD¼P
R362	0114169	Carbon film	2.2KΩ ±5%	SRD¼P
R363	0151289	Control	5KΩ – B	R – BGL
R364	0114173	Carbon film	3.3KΩ ±5%	SRD¼P
R365	0114169	Carbon film	2.2KΩ ±5%	SRD¼P
R366	0151289	Control	5KΩ – B	G – BGL
R367	0114173	Carbon film	3.3KΩ ±5%	SRD¼P
R368	0114169	Carbon film	2.2KΩ ±5%	SRD¼P
R369	0151289	Control	5KΩ – B	B – BGL
R370	2370071	Resistor block	HM3902	
R371	0134099	Composition	5.6KΩ ±5%	RC½GF

SYMBOL NO.	STOCK NO.	DESCRIPTION		
R372	0134091	Composition	2.7KΩ ±5%	RC½GF
R373	0134091	Composition	2.7KΩ ±5%	RC½GF
R374	0153223	Control	1MΩ – B	SCREEN
R375	0134179	Composition	560KΩ ±5%	RC½GF
R376	0134179	Composition	560KΩ ±5%	RC½GF
R377	0134177	Composition	470KΩ ±5%	RC½GF
R401	0114145	Carbon film	390Ω ±5%	SRD¼P
R402	0114057	Carbon film	47Ω ±5%	SRD¼P
R403	0114143	Carbon film	330Ω ±5%	SRD¼P
R404	0114169	Carbon film	2.2KΩ ±5%	SRD¼P
R405	0166667	Control	50KΩ – A	VOLUME
R406	0114161	Carbon film	1KΩ ±5%	SRD¼P
R407	0114203	Carbon film	12KΩ ±5%	SRD¼P
R408	0131688	Composition	7.5KΩ ±5%	RC¼GF
R409	0114205	Carbon film	15KΩ ±5%	SRD¼P
R410	0131667	Composition	1KΩ ±5%	RC¼GF
R411	0114055	Carbon film	39Ω ±5%	SRD¼P
R451	0114138	Carbon film	220Ω ±5%	SRD¼P
R452	0114173	Carbon film	3.3KΩ ±5%	SRD¼P
R453	0114181	Carbon film	6.8KΩ ±5%	SRD¼P
R454	0114059	Carbon film	56Ω ±5%	SRD¼P
R455	0131709	Composition	10KΩ ±5%	RC¼GF
R456	0114181	Carbon film	6.8KΩ ±5%	SRD¼P
R457	0114059	Carbon film	56Ω ±5%	SRD¼P
R458	0131709	Composition	10KΩ ±5%	RC¼GF
R459	0131687	Composition	6.8KΩ ±5%	RC¼GF
R460	0114041	Carbon film	10Ω ±5%	SRD¼P
R461	0131635	Composition	270Ω ±5%	RC¼GF
R462	0131589	Composition	56Ω ±5%	RC¼GF
R463	0131711	Composition	12KΩ ±5%	RC¼GF
R464	0166650	Control	500Ω – A	COLOUR
R465	0131639	Composition	390Ω ±5%	RC¼GF
R466	0131639	Composition	390Ω ±5%	RC¼GF
R467	0131565	Composition	5.6Ω ±5%	RC¼GF
R468	0131633	Composition	220Ω ±5%	RC¼GF
R469	0131635	Composition	270Ω ±5%	RC¼GF
R470	0131633	Composition	220Ω ±5%	RC¼GF
R471	0131667	Composition	1KΩ ±5%	RC¼GF
R472	0131640	Composition	430Ω ±5%	RC¼GF
R473	0151279	Control	200Ω – B	
R474	0131717	Composition	22KΩ ±5%	RC¼GF
R475	0131675	Composition	2.2KΩ ±5%	RC¼GF
R476	0131647	Composition	820Ω ±5%	RC¼GF
R477	0131667	Composition	1KΩ ±5%	RC¼GF
R478	0131633	Composition	220Ω ±5%	RC¼GF
R479	0131625	Composition	100Ω ±5%	RC¼GF
R481	0137565	Carbon film	390Ω ±5%	SRD¼P
R482	0131709	Composition	10KΩ ±5%	RC¼GF
R483	0114223	Carbon film	82KΩ ±5%	SRD¼P
R484	0137609	Carbon film	2.2KΩ ±5%	SRD¼P
R485	0114283	Carbon film	120KΩ ±5%	SRD¼P
R486	0114177	Carbon film	4.7KΩ ±5%	SRD¼P
R487	0131579	Composition	22Ω ±5%	RC¼GF
R488	0114183	Carbon film	8.2KΩ ±5%	SRD¼P

SYMBOL NO.	STOCK NO.	DESCRIPTION		
R489	0131671	Composition	1.5KΩ ±5%	RC¼GF
R490	0114057	Carbon film	47Ω ±5%	SRD¼P
R491	0131645	Composition	680Ω ±5%	RC¼GF
R492	0114296	Carbon film	430KΩ ±5%	SRD¼P
R493	0114296	Carbon film	430KΩ ±5%	SRD¼P
R494	0114213	Carbon film	33KΩ ±5%	SRD¼P
R495	0114220	Carbon film	62KΩ ±5%	SRD¼P
R496	0131685	Composition	5.6KΩ ±5%	RC¼GF
R497	0151187	Control	5KΩ – B	
R498	0114203	Carbon film	12KΩ ±5%	SRD¼P
R499	0131633	Composition	220Ω ±5%	RC¼GF
R500	0131565	Composition	5.6Ω ±5%	RC¼GF
R501	0131751	Composition	100KΩ ±5%	RC¼GF
R502	0114201	Carbon film	10KΩ ±5%	SRD¼P
R503	0114056	Carbon film	43Ω ±5%	SRD¼P
R504	0131643	Composition	560Ω ±5%	RC¼GF
R505	0131751	Composition	100KΩ ±5%	RC¼GF
R506	0131709	Composition	10KΩ ±5%	RC¼GF
R507	0131587	Composition	47Ω ±5%	RC¼GF
R508	0114140	Carbon film	240Ω ±5%	SRD¼P
R509	0114131	Carbon film	100Ω ±5%	SRD¼P
R510	0131681	Composition	3.9KΩ ±5%	RC¼GF
R511	0131677	Composition	2.7KΩ ±5%	RC¼GF
R512	0131675	Composition	2.2KΩ ±5%	RC¼GF
R513	0136681	Composition	3.9KΩ ±5%	RC¼GF
R514	0131677	Composition	2.7KΩ ±5%	RC¼GF
R515	0131675	Composition	2.2KΩ ±5%	RC¼GF
R516	0114281	Carbon film	100KΩ ±5%	SRD¼P
R517	0131751	Composition	100KΩ ±5%	RC¼GF
R518	0114223	Carbon film	82KΩ ±5%	SRD¼P
R519	0131677	Composition	2.7KΩ ±5%	RC¼GF
R520	0131677	Composition	2.7KΩ ±5%	RC¼GF
R521	0131625	Composition	100Ω ±5%	RC¼GF
R522	0114179	Carbon film	5.6KΩ ±5%	SRD¼P
R523	0114201	Carbon film	10KΩ ±5%	SRD¼P
R526	0131725	Composition	47KΩ ±5%	RC¼GF
R527	0114211	Carbon film	27KΩ ±5%	SRD¼P
R528	0114177	Carbon film	4.7KΩ ±5%	SRD¼P
R529	0114173	Carbon film	3.3KΩ ±5%	SRD¼P
R530	0114179	Carbon film	5.6KΩ ±5%	SRD¼P
R531	0114183	Carbon film	8.2KΩ ±5%	SRD¼P
R532	0114207	Carbon film	18KΩ ±5%	SRD¼P
R533	0114201	Carbon film	10KΩ ±5%	SRD¼P
R534	0114057	Carbon film	47Ω ±5%	SRD¼P
R535	0114201	Carbon film	10KΩ ±5%	SRD¼P
R536	0114151	Carbon film	680Ω ±5%	SRD¼P
R537	0114173	Carbon film	3.3KΩ ±5%	SRD¼P
R538	0114139	Carbon film	220Ω ±5%	SRD¼P
R539	0131721	Composition	33KΩ ±5%	RC¼GF
R540	0131589	Composition	56Ω ±5%	RC¼GF
R541	0131647	Composition	820Ω ±5%	RC¼GF
R543	0114183	Carbon film	8.2KΩ ±5%	SRD¼P
R544	0114143	Carbon film	330Ω ±5%	SRD¼P
R547	0114059	Carbon film	56Ω ±5%	SRD¼P

SYMBOL NO.	STOCK NO.	DESCRIPTION		
R548	0114167	Carbon film	1.8KΩ ±5%	SRD¼P
R550	0114183	Carbon film	8.2KΩ ±5%	SRD¼P
R551	0114168	Carbon film	2KΩ ±5%	SRD¼P
R552	0114168	Carbon film	2KΩ ±5%	SRD¼P
R553	0114169	Carbon film	2.2KΩ ±5%	SRD¼P
R554	0114148	Carbon film	510Ω ±5%	SRD¼P
R555	0131715	Composition	18KΩ ±5%	RC¼GF
R556	0131685	Composition	5.6KΩ ±5%	RC¼GF
R557	0131675	Composition	2.2KΩ ±5%	RC¼GF
R558	0131645	Composition	680Ω ±5%	RC¼GF
R559	0131647	Composition	820Ω ±5%	RC¼GF
R560	0114153	Carbon film	820Ω ±5%	SRD¼P
R561	0114153	Carbon film	820Ω ±5%	SRD¼P
R562	0114153	Carbon film	820Ω ±5%	SRD¼P
R563	0131667	Composition	1KΩ ±5%	RC¼GF
R566	0131761	Composition	270KΩ ±5%	RC¼GF
R567	0131647	Composition	820Ω ±5%	RC¼GF
R568	0131641	Composition	470Ω ±5%	RC¼GF
R569	0131642	Composition	510Ω ±5%	RC¼GF
R570	0131633	Composition	220Ω ±5%	RC¼GF
R571	0131680	Composition	3.6KΩ ±5%	RC¼GF
R573	0131647	Composition	820Ω ±5%	RC¼GF
R574	0131641	Composition	470Ω ±5%	RC¼GF
R575	0114139	Carbon film	220Ω ±5%	SRD¼P
R576	0114163	Carbon film	1.8KΩ ±5%	SRD¼P
R577	0114167	Carbon film	1.8KΩ ±5%	SRD¼P
	0131761	Composition	270KΩ ±5%	RC¼GF
R579	0131647	Composition	820Ω ±5%	RC¼GF
R580	0114147	Carbon film	470Ω ±5%	SRD¼P
R581	0114139	Carbon film	220Ω ±5%	SRD¼P
R582	0131680	Composition	3.6KΩ ±5%	RC¼GF
	0131634	Composition	240Ω ±5%	RC¼GF
R583	0114173	Carbon film	3.3KΩ ±5%	SRD¼P
R584	0114173	Carbon film	3.3KΩ ±5%	SRD¼P
R587	0131634	Composition	240Ω ±5%	RC¼GF
R601	0131671	Composition	1.5KΩ ±5%	RC¼GF
R602	0131671	Composition	1.5KΩ ±5%	RC¼GF
R603	0114201	Carbon film	10KΩ ±5%	SRD¼P
R604	0114165	Carbon film	1.5KΩ ±5%	SRD¼P
R605	0114175	Carbon film	3.9KΩ ±5%	SRD¼P
R606	0151218	Control	20KΩ – B	V.HOLD
R607	0114201	Carbon film	10KΩ ±5%	SRD¼P
R608	0151297	Control	50KΩ – B	V. LINE
R609	0137651	Carbon film	10KΩ ±5%	SRD¼SD
R610	0151187	Control	5KΩ – B	V. SIZE
R611	0119508	Metal oxide film	56Ω ±5%	RN¼
R612	0110175	Metal oxide film	18KΩ ±5%	RD1PB
R613	0110333	Metal oxide film	330Ω ±5%	RD3PB
R614	0134091	Composition	2.7KΩ ±5%	RC½GF
R615	0119508	Metal oxide film	56Ω ±5%	RN¼
R616	0110141	Metal oxide film	680Ω ±5%	RD1PB
R617	0162623	Semi control	500Ω – B	V. CENT.
R618	0110123	Metal oxide film	120Ω ±5%	RD1PB
R651	0151187	Control	5KΩ – B	SIDE PIN.
R652	0137605	Carbon film	1.5KΩ ±5%	SRD¼SD
R653	0114152	Carbon film	750Ω ±5%	SRD¼P

SYMBOL NO.	STOCK NO.	DESCRIPTION			
R654	0114203	Carbon film	12KΩ	±5%	SRD¼P
R655	0137612	Carbon film	3KΩ	±5%	SRD½SD
R656	0134041	Composition	100Ω	±5%	RC½GF
R657	0137655	Carbon film	15KΩ	±5%	SRD½SD
R701	0114175	Carbon film	3.9KΩ	±5%	SRD¼P
R702	0114205	Carbon film	15KΩ	±5%	SRD¼P
R703	0137567	Carbon film	470 Ω	±5%	SRD½SD
R704	0137655	Carbon film	15KΩ	±5%	SRD½SD
R705	0114205	Carbon film	15KΩ	±5%	SRD¼P
R706	0114146	Carbon film	430Ω	±5%	SRD¼P
R707	0114177	Carbon film	4.7KΩ	±5%	SRD¼P
R708	0114169	Carbon film	2.2KΩ	±5%	SRD¼P
R709	0114152	Carbon film	750Ω	±5%	SRD¼P
R710	0114179	Carbon film	5.6KΩ	±5%	SRD¼P
R711	0137655	Carbon film	15KΩ	±5%	SRD½SD
R712	0131667	Composition	1KΩ	±5%	RC¼GF
R713	0131716	Composition	20KΩ	±5%	RC¼GF
R714	0114221	Carbon film	68KΩ	±5%	SRD¼P
R715	0114053	Carbon film	33Ω	±5%	SRD¼P
R716	0114147	Carbon film	470Ω	±5%	SRD¼P
R717	0114153	Carbon film	820Ω	±5%	SRD¼P
R718	0110369	Metal oxide film	10KΩ	±5%	RD3PB
R719	0131647	Composition	820Ω	±5%	RC¼GF
R720	0134103	Composition	8.2KΩ	±5%	RC½GF
R721	0151209	Control	2KΩ – B		H. PHASE
R722	0131645	Composition	680Ω	±5%	RC¼GF
R723	0131675	Composition	2.2KΩ	±5%	RC¼GF
R724	0134049	Composition	220Ω	±5%	RC½GF
R725	0137609	Carbon film	2.2KΩ	±5%	SRD½SD
R726	0131721	Composition	33KΩ	±5%	RC¼GF
R727	0114221	Carbon film	68KΩ	±5%	SRD¼P
R728	0131683	Composition	4.7KΩ	±5%	RC¼GF
R729	0137563	Carbon film	330Ω	±5%	SRD½SD
R730	0110367	Metal oxide film	8.2KΩ	±5%	RD3PB
R731	0114151	Carbon film	680Ω	±5%	SRD¼P
R732	0157203	Control	500Ω – B		
R734	0114161	Carbon film	1KΩ	±5%	SRD¼P
R735	0114179	Carbon film	5.6KΩ	±5%	SRD½SD
R736	0137601	Carbon film	1KΩ	±5%	SRD¼P
R737	0114143	Carbon film	330Ω	±5%	SRD¼P
R738	0114131	Carbon film	100Ω	±5%	SRD¼P
R740	0114145	Carbon film	390Ω	±5%	SRD¼P
R741	0134099	Composition	5.6KΩ	±5%	RC½GF
R742	0110360	Metal oxide film	4.3KΩ	±5%	RD3PB
R743	0134093	Composition	3.3KΩ	±5%	RC½GF
R744	0114063	Carbon film	82Ω	±5%	SRD¼P
R745	0134414	Composition	2.7MΩ	±10%	RC½GF
R746	0134049	Composition	220Ω	±5%	RC½GF
R747	0134017	Composition	10Ω	±5%	RC½GF
R748	0114281	Carbon film	100KΩ	±5%	SRD¼P
R753	0141052	Wire wound	27Ω	±5%	RWH-30
R754	0153258	Control	10MΩ – B		Focus
R755	0134412	Composition	1.8MΩ	±10%	RC½GF
R756	0134412	Composition	1.8MΩ	±10%	RC½GF

SYMBOL NO.	STOCK NO.	DESCRIPTION			
R757	0134412	Composition	1.8MΩ	±10%	RC½GF
R758	0134412	Composition	1.8MΩ	±10%	RC½GF
R781	0119504	Wire Wound	0.5Ω	±5%	RN¼
R782	0119505	Fuse	2.2Ω	±5%	RN¼
R783	0110271	Metal oxide film	12KΩ	±5%	RD2PB
R784	0190159	Wire wound	43Ω	±5%	RG3P
R785	0110219	Metal oxide film	82Ω	±5%	RD2PB
R786	0114150	Carbon film	620Ω	±5%	SRD¼P
R787	0114163	Carbon film	1.2KΩ	±5%	SRD¼P
R901	0114283	Carbon film	120KΩ	±5%	SRD¼P
R902	0114169	Carbon film	2.2KΩ	±5%	SRD¼P
R903	0114161	Carbon film	1KΩ	±5%	SRD¼P
R904	0110278	Metal oxide film	24KΩ	±5%	RD2PB
R905	0114211	Carbon film	27KΩ	±5%	SRD¼P
R906	0151209	Control	2KΩ – B		RV-10
R907	0114171	Carbon film	2.7KΩ	±5%	SRD¼P
R908	0141054	Wire wound	180Ω	±5%	RWH-30
R921	0114283	Carbon film	120KΩ	±5%	SRD¼P
R922	0114281	Carbon film	100KΩ	±5%	SRD¼P

SEMICONDUCTORS

TR201	0573474	Silicon	2SC682 Ⓐ	
TR202	0573474	Silicon	2SC682 Ⓐ	
TR203	2320141	Silicon	2SC717	
TR251	0573480	Silicon	2SC458 Ⓑ	
TR252	2320631	Silicon	2SA673 Ⓑ / Ⓒ	
TR253	2320631	Silicon	2SA673 Ⓑ / Ⓒ	
TR254	2320596	Silicon	2SC458 Ⓒ / Ⓓ	
TR301	2321361	Silicon	2SA836 Ⓓ / Ⓔ	
TR302	2321361	Silicon	2SA836 Ⓓ / Ⓔ	
TR303	2320591	Silicon	2SC458 Ⓑ / Ⓒ	
TR304	2320591	Silicon	2SC458 Ⓑ / Ⓒ	
TR305	2320631	Silicon	2SA673 Ⓑ / Ⓒ	
TR306	2320596	Silicon	2SC458 Ⓒ / Ⓓ	
TR307	2320631	Silicon	2SA673 Ⓑ / Ⓒ	
TR351	2321221	Silicon	2SC1514	
TR352	2321221	Silicon	2SC1514	
TR353	2321221	Silicon	2SC1514	
TR451	2320141	Silicon	2SC717	
TR452	2320632	Silicon	2SA673 Ⓒ	
TR453	2320637	Silicon	2SA673 Ⓒ / Ⓓ	
TR454	2320041	Silicon	2SC460 Ⓑ	
TR455	2320041	Silicon	2SC460 Ⓑ	
TR456	2320041	Silicon	2SC460 Ⓑ	
TR457	0573480	Silicon	2SC458 Ⓑ	
TR458	0573480	Silicon	2SC458 Ⓑ	
TR459	0573481	Silicon	2SC458 Ⓒ	
TR460	0573481	Silicon	2SC458 Ⓒ	
TR461	2320981	Silicon	2SC460 Ⓐ / Ⓑ	
TR462	2320981	Silicon	2SC460 Ⓐ / Ⓑ	
TR463	2320632	Silicon	2SA673 Ⓒ	
TR464	2320591	Silicon	2SC458 Ⓑ / Ⓒ	
TR465	2320041	Silicon	2SC460 Ⓑ	
TR466	2320041	Silicon	2SC460 Ⓑ	
TR467	2320591	Silicon	2SC458 Ⓑ / Ⓒ	

SYMBOL NO.	STOCK NO.	DESCRIPTION	
TR468	2320043	Silicon	2SC460 Ⓑ / Ⓒ
TR469	2320595	Silicon	2SC458 Ⓒ
TR470	2320595	Silicon	2SC458 Ⓓ
TR471	2320595	Silicon	2SC458 Ⓓ
TR601	2320646	Silicon	2SC1213Ⓑ / Ⓒ
TR651	2320843	Silicon	2SC1162WT Ⓒ
TR701	2320591	Silicon	2SC458 Ⓑ/Ⓒ
TR702	2320631	Silicon	2SA673 Ⓑ/Ⓒ
TR703	2320631	Silicon	2SA673 Ⓑ/Ⓒ
TR704	2320591	Silicon	2Sc458 Ⓑ/Ⓒ
TR705	2320631	Silicon	2SA673 Ⓑ/Ⓒ
TR706	2321403	Silicon	2SC1391VL
TR707	2320299	Silicon	2SC937YL1BK
TR709	2320591	Silicon	2SC458 Ⓑ/Ⓒ
TR710	2320591	Silicon	2SC458 Ⓑ/Ⓒ
TR781	2320843	Silicon	2SC1162WT Ⓒ
TR901	2321241	Silicon	2SD383
TR902	2321221	Silicon	2SC1514
TR903	2321111	Silicon	2SA778A Ⓚ
CR201	0575005	Germanium	1N60
CR202	0575005	Germanium	1N60
CR251	2330351	Silicon	1S2076
CR252	0575005	Germanium	1N60
CR253	2330351	Silicon	1S2076
CR254	0575001	Germanium	1N34A
CR255	0575001	Germanium	1N34A
CR256	0575001	Germanium	1N34A
CR301	2330351	Silicon	1S2076
CR302	2330351	Silicon	1S2076
CR303	2330251	Silicon	V06C
CR304	0575001	Germanium	1N34A
CR305	0575001	Germanium	1N34A
CR306	2330352	Silicon	1S2076A
CR307	2330251	Silicon	V06C
CR308	2330251	Silicon	V06C
CR309	2330352	Silicon	1S2076A
CR310	2330352	Silicon	1S2076A
CR311	2330352	Silicon	1S2076A
CR312	2330351	Silicon	1S2076
CR451	2330351	Silicon	1S2076
CR452	0575001	Germanium	1N34A
CR453	2330351	Silicon	1S2076
CR454	2330351	Silicon	1S2076
CR455	2330351	Silicon	1S2076
CR456	2330351	Silicon	1S2076
CR457	0575005	Germanium	1N60
CR458	0575005	Germanium	1N60
CR459	0575005	Germanium	1N60
CR460	0575005	Germanium	1N60
CR461	0575005	Germanium	1N60
CR462	0575005	Germanium	1N60
CR463	0575005	Germanium	1N60
CR701	0575001	Germanium	1N34A
CR702	0575001	Germanium	1N34A

SYMBOL NO.	STOCK NO.	DESCRIPTION	
CR703	2330351	Silicon	1S2076
CK704	2331151	Zeheer	HZ-12 Ⓐ
CR705	2330191	Silicon	SB-2C
CR706	2330551	Silicon	V09C
CR707	2330551	Silicon	V09C
CR709	2330251	Silicon	V06C
CR710	2330551	Silicon	V09C
CR711	2330351	Silicon	1S2076
CR712	2331173	Zeener	HZ-11 Ⓒ
CR713	2331173	Zeneer	HZ-11 Ⓒ
CR714	2340331	Varistor	MV-13
CR781	2330551	Silicon	V09C
CR782	2330553	Silicon	V09G
CR783	2330564	Silicon	V11N
CR901	2330722	Silicon	U06E
CR902	2330722	Silicon	U06E
CR903	2330722	Silicon	U06E
CR904	2330722	Silicon	U06E
CR905	2330634	Zeener	HZ-7 Ⓐ / Ⓑ
CR906	2340331	Varistor	MV-13
CR908	2330351	Silicon	1S2076
CR909	2330254	Silicon	V06B
CR910	2330254	Silicon	V06B
CR911	2330254	Silicon	V06B
CR912	2330254	Silicon	V06B
VC451	2331221	Silicon	1S2790
VC452	2331221	Silicon	1S2790
IC001	2360021		HA1108
IC401	2360291		KC583C
TH251	0576038	Silicon	D - 2B (RED)
TH601	2340341		11D-4H
TH901	2340263		6.5PTC
M601	2370091		HM6211

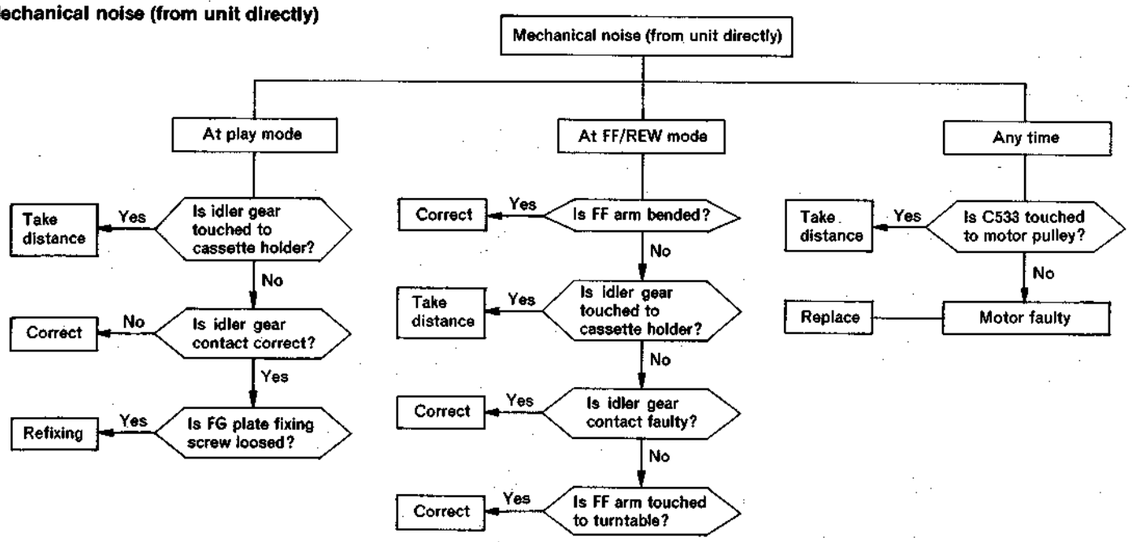
COILS

L001	2140881	Mold IF transformer
L002	2111921	High frequency coil
L003	2121201	Filter coil
L004	2121201	Filter coil
L201	2140881	Mold IF transformer
L202	2140881	Mold IF transformer
L203	2141124	Trap coil
L204	2141123	Trap coil
L205	2141124	Trap coil
L206	2140896	IF transformer
L207	2141222	Trap coil
L208	2140895	IF transformer
L209	2121201	Filter coil
L210	2121205	Filter coil
L211	2120144	Trap coil
L212	2121717	Peaking coil
L213	2121205	Filter coil
L214	2121201	Filter coil

PLACE	SYMBOL NO.	STOCK NO.	DESCRIPTION
	L215	2121205	Filter coil
	L216	2121224	Peaking coil
	L301	2160534	Video coil
	L302	2121699	Peaking coil
	L303	2160831	Settle coil
	L304	2121706	Peaking coil
	L351	2121715	Peaking coil
	L401	2121695	Peaking coil
	L451	2160584	Band-pass coil
	L452	2160585	Band-pass coil
	L453	2121715	Peaking coil
	L454	2121692	Peaking coil
	L455	2121715	Peaking coil
	L456	2120149	Phase coil
	L457	2120148	Phase coil
	L458	2120486	Filter coil
	L459	2160445	Inversion coil
	L460	2121702	Peaking coil
	L461	2160157	Video coil
	L462	2121692	Peaking coil
	L463	2121715	Peaking coil
	L464	2121715	Peaking coil
	L465	2121715	Peaking coil
	L701	2120483	Filter coil
	L702	2120811	Filter coil
	L703	2120333	Heater choke coil
	L704	2120333	Heater choke coil
	L705	2120486	Filter coil
	L706	2161381	Horizontal size coil
	L707	2161371	Horizontal Linearity coil
	L708	2120484	Filter coil
	L781	2120482	Filter coil
	L782	2120042	Horizontal filter coil
	L901	2161147	Degaussing coil
	L902		
	DL301	2160791	Delay line
	DL451	2781881	1H Delay line
	T001	2140872	AFS Discriminating transformer
	T201	2140892	IF transformer
	T202	2140893	IF transformer
	T401	2141373	Discriminating transformer
	T451	2160533	Band-pass transformer
	T452	2160156	Out-put transformer
	T453	2160158	Video transformer
	T454	2160153	Burst transformer
	T455	2160446	Inversion transformer
	T456	2160153	Burst transformer
	T457	2160156	Out-put transformer
	T651	2270501	PCT-H ass'y
	T701	2161051	Horizontal oscillator transformer
	T702	2260021	Horizontal drive transformer
	T710	2431082	Flyback transformer
	T901	2211501	Power transformer

PLACE	SYMBOL NO.	STOCK NO.	DESCRIPTION
			MISCELLANEOUS
		2685961	Aerial socket
		3157777	Back cover assembly
		2506712	Board Signal chassis board
		2506721	Board Deflection chassis board
		2506694	Board Sound module
		2506741	Board CPT board
		2506731	Board Power supply board
		2506702	Board V-IF module
		2506751	Board FBT board
		3113063	Cabinet assembly
	X 451	2781712	Crystal
	CF401	2140911	Ceramic filter
		2741673	Cord-AC cord
	CP001	2790081	Compound component
	CP351	2120524	Compound component
	CP352	2120524	Compound component
	CP353	2120524	Compound component
	CP901	2790083	Compound component
	CP902	2790083	Compound component
		3216933	Front flame assembly
	TF601	2720245	Fuse-Thermo fuse
	TF701	2720245	Fuse-Thermo fuse
	F701	2720179	Fuse 800mA/T
	TF901	2720245	Fuse-Thermo fuse
	F901	2720173	Fuse 2A / T
	F902	2720173	Fuse 2A / T
	F903	2720179	Fuse 800mA / T
	F904	2720179	Fuse 800mA / T
	F905	2720173	Fuse 2A / T
		2720221	Fuse holder
		3256862	Knob-Volume, Tint, Colour, Bright, Contrast
		3256892	Knob-Mains switch
		3257132	Knob-Push button
		2657531	Socket-10p socket
	S001	2630781	Switch-Micro switch
	S901	2630861	Switch-power switch
	SG351	2340034	Spark gap
		2490253	Sensor HP-541C
	SG352	2340034	Spark gap
	SG353	2340034	Spark gap
	SG354	2340034	Spark gap
		2654543	Socket - C.P.T socket
		2490155	Push button programme unit (HP-526E)
		3319301	Tuner (ET-517E)
		2351131	Tube-Picture tube (510HWB22)
	SP401	2410254	Speaker (10 x 15 cm)
		2440706	Yoke-Deflection

Mechanical noise (from unit directly)



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HITACHI
SERVICE MANUAL

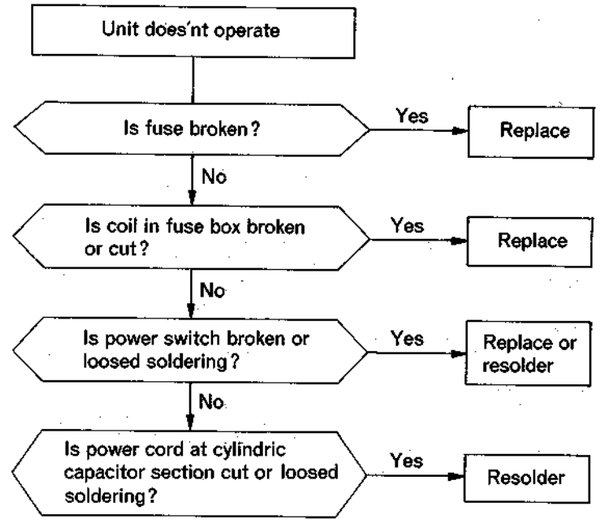
TK **No. 1665E**

CSK-413D, 413LD, 413BX
CSK-412D, 412A, 412AX

TROUBLESHOOTING

This troubleshooting manual describes examples of faults and methods of investigating causes. Use this manual together with the previously issued each service manuals.

1. Unit does'nt operate

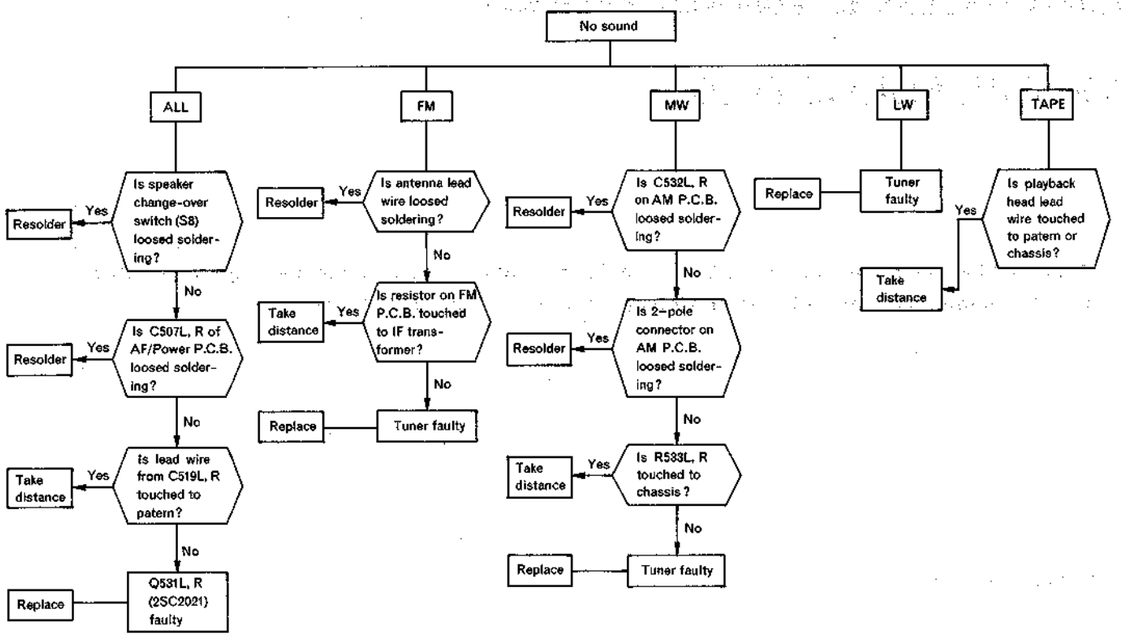


SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

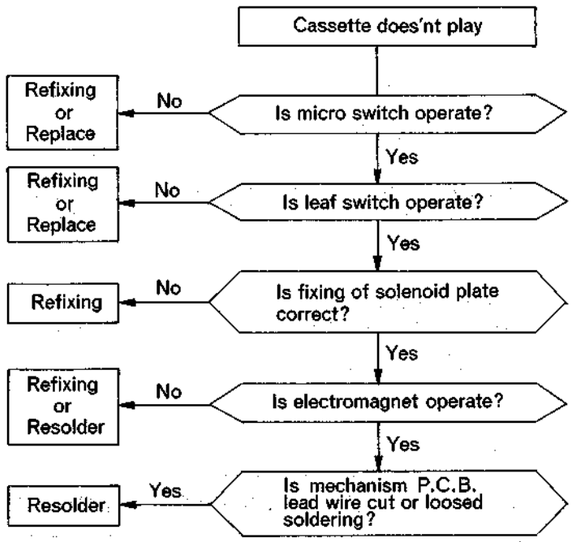
AUTO-REVERSE CAR STEREO CASSETTE PLAYER with RADIO

Dec. 1981 **TOKAI WORKS**

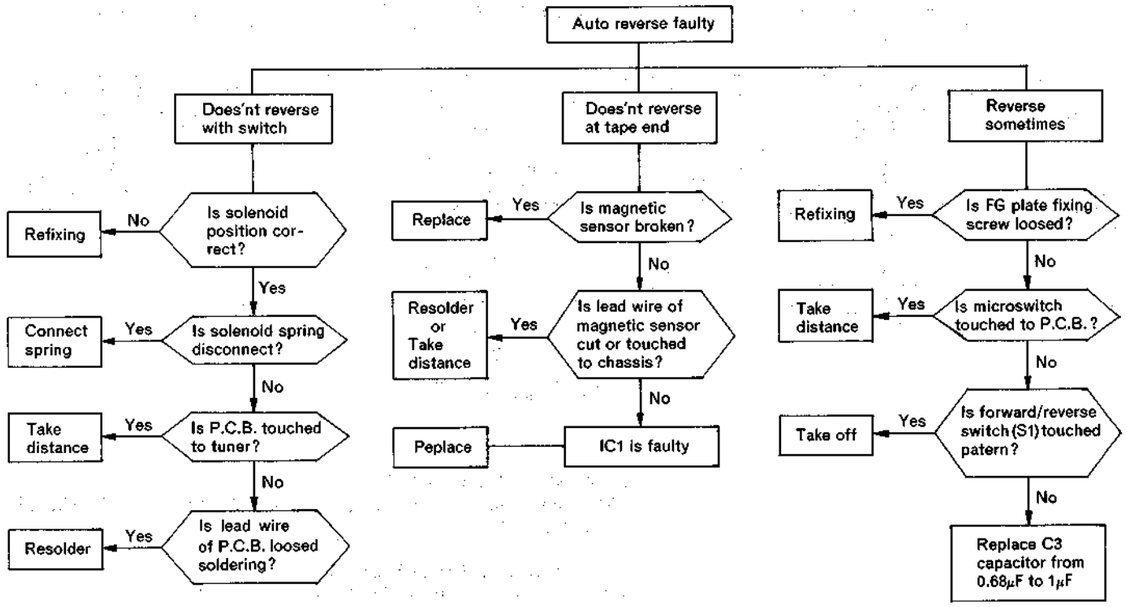
2. No sound (sometimes, always)



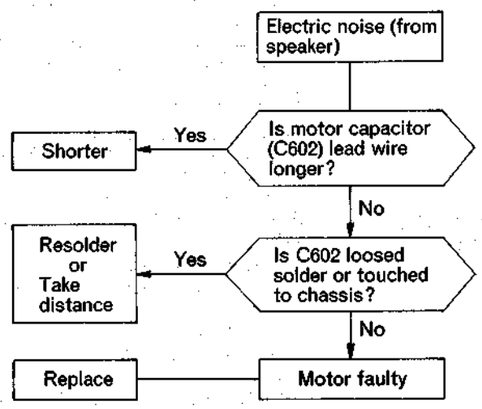
3. Cassette does'nt play



4. Auto reverse faulty



5. Electric noise (from speaker)



6. Pointer of tuner does'nt move