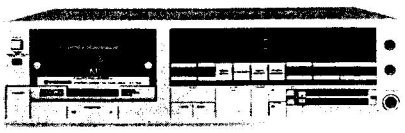
PIONEER

Service Manual

REPAIR & ADJUSTMENTS



ORDER NO.
ARP-260-0

STEREO CASSETTE TAPE DECK

CT-70R

MODEL CT-70R COMES IN SEVEN VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
KU	AC120V only	U.S.A. model
KC	AC120V only	Canada model
HE	AC220V, 240V (switchable)	European continent model
HB	AC220V, 240V (switchable)	United Kingdom model
HP	AC220V, 240V (switchable)	Australia model
D	AC120V, 220V, 240V (switchable)	General export model
D/G	AC120V, 220V, 240V (switchable)	U.S. Military model

- This service manual is applicable to the KU type. For servicing of the other types, please refer to pp. 66~76.
- For the circuit and mechanism descriptions, please refer to the CT-90R service manual (ARP-364-0).
- Ce manuel d'instruction se refère au mode de règlage, en français.
- Este manual de servicio trata del método de ajuste escrito en español.

CONTENTS

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PIONEER ELECTRONICS [USA] INC. 1925 E. Dominguez St., Long Beach, California 90810 U.S.A.
PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 2740 Beveren, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia

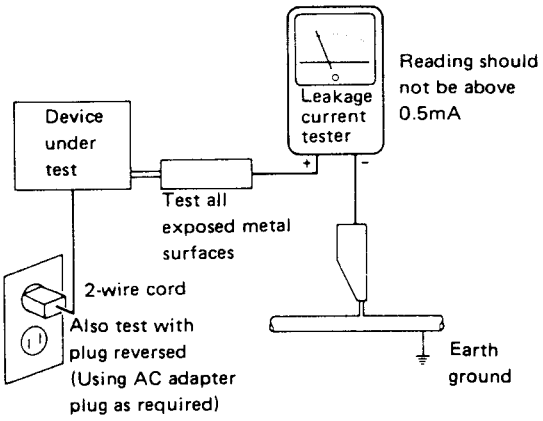
SAFETY INFORMATION

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

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

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

1. SPECIFICATIONS

System ..... Compact cassette, 2-channel stereo
Heads ..... "Ribbon Sendust" recording/playback head x 1
erasing head x 2
Motor ..... DC servo capstan motor x 1
DC reel motor x 2
Wow/Flutter ..... No more than 0.03% (WRMS)
No more than ± 0.16% (DIN)
Fast Winding Time ..... Approx. 90 seconds (C-60 tape)
Frequency Response
– 20 dB recording:
Normal tape ..... 25 to 17,000 Hz
(30 to 16,000 Hz ± 3 dB)
Chrome tape ..... 25 to 17,000 Hz
(30 to 17,000 Hz ± 3 dB)
Metal tape ..... 25 to 19,000 Hz
(30 to 18,000 Hz ± 3 dB)
0 dB recording:
Normal tape ..... 25 to 9,000 Hz
Chrome tape ..... 25 to 9,000 Hz
Metal tape ..... 25 to 14,000 Hz
Signal-to-Noise Ratio
Dolby NR OFF ..... More than 58 dB
Noise Reduction Effect
Dolby type B NR ON ..... More than 10 dB (at 5 kHz)
Dolby type C NR ON ..... More than 19 dB (at 5 kHz)
Harmonic Distortion (Metal tape) . . . No more than 1.0 % (0 dB)
Input (Sensitivity)
MIC (L, R) . . . . . 0.25 mV, 6 mm diam. jack
(Source impedance 600 Ω)
LINE (INPUT) . . . . . 70 mV
(Input impedance 50 kΩ or more)
Output (Reference level)
LINE (OUTPUT) . . . . . 450 mV
(Output impedance 10 kΩ or less)
Headphones . . . . . 0.3 mW
(Load impedance 8Ω)

SUBFUNCTIONS

- Recording playback auto reverse (Quick reverse)
- Dolby NR system (type B and C)
- Music search function
- Skip function
- Index scan
- Blank search
- Music repeat
- Auto tape selector function
- 4-digit tape counter
- 12 Segment level meter (LED)
- Wired remote control
- Timer standby function
- REC muting function

MISCELLANEOUS

Power Requirements
KU, KC models ..... AC 120 V, 60 Hz
HE, HB and HP models ..... AC 220/240 V, 50/60 Hz (switchable)
D, D/G models ..... AC 120/220/240V, 50/60 Hz (switchable)
Power Consumption
KU, KC models ..... 51 watts
HE, HB and HP models ..... 50 watts
D, D/G models ..... 40 watts
Dimensions ..... 420 (W) x 120 (H) x 355 (D) mm
16-9/16 (W) x 4-12/16 (H) x 14 (D) in
Weight (without packaging) ..... 6.6 kg (14 lb 9 oz)

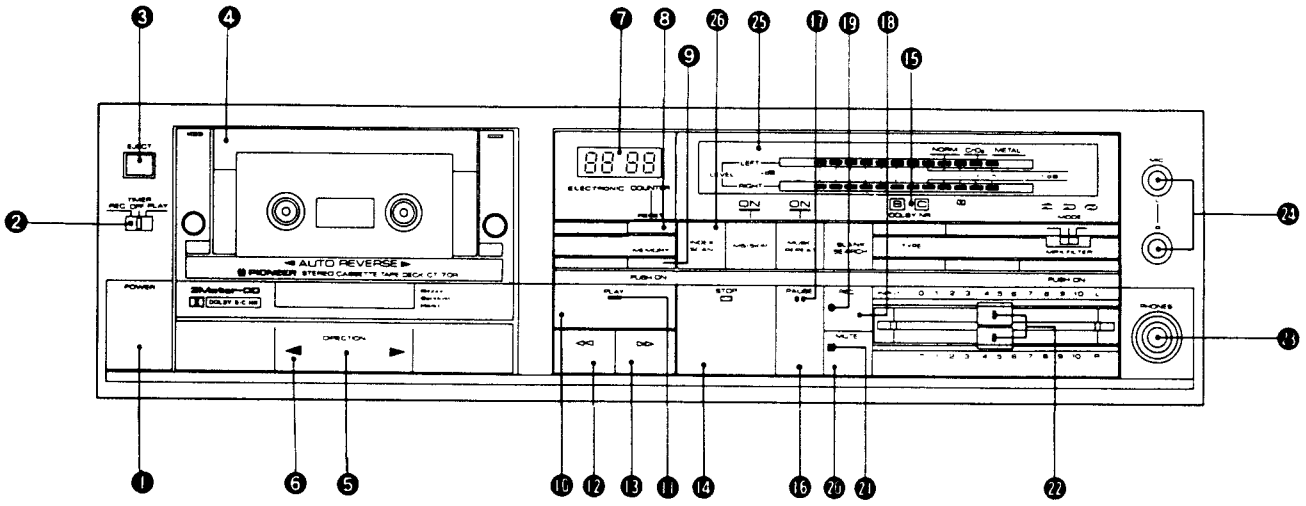
FURNISHED PARTS

Operating instructions 1
Connection cord assembly 2

NOTES:
1. Reference Tapes:
Normal & LH: DIN 44513/BLATT6 or equiv.
CrO_2 DIN 45513/BLATT7 (CrO_2) or equiv.
2. Reference Recording Level: Meter 0 dB indicating level (160 nwb/m magnetic level = Philips cassette reference level)
3. Reference Signal: 315 Hz
4. Wow & Flutter: • JIS (3 kHz, with acoustic compensation (weighted) rms value); DIN 3,150Hz with acoustic compensation tion (weighted) PEAK value DIN 45507
5. Frequency Response: • Measured at – 20 dB level, DOLBY NR OFF, level deviation is ± 6 dB without indication.
6. Signal-to-Noise Ratio: • Measured at 3rd harmonic distortion 3% level, weighted (DIN 45513/BLATT7)
7. Sensitivity: Input level (mV) required for reference recording level with input (REC) level control set to maximum
8. Reference Output Level: Playback output level when meter indicates 0 dB.
9. This model does not employ a recording/playback connector (DIN-type).

NOTE:
Specifications and the design are subject to possible modifications without notice due to improvements.

2. FRONT PANEL FACILITIES



❶ POWER SWITCH (POWER)

The power is switched on when this switch is pressed. Release the switch to turn off the power.

- After the switch is set to the ON position, the muting circuit is activated and so the unit will not operate for about 4 seconds.
- When the POWER switch is set to OFF while the tape deck is operating, the operational mode is released and the unit is set to the stop mode.
- When the POWER switch is set to ON while the TIMER switch is at the REC or PLAY position, the recording or playback mode is established automatically. Make sure that the TIMER switch is at OFF when an unattended recording or wake-up playback operation is not to be performed.
- When the POWER switch is set to ON, the head section functions momentarily. This is normal and not an indication of a malfunction.

❷ TIMER START SWITCH (TIMER)

This switch is used when an optional audio timer is employed for unattended recording or wake-up playback operations. Keep this switch at the OFF position when the timer is not being used.

REC: Set to this position to set the tape deck automatically to the recording mode at the time preset on the audio timer and to start the recording of programs unattended, for instance.

OFF: For when the timer is not being used.

PLAY: Set to this position to set the tape deck automatically to the playback mode at the time preset on the audio timer and to start the playback. The tape playback function can be used to wake-up in the morning instead of an alarm clock.

❸ EJECT BUTTON (EJECT)

The cassette door opens when this button is pressed. When it is pressed while the tape is traveling or during a recording or playback standby operation, noise will be generated and possible malfunctioning may occur. Even if pressed, the cassette door will not open.

❹ CASSETTE DOOR

❺ DIRECTION SWITCH (DIRECTION)

Press this switch to select the direction in which the tape is to travel. When the tape is moving forward and the switch is pressed, the tape direction is reversed; when the tape is moving in the reverse direction, it starts moving forward. The direction indicator lights up to show the direction of the tape movement. Since the tape's direction can be reversed with a push of this switch, there is no need to turn over the tape and re-load it.

When this switch is pressed even in the playback or recording standby mode, the tape's direction is reversed.

❻ DIRECTION INDICATORS

These indicate the direction of the tape transport.

❼ TAPE COUNTER

The numbers change as the tape is playing. Tape position is indicated with a four-column digital counter.

❽ RESET BUTTON (RESET)

Depressing this button resets the tape counter to "0000". Depress this button before recording or playback to reset the counter to "0000". If you make a memo of the tape contents and corresponding tape counter numbers during recording and playback, you will have an index of the programs on the tape enabling you to conveniently find any desired program on the tape.

⑨ MEMORY SWITCH

Memory stop operations can be performed when this switch is pressed to the ON position. The tape counter is set to "0000" beforehand and the tape is rewound. As soon as the tape is rewound to the "0000" position, it stops automatically. Use this function to rewind a recorded program and play it back immediately or to repeatedly listen to the same program. Normally, this switch is kept at the released OFF position. The memory stop function also operates in the fast forward mode.

⑩ PLAY SWITCH (PLAY)

Depress this switch to playback a tape.

⑪ PLAY INDICATOR (▬)

⑫ REW SWITCH (◁◁)

Depress this switch to rewind the tape at high speed (The tape will travel from right to left).

⑬ FF SWITCH (▷▷)

Depress this switch to send the tape forward at high speed (The tape will travel from left to right).

⑭ STOP SWITCH (STOP)

Depress this switch to stop the tape travel and to release the operating switches.

⑮ DOLBY INDICATORS (DOLBY NR)

These light when the DOLBY NR switch is set to ON (▬).

[B]: This lights when the B type Dolby noise reduction system is operating.

[C]: This lights when the C type Dolby noise reduction system is operating.

⑯ PAUSE SWITCH (PAUSE)

Press to temporarily stop the tape transport in the playback or recording mode. At times like this, the pause indicator (❚❚) lights. When pressed again, the pause function is released and the tape starts to travel again. The switch does not function in the fast forward or rewind modes. When it is pressed in the stop mode, the pause indicator lights; when it is pressed again, the unit is reset to the stop mode and the tape does not move.

⑰ PAUSE INDICATOR (❚❚)

This lights when the unit is set to the pause mode.

⑱ RECORDING SWITCH (REC)

This switch is depressed to record a tape. The recording indicator (•) will light. The switch cannot be placed in the ON position if the accidental erasure prevention tabs on the cassette have been broken off, or if no cassette is in the unit.

⑲ RECORDING INDICATOR (●)

This lights when the unit is set to the recording mode.

⑳ RECORDING MUTE SWITCH (REC MUTE)

When this switch is pressed during recording, unrecorded blanks can be created for as long as the switch is kept depressed. While depressed, the MUTE indicator (■) lights. Use this switch for efficient editing of tapes with sufficient blanks between the programs and for providing the unrecorded blanks which are required to operate the index scan, music search/skip, music repeat and blank search accessory functions.

This switch does not lock and so functions only while it is kept in the depressed position. When pressed during a recording, no sound is recorded and so the switch should not be pressed unless absolutely necessary.

㉑ RECORDING MUTE INDICATOR (■)

This lights while the REC MUTE switch is pressed during a recording.

㉒ RECORDING LEVEL CONTROLS (INPUT)

These controls adjust the input from the rear panel INPUT terminals or from the MIC jack. When slid toward the right, the recording level is increased; when slid toward the left, it is reduced. The top control is for the left (L) channel and the bottom control for the right (R) channel.

㉓ HEADPHONE JACK (PHONES)

This is the output jack for the stereo headphones. Plug the headphones into this jack to monitor the quality of a recording or to listen to a tape privately.

NOTE:

- *Use headphones with a low impedance. Sufficient volume will not be obtained with high-impedance headphones.*

㉔ MIC JACKS

These are the input jacks for microphone recording. Plug the left channel microphone into the L jack and the right channel microphone into the R jack.

㉕ LEVEL METER

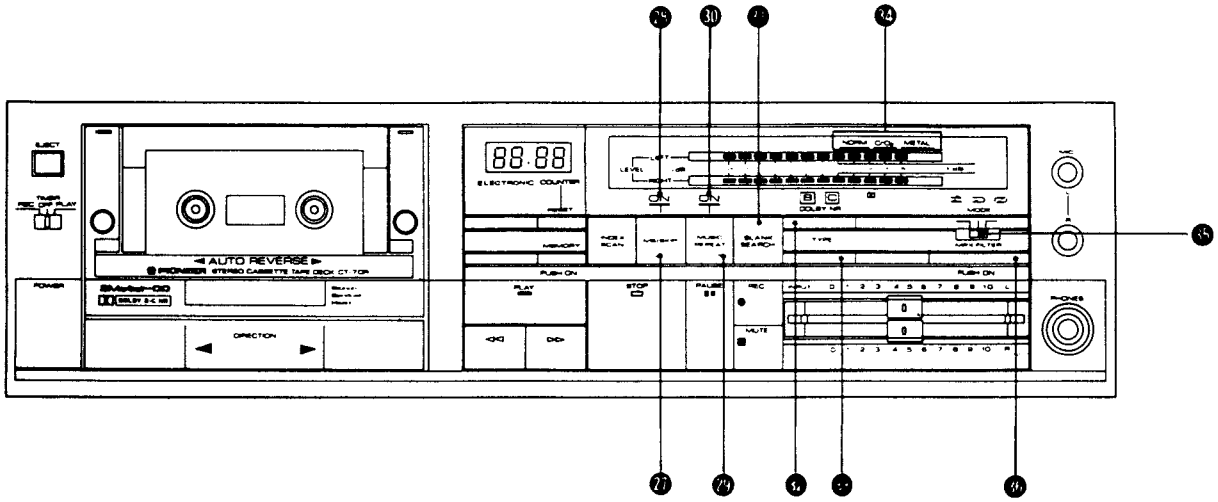
This indicates the recording level during recording and the output level during playback. The top part is for the left (L) channel and the bottom part for the right (R) channel. The meter has a high response speed and it indicates the ever-changing peak values faithfully so that level adjustment can be performed accurately.

㉖ INDEX SCAN SWITCH (INDEX SCAN)

Press this switch to listen to the beginnings of programs on a tape such as a music tape and to find the program which you want to listen to. When the switch is pressed, the tape is fast forwarded or rewound in the direction selected by the DIRECTION switch and the start of the program is searched. When the start of one program is played back for about 7 seconds, the tape is again fast forwarded or rewound.

The following mode change is repeated: fast forward (rewind) ~ play (approx. 7 seconds) ~ fast forward (rewind) ~ play (approx. 7 seconds). Press the PLAY switch when the desired program has been located.

If the tape direction is selected by the FF or REW switch during index scanning, the scanning operation will function in that direction too.



㉗ MUSIC SEARCH/SKIP SWITCH (MS/SKIP)

Push this switch and the FF switch (▷▷) or REW switch (◁◁). The unit is automatically set to the playback mode when it locates an unrecorded blank between the programs over 4 seconds long while the tape is being fast forwarded or rewound. This function is known as "music search."
When the unrecorded blank continues for more than 8 seconds in the playback mode, the tape is fast forwarded or rewound in the direction selected by the DIRECTION switch. When the next program is detected, the unit is again set to the playback mode. This function is convenient for listening efficiently to tapes with long unrecorded blanks between programs, and it is known as the "skip function."
When the MS/SKIP switch is pressed, the ㉘ indicator lights. To release these functions, press the switch again.

㉘ MUSIC SEARCH/SKIP INDICATOR (ON)

㉙ MUSIC REPEAT SWITCH (MUSIC REPEAT)

When this switch is pressed during tape playback, the ㉚ indicator lights and the desired program can be played back repeatedly up to 8 times.

㉚ MUSIC REPEAT INDICATOR (ON)

㉛ BLANK SEARCH SWITCH (BLANK SEARCH)

When this switch is pressed, the unit is set to the fast forward mode. When an unrecorded blank of more than 8 seconds is detected in this mode, the tape is rewound and an unrecorded blank of 4 seconds is automatically set.

㉜ *DOLBY NR SWITCH (DOLBY NR ON/OFF)

Press this switch to the ON (▬) position when recording material with the Dolby noise reduction system or when playing back a tape which has been recorded with the system. Release the switch to the OFF (▬) position when recording material without the Dolby system or when playing back a tape which has not been recorded with the system.

- *If you make a note on the tapes of material recorded with the Dolby system, there will be less chance that the DOLBY NR switch will be set to the wrong position during playback.*
- *When a recording has been made with the system, ensure that it is played back with the system. Proper sound will not be reproduced if a tape recorded with the Dolby system is played back with the switch at the OFF position or if a tape recorded with the switch at the OFF position is played back with the Dolby system.*

*The word "Dolby" and ⧈ are trademarks of Dolby Laboratories Licensing Corporation.
Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.

㉝ DOLBY B/C SELECTOR SWITCH (DOLBY NR B/C)

This deck comes with both type B and type C Dolby noise reduction systems. After the DOLBY NR ON/OFF switch has been pressed, select type B or C using this switch. When pressed in (▬), type C is selected; when released (▬), type B is selected. The Dolby indicator corresponding to the switch position lights.

㉞ TAPE INDICATORS (NORM/CrO_2/METAL)

This mechanism uses the sensor holes on the cassette to detect the type of tape being used. It then automatically adjusts the proper recording bias and equalization for the tape. The type of tape is then shown on the tape indicator. Refer to page 9 for the different types of cassette tapes and their hole positions.

NORM: This indicator lights when normal tapes are used.
CrO_2: This indicator lights when CrO_2 tapes are used.
METAL: This indicator lights when metal tapes are used.

NOTE:
When using metal tapes without sensor holes, the tape selector will be set on the CrO_2 position. In this case, optimum recording and erasure may not be possible. We thus recommend that you use metal tapes with sensor holes. Pre-recorded metal tapes can be played as is on this unit.

㉟ MODE SWITCH (MODE)

This selects the tape transport mode during playback or recording.

⇄ : One-way playback (one-way recording)
When the tape is wound up onto one of the reels, the autostop mechanism is activated and the tape is automatically stopped. Set the switch to this position for playing back (recording) one side of a tape.

⇉ : Auto reverse (both-ways playback, both-ways recording)
When the tape finishes running in the forward direction and is fully wound up, its running direction is automatically reversed. When the tape comes to the end in the reverse direction, the auto-stop mechanism is activated and the tape is stopped automatically. When a start has been made from reverse playback (recording), the tape stops automatically at the end.

↻ : Auto repeat
This function allows both sides A and B to be repeatedly played back four times each (8 times together). Side A is played back first, this is followed by side B and then side A is played back again, etc. When the tape comes to the end, the auto-stop mechanism is activated and the tape is stopped automatically.

- When the PAUSE switch is pushed during playback to set the unit to the pause mode and then the same switch is released to resume playback, sides A and B of a tape can be played back four times each (8 times together) anew.
- In the recording mode the tape runs through both sides and then stops whether the MODE switch is at the ↻ or ⇉ position.

NOTE:
The auto-stop mechanism (leader tape sensing mechanism) may malfunction in the following cases:

- *When a strong beam of light has been shone near the heads.*
- *The tape direction is automatically reversed at the tape end even if there is a malfunction because of the leader tape sensing. (The tape stops at the ⇄ MODE switch position but reverses at the ⇉ or ↻ position.*

㊱ MULTIPLEX FILTER SWITCH (MPX FILTER)

Push this switch when recording FM stereo broadcasts or TV programs using the Dolby noise reduction system.
Contained among the FM stereo signals are a 19 kHz pilot signal and the 38 kHz subcarrier. The MPX FILTER switch is pressed in order to safeguard against incorrect operation of the Dolby circuit due to these signals. Release the switch for any other recording. The switch does not function during playback.

3. DISASSEMBLY

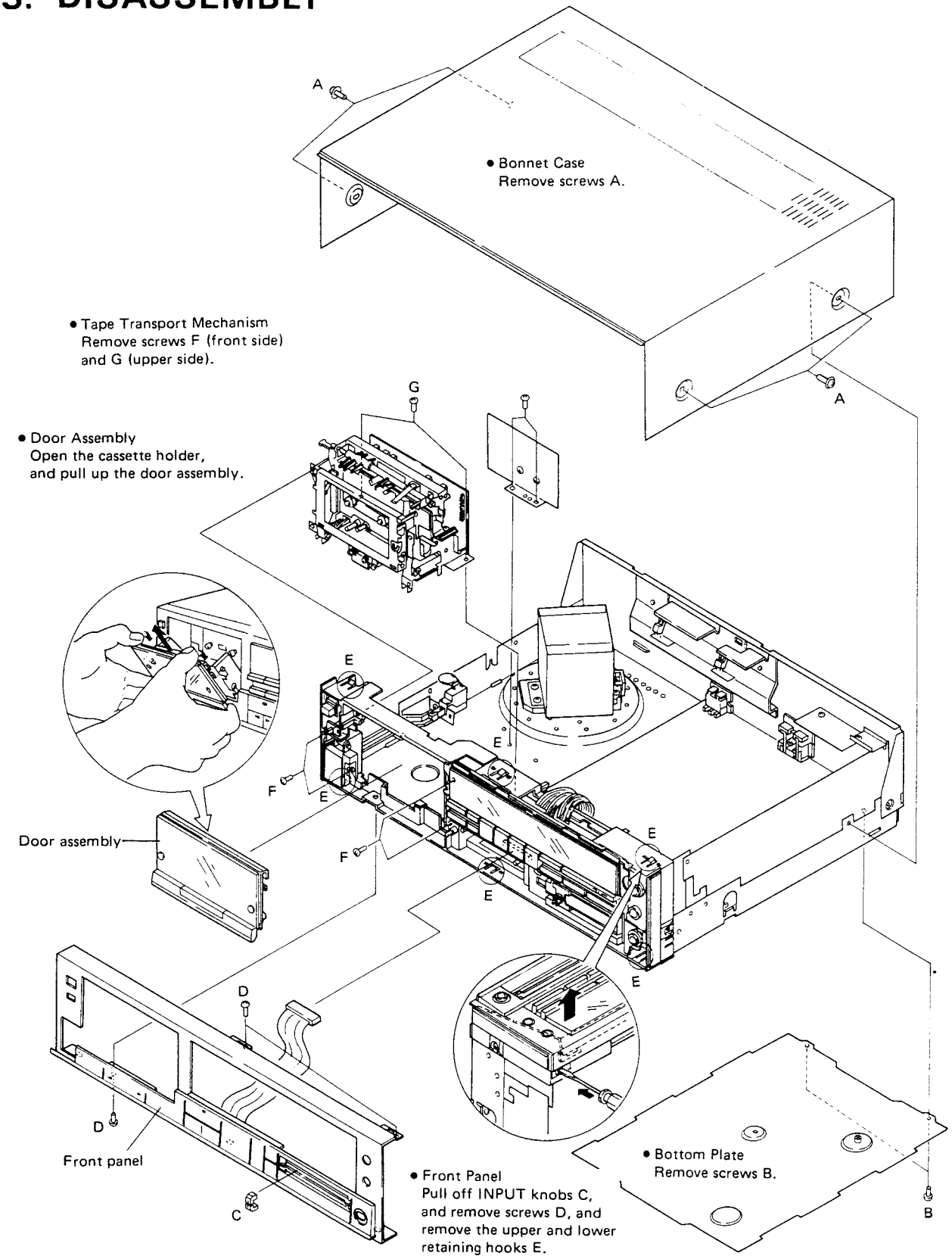


Fig. 3-1 Disassembly

Removing the Head Assembly

1. Remove the two azimuth adjustment screws and remove the stopper holder.
2. Remove the stopper.
3. Push the slide plate all the way to the right (the forward position) and pull the head assembly in the direction of the arrow to remove it.

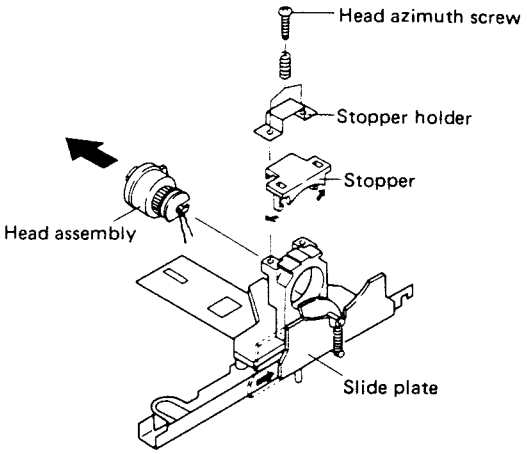


Fig. 3-2 Disassembly of the head assembly

Reassembly Precautions

When replacing the head assembly, be sure the gears mesh as shown in Fig. 3-3.

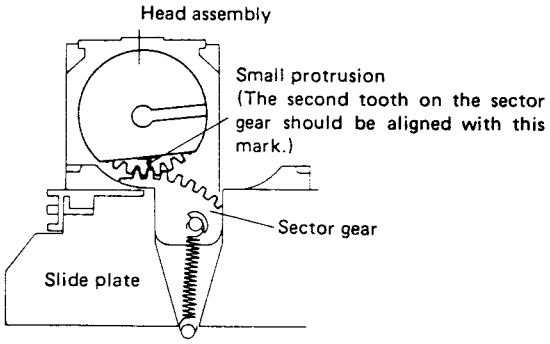


Fig. 3-3 Relationship between head assembly and sector gear

Removal of the Capstan Belt

Undo screws (F), remove the capstan motor control ass'y, and then remove the capstan belt.

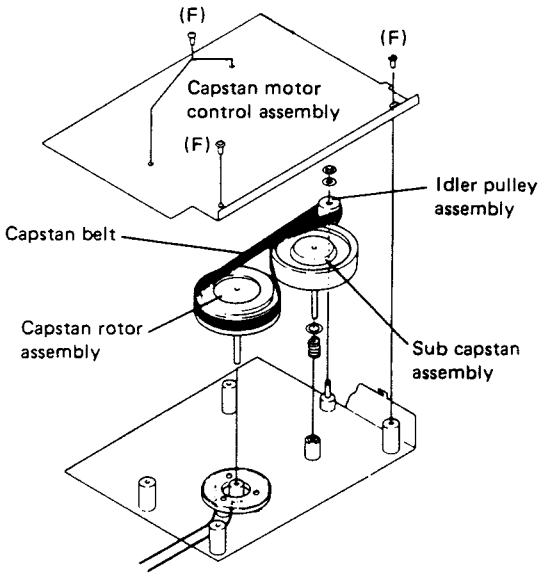
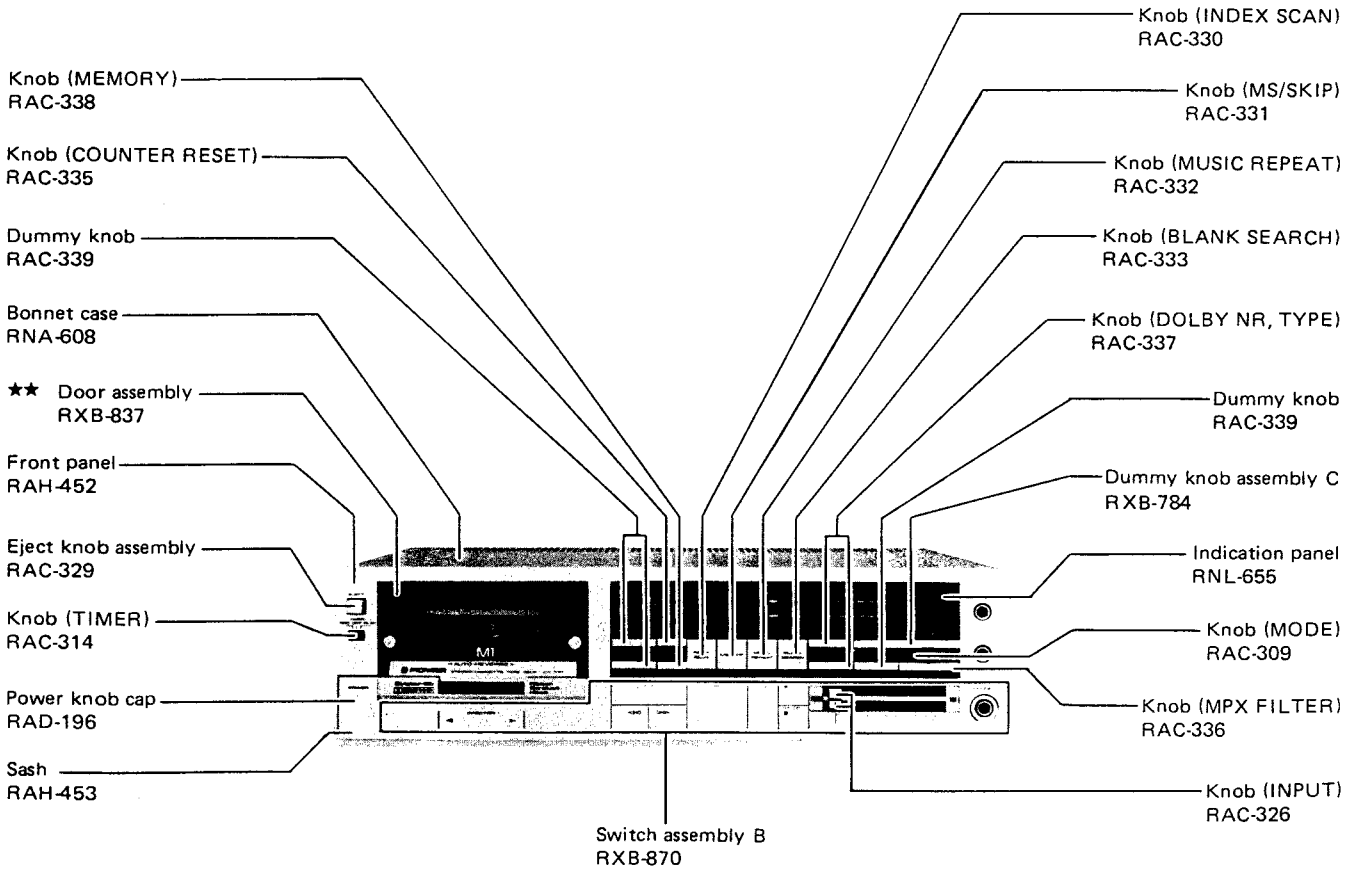


Fig. 3-4 Removal of the capstan belt

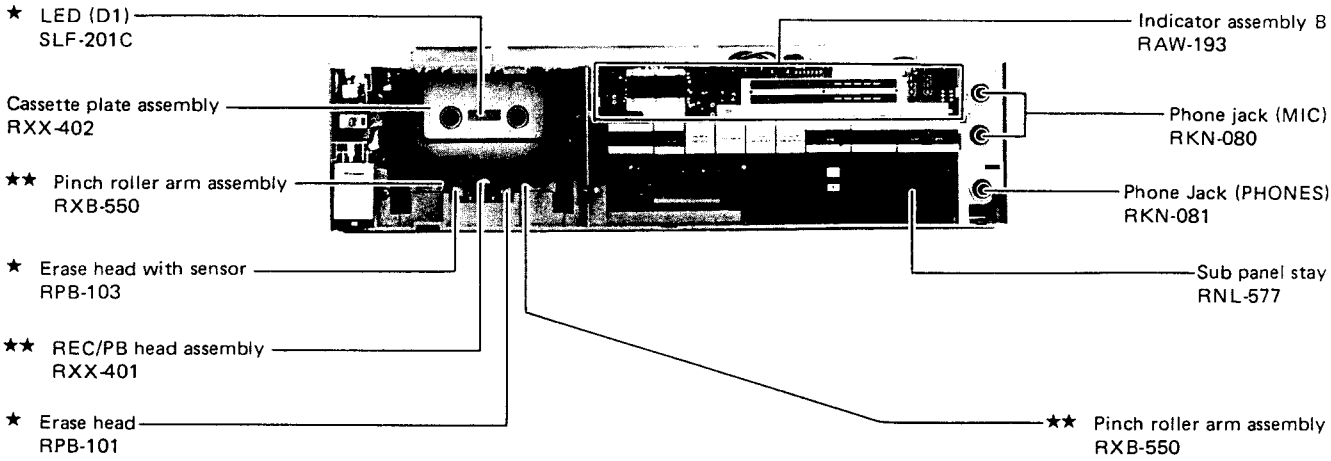
4. PARTS LOCATION

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

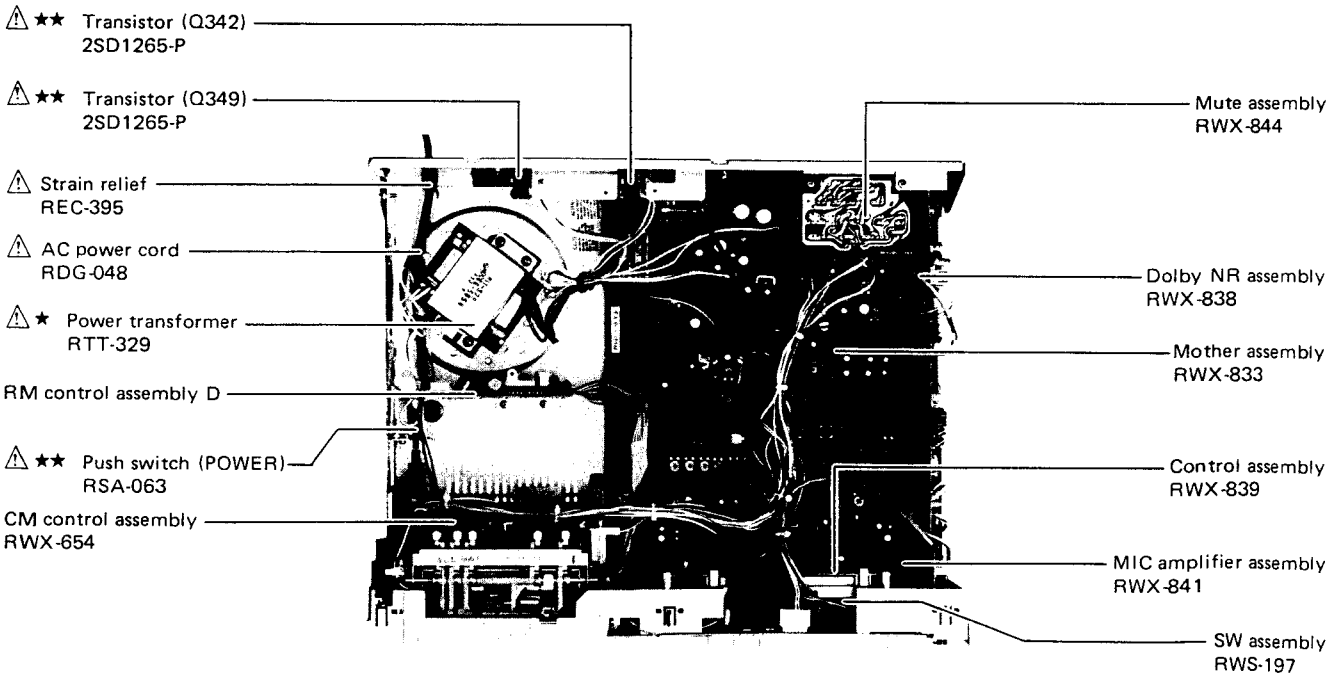
Front Panel View



Front View with Panel Removed



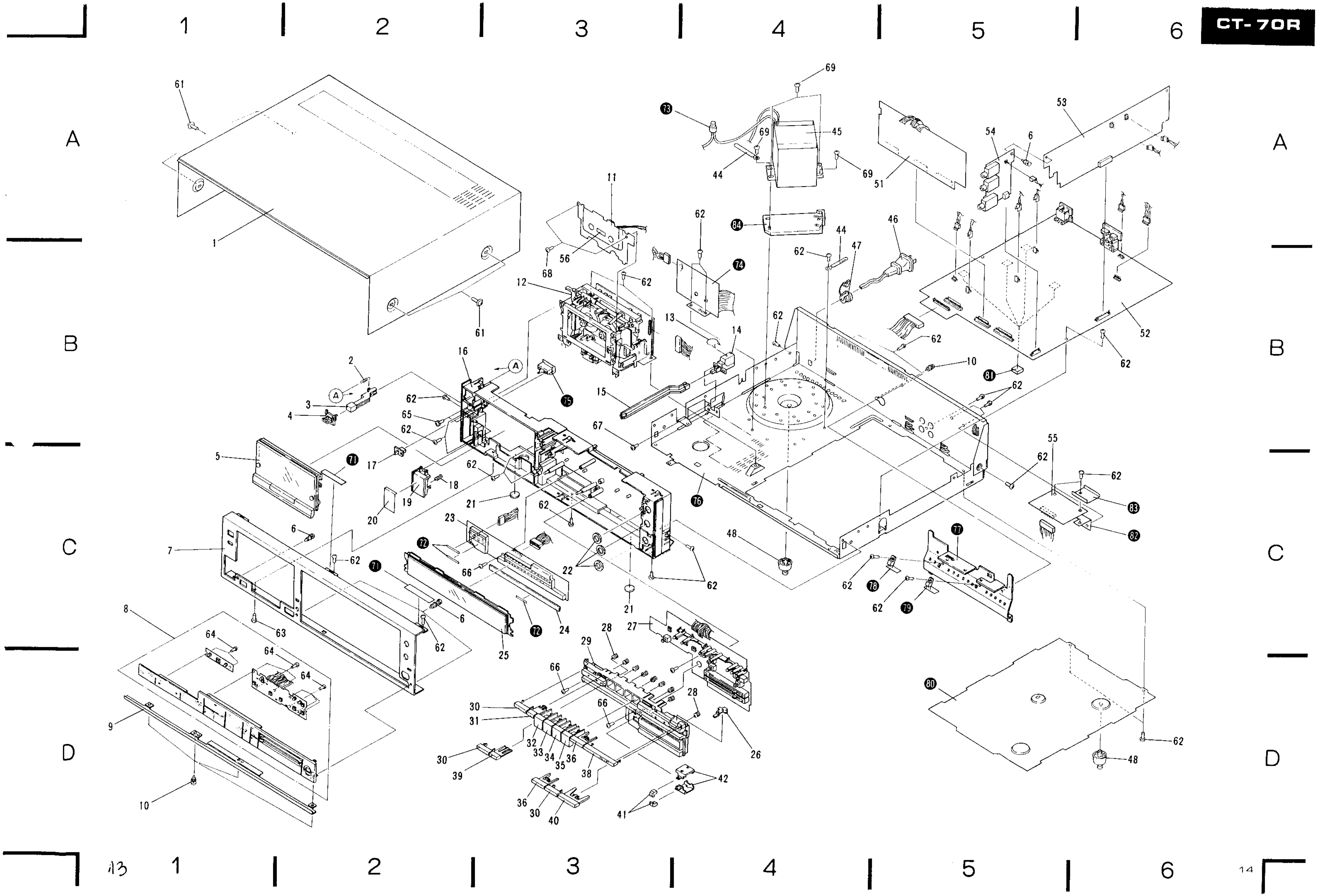
Top View



5. EXPLODED VIEW

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Mark	No.	Part No.	Description
	1.	RNA-608	Bonnet case
	2.	RBH-901	Eject spring
	3.	RAC-329	Eject knob assembly
	4.	RNL-590	Spacer
★★	5.	RXB-837	Door assembly
	6.	RBM-012	Plastic rivet
	7.	RAH-452	Front panel
	8.	RXB-870	Switch assembly B
	9.	RAH-453	Sash
	10.	RBM-011	Plastic rivet
	11.	RXX-402	Cassette plate assembly
	12.	Refer pp. 15–18.	Tape transport mechanism
⚠	13.	RCG-006	Ceramic capacitor (C1)
⚠ ★★	14.	RSA-063	Push switch (S1, POWER)
	15.	RNL-623	Rod
	16.	RNT-033	Panel stay
	17.	RAC-314	Knob (TIMER)
	18.	RBH-982	Spring
	19.	RAC-315	Knob (POWER)
	20.	RAD-196	POWER knob cap
	21.	REC-355	Skid
	22.	RBN-006	Nut
	23.	RAW-193	Indicator assembly B
	24.	REC-399	Diffusion sheet
	25.	RNL-655	Indication panel
	26.	RAC-309	Knob (MODE)
	27.	RWS-197	SW assembly
	28.	RBH-981	Spring
	29.	RNL-577	Sub panel stay
	30.	RAC-339	Dummy knob
	31.	RAC-335	Knob (COUNTER RESET)
	32.	RAC-330	Knob (INDEX SCAN)
	33.	RAC-331	Knob (MS/SKIP)
	34.	RAC-332	Knob (MUSIC REPEAT)
	35.	RAC-333	Knob (BLANK SEARCH)
	36.	RAC-337	Knob (DOLBY NR, TYPE)
	37.	.....	
	38.	RXB-784	Dummy knob assembly C
	39.	RAC-338	Knob (MEMORY)
	40.	RAC-336	Knob (MPX FILTER)
	41.	RAC-326	Knob (INPUT)
	42.	RNL-638	VR slider
	43.	.....	
	44.	RNE-513	Cord fixer
⚠ ★	45.	RTT-329	Power transformer
⚠	46.	RDG-048	AC power cord
⚠	47.	REC-395	Strain relief
	48.	REC-369	Foot assembly
	49.	.....	
	50.	.....	
	51.	RWX-839	Control assembly
	52.	RWX-833	Mother assembly
	53.	RWX-838	Dolby NR assembly
	54.	RWX-841	MIC amplifier assembly
	55.	RWX-844	Mute assembly
★	56.	SLF-201C	LED (D1)
	57.	.....	
	58.	.....	
	59.	.....	
	60.	.....	
	61.	FBT40P080FNi	Screw 4 x 8
	62.	BBZ30P080FMC	Screw 3 x 8
	63.	VBT30P060FMC	Screw 3 x 6
	64.	PBZ20P060FMC	Screw 2 x 6
	65.	PMB26P050FMC	Screw 2.6 x 5
	66.	VPZ30P080FMC	Screw 3 x 8
	67.	PMB30P050FMC	Screw 3 x 5
	68.	BBZ26P060FNi	Screw 2.6 x 6
	69.	VBZ40P080FMC	Screw 4 x 8
	70.	.....	
	71.		Cushion
	72.		Felt
	73.		Connection cap
	74.		RM control assembly C
	75.		Timer switch assembly
	76.		Chassis
	77.		Heat sink
	78.		Transistor B assembly
	79.		Transistor A assembly
	80.		Bottom plate
	81.		Spacer
	82.		P.C. board holder
	83.		Stopper
	84.		Transformer base
	85.	.....	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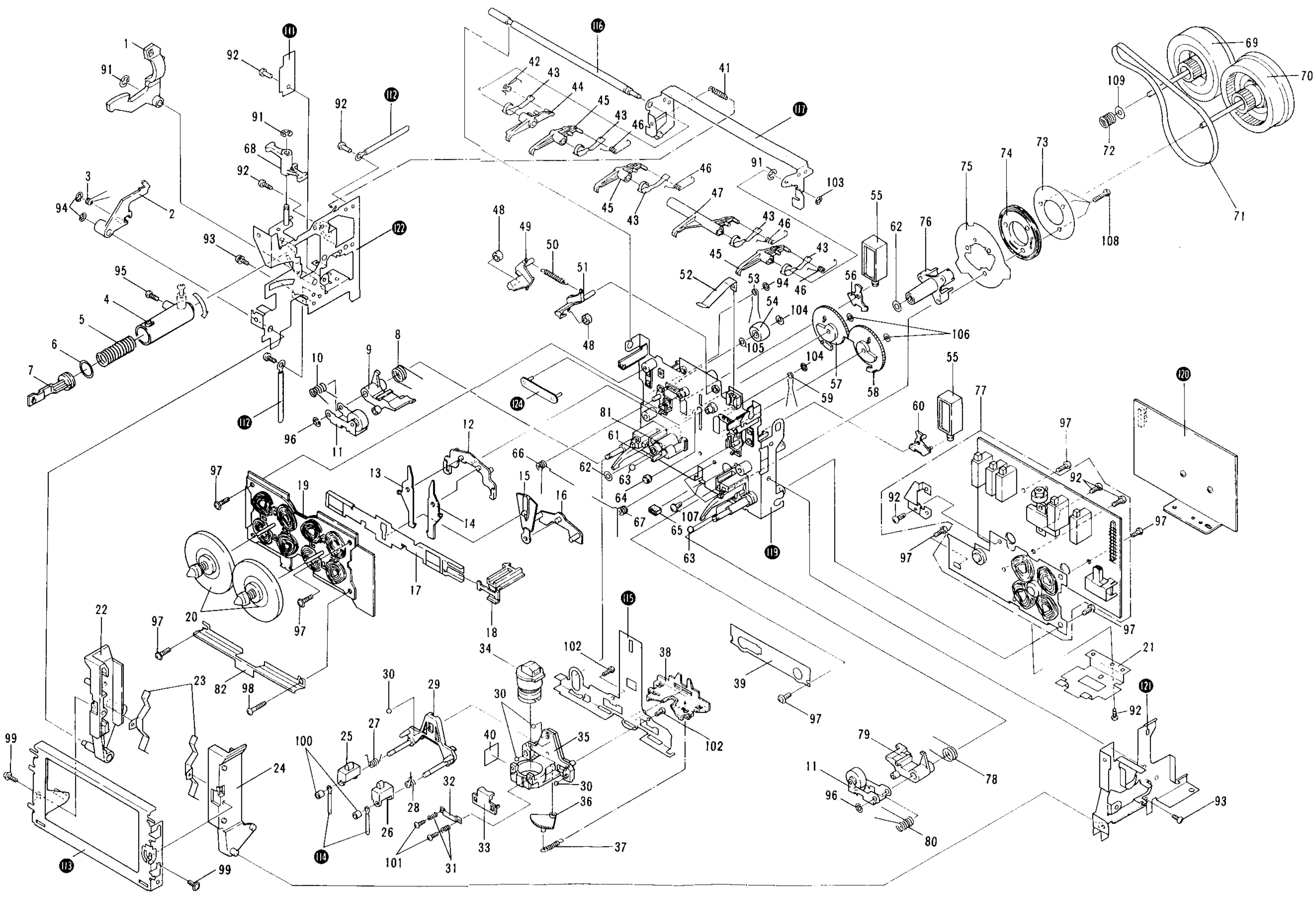
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B

C

D

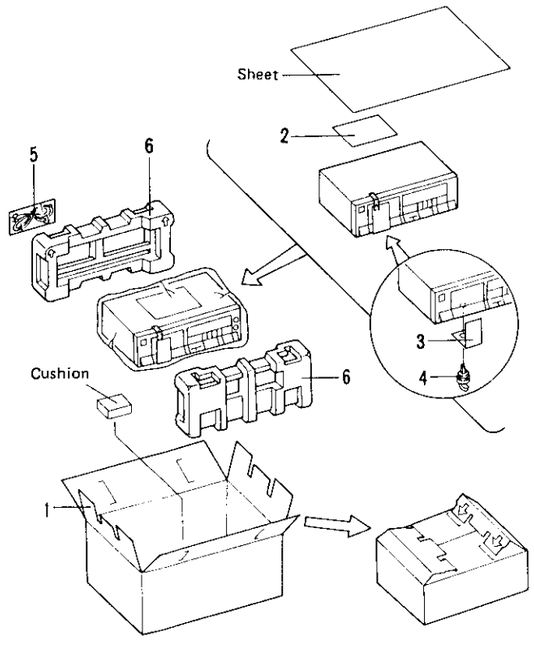
Parts List of Tape Transport Mechanism

- *Parts without part number cannot be supplied.*
- *The ⚠ make found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Mark	No.	Part No.	Description
	1.	RNL-266	Lock arm
	2.	RNL-265	Eject prevent lever
	3.	RBH-957	Lever spring
	4.	RNL-261	Cylinder
	5.	RBH-937	Damper spring
	6.	REB-447	O-ring
	7.	RNL-510	Piston
	8.	RBH-861	Pinch return spring (L)
	9.	RNL-267	Sub pinch arm
	10.	RBH-851	Pinch pressure spring (L)
★★	11.	RXB-550	Pinch roller arm assembly
	12.	RNG-319	Cam follow lever
	13.	RNL-435	Hook (L)
	14.	RNL-436	Hook (R)
	15.	RNL-255	Connection plate
	16.	RNL-306	Pinch plate
	17.	RNH-077	Change plate
	18.	RNL-509	Actuater
★★	19.	RXX-359	Reel motor assembly
	20.	RXX-365	Rotor assembly
	21.	RNH-252	Shield plate
	22.	RNL-541	Pocket L
	23.	RBK-174	Pressure spring
	24.	RNL-542	Pocket R
★	25.	RPB-103	Erase head with sensor
★	26.	RPB-101	Erase head
	27.	RBH-863	Height adjust spring (L)
	28.	RBH-864	Height adjust spring (R)
	29.	RXB-671	Erase head base assembly
	30.	REF-022	Steel ball (3φ)
	31.	RBH-853	Azimuth spring
	32.	RNH-140	Stopper holder
	33.	RNL-262	Stopper
★★	34.	RXX-401	REC/PB head assembly
	35.	RXB-661	Housing
	36.	RNL-312	Sector gear
	37.	RBH-906	Gear spring
	38.	RNL-317	Slide plate
	39.	RNH-146	Head base spring
	40.	REC-377	Shield sheet
	41.	RBH-946	Arm spring
	42.	RBH-944	Switch lever spring A
	43.	RNH-198	Switch lever
	44.	RNL-506	REC detector arm
	45.	RNL-507	Chrome detector arm
	46.	RBH-945	Switch lever spring B
	47.	RNL-508	Metal detector arm
	48.	REB-473	Brake shoe (B)
	49.	RNL-433	Brake plate L
	50.	RBH-927	Brake spring
	51.	RNL-434	Brake plate R
	52.	RBK-176	Half set spring
	53.	RBH-847	Spring (R)
	54.	RXB-620	Idler pulley assembly
⚠ ★	55.	RXP-111	Plunger solenoid
	56.	RNL-256	Trigger lever (L)
	57.	RNL-307	Assist gear (L)
	58.	RNL-308	Assist gear (R)
	59.	RBH-846	Spring (L)
	60.	RNL-257	Trigger lever (R)
	61.	RNL-309	Reference pin
	62.	RBF-030	Oil stopper washer
	63.	REF-023	Steel ball (4φ)
	64.	RLB-434	Guide roller
	65.	REB-260	Stopper
	66.	RBH-961	Ratch spring (L)
	67.	RBH-962	Ratch spring (R)
	68.	RNL-264	Eject lever
	69.	RXB-696	Sub capstan assembly
	70.	RXX-395	Capstan rotor assembly
★★	71.	REB-480	Capstan belt
	72.	RBH-923	Spring (B)
	73.	RNH-064	FG plate
	74.	RXX-334	FG coil assembly
	75.	RNH-202	FG shield plate
	76.	RXB-697	Housing
	77.	RWX-654	CM control assembly
	78.	RBH-862	Pinch return spring (R)
	79.	RNL-268	Sub pinch arm R
	80.	RBH-852	Pinch pressure spring (R)
	81.	RXB-699	Metal sleeve assembly
	82.	RNH-220	Shield plate F
	83.	.....	
	84.	.....	
	85.	.....	
	86.	.....	
	87.	.....	
	88.	.....	
	89.	.....	
	90.	.....	
	91.	YE30FUC	Washer E-type
	92.	VCZ30P060FMC	Screw 3 x 6
	93.	PMA30P060FMC	Screw 3 x 6
	94.	YS24FBT	Washer C-type
	95.	VCZ26P060FMC	Screw 2.6 x 6
	96.	YE25FUC	Washer E-type
	97.	ATZ26P080FMC	Screw 2.6 x 8
	98.	VCZ26P140FMC	Screw 2.6 x 14
	99.	ATZ30P080FMC	Screw 3 x 8
	100.	RBA-073	Special nut
	101.	RBA-080	Azimuth screw
	102.	BMZ26P050FMC	Screw 2.6 x 5
	103.	YE20FUC	Washer E-type
	104.	WA017D034D025	Washer
	105.	WA21D040D025	Washer
	106.	RBF-058	Washer
	107.	PMA26P050FMC	Screw 2.6 x 5
	108.	BMZ26P080BNi	Screw 2.6 x 8
	109.	RBF-059	Washer
	110.	.....	
	111.	.....	
	112.		Cord fixer
	113.		Holder B assembly
	114.		Cord fixer
	115.		Head base assembly
	116.		Main shaft
	117.		Arm assembly
	118.	.....	
	119.		Chassis
	120.		RM control assembly C
	121.		Side frame R
	122.		Side frame L assembly
	123.		Cushion
	124.		Stopper
	125.	.....	
	126.	.....	
	127.	.....	
	128.	.....	
	129.	.....	
	130.	.....	

6. PACKING

Mark	No.	Part No.	Description
	1.	RHG-624	Packing case
	2.	RRB-214	Operating instructions
	3.	RRR-006	Label
	4.	RNL-480	Head base stopper (B)
	5.	RDE-010	Connection cord
	6.	RHA-251	Pad



External Appearance of Transistors and ICs

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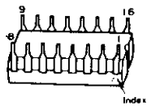
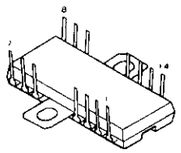
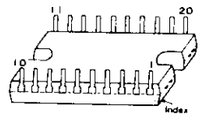
PA2009
PA3010



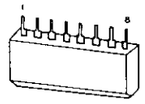
PA2012



PA2010



M5218L



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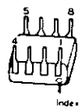
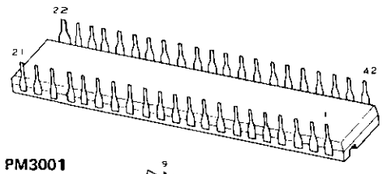
AN6552

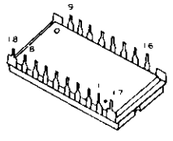


PA3012

PD6006



PM3001



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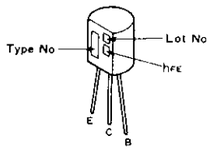
2SC2240
2SA1015



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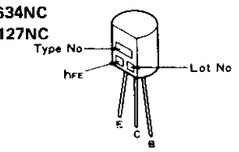
2SA1127NC



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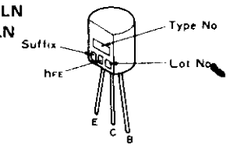
2SA933LN



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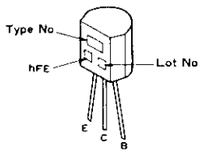

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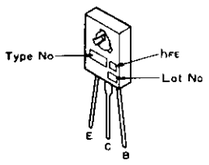

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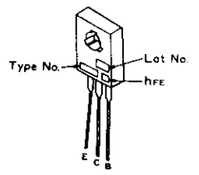

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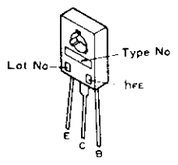

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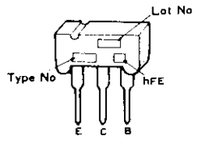
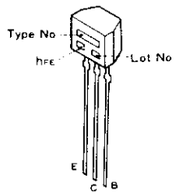


2SC2458



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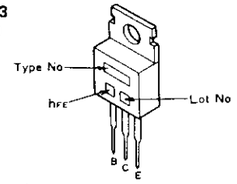
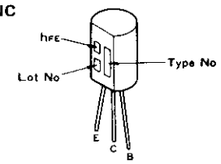
2SD880



2SC1383NC



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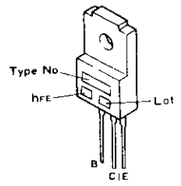
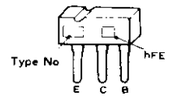
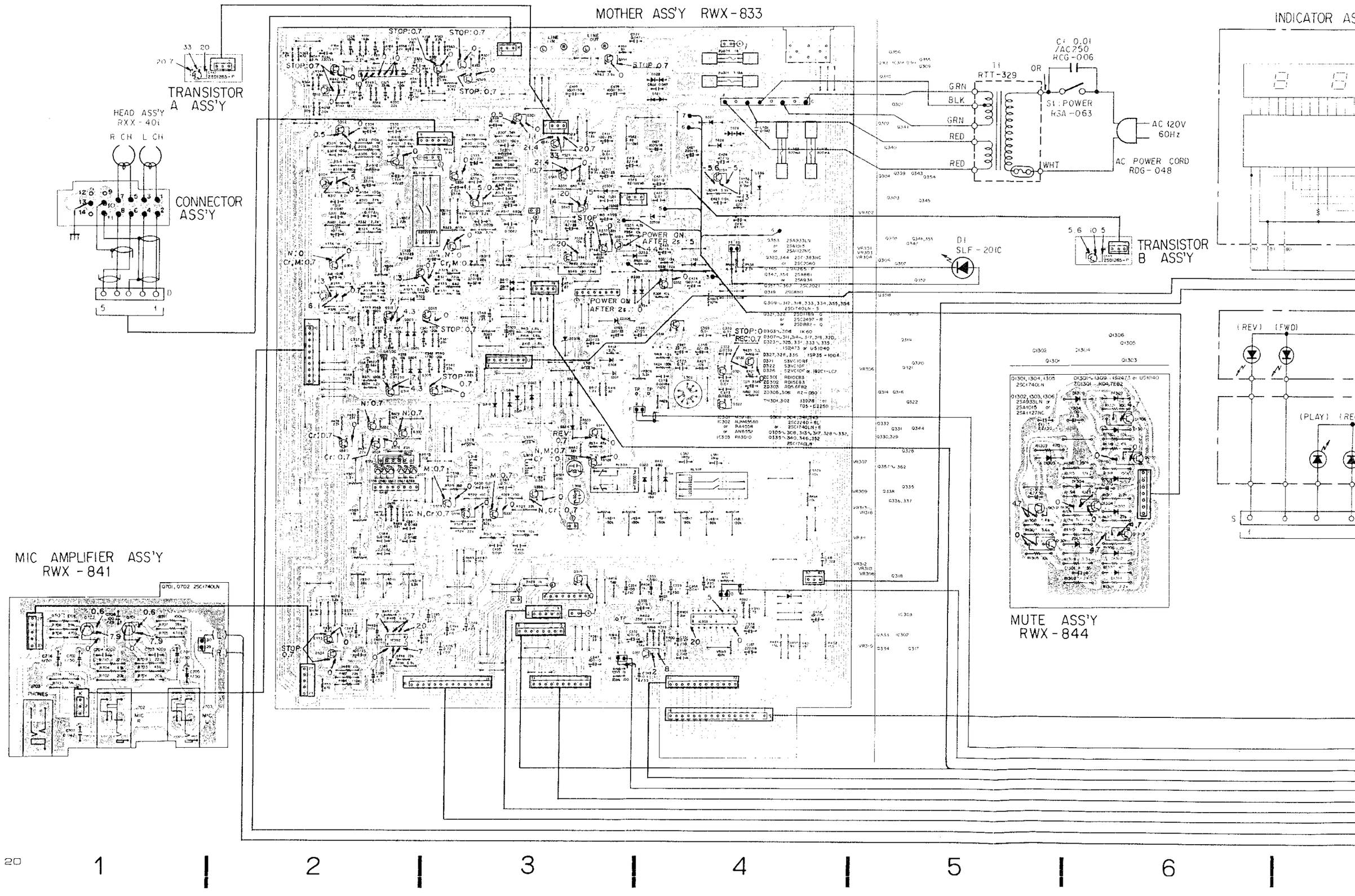


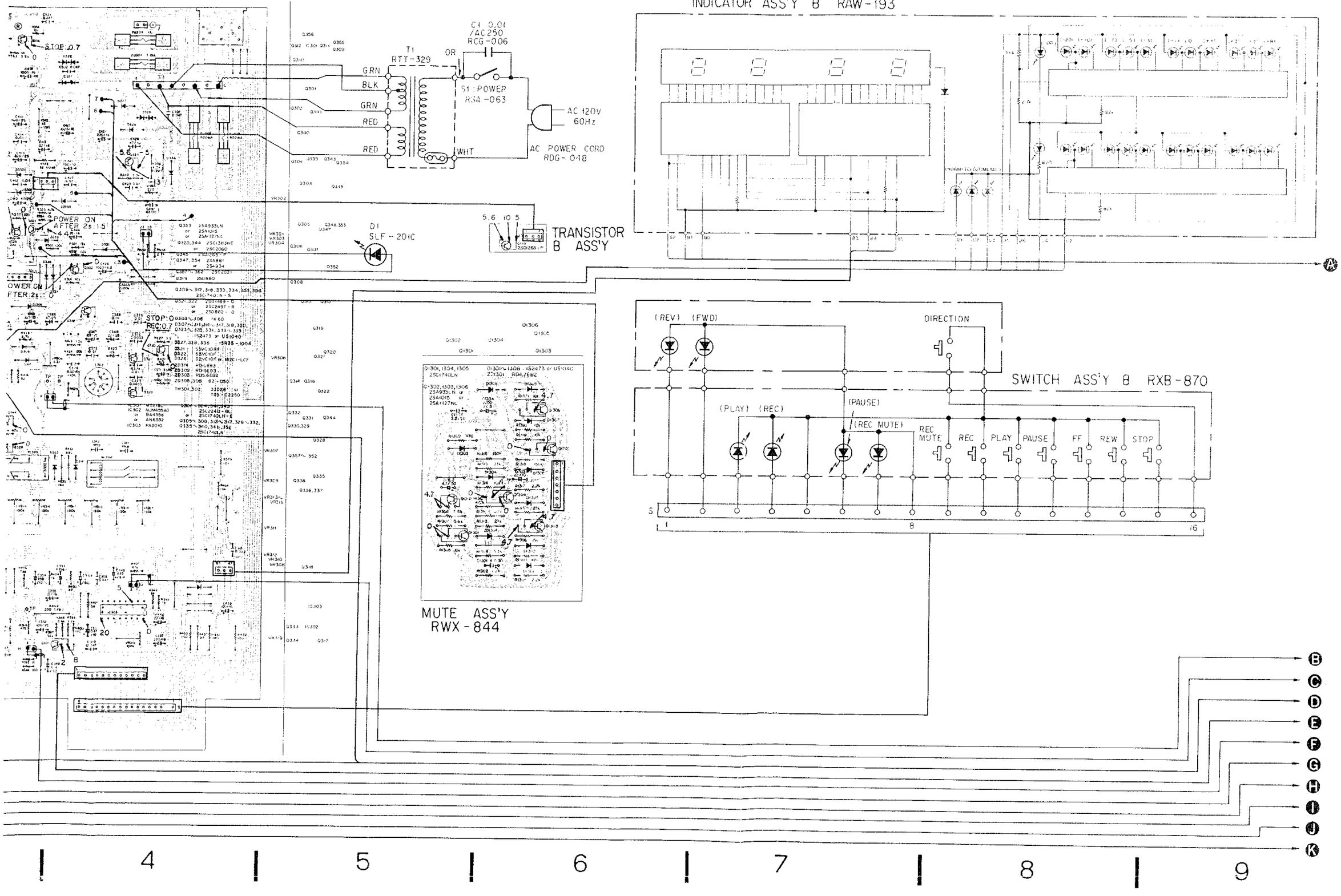
2SC2021



7. P.C.BOARDS CONNECTION DIAGRAM



MOTHER ASS'Y RWX-833



MUTE ASS'Y
RWX-844

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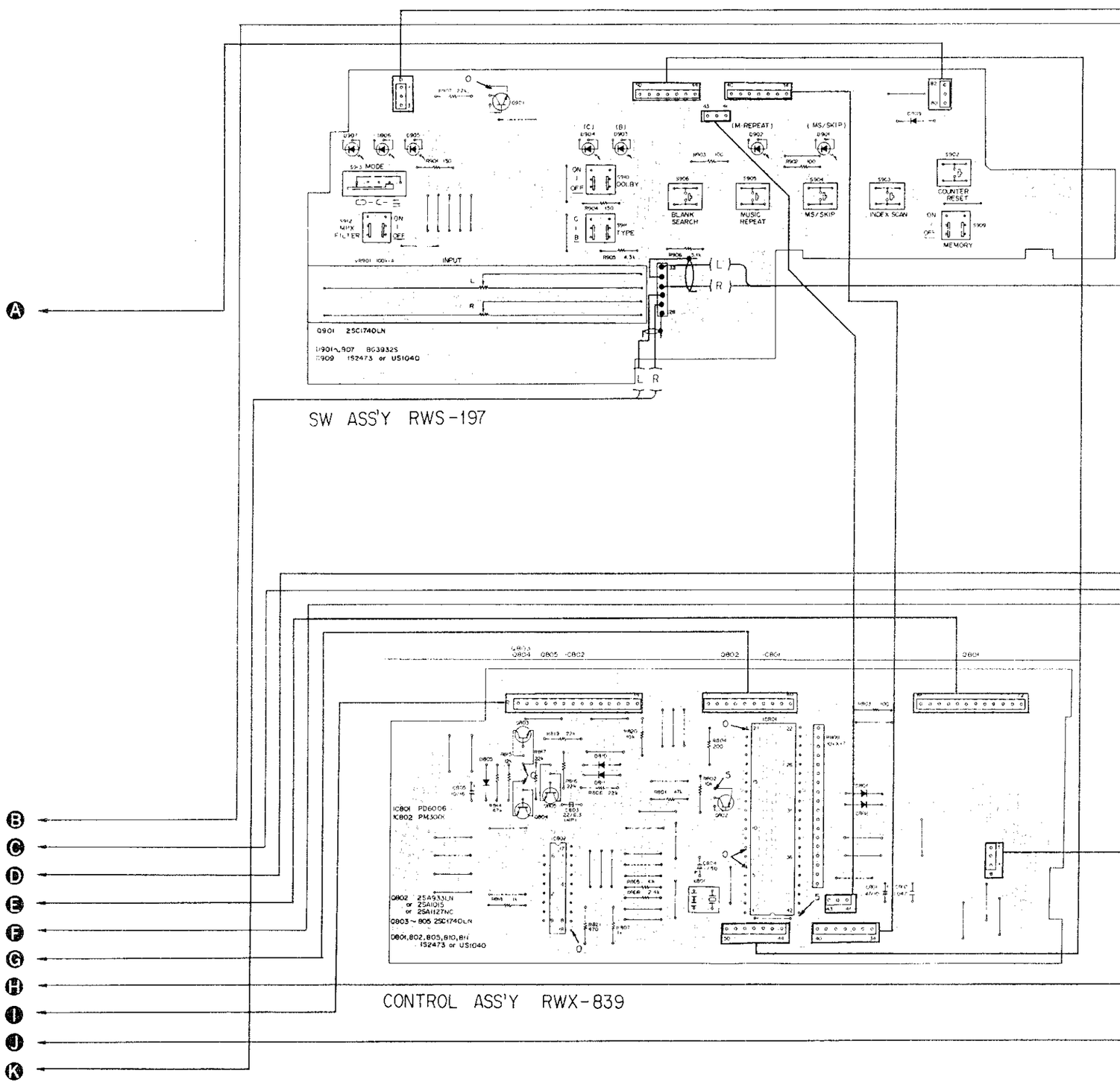
SW ASS'Y RWS-197
DOLBY NR ASS'Y RWX-838
CONTROL ASS'Y RWX-839
TIMER SWITCH ASS'Y
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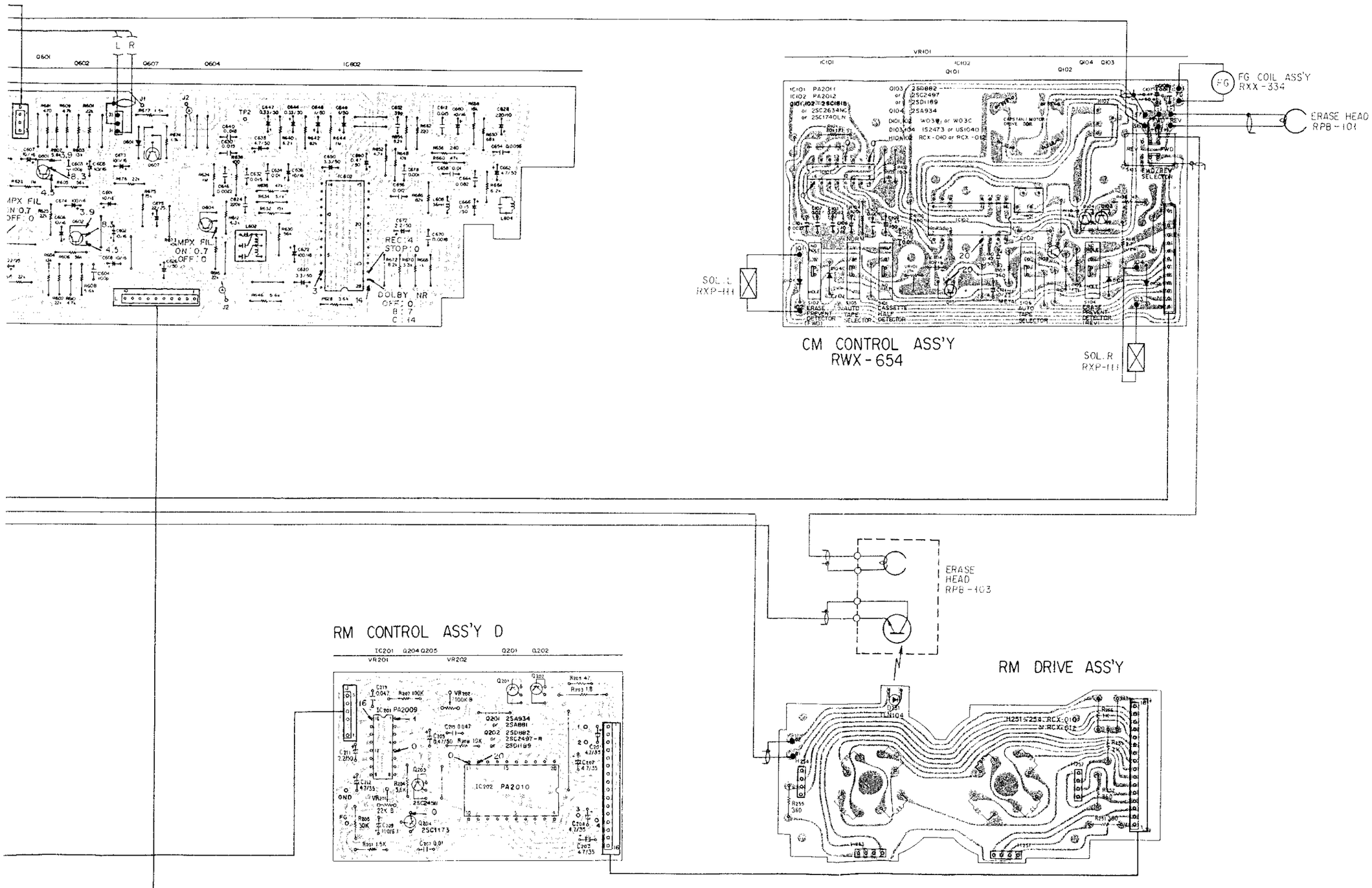
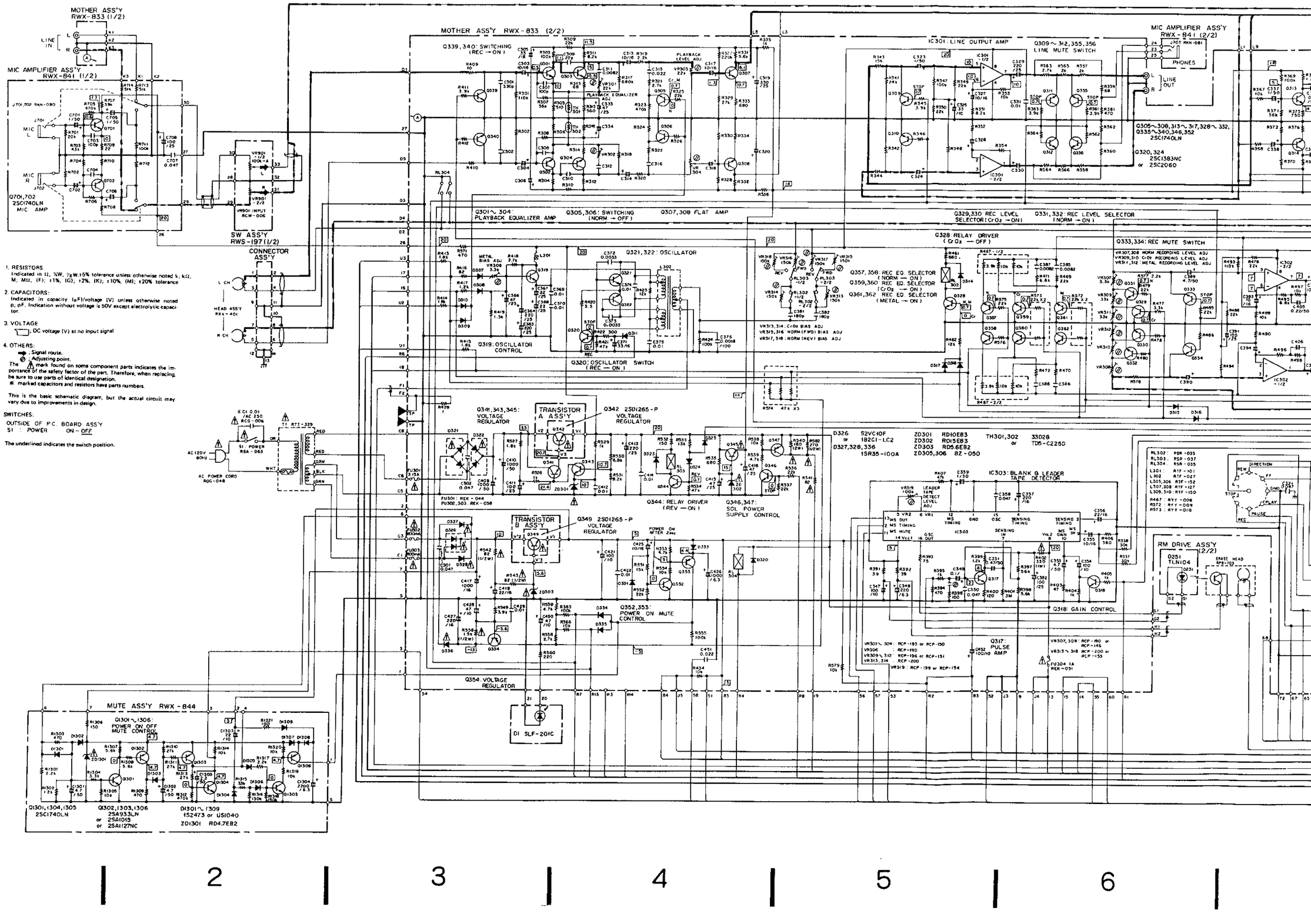

FG COIL ASS'Y
RXX-334
ERASE HEAD
RPB-101
SOL. L
RXP-111
CM CONTROL ASS'Y
RWX-654
SOL. R
RXP-111
ERASE
HEAD
RPB-103
RM CONTROL ASS'Y D
RM DRIVE ASS'Y

8. SCHEMATIC DIAGRAM



1. RESISTORS:
Indicated in Ω, ¼W, ±5% tolerance unless otherwise noted k: kΩ, M: MΩ, (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p: pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE
: DC voltage (V) at no input signal

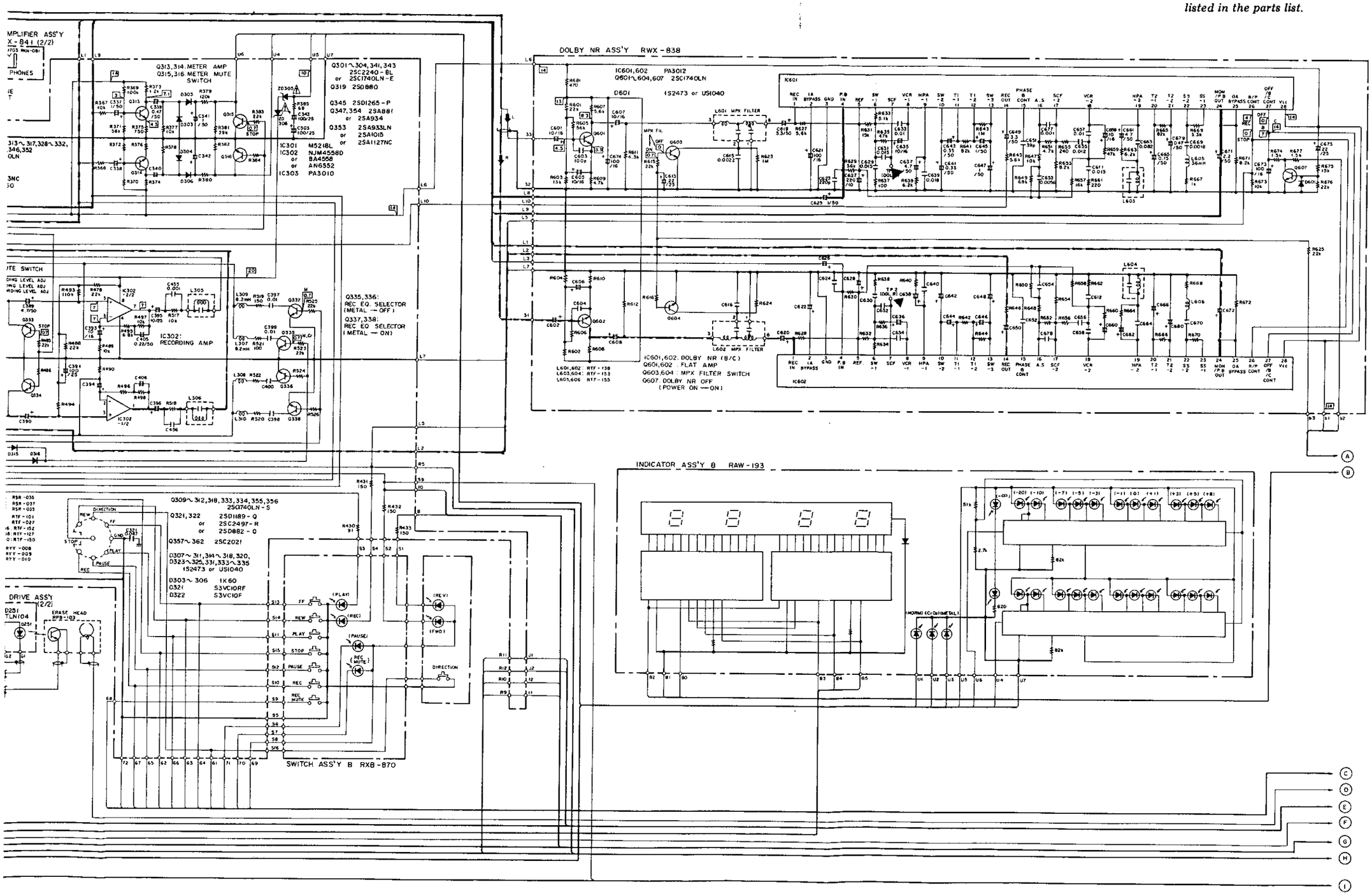
4. OTHERS:
➡ : Signal route.
⊘ : Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

SWITCHES:
OUTSIDE OF P.C. BOARD ASS'Y
S1 : POWER ON – OFF

The underlined indicates the switch position.

NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.



SWITCHES
CM CONTROL ASS'Y
S101: CASSETTE HALF DETECTOR NON MOUNTED – MOUNTED
S102: FWD REC INHIBIT HOLE – NON HOLE
S103-1/2: DIRECTION DETECTOR FWD – REV
S103-2/2: ERASE HEAD SELECTOR FWD – REV
S104: REV REC INHIBIT HOLE – NON HOLE
S105: AUTO TAPE SELECTOR CrO2 – NORM
S106: AUTO TAPE SELECTOR METAL – CrO2
TIMER SWITCH ASS'Y (METAL)
S815: TIMER REC – OFF – PLAY
SW ASS'Y
S902: COUNTER RESET OFF – ON
S903: INDEX SCAN OFF – ON
S904: MS/SKIP OFF – ON
S905: MUSIC REPEAT OFF – ON
S906: BLANK SEARCH OFF – ON
S909: MEMORY OFF – ON
S910: DOLBY NR OFF – ON
S911: DOLBY NR TYPE B – C
S912: MPX FILTER OFF – ON
S913: MODE
The underlined indicates the switch position.

SW ASS'Y RWS-197 (2/2)

TIMER SWITCH ASS'Y
S815: TIMER RSH-064

CONTROL ASS'Y RWX-839

IC801: FUNCTION CONTROL
IC802: MECHANISM & MUTING CONTROL
Q802: INVERTER
Q803: TAPE COUNTER CONTROL
Q804: OSCILLATOR TIMING SWITCH
Q805: OSCILLATOR INHIBIT SWITCH
Q901: 2SC1740LN INVERTER
D901~907: BG39325
D909: 1S2473 or US1040
IC801: PD6006
IC802: PM3001
Q802: 2SA933LN or 2SA1015 or 2SA1127NC
Q803~805: 2SC1740LN
D801,802,805,810,811: 1S2473 or US1040
RMS: RYY-006
XB01: CERAMIC RESONATOR ASS'Y (WITH PAIR CAPACITORS) RSS-033

FG COIL ASS'Y RXX-334

CM CONTROL ASS'Y RWX-654

IC101: CAPSTAN MOTOR CONTROL
IC102: CAPSTAN MOTOR DRIVER
Q101,102: HALL DEVICE CURRENT CONTROL
Q103,104: DRIVE COIL DRIVER
IC101 PA2011
IC102 PA2012
Q101,102 2SC1815 or 2SC2634NC or 2SC1740LN
Q103 2SD882 or 2SC2497 or 2SD1189
Q104 2SA934
D101,102 WO3B or WO3C
D103,104 1S2473 or US1040
VR101: SPEED ADJ (PLAY) RCP-117

RM CONTROL ASS'Y D

IC201 PA2009 REEL MOTOR CONTROL
IC202 PA2010
Q201 2SA934 or 2SA881
Q202 2SD882 or 2SC2497-R or 2SD1189
Q204 2SC1173
Q205 2SC2458
IC202,Q201,202, Q204,205: REEL MOTOR DRIVE

RM DRIVE ASS'Y (1/2)

9. ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 x 10^1*	*561*	*RD¼PS*	5 6 1 *J*
47kΩ	*47 x 10^3*	*473*	*RD¼PS*	4 7 3 *J*
0.5Ω	*0R5*		*RN2H*	0 R 5 *K*
1Ω	*010*		*RS1P*	0 1 0 *K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 x 100*	*5621*	*RN¼SR*	5 6 2 1 *F*

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Miscellaneous Parts.

P.C. BOARD ASSEMBLIES

Mark	Part No.	Symbol & Description
	RWX-833	Mother assembly
	RWX-838	Dolby NR assembly
	RWX-839	Control assembly
	RWS-197	SW assembly
	RWX-841	MIC amplifier assembly
	RWX-844	Mute assembly
	RWX-654	CM control assembly
	Non supply	Timer switch assembly
	Non supply	Transistor A assembly
	Non supply	Transistor B assembly
	Non supply	RM drive assembly
	Non supply	RM control assembly D

FUSES

Mark	Part No.	Symbol & Description	
⚠ ★★	REK-044	FU301	Fuse (3.15A)
⚠ ★★	REK-058	FU302, FU303	Fuse (800mA)
⚠ ★★	REK-051	FU304	Fuse (1A)

OTHERS

Mark	Part No.	Symbol & Description	
⚠ ★	RTT-329	T1	Power transformer
⚠ ★★	RSA-063	S1	Push switch (POWER)
⚠	RCG-006	C1	Ceramic capacitor
★	SLF-201C	D1	LED (tape lighting)

Mark	Part No.	Symbol & Description
⚠	RDG-048	AC power cord
⚠	REC-395	Strain relief (for AC power cord)
★★	RXB-870	Switch assembly B (operation keys)
★★	RXX-401	Head assembly
★	RPB-101	Erase head
★	RPB-103	Erase head with photo sensor
⚠ ★	RXP-111	Plunger solenoid
	RXX-359	Reel motor assembly C
	RKP-273	Connector socket assembly C
	RAW-193	Indicator assembly B

CM Control Assembly (RWX-654)

SEMICONDUCTORS

Mark	Part No.	Symbol & Description	
★★	PA2011	IC101	
★★	PA2012	IC102	
★★	2SC1815 (2SC2634NC) (2SC1740LN)	Q101, Q102	
★★	2SA934	Q104	
★★	2SD882 (2SC2497-R) (2SD1189)	Q103	
★	W03B (W03C)	D101, D102	
★	1S2473 (US1040)	D103, D104	
★	RCX-010 (RCX-012)	H101, H102	Hall device A (Hall device A)

SWITCHES

Mark	Part No.	Symbol & Description
★★	RSG-116	S101, S102 S104–S106 Push switch
★★	RSH-063	S103 Slide switch

CAPACITORS

Mark	Part No.	Symbol & Description
	RCE-227	C101 Film (0.0027)
	CEA R47M50	C107, C109, C110
	CEA 100M 16	C104, C106
	CEA 100M 25	C111
	CQMA 273K 50	C102
	RCE-228	C103 Film (0.0082)
	CKDYF 102Z 50	C105
	CKDYF 103Z 50	C108, C112

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
★	RCP-117	VR101 Semi-fixed (15k-B)
	RN¼PQ 2002F	R101
	RD½PS 2R7J	R111
	RD¼PM □□□J	Other resistors

RM Drive Assembly

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★	TLN-104	D251

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	RD¼PM □□□J	R251–R253, R255, R256

RM Control Assembly D

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	PA2009	IC201
★★	PA2010	IC202
★★	2SA934 (2SA881)	Q201
★★	2SD882 (2SC2497-R) (2SD1189)	Q202
★★	2SC2458	Q205
★★	2SC1173	Q204

CAPACITORS

Mark	Part No.	Symbol & Description
	CEA 4R7M 35	C201, C204, C212
	CEA R47M 50	C205
	CEA 2R2M 50	C211
	CEA 101M 6R3	C209
	CEA 4R7M 35	C202, C203
	CQMA 473K 50	C213
	CKDYF 103Z 50	C207
	CKDYF 473Z 50	C215

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
★	RCP-009	VR201 Semi-fixed (22k-B)
★	RCP-056	VR202 Semi-fixed (100k-B)
	RD¼PM □□□J	R201, R204, R205, R207–R209
	RD½PS 1R8J	R203

OTHERS

Mark	Part No.	Symbol & Description
	REE-051	Spacer
	RKH-005	Transistor holder
	RBA-026	Screw

Mother Assembly (RWX-833)

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	M5218L	IC301
★★	NJM4558D (BA4558) (AN6552)	IC302
★★	PA3010	IC303
★★	2SC2021	Q357–Q362
★★	2SC1740LN	Q305–Q308, Q313–Q317, Q328–Q332, Q335–Q340, Q346, Q352
★★	2SA933LN (2SA1015) (2SA1127NC)	Q353
★★	2SC1383NC (2SC2060)	Q320, Q344
⚠ ★★	2SD1265-P	Q345
★★	2SA881 (2SA934)	Q347, Q354
★★	2SC2240-BL (2SC1740LN-E)	Q301–Q304, Q341, Q343
★★	2SD880	Q319
★★	2SC1740LN-S	Q309–Q312, Q318, Q333, Q334, Q355, Q356
★★	2SD1189-Q (2SC2497-R) (2SD882-Q)	Q321, Q322

Mark		Part No.	Symbol & Description
	★	1K60	D303–D306
⚠	★	1SR35-100A	D327, D328, D336
	★	1S2473 (US1040)	D307–D311, D314–D318, D320, D323–D325, D331, D333-D335
⚠	★	RD5.6EB2	ZD303
⚠	★	RD10EB3	ZD301
⚠	★	RD15EB3	ZD302
⚠	★	S3VC10F	D322
⚠	★	S3VC10RF	D321
⚠	★	S2VC10F (1B2C1-LC2)	D326
⚠	★	BZ-050	ZD305, ZD306
		33D28 (TD5-C225D)	TH301, TH302

COILS

Mark	Part No.	Symbol & Description	
	RTF-101	L301	Line coil
	RTD-027	L302	OSC. coil
	RTF-152	L305, L306	Trap coil
	RTF-127	L307, L308	Peaking coil 8.2mH
	RTF-150	L309, L310	Peaking coil 8.2mH

CAPACITORS

Mark	Part No.	Symbol & Description
	CEA 221M 6R3	C348
	CEA 102M 6R3	C426
	CEA 101M 10	C347, C354, C421, C452
	CEA 100M 16	C313, C314, C327, C328, C355, C393, C394, C425
	CEA 470M 10	C428, C430
	CEANL 100M 16	C303, C304, C317, C318
	CEA 220M 16	C356, C418
	CEA 330M 16	C305, C306, C325, C371
	CEA 221M 16	C357, C427
	CEA 102M 16	C417
	CEA 220M 25	C367, C368
	CEA 470M 25	C333, C334, C366, C415, C416
	CEA 101M 25	C343, C352, C391, C411, C503
	CEA 221M 25	C329, C330, C364, C365, C413
	CEA 100M 25	C395, C396
	CEA 331M 25	C319, C320
	CEA R10M 50	C349
	CEA R22M 50	C405, C406
	CEA R47M 50	C339, C340, C351
	CEA 010M 50	C323, C324, C337, C338, C341, C342, C359
	CEA 4R7M 50	C353, C389, C390
	CEA 102M 50	C409, C410
	CQMA 332J 50	C372, C373
	CQMA 103J 50	C374, C375, C399, C400
	CQMA 822J 50	C397, C398
	CQMA 223K 50	C315, C316, C451
	CQMA 473K 50	C358
	CQMA 822K 50	C311, C312, C385–C388
	CQMA 102K 50	C455, C456
	CQPA 182J 100	C376
	CQSA 220K 50	C309, C310
	CQSA 101K 50	C307, C308
	CQSA 181K 50	C381, C382
	CQSA 331K 50	C301, C302
	CKDYF 103Z 50	C331, C369, C370, C412, C414, C422, C429
	CKDYF 473Z 50	C321, C350, C501, C502

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark		Part No.	Symbol & Description	
	★	RCP-195 (RCP-150)	VR301–VR304	Semi-fixed (22k-B)
	★	RCP-190	VR306	Semi-fixed (3.3k-B)
	★	RCP-190 (RCP-146)	VR307, VR308	Semi-fixed (3.3k-B)
	★	RCP-196 (RCP-151)	VR309–VR312	Semi-fixed (33k-B)
	★	RCP-200	VR313, VR314	Semi-fixed (150k-B)
	★	RCP-200 (RCP-155)	VR315–VR318	Semi-fixed (150k-B)
	★	RCP-199 (RCP-154)	VR319	Semi-fixed (100k-B)
⚠		RD1/8PM □□□J	R541	
⚠		RD½PSF □□□J	R542, R543, R556, R582	
⚠		RS1LF □□□J	R402	
⚠		RS2LF □□□J	R540	
		RYY-008	R467	Resistor array 8-P
		RYY-009	R572	Resistor array 3-P
		RYY-010	R573	Resistor array 6-P
		RD¼PM □□□JNL	R303, R304, R307, R308	
		RD¼PM □□□J	R301, R302, R305, R306, R309–R336, R391, R401, R405, R409–R415, R430–R433, R461, R485–R490, R493–R496, R517–R529, R532, R535, R549, R575–R578	
		RD1/6PM □□□J	Other resistors	

OTHERS

Mark	Part No.	Symbol & Description	
★★	RSR-037	RL303	Miniature relay
★★	RSR-035	RL302, RL304	Reed relay
	RKB-018	Terminal (LINE INPUT/OUTPUT)	
	RKP-720	Connector socket (REMOTE)	
	RKP-692	CN318	Connector assembly 5-P
	RKP-696	CN319	Connector assembly 7-P
	RKP-693	CN320	Connector assembly 12-P
	RKP-779	CN321	Connector assembly 7-P
	RKP-698		Connector 3-P
	RKP-699		Connector 3-P
	RKP-700		Connector 3-P

Transistor A Assembly

Mark	Part No.	Symbol & Description
⚠ ★★	2SD1265-P	Q342

Transistor B Assembly

Mark	Part No.	Symbol & Description
⚠ ★★	2SD1265-P	Q349

Dolby NR Assembly (RWX-838)

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	PA3012	IC601, IC602
★★	2SC1740LN	Q601–Q604, Q607
★	1S2473 (US1040)	D601

COILS

Mark	Part No.	Symbol & Description	
	RTF-138	L601, L602	MPX filter
	RTF-153	L603, L604	Trap coil
	RTF-155	L605, L606	Coil 36mH

CAPACITORS

Mark	Part No.	Symbol & Description
	CEA R15M 50	C665, C666
	CEA R33M 50	C641–C644
	CEA R47M 50	C679, C680
	CEA 010M 50	C645–C648
	CEA 2R2M 50	C671, C672
	CEA 3R3M 50	C649, C650
	CEANL 3R3M 50	C619, C620
	CEANL 010M 50	C625, C626
	CEA 4R7M 50	C637, C638, C661, C662
	CEA 220M 25	C613, C675
	CEA 100M 16	C601, C602, C605–C608
	CEA 101M 16	C621, C622, C673, C674
	CEANL 100M 16	C635, C636, C659, C660
	CEA 221M 10	C627, C628
	CQMA 222J 50	C615, C616
	CQMA 182J 50	C669, C670
	CQMA 102K 50	C677, C678
	CQMA 562K 50	C653, C654
	CQMA 103K 50	C633, C634, C657, C658
	CQMA 123K 50	C655, C656
	CQMA 153K 50	C611, C612, C629–C632
	CQMA 183K 50	C639, C640
	CQMA 823K 50	C663, C664
	CCDSL 390K 50	C652
	CCDSL 101K 50	C603, C604
	CCDSL 221K 50	C623, C624
	CCPSL 390J 50	C651

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	RD¼PM □□□J	All resistors

OTHER

Mark	Part No.	Symbol & Description
	RKP-604	CN602 Connector socket 10-P

Control Assembly (RWX-839)

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	PD6006	IC801
★★	PM3001	IC802
★★	2SA933LN (2SA1015) (2SA1127NC)	Q802
★★	2SC1740LN	Q803–Q805
★	1S2473 (US1040)	D801, D802, D805, D810, D811

CAPACITORS

Mark	Part No.	Symbol & Description
	CEA 100M 16	C805
	CEA 470M 10	C801
	CKDYF 473Z 50	C802
	CEA 010M 50	C804
	CEANP 220M 6R3	C803

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	RYY-006	R809 Resistor array 18-P
	RD¼PM □□□J	Other resistors

OTHERS

Mark	Part No.	Symbol & Description
★	RSS-033	X801 Ceramic resonator assembly (with pair capacitors)
	RKP-604	CN801 Connector socket 10-P
	RKP-605	CN802 Connector socket 12-P
	RKP-606	CN804 Connector socket 14-P
	RKP-687	Connector 3-P

SW Assembly (RWS-197)

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★	BG3932S	D901–D907
★	1S2473 (US1040)	D909
★★	2SC1740LN	Q901

SWITCHES

Mark	Part No.	Symbol & Description
★★	RSG-143	S902–S906 Push switch
★★	RSG-150	S909–S912 Push switch
★★	RSH-067	S913 Slide switch

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
★	RCW-006	VR901 Variable (100k-A)
	RD¼PM □□□ J	R901–R907

OTHERS

Mark	Part No.	Symbol & Description
	RKP-688	CN901 Connector assembly 3-P
	RKP-685	CN904 Connector assembly 6-P
	RKP-694	CN905 Connector assembly 6-P

Timer Switch Assembly

SWITCH

Mark	Part No.	Symbol & Description
★★	RSH-064	S815 Slide switch

MIC Amplifier Assembly (RWX-841)

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	2SC1740LN	Q701, Q702

CAPACITORS

Mark	Part No.	Symbol & Description
	CEA 010M 50	C701, C702, C705, C706
	CEA 101M 25	C708
	CKDYF 473Z 50	C707
	CCDSL 101K 50	C703, C704

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	RD¼PM □□□ J	R701–R714

OTHERS

Mark	Part No.	Symbol & Description
	RKN-080	J701, J702 Phone jack (MIC)
	RKN-081	J703 Phone jack (PHONES)
	RKP-599	CN702 Connector socket 5-P
	RKP-686	CN703 Connector assembly 3-P

Mute Assembly (RWX-844)

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
★★	2SA933LN (2SA1015) (2SA1127NC)	Q1302, Q1303, Q1306
★★	2SC1740LN (2SC1815)	Q1301, Q1304, Q1305
★	1S2473 (US1040)	D1301–D1309
⚠ ★	RD4.7EB2	ZD1301

CAPACITORS

Mark	Part No.	Symbol & Description
	CEA 4R7M 50	C1301, C1302
	CEA 220M 10	C1303
	CEA 222M 6R3	C1304
	CEA 2R2M 50	C1305

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	RD¼PM □□□ J	All resistors

10. ADJUSTMENTS

10.1 MECHANICAL ADJUSTMENT

10.1.1 Pinch Roller Pressure Check

*Use a tension gauge (GGK-047)

Mode	Specification rating	Measuring conditions
Playback mode	250g ~ 400g	Slowly pull the pinch roller away from the capstan, and read the value the moment the pinch roller stops turning.

*If the measured value does not lie within the rated specification range, replace the pinch roller pressure spring.

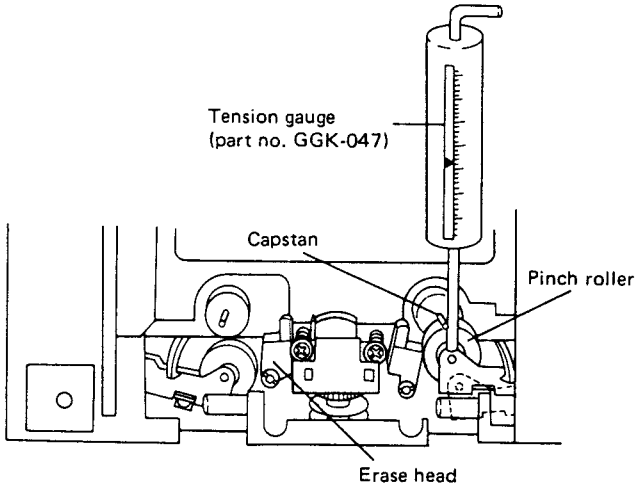


Fig. 10-1 Pinch roller pressure check

10.1.2 Head Azimuth Preliminary Adjustment

Mode	Adjustment location	Specifications
Stop mode when tape direction is "forward"	Head azimuth adjustment screw ❶	Adjust gap A to 1.5mm (±0.3mm)
Stop mode when tape direction is "reverse"	Head azimuth adjustment screw ❷	Adjust gap B to 1.5mm (±0.3mm)

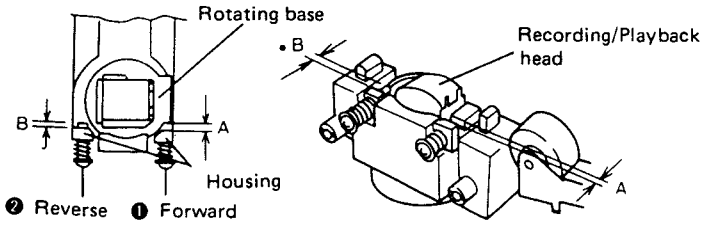


Fig. 10-2 Azimuth adjustment points

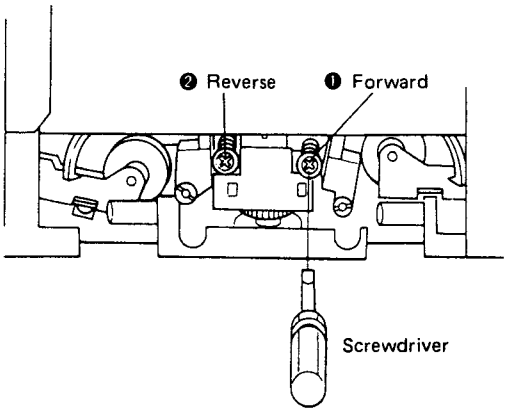


Fig. 10-3 Azimuth preadjustment

10.1.3 Tape Transport Adjustment

Mode	Adjustment location	Specifications
Forward direction playback mode	Adjustment nut ❶	Tape curling at the erase and playback heads must conform with the following figures. Curling at the playback head: Less than 1/9 the tape width Curling at the erase head: Less than 1/5 the tape width.
Reverse direction playback mode	Adjustment nut ❷	

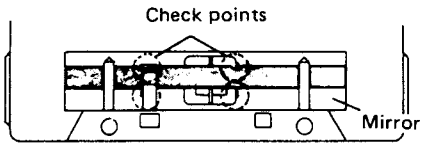


Fig. 10-4 Tape curling check points

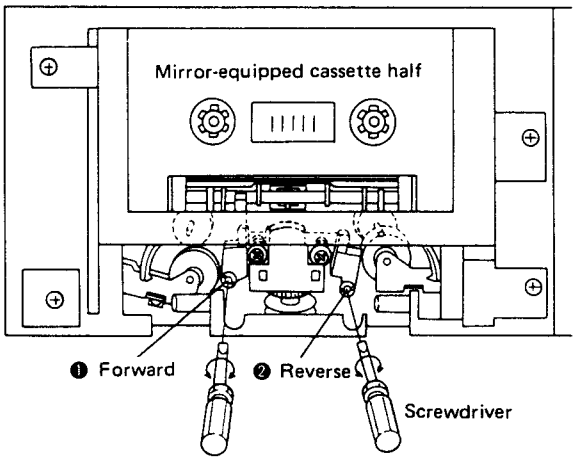


Fig. 10-5 Tape transport adjustment

10.1.4 FF and REW Rotational Speed Adjustment

*Use a frequency counter without a cassette half mounted in the cassette compartment.

Mode	Adjustment location	Specifications
Fast forward mode with tape in forward direction	VR202 (RM control assembly)	Adjust the frequency reading between MR HB out (5) and GND (3) on the RM control assembly to 36Hz ±1Hz.

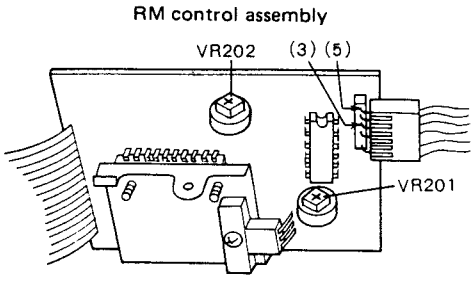


Fig. 10-6 FF/REW rotating speed adjustment

10.1.5 PLAY Take-Up Torque Adjustment

*Use a cassette-type torque meter.

Mode	Adjustment location	Specifications
Forward direction playback mode	VR102 (RM control assembly)	Take-up torque must be 35g·cm to 55g·cm by at least 10 seconds after PLAY mode has been started. Torque meter variation must not exceed 15g·cm.
Reverse direction playback mode	Check	

10.1.6 FAST (FF & REW) Torque Check

*Use a cassette-type torque meter.

Mode	Specifications rating	Remarks
Fast forward mode and rewinding mode	70g·cm ~130g·cm	Take-up torque

10.1.7 Back-Tension Torque Check

*Use a cassette-type torque meter.

Mode	Specifications rating	Remarks
Forward & reverse direction playback mode	2g·cm ~ 5g·cm	Supply reel base back-tention torque

10.1.8 Tape Speed Adjustment

*Use a frequency counter and the STD-301 test tape.

Mode	Adjustment location	Specification
Forward direction playback mode	VR101 (CM control assembly)	Playback frequency must be 3005 ±10Hz at the beginning of the STD-301 test tape.
Reverse direction playback mode	Check	Playback frequency must be 3000 ±30Hz at the beginning of the STD-301 test tape.

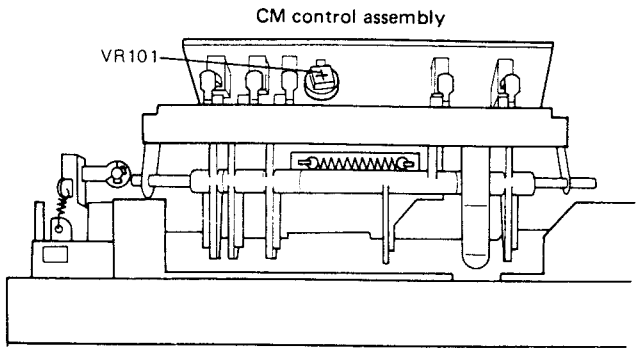


Fig. 10-7 Tape speed adjustment

10.1.9 Cassette Pocket Damper Adjustment

Adjustment location	Specifications
Damper cylinder adjustment screw	The door must open smoothly without going through a two-stage motion, and without any bouncing back when fully opened.

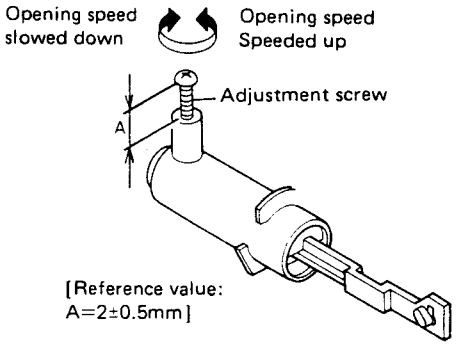


Fig. 10-8 Cassette pocket damper adjustment

10.1.10 Door Position Adjustment

Check 1	The dimensional ratio of A to B, and C to D must be within the 0.5 to 2 range (The dimensions taken when facing the deck from the front).
Check 2	The difference between E and G must not be greater than ±0.4mm, and all dimensions E, F, and G must be at least 0.5mm (the dimensions taken when facing the deck from the front).
If the above specifications are not met, remove the door and adjust the pocket frame with a screwdriver at the position indicated in the following diagram.	

A thru G : Gap dimensions

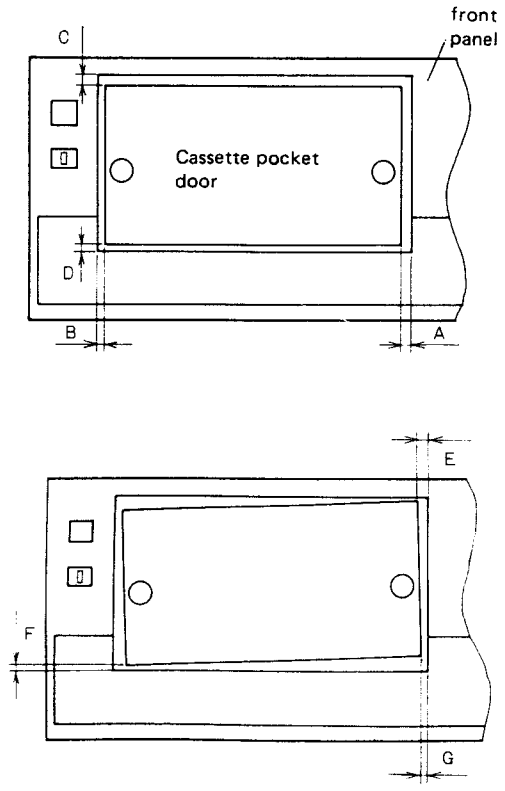


Fig. 10-9 Door position

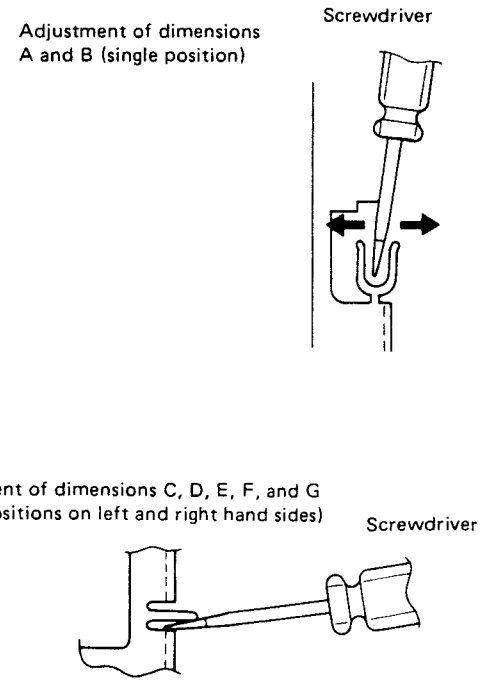


Fig. 10-10 Door position adjustment

10.2 ELECTRICAL ADJUSTMENTS

Adjustment Conditions

1. Commence electrical adjustments only after all mechanical adjustments have been completed.
2. Also make sure that the heads have been cleaned and demagnetized.
3. Let the tape deck warm up for a few minutes before commencing actual adjustments.
4. Assume signal level of 0dBv=1Vrms.
5. Connect a 50kΩ load resistance to the OUTPUT terminals (any resistance in the 47kΩ 52kΩ range is acceptable).
6. Set the control switches to the following positions unless otherwise specified.
   TIMER : OFF
   MEMORY : OFF
   DOLBY NR : OFF
   MPX FILTER : OFF
   MODE : " ⇄ " display

Test Tape

STD-331B* : For playback system adjustments
STD-608A : NORMAL blank tape
STD-603 : CrO_2 blank tape
STD-604 : METAL blank tape

* The recording levels for STD-331A and STD-331B differ. Whereas the STD-331A reference level is 333Hz, 250nwb/m, the corresponding STD-331B level is 315Hz, 160nwb/m.

Adjustment Sequence

Adjustments must always be made in the following order.

1. Head azimuth adjustment
2. Tape transport adjustment
3. Playback equalizer adjustment
4. Playback level adjustment
5. Erase current adjustment
6. Recording/playback frequency response adjustment
7. Recording level adjustment
8. Level meter 0dB check
9. Leader tape detector level adjustment

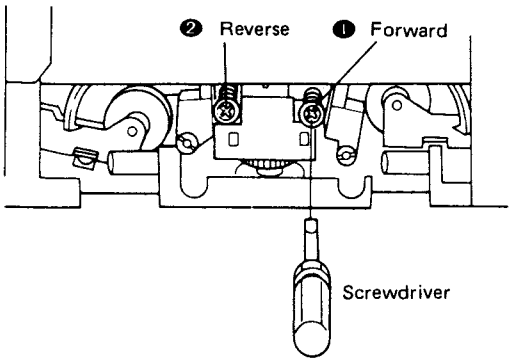


Fig. 10-11 Head azimuth adjustment

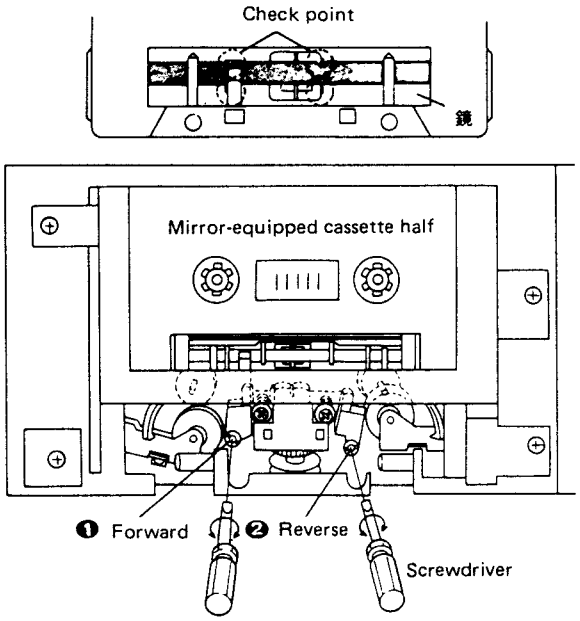


Fig. 10-12 Tape transport adjustment

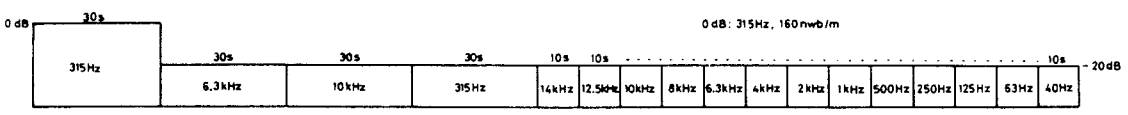


Fig. 10-13 STD-331B test tape

1. Head Azimuth Adjustment
- Turn VR303 and VR304 (playback level ADJ) up to maximum levels, and adjust VR301 and VR302 (playback EQ ADJ) to the mechanical center position.

	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
	Playback (forward and reverse)	Play the 10kHz/–20dB portion of the STD-331B test tape	Head azimuth adjustment screw ① & ② (see Fig. 10-11)	Left and right OUTPUT terminals	Maximum playback signal level	Screw ① for FWD Screw ② for REV

2. Tape transport Adjustment
- Use a mirror-equipped cassette half to check the tape transport condition. Adjust if the rated specifications are not met.

	Mode	Input signal & test tape	Adjustment location	Rated specifications	Remarks
1	Playback (forward and reverse)	Mirror-equipped cassette half	Adjustment nuts ① & ② (see Fig. 10-12)	Absence of tape curling at the playback head and erase head tape guides during playback mode.	Nut ① for FWD Nut ② for REV
2	When tape transport is adjusted, repeat the "Head azimuth adjustment".				

3. Playback Equalizer Adjustment

	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value
1	Forward playback	Play the 315Hz/–20dB and 10kHz/–20dB portions of the STD-331B test tape.	VR301 (left ch.) VR302 (right ch.)	TP.1 (left ch.) TP.2 (right ch.) (Dolby NR ass'y)	Adjust the 10kHz level to 0dB in respect to the 315Hz playback level.
2	Reverse playback		Check		Check the 10kHz level to $0^{+2.5}_{-0}$ dB in respect to the 315Hz playback level.
3	See Fig. 10-14 for the permitted playback frequency response zone.				

4. Playback Level Adjustment
- Since the playback Dolby level is set by this adjustment, make sure the adjustments are accurate.

	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value
1	Forward playback	Play the 315Hz/0dB portion of the STD-331B test tape	VR303 (left ch.) VR304 (right ch.)	TP.1 (left ch.) TP.2 (right ch.) (Dolby NR ass'y)	–7.7dBv (412.1mV)
2	Reverse playback		Check		–7.7dBv±0.5dB

5. Erase Current Adjustment

	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustmentment value	Remarks
1	Forward recording	Load the STD-604 test tape with no input signal applied. (The auto tape selector is set to METAL position.	VR306	TP. (IE to GND)	160mV	Measure the voltage generated at R429 (1Ω) by the erase current.
2	Reverse recording		Check		140mV~180mV	
3	If voltage does not lie in the 140mV to 180mV range during the reverse recording mode, adjust so that the voltage lies within this range during both forward recording and reverse recording.					

Test tape	STD-331B
DOLBY NR switch	OFF

- The right channel signal is compensated by –1dB from the actual 40Hz and 63Hz measured values.

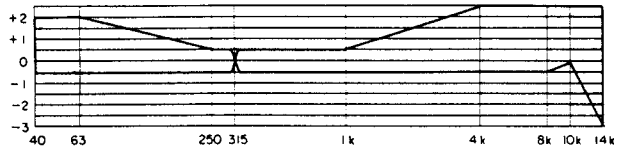


Fig. 10-14 Permitted playback frequency response zone

6. Recording/playback Frequency Response Adjustment						
	Mode	**Input signal & test tape**	**Adjustment location**	**Measuring location**	**Adjustment value**	**Remarks**
1	Forward recording pause	Apply 315Hz/–30dBv to LINE INPUT terminals.	INPUT level control	Left and right OUTPUT terminals	–27dBv (44.7mV)	INPUT level control position setting
2	Forward recording/playback	Record 315Hz and 10kHz signals onto the STD-608A test tape, and then play those recorded sections.	VR315 (left ch.) VR316 (right ch.)		Repeat the recording and playback, and adjust accordingly until the 10kHz playback level is +0.5 dB in respect to the 315Hz signal.	
3	Record 315Hz –15kHz (–30dBv input) onto the STD-608A test tape, and play (FWD) the recorded signals back. Check that the playback signals conform with the permitted frequency response zone shown in Fig. 10-16. If the rated specifications are not satisfied, readjust VR315 and VR316 (to obtain a 10kHz signal level of at least $+0.5^{+2.5}_{-0.5}$ dB in respect to the 315Hz level).					
4	Reverse recording/playback	Record 315Hz and 10kHz signals onto the STD-608A test tape, and then play those recorded sections.	VR317 (left ch.) VR318 (right ch.)	Left and right OUTPUT terminals	Repeat the recording and playback, and adjust accordingly until the 10kHz playback level is +0.5 dB in respect to the 315Hz signal.	
5	Record 315Hz –15kHz (–30dBv input) onto the STD-608A test tape, and play (REV) the recorded signals back. Check that the playback signals conform with the permitted frequency response zone shown in Fig. 10-16. If the rated specifications are not satisfied, readjust VR317 and VR318 (to obtain a 10kHz signal level of at least $+0.5^{+2.5}_{-0.5}$ dB in respect to the 315Hz level).					
6	Forward recording/playback	Record 315Hz and 10kHz signals onto the STD-603 test tape, and then play those recorded sections.	VR313 (left ch.) VR314 (right ch.)	Left and right OUTPUT terminals	Repeat the recording and playback, and adjust accordingly until the 10kHz playback level is +0.5 dB in respect to the 315Hz signal.	
7	Record 315Hz –15kHz (–30dBv input) signals onto the STD-603 test tape, and play the recorded signals back. Check that the playback signals conform with the permitted frequency response zone (for STD-603) shown in Fig. 10-17.					
8	Record 315Hz –15kHz (–30dBv input) signals onto the STD-604 test tape, and play the recorded signals back. Check that the playback signals conform with the permitted frequency response zone (for STD-604) shown in Fig. 10-18. If the rated specifications are not satisfied, readjust VR306 (for the 140mV to 180mV range referred to in "Erase Current Adjustment").					

Adjustment control	**Adjustment item**
VR301, 302	Playback equalizer
VR303, 304	Playback level
VR306	METAL bias
VR307, 308	NORM recording level
VR309, 310	CrO_2 recording level
VR311, 312	METAL recording level
VR313, 314	CrO_2 bias
VR315, 316	NORM (FWD) bias
VR317, 318	NORM (REV) bias
VR319	Leader tape detector level

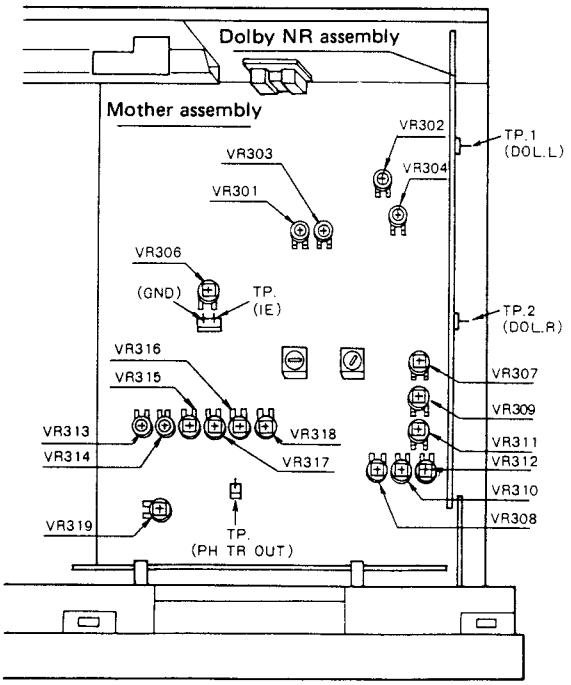
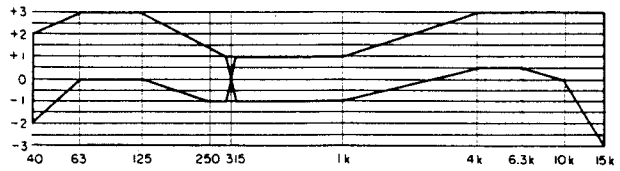
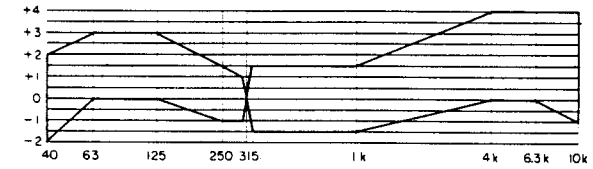


Fig. 10-15 Adjustment locations

Test tape	STD-608A (NORM)
DOLBY NR switch	OFF



Test tape	STD-608A (NORM)
DOLBY NR switch	B type ON



Test tape	STD-608A (NORM)
DOLBY NR switch	C type ON

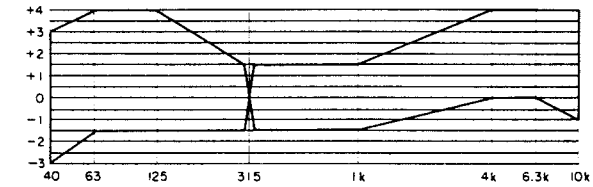
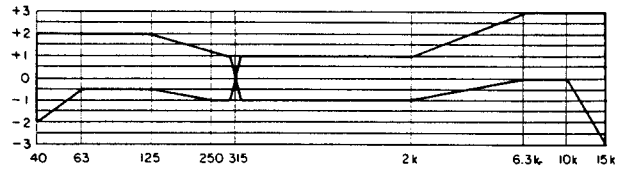
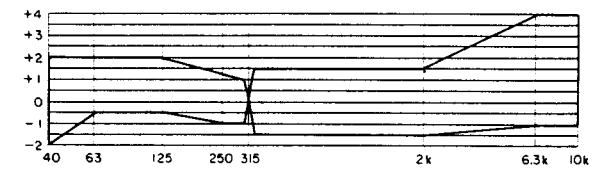


Fig. 10-16 Permitted recording/playback frequency response zone (NORM)

Test tape	STD-603 (CrO_2)
DOLBY NR switch	OFF



Test tape	STD-603 (CrO_2)
DOLBY NR switch	B type ON



Test tape	STD-603 (CrO_2)
DOLBY NR switch	C type ON

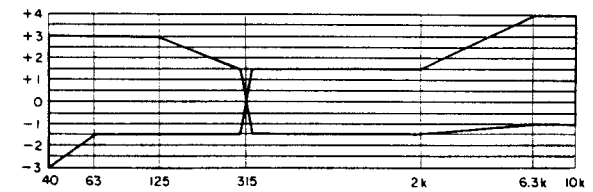
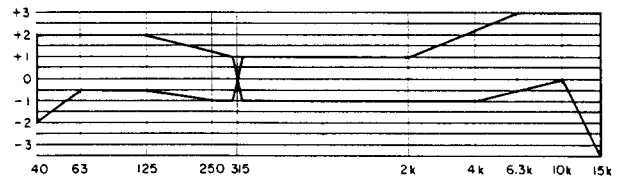
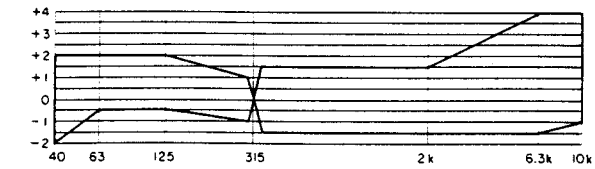


Fig. 10-17 Permitted recording/playback frequency response zone (CrO_2)

Test tape	STD-604 (METAL)
DOLBY NR switch	OFF



Test tape	STD-604 (METAL)
DOLBY NR switch	B type ON



Test tape	STD-604 (METAL)
DOLBY NR switch	C type ON

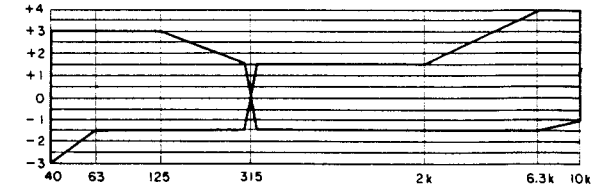


Fig. 10-18 Permitted recording/playback frequency response zone (METAL)

7. Recording Level Adjustment

	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	Recording pause	Apply 315Hz/–10dBv (316 mV) to LINE INPUT terminals.	INPUT level control	TP.1 (left ch.) TP.2 (right ch.) (Dolby NR ass'y)	–7.7dBv (412.mV)	INPUT level control position setting
2	Recording /playback	Record the signal on the STD-608A test tape, and then play that section of the tape.	VR307 (left ch.) VR308 (right ch.)		–7.7dBv (412.1mV) (playback level)	Repeat the recording and playback, and adjust accordingly.
3	Recording /playback	Record the signal on the STD-603 test tape, and then play that section of the tape.	VR309 (left ch.) VR310 (right ch.)		–7.7dBv (412.1mV) (playback level)	
4	Recording /playback	Record the signal on the STD-604 test tape, and then play that section of the tape.	VR311 (left ch.) VR312 (right ch.)		–7.7dBv (412.1mV) (playback level)	
5	VR307, VR309, and VR311 (left channel) and VR308, VR310, and VR312 (right channel) are to be adjusted in the specified adjustment order. If any single control is adjusted separately, always check (and adjust) the other controls which follow it in the adjustment procedure order.					

8. Level Meter 0dB Check

	Mode	Input signal & test tape	Adjustment location	Measuring location	Rated specifications
1	Recording pause	Apply 315Hz/–10dBv (316mV) to LINE INPUT terminals.	INPUT level control	TP.1 (left ch.) TP.2 (right ch.) (Dolby NR ass'y)	Check that the level is –7.7dBv±2dB when the "0dB" display segment lights up.

9. Leader Tape Detector Level Adjustment

	Mode	Input signal & test tape	Adjustment location	Measuring location	Adjustment value	Remarks
1	Disconnect the CN304 connector.					
2	Stop	Apply a 2kHz/–17dBv (0.4Vp-p) signal to the TP (PH TR OUT) terminals.	VR319	Pin 4 of IC303 (PA3010)	DC10.5V±0.25V	
3	Reconnect the CN 304 connector.					
4	Playback	Load a cassette half which is without any tape	The position marked "A" in Fig. 10-19	TP. (PH TR OUT)	If the waveform (square wave) at the measured location is greater than 0.6Vp-p, connect the section indicated by "A" in Fig. 10-19.	

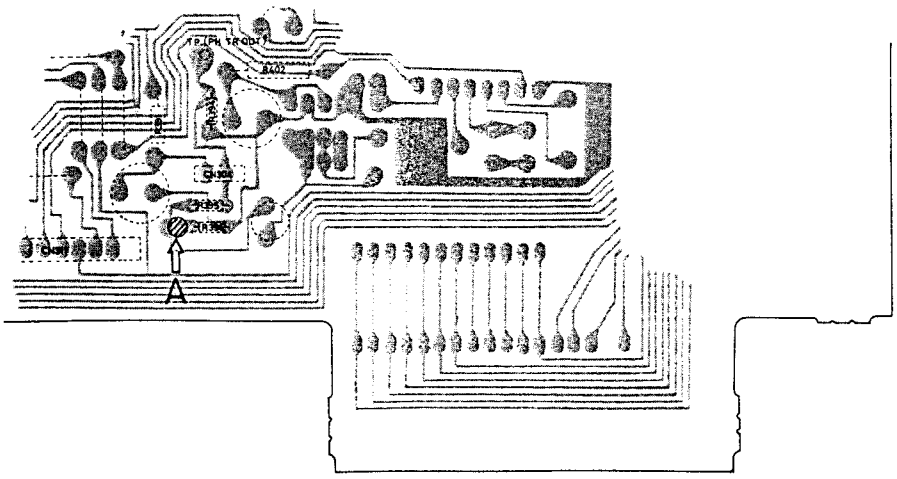


Fig. 10-19 Adjustment location (on foil side of Mother assembly)

10. RÉGLAGE

10.1 RÉGLAGES MÉCANIQUES

10.1.1 Vérification de pression du galet d'entraînement

*Utiliser une jauge de tension (GGK-047).

Mode	Normes	Conditions de mesure
Mode de lecture	250g ~ 400g	Ecarter lentement le galet d'entraînement du cabestan et lire la valeur dès que le galet cesse de tourner.

*Si la valeur mesurée ne correspond pas aux valeurs spécifiées, remplacer le ressort de pression du galet d'entraînement.

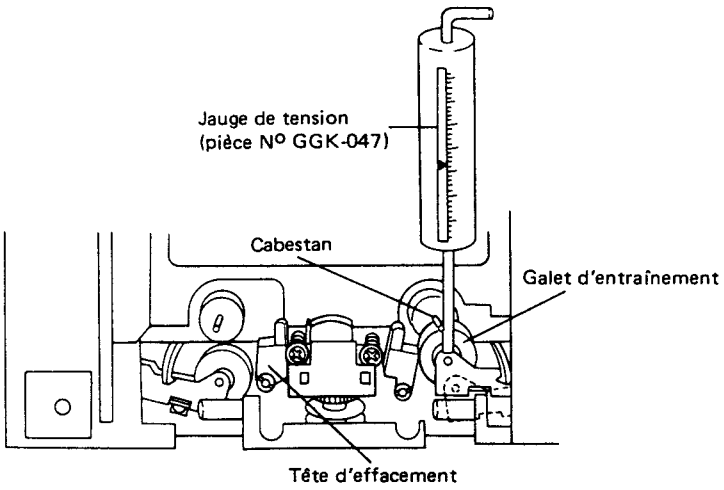


Fig. 10-1 Vérification de la pression du galet d'entraînement

10.1.2 Réglage préliminaire d'azimuth de la tête.

Mode	Lieu du réglage	Spécifications
Mode d'arrêt quand la direction de la bande est vers l'avant.	Vis de réglage d'azimuth de tête ❶	Régler l'espace A à 1,5mm (±0,3mm).
Mode d'arrêt quand la direction de la bande est inversée.	Vis de réglage d'azimuth de tête ❷	Régler l'espace B à 1,5mm (±0,3mm).

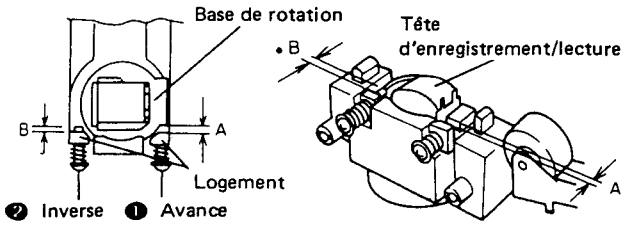


Fig. 10-2 Points de réglage d'azimuth

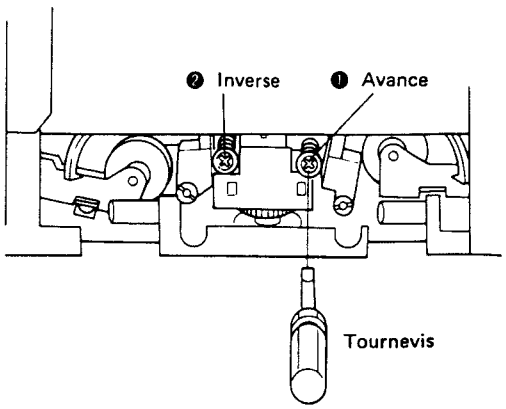


Fig. 10-3 Réglage préliminaire d'azimuth

10.1.3 Réglage du défilement de bande

Mode	Lieu de réglage	Spécifications
Direction vers l'avant en mode de lecture	Ecrou de réglage ❶	La courbure de la bande sur les têtes d'effacement et de lecture doit être conforme aux chiffres suivants. Courbure sur la tête de lecture: moins de 1/9 de la largeur de de la bande. Courbure sur la tête d'effacement: moins de 1/5 de la largeur de la bande.
Direction inverse en mode de lecture	Ecrou de réglage ❷	

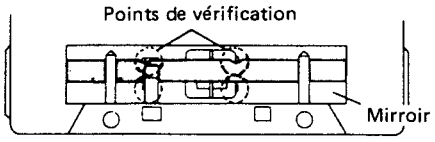


Fig. 10-4 Points de vérification de courbure de bande

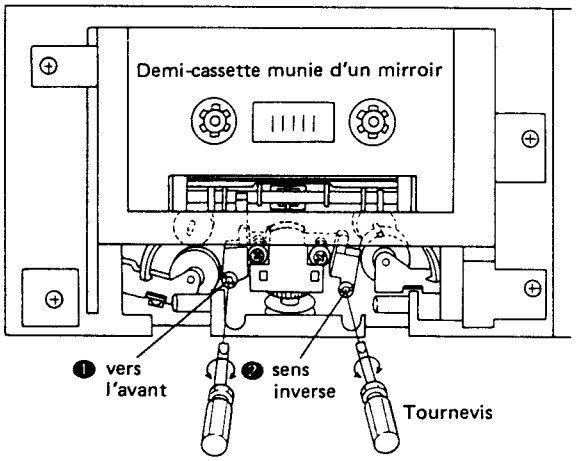


Fig. 10-5 Réglage du défilement de la bande

10.1.4 Réglage de la vitesse de rotation rapide vers l'avant et rembobinage

*Utiliser un compteur de fréquence sans demi-cassette dans le compartement de cassette.

Mode	Lieu de réglage	Spécifications
Avance rapide avec bande en direction vers l'avant	VR202 (montage RM)	Régler les lectures de fréquence entre la sortie MR HB (5) et GND (3) sur le montage RM à 36Hz±1Hz.

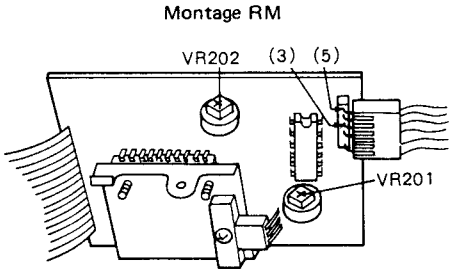


Fig. 10-6 Réglage de vitesse de rotation FF/REW

10.1.5 Réglage du couple de tendeur de LECTURE

*Utiliser un mesureur de couple de type cassette.

Mode	Lieu de réglage	Spécifications
Mode de lecture en direction vers l'avant	VR102 (montage RM)	Le couple du tendeur doit être de 35g-cm à 55g-cm dans les 10 secondes après le démarrage du mode de lecture. Les variations du mesureur de couple ne doivent pas dépasser 15g-cm.
Mode de lecture en direction inverse	Vérification	

10.1.6 Vérification du couple de RAPIDE (FF et REW)

*Utiliser un mesureur de couple de type cassette.

Mode	Normes de spécifications	Remarque
Mode avance rapide et rembobinage	70g-cm ~ 130g-cm	Couple de tendeur.

10.1.7 Vérification du couple de tension de recul

*Utiliser un mesureur de couple de type cassette.

Mode	Normes de spécifications	Remarque
En mode de lecture, direction vers l'avant et inverse.	2g-cm ~ 5g-cm	Fournir le couple de tension de recul à la base du rouleau.

10.1.8 Réglage de la vitesse de défilement de la bande

*Utiliser un compteur de fréquence et la bande d'essai STD-301.

Mode	Lieu de réglage	Spécifications
Mode de lecture vers l'avant	VR101 (ensemble de contrôle CM)	La fréquence de lecture doit être de 3005±10Hz au début de la bande d'essai STD-301.
Mode de lecture vers l'arrière	Vérification	La fréquence de lecture doit être de 3000±30Hz au début de la bande d'essai STD-301.

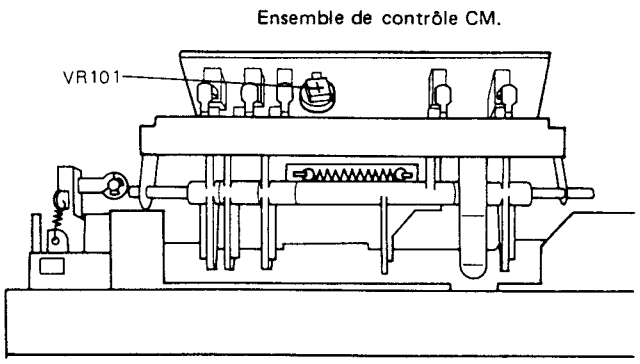


Fig. 10-7 Réglage de la vitesse de défilement de la bande

10.1.9 Réglage de l'amortisseur de poche de cassette

Lieu de réglage	Spécifications
Vis de réglage du cylindre d'amortisseur	La porte doit s'ouvrir sans accroc, sans passer par un mouvement en deux phases, et sans se refermer violemment lorsqu'elle est grande ouverte.

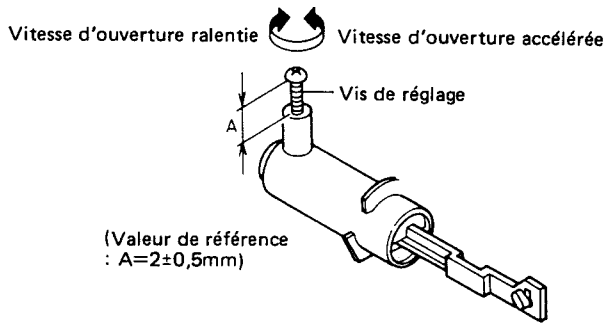


Fig. 10-8 Réglage de l'amortisseur de poche de cassette

10.1.10 Réglage de la position de porte

Vérification 1	Le rapport de dimension entre A et B, et entre C et D doit se trouver entre 0,5 et 2 (dimensions prises face à la platine).
Vérification 2	La différence entre E et G ne doit pas dépasser ±0,4mm et toutes les dimensions E, F et G doivent être au moins de 0,5mm (dimensions prises face à la platine).
Si les spécifications ne sont pas obtenues, déposer la porte et régler le cadre de poche à l'aide d'un tournevis à l'endroit indiqué sur les diagrammes suivants.	

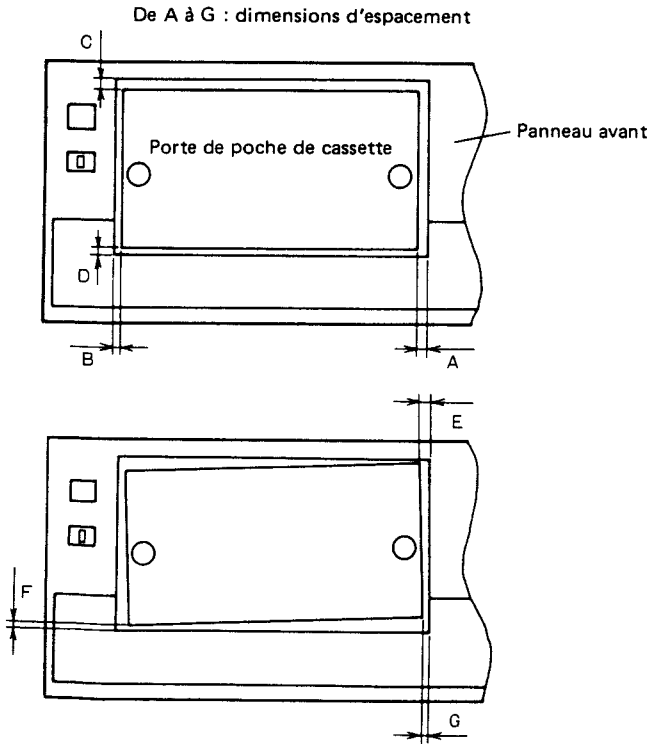


Fig. 10-9 Position de porte

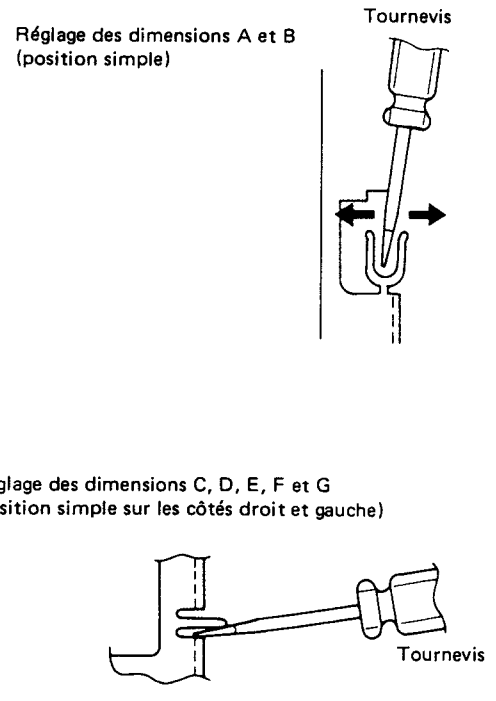


Fig. 10-10 Réglage de position de porte

10.2 RÉGLAGES ELECTRIQUES

Conditions de réglage

1. Ne commencer les réglages électriques qu'une fois terminés tous les réglages mécaniques.
2. S'assurer également que les têtes ont été nettoyées et démagnétisées.
3. Laisser chauffer la platine pendant quelques minutes avant de commencer les réglages réels.
4. Admettre que le niveau de signal de 0dB= 1Vrms.
5. Brancher la résistance de charge de 50 kOhms sur la borne de sortie (toute résistance comprise entre 47 et 52 kOhms est acceptable).
6. Positionner les interrupteurs de contrôle sur les positions suivantes sauf autre directive:

Minuterie	: OFF
Mémoire	: OFF
Dolby NR	: OFF
Filtre MPX	: OFF
Mode	: "⇄" affichage

Bandes d'essai

STD-331B* : pour les réglages de système de lecture
STD-608A : bande normale vierge
STD-603 : bande CrO_2 vierge
STD-604 : bande métal vierge

**Les niveaux d'enregistrement pour STD-331A et STD-331B diffèrent. Tandis que le niveau de référence du STD-331A est de 333Hz, 250nwb/m, le niveau correspondant pour STD-331B est 315Hz, 160nwb/m.*

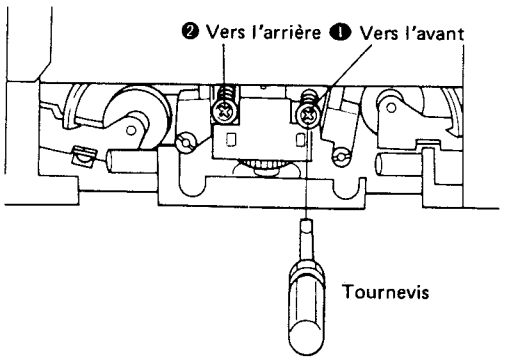


Fig. 10-11 Réglage d'azimuth de tête

Séquence de réglage

Les réglages doivent toujours avoir lieu dans l'ordre suivant:

1. Réglage d'azimuth de tête
2. Réglage du défilement de bande
3. Réglage de l'égaliseur de lecture
4. Réglage du niveau de lecture
5. Réglage du courant d'effacement
6. Réglage de la réponse à la fréquence d'enregistrement/lecture
7. Réglage du niveau d'enregistrement
8. Vérification 0dB du mesureur de niveau
9. Réglage du niveau de détecteur de guide de bande

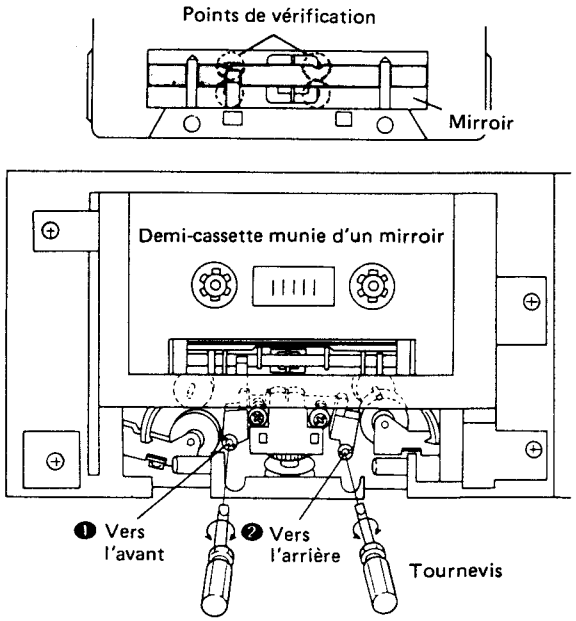


Fig. 10-12 Réglage de défilement de bande

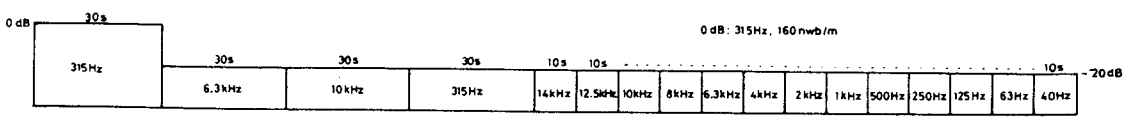


Fig. 10-13 Bande d'essai STD-331B

1. Réglage d'azimuth de tête

• Tourner les VR303 et VR304 (ADJ de niveau de lecture) sur le niveau maximum, puis régler VR301 et VR302 (EQ ADJ de lecture) sur la position centrale mécanique.

	Mode	Signal d'entrée et bande d'essai	Lieu de réglage	Lieu de mesure	Valeur de réglage	Remarques
	Lecture (vers l'avant et vers l'arrière)	Reproduire la portion de 10kHz/−20dB de la bande d'essai STD-331B.	Vis①et②de réglage d'azimuth de tête (voir Fig. 10-11)	Bornes de sortie gauche et droite	Niveau de signal de lecture maximum	Vis① pour la lecture vers l'avant Vis② pour la lecture vers l'arrière

2. Réglage du défilement de bande

• Utiliser une demi-cassette munie d'un mirroir pour vérifier l'état du défilement de bande. Régler si les spécifications ne sont pas atteintes.

	Mode	Signal d'entrée et bande d'essai	Lieu de réglage	Spécifications nominales	Remarques
1	Lecture (vers l'avant et vers l'arrière)	Demi-cassette munie d'un mirroir	Ecrous de réglage ① et ② (Voir Fig. 10-12)	Absence d'enroulement de bande aux guides de bande de la tête de lecture et de la tête d'effacement en mode de lecture.	Ecrou ① pour la lecture vers l'avant Ecrou ② pour la lecture vers l'arrière
2	Une fois que le réglage du défilement est terminé, refaire le réglage de l'azimuth de tête.				

3. Réglage de l'égaliseur de lecture

	Mode	Signal d'entrée et bande d'essai	Lieu de réglage	Lieu de mesure	Valeur de réglage
1	Lecture vers l'avant	Passer les parties 315Hz/−20dB et 10kHz/−20dB de la bande d'essai STD-331B.	VR301 (canal de gauche) VR302 (canal de droite)	TP.1 (canal de gauche) TP.2 (canal de droite) (ensemble de Dolby NR)	Régler le niveau de 10kHz à 0dB en considération du niveau de lecture de 315Hz.
2	Lecture vers l'arrière		Vérifier		Vérifier le niveau de 10kHz à $0^{-2,5}_{-0}$dB en considération du niveau de lecture de 315Hz.
3	Voir la Fig. 10-14 pour les zones de réponse à la fréquence de lecture permise.				

4. Réglage du niveau de lecture

• Comme le niveau de lecture de Dolby est fixé par ce réglage, s'assurer que le réglage est précis.

	Mode	Signal d'entrée et bande d'essai	Lieu de réglage	Lieu de mesure	Valeur de réglage
1	Lecture vers l'avant	Passer la partie de 315Hz/0dB de la bande d'essai STD-331B.	VR303 (canal de gauche) VR304 (canal de droite)	TP.1 (canal de gauche) TP.2 (canal de droite) (ensemble Dolby NR)	−7,7dBv (412,1mV)
2	Lecture vers l'arrière		Vérifier.		−7,7dBv±0,5dB

5. Réglage du courant d'effacement

	Mode	Signal d'entrée et bande d'essai	Lieu de réglage	Lieu de mesure	Valeur de réglage	Remarques
1	Engregistrement vers l'avant	Charger la bande d'essai STD-604 sans appliquer de signal d'entrée. (Le sélecteur de bande automatique est en position métal).	VR305	TP. (IE vers la masse)	160mV	Mesurer la tension formée par le courant d'effacement à R429 (1 Ohm).
2	Enregistrement vers l'arrière		Vérifier		140mV~180mV	
3	Si la tension ne se trouve pas entre 140mV et 180mV pendant l'enregistrement en marche arrière, régler pour que la tension se trouve entre ces limites pendant l'enregistrement aussi bien en marche avant qu'en marche arrière.					

Bande d'essai	STD-331B
Commutateur DOLBY NR	OFF

• Le signal du canal droit est compensé par −1dB des valeurs réelles mesurées de 40 et 63Hz.

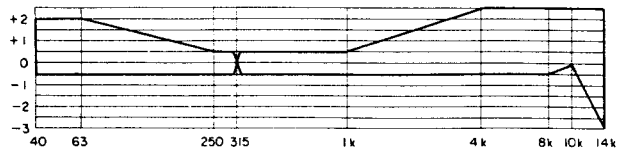


Fig. 10-14 Zone de réponse à la fréquence de lecture permise

6. Réglage de la réponse à la fréquence d'enregistrement/lecture

	Mode	Signal d'entrée et bande d'essai	Lieu de réglage	Lieu de mesure	Valeur de réglage	Remarques
1	Pause d'enregistrement vers l'avant	Appliquer 315Hz/−30dBv aux bornes d'entrée de ligne.	Contrôle de niveau d'entrée	Bornes de sortie gauche et droite	−27dBv (44,7mV)	Réglage de position de contrôle de niveau d'entrée.
2	Enregistrement / lecture vers l'avant	Enregistrer des signaux de 315Hz et 10kHz sur la bande d'essai STD-608A, puis reproduire ces parties.	VR315 (canal gauche) VR316 (canal droit)		Recommencer l'enregistrement et la reproduction et régler en conséquence jusqu'à ce que le niveau de lecture de 10kHz soit de +0,5dB par rapport au signal de 315Hz.	
3	Enregistrer des signaux de 315Hz–15kHz (entrée de −30dBv) sur la bande d'essai STD-608A, puis reproduire (FWD) le signal enregistré. Vérifier que le signal de lecture est conforme à la zone de réponse à la fréquence permise illustrée dans la Fig. 10-16. Dans le cas où les spécifications nominales ne sont pas satisfaites, adjuster à nouveau les VR315 et VR316 (pour obtenir un niveau de signal de 10kHz de $+0{,}5^{+2{,}5}_{-0{,}5}$ dB au moins par rapport au niveau de 315Hz).					
4	Enregistrement / lecture vers l'arrière	Enregistrer des signaux de 315Hz et 10kHz sur la bande d'essai STD-608A, puis reproduire ces parties.	VR317 (canal gauche) VR318 (canal droit)	Bornes de sortie gauche et droite	Recommencer l'enregistrement et la reproduction et régler en conséquence jusqu'à ce que le niveau de lecture de 10kHz soit de +0,5dB par rapport au signal de 315Hz.	
5	Enregistrer des signaux de 315Hz–15kHz (entrée de −30dBv) sur la bande d'essai STD-608A, puis reproduire (REV) le signal enregistré. Vérifier que le signal de lecture est conforme à la zone de réponse à la fréquence permise illustrée dans la Fig. 10-16. Dans le cas où les spécifications nominales ne sont pas satisfaites, adjuster à nouveau les VR317 et VR318 (pour obtenir un niveau de signal de 10kHz de $+0{,}5^{+2{,}5}_{-0{,}5}$ dB au moins par rapport au niveau de 315Hz).					
6	Enregistrement / lecture vers l'avant	Enregistrer des signaux de 315Hz et 10kHz sur la bande d'essai STD-603, puis reproduire ces parties.	VR313 (canal gauche) VR314 (canal droit)	Bornes de sortie gauche et droite	Recommencer l'enregistrement et la reproduction et régler en conséquence jusqu'à ce que le niveau de lecture de 10kHz soit de +0,5dB par rapport au signal de 315Hz.	
7	Enregistrer des signaux de 315Hz–15kHz (entrée de −30dBv) sur la bande d'essai STD-603, puis reproduire le signal enregistré. Vérifier que le signal de lecture est conforme à la zone de réponse à la fréquence permise (pour la STD-603) illustrée dans la Fig. 10-17.					
8	Enregistrer des signaux de 315Hz–15kHz (entrée de −30dBv) sur la bande d'essai STD-604, puis reproduire le signal enregistré. Vérifier que le signal de lecture est conforme à la zone de réponse à la fréquence permise (pour la STD-604) illustrée dans la Fig. 10-18. Dans le cas où les spécifications nominales ne sont pas satisfaites, ajuster de nouveau le VR306 (pour la zone de 140mV à 180mV mentionnée dans "Réglage du courant d'effacement").					

Contrôle de réglage	Pièce de réglage
VR301, 302	Egaliseur de lecture
VR303, 304	Niveau de lecture
VR306	Polarisation métal
VR307, 308	Niveau d'enregistrement normal
VR309, 310	Niveau d'enregistrement CrO_2
VR311, 312	Niveau d'enregistrement métal
VR313, 314	Polarisation CrO_2
VR315, 316	Polarisation normale (vers l'avant)
VR317, 318	Polarisation normale (vers l'arrière)
VR319	Niveau de détecteur d'amorce de bande

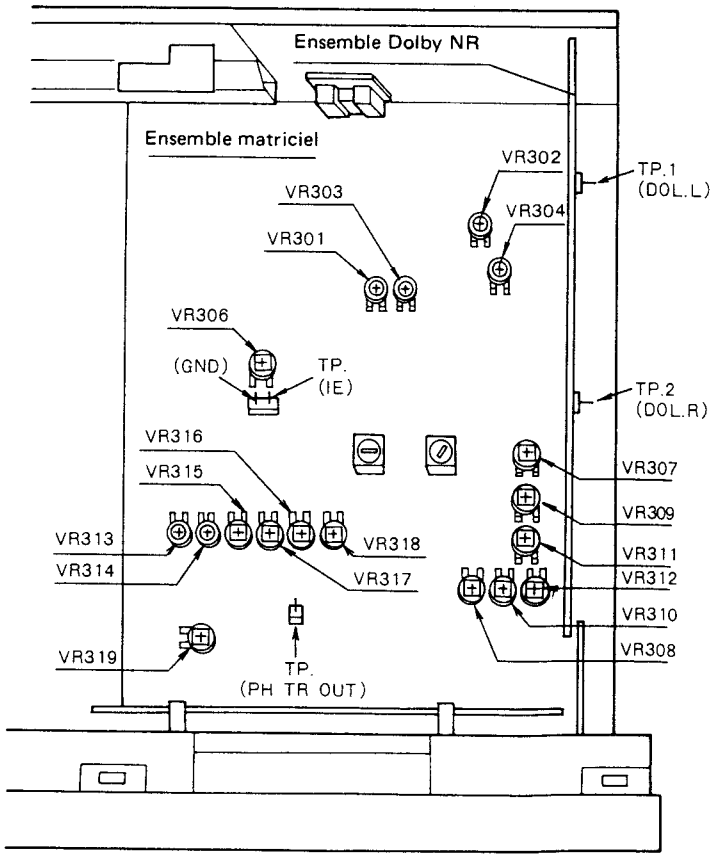
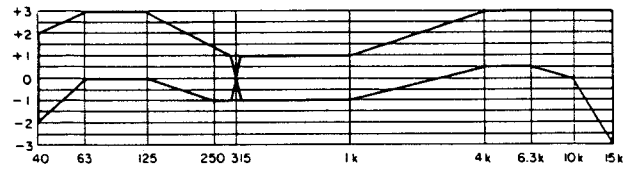
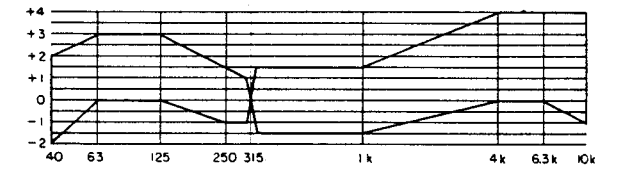


Fig. 10-15 Lieux de réglage

Bande d'essai	STD-608A(NORM)
Commutateur DOLBY NR	OFF



Bande d'essai	STD-608A(NORM)
Commutateur DOLBY NR	Type B sous tension



Bande d'essai	STD-608A(NORM)
Commutateur DOLBY NR	Type C sous tension

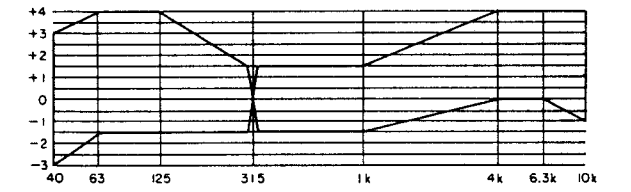
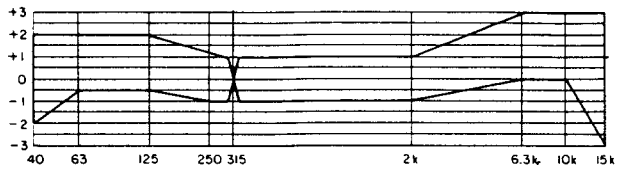
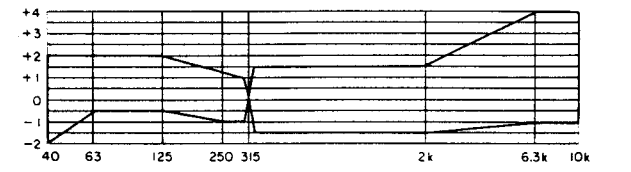


Fig. 10-16 Zone de réponse à la fréquence permise enregistrement/lecture (NORM)

Bande d'essai	STD-603(CrO_2)
Commutateur DOLBY NR	OFF



Bande d'essai	STD-603(CrO_2)
Commutateur DOLBY NR	Type B sous tension



Bande d'essai	STD-603(CrO_2)
Commutateur DOLBY NR	Type C sous tension

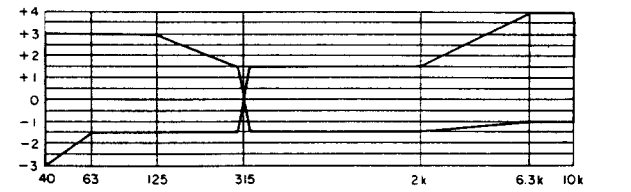
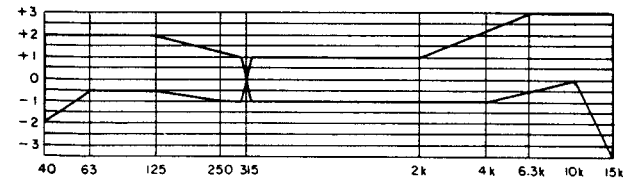
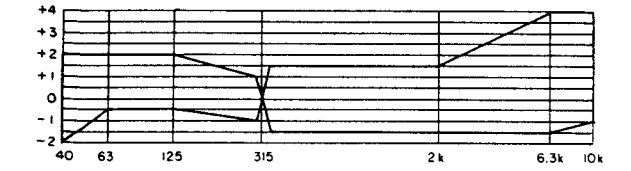


Fig. 10-17 Zone de réponse à la fréquence permise, enregistrement/lecture (CrO_2)

Bande d'essai	STD-604(METAL)
Commutateur DOLBY NR	OFF



Bande d'essai	STD-604(METAL)
Commutateur DOLBY NR	Type B sous tension



Bande d'essai	STD-604(METAL)
Commutateur DOLBY NR	Type C sous tension

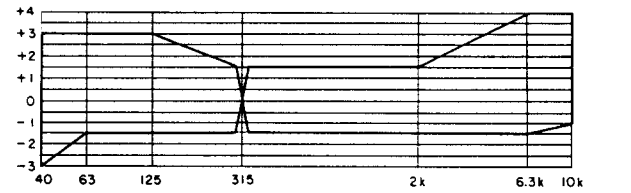


Fig. 10-18 Zone de réponse à la fréquence permise, enregistrement/lecture (métal)

7. Réglage du niveau d'enregistrement

	Mode	Signal d'entrée et bande d'essai	Lieu de réglage	Lieu de mesure	Valeur de réglage	Remarques
1	Enregistrement/ pause	Appliquer 315Hz/–10dBv (316mV) sur les bornes d'entrée de ligne.	Contrôle de niveau d'entrée (INPUT)	TP.1 (canal gauche) TP.2 (canal droit) (ensemble de Dolby NR)	–7,7dBv (412,1mV)	Réglage de position de contrôle de niveau d'entrée.
2	Enregistrement/ lecture	Enregistrer le signal sur la bande d'essai STD-608A, puis reproduire cette section de bande.	VR307 (canal gauche) VR308 (canal droit)		–7,7dBv (412,1mV) (niveau de lecture)	Recommencer l'enregistrement et la reproduction et faire le réglage convenable.
3	Enregistrement/ lecture	Enregistrer le signal sur la bande d'essai STD-603, puis reproduire cette section de bande.	VR309 (canal gauche) VR310 (canal droit)		–7,7dBv (412,1mV) (niveau de lecture)	
4	Enregistrement/ lecture	Enregistrer le signal sur la bande d'essai STD-604, puis reproduire cette section de bande.	VR311 (canal gauche) VR312 (canal droit)		–7,7dBv (412,1mV) (niveau de lecture)	
5	Les VR307, VR309 et VR311 (canal gauche) et les VR308, VR310 et VR312 (canal droit) doivent être réglés dans l'ordre de réglage spécifié. Si aucun des contrôles est réglé séparément, toujours vérifier (et régler) les autres contrôles qui viennent à la suite dans l'ordre.					

8. Vérification 0dB du mesureur de niveau

	Mode	Signal d'entrée et bande d'essai	Lieu de réglage	Lieu de mesure	Spécifications nominales
1	Enregistrement/ pause	Appliquer 315Hz/–10dBv (316mV) sur les bornes d'entrée de ligne.	Contrôle de niveau d'entrée (INPUT)	TP.1 (canal gauche) TP.2 (canal droit) (ensemble de Dolby NR)	Vérifier que le niveau est –7,7dBv±2dB lorsque le ségment d'indicateur "0dB" s'allume.

9. Réglage de niveau de détection d'amorce de bande

	Mode	Signal d'entrée et bande d'essai	Lieu de réglage	Lieu de mesure	Valeur de mesure	Remarques
1	Débrancher la connexion de CN304.					
2	Arrêt	Appliquer un signal de 2kHz/–17 dBv (0,4Vp-p) aux bornes TP (PH TR OUT).	VR319	Broche 4 de IC303 (PA3010)	DC10,5V±0,25V	
3	Rebrancher la connexion de CN304.					
4	Lecture	Charger une demi cassette sans bande.	La position marquée "A" dans la Fig. 10-19.	TP. (PH TR OUT)	Si la forme ondulatoire (onde carrée) au lieu de mesure est plus ample que 0,6Vp-p, brancher la section indiquée par "A" dans la Fig. 10-19.	

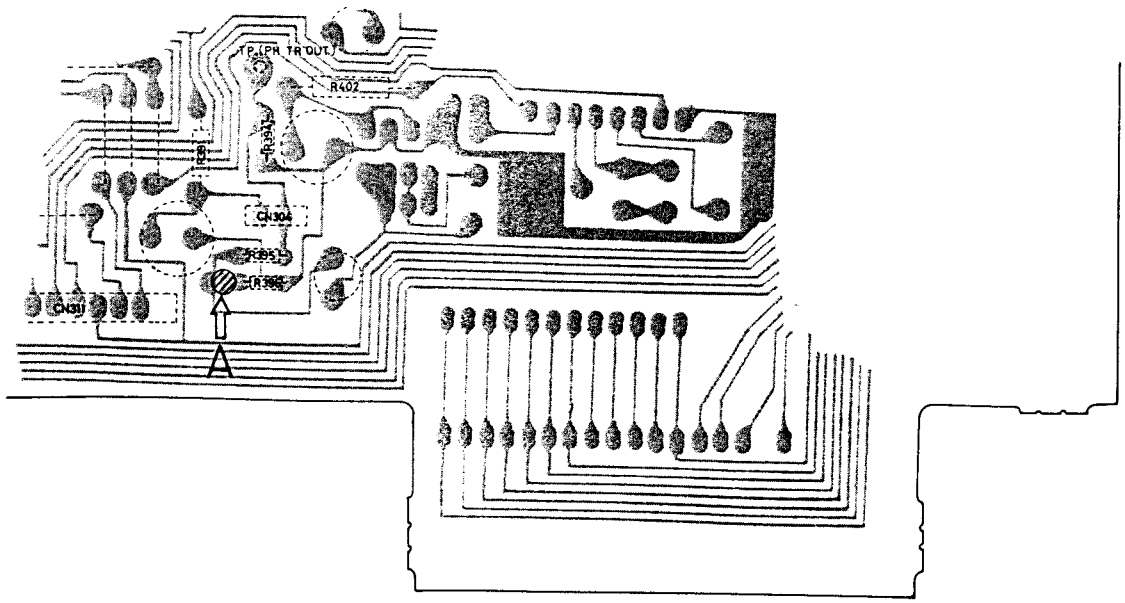


Fig. 10-19 Lieux de réglage (côté feuille de l'ensemble matriciel)

10. AJUSTE

10.1 AJUSTE MECANICO

10.1.1 Comprobación de la presión del rodillo de presión

*Emplear un medidor de tensión (GGK-047)

Modo	Valor de especificación	Condiciones de medición
Modo de reproducción	250 ~ 400g	Tirar lentamente del rodillo de presión separándolo del eje de arrastre, y leer el valor en el momento en que el rodillo de presión deja de girar.

*Si el valor medido no cae dentro del margen de especificación nominal, reemplazar el muelle de presión del rodillo de presión.

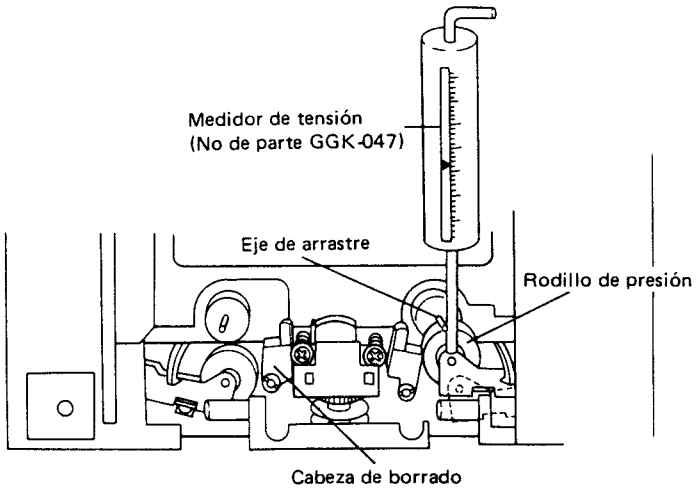


Fig. 10-1 Comprobación de la presión del rodillo de presión

10.1.2 Ajuste preliminar del acimut de la cabeza

Modo	Lugar de ajuste	Especificaciones
Modo de parada cuando la dirección de la cinta es la de "avance".	Tornillo de ajuste del acimut de la cabeza ❶	Ajustar el entrehierros A a 1,5mm (±0,3mm)
Modo de parada cuando la dirección de la cinta es la "inversa"	Tornillo de ajuste del acimut de la cabeza ❷	Ajustar el entrehierros B a 1,5mm (±0,3mm)

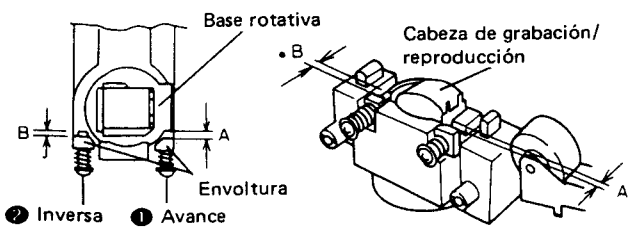


Fig. 10-2 Puntos de ajuste del acimut

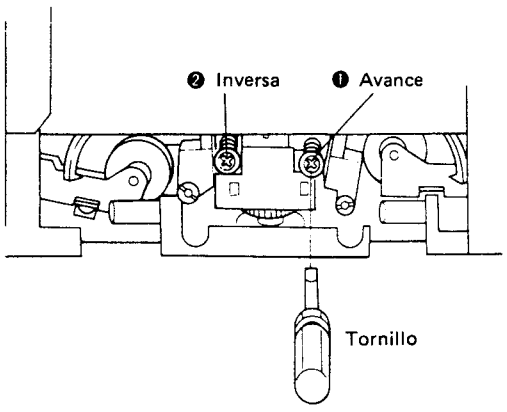


Fig. 10-3 Preajuste del acimut

10.1.3 Ajuste del transporte de la cinta

Modo	Lugar de ajuste	Especificaciones
Modo de reproducción en la dirección de avance	Tuerca de ajuste ❶	El enhebrado de la cinta en las cabezas de borrado y de reproducción debe conformar las figuras siguientes. En enhebrado en la cabeza de reproducción: menos del 1/9 de la anchura de la cinta. Enhebrado en la cabeza de borrado: Menos del 1/5 de la anchura de la cinta.
Modo de reproducción en la dirección inversa	Tuerca de ajuste ❷	

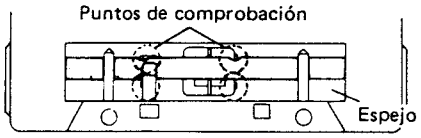


Fig. 10-4 Puntos de comprobación de enhebrado de la cinta

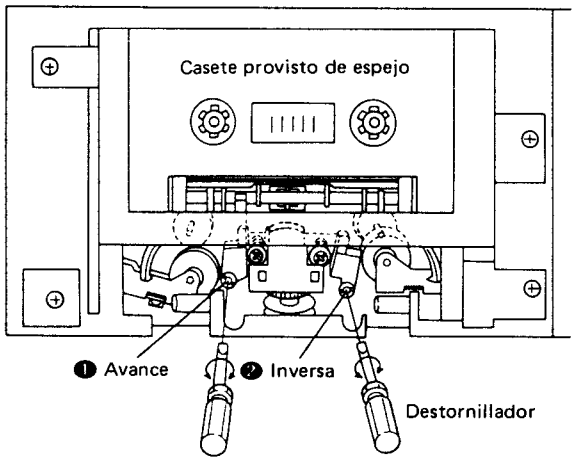


Fig. 10-5 Ajuste del desplazamiento de la cinta

10.1.4 Ajuste de la velocidad de rotación en avance rápido (FF) y en rebobinado (REW)

*Emplear un frecuencímetro sin casete insertado en el compartimiento del casete.

Modo	Lugar de ajuste	Especificaciones
Modo de avac rápido con la cinta en la dirección de avance	VR202 (conjunto de control RM)	Ajustar la indicación de la frecuencia entre MR HB (5) y GND (3) del conjunto de control RM a 36Hz ±1Hz.

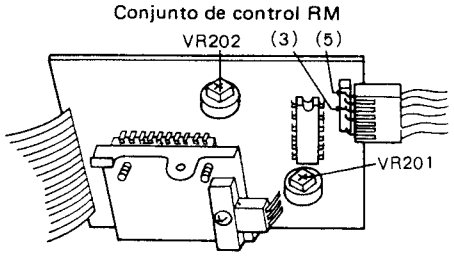


Fig. 10-6 Ajuste de la velocidad de rotación en FF/REW

10.1.5 Ajuste del par de arrante en reproducción (PLAY)

*Emplear un medidor del par tipo casete.

Modo	Lugar de ajuste	Especificaciones
Modo de reproducción en la dirección de avance	VR102 (condjunto de control RM)	El par de arrastre debe ser de 35g·cm a 55g·cm por los menos durante 10 segundos después de haberse iniciado el modo de reproducción (PLAY). La variación del medidor del par no debe exceder de 15g·cm.
Modo de reproducción en la dirección inversa	Comprobación	

10.1.6 Comprobación del par en desplazamiento rápido (FF y REW)

*Emplear un medidor del par tipo casete.

Modo	Valor de especificación	Observaciones
Modo de avance rápido y modo de rebobinado	70g·cm ~ 130g·cm	Par de arrastre

10.1.7 Comprobación del par de retrotensión

*Emplear un medidor del par tipo casete.

Modo	Valor de especificación	Observaciones
Modo de reproducción en la dirección de avance e inversa	2g·cm ~ 5g·cm	Par de retrotensión de la base del carrete de suministro.

10.1.8 Ajuste de la velocidad de la cinta

*Emplear un frecuencímetro y la cinta de prueba.

Modo	Lugar de ajuste	Especificación
Modo de reproducción en la dirección de avance	VR101 (conjunto de control RM)	La frecuencia de reproducción debe ser de 3005±10Hz al principio de la cinta de prueba STD-301.
Modo de reproducción en la dirección inversa	Comprobación	La frecuencia de reproducción debe ser de 3000±30Hz al principio de la cinta de prueba STD-301.

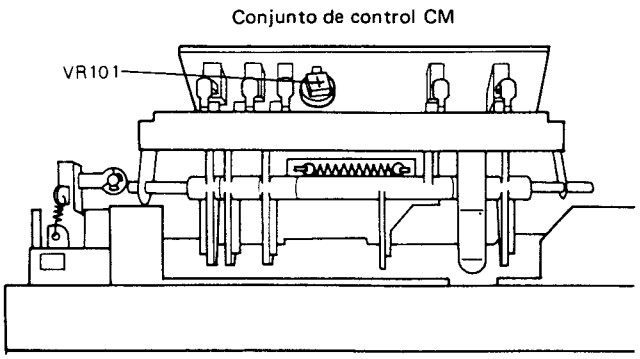


Fig. 10-7 Ajuste de la velocidad de la cinta

10.1.9 Ajuste del amortiguador del compartimiento del casete

Lugar de ajuste	Especificaciones
Tornillo de ajuste del cilindro del amortiguador	La puerta deberá abrirse suavemente sin pasar por el movimiento de dos etapas y sin rebotar al abrirse por completo.

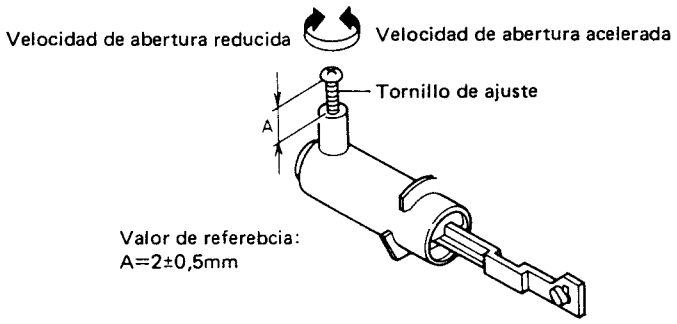


Fig. 10-8 Ajuste del amortiguador del compartimiento del casete

10.1.10 Ajuste de la posición de la puerta

Comprobación 1	La relación dimensional de A a B, y de C a D debe estar dentro del margen de 0,5 a 2. (Las dimensiones se toman encarando el magnetófono desde delante.)
Comprobación 2	La diferencia entre E y G no debe ser mayor de ±0,4mm, y todas las dimensiones E, F y G deben ser por lo menos de 0,5mm. (Las dimensiones se toman encarando el magnetófono desde delante.)
Si no se satisfacen las especificaciones de arriba, sacar la puerta y ajustar el marco del compartimiento con un destornillador en la posición indicada en el diagrama siguiente.	

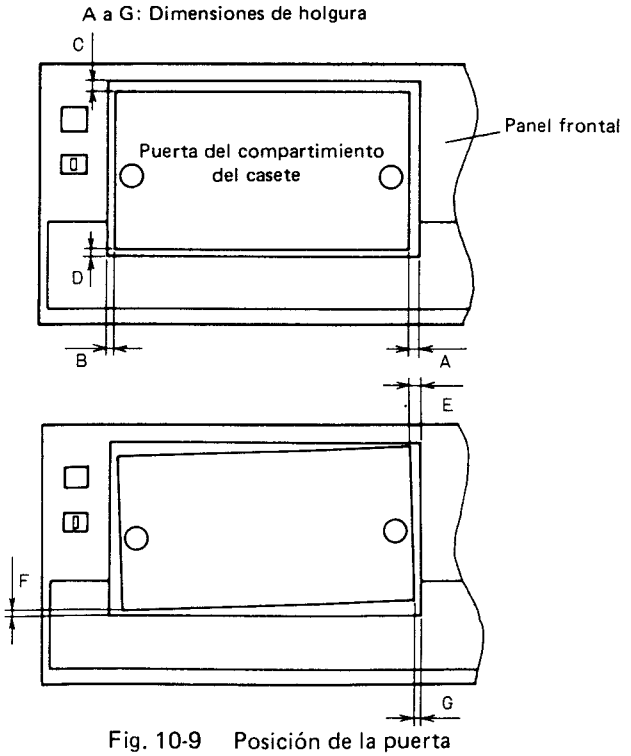


Fig. 10-9 Posición de la puerta

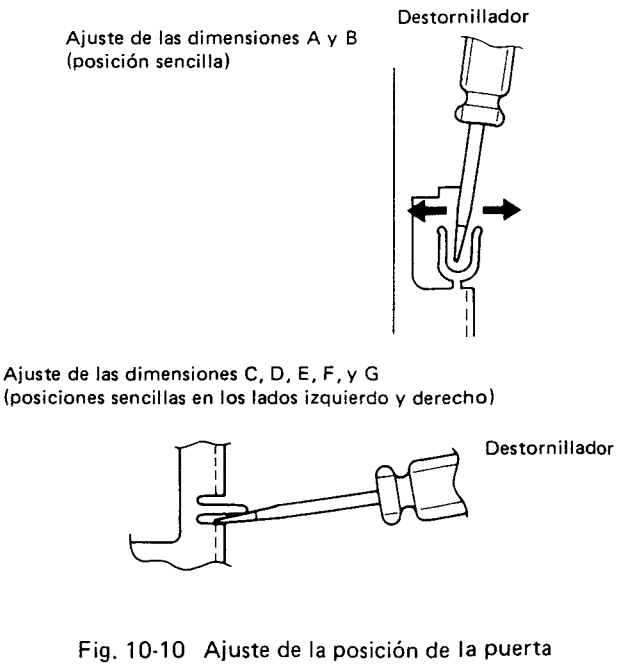


Fig. 10-10 Ajuste de la posición de la puerta

10.2 AJUSTES ELECTRICOS

Condiciones de ajuste

1. Iniciar los ajustes eléctricos sólo después de haber completado todos los ajustes mecánicos.
2. Cerciorarse también que se hayan limpiado y desmagnetizado las cabezas.
3. Dejar precalentarse el magnetófono durante algunos minutos antes de iniciar los ajustes.
4. Asumir un nivel de señal de 0dBv = 1Vrms.
5. Conectar una resistencia de carga de 50K ohmios a los terminales OUTPUT (cualquier resistencia en el marges de 47K ohmios a 52K ohmios es aceptable).
6. Ajustar los controles en las posiciones siguientes a menos que se especifique lo contrario.
   TIMER : OFF
   MEMORY : OFF
   DOLBY NR : OFF
   MPX FILTER : OFF
   MODE : Indicación "⇄"

Cintas de prueba

STD-331D* : Para ajustes del sistema de reproducción
STD-608A : Cinta en blanco NORMAL
STD-603 : Cinta en blanco de CrO_2
STD-604 : Cinta en blanco de METAL

**Los niveles de grabación para las STD-331A y STD-331B son distintos. Mientras que el nivel de referencia de la STD-331A es de 333Hz, 250nwb/m, el nivel correspondiente de la STD-331B es de 315Hz, 160nwb/m.*

Secuencia de ajuste

Los ajustes siempre deben efectuarse en el orden siguiente.

1. Ajuste del acimut de la cabeza
2. Ajuste del transporte de la cinta
3. Ajuste del ecualizador de reproducción
4. Ajuste del nivel de reproducción
5. Ajuste de la corriente de borrado
6. Ajuste de la respuesta en frecuencia de grabación/reproducción
7. Ajuste del nivel de grabación
8. Comprobación de 0dB del medidor de nivel
9. Ajuste del nivel del delector de cinta guía

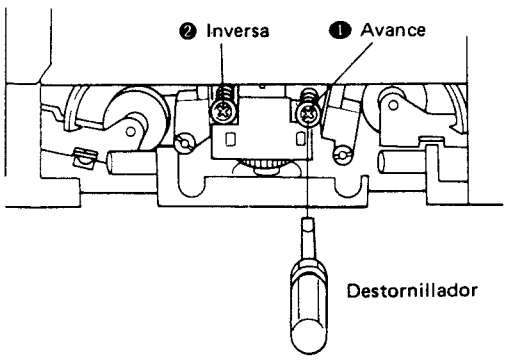


Fig. 10-11 Ajuste del acimut de la cabeza

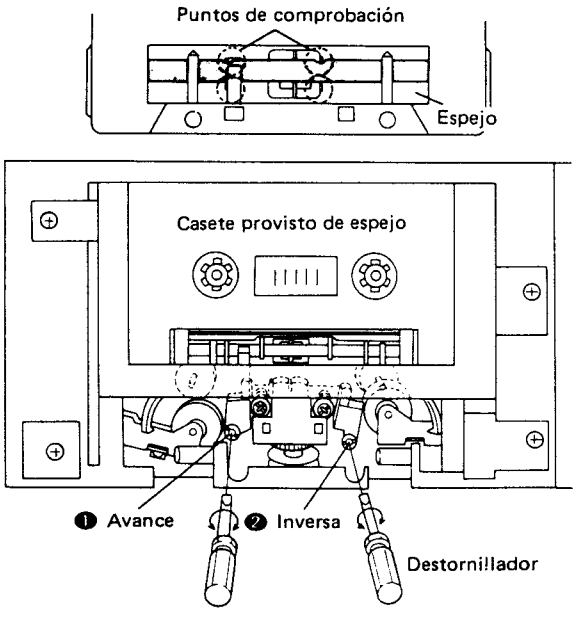


Fig. 10-12 Ajuste del transporte de la cinta

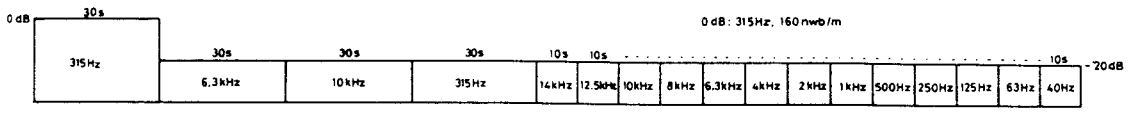


Fig. 10-13 Cinta de prueba STD-331B

1. Ajuste del acimut de la cabeza

• Girar VR303 y VR304 (ADJ del nivel de reproducción) a los niveles máximos, y ajustar VR301 y VR302 (EQ ADJ de reproducción) a la posición del centro mecánico.

	Modo	Señal de entrada y cinta de prueba	Lugar de ajuste	Lugar de medición	Valor de ajuste	Observaciones
1	Reproducción (de avance e inversa)	Reproducir la parte de 10kHz/ −20dB de la cinta de prueba STD-331B	Tornillo de ajuste del acimut de la cabeza ① y ② (ver la Fig. 10-11)	Terminales OUTPUT izquierdo y derecho	Nivel máximo de la señal de reproducción	Tornillo ① para FWD Tornillo ② para REV

2. Ajuste del transporte de la cinta

• Emplear un casete provisto de espejo para comprobar las condiciones de transporte de la cinta. Ajustar si no se satisfacen las especificaciones nominales.

	Modo	Señal de entrada y cinta de prueba	Lugar de ajuste	Especificaciones nominales	Observaciones
1	Reproducción (avance e inversa)	Casete provisto de espejo	Tuercas de ajuste ① y ② (ver la Fig. 10-12)	Ausencia de enhebrado de la cinta en las guías de cinta de las cabezas de reproducción y de borrado durante el modo de reproducción.	Tuerca ① para FWD Tuerca ② para REV
2	Cuando se haya ajustado el transporte, repetir el "ajuste del acimut de la cabeza".				

3. Ajuste del ecualizador de reproducción

	Modo	Señal de entrada y cinta de prueba	Lugar de ajuste	Lugar de medición	Valor de ajuste
1	Reproducción de avance	Reproducir las partes de 315Hz/ −20dB y de 10kHz/−20dB de la cinta de prueba STD-331B.	VR301 (canal izquierdo) VR302 (canal derecho)	TP.1 (canal izquierdo) TP.2 (canal derecho) (Conjunto Dolby NR)	Ajustar el nivel de 10kHz a 0dB con respecto al nivel de reproducción de 315Hz.
2	Reproducción inversa		Comprobación		Comprobar el nivel de 10kHz a $0^{-2,5}_{-0}$dB con respecto al nivel de reproducción de 315Hz.
3	Ver la Fig. 10-14 para la zona de respuesta en frecuencia de reproducción permitida.				

4. Ajuste del nivel de reproducción

• Puesto que el nivel de Dolby de reproducción se ajusta con este ajuste, cerciorarse de que el ajuste sea preciso.

	Modo	Señal de entrada y cinta de prueba	Lugar de ajuste	Lugar de medición	Valor de ajuste
1	Reproducción de avance	Reproducir la parte de 315Hz/0dB de la cinta de prueba STD-331B	VR303 (canal izquierdo) VR304 (canal derecho)	TP.1 (canal izquierdo) TP.2 (canal derecho) (Conjunto de DOLBY NR)	−7,7dBv (412,1mV)
2	Reproducción inversa		Comprobación		−7,7dBv±0,5dB

5. Ajuste de la corriente de borrado

	Modo	Señal de entrada y cinta de prueba	Lugar de ajuste	Lugar de medición	Valor de ajuste	Observaciones
1	Grabación de avance	Cargar la cinta de prueba STD-604 sin aplicar ninguna señal de entrada. (El selector automático de cintas se ajusta en la posición METAL).	VR305	TP. (IE a GND)	160mV	Medir la tensión generada en R429 (1 ohmios) mediante la corriente de borrado.
2	Grabación inversa		Comprobación		140mV~180mV	
3	Si la tensión no está en el margen de 140mV a 180mV durante el modo de grabación inversa, ajustar de modo que la tensión dentro de este margen durante la gravación de avance y grabación inversa.					

Cinta de prueba	STD-331B
Interruptor DOLBY NR.	OFF

• La señal del canal derecho se compensa en −1dB desde los valores medidos reales de 40Hz y 63Hz.

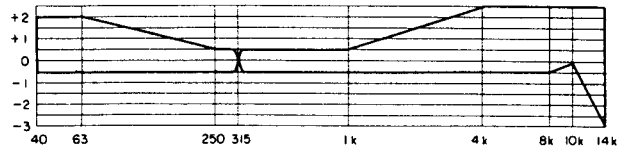
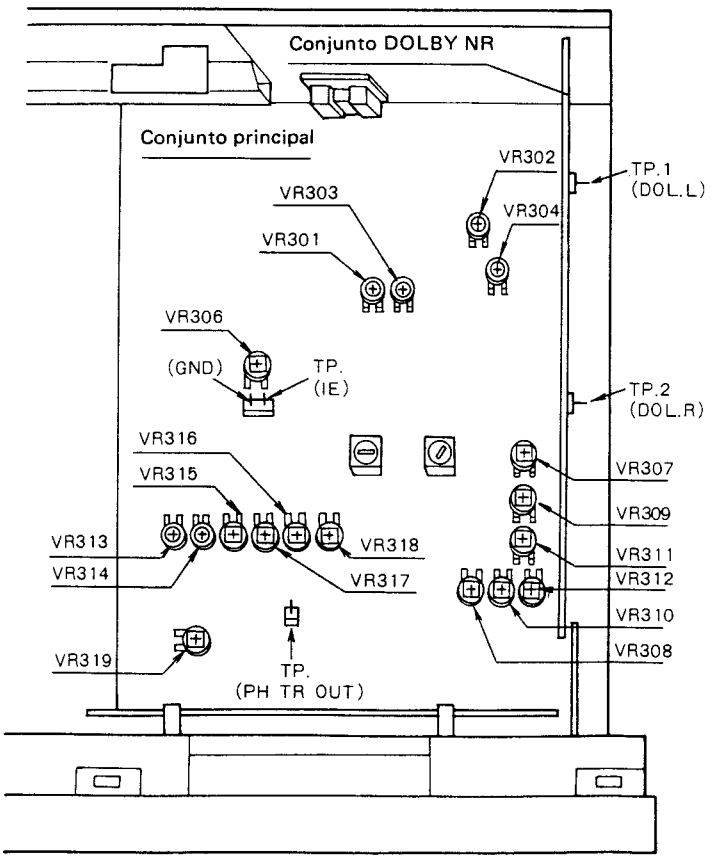


Fig. 10-14 Zona de respuesta en frecuencia de reproducción permitida

6. Ajuste de la respuesta en frecuencia de grabación/reproducción

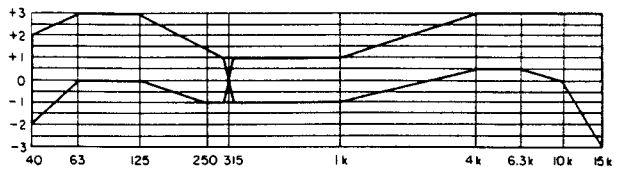
	Modo	Señal de entrada y cinta de prueba	Lugar de ajuste	Lugar de medición	Valor de ajuste	Observaciones
1	Pausa en grabación de avance	Aplicar 315Hz/−30dBv a los terminales LINE INPUT.	Control del nivel INPUT	Terminales OUTPUT izquierdo y derecho	−27dBv (44,7mV)	Ajuste de la posición del control de nivel INPUT.
2	Grabación/reproducción de avance	Grabar las señales de 315Hz y de 10kHz en la cinta de prueba STD-608A y reproducir estas partes grabadas.	VR315 (canal izquierdo) VR316 (canal derecho)		Repetir la grabación y reproducción y ajustar consecuentemente hasta que el nivel de reproducción de 10kHz sea de +0,5dB con respecto a la señal de 315Hz.	
3	Grabar las señales de 315Hz a 15kHz (entrada de −30dBv) en la cinta de prueba STD-608A y reproducir (FWD) las señales grabadas. Comprobar si las señales de reproducción conforman la zona de respuesta en frecuencia permitida mostrada en la Fig. 10-16. Si no se satisfacen las especificaciones nominales, ajustar VR315 y VR316 (para obtener un nivel de señal de 10kHz de por lo menos $+0{,}5\ ^{+2,5}_{-0,5}$ dB con respecto al nivel de 315Hz).					
4	Grabación/reproducción inversa	Grabar las señales de 315Hz y 10kHz en la cinta de prueba STD-608A y reproducir estas partes grabadas.	VR317 (canal izquierdo VR318 (canal derecho)	Terminales OUTPUT izquierdo y derecho	Repetir la grabación y reproducción, y ajustar consecuentemente hasta que el nivel de reproducción de 10kHz sea +0,5dB con respecto a la señal de 315Hz.	
5	Grabar las señales de 315Hz a 15kHz (entrada de −30dBv) en la cinta de prueba STD-608A y reproducir (REV) las señales grabadas. Comprobar si las señales de reproducción conforman la zona de respuesta en frecuencia permitida mostrada en la Fig. 10-16. Si no se satisfacen las especificaciones nominales, ajustar VR317 y VR318 (para obtener un nivel de señal de 10kHz de por lo menos $+0{,}5\ ^{+2,5}_{-0,5}$ dB con respecto al nivel de 315Hz).					
6	Grabación/reproducción de avance	Grabar las señales de 315Hz y 10kHz en la cinta de prueba STD-603 y reproducir estas partes grabadas.	VR313 (canal izquierdo) VR314 (canal derecho)	Terminales OUTPUT izquierdo y derecho	Repetir la grabación y reproducción, y ajustar consecuentemente hasta que el nivel de reprdoucción de 10kHz sea de 0dB con respecto a la señal de 315Hz.	
7	Grabar las señales de 315Hz a 15kHz (entrada de −30dBv) en la cinta de prueba STD-603 y reproducir las señales grabadas. Comprobar si las señales de reproducción conforman la zona de respuesta en frecuencia permitida (para la STD-603) mostrada en la Fig. 10-17.					
8	Grabar las señales de 315Hz a 15kHz (entrada de −30dBv) en la cinta de prueba STD-604 y reproducir las señales grabadas. Comprobar si las señales de reproducción conforman la zona de respuesta en frecuencia permitida (para la STD-604) mostrada en la Fig. 10-18. Si no se satisfacen las especificaciones nominales, ajustar VR306 (para el margen de 140mV a 180mV mencionado en "Ajuste de la corriente de borrado").					

Control de ajuste	Item de ajuste
VR301, 302	Ecualizador de reproducción
VR303, 304	Nivel de reproducción
VR306	Polarización para METAL
VR307, 308	Nivel de grabación para NORM
VR309, 310	Nivel de grabachón para CrO_2
VR311, 312	Nivel de grabación para METAL
VR313, 314	Polarización para CrO_2
VR315, 316	Polarización para NORM (FWD)
VR317, 318	Polarización para NORM (REV)
VR319	Nicel de detector de cinta guía

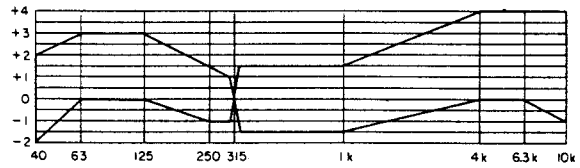


10-15 Lugares de ajuste

Cinta de prueba	STD-608A(NORM)
Interruptor DOLBY NR	OFF



Cinta de prueba	STD-608A(NORM)
Interruptor DOLBY NR	Tipo B ON



Cinta de prueba	STD-608A(NORM)
Interruptor DOLBY NR	Tipo C ON

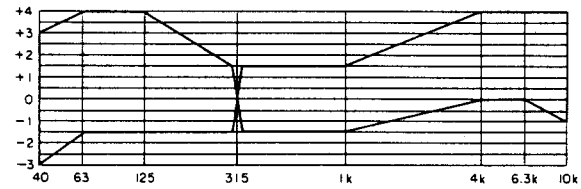
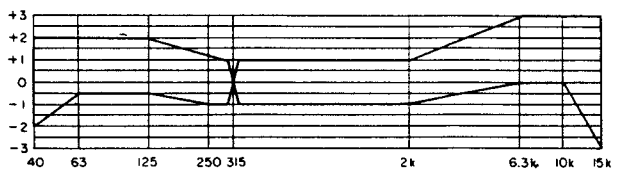
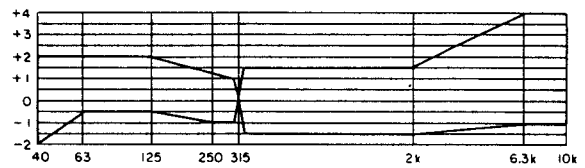


Fig. 10-16 Zona de respuesta en frecuencia permitida para grabación/reproducción (NORM)

Cinta de prueba	STD-603(CrO_2)
Interruptor DOLBY NR	OFF



Cinta de prueba	STD-603(CrO_2)
Interruptor DOLBY NR	Tipo B ON



Cinta de prueba	STD-603(CrO_2)
Interruptor DOLBY NR	Tipo C ON

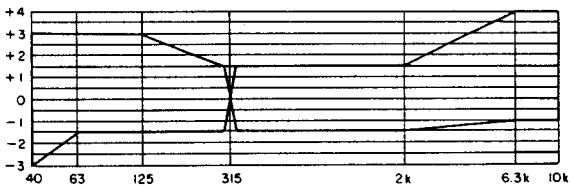
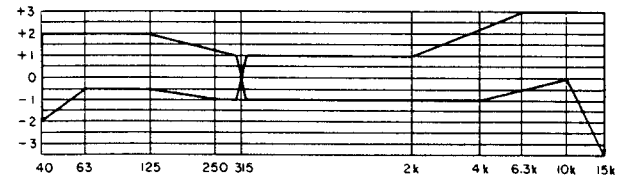
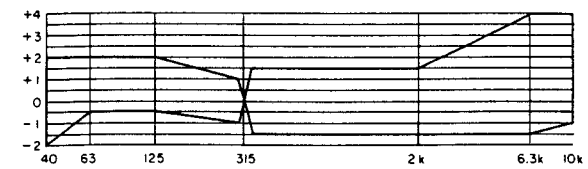


Fig. 10-17 Zona de respuesta en frecuencia permitida para grabación/reproducción (CrO_2)

Cinta de prueba	STD-604(METAL)
Interruptor DOLBY NR	OFF



Cinta de prueba	STD-604(METAL)
Interruptor DOLBY NR	Tipo B ON



Cinta de prueba	STD-604(METAL)
Interruptor DOLBY NR	Tipo C ON

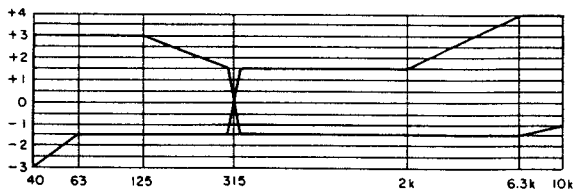


Fig. 10-18 Zona de respuesta en frecuencia permitida para grabación/reproducción (METAL)

7. Ajuste del nivel de grabación

	Modo	Señal de entrada y cinta de prueba	Lugar de ajuste	Lugar de medición	Valor de ajuste	Observaciones
1	Pausa en grabación	Aplicar 315Hz/–10dBv (316mV) a los terminales LINE INPUT.	Control del nivel INPUT	TP.1 (canal izquierdo) TP.2 (canal derecho) (Conjunto DOLBY NR)	–7,7dB (412,1mV)	Ajuste de la posición del nivel INPUT
2	Grabación/ reproducción	Grabar la señal en la cinta de prueba STD-608A y reproducir esta parte de la cinta.	VR307 (canal izquierdo) VR308 (canal derecho)		–7,7dBv (412,1mV) (nivel de reproducción)	Repetir la grabación y reproducción, y ajustar consecuentemente.
3	Grabación/ reproduccion	Grabar la señal en la cinta de prueba STD-603 y reproducir esta parte de la cinta.	VR309 (canal izquierdo) VR310 (canal derecho)		–7,7dBv (412,1mV) (nivel de reproducción)	
4	Grabación/ reproducción	Grabar la señal en la cinta de prueba STD-604 y reproducir esta parte de la cinte.	VR311 (canal izquierdo) VR312 (canal derecho)		–7,7dBv (412,1mV) (nivel de reproducción)	
5	VR307, VR309 y VR311 (canal izquierdo) y VR308, VR310 y VR312 (canal derecho) tienen que ajustarse en el orden de ajuste especificado. Si alguno de los controles se ajusta por separado, comprobar siempre (y ajustar) los demás controles que le siguen el orden del procedimiento de ajuste.					

8. Comprobación de 0dB del medidor de nivel

	Modo	Señal de entrada y cinta de prueba	Lugar de ajuste	Lugar de medición	Especificaciones nominales
1	Pausa an grabación	Aplicar 315Hz/–10dBv (316mV) a los terminales LINE INPUT.	Control del nivel INPUT	TP.1 (canal izquierdo) TP.2 (canal derecho) (Conjunto DOLBY NR)	Comprobar que el nivel es –7,7dBv±2dB cuando el segmento indicador "0dB" se ilumine.

9. Ajuste del nivel de dtector de cinta guía

	Modo	Señal de entrada y cinta de prueba	Lugar de ajuste	Lugar de medición	Valor de ajuste	Observaciones
1	Desconectar el conector CN304.					
2	Parada	Aplicar la señal de 2kHz/–17dBv (0,4Vp-p) a los terminales TP (PH TR OUT).	VR319	Patilla 4 del IC303 (PA3010)	10,5V CC±0,25V	
3	Volver a conectar el conector CN304.					
4	Reproducción	Cargar un casete desprovisto de cinta.	La posición marcada con "A" en la Fig. 10-19.	TP. (PH TR OUT)	Si la forma de onda (onda cuadrada) en el lugar medido es mayor que 0,6 Vp-p, conectar la sección indicada con "A" en la Fig. 10-19.	

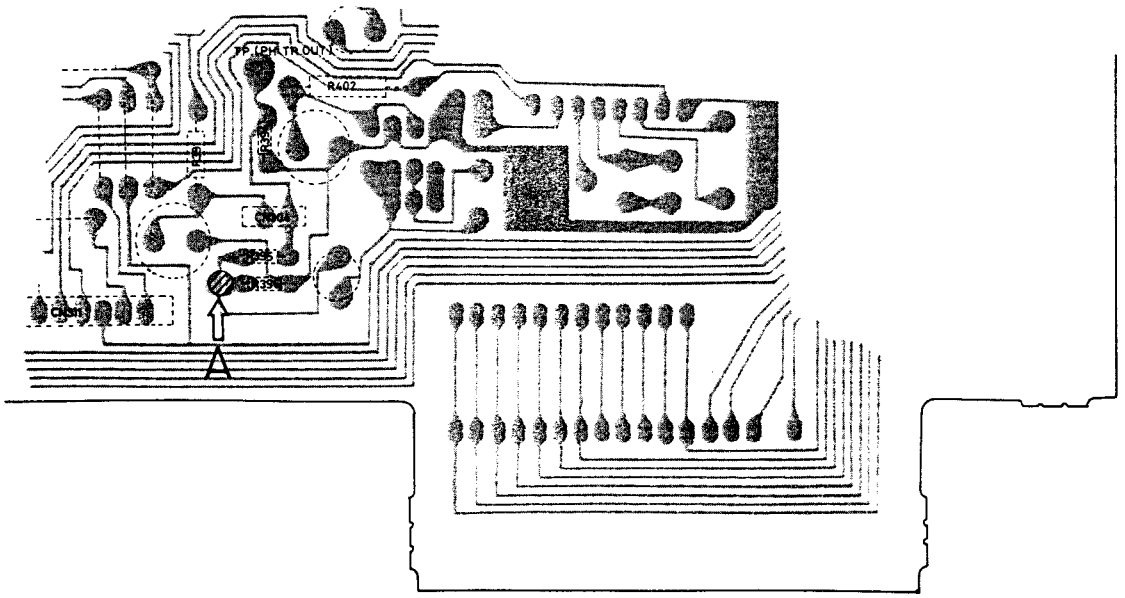


Fig. 10-19 Lugares de ajuste (en el lado de chapa del conjunto principal)

11. SUPPLEMENT FOR HE,HB AND HP TYPES

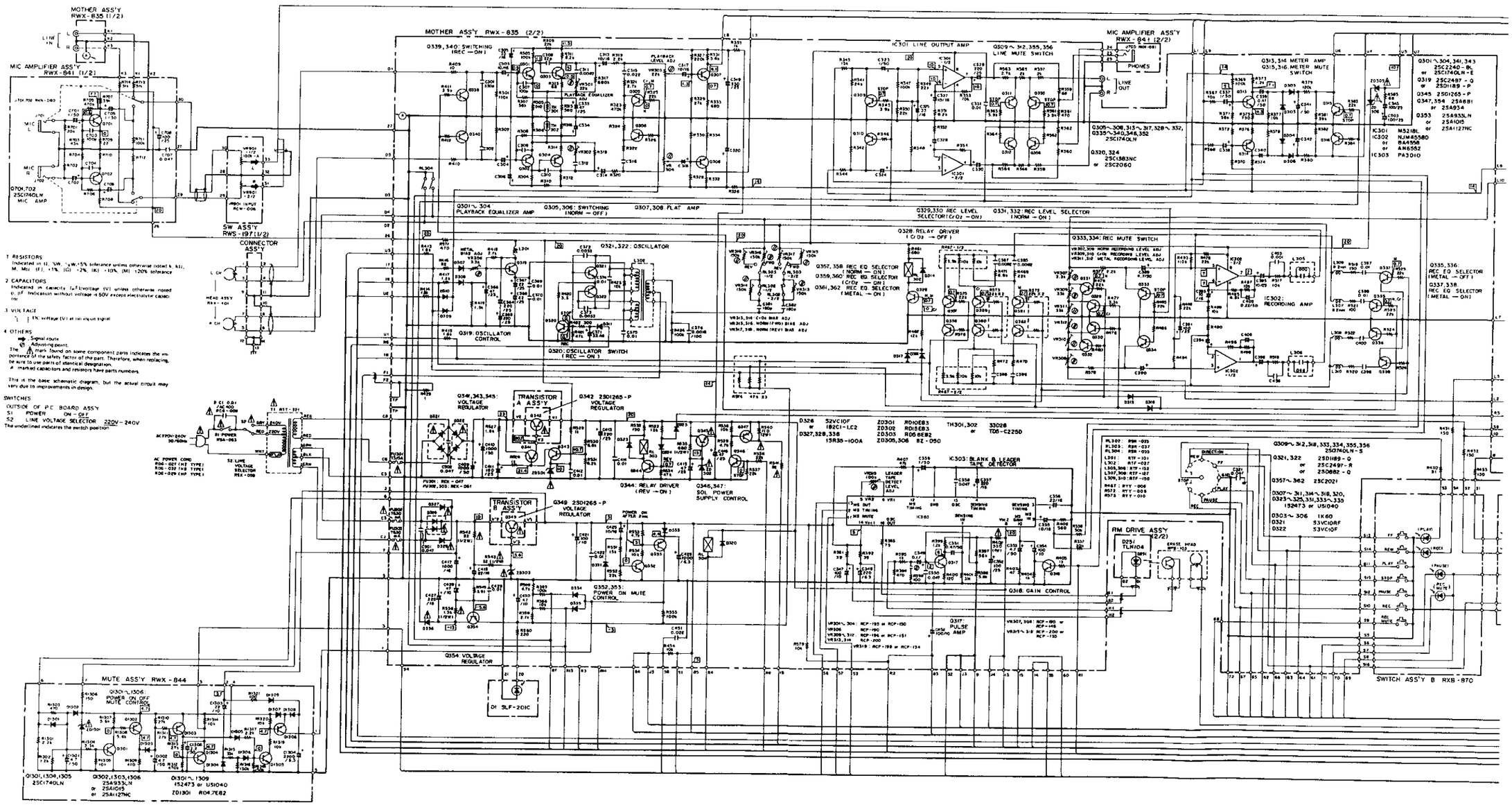
The basic performance of the CT-70R/HE (European continent model), CT-70R/HB (United Kingdom model) and CT-70R/HP (Australia model) is the same as the CT-70R/KU (U.S.A. model). Please refer to pp. 2~64 with exception of this supplement.

11.1 CONTRAST OF MISCELLANEOUS PARTS

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Mark	Symbol & Description	Part No.			
		KU type	HE type	HB type	HP type
⚠★★	FU301 Fuse (3.15A)	REK-044	.....	.....	.....
⚠★★	FU301 Fuse (T3.15A)	.....	REK-047	REK-047	REK-047
⚠★★	FU302, FU303 Fuse (800mA)	REK-058	.....	.....	.....
⚠★★	FU302, FU303 Fuse (T630mA)	.....	REK-061	REK-061	REK-061
⚠★★	FU304 Fuse (1A)	REK-051	.....	.....	.....
⚠	C1 Ceramic capacitor (0.01/AC250)	RCG-006	.....	.....	.....
⚠	C1 Ceramic capacitor (0.01/AC400)	.....	RCG-009	RCG-009	RCG-009
⚠ ★	T1 Power transformer (120V)	RTT-329	.....	.....	.....
⚠ ★	T1 Power transformer (220V/240V)	.....	RTT-321	RTT-321	RTT-321
⚠★★	S2 Line voltage selector	.....	RSX-058	RSX-058	RSX-058
⚠	AC power cord	RDG-048	RDG-027	RDG-032	RDG-029
⚠	Strain relief (for AC power cord)	REC-395	REC-396	REC-396	REC-396
	Mother assembly	RWX-833	RWX-835	RWX-835	RWX-835
	Operating instructions (English)	RRB-214	.....	RRB-214	RRB-214
	(English/German/French/Italian)	.....	RRE-047	.....	.....
	Packing case	RHG-624	RHG-626	RHG-626	RHG-626

11.2 SCHEMATIC DIAGRAM FOR HE, HB AND HP TYPES



1. RESISTORS
Indicated in Ω, 1/4W, ±5% tolerance unless otherwise noted k: kΩ, M: MΩ (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% tolerance

2. CAPACITORS
Indicated in capacity (μF)/voltage (V) unless otherwise noted (p: pF) Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE
Ⓥ: DC voltage (V) at no input signal

4. OTHERS
⇒ Signal route
Ⓐ Adjusting point
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

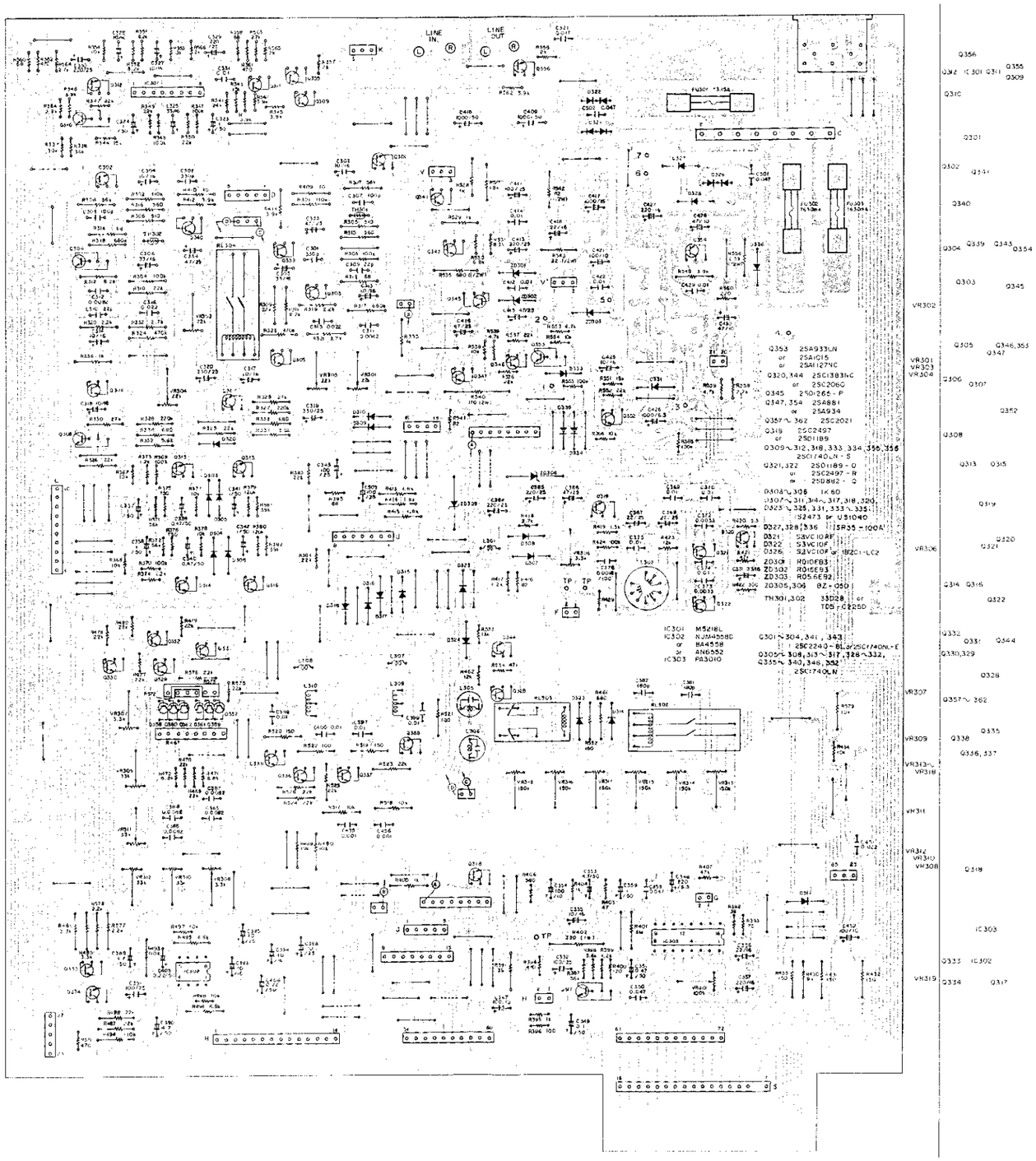
SWITCHES
OUTSIDE OF P.C. BOARD ASS'Y
S1 POWER ON - OFF
S2 LINE VOLTAGE SELECTOR 220V - 240V
The underlined indicates the switch position

11.3 P.C. BOARD ASSEMBLY

The mother assembly RWX-835 (for HE, HB and HP types) is the same as the RWX-833 (for KU type) with the exception of the following parts.

Symbol	RWX-833	RWX-835
R535	RD¼PM 681J	⚠ RS½LF 681J
R582	⚠ RD¼PSF 271J	.....
R540	RS2LF 181J	RS2LF 111J
Q319	2SD880	2SC2497 (2SD1189)

Mother Assembly (RWX-835)



12. SUPPLEMENT FOR KC TYPE

The basic performance of the CT-70R/KC (Canada model) is the same as the CT-70R/KU (U.S.A. model). Please refer to pp. 2~64 with exception of this supplement.

12.1 CONTRAST OF MISCELLANEOUS PARTS

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Mark	Symbol & Description	Part No.		Remarks
		KU type	KC type	
⚠ ★	T1 Power transformer (120V)	RTT-329	RTT-320	
	Packing case	RHG-624	RHG-625	

13. SUPPLEMENT FOR D AND D/G TYPES

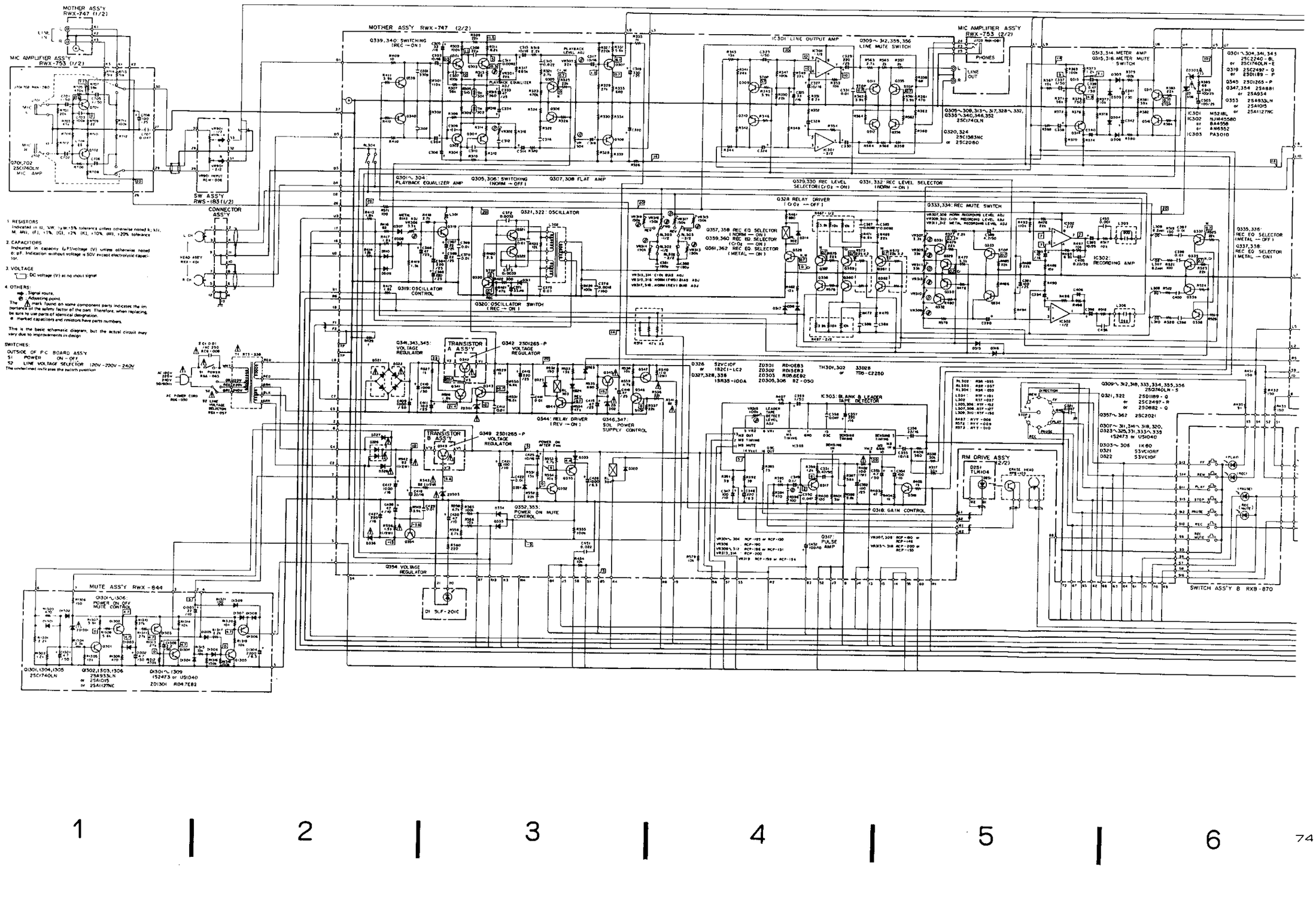
The basic performance of the CT-70R/D (General export model) and CT-70R/D/G (U.S. Military model) is the same as the CT-70R/KU (U.S.A. model). Please refer to pp. 2~64 with exception of this supplement.

13.1 CONTRAST OF MISCELLANEOUS PARTS

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Mark	Symbol & Description	Part No.			Remarks
		KU type	D type	D/G type	
⚠★★	FU301 Fuse (3.15A)	REK-044	.....	.....	
⚠★★	FU302, FU303 Fuse (800mA)	REK-058	.....	.....	
⚠★★	FU304 Fuse (1A)	REK-051	.....	.....	
⚠	C1 Ceramic capacitor (0.01/AC250)	RCG-006	RCG-008	RCG-008	
⚠★★	S2 Line voltage selector	.....	RSX-057	RSX-057	
⚠ ★	T1 Power transformer (120V)	RTT-329	.....	.....	
⚠ ★	(120V/220V/240V)	.....	RTT-338	RTT-338	
⚠	AC power cord	RDG-048	RDG-050	RDG-050	
	Mother assembly	RWX-833	RWX-747	RWX-747	
	Dolby NR assembly	RWX-838	RWX-750	RWX-750	
	Control assembly	RWX-839	RWX-751	RWX-751	
	SW assembly	RWS-197	RWS-183	RWS-183	
	MIC amplifier assembly	RWX-841	RWX-753	RWX-753	
	Packing case	RHG-624	RHG-627	RHG-638	

13.2 SCHEMATIC DIAGRAM FOR D AND D/G TYPES



1. RESISTORS
Indicated in Ω, 1/4W ±5% tolerance unless otherwise noted k: kΩ, M: MΩ, (F): ±1%, (G): ±2% (K): ±10% (M): ±20% tolerance

2. CAPACITORS
Indicated in capacity (μF)/voltage (V) unless otherwise noted p: pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE
DC voltage (V) at no input signal

4. OTHERS:
Signal route.
Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

SWITCHES:
OUTSIDE OF P.C. BOARD ASS'Y
S1 POWER ON - OFF
S2 LINE VOLTAGE SELECTOR 120V - 220V - 240V
The underlined indicates the switch position

13.3 P.C. BOARD ASSEMBLIES

The mother assembly RWX-747 (for D and D/G types) is the same as the RWX-833 (for KU type) with the exception of the P.C. board material and following parts.

Symbol	RWX-833	RWX-747
C501, 502	CKDYF 473Z 50	.....
R527	RD¼PM 182J	RD¼PM 102J
R528	RD¼PM 102J	RD¼PM 182J
R582	⚠ RD½PSF 271J	.....
R540	⚠ RS2LF 181J	⚠ RS2LF 111J
R402	⚠ RS1LF 331J	⚠ RS1LF 101J
R571	RD1/6PM 471J	RD1/6PM 101J
Q319	2SD880	2SC2497 (2SD1189)

The other assemblies RWX-750, RWX-751, RWS-183, RWX-753 are the same as the assemblies for KU type with the exception of the P.C. board material.

Mother Assembly (RWX-747)