ORDER NO. HAD84052782C1

Service Manual

Cassette Deck

RS-B18

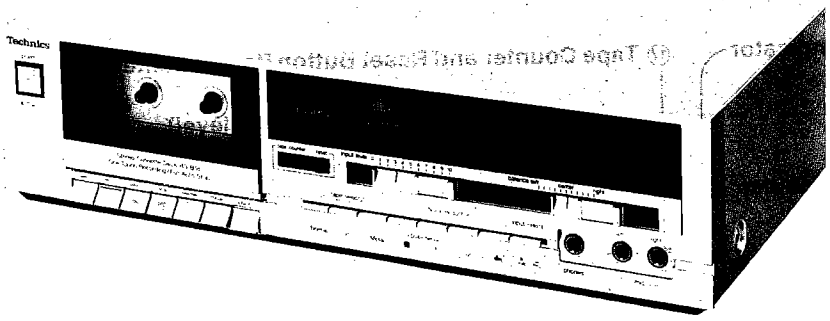
dbx/Dolby B • C NR-Equipped
Stereo Cassette Deck

DOLBY B•C NR

Color

(K)...Black Type
(S)...Silver Type

Color	Area
(S)	[P].....U.S.A.
(K)(S)	[C].....Canada.



RS-636 MECHANISM SERIES

SPECIFICATIONS

Deck system:	Stereo cassette deck
Track system:	4-track, 2-channel
Heads:	
REC/PLAY;	MX head
Erasing;	Double-gap ferrite head
Motors:	1 motor system
Recording system:	AC bias
Bias frequency:	80 kHz
Erasing system:	AC bias
Tape speed:	4.8 cm/sec.
Frequency response:	
Metal;	20 Hz–17,000 Hz 40 Hz–16,000 Hz±3 dB
CrO_2;	20 Hz–17,000 Hz 40 Hz–15,000 Hz±3 dB
Normal;	20 Hz–16,000 Hz 40 Hz–14,000 Hz±3 dB
Dynamic Range (with dbx in):	110 dB (1 kHz)
S/N (signal level=max. recording level, CrO_2 type tape)	
* **dbx in;**	92 dB (A weighted)
** **Dolby C NR in;**	75 dB (CCIR)
Dolby B NR in;	67 dB (CCIR)
NR out;	57 dB (A weighted)
Wow and flutter:	0.07% (WRMS)
Max. Input Level improvement (with dbx in):	10 dB (1 kHz)
Fast Forward and Rewind Time:	Approx. 110 seconds with C-60 cassette tape
Input sensitivity and impedance:	
MIC;	0.25 mV/400Ω–10 kΩ
LINE;	70 mV/47 kΩ
Output voltage and impedance:	
LINE;	400 mV/1.8 kΩ
HEADPHONES;	80 mV/8Ω
Power soncumption:	11 W
Power supply:	AC 50 Hz/60 Hz 120 V
Dimensions (W×H×D):	430×108×220 mm ($16^{29}/_{32}$"×$4^{9}/_{32}$"×$^{21}/_{32}$")
Weight:	3.2 kg (7 lbs)

Design and specifications are subject to change without notice.

*The term dbx is a registered trademark of dbx Inc.

**'Dolby' and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

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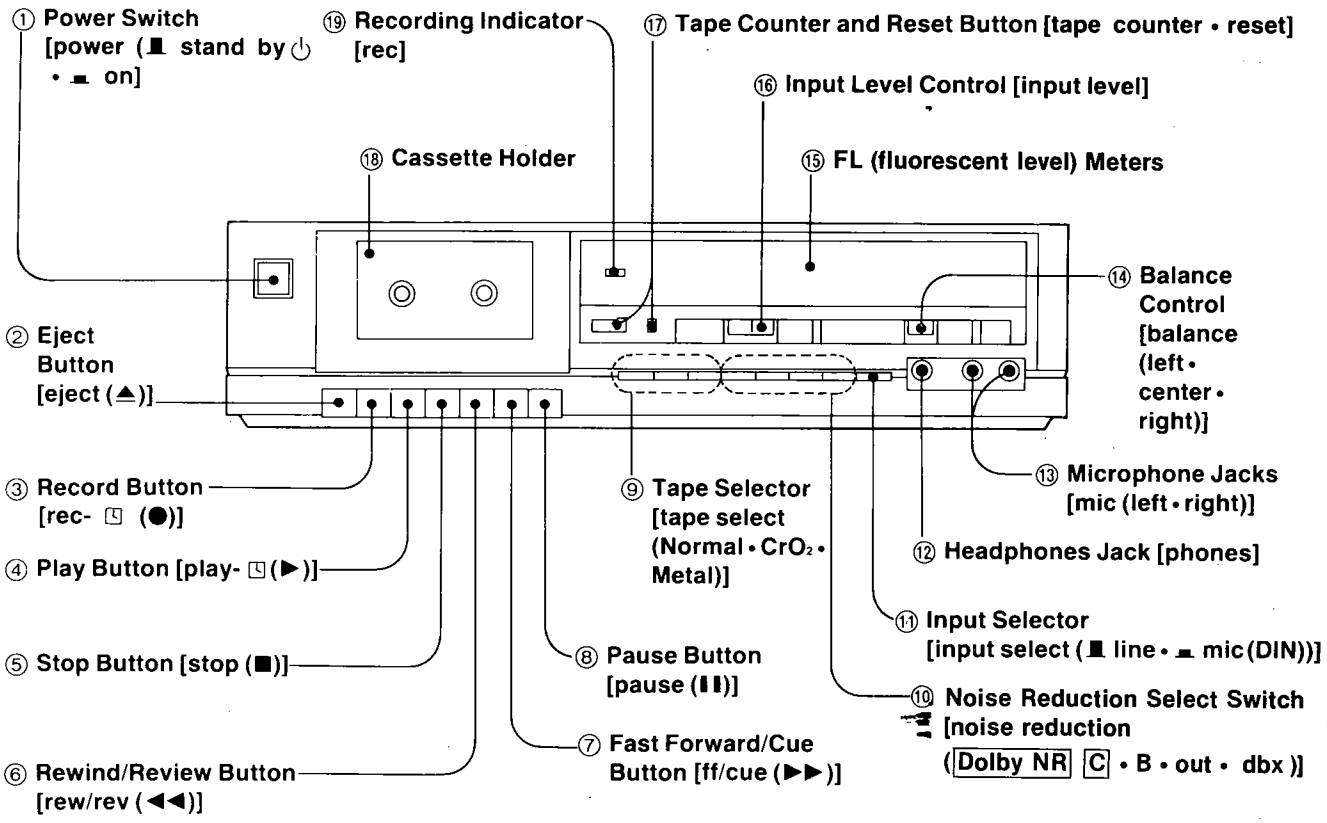
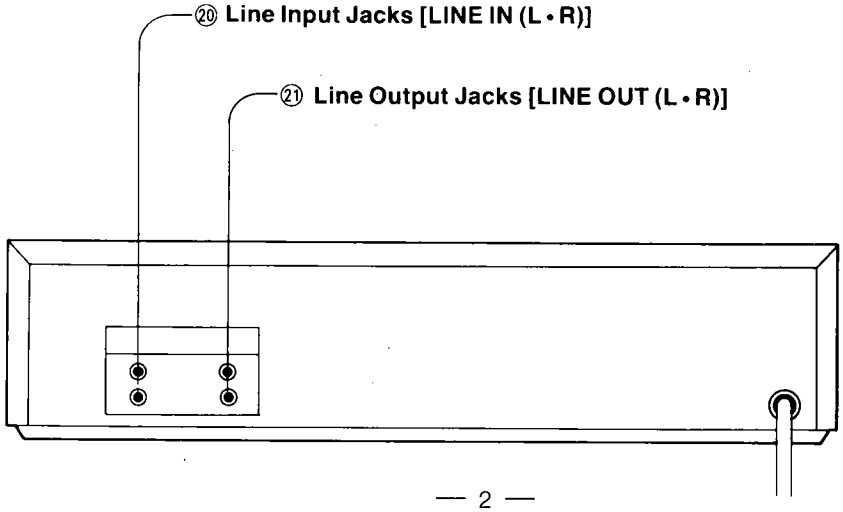
■ CONTENTS

■ LOCATION OF CONTROLS AND COMPONENTS





SAFETY PRECAUTIONS (For U.S.A.)

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

INSULATION RESISTANCE TEST (For U.S.A.)

1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads, antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between 3MΩ and 5.2MΩ to all exposed parts*. (Fig. 1) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. 2)

***Note:** Some exposed parts may be isolated from the chassis by design. These will read infinity.

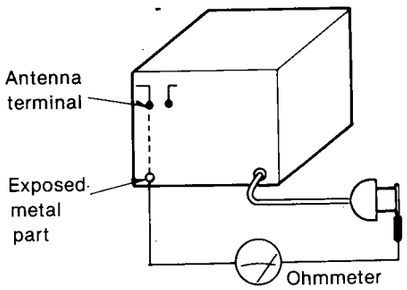


Fig. 1

Resistance = 3MΩ—5.2MΩ

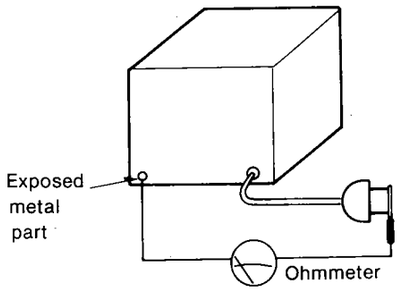


Fig. 2

Resistance = Approx ∞

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

DISASSEMBLY INSTRUCTIONS

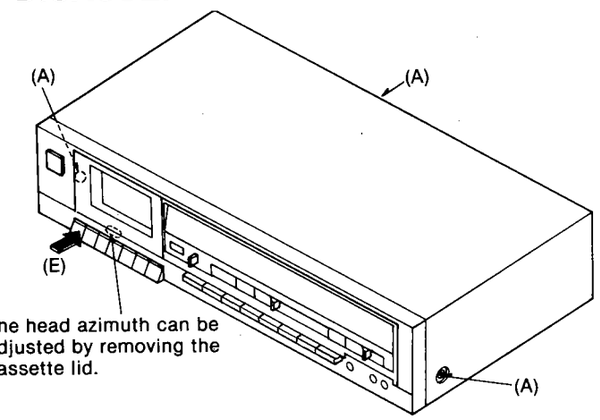


Fig. 1

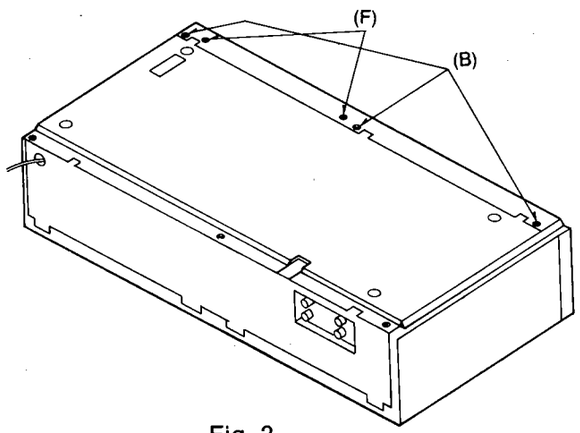


Fig. 2

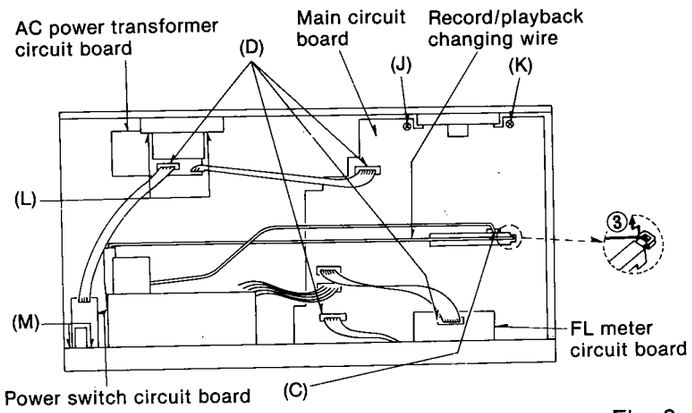
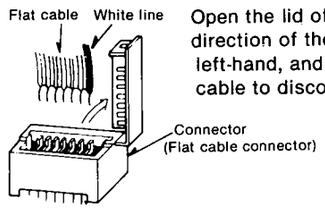


Fig. 3

(D) How to remove flat cable



Open the lid of connector in the direction of the arrow as shown left-hand, and extract the flat cable to disconnect.

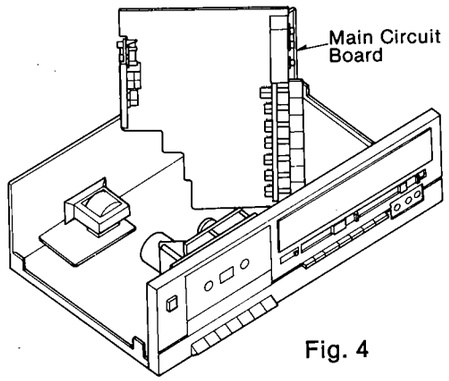


Fig. 4

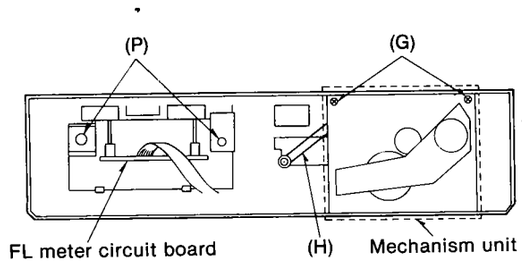


Fig. 5

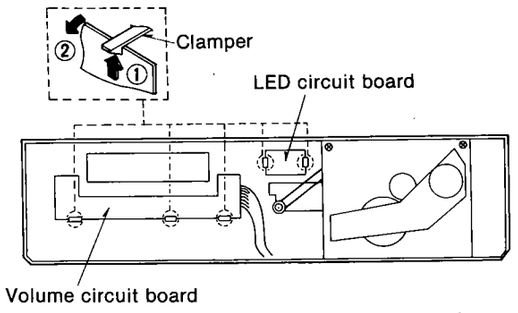


Fig. 6

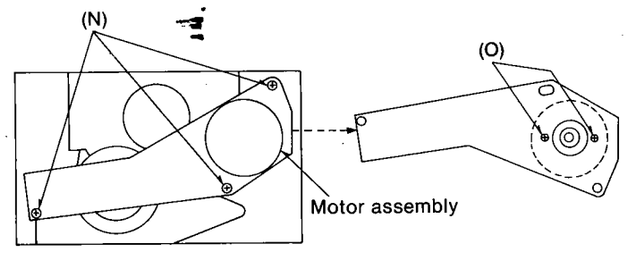


Fig. 7

Ref. No.	Procedure	To remove —.	Remove —.	Shown in fig. —.
1	1	Case cover	• 3 screws .....(A)	1
2	1 → 2	LED circuit board	• As shown in fig. 6, raise the clampers in the direction of arrow (1) and remove the LED circuit board in the direction of arrow (2).	6
3	1 → 2 → 3	Front panel assembly and mechanism unit	• 3 screws .....(B) • Pull out the connectors A B .....(C) • How to remove flat cable C D F .....(D)	2 3 3
4	1 → 4	Mechanism unit	• Push the eject button .....(E) • 2 screws .....(F) • 2 screws .....(G) • Remove the counter belt.....(H) • Pull out the connectors A B .....(C) • How dto remove flat cable F .....(D) • As shown in fig. 3, remove the record/ playback changing wire in the direction of arrow (3).	1 2 5 5 3 3 3
5	1 → 2 → 5	Main circuit board*	• 1 screw .....(J) • 1 screw .....(K) • As shown in fig. 3, remove the record/ playback changing wire in the direction of arrow (3). • When measuring and adjusting, set the main P.C.B. as shown in Fig. 4. Then, connect the ground of main P.C.B. and the bottom case with a wire.	3 3 3 4
6	1 → 6	FL meter circuit board	• How to remove flat cable D .....(D) • 2 screws .....(P)	3 5
7	1 → 6 → 7	Volume circuit board	• How to remove flat cable C D .....(D) • As shown in fig. 6, raise the clampers in the direction of arrow (1) and remove the volume circuit board in the direction of arrow (2).	3 6
8	1 → 8	Power supply circuit board	• 2 screws .....(L) • How to remove flat cable E F .....(D)	3 3
9	1 → 9	Power switch circuit board	• 2 screws .....(M) • How to remove flat cable F .....(D)	3 3
10	1 → 4 → 10	Motor assembly	• 3 screws .....(N) • 2 screws .....(O)	7 7

* When adjusting in record mode, fix the rec/play switch (S1) on the main P.C.B. at "rec" by use of a clip or the like.

■ MEASUREMENT AND ADJUSTMENT METHODS

NOTES:

- Before making the adjustment and measurement, be sure to read "Ref. No. 5: to remove main circuit board" of "DISASSEMBLY INSTRUCTION".

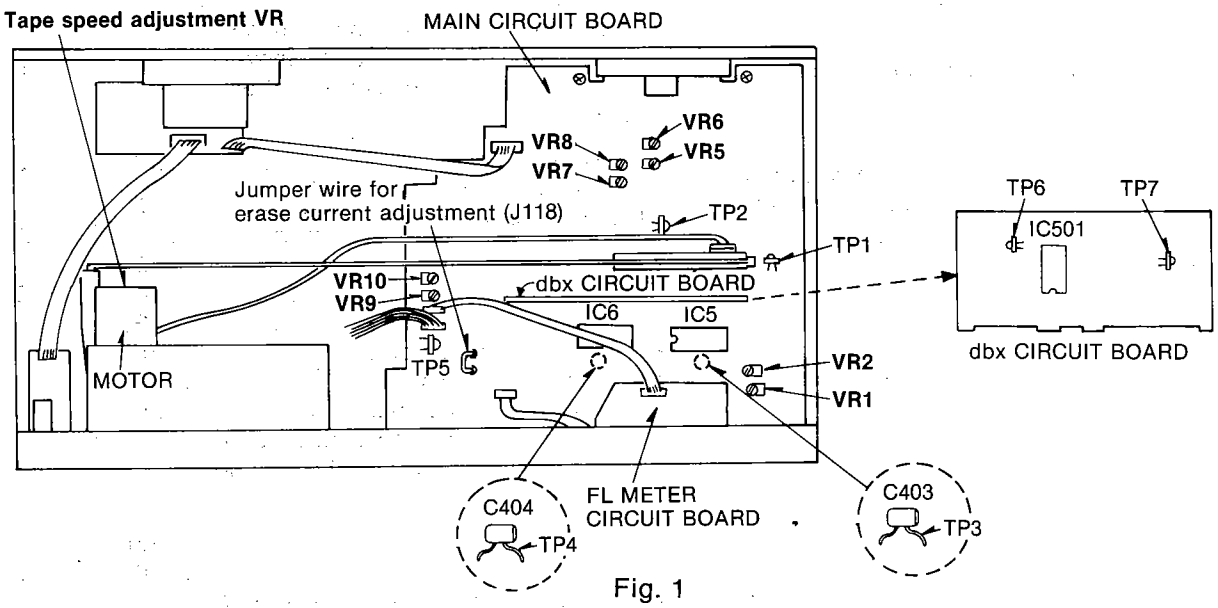


Fig. 1

NOTES: Set switches and controls in the following positions, unless otherwise specified.

- Make sure heads are clean
- Make sure capstan and pinch roller are clean
- Judgeable room temperature 20±5°C (68±9°F)
- NR switch: OUT
- Tape selector: Normal
- Input selector: Line in
- Input level controls: Maximum
- Balance control: Center

Ⓐ Head azimuth adjustment

Condition:
- Playback mode
- Normal tape mode

Equipment:
- VTVM
- Oscilloscope
- Test tape (azimuth)...QZZCFM

L-CH/R-CH output balance adjustment

1. Make connections as shown in fig. 2.

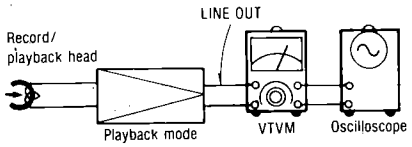


Fig. 2

2. Playback the 8kHz signal from the test tape (QZZCFM). Adjust screw (B) in fig. 3 for maximum output L-CH and R-CH levels. When the output levels of L-CH and R-CH are not at maximum at the same point adjust as follows.
3. Turn screw (B) shown in fig. 3 to find angles A and C (points where peak output levels for left and right channels are obtained). Then, locate angle B between angles A and C, i.e., point where L-CH and R-CH outputs are balanced. (Refer to figs. 3 and 4.)

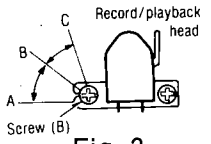


Fig. 3

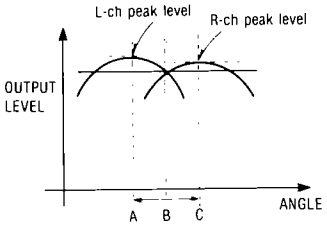


Fig. 4

L-CH/R-CH phase adjustment

4. Make connections as shown in fig. 5.
5. Playback the 8kHz signal from the test tape (QZZCFM). Adjust screw (B) shown in fig. 3 so that pointers of the two VTVMs swing to maximum and a lissajous waveform as illustrated in fig. 6 is obtained on the oscilloscope.

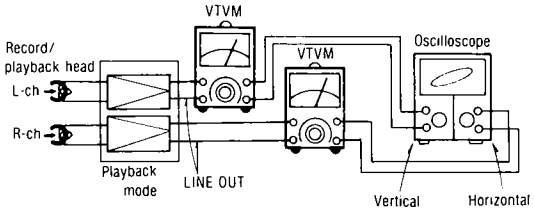


Fig. 5

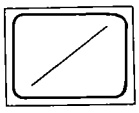


Fig. 6

Tape speed

Condition:
- Playback mode

Equipment:
- Digital frequency counter
- Test tape...QZZCWAT

Tape speed accuracy

1. Test equipment connection is shown in fig. 7.
2. Playback test tape (QZZCWAT 3,000Hz), and supply playback signal to the digital frequency counter.
3. Measure this frequency.
4. On the basis of 3,000Hz, determine value by following formula:

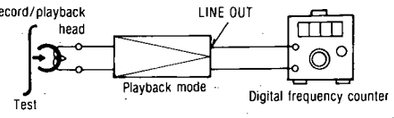


Fig. 7

$$\text{Tape speed accuracy} = \frac{f-3{,}000}{3{,}000} \times 100(\%)$$ where, f = measured value

5. Take measurement at middle section of tape.

Standard value: ±1.5%

6. If measured value is not within the standard value, adjust it by using the tape speed adjustment VR shown in fig. 1.

Note: Please use non metal type screwdriver when you adjust tape speed accuracy on this unit.

Tape speed fluctuation

Make measurements in same manner as above (beginning, middle and end of tape), and determine the difference between maximum and minimum values and calculate as follows:

$$\text{Tape speed fluctuation} = \frac{f_1-f_2}{3{,}000} \times 100(\%)$$ f_1 = maximum value, f_2 = minimum value

Standard value: Less than 1%

Playback frequency response

Condition:
- Playback mode
- Normal tape mode

Equipment:
- VTVM
- Oscilloscope
- Test tape...QZZCFM

1. Test equipment connection is shown in fig. 2.
2. Playback the frequency response portion of test tape (QZZCFM).
3. Measure output level at 315Hz, 12.5kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz and 63Hz, and compare each output level with the standard frequency 315Hz, at LINE OUT.
4. Make measurements for both channels.
5. Make sure that the measured values are within the range specified in the frequency response chart. (Shown in fig. 8).

Playback frequency response chart

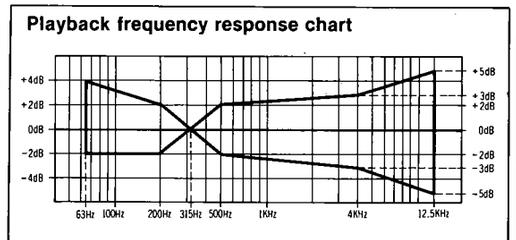


Fig. 8

Playback gain

Condition:
- Playback mode
- Normal tape mode

Equipment:
- VTVM
- Oscilloscope
- Test tape...QZZCFM

Test equipment connection is shown in fig. 2.
Playback standard recording level portion on test tape (QZZCFM 315Hz) and, using VTVM, measure the output level at test points Pin 7 of IC5 (L-CH), IC6 (R-CH).
Make measurements for both channels.

Standard value: 0.42V [0.4V±1dB: at LINE OUT jack]

Adjustment

If the measured value is not within the standard, adjust VR1 (L-CH) or VR2 (R-CH) (See fig. 1).
After adjustment, check "Playback frequency response" again.

Erase current

Condition:
- Record mode
- Metal tape mode

Equipment:
- VTVM
- Oscilloscope

1. Test equipment connection is shown in fig. 9.
2. Place UNIT into metal tape mode.
3. Press the record and pause buttons.
4. Read voltage on VTVM and calculate erase current by following formula:

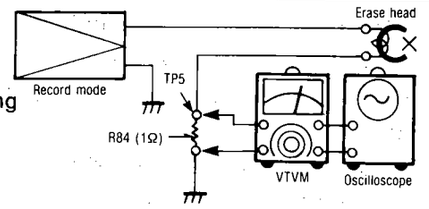


Fig. 9

$$\text{Erase current (A)} = \frac{\text{Voltage across resistor R84}}{1\ (\Omega)}$$

Standard value: 155±15mA (Metal)

5. If the measured value is not within the standard value adjust it by following the adjustment instructions.

Adjustment

- If the erase current is more than 165mA, cut the jumper wire (See fig. 1).

Overall frequency response

Condition:
- Record/playback mode
- Normal tape mode
- CrO_2 tape mode
- Metal tape mode
- Input level controls...MAX

Equipment:
- VTVM
- ATT
- AF oscillator
- Oscilloscope
- Resistor (600Ω)
- Test tape (reference blank tape)
  ...QZZCRA for Normal
  ...QZZCRX for CrO_2
  ...QZZCRZ for Metal

Note:
Before measuring and adjusting, the overall frequency response make sure of the playback frequency response (For the method of measurement, please refer to the playback frequency response).

Overall frequency response chart (Normal)

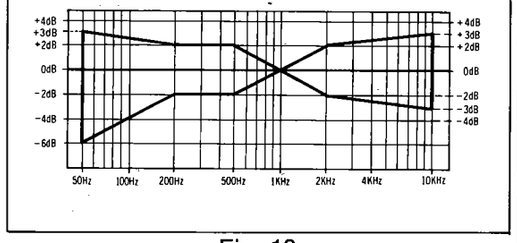


Fig. 10

(Recording equalizer is fixed)
1. Make connections as shown in fig. 11.
2. Place UNIT into normal tape mode and insert the normal reference blank test tape (QZZCRA).
3. Supply a 1kHz signal from the AF oscillator through ATT to LINE IN.
4. Adjust ATT so that input level is −20dB below standard recording level (standard recording level = 0 VU).
5. Adjust the AF oscillator frequency to 1kHz, 50Hz, 100Hz, 200Hz, 500Hz, 4kHz, 8kHz and 10kHz signals, and record these signals on the test tape.
6. Playback the signals recorded in step 5, and check if the frequency response curve is within the limits shown in the overall frequency response chart for normal tapes (fig. 10). (If the curve is within the charted specifications, proceed to steps 7, 8 and 9.)
   If the curve is not within the charted specifications, adjust as follows;

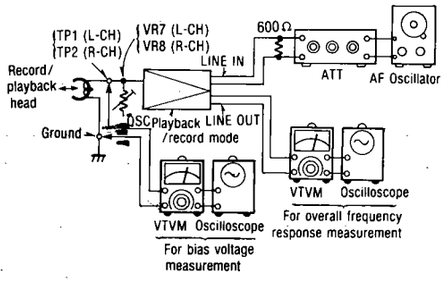


Fig. 11

Adjustment (A):

When the curve exceeds the overall specified frequency response chart (fig. 10) as shown in fig. 12.

1) Increase bias current by turning VR7 (L-CH) and VR8 (R-CH). (See fig. 1 on page 6.)
2) Repeat steps 5 and 6 for confirmation (Proceed to steps 7, 8 and 9 if the curve is now within the charted specifications as shown fig. 10.)
3) If the curve still exceeds the specifications (fig. 10), increase bias current further and repeat steps 5 and 6.

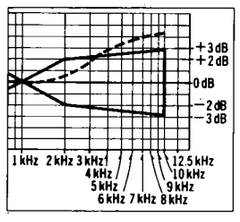


Fig. 12

Adjustment (B):

When the curve falls below the overall specified frequency response chart (fig. 10) as shown in fig. 13.

1) Reduce bias current by turning VR7 (L-CH) and VR8 (R-CH).
2) Repeat steps 5 and 6 for confirmation (Proceed to steps 7, 8 and 9 if the curve is now within the charted specifications as shown fig. 10.)
3) If the curve still falls below the charted specifications (fig. 10), reduce bias current further and repeat steps 5 and 6.

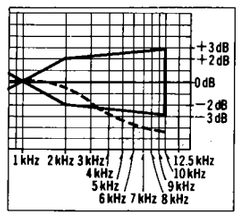


Fig. 13

7. Place UNIT into CrO_2 tape mode.
8. Change test tape to CrO_2 reference blank test tape (QZZCRX), and record 1kHz, 50Hz, 100Hz, 200Hz, 500Hz, 4kHz, 8kHz, 10kHz and 12.5kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for CrO_2 tapes (fig. 14).
9. Place UNIT into metal tape mode and change test tape to metal reference blank test tape (QZZCRZ), and record 1kHz, 50Hz, 100Hz, 200Hz, 500Hz, 4kHz, 8kHz, 10kHz and 12.5kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for metal tapes (fig. 14).
10. Confirm that bias voltage are approximately as follows when the UNIT is set at different tape mode.
    • Measure the voltage across the head using a VTVM.

Reference value:	**around 6.2V (Normal position)** **around 8.9V (CrO_2 position)** **around 15.7V (Metal position)**

Overall frequency response chart (CrO_2, Metal)

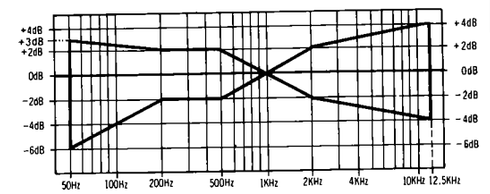


Fig. 14

ⓒ Overall gain

Condition:
- Record/playback mode
- Normal tape mode
- Input level controls...MAX
- Standard input level;

  MIC .....-72^{+5}_{-3}dB

  LINE IN .....-24^{+4}_{-2}dB

Equipment:
- VTVM • AF oscillator
- ATT • Oscilloscope
- Resistor (600Ω)
- Test tape

  (reference blank tape)

  ...QZZCRA for Normal

1. Test equipment connection is shown in fig. 15.
2. Insert the normal reference blank tape (QZZCRA).
3. Place UNIT into record mode.
4. Supply a 1kHz signal through ATT (−24dB) from AF oscillator, to LINE IN.
5. Adjust ATT until monitor level at test points Pin 7 of IC5 (L-CH), IC6 (R-CH) becomes 0.42V [0.4V±2dB at test LINE OUT jack].
6. Playback recorded tape, and make sure that the output level at test points Pin 7 of IC5 (L-CH), IC6 (R-CH) becomes 0.42V [0.4V±2dB at test LINE OUT jack].
7. If measured value is not 0.42V, adjust it by using VR5 (L-CH) or VR6 (R-CH).
8. Repeat from step (2).

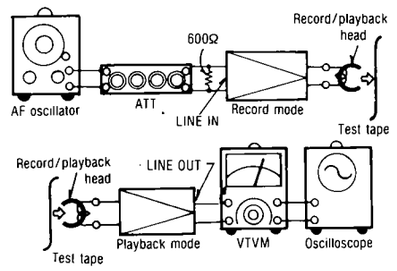


Fig. 15

ⓓ Fluorescent meter

Condition:
- Record mode
- Input level controls...MAX

Equipment:
- VTVM • AF oscillator
- ATT • Oscilloscope
- Resistor (600Ω)

1. Make connections as shown (See fig. 16).
2. In the recording pause mode, apply 1kHz (−24dB) to LINE IN.
3. Adjust ATT so that output level LNE OUT is 0.42V.
4. At this time, check that 0dB indicator is lighted halfway (intermediate brightness between full brightness and light-out: See fig. 17).
5. It the indicator is not lighted halfway as described in step 4, adjust VR9 (L-CH), VR10 (R-CH).
6. Repeat adjustments and checks at steps 3, 4 and 5 two or three times.

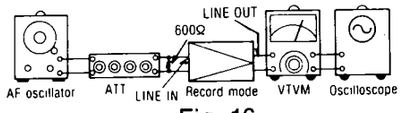


Fig. 16

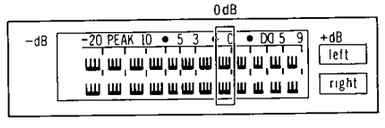


Fig. 17

ⓘ Dolby NR circuit

Condition:
- Record mode
- Dolby NR switch...IN/OUT
- Dolby NR select switch ...B/C
- Input level controls...MAX

Equipment:
- VTVM • AF oscillator
- ATT • Oscilloscope
- Resistor (600Ω)
- Balance control...Center

Record side

• Check of the Dolby-B type encoder characteristics
1. Make connections as shown in fig. 18.
2. Set the unit to the record mode. (NR select switch is OUT.)
3. Apply a 1kHz signal to LINE IN.
4. Adjust the ATT so that the output level at Pin 7 of IC5 (L-CH) and IC6 (R-CH) is 12.3mV.
5. The output level at pin 21 should be 0dB.
6. Set the NR select switch to B, and make sure that the output signal level at pin 21 of IC5 (L-CH) and IC6 (R-CH) is +6±2.5dB.
7. Set the NR select switch to OUT, and adjust the frequency to 5kHz. The output signal level at pin 21 should be 0dB.
8. Set the NR select switch to B and make sure that the output signal level at pin 21 of IC5 (L-CH) and IC6 (R-CH) is +8dB±2.5dB.

• Check to Dolby-C type encoder characteristics
9. Repeat steps 1-5 above.
10. Set the NR select switch to C and make sure that the output signal level at pin 21 of IC5 (L-CH) and IC6 (R-CH) is +11.5dB±2.5dB.
11. Set the NR select switch to OUT and adjust the frequency to 5kHz. The output signal at pin 21 should be 0dB.
12. Set the NR select switch to C and make sure that the output signal level at pin 21 of IC5 (L-CH) and IC6 (R-CH) is +8.5dB±2.5dB.

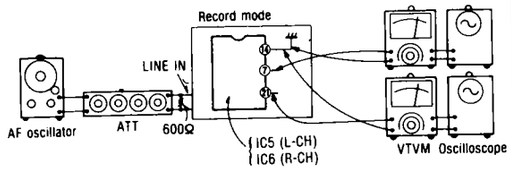


Fig. 18

ⓙ Attack recovery time adjustment (dbx circuit)

Condition:
- Record mode
- Input level control...MAX
- Balance control...Center

Equipment:
- VTVM
- ATT
- AF oscillator
- DC voltmeter
- Noise reduction selector ...dbx tape

1. Make the connections as shown in fig. 19 and apply 1kHz −27dB signal from LINE IN, and set the noise reduction selector to dbx tape position.
2. Set the unit to record mode, adjust ATT so that the signal level at C541 (L-CH) and C542 (R-CH) is 300mV.
3. Read voltage on DC volt meter.

   Reference value: 15±0.5mV
4. If measured value is not within reference, adjust VR301 (shown in fig. 1).

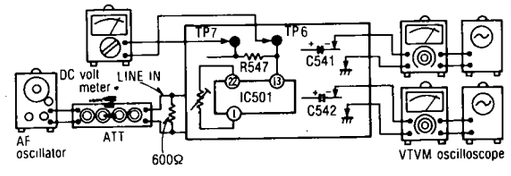
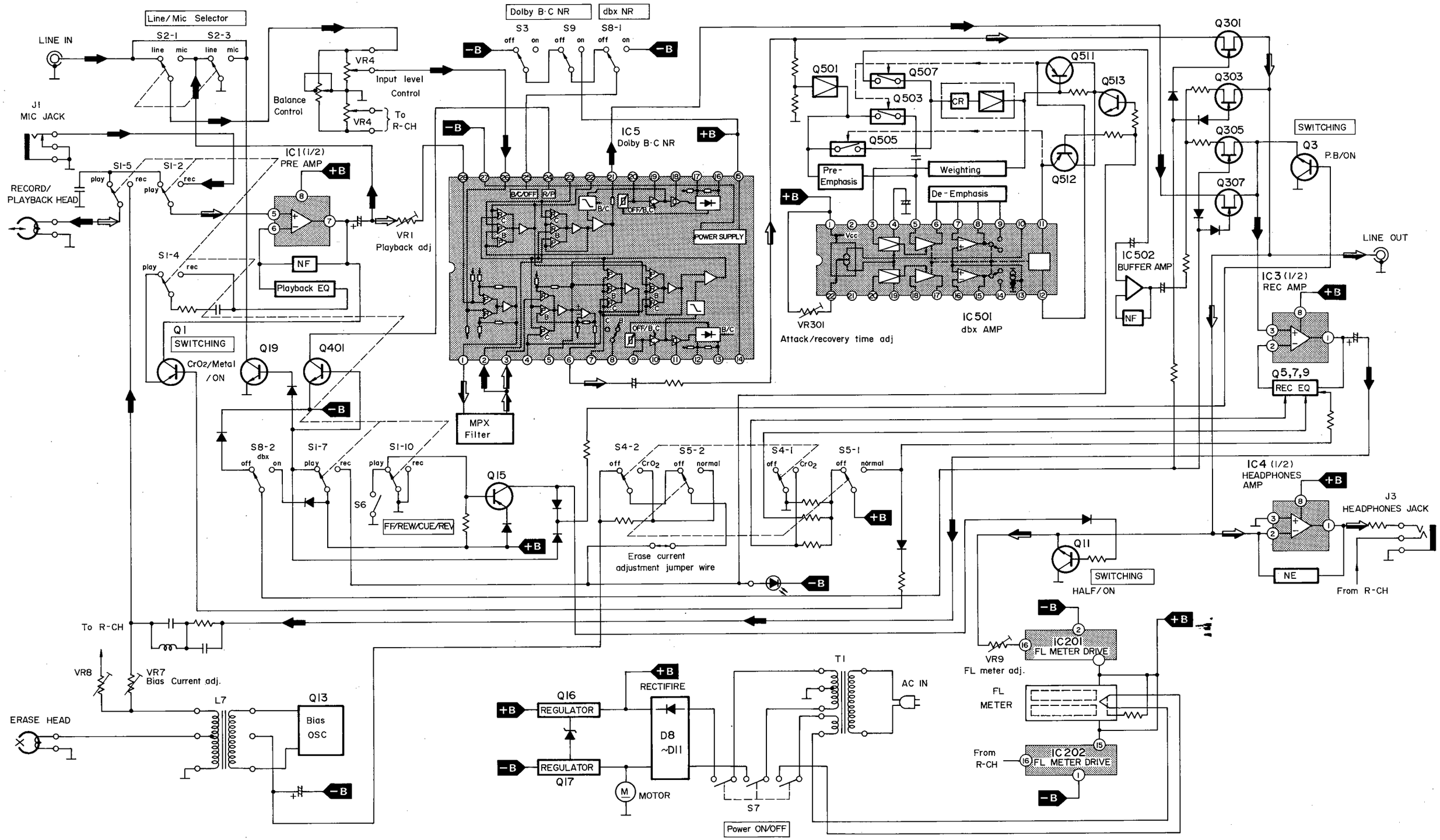


Fig. 19

■ BLOCK DIAGRAM

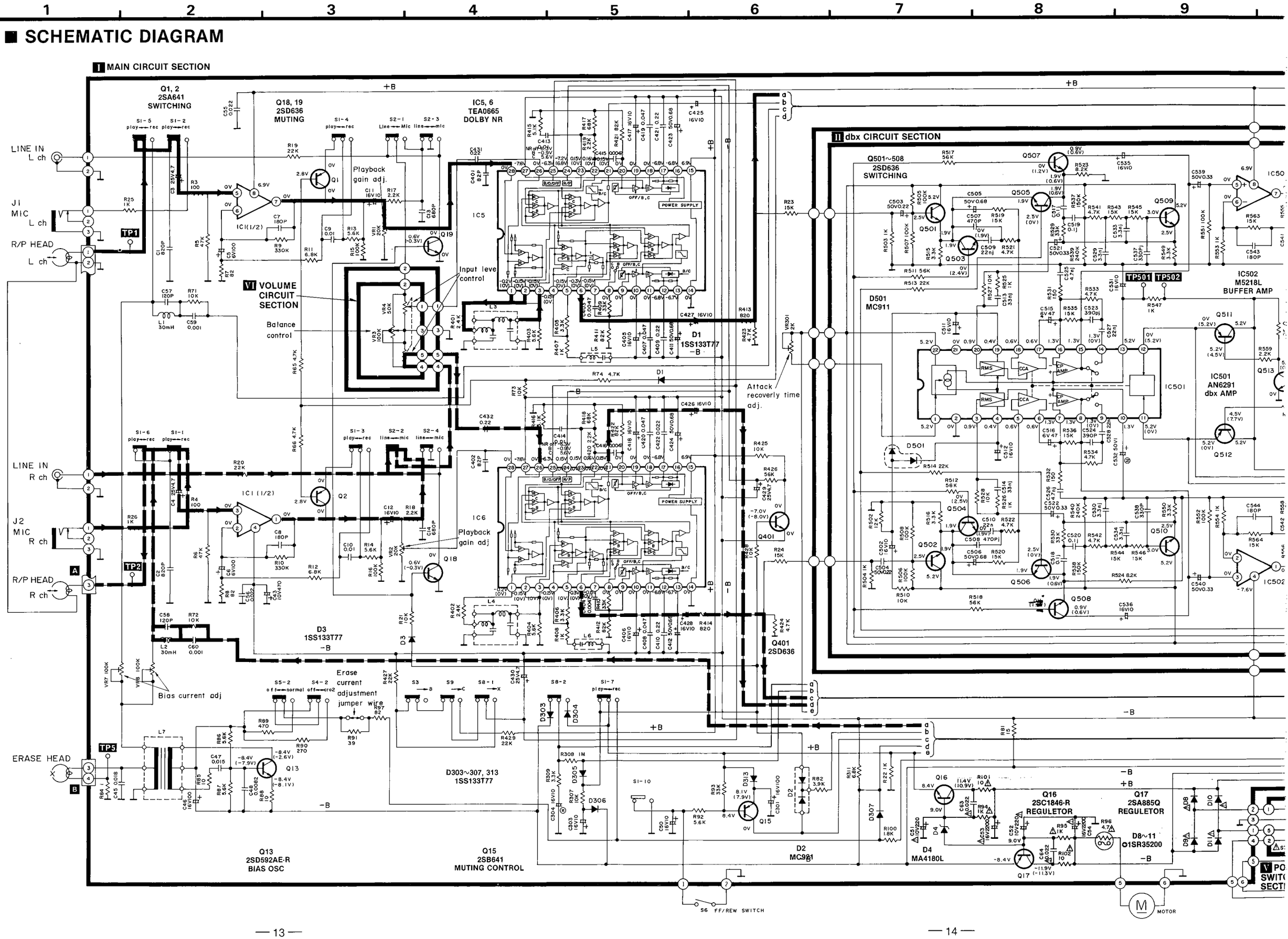


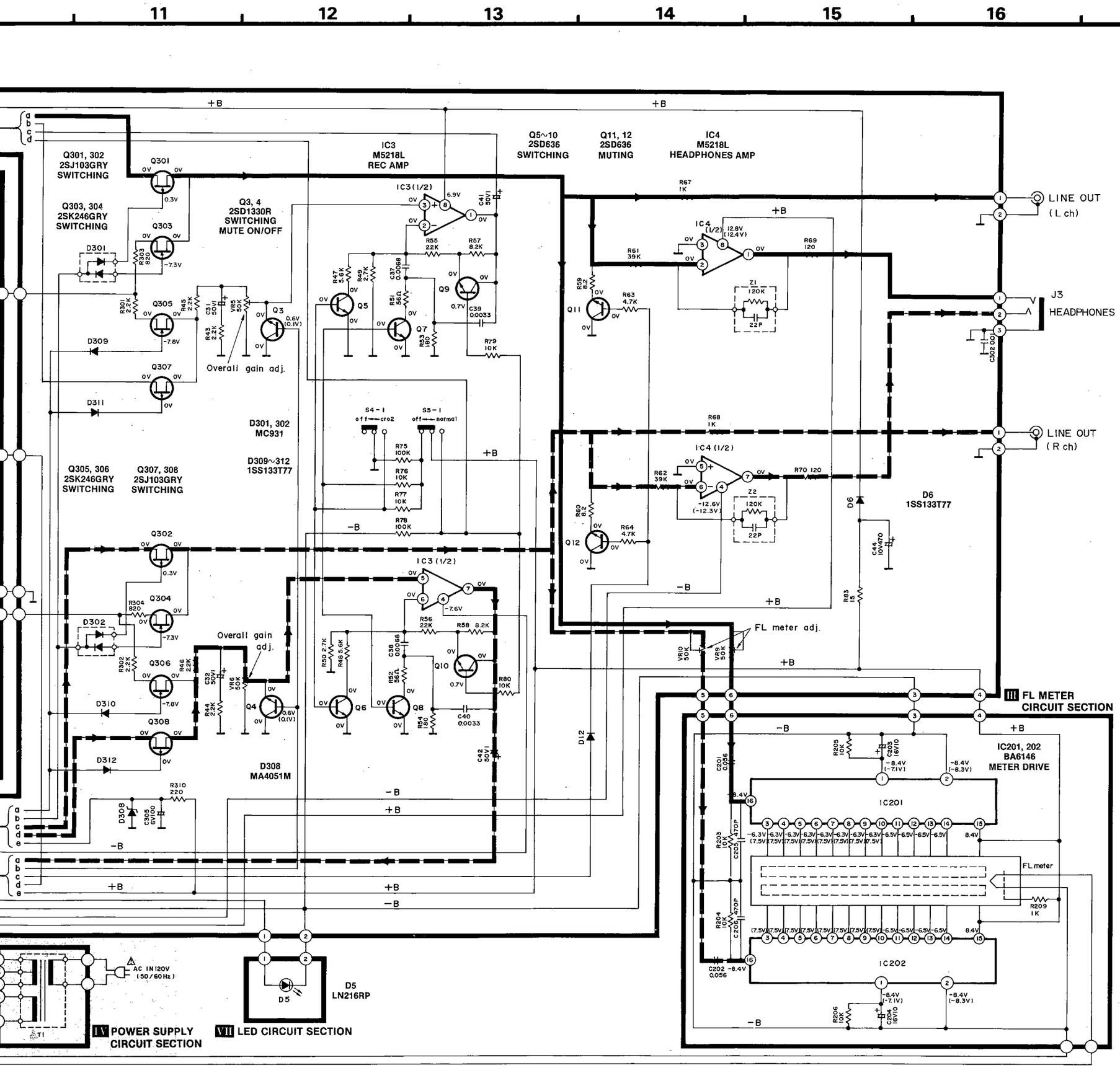
NOTES:

- **S1-1~S1-7** : Record/playback switch (shown in **playback** position).
- **S2-1~S1-4** : Input select switch (shown in **line in** position).
- **S3** : Dolby-B IN/OUT switch (shown in **OUT** position).
- **S4-1, S4-2** : CrO_2 tape select switch (shown in **OFF** position).
- **S5-1, S5-2** : Normal tape select switch (shown in **OFF** position).
- **S6** : FF/CUE/REW/REV switch (shown in **OFF** position).
- **S7** : Power ON/OFF switch (shown in **OFF** position).
- **S8-1, S8-2** : dbx IN/OUT switch (shown in **OFF** position).
- **S9** : Dolby-C IN/OUT switch (shown in **OUT** position).

(⇨) this arrow indicates the flow of the playback signal.
(➡) this arrow indicates the flow of the recording signal.
(⇒) this arrow indicates the flow of the playback and recording signal in combination.
(⇢) this arrow indicates the flow of the control signal.

■ SCHEMATIC DIAGRAM





NOTES:

- **S1-1~S1-7** : Record/playback switch (shown in **playback** position).
- **S2-1~S2-4** : Input select switch (shown in **line in** position).
- **S3** : Dolby-B IN/OUT switch (shown in **OUT** position).
- **S4-1, S4-2** : CrO_2 tape select switch (shown in **OFF** position).
- **S5-1, S5-2** : Normal tape select switch (shown in **OFF** position).
- **S6** : FF/CUE/REW/REV switch (shown in **OFF** position).
- **S7** : Power ON/OFF switch (shown in **OFF** position).
- **S8-1, S8-2** : dbx IN/OUT switch (shown in **OFF** position).
- **S9** : Dolby-C IN/OUT switch (shown in **OUT** position).
- **VR1, 2** : Playback gain adjustment VR.
- **VR3** : Balance control.
- **VR4** : Input level control.
- **VR5, 6** : Overall gain adjustment VR.
- **VR7, 8** : Bias current adjustment VR.
- **L1, 2** : Bias trap coil.
- **L3, 4** : MPX filter.
- **L5, 6** : Network coil.
- **L7** : Bias oscillation coil.
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise. 1K = 1,000(Ω), 1M = 1,000k(Ω)
- Capacity are in micro-farads (μF) unless specified otherwise.
- The mark (▼) shows test point. e.g. ▼ = Test point 1.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
  - ( ) .....Voltage values at record mode.
  - B .....Voltage values at Dolby-B mode.
  - C .....Voltage values at Dolby-C mode.
  - NR off .....Voltage values at which the noise reduction switch is turned off.

  For measurement use VTVM.
- (+B) indicates + B (bias).
- (−B) indicates − B (bias).
- (▬▶) indicates the flow of the playback signal. (NR out).
- (■▶■) indicates the flow of the recording signal. (NR out).

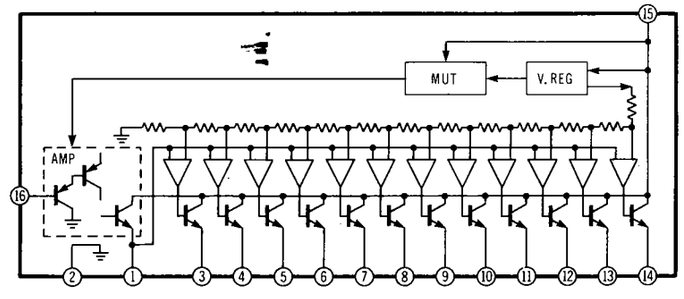
* Important safety notice (⚠)
The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazards.
When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

- The part No. of diodes mentioned in the schematic diagram stand for production part No. Regarding the part No. with ✪ mark the production part No. are different from the replacement part No. Therefore, when placing an order for replacement part, please use the part No. in the replacement parts list.
- **The supply parts number is described alone in the replacement parts list.**

- **This schematic diagram may be modified at any time with the development of new technology.**

■ EQUIVALENT CIRCUIT

IC201, 202: BA6146



SPECIFICATIONS

* Input level control ...MAX
* Balance control.....Center

Playback S/N ratio * Test tape...QZZCFM	Greater than 45dB
Overall distortion * Test tape ...QZZCRA for Normal ...QZZCRX for CrO_2 ...QZZCRZ for Metal	Normal..... Less than 3.5% CrO2, Metal..... Less than 4%
Overall S/N ratio * Test tape...QZZCRA	Greater than 43dB (without NAB filter)

ELECTRICAL PARTS LIST

REPLACEMENT PARTS LIST

- ⚠ mark safety notice
- Components identified by ⚠ mark have special characteristics important for safety.
- When replacing any of these components, use manufacturer's specified parts.

NOTES: RESISTORS
- ERD.....Carbon
- ERG .....Metal-oxide
- ERS.....Metal-oxide
- ERO .....Metal-film
- ERX.....Metal-film
- ERQ .....Fuse type metallic
- ERC.....Solid
- ERF.....Cement

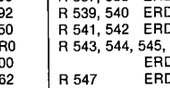
CAPACITORS
- ECBA .....Ceramic
- ECG□ .....Ceramic
- ECK□ .....Ceramic
- ECC□ .....Ceramic
- ECF□ .....Ceramic
- ECQM.....Polyester film
- ECQE .....Polyester film
- ECQF .....Polypropylene
- ECE□ .....Electrolytic
- ECE□N ...Non polar electrolytic
- ECQS .....Polystyrene
- ECS□ .....Tantalum
- QCS .....Tantalum

Ref. No.	Part No.
RESISTORS	
R 401, 402	ERD25FJ242
R 403, 404	ERD25FJ562
R 405, 406	ERD25FJ332
R 407, 408	ERD25FJ102
R 409, 410	ERD25TJ333
R 411, 412	ERD25TJ823
R 413, 414	ERD25FJ821
R 415, 416	ERD25FJ512
R 417, 418	ERD25TJ683
R 419, 420	ERD25FJ222
R 421, 422	ERD25TJ823
R 423, 424	ERD25FJ472
R 425	ERD25FJ103
R 426	ERD25TJ563
R 427	ERD25TJ223
R 428	ERD25FJ103
R 429	ERD25TJ223
R 502	ERD10TLJ123U
R 503, 504	ERD10TLJ102U
R 505, 506, 507, 508	ERD10TLJ104U
R 510	ERD10TLJ103U
R 511, 512	ERD10TLJ563U
R 513, 514	ERD10TLJ223U
R 515, 516	ERD10TLJ332U
R 517, 518	ERD10TLJ563U
R 519, 520	ERD10TLJ153U
R 521, 522	ERD10TLJ472U
R 523, 524	ERD10TLJ822U
R 525, 526	ERD10TLJ102U
R 527, 528	ERD10TLJ103U
R 529, 530	ERD10TLJ333U
R 531, 532	ERD10TLJ151U
R 533, 534	ERD10TLJ472U
R 535, 536	ERD10TLJ153U
R 537, 538	ERD10TLJ154U
R 539, 540	ERD10TLJ244U
R 541, 542	ERD10TLJ472U
R 543, 544, 545, 546	ERD10TLJ153U
R 547	ERD10TLJ102U
R 549, 550	ERD10TLJ332U
R 551, 552	ERD10TLJ104U
R 553, 554	ERD10TLJ102U
R 555, 556	ERD10TLJ101U
R 557, 558	ERD10TLJ822U
R 559	ERD10TLJ222U
R 560	ERD10TLJ333U
R 561	ERD10TLJ473U
R 562	ERD10TLJ822U
R 563, 564	ERD10TLJ153U
J 501 ~ 529	ERD10TL0U
CAPACITORS	
C 1, 2	ECKD1H821KB
C 3, 4	ECEA25Z4R7
C 5, 6	ECEA1AS101
C 7, 8	ECCD1H181K
C 9, 10	ECQM1H103JZ
C 11, 12	ECEA1HS100
C 13, 14	ECKD1H681KB
C 31, 32	ECEA50Z1
C 37, 38	ECQM1H682JZ
C 39, 40	ECQM1H332JZ
C 41, 42	ECEA50Z1
C 43	ECEA1AS471
C 44	ECEA1AU471
C 45	ECQP1183JZ
C 46	ECEA1EU101
C 47	ECFDD153KXY
C 48	ECFDD822KVY
C 49	ECKD1H103ZF
C 50	ECEA1HS100
C 51 ⚠	ECEA1AS221
C 52	ECEA1AS221
C 53, 54 ⚠	ECEA1CS222
C 55, 56	ECKD1H223ZF
C 57, 58	ECKD2H121KB
C 59, 60	ECQM1H102JZ
C 63, 64 ⚠	ECKD1H223ZF
C 201, 202	ECFTD563KXL
C 203, 204	ECEA1HS100
C 301	ECEA1EU101
C 302	ECKD1H103ZF
C 303	ECEA1HS100
C 304, 305	ECEA1CN100
C 401, 402	ECKD1H820K
C 403, 404	ECQM1H472JZ
C 405, 406	ECEA1HS100
C 407, 408	ECQM1H473JZ
C 409, 410	ECQM1H224JZ
C 411, 412	ECEA50ZR68
C 413, 414	ECQM1H103JZ
C 415, 416	ECQM1H472JZ
C 417, 418	ECEA1HS100
C 419, 420	ECQM1H473JZ
C 421, 422	ECQM1H224JZ
C 423, 424	ECEA50ZR68
C 425, 426, 427, 428	ECEA1HS100
C 430	ECEA25Z4R7
C 431, 432	ECQM1H224JZ
C 502	ECEA1HS100
C 503, 504	ECEA50ZR22
C 505, 506	ECEA50MR68R
C 507, 508	ECKD1H471KB
C 509, 510	ECQM1H223JZ
C 511, 512	ECEA1HS100
C 513, 514	ECQM1H333JZ
C 515, 516	ECEA1AS470
C 517, 518, 519, 520	ECQM1H104JZ
C 521, 522	ECEA50MR33R
C 523, 524	ECKD1H391KB
C 525, 526	ECQM1H472JZ
C 527, 528	ECQM1H223JZ
C 529, 530	ECQM1H332JZ
C 531	ECEA1HS100
C 532	ECEA1HN010
C 533, 534	ECQM1H332JZ
C 535, 536	ECEA1HS100
C 537, 538	ECKD1H331KB
C 539, 540	ECEA50ZR33
C 541, 542	ECEA1HS100
C 543, 544	ECKD1H181KB
INTEGRATED CIRCUITS	
IC 1	M5219L
IC 3, 4	M5218L
IC 5, 6	TEA0665
IC 201, 202	BA6146
IC 501	AN6291
IC 502	M5218L
TRANSISTORS	
Q 1, 2	2SB641
Q 3, 4	2SD1330R
Q 5, 6, 7, 8, 9, 10, 11, 12	2SD636
Q 13	2SD592AE-R
Q 15	2SB641
Q 16	2SC1846-R
Q 17	2SA885Q
Q 18, 19	2SD636
Q 301, 302	2SJ103GRY
Q 303, 304, 305, 306	2SK246GRY
Q 307, 308	2SJ103GRY
Q 401	2SD636
Q 501, 502, 503, 504, 505, 506, 507, 508	2SD636
Q 509, 510	2SD1199
Q 511, 512	2SB641
Q 513	2SD636
DIODES & RECTIFIERS	
D 1	1SS133T77
D 2	MC921
D 3	1SS133T77
D 4	MA4180L
D 5	LN216RP
D 6	1SS133T77
D 8, 9, 10, 11 ⚠	SM112
D 12	1SS133T77
D 301, 302	MC931
D 303, 304, 305, 306, 307	1SS133T77
D 308	MA4051M
D 309, 310, 311, 312, 313	1SS133T77
D 501	MC911
VARIABLE RESISTORS	
VR 1, 2	EVNM4AA00B24
VR 3	EWANG5X05G15
VR 4	EWAPB1X05A54
VR 5, 6	EVNM4AA00B54
VR 7, 8	EVNM4AA00B15
VR 9, 10	EVNM4AA00B54
VR 301	EVNM4AA00B23

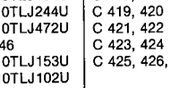
Ref. No.	Part No.	Part Name & Description
COILS		
L 1, 2	QLQX0343KWA	Bias Trap Coil
L 3, 4	QLM9Z10K	MPX Coil
L 5, 6	ELM7Q306A	Network Coil
L 7	QLB0198KA	Bias Oscillation Coil
SPARK KILLERS		
Z 1, 2	EXRP220K124T	
TRANSFORMER		
T 1 ⚠	QLPP65EKC	AC Power Transformer
SWITCHES		
S 1	QSSA209	Slide Switch (Record/ Playback Selector)
S 2, 3, 4, 5	QSWX802	Push Switch (NR Selector, Tape Selector, Input Selector)
S 6	QSB0251iU	Leaf Switch (FF/CUE/REW/REV)
S 7 ⚠	QSW4217T	Push Switch (Power ON/OFF)
S 8, 9	QSWX802	Push Switch (NR Selector, Tape Selector, Input Selector)
JACKS		
J 1, 2	QJA0454C	Microphone Jack
J 3	QJA0455C	Headphone Jack
CONNECTORS		
CN 1	QJT1090	Check Pin
CN 2	QJS1921TN	3 Pin Socket
CN 3	QJS1961S	Jumper Socket (5 Pin)
CN 4	QJS1922TN	6 Pin Socket
CN 5	QJS1993S	Jumper Socket (6 Pin)
CN 6	QJP1921TN	3 Pin Plug
CN 7	QJP1922TN	6 Pin Plug
CN 8	QJT1054	Contact

TERMINATIONS

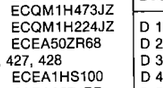

1, 3, 4, 502



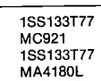
IC5, 6



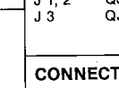
IC202, 203



IC 501

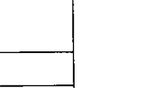


Q303~306

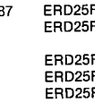


Q1~12, 15, 18, 19, 401, 501~513

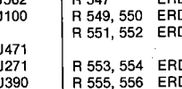
Q13, 301, 302, 307, 308



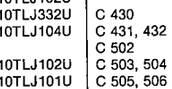
D1, 3, 6, 305~307, 309~313



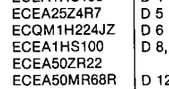
301, 302, 501



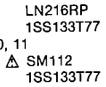
D4



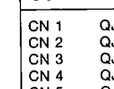
D8~11



D5

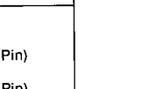


D308



L1, 2

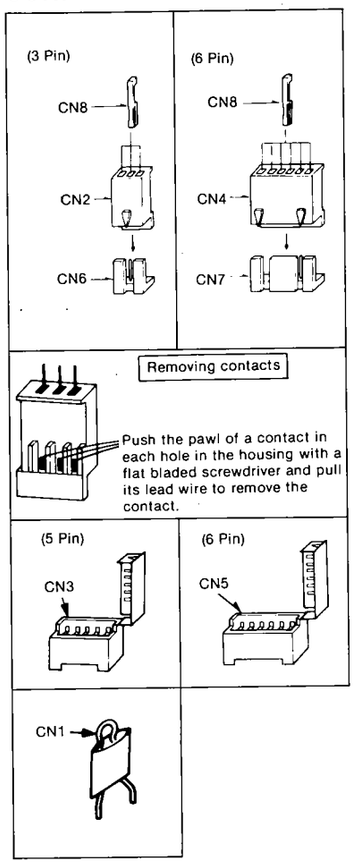
L3, 4



L7

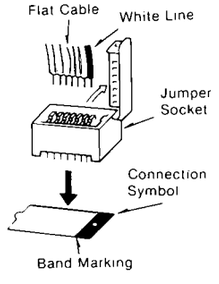
Q16, 17

CONNECTORS



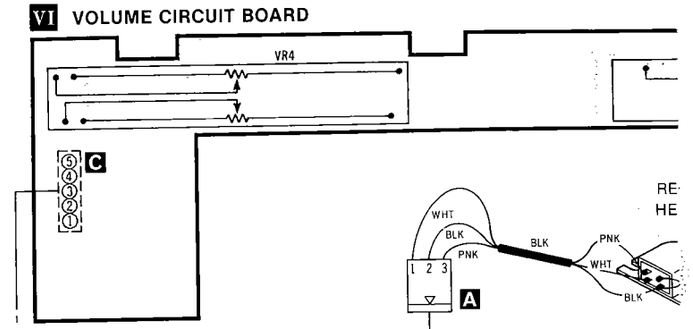
CONNECTION OF A FLAT CABLE

Connect the flat cable to the jumper socket so that the white line on the flat cable corresponds to the band mark side of the connection symbol (yellow or white symbol on the PC board) for the jumper socket. (This connection may differ from those for conventional models.)

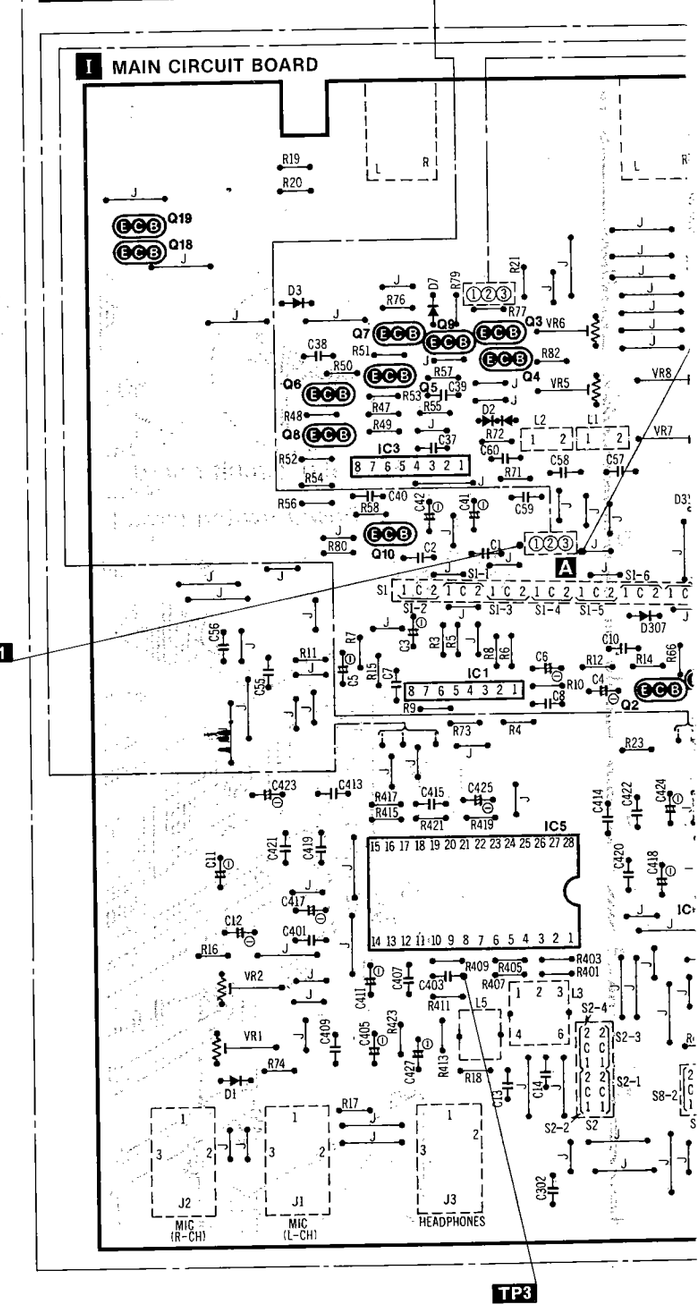


■ CIRCUIT BOARDS AND WIRING CONNECTION

VI VOLUME CIRCUIT BOARD



I MAIN CIRCUIT BOARD



N DIAGRAM

9 8 7 6 5 4 3 2 1

A B C D E F G

VR3

CORD/PLAYBACK
AD

TP7

II dbx CIRCUIT BOARD

TP6

TP2

V POWER SWITCH CIRCUIT BOARD

S7: POWER
ON/OFF
SWITCH

T1: AC POWER
TRANSFORMER

VII LED CIRCUIT BOARD

IV POWER SUPPLY CIRCUIT BOARD

MOTOR

S6: FF/REW
SWITCH

BLU

L. BLU

BRN

AC POWER CORD

TP5

ERASE HEAD

BLK

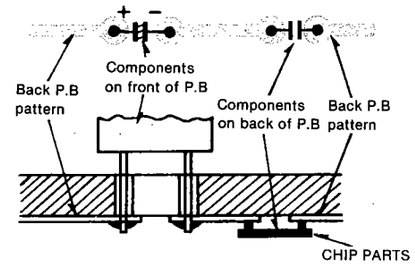
RED

III FL METER CIRCUIT BOARD

TP4

NOTES:

- The circuit shown in ▭ on the conductor side indicates printed circuit on the back side of the printed circuit board.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position.
  For measurement, use VTVM.
- **This circuit board diagram may be modified at any time with the development of new technology.**

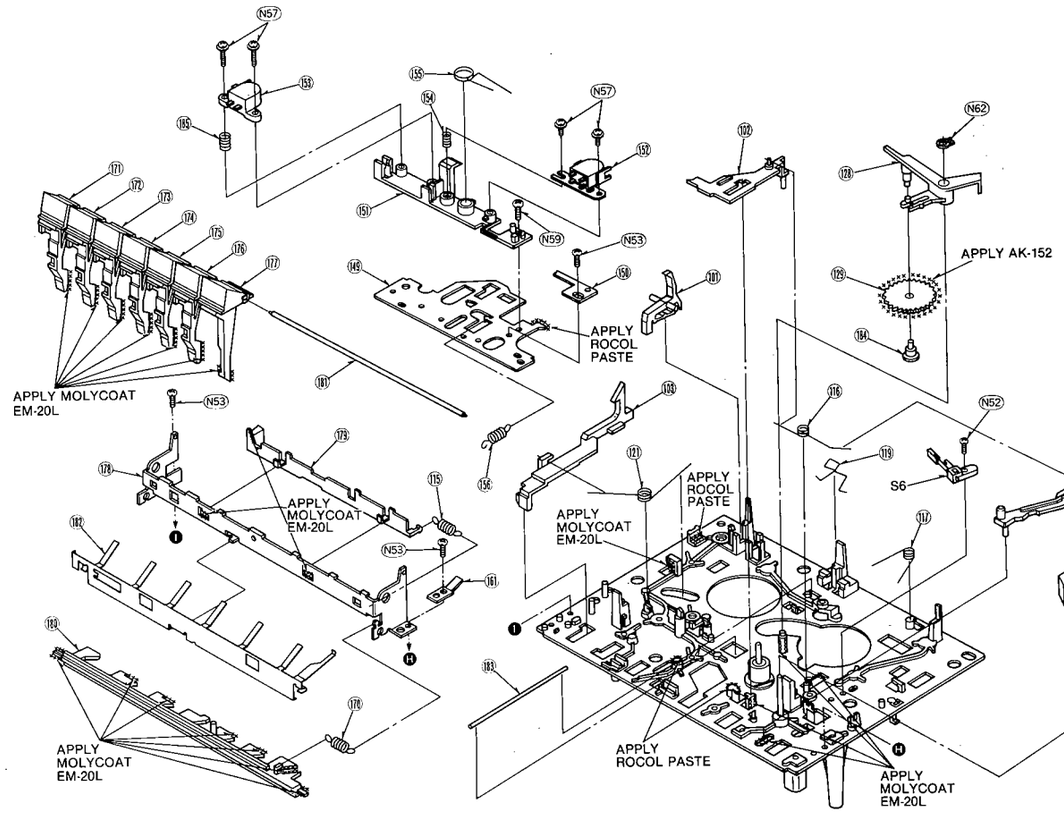


NOTES:

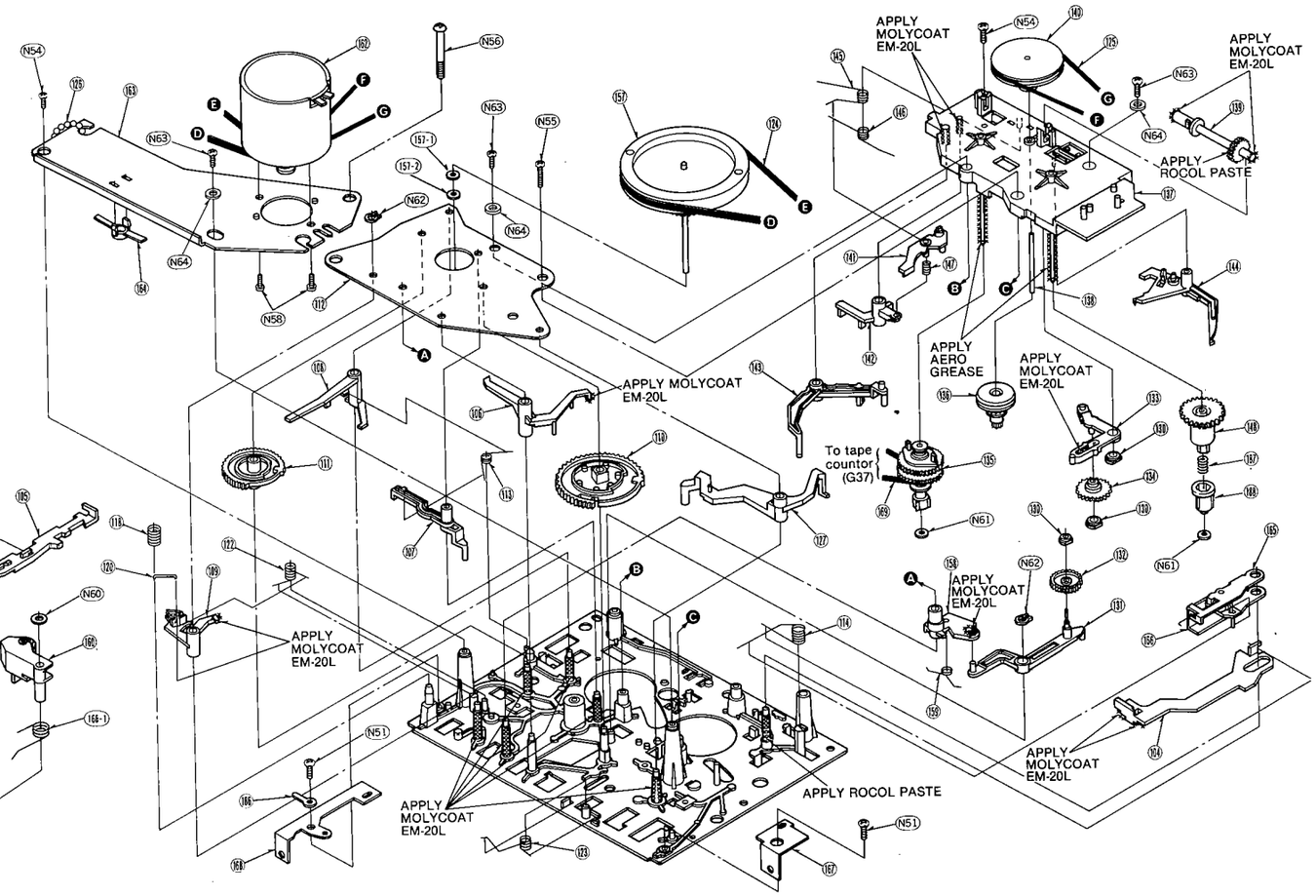
BLK.....Black	ORG.....Orange
BLU.....Blue	PNK.....Pink
BRN.....Brown	RED.....Red
GRY.....Gray	SLD.....Shield Wire
GRN.....Green	VLT.....Violet
L. BLU....Light Blue	WHT.....White
NIL.....No Color Mark	YEL.....Yellow

■ MECHANICAL PARTS LOCATION

(Front View)



(Rear View)



NOTE:
When changing mechanism parts, apply the specified grease and oil to the area marked "xx" shown in the drawing "Mechanical Parts Location".
- Molycoat: Lubricating oil
- Rocol paste: Lubricating oil
- AK-152: Lubricating oil

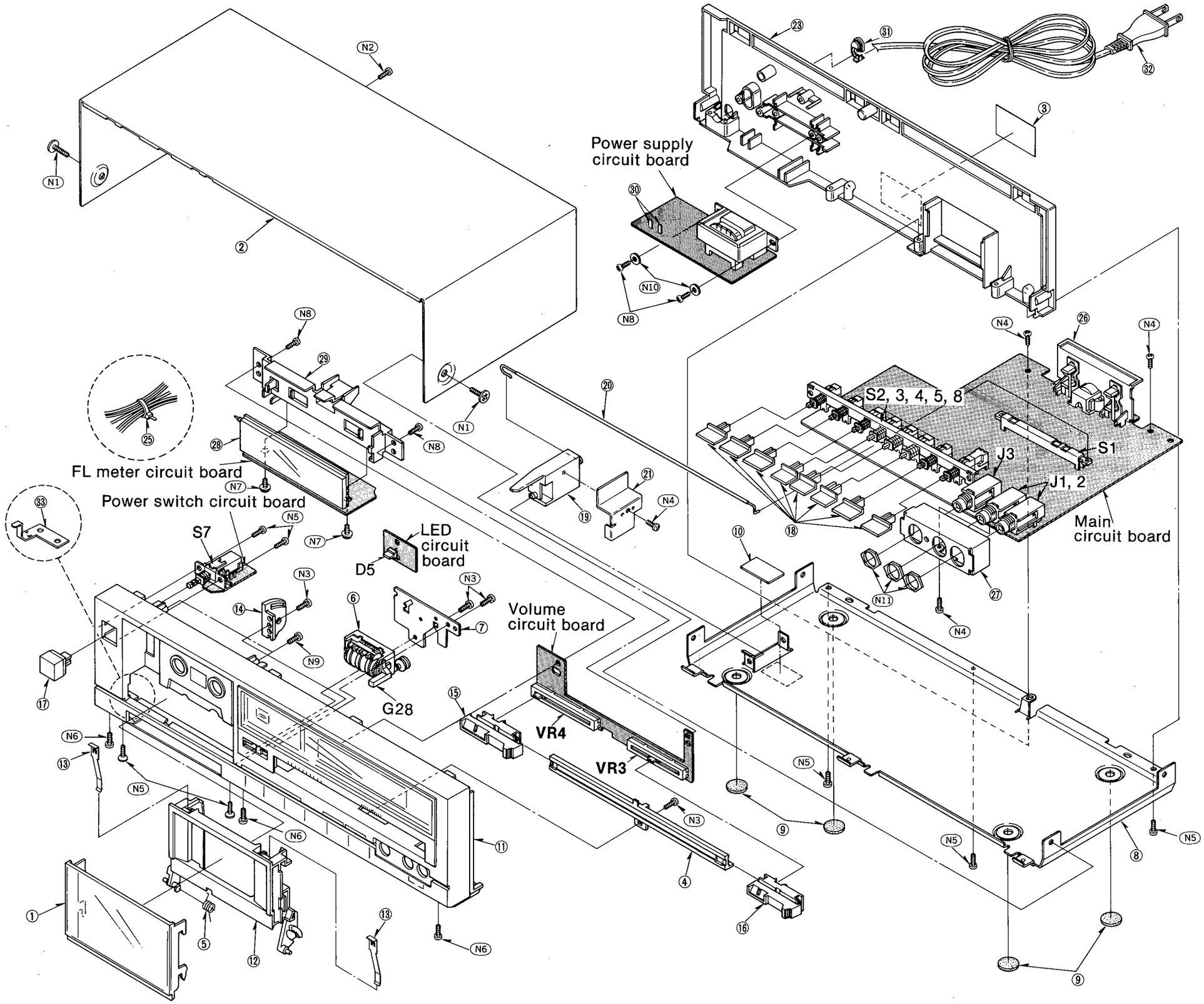
SPECIFICATIONS

Pressure of pressure roller	350±50g
Takeup tension * Use cassette torque meter.....QZZSRKCT	45^{+15}_{-10}g-cm
Wow and flutter; (JIS) * Use test tape .....QZZCWAT	Less than 0.07% (WRMS)

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description
MECHANICAL PARTS		
101	QML4156	Erase Safety Lever
102	QMR2144	Fast Forward Rod
103	QMR2145	Eject Rod
104	QMR2146	Record Rod
105	QMR2149	Auto-Stop Rod
106	QML4093	Main Control Lever
107	QML4094	Sub Lever
108	QML4095	Sub Control Lever
109	QML4096	Pause Lock Lever
110	QDG1330	Main Gear
111	QDG1331	Sub Gear
112	QMF2333	Pressure Plate
113	QBN2035	Sub Lever Spring
114	QBN2036	Record/Playback Arm Spring
115	QBT1868D	Obstruction Rod Spring
116	QBN2039	Auto-Stop Rod Spring
117	QBN2044	Auto-Stop Lever Spring
118	QBC1483	Pause Pin Spring
119	QBS1143	Half Retain Spring
120	QBS1128A	Lock Pin
121	QBN2031	Main Lever Spring
122	QBN2032	Pause Return Spring
123	QBN2034	Main Control Lever Spring
124	QDB0360	Capstan Belt
125	QDB0359	Fast Forward Bell
126	QTD1181	Wire Clamper
127	QXL1689	Main Level Assembly
128	QML4097	Takeup Lever
129	QDG1333	Takeup Intermediate Gear
130	QMB1434	Cap
131	QML4098	Fast Forward Lever
132	QDG1335	Fast Forward Gear
133	QML4099	Rewind Lever
134	QDG1336	Rewind Gear
135	QXD0158	Takeup Reel Table Assembly
136	QXG1082	Takeup Gear Assembly
137	QXK2902	Sub Chassis Assembly
138	QMS2634	Takeup Axis
139	QDG1339	Auto-Stop Gam Gear
140	QDP1989	Intermediation Pulley
141	QML4101	Auto-Stop Detection Lever
142	QML4102	Auto-Stop Driving Lever
143	QML4103	Auto-Stop Change Lever
144	QML4108	Brake Lever
145	QBN2040	Auto-Stop Release Spring
146	QBN2046	Brake Spring
147	QBC1484	Auto-Stop Pressure Spring
148	QDR1179A	Supply Reel Table
149	QMK2108	Head Base Plate
150	QMF2334	Head Adjustment Plate
151	QMZ1314	Head Spacer
152	QWY4165G	Record/Playback Head
153	QWY2138G	Erase Head
154	QBC1278	Head Spring
155	QBN2033	Head Pressure Spring
156	QBT2018DA	Head Return Spring
157	QXF0237	Flywheel Assembly
157-1	QBW2049A	Poly Washer
157-2	QBW2026	Washer
158	QML4100	Change Lever
159	QBN2038	Change Lever Spring
160	QXL1694	Pinch Roller Arm Assembly
160-1	QBN2047	Pinch Roller Arm Spring
161	QBP2045	Return Spring
162	QXU0355	Motor Assembly
163	QMF2335	Flywheel Holding Plate
164	QMZ1313	Thrust Retainer
165	QXL1695	Record/Playback Arm Assembly
166	QBN2045	Record/Playback Spring
167	QMA4766	Mechanism Angle-L
168	QMA4767	Mechanism Angle-R
169	QDB0169	Counter Belt
170	QBC1500	Lock Rod Spring
171	QXL1697	Eject Button Assembly
172	QXL1698	Record Button Assembly
173	QXL1699	Playback Button Assembly
174	QXL1700	Stop Button Assembly
175	QXL1701	Rewind Button Assembly
176	QXL1702	Fast Forward Button Assembly
177	QXL1703	Pause Button Assembly
178	QMA4753	Operation Button Angle
179	QMR2148	Obstruction Rod
180	QMR2147	Lock Rod
181	QMN2869	Operation Lever Shaft
182	QBP2018	Operation Lever Spring
183	QBS1145	Head Pressure Wire
184	QMN2883	Intermediate Gear Axis
185	QBC1502	Erase Head Spring
186	QJT0015	Lug Terminal
187	QBC1372	Supply Reel Table Spring
188	QMB1336	Supply Drive Claw
SCREWS, NUTS AND WASHERS		
N 51	XTV3+6BFN	Tapping Screw ⊕3×6
N 52	XTN2+6B	Tapping Screw ⊕2×6
N 53	XTN26+6B	Tapping Screw ⊕2.6×6
N 54	XTV3+10BFN	Tapping Screw ⊕3×10
N 55	XTV3+20BFN	Tapping Screw ⊕3×20
N 56	XTV3+37B	Tapping Screw ⊕3×37
N 57	QHQ1361	Screw ⊕2×12
N 58	XSN26+3	Screw ⊕2.6×3
N 59	XSN2+3	Screw ⊕2×3
N 60	QBW2046	Poly Washer
N 61	QBW2008	Poly Washer
N 62	XUBQ3FT	Stop Ring 3ϕ
N 63	XTN3+10B	Tapping Screw ⊕3×10
N 64	XWG3	Washer 3ϕ
ACCESSORIES		
A 1	[P] QQT3641	Instruction Book
	[C] QQT3642	Instruction Book
A 2	QEB0125A	Connection Cord
PACKINGS		
P 1	[P] QPN4720	Inside Carton
	[C] QPN4741 "Silver Type"	Inside Carton
	[C] QPN4761 "Black Type"	Inside Carton
P 2	QPA0763	Cushion-A
P 3	QPA0764	Cushion-B
P 4	QPS0710	Pad
P 5	XZB40X60A02	Poly Bag
P 6	QPC0072	Poly Sheet

■ CABINET PARTS LOCATION



REPLACEMENT PARTS LIST

Important safety notice
Components identified by ⚠ mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.

Ref. No.	Part No.	Part Name & Description
CABINET PARTS AND CHASSIS PARTS		
1	QYF0725 "Silver Type"	Cassette Lid Assembly
	QYF0725K "Black Type"	Cassette Lid Assembly
2	QGC1251 "Silver Type"	Case Cover
	QGC1251K "Black Type"	Case Cover
3	[P] QGS3197	Main Name Plate
	[C] QGS3201	Main Name Plate
4	QGG0230H "Silver Type"	Slide Guide
	QGG0230K "Black Type"	Slide Guide
5	QBN2076	Holder Spring
6	QDC0177	Tape Counter
7	QMA4800	Holder Angle (for Tape Counter)
8	QGC1250	Bottom Cover
9	QKA1094	Case Foot
10	QBM1342	Cushion
11	QYP1279 "Silver Type"	Front Panel Assembly
	QYP1279K "Black Type"	Front Panel Assembly
12	QMH2112A	Cassette Holder
13	QBP2006	Tape Pressure Spring
14	QYF0627A	Damper Assembly
15	QYT0677 "Silver Type"	Volume Knob Assembly-A
	QYT0672 "Black Type"	Volume Knob Assembly-A
16	QYT0678 "Silver Type"	Volume Knob Assembly-B
	QYT0673 "Black Type"	Volume Knob Assembly-B
17	QGO2399	Power Button
18	QGO2468	Push Button
19	QML4123	Record/Playback Changing Lever
20	QBS1146	Record/Playback Changing Wire
21	QMA4802	Record/Playback Changing Angle
23	QMK2127	Back Chassis
25	QTD1315	Cord Clamper
26	QEJ5039C	Pin Jack (without DIN)
27	QMA4779	Microphone Angle
28	QSIFL014F	FL Meter
29	QKJ0730	Meter Holder
30	⚠ SJT777	Pin Terminal
31	QTD1129	Cord Bushing
32	⚠ RJA9YA-K	AC Power Cord
33	QJC0073	Earth Plate
SCREWS, NUTS AND WASHERS		
N 1	QHQ1349 "Silver Type"	Ornament Screw
	QHQ1349K "Black Type"	Ornament Screw
N 2	XTB3+10BFN "Silver Type	Tapping Screw ⊕3×10
	XTB3+10BFZ "Black Type"	Tapping Screw ⊕3×10
N 3	XTN3+10BFN	Tapping Screw ⊕3×10
N 4	XTV3+10BFN	Tapping Screw ⊕3×10
N 5	XTS3+10BFN	Screw ⊕3×10
N 6	XTB3+8BFN	Tapping Screw ⊕3×8
N 7	XTV3+12BFN	Tapping Screw ⊕3×12
N 8	XTN3+10B	Tapping Screw ⊕3×10
N 9	XTB3+6BFN	Tapping Screw ⊕3×6
N 10	XWG3	Washer 3φ
N 11	QNQ1070	Nut 12φ

PCCK
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