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AC68-01530A

SERVICE MANUAL

SVR-443/440/243/240B/240W/2401/141/140/VCP-007LR



VIDEO CASSETTE RECORDER

Chassis : Scorpio

SVR-443/440

SVR-243/240B/240W/2401

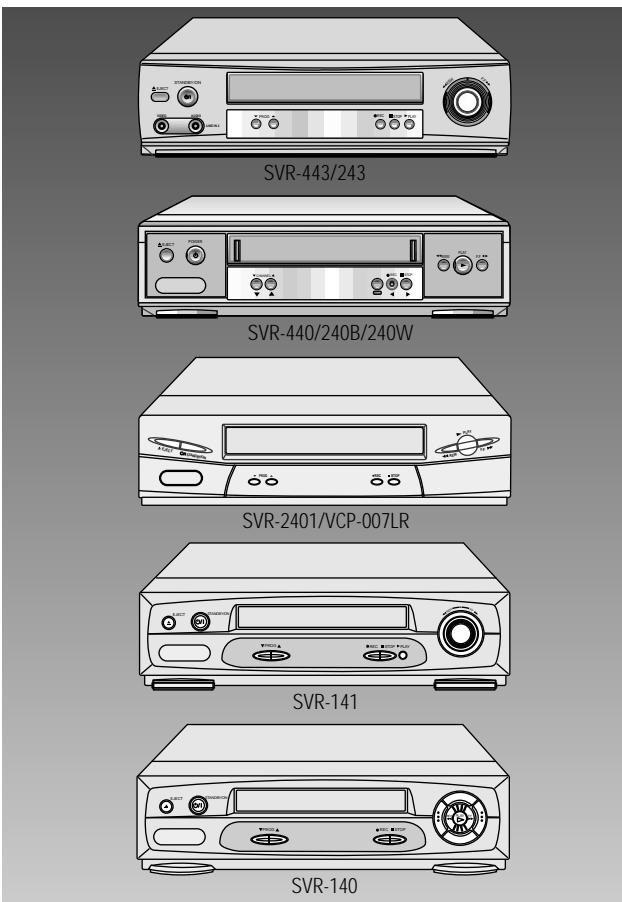
SVR-141/140

VCP-007LR

SERVICE Manual

For mechanical disassembly and adjustment, refer to the "Mechanical Manual" (TS-10 → AC68-01405A).

VIDEO CASSETTE RECORDER



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IMPORTANT SERVICE GUIDE

◆ MODE SWITCH (PROGRAM SWITCH) ASSEMBLY POINT

- When installing the ass'y deck on the Main PCB, be sure to align the assembly point of mode switch.

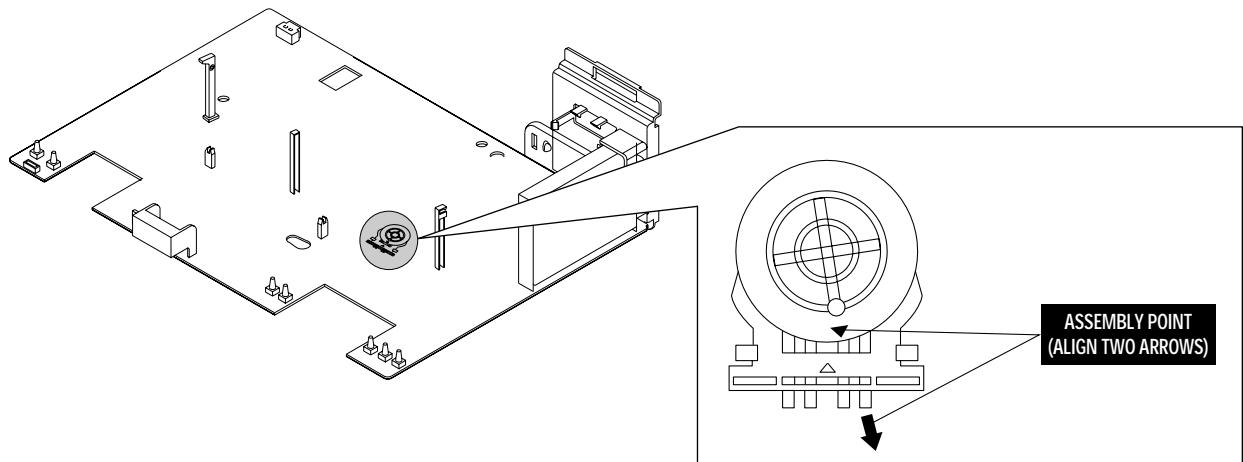


Fig. 1

◆ HOW TO EJECT THE CASSETTE TAPE

(If the unit does not operate on condition that tape is inserted into housing ass'y)

- Turn the Gear Worm ① clockwise in the direction of arrow with screw driver. (See Fig. 2)
(Other method ; Remove the screw of Motor Load Ass'y, Separate the Motor Load Ass'y)
- When Slider S, T are approached in the position of unloading, rotate holder Clutch counterclockwise after inserting screw driver in the hole of frame's bottom in order to wind the unwound tape. (Refer to Fig. 3)
(If you rotate Gear Worm ① continuously when tape is in state of unwinding, you may cause a tape contamination by grease and tape damage. Be sure to wind the unwound tape in the state of set horizontally.)
- Rotate Gear Worm ③ clockwise using screw driver again up to the state of eject mode and then pick out the tape. (Refer to Fig. 2)

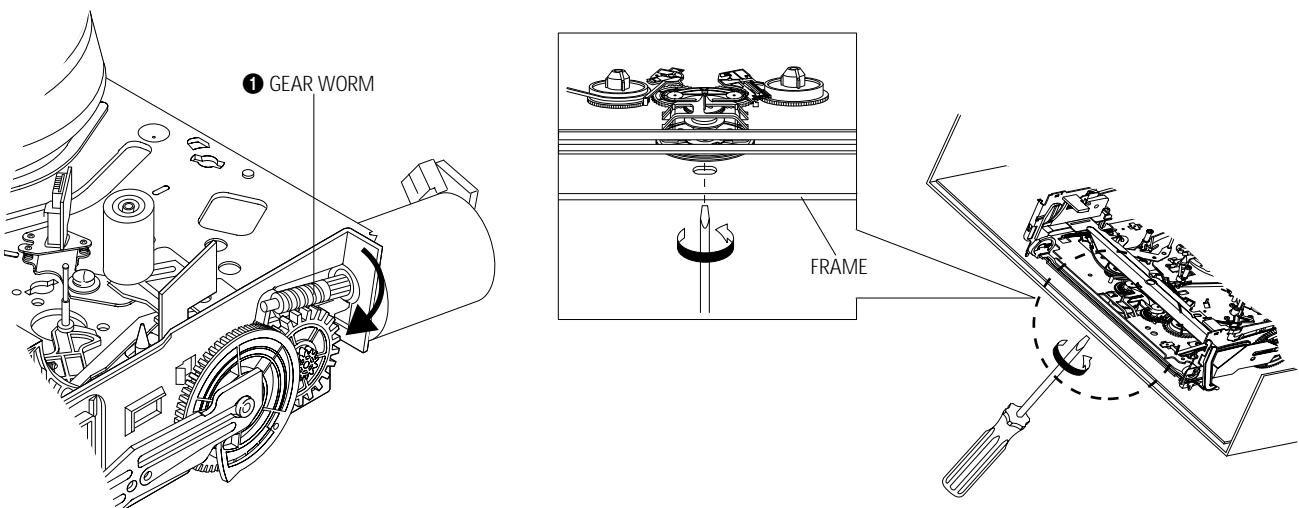


Fig. 2

Fig. 3

1. Precautions

1. Be sure that all of the built-in protective devices are replaced. Restore any missing protective shields.
2. When reinstalling the chassis and its assemblies, be sure to restore all protective devices, including : control knobs and compartment covers.
3. Make sure that there are no cabinet openings through which people--particularly children --might insert fingers and contact dangerous voltages. Such openings include the spacing between the picture tube and the cabinet mask, excessively wide cabinet ventilation slots, and improperly fitted back covers.

If the measured resistance is less than 1.0 megohm or greater than 5.2 megohms, an abnormality exists that must be corrected before the unit is returned to the customer.

4. Leakage Current Hot Check (See Fig. 1-1) :
Warning : Do not use an isolation transformer during this test. Use a leakage current tester or a metering system that complies with American National Standards Institute (ANSI C101.1, Leakage Current for Appliances), and Underwriters Laboratories (UL Publication UL1410, 59.7).
5. With the unit completely reassembled, plug the AC line cord directly the power outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known earth ground (metal water pipe, conduit, etc.) and all exposed metal parts, including : antennas, handle brackets, metal cabinets, screwheads and control shafts. The current measured should not exceed 0.5 milliamp. Reverse the power-plug prongs in the AC outlet and repeat the test.
6. X-ray Limits :
The picture tube is designed to prohibit X-ray emissions. To ensure continued X-ray protection, replace the picture tube only with one that is the same type as the original.

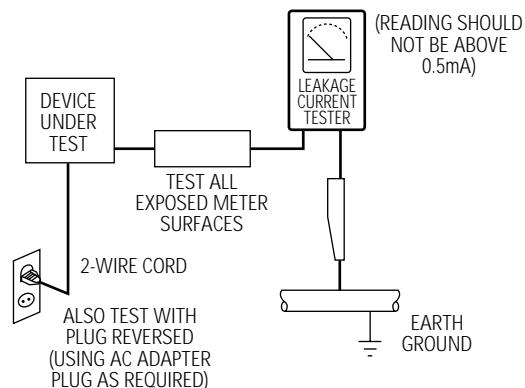


Fig. 1-1 AC Leakage Test

7. Antenna Cold Check :

With the unit's AC plug disconnected from the AC source, connect an electrical jumper across the two AC prongs. Connect one lead of the ohmmeter to an AC prong. Connect the other lead to the coaxial connector.

8. High Voltage Limit :

High voltage must be measured each time servicing is done on the B+, horizontal deflection or high voltage circuits.

Heed the high voltage limits. These include the X-ray protection Specifications Label, and the Product Safety and X-ray Warning Note on the service data schematic.

9. Some semiconductor ("solid state") devices are easily damaged by static electricity. Such components are called Electrostatically Sensitive Devices (ESDs); examples include integrated circuits and some field-effect transistors. The following techniques will reduce the occurrence of component damage caused by static electricity.
10. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging Wrist-strap device. (Be sure to remove it prior to applying power--this is an electric shock precaution.)

11. High voltage is maintained within specified limits by close-tolerance, safety-related components and adjustments. If the high voltage exceeds the specified limits, check each of the special components.
12. Design Alteration Warning :
Never alter or add to the mechanical or electrical design of this unit. Example : Do not add auxiliary audio or video connectors.
Such alterations might create a safety hazard.
Also, any design changes or additions will void the manufacturer's warranty.
13. Hot Chassis Warning :
Some TV receiver chassis are electrically connected directly to one conductor of the AC power cord. If an isolation transformer is not used, these units may be safely serviced only if the AC power plug is inserted so that the chassis is connected to the ground side of the AC source.

To confirm that the AC power plug is inserted correctly, do the following : Using an AC voltmeter, measure the voltage between the chassis and a known earth ground. If the reading is greater than 1.0V, remove the AC power plug, reverse its polarity and reinsert. Re-measure the voltage between the chassis and ground.
14. Some TV chassis are designed to operate with 85 volts AC between chassis and ground, regardless of the AC plug polarity. These units can be safely serviced only if an isolation transformer inserted between the receiver and the power source.
15. Never defeat any of the B+ voltage interlocks.
Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.
16. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.
17. Observe the original lead dress, especially near the following areas : Antenna wiring, sharp edges, and especially the AC and high voltage power supplies. Always inspect for pinched, out-of-place, or frayed wiring. Do not change the spacing between components and the printed circuit board. Check the AC power cord for damage. Make sure that leads and components do not touch thermally hot parts.
18. Picture Tube Implosion Warning :
The picture tube in this receiver employs "integral implosion" protection. To ensure continued implosion protection, make sure that the replacement picture tube is the same as the original.
19. Do not remove, install or handle the picture tube without first putting on shatterproof goggles equipped with side shields. Never handle the picture tube by its neck. Some "in-line" picture tubes are equipped with a permanently attached deflection yoke; do not try to remove such "permanently attached" yokes from the picture tube.
20. Product Safety Notice :
Some electrical and mechanical parts have special safety-related characteristics which might not be obvious from visual inspection. These safety features and the protection they give might be lost if the replacement component differs from the original--even if the replacement is rated for higher voltage, wattage, etc.

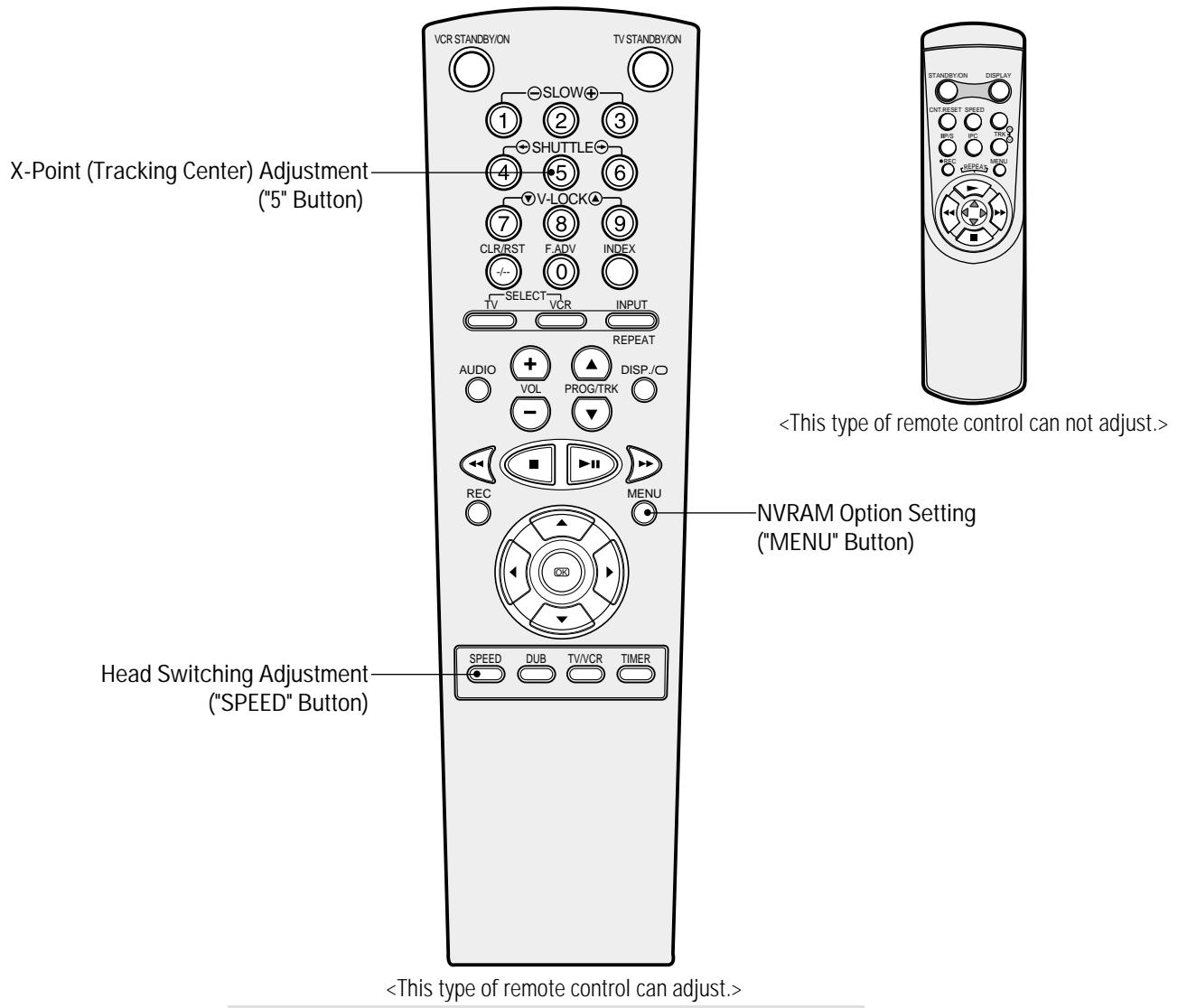
Components that are critical for safety are indicated in the circuit diagram by shading, ( or ). Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

2. Alignment and Adjustment

2-1 Reference

- 1) X-Point (Tracking center) adjustment, "Head switching adjustment" and "NVRAM option setting" can be adjusted with remote control.
- 2) When replacing the Micom (IC601) and NVRAM (IC605 ; EEPROM) be sure to adjust the "Head switching adjustment" and "NVRAM option setting".
- 3) When replacing the cylinder ass'y, be sure to adjust the "X-Point" and "Head switching adjustment".
- 4) Among Samsung VCR remote control used for adjustment as a accessory, only the remote control that has figures buttons (0 ~ 9) is available for all adjustment regardless of chassis.
- 5) How to adjustment.
 - Press the "SW718" button on Main PCB to set the adjustment mode.
 - If the corresponding adjustment button is pressed, the adjustment is performed automatically.
 - If the adjustment is completed, be sure to turn the power off.

2-1-1 Location of adjustment button of remote control



Remote Control for adjustment is not supplied as a Service Jig.

Fig. 2-1

2-1-2 SW718 (TEST) location for adjustment mode setting

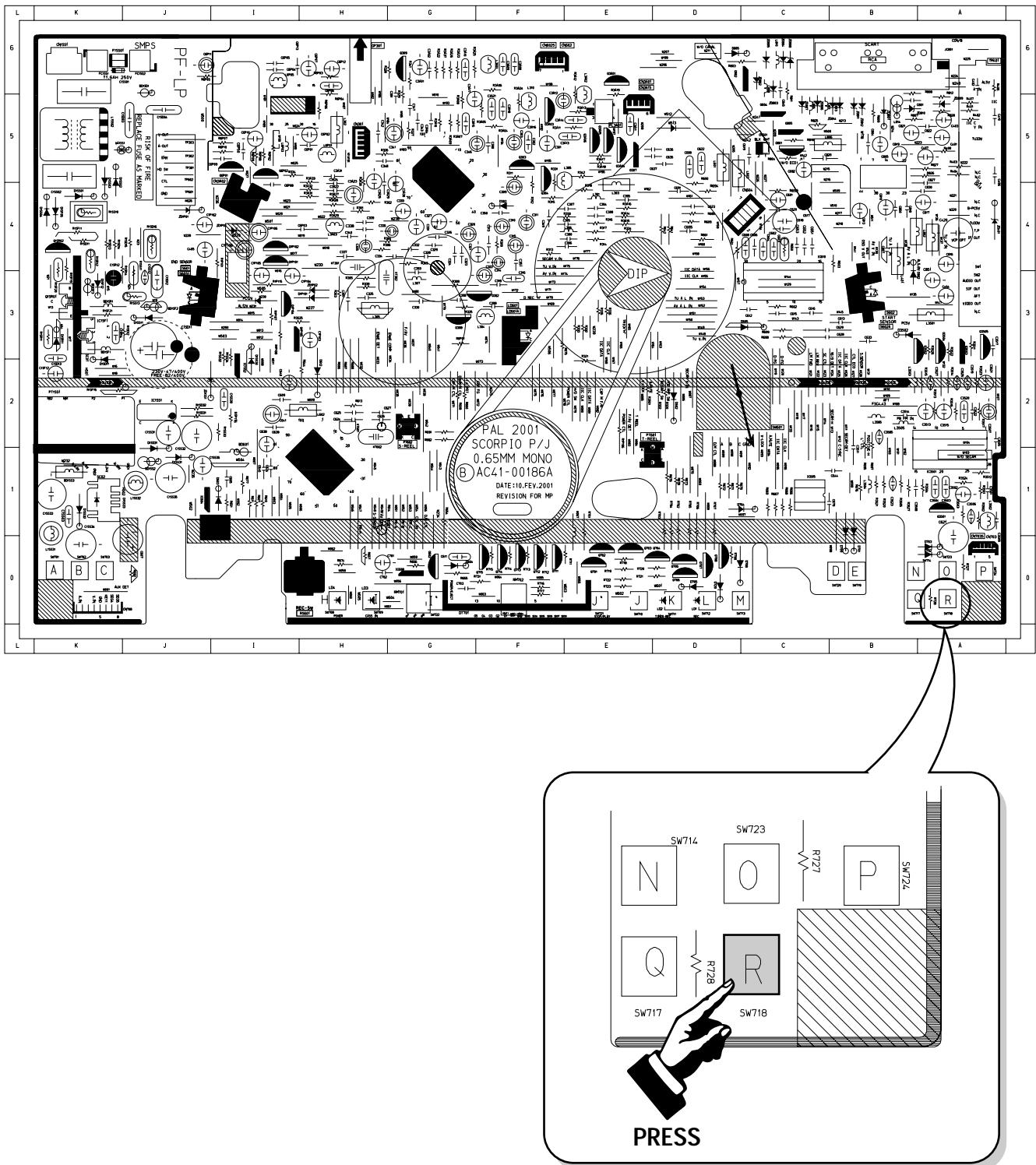


Fig. 2-2 Main PCB (Top View)

2-2 Mechanical Adjustment

Note : Refer to the Mechanical Manual "TS-10 (AC68-01405A)" for the adjustment and confirmation of ass'y full deck.

2-2-1 The number and position of test point

Test point :	TP601 (Control pulse)	TP301 (Envelope)
	TP602 (H'D S/W -Trigger)	TP302 (Audio output)
		TP303 (Video output)

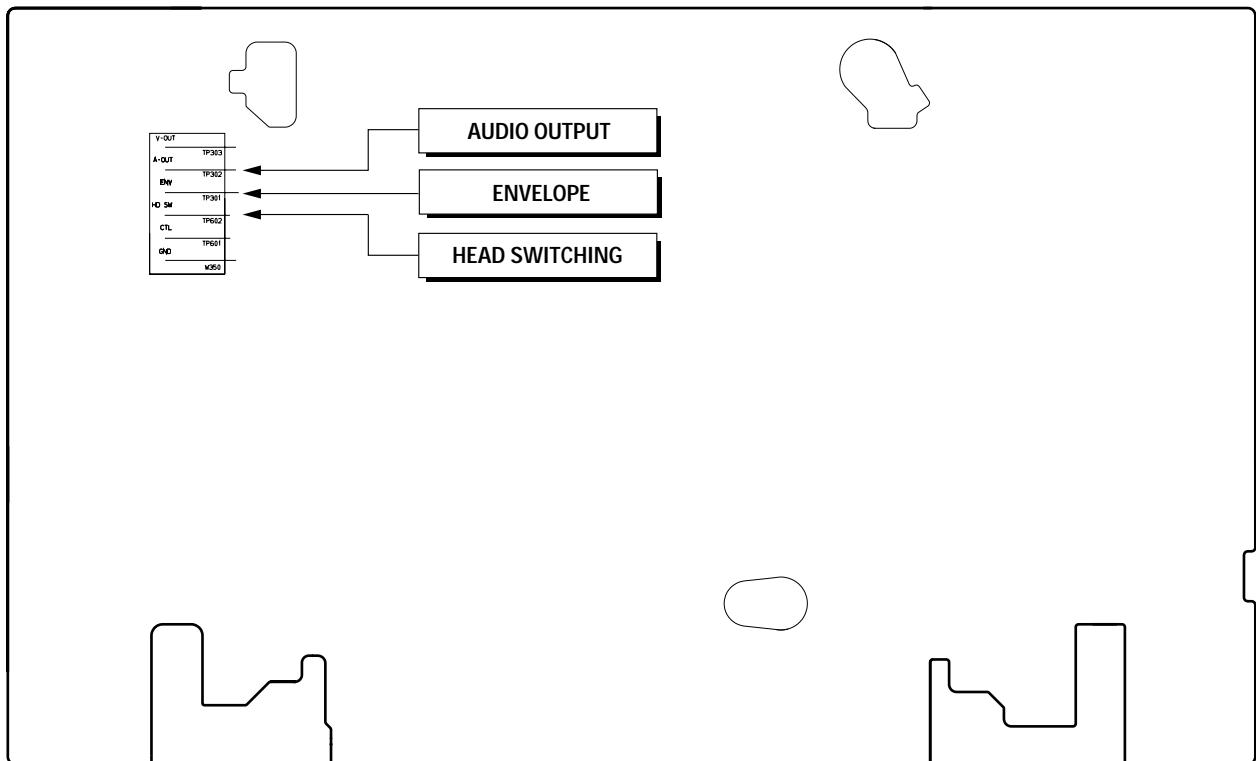


Fig. 2-3 Location of Test point (Main PCB-Top View)

2-2-2 ACE Head Position (X-Point) Adjustment (See the 2-2-1(d) ACE Head Position (X-Point) Adjustment on page 2-2 of the Mechanical Manual)

- 1) Playback the alignment tape (Color bar).
- 2) Press the "SW718" button on Main PCB to set the adjustment mode. (See Fig. 2-2)
- 3) Press the "5" button of remote control then adjustment is operated automatically. (See Fig. 2-1)

- 4) Connect the CH-1 probe to TP301 (Envelope) the CH-2 probe to TP602 (H'D switching pulse) and then trigger to CH-1.
- 5) Insert the (-) driver into the X-Point adjustment hole and adjust it so that envelope waveform is maximum.
- 6) Turn the Power off.

2-3 Head Switching Point Adjustment

- 1) Playback the alignment tape.
- 2) Press the "SW718" button on Main PCB to set the adjustment mode. (See Fig. 2-2)
- 3) Press the "SPEED" button of remote control then adjustment is operated automatically. (See Fig. 2-1)
- 4) Turn the Power off.

2-4 NVRAM Option Setting

- 1) NVRAM Option is adjusted at production line basically.
 2) In case Micom (IC601) and NVRAM (IC605 ; EEPROM) is replaced, be sure to set the corresponding option number of the repaired model. (If the option is not set, the unit is not operated.)

- 1) Press the "SW718" button on Main PCB to set the adjustment mode. (See Fig. 2-2)
- 2) Press the "MENU" button on the remote control about 5 seconds then option setting display is appeared. (See Fig. 2-4)
- 3) Select the option number (See Table 2-1) of corresponding model with "CURSOR" button on the remote control.
- 4) If selecting the option number is completed, press the "OK" button of remote control.
 (If "OK" button is pressed, the selected number is changes reversed color. ; See Fig. 2-4)
- 5) Press the "MENU" button of remote control again to store the option number.
 ("PLEASE WAIT" is displayed for a second as shown Fig. 2-5 and this setting is completed.)
- 6) Turn the Power off.

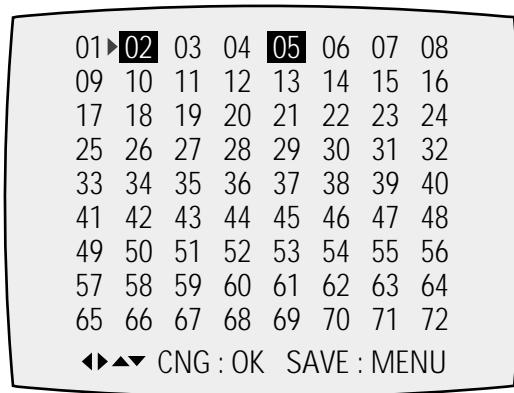


Fig. 2-4

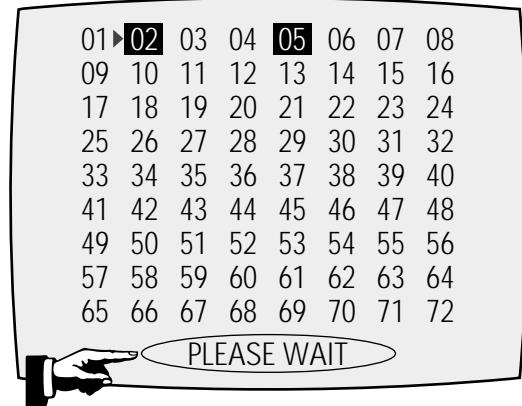


Fig. 2-5

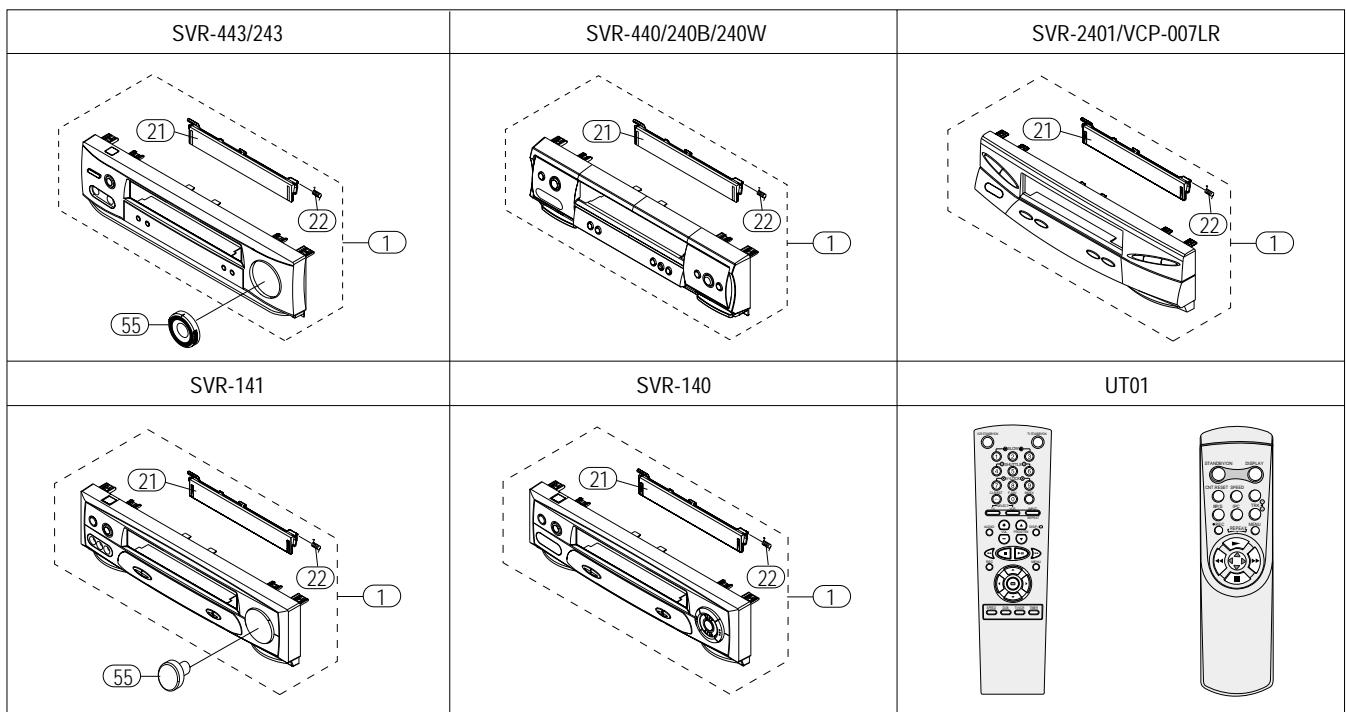
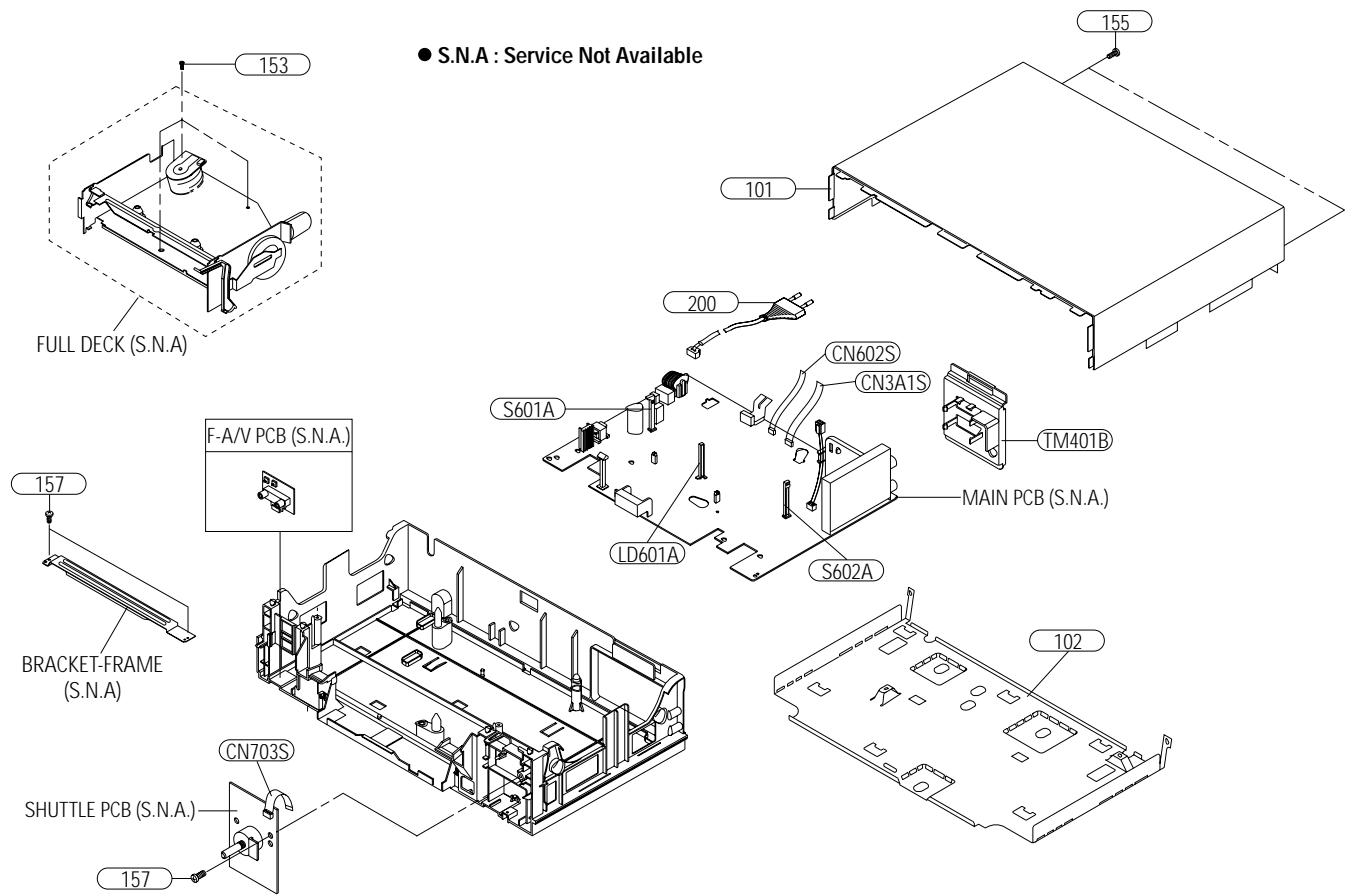
<Table 2-1 NVRAM Option Number>

MODELS	OPTION NUMBER
SVR-443	9, 10, 15, 20, 24, 30, 32, 34, 36, 38, 42, 44, 47, 54, 57, 60, 61, 63
SVR-440	9, 10, 20, 30, 32, 34, 36, 38, 42, 44, 47, 52, 54, 57, 60, 61, 63
SVR-243	10, 15, 20, 24, 30, 32, 34, 36, 37, 42, 44, 47, 54, 57, 60, 61, 63, 71
SVR-240B	10, 20, 30, 32, 34, 36, 37, 42, 44, 47, 52, 54, 57, 60, 61, 63, 71
SVR-240W	10, 20, 30, 32, 34, 36, 37, 42, 44, 47, 52, 54, 57, 60, 61, 63, 71
SVR-2401	10, 20, 30, 34, 36, 37, 42, 44, 47, 52, 54, 57, 60, 61, 63, 71
SVR-141	10, 20, 24, 35, 37, 42, 44, 51, 54, 57, 60, 61, 63, 71
SVR-140	10, 20, 24, 35, 37, 42, 44, 51, 52, 54, 57, 60, 61, 63, 71
VCP-007LR	10, 20, 22, 35, 37, 42, 44, 51, 57, 60, 61, 71

3. Exploded View and Parts List

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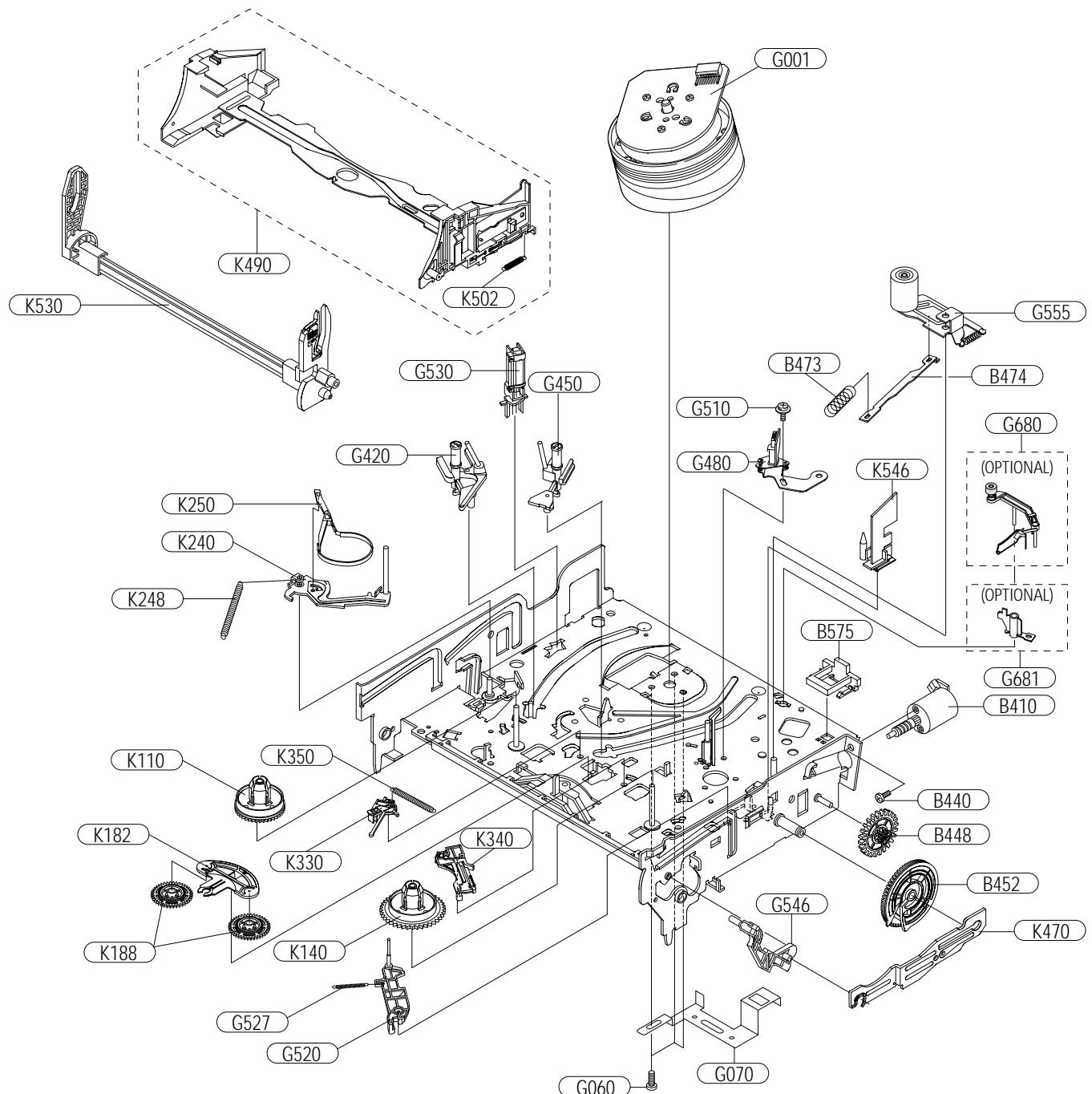
3-1 Cabinet Assembly



Loc. No	Parts No.	Description ; Specification	Remark
1	Refer to table below	ASSY-PANEL FRONT	
21	Refer to table below	DOOR-CASSETTE	
22	AC61-62032A	SPRING-MASK;X-9,-,SUS,-,4.4,-,SV-C130	
55	AC64-00587A	KNOB-SHUTTLE;SVR-643,ABS,-,SILVER,-,-,-	SVR-443/243 ONLY
	AC64-00319A	KNOB-SHUTTLE;-,ABS,-,GRAY,HB,SV-130G,-	SVR-141 ONLY
101	Refer to table below	CABINET TOP	
102	AC63-00015A	COVER-BOTTOM;-,SECC,-,T;0.5,SECC T0.5,-,	
153	AC60-12126A	SCREW-BH;-,BH,-,4*12,FE,FZY,-,-	
155	AC60-12134A	SCREW-TAP BH;-,BH,-,2-4X16,-,FE	
157	AC60-10063A	SCREW-TAPTITE;BH,+,-,M3,L12,ZPC3,SWRCH18	
200	AC39-10019A	POWER CORD;KKP-419C,H03VVH2-F,VDE/KEMA-K	
CN3A1S	3809-001206	CABLE-FLAT;30V,-20to+80C,140mm,6P,1.25mm	
CN602S	3809-001111	CABLE-FLAT;30V,80C,130mm,7P,1.25mm,UL289	
CN703S	3809-001112	CABLE-FLAT;30V,80C,130mm,5P,1.25mm,UL289	SVR-443/243/141 ONLY
LD601A	AC61-21009A	HOLDER-LED;-,POM(M90-44),-,BLK,-,X-9	
S601A	AC61-21008A	HOLDER-SENSOR;-,POM(M90-44),-,BLK,-,X-9	
S602A	AC61-21008A	HOLDER-SENSOR;-,POM(M90-44),-,BLK,-,X-9	
UT01	Refer to table below	REMOCON-ASSY	

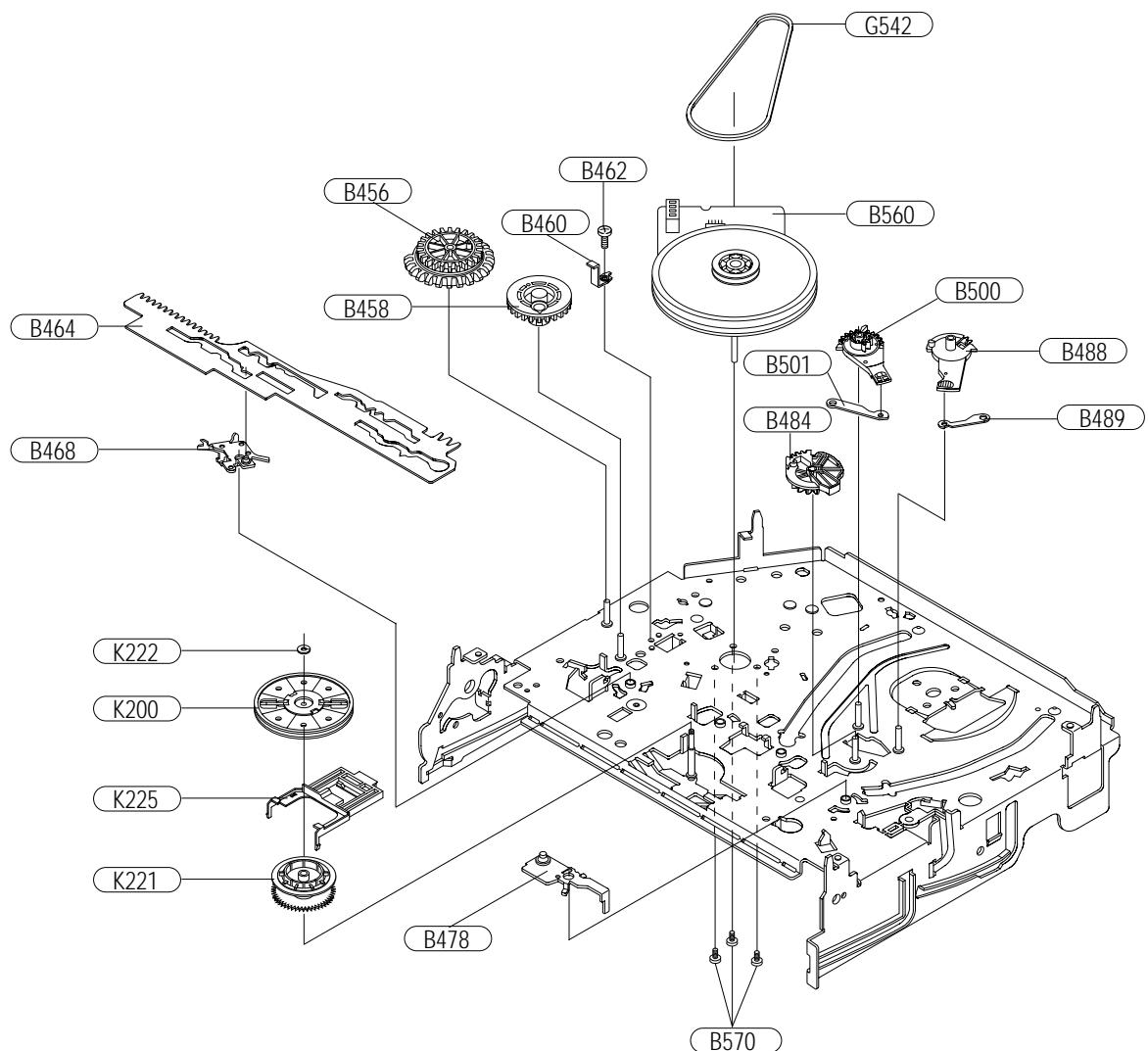
MODELS	1	21	101	UT01
SVR-443	AC97-01363B	AC64-00572Q	AC64-00400A	AC59-00048A
SVR-440	AC97-01366B	AC64-00536B	AC64-00400B	AC59-00048A
SVR-243	AC97-01363C	AC64-00572S	AC64-00400A	AC59-00048A
SVR-240B	AC97-01366C	AC64-00536C	AC64-00400B	AC59-00048A
SVR-240W	AC97-01366D	AC64-00536D	AC64-00400L	AC59-00048C
SVR-2401	AC97-01313A	AC64-00687A	AC64-00400B	AC59-00049A
SVR-141	AC97-00873B	AC64-00683U	AC64-00400B	AC59-00013C
SVR-140	AC97-00873C	AC64-00683T	AC64-00400A	AC59-00013C
VCP-007LR	AC97-01466A	AC64-00687B	AC64-00400B	AC59-00013C

3-2 Mechanical Parts (Top Side)



Loc. No	Parts No.	Description ; Specification	Remark
B410	AC31-00012A	MOTOR-LOADING ASSY;-,TS-10,-,-,-,-,-	
B440	AC60-10515A	SCREW-MACHINE;-,PH,+, -,M3,L3,ZPC, -,YEL	
B448	AC66-00008A	GEAR-WORM WHEEL;TS-10,POM,0.8,40, -,NAT,3	
B452	AC66-00011A	GEAR-FL CAM;TS-10,POM,0.8,59, -,BLK,48.48	
B473	AC61-00105A	SPRING-PINCH DRIVE;TS-10,SUS304-WPB, -,	
B474	AC61-30180A	PLATE-JOINT;-,SECC20/20,T0.8, -,X-9	
B575	AC47-00002A	DAMPER-CAPSTAN;TS-10,POM, -,BLACK	
G001	AC97-01212A	ASSY-CYLINDER;PALCTS10,4HD/DLC	4HEAD
	AC97-01208A	ASSY-CYLINDER;PAL,CTS10,2HD(LP)/DLC	2HEAD
	AC97-01209A	ASSY-CYLINDER;PAL,CTS10,2HD(LP)	VCP
G060	6006-001092	SCREW-ASS'Y MACH;WS,PH,+,M3.0,L6.0,ZPC(Y	
G070	AC61-00161A	PLATE-GROUND DECK;TS-10,SPTE,T0.3, -	
G420	AC66-80142A	SLIDER-SUPPLY ASSY;-,X-9(TS), -,X-9	
G450	AC66-80141A	SLIDER-TAKE UP ASSY;-,X-9(TS), -,X-9	
G480	AC33-00009A	HEAD-ACE ASS'Y;-,PPS,TS-10, -,	
G510	6006-001075	SCREW-ASS'Y TAPT;WSP,PH,+,M2.6,L5.0,ZPC(
G520	AC66-00033A	LEVER-#9 GUIDE ASS'Y;TS-10, -,	
G527	AC61-60553A	SPRING-#9 GUIDE;-,ES,SUS304-WPB,OD3.1,0.	
G530	AC33-00007A	HEAD-FE;-,HVFHPO043A, -,	
G546	AC66-00005A	LEVER-FL DOOR;TS-10,POM, -, -, -,NAT, -	
G555	AC66-00032A	LEVER-UNIT PINCH ASS'Y;TS-10, -,	
G680	AC66-00046A	LEVER-HEAD CLEANER ASS'Y;TS-10,POM+URETH	(OPTIONAL)
G681	AC61-50686A	SLEEVE-HEAD CLEANER;-,POM, -, -, -,TS	(OPTIONAL)
K110	AC66-10267A	REEL-DISK S;X-9,POM, -,	
K140	AC66-10268A	REEL-DISK T;X-9,POM, -,	
K182	AC66-30524A	LEVER-IDLER;-,POM, -,	
K188	AC66-00039A	GEAR-IDLE;TS-10,PET K3372,0.5, -,NTR,28	
K240	AC66-00035A	LEVER-TENSION ASS'Y;TS-10,SECC E20/20+SU	
K248	AC61-00107A	SPRING-TENSION LEVER;TS-10,SUS304-WPB, -,	
K250	AC69-00104A	BAND-BRAKE ASS'Y;TS-10, -,	
K330	AC66-30550A	LEVER-S.BRAKE ASSY;-,POM+SUS, -,X-9	
K340	AC66-30549A	LEVER-T.BRAKE ASSY;-,POM+SUS, -,X-9	
K350	AC61-00106A	SPRING-BRAKE;TS-10,SUS304-WPB, -,	
K470	AC66-00020A	SLIDER-FL DRIVE;TS-10,SECC E20/20,1.0, -,	
K490	AC61-00120A	HOLDER-FL CASS. ASS'Y;TS-10, -,	
K502	AC61-60561A	SPRING-FL.LEVER-LR;-,ES,SUS304 WPB,PI2.7	
K530	AC66-00034A	LEVER-FL ARM ASS'Y;TS-10, -,	
K546	AC61-50658A	GUIDE-CASS. DOOR;X-9,POM, -,NTR, -,	

3-3 Mechanical Parts (Bottom Side)



Loc. No	Parts No.	Description ; Specification	Remark
B456	AC66-00009A	GEAR-JOINT 1;TS-10,POM,1.5,17.5(22),-,NA	
B458	AC66-00012A	GEAR-JOINT 2;TS-10,POM,1.0,23,-,BLK,24.6	
B460	AC61-00090A	BRACKET-GEAR;TS-10,0.8,-,-	
B462	AC60-10517A	SCREW-TAP TITE;-,PH,+,-,M2.6,L5,ZPC,-,YE	
B464	AC66-00019A	SLIDER-CAM;TS-10,SECC E20/20,1.2,-,-,-	
B468	AC66-00017A	LEVER-PINCH DRIVE;TS-10,SECC E20/20,1.0	
B478	AC66-00016A	LEVER-TENSION DRIVE;TS-10,SECC E20/20,1	
B484	AC66-00030A	GEAR-LOADING DR. ASS'Y;TS-10,POM+SWPB,-,	
B488	AC66-00023A	LEVER-S LOADING;TS-10,POM,-,-,-,NAT,-	
B489	AC66-00021A	LINK-LOADING S;TS-10,SECC E20/20,0.8,-,-	
B500	AC66-00024A	LEVER-T LOADING;TS-10,POM,-,-,-,NAT,-	
B501	AC66-00022A	LINK-LOADING T;TS-10,SECC E20/20,0.8,-,-	
B560	AC31-00010A	MOTOR-CAPSTAN;-,SANKYO,-,-	
B570	AC60-10514A	SCREW-CAPSTAN;-,PH,+,M2.6,L6,-	
G542	AC66-60051A	BELT-PULLEY;-,5CM-70,2 * 2,-,71.3,-,X-9	
K200	AC61-21012A	HOLDER-CLUTCH ASSY;-, -, -, -, X-9	
K221	AC66-20581A	GEAR-CENTER ASSY;-,POM,M=0.5,-,HIGHT T.,	
K222	AC60-30306A	WASHER-SLIT;-,ID2.1,OD5.0,T0.5,-,POLYS	
K225	AC66-00006A	LEVER-UP DOWN;TS-10,POM,-,-,-,NAT,-	

MEMO

4. Electrical Parts List

Loc.No	Part No	Description : Specification	Remark	Loc.No	Part No	Description : Specification	Remark
		ASSY PCB-MAIN-FULL	S.N.A.	R1SD14	2001-000305	R-CARBON:110KOHM,5%,1/8W,AA,TP,1.8X3.2MM	SVR-2401 ONLY
S.M.P.S. PARTS				R1SD15	2001-000076	R-CARBON:47KOHM,5%,1/4W,AA,TP,2.4X6.4MM	
BD1SD1	AC27-92001M	INDUCTOR:70UH-M RT BFS3565R2F,-,-,-	Not used SVR-2401	R1SD15	2001-000305	R-CARBON:110KOHM,5%,1/8W,AA,TP,1.8X3.2MM	SVR-2401 ONLY
BD1SF1	3301-000297	CORE-FERRITE BEAD:AA,3.6x1.2x5.7mm,1400,	Not used SVR-2401	R1SD16	2003-000994	R-METAL OXIDE(S):33Kohm,5%,2W,AF,TP,3.9x	
BD1SF3	AC27-92001M	INDUCTOR:70UH-M RT BFS3565R2F,-,-,-	Not used SVR-2401	R1SD31	2001-000780	R-CARBON:4700HM,5%,1/8W,AA,TP,1.8X3.2MM	
BD1SR1	3301-000297	CORE-FERRITE BEAD:AA,3.6x1.2x5.7mm,1400,	SVR-2401 ONLY	R1SD31	2001-000515	R-CARBON:2200HM,5%,1/8W,AA,TP,1.8X3.2MM	SVR-2401 ONLY
BD1SS2	AC27-92001M	INDUCTOR:70UH-M RT BFS3565R2F,-,-,-		R1SD32	2001-000429	R-CARBON:1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
BD1SS3	3301-000297	CORE-FERRITE BEAD:AA,3.6x1.2x5.7mm,1400,		R1SD32	2001-000221	R-CARBON:1.2KOHM,5%,1/8W,AA,TP,1.8X3.2MM	SVR-2401 ONLY
C1SD03	2201-000812	C-CERAMIC,DISC:2.2nF,20%,400V,Y5U,BK,12.		R1SF11	2001-000076	R-CARBON:47KOHM,5%,1/4W,AA,TP,2.4X6.4MM	Not used SVR-2401
C1SD04	2201-000812	C-CERAMIC,DISC:2.2nF,20%,400V,Y5U,BK,12.		R1SF15	2001-000591	R-CARBON:3KOHM,5%,1/8W,AA,TP,1.8X3.2MM	Not used SVR-2401
C1SD11	2401-001682	C-AL:82uF,20%,400V,GP,BK,22x25,10		R1SF19	2001-000904	R-CARBON:6200HM,5%,1/8W,AA,TP,1.8X3.2MM	Not used SVR-2401
C1SD11	2401-003302	C-AL:47uF,20%,400V,GP,TP,18X31.5,7.	SVR-2401 ONLY	R1SF20	2003-002197	R-METAL OXIDE:0.47ohm,5%,2W,AF,TP,3.9x10	Not used SVR-2401
C1SD12	2305-001029	C-FILM,MPEF:10nF,10%,630V,TP,12x9x12.5,5		R1SF21	2001-000096	R-CARBON(S):1MOHM,5%,1/2W,AA,TP,2.4X6.4MM	Not used SVR-2401
C1SD13	2201-000376	C-CERAMIC,DISC:0.22nF,5%,50V,SL,TP,6.3x3		R1SR11	2003-000119	R-METAL OXIDE:0.68ohm,5%,2W,AE,TP,6x16mm	SVR-2401 ONLY
C1SD13	2301-000361	C-FILM,PEF:1.2nF,10%,50V,TP,-,5mm	SVR-2401 ONLY	R1SR12	2003-000264	R-METAL OXIDE:300ohm,5%,1W,AD,TP,4.3x12mm	SVR-2401 ONLY
C1SF12	2401-001200	C-AL:33uF,20%,50V,WT,TP,6.3x11.5	Not used SVR-2401	R1SR14	2001-000003	R-CARBON:330ohm,5%,1/8W,AA,TP,1.8X3.2mm	SVR-2401 ONLY
C1SR12	2401-000905	C-AL:22uF,20%,16V,BP,-,6x11.2,5mm	SVR-2401 ONLY	R1SS10	2006-000262	R-CEMENT:2.7ohm,10%,2W,CB,TP,7.5x11x20.	
C1SR14	2301-000445	C-FILM,PEF:4.7nF,5%,50V,TP,5.7x3mm,5mm	SVR-2401 ONLY	R1SS11	2003-000994	R-METAL OXIDE(S):33Kohm,5%,2W,AF,TP,3.9x	
C1SS01	2305-001021	C-FILM,MPEF:100nF,20%,275V,TP,17.5x7x13.	△	R1SS13	2003-000148	R-METAL OXIDE:1000HM,5%,2W,AE,TP,6x16MM	Not used SVR-2401
C1SS02	2305-001021	C-FILM,MPEF:100nF,20%,275V,TP,17.5x7x13.	△	R1SS32	2001-000429	R-CARBON:1KOHM,5%,1/8W,AA,TP,1.8X3.2MM	
C1SS03	2301-000361	C-FILM,PEF:1.2nF,10%,50V,TP,-,5mm		R1SS33	2004-000869	R-METAL:3Kohm,1%,1/8W,AA,TP,1.8X3.2mm	
C1SS12	2201-000129	C-CERAMIC,DISC:0.1nF,10%,1KV,Y5P,TP,7x4,	Not used SVR-2401	R1SS34	2004-000459	R-METAL:2.2Kohm,1%,1/8W,AA,TP,1.8X3.2mm	
C1SS31	2401-000385	C-AL:10uF,20%,100V,GP,TP,6.3x11.5		VA1SS1	1405-001026	VARISTOR:470V,600A,9x7mm,TP	△
C1SS32	2401-000317	C-AL:330uF,20%,50V,WT,TP,10X16MM,5		ZD1SS1	0403-000571	DIODE-ZENER:UZP43B,43V,40-46V,1W,DO-41,T	SVR-2401 ONLY
C1SS33	2401-001126	C-AL:330uF,20%,25V,WT,TP,10x12.5,5					
C1SS34	2401-003477	C-AL:330uF,20%,25V,LZ,TP,10X12.5MM,					
C1SS35	2401-003480	C-AL:1000uF,20%,10V,LZ,TP,10X16MM,5					
C1SS36	2401-001479	C-AL:470uF,20%,10V,GP,TP,-,					
C1SS39	2301-000129	C-FILM,PEF:100nF,5%,50V,TP,10X9X4.3X5.5m					
CN1SS1	3711-000178	CONNECTOR-HEADER:1WALL,2P,1R,3.96mm,STRA					
D1SD11	0402-001195	DIODE-RECTIFIER:F1T4,400V,1.0A,TS-1,TP					
D1SD31	0402-001195	DIODE-RECTIFIER:F1T4,400V,1.0A,TS-1,TP					
D1SF05	0402-001196	DIODE-RECTIFIER:T5,600V,1A,TS-1,TP	Not used SVR-2401				
D1SF12	0402-001195	DIODE-RECTIFIER:F1T4,400V,1.0A,TS-1,TP	Not used SVR-2401				
D1SR11	0401-000101	DIODE-SWITCHING:IN4148,100V,200mA,DO-35,	SVR-2401 ONLY				
D1SS01	0402-001196	DIODE-RECTIFIER:T5,600V,1A,TS-1,TP					
D1SS02	0402-001196	DIODE-RECTIFIER:T5,600V,1A,TS-1,TP					VCP ONLY
D1SS03	0402-001196	DIODE-RECTIFIER:T5,600V,1A,TS-1,TP					
D1SS04	0402-001196	DIODE-RECTIFIER:T5,600V,1A,TS-1,TP					
D1SS11	0402-000012	DIODE-RECTIFIER:UF4007,1KV,1A,DO-41,TP					
D1SS30	0402-000127	DIODE-RECTIFIER:IN4002,100V,1A,DO-41,TP					
D1SS31	0402-000195	DIODE-RECTIFIER:F1T4,400V,1.0A,TS-1,TP					
D1SS32	0402-000194	DIODE-RECTIFIER:UG2D,200V,2A,DO-204AC,TP					
D1SS33	0402-000431	DIODE-RECTIFIER: FML-M02S,200V,2.5A,TO-22					
F1SS01	3601-001123	FUSE-CARTRIDGE:250V,1.6A,TIME-LAG,CERAMI	△				
IC1SF1	1203-001802	IC-PWM CONTROLLER:STR-G6551,TO-220F,5P,	Not used SVR-2401				
IC1SS1	0604-001028	PHOTO-COUPLE:TR,50-600%,250mW,DIP,4,ST	△				
IC1SS2	AC14-12006D	IC:KA431Z,TO-92,TAPING					
L1SS02	AC29-00002A	FILTER LINE NOISE:-30mH,-,BLF-2116	△				
L1SS31	AC27-12001N	COIL-CHOKE:10UH-15%,RA,K-30,Q80,150KHZ,-					
L1SS32	AC27-12001N	COIL-CHOKE:10UH-15%,RA,K-30,Q80,150KHZ,-					
PT1SS1	AC26-00002C	TRANS SWITCHING:-,EE2621,-,UL/CSA/DEMk	△				
PT1SS1	AC26-00002G	TRANS SWITCHING:EE2621,SV-643F,-,230V,FE	△	SVR-2401 ONLY			
Q1SR01	0502-001050	TR-POWER:2SC4517A,NPN,30W,TO-220,ST,10-					
Q1SR02	0501-000442	TR-SMALL SIGNAL:KTC3203-Y,NPN,400MW,TO-9					
R1SD11	2001-000305	R-CARBON:110KOHM,5%,1/8W,AA,TP,1.8X3.2MM					
R1SD12	2001-000325	R-CARBON:1200HM,5%,1/8W,AA,TP,1.8X3.2MM					
R1SD12	2001-000003	R-CARBON:330ohm,5%,1/8W,AA,TP,1.8X3.2mm		SVR-2401 ONLY			
R1SD13	2001-000076	R-CARBON:47KOHM,5%,1/4W,AA,TP,2.4X6.4MM					
R1SD13	2001-000305	R-CARBON:110KOHM,5%,1/8W,AA,TP,1.8X3.2MM		SVR-2401 ONLY			
R1SD14	2001-000076	R-CARBON:47KOHM,5%,1/4W,AA,TP,2.4X6.4MM					
				C601	2401-003107	C-AL:47uF,20%,16V,GP,TP,5x7,5	
				C602C	2203-000609	C-CERAMIC,CHIP:22nF,10%,50V,X7R,TP,2012	
				C603C	2203-000891	C-CERAMIC,CHIP:4.7nF,10%,50V,X7R,TP,2012	
				C604C	2203-000891	C-CERAMIC,CHIP:4.7nF,10%,50V,X7R,TP,2012	
				C605C	2203-000260	C-CERAMIC,CHIP:10nF,10%,50V,X7R,TP,2012	
				C606C	2203-000260	C-CERAMIC,CHIP:10nF,10%,50V,X7R,TP,2012	
				C607	2401-000118	C-AL:1000uF,20%,10V,GP,TP,10x12.5,5	
				C608C	2203-000575	C-CERAMIC,CHIP:220nF,10%,25V,X7R,TP,2012	
				C609C	2203-000609	C-CERAMIC,CHIP:22nF,10%,50V,X7R,TP,2012	
				C611C	2203-001579	C-CERAMIC,CHIP:15nF,10%,50V,NP0,TP,2012	
				C612	2202-002037	C-CERAMIC,MLC-AXIAL:100nF,80-20%,50V,Y5V	
				C613C	2203-000609	C-CERAMIC,CHIP:22nF,10%,50V,X7R,TP,2012	
				C615C	2203-000444	C-CERAMIC,CHIP:1nF,10%,50V,X7R,TP,2012,-	
				C616	2202-000807	C-CERAMIC,MLC-AXIAL:22nF,+80-20%,25V,Y5V	

Loc.No	Part No	Description ; Specification	Remark	Loc.No	Part No	Description ; Specification	Remark
RM701	AC32-00002A	MODULE-REMOCON-,GP1U291Q,38KHZ,-7.3X13					
SW701	3404-001076	SWITCH-TACT;12V50mA,16gf+50gf,6x6mm,SP	Not used SVR-443/243				
SW703	3404-001076	SWITCH-TACT;12V50mA,16gf+50gf,6x6mm,SP	Not used SVR-443/243				
SW708	3404-001076	SWITCH-TACT;12V50mA,16gf+50gf,6x6mm,SP					
SW709	3404-001076	SWITCH-TACT;12V50mA,16gf+50gf,6x6mm,SP					
SW711	3404-001076	SWITCH-TACT;12V50mA,16gf+50gf,6x6mm,SP					
SW712	3404-001076	SWITCH-TACT;12V50mA,16gf+50gf,6x6mm,SP					
SW713	3404-001076	SWITCH-TACT;12V50mA,16gf+50gf,6x6mm,SP	SHUTTLE MODELS ONLY				
SW718	3404-000165	SWITCH-TACT;12V50mA,160gf,6x6mm,SPST					
SW719	3404-001076	SWITCH-TACT;12V50mA,16gf+50gf,6x6mm,SP	VCP ONLY				
-	-	ASSY PCB-F.AV	SV-443/243 ONLY				
C711	2202-000173	C-CERAMIC,MLC-AXIAL:1nF,10%,50V,Y5P,TP,1					
C713	2401-000414	C-AL:10uF,20%,16V,GP,TP,4x7,5					
CN705	3710-001626	CONNECTOR-SOCKET:8P,1R,2mm,ANGLE,SN					
JC701	AC37-22002J	JACK-PIN:3.2mm,DPSE-9814,2P,13mm,S/W					
L701	2701-000181	INDUCTOR-AXIAL:33uH,5%,2.4x3.4mm					
R741	2001-000281	R-CARBON:1000HM,5%,1/8W,AA,TP,1.8X3.2MM					
R742	2001-000969	R-CARBON:750HM,5%,1/8W,AA,TP,1.8X3.2MM					
SW715	3404-001008	SWITCH-TACT;15V,20mA,160gf,6x7.9x3.5mm,S					
SW716	3404-001008	SWITCH-TACT;15V,20mA,160gf,6x7.9x3.5mm,S					
-	-	ASSY PCB-SHUTTLE	SVR-443/243 ONLY				
CN6B01	3708-001164	CONNECTOR-FPC/FC/PIC:5P,1.25MM,ANGLE,SN					
SH6S1	2101-000101	VR-ROTARY:100Kohm,20%,1/10W,SIDE					

MEMO

5. Schematic Diagrams

◆ Block Identification of Main PCB -----	5-2
5-1 S.M.P.S. (Free Voltage) -----	5-3
5-2 S.M.P.S. (230 Voltage ; SVR-2401 Only) -----	5-4
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Note

For schematic Diagram

- Resistors are in ohms, 1/8W unless otherwise noted.

Special note :

Most semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "electrostatically sensitive (ES) devices" section of this service manual.

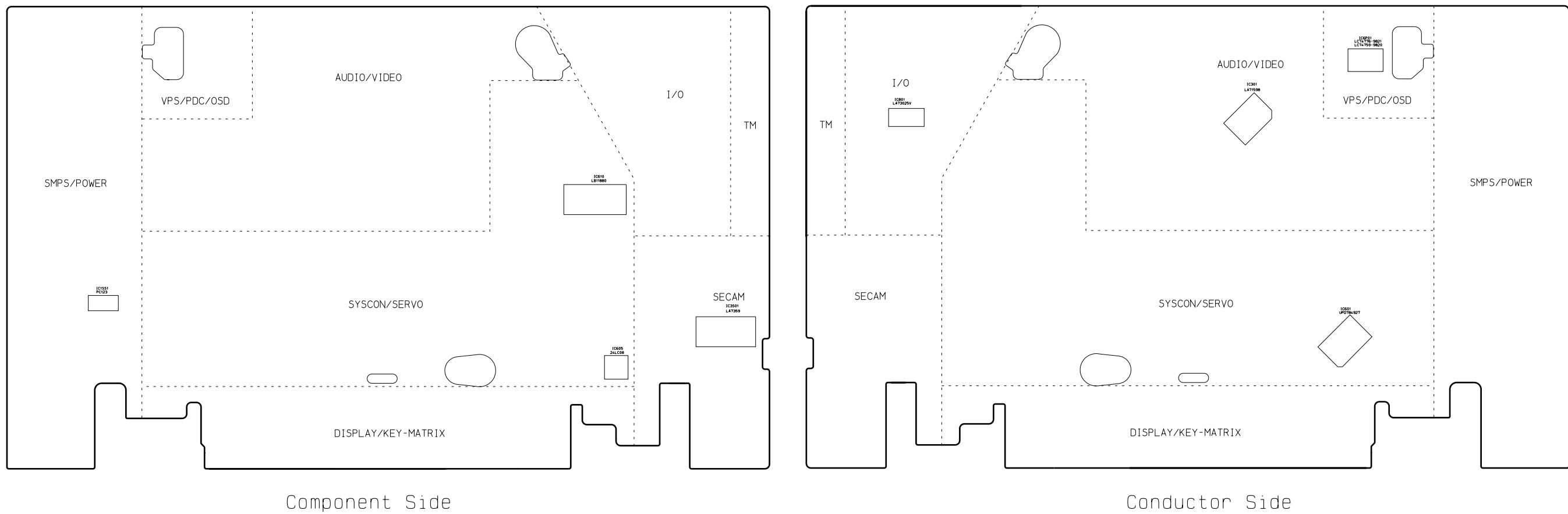
Note :

Do not use the part number shown on this drawing for ordering. The correct part number is shown in the parts list (may be slightly different or amended since this drawing was prepared).

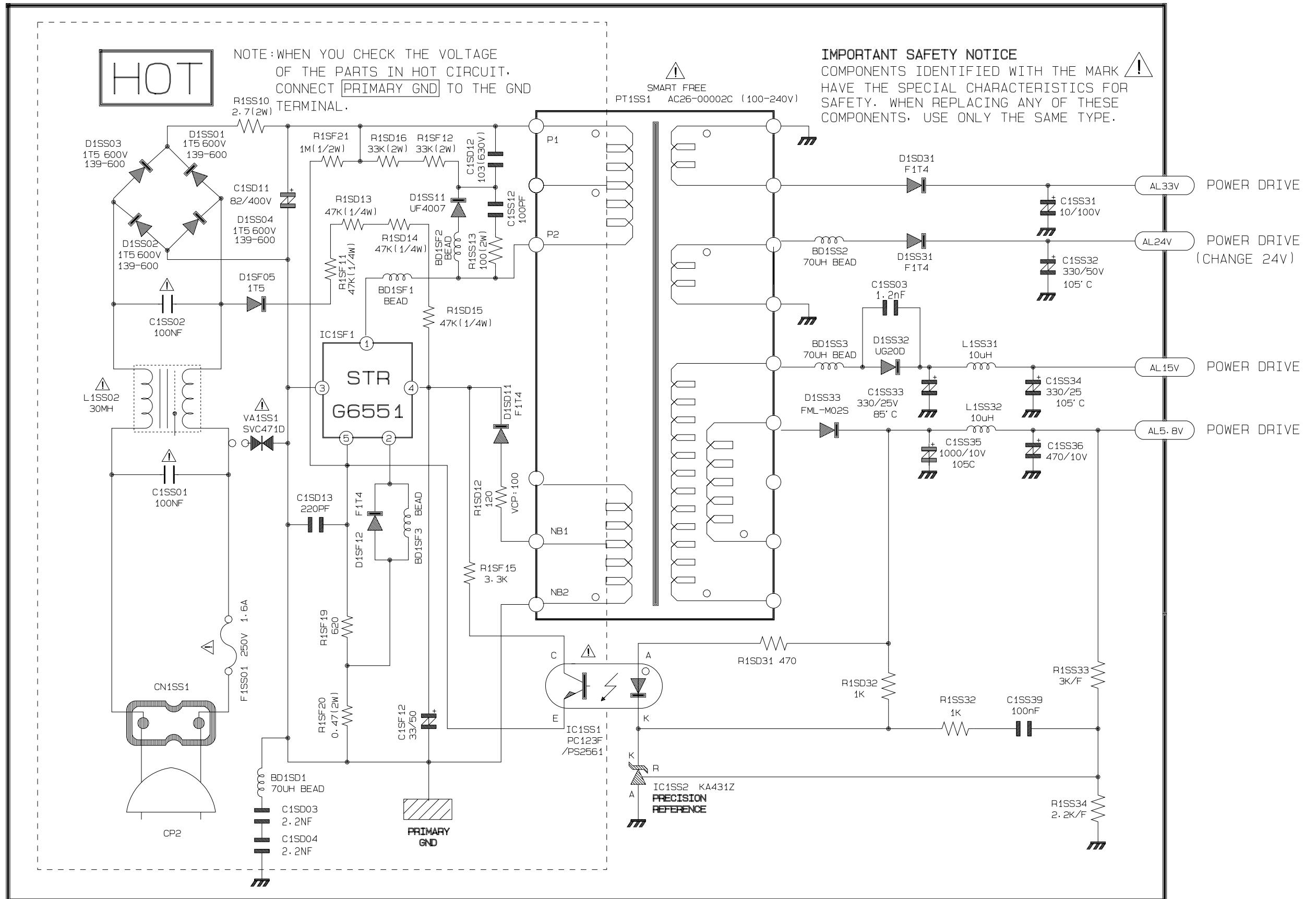
Important safety notices :

Components identified with the mark  have the special characteristics for safety. When replacing any of these components. Use only the same type.

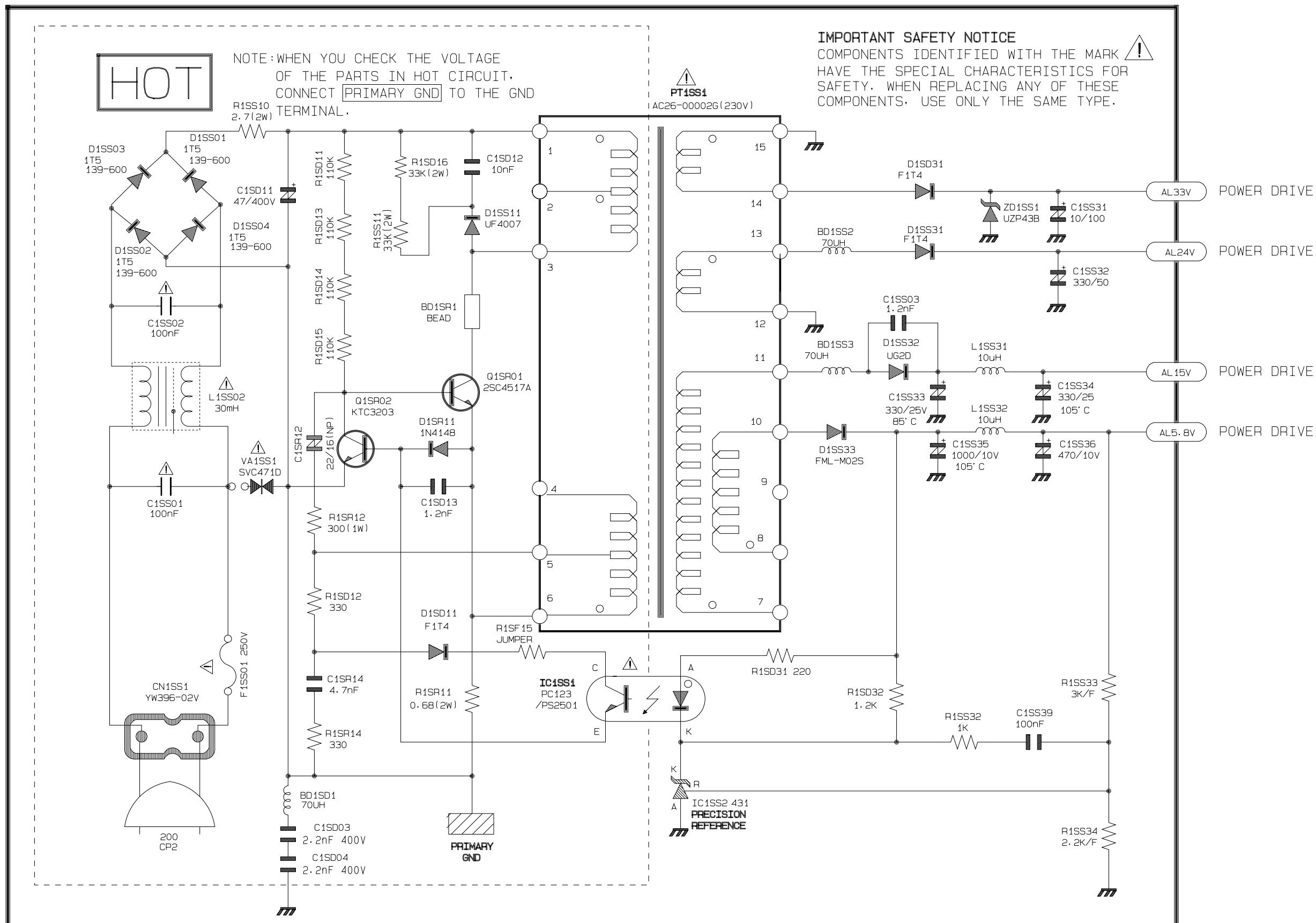
◆ Block Identification of Main PCB



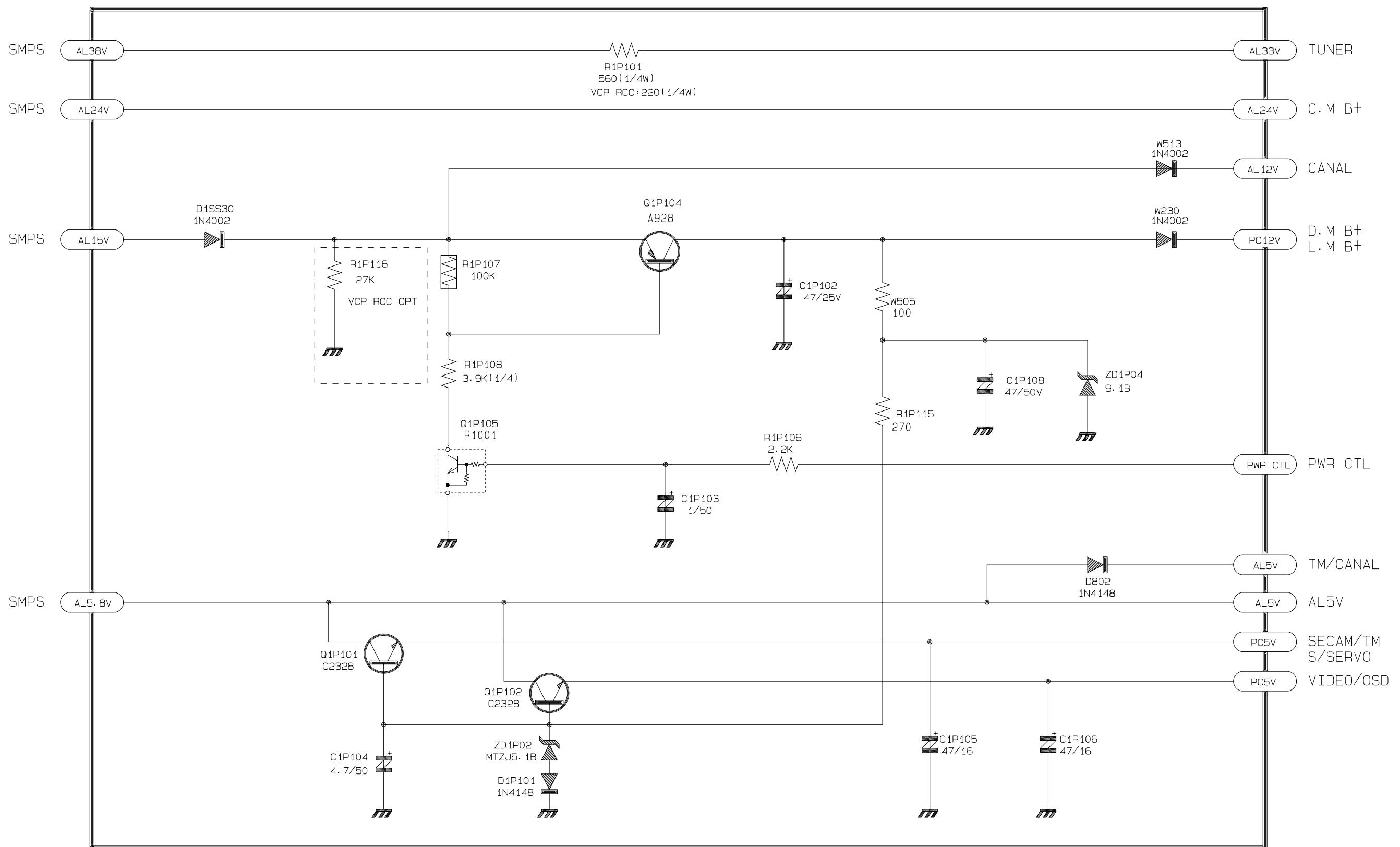
5-1 S.M.P.S. (Free Voltage)



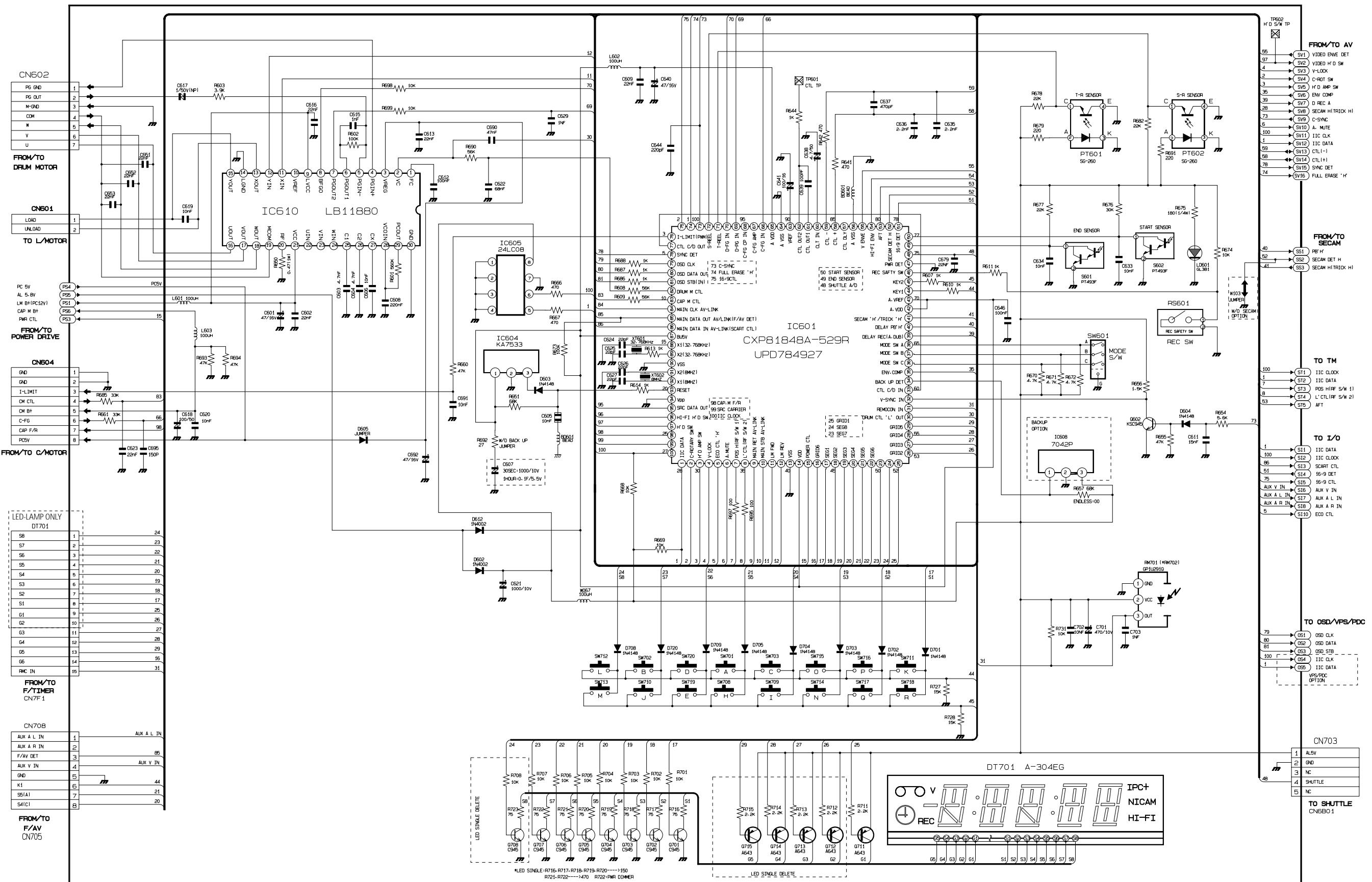
5-2 S.M.P.S. (230 Voltage ; SVR-2401 Only)



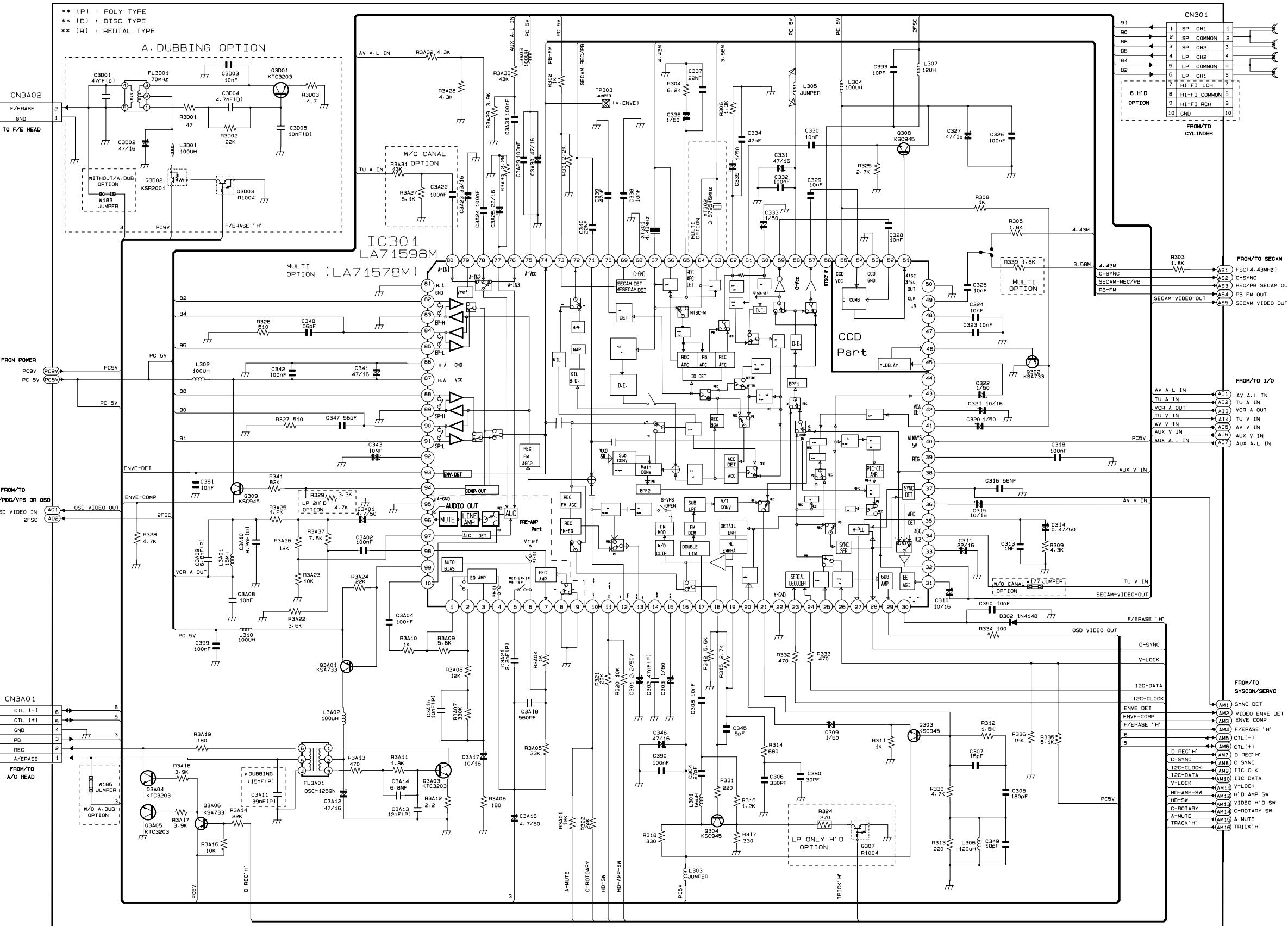
5-3 Power Drive



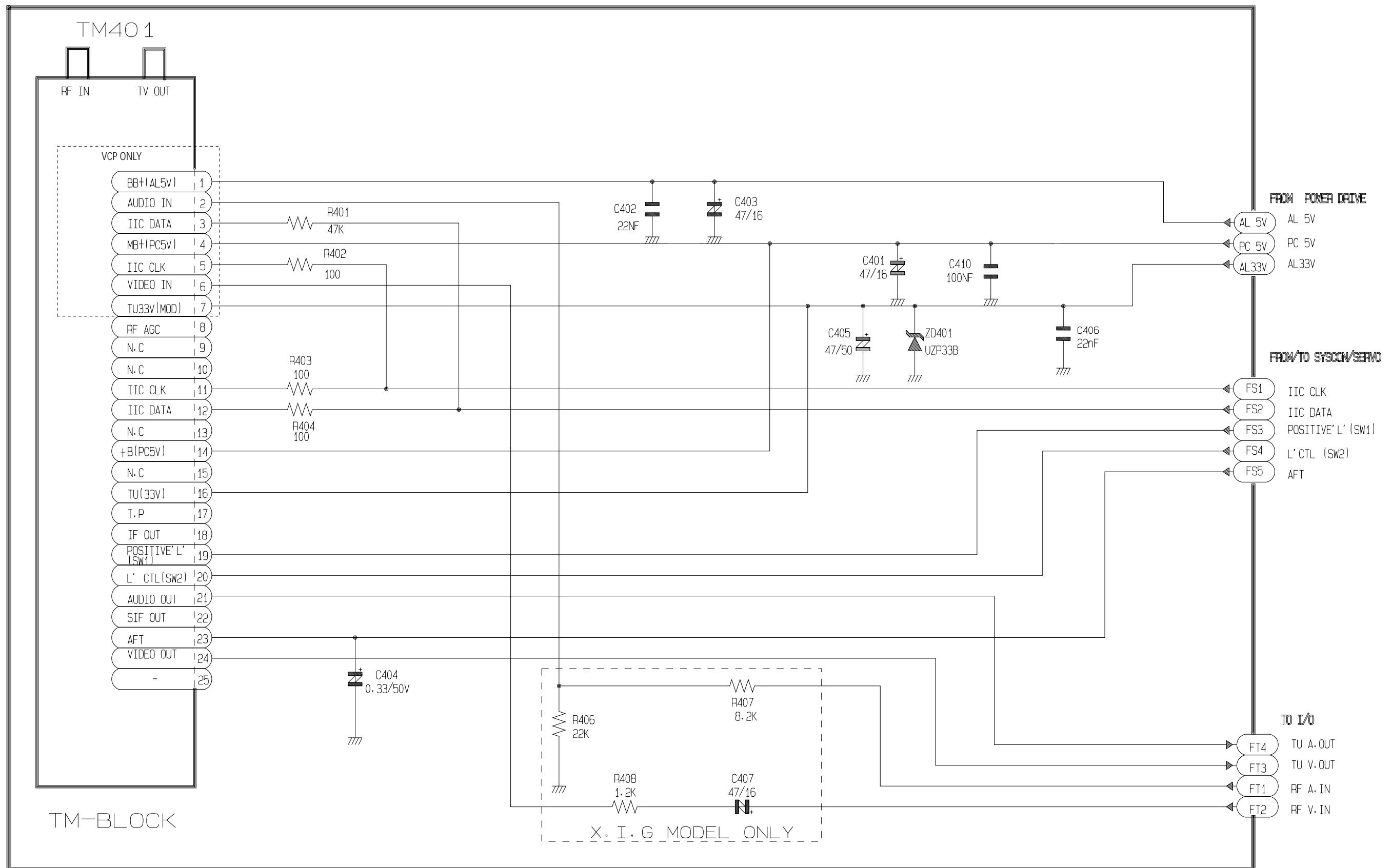
5-4 System Control/Servo/Display



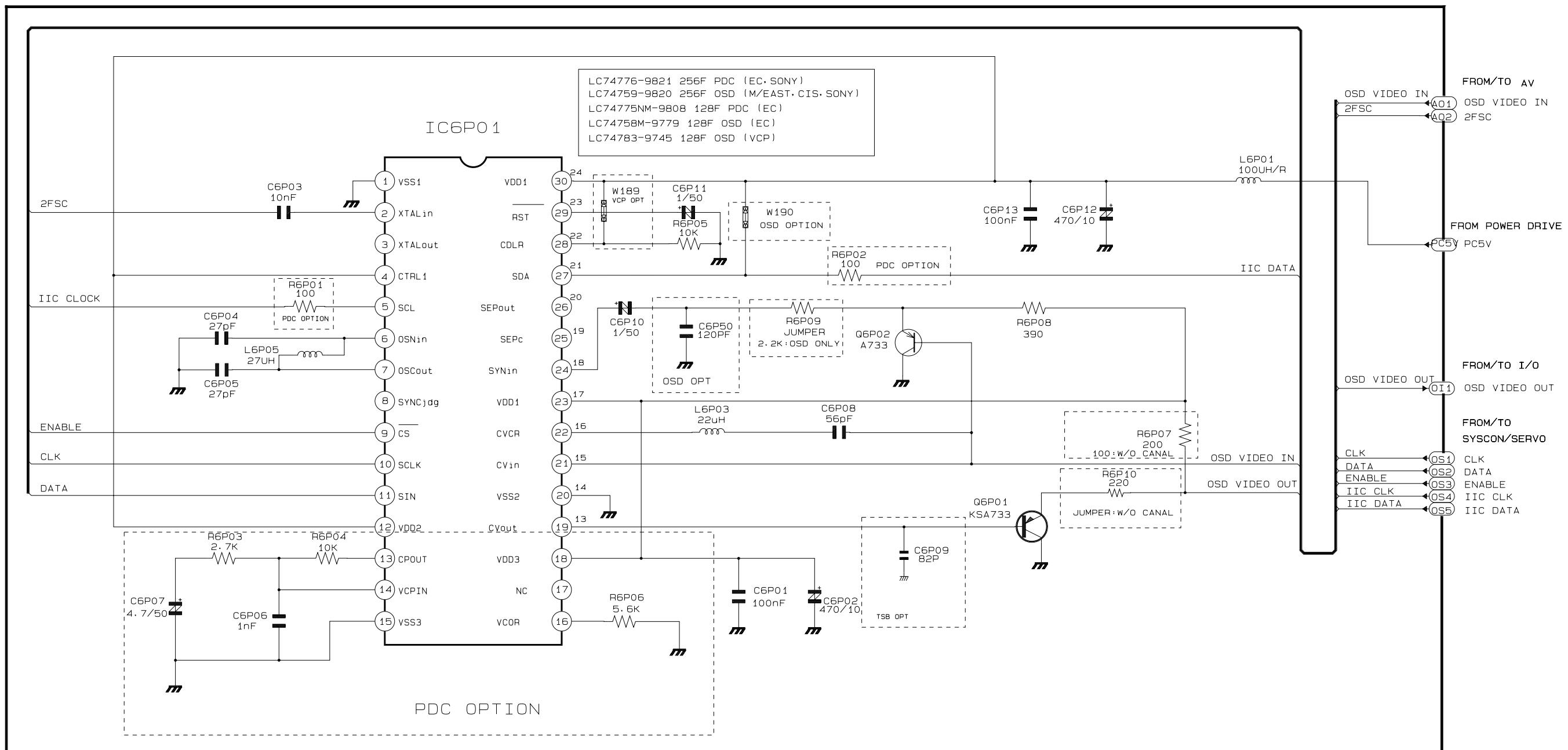
5-5 Audio/Video



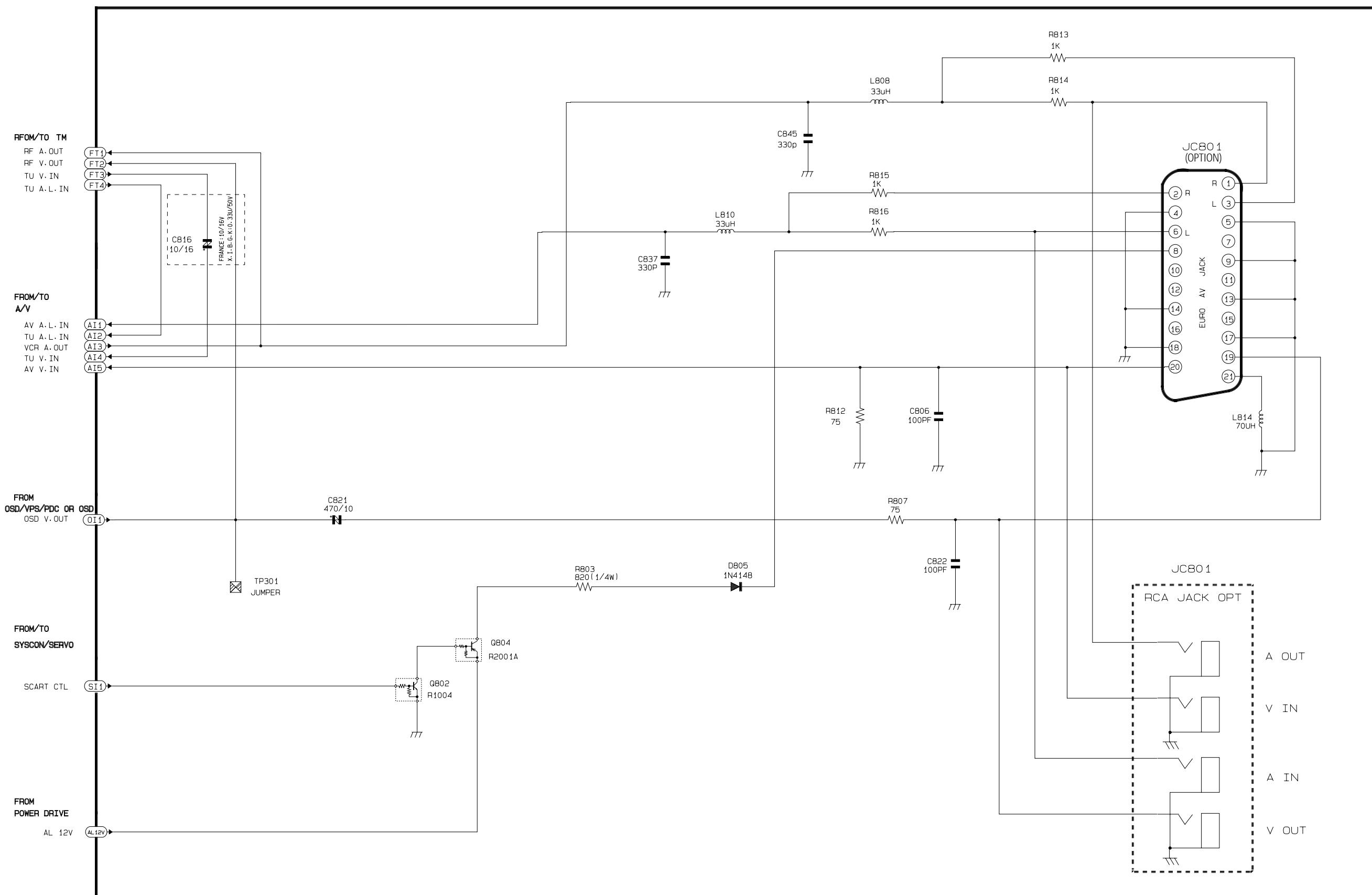
5-6 TM



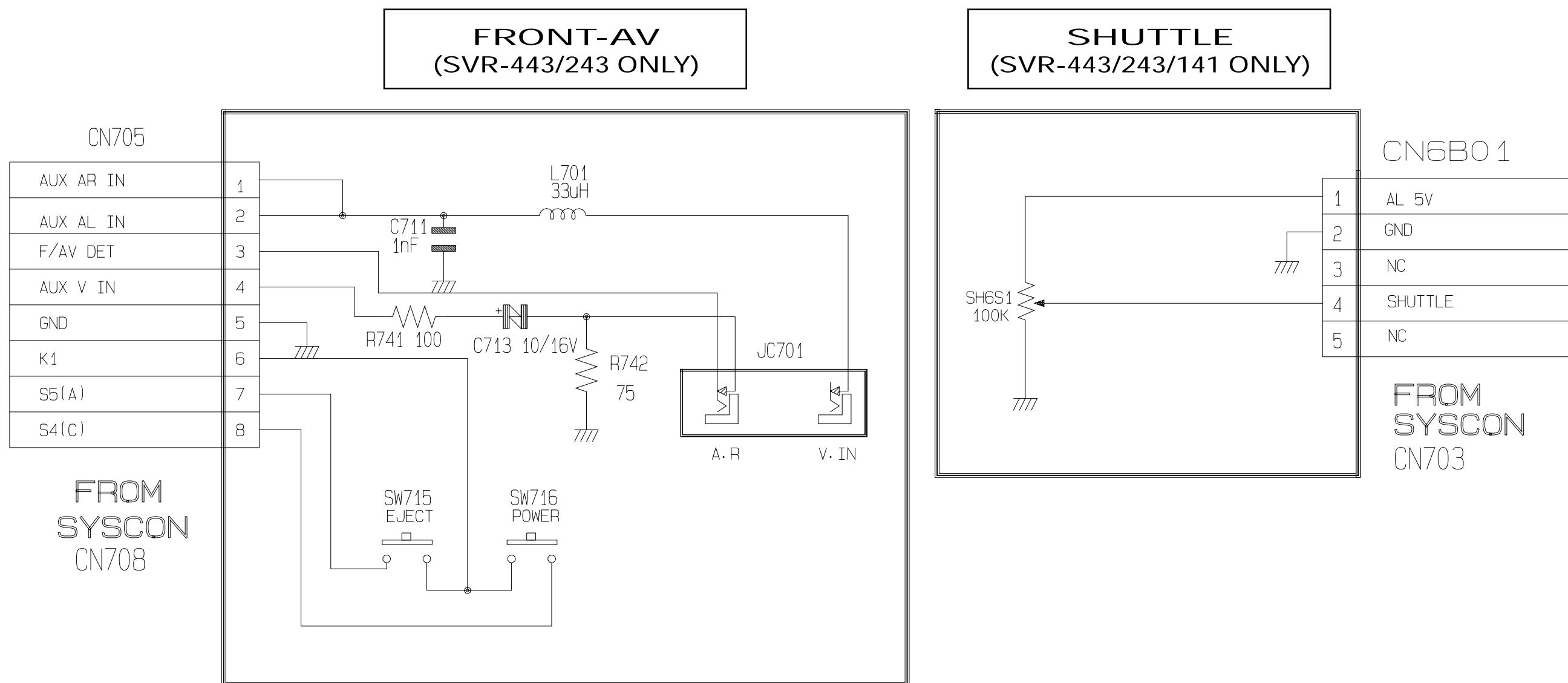
5-7 OSD

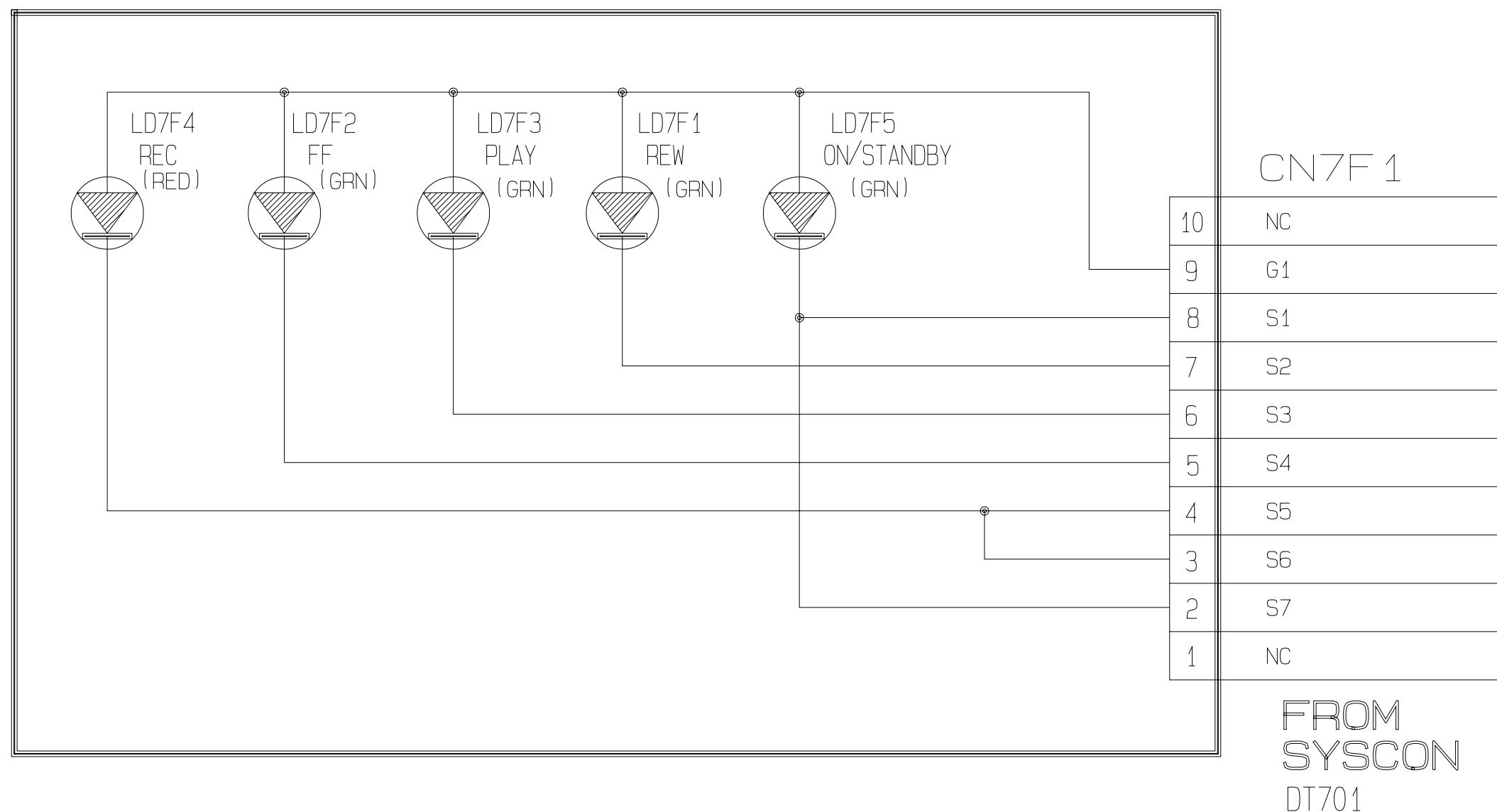


5-8 Input-Output



5-9 Front-AV/Shuttle



5-10 LED-Lamp (2 Head Models Only)



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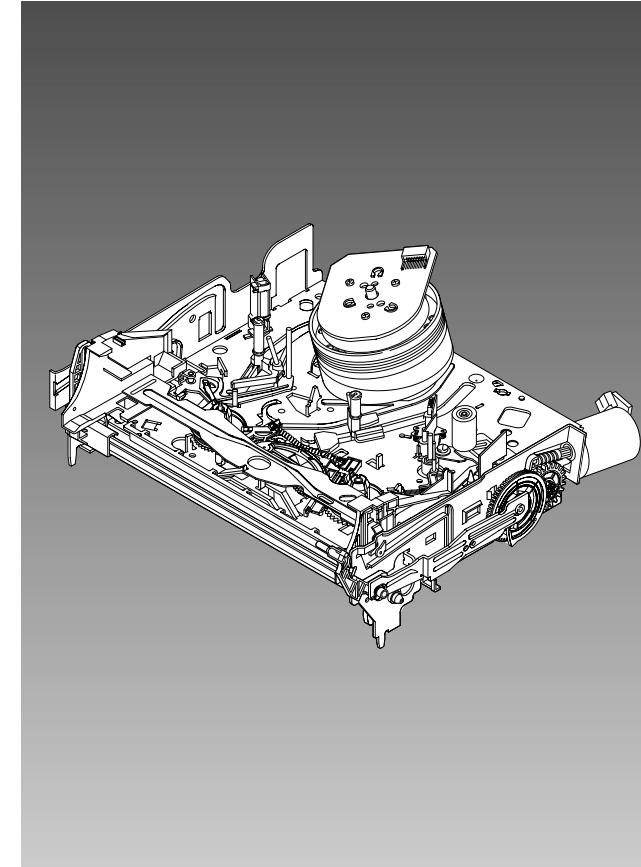


TS-10 DECK

MECHANICAL Manual

- ◆ File with the SERVICE MANUAL.

TS-10 DECK



CONTENTS

1. Disassembly and Reassembly
2. Alignment and Adjustment

1. Disassembly and Reassembly

1-1 Deck Parts Locations

1-1-1 Top View

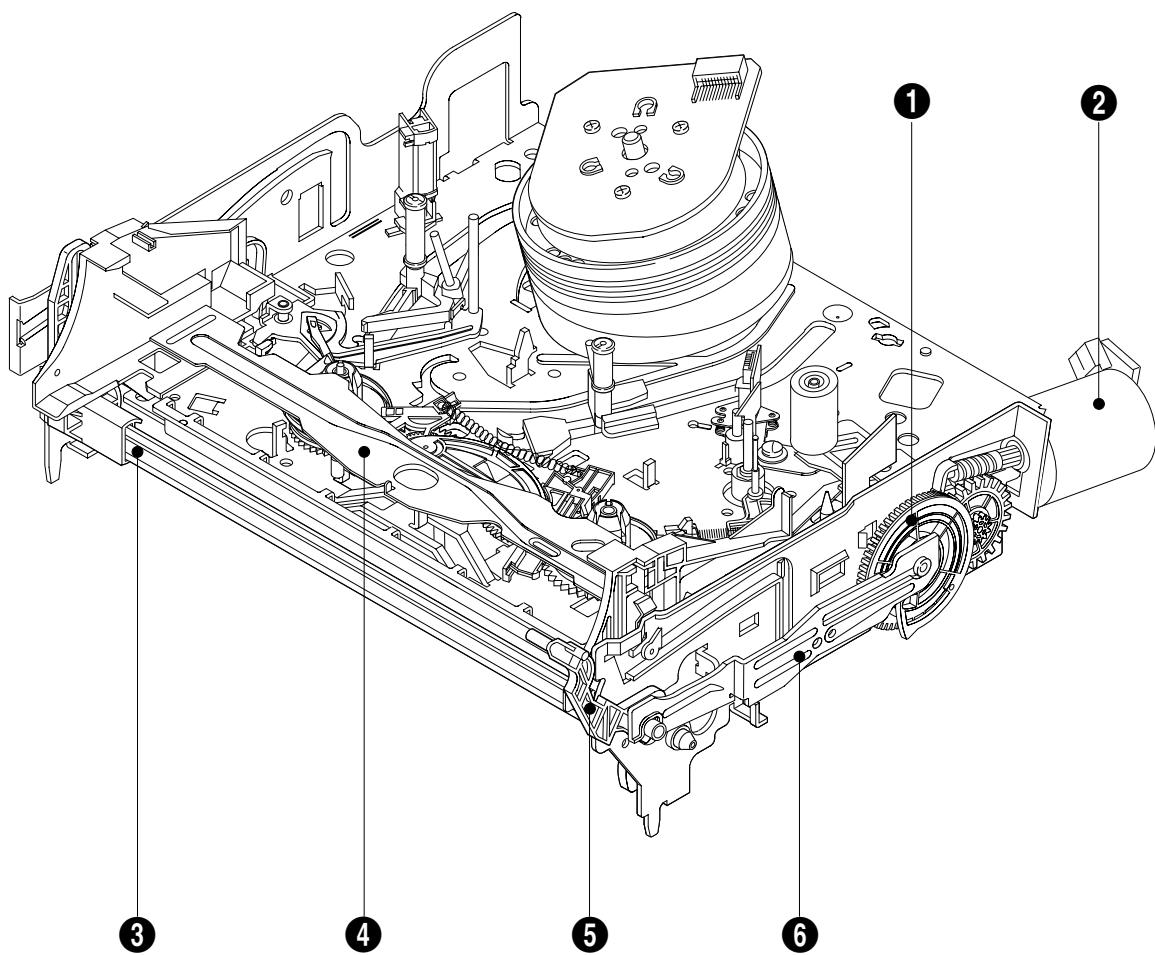


Fig. 1-1 Top parts Location-1

- ① GEAR FL CAM
- ② MOTOR LOADING ASS'Y
- ③ LEVER FL ARM ASS'Y
- ④ HOLDER FL CASSETTE ASS'Y
- ⑤ LEVER FL DOOR
- ⑥ SLIDER FL DRIVE

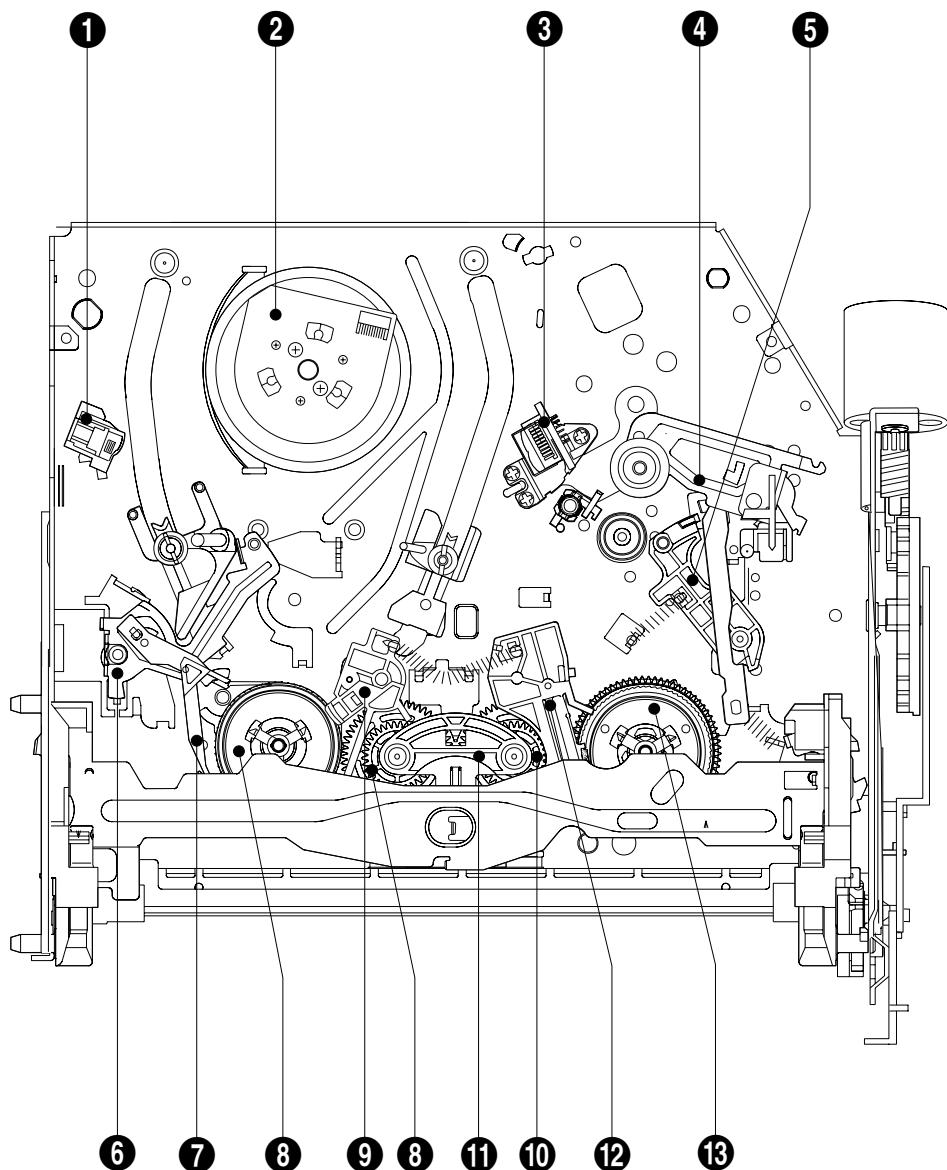


Fig. 1-2 Top Parts Location-2

- ① FE HEAD
- ② CYLINDER ASS'Y
- ③ ACE HEAD ASS'Y
- ④ LEVER UNIT PINCH ASS'Y
- ⑤ LEVER #9 GUIDE ASS'Y
- ⑥ LEVER TENSION ASS'Y
- ⑦ BAND BRAKE ASS'Y

- ⑧ DISK S REEL
- ⑨ LEVER S BRAKE ASS'Y
- ⑩ GEAR IDLE
- ⑪ LEVER IDLE
- ⑫ LEVER T BRAKE ASS'Y
- ⑬ DISK T REEL

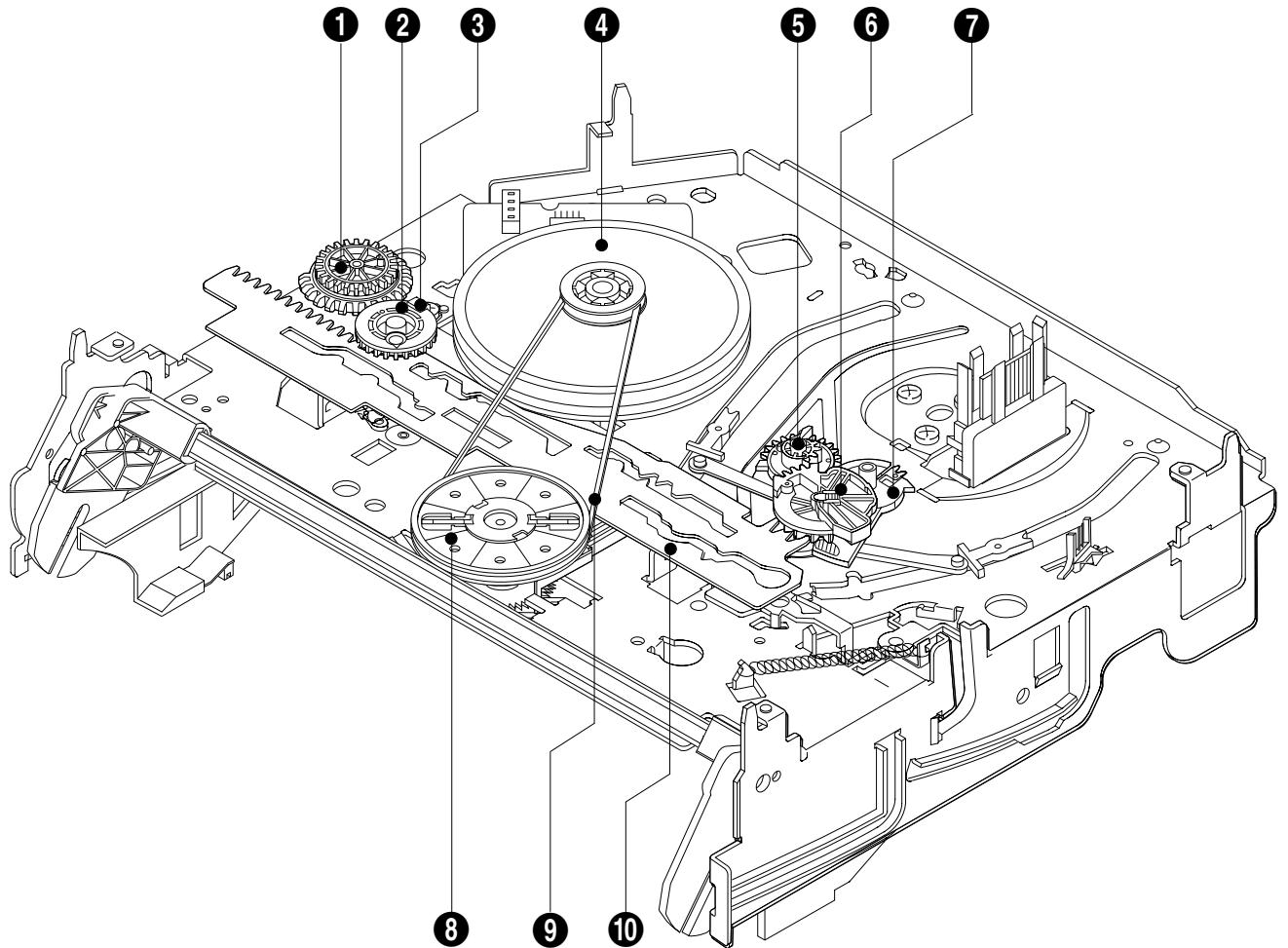
1-1-2 Bottom View

Fig. 1-3 Bottom Parts Location

- ① GEAR JOINT 1
- ② GEAR JOINT 2
- ③ BRACKET GEAR
- ④ MOTOR CAPSTAN ASS'Y
- ⑤ LEVER T LOAD ASS'Y
- ⑥ GEAR LOADING DRIVE
- ⑦ LEVER S LOAD ASS'Y
- ⑧ HOLDER CLUTCH ASS'Y
- ⑨ BELT PULLEY
- ⑩ SLIDER CAM

1-2 Main Deck

1-2-1 Lever FL Door Removal

- 1) Push the Holder FL Cassette Ass'y ① about 20mm in the direction of arrow "A".
- 2) Rotate the Lever FL Door ② in the direction of arrow "B".
- 3) Release the Hook ③ and Remove the Lever FL Door ② in the direction of arrow "C".

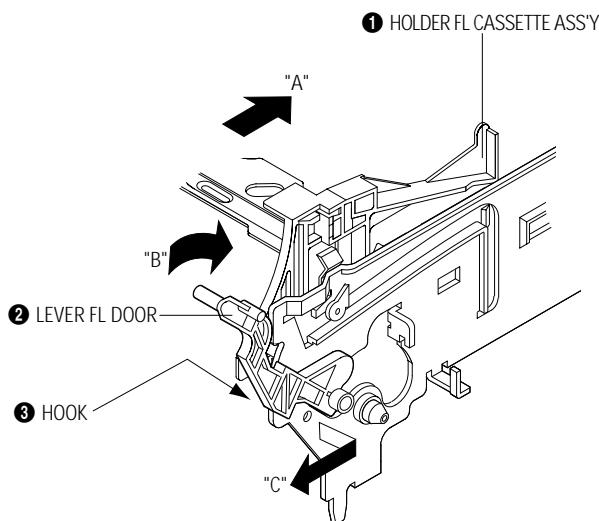


Fig. 1-4 Lever FL Door Removal

1-2-2 Holder FL Cassette Ass'y Removal

- 1) Pull the Holder FL Cassette Ass'y ① to the eject position.
- 2) Pull the Holder FL Cassette Ass'y ① as grasping the Holder FL Cassette Ass'y ① and Lever FL Cassette-R ② in the same time to release hooking from Main Base until the Boss [A] of Holder FL Cassette Ass'y ① is taken out from the Rail [B].
- 3) Lift the Holder FL Cassette Ass'y ①, in this time, you have to grasp the Lever FL Cassette-R ② Continuously until the Holder FL Cassette Ass'y ① is taken out completely.

Note : Be sure to insert Lever FL Cassette-R ② in the direction of "A" to prevent separation and breakage of the Lever FL Cassette-R ② at disassembling and reassembling.

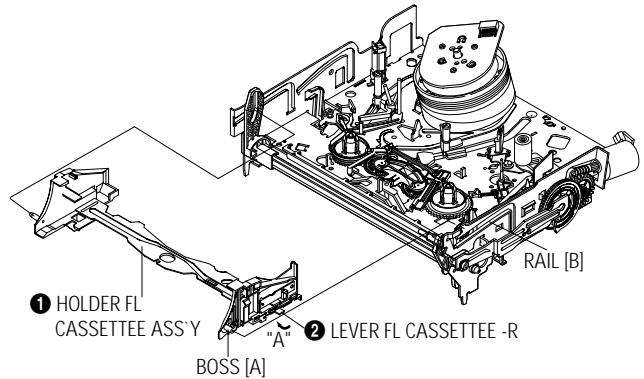


Fig. 1-5 Holder FL Cassette Ass'y Removal

1-2-3 Slider FL Drive, Gear FL Cam Removal

- 1) Pull the Slider FL Drive ① to the front direction.
- 2) Remove the Slider FL Drive ① in the direction of arrow. (Refer to Fig. 1-6)
- 3) Remove the Gear FL cam ②.

Note : When reinstalling be sure to reassemble Slider FL drive ① after you insert the Boss of Lever FL ARM-R in Groove of Slider Fl drive ①.

Assembly : Align the Gear FL Cam ① with the Gear worm wheel Post as shown drawing.
(Refer to Timing point)

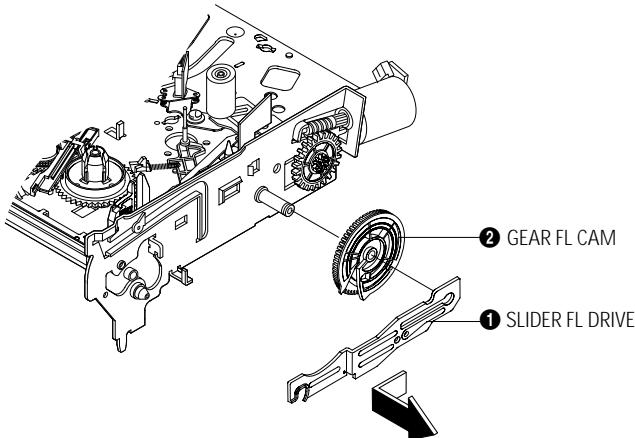


Fig. 1-6 Slider FL Drive Removal

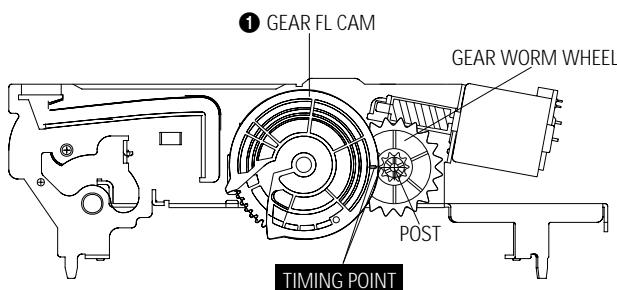


Fig. 1-7 Gear FL Cam, Gear Worm

1-2-4 Lever FL Arm Ass'y Removal

- 1) Push the hole "A" in the direction of arrow "B" use the pin.(about Dia. 2.5)
- 2) Pull out the Lever FL Arm Ass'y ① from the Boss of Main Base.
- 3) Remove the Lever FL Arm Ass'y ① in the direction of arrow "C".

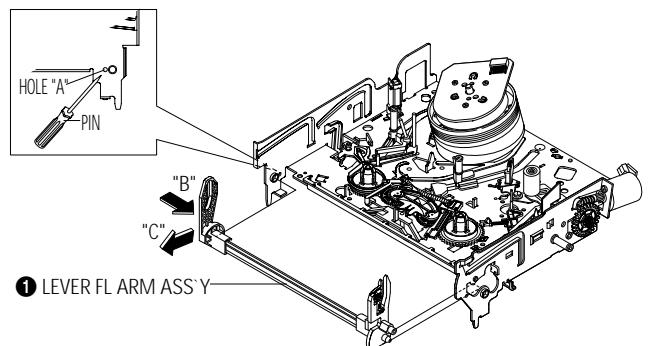


Fig. 1-8 Lever FL Arm Ass'y Removal

1-2-5 Gear Worm Wheel Removal

- 1) Remove the Gear Worm wheel ①.

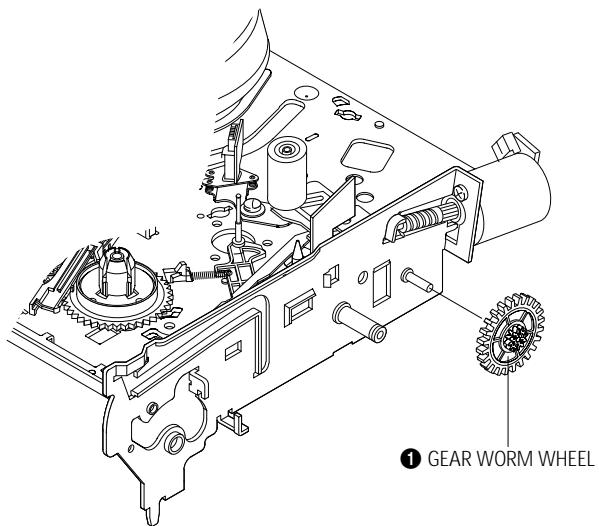


Fig. 1-9 Gear Worm Wheel Removal

1-2-6 Motor Loading Ass'y Removal

- 1) Remove the screw ①.
- 2) Remove the Motor Loading Ass'y ②.

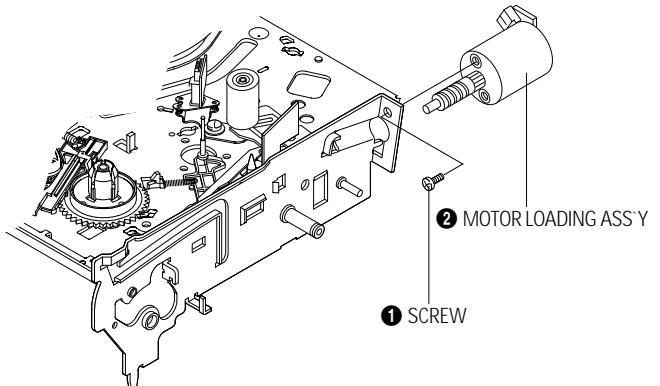


Fig. 1-10 Motor Loading Ass'y Removal

1-2-7 Bracket Gear, Gear Joint 2, 1 Removal

- 1) Remove the SCREW ①.
- 2) Remove the Bracket Gear ②.
- 3) Remove the Gear Joint 2 ③.
- 4) Remove the Gear Joint 1 ④.

Assembly :

- 1) Be sure to align dot mark of Gear Joint 1 ① with dot mark of Gear Joint 2 ② as shown Fig 1-12. (Refer to Timing point1)
- 2) Confirm the Timing Point 2 of the Gear Joint 2 ② and Slider Cam ③.

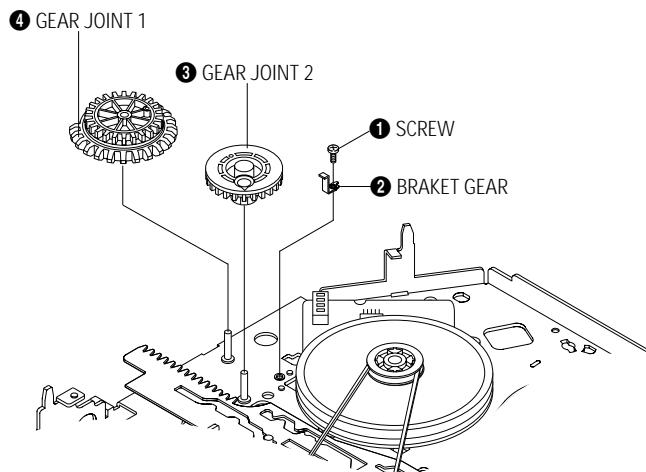


Fig. 1-11 Bracket Gear, Gear Joint 1,2 Removal

1-2-8 Gear Loading Drive, Slider Cam, Lever Load S, T Ass'y Removal

- 1) Remove the Belt Pulley. (Refer to Fig. 1-30)
- 2) Remove the Gear Loading Drive ① after releasing Hook [A] in the direction arrow as shown in detail drawing.
- 3) Remove the Slider Cam ②.
- 4) Remove the Lever Load ③, Link Load ⑤ & Lever Load ④, Link Load ⑥.

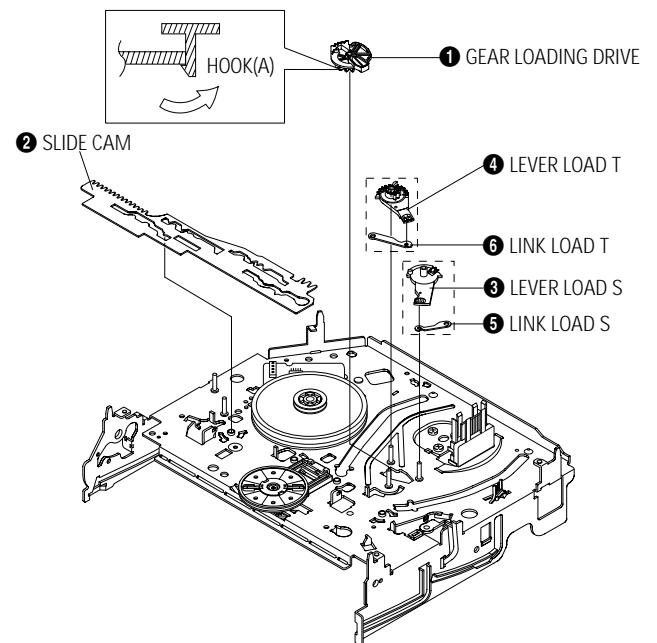


Fig. 1-13 Gear Loading Drive, Slider Cam, Lever T, S Load Ass'y Removal

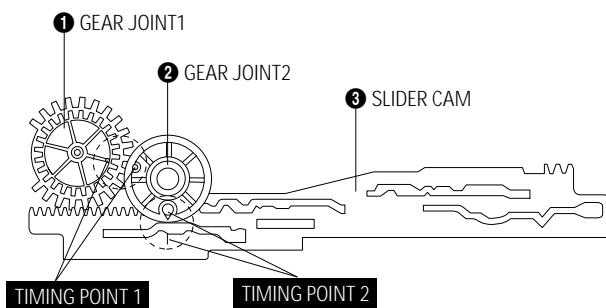


Fig. 1-12 Gear Joint 1,2 Assembly

1-2-9 Gear Loading Drive, Slider Cam, Lever Load S, T Ass'y Assembly

- 1) When reinstalling, be sure to align dot of Lever Load T Ass'y ① with dot of Lever Load S Ass'y ② as shown in drawing, (Refer to Timing Point 1).
- 2) Insert the Pin A,B,C,D into the Slider Cam ③ hole,
- 3) Be sure to align dot of Lever Load T ① and dot of Gear Loading Drive ④, (Refer to Timing Point 2).
- 4) Align dot of Gear Loading drive ④ with mark of Slider Cam ③ as shown in drawing(Refer to Timing Point 3).

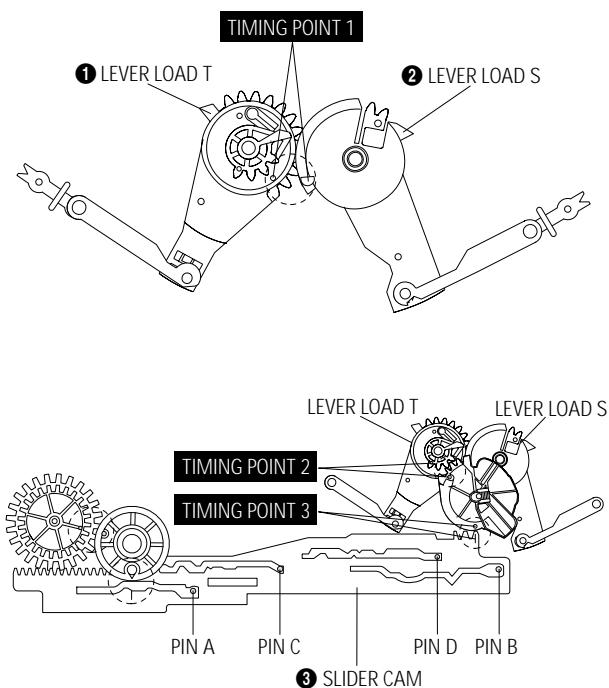


Fig. 1-14 Gear Loading Drive, Slider Cam, Lever Load S, T Ass'y Assembly

1-2-10 Lever Pinch Drive, Lever Tension Drive Removal

- 1) Remove the Lever Pinch Drive ①, Lever Tension Drive ②.

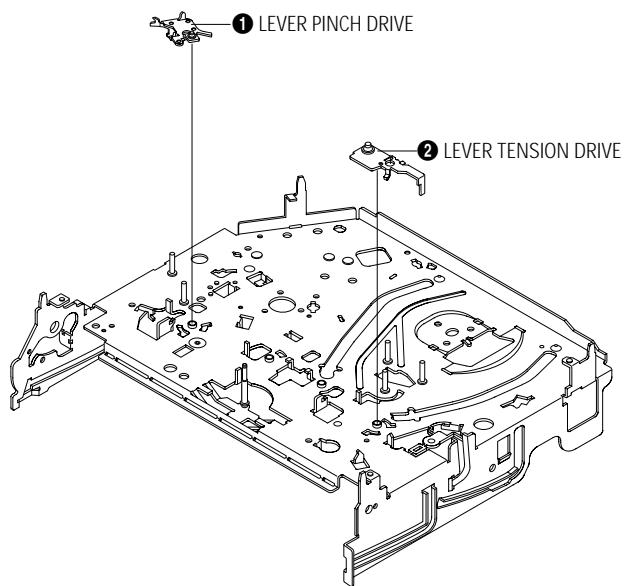


Fig. 1-15 Lever Pinch Drive, Lever Tension Drive Removal

1-2-11 Lever Tension Ass'y, Band Brake Ass'y Removal

- 1) Remove the Lever Brake S Ass'y (Refer to Fig 1-17).
- 2) Remove the Spring Tension Lever ①.
- 3) Rotate stopper of Main Base in the direction of arrow "A".
- 4) Lift the Lever Tension Ass'y ② & Band brake Ass'y ③.

Note :

- 1) When replacing the Lever Tension Ass'y ②, be sure to apply Grease on the post,
- 2) Take care not to touch stain on the felt side, and not to be folder and broken Band brake Ass'y
- 3) After Lever Tension Ass'y seated, Rotate stopper of Main Base to the Mark[B].

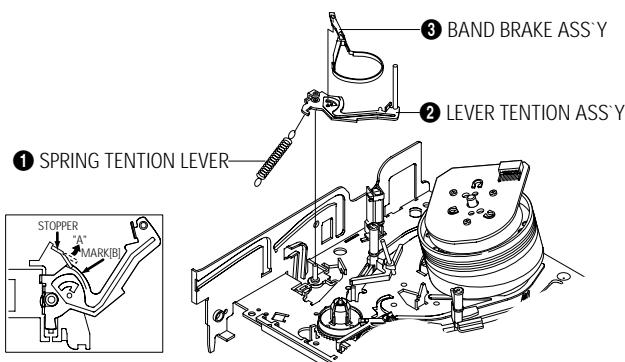


Fig. 1-16 Lever Tension Ass'y,
Band Brake Ass'y Removal

1-2-12 Lever Brake S, T Ass'y Removal

- 1) Release the Hook [A] and the Hook [B], [C] in the direction of arrow as shown in Fig 1-17.
- 2) Lift the Lever S, T Brake Ass'y ①, ② with spring brake ③.

Assembly :

- 1) Assembly the Lever S Brake Ass'y ① on the Main Base.
- 2) Assembly the Lever T Brake Ass'y ② with spring brake ③.

Note : Take extreme care not to be folded and transformed Spring Brake at removing or reinstalling.

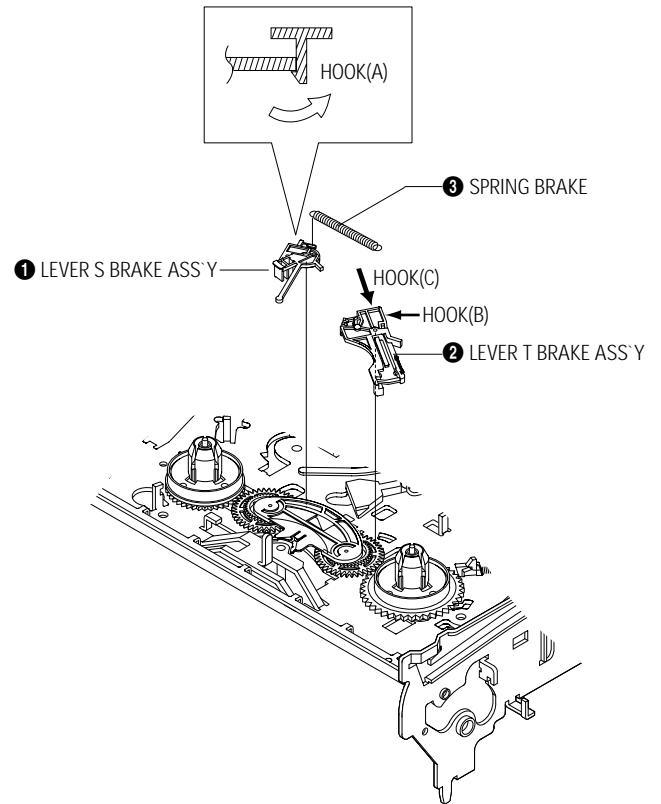


Fig. 1-17 Lever Brake S, T Ass'y Removal

1-2-13 Gear Idle Ass'y Removal

- 1) Push the Lever Idle ① in the direction of arrow "A", "B".
- 2) Lift the Lever Idle ①.

Assembly :

- 1) Apply oil in two Bosses of Lever Idle ①.
- 2) Assemble the Gear Idle ② with the Lever Idle ①.

Note : When replacing the Gear Idle ②, be sure to add oil in the boss of Lever Idle ①.

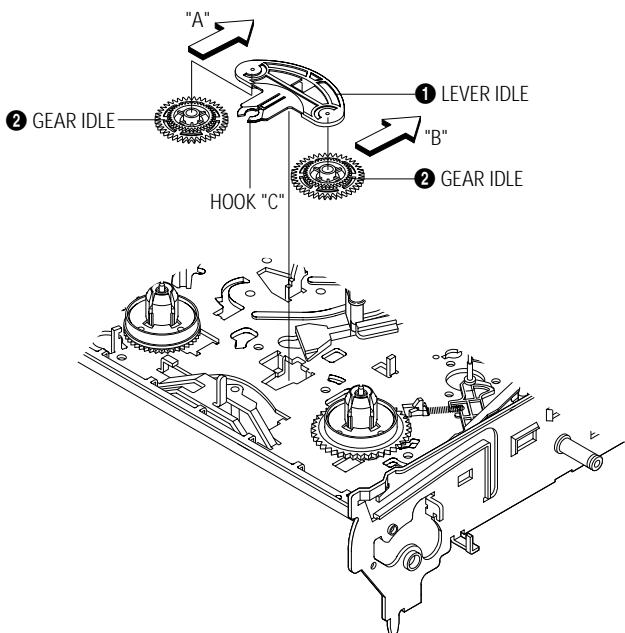


Fig. 1-18 Gear Idle Ass'y Removal

1-2-14 Disk S, T Reel Removal

- 1) Lift the Disk S, T Reel ①, ②.

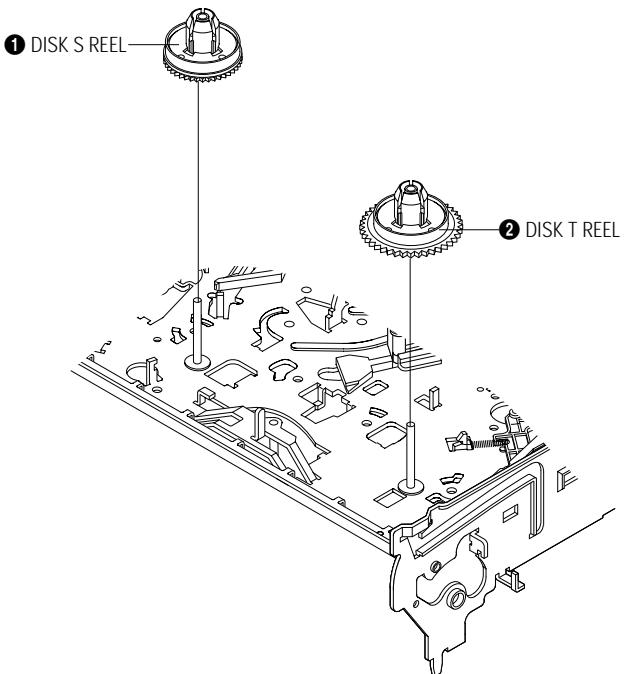


Fig. 1-19 Disk S, T Reel Removal

1-2-15 Holder Clutch Ass'y Removal

- 1) Remove the Washer Slit ①.
- 2) Lift the Holder Clutch Ass'y ②.

Note : When you reinstall Holder Clutch Ass'y
 1) Check the condition of spring as shown in detail A.
 2) Don't push Holder Clutch Ass'y down with excessive force Just insert Holder Clutch Ass'y into post center with dead force and Rotate it smoothly. Be sure to confirm that spring is in the slit of Gear Center Ass'y as shown in detail B.

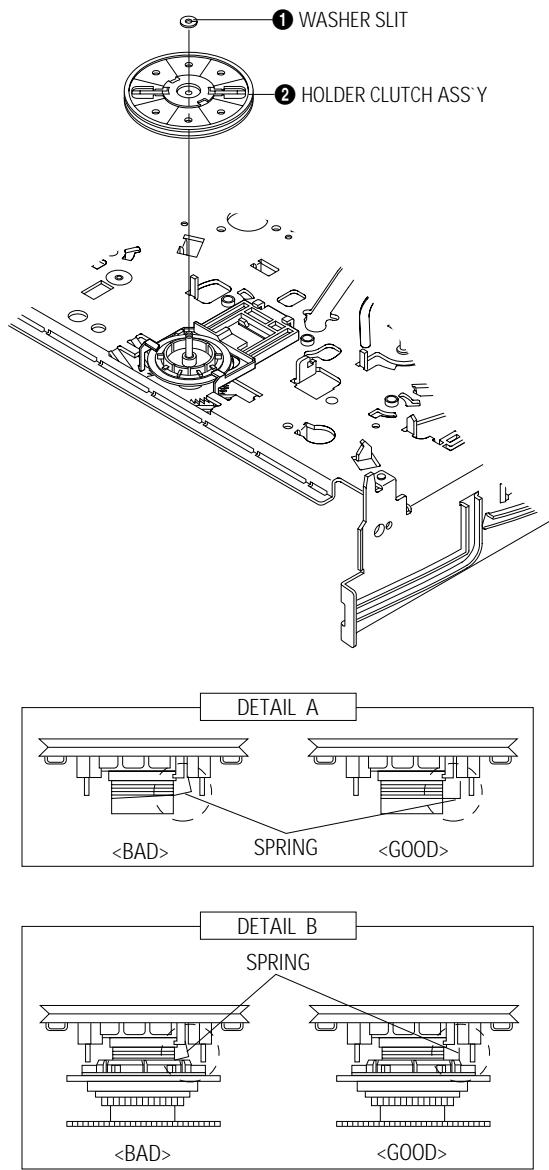


Fig. 1-20 Holder Clutch Ass'y Removal

1-2-16 Lever Up Down Ass'y, Gear Center Ass'y Removal

- 1) Remove the 2 hooks in the direction of arrow as shown Fig. 1-21 and lift the Lever Up Down Ass'y ①.
- 2) Lift the Gear Center Ass'y ②.

Assembly :

- 1) Insert the Lever Up Down Ass'y ① in the rectangular holes on Main Base as shown in Fig 1-22.
- 2) Lift the Lever Up Down Ass'y ① about 35°. (Refer to Fig 1-22)
- 3) Insert Ring of the Gear Center Ass'y ② in the Guide of the Lever Up Down Ass'y ①.
- 4) Insert the Gear Center Ass'y ② in the post on Main Base.
- 5) Push down the Lever Up Down Ass'y ① for locking of the Hook.

Note :

- 1) Take care not to separate and sentence does not mark sense.
- 2) Be sure to confirm that Ring of the Gear Center Ass'y ② is in the Guide of the Lever Up Down Ass'y ① after finishing assembly of Lever Up Down Ass'y ① and Gear Center Ass'y ②.

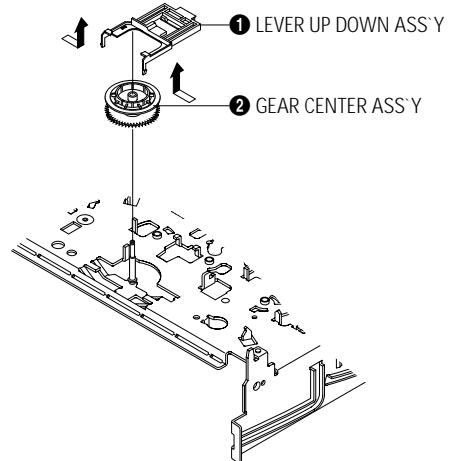


Fig. 1-21 Lever Up Down Ass'y Removal

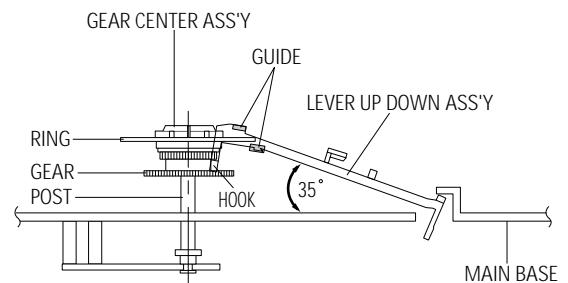


Fig. 1-22 Lever Up Down Ass'y Removal

1-2-17 Guide Cassette Door Removal

- 1) Lift the Hook [A].
- 2) Rotate the Guide Cassette Door ① in the direction of arrow.

Note : After reinstalling the Guide Cassette Door ① be sure the Hook [A].

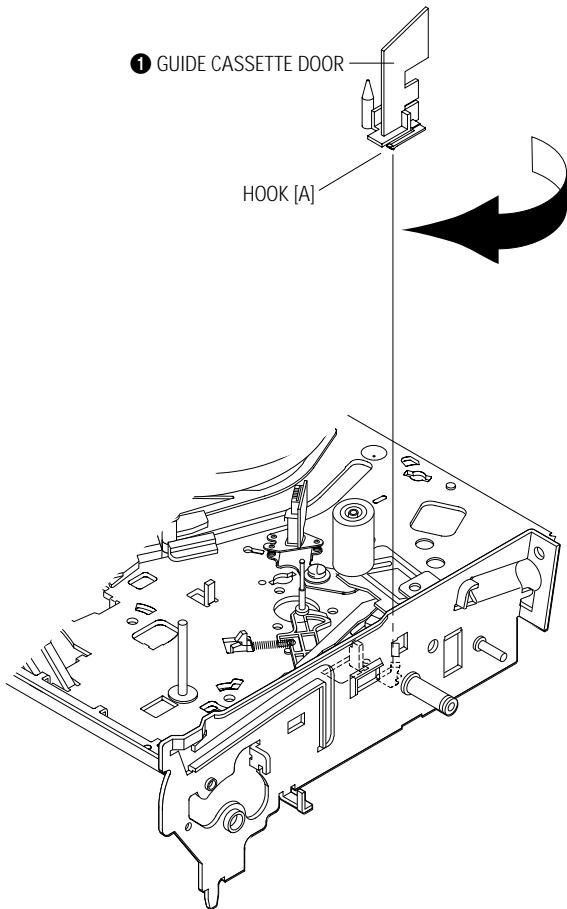


Fig. 1-23 Guide Cassette Door Removal

1-2-18 Lever Unit Pinch Ass'y, Plate Joint, Spring Pinch Drive Removal

- 1) Lift the Unit Pinch Ass'y ①.
- 2) Remove the Plate Joint ② from Lever Pinch Drive.
- 3) Remove the Spring Pinch Drive ③.

Note :

- 1) Take extreme care not to touch the grease on the Roller Pinch.
- 2) When reinstalling, be sure to apply grease on the post pinch roller.

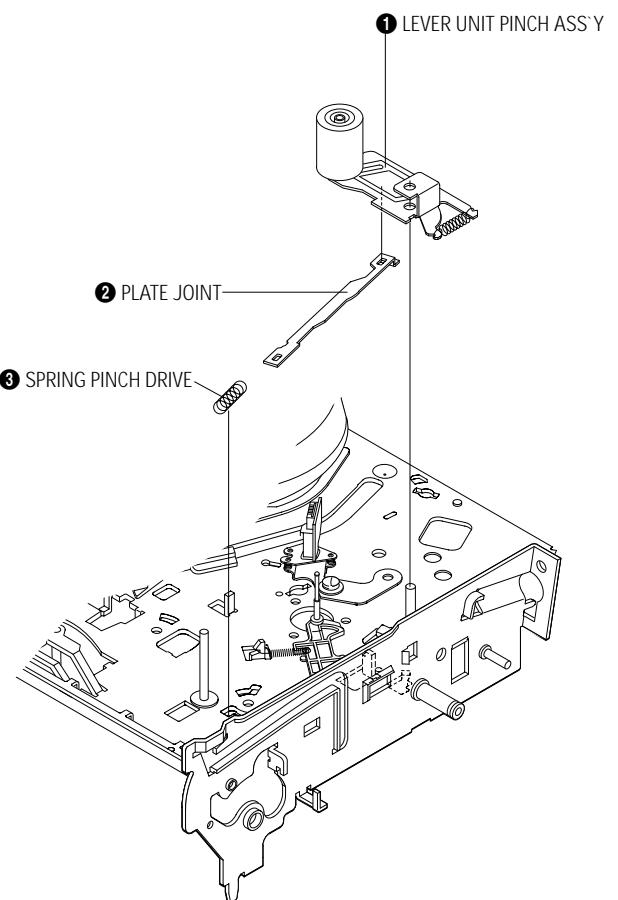


Fig. 1-24 Lever Unit Pinch Ass'y, Plate Joint, Spring Pinch Drive Removal

1-2-19 Lever #9 Guide Ass'y Removal

- 1) Remove the Spring #9 Guide **①**.
- 2) Lift the Spring #9 Guide Ass'y **②** in the direction of arrow "A".

Note :

- 1) Take extreme care not to get grease on the tape Guide Post.
- 2) After reinstalling, check the bottom side of the Post #9 Guide to the top side of Main Base.

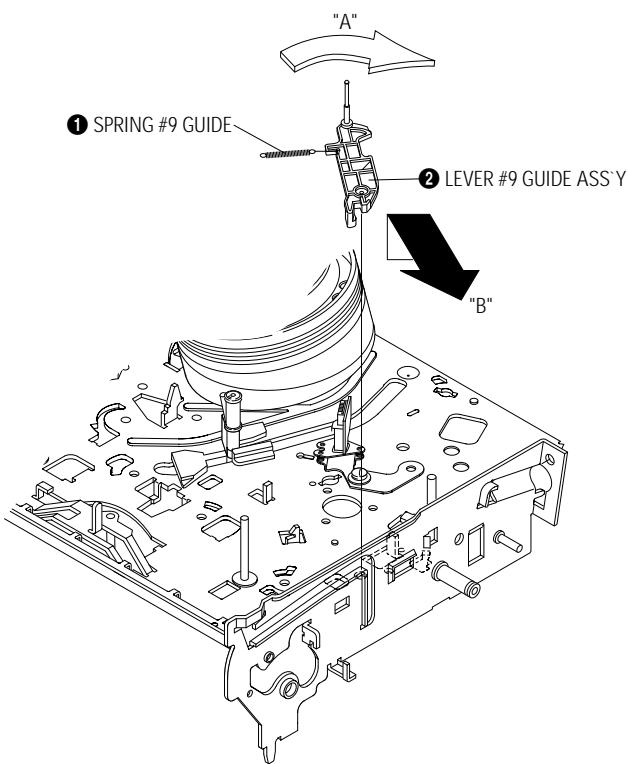


Fig. 1-25 Lever #9 Guide Ass'y Removal

1-2-20 FE Head Removal

- 1) Remove the screw **①**.
- 2) Lift the FE Head **②**.

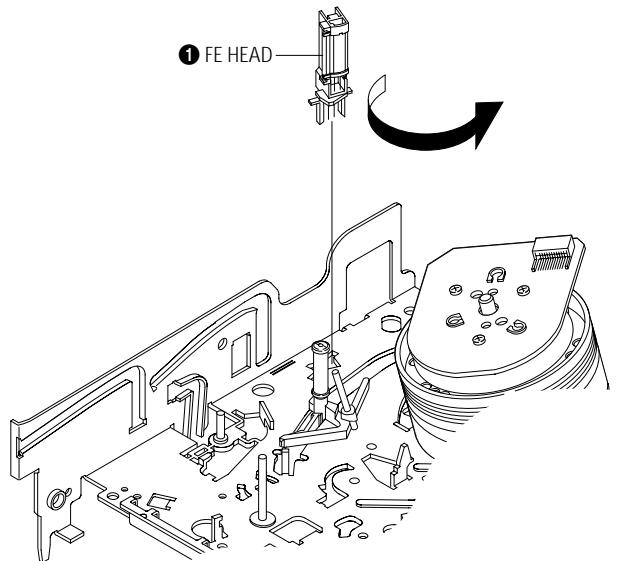


Fig. 1-26 FE Head Removal

1-2-21 ACE Head Removal

- 1) Pull out the FPC from connector of ACE Head Ass'y ②.
- 2) Remove the screw ①.
- 3) Lift the ACE Head Ass'y ②.

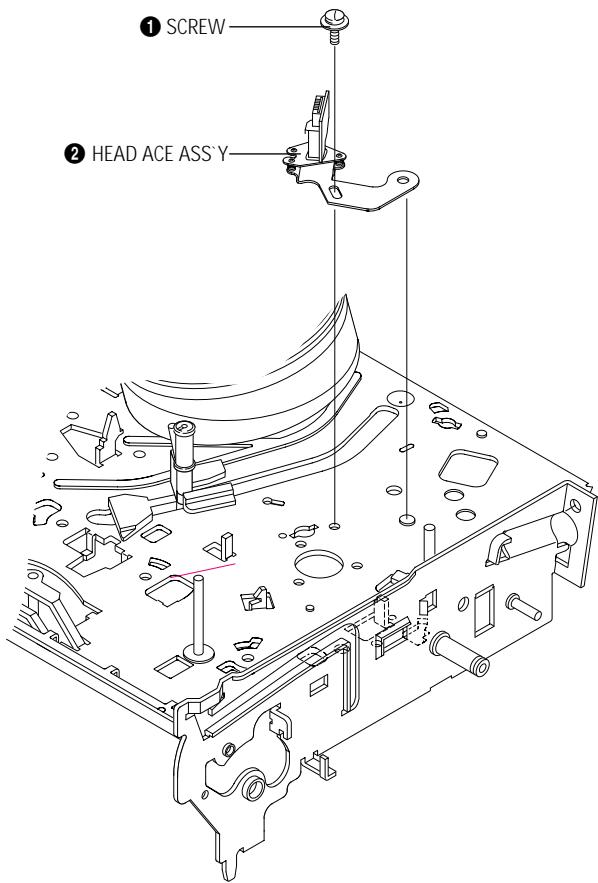


Fig. 1-27 ACE Head Removal

1-2-22 Slider S, T Ass'y Removal

- 1) Move the Slider S, T Ass'y ①, ② to slot, and then lift it to remove. (Refer to arrow)

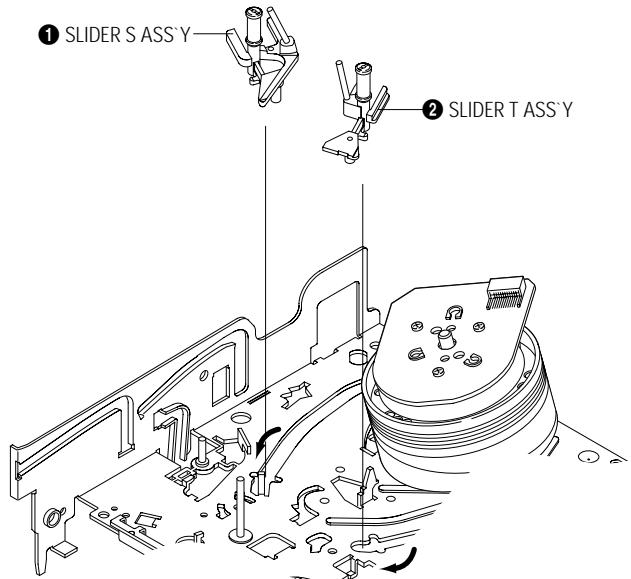


Fig. 1-28 Slider S, T Ass'y Removal

1-2-23 Plate Ground Deck, Cylinder Ass'y Removal

- 1) Remove the 3 Screws ①.
- 2) Lift the Plate Ground Deck ②.
- 3) Lift the Cylinder Ass'y ③.

Assembly :

- 1) Match the 3 holes in the bottom of Cylinder ass'y ③ to the 3 holes of Main Base as attending not to drop or knock the Cylinder ass'y ③.
- 2) Tighten the 1 Screw ①.
- 3) Match the Plate Ground Deck ② to the Hole of Base Main.
- 4) Tighten the other 2 Screws ①.

Note :

- 1) Take care not to touch the Cylinder Ass'y ③ and the tape guide post at reinstalling.
- 2) When reinstalling, Don't push down too much on Screw Driver.

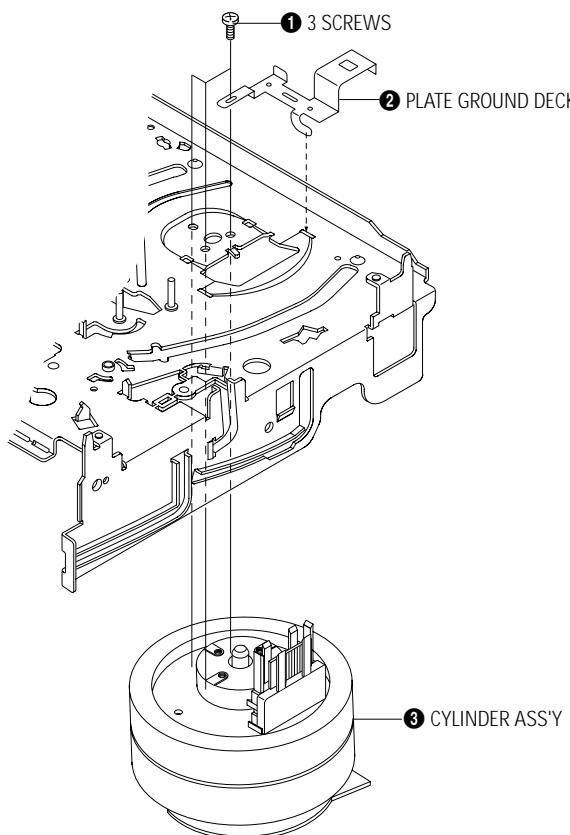


Fig. 1-29 Plate Ground Deck, Cylinder Ass'y Removal

1-2-24 Belt Pulley Removal

- 1) Remove the Belt Pulley ①.

Note : Take extreme care not to get grease on Belt Pulley ① at assembling or reassembling.

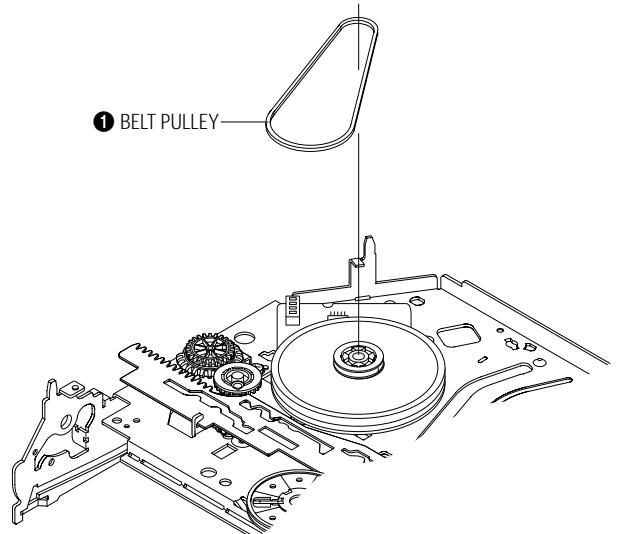


Fig. 1-30 Belt Pulley Removal

1-2-25 Level Head Cleaner Ass'y Removal (Optional)

- 1) Release the Hook ①.
- 2) Lift the Lever Head Cleaner Ass'y ②.

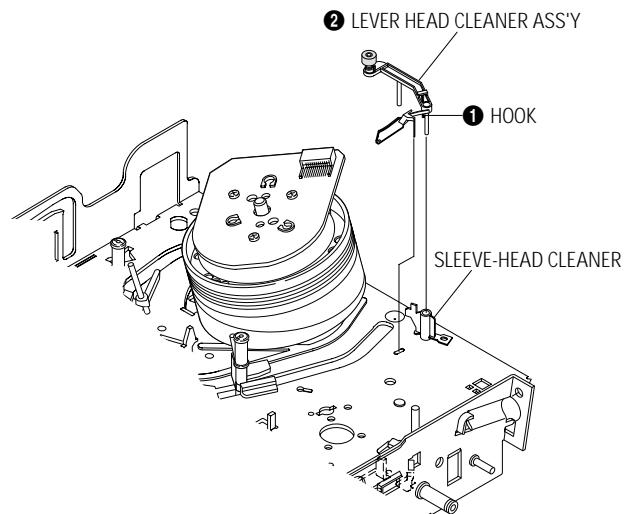


Fig. 1-31 Level Head Cleaner Ass'y Removal

1-2-26 Damper Capstan, Motor Capstan Ass'y Removal

- 1) Remove the Damper Capstan ① in the direction of arrow.
- 2) Remove the 3 Screws ②.
- 3) Remove the Motor Capstan Ass'y ③.

Assembly :

- 1) Match the 3 holes of Motor Capstan Ass'y ③ to the 3 holes of Main Base. Be careful not to drop or knock the Motor Capstan Ass'y ③.
- 2) Tighten the 3 Screws ② in the direction of arrow as shown detail drawing.
- 3) Assemble the Damper Capstan ①.

Note : After tightening screws, check if there is gap between the head of screws and the top side of Main Base. There should have no gap between the head of screws and the top side of Main Base.
After reinstalling, adjusting the tape transport system again.

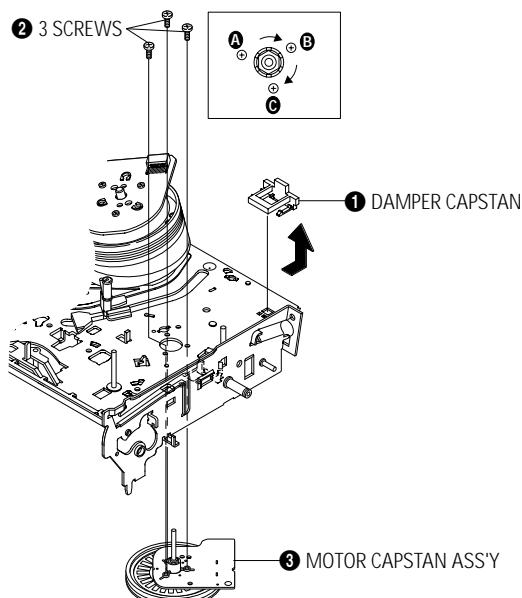


Fig. 1-32 Damper Capstan,Motor Capstan Ass'y Removal

1-2-27 How to Eject the Cassette Tape (If the unit does not operate on condition that is inserted into housing ass'y)

- 1) Turn the Gear worm ① clockwise with screw driver.(Refer to arrow)
(Other method : Remove the Screw of Motor Load Ass'y, Separate the Motor Load Ass'y)

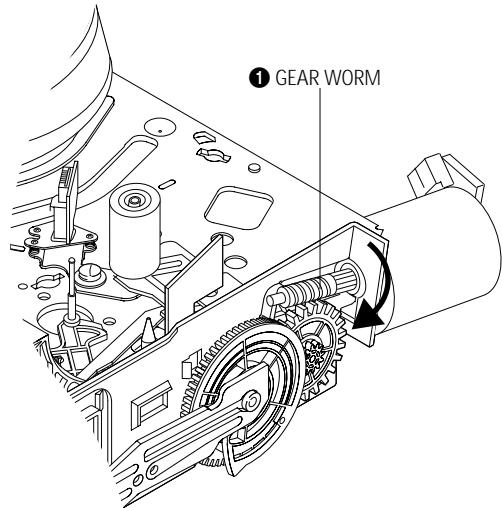


Fig. 1-33

- 2) When Slider S,T are approached in the position of unloading, rotate holder Clutch counterclockwise after inserting screw driver in the hole of frame's bottom in order to wind the unwinded tape.
(Refer to Fig.1-34)
(If you rotate Gear Worm ① continuously when tape is in state of unwinding, you may cause a tape contamination by grease and tape damage. Be sure to wind the unwinded tape in the state of set horizontally.)
- 3) Rotate Gear Worm ① clockwise using screw driver again up to the state of eject mode and then pick out the tape.(Refer to Fig.1-33)

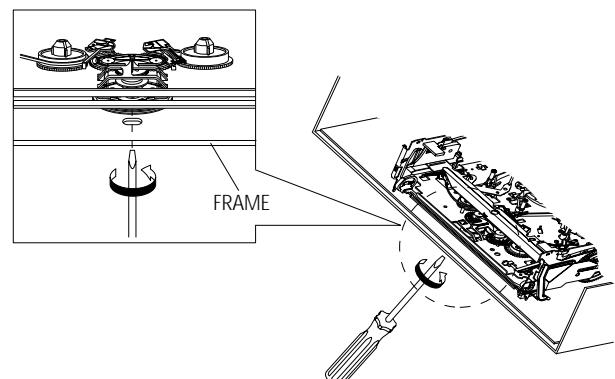


Fig. 1-33

1-3 The table of clearing, Lubrication and replacement time about principal parts

- 1) The replacement time of parts is not life of parts.
- 2) The table 1-1 is that the VCR Set is in normal condition (normal temperature, normal humidity).
The checking period may be changed owing to the condition of use, runtime and environmental conditions.
- 3) Life of the Cylinder Ass'y is depend on the condition of use.
- 4) See exploded view for location of each parts.

<Table 1-1>

*	Parts Name	Checking Period										Remark
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
T A P E P A T H S Y S T E M	POST TENSION	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	- To clean the parts, use patch and alcohol (solvent).
	SLANT POST S, T	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	- After cleaning, use the video tape after alcohol is gone away completely.
	#8 GUIDE SHAFT	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	- We recommend to use oil [EP-50] or solvent.
	CAPSTAN SHAFT	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	- One or two drops of oil should be applied after cleaning with alcohol.
	#9 GUIDE POST	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	- Periodic time of applying oil (Apply oil after cleaning)
	#3 GUIDE POST	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	- The excessive applying oil may be the cause of malfunction.
	GUIDE ROLLER S, T	Δ	Δ	Δ	0	0	0	0	0	0	0	
	CYLINDER ASS'Y	Δ	0	0	0	0	0	0	0	0	0	
	FE HEAD	Δ	Δ	Δ	0	0	0	0	0	0	0	
	ACE HEAD	Δ	0	0	0	0	0	0	0	0	0	
	PINCH ROLLER	Δ	0	0	0	0	0	0	0	0	0	
	POST REEL S, T		◆		◆		◆		◆		◆	
	SLEEVE TENSION		◆		◆		◆		◆		◆	
D R Y I V I N G	POST CENTER		◆		◆		◆		◆		◆	
	LEVER IDLE BOSS (2Point)		◆		◆		◆		◆		◆	
	CAPSTAN MOTOR PULLEY	Δ	Δ	Δ	Δ	Δ	0	0	0	0	0	
	BELT PULLEY				0	0	0	0	0	0	0	
	HOLDER CLUTCH ASS'Y	Δ	0	0	0	0	0	0	0	0	0	
	GEAR CENTER ASS'Y	0	0	0	0	0	0	0	0	0	0	
B R A K E M	GEAR IDLE (2Point)	0	0	0	0	0	0	0	0	0	0	
	LOADING MOTOR	0	0	0	0	0	0	0	0	0	0	
B R A K E M	BAND BRAKE ASS'Y	0	0	0	0	0	0	0	0	0	0	
	BRAKE T ASS'Y	0	0	0	0	0	0	0	0	0	0	

Δ : Cleaning

O : Check and replacement in necessary

◆ : Add Oil

MEMO

2. Alignment and Adjustment

2-1 Tape Transport System and Adjustment Locations

The tape transport system has been adjusted precisely in the factory. Alignment is not necessary except for the following :

- 1) Noise observed on the screen.
- 2) Tape damage.
- 3) Parts replacement in the tape transport system.

Lower flange height of tape guide is used as the reference for the transport adjustment.
To maintain the height of the tape guide and prevent damage, do not apply excessive force onto the main base.

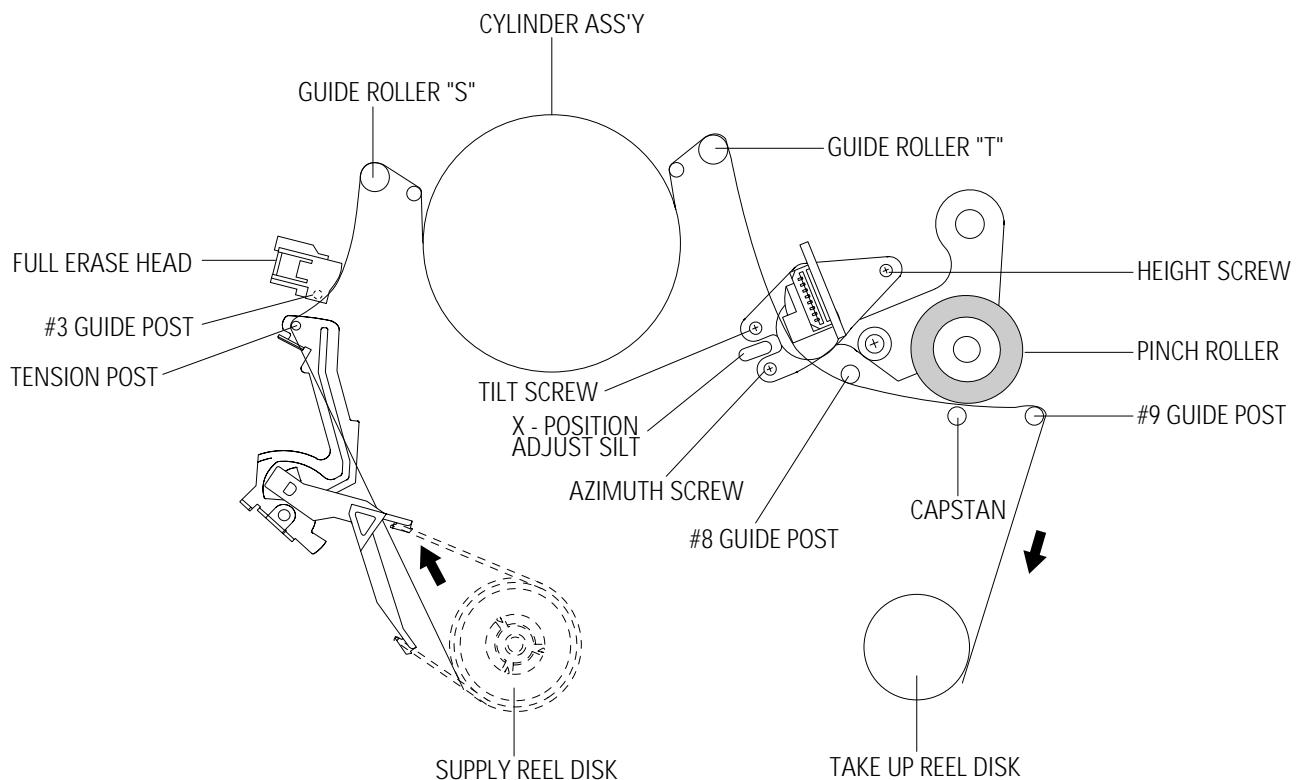


Fig. 2-1 Location of Tape Transport Adjustment

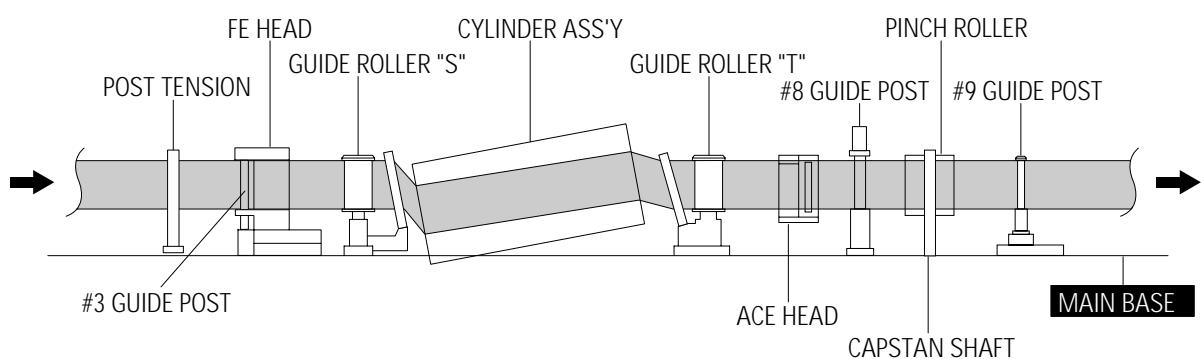


Fig. 2-2 Tape Travel Diagram

2-2 Tape Transport System Adjustment

When parts are replaced, perform the required adjustments by referring to procedures for the tape transport system. If there are any changes to the tape path, first run a T-120 tape and make sure excessive tape wrinkle does not occur at the tape guides.

- 1) If tape wrinkle is observed at the guide roller S, T, turn the guide roller S, T until wrinkle disappears.
- 2) If the tape wrinkle is still observed at the tape guide, perform the tilt adjustment of the ACE head. (See "2. Alignment and Adjustment" of the Service Manual for Test Point Locations.)

2-2-1 ACE Head Assembly Adjustment

2-2-1(a) ACE HEAD HEIGHT ADJUSTMENT

- 1) Run the alignment tape (Color bar) in the playback mode.
- 2) Observe surface of the audio head using a dental mirror.
- 3) Turn screw (C) clockwise or counterclockwise until the gap of lower tape edge and the lower edge of the control head is about 0.25mm. (Refer to Fig. 2-3 and 2-4)

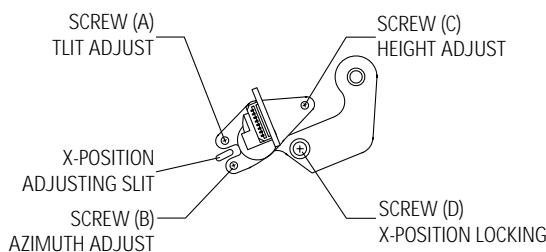


Fig. 2-3 Location of ACE Head Adjustment Screw

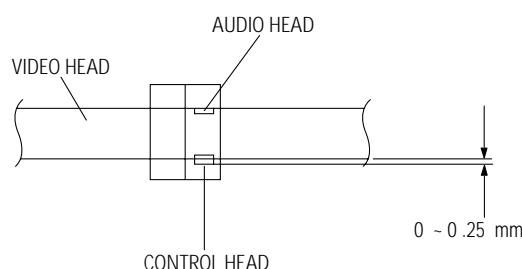


Fig. 2-4 ACE Head Height Adjustment

2-2-1(b) ACE HEAD TILT ADJUSTMENT

- 1) Playback a blank tape and observe the position of the tape at the lower flange of tape guide.
- 2) Confirm that there is no curl or wrinkle at the lower flange of tape guide as shown in Fig. 2-5 (B).
- 3) If a curl or wrinkle of the tape occurs, slightly turn the screw (A) tilt adjust on the ACE head ass'y.
- 4) Reconfirm the ACE head height.

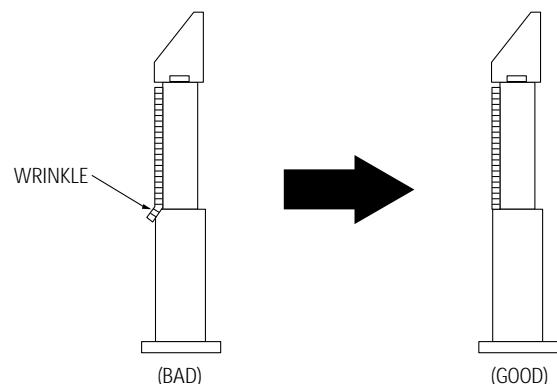


Fig. 2-5 Tape Guide Check

2-2-1(c) AUDIO AZIMUTH ADJUSTMENT

- 1) Load alignment tape (Mono scope) and playback the NTSC : 7KHz (PAL : 6KHz) signal.
- 2) Connect channel-1 scope probe to audio output test point.
- 3) Adjust screw (B) to achieve maximum audio level. (See Fig. 2-3)

2-2-1(d) ACE HEAD POSITION (X-POINT) ADJUSTMENT

- 1) See "2. Alignment and Adjustment" for ACE Head position (X-Point) adjustment.

2-2-2 Linearity adjustment (Guide roller S, T adjustment)

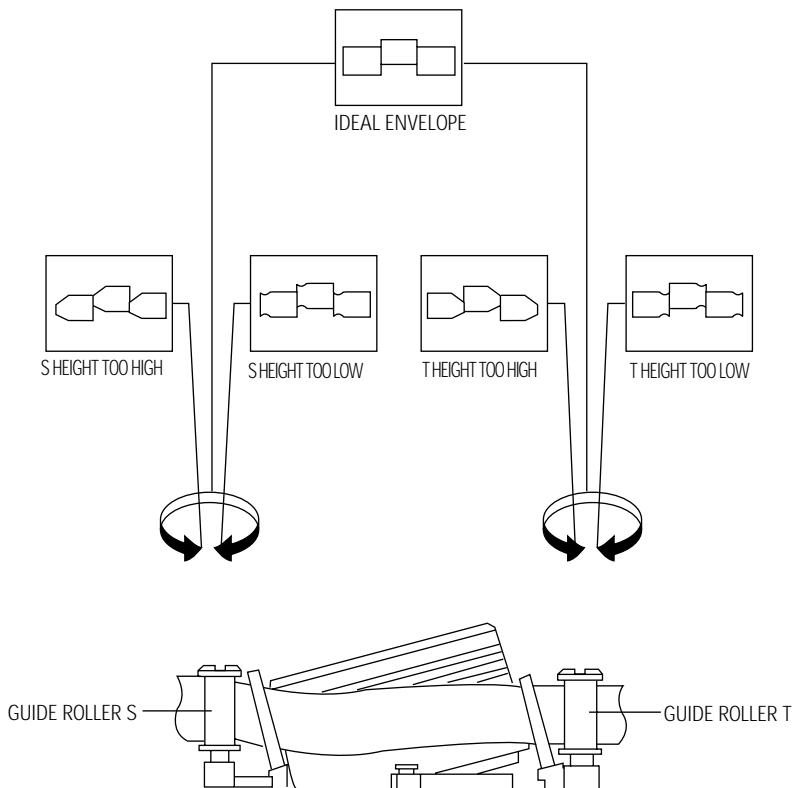
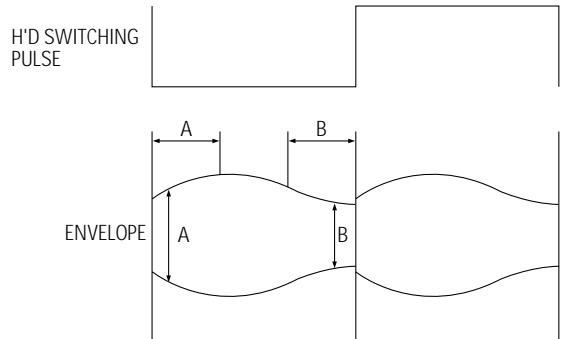
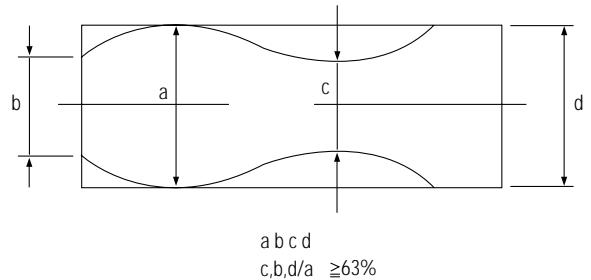
- 1) Playback the Mono Scope alignment tape (SP mode).
- 2) Observe the video envelope signal on an oscilloscope (triggered by the video switching pulse).
- 3) Make sure the video envelope waveform (at its minimum) meets the specification shown in Fig. 2-6.

If it does not, adjust as follows :

Note :

- a=Maximum output of the video RF envelope.
- b=Minimum output of the video RF envelope at the entrance side.
- c=Minimum output of the video RF envelope at the center point.
- d=Maximum output of the video RF envelope at the exit side.

- 4) If the section A in Fig. 2-7 does not meet the specification, adjust the guide roller S up or down.
- 5) If the section B in Fig. 2-7 does not meet the specification, adjust the guide roller T up or down.
- 6) Play back the Mono Scope alignment tape (SP mode).
- 7) Connect an oscilloscope CH-1 to the Envelope and CH-2 to the H'D SW Pulse for triggering.
- 8) Turn the guide roller heads with a flat head (■) driver to obtain a flat video RF envelope as shown in Fig. 2-8.



2-2-3 Check Transitional Operation from RPS to Play

Check transition from RPS mode to play mode :
 Using a pre-recorded SP tape, make sure the entry side of envelope comes to an appropriate steady state within 3 seconds (as shown in Fig. 2-9).
 If the envelope waveform does not reach specified peak-to peak amplitude within 3 seconds, adjust as follows :

- 1) Make sure there is no gap between the supply roller lower flange and the tape.
 If there is a gap, adjust the supply guide roller again.
- 2) Change operation mode from the RPS to the play mode (again) and make sure the entry side of envelope rises within 3 second.

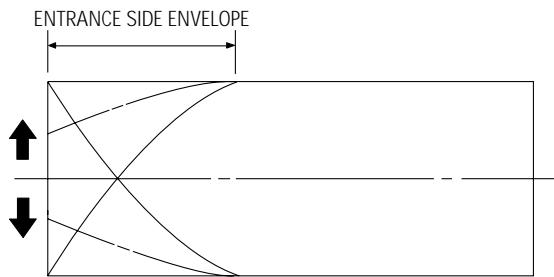


Fig. 2-9 Video Envelope Rising when Operation mode Changes from RPS to Play Mode

2-3 Reel Torque

- 1) The rotation of the capstan motor causes the Holder Clutch Ass'y to rotate through the Belt Pulley.
- 2) The spring wrap PLAY/REV of holder clutch ass'y drives the disk reel S, T through gear idle by rotation of gear center ass'y.
- 3) Brake is operated by slider cam at FF/REW mode.
- 4) Transportation of accurate driving force is done by gears. (Gear Center Ass'y)

Note : If the spec. does not meet the followings specifications, replace the holder clutch ass'y and then recheck.

2-2-4 Envelope Check

- 1) Make recordings on T-120 (E-120) and T-160 (E-180) tape.
 Make sure the playback output envelope meets the specification as shown in Fig. 2-10.
- 2) Play back a self recorded tape (recording made on the unit using with T-120 (E-120)).
 The video envelope should meet the specification as shown in Fig. 2-10.
 In SP mode, (A) should equal (B).
 If the head gap is wide, upper cylinder should be checked.

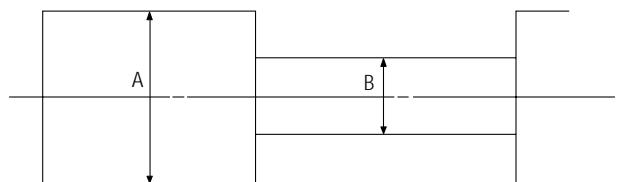


Fig. 2-10 Envelope Output and Output Level

2-2-5 Tape Wrinkle Check

- 1) Run the T-160 (E-180) tape in the playback, FPS, RPS and Pause modes and observe tape wrinkle at each guide.
- 2) If excessive tape wrinkle is observed, perform the following adjustments in Playback mode :
 - ◆ Tape wrinkle at the guide roller S, T section : Linearity adjustment.
 - ◆ Tape wrinkle at tape guide flange : ACE head assembly coarse adjustment.

<Table 2-1>

MODE	TORQUE g/cm	GAUGE
PB	42 ± 11	Cassette Torquemeter
RPS	145 ± 30	Cassette Torquemeter