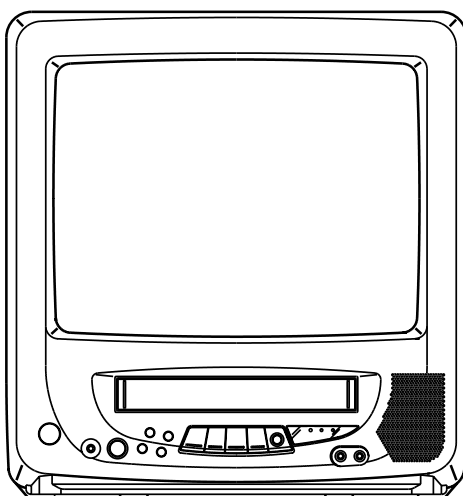


Memorex®

MVT2139 Series A

SERVICE MANUAL

COLOR TELEVISION/VIDEO CASSETTE RECORDER



VHS

**ORIGINAL
MFR'S VERSION A**

SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES


As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.

Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a  mark, the designated parts must be used.

4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

6. AVOID AN X-RAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.

Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not modify the circuit.

Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

(INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the external exposure metal **[Note 2]** should be more than 1M ohm by using the 500V insulation resistance meter **[Note 1]**.
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

[Note 1]

If you have not the 500V insulation resistance meter, use a Tester.

[Note 2]

External exposure metal: Antenna terminal
Earphone jack

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the VERSION LETTER.)

1. MODEL NUMBER and VERSION LETTER

The MODEL NUMBER can be found on the back of each product and the VERSION LETTER can be found at the end of the SERIAL NUMBER.

2. PART NO. and DESCRIPTION

You can find it in your SERVICE MANUAL.

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GENERAL SPECIFICATIONS

G-1	TV System	CRT	CRT Size / Visual Size	13 inch / 335.4mmV	
			CRT Type	Normal	
			Deflection	90 degree	
			Magnetic Field BV/BH	+0.45G / 0.18G	
			Color System	NTSC	
			Speaker	1Speaker	
				Position	Front
				Size	1.5 x 2.5 Inch
				Impedance	8 ohm
			Sound Output	MAX	1.5 W
		10%(Typical)	1.0 W		
G-2	VCR System	System		VHS Player / Recorder	
		Video System		NTSC	
		Hi-Fi STEREO		No	
		NTSC PB		-	
		Deck	DECK	OVD-7	
			Loading System	Front	
			Motor	3	
		Heads	Video Head	2 Head	
			FM Audio Head	No	
			Audio/Control	Mono/Yes	
			Erase(Full Track Erase)	Yes	
		Tape	Rec	PAL	
		Speed		NTSC	
			Play	PAL	
				NTSC	
		Fast Forward / Rewind Time (Approx.) at 25oC		FF:4'50"/REW:2'30" with Cassette	
		Forward/Reverse	NTSC or PAL-M	SP/LP/SLP=3x,5x/7x,9x/9x,15x	
Picture Search		-			
Frame Advance	Slow	-			
Slow Speed	Variable Slow	-			
G-3	Tuning System	Broadcasting System		US Sysytem M	
		Tuner and	System	1Tuner	
		Receive CH	Destination	US (w/CATV)	
			Tuning System	F-Synth	
			Input Impedance	VHF/UHF 75 ohm	
			CH Coverage	2-69, 4A,A-5~A-1, A-1, J~W,W+1~W+84	
		Intermediate	Picture(FP)	45.75MHz	
		Frequency	Sound(FS)	41.25MHz	
			FP-FS	4.5MHz	
		Preset CH		No	
Stereo/Dual TV Sound		No			
Tuner Sound Muting		Yes			
G-4	Signal	Video Signal	Input Level	1 V p-p/75 ohm	
			Output Level	1 V p-p/75 ohm	
			S/N Ratio (Weighted)	50 dB	
			Horizontal Resolution at SP Mode	220Lines	
		Audio Signal	Input Level	-8dBm/50Kohm	
			Output Level	-8dBm/1Kohm	
			S/N Ratio at SP (Weighted)	38dB	
			Harmonic Distortion at SP (1KHz) Typical	1.5 %	
			Frequency Response at SP	100Hz ~10kHz	
			at LP	-	
			at SLP	100Hz ~4kHz	
		Hi-Fi Audio Signal	Dynamic Range : More than	-	
			Wow And Flutter : Less than	-	
	Channel Separation : More than	-			
	Harmonic Distortion : Less than	-			
G-5	Power	Power Source	AC	120V 60Hz	
			DC	12V	
		Power Consumption		at AC 65 W at 120V 60Hz	
				at DC 54W at 12V	
			Stand by (at AC)	4 W at 120V 60 Hz	
	Per Year	-			
Protector	Power Fuse	Yes			
	Dew Sensor	Yes			
G-6	Regulation	Safety		UL/CSA	
		Radiation		FCC /DOC	
		X-Radiation		DHHS/HWC	
G-7	Temperature	Operation		+5°C ~ +40°C	
		Storage		-20°C ~ +60°C	
G-8	Operating Humidity			Less then 80% RH	
G-9	On Screen	Menu		Yes	
	Display	Menu	Type	Character	

GENERAL SPECIFICATIONS

	Timer Rec Set	Yes
	Channel Setup	Yes
	TV/CATV	Yes
	Auto ch Memory	Yes
	Add/Delete	Yes
	Guide ch Set	No
	TV Setup	Yes
	V-chip Set	Yes
	On/Off Timer Set	Yes
	Picture	Yes
	Audio	No
	Sap On/Off	No
	Auto Repeat On/Off	Yes
	System Setup	Yes
	Clock Set	Yes
	Language	Yes
	Auto Clock On/Off	Yes
	Standard Time	Yes
	Daylight Saving Time	Yes
	Commercial Advance	No
	Marking On/Off	No
	Blueback On/Off	No
	Playback Auto/Manual	No
	Unmarked Tape	No
	Movie Advance	No
	Go To Movie	No
	Go To Preview	No
	G-CODE(or SHOWVIEW or PLUSCODE)No. Entry	No
	Clock	Yes
	CH/AV	Yes
	Tape Counter(Linear Counter)	Yes
	Tape Speed	Yes
	Sleep Time	Yes
	Stereo/Audio Output	No
	Bilingual	No
	SAP	No
	Control Volume	Yes
	Level Bright / Contrast / Sharpness / Color	Yes
	Tint	Yes
	Bass/Treble/Balance	No
	Manual Tracking	Yes
	Play/Stop/FF/Rew/Rec/OTR/T-Rec/Pause/Eject/Tape In (Symbol Mark)	Yes
	Auto Tracking/Manual Tracking	Yes
	Caption / Text	Yes
	Index	No
	Muting	Yes
	Hi-Fi	No
	Repeat	Yes
	Zero Return	No
	DEW	Yes
G-10	OSD Language	English French Spanish
G-11	Clock,Timer and Timer Back-up	Calendar 1990/1/1 ~ 2081/12/31
	Timer Events	8 prog./ 1 month
	One Touch Recording Max Time	5 hours
	OTPB Valid Time	-
	Sleep Timer Max Time	120 min.
	Step	10 min.
	On/Off Timer Program(On Tim / Off Tim)	1 prog.
	Auto Shut Off No Signal	15 min.
	No Operation	-
	Timer Back-up (at Power Off Mode)	5 sec.
G-12	Remote Control	Unit RC-CG
	Glow in Dark Remocon	Yes
	Power Source Voltage(D.C)	3V
	UM size x pcs	UM-4 x 2 pcs
	Total Keys	41 Keys
	Keys Power	Yes
	1	Yes
	2	Yes
	3	Yes
	4	Yes
	5	Yes
	6	Yes
	7	Yes
	8	Yes
	9	Yes
	0	Yes

GENERAL SPECIFICATIONS

		CH Up	Yes
		CH Down	Yes
		Volume Up	Yes
		Volume Down	Yes
		Input Select	Yes
		Play	Yes
		F.Fwd	Yes
		Rew	Yes
		Pause/Still	Yes
		Stop	Yes
		Rec/OTR	Yes
		Eject	Yes
		Counter Reset	Yes
		Speed	Yes
		Timer Rec	Yes
		TV Monitor	Yes
		Quick View	Yes
		Program	Yes
		Slow	No
		Auto Tracking	Yes
		Set/Tracking+	Yes
		Set/Tracking -	Yes
		Menu	Yes
		Enter	Yes
		Cancel	Yes
		Call	Yes
		TV/Caption/Text	Yes
		Sleep Timer	Yes
		Muting	Yes
		Zero Return	Yes
		CM Skip	Yes
		Audio Select	No
G-13	Features	Auto Head Cleaning	Yes
		Auto Tracking	Yes
		Auto Search	Yes
		HQ (VHS Standard High Quality)	Yes
		Auto Power On, Auto Play, Auto Rewind, Auto Eject	Yes
		VIDEO PLUS+(SHOWVIEW,G-CODE)	No
		Auto Clock	Yes
		Forward / Reverse Picture Search	Yes
		Reverse Slow	No
		One Touch Playback	No
		Auto CH Memory	Yes
		Closed Caption	Yes
		TV Auto Shut off Function	Yes
		End Call	No
		Index Search	No
		SQP/B	No
		CATV	Yes
		CM Skip(30sec x 6 Times)	Yes
		Comb Filter	No
		TV Monitor	Yes
		Program Extend	No
		Choke Coil	No
		Energy Star	Yes
		Protect of FBT Leak Curcuit	No
		Dirty Head	No
		V-chip USA V-chip	Yes
		CANADA V-chip	No
		Power On Memory	No
		Zero Return	Yes
		CM Advance	No
		Movie Advance	No
G-14	Accessories	Owner's Manual Language	English /French
		w/Guarantee Card	No
		Remote Control Unit	Yes
		Battery	No
		UM size x pcs	-
		OEM Brand	-
		Rod Antenna	Yes
		Poles	2pole
		Terminal	F type
		w/300 ohm to 75 ohm Antenna Adapter	Yes
		Loop Antenna	No
		Terminal	-
		U/V Mixer	No
		300 ohm to 75 ohm Antenna Adapter	No

GENERAL SPECIFICATIONS

		Antenna Change Plug		No	
		DC Car Cord (Center+)		Yes	
		AC Plug Adapter		No	
		AC Cord		No	
		AV Cord (2Pin-1Pin)		No	
		Guarantee Card		Yes	
		Registration Card		No	
		ESP Card		No	
		Warning Sheet		No	
		Dew/AHC Caution Sheet		No	
		Quick Set-up Sheet		No	
		Circuit Diagram		No	
		Service Facility List		No	
		Important Safeguard		No	
G-15	Interface	Switch	Power	Yes	
			Play	Yes	
			Pause/Still	No	
			System Select	No	
			One Touch Playback	No	
			Channel Up	Yes	
			Channel Down	Yes	
			F.FWD/Cue	Yes	
			Eject/Stop	Yes	
			Main Power SW	No	
			Volume Up	Yes	
			Volume Down	Yes	
			Rew/Rev	Yes	
			Rec/OTR	Yes	
			Input Select	No	
		Indicator	Power	Red	
			Rec/OTR	Red	
			T-Rec	Red	
			On Timer	No	
		Key Light up	CS	No	
			Rec/OTR	No	
		Key Light up	One Touch Playback	No	
			Play	No	
		Terminals	Front	Video Input	RCAX1
				Audio Input	RCAX1
				Other Terminal	Head Phone(Stereo & Mono, 3.5mm)
			Rear	Video Input	RCAX1
				Audio Input	RCAX1
				Video Output	RCAX1
				Audio Output	RCAX1
				Euro Scart	No
				Diversity	No
Other	Ext Speaker		No		
	DC Jack 12V(Center +)		Yes		
	VHF/UHF Antenna Input		F Type		
		AC Inlet	No		
G-16	Set Size	Approx. W x D x H (mm)	362 x 370.5 x 382		
G-17	Weight	Net (Approx.)	12.5 kg (27.6 lbs)		
		Gross (Approx.)	14.5 kg (32.2 lbs)		
G-18	Carton	Master Carton		No	
			Content	-	
			Material	-	
			Dimensions W x D x H(mm)	-	
			Description of Origin	-	
	Gift Box		Yes		
		Material	Double/WHITE CORRUGATED CARTON		
		Dimensions W x D x H(mm)	423 x 447 x 443		
		Design	As per Buyer's		
		Description of Origin	Yes		
		Drop Test	Natural Dropping At	1 Corner / 3 Edges / 6 Surfaces	
	Height (cm)	62			
	Container Stuffing(40' container)	700 Sets			
G-19	Cabinet Material	Cabinet Front	PS 94V0 DECABROM		
		Cabinet Rear	PS 94V0 DECABROM		
		Jack Panel	PS 94V0		

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: BACK CABINET (Refer to Fig. 1-1)

1. Remove the 4 screws ①.
2. Remove the 3 screws ② which are used for holding the Back Cabinet.
3. Remove the AC cord from the AC cord hook ③.
4. Remove the Back Cabinet in the direction of arrow.

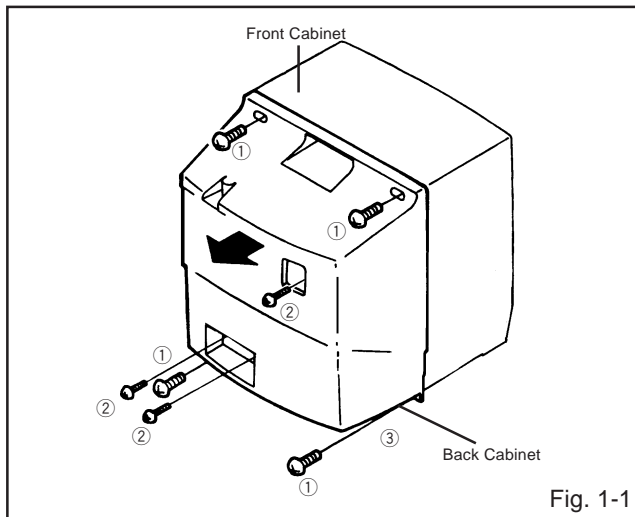


Fig. 1-1

1-2: CRT PCB (Refer to Fig. 1-2)

CAUTION: BEFORE REMOVING THE ANODE CAP, DISCHARGE ELECTRICITY BECAUSE IT CONTAINS HIGH VOLTAGE. BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.

1. Remove the Anode Cap. (Refer to REMOVAL OF ANODE CAP)
2. Disconnect the following connectors: (CP801 and CP850).
3. Remove the CRT PCB in the direction of arrow.

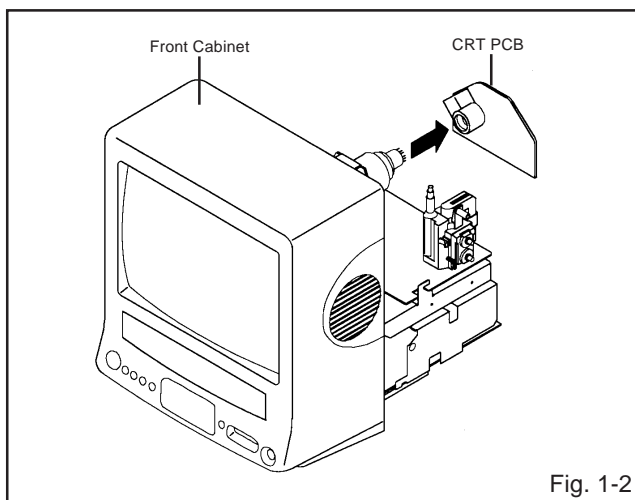


Fig. 1-2

1-3: TV/VCR BLOCK (Refer to Fig. 1-3)

1. Remove the 2 screws ①.
2. Disconnect the following connectors: (CP401, CP403, CP2201 and CP4202).
3. Unlock the support ②.
4. Remove the TV/VCR Block in the direction of arrow.

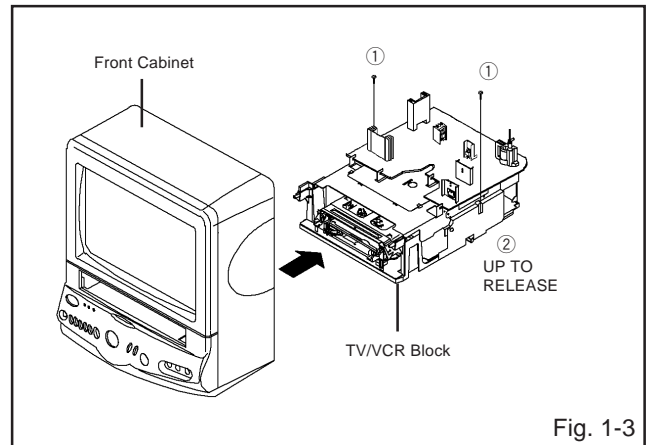


Fig. 1-3

1-4: MAIN PCB (Refer to Fig. 1-4)

1. Remove the screw ①.
2. Remove the Main PCB Holder.
3. Remove the 2 screws ②.
4. Remove the 3 screws ③.
5. Remove the 2 screws ④.
6. Remove the TV PCB Holder and Back Holder.
7. Disconnect the following connectors: (CP402, CD502, CP502 and CP820).
8. Remove the Main PCB in the direction of arrow.

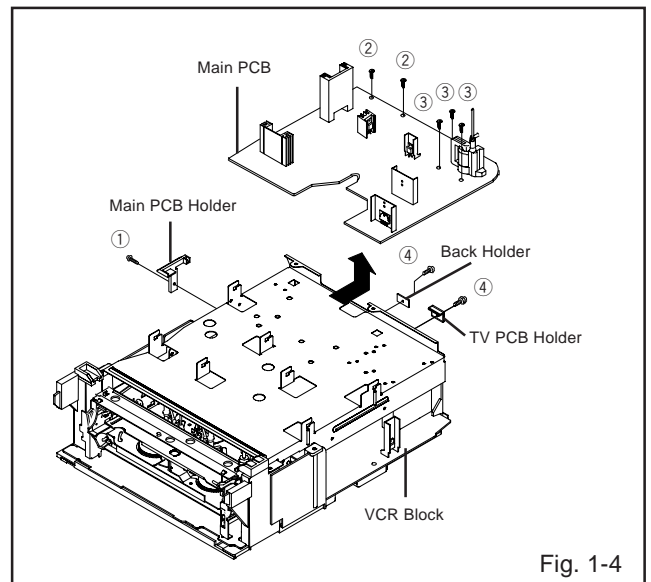
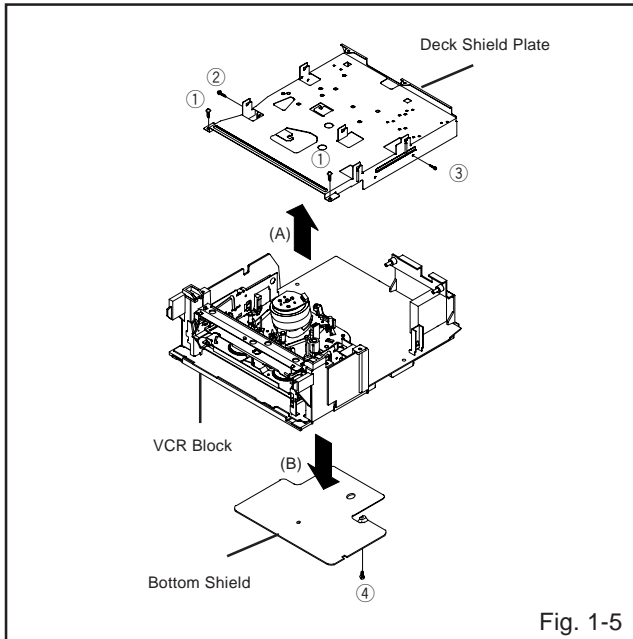


Fig. 1-4

DISASSEMBLY INSTRUCTIONS

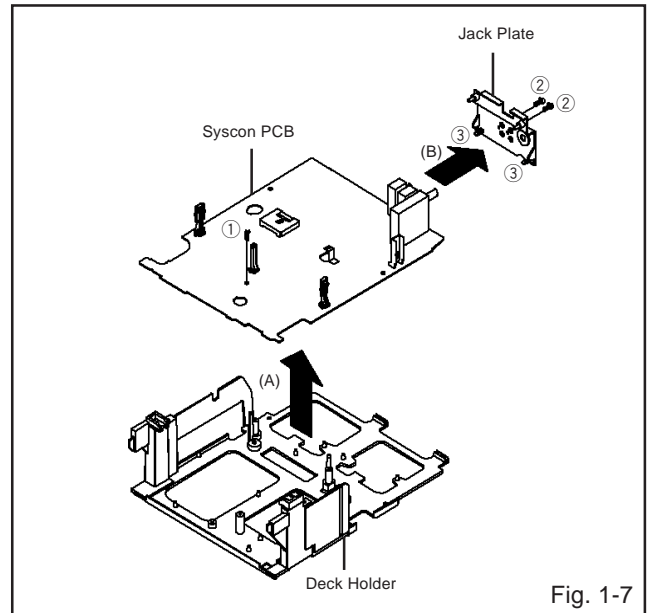
1-5: DECK SHIELD PLATE AND BOTTOM SHIELD (Refer to Fig. 1-5)

1. Remove the 2 screws ①.
2. Remove the screw ②.
3. Remove the screw ③.
4. Remove the Deck Shield Plate in the direction of arrow (A).
5. Remove the screw ④.
6. Remove the Bottom Shield in the direction of arrow (B).



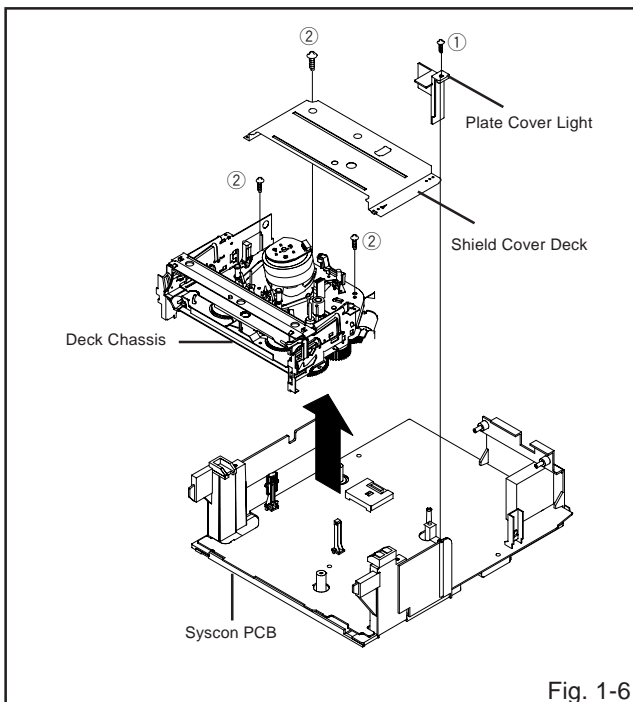
1-7: JACK PLATE AND SYSCON PCB (Refer to Fig. 1-7)

1. Remove the screw ①.
2. Remove the Syscon PCB in the direction of arrow (A).
3. Remove the 2 screws ②.
4. Unlock the 2 supports ③.
5. Remove the Jack Plate in the direction of arrow (B).



1-6: DECK CHASSIS (Refer to Fig. 1-6)

1. Remove the screw ①.
2. Remove the Plate Cover Light.
3. Remove the 3 screws ②.
4. Disconnect the following connectors:
(CP605, CP1001, CP4001, CP4002 and CP4003).
5. Remove the Deck Chassis and Shield Cover Deck in the direction of arrow.



DISASSEMBLY INSTRUCTIONS

2. REMOVAL OF DECK PARTS

2-1: TOP BRACKET (Refer to Fig. 2-1)

1. Extend the 2 supports ①.
2. Slide the 2 supports ② and remove the Top Bracket.

NOTE

1. After the installation of the Top Bracket, bend the support ① so that the Top Bracket is fixed.

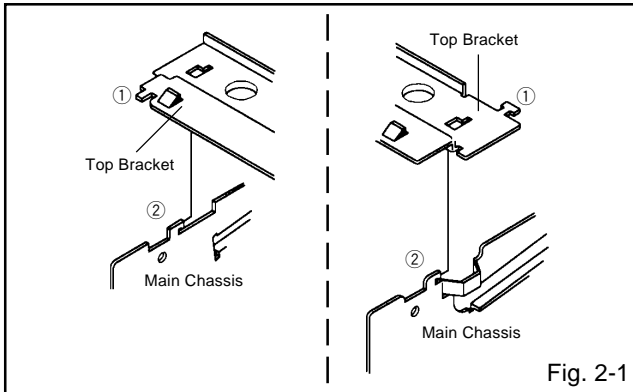


Fig. 2-1

2-2: CASSETTE HOLDER ASS'Y (Refer to Fig. 2-2)

1. Move the Cassette Holder Ass'y to the front side.
2. Push the Locker R to remove the Cassette Side R.
3. Remove the Cassette Side L.

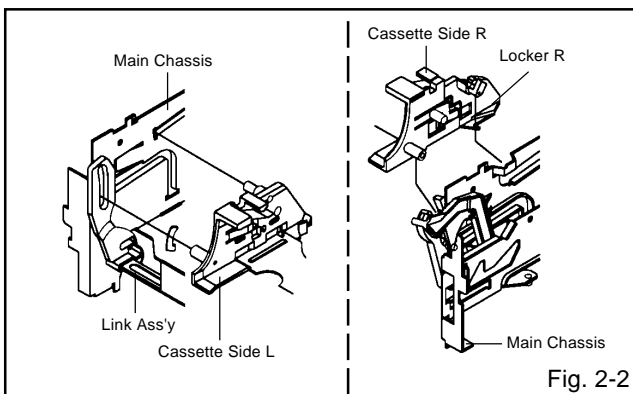


Fig. 2-2

2-3: CASSETTE SIDE L/R (Refer to Fig. 2-3-A)

1. Remove the Locker Spring.
2. Unlock the 4 supports ① and then remove the Cassette Side L/R.
3. Unlock the support ② and then remove the Locker R.

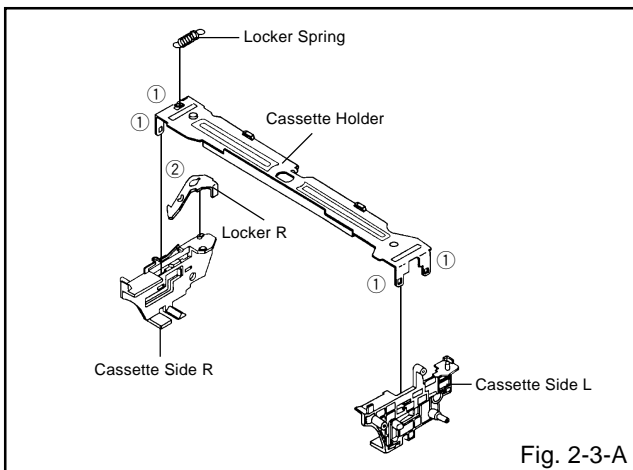


Fig. 2-3-A

NOTE

1. In case of the Locker R installation, check if the two positions of Fig.2-3-B are correctly locked.
2. When you install the Cassette Side R, be sure to move the Locker R after installing.

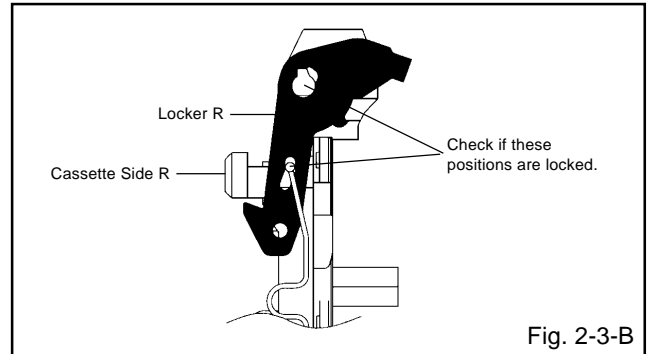


Fig. 2-3-B

2-4: LINK UNIT (Refer to Fig. 2-4)

1. Set the Link Unit to the Eject position.
2. Unlock the support ①.
3. Remove the (A) side of the Link Unit first, then remove the (B) side.

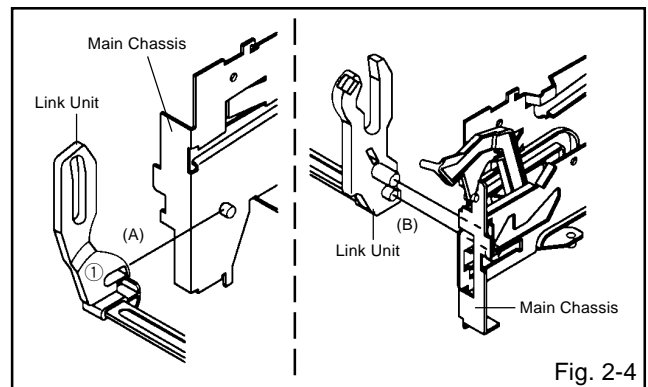


Fig. 2-4

2-5: LINK LEVER/FLAP LEVER (Refer to Fig. 2-5)

1. Extend the support ①.
2. Remove the Link Lever.
3. Remove the Flap Lever.

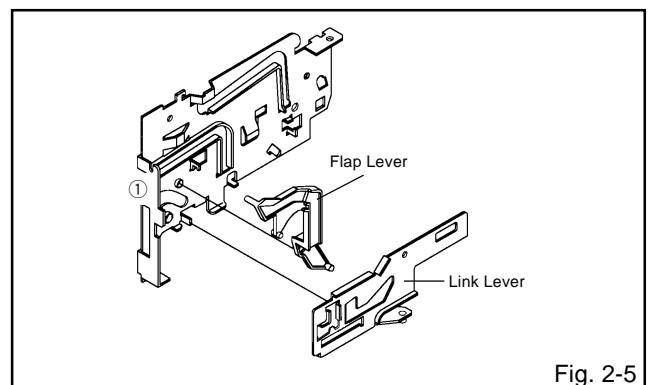


Fig. 2-5

DISASSEMBLY INSTRUCTIONS

2-6: LOADING MOTOR/WORM (Refer to Fig. 2-6-A)

1. Remove the screw ①.
2. Remove the Loading Motor.
3. Remove the Worm.

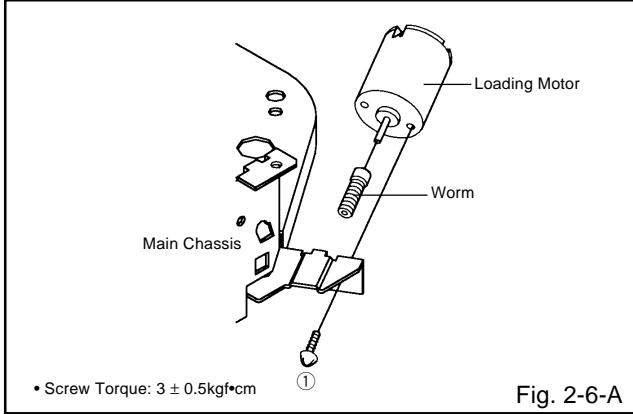


Fig. 2-6-A

NOTE

1. In case of the Worm installation, check if the value of the Fig. 2-6-B is correct.
2. In case of the Loading Motor installation, hook the wire on the Cassette Opener as shown Fig. 2-6-C.

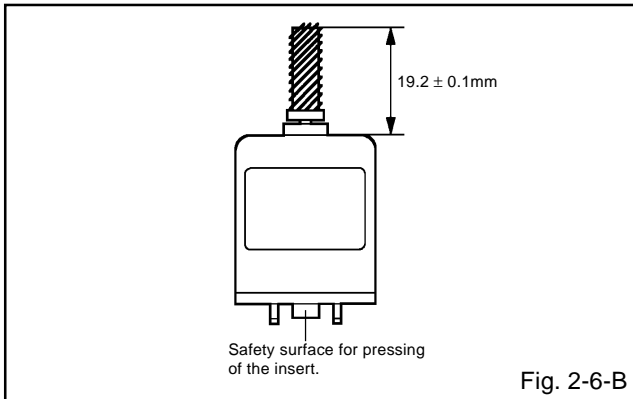


Fig. 2-6-B

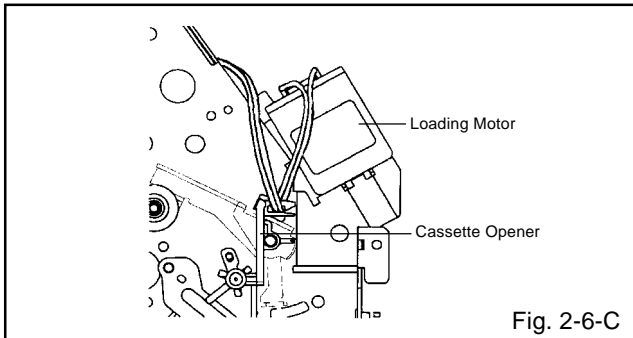


Fig. 2-6-C

2-7: TENSION ASS'Y (Refer to Fig. 2-7-B)

1. Turn the Pinch Roller Cam clockwise so that the Tension Holder hook is set to the position of Fig. 2-7-A to move the Tension Arm Ass'y.
2. Remove the Tension Spring.
3. Unlock the 2 supports ① and remove the Tension Band.
4. Unlock the support ② and remove the Tension Arm Ass'y.
5. Unlock the support ③ and remove the Tension Connect.
6. Float the hook ④ and turn it clockwise then remove the Tension Holder.

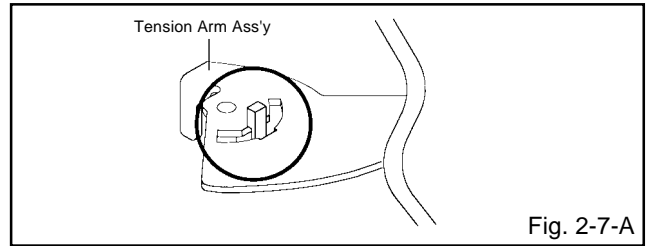


Fig. 2-7-A

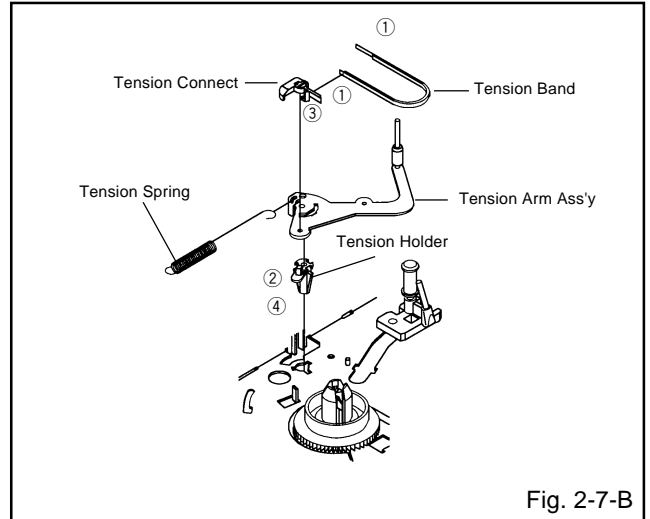


Fig. 2-7-B

NOTE

1. In case of the Tension Band installation, note the direction of the installation. (Refer to Fig. 2-7-C)
2. In case of the Tension Band installation, install correctly as Fig. 2-7-D.
3. In case of the Tension Connect installation, install as the circled section of Fig. 2-7-E.

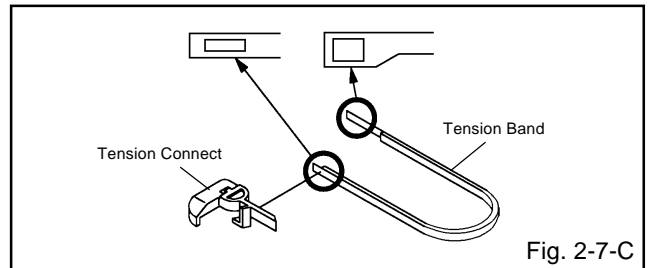


Fig. 2-7-C

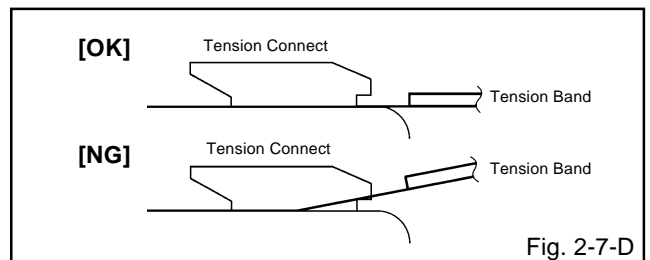


Fig. 2-7-D

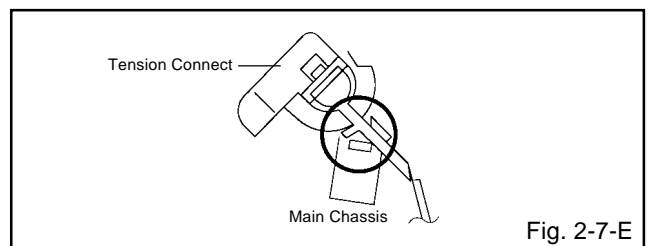


Fig. 2-7-E

DISASSEMBLY INSTRUCTIONS

2-8: T BRAKE ARM/T BRAKE BAND (Refer to Fig. 2-8-A)

1. Remove the T Brake Spring.
2. Turn the T Brake Arm clockwise and bend the hook section to remove it.
3. Unlock the 2 supports ① and remove the T Brake Band.

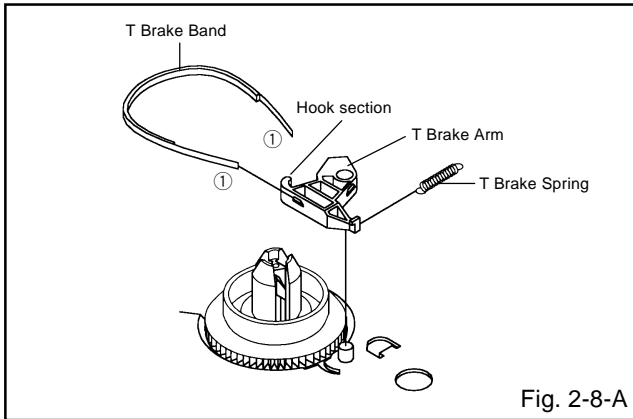


Fig. 2-8-A

NOTE

1. In case of the T Brake Band installation, install correctly as Fig. 2-8-B.

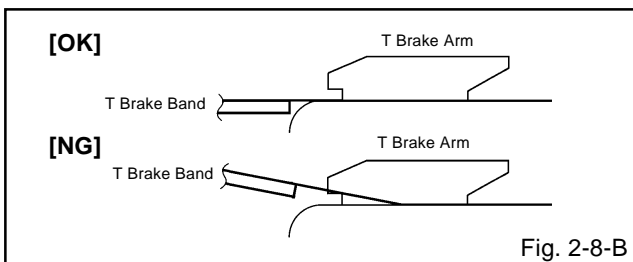


Fig. 2-8-B

2-9: S REEL/T REEL/IDLER ARM ASS'Y/IDLER GEAR (Refer to Fig. 2-9-A)

1. Remove the S Reel and T Reel.
2. Remove the 2 Polyslider Washers ①.
3. Remove the Idler Arm Ass'y and Idler Gear.

NOTE

1. Take care not to damage the gears of the S Reel and T Reel.
2. The Polyslider Washer may be remained on the back of the reel.
3. Take care not to damage the shaft.
4. Do not touch the section "A" of S Reel and T Reel. (Use gloves.) (Refer to Fig. 2-9-A) Do not adhere the stains on it.
5. When you install the reel, clean the shaft and grease it (FG-84M). (If you do not grease, noise may be heard in FF/REW mode.)
6. After installing the reel, adjust the height of the reel. (Refer to MECHANICAL ADJUSTMENT)

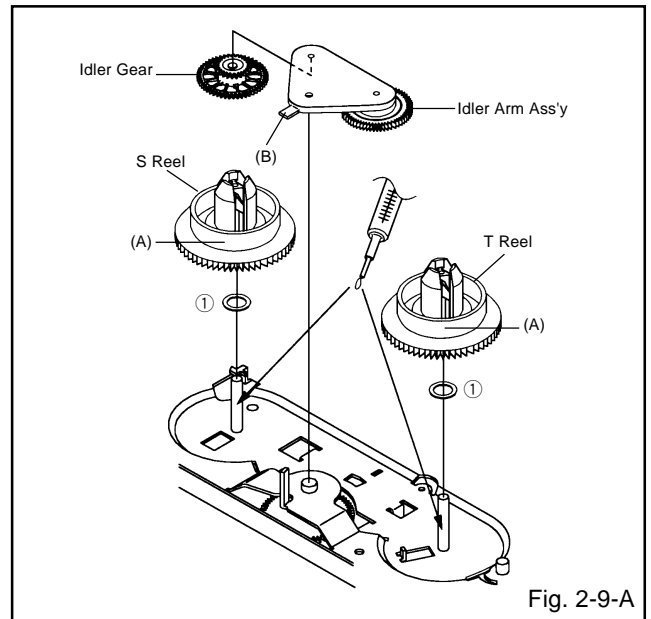


Fig. 2-9-A

NOTE

1. In case of the S Reel and T Reel installation, check if the correct parts are installed. (Refer to Fig. 2-9-B)
2. In case of the Idler Arm Ass'y installation, install correctly as Fig. 2-9-C. And also set it so that the section "B" of Fig. 2-9-A is placed under the Main Chassis tab.

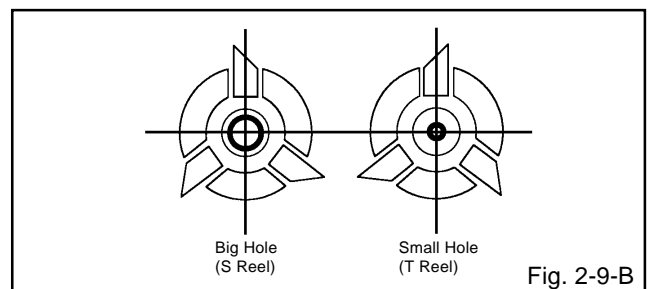


Fig. 2-9-B

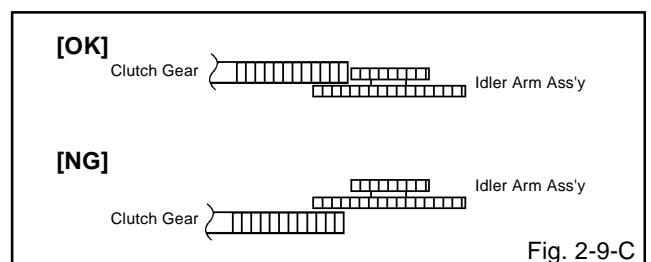
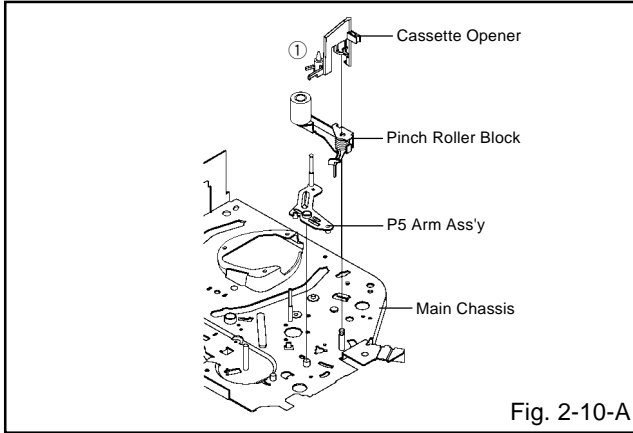


Fig. 2-9-C

DISASSEMBLY INSTRUCTIONS

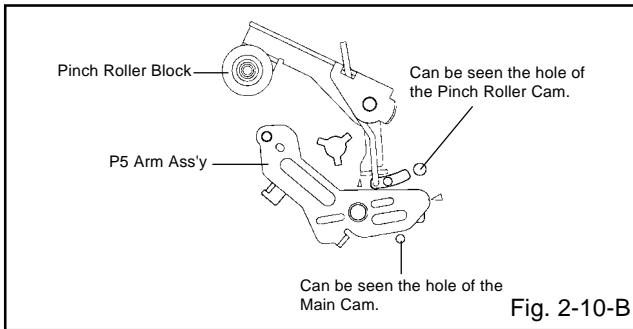
2-10: CASSETTE OPENER/PINCH ROLLER BLOCK/ P5 ARM ASS'Y (Refer to Fig. 2-10-A)

1. Unlock the support ① and remove the Cassette Opener.
2. Remove the Pinch Roller Block and P5 Arm Ass'y.



NOTE

1. Do not touch the Pinch Roller. (Use gloves.)
2. In case of the Pinch Roller Block and the Pinch Roller Cam installation, install correctly as Fig. 2-10-B.

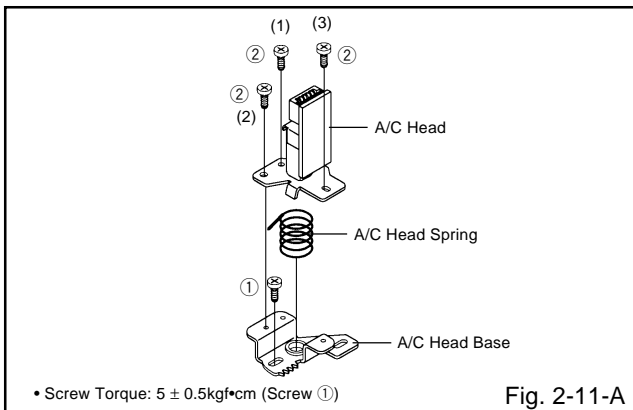


2-11: A/C HEAD (Refer to Fig. 2-11-A)

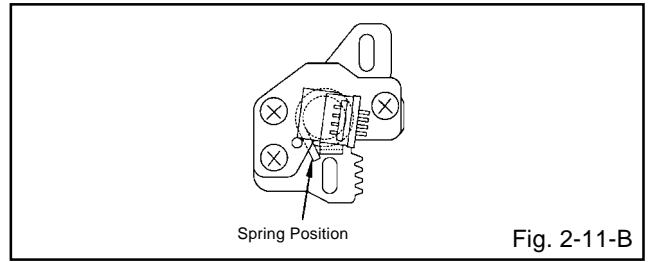
1. Remove the screw ①.
2. Remove the A/C Head Base.
3. Remove the 3 screws ②.
4. Remove the A/C Head and A/C Head Spring.

NOTE

1. Do not touch the A/C Head. (Use gloves.)
2. When you install the A/C Head Spring, install as shown in Fig. 2-11-B.
3. When you install the A/C Head, tighten the screw (1) first, then tighten the screw (2), finally tighten the screw (3).

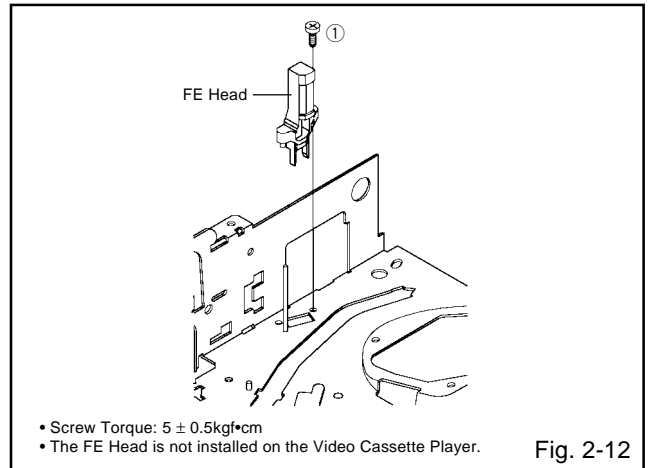


• Screw Torque: $5 \pm 0.5\text{kgf}\cdot\text{cm}$ (Screw ①)



2-12: FE HEAD (RECORDER ONLY) (Refer to Fig. 2-12)

1. Remove the screw ①.
2. Remove the FE Head.



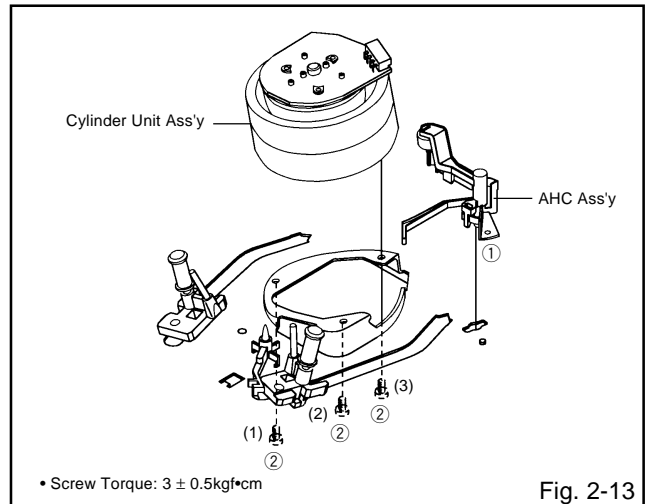
- Screw Torque: $5 \pm 0.5\text{kgf}\cdot\text{cm}$
- The FE Head is not installed on the Video Cassette Player.

2-13: AHC ASS'Y/CYLINDER UNIT ASS'Y (Refer to Fig. 2-13)

1. Unlock the support ① and remove the AHC Ass'y.
2. Disconnect the following connector: (CD2001)
3. Remove the 3 screws ②.
4. Remove the Cylinder Unit Ass'y.

NOTE

1. When you install the Cylinder Unit Ass'y, tighten the screws from (1) to (3) in order while pulling the Ass'y toward the left front direction.

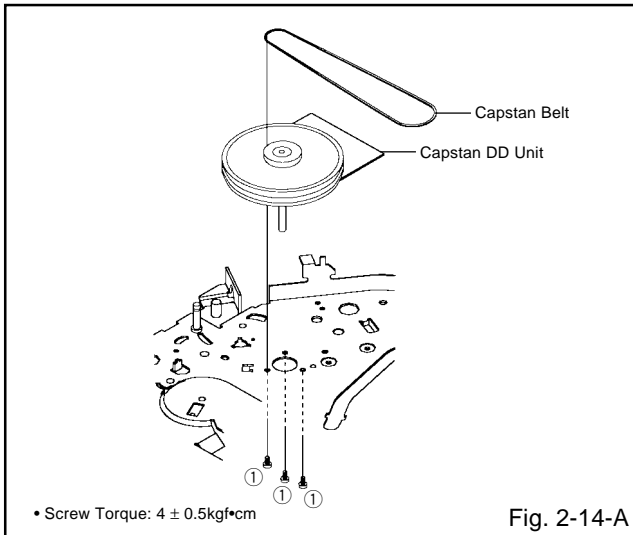


• Screw Torque: $3 \pm 0.5\text{kgf}\cdot\text{cm}$

DISASSEMBLY INSTRUCTIONS

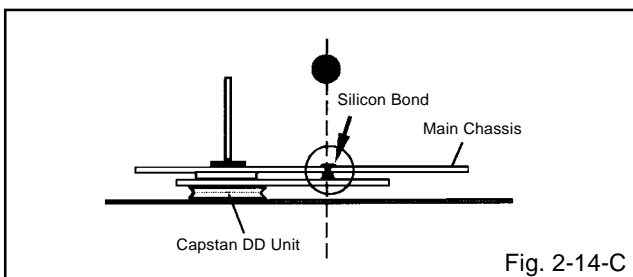
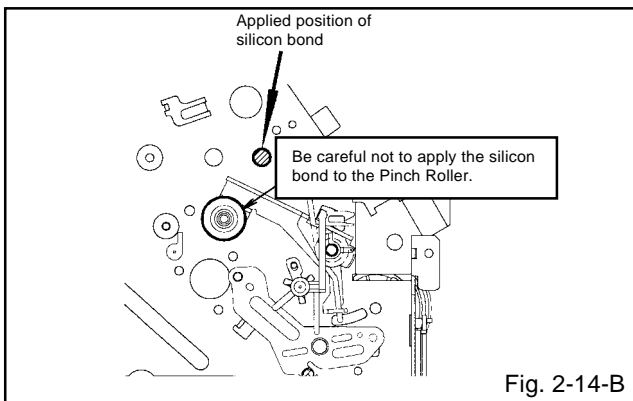
2-14: CAPSTAN DD UNIT (Refer to Fig. 2-14-A)

1. Remove the Capstan Belt.
2. Remove the 3 screws ①.
3. Remove the Capstan DD Unit.



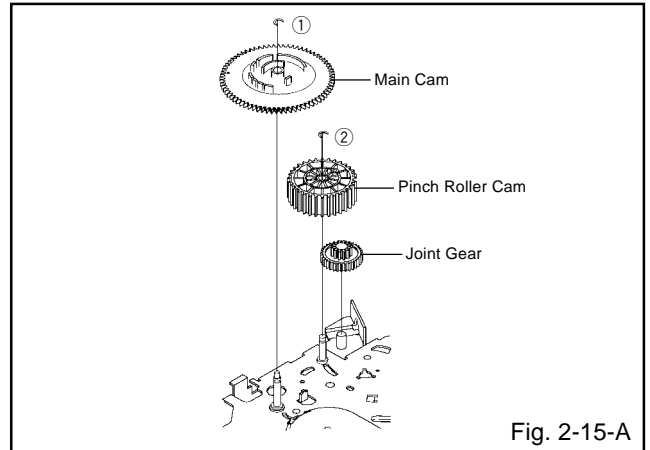
NOTE

1. In case of the Capstan DD Unit installation, apply the silicon bond (TSE3843-W) on the position Fig. 2-14-B correctly. (If no silicon bond applied, abnormal noise will be heard on the deck operation.)
(Refer to Fig. 2-14-B, C)



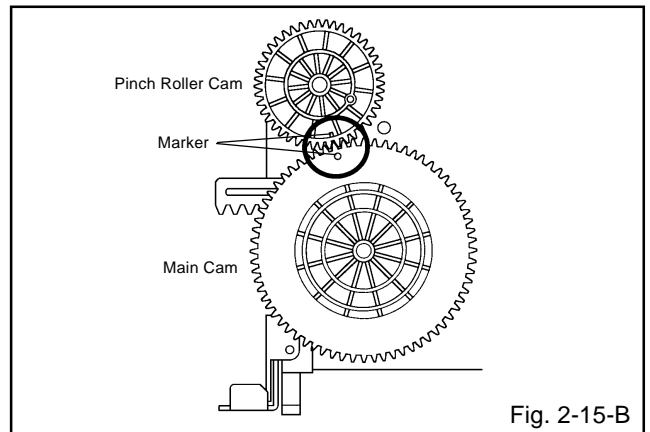
2-15: MAIN CAM/PINCH ROLLER CAM/JOINT GEAR (Refer to Fig. 2-15-A)

1. Remove the E-Ring ①, then remove the Main Cam.
2. Remove the E-Ring ②, then remove the Pinch Roller Cam and Joint Gear.



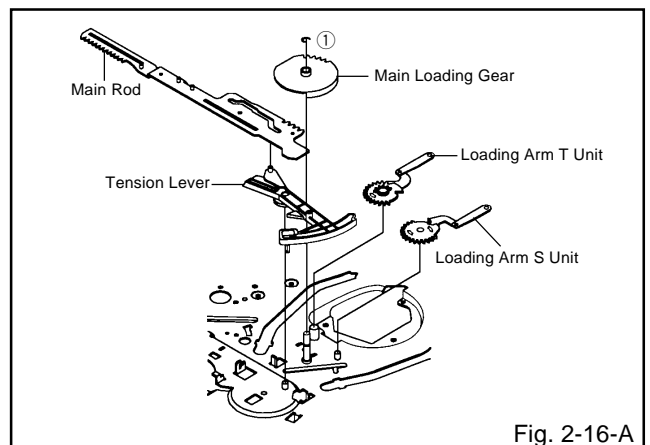
NOTE

1. In case of the Pinch Roller Cam and Main Cam installation, install them as the circled section of Fig. 2-15-B so that the each markers are met. (Refer to Fig. 2-15-B)



2-16: LOADING GEAR S/T UNIT (Refer to Fig. 2-16-A)

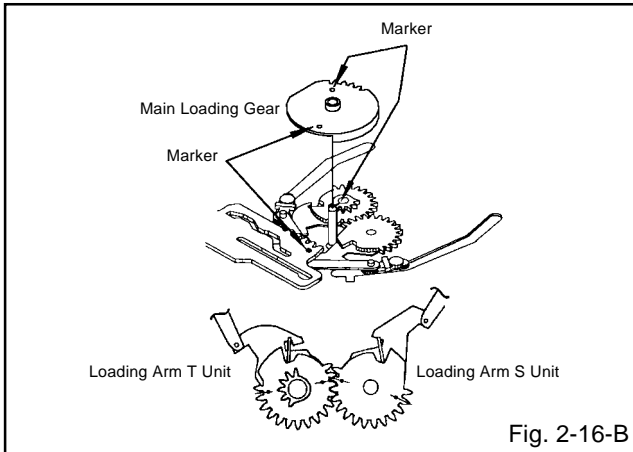
1. Remove the E-Ring ① and remove the Main Loading Gear.
2. Remove the Main Rod, Tension Lever, Loading Arm S Unit and Loading Arm T Unit.



DISASSEMBLY INSTRUCTIONS

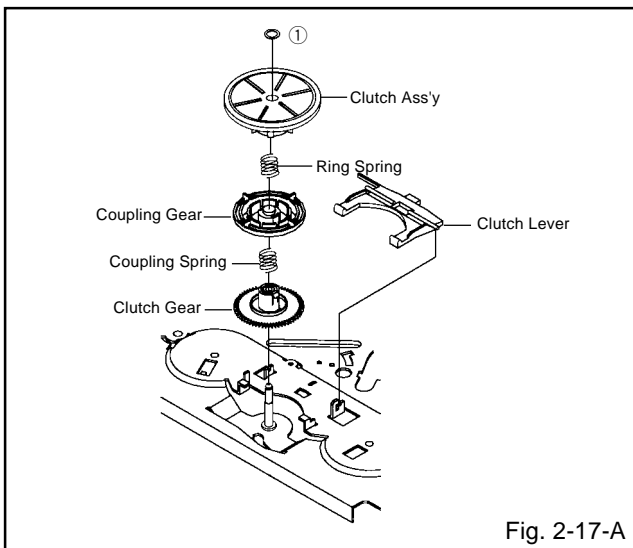
NOTE

1. When you install the Loading Arm S Unit, Loading Arm T Unit and Main Loading Gear, align each marker. (Refer to Fig. 2-16-B)



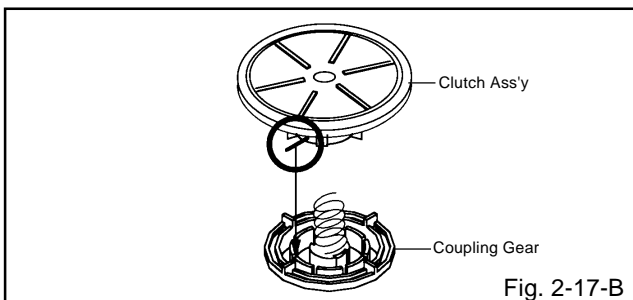
2-17: CLUTCH ASS'Y/RING SPRING/CLUTCH LEVER/CLUTCH GEAR (Refer to Fig. 2-17-A)

1. Remove the Polyslider Washer ①.
2. Remove the Clutch Ass'y and Ring Spring.
3. Remove the Clutch Lever.
4. Remove the Coupling Gear, Coupling Spring and Clutch Gear.



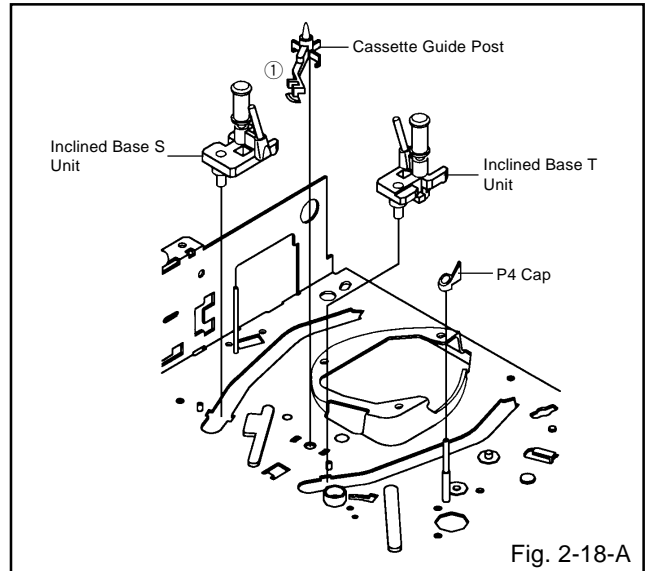
NOTE

1. In case of the Clutch Ass'y installation, install it with inserting the spring of the Clutch Ass'y into the dent of the Coupling Gear. (Refer to Fig. 2-17-B)



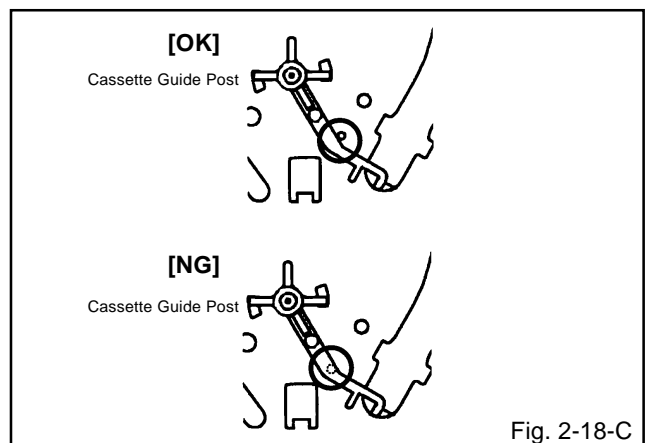
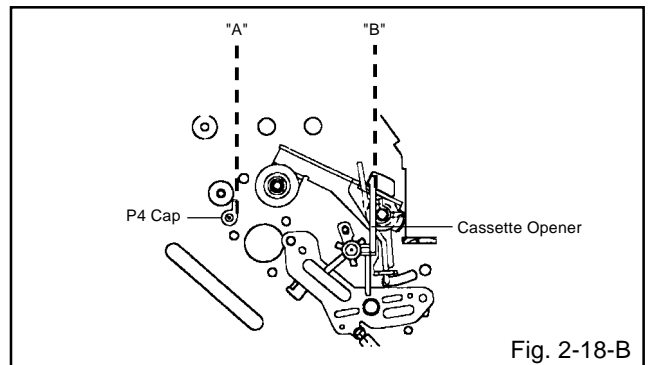
2-18: CASSETTE GUIDE POST/INCLINED BASE S/T UNIT/P4 CAP (Refer to Fig. 2-18-A)

1. Remove the P4 Cap.
2. Unlock the support ① and remove the Cassette Guide Post.
3. Remove the Inclined Base S Unit and Inclined Base T Unit.



NOTE

1. Do not touch the roller of Guide Roller.
2. In case of the P4 Cap installation, install it with parallel for "A" and "B" of Fig. 2-18-B.
3. In case of the Cassette Guide Post installation, install correctly as the circled section of Fig. 2-18-C.



DISASSEMBLY INSTRUCTIONS

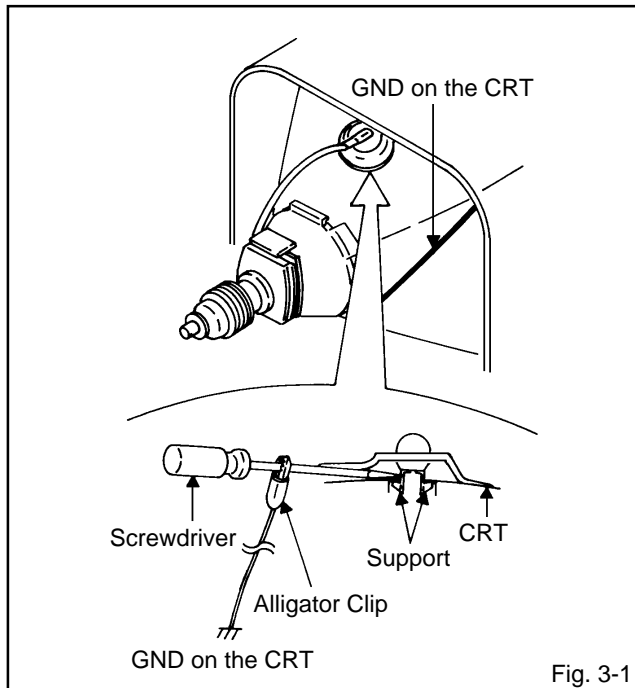
3. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

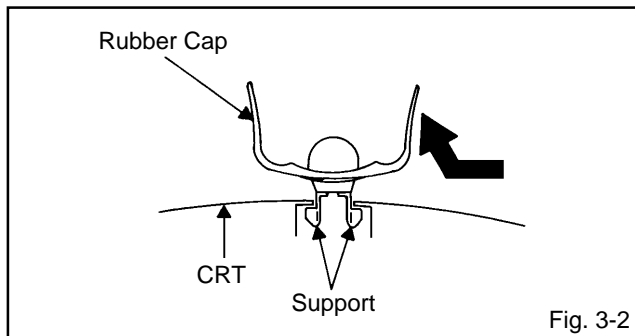
- * After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
- * Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

REMOVAL

1. Follow the steps as follows to discharge the Anode Cap.
(Refer to Fig. 3-1.)
Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground. While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver. A cracking noise will be heard as the voltage is discharged.



2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support.
(Refer to Fig. 3-2.)



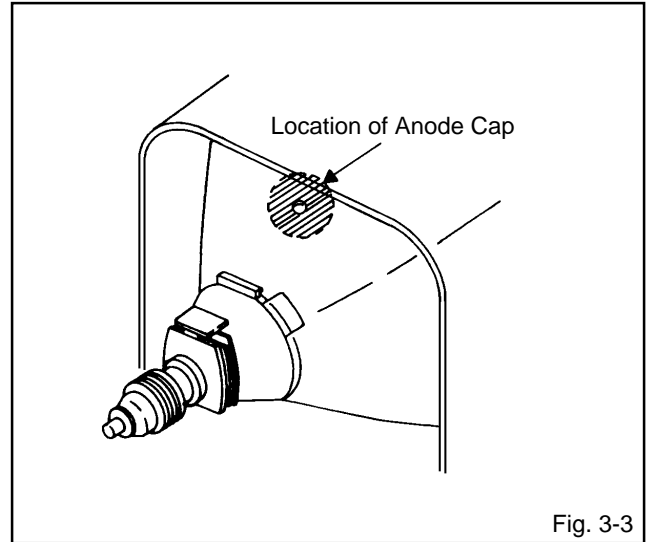
3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

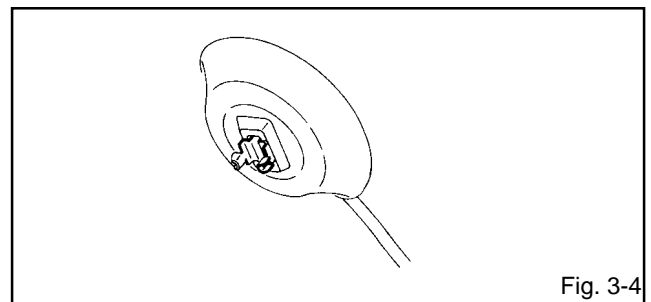
1. Clean the spot where the cap was located with a small amount of alcohol. **(Refer to Fig. 3-3.)**



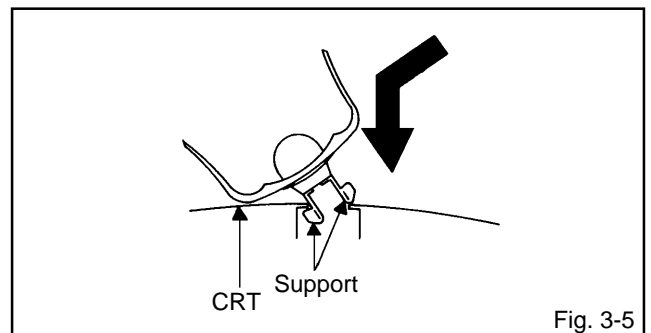
NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. **(Refer to Fig. 3-4.)**



4. Insert one end of the Anode Support into the anode button, then the other as shown in Fig. 3-5.



5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

DISASSEMBLY INSTRUCTIONS

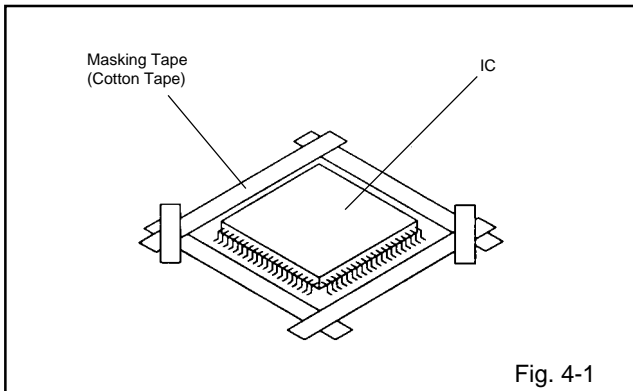
4. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put the Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. (Refer to Fig. 4-1.)

NOTE

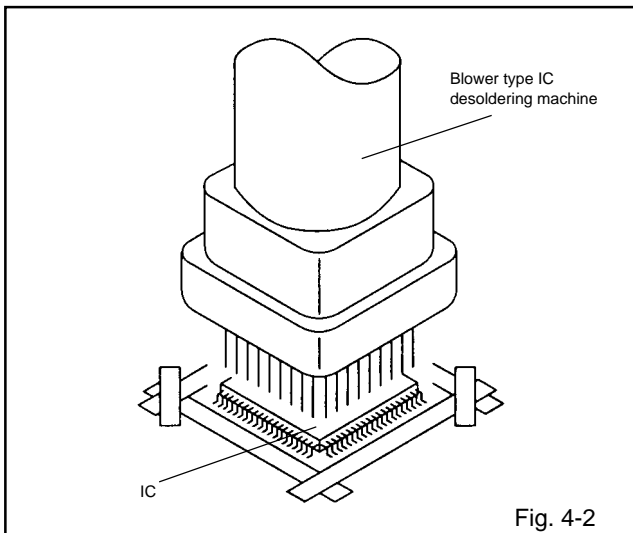
Masking is carried out on all the parts located within 10 mm distance from IC leads.



2. Heat the IC leads using a blower type IC desoldering machine. (Refer to Fig. 4-2.)

NOTE

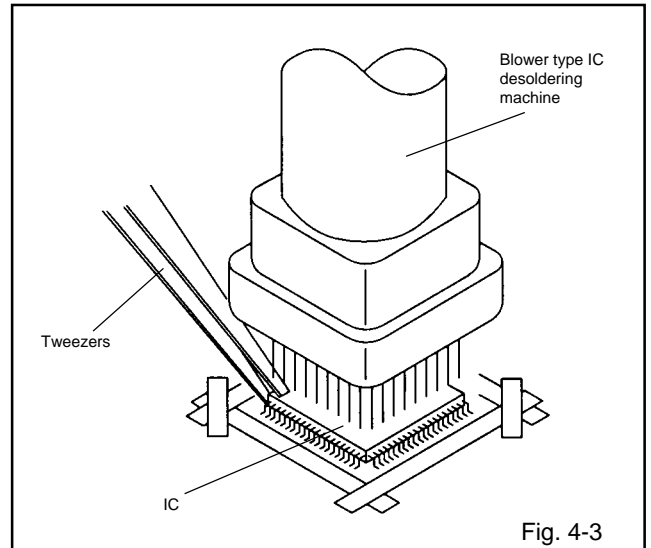
Do not add the rotating and the back and forth directions force on the IC, until IC can move back and forth easily after desoldering the IC leads completely.



3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. (Refer to Fig. 4-3.)

NOTE

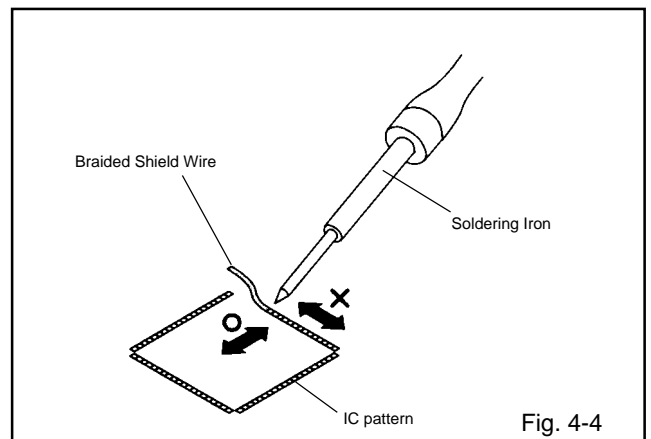
Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.



4. Peel off the Masking Tape.
5. Absorb the solder left on the pattern using the Braided Shield Wire. (Refer to Fig. 4-4.)

NOTE

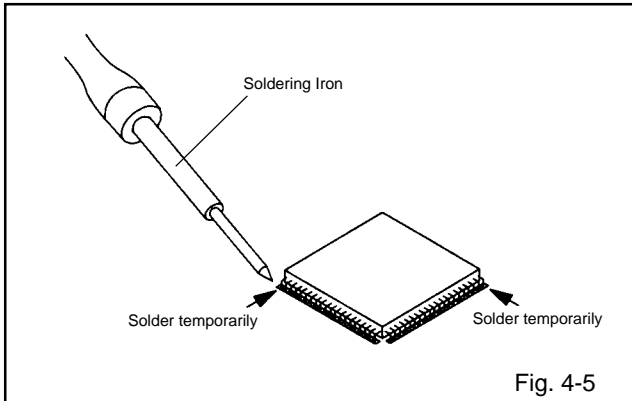
Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.



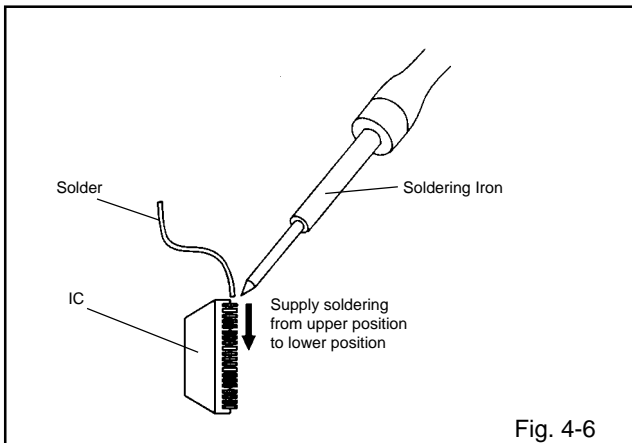
DISASSEMBLY INSTRUCTIONS

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. (Refer to Fig. 4-5.)



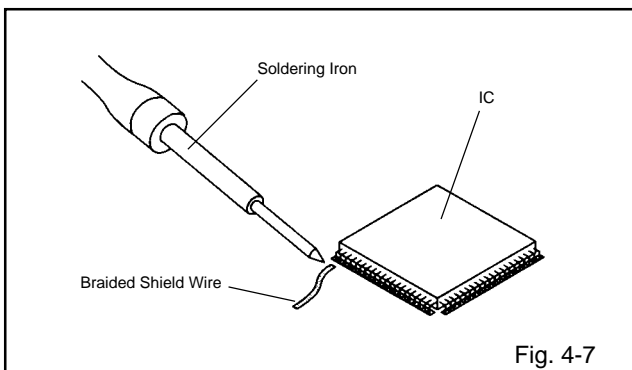
2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. (Refer to Fig. 4-6.)



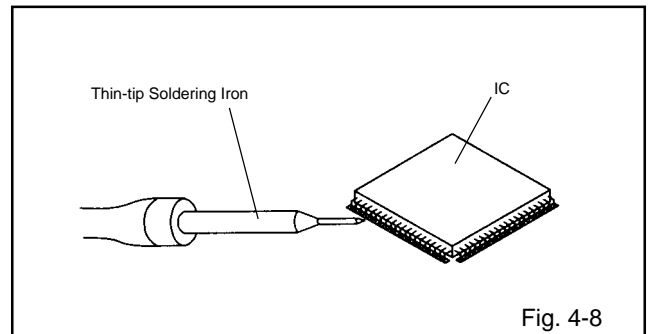
3. Absorb the solder left on the lead using the Braided Shield Wire. (Refer to Fig. 4-7.)

NOTE

Do not absorb the solder to excess.



4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. (Refer to Fig. 4-8.)



5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass. Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

NOTE

When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, be always sure to replace the IC in this case.

KEY TO ABBREVIATIONS

A	A/C	: Audio/Control	H.SW	: Head Switch	
	ACC	: Automatic Color Control	Hz	: Hertz	
	AE	: Audio Erase	I	IC	: Integrated Circuit
	AFC	: Automatic Frequency Control		IF	: Intermediate Frequency
	AFT	: Automatic Fine Tuning		IND	: Indicator
	AFT DET	: Automatic Fine Tuning Detect		INV	: Inverter
	AGC	: Automatic Gain Control	K	KIL	: Killer
	AMP	: Amplifier	L	L	: Left
	ANT	: Antenna		LED	: Light Emitting Diode
	A.PB	: Audio Playback		LIMIT AMP	: Limiter Amplifier
	APC	: Automatic Phase Control		LM, LDM	: Loading Motor
	ASS'Y	: Assembly		LP	: Long Play
	AT	: All Time		L.P.F	: Low Pass Filter
	AUTO	: Automatic		LUMI.	: Luminance
	A/V	: Audio/Video	M	M	: Motor
B	BGP	: Burst Gate Pulse		MAX	: Maximum
	BOT	: Beginning of Tape		MINI	: Minimum
	BPF	: Bandpass Filter		MIX	: Mixer, mixing
	BRAKE SOL	: Brake Solenoid		MM	: Monostable Multivibrator
	BUFF	: Buffer		MOD	: Modulator, Modulation
	B/W	: Black and White		MPX	: Multiplexer, Multiplex
C	C	: Capacitance, Collector		MS SW	: Mecha State Switch
	CASE	: Cassette	N	NC	: Non Connection
	CAP	: Capstan		NR	: Noise Reduction
	CARR	: Carrier	O	OSC	: Oscillator
	CH	: Channel		OPE	: Operation
	CLK	: Clock	P	PB	: Playback
	CLOCK (SY-SE)	: Clock (Syscon to Servo)		PB CTL	: Playback Control
	COMB	: Combination, Comb Filter		PB-C	: Playback-Chrominance
	CONV	: Converter		PB-Y	: Playback-Luminance
	CPM	: Capstan Motor		PCB	: Printed Circuit Board
	CTL	: Control		P. CON	: Power Control
	CYL	: Cylinder		PD	: Phase Detector
	CYL-M	: Cylinder-Motor		PG	: Pulse Generator
	CYL SENS	: Cylinder-Sensor		P-P	: Peak-to Peak
D	DATA (SY-CE)	: Data (Syscon to Servo)	R	R	: Right
	dB	: Decibel		REC	: Recording
	DC	: Direct Current		REC-C	: Recording-Chrominance
	DD Unit	: Direct Drive Motor Unit		REC-Y	: Recording-Luminance
	DEMODO	: Demodulator		REEL BRK	: Reel Brake
	DET	: Detector		REEL S	: Reel Sensor
	DEV	: Deviation		REF	: Reference
E	E	: Emitter		REG	: Regulated, Regulator
	EF	: Emitter Follower		REW	: Rewind
	EMPH	: Emphasis		REV, RVS	: Reverse
	ENC	: Encoder		RF	: Radio Frequency
	ENV	: Envelope		RMC	: Remote Control
	EOT	: End of Tape		RY	: Relay
	EQ	: Equalizer	S	S. CLK	: Serial Clock
	EXT	: External		S. COM	: Sensor Common
F	F	: Fuse		S. DATA	: Serial Data
	FBC	: Feed Back Clamp		SEG	: Segment
	FE	: Full Erase		SEL	: Select, Selector
	FF	: Fast Forward, Flipflop		SENS	: Sensor
	FG	: Frequency Generator		SER	: Search Mode
	FL SW	: Front Loading Switch		SI	: Serial Input
	FM	: Frequency Modulation		SIF	: Sound Intermediate Frequency
	FSC	: Frequency Sub Carrier		SO	: Serial Output
	FWD	: Forward		SOL	: Solenoid
G	GEN	: Generator		SP	: Standard Play
	GND	: Ground		STB	: Serial Strobe
H	H.P.F	: High Pass Filter		SW	: Switch

KEY TO ABBREVIATIONS

S	SYNC	:	Synchronization
	SYNC SEP	:	Sync Separator, Separation
T	TR	:	Transistor
	TRAC	:	Tracking
	TRICK PB	:	Trick Playback
	TP	:	Test Point
U	UNREG	:	Unregulated
V	V	:	Volt
	VCO	:	Voltage Controlled Oscillator
	VIF	:	Video Intermediate Frequency
	VP	:	Vertical Pulse, Voltage Display
	V.PB	:	Video Playback
	VR	:	Variable Resistor
	V.REC	:	Video Recording
	VSF	:	Visual Search Fast Forward
	VSR	:	Visual Search Rewind
	VSS	:	Voltage Super Source
	V-SYNC	:	Vertical-Synchronization
	VT	:	Voltage Tuning
X	X'TAL	:	Crystal
Y	Y/C	:	Luminance/Chrominance

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.

To enter SERVICE MODE, unplug AC cord till lost actual clock time. Then press and hold Vol (-) button of main unit and remocon key simultaneously.

The both pressing of set key and remote control key will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 5 seconds before Power On.

Set Key	Remocon Key	Operations
VOL. (-) MIN	0	Releasing of V-CHIP PASSWORD.
VOL. (-) MIN	1	Initialization of the factory. NOTE: Do not use this for the normal servicing. If you set a factory initialization, the memories are reset such as the clock setting, the channel setting, the POWER ON total hours, and PLAY/REC total hours.
VOL. (-) MIN	2	Horizontal position adjustment of OSD. NOTE: Also can be adjusted by using the Adjustment MENU. Refer to the "ELECTRICAL ADJUSTMENT" (OSD HORIZONTAL).
VOL. (-) MIN	3	Adjust the PG SHIFTER automatically. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	4	Adjust the PG SHIFTER manually. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	5	Adjusting of the Tracking to the center position. NOTE: Also can be adjusted by pressing the ATR button for more than 2 seconds during PLAY.
VOL. (-) MIN	6	POWER ON total hours and PLAY/REC total hours are displayed on the screen. Refer to the "PREVENTIVE CHECKS AND SERVICE INTERVALS" (CONFIRMATION OF HOURS USED). Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC".
VOL. (-) MIN	8	Writing of EEPROM initial data. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).

Method	Operations
Press the ATR button on the remote control for more than 2 seconds during PLAY.	Adjusting of the Tracking to the center position. Refer to the "MECHANICAL ADJUSTMENT" (GUIDE ROLLER) and "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
Make the short circuit between the test point of SERVICE and the GND.	The BOT, EOT and the Reel sensor do not work and the deck can be operated without a cassette tape. Refer to the "PREPARATION FOR SERVICING"

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage.

Parts replacing time does not mean the life span for individual parts.

Also, long term storage or misuse may cause transformation and aging of rubber parts.

The following list means standard hours, so the checking hours depends on the conditions.

Time Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	2,500 hours	Notes
Audio Control Head	■	■	■	●	●	Clean those parts in contact with the tape.
Full Erase Head (Recorder only)	■	■	■	●	●	
Capstan Belt		●	●	●	●	Clean the rubber, and parts which the rubber touches.
Pinch Roller	■	●	●	●	●	
Capstan DD Unit		●	●	●	●	
Loading Motor					●	
Tension Band		●	●	●	●	
T Brake Band		●	●	●	●	
Clutch Ass'y		●	●	●	●	
Idler Arm Ass'y		●	●	●	●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	
Cylinder Unit	■	●	●	●	●	Clean the Head

■ : Clean

● : Check it and if necessary, replace it.

CONFIRMATION OF HOURS USED

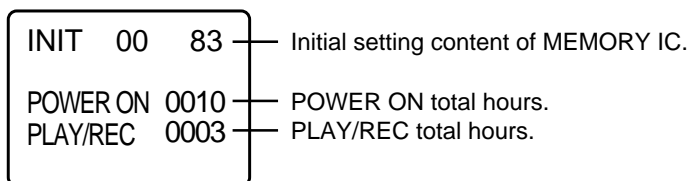
POWER ON total hours and PLAY/REC total hours can be checked on the screen.

Total hours are displayed in 16 system of notation.

NOTE: If you set a factory initialization, the total hours is reset to "0".

The confirmation of using hours will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 5 seconds before Power On.

1. Set the VOLUME to minimum.
2. While holding down VOLUME button on front cabinet, press key 6 on remote control simultaneously.
3. After the confirmation of using hours, turn off the power.



(16 x 16 x 16 x thousands digit value) + (16 x 16 x hundreds digit value) + (16 x tens digit value) + (ones digit value)

PREVENTIVE CHECKS AND SERVICE INTERVALS

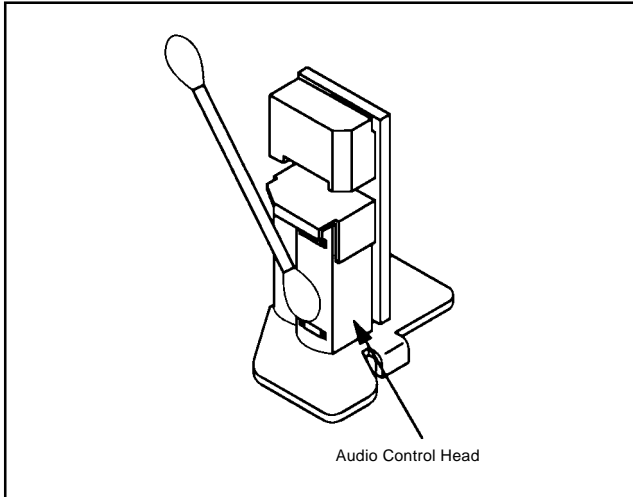
CLEANING

NOTE

After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

Clean the Audio Control Head with the cotton stick soaked by alcohol. Clean the full erase head in the same manner. **(Refer to the figure below.)**



2. TAPE RUNNING SYSTEM

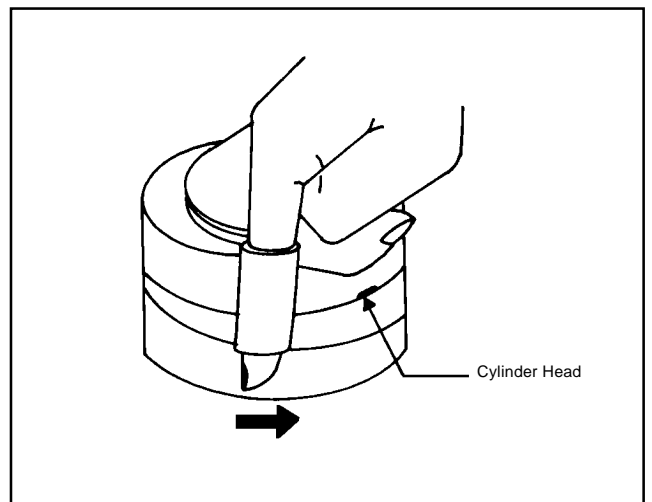
When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). **(Refer to the figure below.)**

NOTE

Do not exert force against the cylinder head. Do not move the chamois upward or downward on the head. Use the chamois one by one.



WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

NOTE: Initial Data setting will not be possible if clock has been set. To reset clock, either unplug AC cord and allow at least 5 seconds before Power On or alternatively, discharge backup capacitor.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	88	1A	F2	63	4B	14	34	8B	51	3A	10	66	56	40	00	29
10	AB	94	91	86	00	00	00	15	08	06	AC	0F	A5	41	0A	0C
20	06	29	01	17	0A	60	32	3A	BA	D7	18	1D	28	2D	2E	2F
30	30	31	33	35	37	39	3B	3D	3F	40	41	42	43	44	45	46
40	47	47	49	4A	4B	4C	4D	4E	4F	50	51	52	53	54	55	56
50	57	58	59	5A	5B	5C	5D	5E	5F	60	61	62	63	64	65	66
60	67	67	68	68	69	69	6A	6A	6B	6B						

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. While holding down VOLUME button on front cabinet, press key 6 on remote control for more than 2 seconds. ADDRESS and DATA should appear as FIG 1.

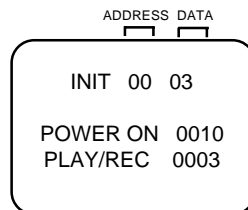
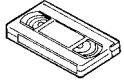
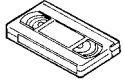
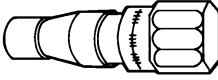
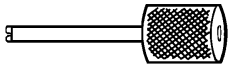
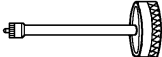
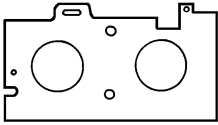
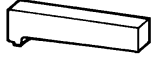
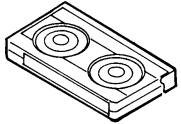
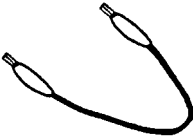
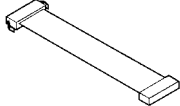
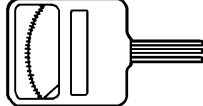


Fig. 1

3. ADDRESS is now selected and should "blink". Using the FF or REW button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using FF or REW button until required DATA value has been selected.
6. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input. The unit will now have the correct DATA for the new MEMORY IC.

SERVICING FIXTURES AND TOOLS

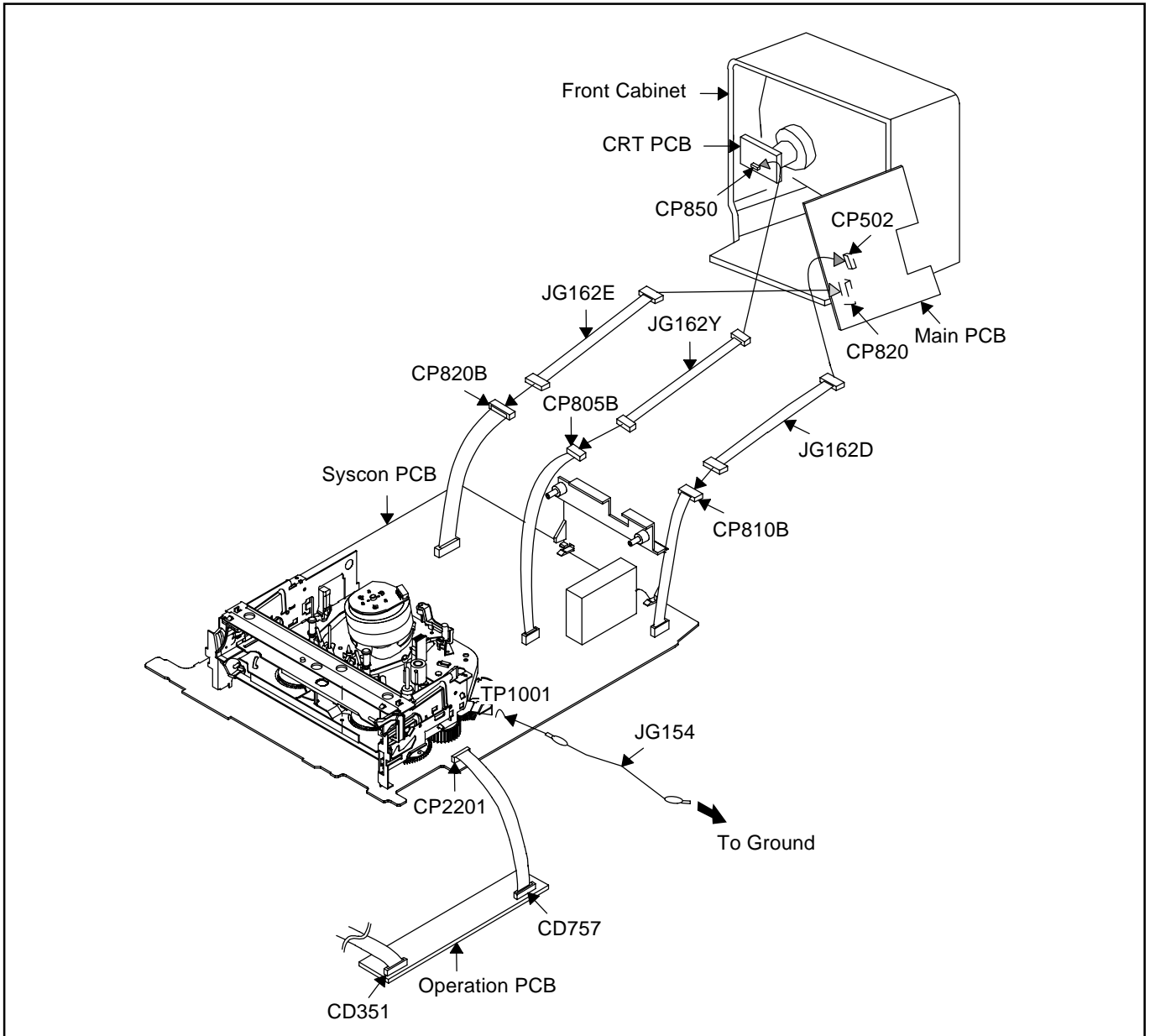
<p>(For 2 heads model) VHS Alignment Tape JG001 (VN₂S-LI6³) JG001A (VN₂S-CO1³) JG001Q (VN₂S-LI6³H) JG001T (VN₂S-X6³)</p> 	<p>(For 4 heads model) VHS Alignment Tape JG001B (VN₁S-LI6³) JG001I (VN₁S-CO1³) JG001P (VN₁S-LI6³H) JG001S (VN₁S-X6³)</p> 	<p>JG002B Adapter JG002E Dial Torque Gauge (10~90gf•cm) JG002F (60~600gf•cm)</p> 	<p>JG005 Post Adjustment Screwdriver Part No. SV-TG0-030-000 (small)</p> 
<p>JG153 X Value Adjustment Screwdriver</p> 	<p>JG022 Master Plane</p> 	<p>JG024A Reel Disk Height Adjustment Jig</p> 	<p>JG100A Torque Tape (VHT-063)</p> 
<p>JG154 Cable</p> 	<p>JG162D Cable (11 Pins) JG162E Cable (13 Pins) JG162Y Cable (5 Pins)</p> 	<p>Tentelometer</p> 	

Ref. No.	Part No.	Parts Name	Remarks
JG001	APJG001000	VHS Alignment Tape (For 2 heads model)	Monoscope, 6KHz
JG001A	APJG001A00	VHS Alignment Tape (For 2 heads model)	Color Bar, 1KHz
JG001Q	APJG001Q00	VHS Alignment Tape (For 2 heads model)	Hi-Fi Audio
JG001T	APJG001T00	VHS Alignment Tape (For 2 heads model)	X Value Adjustment
JG001B	APJG001B00	VHS Alignment Tape (For 4 heads model)	Monoscope, 6KHz
JG001I	APJG001I00	VHS Alignment Tape (For 4 heads model)	Color Bar, 1KHz
JG001P	APJG001P00	VHS Alignment Tape (For 4 heads model)	Hi-Fi Audio
JG001S	APJG001S00	VHS Alignment Tape (For 4 heads model)	X Value Adjustment
JG002B	APJG002B00	Adapter	VSR Torque, Brake Torque (S Reel/T Reel Ass'y)
JG002E	APJG002E00	Dial Torque Gauge (10~90gf•cm)	Brake Torque (T Reel Ass'y)
JG002F	APJG002F00	Dial Torque Gauge (60~600gf•cm)	VSR Torque, Brake Torque (S Reel)
JG005	APJG005000	Post Adjustment Screwdriver	Guide Roller Adjustment
JG153	APJG153000	X Value Adjustment Screwdriver	X Value Adjustment
JG022	APJG022000	Master Plane	Reel Disk Height Adjustment
JG024A	APJG024A00	Reel Disk Height Adjustment Jig	Reel Disk Height Adjustment
JG100A	APJG100A00	Torque Tape (VHT-063)	Playback Torque, Back Tension Torque During Playback
JG154	APJG154000	Cable	Used to connect the test point of SERVICE and GROUND
JG162D	APJG162D00	Cable (11 Pins)	Used to connect the Syscon PCB and Main PCB
JG162E	APJG162E00	Cable (13 Pins)	Used to connect the Syscon PCB and Main PCB
JG162Y	APJG162Y00	Cable (5 Pins)	Used to connect the Syscon PCB and CRT PCB

PREPARATION FOR SERVICING

How to use the Servicing Fixture

1. Unplug the connector CP2201, CP4202, then remove the TV/VCR Block from the set.
2. Unplug the connector CP502, CP820 and CP850, then remove the Main PCB from the VCR Block.
3. Connect as shown in the below figure using the Service Fixture.
 - Connect the Syscon PCB to the Main PCB with the cable JG162D and JG162E.
 - Connect the Syscon PCB to the CRT PCB with the cable JG162Y.
4. Remove the Operation PCB from the set, then connect it with the Syscon PCB.
If necessary, connect CD351. (Front A/V Jack Input Terminal)
5. Short circuit between **TP1001** and **Ground** with the cable JG154.
(The BOT, EOT and the Reel Sensor do not work and the deck can be operated without a cassette tape.)
6. In case of using a cassette tape, press the STOP/EJECT button to insert or eject a cassette tape.
Turn on the power and re-check the cable before checking the trouble points.



MECHANICAL ADJUSTMENTS

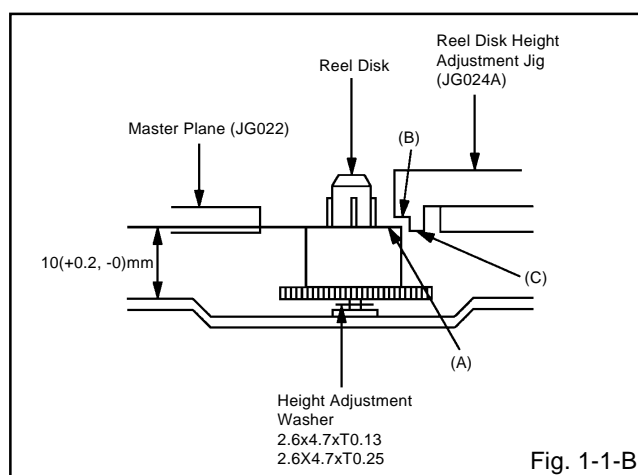
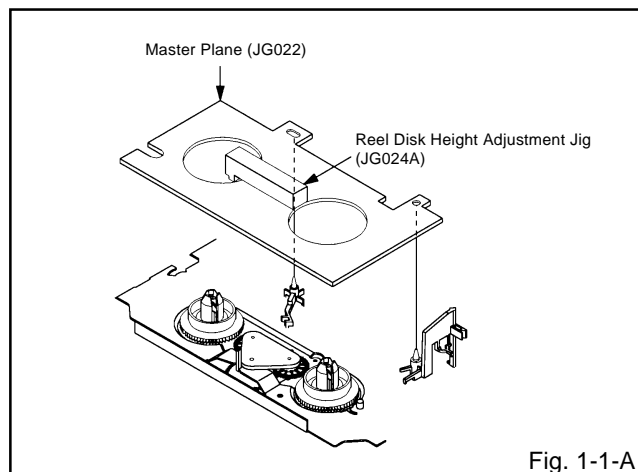
1. CONFIRMATION AND ADJUSTMENT

Read the following NOTES before starting work.

- Place an object which weighs between 450g~500g on the Cassette Tape to keep it steady when you want to make the tape run without the Cassette Holder. (Do not place an object which weighs over 500g.)

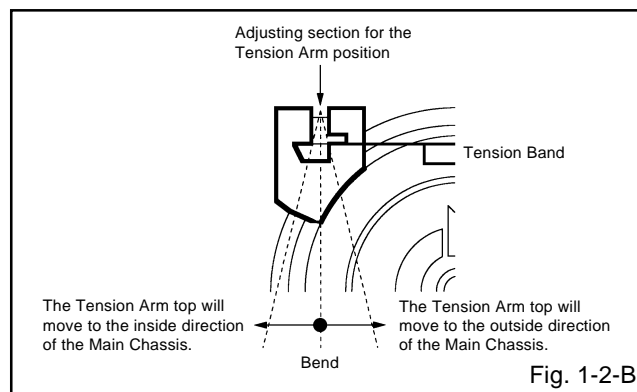
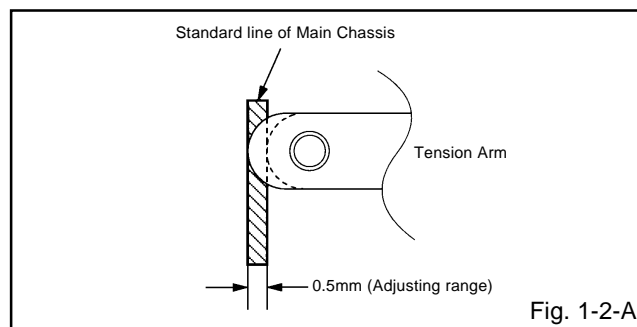
1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

- Turn on the power and set to the STOP mode.
- Set the master plane (**JG022**) and reel disk height adjustment jig (**JG024A**) on the mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A**.
- While turning the reel and confirm the following points. Check if the surface "A" of reel disk is lower than the surface "B" of reel disk height adjustment jig (**JG024A**) and is higher than the surface "C". If it is not passed, place the height adjustment washers and adjust to 10(+2, -0)mm.
- Adjust the other reel in the same way.



1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

- Set to the PLAY mode.
- Adjust the adjusting section for the Tension Arm position so that the Tension Arm top is within the standard line of Main Chassis.
- While turning the S Reel clockwise, confirm that the edge of the Tension Arm is located in the position described above.

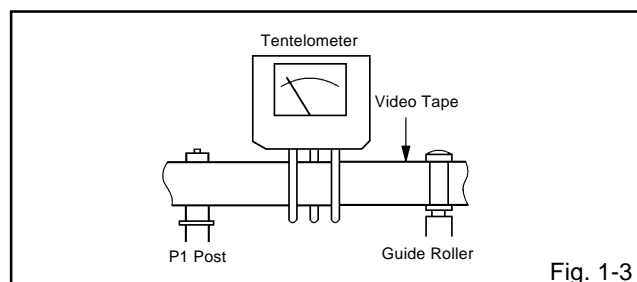


1-3: CONFIRMATION OF PLAYBACK TORQUE AND BACK TENSION TORQUE DURING PLAYBACK

- Load a video tape (T-120) recorded in standard speed mode. Set the unit to the PLAY mode.
- Install the tentelometer as shown in **Fig. 1-3**. Confirm that the meter indicates $20 \pm 2\text{gf}$ in the beginning of playback.

• USING A CASSETTE TYPE TORQUE TAPE (**JG100A**)

- After confirmation and adjustment of Tension Post position (Refer to item 1-2), load the cassette type torque tape (**JG100A**) and set to the PLAY mode.
- Confirm that the right meter of the torque tape indicates 50~90gf•cm during playback in SP mode.
- Confirm that the left meter of the torque tape indicates 25~40gf•cm during playback in SP mode.



MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF VSR TORQUE

1. Install the Torque Gauge (JG002F) and Adapter (JG002B) on the S Reel. Set to the Picture Search (Rewind) mode. (Refer to Fig.1-4-B)
2. Then, confirm that it indicates 120~180gf•cm.

NOTE

Install the Torque Gauge on the reel disk firmly. Press the REW button to turn the reel disk.

1-5: CONFIRMATION OF REEL BRAKE TORQUE

(S Reel Brake) (Refer to Fig. 1-4-B)

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of Fig. 1-4-A.
2. Move the Idler Ass'y from the S Reel.
3. Install the Torque Gauge (JG002F) and Adapter (JG002B) on the S Reel. Turn the Torque Gauge (JG002F) clockwise.
4. Then, confirm that it indicates 60~100gf•cm.

(T Reel Brake) (Refer to Fig. 1-4-B)

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of Fig. 1-4-A.
2. Move the Idler Ass'y from the T Reel.
3. Install the Torque Gauge (JG002E) and Adapter (JG002B) on the T reel. Turn the Torque Gauge (JG002E) counterclockwise.
4. Then, confirm that it indicates 30~50gf•cm.

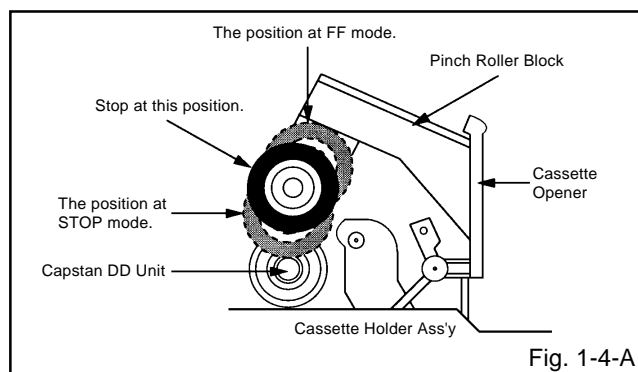


Fig. 1-4-A

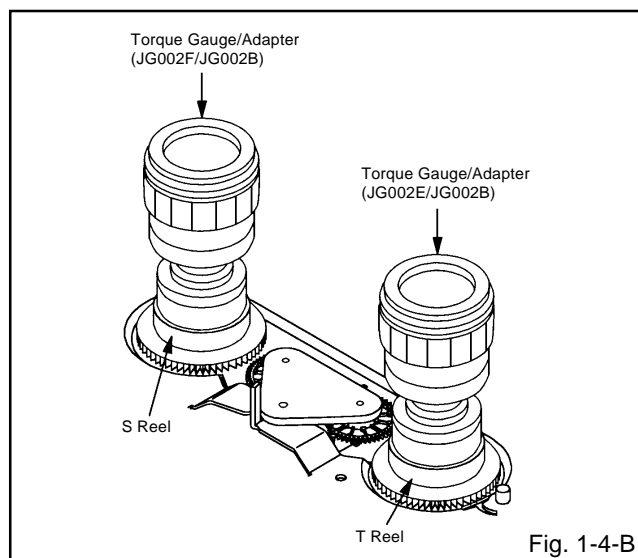


Fig. 1-4-B

NOTE

If the torque is out of the range, replace the following parts.

Check item	Replacement Part
1-4	Idler Ass'y/Clutch Ass'y
1-5	S Reel side: S Reel/Tension Band/Tension Connect/Tension Arm Ass'y T Reel side: T Reel/T Brake Band//T Brake Spring/T Brake Arm

2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

Tape Running Mechanism is adjusted precisely at the factory. Adjustment is not necessary as usual. When you replace the parts of the tape running mechanism because of long term usage or failure, the confirmation and adjustment are necessary.

2-1: GUIDE ROLLER

1. Playback the VHS Alignment Tape (JG001 or JG001B). (Refer to SERVICING FIXTURE AND TOOLS)
2. Connect CH-1 of the oscilloscope to TP4001 (Envelope) and CH-2 to TP1002 (SW Pulse).
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Trigger with SW Pulse and observe the envelope. (Refer to Fig. 2-1-A)
5. When observing the envelope, adjust the Adjusting Driver (JG005) slightly until the envelope will be flat. Even if you press the Tracking Button, adjust so that flatness is not moved so much.
6. Adjust so that the A : B ratio is better than 3 : 2 as shown in Fig. 2-1-B, even if you press the Tracking Button to move the envelope (The envelope waveform will begin to decrease when you press the Tracking Button).
7. Adjust the PG shifter during playback. (Refer to the ELECTRICAL ADJUSTMENTS)

NOTE

After adjustment, confirm and adjust A/C head. (Refer to item 2-2)

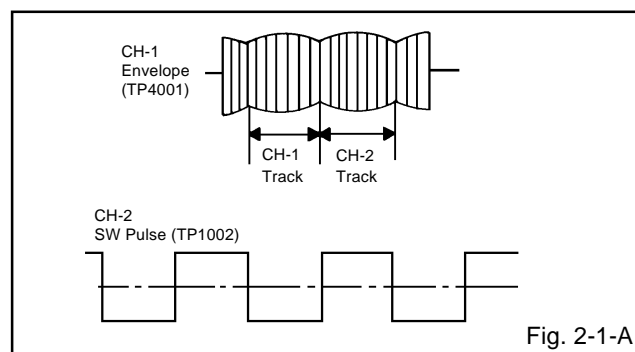


Fig. 2-1-A

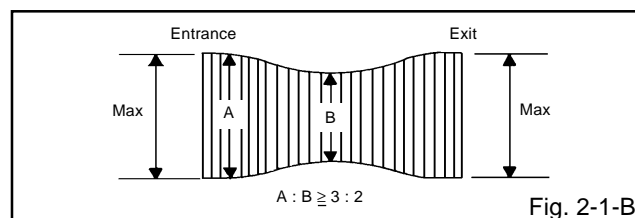


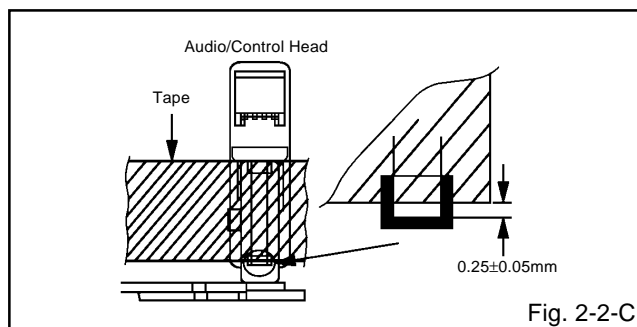
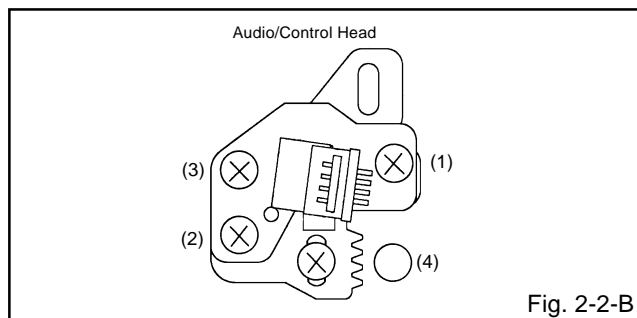
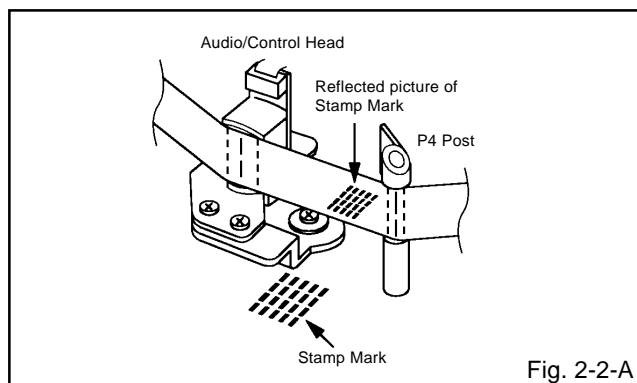
Fig. 2-1-B

MECHANICAL ADJUSTMENTS

2-2: CONFIRMATION AND ADJUSTMENT OF AUDIO/CONTROL HEAD

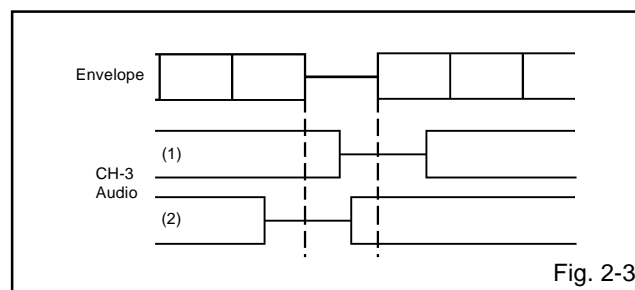
When the Tape Running Mechanism does not work well, adjust the following items.

1. Playback the VHS Alignment Tape (**JG001** or **JG001B**).
(Refer to **SERVICING FIXTURE AND TOOLS**)
2. Confirm that the reflected picture of stamp mark is appeared on the tape prior to P4 Post as shown in **Fig. 2-2-A**.
 - a) When the reflected picture is distorted, turn the screw (1) clockwise until the distortion is disappeared.
 - b) When the reflected picture is not distorted, turn the screw (1) counterclockwise until little distortion is appeared, then adjust the a).
3. Turn the screw (2) to set the audio level to maximum.
4. Confirm that the bottom of the Audio/Control Head and the bottom of the tape is shown in **Fig. 2-2-C**.
 - a) When the height is not correct, turn the screw (3) to adjust the height. Then, adjust the 1~3 again.



2-3: TAPE RUNNING ADJUSTMENT (X VALUE ADJUSTMENT)

1. Confirm and adjust the height of the Reel Disk.
(Refer to item 1-1)
2. Confirm and adjust the position of the Tension Post. (Refer to item 1-2)
3. Adjust the Guide Roller. (Refer to item 2-1)
4. Confirm and adjust the Audio/Control Head.
(Refer to item 2-2)
5. Connect CH-1 of the oscilloscope to **TP4001**, CH-2 to **TP1002** and CH-3 to **HOT side of Audio Out Jack**.
6. Playback the VHS Alignment Tape (**JG001S** or **JG001T**).
(Refer to **SERVICING FIXTURE AND TOOLS**)
7. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
8. Set the X Value adjustment driver (**JG153**) to the (4) of **Fig. 2-2-B**. Adjust X value so that the envelope waveform output becomes maximum. Check if the relation between Audio and Envelope waveform becomes (1) or (2) of **Fig. 2-3**.

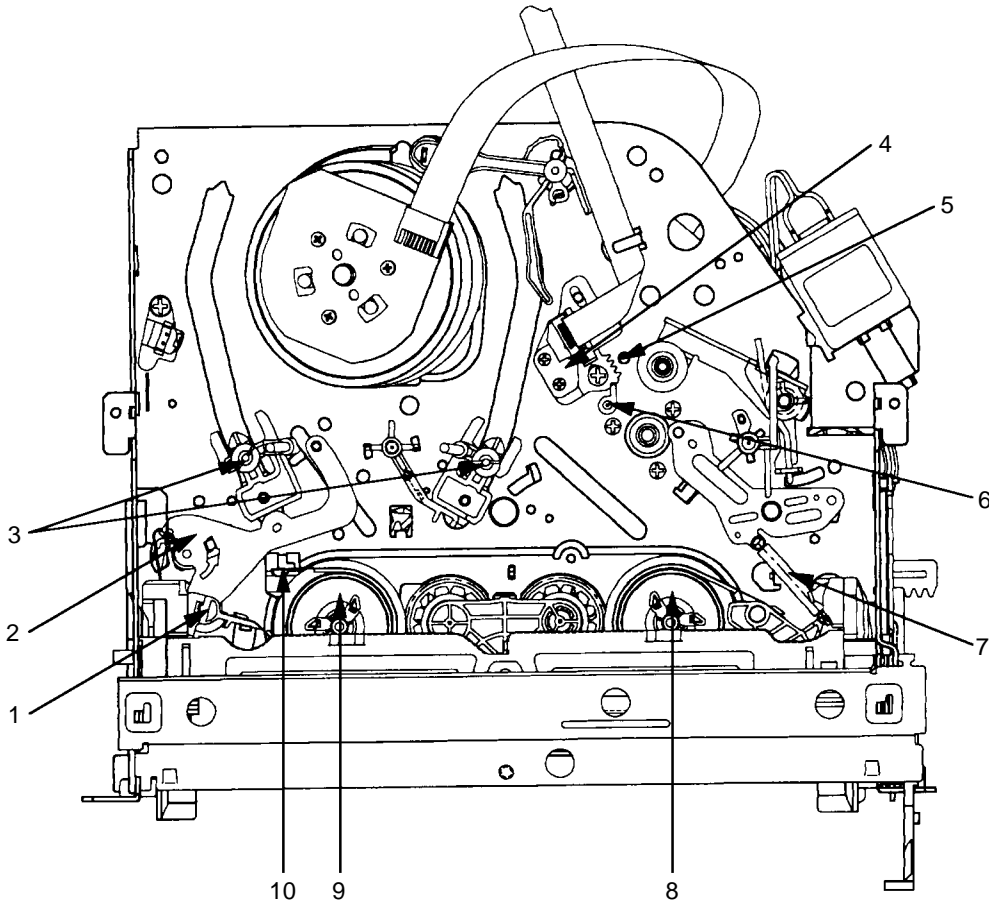


2-4: CONFIRM HI-FI AUDIO (Hi-Fi model only)

1. Connect CH-1 of the oscilloscope to **TP4001** and CH-2 to the **Hi-Fi Audio Out Jack**.
2. Playback the VHS Alignment Tape (**JG001P** or **JG001Q**).
(Refer to **SERVICING FIXTURE AND TOOLS**)
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Press the Tracking Up button and count number of steps which the audio output is changed from Hi-Fi (10KHz) to MONO (6KHz).
5. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
6. Press the Tracking Down button and count number of steps which the audio output is changed from Hi-Fi (10KHz) to MONO (6KHz).
7. If the difference are more than 3 steps, set the X Value adjustment driver (**JG153**) to 4 of **Fig. 2-2-B**. Change the X Value and adjust it so that the value becomes within 2 steps.

MECHANICAL ADJUSTMENTS

3. MECHANISM ADJUSTMENT PARTS LOCATION GUIDE



- | | |
|-----------------------------------|--|
| 1. Tension Connect | 6. P4 Post |
| 2. Tension Arm | 7. T Brake Spring |
| 3. Guide Roller | 8. T Reel |
| 4. Audio/Control Head | 9. S Reel |
| 5. X value adjustment driver hole | 10. Adjusting section for the Tension Arm position |

ELECTRICAL ADJUSTMENTS

1. BEFORE MAKING ELECTRICAL ADJUSTMENTS

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
- When you exchange IC and Transistor for a heat sink, apply the silicon grease (**YG6260M**) on the contact section of the heat sink, Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor.)

On-Screen Display Adjustment

1. Unplug the AC plug for more than 5 seconds to set the clock to the non-setting state. Then, set the volume level to minimum.
2. Press the VOL. DOWN button on the set and the Channel button (**9**) on the remote control simultaneously to appear the adjustment mode on the screen as shown in **Fig. 1-1**.

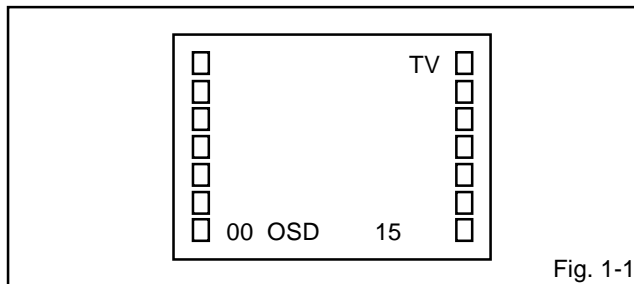


Fig. 1-1

3. Use the Channel UP/DOWN button or Channel button (**0-9**) on the remote control to select the options shown in **Fig. 1-2**.
4. Press the MENU button on the remote control to end the adjustments.

NO.	FUNCTION	NO.	FUNCTION
00	OSD H	13	BRIGHTNESS
01	CUT OFF	14	CONTRAST
02	RF DELAY	15	COLOR
03	VIF VCO	16	TINT
04	H VCO	17	SHARPNESS
05	H PHASE	18	FM LEVEL
06	V SIZE	19	LEVEL
07	V SHIFT	20	SEPARATION 1
08	R DRIVE	21	SEPARATION 2
09	B DRIVE	22	TEST MONO
10	R BIAS	23	TEST STEREO
11	G BIAS	24	X-RAY TEST
12	B BIAS		

Fig. 1-2

2. BASIC ADJUSTMENTS (VCR SECTION)

2-1: PG SHIFTER

1. Connect CH-1 on the oscilloscope to **TP1002** and CH-2 to **J4202**.
2. Playback the alignment tape. (**JG001A**)
3. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
4. Press the VOL. DOWN button on the set and the channel button (**3**) on the remote control simultaneously until the indicator REC disappears. If the indicator REC disappears, adjustment is completed.

(If the above adjustments doesn't work well:)

5. Press the VOL. DOWN button on the set and the channel button (**3**) on the remote control simultaneously until the indicator REC disappears.
6. When the REC indicator is blinking, press both VOL. DOWN button on the set and the channel button (**4**) on the remote control simultaneously and adjust the Tracking +/- button until the arising to the down of Head Switching Pulse becomes $6.5 \pm 0.5H$.
(Refer to **Fig. 2-1-A, B**)
7. Press the Tracking Auto button.

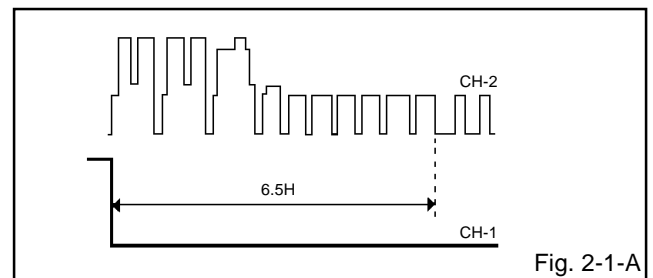


Fig. 2-1-A

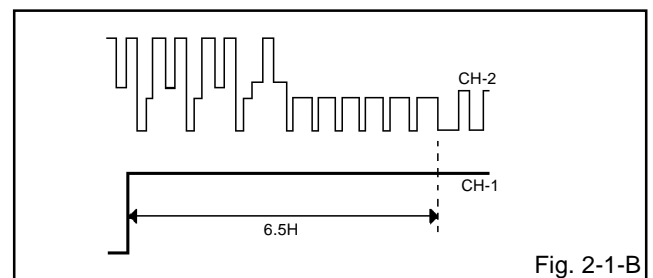


Fig. 2-1-B

2-2: VCO FREERUN

1. Place the set with Aging Test for more than 10 minutes.
2. Connect the digital voltmeter between the **pin 7 of CP602** and the **pin 1 (GND) of CP602**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**03**) on the remote control to select "VIF VCO".
4. Press the VOL. UP/DOWN button on the remote control until the digital voltmeter is 2.5V.

ELECTRICAL ADJUSTMENTS

2-3: RF AGC

1. Receive a 63dB monoscope pattern.
2. Connect the digital voltmeter between the **pin 5 of CP602** and the **pin 1 (GND) of CP602**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**02**) on the remote control to select "RF DELAY".
4. Press the VOL. UP/DOWN button on the remote control until the digital voltmeter is $2.65 \pm 0.05V$.

(TV SECTION)

2-4: CONSTANT VOLTAGE

1. Input DC12V to DC Jack and turn the Power ON.
2. Connect the digital voltmeter between the **FH503** or **FH504** and the **GND**.
3. Set condition is AV MODE without signal.
4. Adjust the **VR501** until the DC voltage is $134 \pm 0.5V$.
5. Input AC120V to AC cord and remove the DC Jack cord. Check if the Power is ON before doing the above procedure.
6. Adjust the **VR502** until the DC voltage is $135 \pm 0.5V$.

2-5: CUT OFF

1. Adjust the unit to the following settings.
R.DRIVE=64, B.DRIVE=64, R.BIAS=128, G.BIAS=128,
B.BIAS=128, SUB BRIGHT=128, SUB CONTRAST=100.
2. Place the set with Aging Test for more than 15 minutes.
3. Set condition is AV MODE without signal.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**01**) on the remote control to select "CUT OFF".
5. Adjust the **Screen Volume** until a dim raster is obtained.

2-6: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the white 100% signal from the Pattern Generator.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**10**) on the remote control to select "R.BIAS".
5. Using the VOL. UP/DOWN button on the remote control, adjust the R.BIAS.
6. Press the CH. UP/DOWN button on the remote control to select the "R.DRIVE", "B.DRIVE", "G.BIAS" or "B.BIAS".
7. Using the VOL. UP/DOWN button on the remote control, adjust the R.DRIVE, B.DRIVE, G.BIAS or B.BIAS.
8. Perform the above adjustments 6 and 7 until the white color is looked like a white.

2-7: FOCUS

1. Receive the monoscope pattern.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the **Focus Volume** until picture is distinct.

2-8: SUB BRIGHTNESS

1. Receive the monoscope pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**13**) on the remote control to select "BRIGHTNESS".
4. Press the VOL. UP/DOWN button on the remote control until the white 10% starting to be visible.
5. Receive the monoscope pattern. (Audio Video Input)
6. Press the INPUT SELECT button on the remote control to set to the AV mode. Then perform the above adjustments 2~4.

2-9: HORIZONTAL PHASE

1. Receive the monoscope pattern.
2. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**05**) on the remote control to select "H PHASE".
3. Press the VOL. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

2-10: VERTICAL SHIFT

1. Receive the center cross signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**07**) on the remote control to select "V SHIFT".
4. Check if the step No. V SHIFT is "0".
5. Adjust the **VR402** until the horizontal line becomes fit to the notch of the shadow mask.

2-11: VERTICAL SIZE

1. Receive the center cross signal from the Pattern Generator.
2. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**06**) on the remote control to select "V SIZE".
3. Press the VOL. UP/DOWN button on the remote control until the rectangle on the center of the screen becomes square.
4. Receive a broadcast and check if the picture is normal.

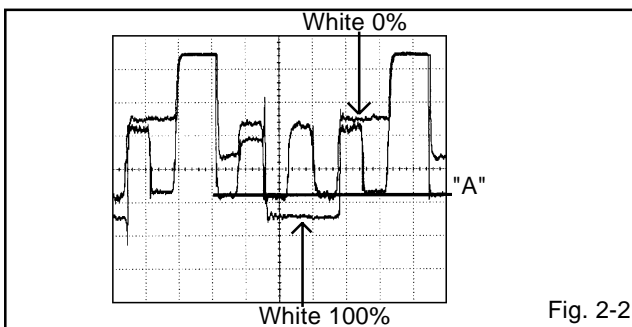
2-12: SUB CONTRAST

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**14**) on the remote control to select "CONTRAST".
2. Press the VOL. UP/DOWN button on the remote control until the contrast step No. becomes "100".
3. Receive the color bar pattern. (Audio Video Input)
4. Press the INPUT SELECT button on the remote control to set to the AV mode. Then perform the above adjustments 1, 2.

ELECTRICAL ADJUSTMENTS

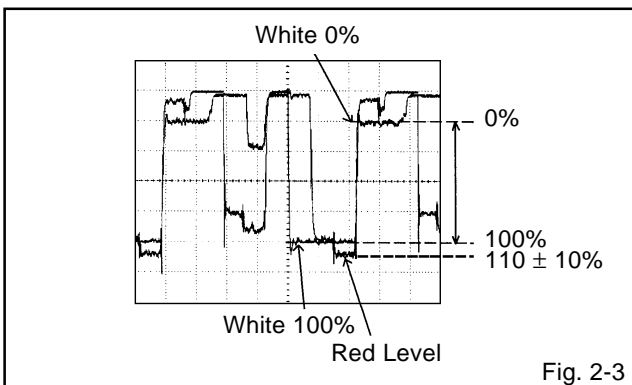
2-13: SUB TINT

1. Receive the color bar pattern. (RF Input)
2. Connect the oscilloscope to **TP803** (R810).
3. Using the remote control, set the brightness, contrast, color and tint to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**16**) on the remote control to select "TINT".
5. Press the VOL. UP/DOWN button on the remote control until the section "A" becomes a straight line. (**Refer to Fig. 2-2**)
6. Receive the color bar pattern. (Audio Video Input)
7. Press the INPUT SELECT button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.



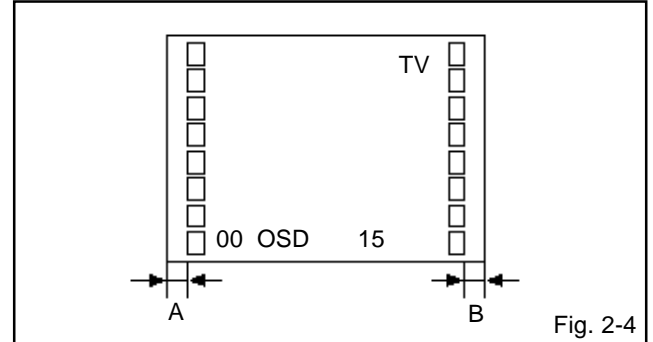
2-14: SUB COLOR

1. Receive the color bar pattern. (RF Input)
2. Connect the oscilloscope to **TP801** (R802).
3. Using the remote control, set the brightness, contrast, color and tint to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**15**) on the remote control to select "COLOR".
5. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set 5 scales on the screen of the oscilloscope.
6. Press the VOL. UP/DOWN button on the remote control until the red color level is adjusted to $110\% \pm 10\%$ of the white level. (**Refer to Fig. 2-3**)
7. Receive the color bar pattern. (Audio Video Input)
8. Press the INPUT SELECT button on the remote control to set to the AV mode. Then perform the above adjustments 2~6.



2-15: OSD HORIZONTAL

1. Activate the adjustment mode display of **Fig. 1-1**.
2. Press the VOL. UP/DOWN button on the remote control until the difference of A and B becomes minimum. (**Refer to Fig. 2-4**)



2-16: H VCO

1. Receive the monoscope pattern. (RF Input)
2. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**04**) on the remote control to select "H VCO".
3. Check if the step No. of H VCO is "4".

2-17: SUB SHARPNESS

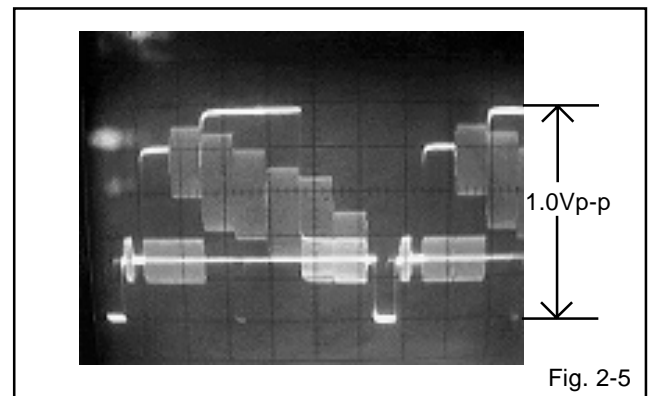
1. Receive the monoscope pattern.
2. Activate the adjustment mode display of **Fig. 1-1** and press the channel button (**17**) on the remote control to select "SHARPNESS".
3. Check if the step No. of SHARPNESS is "40".
4. Press the INPUT SELECT button on the remote control to set to the AV mode. Then perform the above adjustments 1, 2.

2-18: VERTICAL LINEALITY

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Adjust the **VR401** of the OVER SCAN on upside and downside becomes minimum.

2-19: E-E LEVEL

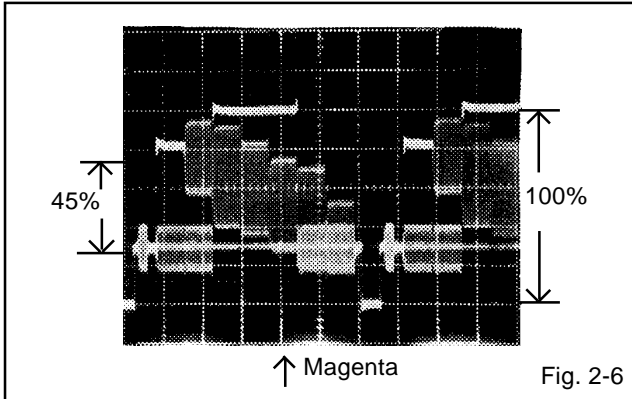
1. Receive the color bar pattern. (Audio Video Input)
2. Connect the oscilloscope to **TP4201**.
3. Check if the VIDEO OUTPUT LEVEL is $1 \pm 0.2V_{p-p}$. (**Refer to Fig. 2-5**)



ELECTRICAL ADJUSTMENTS

2-20: COLOR LEVEL

1. Receive the color bar pattern. (RF Input)
2. Connect the oscilloscope to **TP4201**.
3. When setting to the Y-LEVEL 100%, check if the MAGENTA is $45 \pm 10\%$. (Refer to Fig. 2-6)



ELECTRICAL ADJUSTMENTS

3. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 3-1)**
If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnelside of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

3-2: PURITY

NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from the color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

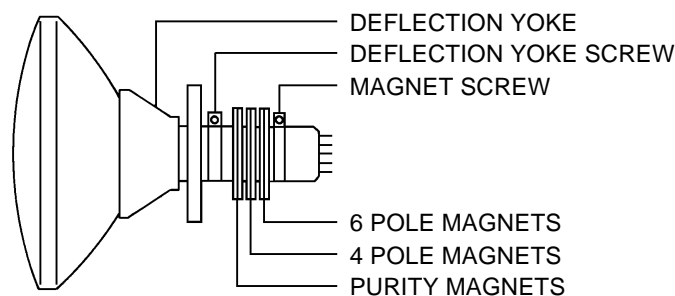


Fig. 3-1

3-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-2.

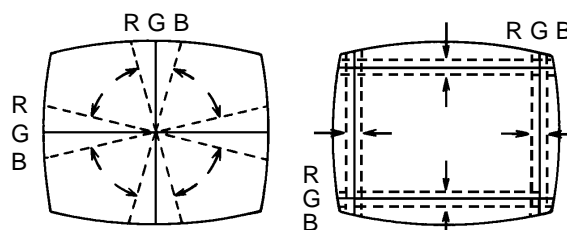
1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

3-4: DYNAMIC CONVERGENCE

NOTE

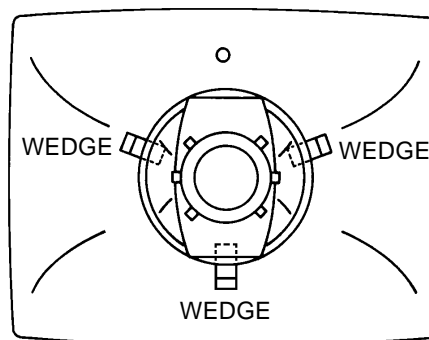
Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 3-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 3-2-b)**



UPWARD/DOWNWARD SLANT RIGHT/LEFT SLANT

Fig. 3-2-a

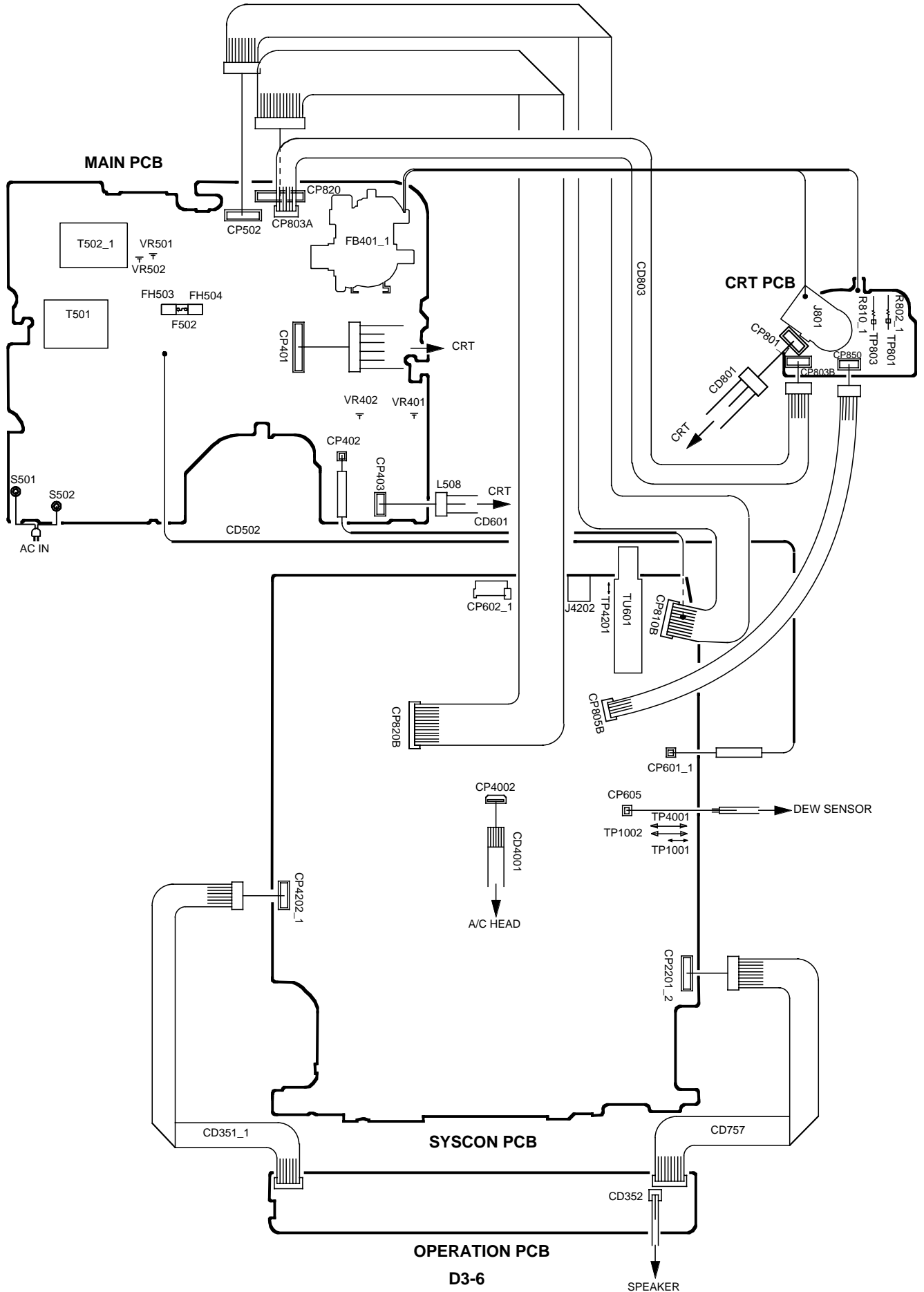


WEDGE POSITION

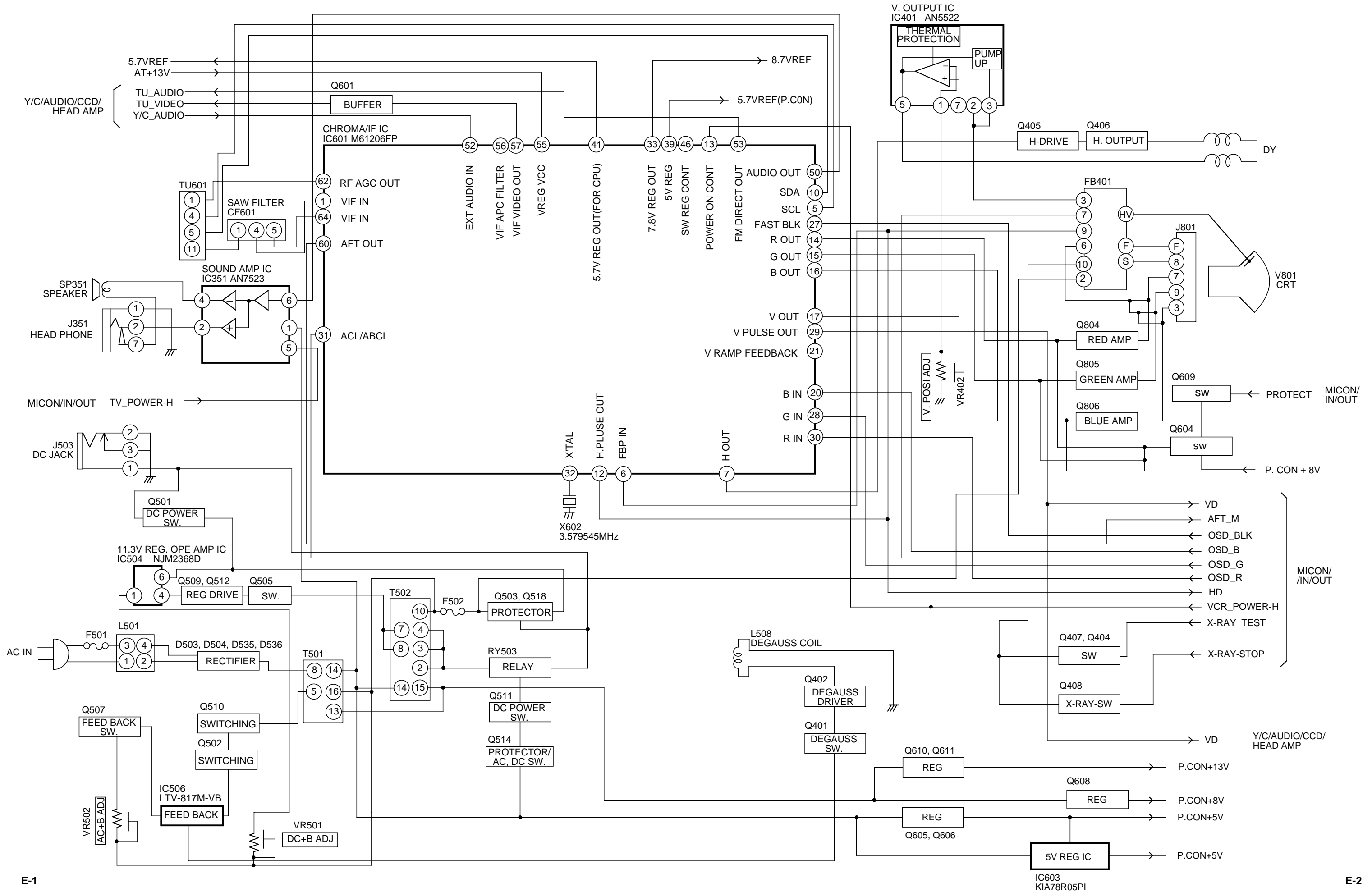
Fig. 3-2-b

ELECTRICAL ADJUSTMENTS

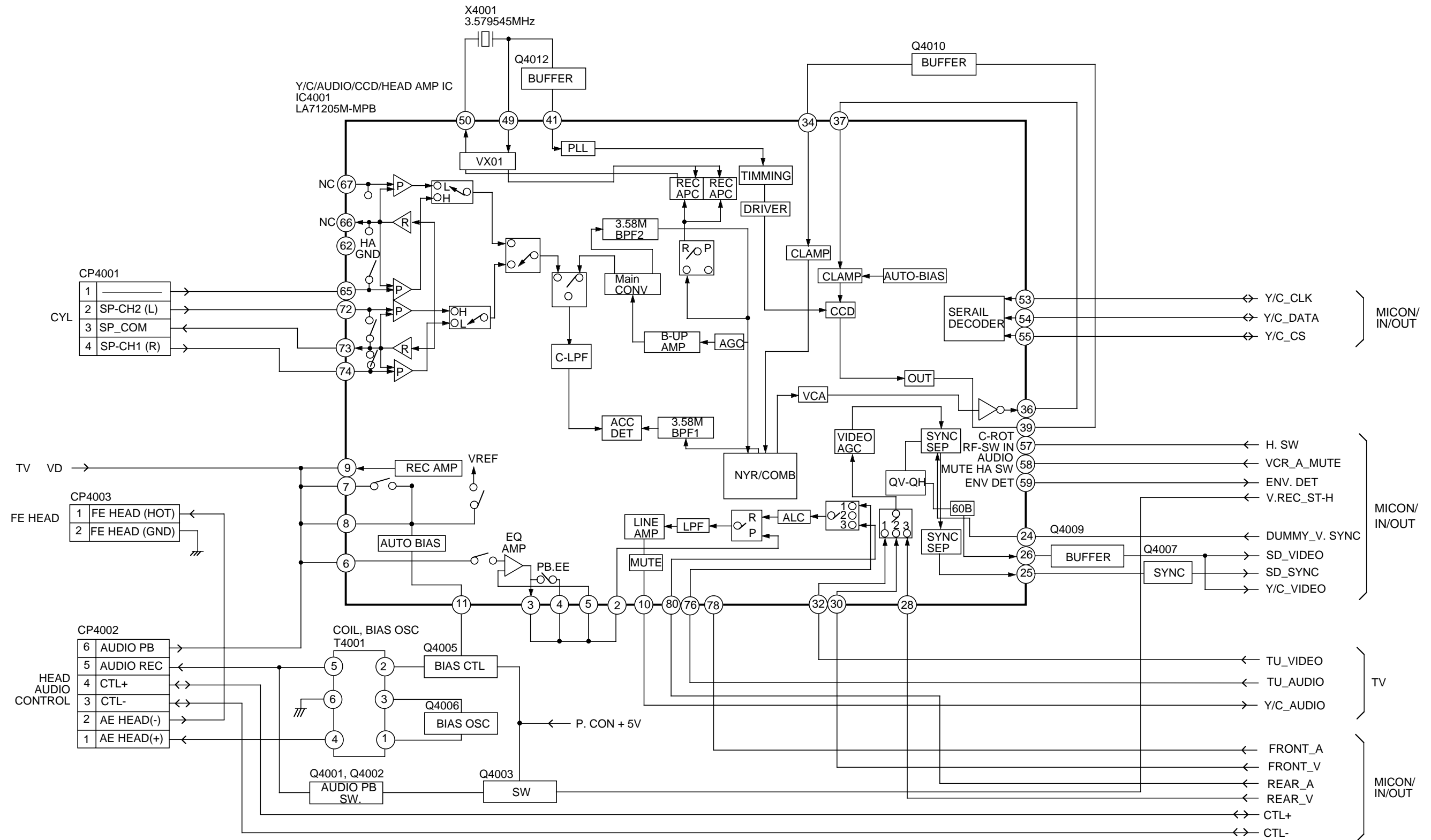
4. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)



TV BLOCK DIAGRAM

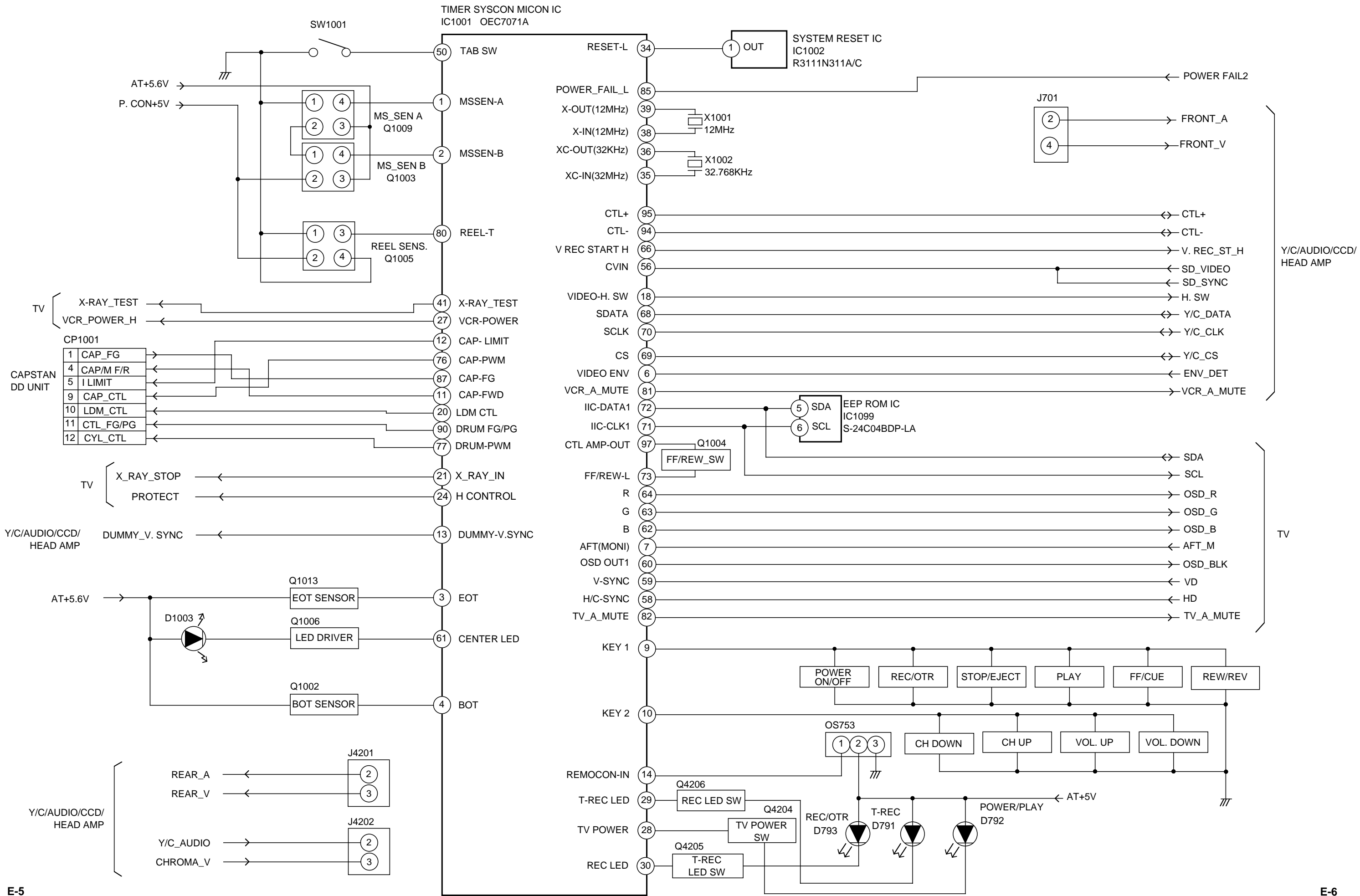


Y/C/AUDIO/CCD/HEAD AMP BLOCK DIAGRAM

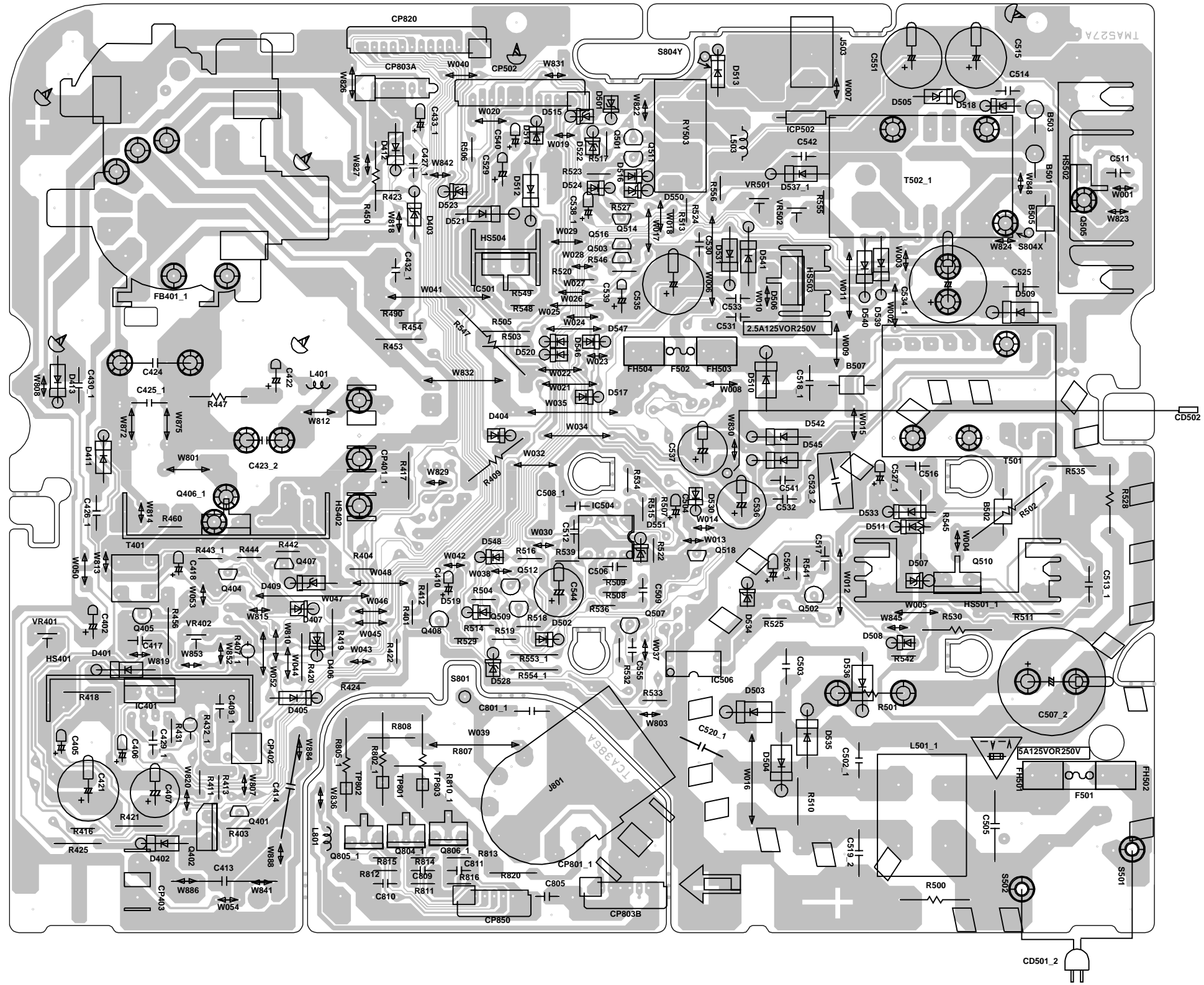


MICON/IN/OUT BLOCK DIAGRAM

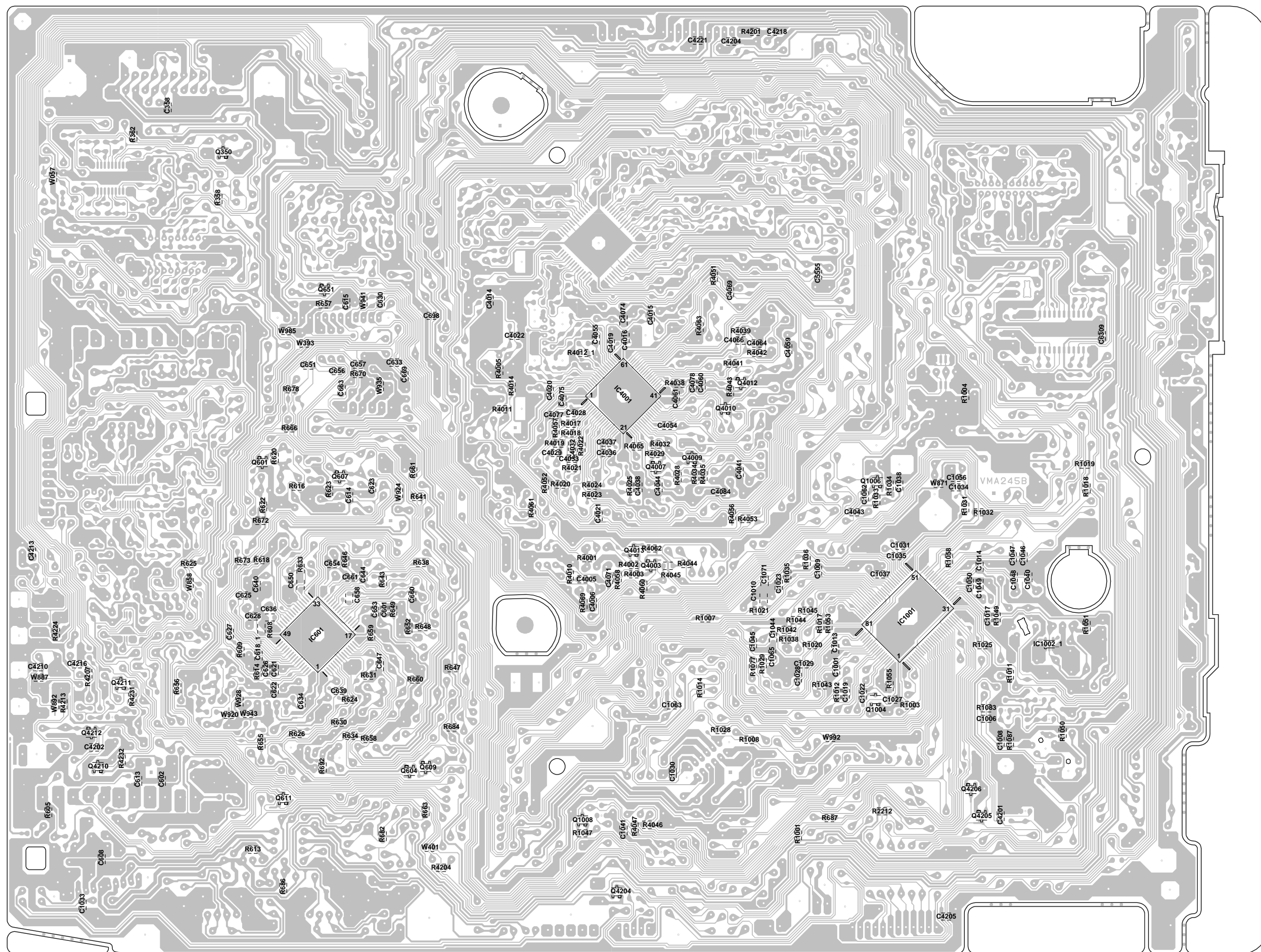
TIMER SYSCON MICON IC
IC1001 OEC7071A



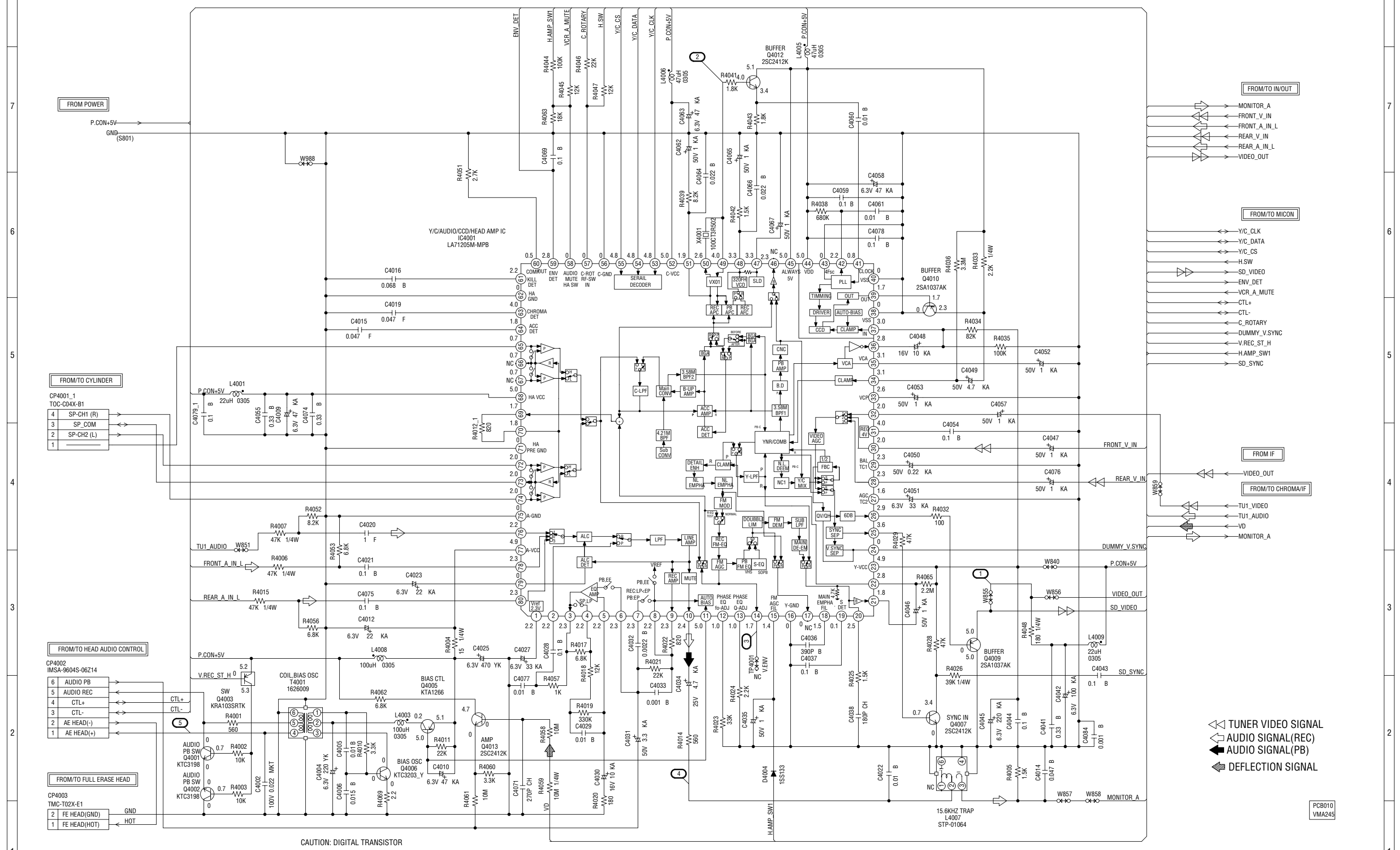
PRINTED CIRCUIT BOARDS
MAIN/CRT
SOLDER SIDE



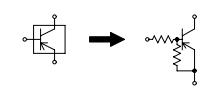
PRINTED CIRCUIT BOARDS
SYSCON (CHIP MOUNTED PARTS)
SOLDER SIDE



Y/C/AUDIO/CCD/HEAD AMP SCHEMATIC DIAGRAM (SYSCON PCB)



CAUTION: DIGITAL TRANSISTOR



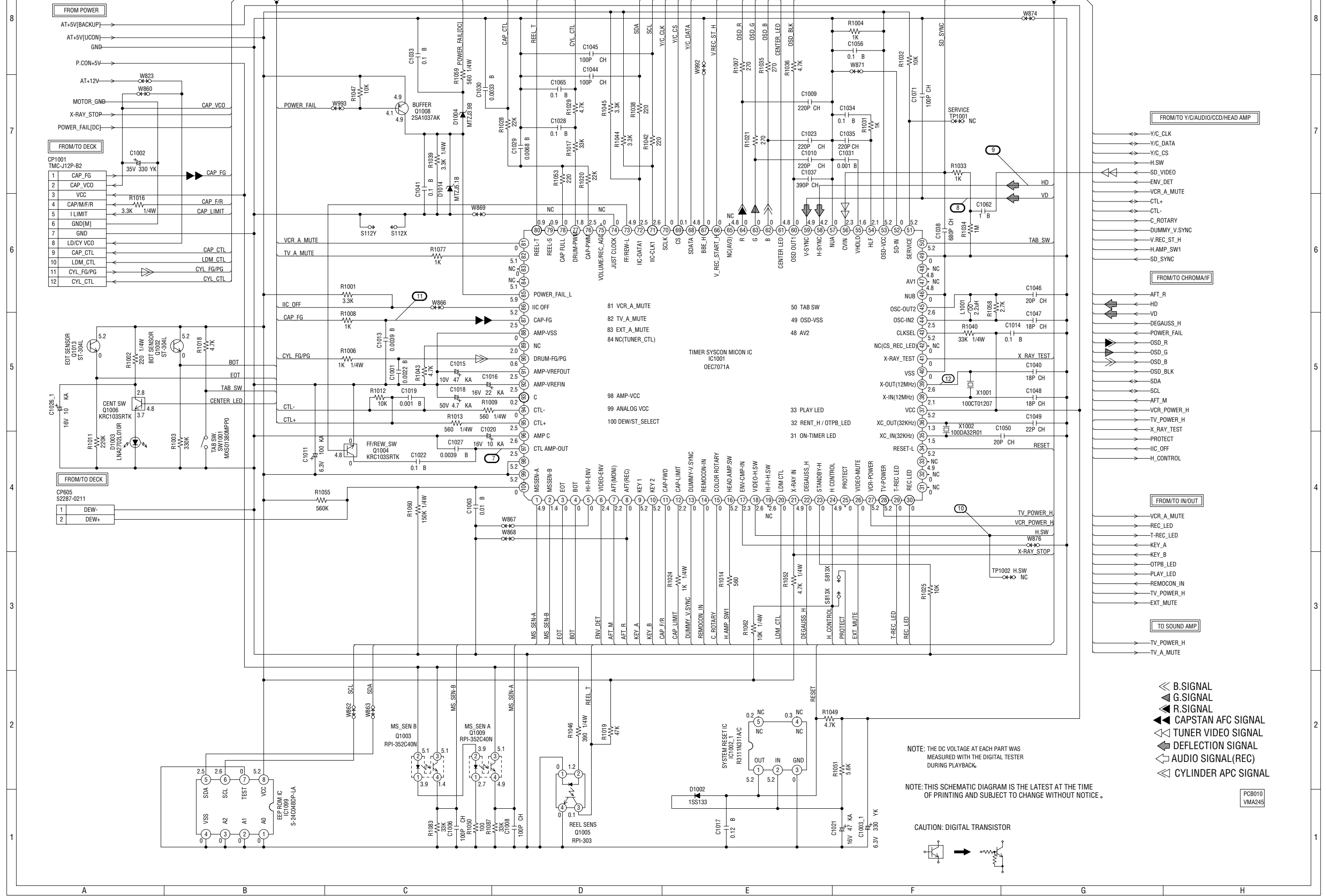
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

- ◁ TUNER VIDEO SIGNAL
- ◁ AUDIO SIGNAL(REC)
- ◁ AUDIO SIGNAL(PB)
- ◁ DEFLECTION SIGNAL

PCB010
VMA245

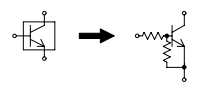
MICON SCHEMATIC DIAGRAM (SYSCON PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

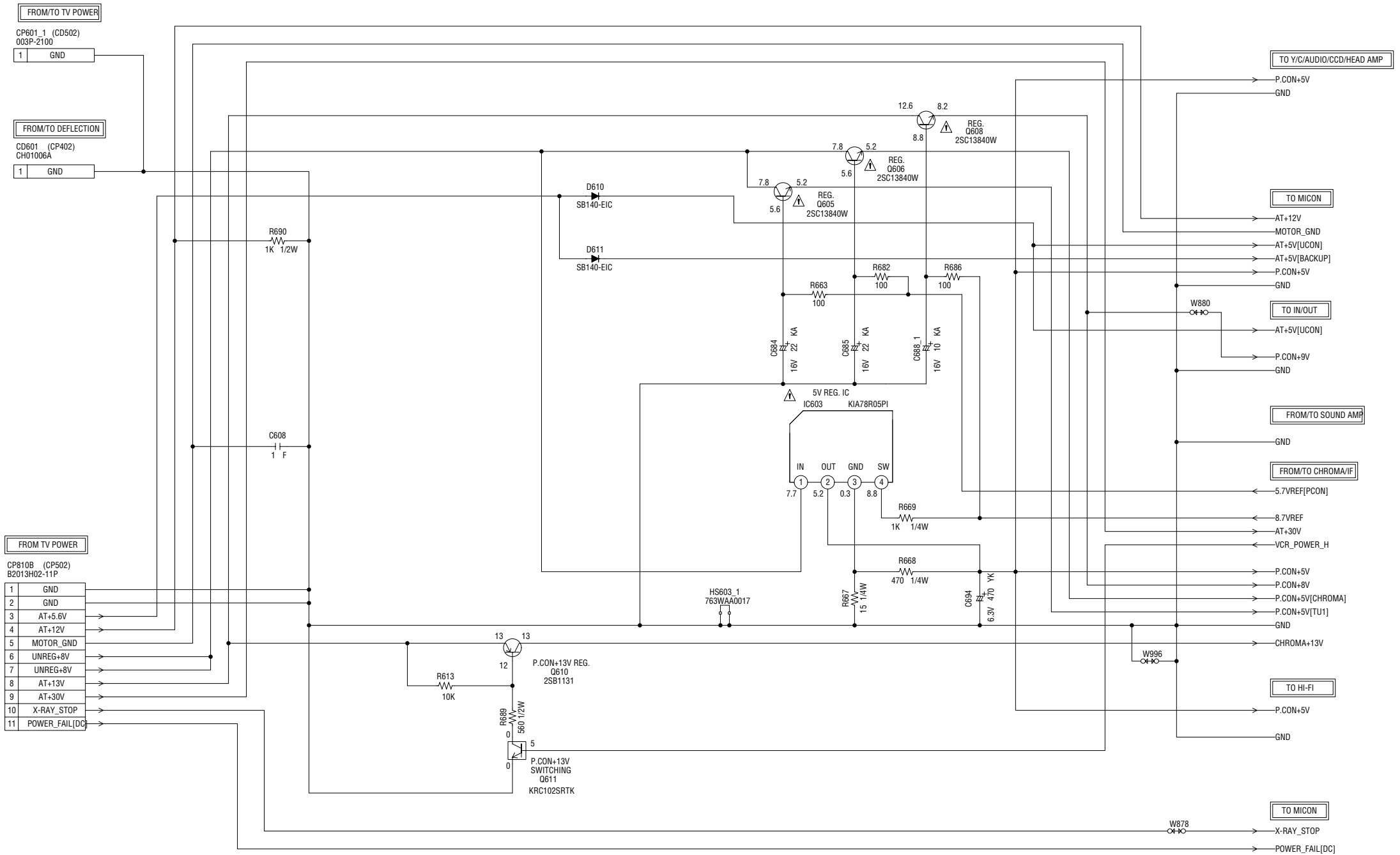
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: DIGITAL TRANSISTOR

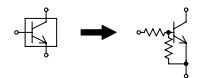


PCB010
VMA245

POWER SCHEMATIC DIAGRAM (SYSCON PCB)



CAUTION: DIGITAL TRANSISTOR



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING RECORDING (SP MODE)

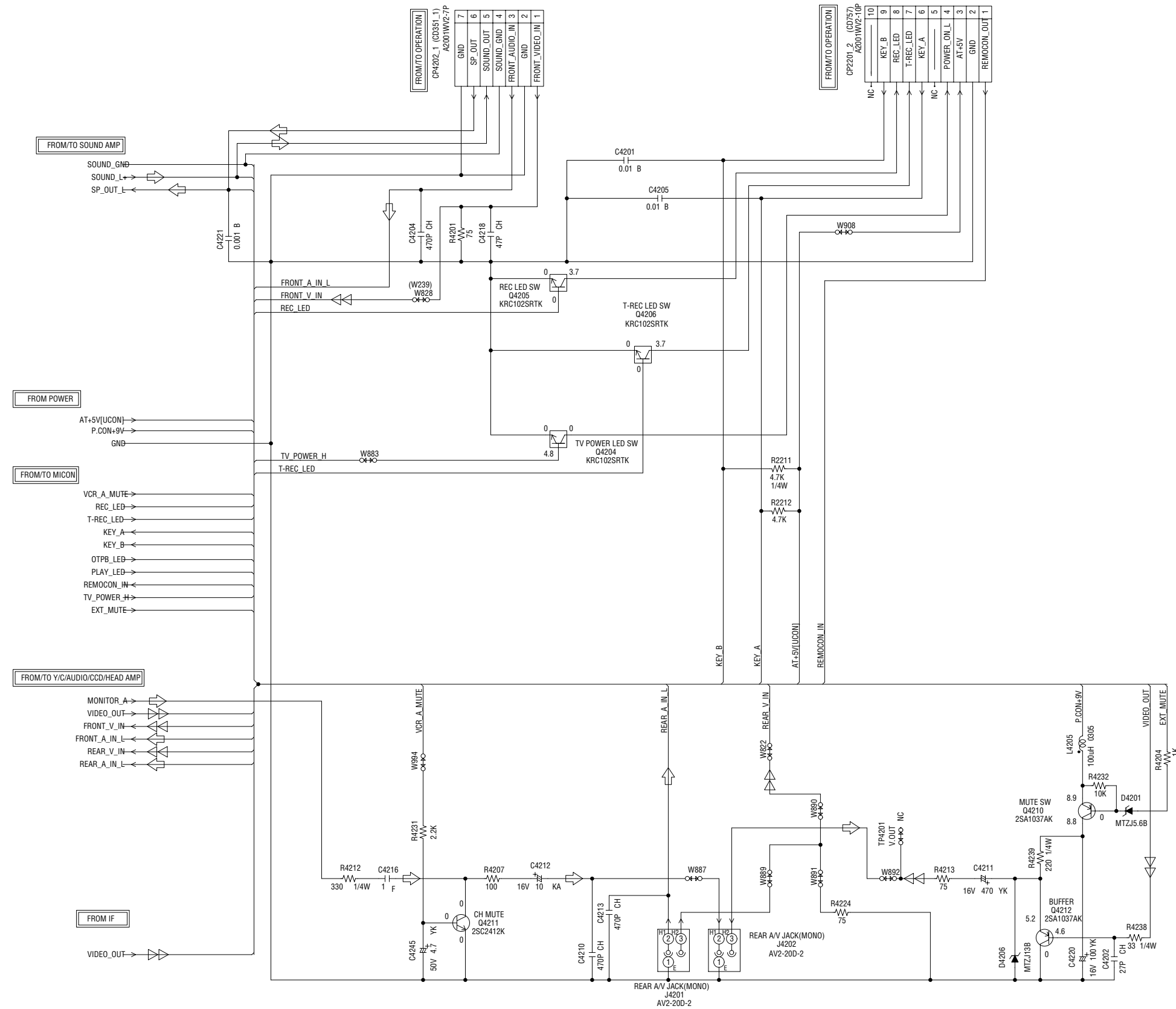
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

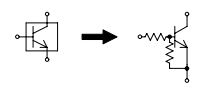
ATTENTION: LES PIECES REPARÉES PAR UN ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

PC8010
VMA245

IN/OUT SCHEMATIC DIAGRAM (SYSCON PCB)



CAUTION: DIGITAL TRANSISTOR



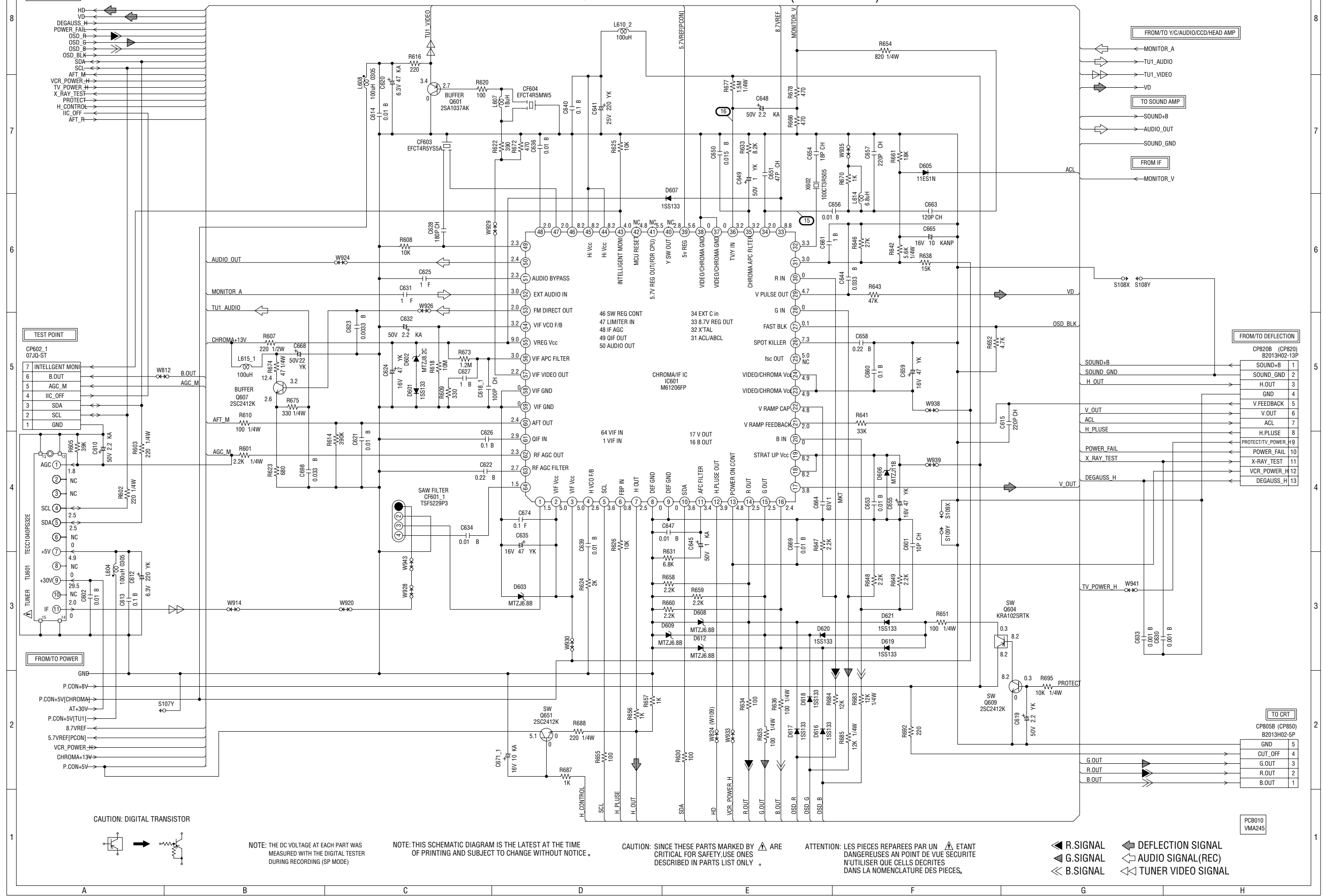
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

◁ TUNER VIDEO SIGNAL
 ⇨ AUDIO SIGNAL(REC)

PC8010
VMA245

CHROMA/IF SCHEMATIC DIAGRAM (SYSCON PCB)



CAUTION: DIGITAL TRANSISTOR

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING RECORDING (SP MODE)

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPARÉES PAR UN ÉTANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLES DECRITES DANS LA NOMENCLATURE DES PIECES.

◀ R. SIGNAL
◀ G. SIGNAL
◀ B. SIGNAL
◀ DEFLECTION SIGNAL
◀ AUDIO SIGNAL (REC)
◀ TUNER VIDEO SIGNAL

FROM/TO DEFLECTION

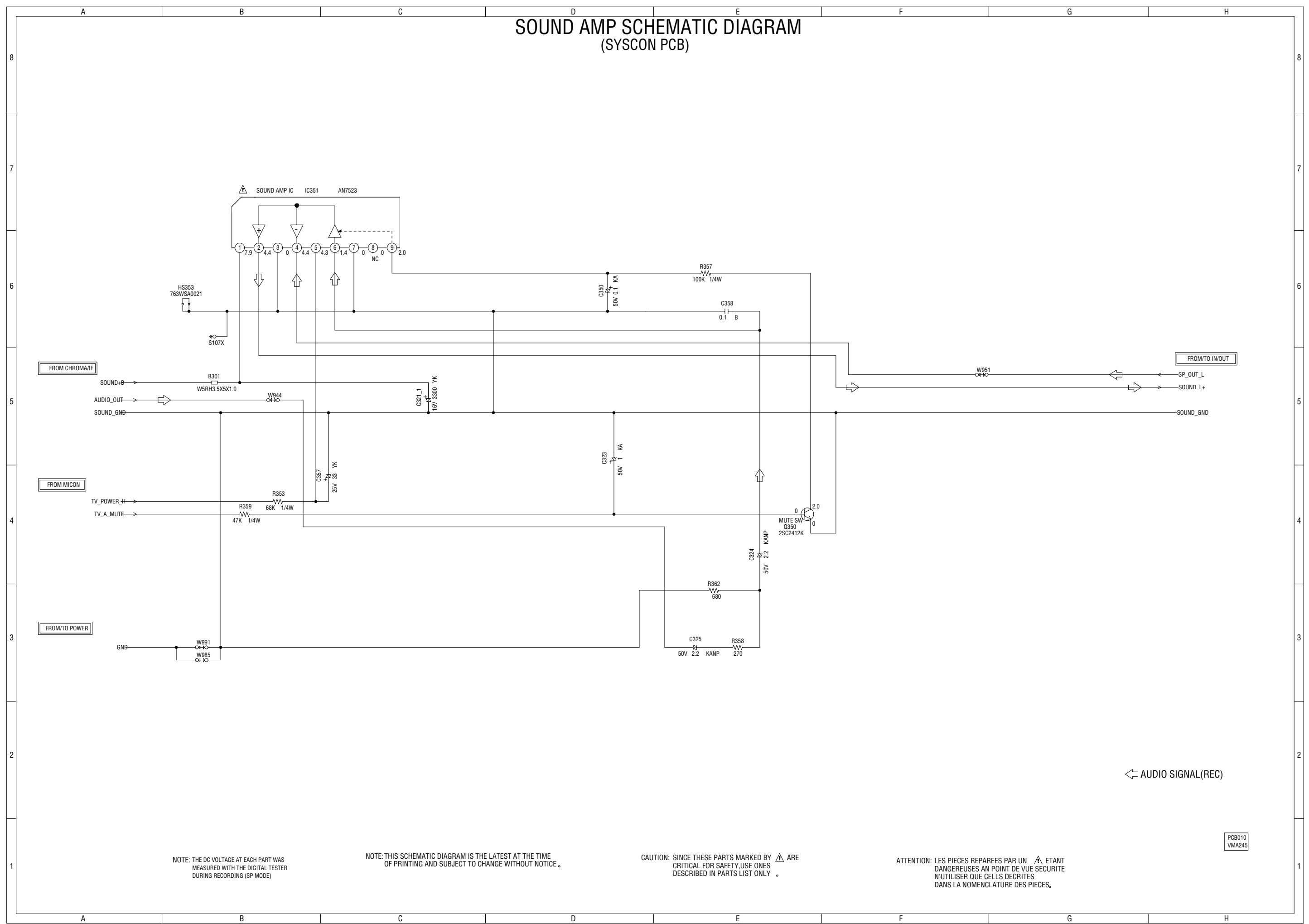
CP820B (CP820)	SOUND+B	1
B2013H02-13P	SOUND_GND	2
	H.OUT	3
	GND	4
	V.FEEDBACK	5
	V.OUT	6
	ACL	7
	H.PLUSE	8
	PROTECT/TV_POWER	9
	POWER_FAIL	10
	X-RAY_TEST	11
	VCR_POWER_H	12
	DEGAUSS_H	13

TO CRT

CP805B (CP850)	GND	5
B2013H02-5P	CUT_OFF	4
	G.OUT	3
	R.OUT	2
	B.OUT	1

PCB010
VMA245

SOUND AMP SCHEMATIC DIAGRAM (SYSCON PCB)



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING RECORDING (SP MODE)

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

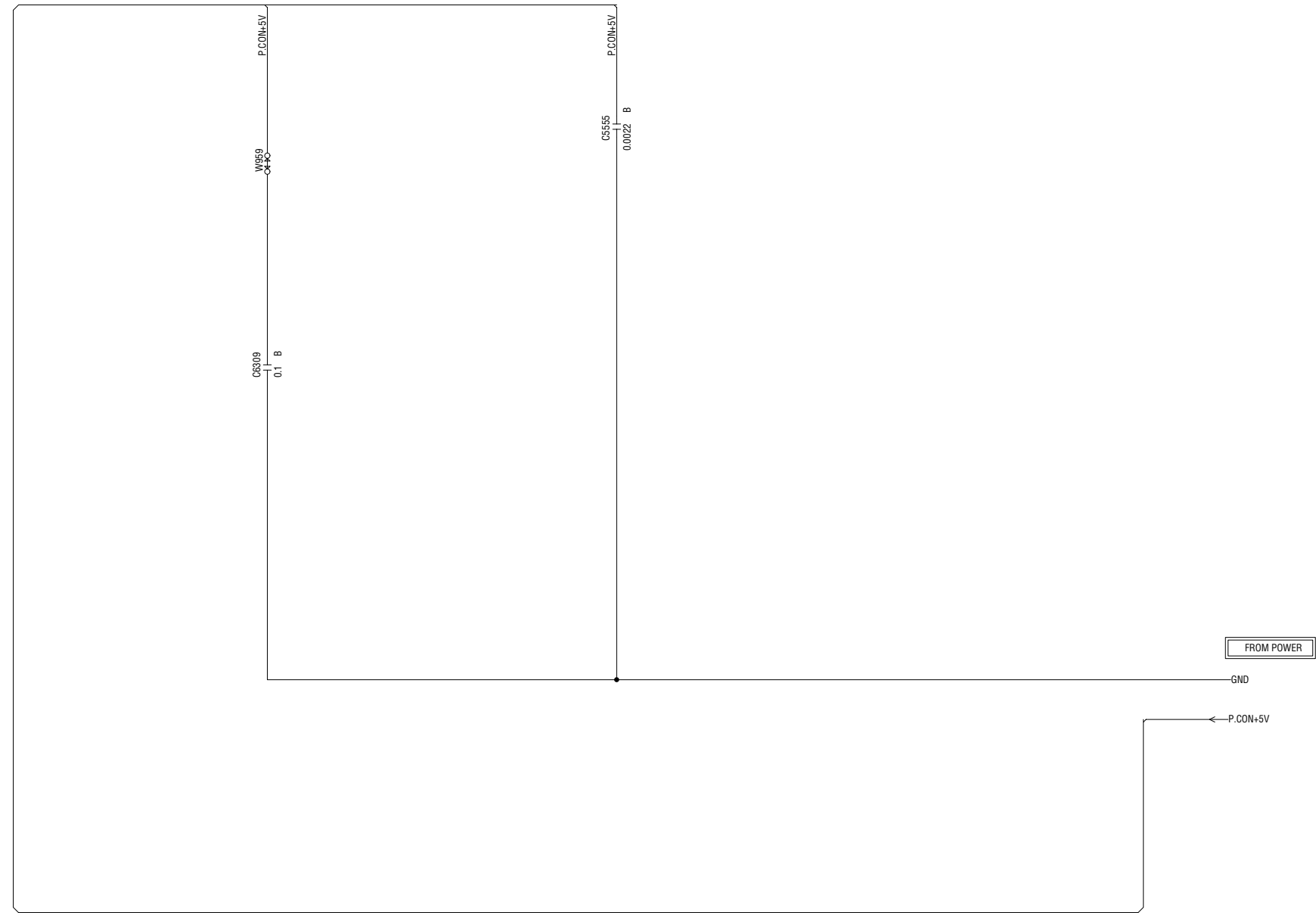
CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPARÉES PAR UN ÉTANT DANGÉREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

AUDIO SIGNAL (REC)

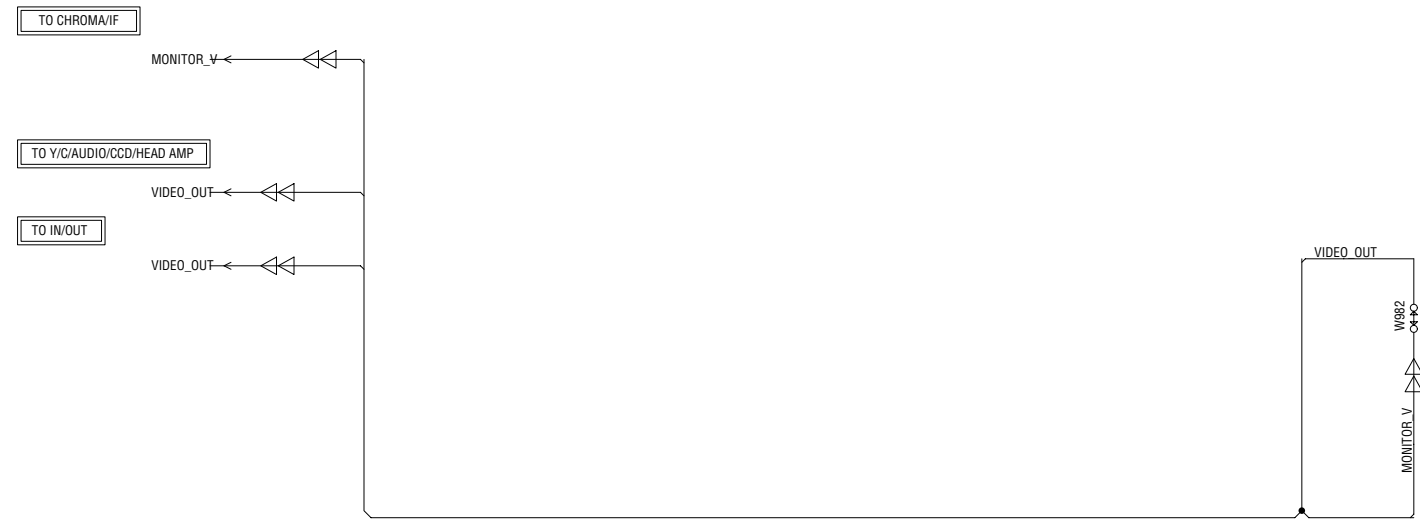
PCB010
VMA245

HI-FI SCHEMATIC DIAGRAM (SYSCON PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

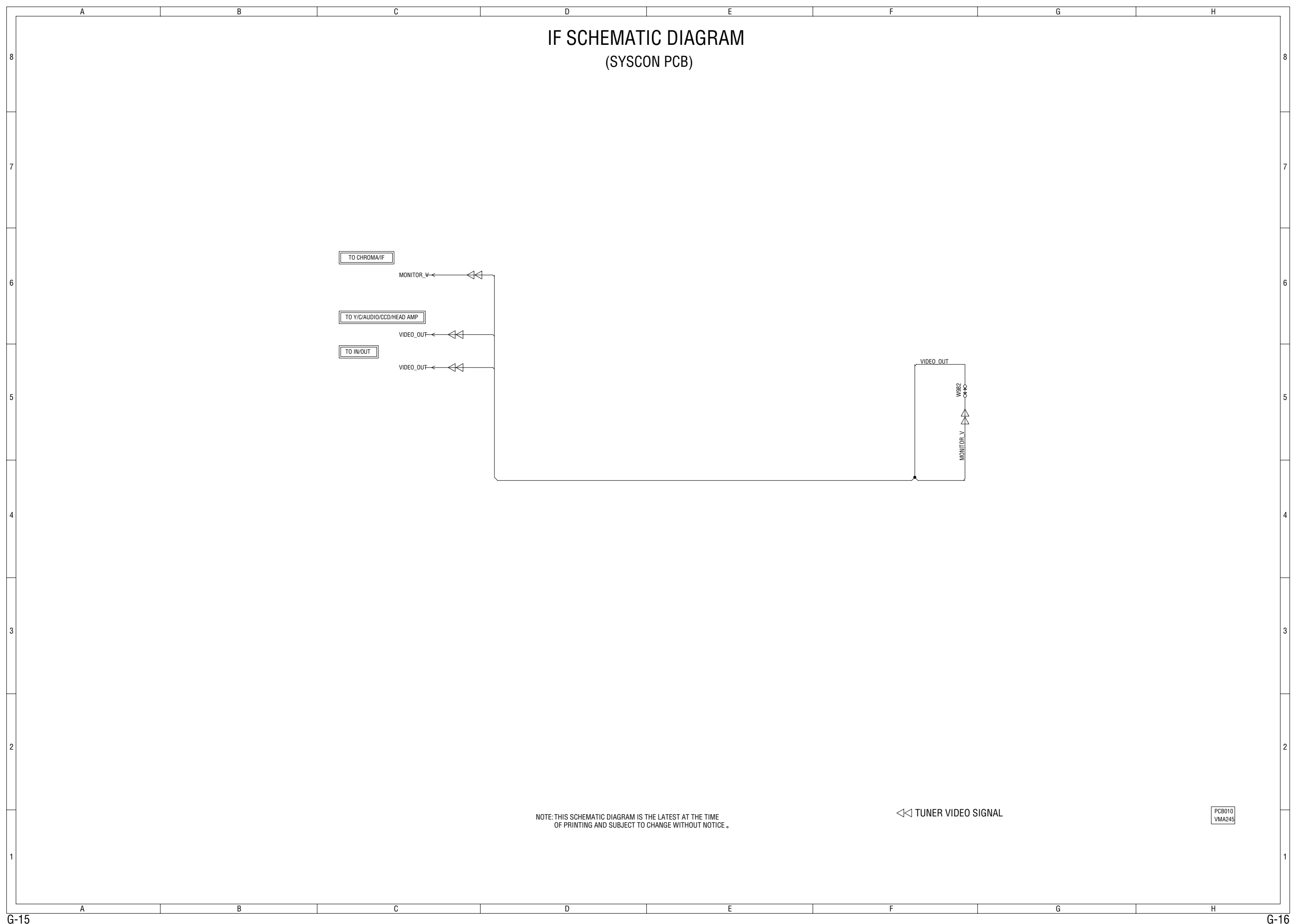
IF SCHEMATIC DIAGRAM (SYSCON PCB)



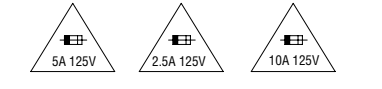
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME
OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE .

◄◄ TUNER VIDEO SIGNAL

PC8010
VMA245



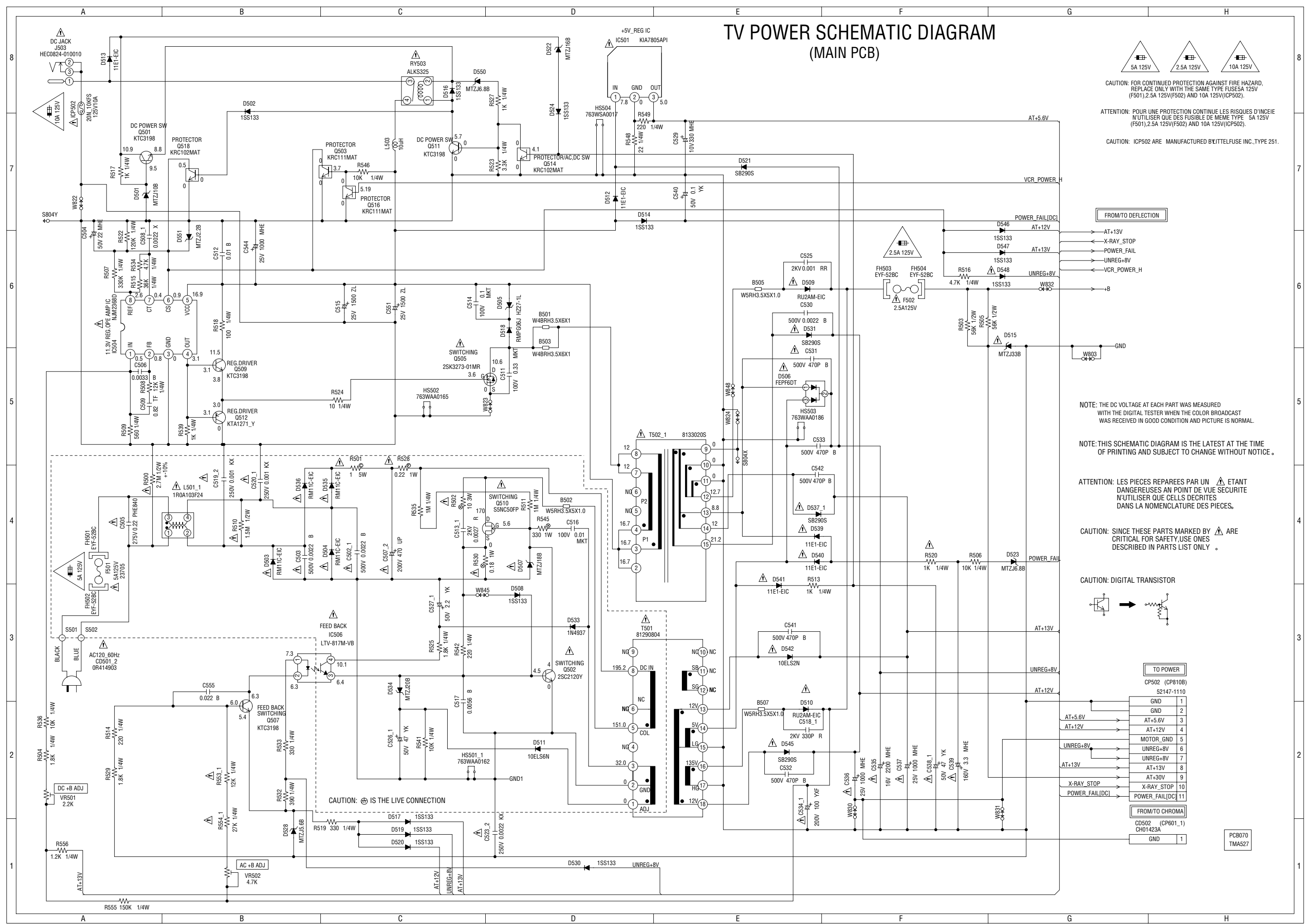
TV POWER SCHEMATIC DIAGRAM (MAIN PCB)



CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE 5A 125V (F501), 2.5A 125V (F502) AND 10A 125V (ICP502).

ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES D'INCENDIE N'UTILISER QUE DES FUSIBLE DE MEME TYPE 5A 125V (F501), 2.5A 125V (F502) AND 10A 125V (ICP502).

CAUTION: ICP502 ARE MANUFACTURED BY LITTELFUSE INC., TYPE 251.



FROM/TO DEFLECTION

- AT+13V
- ← X-RAY_STOP
- ← POWER_FAIL
- ← UNREG+8V
- ← VCR_POWER_H
- +B

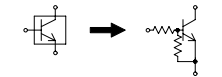
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

ATTENTION: LES PIECES REPARÉES PAR UN ÉTANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLES DECRITES DANS LA NOMENCLATURE DES PIECES.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

CAUTION: DIGITAL TRANSISTOR



TO POWER

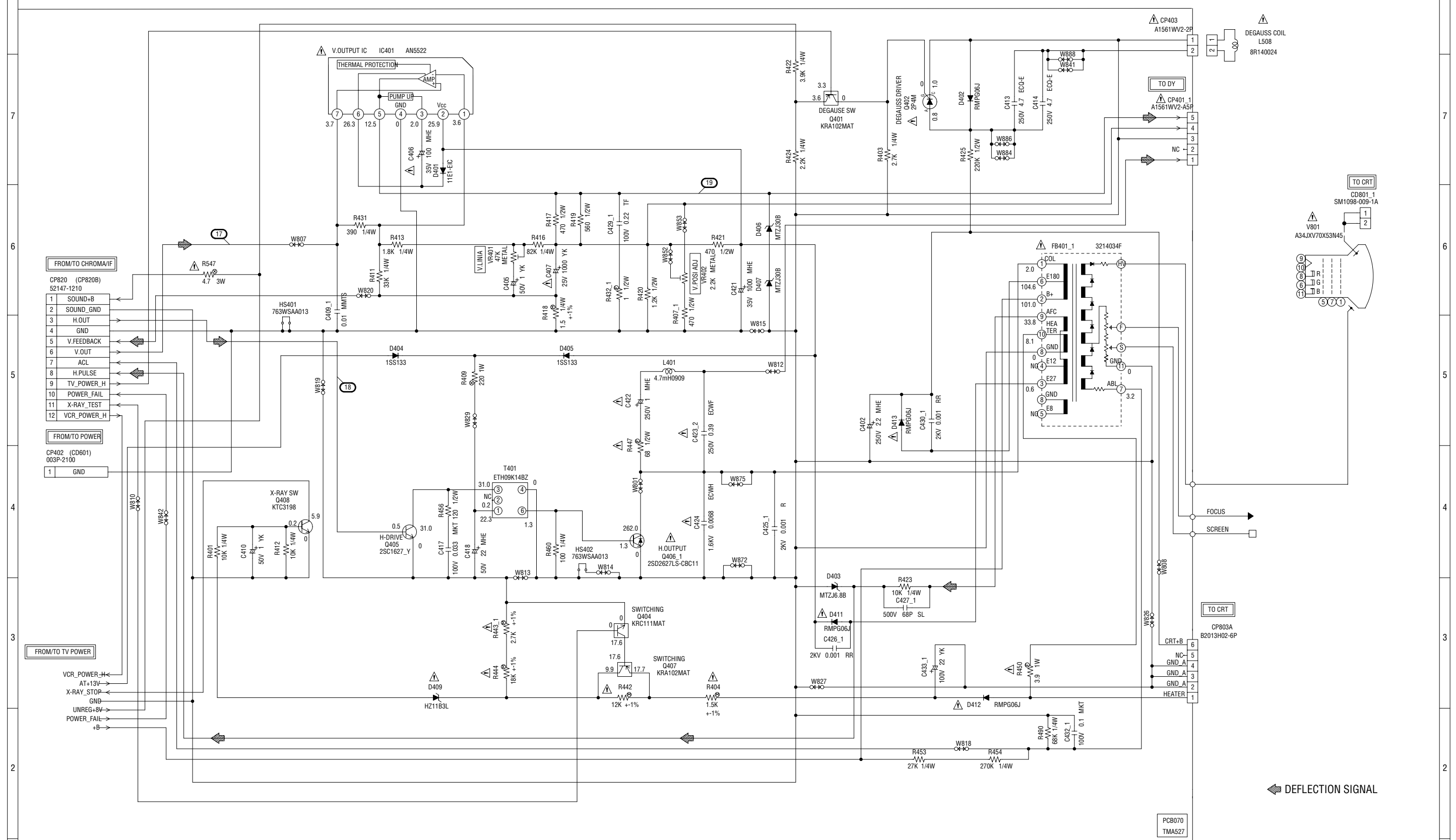
CP502 (CP810B)	1
52147-1110	2
GND	3
AT+5.6V	4
AT+12V	5
AT+12V	6
MOTOR_GND	7
UNREG+8V	8
UNREG+8V	9
AT+13V	10
AT+30V	11
X-RAY_STOP	12
X-RAY_STOP	13
POWER_FAIL[DC]	14
POWER_FAIL[DC]	15

FROM/TO CHROMA

CP601_1	1
CH01423A	2
GND	3

PCB070
TMA527

DEFLECTION SCHEMATIC DIAGRAM (MAIN PCB)



FROM/TO CHROMA/IF

1	SOUND+B
2	SOUND_GND
3	H.OUT
4	GND
5	V.FEEDBACK
6	V.OUT
7	ACL
8	H.PULSE
9	TV_POWER_H
10	POWER_FAIL
11	X-RAY_TEST
12	VCR_POWER_H

FROM/TO POWER

1	GND
---	-----

FROM/TO TV POWER

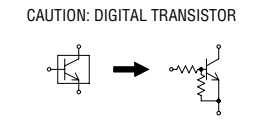
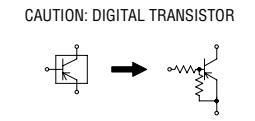
VCR_POWER_H
AT+13V
X-RAY_STOP
GND
UNREG+8V
POWER_FAIL
+B

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

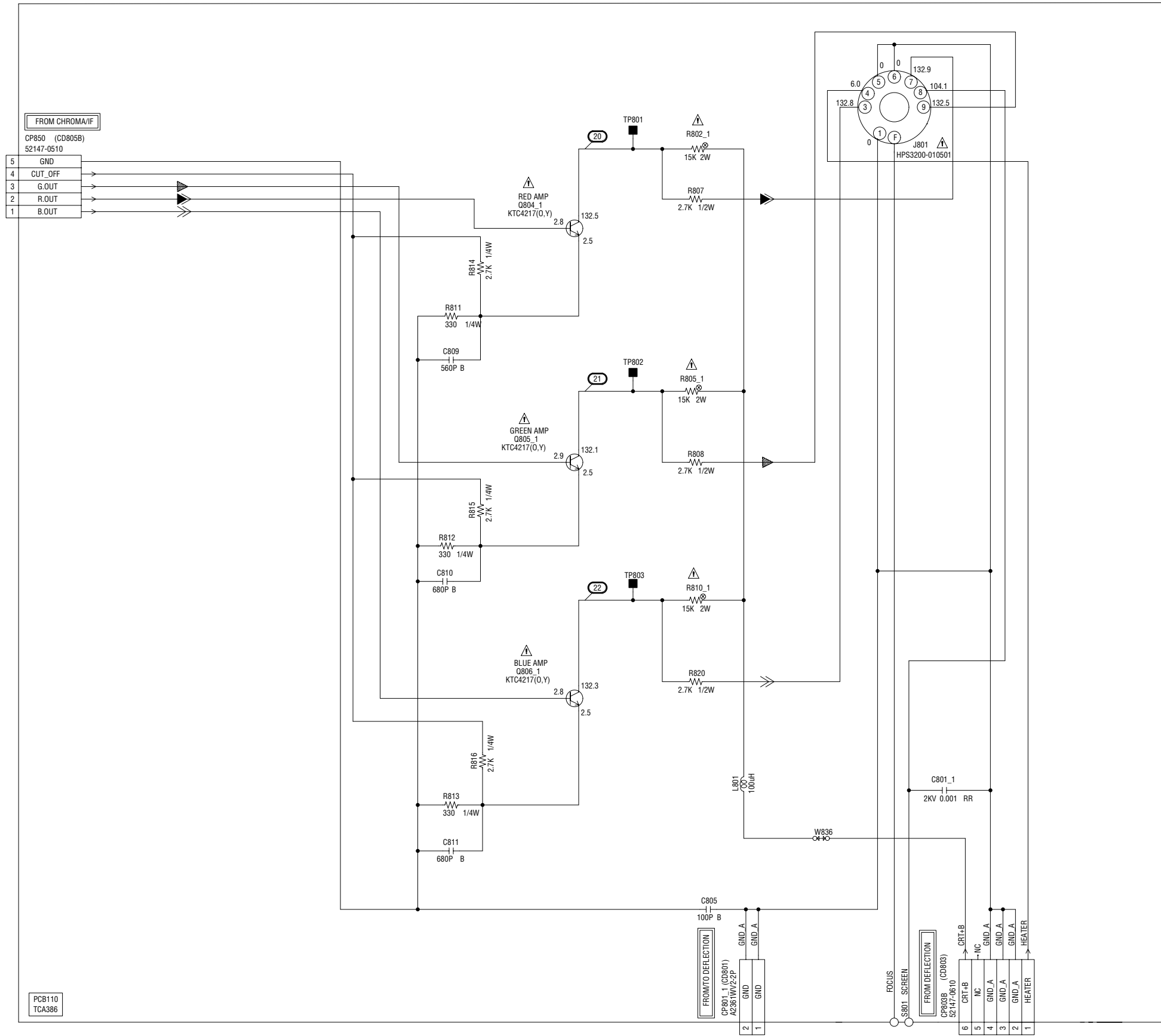
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

ATTENTION: LES PIÈCES REPARÉES PAR UN ÉTANT DANGEREUSES AN POINT DE VUE SECURITE UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIÈCES.

CAUTION: SINCE THESE PARTS MARKED ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.



CRT SCHEMATIC DIAGRAM (CRT PCB)

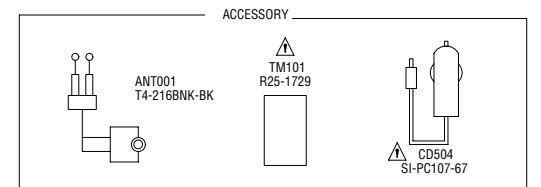


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

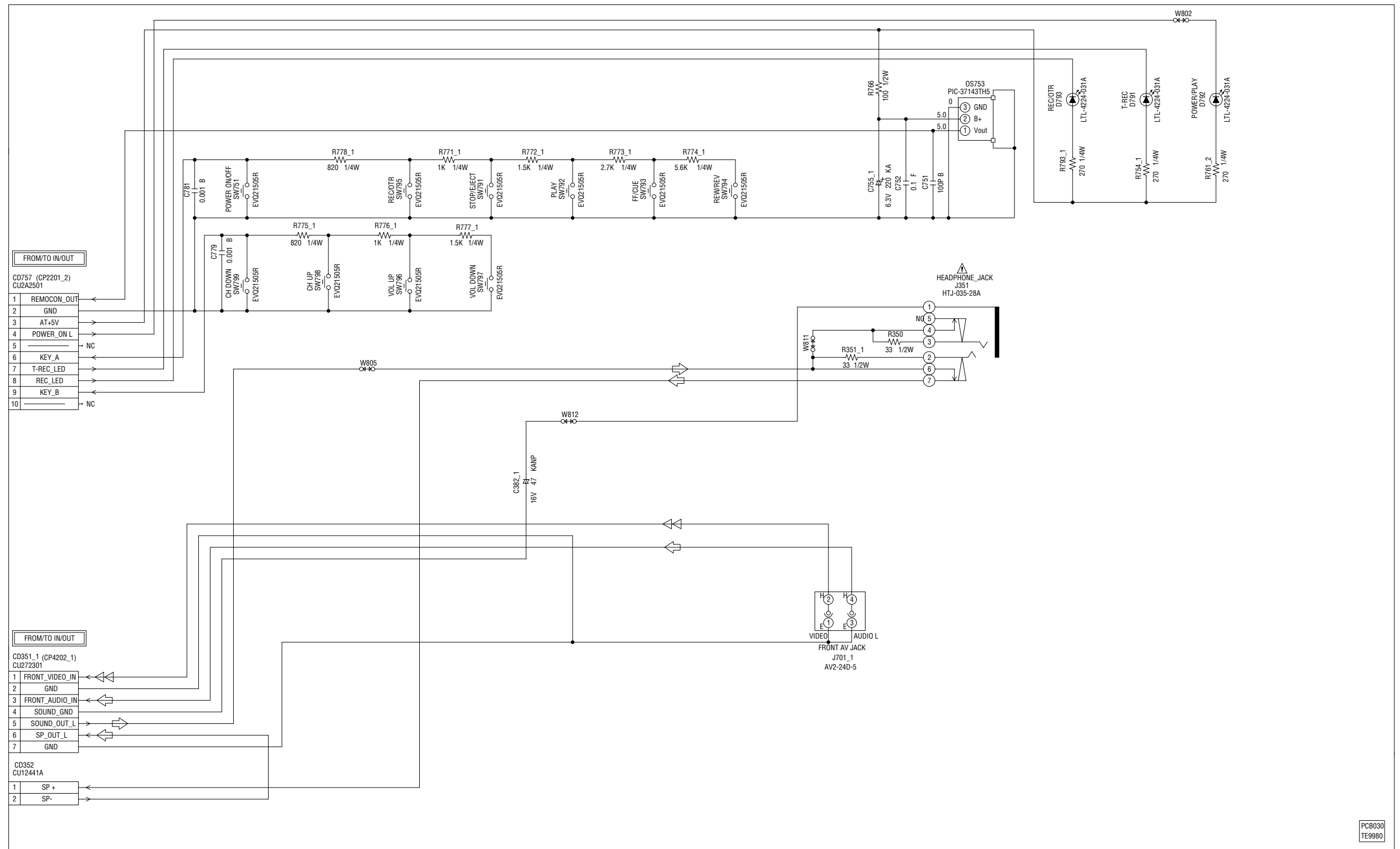
CAUTION: SINCE THESE PARTS MARKED WITH ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AN POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.



R. SIGNAL
 G. SIGNAL
 B. SIGNAL

OPERATION SCHEMATIC DIAGRAM (OPERATION PCB)



PCB030
TE9980

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

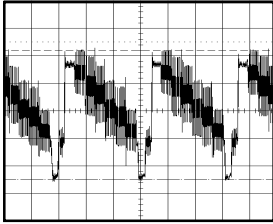
CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPARÉES PAR UN ÉTANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

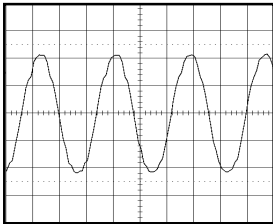
TUNER VIDEO SIGNAL
 AUDIO SIGNAL

WAVEFORMS

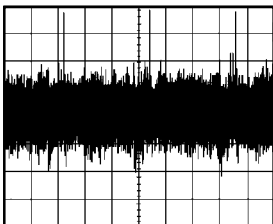
Y/C/AUDIO/CCD/HEAD AMP



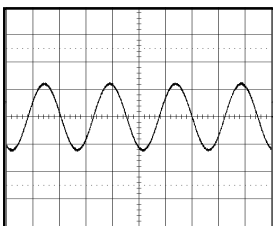
① PB
0.5V 20 μ s/div



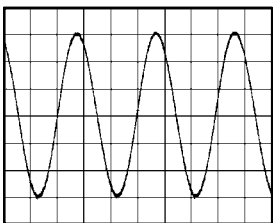
② POWER ON
100mV 0.1 μ s/div



③ PB
10mV 20 μ s/div

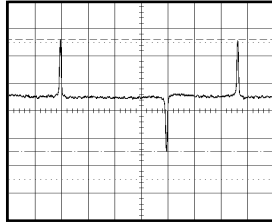


④ PB
0.5V 1ms/div

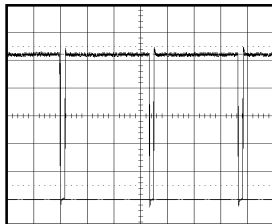


⑤ REC
10.0V 5 μ s/div

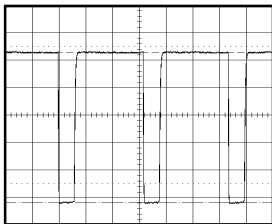
MICON



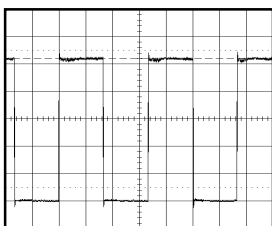
⑦ PB
1.0V 5ms/div



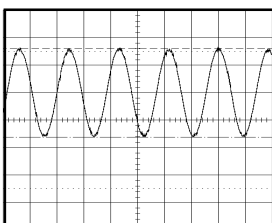
⑧ POWER ON
0.5V 10ms/div



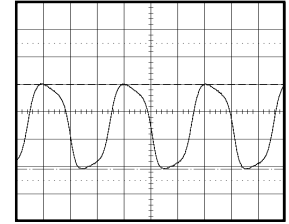
⑨ POWER ON
1.0V 20 μ s/div



⑩ PB
1.0V 10ms/div

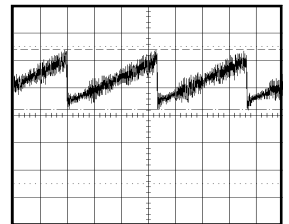


⑪ PB
0.5V 0.5ms/div

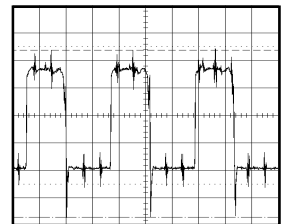


⑫ POWER ON
1.0V 10 μ s/div

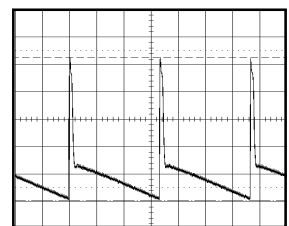
DEFLECTION



⑰ 0.5V 5ms/div

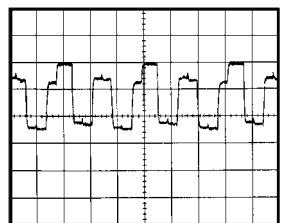


⑱ 200mV 20 μ s/div



⑲ 10.0V 5ms/div

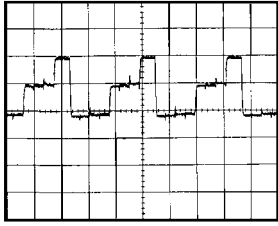
CRT



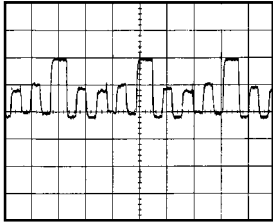
⑳ 50.0V 20 μ s/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

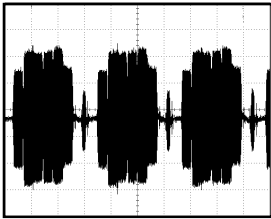


②1 50.0V 20 μ s/div

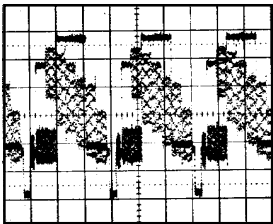


②2 50.0V 20 μ s/div

CHROMA/IF



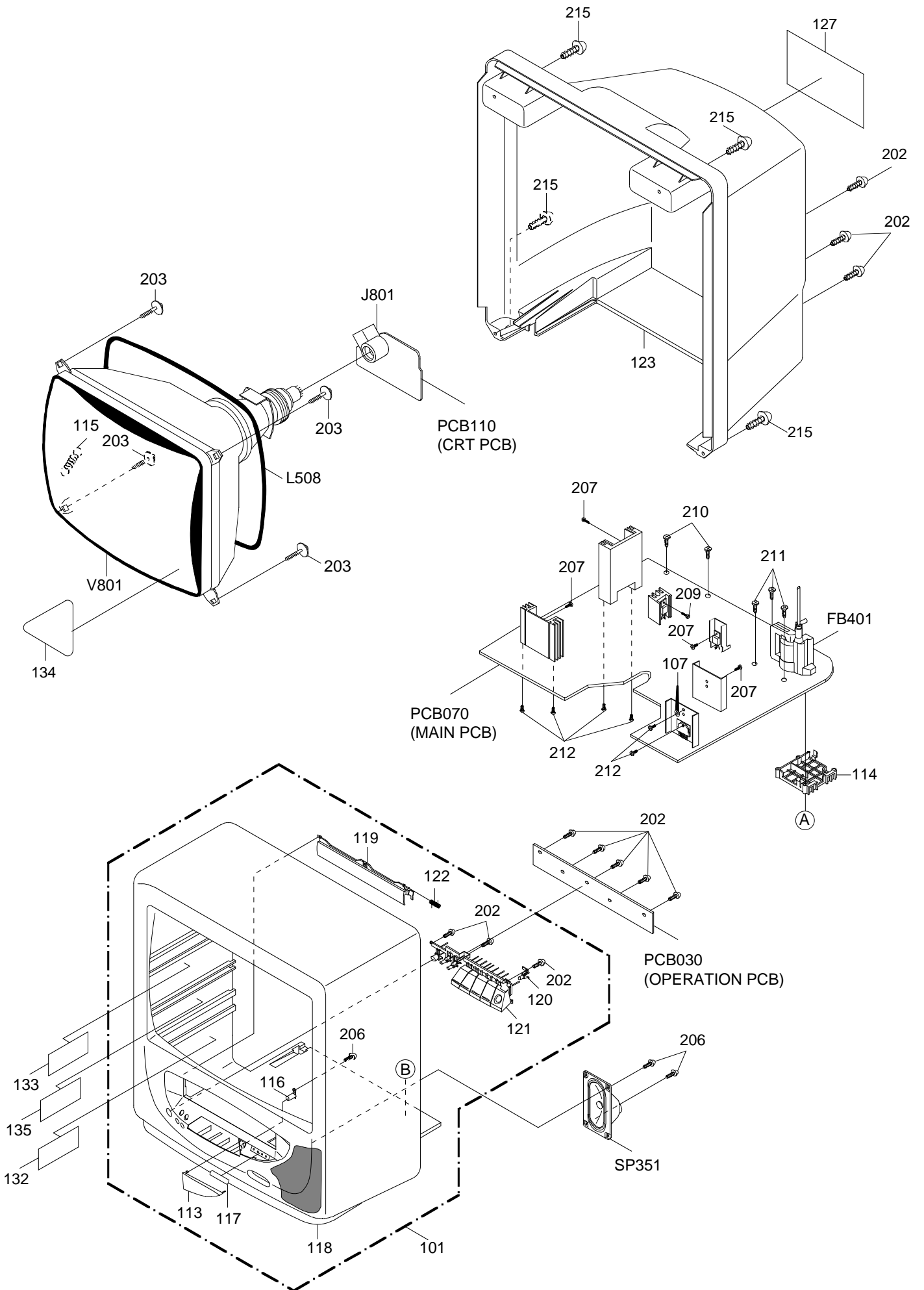
①5 100mV 20 μ s/div



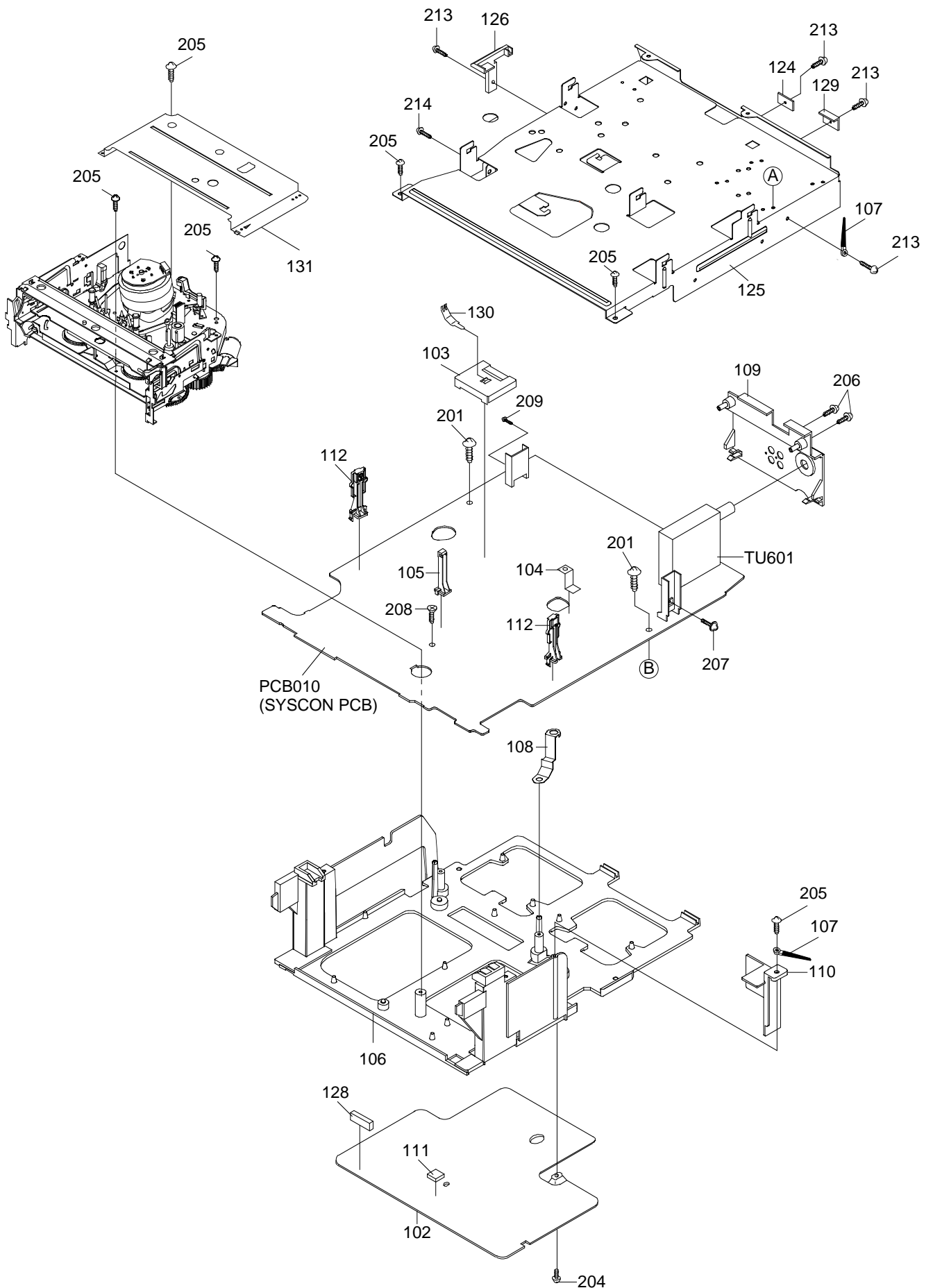
①6 200mV 20 μ s/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

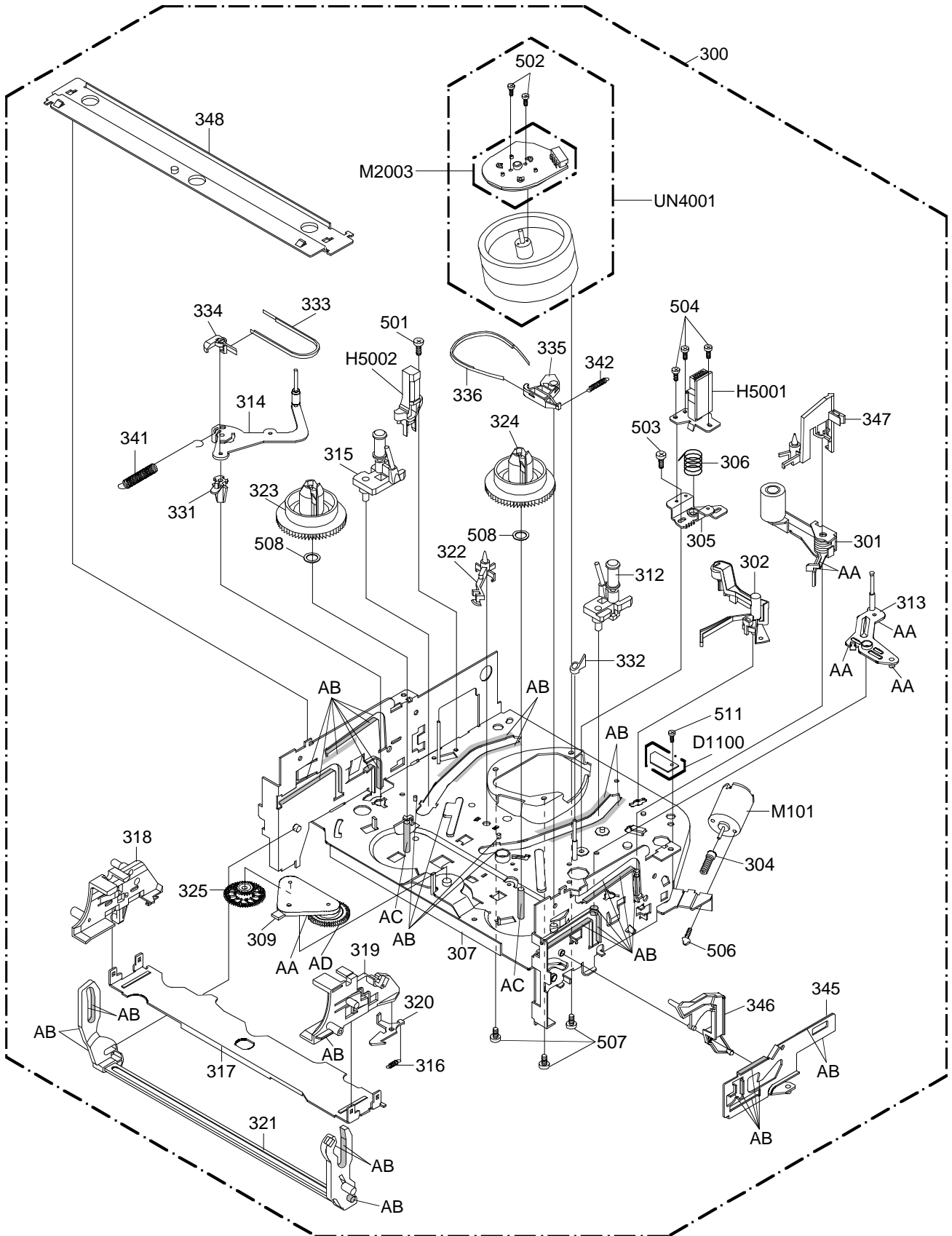
MECHANICAL EXPLODED VIEW



MECHANICAL EXPLODED VIEW



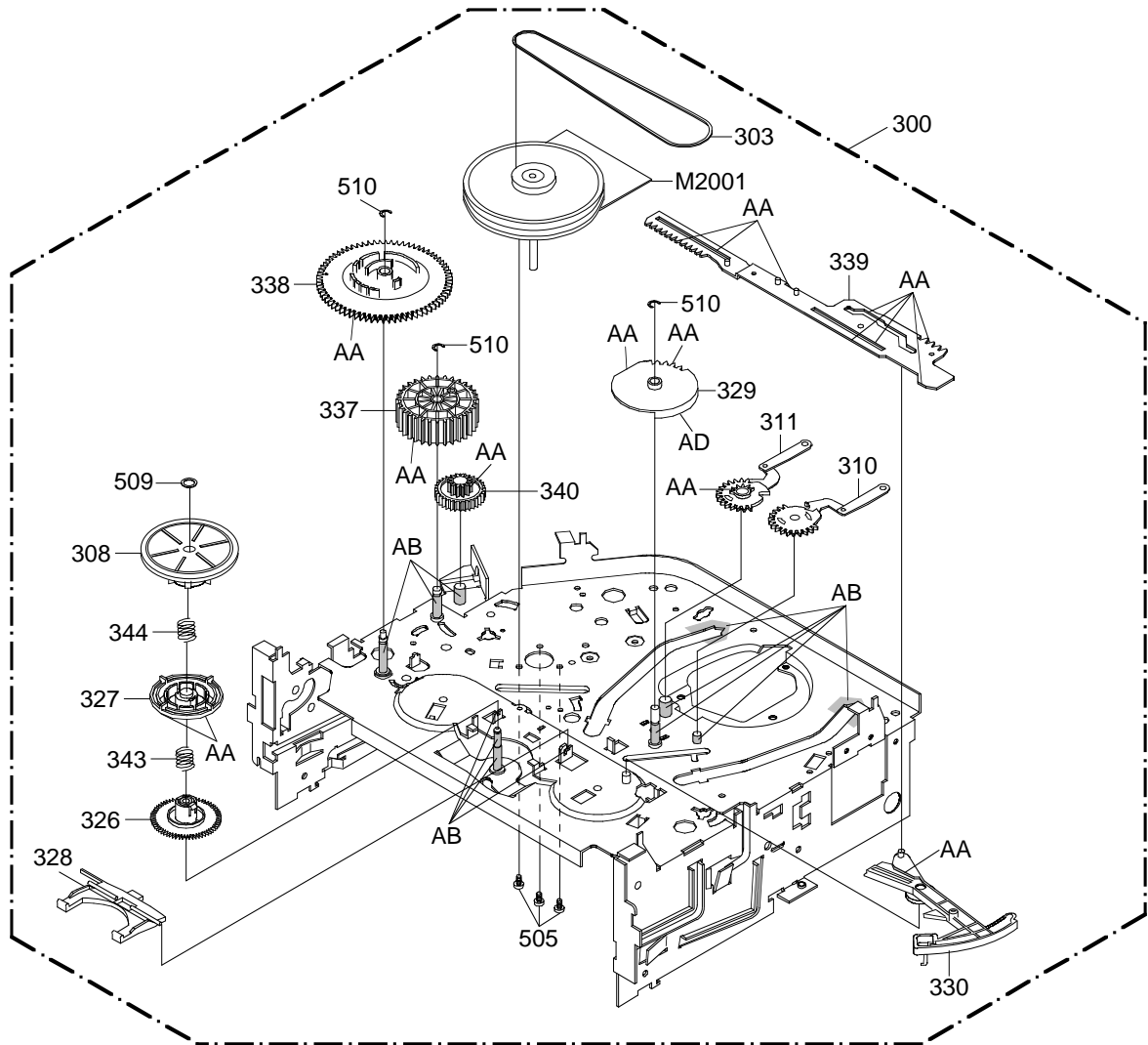
CHASSIS EXPLODED VIEW (TOP VIEW)



CLASS	PART NO.	MARK
GREASE	G-555G	AA
	MG-33	AB
	FG-84M	AC
	FL-721	AD

NOTE: Applying positions AA, AB, AC and AD for the grease are displayed for this section. Check if the correct grease is applied for each position.

CHASSIS EXPLODED VIEW (BOTTOM VIEW)



CLASS	PART NO.	MARK
GREASE	G-555G	AA
	MG-33	AB
	FG-84M	AC
	FL-721	AD

NOTE: Applying positions AA, AB, AC and AD for the grease are displayed for this section. Check if the correct grease is applied for each position.

MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
101	A5A3A0I720	CABINET,FRONT ASSY
102	752WSAA028	SHIELD,BOTTOM
103	752WSA0230	SHIELD,CASE HEAD AMP
104	753WSA0118	PLATE,EARTH-SYSCON
105	85OP700037	HOLDER,LED
106	761WPAA055	HOLDER,DECK
107	8995034000	CORD CLIP UL CO.
108	753WSA0144	PLATE,BOTTOM-EARTH
109	771WPA0270	PLATE,JACK
110	755WPA0026	PLATE,COVER LIGHT
111	800WFA0038	CUSHION
112	85OP700038	HOLDER,END SENSOR
113	711WPA0114	PLATE,FRONT
114	761WPA0223	HOLDER,FBT
115	741WUA0019	SPRING,EARTH
116	713WPA0075	GUIDE,REMOCON
117	7230006830	SHEET,LED
118	701WPJB572	CABINET,FRONT
119	712WPJB316	FLAT,FLAP
120	735WPAA267	BUTTON,REC
121	735WPJA546	BUTTON,FRAME
122	743WKA0032	SPRING,FLAP(COMBO)
123	702WPAA201	CABINET,BACK
124	761WPA0171	HOLDER,BACK
125	752WSA0276	PLATE,DECK SHIELD ASS'Y
126	761WPA0151	HOLDER,M/PCB
127	722A08A101	SHEET,RATING
128	800WFA0037	CUSHION
129	761WPA0240	HOLDER,TV-PCB
130	753WUAA006	SPRING,EARTH HEAD AMP
131	752WSA0263	SHIELD,COVER DECK
132	722000A023	SHEET,HWC
133	7220001119	SHEET,CSA WARNING
134	723000A927	FILM,DECORATION
135	726000A023	SHEET,CRT SERVICEMAN
201	8117540B04	SCREW,TAPPING(B0) TRUSS 4x20
202	8110630A04	SCREW,TAP TITE(P) BRAZIER 3x10
203	8121F50B84	SCREW,TAPPING(BO) FAI20 FLAT 5x28
204	8110630604	SCREW,TAP TITE(P) BRAZIER 3x6
205	8110630A24	SCREW,TAP TITE(P) BRAZIER 3x12
206	8110630804	SCREW,TAP TITE(P) BRAZIER 3x8
207	8109I30A04	SCREW,TAP TITE(B) WH7 3x10
208	8110330804	SCREW,TAP TITE(P) FLAT 3x8
209	8107630804	SCREW,TAP TITE(S) BRAZIER 3x8
210	8107930604	SCREW,CUP(S) 3x6
211	8107630B04	SCREW,TAP TITE(S) BRAZIER 3x20
212	8109630802	SCREW,TAP TITE(B) BRAZIER 3x8
213	8107630604	SCREW,TAP TITE(S) BRAZIER 3x6
214	8109630604	SCREW,TAP TITE(B) BRAZIER 3x6
215	8117540A64	SCREW,TAPPING(B0) TRUSS 4x16
---	A5A3A0C975	INSTRUCTION BOOK KIT
---	791WHAA016	LAMIFILM BAG
---	792WHA0271	PACKAGE,TOP
---	792WHA0272	PACKAGE,BOTTOM
---	793WCDB218	GIFT BOX
---	7230007398	SECURITY TAG
---	JB5K0200	POLYBAG,INSTRUCTION
---	J5A3A001	INSTRUCTION BOOK
---	J5A3A002	WARRANTY SHEET

CHASSIS REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
300	A5A317C420K	DECK ASSY A5A317C420K	501	8107226804	SCREW,TAP TITE(S) BIND 2.6x8
301	85OA400234	PINCH ROLLER BLOCK	502	810A123504	SEMS A M2.3x5.0
302	85OA500026	AHC ASS'Y	503	8107226404	SCREW,TAP TITE(S) BIND 2.6x4
303	85OP200290	BELT,CAPSTAN (S)	504	8102120604	SCREW,PAN M2x6
304	85OP600581	WORM	505	8109126604	SCREW,TAP TITE(B) PAN 2.6x6
305	85OP500083	BASE,AC HEAD	506	810A130404	SCREW/WASHER(A) M3x4
306	85OP800324	SPRING,AC HEAD	507	810A126504	SCREW/WASHER(A) M2.6x5
307	85OA000459	MAIN CHASSIS ASS'Y	508	82Q264713N	POLYSLIDER WASHER 2.6x4.7xT0.13
308	85OA200089	CLUTCH ASS'Y	509	82P184505N	POLYSLIDER WASHER(CUT) 1.8x4.5xT0.5
309	85OA200090	ARM IDLER ASS'Y	510	83ETW30000	E-RING 3
310	85OA300065	LOADING ARM S UNIT	511	8107226604	SCREW,TAP TITE(S) BIND 2.6x6
311	85OA300066	LOADING ARM T UNIT	CD1501	122H071603	CORD JUMPER SMCD-7X151
312	85OA400223	INCLINED BASE T UINIT 3S	CD1502	122Y021902	CORD JUMPER 2Y021902
313	85OA400232	P5 ARM ASS'Y 2	D1100	DAK0000170	DEW SENSORCW/AL,PLATE HDP-05-26
314	85OA400233	TENSION ARM ASS'Y (WT)	H5001	1523D91034	HEAD (AUDIO CONTROL) HVMXA1072A
315	85OA400231	INCLINED BASE S UNIT	H5002	1543D02013	HEAD (FULL ERASE) HVFHP0032A
316	85OP800358	SPRING,LOCKER	△ M101	1596P98001	MOTOR (LOADING) MXN13FB12K3
317	85OP900736	CASS,HOLDER	△ M2001	1510S98036	CAPSTAN DD UNIT F2QVB08
318	85OP900748	CASS,SIDE L	△ M2003	1589S11014	MICRO MOTOR I2OAL03
319	85OP900749	CASS,SIDE R	△ UN4001	A5A305A500	CYLINDER UNIT ASS'Y A5A305A500
320	85OP900739	LOCKER,R			
321	85OA900228	LINK UNIT			
322	85OP000496	POST,CASS GUIDE			
323	85OP200291	REEL,S (S)			
324	85OP200292	REEL,T (S)			
325	85OP200308	GEAR,IDLER			
326	85OP200311	GEAR,CLUTCH			
327	85OP200312	GEAR,COUPLING			
328	85OP200313	LEVER,CLUTCH			
329	85OP300194	GEAR,MAIN LOADING			
330	85OP400490	LEVER,TENSION			
331	85OP400492	HOLDER,TENSION			
332	85OP400520	CAP.P4			
333	85OP400532	BAND,TENSION			
334	85OP400533	CONNECT,TENSION			
335	85OP600573	ARM,BRAKE T			
336	85OP600574	BAND,BRAKE T			
337	85OP600577	CAM,PINCH ROLLER			
338	85OP600578	CAM,MAIN			
339	85OP600579	ROD,MAIN			
340	85OP600582	GEAR,JOINT			
341	85OP800322	SPRING,TENSION			
342	85OP800350	SPRING,BRAKE T			
343	85OP800355	SPRING,COUPLING			
344	85OP800356	SPRING,RING			
345	85OP900750	LEVER,LINK 2			
346	85OP900744	LEVER,FLAP			
347	85OP900745	CASS,OPENER			
348	85OP900746	BRACKET,TOP 3V			

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
RESISTORS			DIODES		
△ R404	R4X5T6152F	R,METAL 1.5K OHM 1/6W	D505	D94TA27011	DIODE ZENER HZ27-1L TD
△ R409	R3X181221J	R,METAL OXIDE 220 OHM 1W	D506	D230PF6DT0	DIODE SILICON FEPF6DT
△ R432	R655U2010J	R,FUSE 1 OHM 1/2W	△ D507	D97U01801B	DIODE,ZENER MTZJ18B T-77
△ R442	R4X5T6123F	R,METAL 12K OHM 1/6W	D508	D1VT001330	DIODE,SILICON 1SS133T-77
△ R443	R4X5T6272F	R,METAL 2.7K OHM 1/6W	△ D509	D2WXRU2AM0	DIODE SILICON RU2AM-EIC
△ R447	R65582680J	R,FUSE 68 OHM 1/2W	△ D510	D2WXRU2AM0	DIODE SILICON RU2AM-EIC
△ R450	R635813R9J	R,FUSE 3.9 OHM 1W	D511	D28TELS6N6	DIODE RECTIFIER 10ELS6N-TA1B2
△ R500	R0G3K2275K	RC 2.7M OHM 1/2W	D512	D2WT011E10	DIODE SILICON 11E1-EIC
△ R501	R5Y2CD010J	R,CEMENT 1 OHM 5W	D513	D2WT011E10	DIODE SILICON 11E1-EIC
	R5X2CD010J	R,CEMENT 1 OHM 5W	D514	D1VT001330	DIODE,SILICON 1SS133T-77
△ R502	R3X28B100J	R,METAL OXIDE 10 OHM 3W	△ D515	D97U03301B	DIODE,ZENER MTZJ33B T-77
△ R505	R002T2563J	RC 56K OHM 1/2W	D516	D1VT001330	DIODE,SILICON 1SS133T-77
△ R511	R002T4105J	RC 1M OHM 1/4W	D517	D1VT001330	DIODE,SILICON 1SS133T-77
△ R513	R002T4102J	RC 1K OHM 1/4W	D518	D2LTPG06J0	DIODE SILICON RMPG06J-G3
△ R520	R002T4102J	RC 1K OHM 1/4W	D519	D1VT001330	DIODE,SILICON 1SS133T-77
△ R528	R63581R22J	R,FUSE 0.22 OHM 1W	D520	D1VT001330	DIODE,SILICON 1SS133T-77
△ R529	R002T4182J	RC 1.8K OHM 1/4W	D521	D2WXB290S0	DIODE SILICON SB290S
△ R530	R3X181R18J	R,METAL OXIDE 0.18 OHM 1W	D522	D97U01601B	DIODE ZENER MTZJ16B T-77
△ R545	R3X181331J	R,METAL OXIDE 330 OHM 1W	D523	D97U06R81B	DIODE,ZENER MTZJ6.8B T-77
△ R547	R3X28B4R7J	R,METAL OXIDE 4.7 OHM 3W	D524	D1VT001330	DIODE,SILICON 1SS133T-77
△ R802	R3X18A153J	R,METAL OXIDE 15K OHM 2W	D528	D97U05R61B	DIODE,ZENER MTZJ5.6B T-77
△ R805	R3X18A153J	R,METAL OXIDE 15K OHM 2W	D530	D1VT001330	DIODE,SILICON 1SS133T-77
△ R810	R3X18A153J	R,METAL OXIDE 15K OHM 2W	△ D531	D2WXB290S0	DIODE SILICON SB290S
CAPACITORS			D533	D2WXN49370	DIODE SILICON 1N4937
C321	E0EL02332M	CE 3300 UF 16V	D534	D97U02001B	DIODE,ZENER MTZJ20B T-77
	E02L02332M	CE 3300 UF 16V	△ D535	D2WTRM11C0	DIODE SILICON RM11C-EIC
△ C402	E5EZTD2R2M	CE 2.2 UF 250V	△ D536	D2WTRM11C0	DIODE SILICON RM11C-EIC
△ C406	E5EZU4101M	CE 100 UF 35V	△ D537	D2WXB290S0	DIODE SILICON SB290S
△ C407	E02LF3102M	CE 1000 UF 25V	△ D539	D2WT011E10	DIODE SILICON 11E1-EIC
C413	P21503475K	CMP 4.7 UF 250V ECQ-E	△ D540	D2WT011E10	DIODE SILICON 11E1-EIC
C414	P21503475K	CMP 4.7 UF 250V ECQ-E	△ D541	D2WT011E10	DIODE SILICON 11E1-EIC
C421	E5EZ04102M	CE 1000 UF 35V	△ D542	D28XELS2N2	DIODE RECTIFIER 10ELS2N-TA2B5
△ C422	E5EZTD010M	CE 1 UF 250V	△ D545	D2WXB290S0	DIODE SILICON SB290S
△ C423	P411F3394J	CMPP 0.39 UF 250V ECWF	D546	D1VT001330	DIODE,SILICON 1SS133T-77
△ C424	P414F9682H	CMPP 0.0068UF 1.6KV ECWF or	D547	D1VT001330	DIODE,SILICON 1SS133T-77
	P4N8FJ682H	CMPP 0.0068UF 1.25KV	△ D548	D1VT001330	DIODE,SILICON 1SS133T-77
C425	C03L0R713K	CC 0.001 UF 2KV R	D550	D97U06R81B	DIODE,ZENER MTZJ6.8B T-77
C426	C0PLRR713K	CC 0.001 UF 2KV RR	D551	D97U02R21B	DIODE,ZENER MTZJ2.2B T-77
C430	C0PLRR713K	CC 0.001 UF 2KV RR	D601	D1VT001330	DIODE,SILICON 1SS133T-77
△ C433	E02LU8220M	CE 22 UF 100V	D602	D97U08R21C	DIODE,ZENER MTZJ8.2C T-77
△ C502	C0JBB05H3K	CC 0.0022UF 500V B	D603	D97U06R81B	DIODE,ZENER MTZJ6.8B T-77
△ C503	C0JBB05H3K	CC 0.0022UF 500V B	D605	D28T11ESN1	DIODE SILICON 11ES1N-TA1B2
△ C505	P2472B224M	CMP 0.22UF 275V PHE840	D606	D97U01101B	DIODE,ZENER MTZJ11B T-77
△ C507	E51CGC471M	CE 470 UF 200V	D607	D1VT001330	DIODE,SILICON 1SS133T-77
	E51CFC471M	CE 470 UF 200V	D608	D97U06R81B	DIODE,ZENER MTZJ6.8B T-77
C513	C03L0R7K3K	CC 0.0027UF 2KV R	D609	D97U06R81B	DIODE,ZENER MTZJ6.8B T-77
C515	E62FF3152M	CE 1500 UF 25V	D610	D2WXS1400	DIODE SCHOTTKY SB140-EIC
C518	C03L0R7L2K	CC 330 PF 2KV R	D611	D2WXS1400	DIODE SCHOTTKY SB140-EIC
C519	CB3930M13M	CC 0.001 UF 250V	D612	D97U06R81B	DIODE,ZENER MTZJ6.8B T-77
C520	CB3930M13M	CC 0.001 UF 250V	D616	D1VT001330	DIODE,SILICON 1SS133T-77
C523	CB3930MH3M	CC 0.0022UF 250V	D617	D1VT001330	DIODE,SILICON 1SS133T-77
C525	C0PLRR713K	CC 0.001 UF 2KV RR	D618	D1VT001330	DIODE,SILICON 1SS133T-77
△ C534	E62NFC101M	CE 100 UF 200V	D619	D1VT001330	DIODE,SILICON 1SS133T-77
C535	E5EZF2222M	CE 2200 UF 16V	D620	D1VT001330	DIODE,SILICON 1SS133T-77
△ C536	E5EZF3102M	CE 1000 UF 25V	D621	D1VT001330	DIODE,SILICON 1SS133T-77
△ C537	E5EZF3102M	CE 1000 UF 25V	D791	0021E2Q150	LED LTL-4224-031A or
△ C538	E02LU5470M	CE 47 UF 50V		002132Q040	LED SLZ-936C-11-S-T1
△ C540	E02LU50R1M	CE 0.1 UF 50V	D792	0021E2Q150	LED LTL-4224-031A or
C544	E5EZF3102M	CE 1000 UF 25V		002132Q040	LED SLZ-936C-11-S-T1
C551	E62FF3152M	CE 1500 UF 25V	D793	0021E2Q150	LED LTL-4224-031A or
C801	C0PLRR713K	CC 0.001 UF 2KV RR		002132Q040	LED SLZ-936C-11-S-T1
DIODES			D1002	D1VT001330	DIODE,SILICON 1SS133T-77
D401	D2WT011E10	DIODE SILICON 11E1-EIC	D1003	0010100320	INFRARED LED LNA2702L010R
D402	D2LTPG06J0	DIODE SILICON RMPG06J-G3	D1004	D97U03R91B	DIODE,ZENER MTZJ3.9B T-77
D403	D97U06R81B	DIODE,ZENER MTZJ6.8B T-77	D1014	D97U05R11B	DIODE,ZENER MTZJ5.1B T-77
D404	D1VT001330	DIODE,SILICON 1SS133T-77	D4004	D1VT001330	DIODE,SILICON 1SS133T-77
D405	D1VT001330	DIODE,SILICON 1SS133T-77	D4201	D97U05R61B	DIODE,ZENER MTZJ5.6B T-77
D406	D97U03001B	DIODE,ZENER MTZJ30B T-77	D4206	D97U01301B	DIODE,ZENER MTZJ13B T-77
D407	D97U03001B	DIODE,ZENER MTZJ30B T-77	ICS		
△ D409	D94TA11B13	DIODE ZENER HZ11B3L TD	△ IC351	I0FSP75230	IC AN7523
△ D411	D2LTPG06J0	DIODE SILICON RMPG06J-G3	△ IC401	I01TD55220	IC AN5522
△ D412	D2LTPG06J0	DIODE SILICON RMPG06J-G3	△ IC501	I1KA97805A	IC KIA7805API
△ D413	D2LTPG06J0	DIODE SILICON RMPG06J-G3	△ IC504	I0QD023680	IC NJM2368D
D501	D97U01001B	DIODE,ZENER MTZJ10B T-77	△ IC506	0002E00610	PHOTO COUPLER LTV-817M-VB
D502	D1VT001330	DIODE,SILICON 1SS133T-77	IC601	I06FC61206	IC M61206FP
△ D503	D2WTRM11C0	DIODE SILICON RM11C-EIC	△ IC603	I1KA98R050	IC KIA78R05PI
△ D504	D2WTRM11C0	DIODE SILICON RM11C-EIC	IC1001	I56F57071A	IC OEC7071A

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
ICS			COILS & TRANSFORMERS		
IC1002	IC7J0311A0	IC R3111N311A/C-TR	L801	021673101K	COIL 100 UH
IC1099	A5A3A0C015	IC S-24C04BDP-LA	L1001	021LA62R2K	COIL 2.2 UH
IC4001	I03F3205M0	IC LA71205M-MPB	L4001	02167F220J	COIL 22 UH
TRANSISTORS			JACKS		
Q350	T8YJ2412K0	TRANSISTOR SILICON 2SC2412KT146 R,S	J351	060G131014	RCA JACK HTJ-035-28A
Q401	TPATB03003	COMPOUND TRANSISTOR KRA102MAT	△ J503	0602602006	JACK DC HEC0824-010010
Q402	TF2002P4M0	THYRISTOR 2P4M	J701	060Q401075	RCA JACK AV2-24D-5
Q404	TNATJ03003	COMPOUND TRANSISTOR KRC111MAT	△ J801	066X120014	SOCKET,CATHODE RAY TUBE HPS3200-010501
△ Q405	TC5T01627Y	TRANSISTOR SILICON 2SC1627_Y(TPE2)	J4201	060Q401050	RCA JACK AV2-20D-2
△ Q406	TD30026270	TRANSISTOR SILICON 2SD2627LS-CBC11	J4202	060Q401050	RCA JACK AV2-20D-2
Q407	TPATB03003	COMPOUND TRANSISTOR KRA102MAT	SWITCHES		
Q408	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)	SW751	0504101T34	SWITCH,TACT EVQ21505R
Q501	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)	SW791	0504101T34	SWITCH,TACT EVQ21505R
△ Q502	TC5T021204	TRANSISTOR,SILICON 2SC2120Y(TPE2)	SW792	0504101T34	SWITCH,TACT EVQ21505R
Q503	TNATJ03003	COMPOUND TRANSISTOR KRC111MAT	SW793	0504101T34	SWITCH,TACT EVQ21505R
△ Q505	T410032730	FET 2SK3273-01MR	SW794	0504101T34	SWITCH,TACT EVQ21505R
Q507	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)	SW795	0504101T34	SWITCH,TACT EVQ21505R
Q509	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)	SW796	0504101T34	SWITCH,TACT EVQ21505R
Q510	TJXG5NC500	FET STP5NC50FP	SW797	0504101T34	SWITCH,TACT EVQ21505R
Q511	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)	SW798	0504101T34	SWITCH,TACT EVQ21505R
Q512	TAAT012714	TRANSISTOR, SILICON KTA1271_Y-AT	SW799	0504101T34	SWITCH,TACT EVQ21505R
Q514	TNATB03005	COMPOUND TRANSISTOR KRC102MAT	SW1001	0508A11002	SWITCH(LEAF) MXS01380MPP0
Q516	TNYTB03001	COMPOUND TRANSISTOR DTC114ESTP	VARIABLE RESISTORS		
Q518	TNATJ03003	COMPOUND TRANSISTOR KRC111MAT	VR401	V1K63Q4BTE	VOLUME,SEMI FIXED NVG6TLTAB473
Q601	T6YJ1037K0	TRANSISTOR,SILICON 2SA1037AKT146R,S	VR402	V1K63H3BTE	VOLUME,SEMI FIXED NVG6TLTAB222
Q604	TPAAB05001	COMPOUND TRANSISTOR KRA102SRTK	VR501	V1163H3BTC	VOLUME,SEMI FIXED EVNVCYAA03BE3
△ Q605	TC10013840	TRANSISTOR SILICON 2SC13840W	VR502	V1163Q3BTC	VOLUME,SEMI FIXED EVNVCYAA03BQ3
△ Q606	TC10013840	TRANSISTOR SILICON 2SC13840W	P.C.BOARD ASSEMBLIES		
Q607	T8YJ2412K0	TRANSISTOR SILICON 2SC2412KT146 R,S	PCB010	A5A3A0I010	PCB ASS'Y VMA245B
△ Q608	TC10013840	TRANSISTOR SILICON 2SC13840W	PCB030	A5A3A0I030	PCB ASS'Y TE9980B
Q609	T8YJ2412K0	TRANSISTOR SILICON 2SC2412KT146 R,S	PCB070	A5A3A0I070	PCB ASS'Y TMA527A
Q610	TB3T011310	TRANSISTOR SILICON 2SB1131(S,T)-AE	PCB110	A5A3A0I110	PCB ASS'Y TCA386A
Q611	TNAAB05003	COMPOUND TRANSISTOR KRC102SRTK	MISCELLANEOUS		
Q651	T8YJ2412K0	TRANSISTOR SILICON 2SC2412KT146 R,S	△ ANT001	125C108027	ANTENNA ROD T4-216BNK-BK
△ Q804	TCA0042170	TRANSISTOR SILICON KTC4217(O,Y)	B301	024HT03553	CORE,BEADS W5RH3.5X5X1.0
△ Q805	TCA0042170	TRANSISTOR SILICON KTC4217(O,Y)	B501	024HT03564	CORE,BEADS W4BRH3.5X6X1
△ Q806	TCA0042170	TRANSISTOR SILICON KTC4217(O,Y)	B502	024HT03553	CORE,BEADS W5RH3.5X5X1.0
Q1002	0000M00390	PHOTO TRANSISTOR ST-304L	B503	024HT03564	CORE,BEADS W4BRH3.5X6X1
Q1003	0002700680	PHOTO COUPLER RPI-352C40N	B505	024HT03553	CORE,BEADS W5RH3.5X5X1.0
Q1004	TNAAC05002	COMPOUND TRANSISTOR KRC103SRTK	B507	024HT03553	CORE,BEADS W5RH3.5X5X1.0
Q1005	0002700690	PHOTO COUPLER RPI-303	CD351	06CU272301	CORD CONNECTOR CU272301
Q1006	0002700590	PHOTO COUPLER RPI-301	CD352	06CU12441A	CORD CONNECTOR CU12441A
Q1006	TNAAC05002	COMPOUND TRANSISTOR KRC103SRTK	△ CD501	120R414903	CORD AC BUSH 0R414903
Q1008	T6YJ1037K0	TRANSISTOR,SILICON 2SA1037AKT146R,S	CD502	06CH01423A	CORD CONNECTOR CH01423A
Q1009	0002700680	PHOTO COUPLER RPI-352C40N	△ CD504	121B164101	CORD,CAR BATTERY SI-PC107-67
Q1013	0000M00390	PHOTO TRANSISTOR ST-304L	CD601	06CH01006A	CORD CONNECTOR CH01006A
Q4001	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)	CD757	06CU2A2501	CORD CONNECTOR CU2A2501
Q4002	TCATC31980	TRANSISTOR,SILICON KTC3198-AT(Y,GR)	CD801	06CU82039A	CORD CONNECTOR SM1098-009-1A
Q4003	TPAAC05002	COMPOUND TRANSISTOR KRA103SRTK	CD803	WDL6026038	FLAT CABLE AWM2468 AWG26 6C BLACK 260MM
Q4005	TAATA12660	TRANSISTOR,SILICON KTA1266-AT(Y,GR)	CD810	WJL6830038	FLAT CABLE AWM2468 AWG26 11C GRAY 300 MM
Q4006	TCAT032034	TRANSISTOR, SILICON KTC3203_Y-AT	CD820	WKL6026038	FLAT CABLE AWM2468 AWG26 12C BLACK 260MM
Q4007	T8YJ2412K0	TRANSISTOR SILICON 2SC2412KT146 R,S	CD850	WCL6830038	FLAT CABLE AWM2468 AWG26 5C GRAY 300MM
Q4009	T6YJ1037K0	TRANSISTOR,SILICON 2SA1037AKT146R,S	CF601	1029045R7G	FILTER,SAW TSF5229P3
Q4010	T6YJ1037K0	TRANSISTOR,SILICON 2SA1037AKT146R,S	CF603	1011T4R504	FILTER,CERAMIC EFCT4R5Y5SA
Q4012	T8YJ2412K0	TRANSISTOR SILICON 2SC2412KT146 R,S	CF604	1011T4R517	FILTER,CERAMIC EFCT4R5MW5
Q4013	T8YJ2412K0	TRANSISTOR SILICON 2SC2412KT146 R,S	CP401	069S450089	CONNECTOR PCB SIDE A1561WV2-A5P
Q4204	TNAAB05003	COMPOUND TRANSISTOR KRC102SRTK	CP402	069W01001A	CONNECTOR PCB SIDE 003P-2100
Q4205	TNAAB05003	COMPOUND TRANSISTOR KRC102SRTK	△ CP403	069S420110	CONNECTOR PCB SIDE A1561WV2-2P
Q4206	TNAAB05003	COMPOUND TRANSISTOR KRC102SRTK	CP502	069R2B0589	CONNECTOR PCB SIDE 52147-1110
Q4210	T6YJ1037K0	TRANSISTOR,SILICON 2SA1037AKT146R,S	CP601	069W01001A	CONNECTOR PCB SIDE 003P-2100
Q4211	T8YJ2412K0	TRANSISTOR SILICON 2SC2412KT146 R,S	CP602	069X170379	CONNECTOR PCB SIDE 07JQ-ST
Q4212	T6YJ1037K0	TRANSISTOR,SILICON 2SA1037AKT146R,S	CP605	069R220021	CONNECTOR PCB SIDE 52287-0211
COILS & TRANSFORMERS			CP801	069S320010	CONNECTOR PCB SIDE A2361WV2-2P
L401	021679472K	COIL 4.7 MH	CP820	069R2C0589	CONNECTOR PCB SIDE 52147-1210
△ L501	029T000092	COIL,LINE FILTER 1R0A103F24	CP850	069R250589	CONNECTOR PCB SIDE 52147-0510
L503	021767100K	COIL 10 UH			
△ L508	028R140024	COIL,DEGAUSS 8R140024			
L604	02167F101J	COIL 100 UH			
L607	021LA6180K	COIL 18 UH			
L608	02167F101J	COIL 100 UH			
L610	021375101K	COIL 100 UH			
L614	021LA66R8K	COIL 6.8 UH			
L615	021375101K	COIL 100 UH			

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
MISCELLANEOUS			
CD4001	122F061502	CORD JUMPER	2F061502
	122L061501	CORD JUMPER	2L061501
CP1001	06972C0010	CONNECTOR PCB SIDE	TMC-J12P-B2
CP2201	069S2A0629	CONNECTOR PCB SIDE	A2001WV2-10P
CP4001	0697240600	CONNECTOR PCB SIDE	TOC-C04X-B1
CP4002	069J760029	CONNECTOR PCB SIDE	IMSA-9604S-06Z14
CP4003	0697120320	CONNECTOR PCB SIDE	TMC-T02X-E1
CP4202	069S270629	CONNECTOR PCB SIDE	A2001WV2-7P
CP803A	067U006049	WIRE HOLDER	B2013H02-6P
CP803B	069R260589	CONNECTOR PCB SIDE	52147-0610
CP805B	067U005049	WIRE HOLDER	B2013H02-5P
CP810B	067U011029	WIRE HOLDER	B2013H02-11P
CP820B	067U013029	WIRE HOLDER	B2013H02-13P
CUS012	800WFAA007	CUSHION B	
CUS013	800WFAA008	CUSHION C	
EL001	124116281A	EYE LET	XRY16X28BD
EL002	124120301A	EYE LET	XRY20X30BD
△ F501	081PC05004	FUSE	51MS050LCC
△ F502	081PC2R504	FUSE	51MS025LCC
△ FB401	043214034F	TRANSFORMER,FLYBACK	3214034F
FH501	06710T0006	HOLDER,FUSE	EYF-52BC
FH502	06710T0006	HOLDER,FUSE	EYF-52BC
FH503	06710T0006	HOLDER,FUSE	EYF-52BC
FH504	06710T0006	HOLDER,FUSE	EYF-52BC
△ ICP502	0835C10003	MICRO FUSE	20N_10KFS
OS753	077Q037002	REMOTE RECEIVER	PIC-37143TH5
△ RY503	0560V10118	RELAY	ALKS325
SP351	070C533019	SPEAKER	SG04D11BNA
TM101	076R0CG020	TRANSMITTER	R25-1729
TU601	0145K00056	TUNER,VHF-UHF	TECC1040PG32E
△ V801	098Y1404B9	CRT W/DY	A34JXV70X53N45
X602	100CT3R505	CRYSTAL	HC-49/C
X1001	100CT01207	CRYSTAL	HC-49/U-S
X1002	100DA32R01	CRYSTAL	DT-26
X4001	100CT3R502	CRYSTAL	HC-49/U

RESISTOR

RC..... CARBON RESISTOR

CAPACITORS

CC..... CERAMIC CAPACITOR
 CE..... ALUMI ELECTROLYTIC CAPACITOR
 CP..... POLYESTER CAPACITOR
 CPP..... POLYPROPYLENE CAPACITOR
 CPL..... PLASTIC CAPACITOR
 CMP..... METAL POLYESTER CAPACITOR
 CMPL..... METAL PLASTIC CAPACITOR
 CMPP..... METAL POLYPROPYLENE CAPACITOR

SPEC.NO.	M5A3-A0I
O/R NO.	K215046