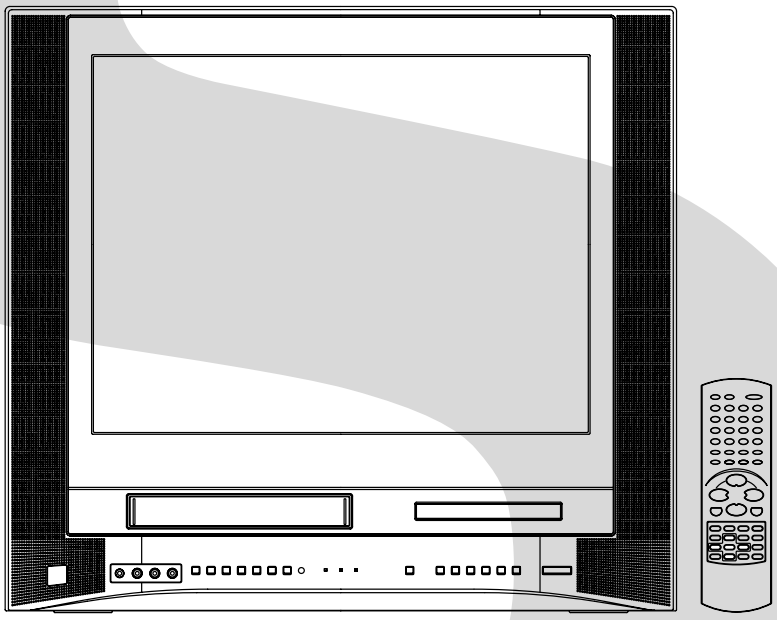
TOSHIBA

SERVICE MANUAL

COLOR TELEVISION/ VIDEO CASSETTE RECORDER/ DVD VIDEO PLAYER

VTW2185



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 eternal exposure metal **[Note 2]** should be more than 1M ohm by using the 500V insulation resistance meter **[Note1]** .
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.

TAPE REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the TV/DVD/VCR block from the main unit and the **Fig. 1** below can be seen. **(Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)**
2. Remove the screw ① of the Deck Chassis and remove the Loading Motor.
3. Rotate the Pinch Roller Cam in the direction of the arrow by hand to slacken the Video Tape. **(Refer to Fig. 2)**
4. Rotate the Clutch Ass'y either of the directions to wind the Video Tape in the Cassette Case.
5. Repeat the above step 3~4. Then take out the Video Cassette from the Deck Chassis. Be careful not to scratch on the tape.

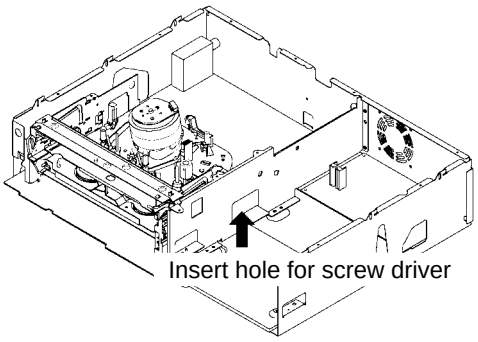


Fig.1

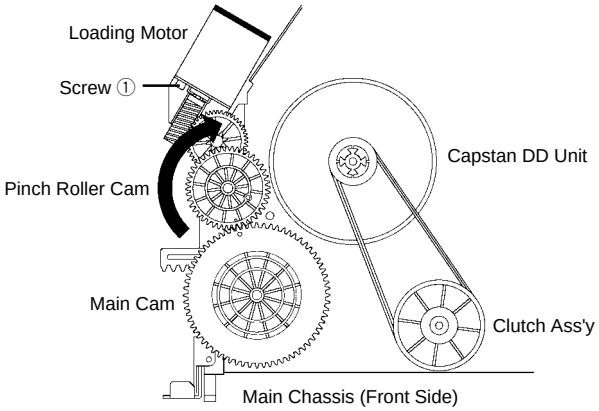


Fig.2

DISC REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Back Cabinet, TV//DVD/VCR Block and DVD TOP. **(Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)**
2. Slide the Rack Loading (White) toward the arrow direction by using a minus driver to release the lock. **(RefertoFig.1)**
3. Draw the Tray.

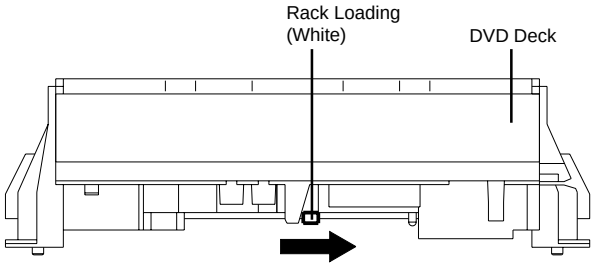


Fig.1

PARENTAL CONTROL - RATING LEVEL

4 DIGIT PASSWORD CANCELLATION

If the stored 4 digit password in the Rating Level menu needs to be cancelled, please follow the steps below.

1. Turn Unit ON.
2. Press and hold the '7' key on the remote control unit.
3. Simultaneously press and hold the 'STOP' key on the front panel.
4. Hold both keys for more than 3 seconds.
5. The On Screen Display message 'PASSWORD CLEAR' will appear.
6. The 4 digit password has now been cleared

TRAY LOCK

Tray cannot be opened by setting the Tray Lock, please follow the steps below.

1. Turn Unit ON.
2. Set the DVD to the Stop Mode.
3. Press and hold the '9' key on the remote control unit.
4. Simultaneously press and hold the 'STOP' key on the front panel.
5. Hold both keys for more than 3 seconds.
6. Press the OPEN/CLOSE key on the front panel to check the Tray Lock setting.

NB: No indications on the screen when the Tray Lock is setting.

To unlock the Tray Lock, please follow the steps below.

1. Turn Unit ON.
2. Set the DVD to the Stop Mode.
3. Set the VOLUME to minimum.
4. Press and hold the 'REC/OTR' button on the front panel.
5. Simultaneously press and hold the '4' key on the remote control unit.
6. Hold both keys for more than 2 second.
7. The On Screen Display message 'INITIALIZE7 COMPLETE' will appear.
8. The Tray Lock has now been cleared.

NB: The above procedure will reset ALL of the player's settings to the default factory state.

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GENERAL SPECIFICATIONS

G-1	**TV System**	CRT	CRT Size / Visual Size		21 inch / 508.0mmV
			CRT Type		Flat
			Deflection		90 degree
			Magnetic Field BV/BH		+ 0.45 G / 0.18 G
		Color System			PAL
		Speaker			2 Speaker
			Position		Front
			Size		1.8 x 3.9 Inch
			Impedance		8 ohm
		Sound Output	MAX		1.5W + 1.5W
			10%(Typical)		1.5W + 1.5W
G-2	**VCR System**	System			VHS Player / Recorder
		Video System			PAL
		Hi-Fi STEREO			Yes
		NTSC PB(PAL 60Hz)			Yes
		Deck	DECK		OVD-7
			Loading System		Front
			Motor		3
		Heads	Video Head		4 Head
			FM Audio Head		2 Head
			Audio /Control		Mono /Yes
			Erase(Full Track Erase)		Yes
		Tape Speed	Rec	PAL	SP/LP
				NTSC	-
			Play	PAL	SP/LP
				NTSC	SP
		Fast Forward / Rewind Time (Approx.) at 25oC			FF:1'48"/REW:1'48"
				Cassette	at E-180
		Forward/Reverse Picture Search		NTSC or PAL-M	SP=3x,5x
				PAL or SECAM	SP/LP=5x,7x/7x,13x
		Frame Advance			Yes
		Slow Speed			1/5, 1/10,1/30
G-3	**DVD System**	Color System			PAL
		Disc			DVD, CD-DA, CD-R/RW, VIDEO CD,SVCD
		Disc Diameter			120 mm , 80 mm
		Deck	Disc Loading System		Front Loading
			Motor		2 Motors
		Pick up			1-Lens 2-Beams System
		Playback time(Max)	DVD 1-Layer		135min (4.7GB)
			DVD 2-Layer		245min (8.5GB)
			CD		74min
			Video CD		74min
		Search speed	Fwd		2-15 times / 4 step (DVD,Video CD)
					2-20 times / 4 step (CD)
				Actual	2-45 times (DVD,Video CD)
					4-40 times (CD)
			Rew		2-15 times / 4 step (DVD,Video CD)
					2-20 times / 4 step (CD)
				Actual	2-45 times (DVD,Video CD)
					4-40 times (CD)
		Slow speed	Fwd		1/8-1/2 times
				Actual	-
			Rew		-
				Actual	-
G-4	**Tuning System**	Broadcasting System			U.K. System I
		Tuner and Receive CH	System		2 Tuner
			Destination		U.K.
			Tuning System		F-Synth
			Input Impedance		VHF/UHF 75 ohm
			CH Coverage		21~69
		Intermediate Frequency	Picture(FP)		39.5MHz
			Sound(FS)		33.5MHz
			FP-FS		6.0MHZ
		Auto Tuning Method			-
		Preset CH			80CH
		Stereo/Dual TV Sound			Yes (NICAM)
		Tuner Sound Muting			Yes

GENERAL SPECIFICATIONS

G-5	**Signal**	Video Signal	Input Level		1 V p-p/75 ohm
			Output Level		1 V p-p/75 ohm
			S/N Ratio (Weighted) at DVD Mode		65dB
			S/N Ratio (Weighted) at VCR Mode		53dB
			Horizontal Resolution at DVD Mode		400 Lines
			Horizontal Resolution at VCR(SP)Mode		240 Lines
		RGB Signal	Output Level		-
		Audio Signal	Input Level		-3.8dBm/50k ohm
		VCR	Output Level (0dB=0.775Vrms)		-3.8dBm/1k ohm
		DVD	Output Level (-20dBFs 0dBFs=2.0Vrms)		-12.0dBm/1k ohm
			Digital Output Level		0.5 V p-p/75 ohm(DVD)
			S/N Ratio at DVD (Weighted)		90 dB
			S/N Ratio at VCR(SP) (Weighted)		42 dB
			Harmonic Distortion at DVD Mode		0.06% (1kHz)
			Harmonic Distortion at VCR(SP) Mode		1.5% (1kHz) Typical
			Frequency Response :		
			DVD Mode	at DVD	4Hz - 22kHz
				at Video CD	4Hz - 20kHz
				at SVCD	4Hz - 20kHz
				at CD	4Hz - 20kHz
			VCR Mode	at SP	100Hz - 10kHz
				at LP	100Hz - 5kHz
				at SLP(EP)	-
		Hi-Fi Audio Signal	Dynamic Range : More than		75 dB
			Frequency Response :		20Hz - 20kHz
			Wow And Flutter : Less than		0.01 %Wrms
			Channel Separation : More than		60 dB
			Harmonic Distortion : Less than		1.0 %
G-6	**Power**	Power Source	AC		230~240V 50Hz
			DC		-
		Power Consumption		at AC	80 W at 230 V 50 Hz
				at DC	-
			Stand by (at AC)		4 W at 230 V 50 Hz
			Per Year		-
		Protector	Power Fuse		Yes
			Dew Sensor		No
G-7	**Regulation**		Safety		CE , BEAB
			Radiation		CE
			X-Radiation		NONE
G-8	**Temperature**		Operation		+5oC ~ +40oC
			Storage		-20oC ~ +60oC
G-9	**Operating Humidity**				Less than 80% RH

GENERAL SPECIFICATIONS

G-10	On Screen Display (TV/VCR)	Menu			Yes
		Menu	Type		Character
		Timer Rec Set			Yes
		Channel Setup			No
			Auto Tuning		No
			Ch Mapping		No
			Ch Tuning		Yes
			Ch Allocation		No
		TV Setup			Yes
			On/Off Timer Set		Yes
			Picture		Yes
			Audio		No
			NICAM Auto On/Off		Yes
		VCR Setup			No
			Auto Repeat On/Off		Yes
			System Select		No
			Scene Repeat		No
		System Setup			No
			Clock Set		Yes (Calendar 24h)
			Language		No
			System Select		No
		G-CODE(or SHOWVIEW or PLUSCODE)No. Entry			Yes
		Stereo/Audio Output			Yes
			Bilingual		No
			NICAM		Yes
		Control Level	Volume		Yes
			Brightness / Contrast / Sharpness / Color		Yes
			Tint		No
			Bass/Treble/Balance		No
			Manual Tracking		Yes
		Play/Stop/FF/Rew/Rec/OTR/T-Rec/Pause/Eject/Tape In (Symbol Mark)			Yes
		TV/VCR			Yes
		DVD			Yes
		Clock / Date			Yes
		CH/AV			Yes
		Tape Counter(Linear Counter)			Yes
		Tape Speed			Yes
		Sleep Time			Yes
		Auto Tracking/Manual Tracking			Yes
		Index			Yes
		Mute			Yes
		Hi-Fi			Yes
		PDC			Yes
		Repeat			Yes
		Zero Return			Yes
		DEW			No

GENERAL SPECIFICATIONS

G-11	On Screen Display	Menu (DVD)			Yes	
			Menu Type		Character	
			Language		Yes	
				OSD Language		No
				Menu	Yes	
				SubTitle	Yes	
				Audio	Yes	
			Picture		Yes	
				TV Screen Size	Yes	
				OSD Display On/Off	Yes	
			Sound		Yes	
				DRC (Dynamic Range Control)	Yes	
				dts Decode		No
				Output(5.1ch/ 2ch)		No
				Surround On/Off		No
				Center On/Off		No
				Sub Woofer On/Off		No
			Parental		Yes	
				Password Lock/ Un Lock	Yes	
				Rating Level	Yes	
			Open		Yes	
			Close		Yes	
			No disc		Yes	
			Reading		Yes	
			Play		Yes	
			Still/Pause		Yes	
			Stop		Yes	
			Prohibit Mark		Yes	
			Step		Yes	
			Skip(>>|)		Yes	
			Skip(|<<)		Yes	
			Random		Yes (CD,MP3)	
			Repeat		Yes	
			Slow+ ##		Yes	
			Slow- ##			No
			Search+ ##		Yes	
			Search- ##		Yes	
			Jump		Yes	
			Resume		Yes	
			Title No.		Yes	
			Chapter No.		Yes	
			Track No.		Yes	
			Time		Yes	
			Sub Title No.		Yes	
			Angle No.		Yes	
			Vocal On/Off			No
			Audio No.		Yes	
			Audio Stereo L/R		Yes (Video CD,SVCD)	
			Zoom		Yes	
			Marker No.			No
			Program Play Back		Yes (CD,MP3)	
			Surround On/Off			No
			Screen Saver			No
			MP3	Folder Name	Yes	
				File Name	Yes	
				File No	Yes	
				Time	Yes	
				Track No	Yes	
G-12	OSD Language		TV/VCR		English	
			DVD		English	
G-13	Clock,Timer and Timer Back-up	Calendar			1990/1/1 ~ 2081/12/31	
		Timer Events			8 Program/ 1 Month	
		One Touch Recording Max Time			SP 5 Hours LP 10 Hours	
		OTPB Valid Time			-	
		Sleep Timer		Max Time	120	Min
				Step	10	Min
		On/Off Timer		Program(On Timer / Off Timer)	1	Program
		Auto Shut Off		No Signal	15	Min
				No Operation	-	Min
		Timer Back-up (at Power Off Mode)			30	min.

GENERAL SPECIFICATIONS

G-14	**Remote Control Unit**	Unit(for TOSHIBA)		RC-GN
		Glow in Dark Remocon		Yes
		Format		NEC
		Custom Code		71-8E
		Power Source	Voltage(D.C)	3V
			UM size x pcs	UM-4 x 2 pcs
		Total Keys		49
		Keys	TV/VCR	Yes
			DVD	Yes
			Power	Yes
			1	Yes
			2	Yes
			3	Yes
			4	Yes
			5	Yes
			6	Yes
			7	Yes
			8	Yes
			9	Yes
			0/AV	Yes
			CH / Page Up	Yes
			CH / Page Down	Yes
			Volume Up	Yes
			Volume Down	Yes
			Display	Yes
			Sleep	Yes
			Audio Select	Yes
			Mute	Yes
			Skip- / Channel Return	Yes
			Skip+ / TEXT/MIX/TV	Yes
			T-REC	Yes
			REC(T-REC/OTR)	Yes
			Rec/OTR	Yes
			Slow	Yes
			Play	Yes
			Stop	Yes
			Rev	Yes
			Fwd	Yes
			Pause / Still	Yes
			CM Skip / Jump	Yes
			SP/LP / Return	Yes
			Counter Reset / Angle	Yes
			Zero Return / Subtitle	Yes
			Zoom / Reveal	Yes
			Menu /Setup	Yes
			Video+/ Program/ Repeat A-B	Yes
			D.Tracking / Top Menu	Yes
			Tracking+ / DVD Menu	Yes
			Tracking- / Play Mode	Yes
			Cancel / F/T/B	Yes
			Enter / Hold	Yes
			Index / Sub Page	Yes
			Cursor Up / Green	Yes
			Cursor Down / Yellow	Yes
			Cursor Left / Red	Yes
			Cursor Right / Blue	Yes

GENERAL SPECIFICATIONS

G-15	Features	Auto Head Cleaning		Yes
		Auto Tracking		Yes
		HQ (VHS Standard High Quality)		Yes
		Auto Power On, Auto Play, Auto Rewind, Auto Eject		Yes
		VIDEO PLUS+(SHOWVIEW,G-CODE)		Yes
		CH Auto Setup/Auto Clock		Yes
		PDC		Yes
		Forward / Reverse Picture Search		Yes
		TV Auto Shut off Function		Yes
		Index Search		Yes
		SQPB		No
		CM Skip(30sec x 6 Times)		Yes
		VM Circuit		No
		TV/REC Monitor		No
		Choke Coil		Yes
		Energy Star		No
		Protect of FBT Leak Circuit		Yes
		Zero Return		Yes
		Power On Memory		No
		T'Text		Yes
			Text type	Fast
		Parental Lock (DVD Only)		Yes
		Tray Lock		Yes
		Auto Stop (Pause, and Resume Stop after 5min.)		Yes
		VIDEO CD Playback		Yes
		SVCD Playback		Yes
			Overlay Graphics And Text	No
			Command List	No
			Entry Point Jump	No
		MP3 Playback		Yes
		Digital Out	Dolby Digital	Yes
			PCM	Yes
			DTS	Yes
			MPEG1, MPEG2	Yes
		Down Mix Out	(Dolby Digital, MPEG1,MPEG2)	Yes
		TruSurround		No
		Screen Saver		No
G-16	Accessories	Owner's Manual	Language	English
			w/Guarantee Card	No
		Remote Control Unit		Yes
		Rod Antenna		No
			Poles	-
			Terminal	-
			w/300 ohm to 75 ohm Antenna Adapter	-
		Loop Antenna		No
			Terminal	--
		U/V Mixer		No
		DC Car Cord (Center+)		No
		Guarantee Card		No
		Warning Sheet		No
		Circuit Diagram		No
		Antenna Change Plug		No
		Service Facility List		No
		Important Safeguard		No
		Dew/AHC Caution Sheet		Yes
		AC Plug Adapter		No
		Quick Set-up Sheet		Yes
		Battery		Yes
			UM size x pcs	UM-4 x 2 pcs
			OEM Brand	No
		AC Cord		No
		AV Cord (2Pin-1Pin)		No
		21pin-RCA Cable		No
		RF Cable		Yes (0.9m)
		Registration Card		Yes
		PTB Sheet		No
		Anti-Theft Sheet		No
		Euro Warranty Information Sheet		No
		Helpline Sheet		Yes

GENERAL SPECIFICATIONS

G-17	**Interface**	Switch	Front	Standby	Yes
				Channel Up	Yes
				Channel Down	Yes
				Volume Up	Yes
				Volume Down	Yes
				Play (VCR)	Yes
				Stop / Eject (VCR)	Yes
				F.FWD/Cue (VCR)	Yes
				Rew/Rev (VCR)	Yes
				REC/OTR (VCR)	Yes
				Play (DVD)	Yes
				Stop (DVD)	Yes
				Skip+/Search+ (DVD)	Yes
				Skip-/Search- (DVD)	Yes
				Open/Close (DVD)	Yes
				Input Select	No
				Main Power SW	Yes
		Indicator		Standby	Yes(Red)
				REC/OTR	Yes(Red)
				T-REC	Yes(Red)
				TV/VCR	No
				DVD	No
		Terminals	Front	Video Input	RCA x1
				Audio Input	RCA x2(STEREO)
				Other Terminal	Headphone (Stereo & Mono, 3.5mm)
			Rear	Video Input	No
				Audio Input	No
				Video Output	No
				Audio Output	RCA x2(STEREO)
				Digital Audio Output	Coaxial (DVD Only)
				Euro Scart	1-SCART
				VHF/UHF Antenna Input	DIN type
				AC Inlet	No
G-18	**Set Size**			Approx. W x D x H (mm)	573 x 482 x 517
G-19	**Weight**			Net (Approx.)	29.0kg (63.9lbs)
				Gross (Approx.)	32.5kg (71.7lbs)
G-20	**Carton**		Master Carton		No
				Content	-
				Material	-
				Dimensions W x D x H(mm)	-
				Description of Origin	-
			Gift Box		Yes
				Material	Double/White
				Dimensions W x D x H(mm)	658 x 575 x 625
				Design	As per Buyer's
				Description of Origin	Yes
			Drop Test	Natural Dropping At	1 Corner / 3 Edges / 6 Surfaces
				Height (cm)	31
			Container Stuffing(40' container)		216 Sets
G-21	**Material**		Cabinet	Front	PS 94HB
				Rear	PS 94V0 Non Decabrom
				Jack Panel	-
			PCB	Non-Halogen Demand	Yes
				Eyelet Demand	Yes

DISASSEMBLY INSTRUCTIONS

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

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

1. Remove the 6 screws ①.
2. Remove the Back Cabinet in the direction of arrow.

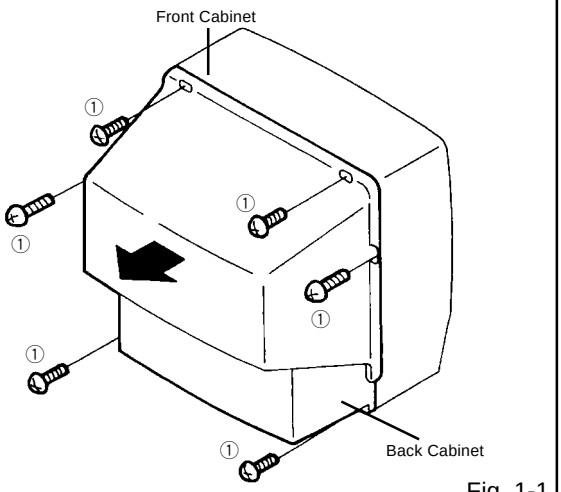


Fig. 1-1

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 CP853B).
3. Remove the CRT PCB in the direction of arrow.

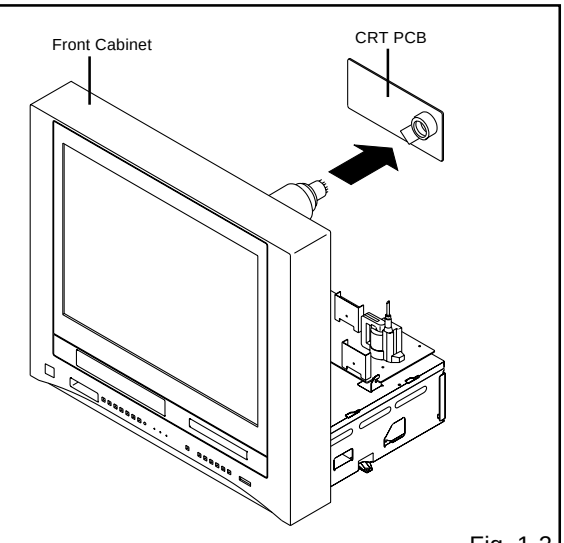


Fig. 1-2

1-3: POWER SW PCB (Refer to Fig. 1-3)

1. Remove the 2 screws ①.
2. Disconnect the following connector: (CP1704).
3. Remove the Power SW PCB in the direction of arrow.

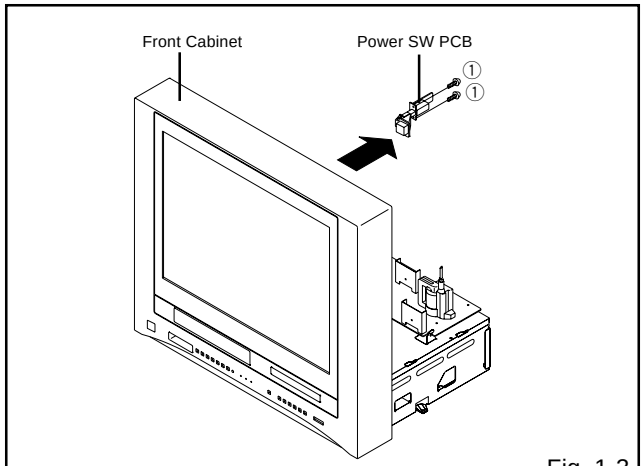


Fig. 1-3

1-4: TV/DVD/VCR BLOCK (Refer to Fig. 1-4)

1. Remove the 2 screws ①.
2. Disconnect the following connectors:
   (CP352, CP402 and CP1702).
3. Remove the TV/DVD/VCR Block in the direction of arrow.

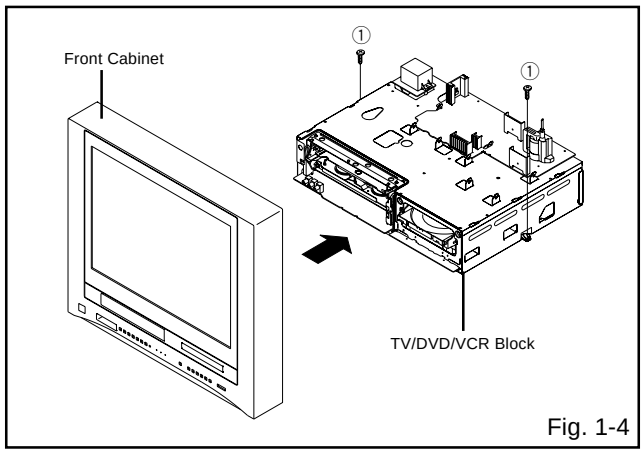


Fig. 1-4

DISASSEMBLY INSTRUCTIONS

1-5: FILTER PCB (Refer to Fig. 1-5)

1. Remove the screw ①.
2. Disconnect the following connector: (CP504).
3. Remove the Filter PCB in the direction of arrow.

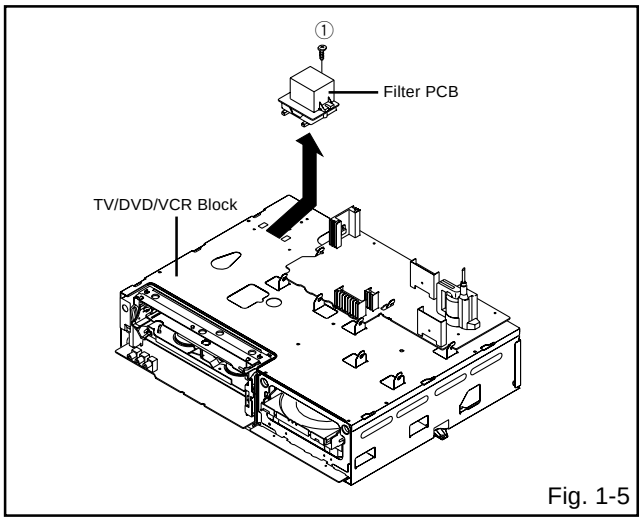


Fig. 1-5

1-6: MAIN PCB (Refer to Fig. 1-6)

1. Remove the 2 screws ①.
2. Remove the 4 screws ②.
3. Disconnect the following connectors:
   (CP3601, CP3602 and CP3603).
4. Remove the Main PCB in the direction of arrow.

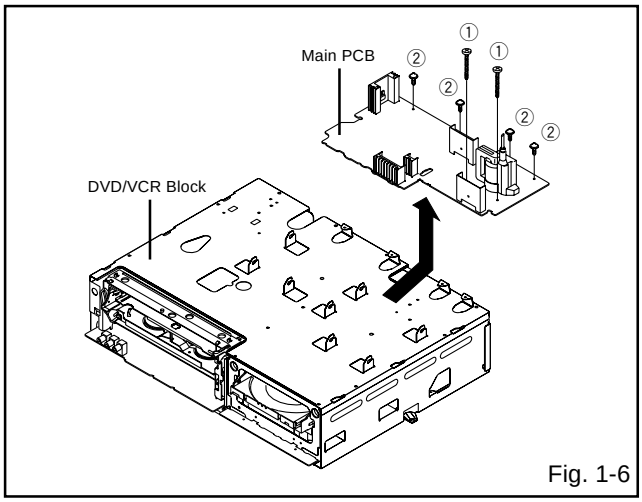


Fig. 1-6

1-7: TOP SHIELD (Refer to Fig. 1-7)

1. Remove the 11 screws ①.
2. Remove the Top Shield in the direction of arrow.

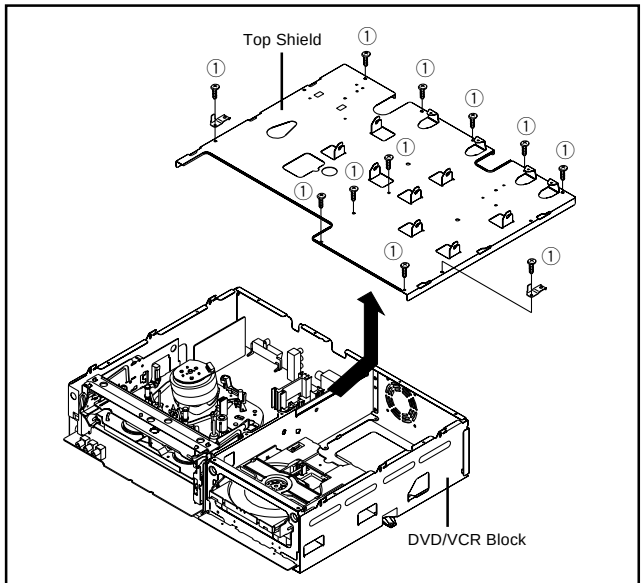


Fig. 1-7

1-8: DVD BLOCK (Refer to Fig. 1-8)

1. Remove the 2 screws ①.
2. Remove the VCR Holder.
3. Remove the 4 screws ②.
4. Disconnect the following connectors:
   (CP8001 and CP8002).
5. Remove the DVD Block in the direction of arrow.

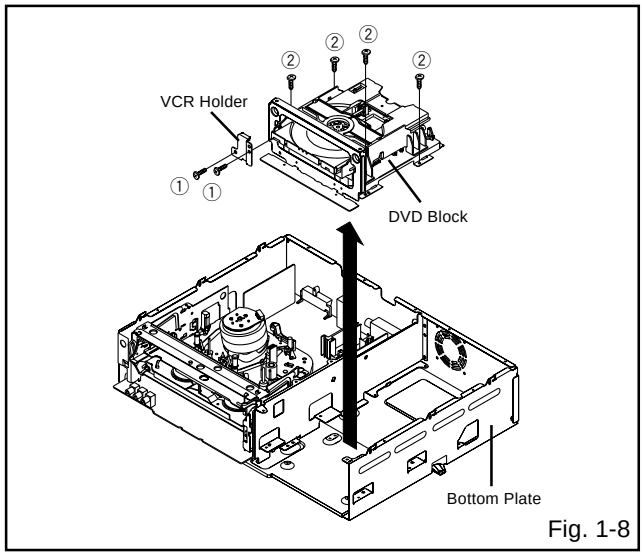


Fig. 1-8

DISASSEMBLY INSTRUCTIONS

1-9: OPERATION PCB/DVD PCB/DVD DECK (Refer to Fig. 1-9)

1. Make the short circuit on the position as shown **Fig. 1-9** using a soldering. If you remove the DVD Deck with no soldering, the Laser may be damaged.
2. Remove the 2 screws ①.
3. Remove the Operation PCB in the direction of arrow (A).
4. Remove the 2 screws ②.
5. Remove the Front Shield in the direction of arrow (B).
6. Disconnect the following connectors: (CP2001, CP2301 and CP2302).
7. Remove the 4 screws ③.
8. Remove the DVD Deck in the direction of arrow (C).
9. Remove the 4 screws ④.
10. Remove the DVD PCB in the direction of arrow (D).

NOTE

When the installation of the DVD Deck, remove all the soldering on the short circuit position after the connection of Pick Up PCB and DVD PCB connector.

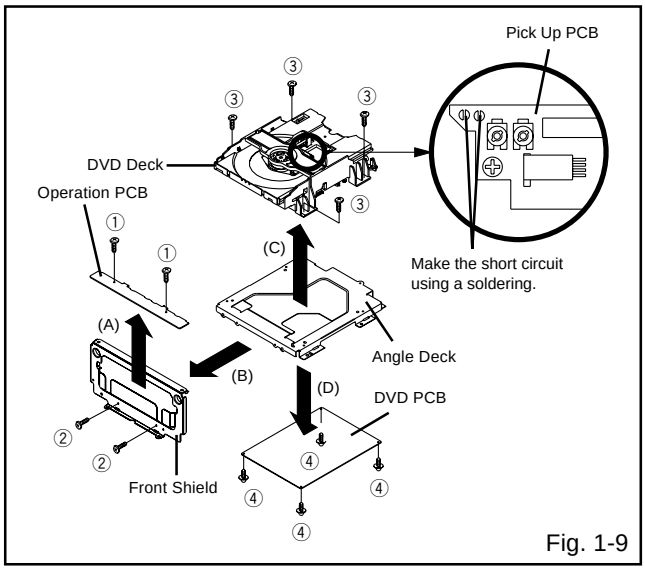


Fig. 1-9

1-10: VCR DECK (Refer to Fig. 1-10)

NOTE

Do not remove the cable at the FE Head section. The FE Head may be damaged if you remove the cable by force.

1. Move the Cassette Holder Ass'y to the back side.
2. Remove the screw ①.
3. Remove the FE Head.
4. Remove the 3 screws ②.
5. Remove the screw ③.
6. Disconnect the following connectors: (CP1001, CP4501 and CP4505).
7. Remove the AC Head Cover and VCR Deck in the direction of arrow.

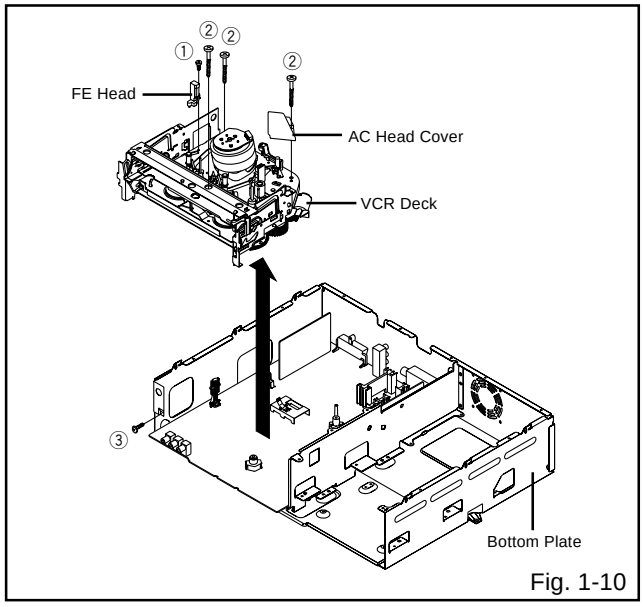


Fig. 1-10

1-11: VCR PCB (Refer to Fig. 1-11)

1. Remove the 4 screws ①.
2. Remove the AV Jack Shield.
3. Remove the VCR PCB in the direction of arrow.

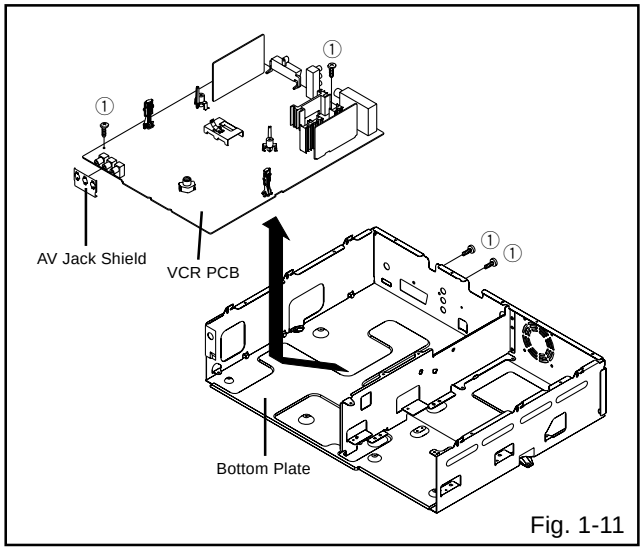


Fig. 1-11

DISASSEMBLY INSTRUCTIONS

2. REMOVAL OF VCR 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.

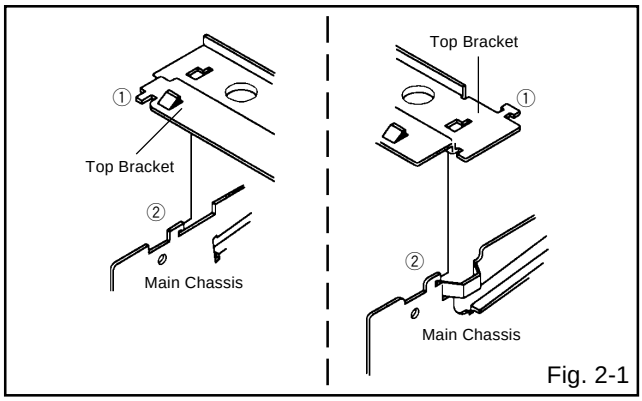


Fig. 2-1

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.

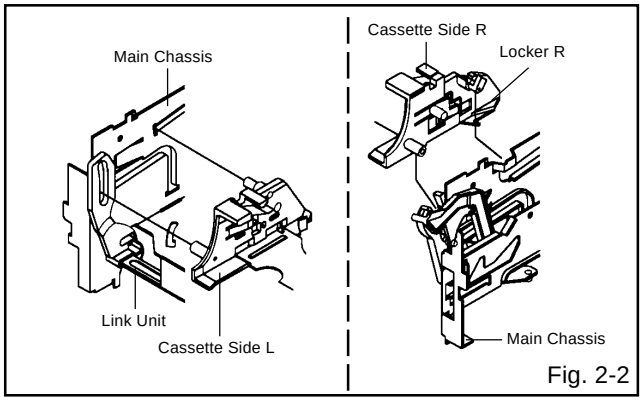


Fig. 2-2

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.

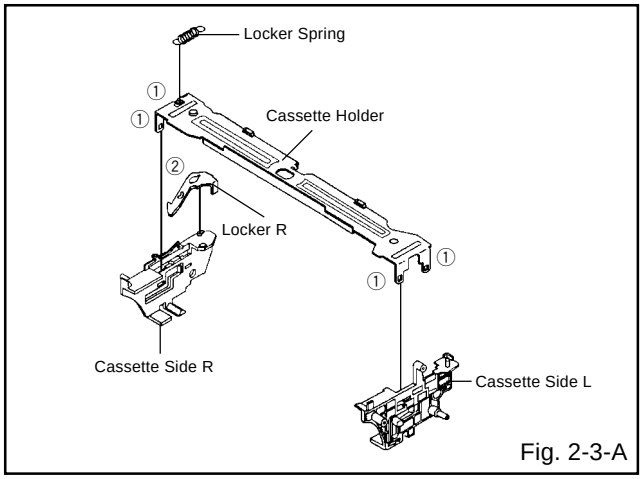


Fig. 2-3-A

NOTE

1. In case of the Locker R installation, check if the one position 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.

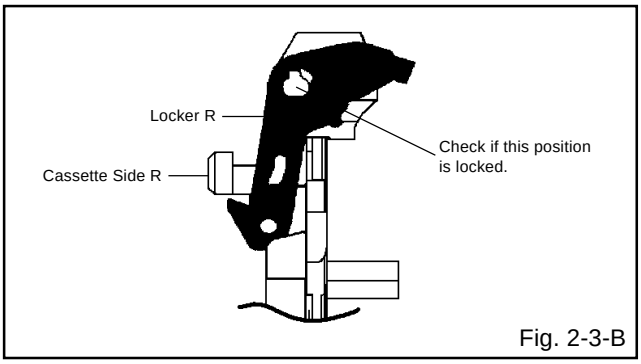


Fig. 2-3-B

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.

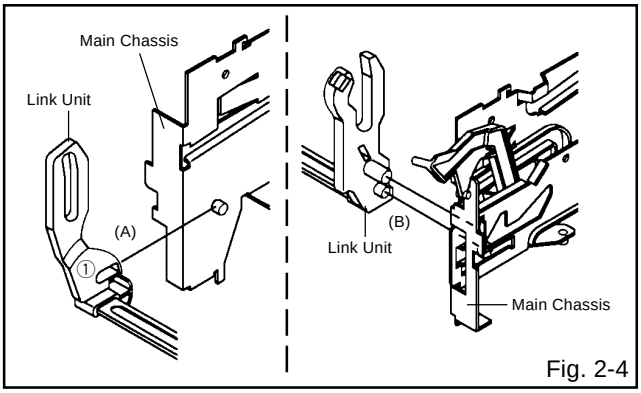


Fig. 2-4

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.

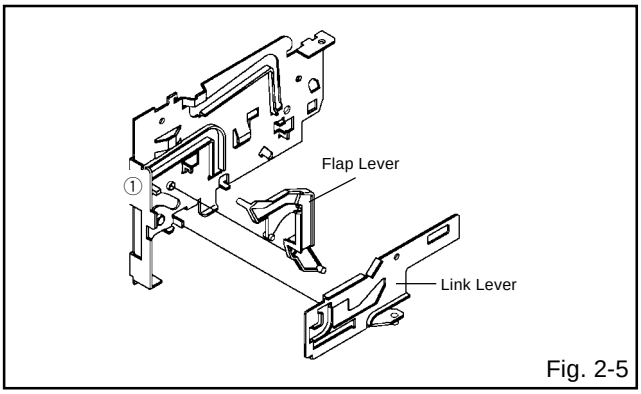


Fig. 2-5

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.

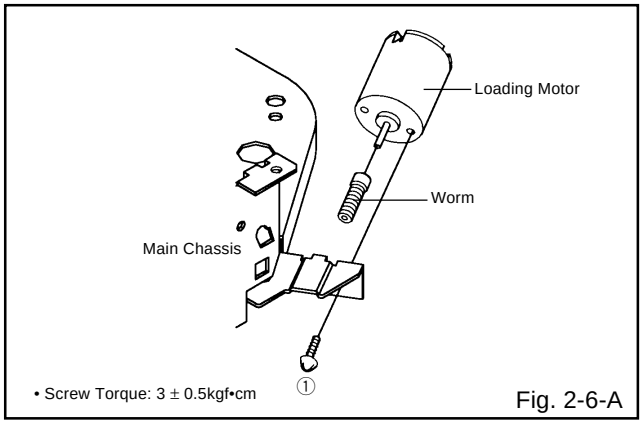


Fig. 2-6-A

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, slacken the wire as shown Fig. 2-6-C.
3. When installing the wires between Capstan DD Unit and Loading Motor, connect them correctly as shown Fig. 2-6-D.

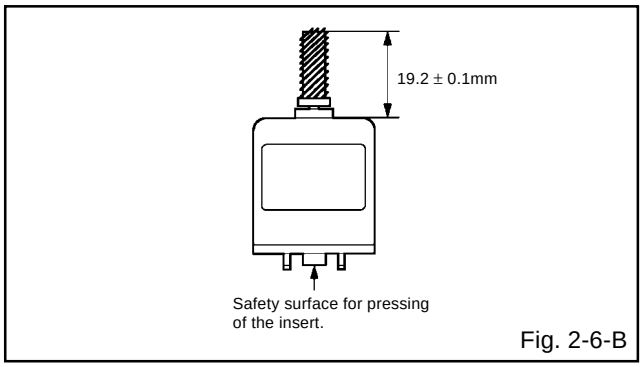


Fig. 2-6-B

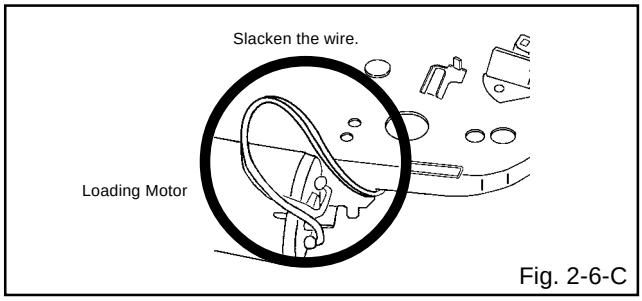


Fig. 2-6-C

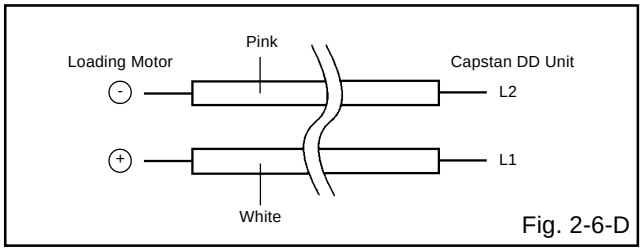


Fig. 2-6-D

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.

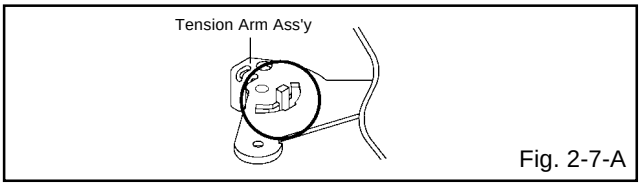


Fig. 2-7-A

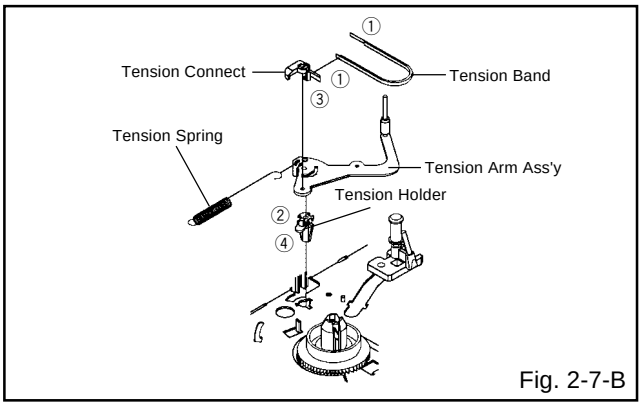


Fig. 2-7-B

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.

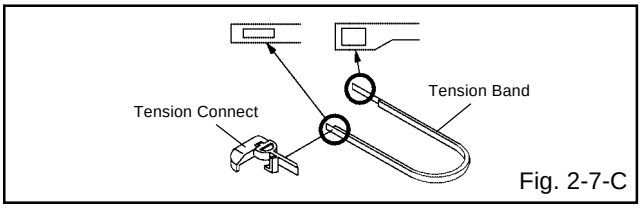


Fig. 2-7-C

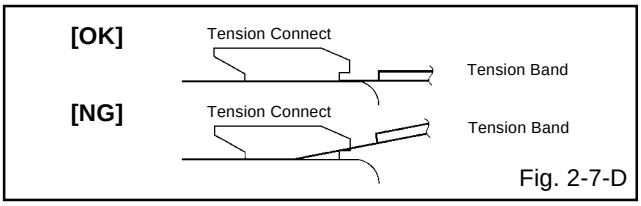


Fig. 2-7-D

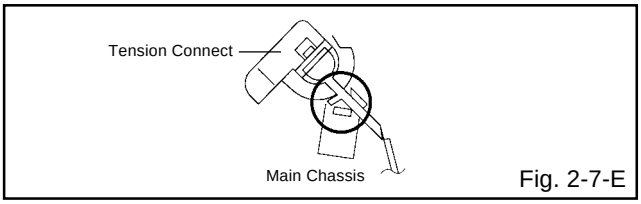


Fig. 2-7-E

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.

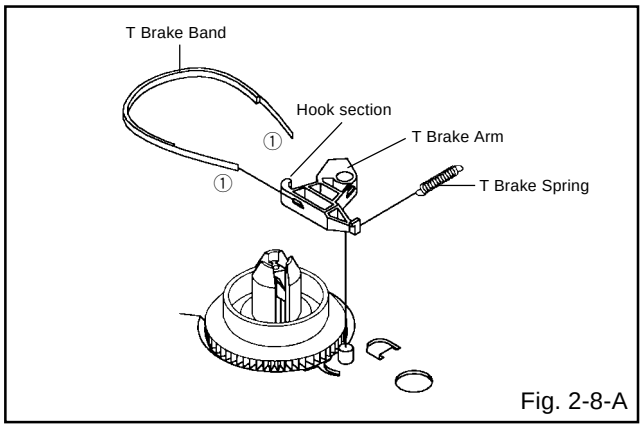


Fig. 2-8-A

NOTE

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

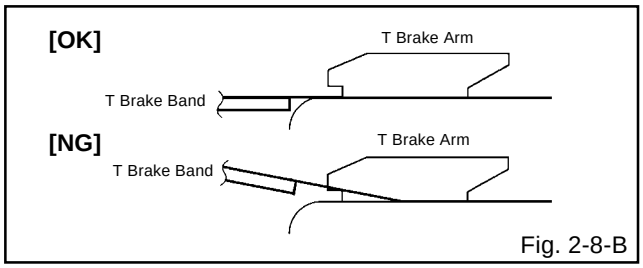


Fig. 2-8-B

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. (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)**

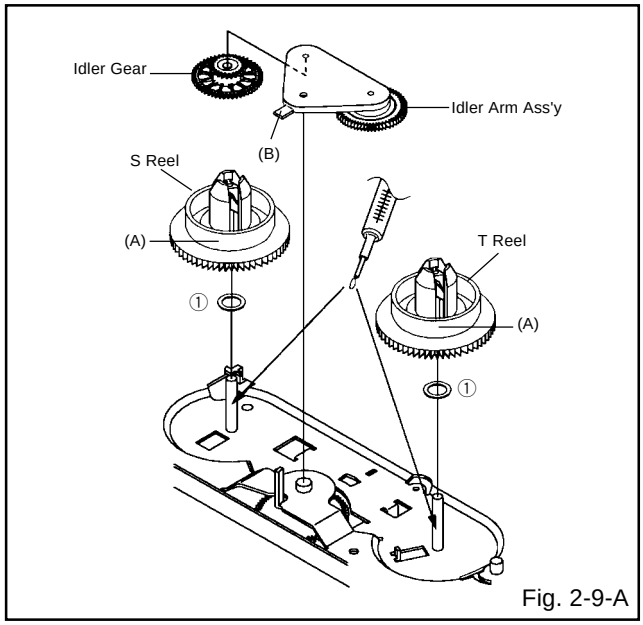


Fig. 2-9-A

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.

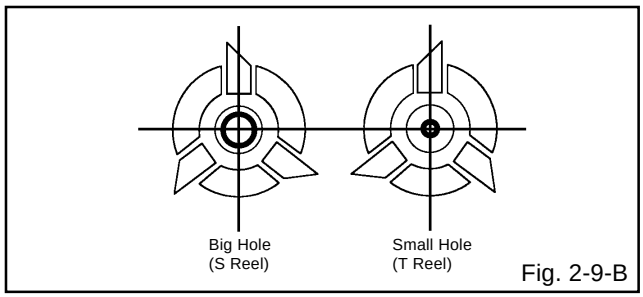


Fig. 2-9-B

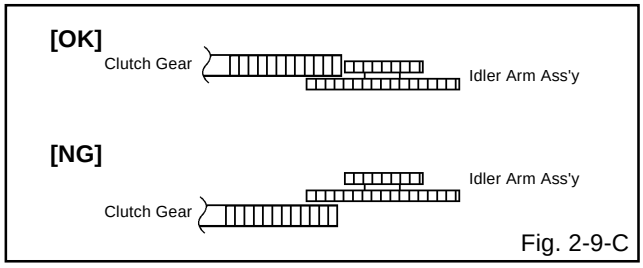


Fig. 2-9-C

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.

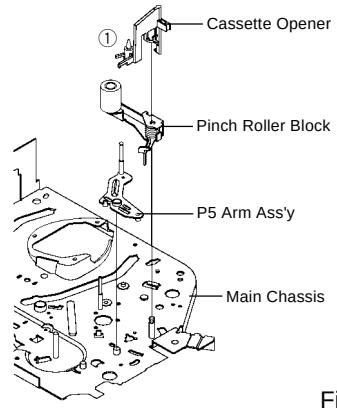


Fig. 2-10-A

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.

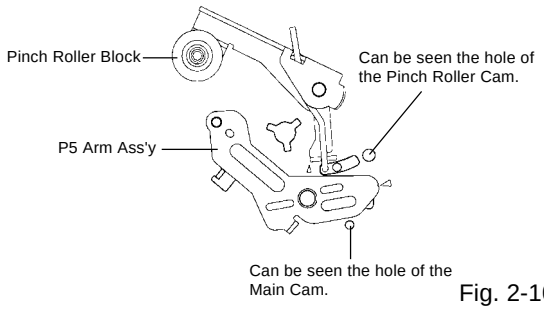


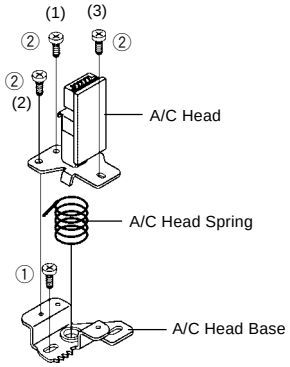
Fig. 2-10-B

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 ± 0.5kgf•cm (Screw ①)

Fig. 2-11-A

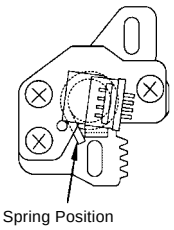
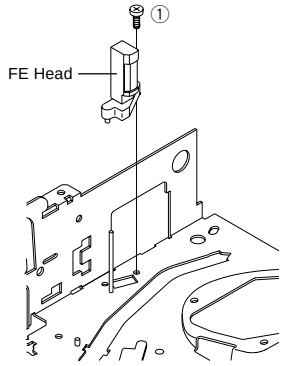


Fig. 2-11-B

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

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



• Screw Torque: 5 ± 0.5kgf•cm
• The FE Head is not installed on the Video Cassette Player.

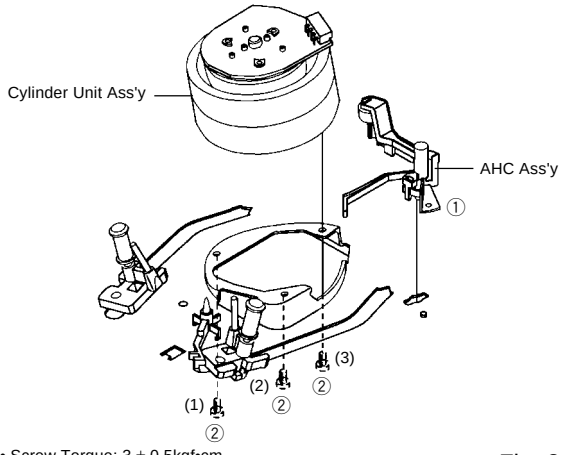
Fig. 2-12

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 ± 0.5kgf•cm

Fig. 2-13

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.

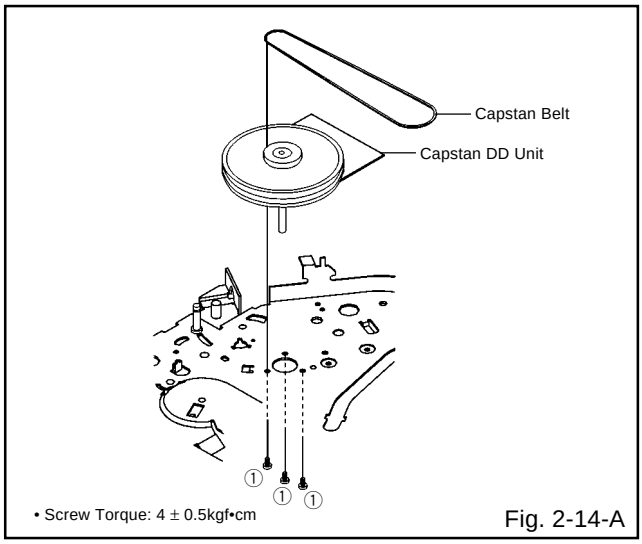


Fig. 2-14-A

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)**

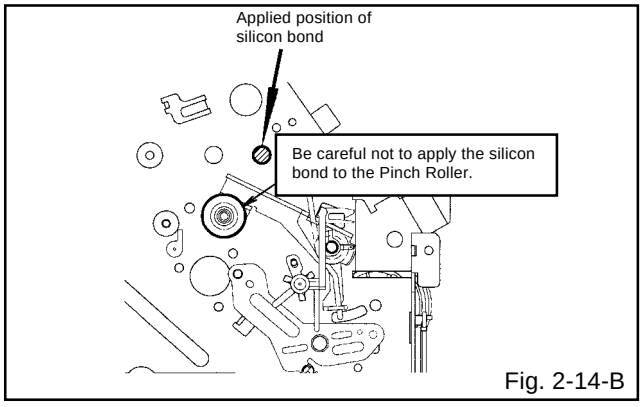


Fig. 2-14-B

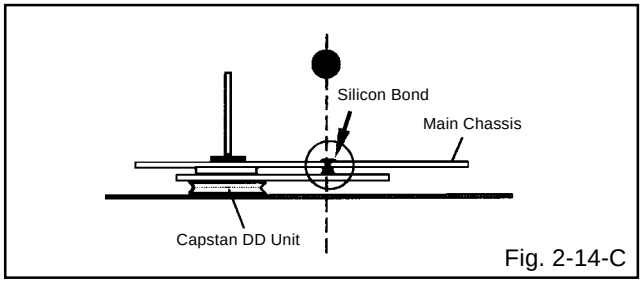


Fig. 2-14-C

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.

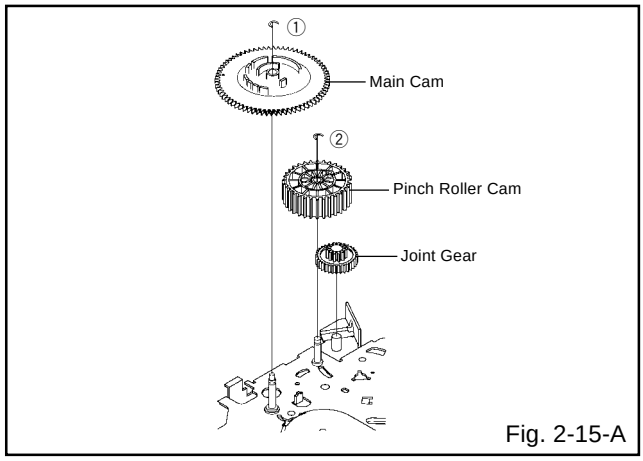


Fig. 2-15-A

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)**

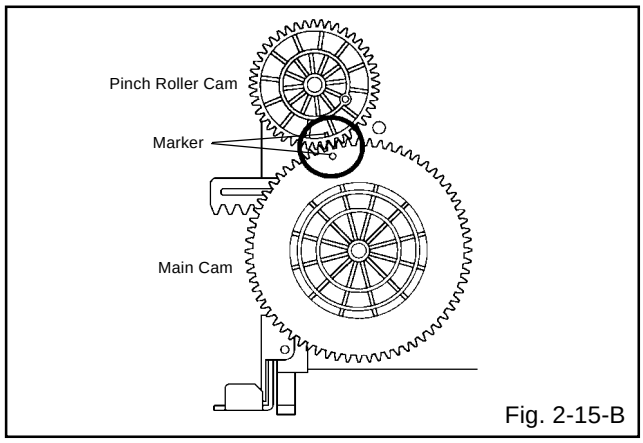


Fig. 2-15-B

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.

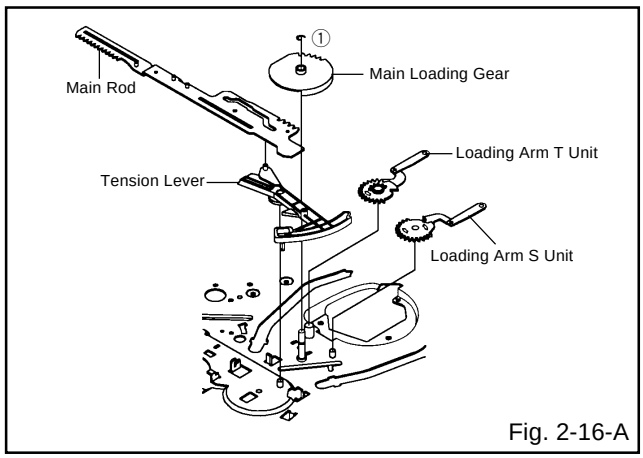


Fig. 2-16-A

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)**

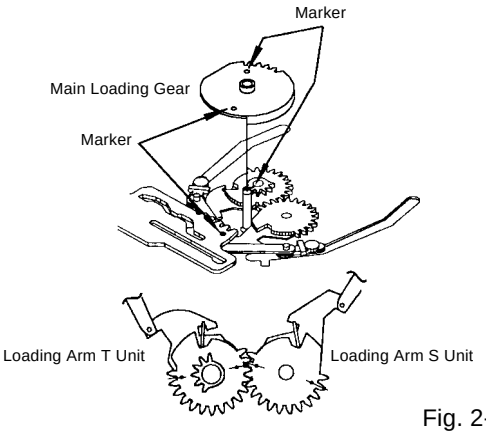


Fig. 2-16-B

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.

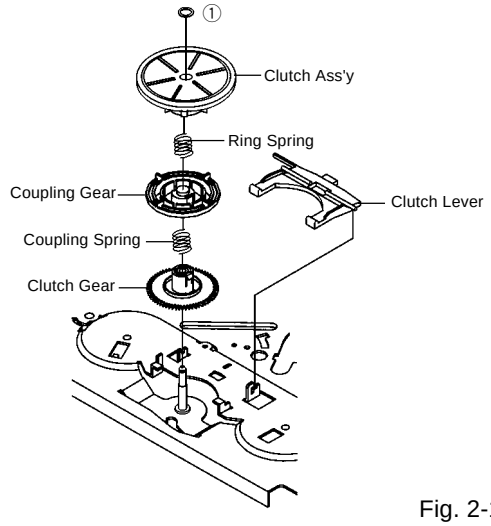


Fig. 2-17-A

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)**

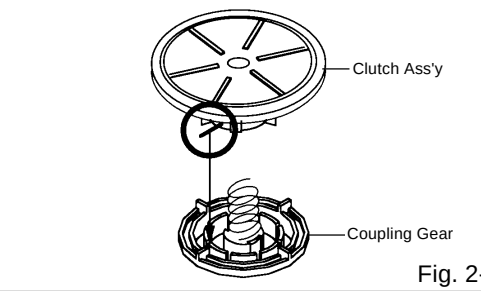


Fig. 2-17-B

2-18: CASSETTE GUIDE POST/INCLINED BASE S/T UNIT/P4 CAP/LED REFLECTOR (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/T Unit.
4. Remove the screw ②.
5. Remove the LED Reflector.

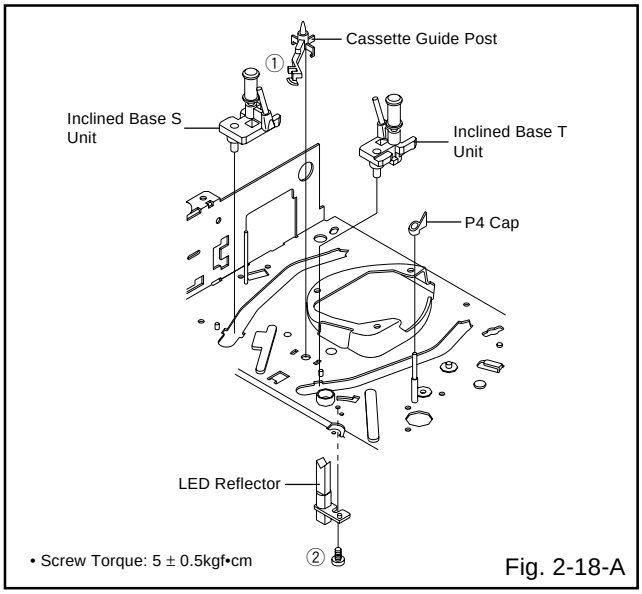


Fig. 2-18-A

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.

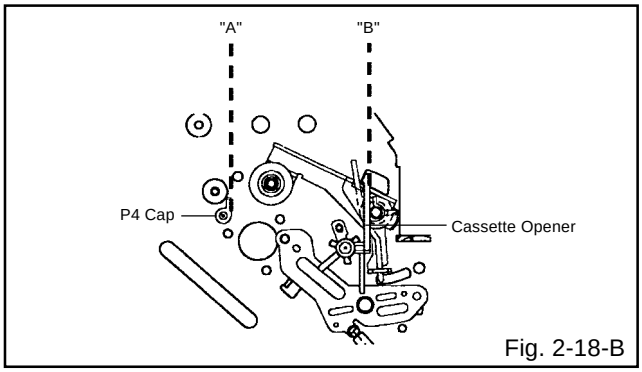


Fig. 2-18-B

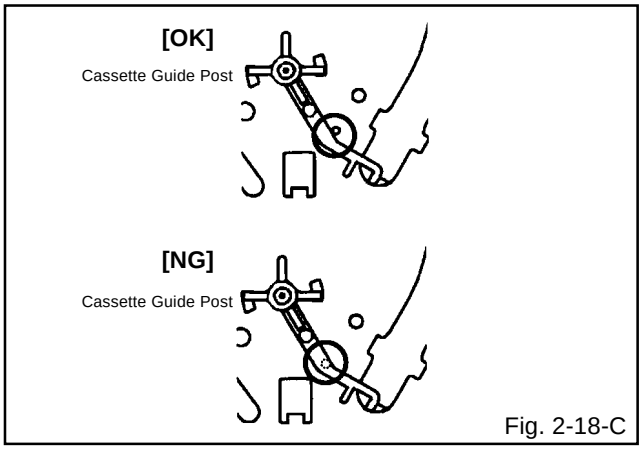


Fig. 2-18-C

DISASSEMBLY INSTRUCTIONS

3. REMOVAL OF DVD DECK PARTS

NOTE

1. Do not disassemble the DVD DECK PARTS except listed parts here. Minute adjustments are needed if the disassemble is done. If the repair is needed except listed parts, replace the DVD MECHA ASS'Y.

3-1: TRAY (Refer to Fig. 3-1-A)

1. Set the Tray opened. **(Refer to the DISC REMOVAL METHOD AT NO POWER SUPPLY)**
2. Unlock the support ① and remove the Tray.

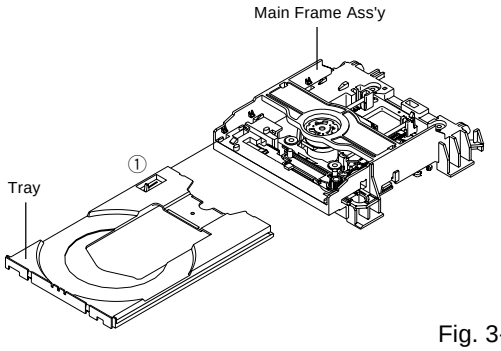


Fig. 3-1-A

NOTE

1. In case of the Tray installation, install them as the circled section of Fig. 3-1-B so that the each markers are met.

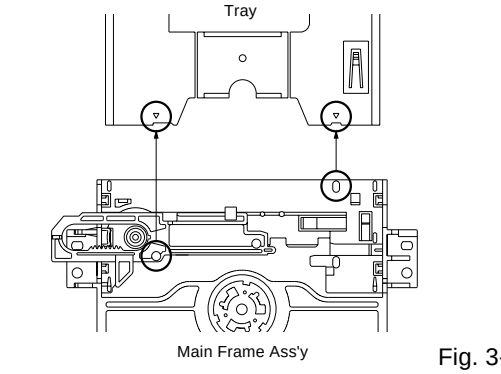


Fig. 3-1-B

3-2: MAIN CHASSIS ASS'Y (Refer to Fig. 3-2-A)

1. Remove the Main Chassis Ass'y from the Insulator (R).
2. Unlock the support ①.
3. Remove the Main Chassis Ass'y.

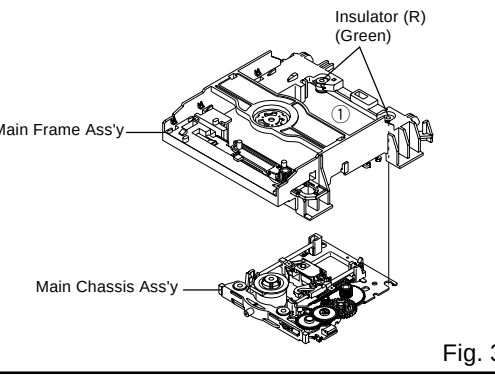


Fig. 3-2-A

NOTE

1. In case of the Main Chassis Ass'y, install it from (1) to (6) in order. **(Refer to Fig. 3-2-B)**

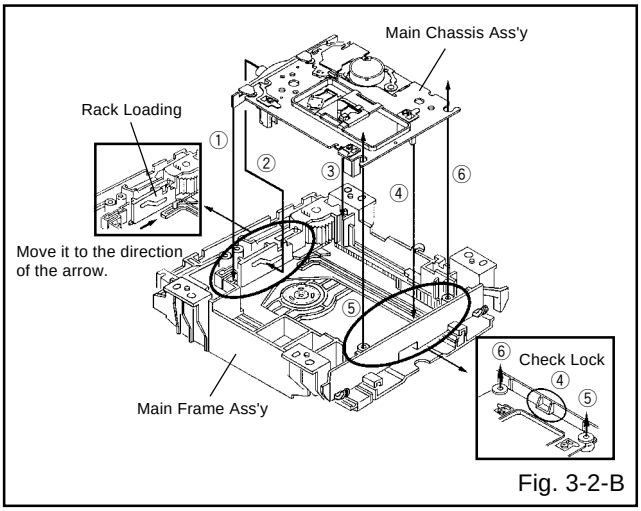


Fig. 3-2-B

3-3: RACK LOADING/MAIN GEAR/ RACK LOADING SPRING (Refer to Fig. 3-3)

1. Press down the catcher ① and slide the Rack Loading.
2. Remove the Rack Loading, Rack Loading Spring and Main Gear.

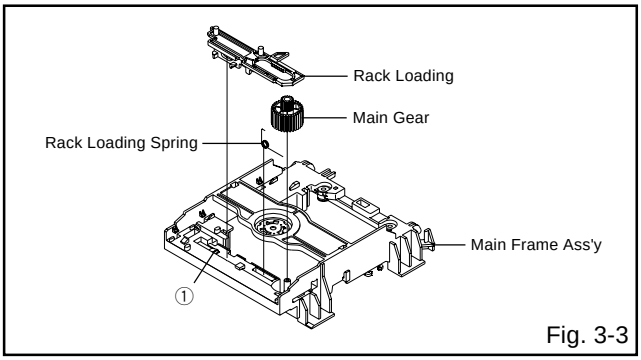


Fig. 3-3

3-4: CLAMPER ASS'Y/INSULATOR(R)/LEVER SWITCH (Refer to Fig. 3-4-A)

1. Remove the screw ①.
2. Remove the Lever Switch.
3. Remove the 2 Insulator (R).
4. Press the Clamper and rotate the Clamper Plate clockwise, then unlock the 3 supports ②.
5. Remove the Clamper Plate, Clamper Magnet and Clamper.

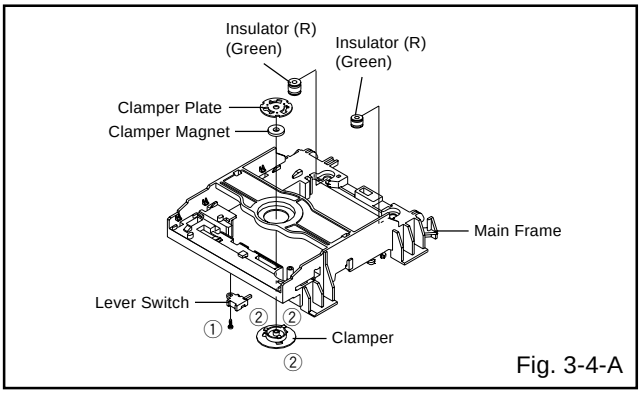


Fig. 3-4-A

DISASSEMBLY INSTRUCTIONS

NOTE

1. When installing the Clamper Magnet, install it with the green face up.
2. When installing the wire of the Lever Switch, install it correctly as Fig. 3-4-B.
3. When installing the Lever Switch, install it correctly as Fig. 3-4-C.
4. In case of the Lever Switch installation, hook the wire on the Main Frame as shown Fig. 3-4-D.

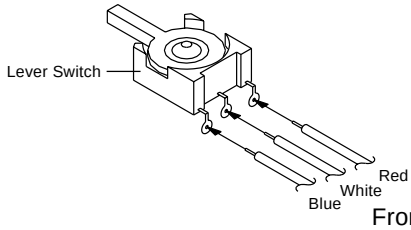


Fig. 3-4-B

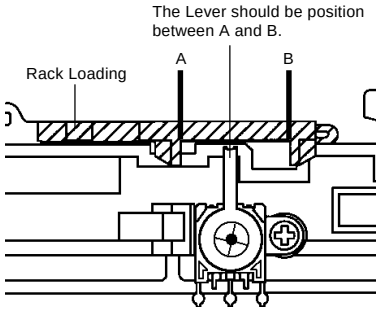


Fig. 3-4-C

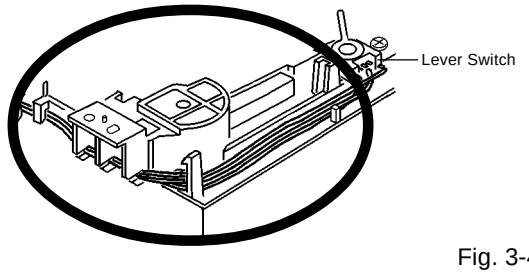


Fig. 3-4-D

3-5: TRAVERSE HOLDER/INSULATOR (F) (Refer to Fig. 3-5-A)

1. Remove the Traverse Holder.
2. Remove the 2 Insulator (F).

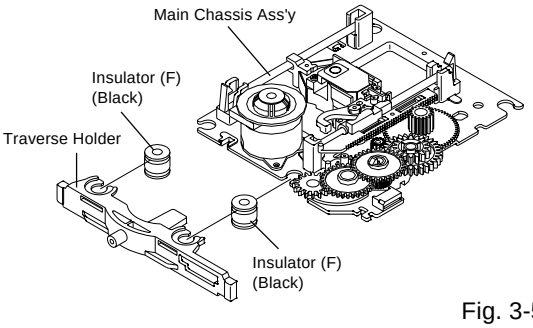


Fig. 3-5-A

NOTE

1. After the installing of the Traverse Holder, check if the wire is like Fig. 3-5-B.

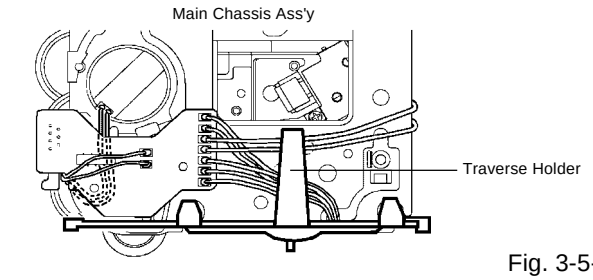


Fig. 3-5-B

3-6: SWITCH PCB ASS'Y (Refer to Fig. 3-6-A)

1. Remove the screw ①.
2. Remove the Switch PCB Ass'y.

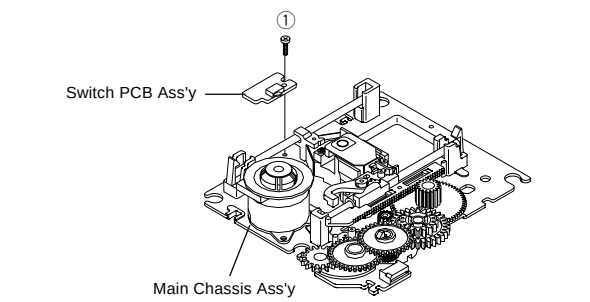


Fig. 3-6-A

NOTE

1. When installing the wire of the Switch PCB, install it correctly as Fig. 3-6-B.

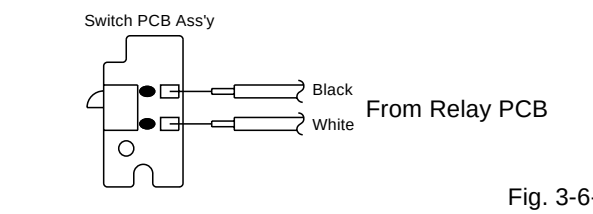


Fig. 3-6-B

3-7: RACK FEED ASS'Y (Refer to Fig. 3-7-A)

1. Remove the screw ①.
2. Remove the Rack Feed 1/2 Spring, Rack Feed 1/2 and Rack Feed Lever.

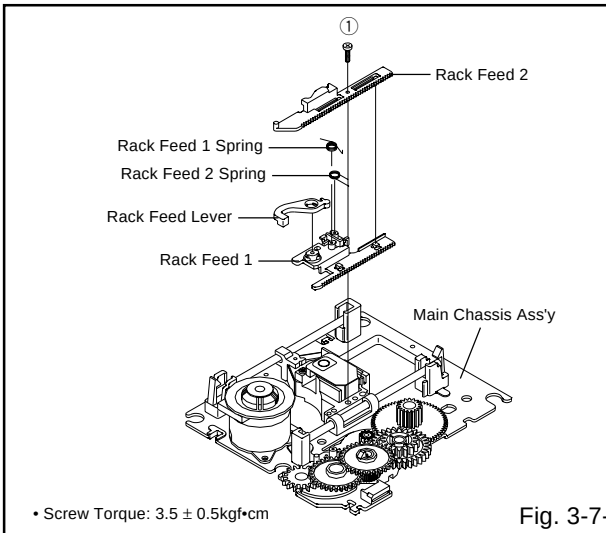


Fig. 3-7-A

DISASSEMBLY INSTRUCTIONS

NOTE

1. After the assembly of the Rack Feed, check if the Rack Feed 1/2 is moving smoothly. **(Refer to Fig. 3-7-B)**
2. In case of the Rack Feed Ass'y installation, install correctly as Fig. 3-7-C.

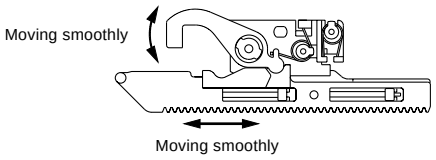


Fig. 3-7-B

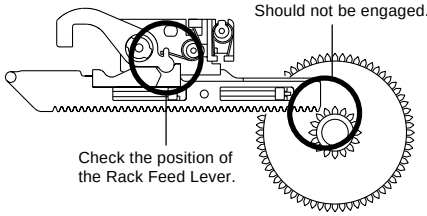


Fig. 3-7-C

3-8: RELAY PCB ASS'Y (Refer to Fig. 3-8-A)

1. Remove the screw ①.
2. Remove the Relay PCB Ass'y.

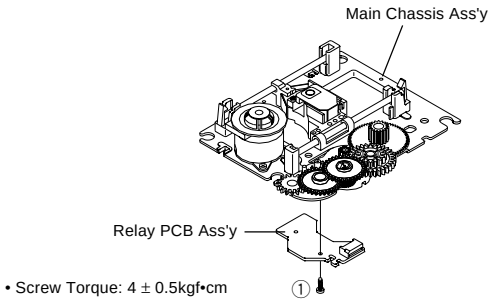


Fig. 3-8-A

NOTE

1. When installing the wire of the Relay PCB, install it correctly as Fig. 3-8-B.

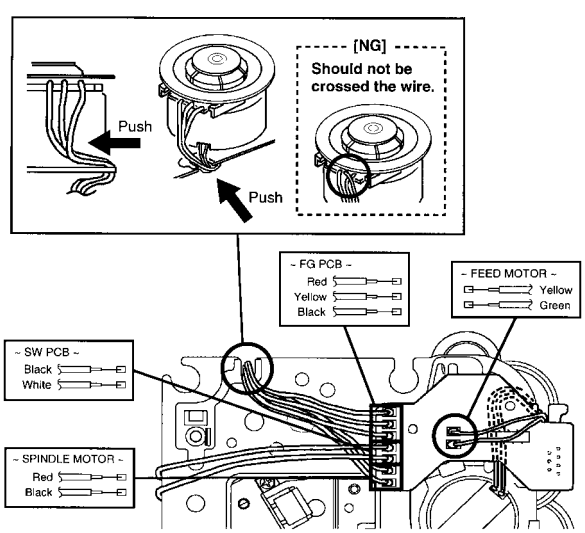


Fig. 3-8-B

3-9: GEAR (Refer to Fig. 3-9-A)

1. Unlock the support ①.
2. Remove the Middle Gear 1/2/3, Idler Gear and Feed Gear.

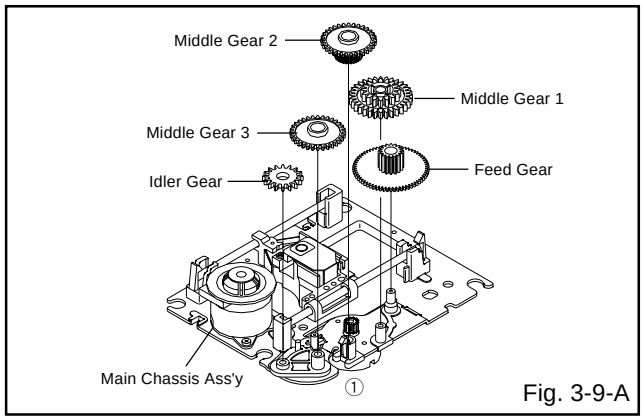


Fig. 3-9-A

NOTE

1. In case of the Idler Gear installation, install correctly as Fig. 3-9-B.
2. When installing the Middle Gear 2, check if the Middle Gear 2 is locked correctly as Fig. 3-9-C.

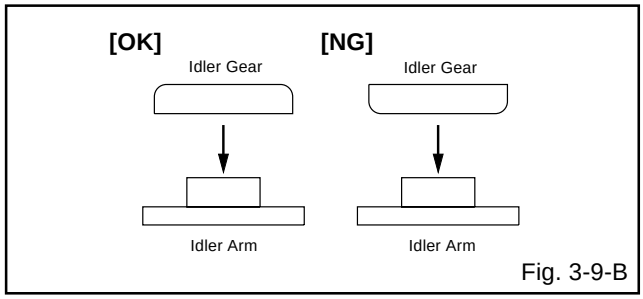


Fig. 3-9-B

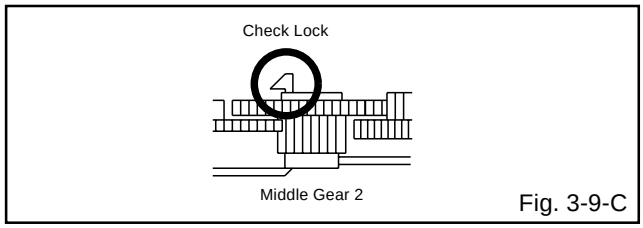


Fig. 3-9-C

3-10: IDLER ARM (Refer to Fig. 3-10-A)

1. Remove the Idler Arm Spring.
2. Remove the Chassis Spring.
3. Remove the Idler Arm.

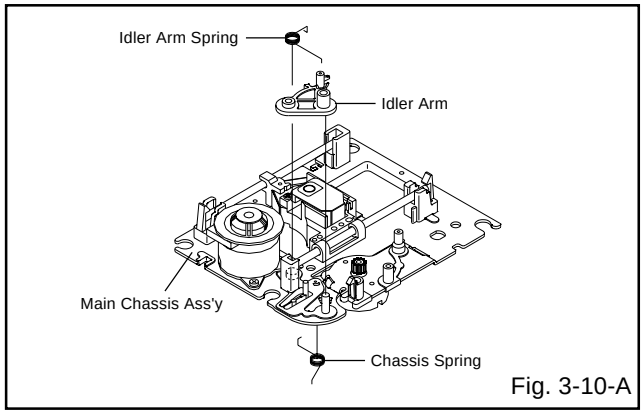


Fig. 3-10-A

DISASSEMBLY INSTRUCTIONS

NOTE

1. In case of the Idler Arm installation, install as the circled section of Fig. 3-10-B.
2. In case of the Idler Arm Spring installation, install as the circled section of Fig. 3-10-C.
3. In case of the Chassis Spring installation, install as the circled section of Fig. 3-10-D.

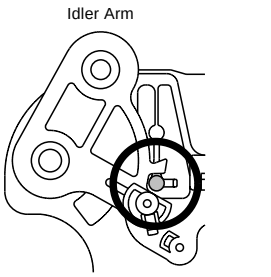


Fig. 3-10-B

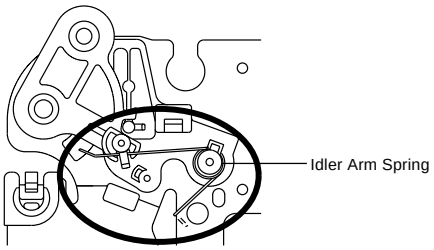


Fig. 3-10-C

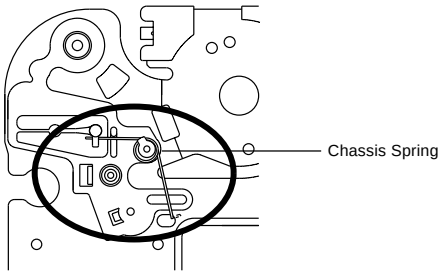
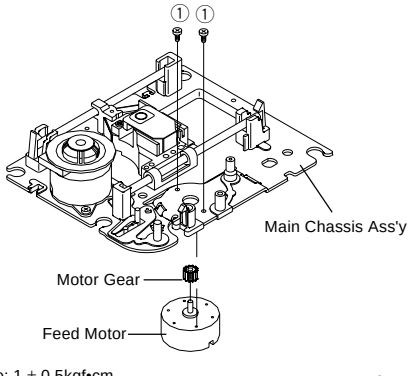


Fig. 3-10-D

3-11: FEED MOTOR (Refer to Fig. 3-11-A)

1. Remove the 2 screws ①.
2. Remove the Feed Motor.
3. Remove the Motor Gear.



• Screw Torque: 1 ± 0.5kgf•cm

Fig. 3-11-A

NOTE

1. In case of the Motor Gear installation, check if the value of the Fig. 3-11-B is correct.
2. When installing the Feed Motor, check if the cable is positioned as Fig. 3-11-C.

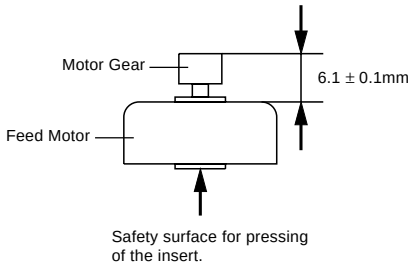


Fig. 3-11-B

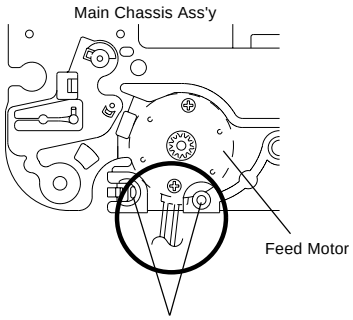


Fig. 3-11-C

DISASSEMBLY INSTRUCTIONS

4. 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. 4-1.)**
   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.

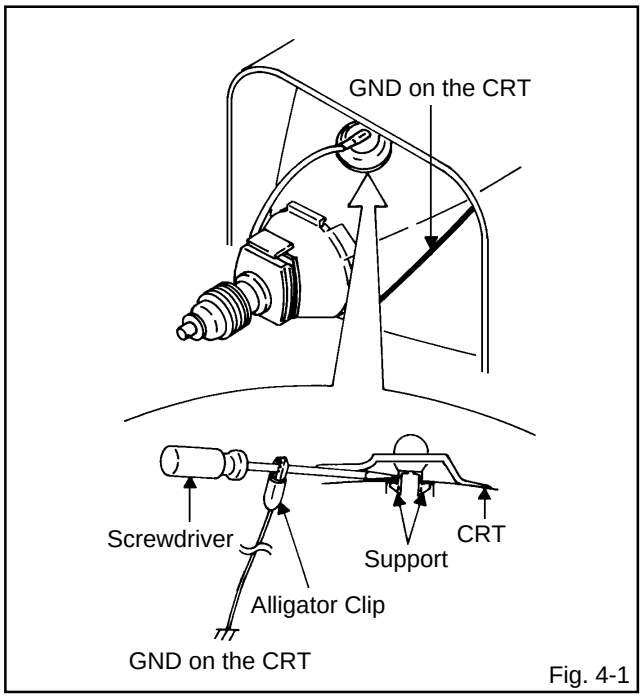


Fig. 4-1

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. 4-2.)**

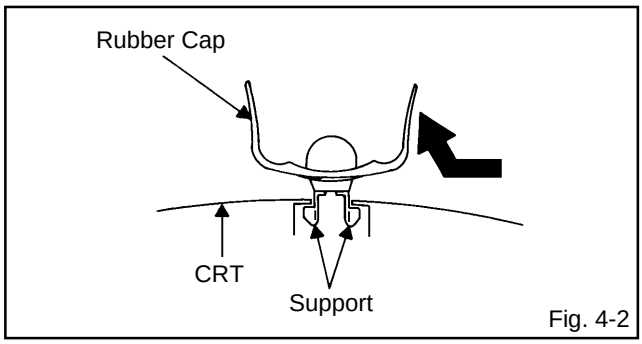


Fig. 4-2

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. 4-3.)**

NOTE

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

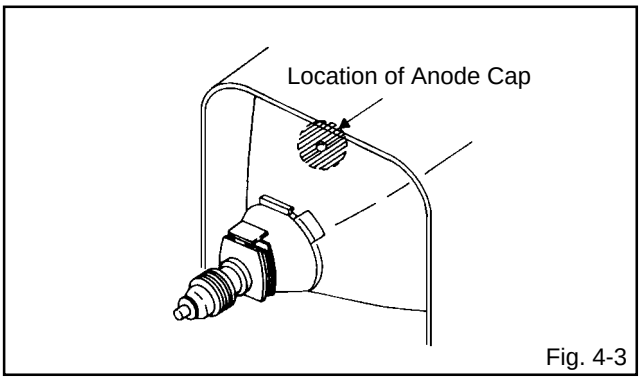


Fig. 4-3

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. 4-4.)**

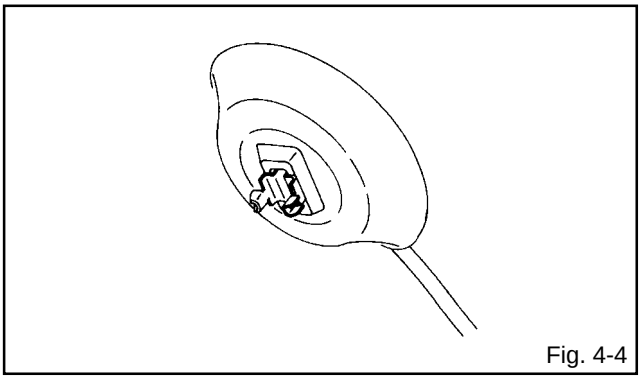


Fig. 4-4

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

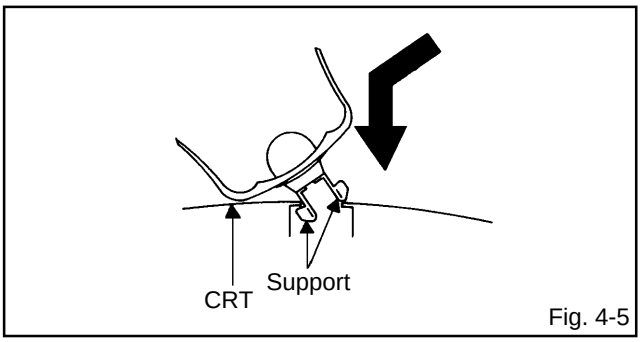


Fig. 4-5

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

DISASSEMBLY INSTRUCTIONS

5. 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. 5-1.)**

   NOTE

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

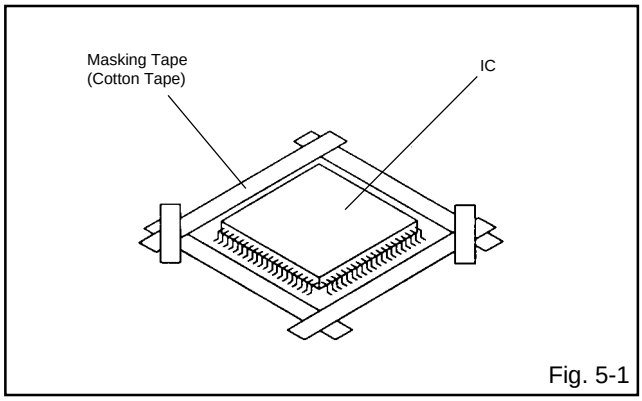


Fig. 5-1

2. Heat the IC leads using a blower type IC desoldering machine. **(Refer to Fig. 5-2.)**

   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.

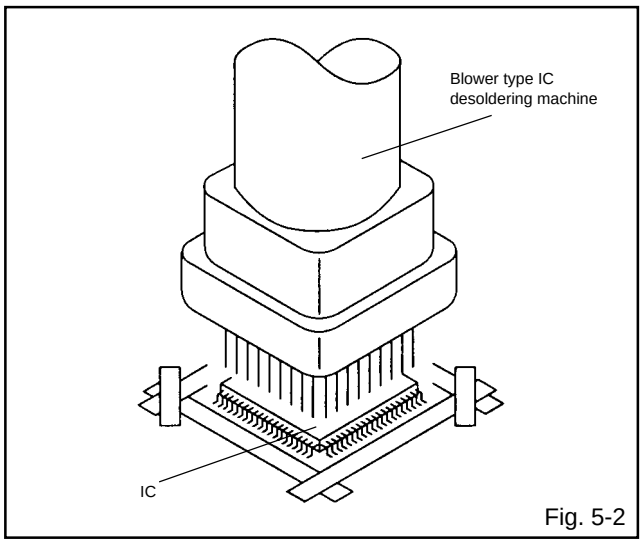


Fig. 5-2

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. 5-3.)**

   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.

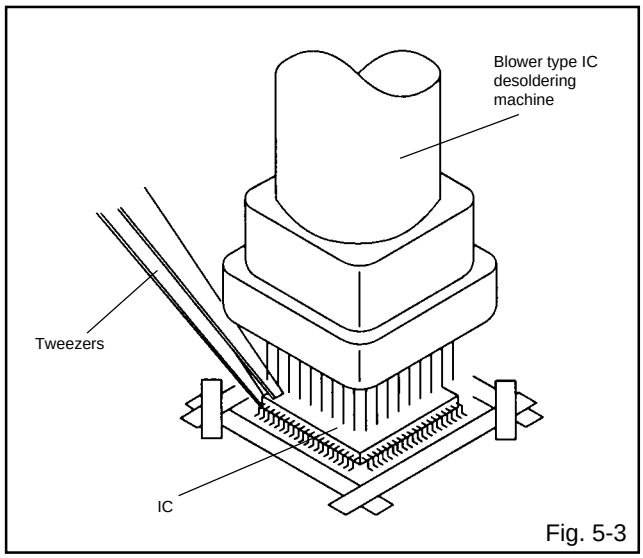


Fig. 5-3

4. Peel off the Masking Tape.

5. Absorb the solder left on the pattern using the Braided Shield Wire. **(Refer to Fig. 5-4.)**

   NOTE

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

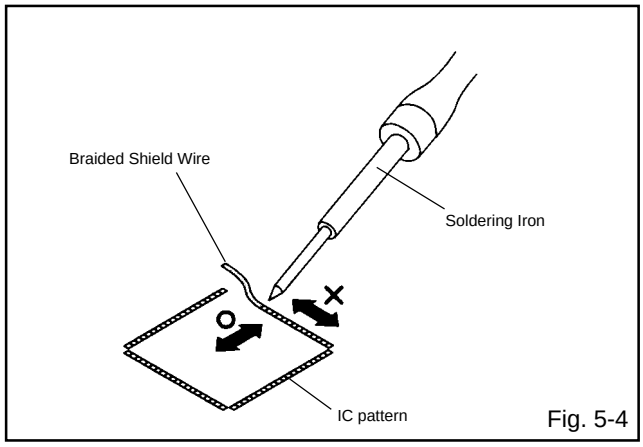


Fig. 5-4

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. 5-5.)**

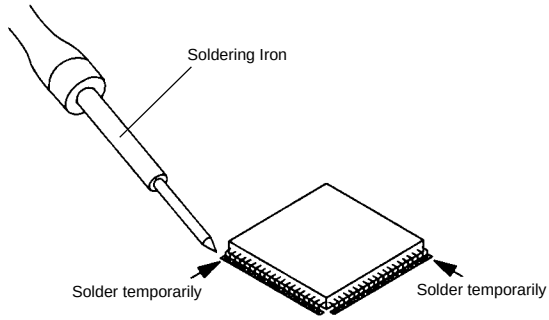


Fig. 5-5

2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. **(Refer to Fig. 5-6.)**

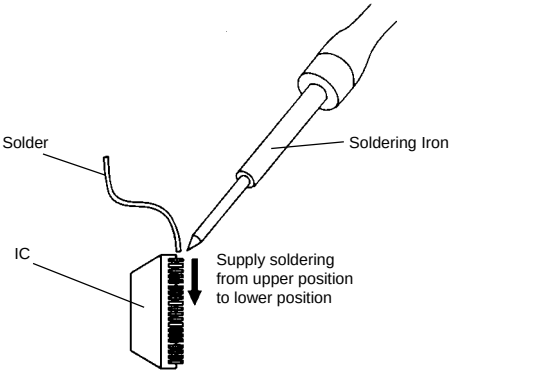


Fig. 5-6

3. Absorb the solder left on the lead using the Braided Shield Wire. **(Refer to Fig. 5-7.)**

   NOTE

   Do not absorb the solder to excess.

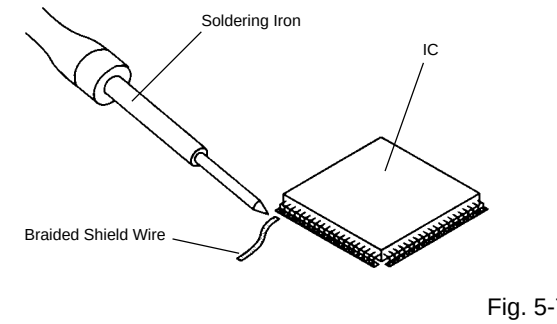


Fig. 5-7

4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. **(Refer to Fig. 5-8.)**

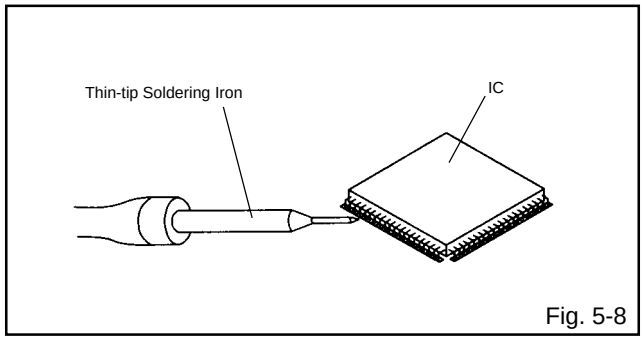


Fig. 5-8

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

Set Key	Remocon Key	Standard Time (seconds)	Operations
VOL. (-) MIN	1	2	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	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	2	Adjust the PG SHIFTER automatically. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	4	2	Adjust the PG SHIFTER manually. Refer to the "ELECTRICAL ADJUSTMENT" (PG SHIFTER).
VOL. (-) MIN	5	2	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	2	POWER ON total hours and PLAY/REC total hours are displayed on the screen. Refer to the "PREVENTIVE CHECKS AND SERVICE INTERVALS" (CONFIRMATION OF USING HOURS). Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC".
VOL. (-) MIN	7	2	Releasing of PROTECTION PASSWORD.
VOL. (-) MIN	8	2	Writing of EEPROM initial data. NOTE: Do not use this for the normal servicing.
VOL. (-) MIN	9	2	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).
REC/OTR	4	2	Initialization of the factory on DVD. NOTE: Do not use this for the normal servicing. The function will only work without the setting of DVD disc at DVD mode. While pressing the Remocon Key for more than the Standard Time, press the Set Key simultaneously.
STOP (DVD)	7	3	Releasing of PARENTAL LOCK. Refer to the “PARENTAL CONTROL - RATING LEVEL”. NOTE: The function will only work without the setting of DVD disc at DVD mode.
STOP (DVD)	9	3	Tray cannot be opened. Refer to the “TRAY LOCK”. NOTE: No indications on the screen when the Tray Lock is setting.

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 VCR 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	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	●	●	●	●	Clean the Head

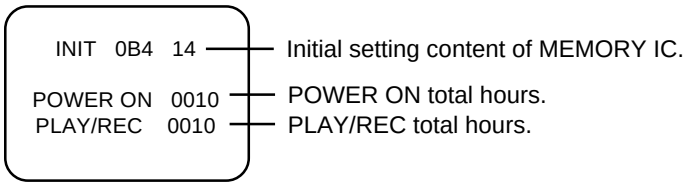
■ : Clean
● : Check it and if necessary, replace it.

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 30 minutes before Power On or alternatively, discharge backup capacitor.

1. Set the VOLUME to minimum.
2. Press both VOL. DOWN button on the set and the Channel button **(6)** on the remote control for more than 2 seconds.
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

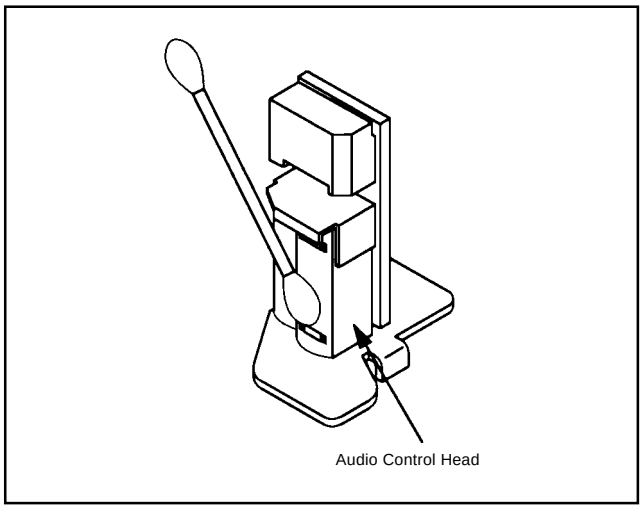
CLEANING

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

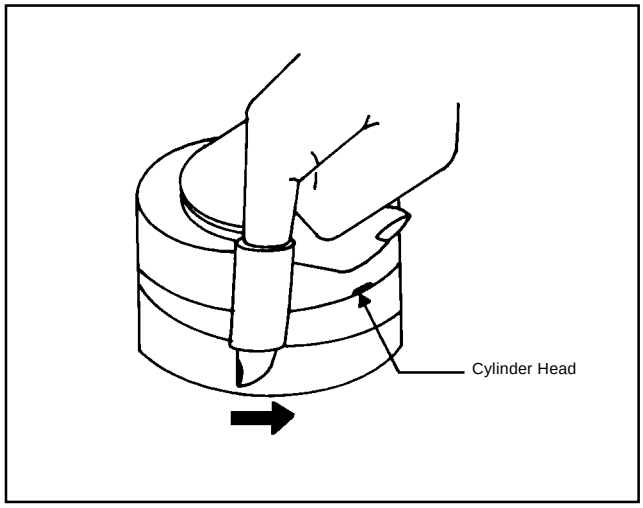
When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

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 30 minutes before Power On or alternatively, discharge backup capacitor.
No need setting for after INI 11F due to the adjustment value.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
0B0	---	---	---	---	14	10	80	84	C0	4C	95	C7	C4	C9	0E	E1
0C0	04	6B	98	A2	D8	05	63	65	66	27	1B	3B	28	17	15	1B
0D0	3A	0F	11	20	45	64	64	65	64	CA	00	37	87	0C	87	5F
0E0	00	DF	6F	F9	5F	01	FF	23	F9	6F	9F	B2	9A	97	8C	B2
0F0	A0	C4	20	08	BF	50	2B	B5	C1	41	00	2D	0C	0E	7A	00
100	27	03	57	15	00	00	00	00	00	00	00	00	00	00	82	00
110	00	03	04	20	40	20	A0	00	00	40	00	00	00	97	30	01

Table 1

1. Enter DATA SET mode by setting VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 2 seconds. ADDRESS and DATA should appear as FIG 1.

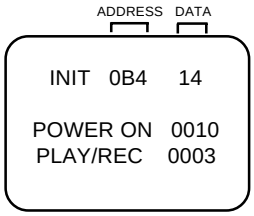


Fig. 1

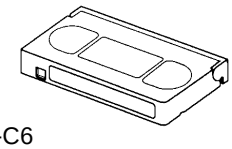
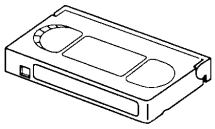
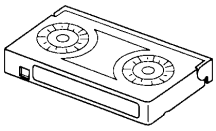
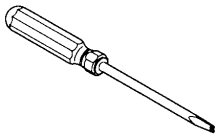
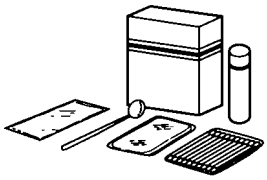
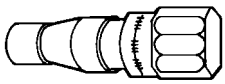
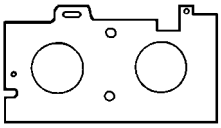
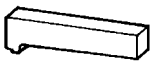
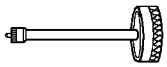
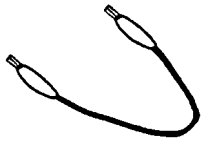
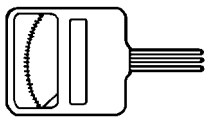
3. ADDRESS is now selected and should "blink". Using the UP/DOWN button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press ENTER to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using UP/DOWN button until required DATA 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.

After the data input, set to the initializing of shipping.

9. Turn POWER on.
10. Press both VOL. DOWN button on the set and Channel button **(1)** on the remote control for more than 2 seconds.
11. After the finishing of the initializing of shipping, the unit will turn off automatically.

The unit will now have the correct DATA for the new MEMORY IC.

SERVICING FIXTURES AND TOOLS

Alignment Tape  ST-C6 ST-C7	Back tension cassette gauge  70909103	Torque cassette gauge (KT-300NR)  70909199	Taper nut driver  70909228
VTR cleaning kit 	VTR lubrication kit 	Grease 	JG002B Adapter JG002E Dial Torque Gauge (10~90gf•cm) JG002F (60~600gf•cm) 
JG022 Master Plane 	JG024A Reel Disk Height Adjustment Jig 	JG153 X Value Adjustment Screwdriver 	JG154 Cable 
Tentelometer 			

Ref. No.	Part No.	Parts Name	Remarks
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)
JG022	APJG022000	Master Plane	Reel Disk Height Adjustment
JG024A	APJG024A00	Reel Disk Height Adjustment Jig	Reel Disk Height Adjustment
JG153	APJG153000	X Value Adjustment Screwdriver	X Value Adjustment
JG154	APJG154000	Cable	Used to connect the test point of SERVICE and GROUND

PREPARATION FOR SERVICING

How to use the Servicing Fixture

1. Remove the TV/VCR/DVD block from the set.
   Be sure to place the parts on a paper so that they have no short-circuit each other.
2. Short circuit between **TP1001** and **Ground** with the cable JG154.
   (The BOT, EOT, and the Reel Sensor do not work and the VCR deck can be operated without a cassette tape.)
3. 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

1. Turn on the power and set to the STOP mode.
2. 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**.
3. 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.
4. Adjust the other reel in the same way.

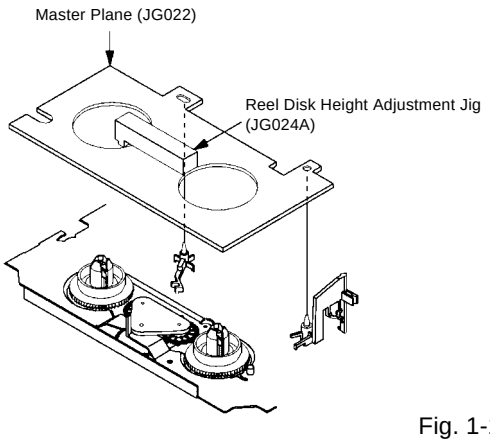


Fig. 1-1-A

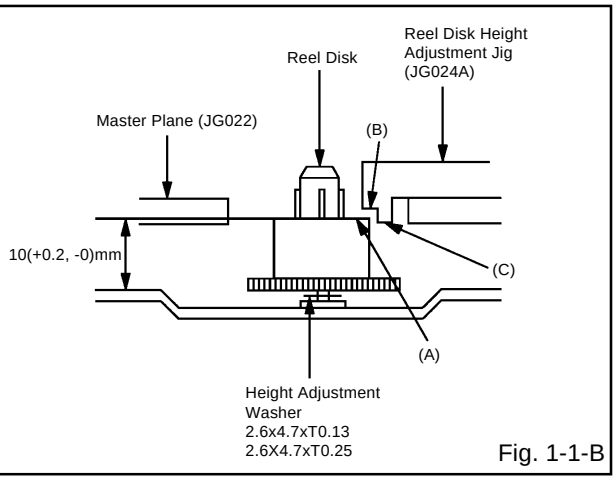


Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

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

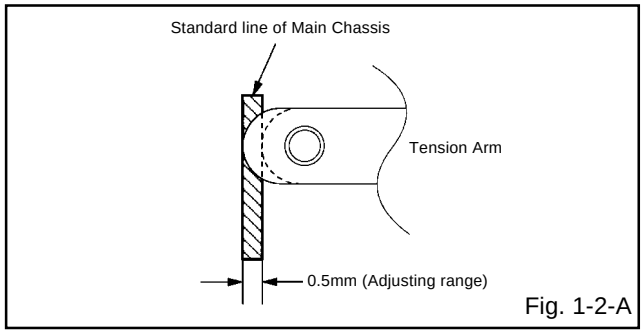


Fig. 1-2-A

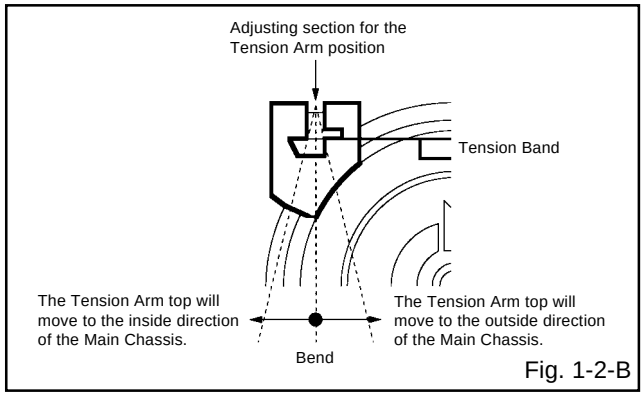


Fig. 1-2-B

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

1. Load a video tape (E-180) recorded in standard speed mode. Set the unit to the PLAY mode.
2. Install the tentelometer as shown in **Fig. 1-3**. Confirm that the meter indicates 20 ± 2gf in the beginning of playback.

• USING A CASSETTE TYPE TORQUE TAPE **(KT-300NR)**

1. After confirmation and adjustment of Tension Post position **(Refer to item 1-2)**, load the cassette type torque tape **(KT-300NR)** and set to the PLAY mode.
2. Confirm that the right meter of the torque tape indicates 50~90gf•cm during playback in SP mode.
3. Confirm that the left meter of the torque tape indicates 25~40gf•cm during playback in SP mode.

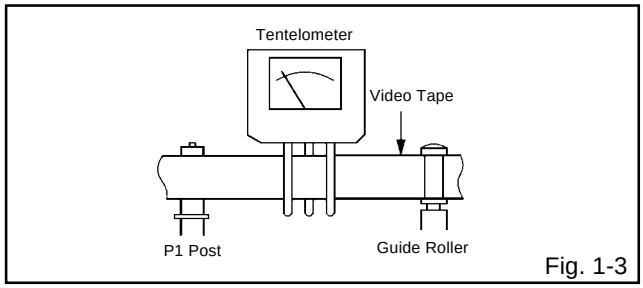


Fig. 1-3

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.

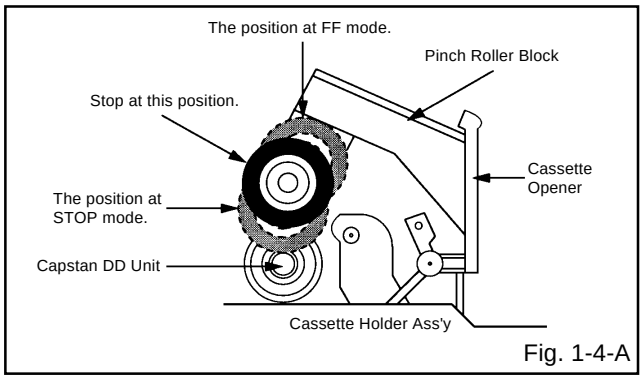


Fig. 1-4-A

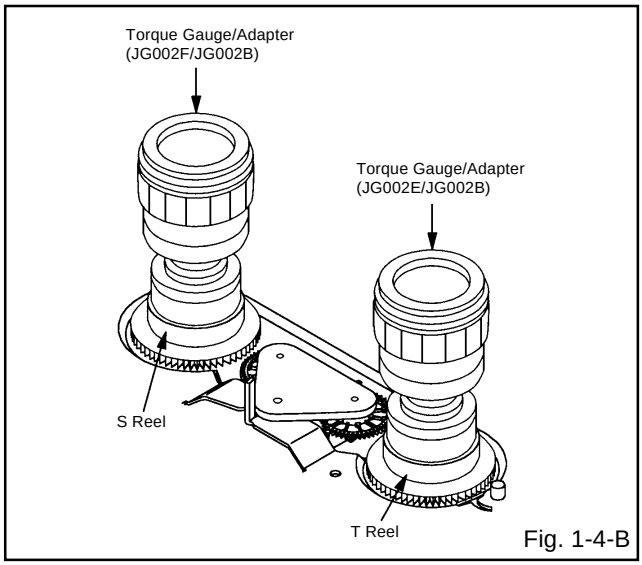


Fig. 1-4-B

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.
2. Connect CH-1 of the oscilloscope to **TP4502 (Envelope)** and CH-2 to **TP4501 (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 Taper Nut Driver 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)**

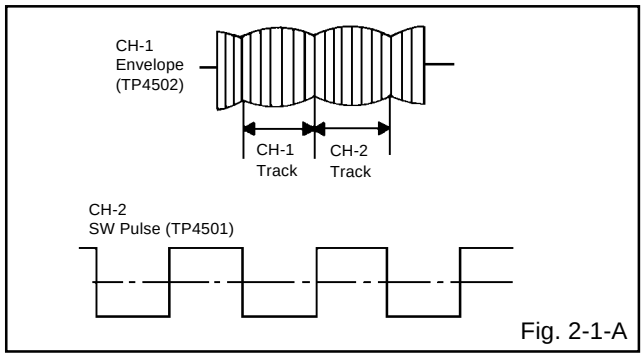


Fig. 2-1-A

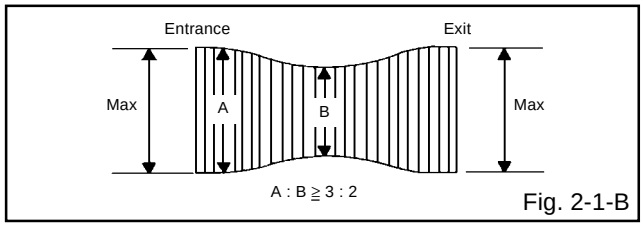


Fig. 2-1-B

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.
2. Confirm that the reflected picture of stamp mark is appeared on the tape prior to P4 Cap 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**.
   c) When the height is not correct, turn the screw ③ to adjust the height. Then, adjust the 1~3 again.

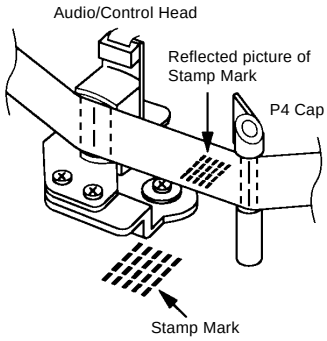


Fig. 2-2-A

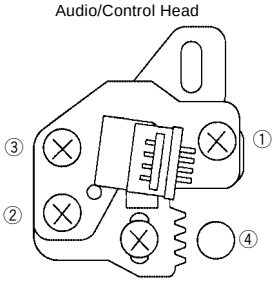


Fig. 2-2-B

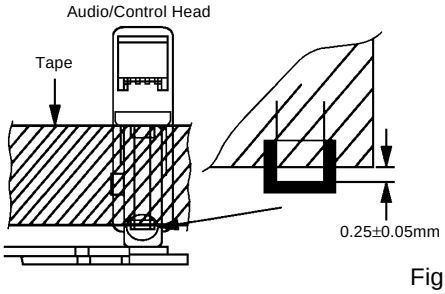


Fig. 2-2-C

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 **TP4501**, CH-2 to **TP4502** and CH-3 to **Audio Out of 21 Pin Jack**.
6. Playback the VHS Alignment Tape.
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**.

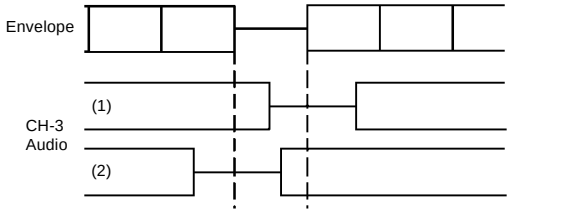
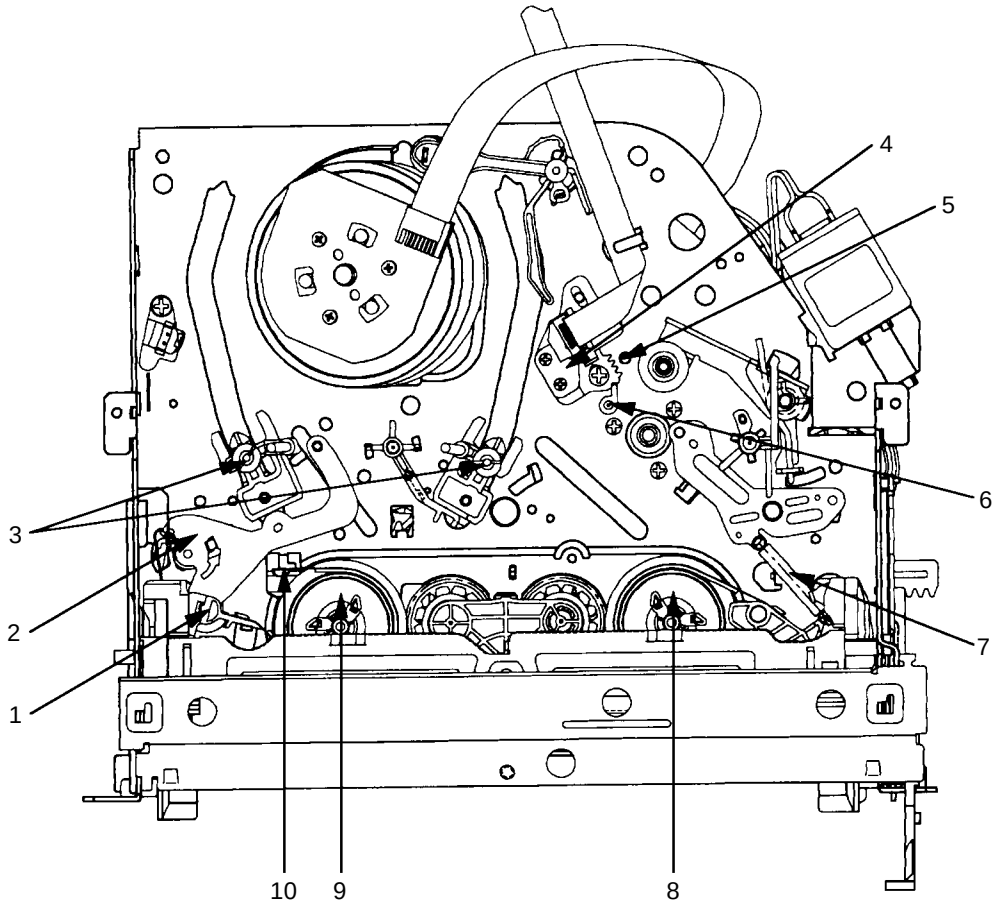


Fig. 2-3

MECHANICAL ADJUSTMENTS

3. MECHANISM ADJUSTMENT PARTS LOCATION GUIDE



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

ELECTRICAL ADJUSTMENTS

1. ADJUSTMENT PROCEDURE

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

CAUTION

When you exchange IC and Transistor for a heat sink, apply the silicon grease 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 30 minutes to set the clock to the non-setting state. (To release the Back-Up immediately, take the short circuit between **C1003** and **GND** at the Power Off.) 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 for more than 2 seconds to display adjustment mode on the screen as shown in **Fig. 1-1**.

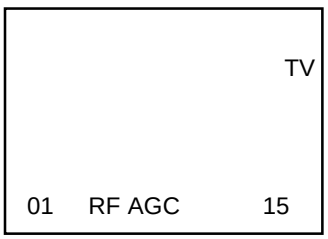


Fig. 1-1

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	CUT OFF	20	CONTRAST CENT
01	RF AGC	21	CONTRAST MAX
02	AGC GAIN	22	CONTRAST MIN
03	R DRIVE	23	COLOUR CENT
04	R CUTOFF	24	COLOUR MAX
05	G DRIVE	25	COLOUR MIN
06	G CUTOFF	26	---
07	B DRIVE	27	SHARP
08	H POSI	28	M R CUT OFF
09	V POSI	29	M G CUT OFF
10	---	30	M B CUT OFF
11	V SIZE	31	H POS OSD
12	---	32	---
13	VCO COARSE	33	---
14	VCO FINE	34	---
15	VCO COARSE L1	35	CVBS OUT
16	VCO FINE L1	36	APR THRESHOLD
17	BRIGHT CENT	37	BELL FILTER
18	BRIGHT MAX	38	BANDPASS
19	BRIGHT MIN	39	REC AGC

Fig. 1-2

2. BASIC ADJUSTMENTS (VCR SECTION)

2-1: PG SHIFTER

1. Playback the alignment tape.
2. Press and hold the Tracking-Auto button on the remote control more than 2 seconds to set tracking to center.
3. 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:)

4. Connect CH-1 on the oscilloscope to **TP4501** and CH-2 to **TP4201**.
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 ± 0.5H.
   (Refer to Fig. 2-1-A, B)
7. Stop the alignment tape.

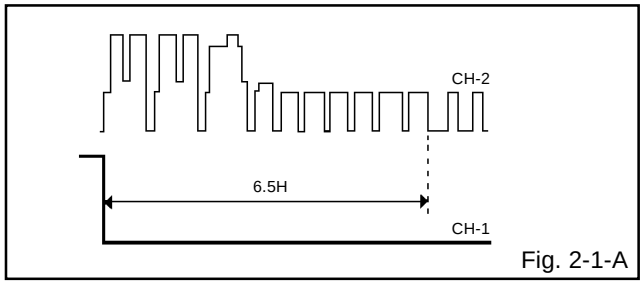


Fig. 2-1-A

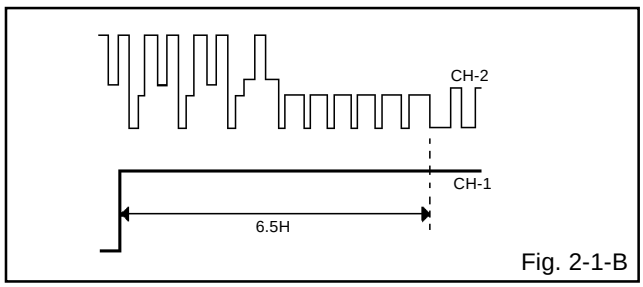


Fig. 2-1-B

2-2: VCO

(MONITOR TUNER)

1. Place the set with Aging Test for more than 10 minutes.
2. Connect the oscillator (39.5MHz) to **TP601**.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(13)** on the remote control to select "VCO COARSE".
4. Press the LEFT/RIGHT button on the remote control until the "OK" appear on the screen. If the "OK" is not displayed, select the "-" side on the changed from "+" to "-".
5. Press the channel button **(14)** to set to "VCO FINE" mode.
6. Press the LEFT/RIGHT button on the remote control to select the 5 step down point from the upper limit on the "OK".
   (Example: In case of the "OK" point 41, select 36.)

ELECTRICAL ADJUSTMENTS

(REC TUNER)

1. Place the set with Aging Test for more than 10 minutes.
2. Connect the oscillator (39.5MHz) to **TP6001**.
3. Connect the digital voltmeter between the **pin 7 of CP603** and the **pin 1 (GND) of CP603**.
4. Adjust the **L6006** until the digital voltmeter is 2.4 ± 0.1V.

2-3: RF AGC

(MONITOR TUNER)

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the UHF (63 ± 1dB).
3. Connect the digital voltmeter between the **pin 5 of CP603** and the **pin 1 (GND) of CP603**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(01)** on the remote control to select "RF AGC".
5. Press the LEFT/RIGHT button on the remote control until the digital voltmeter is 2.5 ± 0.1V.

(REC TUNER)

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the UHF (63 ± 1dB).
3. Connect the digital voltmeter between the **pin 6 of CP603** and the **pin 1 (GND) of CP603**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(39)** on the remote control to select "REC AGC".
5. Press the LEFT/RIGHT button on the remote control until the digital voltmeter is 3.3 ± 0.1V.

(TV SECTION)

2-4: CONSTANT VOLTAGE

1. Connect the digital voltmeter to **TP401**.
2. Set condition is AV MODE without signal.
3. Using the remote control, set the brightness and contrast to normal position.
4. Adjust the **VR1701** until the digital voltmeter is 115 ± 1V.

2-5: FOCUS

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

2-6: HORIZONTAL POSITION

1. Receive the monoscope pattern 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 **(08)** on the remote control to select "H POSI (50)".
4. Press the LEFT/RIGHT button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.
5. Receive the cross hatch signal of NTSC. (Audio Video Input)
6. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~4.

2-7: VERTICAL POSITION

NOTE: Adjust after performing adjustments in section 2-6.

1. Receive the monoscope pattern 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 **(09)** on the remote control to select "V POSI (50)".
4. Check if the step No. V. POSI (50) is "05".
5. Adjust the **VR402** until the horizontal line becomes fit to the notch of the shadow mask.
6. Receive the cross hatch signal of NTSC. (Audio Video Input)
7. Press the AV button on the remote control to set to the AV mode.
8. Using the remote control, set the brightness and contrast to normal position.
9. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(09)** on the remote control to select "V POSI (60)".
10. Check if the step No. V. POSI (60) is "15".

2-8: VERTICAL SIZE

NOTE: Adjust after performing adjustments in section 2-7.

1. Receive the monoscope pattern 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 **(11)** on the remote control to select "V SIZE (50)".
4. Adjust by using the LEFT/RIGHT button on the remote control so that the Up/Down OVER SCAN Quantity becomes equal to the Right/Left OVER SCAN Quantity.
5. Receive a broadcast and check if the picture is normal.
6. Receive the cross hatch signal of NTSC. (Audio Video Input)
7. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~4.

2-9: VERTICAL LINEARITY

NOTE: Adjust after performing adjustments in section 2-8. After the adjustment of Vertical Linearity, reconfirm the Vertical Position and Vertical Size adjustments.

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

ELECTRICAL ADJUSTMENTS

2-10: OSD HORIZONTAL

1. Using the remote control, set the brightness and contrast to normal position.
2. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(31)** on the remote control to select "H POS OSD".
3. Press the LEFT/RIGHT button on the remote control until the difference of A and B becomes minimum. **(Refer to Fig. 2-2)**

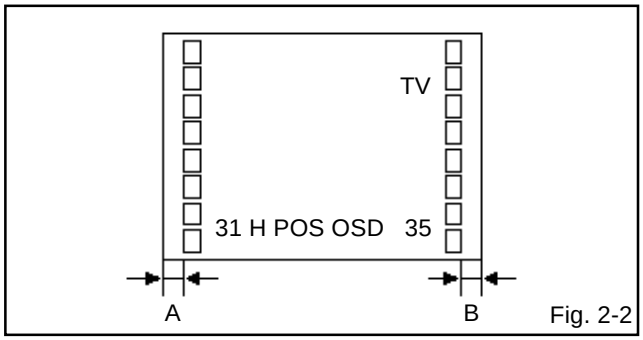


Fig. 2-2

2-11: CUT OFF

1. Set condition is AV MODE without signal.
2. Using the remote control, set the brightness and contrast to normal position.
3. Place the set with Aging Test for more than 15 minutes.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(00)** on the remote control to select "CUT OFF".
5. Adjust the **Screen Volume** until a dim raster is obtained.

2-12: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set with Aging Test for more than 15 minutes.
2. Receive the gray scale pattern 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 **(03)** on the remote control to select "R DRIVE".
5. Press the CH. UP/DOWN button on the remote control to select the "R DRIVE", "G DRIVE", "M R CUTOFF" or "M G CUTOFF".
6. Adjust the LEFT/RIGHT button on the remote control to whiten the R DRIVE, G DRIVE, M R CUT OFF, and M G CUT OFF at each step tone sections equally.
7. Perform the above adjustments 5 and 6 until the white color is looked like a white.

2-13: BRIGHT CENT

1. Receive the PAL black 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 **(17)** on the remote control to select "BRIGHT CENT".
4. Press the LEFT/RIGHT button on the remote control until the screen begin to shine.
5. Receive the PAL black pattern*. (Audio Video Input)
6. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~4.
7. Press the DVD button on the remote control to set to the DVD mode.
8. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(17)** on the remote control to select "BRIGHT CENT".
9. Press the LEFT/RIGHT button on the remote control to set the same step numbers as the AV mode.

*The Black Pattern means the whole black raster signal. Select the "RASTER" of the pattern generator, set to the OFF position for each R, G and B.

2-14: CONTRAST CENT

1. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(20)** on the remote control to select "CONTRAST CENT".
2. Press the LEFT/RIGHT button on the remote control until the contrast step No. becomes "47".
3. Receive a broadcast and check if the picture is normal.
4. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 1~3.
5. Press the DVD button on the remote control to set to the DVD mode.
6. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(17)** on the remote control to select "BRIGHT CENT".
7. Press the LEFT/RIGHT button on the remote control to set the same step numbers as the AV mode.

ELECTRICAL ADJUSTMENTS

2-15: COLOR CENT

1. Receive the PAL color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast and color to normal position.
3. Connect the oscilloscope to **TP024**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(23)** on the remote control to select "COLOUR CENT".
5. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
6. Press the LEFT/RIGHT button on the remote control until the red color level is adjusted to 90 ± 5% of the white level. **(Refer to Fig. 2-3)**
7. Receive the PAL color bar pattern. (Audio Video Input)
8. Press the AV button on the remote control to set to the AV mode. Then perform the above adjustments 2~6.
8. Press the DVD button on the remote control to set to the DVD mode.
9. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(17)** on the remote control to select "BRIGHT CENT".
10. Press the LEFT/RIGHT button on the remote control to set the same step numbers as the AV mode.

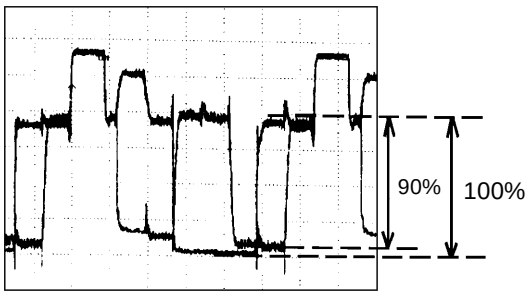


Fig. 2-3

2-16: Confirmation of Fixed Value (Step No.)

Please check if the fixed values of the each adjustment items are set correctly referring below.

NO.	FUNCTION	STEP NO.
02	AGC GAIN	00
04	R CUTOFF	31
06	G CUTOFF	31
07	B DRIVE	31
15	VCO COARSE L1	00
16	VCO FINE L1	00
18	BRIGHT MAX	55
19	BRIGHT MIN	10
21	CONTRAST MAX	63
22	CONTRAST MIN	10
24	COLOUR MAX	50
25	COLOUR MIN	10
27	SHARP	05
30	M B CUT OFF	50
35	CVBS OUT	25
36	APR THRESHOLD	05
37	BELL FILTER	00
38	BANDPASS	00

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 funnel side 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 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 color.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

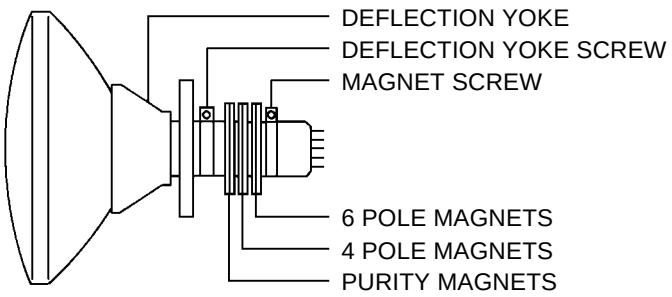


Fig. 3-1

3-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-2.

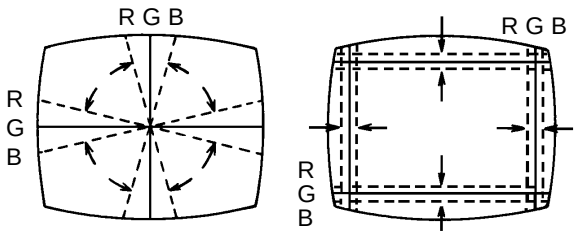
1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

3-4: DYNAMIC CONVERGENCE

NOTE

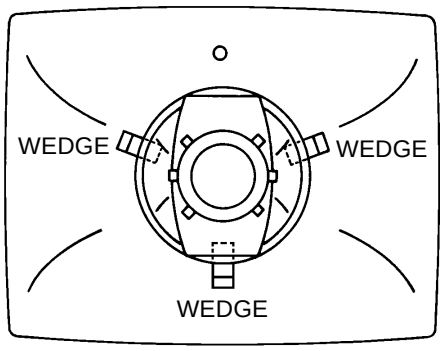
Adjust after performing adjustments in section 3-3.

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

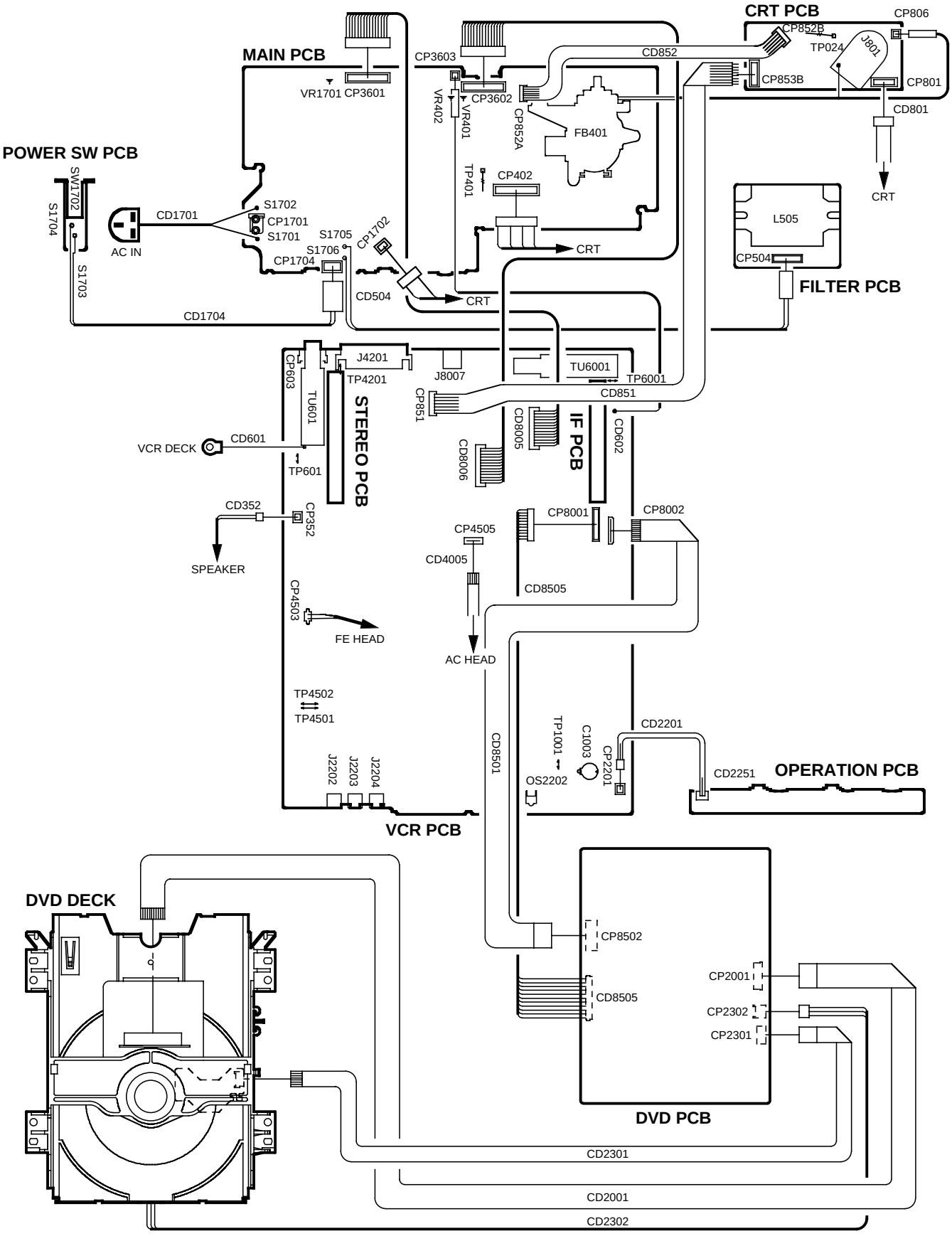


WEDGE POSITION

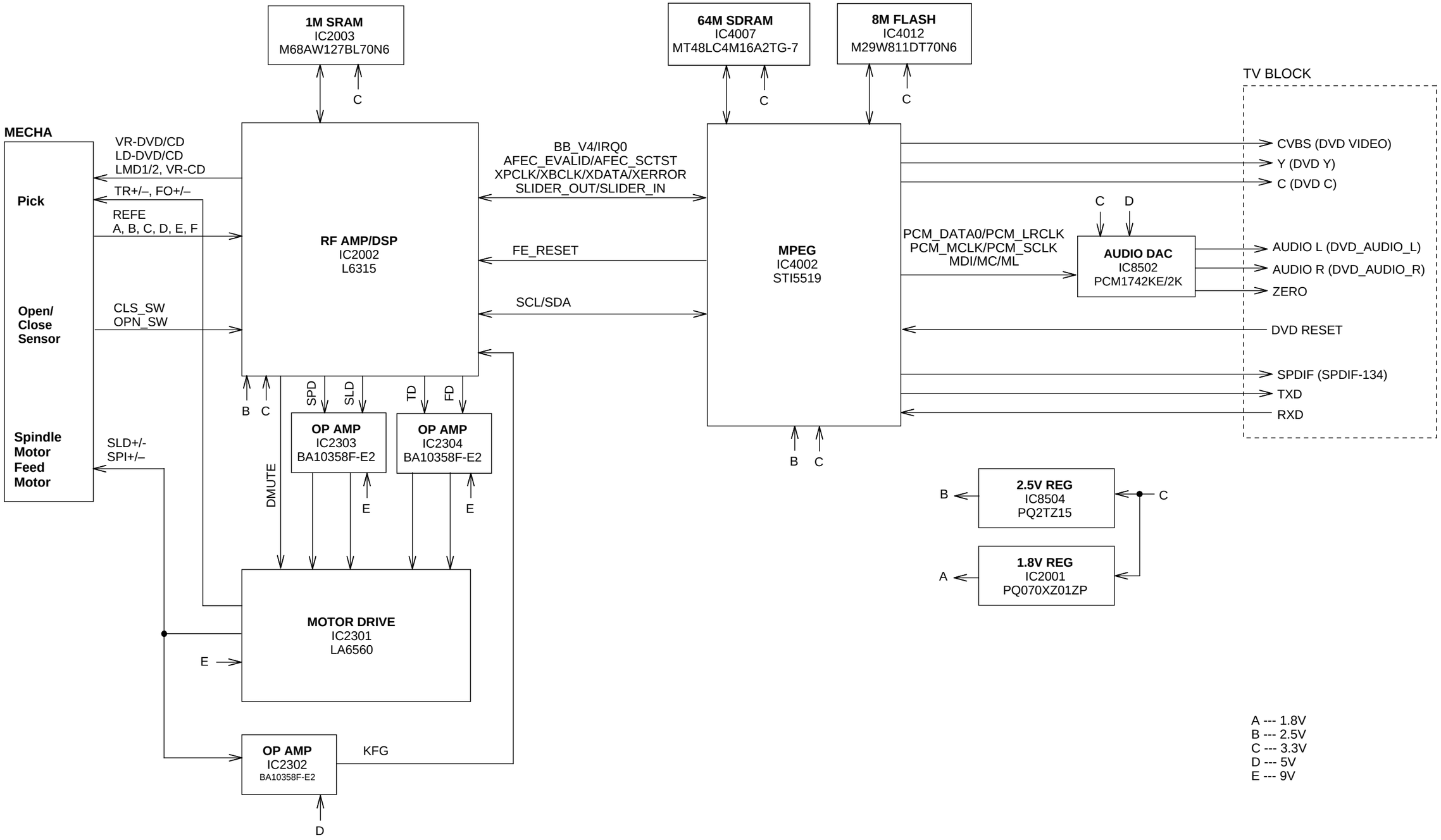
Fig. 3-2-b

ELECTRICAL ADJUSTMENTS

4. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)



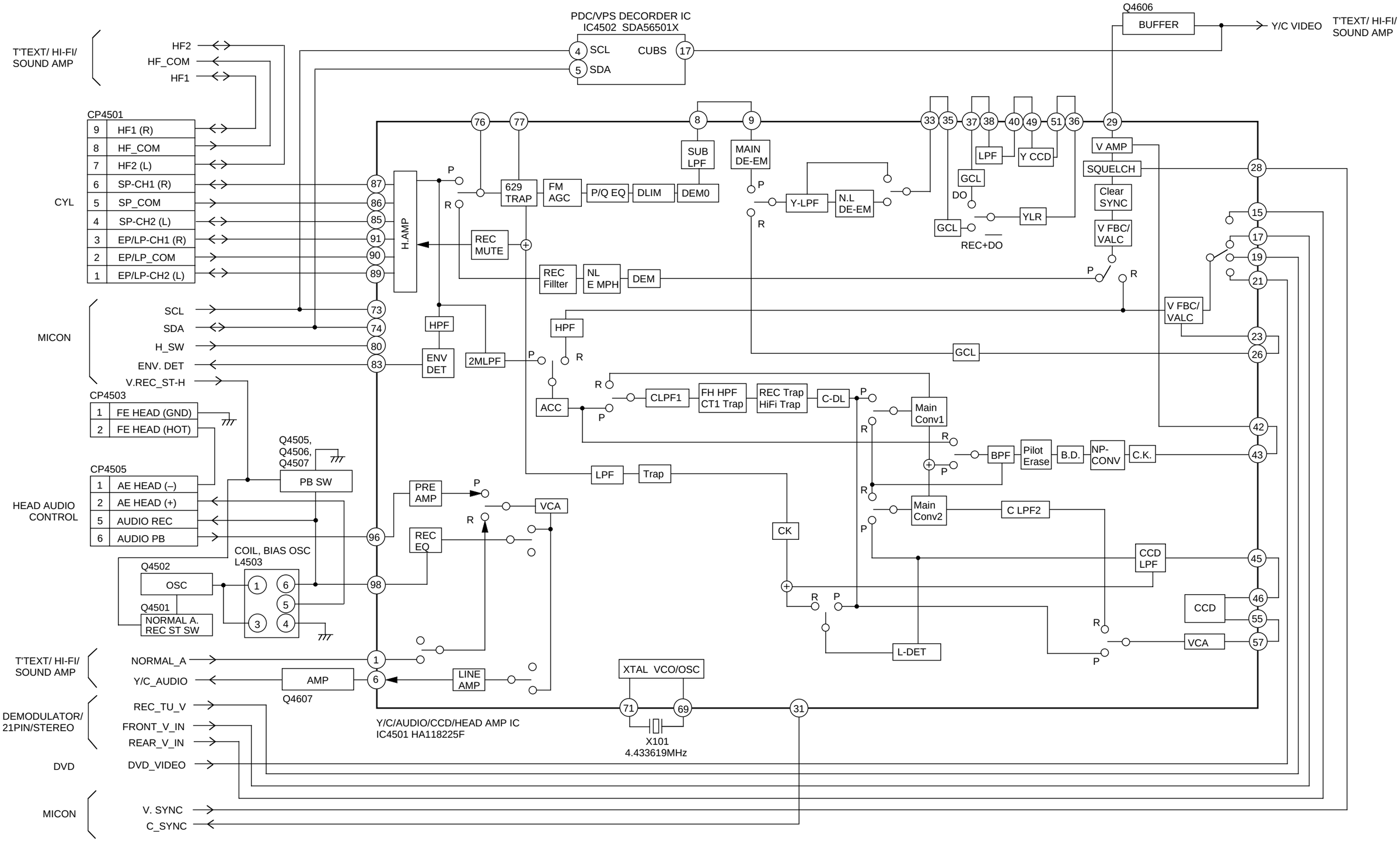
DVD ST SOLUTION BLOCK DIAGRAM



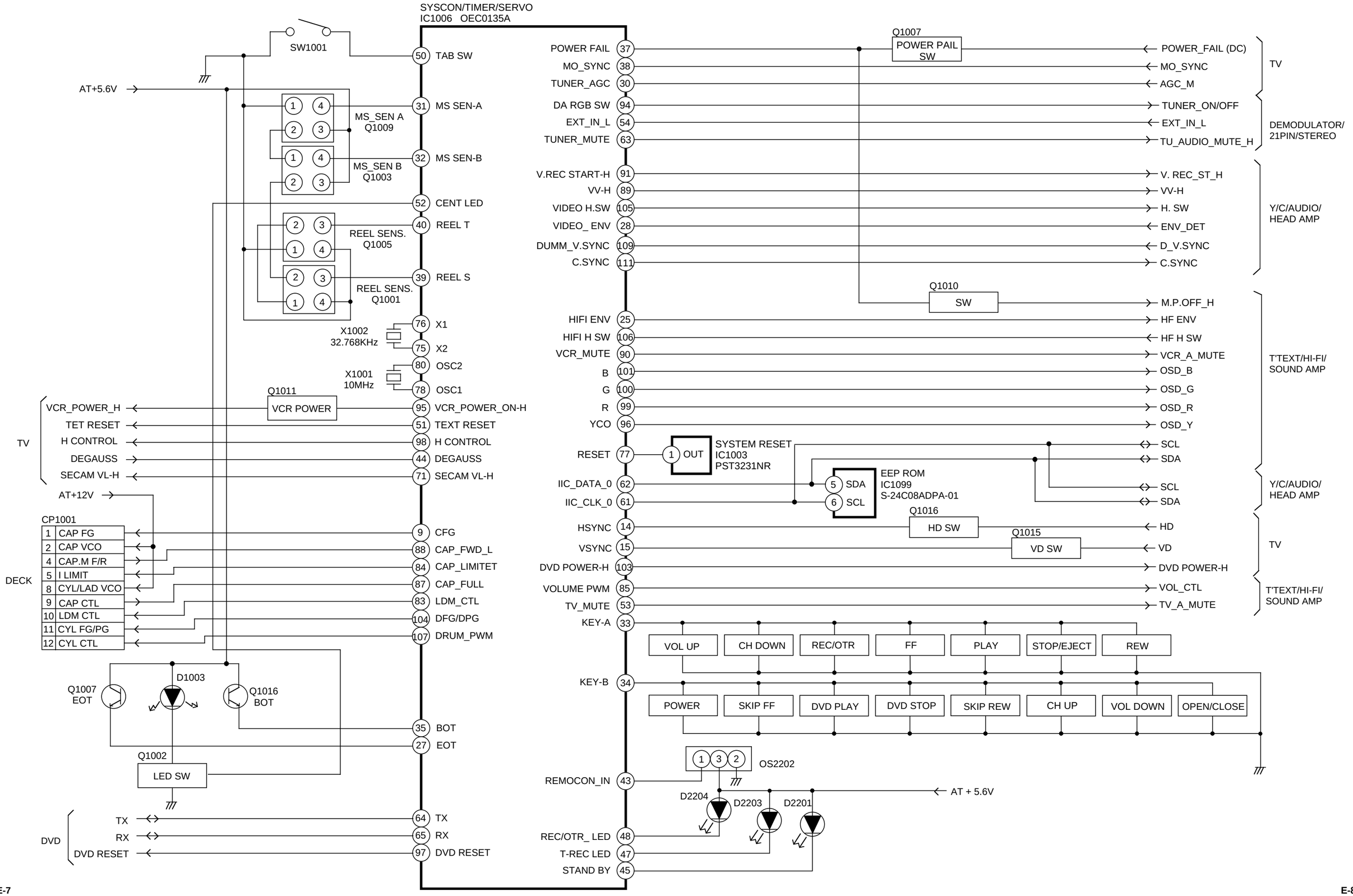
TV BLOCK DIAGRAM

DVD
DVD C
DVD Y
CONTROL
VIDEO SW
6dB
DRIVER
SW
IC 603
LA7956
SW
IC 1203
MM1504XNRE
21_B
21_G
21_R
21_Y
DEMODULATOR/
21PIN/STEREO
T'TEXT/HI-FI/
SOUND AMP
TEXT_SYNC
TU_AUDIO
RE_TV_V
REAR_V_IN
FRONT_V_IN
JACK_VIDEO
TU VIDEO
Y/C_VIDEO
DEMODULATOR/
21PIN/STEREO
Y/C/AUDIO/
HEAD AMP
Q1253
BUFFER
Q612, Q613, Q614
BUFFER
Q602
BUFFER
S-TRAP
CF605
THERMAL
PROTECTION
V-DRIVE IC
IC401 TDA8174A
PUMP
UP
RAMP
Q405
H-DRIVE
Q406
H.OUTPUT
DY
Q804
B-AMP
Q805
G-AMP
Q806
R-AMP
J801
FB401
V801
CRT
TU601
Q607
PRE AMP
Q604
IF AMP
Q605
IF AMP
CF601
CF602
AFC
PLL
AGC
B/W INV.
RF AGC
FM DEM.
DEEMP
LIM-
ITER
FM
AM
VOLUME
Mute
VER SCAN
SYNC.
SEP
BLACK
STRETCH
C-TRAP
LUMA DL
PEAKING
ACC
BPF
C-DL
RGB YUV
DRIVE
CUT
OFF
RGB
SW
RGB CONT
YUV
SW
CONT
MATRIX
BCL
AUTO IDENT.
&KILLER
HOR 1ST
LOOP
HOR 2ND
LOOP
VAMP
NC
Mute
VD
HD
H-CTL
MICON
Q611
SW
MICON
MO_SYNC
AGC_M
SDA
SCL
DEGAUSS_H
CHROMA /IF
IC601 STV2248E
BUS
X601
4.433619MHz
TEXT_B
TEXT_G
TEX_R
TEXT_Y
T'TEXT/HI-FI/
SOOUND AMP
Q1703
FEED BACK
SW
+B ADJ
VR1701
T1701
SOUND+B
5V REG. IC
IC3603 KIA7805API
AT+5.6V
Q3006
DRIVE
P.CON+5V_C
5V REG. IC
IC3002 KIA7805API
Q3002
DRIVE
P.CON+5V_A
IC1701
STR-W6853
FEED BACK
POWER
CONTROL IC
IC1704
PS2561L1-1-V
Q3609
SW
VCR_POWER-H
Q3608
30V DRIVE
AT+30V
POWER_FAIL(DC)
Q1705
RELAY DRIVE
RY1701
L1703
DEGAUSS COIL
D1701, D1702
D1703, D1704
RECTIFIER
Q3605
DRIVE
5V REG. IC
IC3003 KIA7805API
P.CON+12V
P.CON+9V(DVD)
9V REG. IC
IC3601 KIA7809API
Q3606
SW
DVD_POWER_H
MICON
F1701
AC IN
CD1701
Q3102
SW
Q3101
DRIVE
9V REG. IC
IC3101 KIA7809API
P.CON+9V
P.CON+8V_A
SW1702
CD1704
5V REG. IC
IC3602 KIA7805API
L3001
MOTOR+12V(AT+12V)
AT+11.5V
Q3607
DRIVE
Q3001
DRIVE
P.CON+5V_B
AT+11V
L505
CP504
CD504
Q3005
3.3V CTL
3.3V CTL
Q3008
P.CON+3.3V

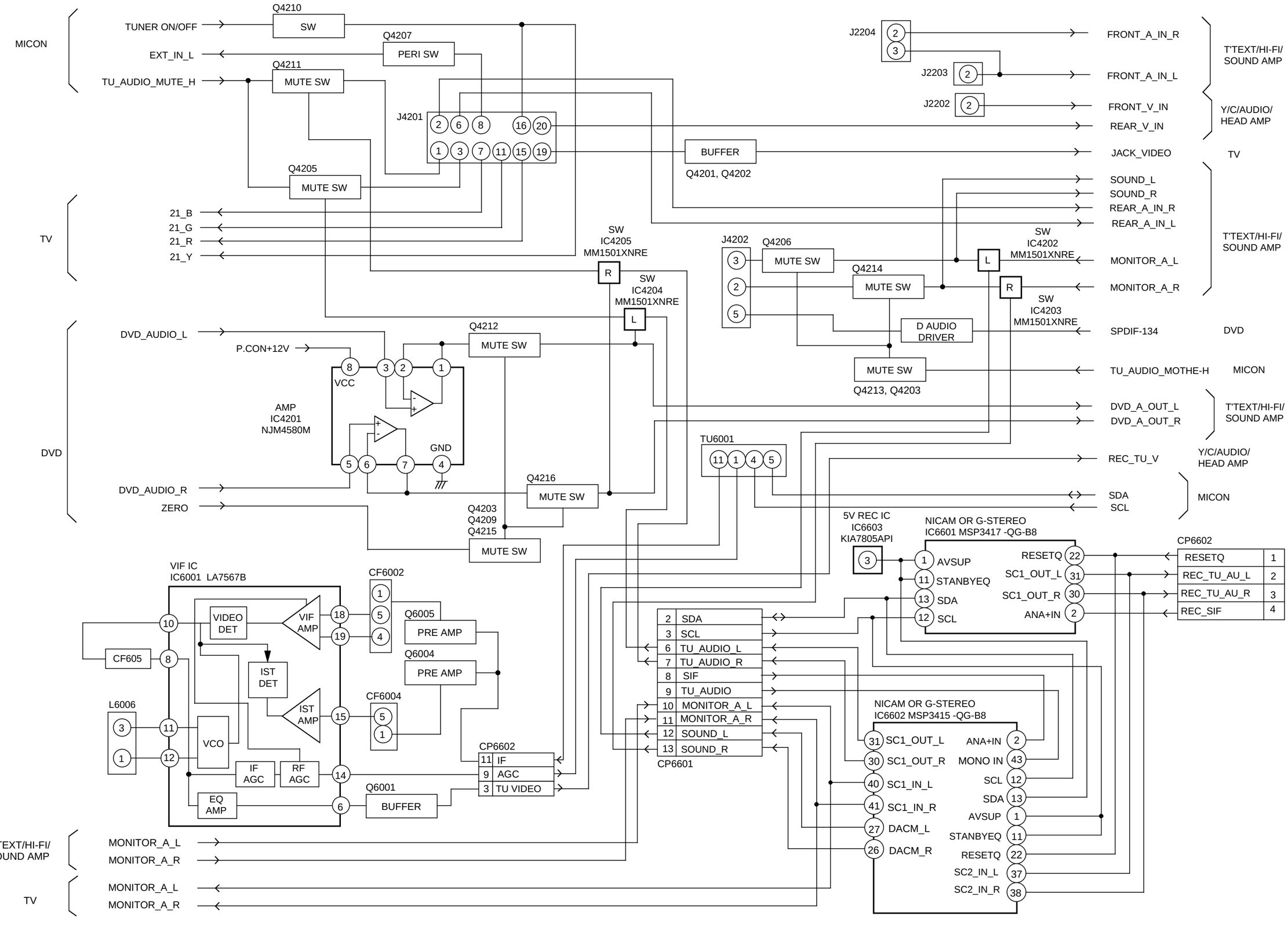
Y/C/AUDIO/HEAD AMP BLOCK DIAGRAM



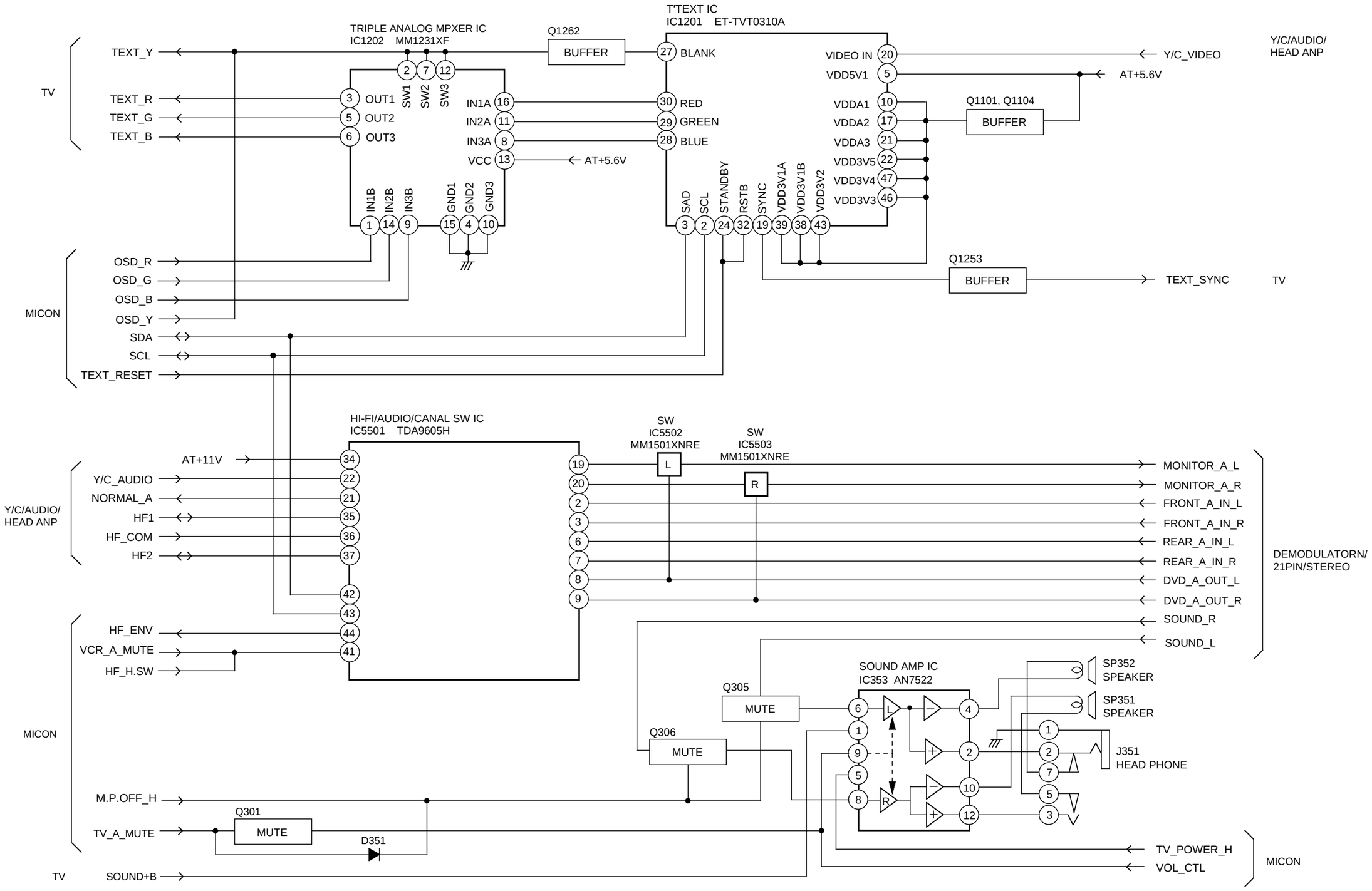
MICON BLOCK DIAGRAM



DEMODULATOR/21PIN/STEREO BLOCK DIAGRAM

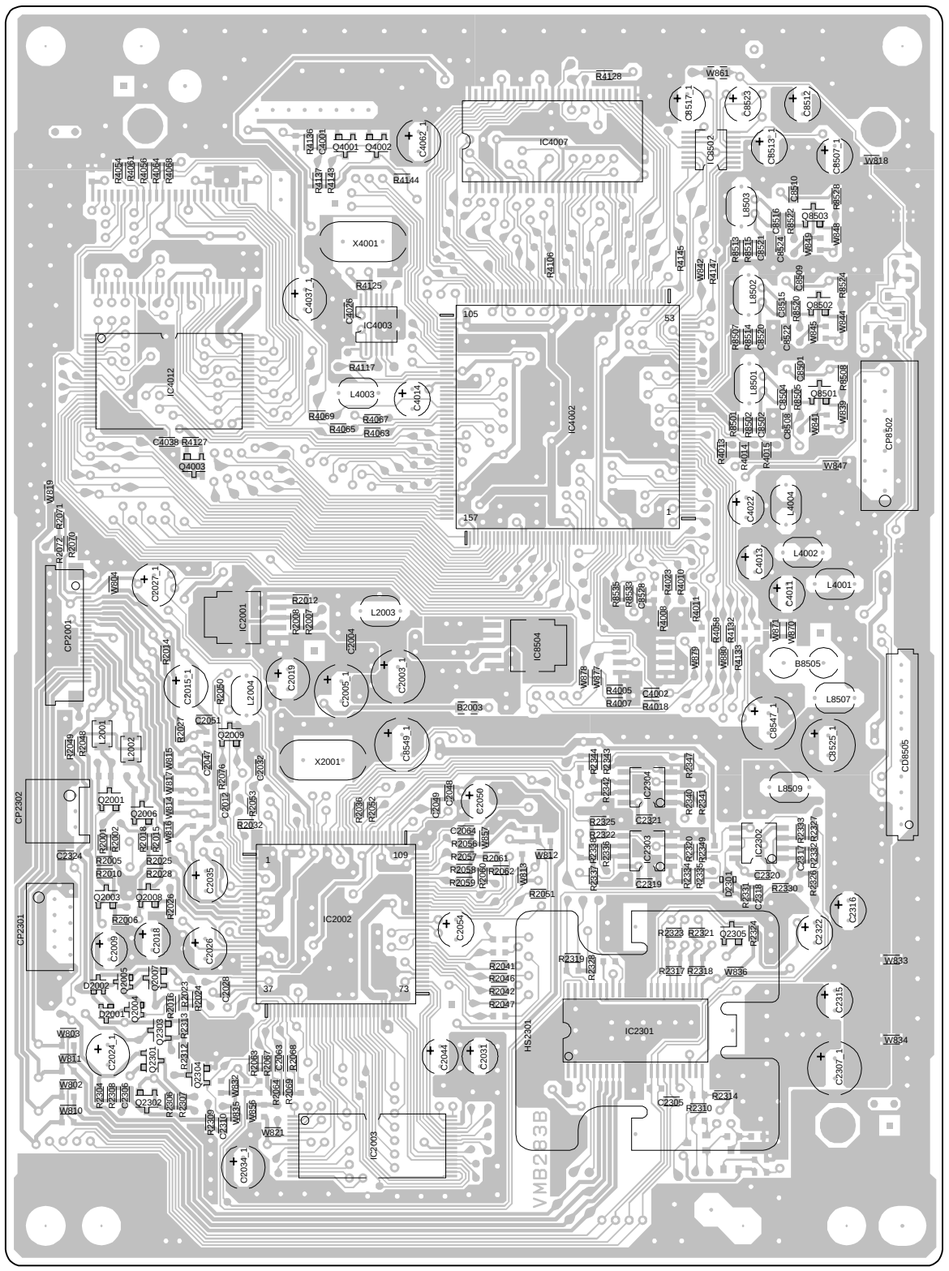


T'TEXT/Hi-Fi/SOUND AMP BLOCK DIAGRAM

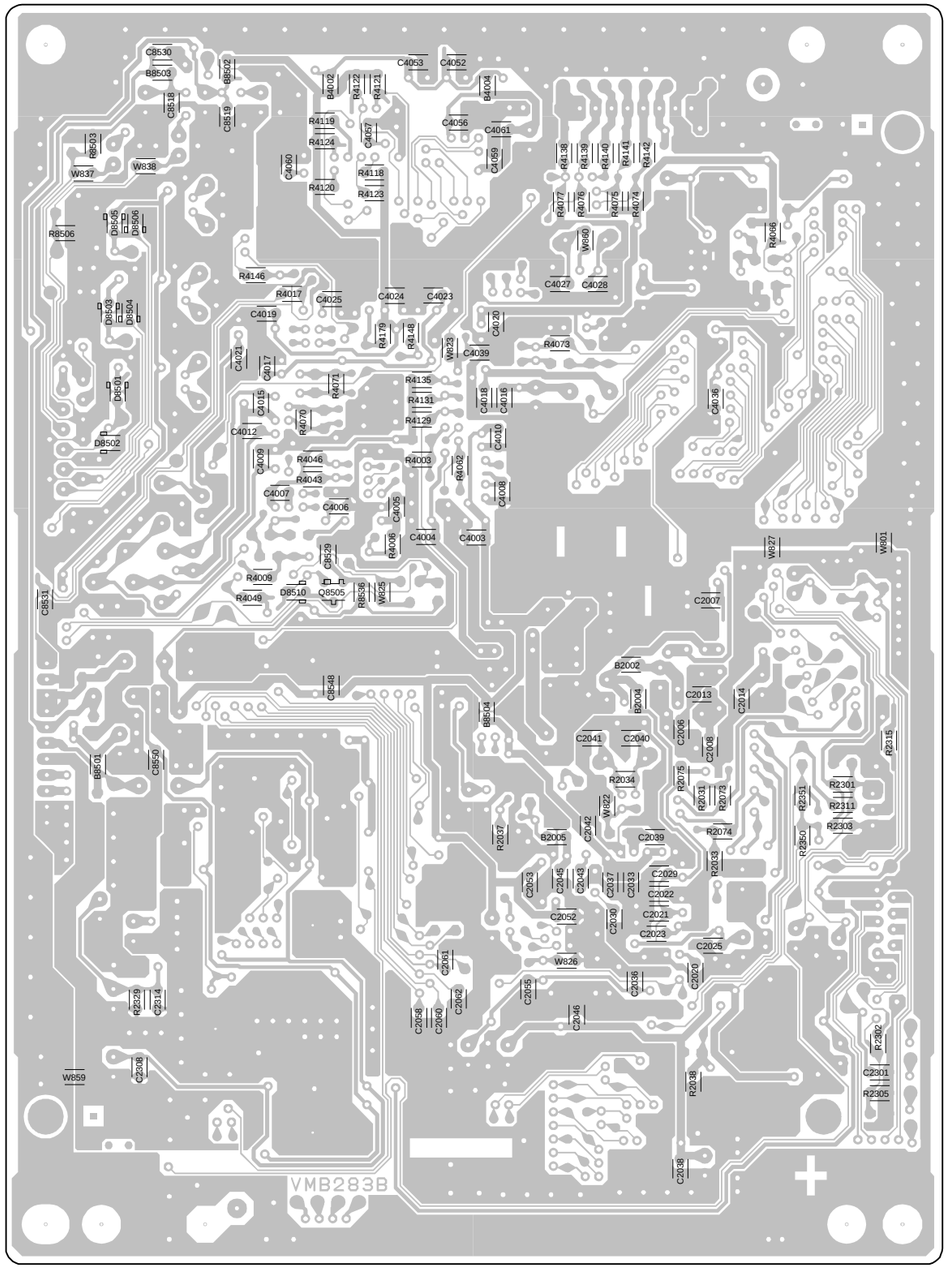


PRINTED CIRCUIT BOARDS

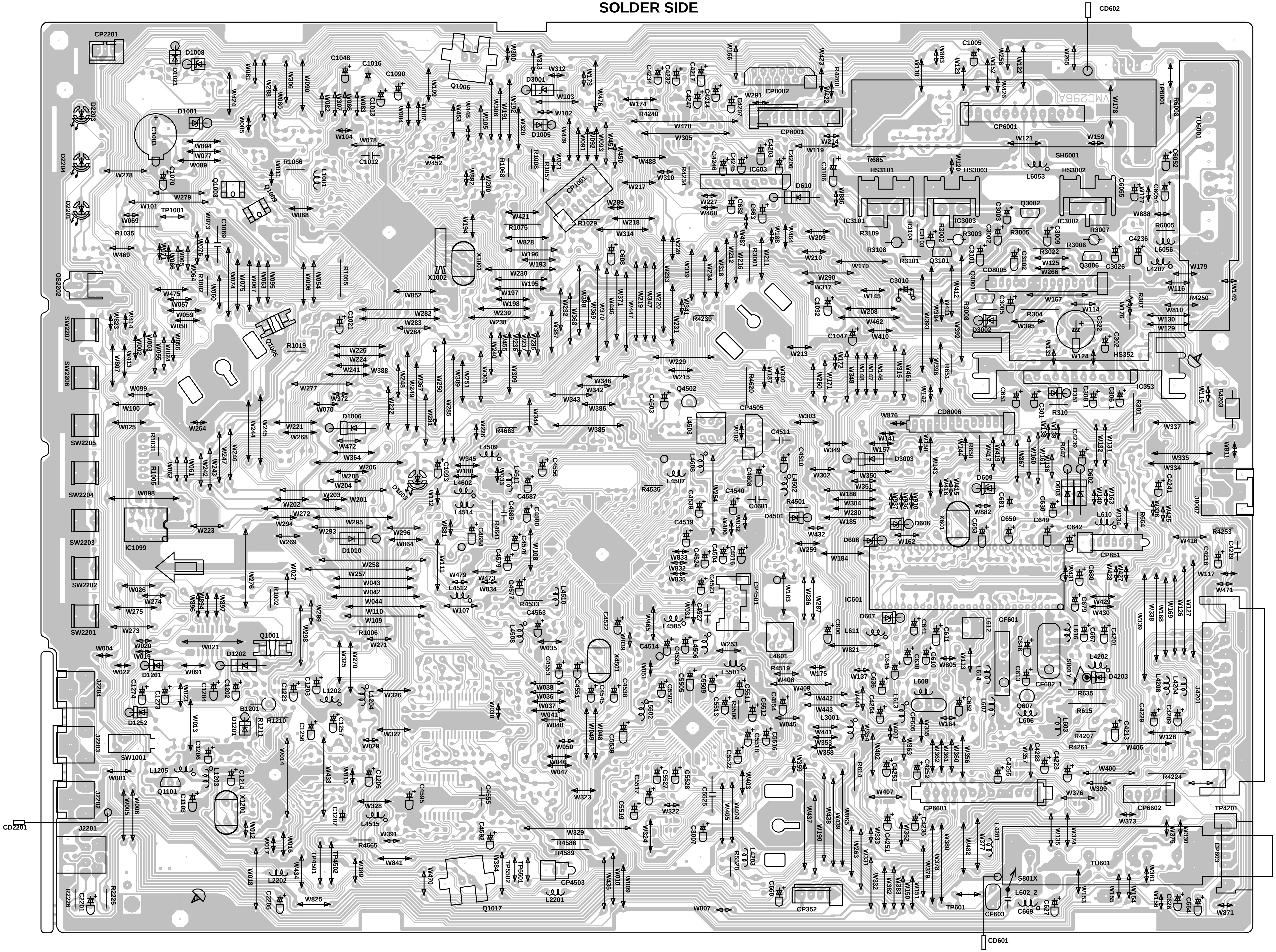
DVD (TOP SIDE)



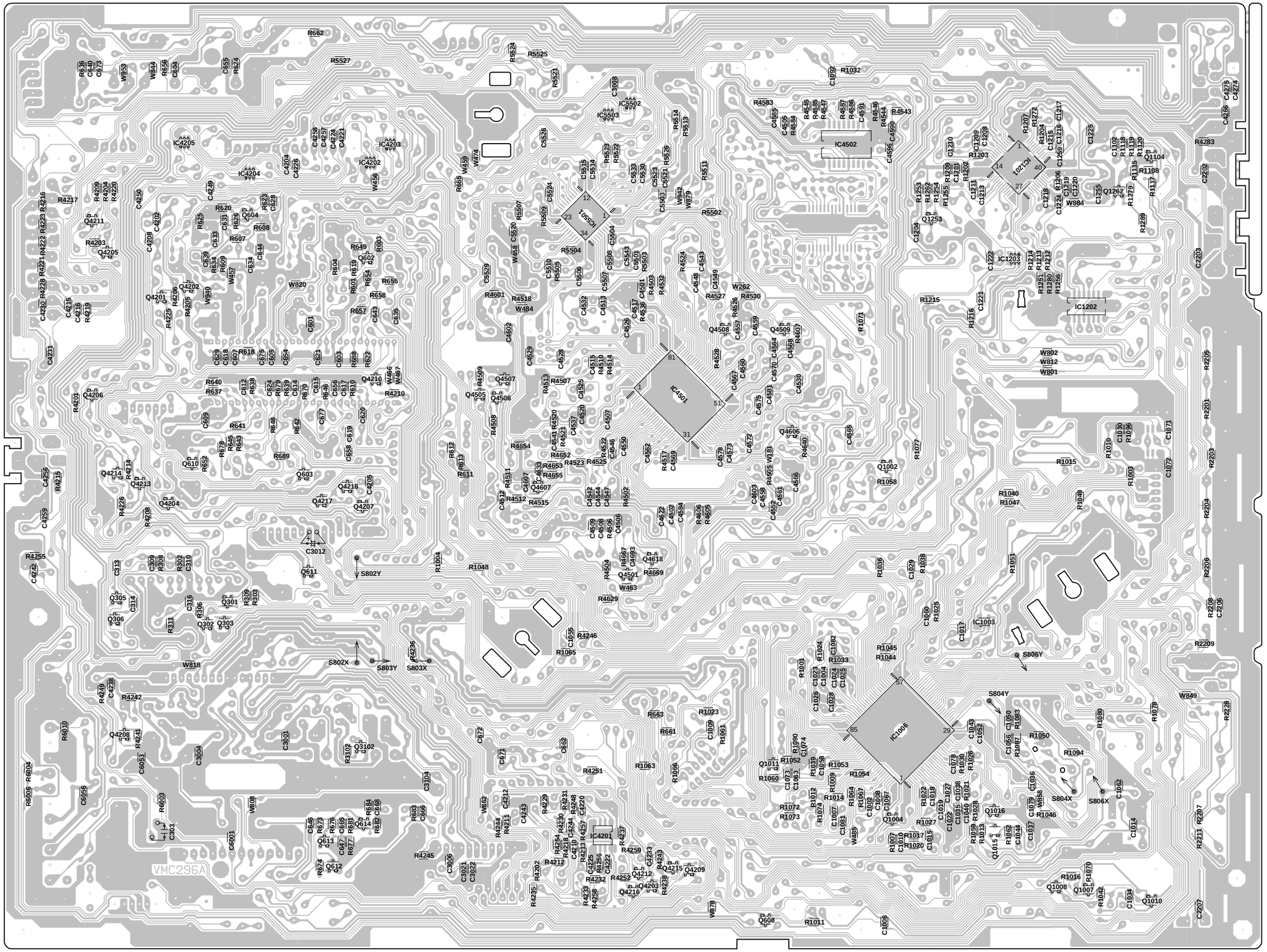
DVD (BOTTOM SIDE)



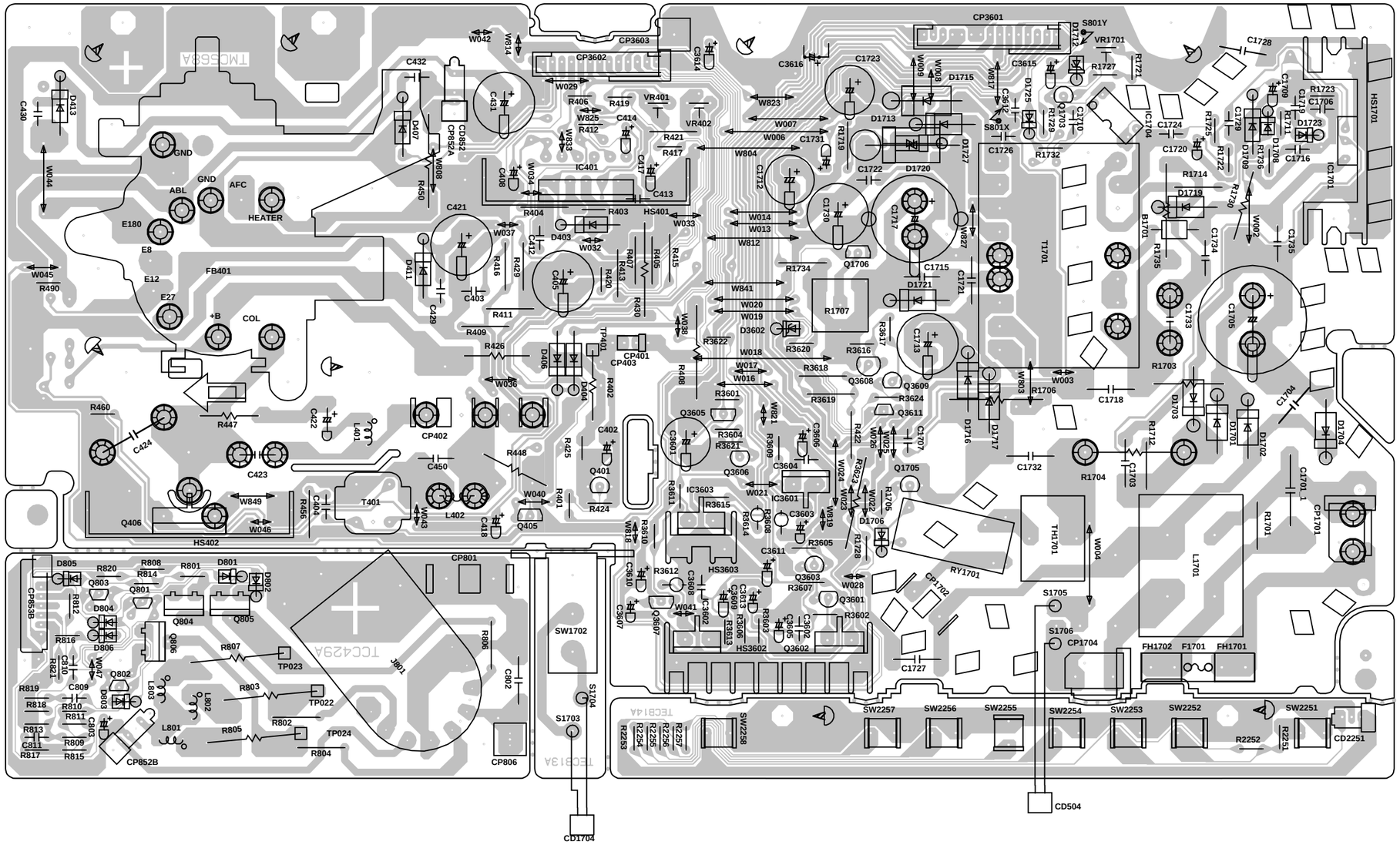
PRINTED CIRCUIT BOARDS
VCR (INSERTED PARTS)
SOLDER SIDE



PRINTED CIRCUIT BOARDS
VCR (INSERTED PARTS)
SOLDER SIDE

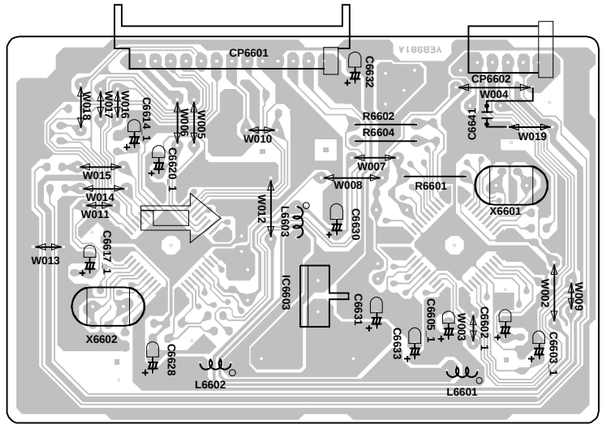


PRINTED CIRCUIT BOARDS
MICON/CRT/OPERSTION/POWER
SOLDER SIDE

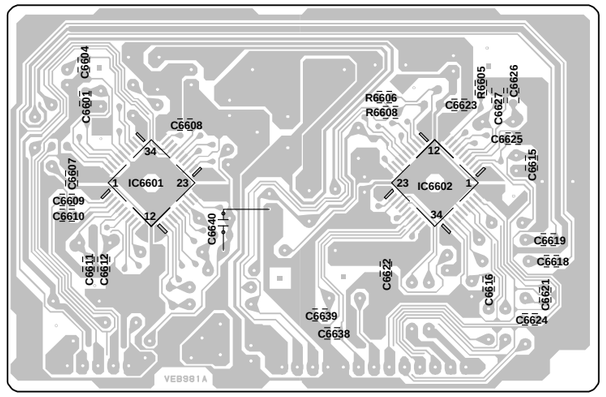


PRINTED CIRCUIT BOARDS

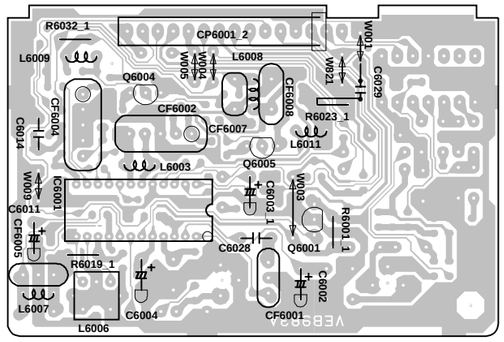
STEREO (INSERTED PARTS)
SOLDER SIDE



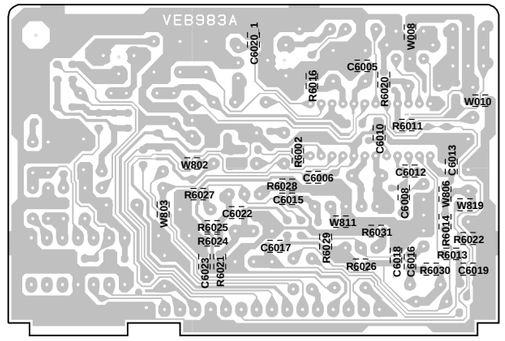
STEREO (CHIP MOUNTED PARTS)
SOLDER SIDE



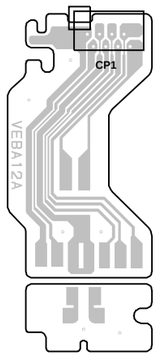
IF (INSERTED PARTS)
SOLDER SIDE



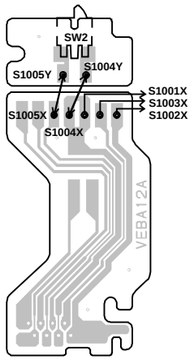
IF (CHIP MOUNTED PARTS)
SOLDER SIDE



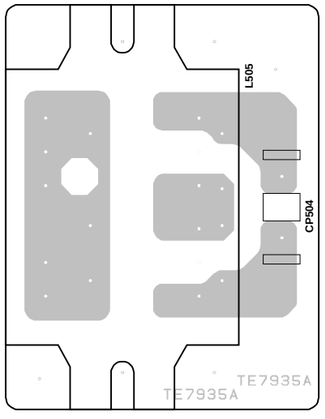
RELAY/SW (INSERTED PARTS)
SOLDER SIDE



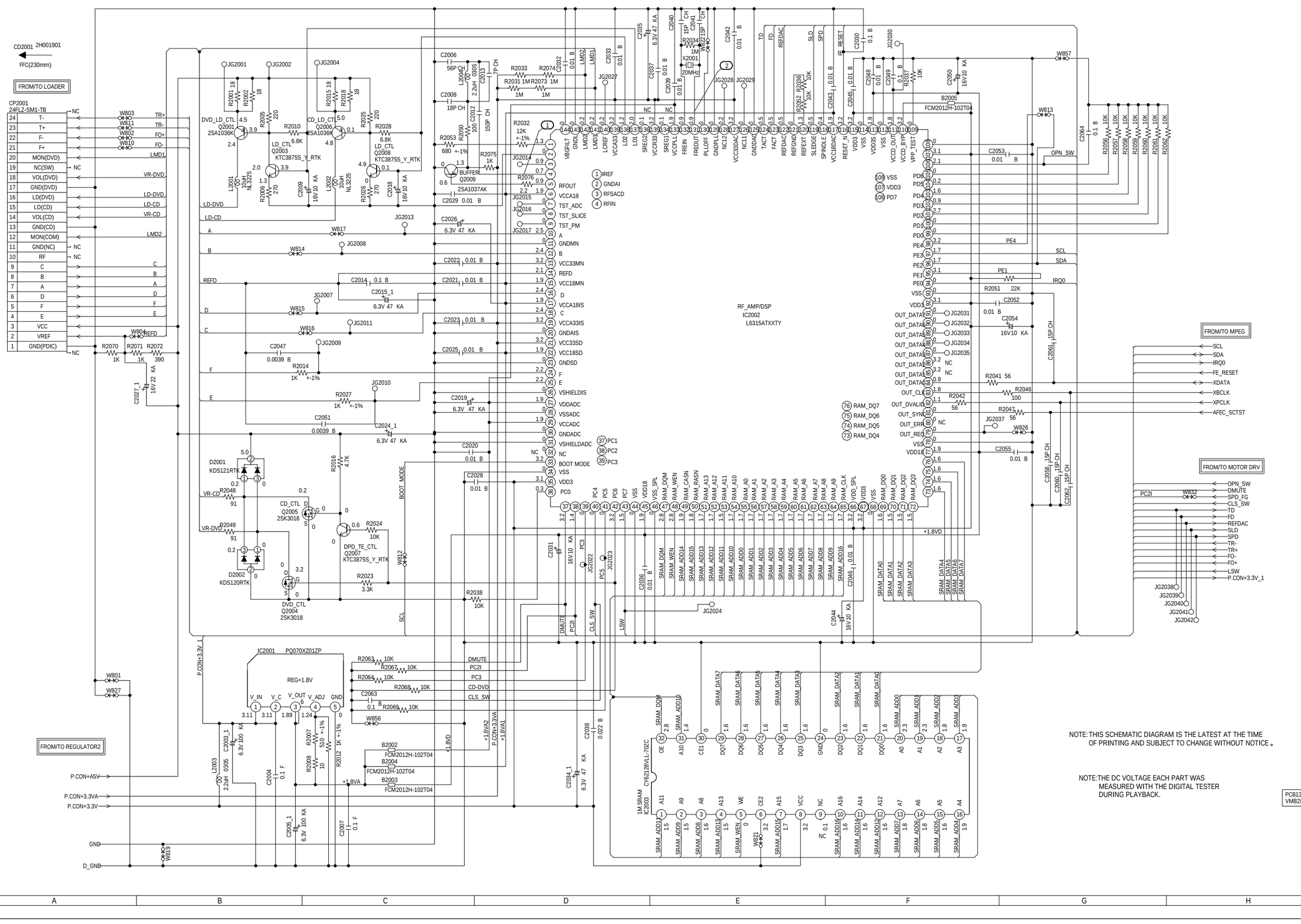
RELAY/SW (CHIP MOUNTED PARTS)
SOLDER SIDE



FILTER
SOLDER SIDE



RF_AMP/DSP SCHEMATIC DIAGRAM (DVD PCB)



MOTOR DRIVE SCHEMATIC DIAGRAM

(DVD PCB)

FROM/TO LOADER

CP2301
IMSA-9615S-08C-PP

8	+5V
7	SP_FG
6	GND
5	LIMIT SW
4	SP1+
3	SP1-
2	SLD+
1	SLD-

CD2301
2H080701
FFC(100mm)

FROM/TO LOADER

CP2302
A2001WR2-3P

1	CLOSE
2	GND(D)
3	OPEN

MOTOR DRIVE
IC2301
LA6560

0	1	FWD	
0	2	REV	
8.8	3	VCC2	
0.2	4	NC VLD-	
0.2	5	NC VLD+	
4.0	6	VD4+	
4.3	7	VD4-	
4.3	8	VD3+	
4.1	9	VD3-	
0	10		
5.3	11	VD2+	
3.1	12	VD2-	
4.2	13	VD1+	
4.2	14	VD1-	
8.8	15	VCC1	
2.5	16	VIN1	
0	17	VIN1-A	
2.5	18	VIN1+A	
2.5	19	VIN1+B	
0	20	S-GND	
0	21	VCONT	
3.3	22	MUTE	
2.5	23	VIN4	
2.5	24	VIN4-	
2.5	25	VIN4+	
2.6	26	VREF-IN	
5.0	27	VIN1-SW	
NC	28	VREF-OUT	
0	29		
4.9	30	REG-OUT	
0.2	31	REG-IN	
2.5	32	VIN3+	
2.5	33	VIN3-	
2.6	34	VIN3	
2.5	35	VIN2+	
2.5	36	VIN2-	
3.0	37	VIN2	
2.5	38	VIN1+B	

C2307_1 16V100 KA
C2308 0.1 B
C2301 0.1 B
C2305 0.1 B
C2324 0.1 B
C2306 0.0022 B
C2310 100P CH
C2314 0.1 F
C2315 16V10 KA
C2316 16V10 KA
C2322 16V10 KA
C2317 0.001 B
C2318 0.01 B
C2320 0.1 F
C2321 0.1 F

R2319 12K
R2328 10K
R2323 10K
R2324 1K
R2329 1K
R2317 27K
R2318 27K
R2321 10K
R2310 22K +-1%
R2314 10K
R2351 100
R2350 10K
R2320 100K +-1%
R2322 100K +-1%
R2325 1K +-1%
R2306 10K
R2307 10K
R2308 1M
R2304 22K
R2305 22K
R2309 4.7K
R2312 1K
R2313 10K
R2302 1K
R2301 4.7K
R2303 4.7K
R2311 100
R2315 100
R2327 5.6K
R2326 5.6K
R2332 4.7K
R2330 10K
R2331 18K
R2333 4.7K
R2337 1K +-1%
R2343 1K +-1%
R2338 100K +-1%
R2336 100K +-1%
R2344 100K +-1%
R2342 100K +-1%
R2334 100K +-1%
R2335 100K +-1%
R2340 100K +-1%
R2341 100K +-1%
R2347 1K +-1%
R2349 1K +-1%

W836
W835 0+0

HS2301
763WSA0022

5VREG.
Q2305
KTA1504S_Y_RTK

SPDFG.CTL
Q2302
KTA1504S_Y_RTK

SPDFG.CTL
Q2301
KTC3875S_Y_RTK

DMVTE_CTL
Q2303
2SA1037AK

DMVTE_CTL
Q2304
KRC102SRTK

D2301
MCL4148

OPE AMP
IC2303
BA10358F-E2

OPE AMP
IC2304
BA10358F-E2

OP AMP
IC2302
BA10358F-E2

FROM/TO RF_AMP/DSP

- OPN_SW
- DMUTE
- SPD_FG
- CLS_SW
- TD
- FD
- REFDAC
- SLD
- SPD
- TR-
- TR+
- FO-
- FO+
- P.CON+3.3V_1
- LSW

FROM/TO REGULATOR2

- P.CON+A5V
- P.CON+3.3V
- P.CON+9V
- M_GND
- D_GND
- GND

P.CON+A5V
D GND
DMUTE
REFDAC
M_GND
VR
SP-
SP+
SPD_FG
P.CON+A5V
P.CON+3.3V_1
CLS_SW
OPN_SW
TR-
TR+
FO-
FO+

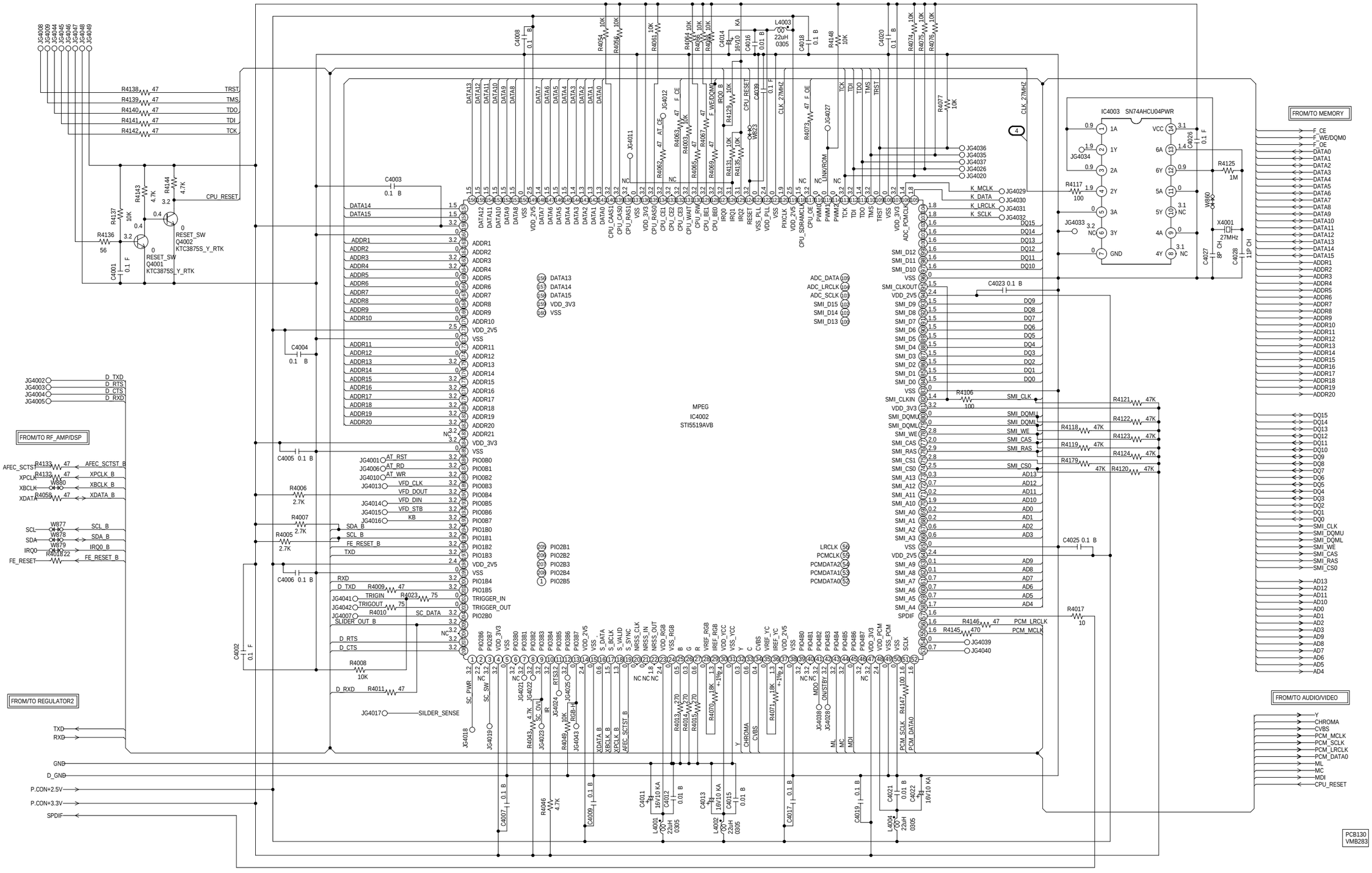
PCB130
VMB283

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

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

CAUTION: DIGITAL TRANSISTOR

MPEG SCHEMATIC DIAGRAM (DVD PCB)

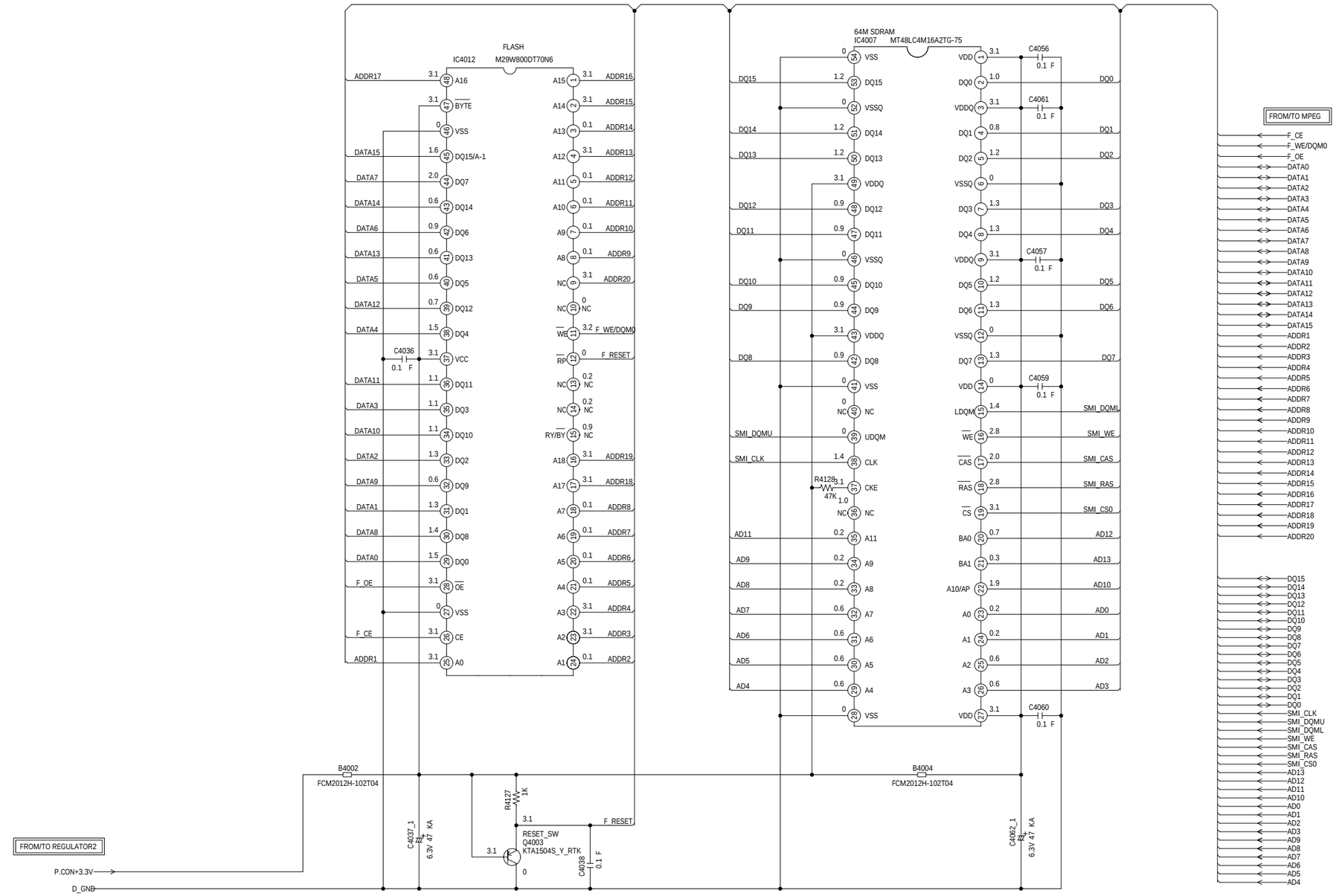


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

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

MEMORY SCHEMATIC DIAGRAM

(DVD PCB)



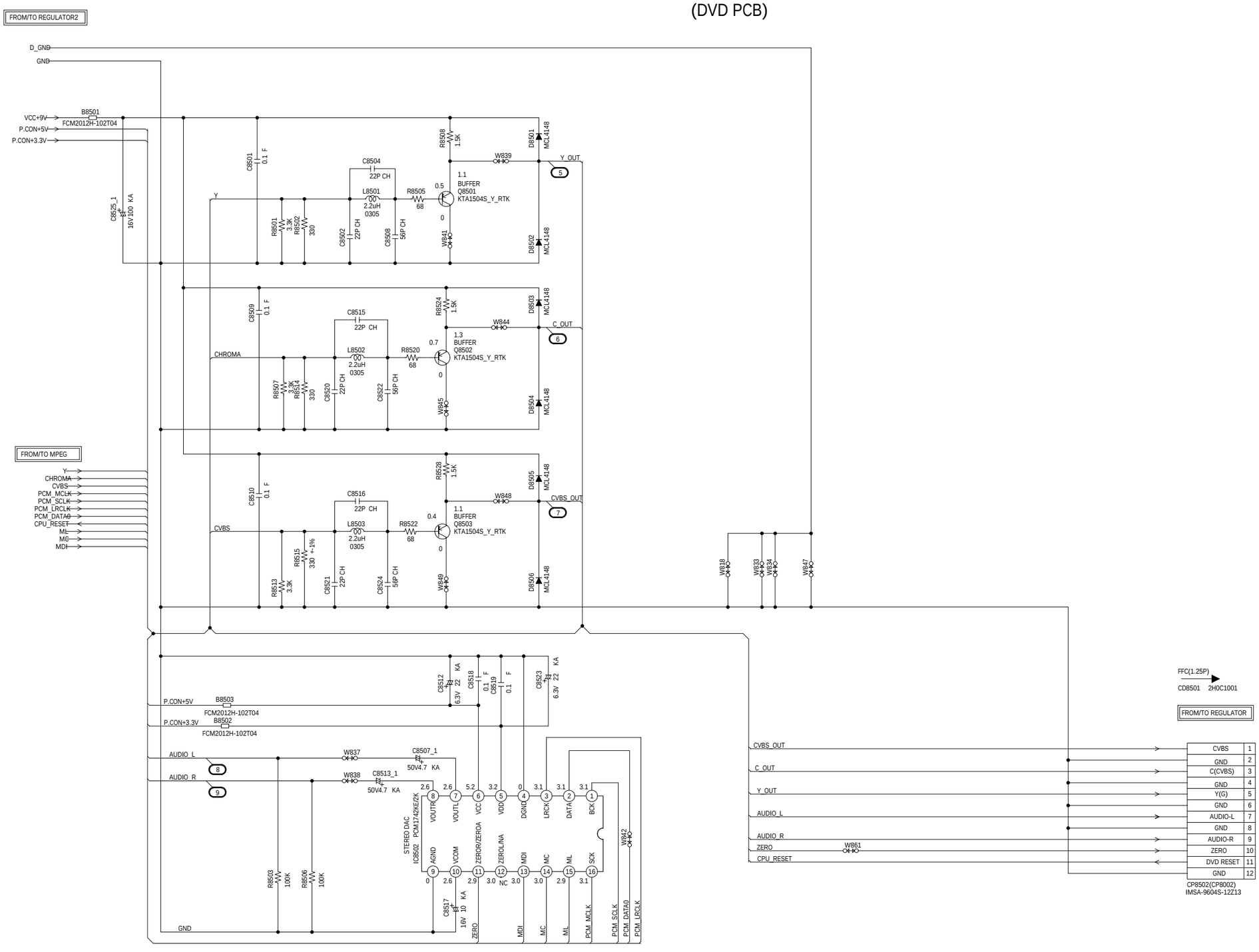
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

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

PCB130
VMB283

AUDIO/VIDEO SCHEMATIC DIAGRAM

(DVD PCB)

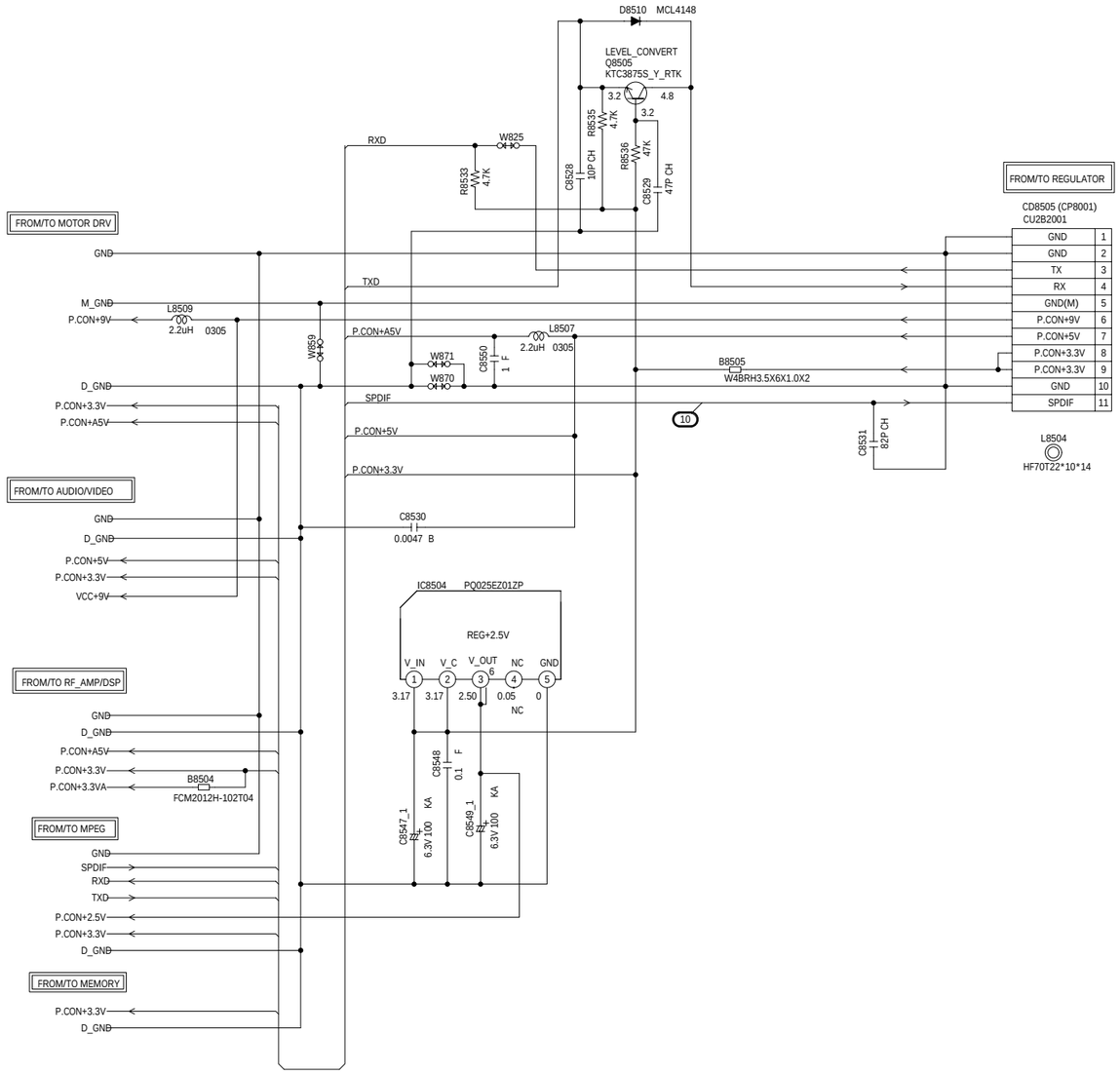


NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

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

REGULATOR2 SCHEMATIC DIAGRAM

(DVD PCB)



PCB130
VMB283

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

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

Y/C/AUDIO/HEAD AMP SCHEMATIC DIAGRAM

(VCR PCB)

FROM/TO REGULATOR1

FROM/TO CYL

CP4501
TOC-C09X-A1

9	HF1 (R)	HF1
8	HF COM	HF_COM
7	HF2 (L)	HF2
6	SP-CH1 (R)	
5	SP COM	
4	SP-CH2 (L)	
3	EP/LP-CH1 (R)	
2	EP/LP COM	
1	EP/LP-CH2 (L)	

FROM FULL ERASE HEAD

CP4503
B2013H02-2P

2	FE HEAD(GND)	GND
1	FE HEAD(HOT)	HOT

FROM/TO HEAD AUDIO CONTROL

CD4005
1.25X6X138XC

CP4505
IMSA-9604S-06Z14

1	AE HEAD(-)	
2	AE HEAD(+)	
3	CTL-	CTL-
4	CTL+	CTL+
5	AUDIO_PB	
6	AUDIO_REC	

FROM/TO SECAM CHROMA/HI-FI
- HF1
- HF2
- HF_COM
- NORMAL_A
- Y/C_AUDIO

FROM/TO CHROMA/IF
- Y/C_VIDEO
- DVD_VIDEO

FROM/TO DEMODULATOR/21PIN
- REC_TU_V
- REAR_V_IN

FROM/TO DVD I/O
- FRONT_V_IN

FROM/TO MICON
- VCR_A_MUTE
- H.SW
- C.SYNC
- SCL
- SDA
- D_V_SYNC
- V.REC_ST_H
- ENV_DET
- CTL+
- CTL-
- 2FSC_A
- AT+5.6V_A
- MESECAM_H

Y/C/AUDIO/CCD /HEAD AMP IC
IC4501
HA118225F

PDC/VPD DECODER IC
IC4502
SDA5650/X

CAUTION: DIGITAL TRANSISTOR

NOTE:THE DC VOLTAGE 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 。

PCB010
VMC296

MICON SCHEMATIC DIAGRAM

(VCR PCB)

FROM/TO REGULATOR1

AT+5.6V
POWER_FAIL[DC]
VCR_POWER_H
AT+12V
RX
TX
DEGAUSS_H
DVD_POWER_H
EMERGENCY
VD
HD
TV_POWER_H
P.CON+5V_C
MOTOR_GND
GND
P.CON+5V_A

FROM/TO DVD I/O

TUNER_H
T-REC_LED
REC_LED
REMOCON_IN
KEY_A
KEY_B
STANDBY_H
TU_AUDIO_MUTE_H

FROM/TO Y/C/A/H.AMP

AT+5.6V_A
MESECAM_H
D_V_SYNC
V.REC_ST_H
2FSC_A
SCL
SDA
H.SW
ENV_DET
VCR_A_MUTE
CTL+
CTL-
C.SYNC

FROM/TO CAPSTAN DD UNIT

CP1001
TMC-J12P-B2

1	CAP FG
2	CAP VCO
3	VCC
4	CAP.M/F/R
5	I LIMIT
6	MOTOR GND
7	GND
8	CYL/LAD VCO
9	CAP CTL
10	LDM CTL
11	CYL FG/PG
12	CYL CTL

SYSCON/TIMER/SERVO IC
IC1006
OEC0136A

FROM/TO DEMODULATOR/21PIN
REC_AGC_CTL
REC_SVL-H
IF_MOD
NICAM_RESET
SCL
SDA
REC_AFT
EXT_IN_L
TU_AUDIO_MUTE_H
TUNER_ON/OFF
21PIN/DVD

FROM/TO SECAM CHROMA/HI-FI
SDA
SCL
VCR_A_MUTE
HF_ENV
HF_H.SW
VCR/DVD

FROM/TO CHROMA/IF
MO_SYNC
DVD_RESET
H_CTL
PROTECT
SDA
SCL
IIC_OFF
AGC_M
HD
AV1
AV2
TUNER_CTL
VCR/DVD

FROM/TO T'TEXT/RGB SW
TEXT_RESET
VCR/DVD
OSD_R
OSD_G
OSD_B
OSD_Y
SCL
SDA
P.CON+5V_E

FROM/TO SOUND AMP
VOL_CTL
M.P.OFF_H
TV_A_MUTE
TV_POWER_H
POWER_FAIL

EEP ROM IC
IC1099
S-24C08ADFA-01

SYSTEM RESET IC
IC1003
PST3231NR

PCB010
VMC296

CAUTION: DIGITAL TRANSISTOR

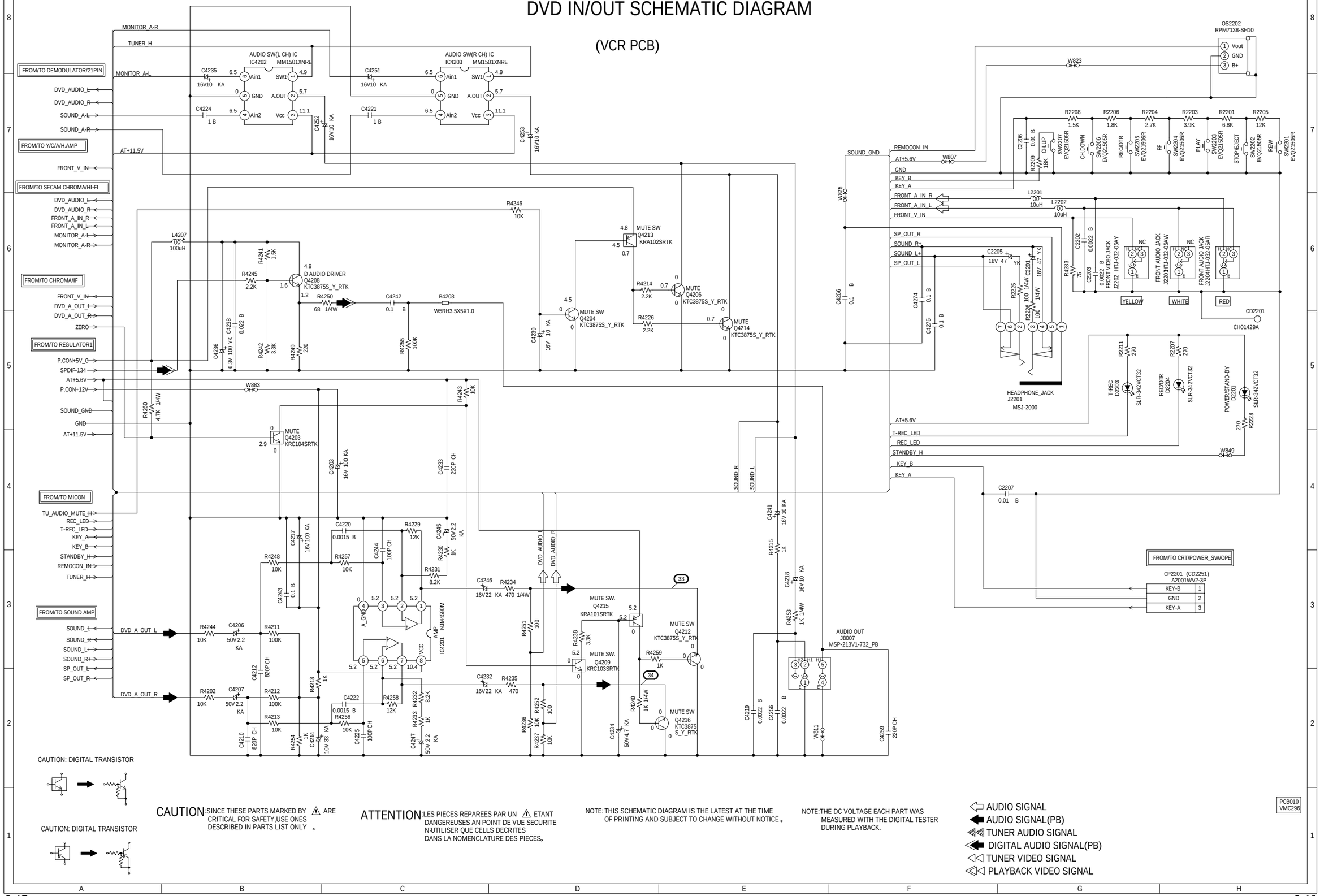
CAUTION: DIGITAL TRANSISTOR

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

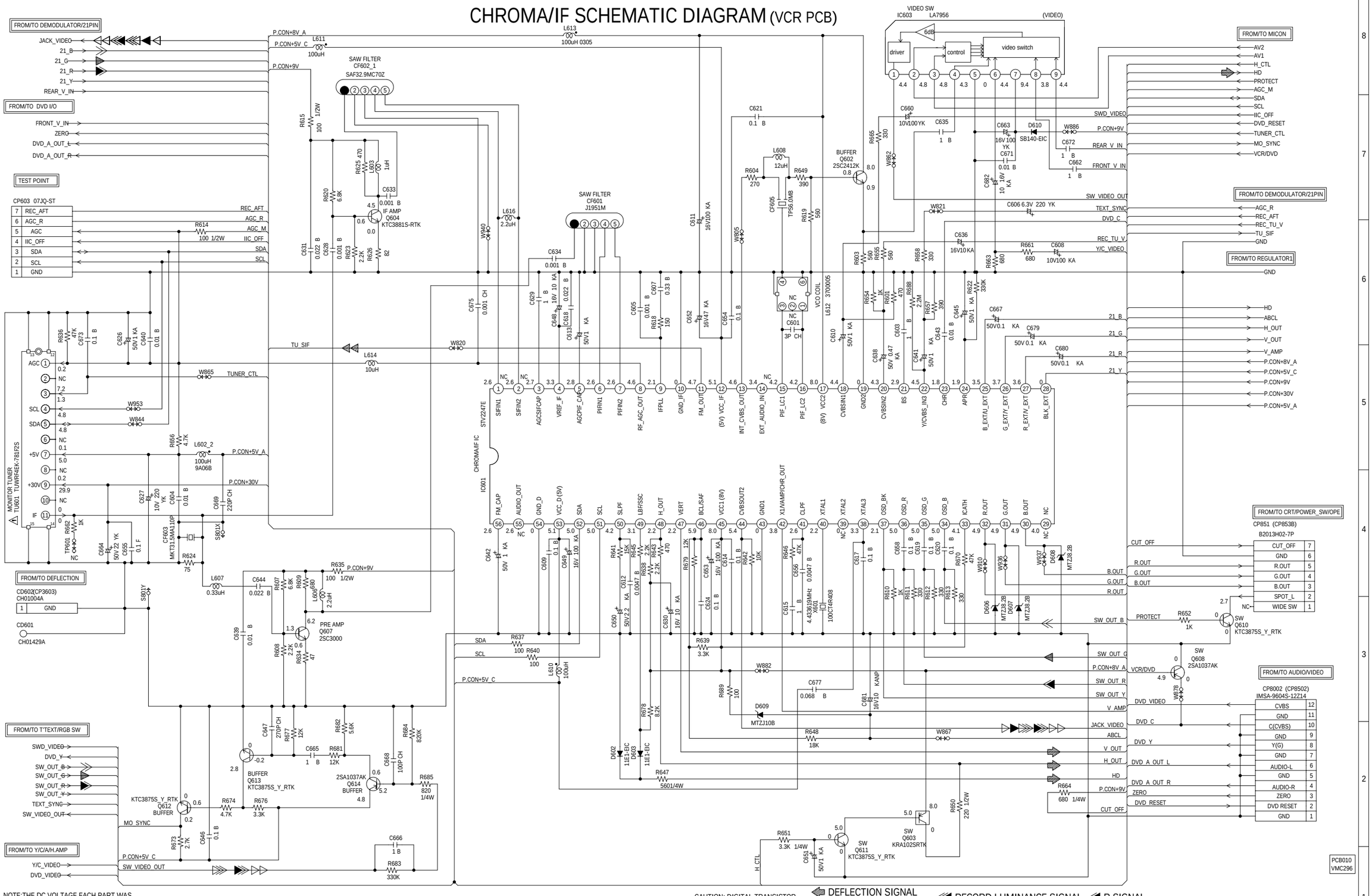
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

DVD IN/OUT SCHEMATIC DIAGRAM

(VCR PCB)

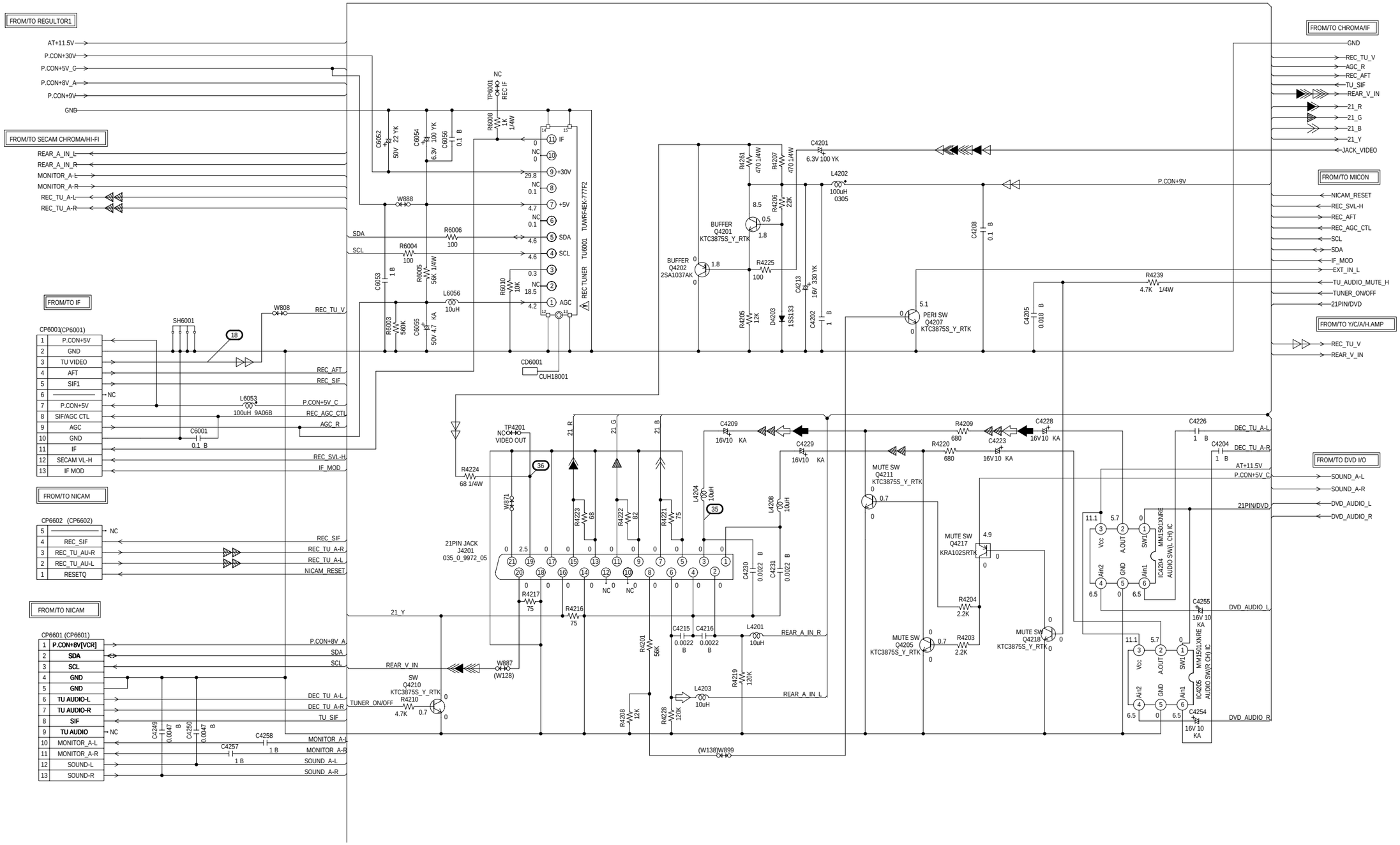


CHROMA/IF SCHEMATIC DIAGRAM (VCR PCB)



DEMODULATOR/21PIN SCHEMATIC DIAGRAM

(VCR PCB)

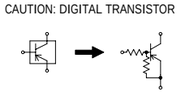


PCB010
VMC296

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

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

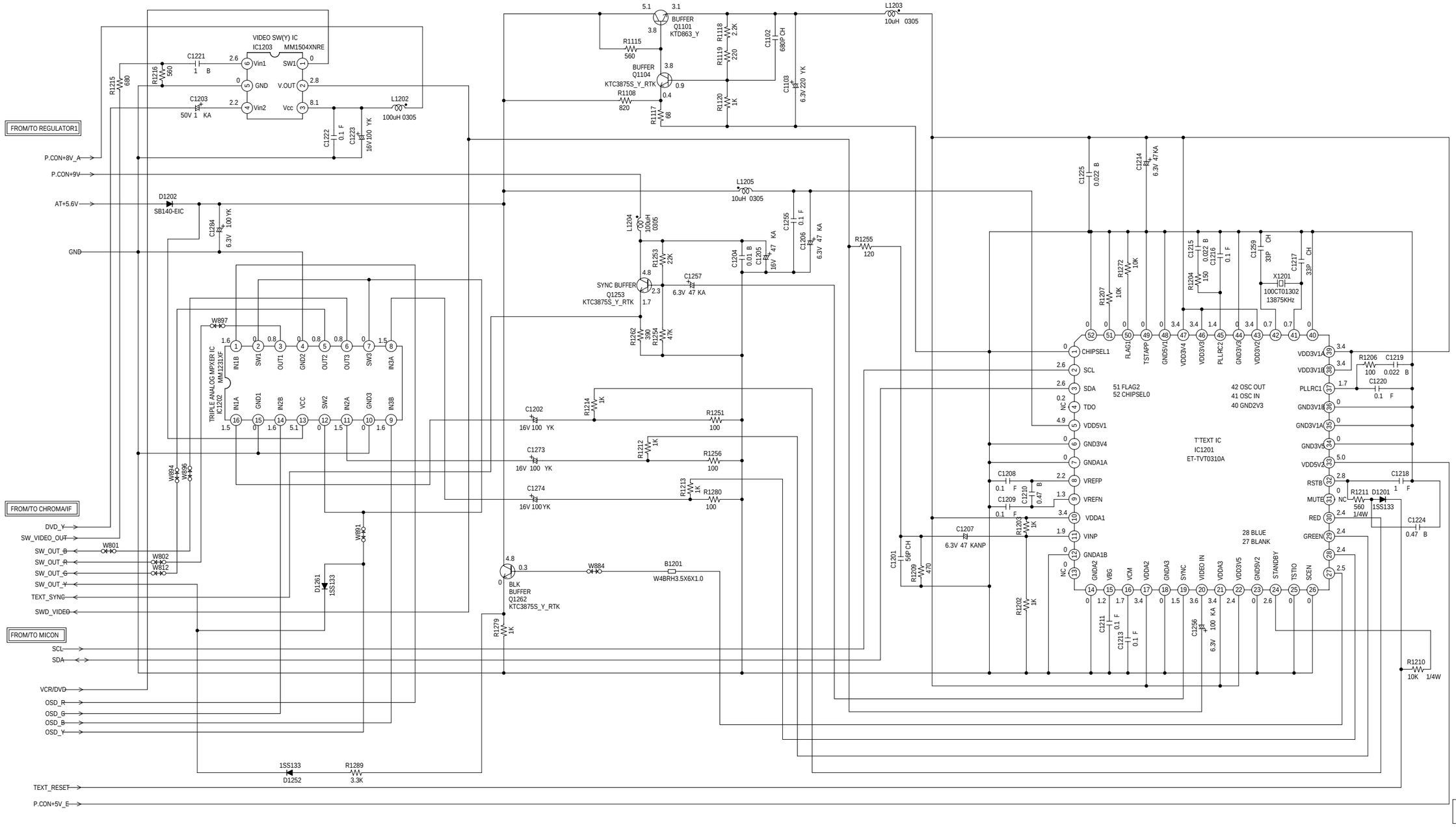
CAUTION: DIGITAL TRANSISTOR



TUNER VIDEO SIGNAL
TUNER AUDIO SIGNAL
AUDIO SIGNAL(REC)
AUDIO SIGNAL(PB)
RECORD LUMINANCE SIGNAL
PLAYBACK LUMINANCE SIGNAL
RECORD COLOR SIGNAL
PLAYBACK COLOR SIGNAL

T'TEXT/RGB SW SCHEMATIC DIAGRAM

(VCR PCB)

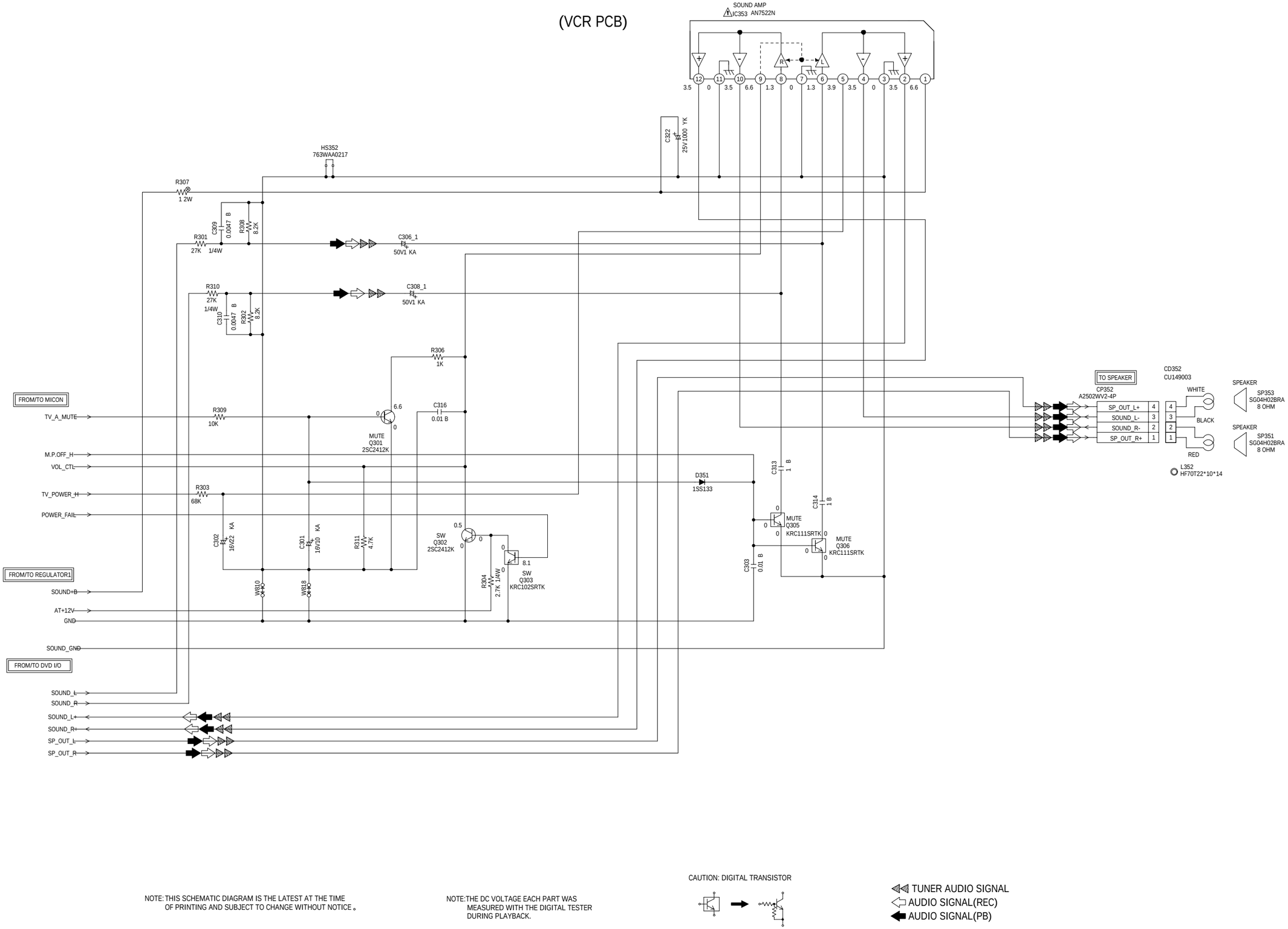


NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

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

SOUND AMP SCHEMATIC DIAGRAM

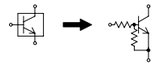
(VCR PCB)



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

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

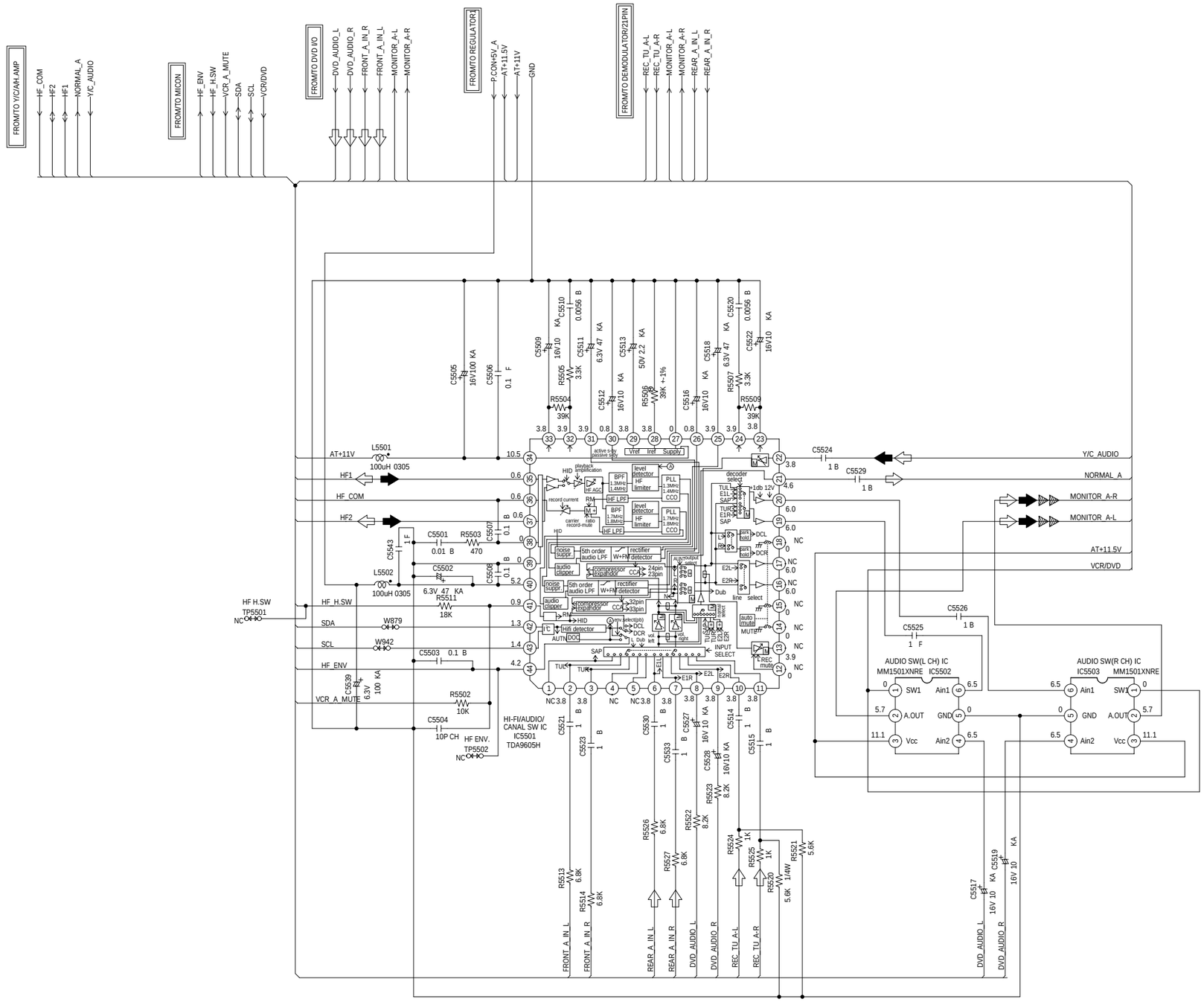
CAUTION: DIGITAL TRANSISTOR



TUNER AUDIO SIGNAL
AUDIO SIGNAL(REC)
AUDIO SIGNAL(PB)

SECAM CHROMA/Hi-Fi SCHEMATIC DIAGRAM

(VCR PCB)

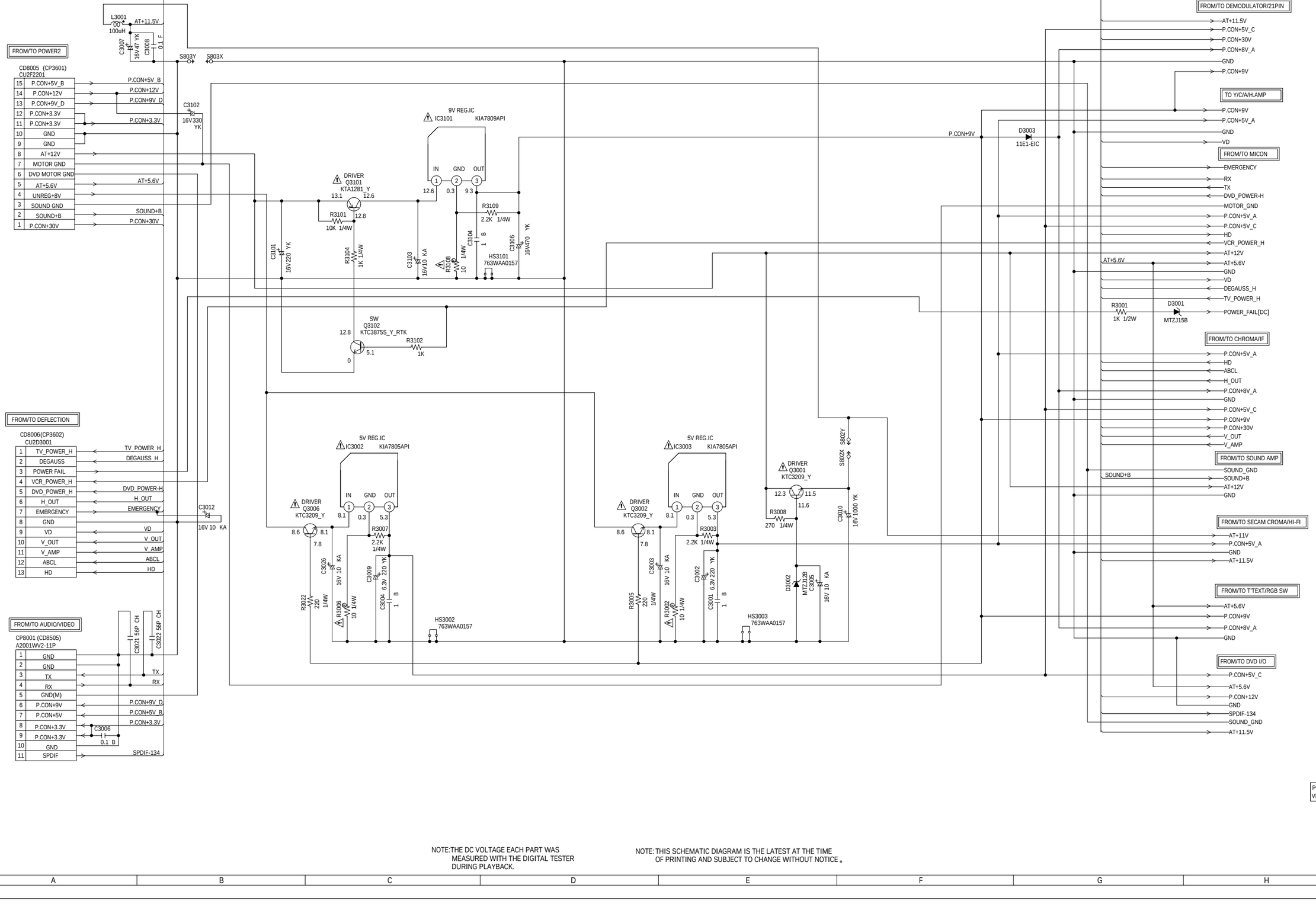


NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

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

AUDIO SIGNAL(PB)
AUDIO SIGNAL(REC)
TUNER AUDIO SIGNAL

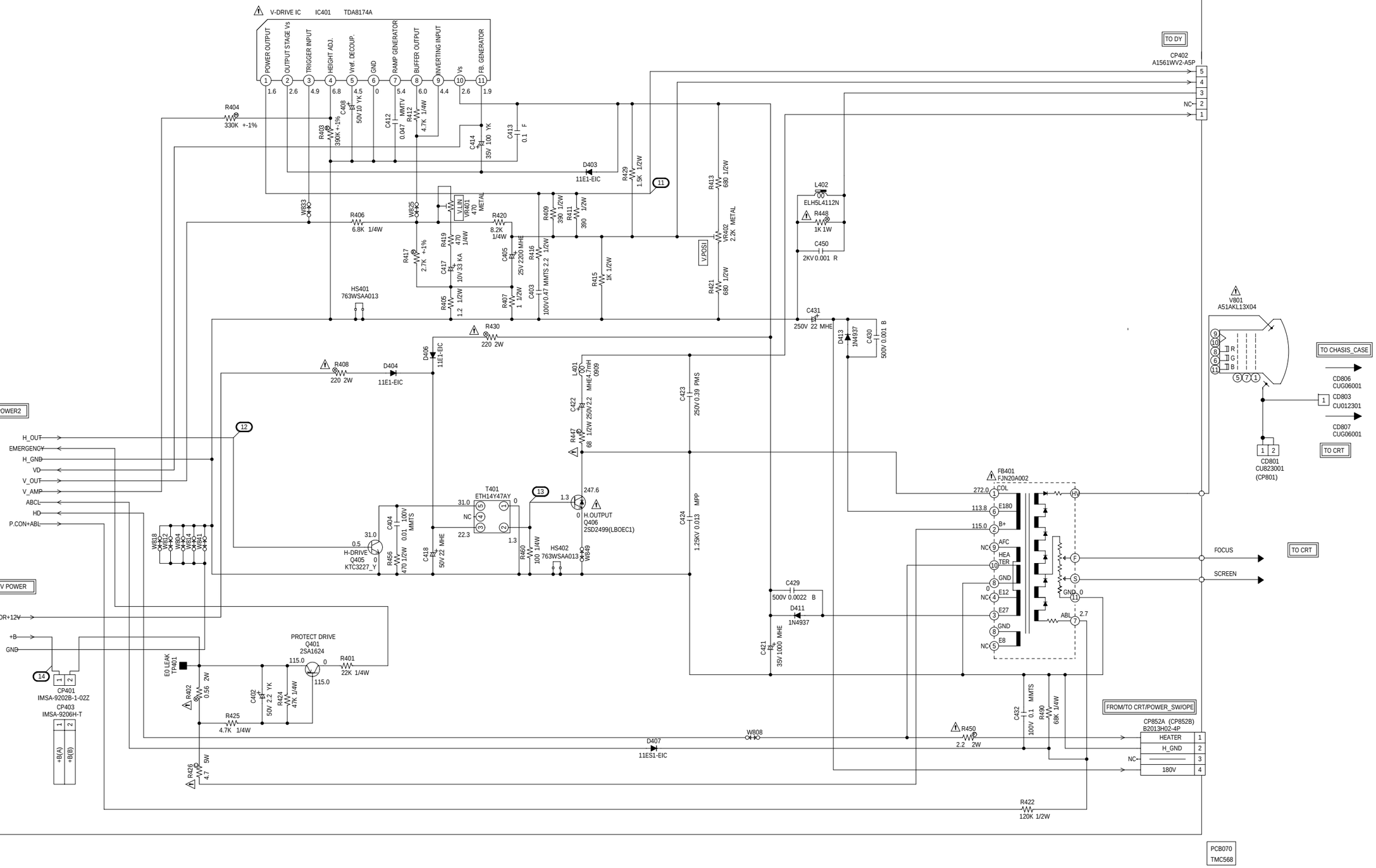
REGULATOR SCHEMATIC DIAGRAM
(VCR PCB)



NOTE:THE DC VOLTAGE 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。

DEFLECTION SCHEMATIC DIAGRAM (MAIN 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.

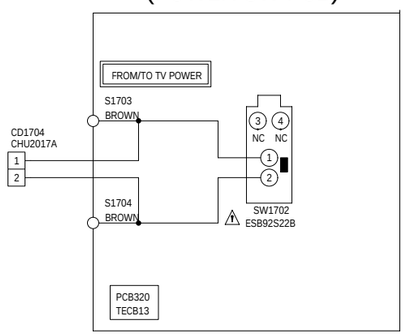
NOTE: THE RESISTOR MARKED F IS FUSE RESISTOR. THE ALUMI ELECTROLYTIC CAPACITOR MARKED NP IS NON POLAR ONE.

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

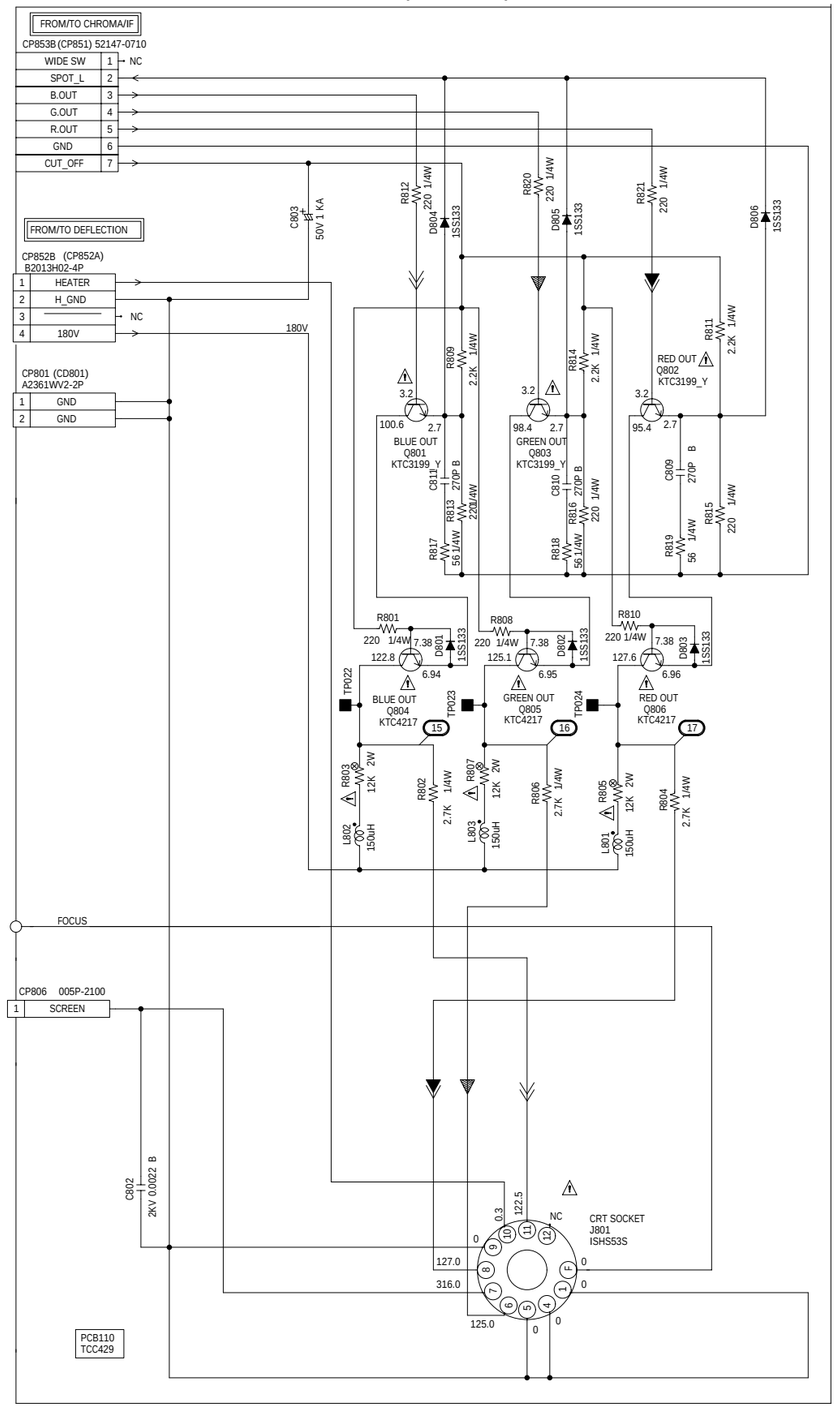
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

CRT/POWER SW/OPERATION SCHEMATIC DIAGRAM

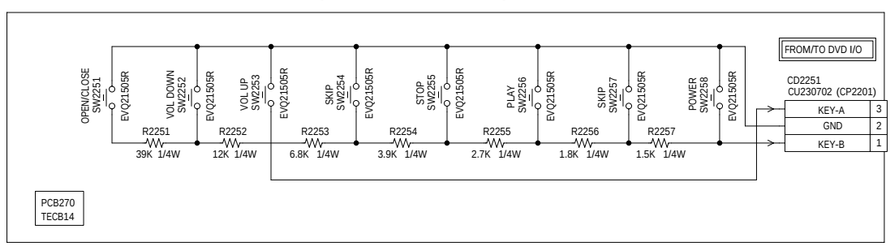
(POWER SW PCB)



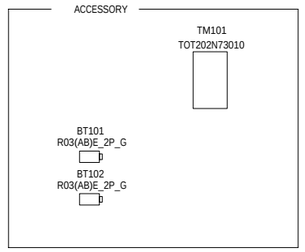
(CRT PCB)



(OPERATION PCB)



ACCESSORY



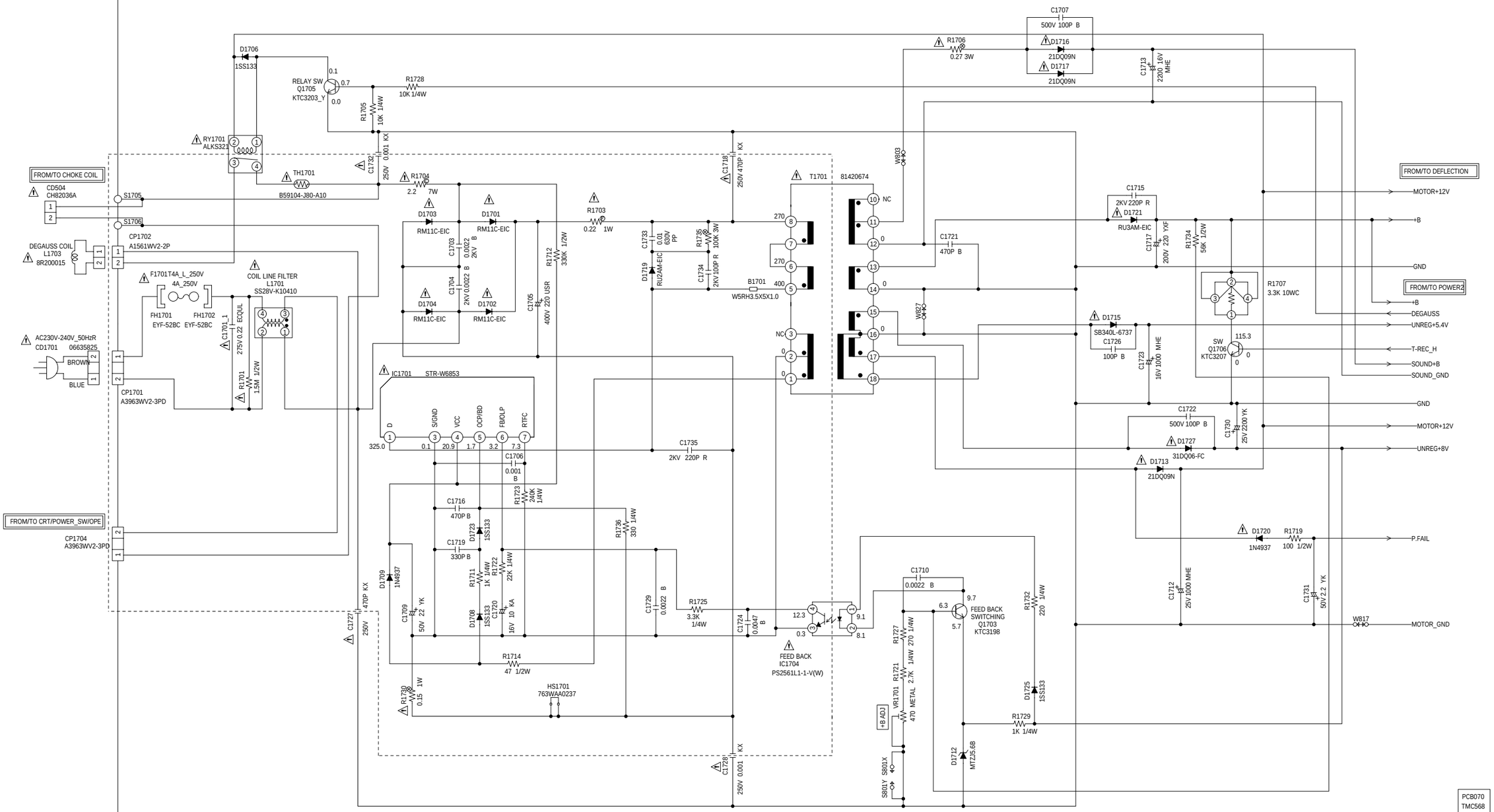
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

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 REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

TV POWER SCHEMATIC DIAGRAM
(MAIN PCB)



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

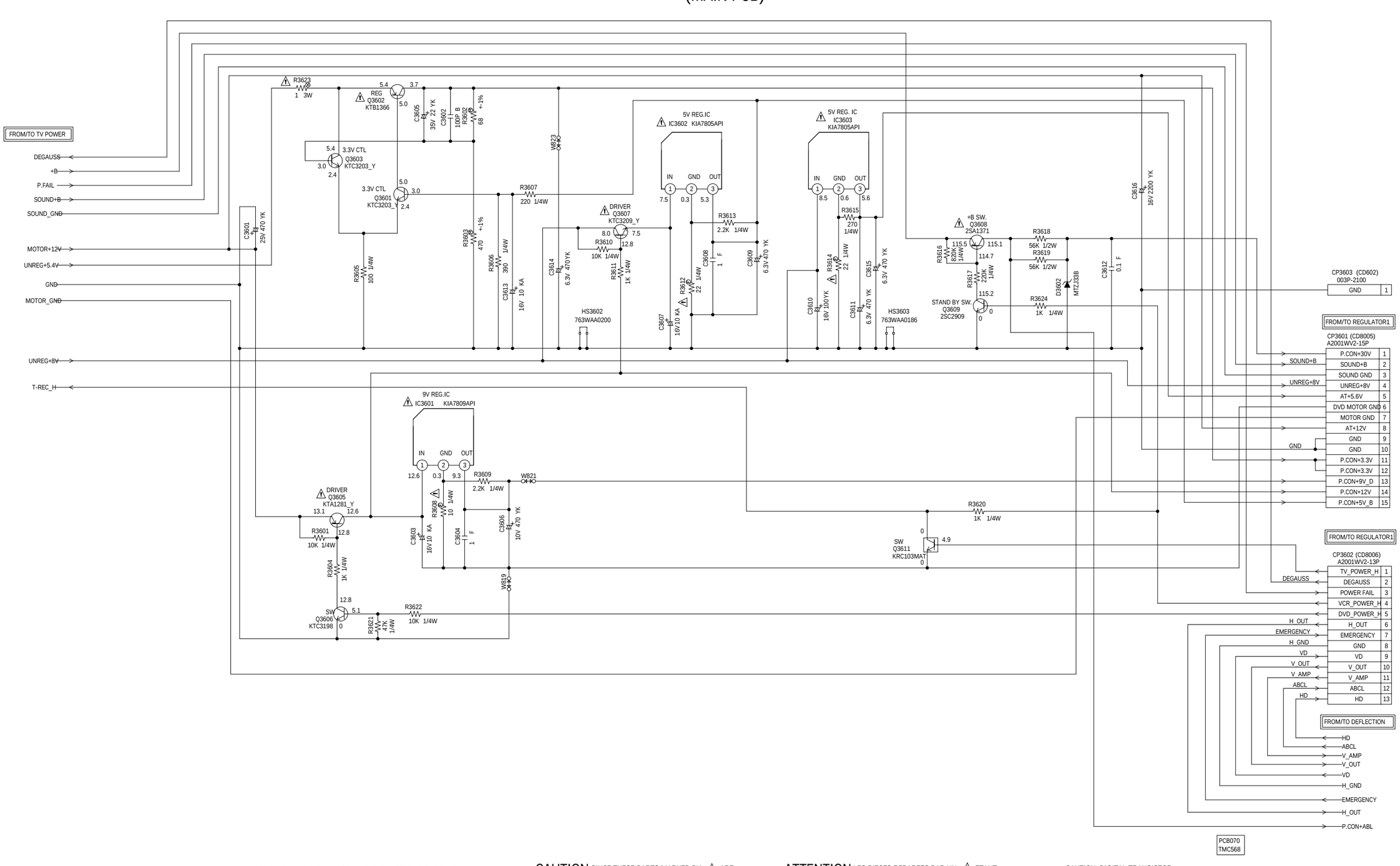
CAUTION: SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

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.

POWER2 SCHEMATIC DIAGRAM

(MAIN PCB)



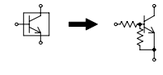
NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

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

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

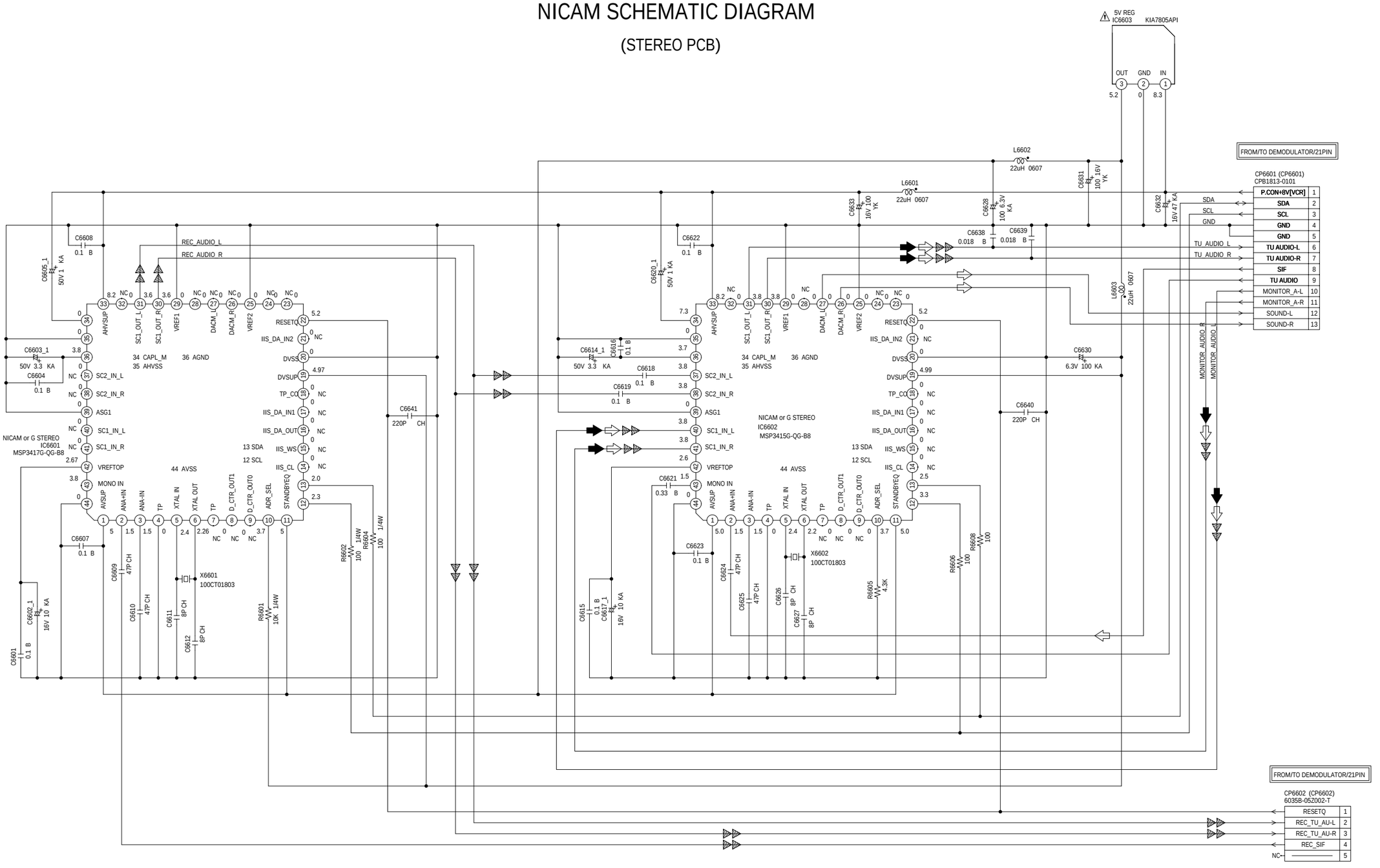
ATTENTION:LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

CAUTION: DIGITAL TRANSISTOR



NICAM SCHEMATIC DIAGRAM

(STEREO PCB)



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 。

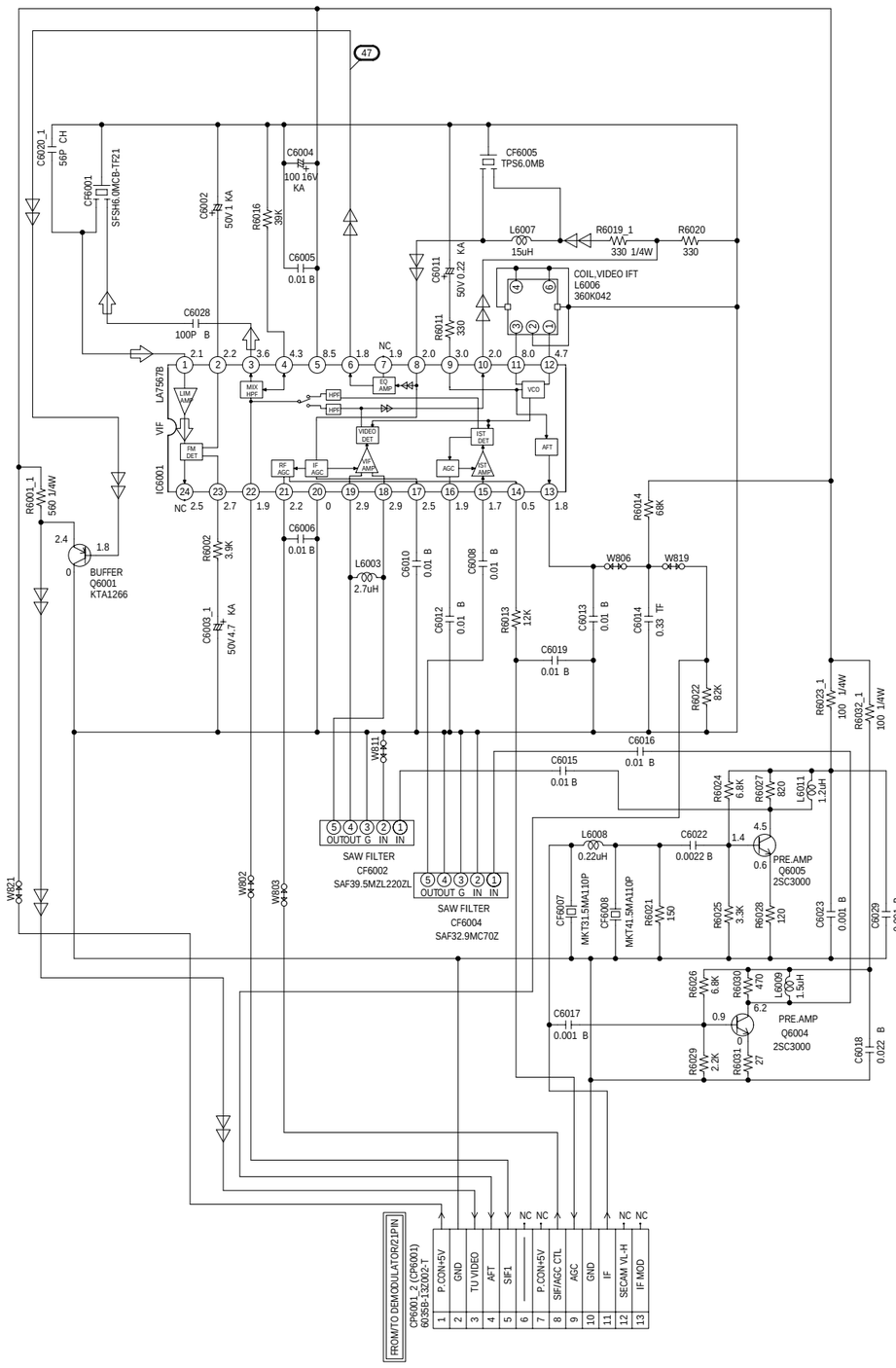
ATTENTION: LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

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

◀ AUDIO SIGNAL(PB)
⇦ AUDIO SIGNAL(REC)
⋘ TUNER AUDIO SIGNAL

IF SCHEMATIC DIAGRAM

(IF PCB)



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

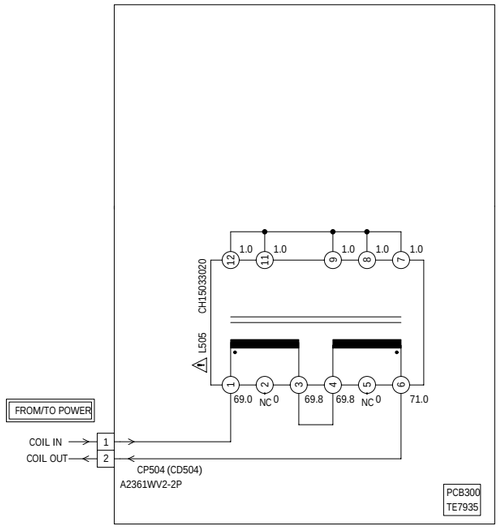
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

◁◁ TUNER VIDEO SIGNAL

⇦ AUDIO SIGNAL(REC)

CHOKE COIL SCHEMATIC DIAGRAM

(FILTER PCB)



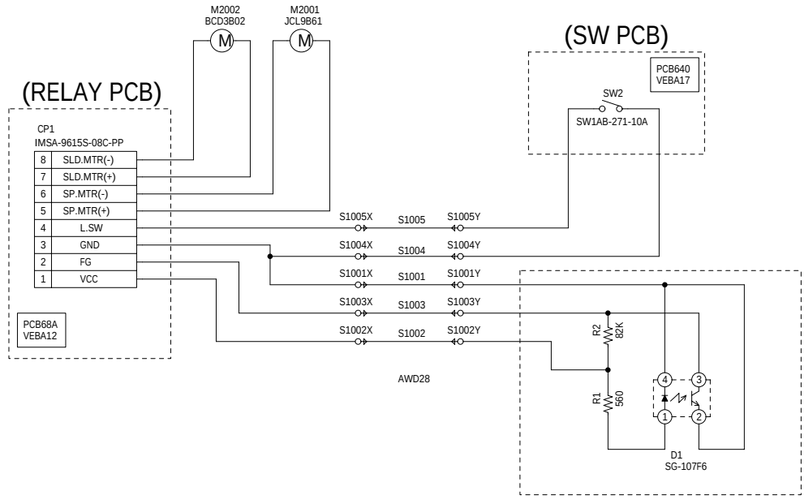
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER WHEN THE COLOR BROADCAST WAS RECEIVED IN GOOD CONDITION AND PICTURE IS NORMAL.

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 REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

RELAY/SW/FG SCHEMATIC DIAGRAM



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.

INTERCONNECTION DIAGRAM

DVD DRIVE DM-2

T-	24	24	T-
T+	23	23	T+
F-	22	22	F-
F+	21	21	F+
MON(DVD)	20	20	MON(DVD)
NC(SW)	19	19	NC(SW)
VOL(DVD)	18	18	VOL(DVD)
GND(DVD)	17	17	GND(DVD)
LD(DVD)	16	16	LD(DVD)
LD(CD)	15	15	LD(CD)
VOL(CD)	14	14	VOL(CD)
GND(CD)	13	13	GND(CD)
MON(COM)	12	12	MON(COM)
GND(NC)	11	11	GND(NC)
RF	10	10	RF
C	9	9	C
B	8	8	B
A	7	7	A
D	6	6	D
F	5	5	F
E	4	4	E
VCC	3	3	VCC
VREF	2	2	VREF
GND(PDIC)	1	1	GND(PDIC)

CD2001 — CP2001

OPTICAL PICK-UP

SPINDLE MOTOR

SLED,LOADING MOTOR

FG SENSER

SLD-	1	1	SLD-
SLD+	2	2	SLD+
SP1-	3	3	SP1-
SP1+	4	4	SP1+
LIMIT SW	5	5	LIMIT SW
GND	6	6	GND
SP_FG	7	7	SP_FG
+5V	8	8	+5V

CD2301 — FFC — CP2301

CLOSE	1	1	CLOSE
GND(D)	2	2	GND(D)
OPEN	3	3	OPEN

CP2302

DVD PCB
PCB130
VMB283

CD8505 — CP8001

GND	1	1	GND
GND	2	2	GND
TX	3	3	TX
RX	4	4	RX
GND(M)	5	5	GND(M)
P.CON+9V	6	6	P.CON+9V
P.CON+5V	7	7	P.CON+5V
P.CON+3.3V	8	8	P.CON+3.3V
P.CON+3.3V	9	9	P.CON+3.3V
GND	10	10	GND
SPDIF	11	11	SPDIF

CP8502 — CD8501 FFC — CP8002

CVBS	1	1	12	12	CVBS
GND	2	2	11	11	GND
C(CVBS)	3	3	10	10	C(CVBS)
GND	4	4	9	9	GND
Y(G)	5	5	8	8	Y(G)
GND	6	6	7	7	GND
AUDIO-L	7	7	6	6	AUDIO-L
GND	8	8	5	5	GND
AUDIO-R	9	9	4	4	AUDIO-R
ZERO	10	10	3	3	ZERO
DVD RESET	11	11	2	2	DVD RESET
GND	12	12	1	1	GND

CD8006

TV_POWER_H	1	1	TV_POWER_H
DEGAUSS	2	2	DEGAUSS
POWER FAIL	3	3	POWER FAIL
VCR_POWER_H	4	4	VCR_POWER_H
DVD_POWER_H	5	5	DVD_POWER_H
H_OUT	6	6	H_OUT
EMERGENCY	7	7	EMERGENCY
GND	8	8	GND
VD	9	9	VD
V_OUT	10	10	V_OUT
V_AMP	11	11	V_AMP
ABCL	12	12	ABCL
HD	13	13	HD

CP6001

13	IF MOD	13
12	SECAM VL-H	12
11	IF	11
10	GND	10
9	AGC	9
8	SIF/AGC CTL	8
7	P.CON+5V	7
6	———	6
5	SIF1	5
4	AFT	4
3	TU VIDEO	3
2	GND	2
1	P.CON+5V	1

IF PCB
PCB300
VEB983

STEREO PCB
PCB310
VEB981

CP6602

1	RESET'Q
2	REC_TU_AU-L
3	REC_TU_AU-R
4	REC_SIF
5	———

CP6601

1	P.CON+8V[VCR]
2	SDA
3	SCL
4	GND
5	GND
6	TU AUDIO-L
7	TU AUDIO-R
8	SIF
9	TU AUDIO
10	MONITOR_A-L
11	MONITOR_A-R
12	SOUND-L
13	SOUND-R

SPEAKER — SP353 8 OHM — WHITE
SPEAKER — SP351 8 OHM — BLACK — RED

CD352 — CP352

4	SP_OUT_L+
3	SOUND_L-
2	SOUND_R-
1	SP_OUT_R+

COMMAND TRANSMITTER
TM601

OS2202

Vout	1
GND	2
B+	3

FULL ERASE HEAD ASS'Y
H5002

CP4503

1	FE HEAD(HOT)
2	FE HEAD(GND)

HALL SENSOR — MAIN COIL — ROTOR MAGNET — MR FG SENSOR (VCC, O, G)

HALL VCC — HALL IN — OUT SWITCH LOGIC

CP1001

CAP FG	1	1	CAP FG
CAP VCO	2	2	CAP VCO
VCC	3	3	VCC
CAP.M/F/R	4	4	CAP.M/F/R
I LIMIT	5	5	I LIMIT
MOTOR GND	6	6	MOTOR GND
GND	7	7	GND
LD/CY VCO	8	8	LD/CY VCO
CAP CTL	9	9	CAP CTL
LDM CTL	10	10	LDM CTL
CYL FG/PG	11	11	CYL FG/PG
CYL CTL	12	12	CYL CTL

CAPSTAN DD UNIT
M2001

FFC — 1 2 3 4 5 6 7 — RED — WHITE — LM

LOADING MOTOR
M101

D-PG GND — D-PG OUT — M-GND — D-COM — D-W OUT — D-V OUT — D-U OUT

UN4001
CYLINDER UNIT

CP2201 — CD2251

KEY-B	1	1	KEY-B
GND	2	2	GND
KEY-A	3	3	KEY-A

OPERATION PCB
PCB270
TECB14

VCR PCB
PCB010
VMC296

21PIN JACK
J4201

CP4501

HF1 (R)	9	9	HF1 (R)
HF COM	8	8	HF COM
HF2 (L)	7	7	HF2 (L)
SP-CH1 (R)	6	6	SP-CH1 (R)
SP COM	5	5	SP COM
SP-CH2 (L)	4	4	SP-CH2 (L)
EP/LP-CH1 (R)	3	3	EP/LP-CH1 (R)
EP/LP COM	2	2	EP/LP COM
EP/LP-CH2 (L)	1	1	EP/LP-CH2 (L)

FPC — HI-FI HEAD — SP HEAD — EP/LP HEAD

REC TUNER
TU6001

11	IF
10	NC
9	+30V
8	NC
7	+5V
6	NC
5	SDA
4	SCL
3	NC
2	NC
1	AGC

MONITOR TUNER
TU601

11	IF
10	NC
9	+30V
8	NC
7	+5V
6	NC
5	SDA
4	SCL
3	NC
2	NC
1	AGC

HEAD AUDIO CONTROL ASS'Y
H5001

CP4505

AUDIO_REC	6	6	AUDIO PB
AUDIO_PB	5	5	AUDIO REC
CTL+	4	4	CTL+
CTL-	3	3	CTL-
AE HEAD(+)	2	2	AE HEAD(-)
AE HEAD(-)	1	1	AE HEAD(+)

FFC — AUDIO — CONTROL — AE

CP603

1	GND
2	SCL
3	SDA
4	NC_OFF
5	AGC
6	AGC_R
7	REC_AFT

AUDIO OUT J8007 — RED FRONT AUDIO JACK J2204 — WHITE FRONT AUDIO JACK J2203 — YELLOW FRONT VIDEO JACK J2202

HEADPHONE_JACK J2201

CP504 — FILTER PCB PCB00 TE7935 — CD504 — S1705 — S1706

DEGAUSS COIL — L1703 — CP1702

1	DEGAUSS COIL	1
2	DEGAUSS COIL	2

CP602

GND	1	1	GND

CP3603

GND	1

CP3602

1	TV_POWER_H
2	DEGAUSS
3	POWER FAIL
4	VCR_POWER_H
5	DVD_POWER_H
6	H_OUT
7	EMERGENCY
8	GND
9	VD
10	V_OUT
11	V_AMP
12	ABCL
13	HD

CP3601 — CD8005

P.CON+5V_B	15	15	P.CON+5V_B
P.CON+12V	14	14	P.CON+12V
P.CON+9V_D	13	13	P.CON+9V_D
P.CON+3.3V	12	12	P.CON+3.3V
P.CON+3.3V	11	11	P.CON+3.3V
GND	10	10	GND
GND	9	9	GND
AT+12V	8	8	AT+12V
MOTOR GND	7	7	MOTOR GND
DVD MOTOR GND	6	6	DVD MOTOR GND
AT+5.6V	5	5	AT+5.6V
UNREG+8V	4	4	UNREG+8V
SOUND GND	3	3	SOUND GND
SOUND+B	2	2	SOUND+B
P.CON+30V	1	1	P.CON+30V

MAIN PCB
PCB070
TMC568

CP1701

BROWN	2	2
	1	1
BLUE		

CD1701
AC230V-240V_50HzR

CP403

+B(A)	1	1
+B(B)	2	2

CP401 — FBT — FB401 — CP852A — HEATER — GND — 180V — CP402 — 5 4 3 2 1 — NC

FOCUS — SCREEN

CP851

CUT_OFF	7	7	CUT_OFF
GND	6	6	GND
R.OUT	5	5	R.OUT
G.OUT	4	4	G.OUT
B.OUT	3	3	B.OUT
SPOT_L	2	2	SPOT_L
WIDE SW	1	1	WIDE SW

V801 — ANODE — H.V — CRT

CP806 — SCREEN — FOCUS — CP852B — HEATER — GND — 180V

CRT SOCKET J801

CP853B

CUT_OFF	7
GND	6
R.OUT	5
G.OUT	4
B.OUT	3
SPOT_L	2
WIDE SW	1

CD1704 — SW1702 — S1703 — S1704 — BROWN — BROWN

POWER SW PCB
PCB320
TECB13

CRT PCB
PCB110
TCC429

CP801 — GND — GND

CD801

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

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

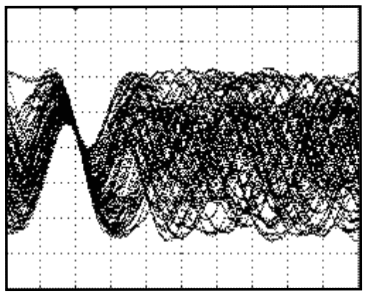
NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

WAVEFORMS

RF_AMP/DSP

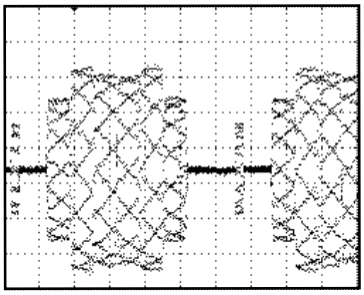
100ns
100mV

①



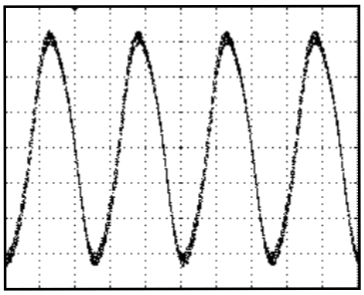
10µs
100mV

⑥



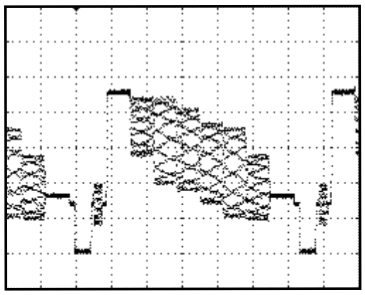
20ns
200mV

②



10µs
200mV

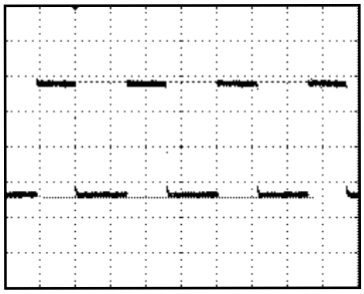
⑦



MOTOTR DRIVE

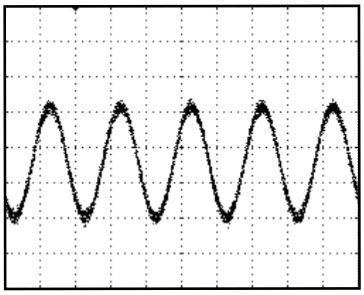
2ms
1.0V

③



500µs
500mV

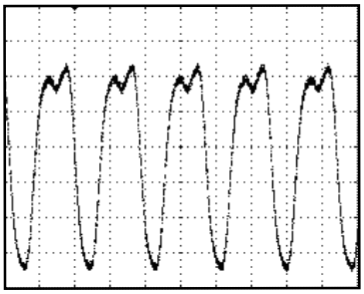
⑧



MPEG

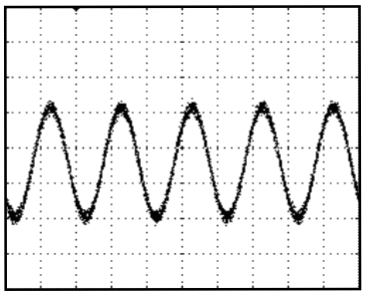
20ns
500mV

④



500µs
500mV

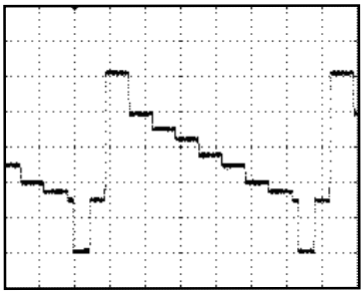
⑨



AUDIO/VIDEO

10µs
200mV

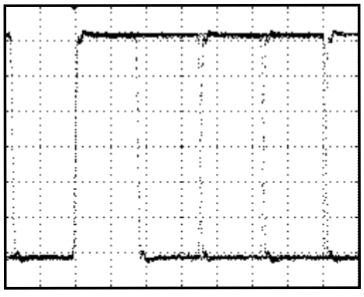
⑤



REGULATOR 2

100ns
500mV

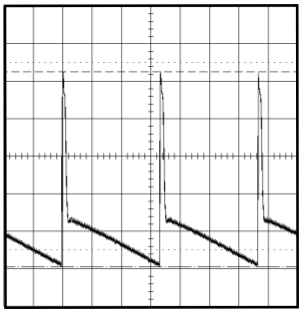
⑩



DEFLECTION

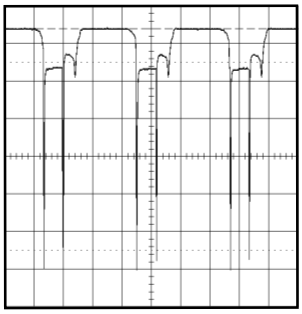
5ms
10.0V

⑪



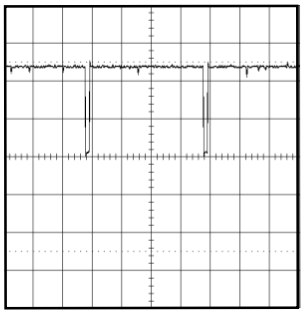
20µs
2.0V

⑫



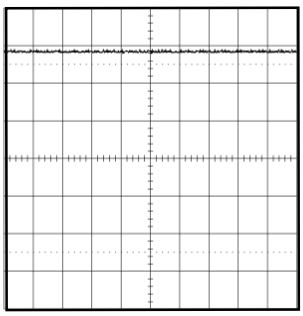
5ms
2.0V

⑬



0.1ms
20.0V

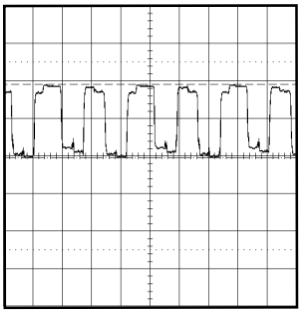
⑭



CRT

20µs
50.0V

⑮

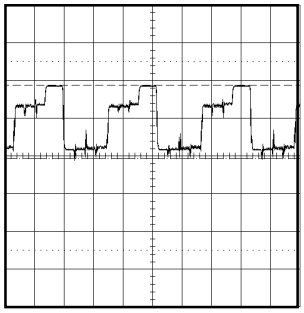


NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

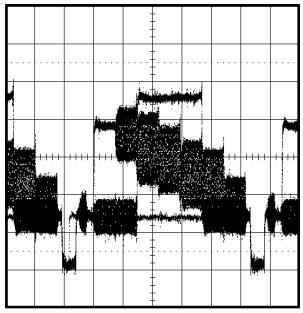
20µs
50.0V

⑯



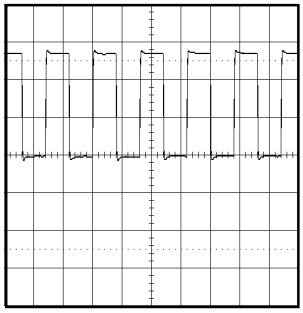
REC
10µs
0.5V

㉓



PB
0.5µs
2.0V

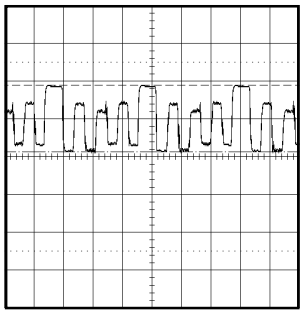
㉘



MICON

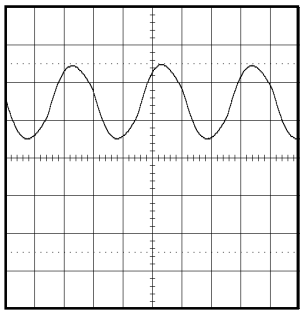
20µs
50.0V

⑰



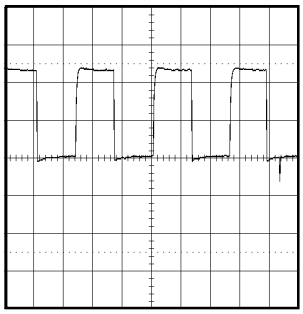
REC
10µs
1.0V

㉔



PB
5ms
2.0V

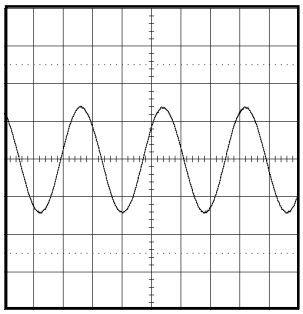
㉙



Y/C/AUDIO/HEAD AMP

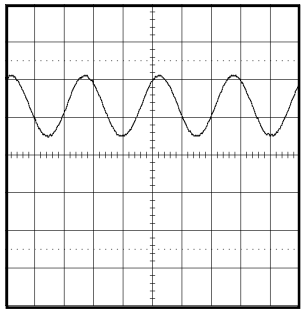
REC
5µs
20.0V

⑳



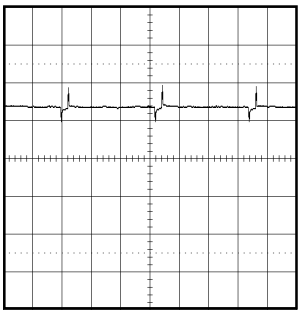
REC
1ms
2.0V

㉕



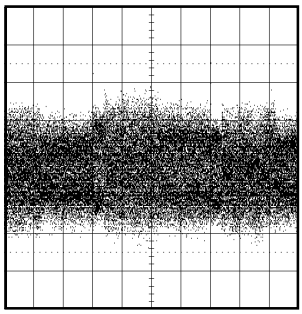
REC
20µs
2.0V

㉚



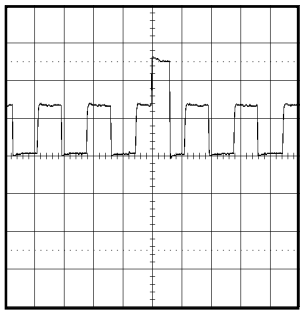
PB
5ms
50mV

㉑



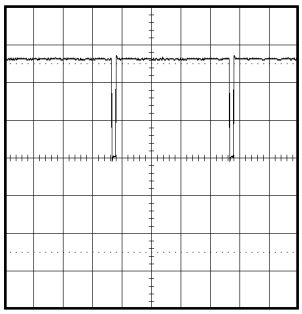
REC
1ms
2.0V

㉖



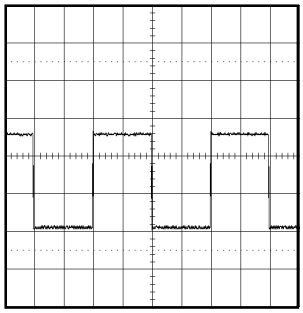
REC
5ms
2.0V

㉛



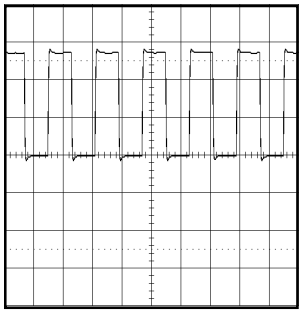
PB
10ms
2.0V

㉒



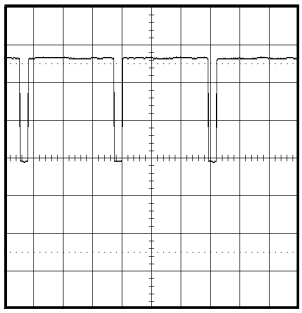
PB
0.5µs
2.0V

㉗



REC
20µs
2.0V

㉜



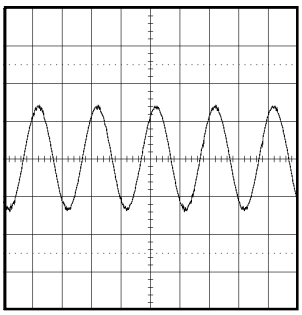
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

DVD IN/OUT

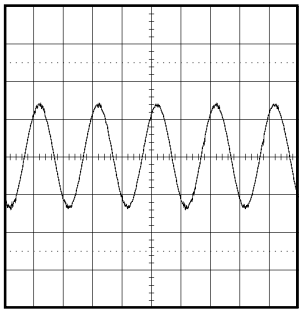
PB
0.5ms
0.5V

㉝



PB
0.5ms
0.5V

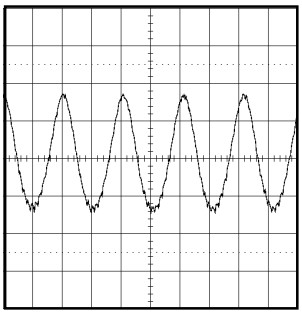
㉞



21PIN/IN/OUT

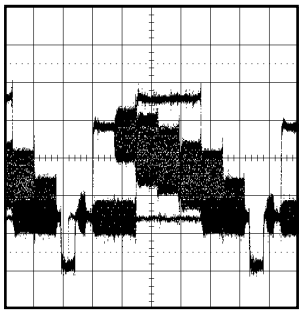
REC
0.5ms
0.5V

㉟



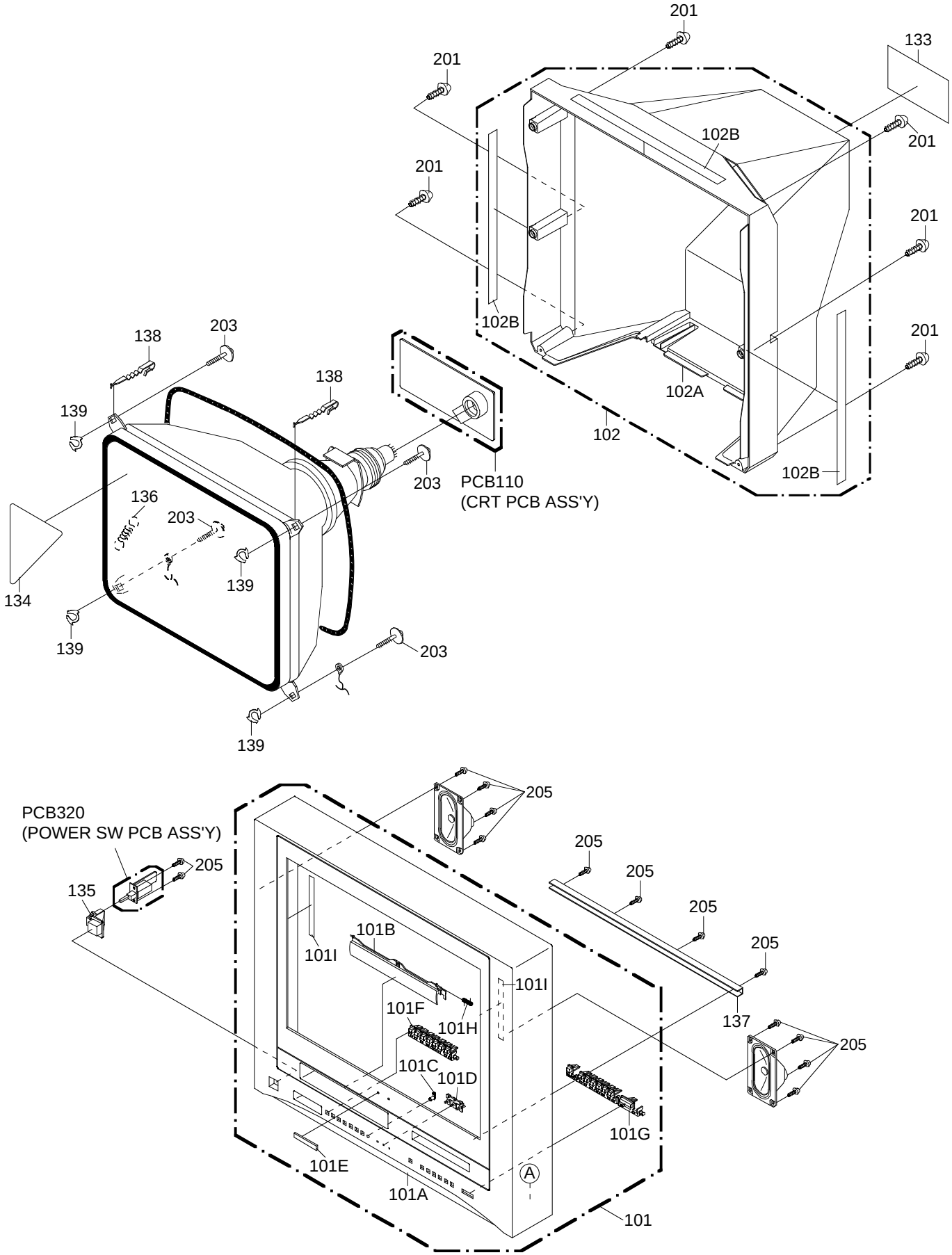
REC
10µs
0.5V

㊱

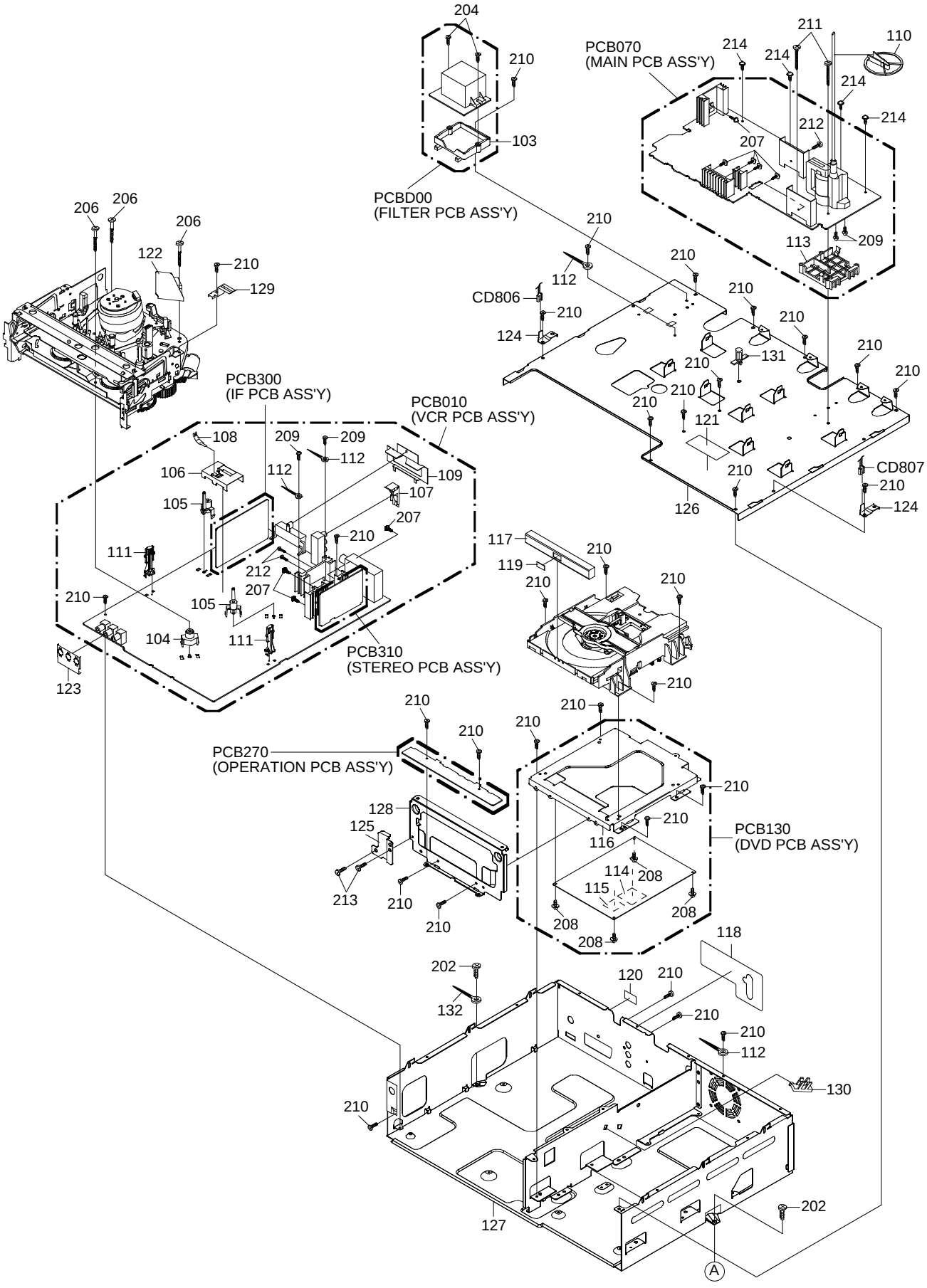


NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

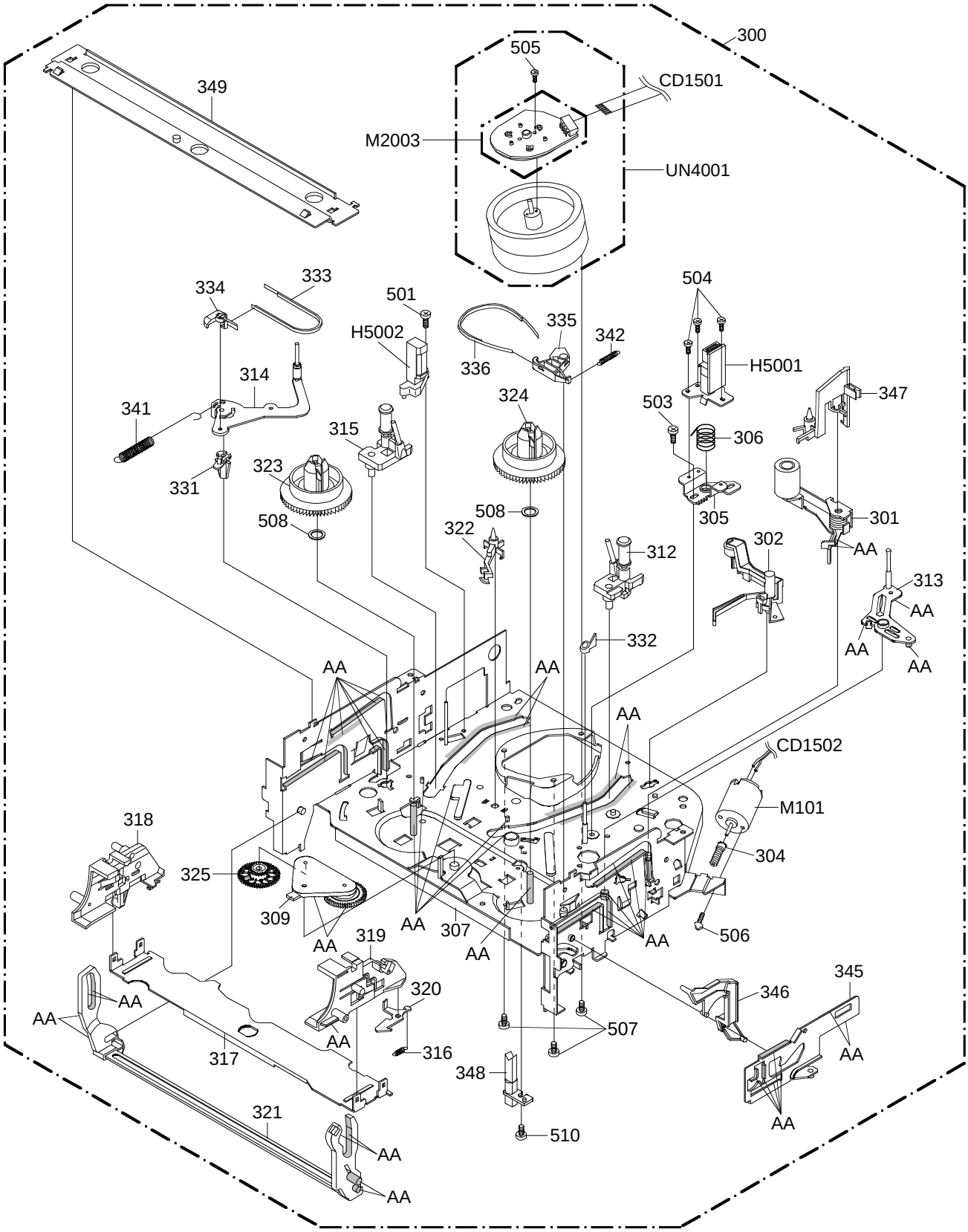
MECHANICAL EXPLODED VIEW



MECHANICAL EXPLODED VIEW



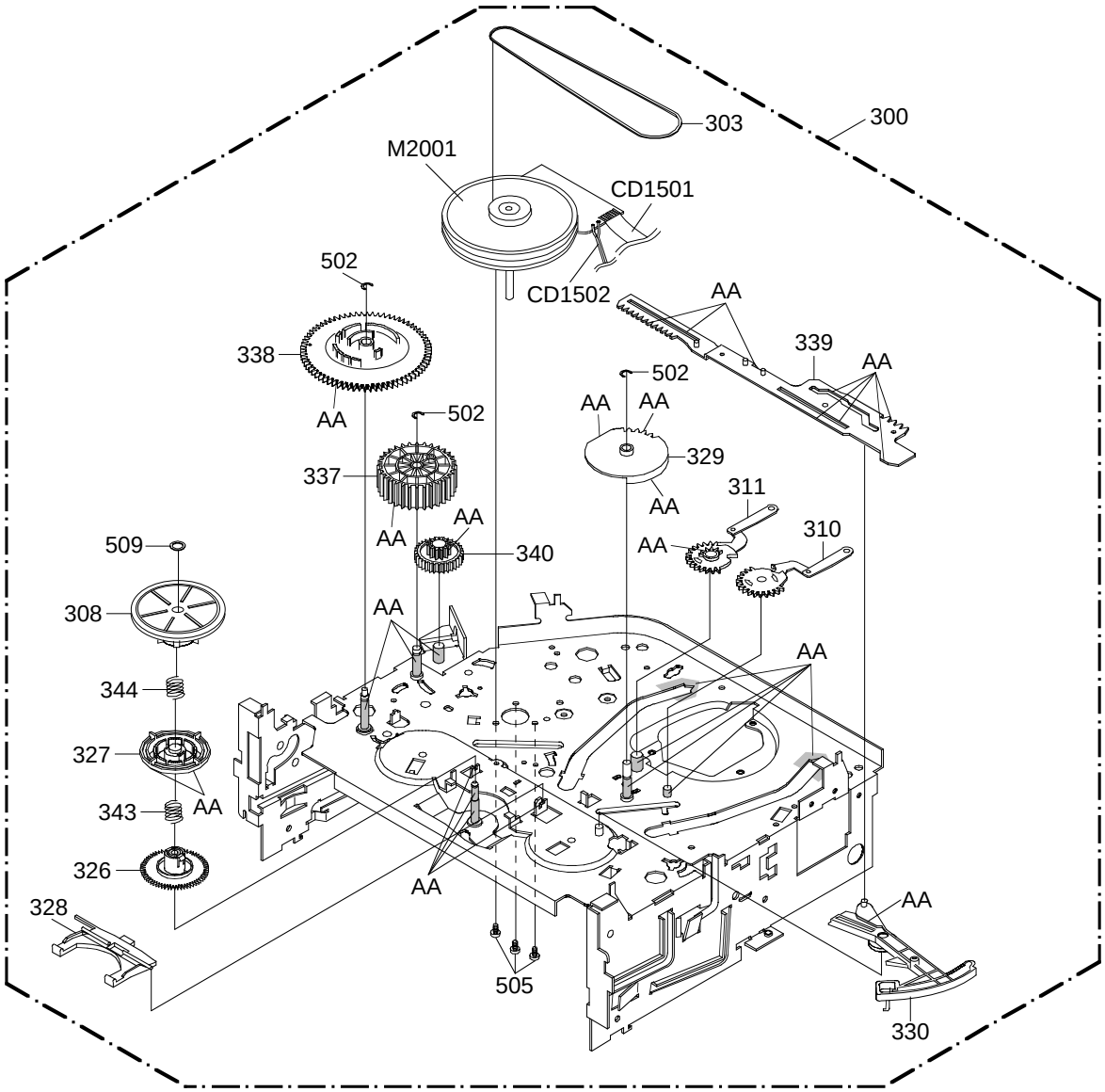
CHASSIS EXPLODED VIEW (TOP VIEW)



CLASS	MARK
GREASE	AA

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

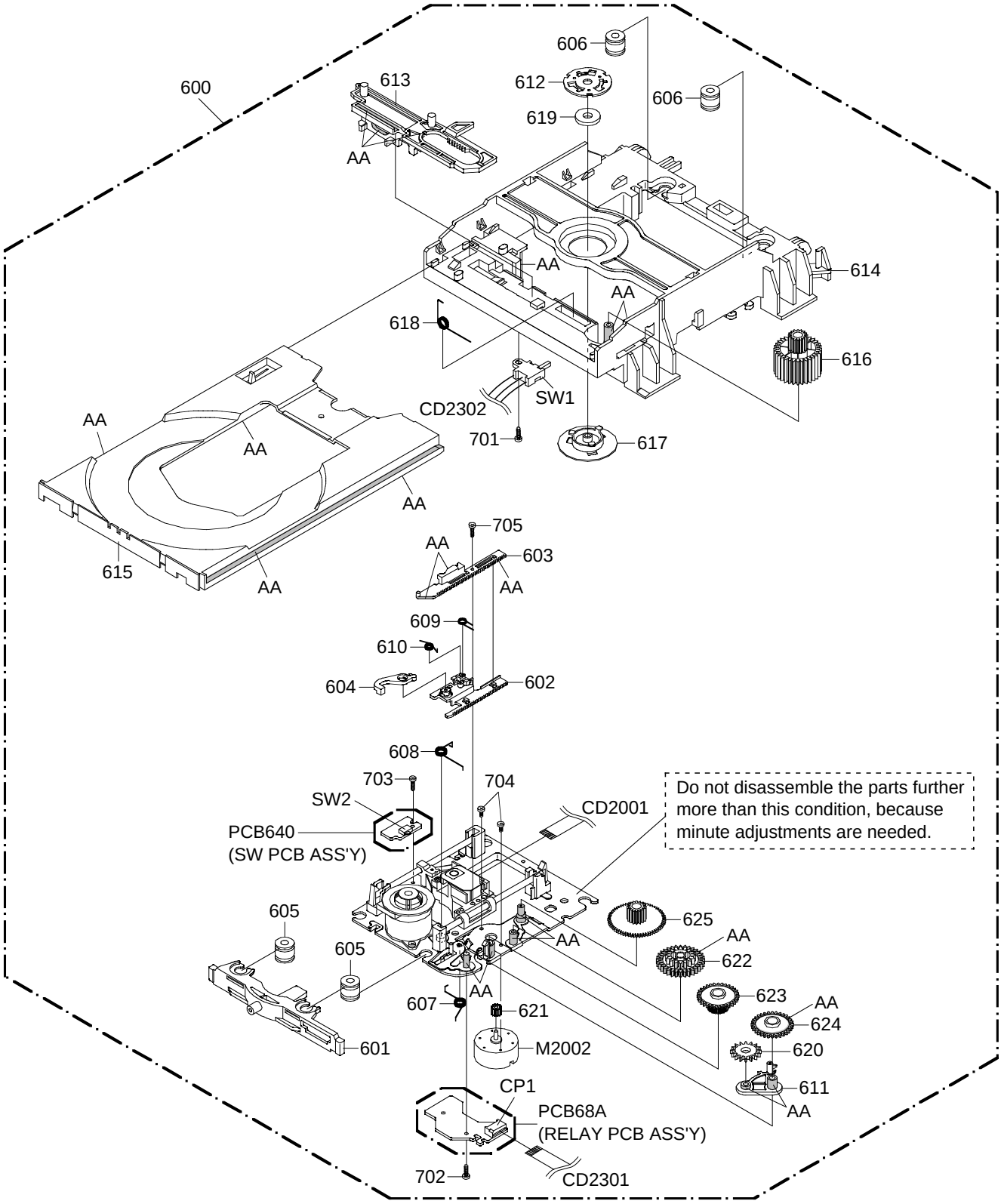
CHASSIS EXPLODED VIEW (BOTTOM VIEW)



CLASS	MARK
GREASE	AA

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

DVD DECK EXPLODED VIEW



CLASS	MARK
GREASE	AA

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

MECHANICAL REPLACEMENT PARTS LIST

Location	Part Number	Description	
101	A5G001A720	CABINET,FRONT ASSY	
101A	701WPJ1211	CABINET,FRONT	
101B	712WPJ0823	FLAP	
101C	713WPA0160	GUIDE,REMOCON	
101D	713WPA0195	GLASS,LED	
101E	7235490021	BADGE,BRAND	
101F	735WPB0261	BUTTON,FRAME1	
101G	735WPB0262	BUTTON,FRAME2	
101H	743WKA0032	SPRING,FLAP	
101I	800WQ00045	FELT SHEET	
102	A5G001A740	CABINET,BACK ASSY	
102A	702WPB0036	CABINET,BACK	
102B	800WQ00041	FELT SHEET	
103	761WPA0281	HOLDER,TRANS	
104	701WPA0686	HOLDER,DECK	
105	701WPA0751	HOLDER,DECK	
106	752WSA0230	SHIELD,CASE HEAD AMP	
107	752WSA0290	SHIELD,COMPO	
108	753WUAA006	SPRING,EARTH HEAD AMP	
109	761WSA0098	SHIELD,21PIN	
110	899HV3T000	HOLDER,ANODE WIRE	
111	85OP700038	HOLDER,END SENSOR	
112	8995034000	CORD CLIP UL CO.	
113	761WPA0223	HOLDER,FBT	
114	7232020744	SHEET,IC	
115	7232020745	SHEET,IC	
116	761WSA0099	ANGLE,DECK	
117	712WPB0158	PLATE,TRAY-FRONT	
118	7230007658	SHEET,JACK	
119	7235630001	SHEET,DVD	
120	7250000583	SHEET,PVC	
121	7260000341	SHEET,CAUTION	
122	752WSA0275	COVER,AC HEAD	
123	752WSA0292	SHIELD,AV JACK	
124	752WSA0319	ANGLE,ANTENNA 2	
125	752WSA0343	HOLDER,VCR	
126	752WSA0353	SHIELD,TOP	
127	752WSA0354	PLATE,BOTTOM ASS'Y	
128	753WSA0163	SHIELD,FRONT	
129	753WUA0062	SPRING,EARTH-TOP	
130	774WPA0002	HOLDER,WIRE	
131	890PS70100	PUSH SPACER	
132	899EFBA001	WIRING CLIP	
133	7225490115	SHEET,RATING	
134	7230007680	POP LABEL	
135	735WPJ0238	BUTTON,POWER	
136	741WUA0001	SPRING,EARTH	
137	752WSA0287	ANGLE,FRONT	
138	762WPA0011	HOLDER,CRT WIRE	
139	769WSA0011	WASHER CRT T=0.5	
201	8117540A64	SCREW,TAPPING(B0) TRUSS	4x16
202	8117540804	SCREW,TAPPING(B0) TRUSS	4x8
203	8141J50C54	SCREW,TAP TITE(P) GW22	5x35
204	8110630A04	SCREW,TAP TITE(P) BRAZIER	3x10
205	8110630804	SCREW,TAP TITE(P) BRAZIER	3x8
206	8109130B94	SCREW,TAP TITE(B) R PAN	3x29
207	8109I30A04	SCREW,TAP TITE(B) WH7	3x10
208	8109I30804	SCREW,TAP TITE(B) WH7	3x8
209	8109630802	SCREW,TAP TITE(B) BRAZIER	3x8
210	8109230804	SCREW,TAP TITE(B) BIND	3x8
211	8107630B04	SCREW,TAP TITE(S) BRAZIER	3x20
212	8107630804	SCREW,TAP TITE(S) BRAZIER	3x8
213	8107230804	SCREW,TAP TITE(S) BIND	3x8
214	8107930604	SCREW,CUP(S)	3x6
---	7230007657	SHEET,BARCODE	
---	791WHA0085	LAMIFILM,BAG	
---	792WHA0352	PACKAGE,TOP	
---	792WHA0473	PACKAGE,BOTTOM	
---	793WCD1485	GIFT BOX	
---	A5G001A975	INSTRUCTION BOOK KIT	
---	J2B52541A	HELPLINE SHEET	
---	J5705417	REGISTRATION CARD	
---	J5G00101A	INSTRUCTION BOOK	
---	J5G00107A	QUICK SET-UP SHEET	
---	JB5UD400	POLYBAG,INSTRUCTION(RED CAUTION)	

CHASSIS REPLACEMENT PARTS LIST

	Location	Part Number	Description	
	300	A5F602A420A	DECK ASSY	A5F602A420A
	301	85OA400234	PINCH ROLLER BLOCK	
	302	85OA500026	AHC ASS'Y	
	303	85OP200290	BELT,CAPSTAN (S)	
	304	85OP600581	WORM	
	305	85OP500083	BASE,AC HEAD	
	306	85OP800324	SPRING,AC HEAD	
	307	85OA000459	MAIN CHASSIS ASS'Y	
	308	85OA200089	CLUTCH ASS'Y	
	309	85OA200090	ARM IDLER ASS'Y	
	310	85OA300065	LOADING ARM S UNIT	
	311	85OA300066	LOADING ARM T UNIT	
	312	85OA400223	INCLINED BASE T UINT 3S	
	313	85OA400232	P5 ARM ASS'Y 2	
	314	85OA400235	TENSION ARM ASS'Y 2	
	315	85OA400231	INCLINED BASE S UNIT	
	316	85OP800367	SPRING LOCKER	
	317	85OP900736	CASS,HOLDER	
	318	85OP900748	CASS,SIDE L	
	319	85OP900749	CASS,SIDE R	
	320	85OP900739	LOCKER,R	
	321	85OA900228	LINK UNIT	
	322	85OP000496	POST,CASS GUIDE	
	323	85OP200316	REEL,S (S)	
	324	85OP200317	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	85OP400542	BAND,TENSION	
	334	85OP400533	CONNECT,TENSION	
	335	85OP600573	ARM,BRAKE T	
	336	85OP600584	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	85OP800360	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	85OP700035	REFLECTOR,LED	
	349	85OP900746	BRACKET,TOP 3V	
	501	8107226804	SCREW,TAP TITE(S) BIND	2.6x8
	502	83ETW30000	E-RING	3.0
	503	8107226404	SCREW,TAP TITE(S) BIND	2.6x4
	504	8102120604	SCREW,PAN	M2x6
	505	8109126604	SCREW,TAP TITE(B) PAN	2.6x6
	506	810A130404	SCREW/WASHER(A)	M3x4
	507	810A126504	SCREW/WASHER(A)	M2.6x5
	508	82Q264713N	POLYSLIDER WASHER	2.6x4.7xT0.13
	509	82P184505N	POLYSLIDER WASHER(CUT)	1.8x4.5xT0.5
	510	8107226604	SCREW,TAP TITE(S) BIND	2.6x6
	CD1501	122H071704	CORD JUMPER	2H071704
	CD1502	122Y021002	CORD JUMPER	2Y021002
	H5001	1523Q91003	HEAD (AUDIO CONTROL)	VTR-1X2RPE22-756
	H5002	1543Q02014	HEAD (FULL ERASE)	VTR-1X2ERS11-154
⚠	M101	1596S98001	MOTOR (LOADING)	MDB2B66
⚠	M2001	1510S98038	CAPSTAN DD UNIT	F2QVB33
	M2003	1589S11017	MICRO MOTOR	I2OAL05
⚠	UN4001	A2A741B500	CYLINDER UNIT ASS'Y	A2A741B500

DVD DECK REPLACEMENT PARTS LIST

	Location	Part Number	Description	
	600	A5F101H650	DECK ASSY	A5F101H650
	601	92P100022A	TRAVERSE HOLDER	
	602	92P100032A	RACK,FEED 1	
	603	92P100033A	RACK,FEED 2	
	604	92P100035A	LEVER,RACK FEED	
	605	92P200006A	INSULATOR(F)	
	606	92P200007A	INSULATOR(R)	
	607	92P300008A	SPRING,CHASSIS	
	608	92P300005A	SPRING,ARM IDLER	
	609	92P300006A	SPRING,RACK FEED 2	
	610	92P300007A	SPRING,RACK FEED 1	
	611	92P100031A	ARM,IDLER	
	612	92P000001A	CLAMPER PLATE	
	613	92P100019A	RACK,LOADING	
	614	92P100020A	MAIN FRAME M	
	615	92P100021A	TRAY	
	616	92P100023A	GEAR,MAIN	
	617	92P100024A	CLAMPER	
	618	92P300002A	SPRING,RACK LOADING	
	619	92P400002A	MAGNET,CLAMPER	
	620	92P100030A	GEAR,IDLER	
	621	92P100025A	GEAR,MOTOR	
	622	92P100026A	GEAR,MIDDLE 1	
	623	92P100027A	GEAR,MIDDLE 2	
	624	92P100028A	GEAR,MIDDLE 3	
	625	92P100029A	GEAR,FEED	
	701	8110226804	SCREW,TAP TITE(P) BIND	2.6x8
	702	8110120604	SCREW,TAP TITE(P) PAN	2x6
	703	8107220504	SCREW,TAP TITE(S) BIND	2x5
	704	8140117254	SCREW,PAN	M1.7x2.5 P3
	705	8110220804	SCREW,TAP TITE(P) BIND	2x8
	CD2001	122H0O1901	CORD JUMPER	2H0O1901
	CD2301	122H080701	CORD JUMPER	2H080701
	CD2302	06CH232101	CORD CONNECTOR	CH232101
	CP1	069JV80180	CONNECTOR PCB SIDE	IMSA-9615S-08C-PP
⚠	M2002	1515S98001	FEED MOTOR	BCD3B81
	PCB640	A5E601V640	PCB ASS'Y	VEBA17A
	PCB68A	A5E601V680	PCB ASS'Y	VEBA12A
	SW1	0515S32001	SWITCH	SSS-23-6
	SW2	0500S01032	PUSH LEVER SWITCH	SW1AB-271-10A

ELECTRICAL REPLACEMENT PARTS LIST

Location	Part Number	Description		
		RESISTORS		
R307	R3X28A010J	R,METAL OXIDE	1 OHM 2W	
⚠R402	R3X28AR56J	R,METAL OXIDE	0.56 OHM 2W	
⚠R408	R3X18A221J	R,METAL OXIDE	220 OHM 2W	
⚠R426	R5X2CD4R7J	R,CEMENT	4.7 OHM 5W	
⚠R430	R3X18A221J	R,METAL OXIDE	220 OHM 2W	
⚠R447	R65582680J	R,FUSE	68 OHM 1/2W	
⚠R448	R3K181102J	R,METAL	1K OHM 1W	
⚠R450	R6358A2R2J	R,FUSE	2.2 OHM 2W	
⚠R803	R3X18A123J	R,METAL OXIDE	12K OHM 2W	
⚠R805	R3X18A123J	R,METAL OXIDE	12K OHM 2W	
⚠R807	R3X18A123J	R,METAL OXIDE	12K OHM 2W	
⚠R1701	R002T2155J	RC	1.5M OHM 1/2W	
⚠R1703	R63581R22J	R,FUSE	0.22 OHM 1W	
⚠R1704	R5X2CE2R2J	R,CEMENT	2.2 OHM 7W	
⚠R1706	R3X28BR27J	R,METAL OXIDE	0.27 OHM 3W	
R1707	R5X34F332J	R,CEMENT	0 3.3K OHM 10W	
⚠R1730	R3X181R15J	R,METAL OXIDE	0.15 OHM 1W	
⚠R1735	R3X28B104J	R,METAL	100K OHM 3W	
⚠R3002	R655U4100J	R,FUSE	10 OHM 1/4W	
⚠R3006	R655U4100J	R,FUSE	10 OHM 1/4W	
⚠R3108	R655U4100J	R,FUSE	10 OHM 1/4W	
⚠R3608	R655U4100J	R,FUSE	10 OHM 1/4W	
⚠R3612	R635U4220J	R,FUSE	22 OHM 1/4W	
⚠R3614	R635U4220J	R,FUSE	22 OHM 1/4W	
⚠R3623	R3X28B010J	R,METAL	1 OHM 3W	
		CAPACITORS		
C303	CQGTB0414K	CC	0.01 UF 50V B	
C322	E02LF3102M	CE	1000 UF 25V	
C405	E5EZF3222M	CE	2200 UF 25V	
C421	E5EZF4102M	CE	1000 UF 35V	
C423	P4J7F3394J	CMPP	0.39 UF 250V PMS	
C424	P4N8FJ133H	CMPP	0.013 UF 1.25KV	
C431	E5EZFD220M	CE	22 UF 250V	
C450	C0PLRR713K	CC	0.001 UF 2KV R	or
	C03L0R713K	CC	0.001 UF 2KV R	
C802	C0JBB07H3K	CC	0.0022UF 2KV B	
C1003	E51A0P104Z	CE	0.1 F 5.5V	
⚠C1701	P2122B224M	CMP	0.22 UF 275V ECQUL	
C1703	C0JBB07H3K	CC	0.0022UF 2KV B	
C1704	C0JBB07H3K	CC	0.0022UF 2KV B	
C1705	E52D0H221M	CE	220 UF 400V	
C1712	E5EZF3102M	CE	1000 UF 25V	
C1713	E5EZF2222M	CE	2200 UF 16V	
C1715	C0PLRR7H2K	CC	220 PF 2KV R	
C1717	E62NFC221M	CE	220 UF 200V	
⚠C1718	CD39B0MQ2K	CC	470 PF 250V	
⚠C1727	CD39B0MQ2K	CC	470 PF 250V	
⚠C1728	CD39E0M13M	CC	0.001 UF 250V	
C1730	E02LF3222M	CE	2200 UF 25V	
⚠C1732	CD39E0M13M	CC	0.001 UF 250V	
C1733	P3N1F5103J	CPP	0.01 UF 630V	
C1734	C0PLRR712K	CC	100 PF 2KV R	
C1735	C0PLRR7H2K	CC	220 PF 2KV R	
C3010	E02LT2102M	CE	1000 UF 16V	
C3012	E50HU2100M	CE	10 UF 16V	
C3616	E0ELF2222M	CE	2200 UF 16V	
C6029	CHG0B0413K	CC	0.001 UF 50V B	
C6640	CQGTCH4H2J	CC	220 PF 50V CH	
C6641	CQGTCH4H2J	CC	220 PF 50V CH	
		DIODES		
D351	D1VT001330	DIODE,SILICON	1SS133T-77	
D403	D2WT011E10	DIODE,SILICON	11E1-EIC	
D404	D2WT011E10	DIODE,SILICON	11E1-EIC	
D406	D2WT011E10	DIODE,SILICON	11E1-EIC	
D407	D2WT11ES10	DIODE,SILICON	11ES1-EIC	
D411	D2WXN49370	DIODE,SILICON	1N4937	
D413	D2WXN49370	DIODE,SILICON	1N4937	
D602	D2WT011E10	DIODE,SILICON	11E1-EIC	
D603	D2WT011E10	DIODE,SILICON	11E1-EIC	
D606	D97U08R21B	DIODE,ZENER	MTZJ8.2B T-77	
D607	D97U08R21B	DIODE,ZENER	MTZJ8.2B T-77	
D608	D97U08R21B	DIODE,ZENER	MTZJ8.2B T-77	
D609	D97U01001B	DIODE,ZENER	MTZJ10B T-77	
D610	D2WXSB1400	DIODE,SCHOTTKY	SB140-EIC	
D801	D1VT001330	DIODE,SILICON	1SS133T-77	
D802	D1VT001330	DIODE,SILICON	1SS133T-77	
D803	D1VT001330	DIODE,SILICON	1SS133T-77	

ELECTRICAL REPLACEMENT PARTS LIST

Location	Part Number	Description		
		DIODES		
D804	D1VT001330	DIODE,SILICON	1SS133T-77	
D805	D1VT001330	DIODE,SILICON	1SS133T-77	
D806	D1VT001330	DIODE,SILICON	1SS133T-77	
D1001	D97U06R21B	DIODE,ZENER	MTZJ6.2B T-77	
D1003	0010E00330	INFRARED LED	LTE-3271T-012A-O	
D1005	D1VT001330	DIODE,SILICON	1SS133T-77	
D1006	D2WXSB1400	DIODE,SCHOTTKY	SB140-EIC	
D1008	D97U05R11B	DIODE,ZENER	MTZJ5.1B T-77	
D1010	D2WXSB1400	DIODE,SCHOTTKY	SB140-EIC	
D1021	D1VT001330	DIODE,SILICON	1SS133T-77	
D1201	D1VT001330	DIODE,SILICON	1SS133T-77	
D1202	D2WXSB1400	DIODE,SCHOTTKY	SB140-EIC	
D1252	D1VT001330	DIODE,SILICON	1SS133T-77	
D1261	D1VT001330	DIODE,SILICON	1SS133T-77	
⚠D1701	D2WTRM11C0	DIODE,SILICON	RM11C-EIC	
⚠D1702	D2WTRM11C0	DIODE,SILICON	RM11C-EIC	
⚠D1703	D2WTRM11C0	DIODE,SILICON	RM11C-EIC	
⚠D1704	D2WTRM11C0	DIODE,SILICON	RM11C-EIC	
D1706	D1VT001330	DIODE,SILICON	1SS133T-77	
D1708	D1VT001330	DIODE,SILICON	1SS133T-77	
D1709	D2WXN49370	DIODE,SILICON	1N4937	
D1712	D97U05R61B	DIODE,ZENER	MTZJ5.6B T-77	
⚠D1713	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1	
⚠D1715	D2LKB340L0	DIODE,SCHOTTKY	SB340L-6737	
⚠D1716	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1	
⚠D1717	D28T21DQN9	DIODE,SCHOTTKY	21DQ09N-TA2B1	
D1719	D2WXRU2AM0	DIODE,SILICON	RU2AM-EIC	
⚠D1720	D2WXN49370	DIODE,SILICON	1N4937	
⚠D1721	D2WXRU3AM0	DIODE,SILICON	RU3AM-EIC	
D1723	D1VT001330	DIODE,SILICON	1SS133T-77	
D1725	D1VT001330	DIODE,SILICON	1SS133T-77	
⚠D1727	D28F31DQ06	DIODE,SILICON	31DQ06-FC	
D2001	DDARDS1210	DIODE,SILICON	KDS121RTK	
D2002	DDARDS1200	DIODE,SILICON	KDS120RTK	
D2201	0021721150	LED	SLR-342VCT32	
D2203	0021721150	LED	SLR-342VCT32	
D2204	0021721150	LED	SLR-342VCT32	
D2301	DDDRL41480	DIODE,SILICON	MCL4148	
D3001	D97U01501B	DIODE,ZENER	MTZJ15B T-77	
D3002	D97U01201B	DIODE,ZENER	MTZJ12B T-77	
D3003	D2WT011E10	DIODE,SILICON	11E1-EIC	
D3602	D97U03301B	DIODE,ZENER	MTZJ33B T-77	
D4203	D1VT001330	DIODE,SILICON	1SS133T-77	
D4501	D1VT001330	DIODE,SILICON	1SS133T-77	
D8501	DDDRL41480	DIODE,SILICON	MCL4148	
D8502	DDDRL41480	DIODE,SILICON	MCL4148	
D8503	DDDRL41480	DIODE,SILICON	MCL4148	
D8504	DDDRL41480	DIODE,SILICON	MCL4148	
D8505	DDDRL41480	DIODE,SILICON	MCL4148	
D8506	DDDRL41480	DIODE,SILICON	MCL4148	
D8510	DDDRL41480	DIODE,SILICON	MCL4148	
		ICS		
⚠IC353	I0FSP7522N	IC	AN7522N	
⚠IC401	I0WTD81740	IC	TDA8174A	
IC601	I0WDE2247E	IC	STV2247E	
IC603	I03D079560	IC	LA7956	
IC1003	I9UF032310	IC	PST3231NR	
IC1006	I54F50136A	IC	OEC0136A	
IC1099	A5G001A015	IC	S-24C08ADPA-01	
IC1201	ICKF0310A0	IC	ET-TVT0310A	
IC1202	I0UF012310	IC	MM1231XF	
IC1203	I0UF015040	IC	MM1504XNRE	
⚠IC1701	I2BT068530	IC	STR-W6853	
⚠IC1704	000220001W	PHOTO COUPLER	PS2561L1-1-V(W)	
IC2001	I0GF9XZ010	IC	PQ070XZ01ZP	
IC2002	I5PK063150	IC	L6315ATXXTY	or
	I5PKL63150	IC	L6315ATXXTV	
IC2003	I5FJ0128V7	IC	CY62128VLL-70ZC	or
	I5PJ027BL7	IC	M68AW127BM70N6	
IC2301	I03F065600	IC	LA6560	
IC2302	I07E00358F	IC	BA10358F-E2	
IC2303	I07E00358F	IC	BA10358F-E2	
IC2304	I07E00358F	IC	BA10358F-E2	
⚠IC3002	I1KA97805A	IC	KIA7805API	
⚠IC3003	I1KA97805A	IC	KIA7805API	
⚠IC3101	I1KA97809A	IC	KIA7809API	
⚠IC3601	I1KA97809A	IC	KIA7809API	

ELECTRICAL REPLACEMENT PARTS LIST

Location	Part Number	Description	
		ICS	
⚠IC3602	I1KA97805A	IC	KIA7805API
⚠IC3603	I1KA97805A	IC	KIA7805API
IC4002	I5PK055190	IC	STI5519AVB
IC4003	I5CF0CU040	IC	SN74AHCU04PWR
IC4007	IF6J016A27	IC	MT48LC4M16A2TG-75
IC4012	I5PJ000DT7	IC	M29W800DT70N6
IC4201	I0QF045800	IC	NJM4580M
IC4202	I0UF015010	IC	MM1501XNRE
IC4203	I0UF015010	IC	MM1501XNRE
IC4204	I0UF015010	IC	MM1501XNRE
IC4205	I0UF015010	IC	MM1501XNRE
IC4501	I04F38225F	IC	HA118225F
IC4502	I3EF656500	IC	SDA5650/X
IC5501	I0KF79605H	IC	TDA9605H
IC5502	I0UF015010	IC	MM1501XNRE
IC5503	I0UF015010	IC	MM1501XNRE
IC6001	I03D7567B0	IC	LA7567B
IC6601	I19FF34170	IC	MSP3417G-QG-B8
IC6602	I19FF34150	IC	MSP3415G-QG-B8
⚠IC6603	I1KA97805A	IC	KIA7805API
IC8502	I17F0742K0	IC	PCM1742KE/2K
IC8504	I0GF9Z01Z0	IC	PQ025EZ01ZP
		TRANSISTORS	
Q301	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q302	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q303	TNAAB05003	COMPOUND TRANSISTOR	KRC102SRTK
Q305	TNAAJ05003	COMPOUND TRANSISTOR	KRC111SRTK
Q306	TNAAJ05003	COMPOUND TRANSISTOR	KRC111SRTK
Q401	TA3T016240	TRANSISTOR,SILICON	2SA1624-AA
Q405	TCAT03227Y	TRANSISTOR,SILICON	KTC3227_Y-AT
⚠Q406	TDUU024990	TRANSISTOR,SILICON	2SD2499(LB0EC1)
Q602	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q603	TPAAB05001	COMPOUND TRANSISTOR	KRA102SRTK
Q604	T8AA03881S	TRANSISTOR,SILICON	KTC3881S-RTK
Q607	TC3T030000	TRANSISTOR,SILICON	2SC3000-AA
Q608	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q610	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q611	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q612	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q613	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q614	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
⚠Q801	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
⚠Q802	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
⚠Q803	TCATC3199Y	TRANSISTOR,SILICON	KTC3199_Y-AT
⚠Q804	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
⚠Q805	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
⚠Q806	TCA0042170	TRANSISTOR,SILICON	KTC4217(O,Y)
Q1001	0002700690	PHOTO COUPLER	RPI-303
Q1002	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q1003	0002700680	PHOTO COUPLER	RPI-352C40N
Q1004	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q1005	0002700690	PHOTO COUPLER	RPI-303
Q1006	0000M00390	PHOTO TRANSISTOR	ST-304L
Q1007	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q1008	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q1009	0002700680	PHOTO COUPLER	RPI-352C40N
Q1010	TPAAC05002	COMPOUND TRANSISTOR	KRA103SRTK
Q1011	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q1015	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q1016	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q1017	0000M00390	PHOTO TRANSISTOR	ST-304L
Q1101	TDAT00863Y	TRANSISTOR,SILICON	KTD863_Y-AT
Q1104	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q1253	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q1262	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q1703	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q1705	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q1706	TCAT032070	TRANSISTOR,SILICON	KTC3207-AT
Q2001	T67J1036K0	TRANSISTOR,SILICON	2SA1036KT146
Q2003	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q2004	T27T030180	FET	2SK3018
Q2005	T27T030180	FET	2SK3018
Q2006	T67J1036K0	TRANSISTOR,SILICON	2SA1036KT146
Q2007	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q2008	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q2009	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q2301	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK

ELECTRICAL REPLACEMENT PARTS LIST

Location	Part Number	Description		
		TRANSISTORS		
Q2302	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK	
Q2303	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S	
Q2304	TNAAB05003	COMPOUND TRANSISTOR	KRC102SRTK	
Q2305	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK	
⚠Q3001	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT	
⚠Q3002	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT	
⚠Q3006	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT	
⚠Q3101	TAAT01281Y	TRANSISTOR,SILICON	KTA1281_Y	
Q3102	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q3601	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT	
⚠Q3602	TBA0013660	TRANSISTOR,SILICON	KTB1366(O,Y)	
Q3603	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT	
⚠Q3605	TAAT01281Y	TRANSISTOR,SILICON	KTA1281_Y	
Q3606	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)	
⚠Q3607	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT	
⚠Q3608	TA3T1371A0	TRANSISTOR,SILICON	2SA1371(D,E)-AE	
Q3609	TC3T029090	TRANSISTOR,SILICON	2SC2909(S,T)-AA	
Q3611	TNATC03002	COMPOUND TRANSISTOR	KRC103MAT	
Q4001	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q4002	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q4003	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK	
Q4201	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q4202	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S	
Q4203	TNAAD05001	COMPOUND TRANSISTOR	KRC104SRTK	
Q4204	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q4205	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q4206	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q4207	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q4208	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q4209	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK	
Q4210	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q4211	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q4212	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q4213	TPAAB05001	COMPOUND TRANSISTOR	KRA102SRTK	
Q4214	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q4215	TPAAA05001	COMPOUND TRANSISTOR	KRA101SRTK	
Q4216	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q4217	TPAAB05001	COMPOUND TRANSISTOR	KRA102SRTK	
Q4218	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q4501	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q4502	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT	
Q4505	TPAAC05002	COMPOUND TRANSISTOR	KRA103SRTK	
Q4506	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q4507	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q4508	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q4509	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q4606	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S	
Q4607	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q4618	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
Q6001	TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)	
Q6004	TC3T030000	TRANSISTOR,SILICON	2SC3000-AA	
Q6005	TC3T030000	TRANSISTOR,SILICON	2SC3000-AA	
Q8501	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK	
		TRANSISTORS		
Q8502	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK	
Q8503	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK	
Q8505	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK	
		COILS &TRANSFORMERS		
L352	02A6B2E0A1	CORE,FERRITE	HF70T22*10*14	
L401	021679472K	COIL	4.7 MH	
L402	0221000013	COIL,LINEARITY	ELH5L4112N	
⚠L505	02D5000050	COIL,CHOKE	CH15033020	
L602	021375101K	COIL	100 UH	
L603	0216A61R0K	COIL	1 UH	or
	021LA61R0M	COIL	1 UH	
L606	0216A62R2K	COIL	2.2 UH	or
	021LA62R2K	COIL	2.2 UH	
L607	0216A6R33K	COIL	0.33 UH	or
	021LA6R33M	COIL	0.33 UH	
L608	0216A6120K	COIL	12 UH	
L610	021673101K	COIL	100 UH	
L611	021673101K	COIL	100 UH	
L612	033700005R	COIL,VIDEO IFT	3700005	
L613	02167F101J	COIL	100 UH	
L614	0216A6100K	COIL	10 UH	or
	021LA6100K	COIL	10 UH	
L616	021LA62R2K	COIL	2.2 UH	

ELECTRICAL REPLACEMENT PARTS LIST

Location	Part Number	Description		
		COILS &TRANSFORMERS		
L801	021673151K	COIL	150 UH	
L802	021673151K	COIL	150 UH	
L803	021673151K	COIL	150 UH	
L1001	0216A6120K	COIL	12 UH	
L1202	02167F101J	COIL	100 UH	
L1203	02167F100J	COIL	10 UH	
L1204	02167F101J	COIL	100 UH	
L1205	02167F100J	COIL	10 UH	
⚠L1701	029X000109	COIL,LINE FILTER	SS28V-K10410	
⚠L1703	028R200015	COIL,DEGAUSS	8R200015	
L2001	0216S1100J	COIL	10 UH	
L2002	0216S1100J	COIL	10 UH	
L2003	02167F2R2J	COIL	2.2 UH	
L2004	02167F2R2J	COIL	2.2 UH	
L2201	021LA6100K	COIL	10 UH	
L2202	021LA6100K	COIL	10 UH	
L3001	021673101K	COIL	100 UH	
L4001	02167F220J	COIL	22 UH	
L4002	02167F220J	COIL	22 UH	
L4003	02167F220J	COIL	22 UH	
L4004	02167F220J	COIL	22 UH	
L4201	0216A6100J	COIL	10 UH	
L4202	02167F101J	COIL	100 UH	
L4203	0216A6100K	COIL	10 UH	
L4204	0216A6100K	COIL	10 UH	
L4207	021673101J	COIL	100 UH	
L4208	0216A6100J	COIL	10 UH	
L4502	021375101K	COIL	100 UH	
L4503	0316260088	COIL,BIAS OSC	1626008	
L4505	02167F101J	COIL	100 UH	
L4506	02167F101J	COIL	100 UH	
L4507	0216A6820K	COIL	82 UH	
L4508	02167F220J	COIL	22 UH	
L4509	02167F220J	COIL	22 UH	
L4510	0216A6120K	COIL	12 UH	
L4511	0216A6390K	COIL	39 UH	
L4512	02167F101J	COIL	100 UH	
L4514	021LA6390K	COIL	39 UH	
L4515	02167F101J	COIL	100 UH	
L4601	032623004T	COIL,TRAP	STP-01064	or
	0326230038	COIL,TRAP	2623003	
L4602	02167F101J	COIL	100 UH	
L4608	021673102K	COIL	1 MH	
L5501	02167F101J	COIL	100 UH	
L5502	02167F101J	COIL	100 UH	
L6003	0216A62R7K	COIL	2.7 UH	or
	021LA62R7K	COIL	2.7 UH	
L6006	03360K042R	COIL,VIDEO IFT	360K042	
L6007	0216A6150K	COIL	15 UH	or
	021LA6150K	COIL	15 UH	
L6008	0216A6R22K	COIL	0.22 UH	or
	021LA6R22M	COIL	0.22 UH	
L6009	0216A61R5K	COIL	1.5 UH	or
	021LA61R5K	COIL	1.5 UH	
L6011	0216A61R2K	COIL	1.2 UH	or
	021LA61R2M	COIL	1.2 UH	
L6053	021375101K	COIL	100 UH	
L6056	0216A6100J	COIL	10 UH	
L6601	02167D220K	COIL	22 UH	
L6602	02167D220K	COIL	22 UH	
L6603	02167D220K	COIL	22 UH	
L8501	02167F2R2J	COIL	2.2 UH	
L8502	02167F2R2J	COIL	2.2 UH	
L8503	02167F2R2J	COIL	2.2 UH	
L8504	02AHB9A972	CORE,FERRITE	W5T29X7.5X19	
L8507	02167F2R2J	COIL	2.2 UH	
L8509	02167F2R2J	COIL	2.2 UH	
T401	045013003J	TRANS,HORIZONTAL DRIVE	ETH14Y47AY	
⚠T1701	0481420674	TRANSFORMER,SWITCHING	81420674	
		JACKS		
⚠J801	066F130020	SOCKET,CATHODE RAY,TUBE	ISHS53S	
J2201	060J131015	HEADPHONE JACK	MSJ-2000	
J2202	060G421016	RCA JACK	HTJ-032-05AY	
J2203	060G421017	RCA JACK	HTJ-032-05AW	
J2204	060G421020	RCA JACK	HTJ-032-05AR	
J4201	063G100046	SOCKET,21PIN	035_0_9972_05	
J8007	060J411029	RCA JACK	MSP-213V1-732_PBSN	

ELECTRICAL REPLACEMENT PARTS LIST

Location	Part Number	Description	
		SWITCHES	
SW1001	0508S11001	SWITCH (LEAF)	LSA-1144EAU
⚠SW1702	0530105019	SWITCH	ESB92S22B
SW2201	0504101T34	SWITCH,TACT	EVQ21505R
SW2202	0504101T34	SWITCH,TACT	EVQ21505R
SW2203	0504101T34	SWITCH,TACT	EVQ21505R
SW2204	0504101T34	SWITCH,TACT	EVQ21505R
SW2205	0504101T34	SWITCH,TACT	EVQ21505R
SW2206	0504101T34	SWITCH,TACT	EVQ21505R
SW2207	0504101T34	SWITCH,TACT	EVQ21505R
SW2251	0504101T34	SWITCH,TACT	EVQ21505R
SW2252	0504101T34	SWITCH,TACT	EVQ21505R
SW2253	0504101T34	SWITCH,TACT	EVQ21505R
SW2254	0504101T34	SWITCH,TACT	EVQ21505R
SW2255	0504101T34	SWITCH,TACT	EVQ21505R
SW2256	0504101T34	SWITCH,TACT	EVQ21505R
SW2257	0504101T34	SWITCH,TACT	EVQ21505R
SW2258	0504101T34	SWITCH,TACT	EVQ21505R
		VARIABLE RESISTORS	
VR401	V1K63Q2BTE	VOLUME,SEMI FIXED	NVG6TLTAB471
VR402	V1K63H3BTE	VOLUME,SEMI FIXED	NVG6TLTAB222
VR1701	V1K63Q2BTE	VOLUME,SEMI FIXED	NVG6TLTAB471
		P.C.BOARD ASSEMBLIES	
PCB010	A5G001A010	PCB ASS'Y	VMC296A
PCB070	A5G001A070	PCB ASS'Y	TMC568A
PCB110	A5G001A110	PCB ASS'Y	TCC429A
PCB130	A5G001A130	PCB ASS'Y	VMB283B
PCB270	A5G001A270	PCB ASS'Y	TECB14A
PCB300	A5G001A300	PCB ASS'Y	VEB983A
PCB310	A5G001A310	PCB ASS'Y	VEB981A
PCB320	A5G001A320	PCB ASS'Y	TECB13A
PCBD00	A5G001AD00	PCB ASS'Y	TE7935A
		MISCELLANEOUS	
B1201	024HT03564	CORE,BEADS	W4BRH3.5X6X1.0
B1701	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B2002	024HC31022	CORE,BEADS	FCM2012H-102T04
B2003	024HC31022	CORE,BEADS	FCM2012H-102T04
B2004	024HC31022	CORE,BEADS	FCM2012H-102T04
B2005	024HC31022	CORE,BEADS	FCM2012H-102T04
B4002	024HC31022	CORE,BEADS	FCM2012H-102T04
B4004	024HC31022	CORE,BEADS	FCM2012H-102T04
B4203	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B8501	024HC31022	CORE,BEADS	FCM2012H-102T04
B8502	024HC31022	CORE,BEADS	FCM2012H-102T04
B8503	024HC31022	CORE,BEADS	FCM2012H-102T04
B8504	024HC31022	CORE,BEADS	FCM2012H-102T04
B8505	024HT03563	CORE,BEADS	W4BRH3.5X6X1.0X2
BT101	1412004008	BATTERY,MANGAN	R03(AB)E_2P_G
BT102	1412004008	BATTERY,MANGAN	R03(AB)E_2P_G
CD001	06CDL02003	CABLE,PAL	CDL02003
CD352	06CU149003	CORD,CONNECTOR	CU149003
CD504	06CH82036A	CORD,CONNECTOR	CH82036A
CD601	06CH01429A	CORD,EIS CONNECTOR	CH01429A
CD602	06CH01004A	CORD,CONNECTOR	CH01004A
CD801	06CU823001	CORD,CONNECTOR	CU823001
CD803	06CU012301	CORD,CONNECTOR	CU012301
CD806	06CUG06001	CORD,CONNECTOR	CUG06001
CD807	06CUG06001	CORD,CONNECTOR	CUG06001
CD851	WEL6840038	FLAT CABLE	AWM2468 AWG26 7C GRAY 400MM
CD852	WBL6034038	FLAT CABLE	AWM2468 AWG26 4C BLACK 340MM
CF601	102E239R5B	FILTER SAW	J1951M
CF602	1022132R91	FILTER,SAW	SAF32.9MC70Z
CF603	1012T03102	FILTER,CERAMIC TRAP	MKT31.5MA110P
CF605	1012T6R003	FILTER,CERAMIC TRAP	TPS6.0MB-TF21
CP352	069S140419	CONNECTOR PCB SIDE	A2502WV2-4P
CP401	069J620100	CONNECTOR PCB SIDEIM	IMSA-9202B-1-02Z003-PP
CP402	069S450089	CONNECTOR PCB SIDE	A1561WV2-A5P
CP403	069J620080	CONNECTOR	IMSA-9206H-T
CP504	069S320010	CONNECTOR PCB SIDE	A2361WV2-2P
CP603	069X170379	CONNECTOR PCB SIDE	07JQ-ST
CP801	069S320010	CONNECTOR PCB SIDE	A2361WV2-2P
CP806	069W010010	CONNECTOR PCB SIDE	005P-2100
CP851	067U007029	WIRE HOLDER	B2013H02-7P
⚠CD1701	1206635825	CORD AC	6635825
CD1704	06CHU2017A	CORD,CONNECTOR	CHU2017A
CD2201	06CH01429A	CORD,EIS CONNECTOR	CH01429A
CD2251	06CU230702	CORD,JUMPER	CU230702
CD4005	122S061401	CORD,JUMPER	1.25X6X138XC

ELECTRICAL REPLACEMENT PARTS LIST

Location	Part Number	Description	
		MISCELLANEOUS	
CD6001	06CUH18001	CORD COAXIAL	CUH18001
CD8005	06CU2F2201	CORD CONNECTOR	CU2F2201
CD8006	06CU2D3001	CORD CONNECTOR	CU2D3001
CD8501	122H0C2203	CORD JUMPER	2H0C2203
CD8505	06CU2B3301	CORD CONNECTOR	CU2B3301
CF6001	1012T6R012	FILTER,CERAMIC	SFSH6.0MCB-TF21
CF6002	1022V39R52	FILTER,SAW	SAF39.5MZL220ZL
CF6004	1022132R91	FILTER,SAW	SAF32.9MC70Z
CF6005	1012T6R003	FILTER,CERAMIC TRAP	TPS6.0MB-TF21
CF6007	1012T03102	FILTER,CERAMIC TRAP	MKT31.5MA110P
CF6008	1012T04101	FILTER,CERAMIC TRAP	MKT41.5MA110P
CP1001	06972C0010	CONNECTOR PCB SIDE	TMC-J12P-B2
CP1701	069S320419	CONNECTOR PCB SIDE	A3963WV2-3PD
CP1702	069S420110	CONNECTOR PCB SIDE	A1561WV2-2P
CP1704	069S320419	CONNECTOR PCB SIDE	A3963WV2-3PD
CP2001	069XYO0010	CONNECTOR PCB SIDE	24FLZ-SM1-TB
CP2201	069S230629	CONNECTOR PCB SIDE	A2001WV2-3P
CP2301	069JV80180	CONNECTOR PCB SIDE	IMSA-9615S-08C-PP
CP2302	069S230639	CONNECTOR PCB SIDE	A2001WR2-3P
CP3601	069S2F0629	CONNECTOR PCB SIDE	A2001WV2-15P
CP3602	069S2D0629	CONNECTOR PCB SIDE	A2001WV2-13P
CP3603	069D01001A	CONNECTOR PCB SIDE	003P-2100
CP4501	0697290620	CONNECTOR PCB SIDE	TOC-C09X-A1
CP4503	067U002019	WIRE HOLDER	B2013H02-2P
CP4505	069J760029	CONNECTOR PCB SIDE	IMSA-9604S-06Z14
CP6001	069J1D0260	CONNECTOR PCB SIDE	6035B-13Z002-T
CP6601	069Q1D0179	CONNECTOR PCB SIDE	CPB1813-0101
CP6602	069J150260	CONNECTOR PCB SIDE	6035B-05Z002-T
CP8001	069S2B0629	CONNECTOR PCB SIDE	A2001WV2-11P
CP8002	069J7C0029	CONNECTOR PCB SIDE	IMSA-9604S-12Z14
CP8502	069J7C0019	CONNECTOR PCB SIDE	IMSA-9604S-12Z13
CP852A	067U004029	WIRE HOLDER	B2013H02-4P
CP852B	067U004029	WIRE HOLDER	B2013H02-4P
CP853B	069R270589	CONNECTOR PCB SIDE	52147-0710
CUS011	800WFAA007	CUSHION B	
CUS012	800WFAA006	CUSHION A	
CUS013	800WFAA008	CUSHION C	
CUS131	800WFAA006	CUSHION A	
CUS302	800WFAA006	CUSHION A	
CUS311	800WFAA006	CUSHION A	
EL001	124120301A	EYE LET	XRY20X30BD
EL002	124116281A	EYE LET	XRY16X28BD
⚠F1701	080NT04004	FUSE	50T040H
⚠FB401	043220057F	TRANSFORMER,FLYBACK	FJN20A002
FH1701	06710T0006	HOLDER,FUSE	EYF-52BC
FH1702	06710T0006	HOLDER,FUSE	EYF-52BC
OS2202	0773071003	REMOTE RECEIVER	RPM7138-SH10
⚠RY1701	0560V20115	RELAY	ALKS321
SP351	070C546004	SPEAKER	SG04H02BRA
SP353	070C546004	SPEAKER	SG04H02BRA
TM101	076D0GN010	TRANSMITTER	TOT202N73010
⚠TU601	0144507034	TUNER,UHF	TUWRF4EK-781F2S
⚠TH1701	D8E0J80A10	DEGAUSS ELEMENT	B59104-J80-A10
⚠TU6001	0144507033	TUNER,UHF	TUWRF4EK-777F2
⚠V801	098Q210448	CRT W/DY	A51AKL13X04
X601	100CT4R408	CRYSTAL	HC-49/U
X1001	100CT01002	CRYSTAL	HC-49/U-S
X1002	100DA32R01	CRYSTAL	DT-26
X1201	100CT01302	CRYSTAL	HC-49/U-S
X2001	100BT02003	CRYSTAL	HC-49U/S
X4001	100BT02701	CRYSTAL	HC-49U/S
X4501	100DT4R410	CRYSTAL	AT-49
X6601	100CT01803	CRYSTAL	HC-49/U-S
X6602	100CT01803	CRYSTAL	HC-49/U-S

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

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