

# **HITACHI** **SERVICE MANUAL**

**FH****No. E402****CT1394W**

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

## SPECIFICATIONS

ANTENNA INPUT IMPEDANCE .....	75 $\Omega$	POWER INPUT .....	120 V, 60 Hz
CHANNEL CONVERGENCE RANGE .....		POWER RATING .....	69 W
VHF .....	2 ~ 13	CONVERGENCE .....	Self convergence
UHF .....	14 ~ 69	FOCUS .....	Electrostatic
CATV .....		PICTURE TUBE .....	A34JLN60X
MID BAND .....	A ~ 1ch, A-5 ~ A-1ch	SOUND OUTPUT .....	1W
SUPER BAND .....	J ~ Wch	SPEAKER .....	5 x 7 cm, 8 $\Omega$
HYPER BAND .....	W+1 ~ W+28ch	DIMENSIONS (W) .....	37.0cm
ULTRA BAND .....	W+29 ~ W+84ch	(H) .....	35.5cm
INTERMEDIATE FREQUENCIES .....		(D) .....	37.5cm
Picture I-F Carrier .....	45.75 MHz	WEIGHT .....	Appr. 10.5 kg
Sound I-F Carrier .....	41.25 MHz		
Sound I-F .....	4.5 MHz		

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

## SOLID STATE COLOR TELEVISION

JANUARY 1990

FUJIAN HITACHI TELEVISION CO., LTD.

## SAFETY PRECAUTIONS

**NOTICE:** Comply with all cautions and safety related notes located on or inside the cabinet and on the chassis or picture tube.

**WARNING:** Since the chassis of this receiver is connected to one side of AC power supply during operation, whenever the receiver is plugged in, service should not be attempted by anyone unfamiliar with the precautions necessary when working on this type of receiver.

The following precautions should be observed:

1. Do not install, remove, or handle the picture tube in any manner unless shatterproof 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 receiver, all the protective devices must be put back in place, such as barriers, non-metallic knobs, adjustment and compartment cover-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 manufacture's. 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 that it is completely safe to operate without danger of electrical shock, and be sure that no protective device built into the receiver by the manufacturer has become defective, or inadvertently defeated during servicing.

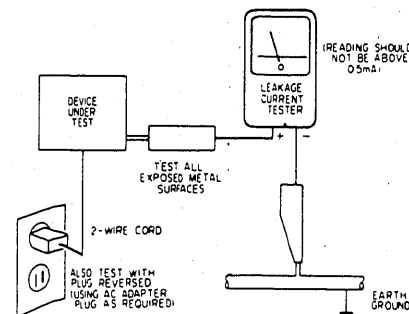
Therefore, the following checks should be performed for the continued protection of the customer and service technician.

### Leakage Current Cold Check

With the AC plug removed from the 120V AC 60Hz source, place a jumper across the two plug prongs. Turn the AC power switch on. Using an insulation tester (DC500V), connect one lead to the jumpered AC plug and touch the other lead to each exposed metal part (antennas, screwheads, metal overlays, control shafts, etc.), particularly any exposed metal part having a return path to the chassis. Exposed metal parts having a return path to the chassis should have a minimum resistor reading of  $0.3M\Omega$  and a maximum resistor reading of  $5M\Omega$ . Any resistor value below or above this range indicates an abnormality which requires corrective action. Exposed metal parts not having a return path to the chassis will indicate an open circuit.

### Leakage Current Hot Check

Plug the AC line cord directly into a 120V AC 60Hz outlet (do not use an isolation transformer for this check). Turn the AC power switch on. Using a "leakage Current Tester (Simpson Model 229 equivalent)", measure for current from all exposed metal parts of the cabinet (antennas, screwheads, metal overlays, control shaft, etc.), particularly any exposed metal part having a return path to the chassis, to a known earth ground (water pipe, conduit, etc.). Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE RECEIVER TO THE CUSTOMER.

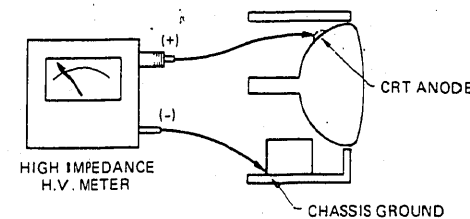
### High Voltage

This receiver is provided with a hold down circuit for clearly indicating that voltage has increased in excess of a predetermined value. Comply with all notes described in this Service Manual regarding this hold down circuit when servicing, so that this hold down circuit may correctly be operated.

### Serviceman warning

With minimum Black level and Picture, operating high voltage in this receiver is lower than 25.0KV. In case any component having influence on high voltage is replaced, confirm that high voltage with minimum Black level and Picture is lower than 25.0KV. To measure H.V. use a high impedance H.V. meter. Connect (-) to chassis earth and (+) to the CRT anode button. (See the following connection diagram).

**NOTE:** Turn power switch off without fail before the connection with Anode button is made.



### X-radiation

**TUBE:** 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 emissions.

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

When trouble shooting and making test measurements in a receiver with a problem of excessive high voltage, avoid being unnecessarily close to the picture tube and the high voltage component.

Do not operate the chassis longer than is necessary to locate the cause excessive voltage.

## PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in HITACHI television receiver have special safety related characteristics. These 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  $\Delta$  on the schematics and on 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-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 HITACHI SALES CORPORATION.

## TECHNICAL CAUTIONS

## OPERATION CHECK HOLD DOWN CIRCUIT

1. Connect a high voltage voltmeter between the CRT anode and the chassis ground as shown Fig. 1.
2. Set Brightness and Picture controls to Maximum.
3. Adjust Screen control, so that beam current become 0.75mA.
4. Set the AC input voltage to 100 volts, and short circuit both terminals of R907as shown Fig. 2.
5. Increase the AC input voltage gradually and check that the picture disappears when the high voltage is less than 28.0 KV.
6. Turn the switch of the set OFF immediately after checking that the picture disappears.
7. Remove the adjusting jig and the voltmeter.

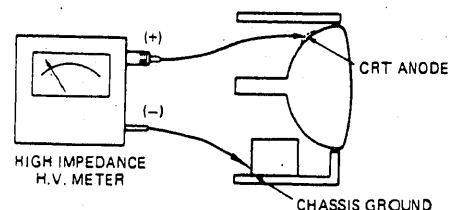


Fig. 1. Connection of H.V. Meter

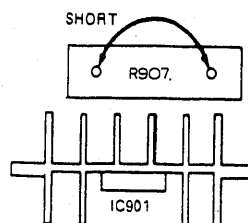


Fig. 2.

## OPERATING SUMMARY

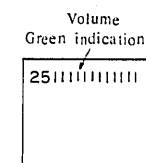
## HOW TO SELECT CHANNELS

## 1. TURNING THE SET ON - (POWER BUTTON)

Push the POWER BUTTON to turn the set ON. (To turn the set OFF, push the POWER BUTTON again.)

## 2. VOLUME CONTROL - (VOLUME BUTTON)

Push the right side (▲: UP) of the VOLUME BUTTON to make sound louder, and left side (▼: DOWN) of the VOLUME BUTTON to make sound softer. Variation of the volume is displayed at the upper part of the screen with a number from 0 ~ 63 and color bar.



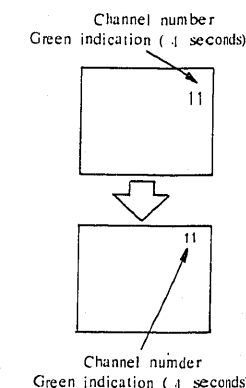
## 3. BAND SELECTION - (BAND SELECTOR SWITCH)

The BAND SELECTOR SWITCH is installed at the back of the set. Your TV can receive 12 VHF channels, 56 UHF channels and 125 CATV channels. Choose the required reception band by sliding the BAND SELECTOR SWITCH. When shipped from the factory, this switch is set to the "NORM" position.

RECEPTION BAND	
NORM	CATV 1 or CATV 2
VHF 2 ~ 13ch	VHF 2 ~ 13ch Mid band A ~ 1, A-5 ~ A-1 Super band J ~ W
UHF 14 ~ 69ch	Hyperband W + 1 ~ W + 28 Ultra band W + 29 ~ W + 84

## 4. CHANNEL SELECTION - (CHANNEL BUTTON)

Channel selection may be performed by pressing either the CHANNEL BUTTON UP (▲) or DOWN (▼). When pressing the right side (▲: UP) of CHANNEL BUTTON, the next higher channel is selected. And when pressing the left side (▼: DOWN) of the CHANNEL BUTTON, the next lower channel is selected. The No. of the channel to which it is tuned is displayed at the upper right side of the screen. The channel No. selected is displayed for approx. 8 seconds after changing channels and disappears automatically.  
(The channel No. is indicated for 4 sec. in large letters, then indicated for 4 sec. in small letters, and then disappears.)  
(When you turn the set ON, the channel No. is displayed on the screen for approx. 15 seconds.)



## CABLE ANTENNA (CATV) OPERATION

Your TV can receive Cable Antenna (CATV) system. (See the table "RECEPTION BAND")  
To receive CATV channels, please operate as follows.

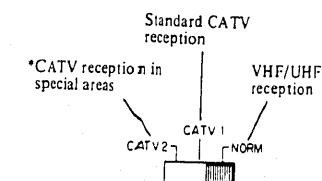
## 1. CATV ANTENNA CONNECTION

Connect your CATV cable to the antenna terminal board.  
(Refer to "ANTENNA CONNECTIONS" on page 4.)

## 2. BAND SELECTION - (BAND SELECTOR SWITCH)

Set the BAND SELECTOR SWITCH on the back of the set to CATV 1 for normal CATV operation.

\*If reception of CATV Channel 5 and CATV Channel 6 is poor or not possible set the BAND SELECTOR SWITCH to CATV2.

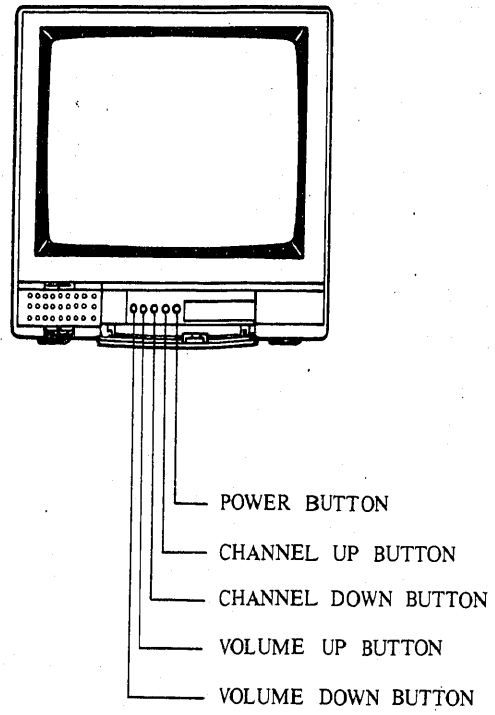


## 3. CHANNEL SELECTION - (CHANNEL BUTTON)

CATV channel selection can be done with the CHANNEL BUTTON UP (▲) or DOWN (▼) as with VHF/UHF channels. When receiving CATV 2-13 channels, 2-13 is indicated on the screen. When receiving Mid band channels A-1, 14-22 is indicated, and when receiving Super band channels J-W, 23-36 is indicated. When receiving Hyper band channels W + 1 ~ W + 28, 37 ~ 64 is indicated, when receiving Mid band channels A-5 ~ A-1, 95 ~ 99 is indicated, and when receiving Ultra band channels W + 29 ~ W + 58, W + 59 ~ W + 84, 65 ~ 91 and 100 ~ 125 is indicated.

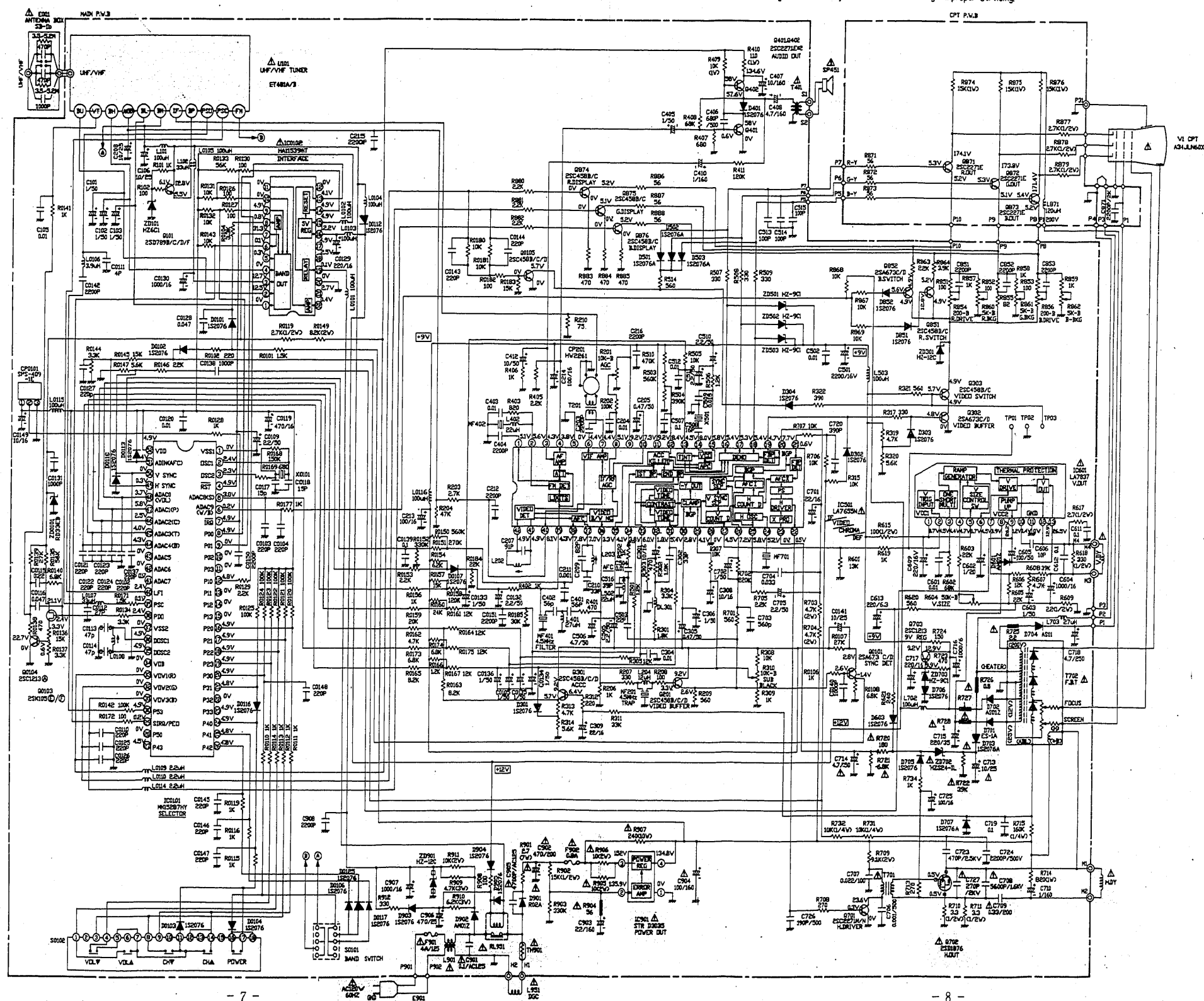
**Note:** In some areas there is a special channel (4<sup>+</sup>) between channel 4 and channel 5; this can be received when the BAND SELECTOR SWITCH is set to "CATV 2" and channel No. 1 is selected.

CONTROLS



## BASIC CIRCUIT DIAGRAM

PRODUCT SAFETY NOTE Components marked with a  $\Delta$  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 through improper servicing.

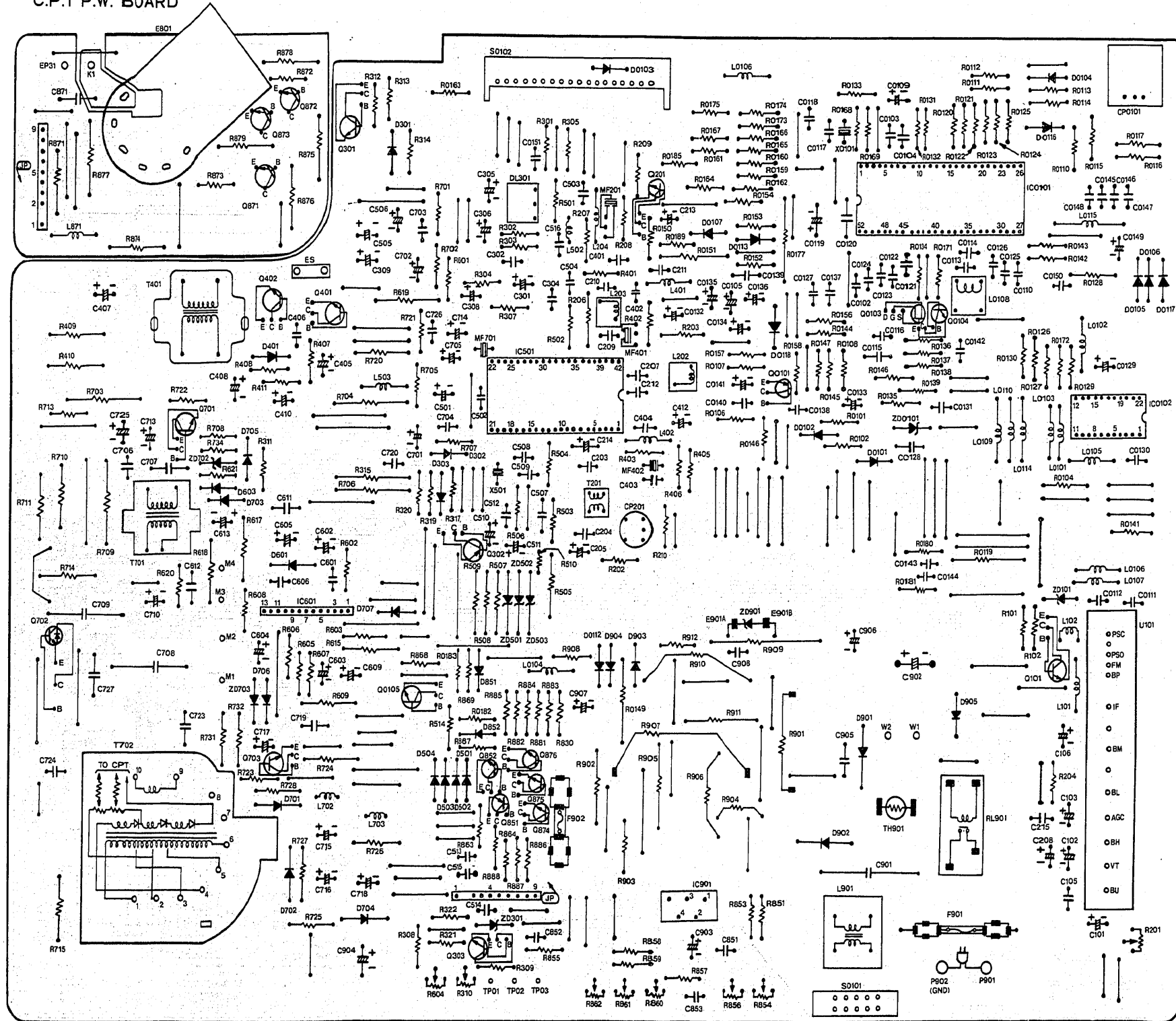


- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.
- All DC voltage to be measured with a tester (100K $\Omega$ /V).
- Voltage taken on a complex color bar signal including a standard color bar signal.

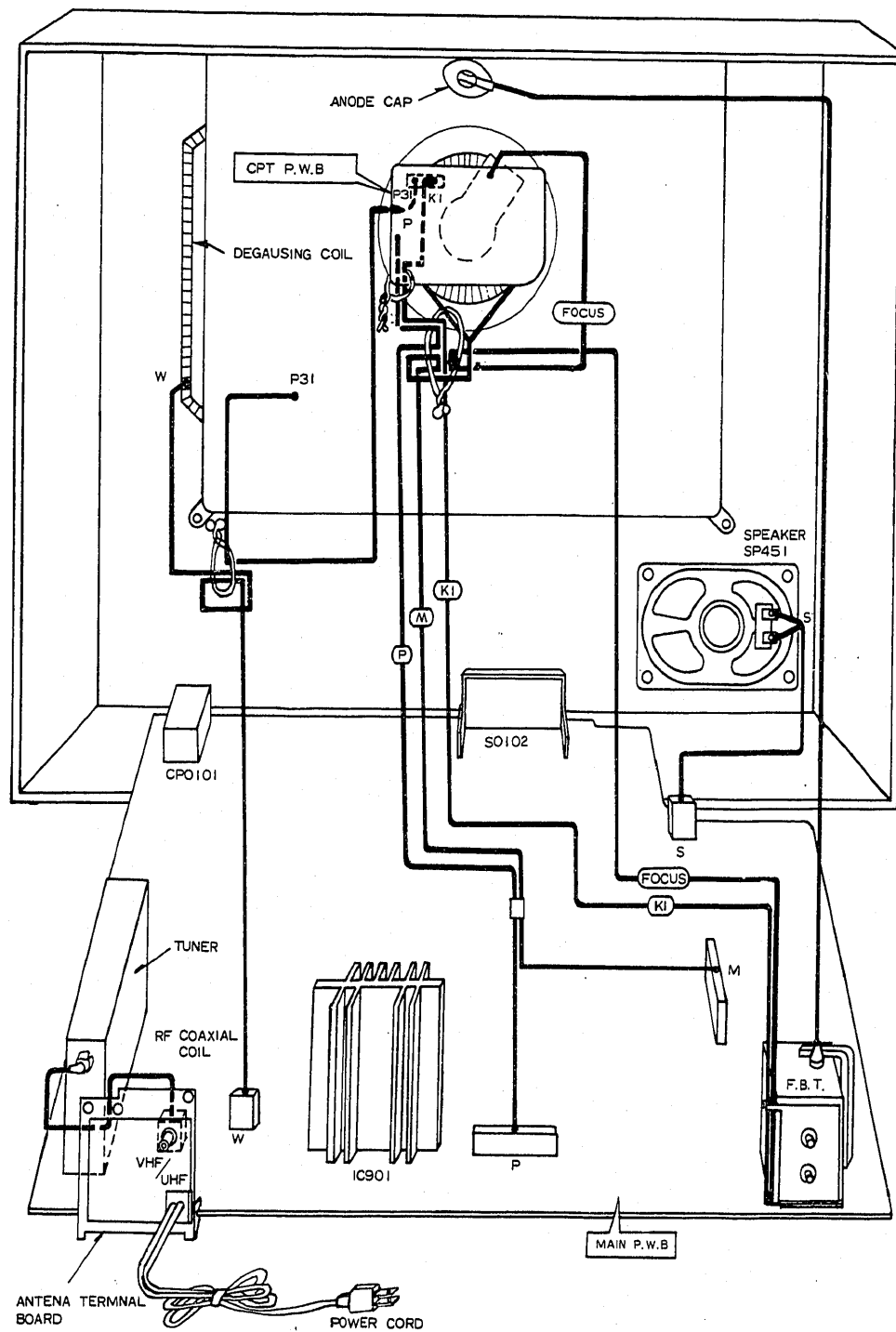
C.P.T P.W. BOARD

# PRINTED WIRING BOARD

MAIN P.W. BOARD



WIRING DIAGRAM



## REPLACEMENT PARTS LIST

**PRODUCT SAFETY NOTE:** Components marked with a  $\Delta$  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, MF: Metal oxide film, VR: Variable resistor, WW: Wire wound, FR: Fuse resistor

SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
CAPACITORS					
C0102	0248692	CD 220PF $\pm 5\%$ 50V	C0145	0248692	CD 220PF $\pm 5\%$ 50V
C0103	0248692	CD 220PF $\pm 5\%$ 50V	C0146	0248692	CD 220PF $\pm 5\%$ 50V
C0104	0248692	CD 220PF $\pm 5\%$ 50V	C0147	0248692	CD 220PF $\pm 5\%$ 50V
C0105	0800015	EL 10 $\mu$ F 16V	C0148	0248692	CD 220PF $\pm 5\%$ 50V
C0109	0800005	EL 2.2 $\mu$ F 50V	C0149	0800015	EL 10 $\mu$ F 16V
C0110	0248692	CD 220PF $\pm 5\%$ 50V	C0150	0244105	CD 2200PF $\pm 10\%$ 50V
C0111	0248634	CD 4PF 50V	C0151	0244105	CD 2200PF $\pm 10\%$ 50V
C0112	0246450	CD 27PF $\pm 5\%$ 50V	C101	0800003	EL 1 $\mu$ F 50V
C0113	0246456	CD 47PF $\pm 5\%$ 50V	C102	0800003	EL 1 $\mu$ F 50V
C0114	0246456	CD 47PF $\pm 5\%$ 50V	C103	0800003	EL 1 $\mu$ F 50V
C0115	0277029	PF 0.22 $\mu$ F $\pm 10\%$ 50V	C105	0274763	PF 0.01 $\mu$ F $\pm 10\%$ 50V
C0116	0277021	PF 0.047 $\mu$ F $\pm 10\%$ 50V	C106	0800016	EL 10 $\mu$ F 25V
C0117	0246444	CD 15PF $\pm 5\%$ 50V	C107	0274763	PF 0.01 $\mu$ F $\pm 10\%$ 50V
C0118	0246444	CD 15PF $\pm 5\%$ 50V	C108	0244105	CD 2200PF $\pm 10\%$ 50V
C0119	0800074	EL 470 $\mu$ F 16V	C203	0244105	CD 2200PF $\pm 10\%$ 50V
C0120	0274763	PF 0.01 $\mu$ F $\pm 10\%$ 50V	C204	0244171	CD 0.01 $\mu$ F 50V
C0121	0248692	CD 220PF $\pm 5\%$ 50V	C205	0259958	EL 0.47 $\mu$ F 50V
C0122	0248692	CD 220PF $\pm 5\%$ 50V	C207	0248593	CD 91PF 50V
C0123	0248692	CD 220PF $\pm 5\%$ 50V	C208	0800015	EL 10 $\mu$ F 16V
C0124	0248692	CD 220PF $\pm 5\%$ 50V	C209	0246462	CD 82PF $\pm 5\%$ 50V
C0125	0248692	CD 220PF $\pm 5\%$ 50V	C210	0246452	CD 33PF $\pm 5\%$ 50V
C0126	0248692	CD 220PF $\pm 5\%$ 50V	C211	0244139	CD 1000PF $\pm 10\%$ 50V
C0127	0248692	CD 220PF $\pm 5\%$ 50V	C212	0244105	CD 2200PF $\pm 10\%$ 50V
C0128	0277021	PF 0.047 $\mu$ F $\pm 10\%$ 50V	C213	0800049	EL 100 $\mu$ F 16V
C0129	0253051	EL 220 $\mu$ F 16V	C214	0800049	EL 100 $\mu$ F 16V
C0130	0800082	EL 1000 $\mu$ F 16V	C215	0244105	CD 2200PF $\pm 10\%$ 50V
C0131	0244139	CD 1000PF $\pm 10\%$ 50V	C301	0800015	EL 10 $\mu$ F 16V
C0132	0800005	EL 2.2 $\mu$ F 50V	C302	0248672	CD 33PF $\pm 5\%$ 50V
C0133	0800003	EL 1 $\mu$ F 50V	C304	0244171	CD 0.01 $\mu$ F 50V
C0134	0800003	EL 1 $\mu$ F 50V	C305	0800003	EL 1 $\mu$ F 50V
C0135	0800003	EL 1 $\mu$ F 50V	C306	0800003	EL 1 $\mu$ F 50V
C0136	0800003	EL 1 $\mu$ F 50V	C308	0800015	EL 10 $\mu$ F 16V
C0137	0248692	CD 220PF $\pm 5\%$ 50V	C309	0800041	EL 47 $\mu$ F 16V
C0138	0244139	CD 1000PF $\pm 10\%$ 50V	C401	0248678	CD 56PF $\pm 5\%$ 50V
C0139	0277025	PF 0.1 $\mu$ F $\pm 10\%$ 50V	C402	0248678	CD 56PF $\pm 5\%$ 50V
C0140	0244139	CD 1000PF $\pm 10\%$ 50V	C403	0244171	CD 0.01 $\mu$ F 50V
C0141	0800015	EL 10 $\mu$ F 16V	C404	0244105	CD 2200PF $\pm 10\%$ 50V
C0142	0244105	CD 2200PF $\pm 10\%$ 50V	C405	0800003	EL 1 $\mu$ F 50V
C0143	0890078	CD 220PF $\pm 10\%$ 50V	C406	0243511	CD 680PF $\pm 10\%$ 500V
C0144	0890078	CD 220PF $\pm 10\%$ 50V	C407	0253456	EL 10 $\mu$ F 160V
			C408	0253455	EL 4.7 $\mu$ F 160V




**PRODUCT SAFETY NOTE:** Components marked with a  $\Delta$  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.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
C410	0253452	EL 1 $\mu$ F 160V	C724	0244505	CD 2200PF $\pm$ 10% 500V
C412	0800018	EL 10 $\mu$ F 50V	C725	0800016	EL 10 $\mu$ F 25V
C501	0800087	EL 2200 $\mu$ F 16V	C726	0243508	CD 390PF $\pm$ 10% 500V
C502	0274763	PF 0.01 $\mu$ F $\pm$ 10% 50V	$\Delta$ C727	0244205	CD 270PF $\pm$ 10% 2000V
C503	0246448	CD 22PF $\pm$ 5% 50V	C851	0244105	CD 2200PF $\pm$ 10% 50V
C504	0244171	CD 0.01 $\mu$ F $\pm$ 80-20% 50V	C852	0244105	CD 2200PF $\pm$ 10% 50V
C505	0800005	EL 2.2 $\mu$ F 50V	C853	0244105	CD 2200PF $\pm$ 10% 50V
C506	0800012	EL 4.7 $\mu$ F 50V	C871	0244215	CD 2200PF $\pm$ 10% 2000V
C507	0277025	PF 0.1 $\mu$ F $\pm$ 10% 50V	$\Delta$ C901	0279718	PF 0.1 $\mu$ F 125V
C508	0248665	CD 16PF $\pm$ 5% 50V	$\Delta$ C902	0259976	EL 470 $\mu$ F 200WV
C509	0274765	PF 0.015 $\pm$ 10% 50V	C903	0252710	EL 22 $\mu$ F 160V
C510	0800005	EL 2.2 $\mu$ F 50V	$\Delta$ C904	0253460	EL 100 $\mu$ F 160V
C511	0800005	EL 2.2 $\mu$ F 50V	$\Delta$ C905	0249145	CD 4700PF 125V
C512	0244171	CD 0.01 $\mu$ F $\pm$ 80-20% 50V	C906	0800075	EL 470 $\mu$ F 25V
C513	0248684	CD 100PF $\pm$ 5% 50V	C907	0800082	EL 1000 $\mu$ F 16V
C514	0248684	CD 100PF $\pm$ 5% 50V	RESISTORS		
C515	0248684	CD 100PF $\pm$ 5% 50V			
C516	0248674	CD 39PF $\pm$ 5% 50V	R0101	0100069	CF 1.5K OHM $\pm$ 5% 1/8W
C601	0277013	PF 0.01 $\mu$ F $\pm$ 10% 50V	R0102	0100049	CF 220 OHM $\pm$ 5% 1/8W
C602	0292716	TA 1 $\mu$ F $\pm$ 20% 20V	R0104	0100077	CF 3.3K OHM $\pm$ 5% 1/8W
C603	0800003	EL 1 $\mu$ F 50V	R0106	0100065	CF 1K OHM $\pm$ 5% 1/8W
C604	0800052	EL 1000 $\mu$ F 16V	R0107	0100099	CF 27K OHM $\pm$ 5% 1/8W
C605	0800053	EL 100 $\mu$ F 50V	R0108	0100085	CF 6.8K OHM $\pm$ 5% 1/8W
C606	0248640	CD 10PF 50V	R0110	0100065	CF 1K OHM $\pm$ 5% 1/8W
C609	0253051	EL 220 $\mu$ F 16V	R0111	0100065	CF 1K OHM $\pm$ 5% 1/8W
C611	0277025	PF 0.1 $\mu$ F $\pm$ 10% 50V	R0112	0100065	CF 1K OHM $\pm$ 5% 1/8W
C612	0277025	PF 0.1 $\mu$ F $\pm$ 10% 50V	R0113	0100065	CF 1K OHM $\pm$ 5% 1/8W
C613	0800056	EL 220 $\mu$ F 6.3V	R0114	0100065	CF 1K OHM $\pm$ 5% 1/8W
C701	0800023	EL 22 $\mu$ F 16V	R0115	0100065	CF 1K OHM $\pm$ 5% 1/8W
C702	0800003	EL 1 $\mu$ F 50V	R0116	0100065	CF 1K OHM $\pm$ 5% 1/8W
C703	0244115	CD 560PF $\pm$ 10% 50V	R0117	0100065	CF 1K OHM $\pm$ 5% 1/8W
C704	0277019	PF 0.033 $\mu$ F $\pm$ 10% 50V	R0119	0113760	CF 2.7K OHM $\pm$ 5% 1/8W
C705	0800005	EL 2.2 $\mu$ F 50V	R0120	0100113	CF 100K OHM $\pm$ 5% 1/8W
C706	0244501	CD 1000PF $\pm$ 10% 500V	R0121	0100113	CF 100K OHM $\pm$ 5% 1/8W
C707	0279851	PF 0.022 $\mu$ F $\pm$ 10% 100V	R0122	0100113	CF 100K OHM $\pm$ 5% 1/8W
$\Delta$ C708	0299731	PP 5600PF $\pm$ 5% 1600V	R0123	0100113	CF 100K OHM $\pm$ 5% 1/8W
$\Delta$ C709	0299932	PP 0.33 $\mu$ F $\pm$ 10% 200V	R0124	0100113	CF 100K OHM $\pm$ 5% 1/8W
C710	0253452	EL 1 $\mu$ F 160V	R0125	0100113	CF 100K OHM $\pm$ 5% 1/8W
$\Delta$ C713	0800016	EL 10 $\mu$ F 25V	R0126	0100041	CF 100 OHM $\pm$ 5% 1/8W
$\Delta$ C714	0800012	EL 4.7 $\mu$ F 50V	R0127	0100041	CF 100 OHM $\pm$ 5% 1/8W
C715	0800061	EL 220 $\mu$ F 35V	R0128	0100065	CF 1K OHM $\pm$ 5% 1/8W
C716	0800083	EL 1000 $\mu$ F 25V	R0129	0100073	CF 2.2K OHM $\pm$ 5% 1/8W
C717	0253051	EL 220 $\mu$ F 16V	R0130	0100041	CF 100 OHM $\pm$ 5% 1/8W
C718	0259842	EL 4.7 $\mu$ F 250V	R0131	0100089	CF 10K OHM $\pm$ 5% 1/8W
C719	0277025	PF 0.1 $\mu$ F $\pm$ 10% 50V			
C720	0244113	CD 330PF $\pm$ 10% 50V			
$\Delta$ C723	0244202	CD 470PF $\pm$ 10% 2500KV			

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SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
R0132	0100089	CF 10K OHM $\pm$ 5% 1/8W	R0183	0100093	CF 15K OHM $\pm$ 5% 1/8W
R0133	0100107	CF 56K OHM $\pm$ 5% 1/8W	R0184	0100097	CF 22K OHM $\pm$ 5% 1/8W
R0134	0100077	CF 3.3K OHM $\pm$ 5% 1/8W	R0185	0100100	CF 30K OHM $\pm$ 5% 1/8W
R0135	0100107	CF 56K OHM $\pm$ 5% 1/8W	R101	0100065	CF 1K OHM $\pm$ 5% 1/8W
R0136	0100093	CF 15K OHM $\pm$ 5% 1/8W	R102	0100041	CF 100 OHM $\pm$ 5% 1/8W
R0137	0100077	CF 3.3K OHM $\pm$ 5% 1/8W	R201	0150114	VR 10K OHM-B
R0138	0100057	CF 470 OHM $\pm$ 5% 1/8W	R202	0100113	CF 100K OHM $\pm$ 5% 1/8W
R0139	0100099	CF 27K OHM $\pm$ 5% 1/8W	R203	0100075	CF 2.7K OHM $\pm$ 5% 1/8W
R0140	0100085	CF 6.8K OHM $\pm$ 5% 1/8W	R204	0100105	CF 47K OHM $\pm$ 5% 1/8W
R0141	0100065	CF 1K OHM $\pm$ 5% 1/8W	R206	0100065	CF 1K OHM $\pm$ 5% 1/8W
R0142	0100113	CF 100K OHM $\pm$ 5% 1/8W	R207	0100053	CF 330 OHM $\pm$ 5% 1/8W
R0143	0100089	CF 10K OHM $\pm$ 5% 1/8W	R208	0100041	CF 100 OHM $\pm$ 5% 1/8W
R0144	0100077	CF 3.3K OHM $\pm$ 5% 1/8W	R209	0100059	CF 560 OHM $\pm$ 5% 1/8W
R0145	0100093	CF 15K OHM $\pm$ 5% 1/8W	R210	0100038	CF 75 OHM $\pm$ 5% 1/8W
R0146	0100097	CF 22K OHM $\pm$ 5% 1/8W	R301	0100071	CF 1.8K OHM $\pm$ 5% 1/8W
R0147	0100083	CF 5.6K OHM $\pm$ 5% 1/8W	R302	0100068	CF 1.3K OHM $\pm$ 5% 1/8W
R0149	0110267	MF 8.2K OHM $\pm$ 5% 2W	R303	0100057	CF 470 OHM $\pm$ 5% 1/8W
R0150	0100131	CF 560K OHM $\pm$ 5% 1/8W	R304	0100077	CF 3.3K OHM $\pm$ 5% 1/8W
R0151	0100123	CF 270K OHM $\pm$ 5% 1/8W	R305	0100091	CF 12K OHM $\pm$ 5% 1/8W
R0152	0100125	CF 330K OHM $\pm$ 5% 1/8W	R307	0100089	CF 10K OHM $\pm$ 5% 1/8W
R0153	0100073	CF 2.2K OHM $\pm$ 5% 1/8W	R308	0100089	CF 10K OHM $\pm$ 5% 1/8W
R0154	0100084	CF 6.2K OHM $\pm$ 5% 1/8W	R309	0100065	CF 1K OHM $\pm$ 5% 1/8W
R0155	0100091	CF 12K OHM $\pm$ 5% 1/8W	R310	0150114	VR 10K OHM-B
R0156	0100065	CF 1K OHM $\pm$ 5% 1/8W	R311	0100101	CF 33K OHM $\pm$ 5% 1/8W
R0157	0100093	CF 15K OHM $\pm$ 5% 1/8W	R312	0100049	CF 220 OHM $\pm$ 5% 1/8W
R0158	0100115	CF 120K OHM $\pm$ 5% 1/8W	R313	0100081	CF 4.7K OHM $\pm$ 5% 1/8W
R0159	0100098	CF 24K OHM $\pm$ 5% 1/8W	R314	0100083	CF 5.6K OHM $\pm$ 5% 1/8W
R0160	0100096	CF 20K OHM $\pm$ 5% 1/8W	R315	0100089	CF 10K OHM $\pm$ 5% 1/8W
R0161	0100091	CF 12K OHM $\pm$ 5% 1/8W	R317	0100053	CF 330 OHM $\pm$ 5% 1/8W
R0162	0100081	CF 4.7K OHM $\pm$ 5% 1/8W	R319	0100081	CF 4.7K OHM $\pm$ 5% 1/8W
R0163	0100087	CF 8.2K OHM $\pm$ 5% 1/8W	R320	0100083	CF 5.6K OHM $\pm$ 5% 1/8W
R0164	0100091	CF 12K OHM $\pm$ 5% 1/8W	R321	0100059	CF 560 OHM $\pm$ 5% 1/8W
R0165	0100087	CF 8.2K OHM $\pm$ 5% 1/8W	R322	0100055	CF 390 OHM $\pm$ 5% 1/8W
R0166	0100067	CF 1.2K OHM $\pm$ 5% 1/8W	R401	0100057	CF 470 OHM $\pm$ 5% 1/8W
R0167	0100091	CF 12K OHM $\pm$ 5% 1/8W	R402	0100065	CF 1K OHM $\pm$ 5% 1/8W
R0168	0100117	CF 150K OHM $\pm$ 5% 1/8W	R403	0100063	CF 820 OHM $\pm$ 5% 1/8W
R0169	0100061	CF 680 OHM $\pm$ 5% 1/8W	R405	0100073	CF 2.2K OHM $\pm$ 5% 1/8W
R0171	0100069	CF 1.5K OHM $\pm$ 5% 1/8W	R406	0100065	CF 1K OHM $\pm$ 5% 1/8W
R0172	0100041	CF 100 OHM $\pm$ 5% 1/8W	R407	0100061	CF 680 OHM $\pm$ 5% 1/8W
R0173	0100085	CF 6.8K OHM $\pm$ 5% 1/8W	R408	0100109	CF 68K OHM $\pm$ 5% 1/8W
R0174	0100085	CF 6.8K OHM $\pm$ 5% 1/8W	R409	0110169	MF 10K OHM $\pm$ 5% 1W
R0175	0100091	CF 12K OHM $\pm$ 5% 1/8W	R410	0110122	MF 110 OHM $\pm$ 5% 1W
R0177	0100065	CF 1K OHM $\pm$ 5% 1/8W	R411	0100115	CF 120K OHM $\pm$ 5% 1/8W
R0180	0100089	CF 10K OHM $\pm$ 5% 1/8W	R501	0100067	CF 1.2K OHM $\pm$ 5% 1/8W
R0181	0100089	CF 10K OHM $\pm$ 5% 1/8W	R502	0100065	CF 1K OHM $\pm$ 5% 1/8W
R0182	0100041	CF 100 OHM $\pm$ 5% 1/8W	R503	0100131	CF 560K OHM $\pm$ 5% 1/8W

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SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
R504	0100127	CE 390K OHM $\pm 5\%$ 1/8W	R731	0114201	CF 10K OHM $\pm 5\%$ 1/4W
R505	0100089	CF 10K OHM $\pm 5\%$ 1/8W	R732	0114201	CF 10K OHM $\pm 5\%$ 1/4W
R506	0100067	CF 1.2K OHM $\pm 5\%$ 1/8W	R734	0100065	CF 1K OHM $\pm 5\%$ 1/4W
R507	0100053	CF 330 OHM $\pm 5\%$ 1/8W	R851	0100041	CF 100 OHM $\pm 5\%$ 1/8W
R508	0100053	CF 330 OHM $\pm 5\%$ 1/8W	R852	0100041	CF 100 OHM $\pm 5\%$ 1/8W
R509	0100053	CF 330 OHM $\pm 5\%$ 1/8W	R853	0100041	CF 100 OHM $\pm 5\%$ 1/8W
R510	0100129	CF 470K OHM $\pm 5\%$ 1/8W	R854	0150109	VR 200 OHM-B
R514	0100059	CF 560 OHM $\pm 5\%$ 1/8W	R855	0100039	CF 82 OHM, $\pm 5\%$ 1/8W
R601	0100092	CF 13K OHM $\pm 5\%$ 1/8W	R856	0150109	VR 200 OHM-B
R602	0100109	CF 68K OHM $\pm 5\%$ 1/8W	R857	0100065	CF 1K OHM $\pm 5\%$ 1/8W
R603	0100097	CF 22K OHM $\pm 5\%$ 1/8W	R858	0100065	CF 1K OHM $\pm 5\%$ 1/8W
R604	0150116	VR 50K OHM-B	R859	0100065	CF 1K OHM $\pm 5\%$ 1/8W
R605	0100097	CF 22K OHM $\pm 5\%$ 1/8W	R860	0150113	VR 5K OHM-B
R606	0100091	CF 12K OHM $\pm 5\%$ 1/8W	R861	0150113	VR 5K OHM-B
R607	0100081	CF 4.7K OHM $\pm 5\%$ 1/8W	R862	0150113	VR 5K OHM-B
R608	0100103	CF 39K OHM $\pm 5\%$ 1/8W	R863	0100073	CF 2.2K OHM $\pm 5\%$ 1/8W
R609	0113684	CF 2.2 OHM $\pm 5\%$ 1/2W	R864	0100079	CF 3.9K OHM $\pm 5\%$ 1/8W
R615	0113725	CF 100 OHM $\pm 5\%$ 1/2W	R867	0100089	CF 10K OHM $\pm 5\%$ 1/8W
R617	0113686	CF 2.7 OHM $\pm 5\%$ 1/2W	R868	0100089	CF 10K OHM $\pm 5\%$ 1/8W
R618	0113737	CF 330 OHM $\pm 5\%$ 1/2W	R871	0100035	CF 56 OHM $\pm 5\%$ 1/8W
R619	0100065	CF 1K OHM $\pm 5\%$ 1/8W	R872	0100035	CF 56 OHM $\pm 5\%$ 1/8W
R620	0100059	CF 560 OHM $\pm 5\%$ 1/8W	R873	0100035	CF 56 OHM $\pm 5\%$ 1/8W
R621	0100050	CF 240 OHM $\pm 5\%$ 1/8W	R874	0110173	MF 15K OHM $\pm 5\%$ 1W
R701	0100059	CF 560 OHM $\pm 5\%$ 1/8W	R875	0110173	MF 15K OHM $\pm 5\%$ 1W
R702	0100121	CF 220K OHM $\pm 5\%$ 1/8W	R876	0110173	MF 15K OHM $\pm 5\%$ 1W
R703	0110261	MF 4.7K OHM $\pm 5\%$ 2W	R877	0113760	CF 2.7K OHM $\pm 5\%$ 1/2W
R704	0110261	MF 4.7K OHM $\pm 5\%$ 2W	R878	0113760	CF 2.7K OHM $\pm 5\%$ 1/2W
R705	0100073	CF 2.2K OHM $\pm 5\%$ 1/8W	R879	0113760	CF 2.7K OHM $\pm 5\%$ 1/2W
R706	0100089	CF 10K OHM $\pm 5\%$ 1/8W	R880	0100073	CF 2.2K OHM $\pm 5\%$ 1/8W
R707	0100089	CF 10K OHM $\pm 5\%$ 1/8W	R881	0100073	CF 2.2K OHM $\pm 5\%$ 1/8W
R708	0100051	CF 270 OHM $\pm 5\%$ 1/8W	R882	0100073	CF 2.2K OHM $\pm 5\%$ 1/8W
R709	0110268	MF 9.1K OHM $\pm 5\%$ 2W	R883	0100057	CF 470 OHM $\pm 5\%$ 1/8W
R710	0113688	CF 3.3 OHM $\pm 5\%$ 1/2W	R884	0100057	CF 470 OHM $\pm 5\%$ 1/8W
R711	0113688	CF 3.3 OHM $\pm 5\%$ 1/2W	R885	0100057	CF 470 OHM $\pm 5\%$ 1/8W
R713	0100051	CF 270 OHM $\pm 5\%$ 1/8W	R886	0100035	CF 56 OHM $\pm 5\%$ 1/8W
R714	0110143	MF 820 OHM $\pm 5\%$ 1W	R887	0100035	CF 56 OHM $\pm 5\%$ 1/8W
R715	0114286	CF 160K OHM $\pm 5\%$ 1/4W	R888	0100035	CF 56 OHM $\pm 5\%$ 1/8W
△ R720	0100047	CF 180 OHM $\pm 5\%$ 1/8W	△ R901	0141133	WW 2.7 OHM $\pm 10\%$ 7W
△ R721	0100085	CF 6.8K OHM $\pm 5\%$ 1/8W	R902	0113778	CF 15K OHM $\pm 5\%$ 1/2W
△ R722	0100103	CF 39K OHM $\pm 5\%$ 1/8W	R903	0100125	CF 330K OHM $\pm 5\%$ 1/8W
R723	0100057	CF 470 OHM $\pm 5\%$ 1/8W	△ R904	0119508	FR 56 OHM $\pm 5\%$ 1/4W
R724	0114135	CF 150 OHM $\pm 5\%$ 1/4W	△ R905	0110197	MF 10 OHM $\pm 5\%$ 2W
△ R725	0119505	FR 2.2 OHM $\pm 5\%$ 1/4W	△ R906	0110197	MF 10 OHM $\pm 5\%$ 2W
△ R726	0119838	FR 0.5 OHM $\pm 5\%$ 1/4W	△ R907	0141130	WW 240 OHM $\pm 5\%$ 10W
△ R727	0119512	FR 1 OHM $\pm 5\%$ 1/4W	R908	0100041	CF 100 OHM $\pm 5\%$ 1/8W
△ R728	0119512	FR 1 OHM $\pm 5\%$ 1/4W	R909	0110361	MF 4.7K OHM $\pm 5\%$ 3W

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SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
R910	0110364	MF 4-7K OHM $\pm$ 5% 3W	00103	2331351	DI IS2076/IS2473H
R911	0110269	MF 6-2K OHM $\pm$ 5% 3W	00104	2331351	DI IS2076/IS2473H
R912	0100053	MF 10K OHM $\pm$ 5% 3W	00105	2331351	DI IS2076/IS2473H
			00106	2331351	DI IS2076/IS2473H
			00107	2331351	DI IS2076/IS2473H
			00112	2331351	DI IS2076/IS2473H
			00113	2331351	DI IS2076/IS2473H
			00116	2331351	DI IS2076/IS2473H
			00117	2331351	DI IS2076/IS2473H
			00118	2331351	DI IS2076/IS2473H
			0301	2331351	DI IS2076/IS2473H
			0302	2331351	DI IS2076/IS2473H
			0303	2331351	DI IS2076/IS2473H
			0304	2331351	DI IS2076/IS2473H
			0401	2331351	DI IS2076/IS2473H
			0501	2330352	DI IS2076A
			0502	2330352	DI IS2076A
			0503	2330352	DI IS2076A
			0601	2339491	DI AM01Z
			0603	2331351	DI IS2076/IS2473H
			0701	2334581	DI ES-1A
			0702	2339481	DI AS01Z
			0703	2330352	DI IS2076A
			0704	2339482	DI AS01
			0705	2331351	DI IS2076/IS2473H
			0706	2331351	DI IS2076/IS2473H
			0707	2330352	DI IS2076A
			△ 0901	2331991	DI R02A
			0902	2339491	DI AM01Z
			0903	2331351	DI IS2076/IS2473H
			0904	2331351	DI IS2076/IS2473H
			0905	2331351	DI IS2076/IS2473H
			Z00101	2334312	ZD RD33EB1
			Z0101	2331807	ZD HZ-6C1
			Z0301	2331155	ZD HZ-12C
			Z0501	2331827	ZD HZ-9C1
			Z0502	2331827	ZD HZ-9C1
			Z0503	2331827	ZD HZ-9C1
			△ Z0702	2339211	ZD HZS24-1L
			Z0703	2331827	ZD HZ-9C1
			Z0851	2331155	ZD HZ-12C
			Z0852	2331155	ZD HZ-12C
			Z0901	2331155	ZD HZ-12C
ICs					
IC0101	2380662	IC MN 15287HY			
△ IC0102	2381471	IC HA 11539NT			
△ IC501	2000571	IC LA 7655N			
△ IC601	2000581	IC LA 7837			
△ IC901	2917803	IC STR D3035			
TRANSISTORS					
Q0101	2320637	TR 2SA 673 C/D			
Q0103	2324084	TR 2SK 105 E/F			
Q0104	2320663	TR 2SC 1213AC			
Q0105	2320598	TR 2SC 458 B/C/D			
Q101	2323521	TR 2SD 789 B/C			
Q201	2320598	TR 2SC 458 B/C/D			
Q301	2320598	TR 2SC 458 B/C/D			
Q302	2320637	TR 2SA 673 C/D			
Q303	2320598	TR 2SC 458 B/C/D			
Q401	2321993	TR 2SC 2271E			
Q402	2321993	TR 2SC 2271E			
Q701	2321992	TR 2SC 2271M/N			
△ Q702	2327501	TR 2SD 1876			
△ Q703	2320647	TR 2SC 1213 C/D			
Q851	2320598	TR 2SC 458 B/C/D			
Q852	2320637	TR 2SA 673 C/D			
Q871	2321993	TR 2SC 2271E			
Q872	2321993	TR 2SC 2271E			
Q873	2321993	TR 2SC 2271E			
Q874	2320598	TR 2SC 458 B/C/D			
Q875	2320598	TR 2SC 458 B/C/D			
Q876	2320598	TR 2SC 458 B/C/D			
DIODES					
D0101	2331351	DI IS2076/IS2473H			
D0102	2331351	DI IS2076/IS2473H			

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SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
THERMISTORS			COMPOUND COMPONENTS		
$\Delta$ TH901	2340521	PTC THERMISTOR	CP0101	2381125	R/C MODULE
			CP201	2300471	SAW FILTER HW2261
			MF201	2143591	CERAMIC TRAP 4.5MHz
			MF401	2142621	CERAMIC FILTER 4.5MHz
			MF402	2167231	CERAMIC DISCRI CDA4.5ME27
			MF701	2167241	CERAMIC OSC CSB5C3F 15
COILS			FUSES		
$\Delta$ DL301	2794281	DELAY LINE WITH TRAP	$\Delta$ F901	2720587	FUSE 4A
L0101	2122253	LA AXIAL COIL 100 $\mu$ H	$\Delta$ F902	2720812	FUSE 0.8A
L0102	2122253	LA AXIAL COIL 100 $\mu$ H			
L0103	2122253	LA AXIAL COIL 100 $\mu$ H	MISCELLANEOUS		
L0104	2122253	LA AXIAL COIL 100 $\mu$ H		2970293	REMOTE CONTROL TRANSMITTER
L0105	2122253	LA AXIAL COIL 100 $\mu$ H		3701271	F.B.T RIVET
L0106	2122234	LA AXIAL COIL 3.9 $\mu$ H		3870471	F.B.T SPACER 1395
L0107	2122246	LA AXIAL COIL 33 $\mu$ H		4528931	3XLB TIGHT T.NE
L0108	2164362	COIL		6590091	FH09XS SHIELD PLATE
L0109	2122231	LA AXIAL COIL 2.2 $\mu$ H		3701201	G7 P.W.B HOLDER
L0110	2122231	LA AXIAL COIL 2.2 $\mu$ H		2984311	SHIELD ANTENNA BOX
L0114	2122231	LA AXIAL COIL 2.2 $\mu$ H		4519521	SCREW (PAN NASHER) 5 $\times$ 25
L0115	2122253	LA AXIAL COIL 100 $\mu$ H		8781642	TAPPING SCREW 4 $\times$ 12
L0116	2122253	LA AXIAL COIL 100 $\mu$ H		8781646	TAPPING SCREW 4 $\times$ 16
L101	2122253	LA AXIAL COIL 100 $\mu$ H		3739671	BS CORD HOLDER
L202	2142445	IF COIL MC122		2750771	ROD ANTENNA
L203	2142445	IF COIL MC122		2750781	BOW TIE ANTENNA
L204	2122241	LA AXIAL COIL 12 $\mu$ H	$\Delta$	2984301	U/V MIXER
L401	2122245	LA AXIAL COIL 27 $\mu$ H		3703396	ANTENNA TEPMINAL BASE
L402	2122244	LA AXIAL COIL 22 $\mu$ H	$\Delta$ E6001	2442472	DEFLECTION YOKE
L502	2122244	LA AXIAL COIL 22 $\mu$ H	E6002	2786562	CPT GROUND WIRE
L503	2122253	LA AXIAL COIL 100 $\mu$ H	E801	2953641	CPT SOCKET
L702	2120482	FL-7H 100 $\mu$ H	$\Delta$ E901	2742553	AC CORD
L703	2122095	FL-11H 27 $\mu$ H	E902	2720221	FUSE HOLDER
L871	2122254	LA AXIAL COIL 120 $\mu$ H	EM	2665272	4P PLUG WITH RASE
$\Delta$ L901	2122712	LINE FILTER COIL	EP31	2661751	2P PLUG-PIN WITH BASE
$\Delta$ L951	2163581	DEGAUSSING COIL	ES	2661751	2P PLUG-PIN WITH BASE
			EW	2661751	2P PLUG-PIN WITH BASE
TRANSFORMERS			J451	2663143	2J CONNECTOR WITH WIRE
T201	2143292	SAW MATCHING COIL	JP	2990535	10P CONNECTOR WITH 9 WIRE
$\Delta$ T401	2250432	SOUND OUTPUT TRANSFORMER	$\Delta$ RL901	2640571	POWER RELAY
$\Delta$ T701	2260021	TRANS HORIZONTAL DRIVE	S0101	2620801	SLIDE SWITCH
$\Delta$ T702	2435084	FLYBACK TRANSFORMER			

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SYMBOL NO.	PART NO.	DESCRIPTION	SYMBOL NO.	PART NO.	DESCRIPTION
S0102	2634291	KEY SWITCH UNIT			
$\Delta$ SP451	5752011	SPEAKER			
$\Delta$ U101	2428291	TUNER ET-481A			
$\Delta$ V1	2356031	CPT A34JLN60X			
X0101	2787523	CRYSTAL 4MHz			
X501	2790444	CRYSTAL 3.58MHz			



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