ORDER NO.FTD83090268C1

7480

Service Manual

Black and White Television

TR-1030P

Chassis No. M10

Chassis Family No. 1M10

The Service Technician is required to read and follow the "Safety Precautions" and "Important Safety Notice" in this Service Manual.

SPECIFICATIONS:

Power Source:	AC: 120V, 60Hz. DC: 6V
Power Consumption:	AC: 4.5W DC: 1.8W
Antenna Impedance:	UHF/VHF Monopole Antenna. 75Ω, Unbalanced type.
Receiving Channel:	U.S.A. Standard VHF: 2-13 UHF: 14-83
Intermediate Frequency:	Video: 45.75MHz Sound: 41.25MHz
Integrated Circuits:	5 IC's
Semiconductor:	13 Transistors 23 Diodes
Audio Output:	120mW Maximum (at 1000Hz)
Nominal Anode Voltage:	4.7kV (Zero Beam Current)
Picture Tube:	40CB4M 1.5" 36° Deflection
Speaker:	1-3/8 inches, 8Ω, Round type.
Automatic Circuit:	Peak Automatic Gain Control Saw-Tooth Automatic Frequency Control Automatic Voltage Regulator
Dimensions:	Height: 1-1/2 inches (38mm) Width: 3-1/8 inches (79mm) Depth: 5-15/16 inches (151mm)
Weight:	0.81 lbs. (0.37kg) without dry Battery
Standard Accessories:	AC Adaptor (TY-AC39P or TY-AC46P) Earphone (TNQ8955) Car Battery Cord (TSX8366B) Rechargeable Battery (TY-391P) Lens Hood (TKK800574-6)
Optional Accessorise:	Car Battery Cord (TY-NC32P)

Specifications are subject to change without notice.

Panasonic®

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THIS MODEL COMPLIES WITH DHHS RULES 21 CFR SUBCHAPTER J APPLICABLE AT DATE OF MANUFACTURE.

SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. It is advisable to insert an isolation transformer between the television set and the AC power line before servicing the chassis.
2. In servicing, pay attention to the original lead dress, especially in the high voltage circuit. If a short circuit is found, replace all parts which have been overheated as a result the short circuit.
3. After servicing, observe that all the protective devices such as insulation barriers, insulation papers, shields, isolation and R-C combinations, are properly installed.
4. Before turning the receiver on, check the resistance between the B+ line and chassis ground. Connect ⊖ side of an ohmmeter to B+ line and ⊕ side to ground. Each line should have more resistance than specified below.

B+ line	Minimum Resistance
4.8V	600Ω

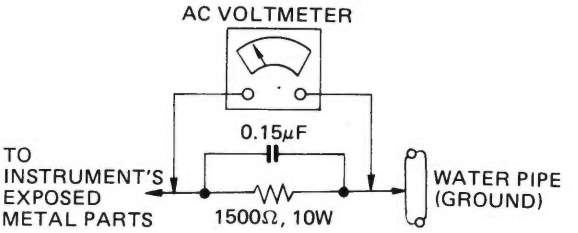
5. When the TV set will not be used for a long period of time, unplug the power cord from the AC line outlet.
6. Potentials as high as 4.7kV are present when this receiver is operating. Operation of the receiver without the rear cover on involves danger of shock.
   Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high-voltage equipment. Always discharge the anode of the picture tube to the receiver chassis before handling the tube.
7. After servicing make the following leakage current check to prevent the customer from undergoing shock hazard.

LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Turn the receiver power switch on.
3. Measure the resistance value with an ohmmeter between the jumpered AC plug and each exposed metallic part such as screwheads, antennas, control shafts, handle bracket, etc. When the exposed metallic part has a return path to the chassis, the reading should be 1.8 megohm to 4 megohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity.
4. Remove the jumper from the AC plug.

LEAKAGE CURRENT HOT CHECK

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during this check.
2. Connect a 1500 ohm, 10 watt resistor, paralleled by a 0.15μF capacitor between each exposed metallic part and a good ground like a water pipe as shown in Figure.
3. Use an AC voltmeter with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Move the resistor connection to each exposed metallic part and measure the voltage.
5. Reverse the polarity of the AC plug in the AC outlet and repeat the above measurement.
6. The potential must not exceed 0.75 volt RMS, from any exposed metal part to ground. In case any of the measurements are not with in the limits specified, there is a possibility of a shock hazard and the receiver should be repaired and rechecked before it is returned to the customer.



X-RADIATION

WARNING: The potential source of X-Radiation in TV sets is the picture tube.

NOTE: It is important to use an accurate, periodically calibrated, high voltage meter.

1. Turn the Brightness control fully counterclockwise.
2. Measure the High Voltage. The high voltage meter should indicate a nominal 4.7kV and the maximum 6.0 kV. If the upper meter indication exceeds the maximum level, immediate service is required to prevent the possibility of premature component failure.
3. To prevent a possibility of x-radiation, it is essential to use the specified picture tube.

IMPORTANT SAFETY NOTICE

There are special components used in Panasonic TV sets which are important for safety. These parts are identified on the schematic diagram and on the replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent X-RADIATION, shock, fire, or other hazards. Do not modify the original design without permission of Matsushita Electric.

The electrical parts used in this model-such as the resistors, the capacitors and the transistors, are smaller than the same parts used in conventional models. Very painstaking and careful servicing techniques, therefore, are necessary for this model.

DISASSEMBLY INSTRUCTIONS

UPPER CABINET REMOVAL

1. Remove **4** screws Ⓐ as shown in Fig. 1.
2. Lift the Rod antenna.

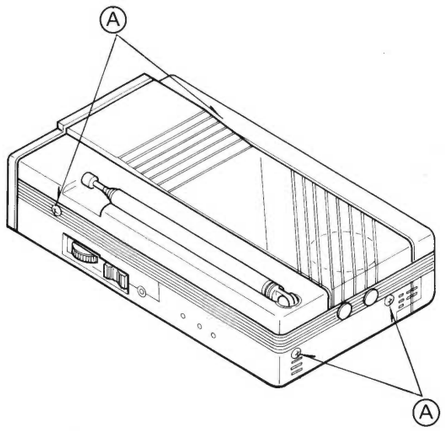


Fig. 1

HOW TO OPEN THE P.C.BOARD

1. Remove the upper cabinet.
2. Remove the P.C.Board block.
3. Remove the 10P socket as shown in Fig. 3.

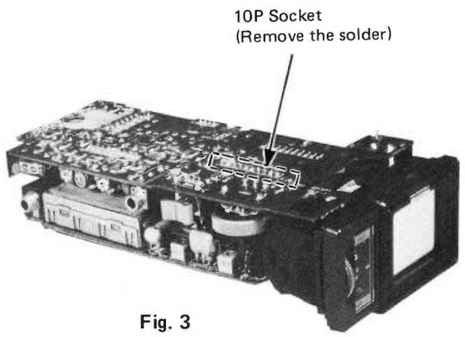


Fig. 3

P.C.BOARD BLOCK REMOVAL

1. Remove the side plate.
2. Lift the escutcheon, then lift the under P.C.Board with flat screw driver as shown in Fig 2.

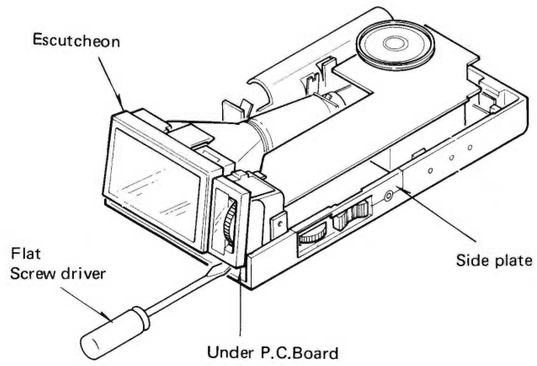
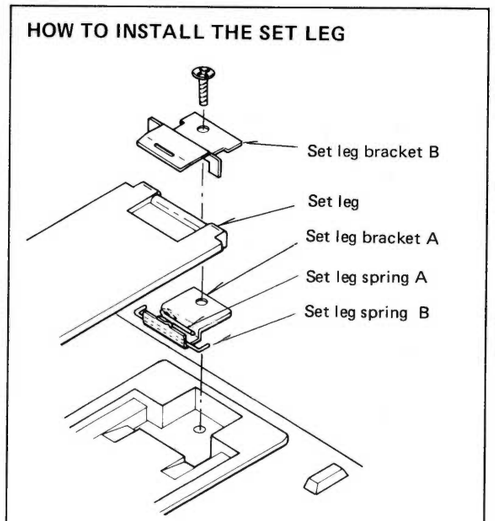


Fig. 2

HOW TO INSTALL THE SET LEG



FIELD ALIGNMENT

AVR (AUTOMATIC VOLTAGE REGULATOR)

Connect a voltmeter across B+ line and chassis. Make certain the B+ supply voltage is +4.8V ± 0.05V. Adjust the AVR control (VR71) if necessary.

YOKE POSITION

The yoke is secured to the neck of the picture tube with an angular clamp and screw. To Adjust the yoke and correct for picture tilt : Loosen the clamp screw, correct tilt, and retighten the clamp screw.

CENTERING

The picture centering device consists of two rings located at the rear of the yoke assembly. Each ring has a tab for ease of adjustment.

The tabs should be rotated and moved towards or away from each other until the picture is properly centered on the picture tube screen.

TO ADJUST THE AGC PROPERLY

(1) Set the channel selector to a station transmitting a strong signal.
(2) Turn the RF AGC control (VR19) clockwise or counterclockwise to the point where the snow noise disappears in the picture.
(3) Check the reception on all channels.

VERTICAL HEIGHT

Adjust the V-Height control (VR32) until picture becomes symmetrical from top to bottom.

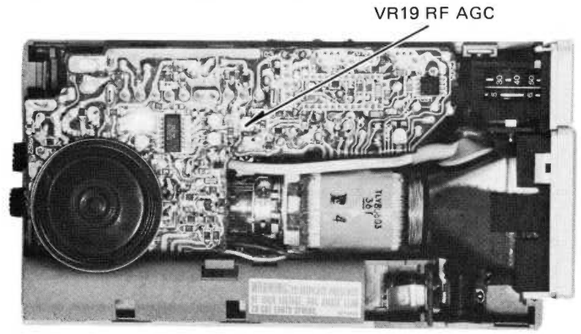


Fig. 4

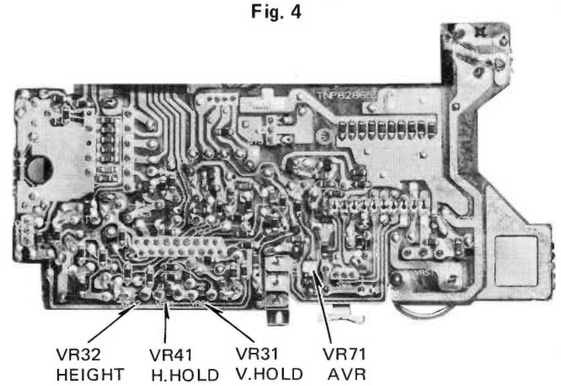


Fig.5

INDICATOR ALIGNMENT

Adjust as follows

Steps	Receiving Channel	U/V Select	Control	Remark
1	lowest	UHF	VR92	ADjust each control to get the best picture.
2	highest		VR93	
3	low band (CH2-6)	VHF	VR96	
4	lowest of high band (CH7-13)		VR94	
5	highest of high band		VR95	

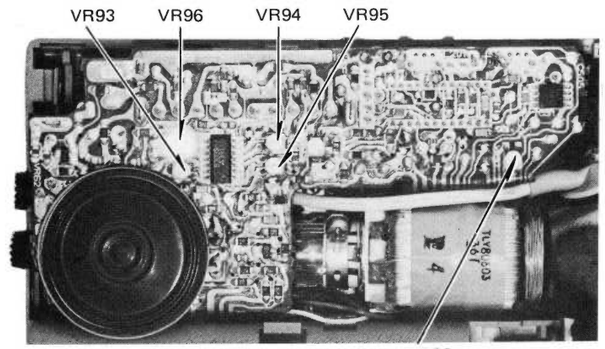
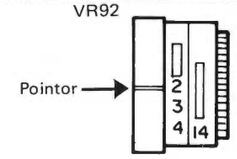


Fig. 6



Bt Boltage

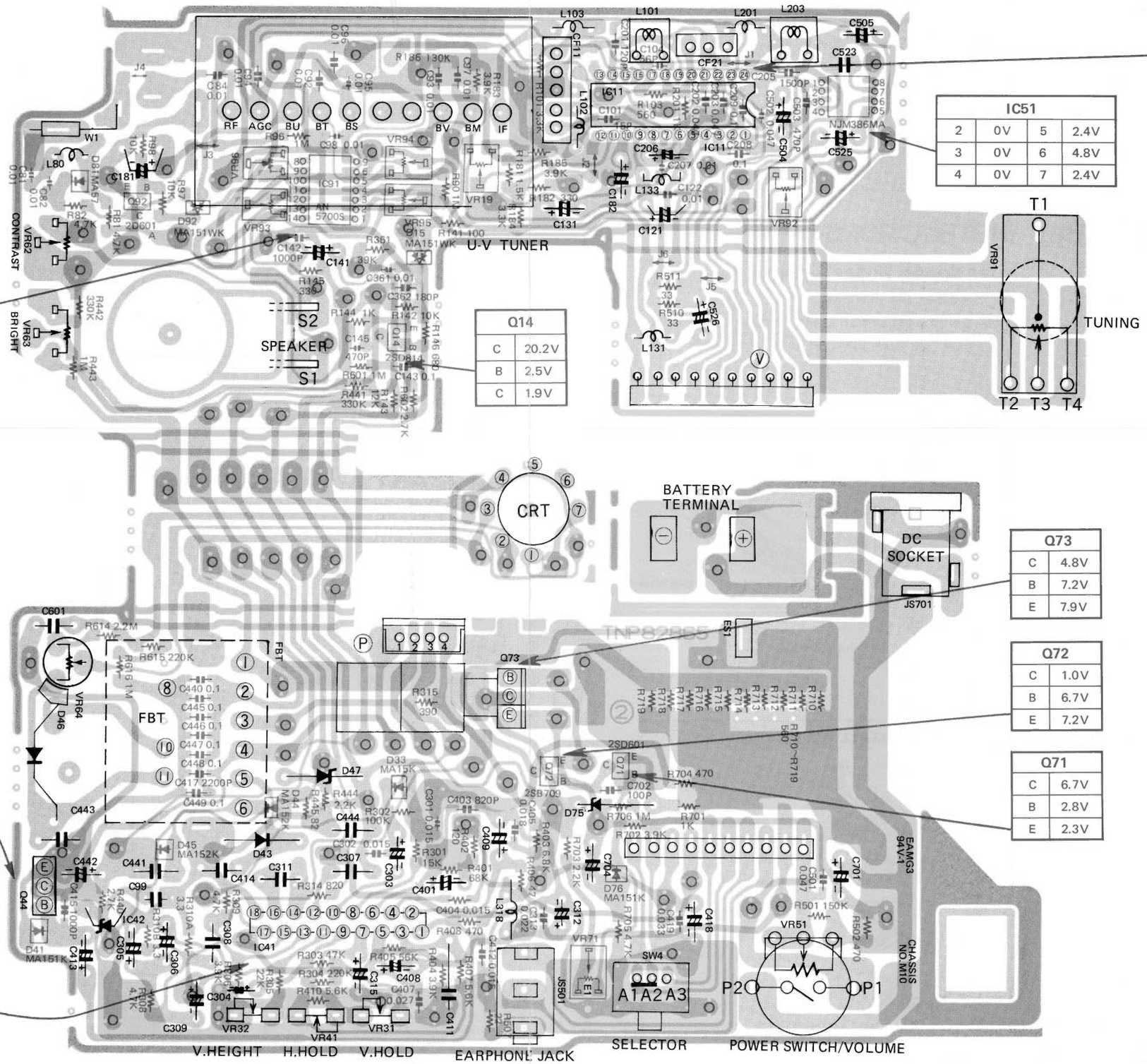
Channel	2	3	4	5	6	7	8	9	10	11	12	13
V	1.5	3.3	6.1	13.5	23.4	9.2	10.6	11.9	13.1	15.1	17.7	22.7
Channel	14	20	30	40	50	60	70	83				
U	1.9	3.4	6.7	9.3	11.4	14.1	17.3	25				

CONDUCTOR VIEW

Parts Side

Solder Side

○ Connect point of solder side and parts side.



IC91			
Terminal NO.	VHF L	VHF H	UHF
3	31.2	31.2	26.5
4	24.4	0.1	11.5
5	1.5–23.4	9.2–22.7	1.9–25
6	4.8	4.7	0
7	0	0	0
9	0	4.0	–0.1
10	24.5	6.2	11.5
11	31.2	6.2	11.4
12	32.0	32.0	32.0

IC11			
1	3.6V	13	2.1V
2	2.1V	14	2.9V
3	2.1V	15	0.2V
4	1.5V	16	—
5	0V	17	3.8V
6	3.6V	18	3.8V
7	2.4V	19	0V
8	2.4V	20	2.0V
9	4.7V	21	2.0V
10	2.9V	22	2.0V
12	2.0V	23	1.5V
13	1.6V	24	3.6V

IC51			
2	0V	5	2.4V
3	0V	6	4.8V
4	0V	7	2.4V

Q14	
C	20.2V
B	2.5V
C	1.9V

Q44	
C	4.8V
B	0.1V
E	0V

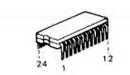
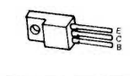
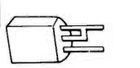
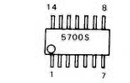
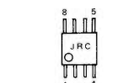
IC41			
1	1.4V	10	0.5V
2	4.7V	11	1.5V
3	2.0V	12	3V
4	2.1V	13	1.3V
5	2.1V	14	0.2V
6	2.9V	15	4.9V
7	3.3V	16	4.5V
8	0.6V	17	2.4V
9	1.9V	18	0V

Q73	
C	4.8V
B	7.2V
E	7.9V

Q72	
C	1.0V
B	6.7V
E	7.2V

Q71	
C	6.7V
B	2.8V
E	2.3V

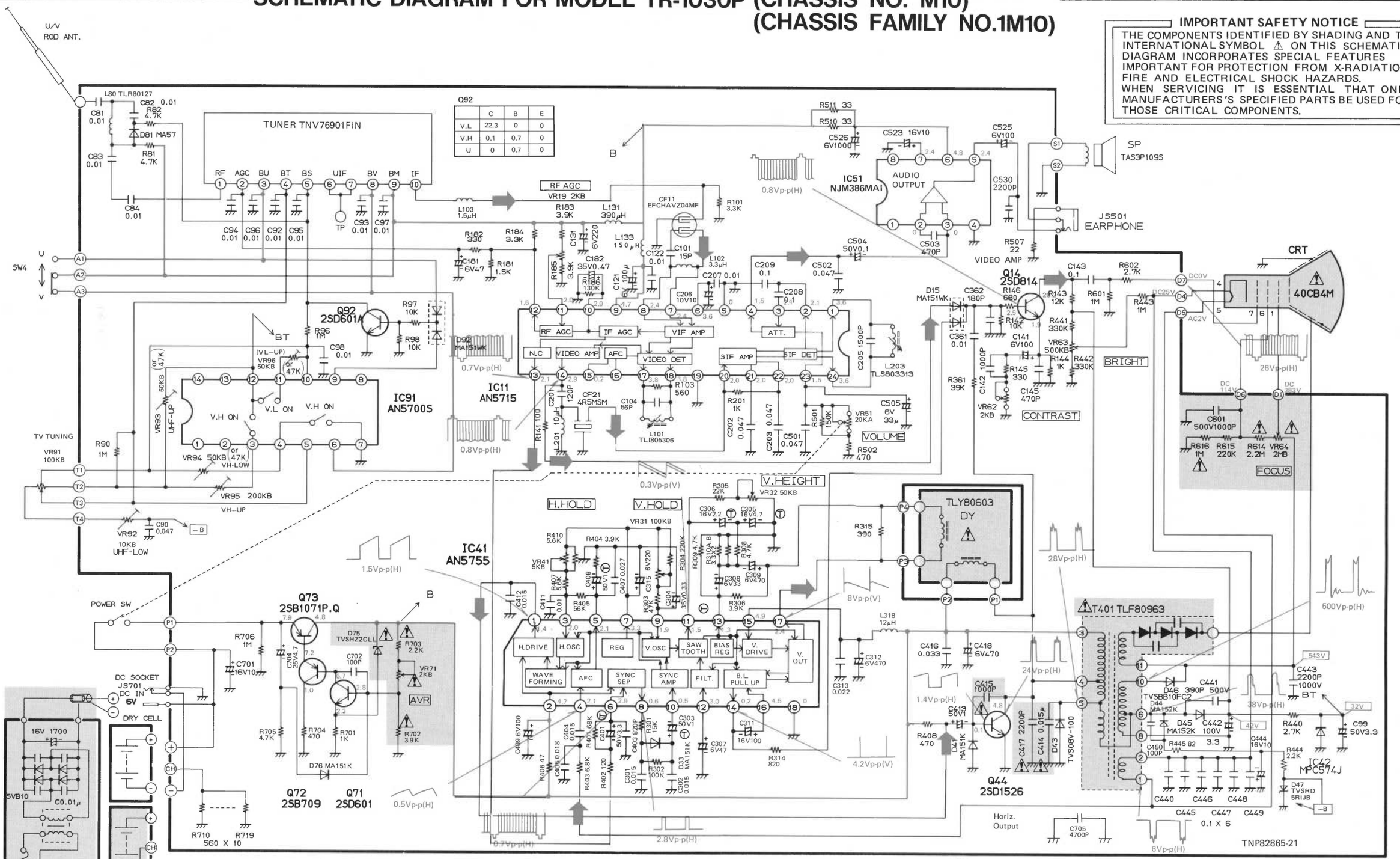
IC AND TANSISTOR BASE INFORMATION

	AN5755
	AN5715
	2SB1071
	2SD1526
	MPC574J
	AN5700S
	NJM386MA
	Y:2SD601 Z:2SD601A A:2SB709 P:2SD814
	MH:MA151K MI:MA152K MX:MA57
	MT:MA151WK

SCHEMATIC DIAGRAM FOR MODEL TR-1030P (CHASSIS NO. M10) (CHASSIS FAMILY NO.1M10)

IMPORTANT SAFETY NOTICE

THE COMPONENTS IDENTIFIED BY SHADING AND THE INTERNATIONAL SYMBOL ⚠ ON THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURERS'S SPECIFIED PARTS BE USED FOR THOSE CRITICAL COMPONENTS.



Q92

	C	B	E
V.L	22.3	0	0
V.H	0.1	0.7	0
U	0	0.7	0

IC91 Terminal Voltage

Terminal NO.	3	4	5	6	7	9	10	11	12
VHF.LOW	31.2	24.4	BT Voltage	4.8	0	0	24.5	31.2	32
VHF.HIGH	31.2	0.1		4.7	0	4.0	6.2	6.2	32
UHF	26.5	11.5		0	0	−0.1	11.5	11.4	32

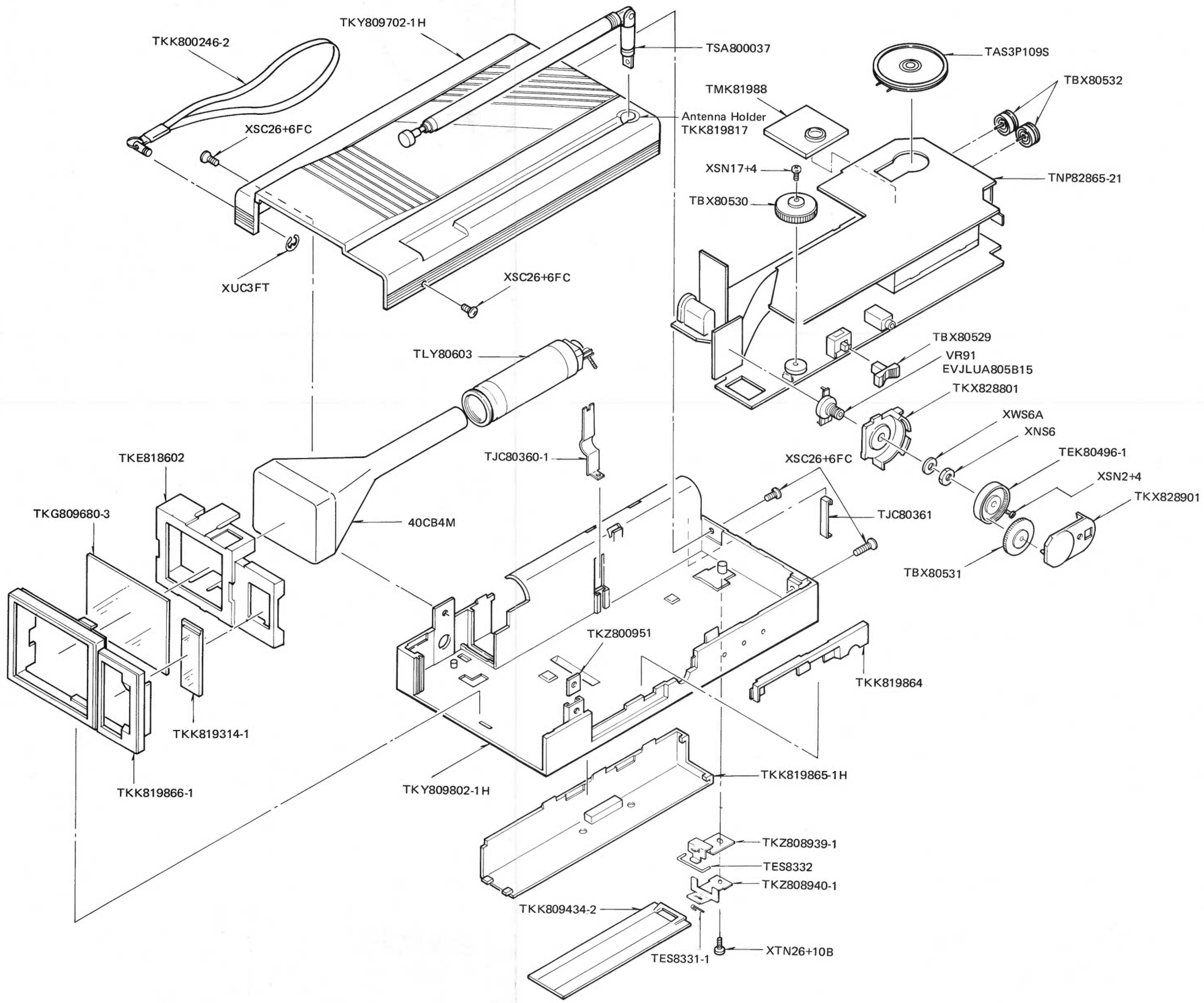
BT Voltage

VHF	2	3	4	5	6	7	8	9	10	11	12	13
Voltage	1.5	3.3	6.1	13.5	23.4	9.2	10.6	11.9	13.1	15.1	17.7	22.7
UHF	14	20	30	40	50	60	70	83				
Voltage	1.9	3.4	6.7	9.3	11.4	14.1	17.3	25				

NOTE

1. RESISTOR
   All resistors are 1/4W. Unless otherwise specified.
   Unit of resistance is ohm (Ω). (K = 1,000Ω, M = 1,000,000Ω)
2. CAPACITOR
   All capacitors are 50 V dielectric strength, unless otherwise specified.
   Unit of capacitance is μF.
3. COIL
   Unit of inductance is μH.
4. TEST POINT
   ○ Test point position.
5. VOLTAGE MEASUREMENT
   Voltage is measured by a volt ohm meter with DC20K OHM/V, receiving normal signal. When all controls are set to the maximum position.
6. When arrow mark (→) is found, connection is easily found along with the direction of an arrow.
7. This schematic diagram is the latest at the time of printing and subject to change without notice.

EXPLODED VIEW



REPLACEMENT PARTS LIST

Important Safety Notice

Components identified by the International symbol ⚠ have special characteristics important for safety.
When replacing any of these components use only manufacturer's specified parts.

Note: 1. Tolerance J: ±5% K: ±10% Z: $^{+80}_{-20}$% C: ±0.25pF M: ±20% 2. Main board TNP82865-21 is not available as a complete printed circuit board.

Ref. NO.	PART NO.	DESCRIPTION
	CABINET AND MAIN CHASSIS PARTS	
	TKY809702-1H	Upper Cabinet with Warning Label Antenna Holder
	TKY809802-1H	Bottom Cabinet with Model Plate Battery X-Ray Label
	TKE818602	Escutcheon
	TKG809680-3	Front Protector
	TKK819866-1	Escutcheon Panel
	TKK819314-1	Indicator Cover
	TKK809434-2	Set Leg
	TKK819865-1H	Battery Cover
	TKK819864	Side Plate
	TKK800246-2	Handle
	TKK819817	Antenna Holder
	TKX828801	Indicator Bracket
	TKX828901	Indicator Holder
	TKZ808939-1	Set Leg Bracket A
	TKZ800951	Nut (Cabinet)
	TES8332	Set Leg Spring B
	TES8331-1	Set Leg Spring A
	TKZ808940-1	Set Leg Bracket B
	TMK81547	Barrier (Flyback Trans)
	TMK81988	Rubber (Speaker)
	TEK80496-1	Indicator Drum
	TBM81889	Model Plate
	TBX80529	Knob (U/V Selector)
	TBX80532	Knob (Control)
	TBX80530	Knob (Power Switch)
	TBX80531	Knob (T.V Indicator)
⚠	40CB4M	Picture Tube
⚠	TLY80603	Deflection Yoke
	TSA800037	Rod Antenna
	TAS3P109S	Speaker
	TNP82865-21	Main P.C. Board
	TJC80360-1	Terminal (Charging)
	TJC80361	Terminal (Power Joining)
VR91	EVJLUA805B15	Control (T.V Tuning)
	TPC821491	Carton
	TXAPD11030P	Filler Complete
	TPE814034	Set Cover
	TQB810704-1	Instruction Book
	TQD8118193	Warranty Card
	TQE8588	Bag
	TQB810476	Safety Sheet
	TKK800574-6	Lens Food
	TNQ8955	Earphone
⚠	TSX8366B	Car Cord
⚠	TY-AC46P	AC Adaptor
	TY-391P	Battery (Goods on the Market)
	XSC26+6FC	Screw (Antenna Cabinet)
	XTN26+10B	Screw (Set Leg)
	XSN17+4	Screw (Power Switch Vol. Knob)
	XSN2+4	Screw (Indicator Dram)
	XNS6	Nut (VR91 Tuning Control)
	XWS6A	Washer (VR91 Tuning Control)
	XUC3FT	E. Ring (Handle E. Ring)
		V/U Tuner

TNP82865-21 MAIN P.C. BOARD

TNV76901F1N V/U TUNER

I.C.

IC11	AN5715
IC41	AN5755
IC42	TVSMPC574J
IC51	TVSNJM386MA1
IC91	AN5700S

TRANSISTORS

Q14	2SD814
Q44	2SD1526
Q71	2SD601A
Q72	2SB709
Q73	2SB1071BAQ
Q92	2SD601A

DIODES

D15		MA151WK
D33		MA151K
D41		MA151K
D43		TVS08V-100
D44		MA152K
D45		MA152K
D46		TVSBB10FC2
D47		TVSRD5R1JB
D75	⚠	TVSHZ2CLL
D76		MA151K
D81		MA57
D92		MA151WK

COILS & TRANS.

L80	TLR80127	Coil
L101	TLI805306	VIF Coil
L102	TLU3R3K186	Peaking Coil
L103	TLT1R5K991	Peaking Coil
L201	TLQ100K186	Peaking Coil
L203	TLS803313	IFT Coil
L131	TLU391K186	Peaking Coil
L133	TLQ151K186	Peaking Coil
L318	TLQ120K186	Peaking Coil
T401 ⚠	TLF80963	Flyback Trans.

CAPACITORS

C81	ECUX1H103ZF9	Chip	0.01μF	Z	50V
C82	ECUX1H103ZF9	Chip	0.01μF	Z	50V
C83	ECUX1H103ZF9	Chip	0.01μF	Z	50V
C84	ECUX1H103ZF9	Chip	0.01μF	Z	50V
C90	ECUV1H473ZF9	Chip	0.047μF	Z	50V
C92	ECUX1H103ZF9	Chip	0.01μF	Z	50V
C93	ECUX1H103ZF9	Chip	0.01μF	Z	50V

Ref. NO.	PART NO.	DESCRIPTION			
C94	ECUX1H103ZF9	Chip	0.01μF	Z	50V
C95	ECUX1H103ZF9	Chip	0.01μF	Z	50V
C96	ECUX1H103ZF9	Chip	0.01μF	Z	50V
C97	ECUX1H103ZF9	Chip	0.01μF	Z	50V
C98	ECUX1H103ZF9	Chip	0.01μF	Z	50V
C99	ECEA1HK3R3	Electrolytic	0.047μF		50V
C101	ECUX1H150KC	Chip	15pF	K	50V
C104	ECUV1H560JC9	Chip	56pF	J	50V
C121	ECEA0JK101	Electrolytic	100μF		6.3V
C122	ECUX1H103ZF9	Chip	0.01μF	Z	50V
C131	ECEA0JU221	Electrolytic	220μF		6.3V
C141	ECEA0JK101	Electrolytic	100μF		6.3V
C142	ECUX1H102MR9	Chip	1000pF	M	50V
C143	ECUV1H104ZF9	Chip	0.1μF	Z	50V
C145	ECUX1H471MR9	Chip	470pF	M	50V
C181	ECEA0JK470	Electrolytic	47μF		6.3V
C182	ECSF1VE474	Tantalum	0.47μF		35V
C201	ECUV1H121JC9	Chip	120pF	J	50V
C202	ECUV1H473ZF9	Chip	0.047μF	Z	50V
C203	ECUV1H473ZF9	Chip	0.047μF	Z	50V
C205	ECUV1H152KC9	Chip	1500pF	K	50V
C206	ECEA1CK100	Electrolytic	10μF		16V
C207	ECUX1H103ZF9	Chip	0.01μF	Z	50V
C208	ECUV1E104MD9	Chip	0.1μF	M	25V
C209	ECUV1E104MD9	Chip	0.1μF	M	25V
C301	ECUX1H153ZF	Chip	0.015μF	Z	50V
C302	ECUV1H153ZF9	Chip	0.015μF	Z	50V
C303	ECEA1HK010EJ	Electrolytic	1μF		50V
C304	ECSF1VE334	Tantalum	0.33μF		35V
C305	ECSF1CE475	Tantalum	4.7μF		16V
C306	ECSF1CE225	Tantalum	2.2μF		16V
C307	ECEA0JK470	Electrolytic	47μF		6.3V
C308	ECEA0JK330	Electrolytic	33μF		6.3V
C309	ECEA0JU471	Electrolytic	470μF		6.3V
C311	ECEA0JK101	Electrolytic	100μF		6.3V
C312	ECEA0JU471	Electrolytic	470μF		6.3V
C313	ECUX1H223ZF9	Chip	0.022μF	Z	50V
C315	ECEA0JU221	Electrolytic	220μF		6.3V
C361	ECUX1H103ZF9	Chip	0.01μF		50V
C362	ECUV1H181KC9	Chip	180pF	K	50V
C401	ECEA1HK3R3	Electrolytic	3.3μF		50V
C403	ECUV1H821KC9	Chip	820pF	K	50V
C404	ECUV1H153ZF9	Chip	0.015μF	Z	50V
C405	ECUX1H183KR9	Chip	0.018μF	K	50V
C407	ECUV1H273KR9	Chip	0.027μF	K	50V
C408	ECEA1HK010EJ	Electrolytic	1μF		50V
C409	ECEA0JK101	Electrolytic	100μF		6.3V
C412	ECUV1H153ZF9	Chip	0.015μF	Z	50V
C411	ECQP1103N23	Polypropylene	0.01μF		100V
C413	ECEA1HK010EJ	Electrolytic	1μF		50V
C414 ⚠	ECQM1H153JZ	Polyester	0.015μF	J	50V
C415 ⚠	ECUV1H102KR9	Chip	1000pF	K	50V
C416	ECUV1H333ZF9	Chip	0.033μF	Z	50V
C417 ⚠	ECUV1H222KR9	Chip	2200pF	K	50V
C418	ECEA0JU471	Electrolytic	470μF		6.3V
C440	ECUV1H104ZF9	Chip	0.1μF	Z	50V
C441	ECKD2H391KB9	Ceramic	390pF	K	500V

Ref. NO.	PART NO.	DESCRIPTION			
C442	ECEA2AS3R3	Electrolytic	3.3μF		100V
C443	ECKC3A222ZE	Ceramic	2200pF	Z	2KV
C444	ECEA1CK100	Electrolytic	10μF		16V
C445	ECUV1H104ZF9	Chip	0.1μF	Z	50V
C446	ECUV1H104ZF9	Chip	0.1μF	Z	50V
C447	ECUV1H104ZF9	Chip	0.1μF	Z	50V
C448	ECUV1H104ZF9	Chip	0.1μF	Z	50V
C449	ECUV1H104ZF9	Chip	0.1μF	Z	50V
C450	ECUV1H101KC9	Chip	100pF	K	50V
C501	ECUV1H473ZF9	Chip	0.047μF	Z	50V
C502	ECUV1H473ZF	Chip	0.047μF	Z	50V
C503	ECUV1H471JC9	Chip	470pF	J	50V
C504	ECSF1VE104	Tantalum	0.1μF		35V
C505	ECEA0JK330	Electrolytic	33μF		6.3V
C523	ECEA1CK100	Electrolytic	10μF		16V
C525	ECEA0JK101	Electrolytic	100μF		6.3V
C530	ECUV1H222KR9	Chip	2200pF	K	50V
C526	ECEA0JU102	Electrolytic	1000μF		6.3V
C601	ECKD2H102KB2	Ceramic	1000pF	K	500V
C701	ECEA1CU101	Electrolytic	100μF		16V
C702	ECUV1H101KC9	Chip	100pF	K	50V
C704	ECEA1EK4R7EJ	Electrolytic	4.7μF		25V
C705	ECKD1H472ZF2	Ceramic	4700pF	Z	50V

RESISTORS

R81	ERJ8GCJ472	Chip	4.7KΩ	J	1/8W
R82	ERJ8GCJ472	Chip	4.7KΩ	J	1/8W
R90	ERJ8GCJ105	Chip	1MΩ	J	1/8W
R96	ERJ8GCJ105	Chip	1MΩ	J	1/8W
R97	ERJ8GCJ103	Chip	10KΩ	J	1/8W
R98	ERJ8GCJ103	Chip	10KΩ	J	1/8W
R101	ERJ8GCJ332	Chip	3.3KΩ	J	1/8W
R103	ERJ8GCJ561	Chip	560Ω	J	1/8W
R141	ERJ8GCJ101	Chip	100Ω	J	1/8W
R142	ERJ8GCJ103	Chip	10KΩ	J	1/8W
R143	ERJ8GCJ123	Chip	12KΩ	J	1/8W
R144	ERJ8GCJ102	Chip	1KΩ	J	1/8W
R145	ERJ8GCJ331	Chip	330Ω	J	1/8W
R146	ERJ8GCJ681	Chip	680Ω	J	1/8W
R181	ERJ8GCJ152	Chip	1 5KΩ	J	1/8W
R182	ERJ8GCJ331	Chip	330Ω	J	1/8W
R183	ERJ8GCJ392	Chip	3.9KΩ	J	1/8W
R184	ERJ8GCJ332	Chip	3.3KΩ	J	1/8W
R185	ERJ8GCJ392	Chip	3.9KΩ	J	1/8W
R186	ERJ8GCJ134	Chip	130KΩ	J	1/8W
R201	ERJ8GCJ102	Chip	1KΩ	J	1/8W
R301	ERJ8GCJ153	Chip	15KΩ	J	1/8W
R302	ERJ8GCJ104	Chip	100KΩ	J	1/8W
R303	ERJ8GCJ473	Chip	47KΩ	J	1/8W
R304	ERD8GCJ224	Chip	220KΩ	J	1/8W
R305	ERJ8GCJ223	Chip	22KΩ	J	1/8W
R306	ERJ8GCJ392	Chip	3.9KΩ	J	1/8W
R308	ERJ8GCJ472	Chip	4.7KΩ	J	1/8W
R309	ERJ8GCJ472	Chip	4.7KΩ	J	1/8W
R310A	ERJ8GCJ3R3	Chip	3.3Ω	J	1/8W
R310B	ERJ8GCJ3R3	Chip	3.3Ω	J	1/8W
R314	ERJ8GCJ821	Chip	820Ω	J	1/8W
R315	ERJ8GCJ391	Chip	390Ω	J	1/8W
R361	ERJ8GCJ393	Chip	39KΩ	J	1/8W
R401	ERJ8GCJ683	Chip	68KΩ	J	1/8W

Ref. NO.	PART NO.	DESCRIPTION			
R402	ERJ8GCJ121	Chip	120Ω	J	1/8W
R403	ERJ8GCJ682	Chip	6.8KΩ	J	1/8W
R404	ERJ8GCJ392	Chip	3.9KΩ	J	1/8W
R405	ERJ8GCJ563	Chip	56KΩ	J	1/8W
R406	ERJ8GCJ470	Chip	47KΩ	J	1/8W
R407	ERJ8GCJ562	Chip	5.6KΩ	J	1/8W
R408	ERJ8GCJ471	Chip	470Ω	J	1/8W
R410	ERJ8GCJ562	Chip	5.6KΩ	J	1/8W
R440	ERJ8GCJ272	Chip	2.7KΩ	J	1/8W
R441	ERJ8GCJ334	Chip	330KΩ	J	1/8W
R442	ERJ8GCJ334	Chip	330KΩ	J	1/8W
R443	ERJ8GCJ105	Chip	1MΩ	J	1/8W
R444	ERJ8GCJ222	Chip	2.2KΩ	J	1/8W
R445	ERJ8GCJ820	Chip	82Ω	J	1/8W
R501	ERJ8GCJ154	Chip	150KΩ	J	1/8W
R502	ERJ8GCJ471	Chip	470Ω	J	1/8W
R507	ERJ8GCJ220	Chip	22Ω	J	1/8W
R510	ERJ8GCJ330	Chip	33Ω	J	1/8W
R511	ERJ8GCJ330	Chip	33Ω	J	1/8W
R601	ERJ8GCJ105	Chip	1MΩ	J	1/8W
R602	ERJ8GCJ272	Chip	2.7KΩ	J	1/8W
R614 ⚠	ERJ8GCJ225	Chip	2.2MΩ	J	1/8W
R615	ERJ8GCJ224	Chip	220KΩ	J	1/8W
R616 ⚠	ERJ8GCJ105	Chip	1MΩ	J	1/8W
R701	ERJ8GCJ102	Chip	1KΩ	J	1/8W
R702 ⚠	ERJ8GCJ392	Chip	3.9KΩ	J	1/8W
R703 ⚠	ERJ8GCJ222	Chip	2.2KΩ	J	1/8W
R704	ERJ8GCJ471	Chip	470Ω	J	1/8W
R705	ERJ8GCJ472	Chip	4.7KΩ	J	1/8W
R706	ERJ8GCJ105	Chip	1MΩ	J	1/8W
R710	ERJ8GCJ561	Chip	560Ω	J	1/8W
R711	ERJ8GCJ561	Chip	560Ω	J	1/8W
R712	ERJ8GCJ561	Chip	560Ω	J	1/8W
R713	ERJ8GCJ561	Chip	560Ω	J	1/8W
R714	ERJ8GCJ561	Chip	560Ω	J	1/8W
R715	ERJ8GCJ561	Chip	560Ω	J	1/8W
R716	ERJ8GCJ561	Chip	560Ω	J	1/8W
R717	ERJ8GCJ561	Chip	560Ω	J	1/8W
R718	ERJ8GCJ561	Chip	560Ω	J	1/8W
R719	ERJ8GCJ561	Chip	560Ω	J	1/8W
J1	ERJ8GC0R00	Chip	0Ω		1/8W
J2	ERJ8GC0R00	Chip	0Ω		1/8W
J3	ERJ8GC0R00	Chip	0Ω		1/8W
J5	ERJ8GC0R00	Chip	0Ω		1/8W
J6	ERJ8GC0R00	Chip	0Ω		1/8W

CONTROLS

VR19	EVM13SX00B23	Control (AGC)
VR31	EVNA1AA00B15	Control (V-Hold)
VR32	EVNA1AA00B54	Control (Height)
VR41	EVNA1AA00B53	Control (H-Hold)
VR51	EVLD5ZT12A24	Control (Switch Vol)
VR62	EVZV3H5B23	Control (Contrast)
VR63	EVZV3H5B55	Control (Bright)
VR64 ⚠	EVM33GA00B26	Control (Focus)
VR71 ⚠	EVM13SX00B23	Control (AVR)
VR92	EVM13SX00B14	Control
VR93	EVM13SX00B54	Control
VR94	EVM13SX00B54	Control
VR95	EVM13SX00B25	Control
VR96	EVM13SX00B54	Control

OTHER PARTS

CF11	EFCHAVZ04MF	Ceramic Filter
CF21	EFCS4R5MSM	Ceramic Filter
JS501	TJS828760	E.P Socket
JS601	TJS825080	CRT Socket
JS701	TJS828290	DC Socket
P	TJS868840	Deflection Yoke Socket
V	TJS878060	10P Socket
SW4	TSE80349	U/V Selector Switch
ES1	TES8511	CRT Earth Spring
H1	TJC80362-2	Battery Terminal
H2	TJC80362-2	Battery Terminal
W1	TUX80713	Antenna Bracket
	TUC80580	Shield Case

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