

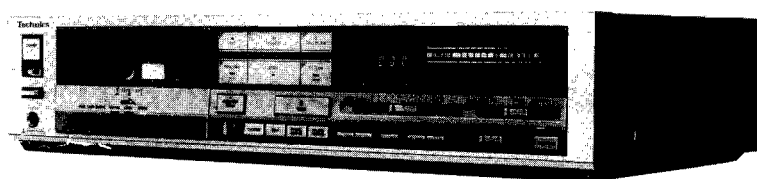
Service Manual

Cassette Deck

RS-M253X

(Silver Face)
(Black Face)

dbx/Dolby B-C 2 Motor 3 Head
Cassette Deck



This is the Service Manual for the following areas.

- D** For all European areas except United Kingdom.
- B** For United Kingdom.
- N** For Asia, Latin America, Middle East and Africa areas.
- A** For Australia.

RS-M253X in black is also available in some countries.

RS-M250 MECHANISM SERIES

Specifications

Track system:	4-track 2-channel stereo recording and playback	Fast forward and rewind	30 seconds with C-60 tape
Tape speed:	4.8 cm/s		sensitivity 0.25 mV, applicable
Wow and flutter:	0.04% (WRMS), $\pm 0.14\%$ (DIN)	Inputs:	phone impedance 600 Ω —10 k Ω
Frequency response:	Metal tape; 20—22,000 Hz 20—21,000 Hz (DIN) 30—19,000 Hz ± 3 dB CrO ₂ tape; 20—21,000 Hz 20—20,000 Hz (DIN) 30—18,000 Hz ± 3 dB Normal tape; 20—19,000 Hz 20—18,000 Hz (DIN) 30—17,000 Hz ± 3 dB	Outputs:	sensitivity 60 mV, input impedance 47 k Ω or more output level 400 mV, output impedance 3.5 k Ω or less
Dynamic range:	110 dB (at 1 kHz) with dbx in	Bias frequency:	85 kHz
Max. input level		Heads:	3-head system
improvement:	10 dB or more improved with dbx in (at 1 kHz)		2-AX (AMORPHOUS) head for record/playback
Signal-to-noise ratio:	dbx in; 92 dB Dolby C NR in; 78 dB (CCIR) Dolby B NR in; 70 dB (CCIR) NR out; 60 dB (Signal level = max. input level A weighted, CrO ₂ type tape)	Motor:	1-double-gap sendust head for erasure
		Power requirements:	2-motor system
			AC; 110/125/220/240 V, 50-60 Hz
		Power consumption:	Pre-set power voltage; DNA ; 220 V B ; 240 V
			DNA ; 25 W N ; 18 W
		Dimensions:	43 cm(W) $\times$ 9.76 cm(H) $\times$ 27.3 cm(D)
		Weight:	5.3 kg

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.

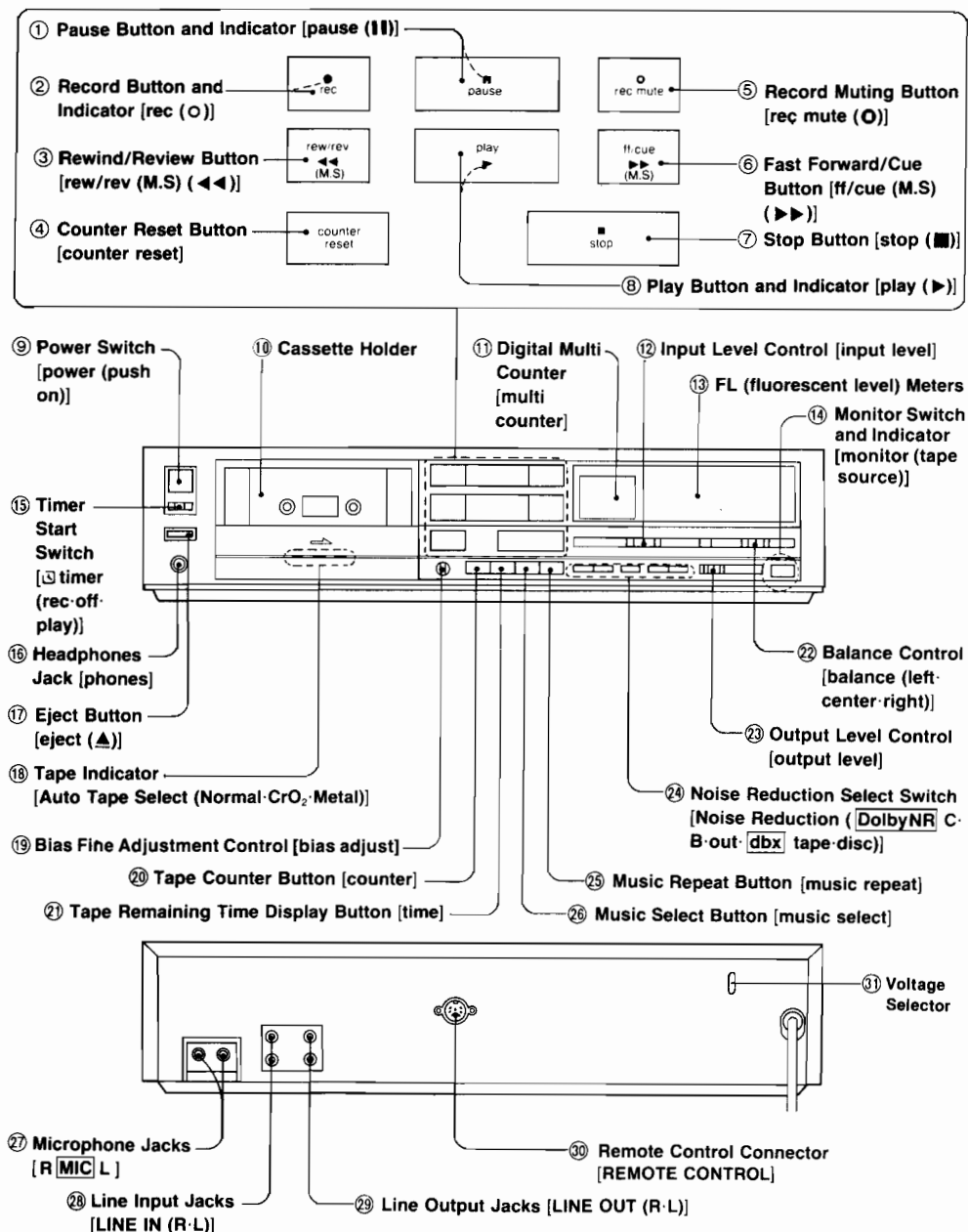
Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

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LOCATION OF CONTROLS AND COMPONENTS



DISASSEMBLY INSTRUCTIONS

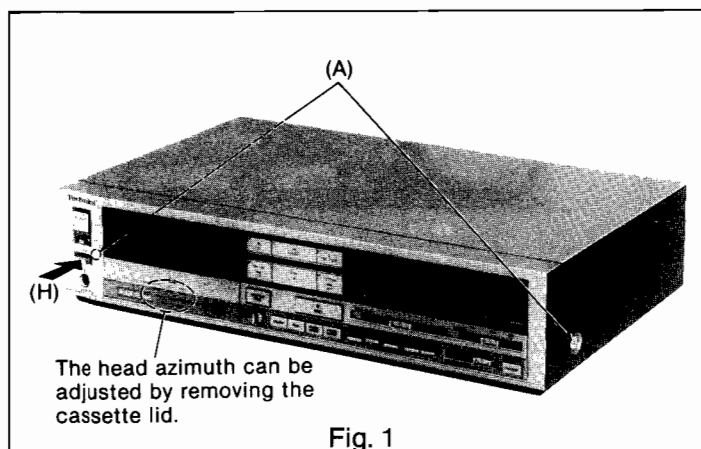


Fig. 1

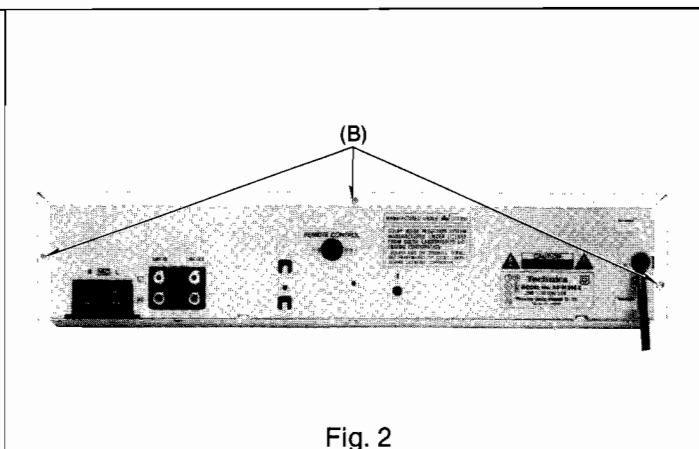


Fig. 2

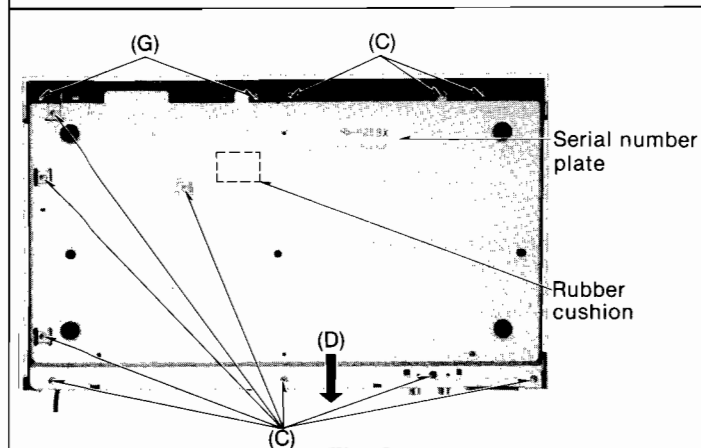
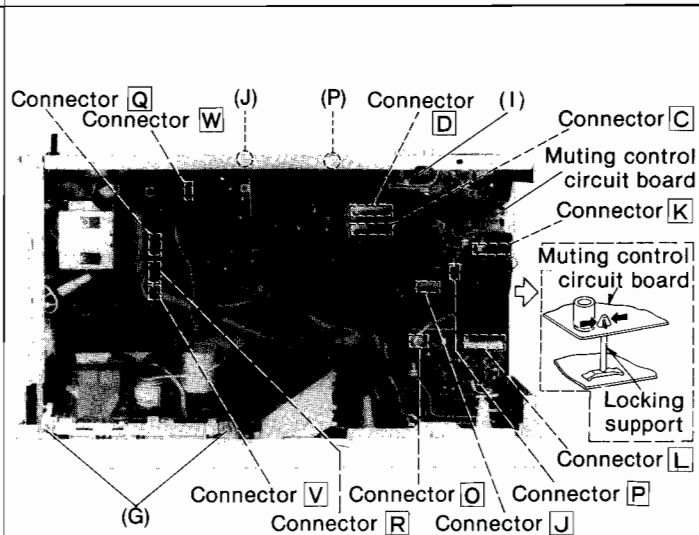


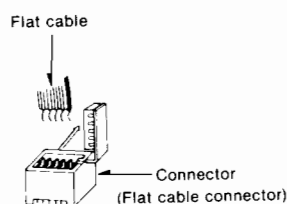
Fig. 3

NOTE:

When removing the bottom cover, do not allow the rubber cushion on the bottom cover to be trapped by the terminals of the electric components.

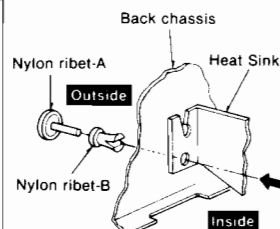


(F) How to remove flat cable



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

(J) (P) How to remove nylon rivet



To remove a heat sink from the back chassis, first press nylon rivet-A from the inside in the direction indicated by the arrow as shown left, and extract the rivet to the outside. Next remove nylon rivet-B from the outside. Consequently, the heat sink can be removed from the back chassis.

Fig. 4

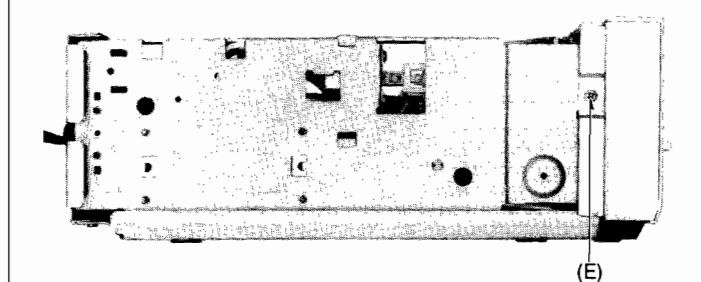


Fig. 5

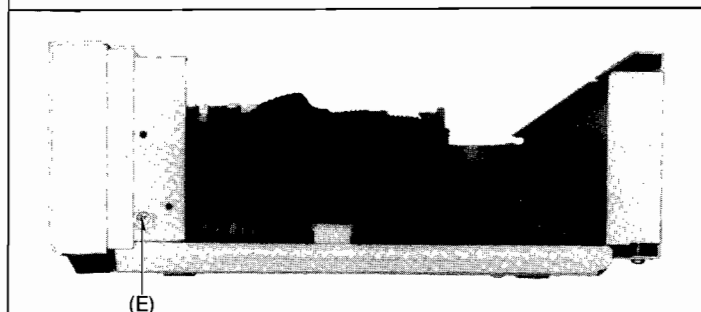
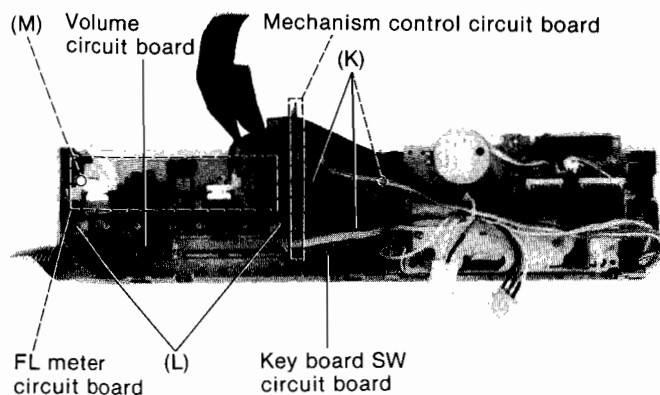
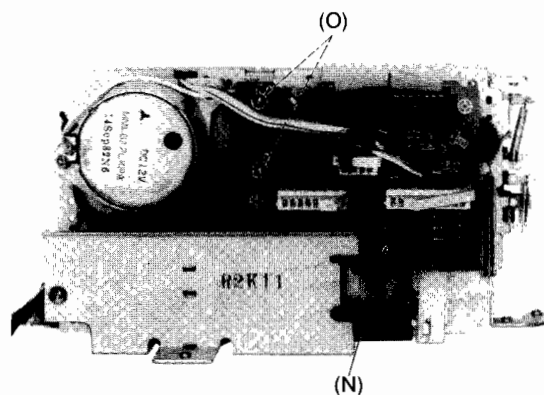


Fig. 6


Fig. 7

Fig. 8

Ref. No.	Procedure	To remove —.	Remove —.	Shown in fig. —.
1	1	Case cover	• 2 ornament screws(A) • 3 screws(B)	1 2
2	2	Bottom cover assembly	• 11 screws(C) • Slide the bottom cover assembly in the direction of arrow (D) and remove it.	3
3	1 → 2 → 3	Front panel assembly and Mechanism unit	• 2 screws(E) • How to remove flat cable(F)	5, 6 4
4	1 → 2 → 3 → 4	Mechanism unit	• 4 screws(G) • Push the EJECT button to open the cassette holder.....(H)	3, 4 1
5	1 → 2 → 3 → 5	Main circuit board	• 1 screw(I) • How to remove nylon rivet(J)	4 4
6	1 → 2 → 3 → 6	Key board SW and Mechanism control circuit board	• 3 screws(K)	7
7	1 → 2 → 3 → 7	Volume circuit board	• 2 screws(L)	7
8	1 → 2 → 3 → 8	FL Meter and FL Meter circuit board	• 1 screw(M)	7
9	1 → 2 → 3 → 9	Mechanism circuit board	• 1 screw(N) • Unsolder the soldered portion of the reel motor terminal (O)	8 8
10	1 → 10	Muting control circuit board	• 1 screw(I) • How to remove nylon rivet(P) • Remove the locking support from the board while pushing its tip in the direction of arrow.	4 4 4

* Serial No. Indication.

The serial number plate of this product is attached to the bottom cover (shown in Fig. 3).

DISASSEMBLY NOTES

When the bottom cover is removed for repair, measurement, or adjustment, the grounds of the mechanism chassis, back chassis, and side panel must be disconnected.

Otherwise, the auto tape selector will not operate normally and noise will be generated. To prevent these problems, use a cord to connect the mechanism chassis and the ground of the main circuit board.

OPERATING PRECAUTIONS

When the recorder is turned off during playback or music selection, the head base plate will not return. This prevents the cassette holder from opening. To open the cassette holder, turn on the recorder again (the head base plate will return) and press the EJECT button.

MEASUREMENT AND ADJUSTMENT METHODS

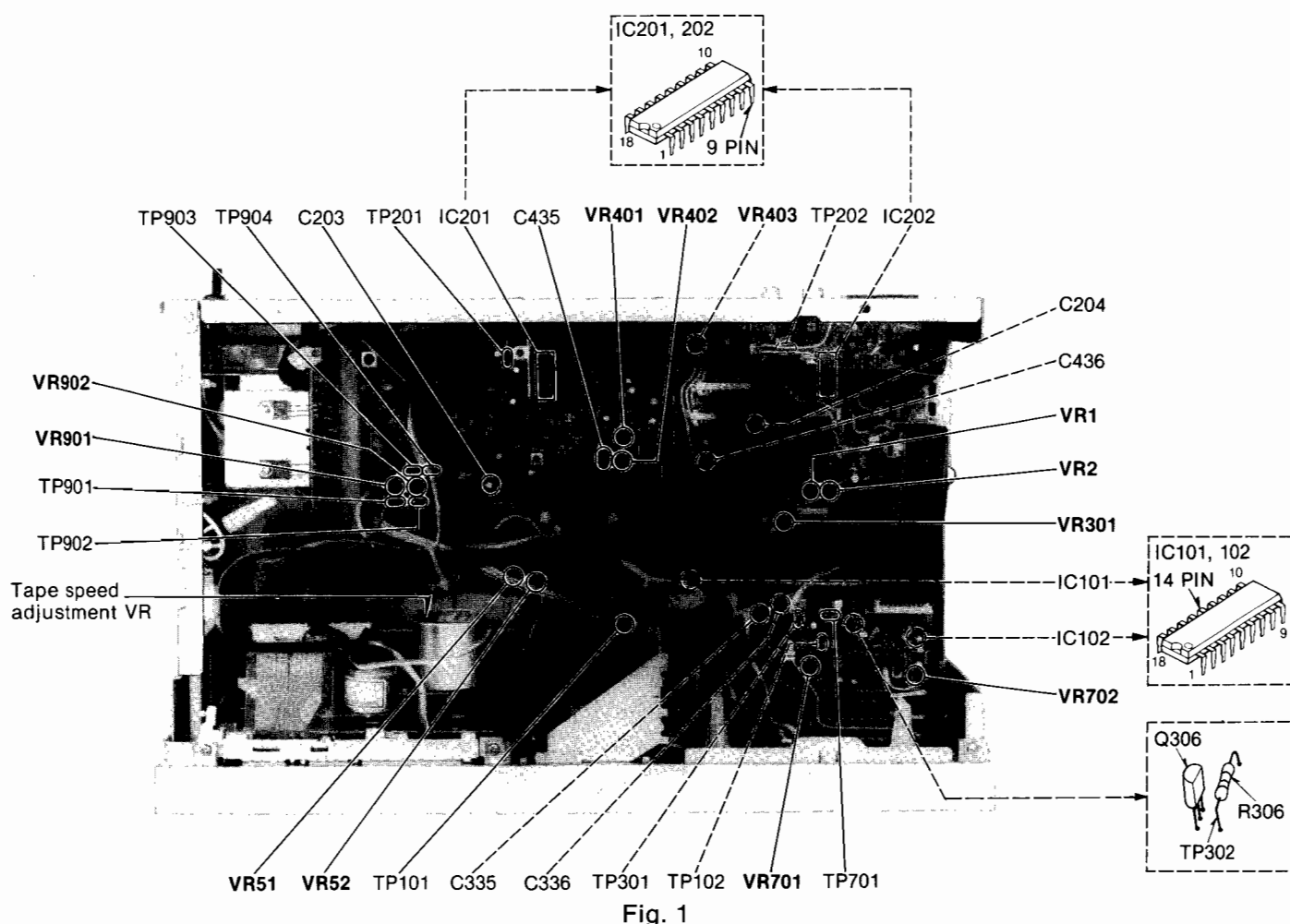


Fig. 1

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

- Make sure heads are clean
- Make sure capstan and pressure roller are clean
- Judgeable room temperature $20 \pm 5^\circ\text{C}$ ($68 \pm 9^\circ\text{F}$)
- Monitor selector: Tape
- Input level controls: Maximum
- Output level control: Maximum
- Dolby NR selector: OUT
- Bias fine adjust: Center
- Balance control: Center

A Erase head height adjustment

Condition:
• Playback mode

Equipment:
• Test tape (tape path viewer)
...QZZCRD

Caution:

1. Remove screws (A) and (B) to replace the erase head.
(Do not remove nut (C) since it is provided for erase head height, adjustment).
2. After erase head replacement, check by playing test tape (QZZCRD) to see that the tape travels properly.
3. For any tape travel performance problem, follow the procedure below for adjustment.

Adjustment

1. Adjust nut (C) shown in fig. 2 so that the tape may not get curled or malformed by tape guide of the erase head.

Head Height Adjustment using the Head Adjustment Jig (QZZ0207)

The head adjustment jig (QZZ0207) enables accurate, speedy head height adjustment in the following manner.

- a. Install the plate on the mechanism.
- b. Set the mechanism in the PLAY mode.
- c. Place the check bar on the plate.
- d. Pass the check bar through the tape guides.
- e. Adjust the nut (C) to prevent the check bar from contacting the tape guides.
- f. Operate the tape path viewer (QZZCRD) to make sure that the tape is not in contact with the tape guide (i.e. the tape is not twisted).

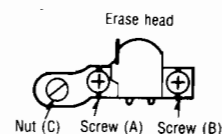


Fig. 2

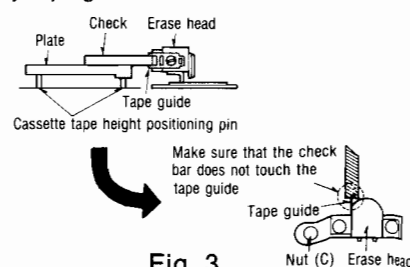


Fig. 3

Ⓑ Record/playback head adjustment

- Condition:
- Playback mode
 - Normal tape mode
 - Output level control...MAX

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

L-CH/R-CH output balance adjustment

1. Make connections as shown in fig. 4.

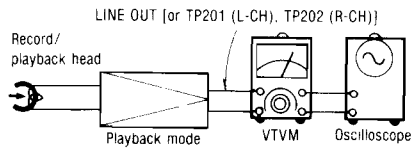


Fig. 4

2. Playback the 8kHz signal from the test tape (QZZCFM). Adjust screw (D) in fig. 5 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 (D) shown in fig. 5 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. 5 and 6.)

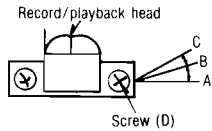


Fig. 5

L-CH/R-CH phase adjustment

4. Make connections as shown in fig. 7.
5. Playback the 8kHz signal from the test tape (QZZCFM). Adjust screw (D) shown in fig. 5 so that pointers of the two VTVMs swing to maximum and a lissajous waveform as illustrated in fig. 8 is obtained on the oscilloscope.

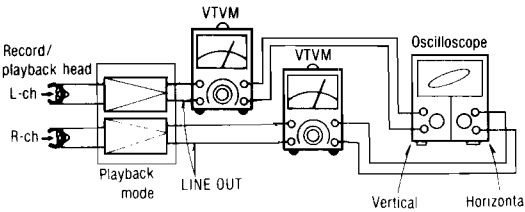


Fig. 7

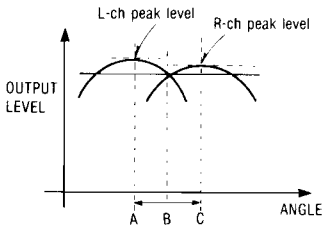


Fig. 6



Fig. 8

Ⓒ Tape speed

- Condition:
- Playback mode
 - Output level control...MAX

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

Tape speed accuracy

1. Test equipment connection is shown in fig. 9.
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:

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

5. Take measurement at middle section of tape.

Standard value: $\pm 1.5\%$

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:

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

Standard value: Less than 1%

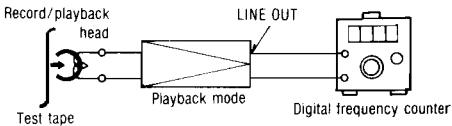


Fig. 9

① Playback frequency response

Condition:

- Playback mode
- Normal tape mode
- Output level control...MAX

Equipment:

- VTVM
- Oscilloscope
- Test tape...QZZCFM

1. Test equipment connection is shown in fig. 4.
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 test point [TP201 (L-CH), TP202 (R-CH)].
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. 10).

Playback frequency response chart

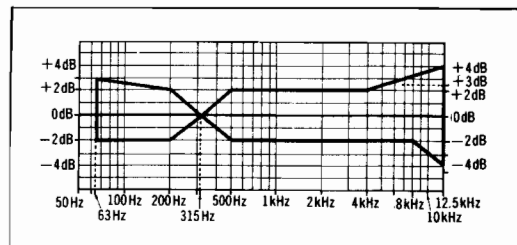


Fig. 10

② Playback gain

Condition:

- Playback mode
- Normal tape mode
- Output level control...MAX

Equipment:

- VTVM
- Oscilloscope
- Test tape...QZZCFM

1. Test equipment connection is shown in fig. 4.
2. Playback standard recording level portion on test tape (QZZCFM 315Hz) and, using VTVM, measure the output level at test points [TP201 (L-CH), TP202 (R-CH)].
3. Make measurements for both channels.

Standard value: 0.28V [0.4±0.05V: at LINE OUT jack]

Adjustment

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

③ Erase current

Condition:

- Record mode
- Metal tape mode
- Bias fine adjustment VR ...Center

Equipment:

- VTVM
- Oscilloscope

1. Test equipment connection is shown in fig. 11.
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:

$$\text{Erase current (A)} = \frac{\text{Voltage across resistor R903}}{1 (\Omega)}$$

Standard value: 95 + 10 mA (Metal)
- 15

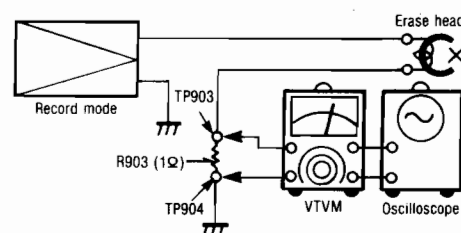


Fig. 11

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

Adjustment

1. Short points (A) and (B) on the main circuit board. Refer to the circuit board diagram on page 22.
2. Measure the erase current.
3. If the erase current is less than 80mA, open the point (B).
4. If the erase current is more than 105mA, open the points (A).

⑥ Overall frequency response

Condition:

- Record/playback mode
- Normal tape mode
- CrO₂ tape mode
- Metal tape mode
- Input level controls...MAX
- Output level control...MAX
- Bias fine adjustment VR
- ...Center
- Balance control...Center

Equipment:

- VTVM
- ATT
- AF oscillator
- Oscilloscope
- Resistor (600Ω)

• Test tape

- (reference blank tape)
- ...QZZCRA for Normal
- ...QZZCRX for CrO₂
- ...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).

(Recording equalizer is fixed)

1. Make connections as shown in fig. 13.
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, 10kHz, 12.5kHz and 14kHz signals, and record these signals on the test tape.
6. Playback the signals recorded in step 6, and check if the frequency response curve is within the limits shown in the overall frequency response chart for normal tapes (fig. 12).
(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;

Overall frequency response chart (Normal)

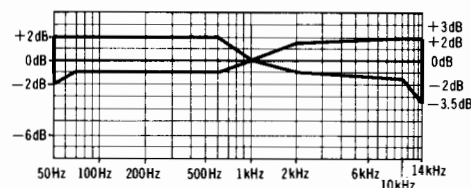


Fig. 12

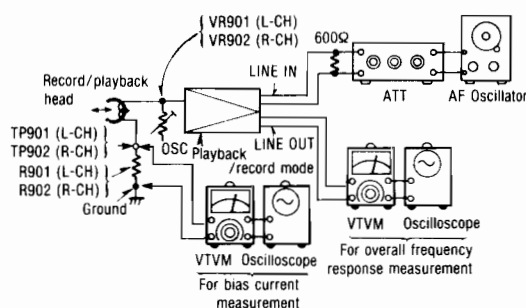


Fig. 13

Adjustment (A):

When the curve exceeds the overall specified frequency response chart (fig. 12) as shown in fig. 14.

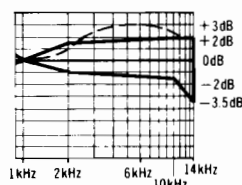


Fig. 14

- 1) Increase bias current by turning VR901 (L-CH) and VR902 (R-CH).
(See fig. 1 on page 5.)
- 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. 12).
- 3) If the curve still exceeds the specifications (fig. 12), increase bias current further and repeat steps 5 and 6.
7. Place UNIT into CrO₂ tape mode.
8. Change test tape to CrO₂ reference blank test tape (QZZCRX), and record 1kHz, 50Hz, 100Hz, 200Hz, 500Hz, 4kHz, 8kHz, 10kHz, 12.5kHz, 14kHz and 16kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for CrO₂ tapes (fig. 16).
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, 12.5kHz, 14kHz and 16kHz 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. 16).
10. Confirm that bias currents are approximately as follows when the UNIT is set at different tape mode.

- Read voltage on VTVM between ground and test point (TP901 for L-CH, TP902 for R-CH) and calculate bias current by following formula:

$$\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10 (\Omega)}$$

around 500μA (Normal position)
Standard value: around 710μA (CrO₂ position)
around 1200μA (Metal position)

Adjustment (B):

When the curve falls below the overall specified frequency response chart (fig. 12) as shown in fig. 15.

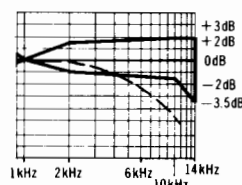


Fig. 15

- 1) Reduce bias current by turning VR901 (L-CH) and VR902 (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. 12).
- 3) If the curve still falls below the charted specifications (fig. 12), reduce bias current further and repeat steps 5 and 6.

Overall frequency response chart (CrO₂, Metal)

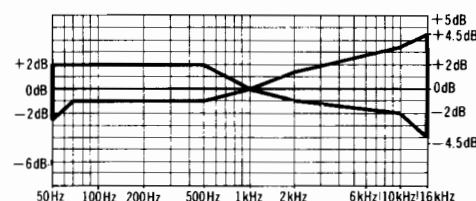


Fig. 16

④ Dolby NR circuit

Condition:

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

Equipment:

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

Record side

- Check of the Dolby-B type encoder characteristics
 1. Make connections as shown in fig. 22.
 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 TP101 (L-CH) and TP102 (R-CH) is 12.3mV.
 5. The output level at pin 9 should be 0dB.
 6. Set the NR select switch to B, and make sure that the output signal level at pin 9 of IC101 (L-CH) and IC102 (R-CH) is $+6\text{dB} \pm 1.5\text{dB}$.
 7. Set the NR select switch to OUT, and adjust the frequency to 5kHz. The output signal level at pin 9 should be 0dB.
 8. Set the NR select switch to B and make sure that the output signal level at pin 9 of IC101 (L-CH) and IC102 (R-CH) is $+8\text{dB} \pm 1.5\text{dB}$.
- 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 9 of IC101 (L-CH) and IC102 (R-CH) is $+11.4\text{dB} \pm 1\text{dB}$.
 11. Set the NR select switch to OUT and adjust the frequency to 5kHz. The output signal at pin 9 should be 0dB.
 12. Set the NR select switch to C and make sure that the output signal level at pin 9 of IC101 (L-CH) and IC102 (R-CH) is $+8.4\text{dB} \pm 1.5\text{dB}$.

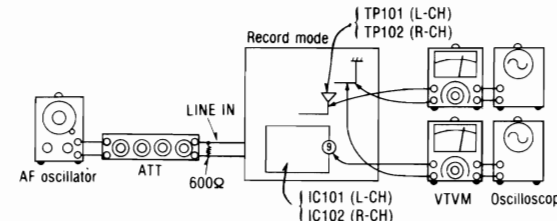


Fig. 22

Playback side

- Check of the Dolby-B type decoder characteristics
 1. Make connections as shown in fig. 23.
 2. Set the unit to the playback mode. (NR select switch is OUT.)
 3. Apply a 1kHz signal to the minus terminals of the C203 (L-CH) and C204 (R-CH).
 4. Adjust the ATT so that the output level at pin 14 of IC201 (L-CH) and IC202 (R-CH) is 12.3mV.
 5. The output level at TP201 (L-CH) and TP202 (R-CH) should be 0dB.
 6. Set the NR select switch to B, and make sure that the output signal level at TP201 (L-CH) and TP202 (R-CH) is $-6\text{dB} \pm 2.5\text{dB}$.
 7. Set the NR select switch to OUT, and adjust the frequency to 5kHz. The output signal level at TP201 (L-CH) and TP202 (R-CH) should be 0dB.
 8. Set the NR select switch to B and make sure that the output signal level at TP201 (L-CH) and TP202 (R-CH) is $-10\text{dB} \pm 2.5\text{dB}$.
- Check to Dolby-C type decoder characteristics
 9. Repeat steps 1-5 above.
 10. Set the NR select switch to C and make sure that the output signal level at TP201 (L-CH) and TP202 (R-CH) is $-19\text{dB} \pm 2.5\text{dB}$.
 11. Set the NR select switch to OUT and adjust the frequency to 5kHz. The output signal at TP201 (L-CH) and TP202 (R-CH) should be 0dB.
 12. Set the NR select switch to C and make sure that the output signal level at TP201 (L-CH) and TP202 (R-CH) is $-16\text{dB} \pm 2.5\text{dB}$.

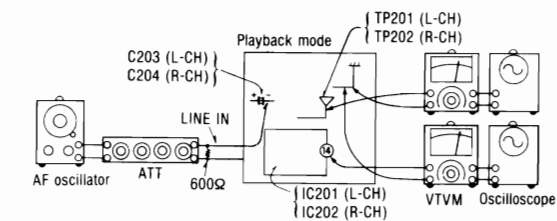


Fig. 23

ⓧ Attack recovery time adjustment (dbx circuit)

Condition:

- Record mode
- Input level control...MAX
- Noise reduction selector...dbx tape/dbx disc
- Balance control...Center
- Output level control...MAX
- Bias fine adjustment VR...Center

Equipment:

- VTVM
- ATT
- AF oscillator
- DC voltmeter

Record side

1. Make the connections as shown in fig. 24 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 C335 (L-CH) and C336 (R-CH) is 300mV.
3. Read voltage on DC volt meter.

Reference value: $15 \pm 0.5\text{mV}$

4. If measured value is not within reference, adjust VR301 (shown in Fig. 1).

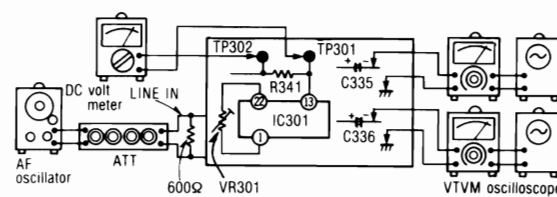


Fig. 24

Playback side

1. Make the connections as shown in fig. 25 and apply 1kHz -27dB signal from LINE IN, and set the noise reduction selector to dbx disc position.
2. Set the unit to record mode, adjust ATT so that the signal level at C435 (L-CH) and C436 (R-CH) is 300mV.
3. Read voltage on DC volt meter.

Reference value: $15 \pm 0.5\text{mV}$

4. If measured value is not within reference, adjust VR403 (shown in Fig. 1).

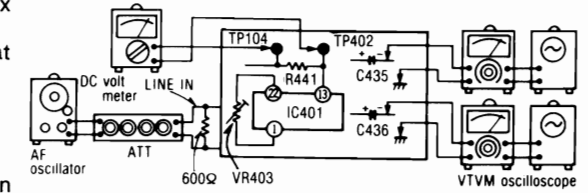


Fig. 25

⑤ Overall gain (dbx circuit)

Condition:

- Record/playback mode
- Normal tape mode
- Noise reduction selector...dbx tape
- Input level controls...MAX
- Output level control...MAX
- Bias fine adjustment VR...Center
- Standard input level;
 - MIC $-72 \pm 3\text{dB}$
 - LINE IN $-24 \pm 3\text{dB}$

Equipment:

- VTVM
- ATT
- Resistor (600Ω)
- Test tape (reference blank tape) ...QZZCRA for Normal
- AF oscillator
- Oscilloscope

Note:

Before adjustment, make sure that the overall gain ⑤ in the NR OUT mode complies within the specifications.

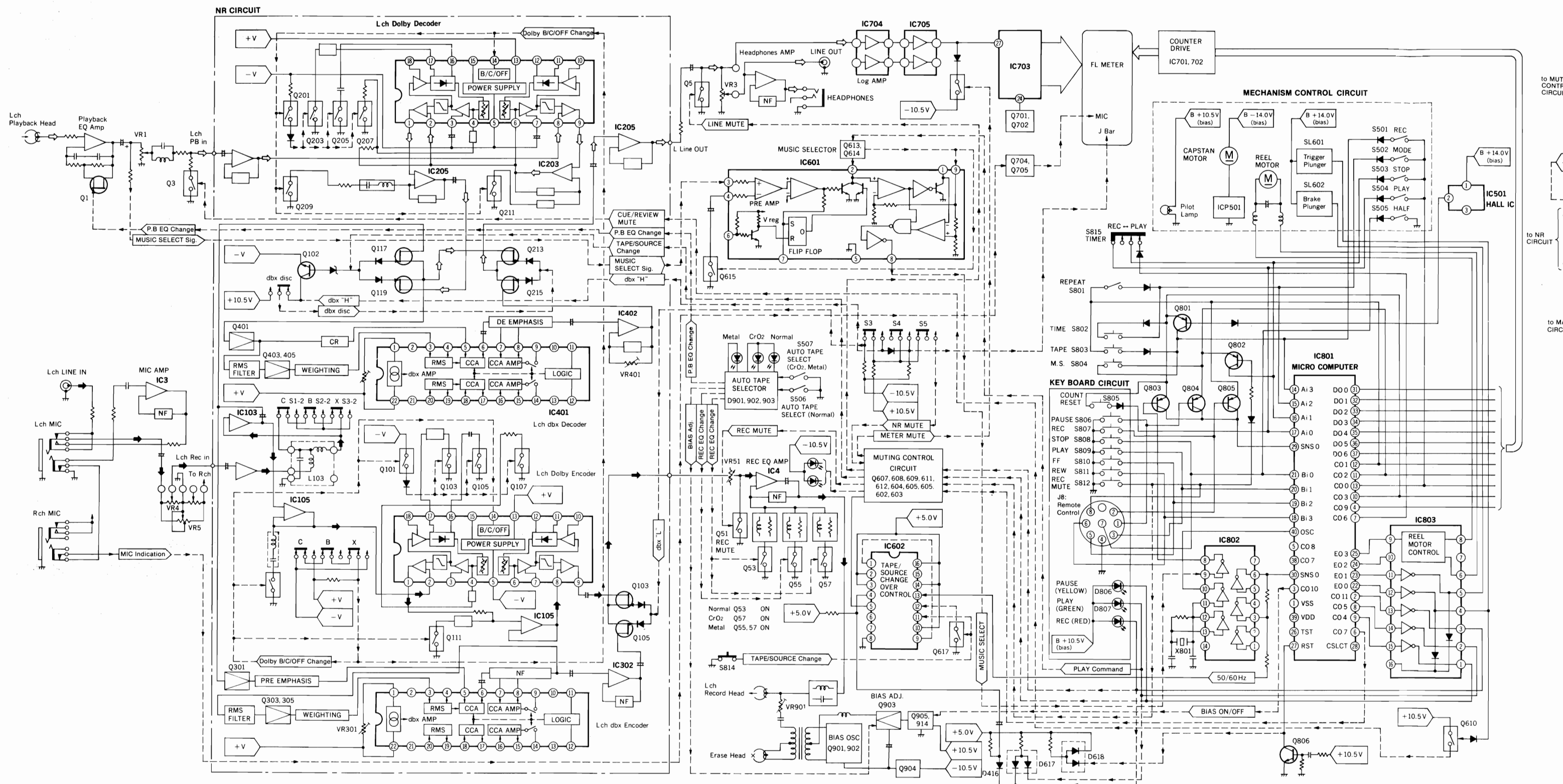
1. Test equipment connection is shown in fig. 17.
2. Insert the normal reference blank tape (QZZCRA).
3. Set the NR switch in the dbx tape mode and the monitor switch in the source mode.
4. Place UNIT into record mode.
5. Supply a 1kHz signal through ATT (-24dB) from AF oscillator, to LINE IN.
6. Adjust ATT until monitor level at test points [TP101 (L-CH), TP102 (R-CH)] becomes 0.28V [$0.4\text{V} \pm 1\text{dB}$ at test LINE OUT jack].
7. Set the monitor switch in the tape mode.
8. Playback recorded tape, and make sure that the output level at test points [TP201 (L-CH), TP202 (R-CH)] becomes 0.28V [$0.4\text{V} \pm 1\text{dB}$ at test LINE OUT jack].
9. If measured value is not 0.28V, adjust it by using VR401 (L-CH) or VR402 (R-CH).
10. Repeat from step (2).

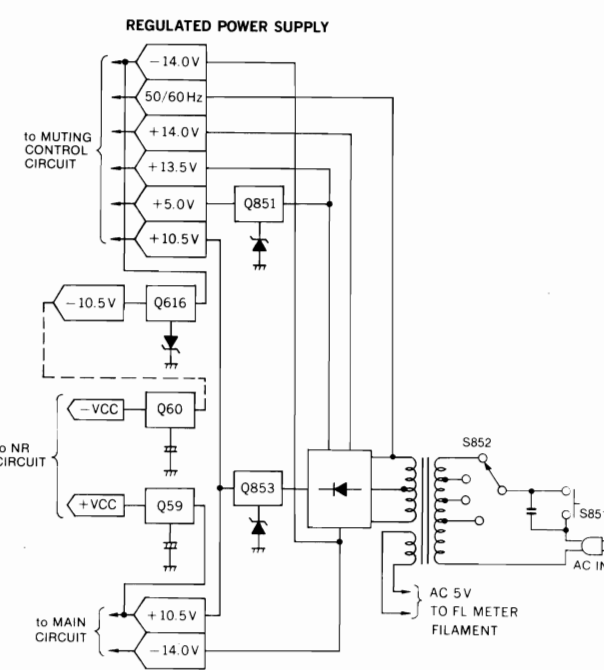
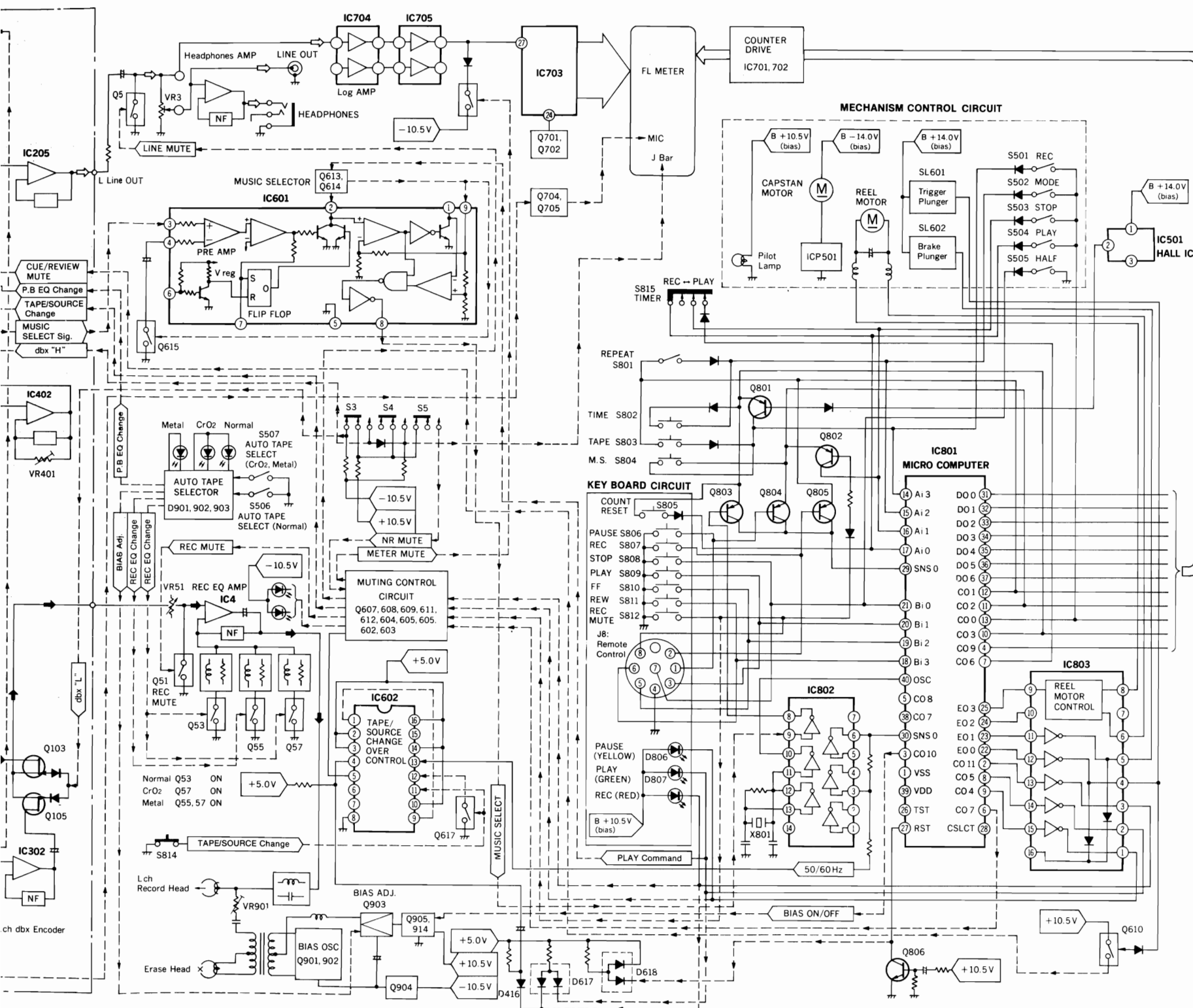
MICROCOMPUTER TERMINAL FUNCTIONS AND WAVEFORMS

The terminal functions and waveforms of the microcomputer (IC801; MN1405RMB) used in this product are identical to those of RS-M245X.

Refer to the RS-M245X Service Manual.

BLOCK DIAGRAM (L-CH ONLY)





- NOTES:**
- S1-1—S1-4 ...Dolby-C IN/OUT switch (shown in OUT position).
 - S2-1—S2-4 ...Dolby-B IN/OUT switch (shown in OUT position).
 - S3-1—S3-6 ...dbx tape IN/OUT switch (shown in OUT position).
 - S4-1, S4-2 ...dbx disc IN/OUT switch (shown in OUT position).
 - S5 ...NR muting switch (shown in OFF position).
 - S814 ...Monitor tape/source select switch.
 - S851 ...Power ON/OFF switch (shown in OFF position).
 - S852 ...AC power voltage select switch (shown in 240V position).
 - VR1, 2 ...Playback gain adjustment VR.
 - VR3 ...Output level controls.
 - VR4 ...Input level controls.
 - VR5 ...Channel balance control.
 - VR51, 52 ...Overall gain adjustment VR.
 - VR301, 403 ...Attack recovery time adjustment VR.
 - VR401, 402 ...dbx overall gain adjustment VR.
 - VR901, 902 ...Bias current adjustment VR.
 - VR903 ...Bias fine adjustment control.
 - Points (A), (B)... Erase current adjustment points.
 - 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.
 - No mark ...Voltage values at OUT (NR select switch) mode.
 - () ...Voltage values at record mode.
 - Tape ...Voltage values at tape monitor mode.
 - STOP ...Voltage values at stop mode.
 - NR/Dolby C ...Voltage values at Dolby-C mode.
 - NOR ...Voltage values at Normal tape mode.
 - Met ...Voltage values at Metal tape mode.
 - For measurement use VTVM.
 - (▶) indicates B+ (bias).
 - (▶) indicates B- (bias).
 - (▶) indicates the flow of the playback signal. (NR out).
 - (▶) indicates the flow of the recording signal. (NR out).
 - Important safety notice
 - Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
 - Described in the schematic diagram are two types of numbers; the supply parts numbers and production parts number for transistors and diodes.
 - One type of number is used for supply parts number and production parts number when they are identical.
 - e.g. Q1
2SC1844(E,F) ← Production parts number
[2SC1844E] ← Supply parts number
D212
1S2473T77 ← Production parts number
[MA161] ← Supply parts numbers
 - The supply parts number is described alone in the replacement parts list.

- NOTES:**
- S1 : Dolby-C IN/OUT SWITCH (OUT)
 - S2 : Dolby-B IN/OUT SWITCH (OUT)
 - S3 : dbx TAPE IN/OUT SWITCH (OUT)
 - S4 : dbx disc IN/OUT SWITCH (OUT)
 - S5 : NR MUTE SWITCH
 - S501: REC INHIBIT SWITCH
 - S502: MODE SWITCH
 - S503: STOP SWITCH
 - S504: PLAY SWITCH
 - S505: HALF SWITCH
 - S506: AUTO TAPE SELECT SWITCH (Normal)
 - S507: AUTO TAPE SELECT SWITCH (Metal, CrO₂)
 - S801: MUSIC REPEAT SWITCH
 - S802: TIME COUNTER SWITCH
 - S803: TAPE COUNTER SWITCH
 - S804: MUSIC SELECT COUNTER SWITCH
 - S805: COUNTER RESET COUNTER SWITCH
 - S806: PAUSE SWITCH
 - S807: RECORD SWITCH
 - S808: STOP SWITCH
 - S809: PLAY SWITCH
 - S810: FF SWITCH
 - S811: REWIND SWITCH
 - S812: REC MUTE SWITCH
 - S813: TIMER SWITCH
 - S814: MONITOR SWITCH
 - S851: POWER ON/OFF SWITCH
 - S852: AC POWER VOLTAGE SELECT SWITCH.
 - (▶) this arrow indicates the flow of the recording signal. (NR OUT/TAPE MONITOR).
 - (▶) this arrow indicates the flow of the playback signal. (NR OUT/TAPE MONITOR).
 - (▶) this arrow indicates the flow of the control signal.

Overall S/N ratio

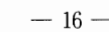
Greater than 43dB
(without NAB filter)

D For all European areas except United Kingdom.

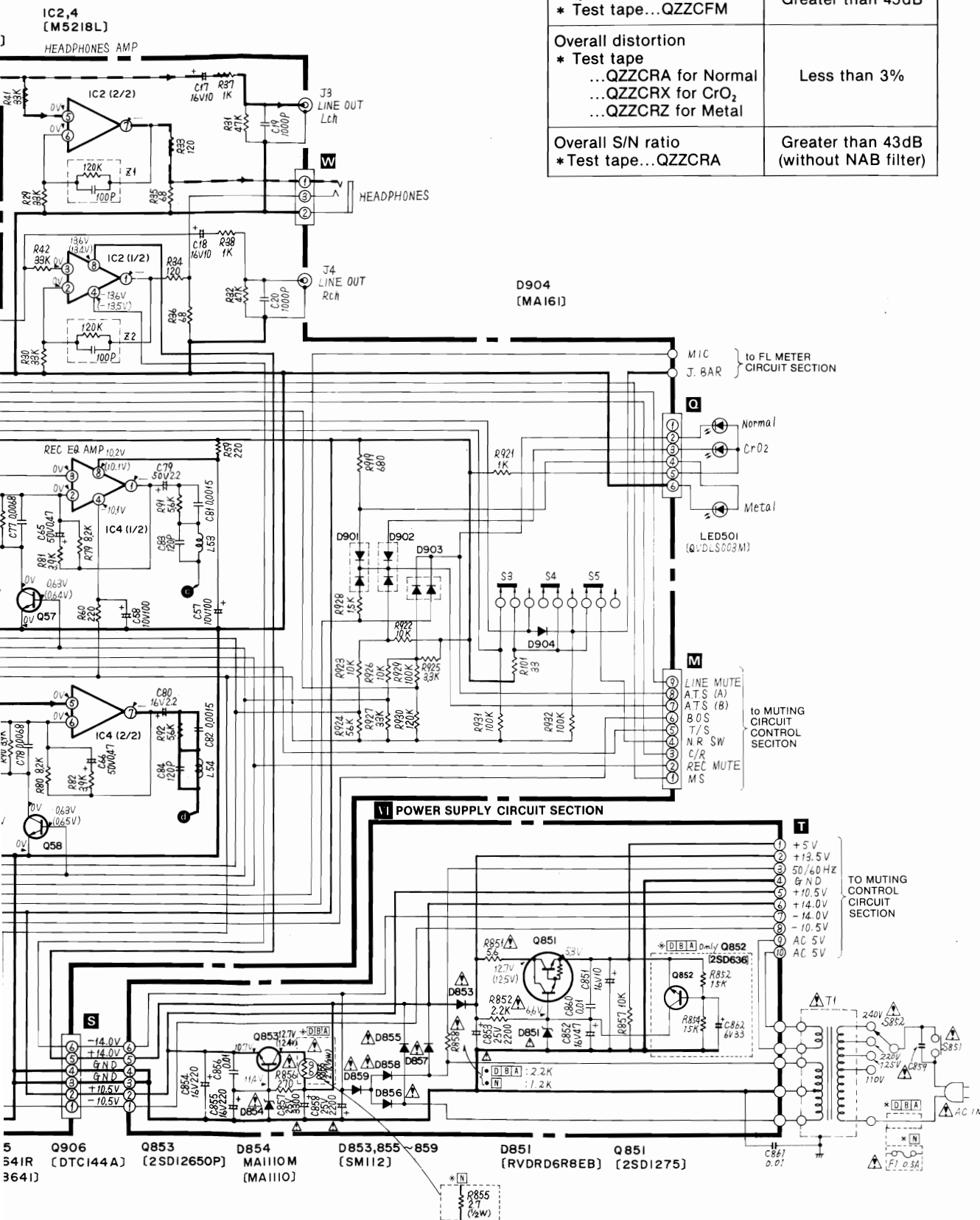
B For United Kingdom.

N For Asia, Latin America, Middle East and Africa areas.

A For Australia.



ing Control Circuit Section)



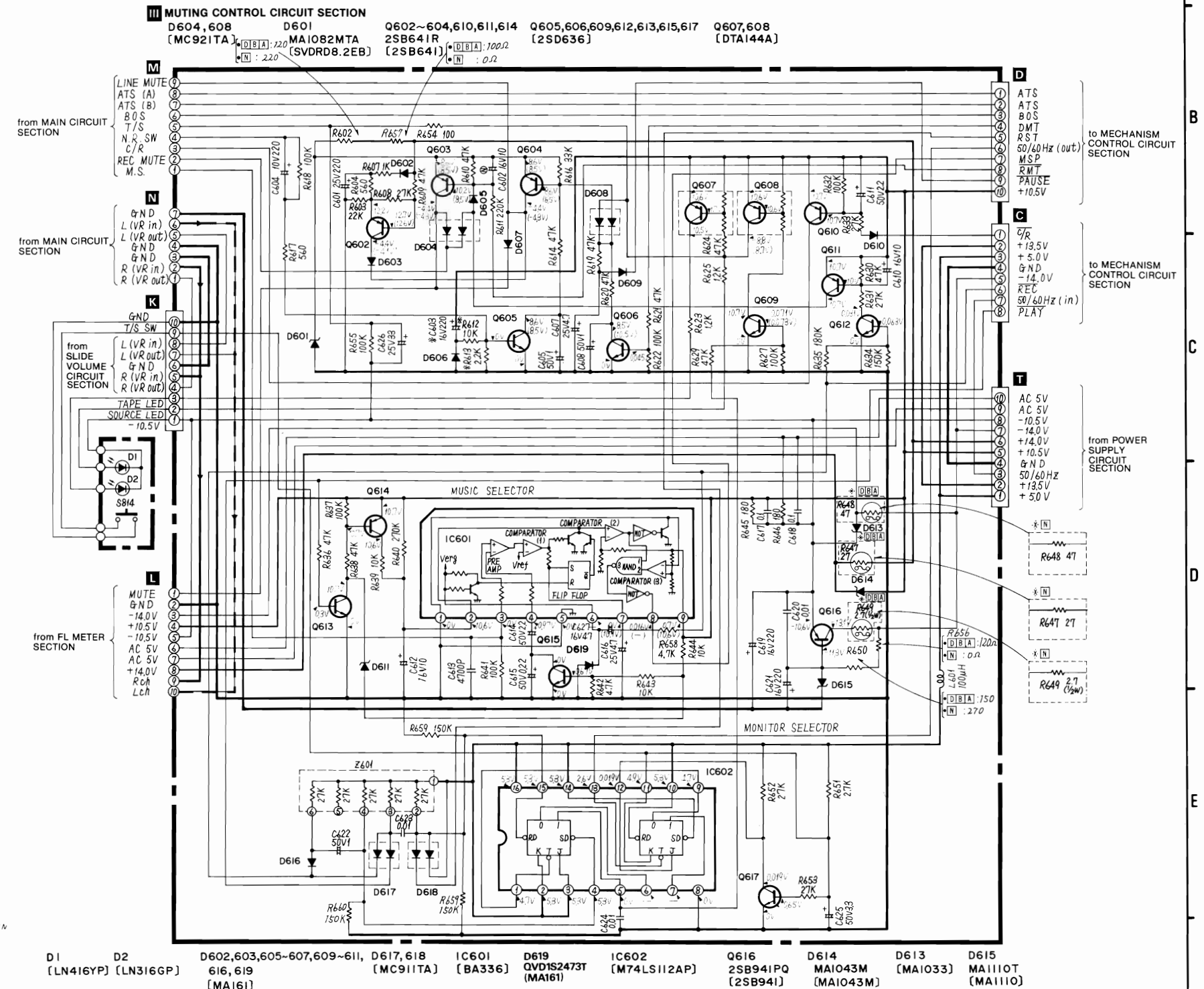
- ```
* Output level control...MAX
* Input level control ...MAX
* Balance control Center
```

## SPECIFICATIONS

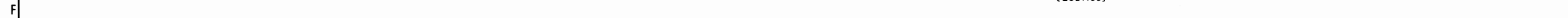
|                                                                                                                    |                                           |
|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| Playback S/N ratio<br>* Test tape...QZZCFM                                                                         | Greater than 45dB                         |
| Overall distortion<br>* Test tape<br>...QZZCRA for Normal<br>...QZZCRX for CrO <sub>2</sub><br>...QZZCRZ for Metal | Less than 3%                              |
| Overall S/N ratio<br>* Test tape...QZZCRA                                                                          | Greater than 43dB<br>(without NAB filter) |

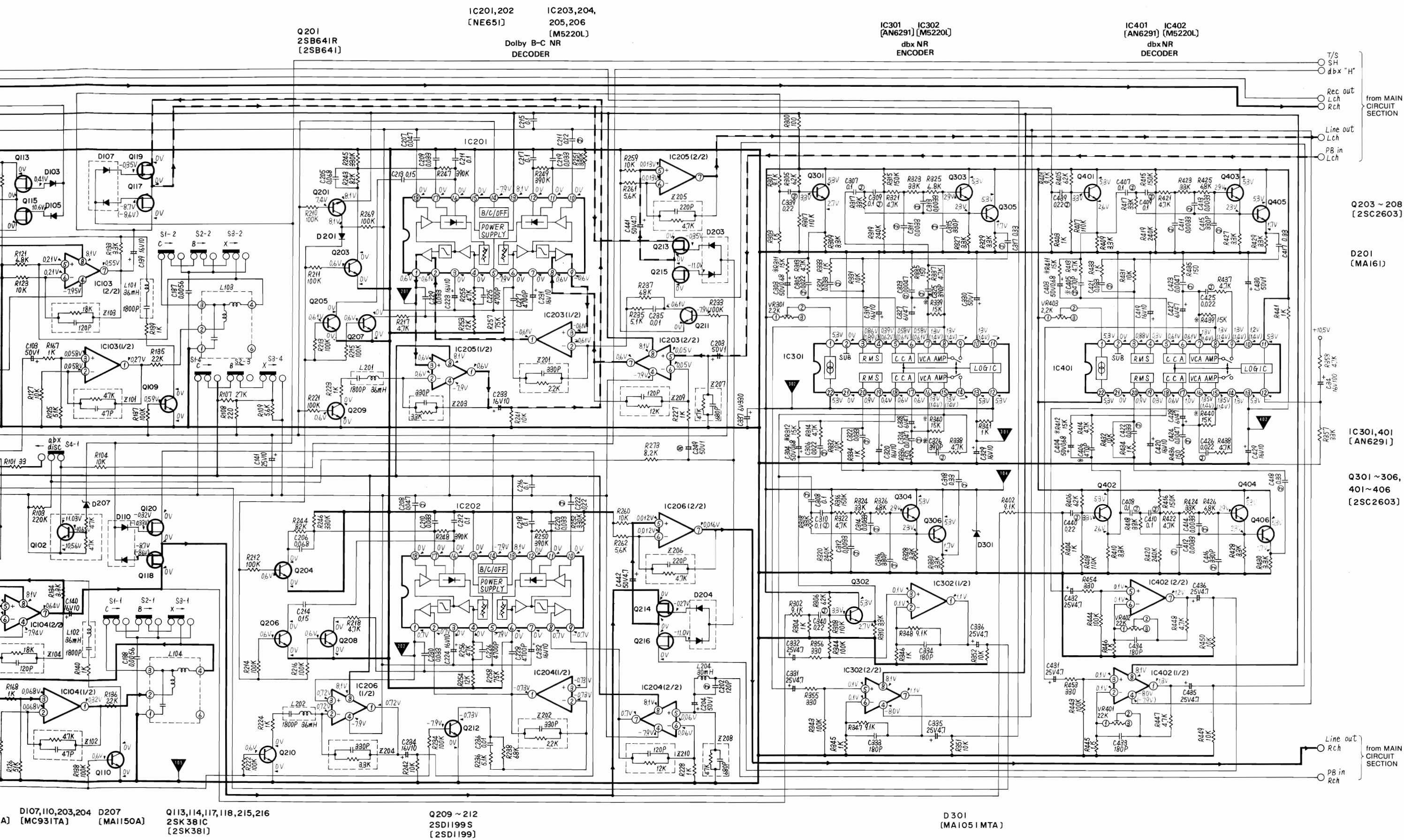
**NOTES:**

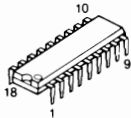
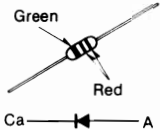
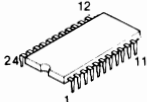
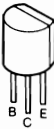
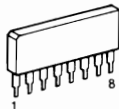
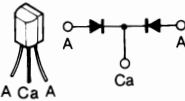
- D** ..... For all European areas except United Kingdom.  
**B** ..... For United Kingdom.  
**N** ..... For Asia, Latin America, Middle East and Africa areas.  
**A** ..... For Australia.



|       |         |          |          |
|-------|---------|----------|----------|
| Q 201 | [NE651] | 205,206  | [C301]   |
|       |         | [M52201] | [AN6291] |





|                                                                                                                                     |                                                                                                                                                    |                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
|  <p>IC101, 102, 201, 202</p>                    |  <p>Q903</p>                                                   |  <p>D301</p>                    |
|  <p>IC301, 401</p>                             |  <p>Q3, 55-58, 103-108,<br/>202-208, 301-306,<br/>402-406</p> |  <p>L53, 54, 203, 204, 902</p> |
|  <p>IC1-4, 103-106, 203-<br/>206, 302, 402</p> |  <p>D107, 110, 203, 204,<br/>901-903</p>                      |                                                                                                                     |

## ELECTRICAL PARTS LIST

## REPLACEMENT PARTS LIST

Important safety notice  
Components identified by  $\Delta$  mark have special characteristics important for safety.  
When replacing any of these components, use only 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

## ECCED ..... Electrolytic

ECCEN ..... Non polar electrolytic  
ECQS ..... Polystyrene  
ECSD ..... Tantalum  
QCS ..... Tantalum

in America,  
and Africa areas.

POWER SUPPLY  
CIRCUIT BOARD

S from POWER SUPPLY P. B

|   |            |
|---|------------|
| 6 | - 14.0V IN |
| 5 | + 14.0V IN |
| 4 | GND        |
| 3 | GND        |
| 2 | + 10.5V IN |
| 1 | - 10.5V IN |

T to MUTING  
CONTROL P. B

|    |             |
|----|-------------|
| 1  | + 5.0V OUT  |
| 2  | + 13.5V OUT |
| 3  | 50/60Hz OUT |
| 4  | GND         |
| 5  | + 10.5V OUT |
| 6  | + 14.0V OUT |
| 7  | - 14.0V OUT |
| 8  | - 10.5V OUT |
| 9  |             |
| 10 | AC 5.0V OUT |

## IONS &amp; CONNECTORS

|                                                   |                            |             |         |
|---------------------------------------------------|----------------------------|-------------|---------|
| <br>Q903                                          | <br>D301                   | <br>L51, 52 | <br>CN6 |
| <br>Q3, 55-58, 103-108, 202-208, 301-308, 402-406 | <br>L53, 54, 203, 204, 902 | <br>CN1     | <br>CN8 |
| <br>D107, 110, 203, 204, 901-903                  | <br>L101, 102, 201, 202    | <br>CN3     | <br>CN7 |
| <br>D103-106, 111, 201, 904                       | <br>L901                   | <br>CN4     | <br>CN9 |
| <br>D207                                          | <br>L103, 104              | <br>CN5     | <br>CN9 |

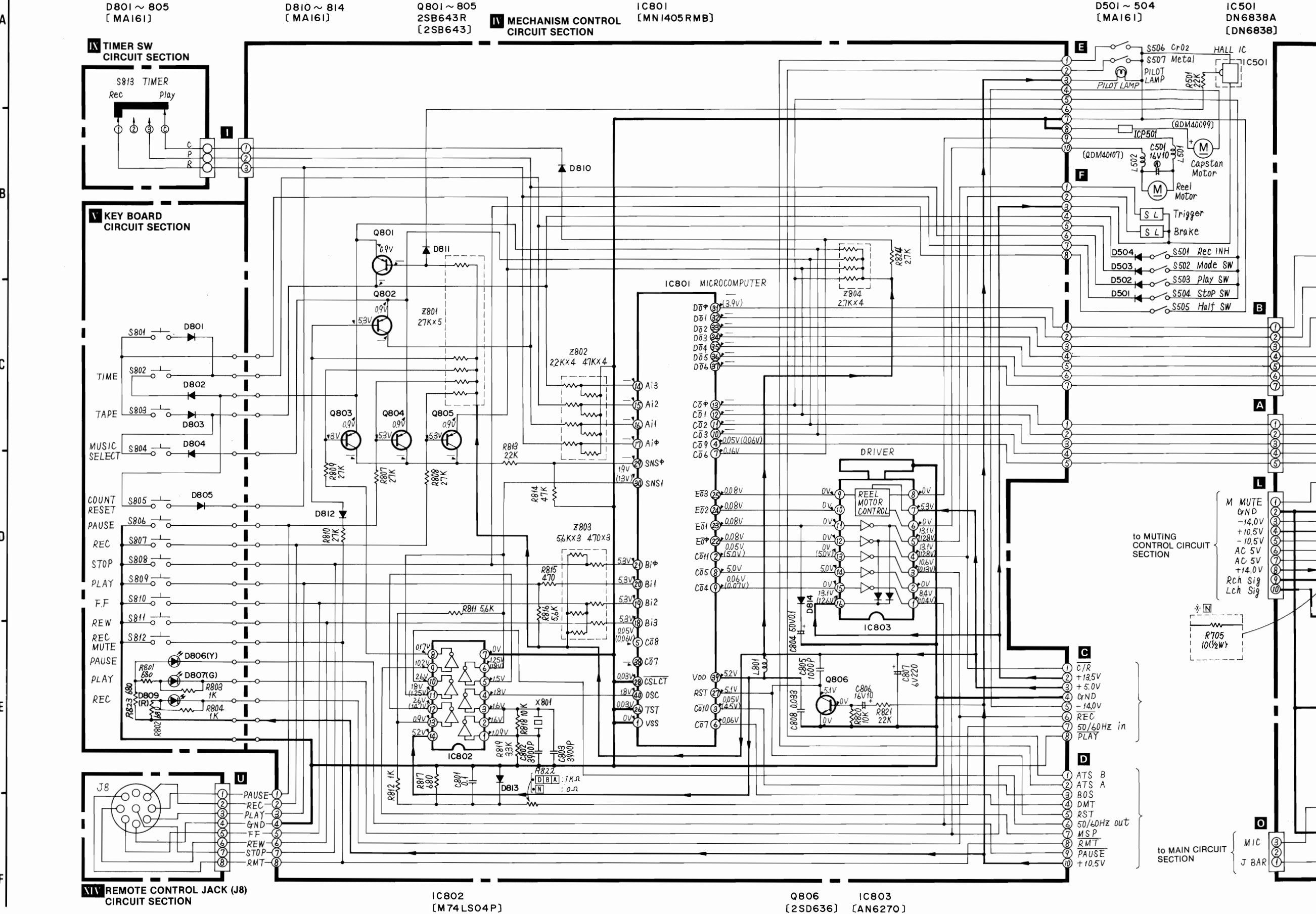
| Ref. No.         | Part No.   | Ref. No.             | Part No.   | Ref. No.        | Part No.   | Ref. No.         | Part No.                                                 | Ref. No.   | Part No.   | Ref. No.             | Part No.    | Ref. No.   | Part No.    | Ref. No.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Part No. | Ref. No.                  | Part No.      |
|------------------|------------|----------------------|------------|-----------------|------------|------------------|----------------------------------------------------------|------------|------------|----------------------|-------------|------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------|---------------|
| <b>RESISTORS</b> |            |                      |            |                 |            |                  |                                                          |            |            |                      |             |            |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |          |                           |               |
| R 1, 2           | ERD25TJ473 | R 227, 228           | ERD25FJ102 | R 603           | ERD25TJ223 | R 705            | ERD25FJ100                                               | R 903      | ERD25FJ1R0 | C 127, 128           | ECQM1H333JZ | C 613      | ECQM1H472JZ | Q 101                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2SB641   | D 605, 606, 607           |               |
| R 3, 4           | ERD25FJ101 | R 233, 234           | ERD25TJ104 | R 604           | ERD25FJ561 | [DBA] ERQ12HJ100 | [For all European areas and Australia.]                  | R 904, 905 | ERD25TJ223 | C 129, 130           | ECQM1H472JZ | C 614      | ECEA50Z2R2  | Q 102                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | DTC144A  | MA161                     |               |
| R 5, 6           | ERD25FJ221 | R 235, 236           | ERD25FJ512 | R 607           | ERD25FJ102 | [N] ERD25FJ100   | [For Asia, Latin America, Middle East and Africa areas.] | R 906, 907 | ERD25FJ270 | C 131, 132           | ECEA1HS100  | C 615      | ECEA50Z2R2  | Q 103, 104, 105, 106, 107, 108                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2SC2603E | D 608                     | MC921TA       |
| R 7, 8           | ERD25TJ824 | R 237, 238           | ERD25TJ683 | R 608           | ERD25TJ273 |                  |                                                          | R 908      | ERD25FJ561 | C 139, 140, 141      | ECEA1HS100  | C 616      | ECEA1ES4R7  | Q 109, 110, 111, 112                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2SD1199  | D 609, 610, 611           | MA161         |
| R 9, 10          | ERD25TJ183 | R 241, 242           | ERD25FJ103 | R 609, 610      | ERD25TJ473 |                  |                                                          | R 909      | ERD25FJ222 | C 135, 136           | ECQM1H103JZ | C 617, 618 | ECQV05104JZ | Q 113, 114                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2SK381   | D 613                     | MA1033        |
| R 11, 12         | ERD25TJ123 | R 243, 244           | ERD25TJ823 | R 611           | ERD25TJ224 |                  |                                                          | R 910, 911 | ERD25FJ561 | C 137, 138           | ECQM1H562JZ | C 619      | ECEA1CS221  | Q 115, 116                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2SJ40    | D 614                     | MA1043M       |
| R 13, 14         | ERD25TJ225 | R 245, 246           | ERD25TJ334 | R 612           | ERD25FJ103 |                  |                                                          | R 912      | ERD25FJ122 | C 139, 140, 141      | ECEA1HS100  | C 620      | ECFDD103KVY | Q 117, 118                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2SK381   | D 615                     | MA1110M       |
| R 15, 16         | ERD25TJ104 | R 247, 248, 249, 250 | ERD25TJ394 | R 613           | ERD25FJ222 |                  |                                                          | R 914      | ERD25FJ562 | C 201, 202           | ECQM1H103JZ | C 621      | ECEA1CS221  | Q 119, 120                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2SJ40    | D 616                     | MA161         |
| R 17, 18         | ERD25TJ183 | R 251, 252           | ERD25TJ334 | R 614           | ERD25TJ473 |                  |                                                          | R 915      | ERD25TJ473 | C 203, 204           | ECEA50Z1    | C 622      | ECEA1HN010  | Q 121, 122                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2SB641   | D 617, 618                | MC911TA       |
| R 19, 20         | ERD25FJ332 | R 253, 254           | ERD25TJ123 | R 616           | ERD25TJ333 |                  |                                                          | R 919      | ERD25FJ681 | C 205, 206           | ECQM1H683JZ | C 623, 624 | ECKD1H103ZF | Q 123, 124                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2SB641   | D 619                     | MA161         |
| R 21, 22         | ERD25FJ271 | R 255, 256           | ERD25TJ473 | R 617           | ERD25FJ561 |                  |                                                          | R 921      | ERD25FJ102 | C 207, 208           | ECQM1H473JZ | C 625      | ECEA50Z3R3  | Q 125, 126                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2SC2603E | D 701                     | SVDRD8.2EB    |
| R 23, 24         | ERD25FJ103 | R 257, 258           | ERD25TJ753 | R 618           | ERD25TJ104 |                  |                                                          | R 922, 923 | ERD25FJ103 | C 209, 210           | ECQM1H333JZ | C 626      | ECEA1VS330  | Q 127, 128                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2SC2603E | D 702, 703                | MA161         |
| R 25, 26         | ERD25FJ471 | R 259, 260           | ERD25FJ103 | R 619, 620, 621 | ERD25FJ562 |                  |                                                          | R 924      | ERD25TJ563 | C 211, 212           | ECQV05104JZ | C 627      | ECEA1CN470  | Q 129, 130                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2SD1199  | D 704                     | MC921TA       |
| R 27, 28         | ERD25FJ681 | R 261, 262           | ERD25FJ562 | R 622           | ERD25TJ104 |                  |                                                          | R 925      | ERD25FJ332 | C 213, 214           | ECQV05154JZ | C 702      | ECEA1ES101  | Q 131, 132                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2SJ40    | Q 706, 707, 708           | MA161         |
| R 29, 30         | ERD25TJ333 | R 269                | ERD25TJ104 | R 623           | ERD25FJ122 |                  |                                                          | R 926      | ERD25FJ103 | C 215, 216, 217, 218 |             | C 703      | ECEA1HS100  | Q 133, 134                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2SK381   | D 801, 802, 803, 804, 805 | refer to S806 |
| R 31, 32         | ERD25TJ473 | R 273                | ERD25FJ822 | R 624           | ERD25TJ473 |                  |                                                          | R 927      | ERD25TJ333 | C 219, 220           | ECQM1H333JZ | C 704      | ECFDD473KXY | Q 135, 136                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2SC2603E | D 807                     | refer to S809 |
| R 33, 34         | ERD25FJ121 | R 300                | ERD25FJ101 | R 625           | ERD25FJ122 |                  |                                                          | R 928      | ERD25FJ152 | C 221, 222           | ECQM1H333JZ | C 705, 706 | ECEA50Z4R7  | Q 137, 138                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2SC2603E | D 808                     | refer to S806 |
| R 35, 36         | ERD25FJ680 | R 301, 302           | ERD25FJ912 | R 627           | ERD25TJ104 |                  |                                                          | R 929      | ERD25TJ104 | C 223, 224           | ECEA1HS100  | C 707, 708 | ECEA1HS100  | Q 139, 140, 141                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2SC2603E | D 809                     | refer to S807 |
| R 37, 38         | ERD25FJ102 | R 303, 304           | ERD25FJ102 | R 629, 630      | ERD25TJ473 |                  |                                                          | R 930      | ERD25TJ124 | C 225, 226, 227, 228 |             | C 801      | ECQV05104JZ | Q 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000 |          |                           |               |

REPLACEMENT PARTS LIST

Important safety notice  
Components identified by Δ 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                                                 |
|----------------------|------------------|-------------------------------------------------------------------------|
| COILS                |                  |                                                                         |
| L 51, 52             | QLQX2722D        | Peaking Coil                                                            |
| L 53, 54             | QLQX0343KWA      | Bias Trap Coil                                                          |
| L 101, 102           | ELM7Q306A        | Skewing Network                                                         |
| L 103, 104           | ELM10Q201F       | M.P.X. Coil                                                             |
| L 201, 202           | ELM7Q306A        | Skewing Network                                                         |
| L 203, 204           | QLQX0343KWA      | Bias Trap Coil                                                          |
| L 501, 502           | QLQZ1014D        | Choke Coil                                                              |
| L 601                | ELEH101KA        | Choke Coil                                                              |
| L 801                | ELEH101KA        | Choke Coil                                                              |
| L 901                | QLB0204          | Bias Oscillation Coil                                                   |
| L 902                | QLQX0332KWA      | Peaking Coil                                                            |
| FUSE                 |                  |                                                                         |
| F 1                  | [N] Δ XBA2E05NR5 | Fuse (0.5A)<br>[For Asia, Latin America, Middle East and Africa areas.] |
| SWITCHES             |                  |                                                                         |
| S 1, 2, 3, 4, 5      | QSWX505          | Push Switch (NR Selector)                                               |
| S 501                | QSB0289          | Leaf Switch (REC Inhibit)                                               |
| S 502                | QSB0287          | Leaf Switch (Mode)                                                      |
| S 503                | QSB0288          | Leaf Switch (Stop)                                                      |
| S 504                | QSB0287          | Leaf Switch (Play)                                                      |
| S 505                | QSB0288          | Leaf Switch (Eject)                                                     |
| S 506                | QSB0290          | Leaf Switch<br>(for CrO <sub>2</sub> Tape)                              |
| S 507                | QSB0289          | Leaf Switch<br>(for Metal Tape)                                         |
| S 801, 802, 803, 804 | QSW1130          | Push Switch<br>(Repeat/Time Counter/Tape)                               |
| S 805                | SSG13            | Push Switch<br>(Counter Reset)                                          |
| S 806                | QSW1126          | Push Switch with D806<br>(Pause)                                        |
| S 807                | QSW1124          | Push Switch with D809<br>(REC)                                          |
| S 808                | SSG13            | Push Switch (Stop)                                                      |
| S 809                | QSW1125          | Push Switch with D807<br>(Monitor Tape/Source)                          |
| S 810                | SSG13            | Push Switch (F.F)                                                       |
| S 811, 812           | SSG13            | Push Switch<br>(Rewind/REC Mute)                                        |
| S 813                | QSS1306          | Slide Switch (Timer Start)                                              |
| S 814                | QSW1130          | Push Switch<br>(Monitor Tape/Source)                                    |
| S 851 Δ              | QSW1127          | Push Switch<br>(Power ON/OFF)                                           |
| S 852 Δ              | QSR1407          | Rotary Switch<br>(AC Power Voltage Selector)                            |
| JACKS                |                  |                                                                         |
| J 1, 2, 3, 4         | QEJ5030C         | Jack Board (LINE IN/OUT)                                                |
| J 5, 6               | QJA0453          | Jack (Microphone Jack)                                                  |
| J 7                  | QJA0267H         | Headphones Jack                                                         |
| J 8                  | QJS1955H         | Remote Control Socket                                                   |
| CONNECTORS           |                  |                                                                         |
| CN 1                 | QJT1054          | Contact                                                                 |
| CN 2                 | QJS1922TN        | 6 Pin Socket                                                            |
| CN 3                 | QJS1921TN        | 3 Pin Socket                                                            |
| CN 4                 | QJP1921TN        | 3 Pin Plug                                                              |
| CN 5                 | QJP1922TN        | 6 Pin Plug                                                              |
| CN 6                 | QJS1961S         | Jumper Socket (5 Pin)                                                   |
| CN 7                 | QJS1962S         | Jumper Socket (7 Pin)                                                   |
| CN 8                 | QJS1968S         | Jumper Socket (9 Pin)                                                   |
| CN 9                 | QJS1993S         | Jumper Socket (6 Pin)                                                   |
| CN 10                | QJS1983S         | Jumper Socket (8 Pin)                                                   |
| CN 11                | QJS1989S         | Jumper Socket (10 Pin)                                                  |
| CN 12                | QJS1996T         | Jumper Socket (14 Pin)                                                  |
| CN 13                | QJS1987S         | Jumper Socket (4 Pin)                                                   |
| CN 14                | QJT1090          | Check Pin                                                               |
| CN 15                | QJS1989S         | Jumper Socket (10 Pin)                                                  |

SCHEMATIC DIAGRAM (for Mechanism Control/FL Meter Circuit Section)



D501 ~ 504  
[MA161]

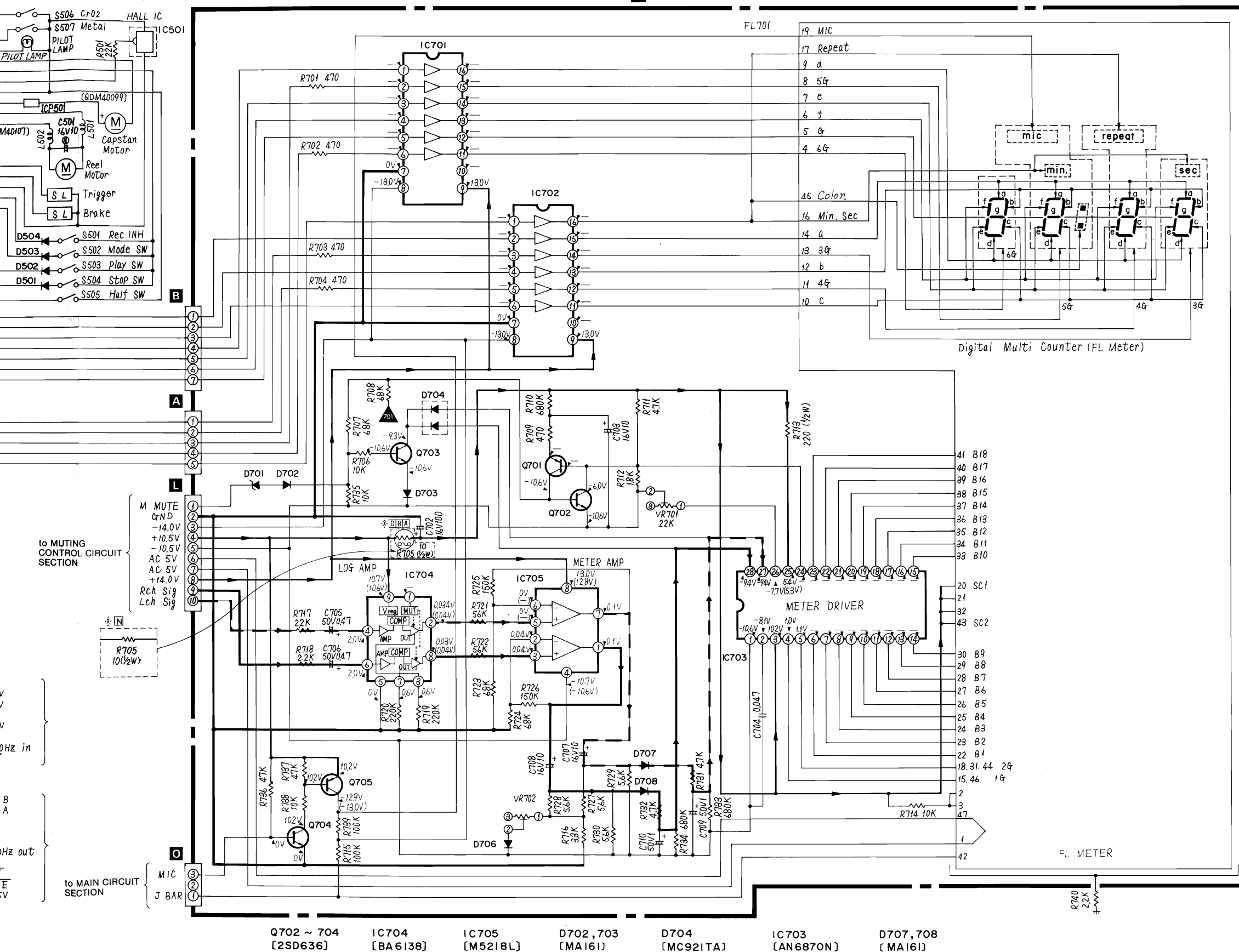
IC501  
DN6838A  
[DN6838]

D701  
MA1043MTA  
[SVDRD8.2EB]

Q701,705  
2SB641R  
[2SB641]

IC701,702  
[AN6280]

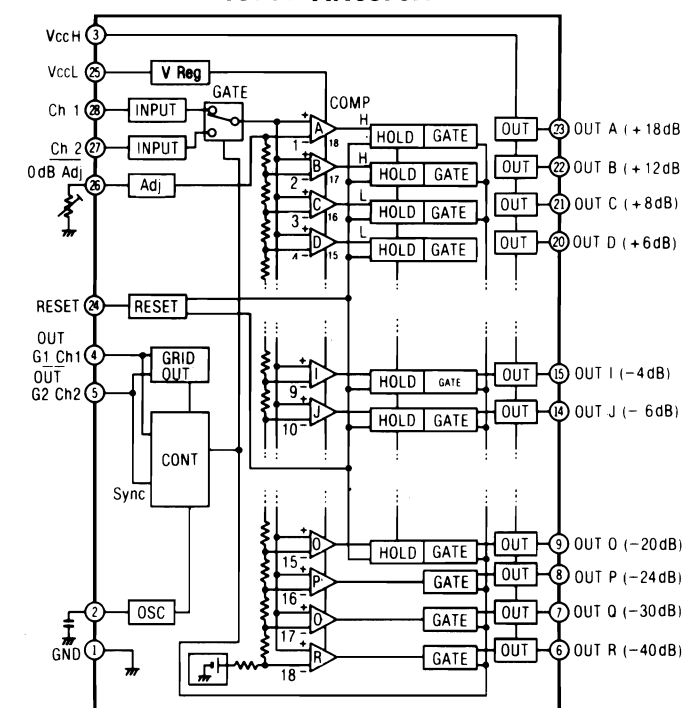
## II FL METER CIRCUIT SECTION



## NOTES:

- S501.....REC inhibit switch (shown in OFF position).
- S502.....Mode switch (shown in OFF position).
- S503.....Stop switch (shown in OFF position).
- S504.....Play switch (shown in OFF position).
- S505.....Half switch (shown in OFF position).
- S506.....Auto tape select switch (for CrO<sub>2</sub> tape).
- S507.....Auto tape select switch (for Metal tape).
- S801.....Music repeat switch (shown in OFF position).
- S802.....Time counter switch (shown in OFF position).
- S803.....Tape counter switch (shown in OFF position).
- S804.....Music select switch (shown in OFF position).
- S805.....Counter reset switch (shown in OFF position).
- S806.....Pause switch (shown in OFF position).
- S807.....Record switch (shown in OFF position).
- S808.....Stop switch (shown in OFF position).
- S809.....Play switch (shown in OFF position).
- S810.....FF switch (shown in OFF position).
- S811.....Rewind switch (shown in OFF position).
- S812.....REC Mute switch (shown in OFF position).
- S813.....Timer switch (shown in 1 position).  
(1...T. REC, 2...OFF, 3...T. PLAY).
- VR701.....FL meter adjustment VR (-40dB indication).
- VR702.....FL meter adjustment VR (0dB indication).
- 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.
- No mark.....Voltage values at OUT (NR select switch) mode.
- ( ).....Voltage values at record mode.
- For measurement use VTVM.
- (→) indicates B+ (bias).
- (←) indicates B- (bias).
- (---) indicates the flow of the playback signal. (NR out).
- (---) indicates the flow of the recording signal. (NR out).
- Described in the schematic diagram are two types of numbers; the supply parts numbers and production parts numbers for transistors and diodes. One type of number is used for supply parts number and production parts number when they are identical.
- e.g. Q1  
2SC1844(E,F) ← Production parts number  
[2SC1844E] ← Supply parts number  
D212  
1S2473T77 ← Production parts number  
[MA161] ← Supply parts number
- 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 IC703 AN6870N



## CIRCUIT BOARDS (for FL Meter/Mechanism Control/Muting Control/Key Board Circuit Boards)

## NOTES:

This product is available in two different types of Muting Control Circuit Boards and Key Board Circuit Boards. For repair and servicing, follow the instructions according to the type used.

- Type-1...RS-M253X sets with marking "B" on the circuit board (shown in Fig. 1).
- Type-2...RS-M253X sets with marking "C" on the circuit board (shown in Fig. 2).

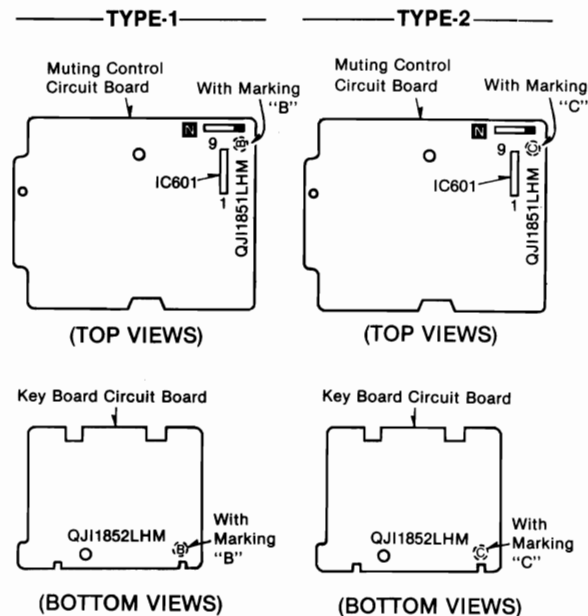


Fig. 1

Fig. 2

## NOTES:

- The circuit shown in on the conductor side indicates printed circuit on the back side of the printed circuit board.
- The circuit shown in on the conductor indicates printed circuit on the front side of the printed circuit board, which is put the components.
- The symbols (●) shown in the circuit board indicate connection points between conductors on the front side and back side of the 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:

- ..... For all European areas except United Kingdom.
- ..... For United Kingdom.
- ..... For Asia, Latin America, Middle East and Africa areas.
- ..... For Australia.

## III MUTING CONTROL CIRCUIT BOARD

- C** to MECHANISM CONTROL P. B
- 1 Play EQ Change IN
  - 2 +13.5V OUT
  - 3 +5.0V OUT
  - 4 GND
  - 5 -14.0V OUT
  - 6 REC COMMAND IN
  - 7 50/60Hz
  - 8 PLAY COMMAND IN

## D from MECHANISM CONTROL P. B

- 1 Tape Selector IN
- 2 Tape Selector IN
- 3 BIAS OSC. ON/OFF IN
- 4 MUTE IN
- 5 RESET IN
- 6 50/60Hz IN
- 7 Music Selector OUT
- 8 REC MUTE IN
- 9 PAUSE IN
- 10 +10.5V OUT

## M from MAIN P. B

- 1 Music selector IN
- 2 REC MUTE OUT
- 3 Play EQ Change Sig. OUT
- 4 NR SW IN
- 5 Tape/Source Change Sig. OUT
- 6 BIAS OSC. ON/OFF OUT
- 7 Tape Selector OUT
- 8 Tape Selector OUT
- 9 LINE MUTE OUT

## K to SLIDE VOLUME P. B

- 1 -10.5V OUT
- 2 SOURCE LED OUT
- 3 TAPE LED OUT
- 4 R-ch VR out OUT
- 5 R-ch VR in OUT
- 6 GND
- 7 L-ch VR in OUT
- 8 L-ch VR out OUT
- 9 Tape/Source Change Sig.
- 10 GND

## L to FL METER P. B

- 1 METER MUTE OUT
- 2 GND
- 3 -14.0V OUT
- 4 +10.5V OUT
- 5 -10.5V OUT
- 6 AC 5.0V OUT
- 7 +14.0V OUT
- 8 R-ch SIGNAL OUT
- 9 L-ch SIGNAL OUT
- 10 GND

## T from POWER SUPPLY P. B

- 1 +5.0V IN
- 2 +13.5V IN
- 3 50/60Hz IN
- 4 GND
- 5 +10.5V IN
- 6 +14.0V IN
- 7 -14.0V IN
- 8 -10.5V IN
- 9 AC 5.0V IN
- 10 GND

## N from MAIN P. B

- 1 R-ch VR out IN
- 2 R-ch VR in OUT
- 3 GND
- 4 GND
- 5 L-ch VR out IN
- 6 L-ch VR in OUT
- 7 GND

## II FL METER CIRCUIT BOARD

## L from MUTING CONTROL P. B

- 10 L-ch SIGNAL IN
- 9 R-ch SIGNAL IN
- 8 +14.0V IN
- 7 AC 5.0V IN
- 6 -10.5V IN
- 5 +10.5V IN
- 4 -14.0V IN
- 3 GND
- 2 METER MUTE IN
- 1 GND

## O from MAIN P. B

- 3 MAIN Indicate Command IN
- 1 J BAR Indicate Command IN

## A from MECHANISM CONTROL P. B

- 1 Digital Counter In
- 2 min/sec/repeat Indication Command IN
- 3
- 4
- 5

## B from MECHANISM CONTROL P. B

- 1 Digital Counter In
- 2
- 3
- 4
- 5
- 6
- 7

## C from MUTING CONTROL P. B

- 1 Play EQ Change Sig. OUT
- 2 +13.5V IN
- 3 +5.0V IN
- 4 GND
- 5 -14.0V IN
- 6 REC Command OUT
- 7 50/60Hz IN
- 8 PLAY Command IN

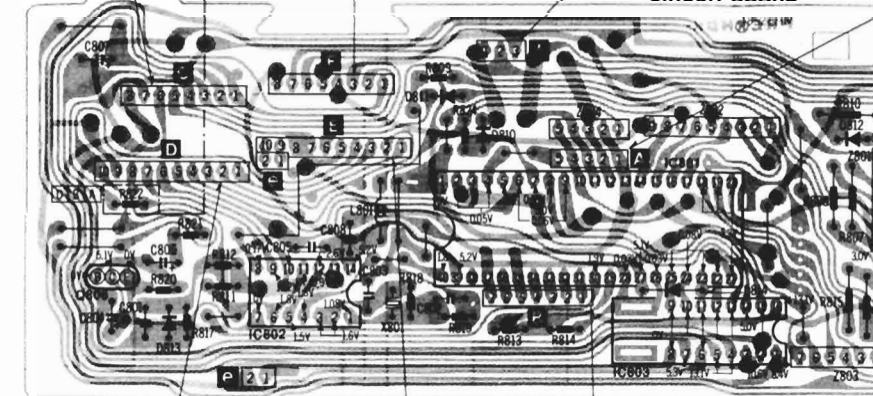
## F from MUTING CONTROL P. B

- 1 Trigger Plunger Control Sig. OUT
- 2 Brake Plunger Control Sig. OUT
- 3 B+ OUT (for Plunger/Hall IC)
- 4 Rec INH IN
- 5 Mode IN
- 6 Play IN
- 7 Stop IN
- 8 Half IN

## I to TIMER SW P. B

- 1 Schan Sig. OUT
- 2 Timer Play Command IN
- 3 Timer REC IN
- 4
- 5

## IV MECHANISM CONTROL CIRCUIT BOARD



## D from MUTING CONTROL P. B

- 1 Tape Selector OUT
- 2 Tape Selector OUT
- 3 BIAS OSC. ON/OFF OUT
- 4 MUTE OUT
- 5 RESET OUT
- 6 50/60Hz OUT
- 7 Music Selector IN
- 8 REC MUTE OUT
- 9 PAUSE IN
- 10 +10.5V IN

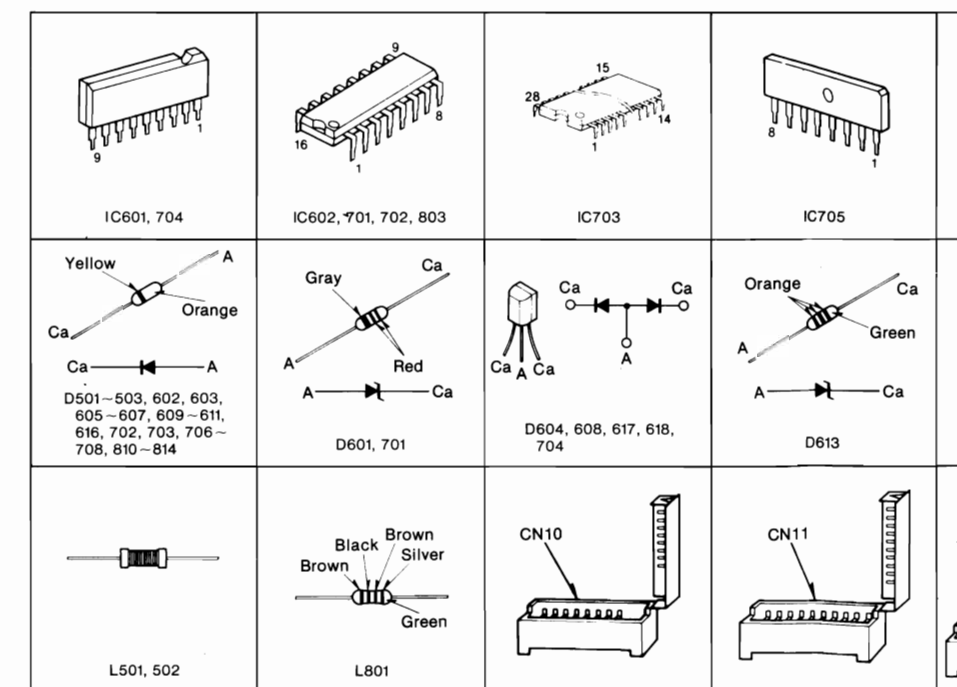
## E to MECHANISM P. B

- 1 Tape Selector IN
- 2 Tape Selector IN
- 3 B+ OUT
- 4 MOTOR OUT
- 5 Switching Schan OUT (Mecha mode)
- 6 Rotary Detection IN
- 7 GND
- 8 GND
- 9 Reel Motor Control Sig. OUT
- 10

## B from FL METER P. B

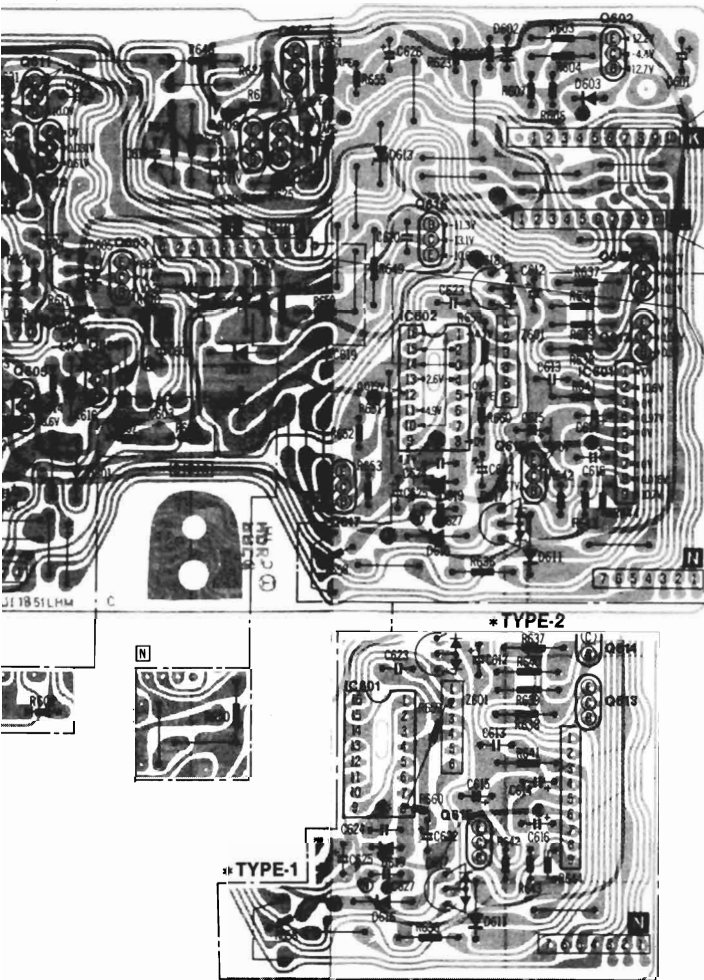
- 1 Digital Counter OUT
- 2
- 3
- 4
- 5
- 6
- 7

## TERMINATIONS &amp; CONNECTORS



**=L Meter/Mechanism Control/Muting Control/Key Board Circuit Boards)**

## CONTROL CIRCUIT BOARD



- |          |                         |
|----------|-------------------------|
| <b>K</b> | to SLIDE VOLUME P. B    |
| 1        | - 10.5V OUT             |
| 2        | SOURCE LED OUT          |
| 3        | TAPE LED OUT            |
| 4        | R-ch VR out OUT         |
| 5        | R-ch VR in OUT          |
| 6        | GND                     |
| 7        | L-ch VR in OUT          |
| 8        | L-ch VR out OUT         |
| 9        | Tape/Source Change Sig. |
| 10       | GND                     |

- | to FL METER P. B |                 |
|------------------|-----------------|
| 1                | METER MUTE OUT  |
| 2                | GND             |
| 3                | - 14.0V OUT     |
| 4                | + 10.5V OUT     |
| 5                | - 10.5V OUT     |
| 6                |                 |
| 7                | AC 5.0V OUT     |
| 8                | + 14.0V OUT     |
| 9                | R-ch SIGNAL OUT |
| 10               | L-ch SIGNAL OUT |

- | from POWER SUPPLY P. B |             |
|------------------------|-------------|
| 1                      | + 5.0V IN   |
| 2                      | + 13.5V IN  |
| 3                      | 50/60 Hz IN |
| 4                      | GND         |
| 5                      | + 10.5V IN  |
| 6                      | + 14.0V IN  |
| 7                      | - 14.0V IN  |
| 8                      | - 10.5V IN  |
| 9                      |             |
| 10                     | AC 5.0V IN  |

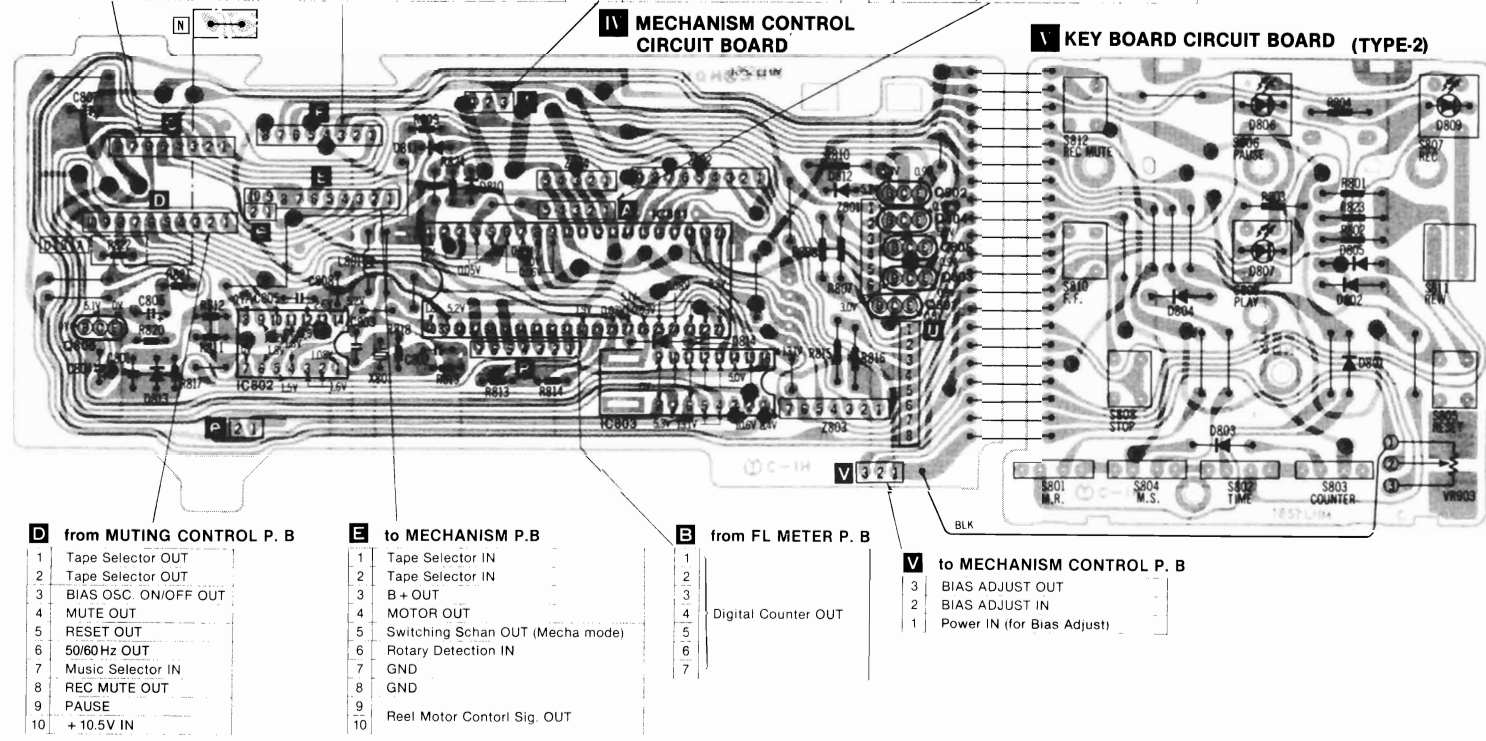
- N** from MAIN P. B
- |   |                |
|---|----------------|
| 1 | R-ch VR out IN |
| 2 | R-ch VR in OUT |
| 3 | GND            |
| 4 | GND            |
| 5 | L-ch VR out IN |
| 6 | L-ch VR in OUT |
| 7 | GND            |

- | C from MUTING CONTROL P. B |                         |
|----------------------------|-------------------------|
| 1                          | Play EQ Change Sig. OUT |
| 2                          | + 13.5V IN              |
| 3                          | + 5.0V IN               |
| 4                          | GND                     |
| 5                          | - 14.0V IN              |
| 6                          | REC Command OUT         |
| 7                          | 50/60 Hz IN             |
| 8                          | PLAY Command IN         |

- | F | from MUTING CONTROL P. B         |
|---|----------------------------------|
| 1 | Trigger Plunger Control Sig. OUT |
| 2 | Brake Plunger Control Sig. OUT   |
| 3 | B + OUT (for Plunger/Hall IC)    |
| 4 | Rec INH IN                       |
| 5 | Mode IN                          |
| 6 | Play IN                          |
| 7 | Stop IN                          |
| 8 | Half IN                          |

- |   |                    |
|---|--------------------|
| 1 | Schan Sig. OUT     |
| 2 | Timer Play Command |
| 3 | Timer REC IN       |

- |          |                                       |
|----------|---------------------------------------|
| <b>A</b> | to FL METER P. B                      |
| 1        | } Digital Counter OUT                 |
| 2        |                                       |
| 3        |                                       |
| 4        |                                       |
| 5        | min/sec/repeat Indication Command OUT |

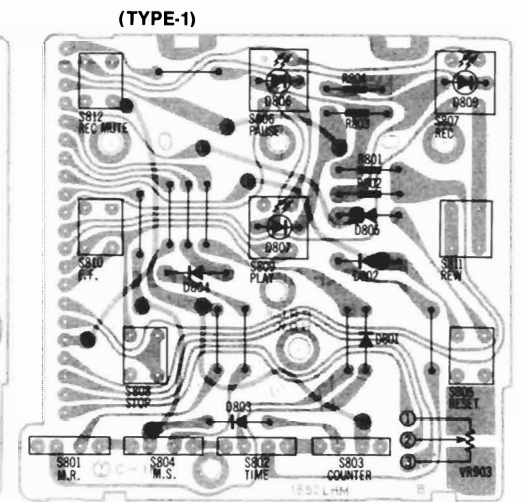


- | D  | from MUTING CONTROL P. B |
|----|--------------------------|
| 1  | Tape Selector OUT        |
| 2  | Tape Selector OUT        |
| 3  | BIAS OSC. ON/OFF OUT     |
| 4  | MUTE OUT                 |
| 5  | RESET OUT                |
| 6  | 50/60Hz OUT              |
| 7  | Music Selector IN        |
| 8  | REC MUTE OUT             |
| 9  | PAUSE                    |
| 10 | + 10.5V IN               |

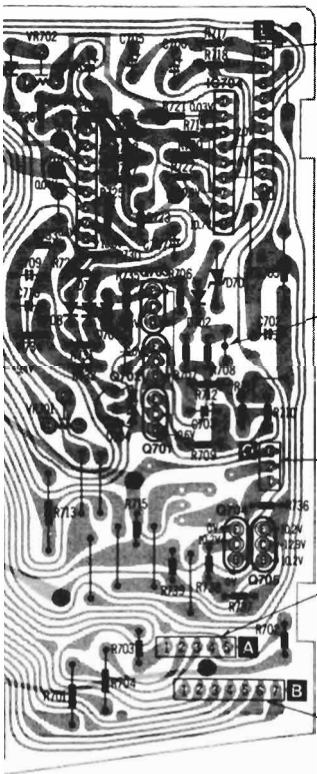
- | E  | to MECHANISM P.B                 |
|----|----------------------------------|
| 1  | Tape Selector IN                 |
| 2  | Tape Selector IN                 |
| 3  | B + OUT                          |
| 4  | MOTOR OUT                        |
| 5  | Switching Schan OUT (Mecha mode) |
| 6  | Rotary Detection IN              |
| 7  | GND                              |
| 8  | GND                              |
| 9  | Reel Motor Control Sig. OUT      |
| 10 |                                  |

- B** from FL METER P. E
- 1  
2  
3  
4 } Digital Counter OUT  
5  
6  
7

- |          |                            |
|----------|----------------------------|
| <b>V</b> | to MECHANISM CONTROL P. B  |
| 3        | BIAS ADJUST OUT            |
| 2        | BIAS ADJUST IN             |
| 1        | Power IN (for Bias Adjust) |



## ARD



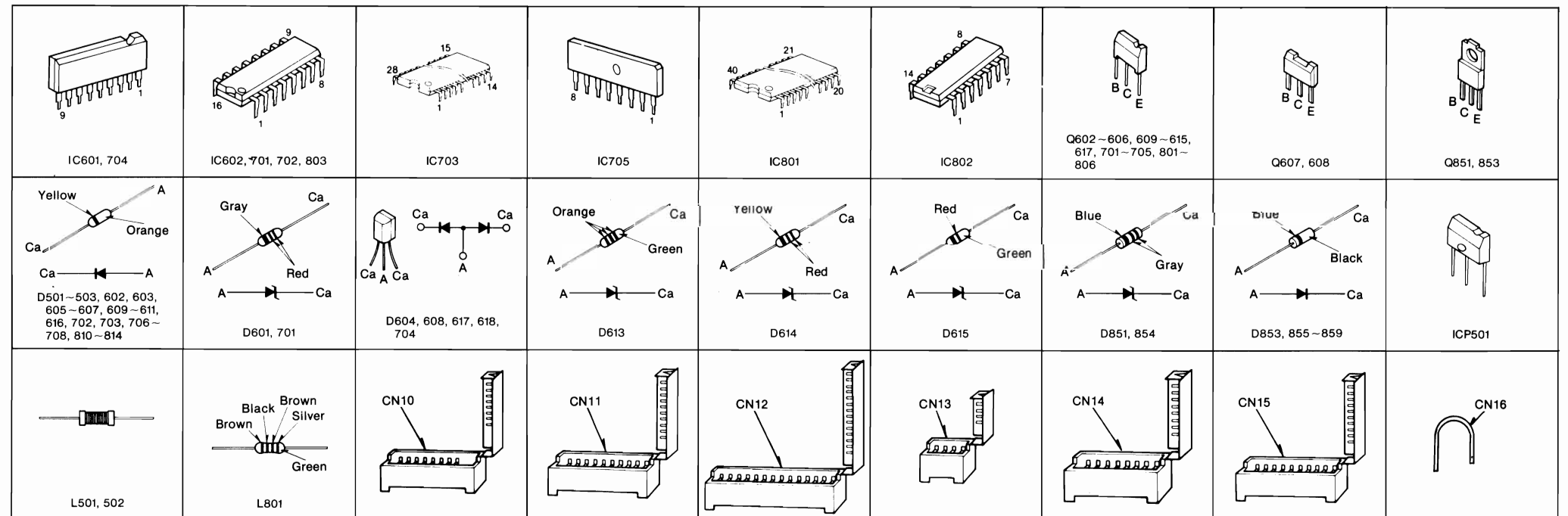
- | from MUTING CONTROL P. B |                |
|--------------------------|----------------|
| 10                       | L-ch SIGNAL IN |
| 9                        | R-ch SIGNAL IN |
| 8                        | + 14.0V IN     |
| 7                        | AC 5.0V IN     |
| 6                        |                |
| 5                        | - 10.5V IN     |
| 4                        | + 10.5V IN     |
| 3                        | - 14.0V IN     |
| 2                        | GND            |
| 1                        | METER MUTE IN  |

- |   |                           |
|---|---------------------------|
| 0 | from MAIN P. B            |
| 3 | MAIN Indicate Command IN  |
| 1 | J BAR Indicate Command IN |

- A** from MECHANISM CONTROL P. B
- |   |   |                                      |
|---|---|--------------------------------------|
| 1 | } | Digital Counter In                   |
| 2 |   |                                      |
| 3 |   |                                      |
| 4 |   |                                      |
| 5 |   | min/sec/repeat Indication Command IN |

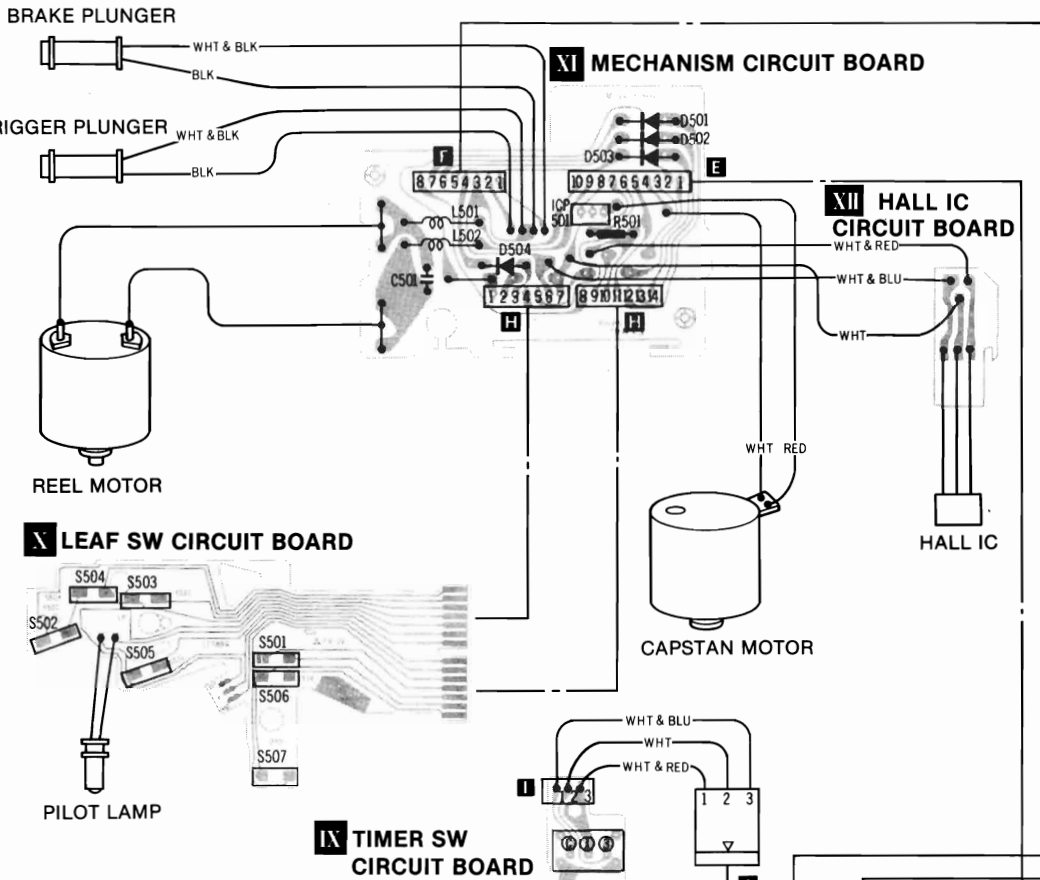
- B** from MECHANISM CONTROL P. B
- |   |                      |
|---|----------------------|
| 1 | } Digital Counter In |
| 2 |                      |
| 3 |                      |
| 4 |                      |
| 5 |                      |
| 6 |                      |
| 7 |                      |

## TERMINATIONS & CONNECTORS



WIRING CONNECTION DIAGRAM

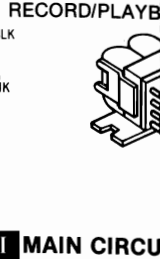
A  
B  
C  
D  
E  
F



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

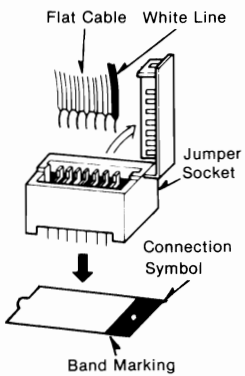
**II FL METER CIRCUIT BOARD**

**III MUTING CONTROL CIRCUIT SECTION**



**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.)



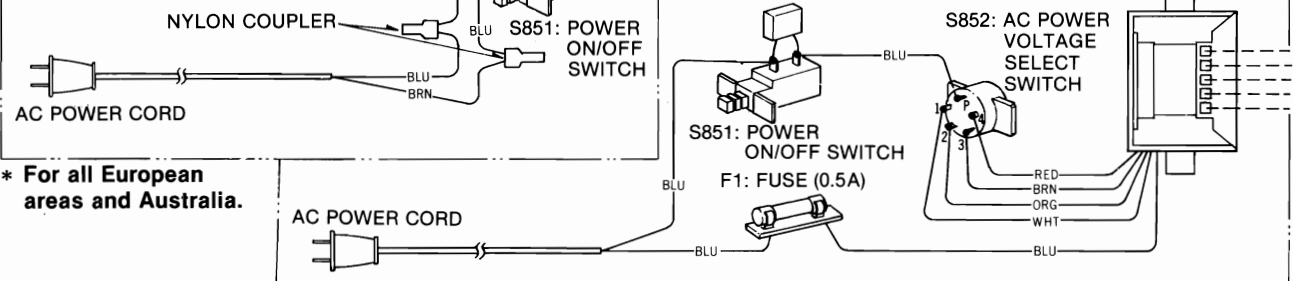
**XIV REMOTE CONTROL CIRCUIT BOARD**

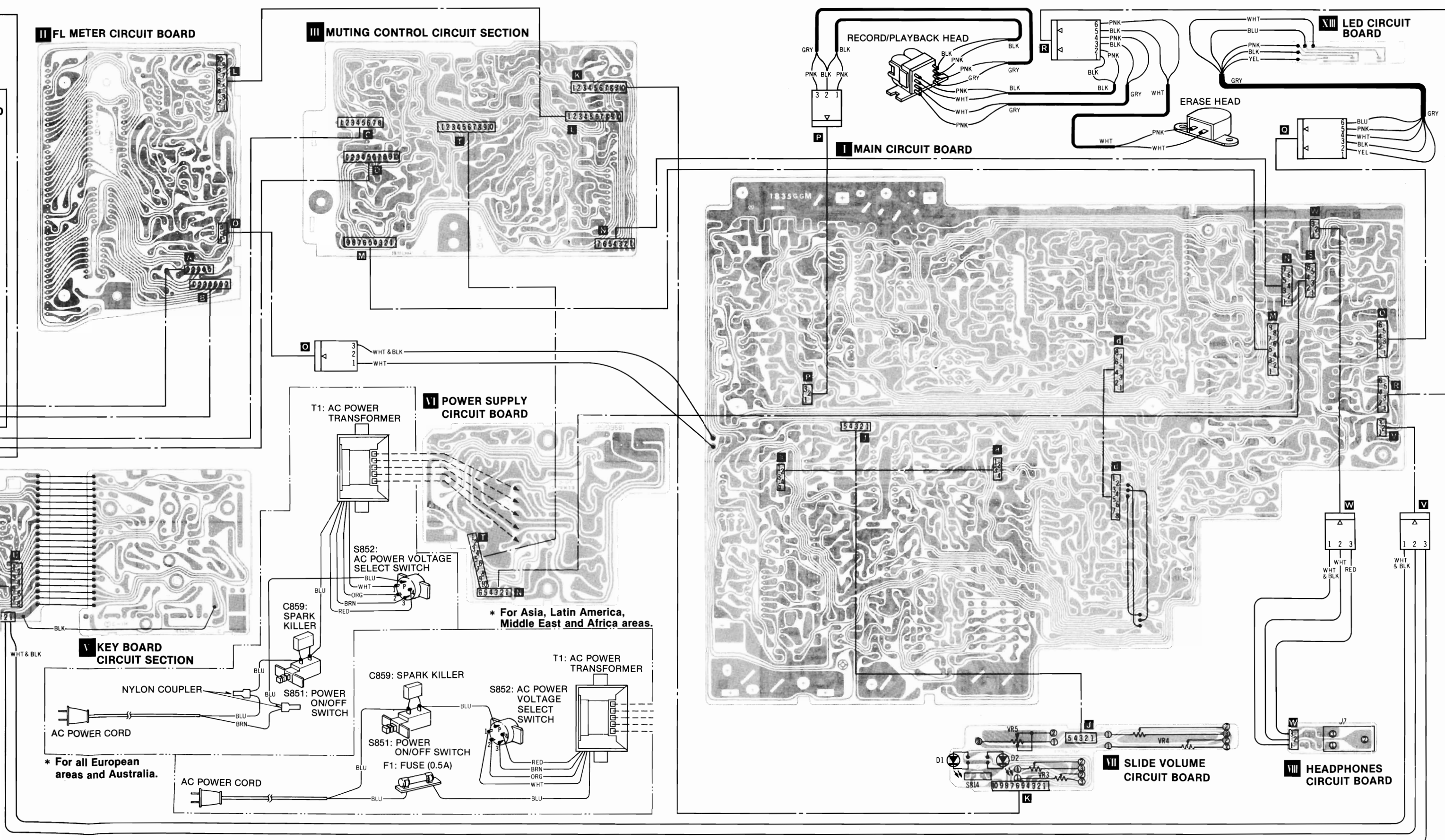
**V KEY BOARD CIRCUIT SECTION**

**VI POWER SUPPLY CIRCUIT BOARD**

\* For all European areas and Australia.

\* For Asia, Latin America, Middle East and Africa areas.

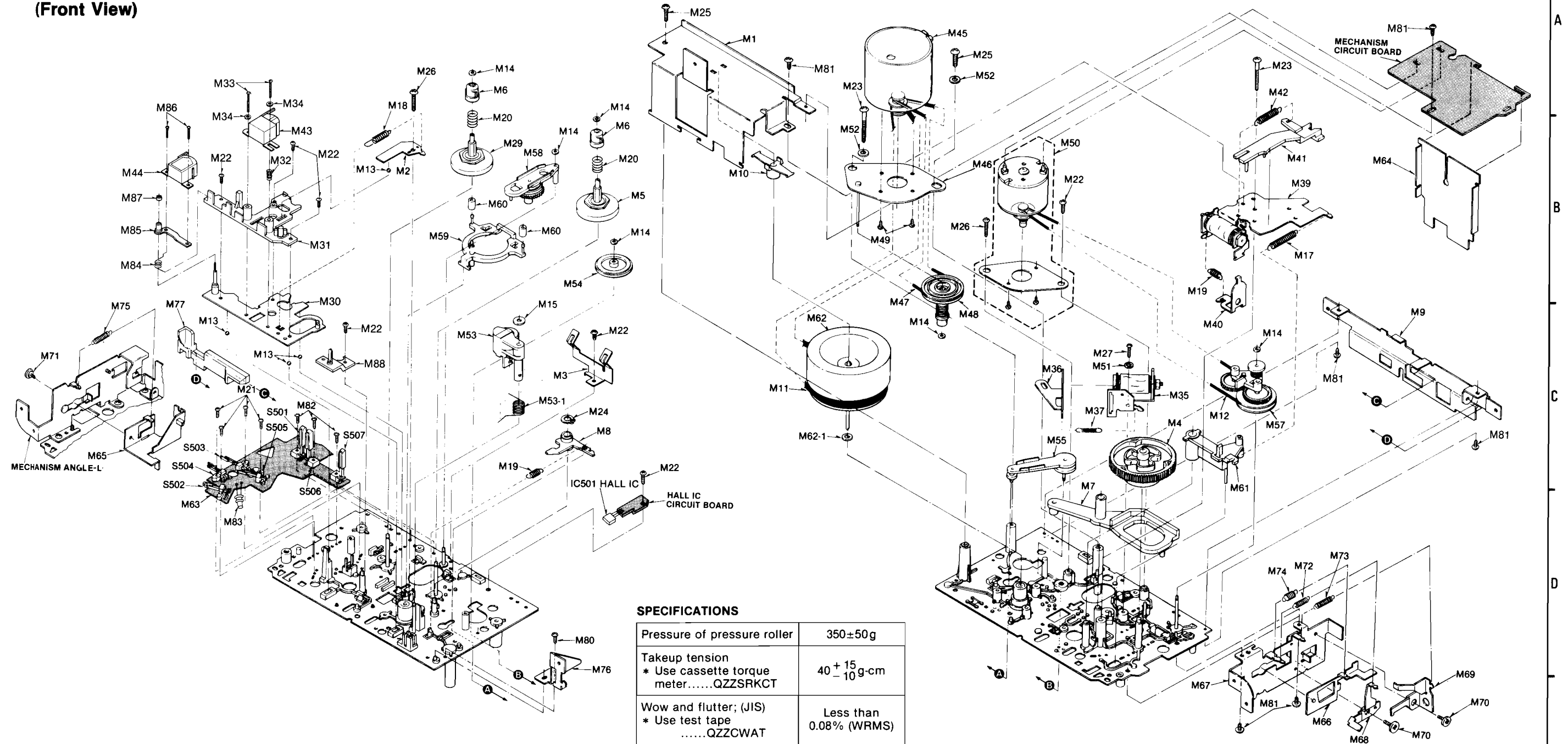




## MECHANICAL PARTS LOCATION

(Front View)

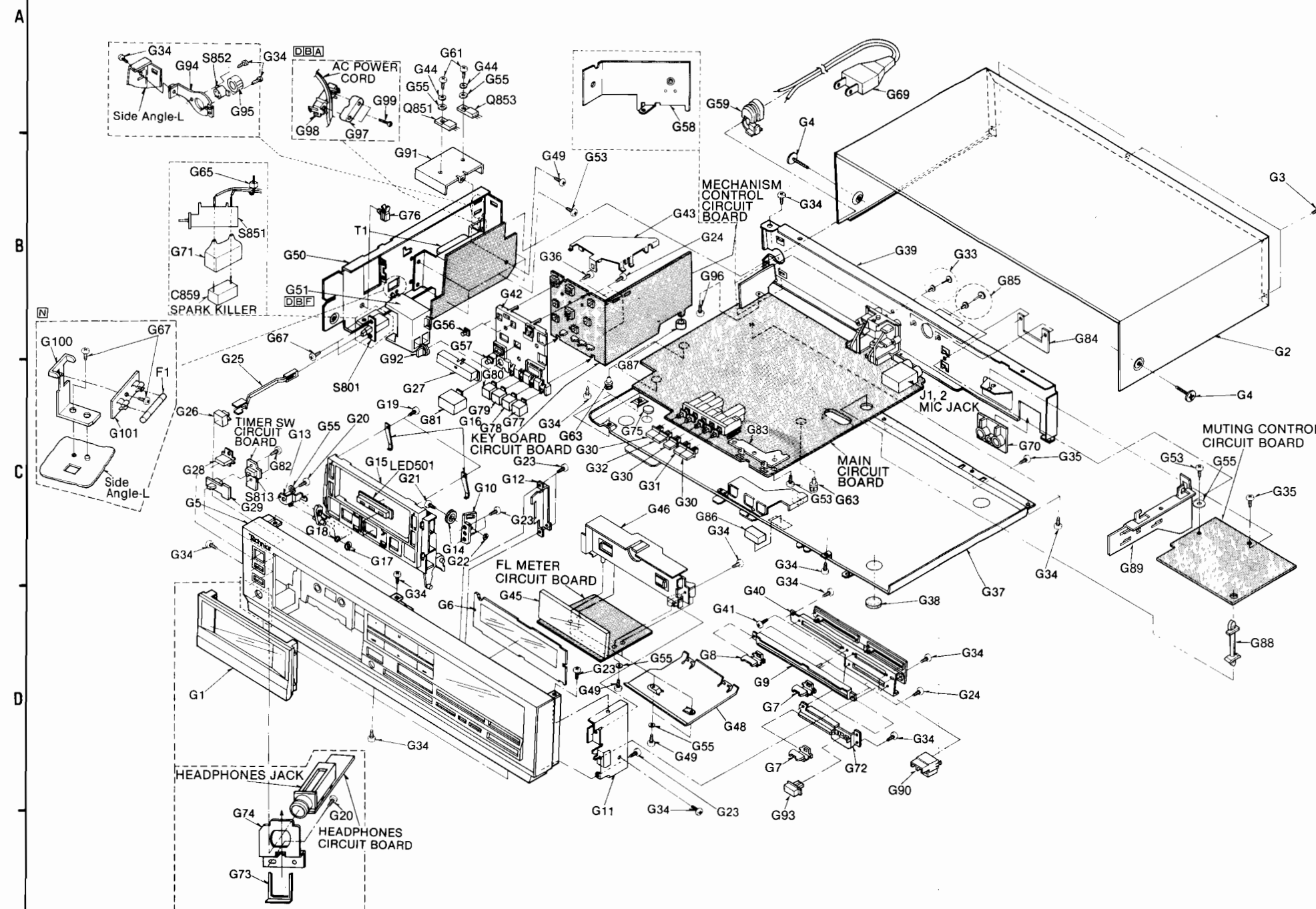
(Rear View)



## REPLACEMENT PARTS LIST

| Ref. No.                | Part No. | Part Name & Description  | Ref. No. | Part No.    | Part Name & Description | Ref. No. | Part No.  | Part Name & Description  | Ref. No. | Part No.  | Part Name & Description  | Ref. No. | Part No.  | Part Name & Description | Ref. No. | Part No.   | Part Name & Description |
|-------------------------|----------|--------------------------|----------|-------------|-------------------------|----------|-----------|--------------------------|----------|-----------|--------------------------|----------|-----------|-------------------------|----------|------------|-------------------------|
| <b>MECHANICAL PARTS</b> |          |                          | M 14     | QBW2008     | Snap Washer             | M 31     | QMZ1303   | Spacer                   | M 46     | QXA1328   | Motor Retainer Assembly  | M 60     | QBG1132   | Brake Rubber            | M 73     | QBT1998    | Lock Lever-A Spring     |
| M 1                     | QMA4528  | Flywheel Retainer        | M 15     | QBW2046     | Snap Washer             | M 32     | QBC1103   | Spring (for R/P Head)    | M 47     | QDB0332   | Takeup Belt              | M 61     | QXL1411   | Lock Lever Assembly     | M 74     | QBT1999    | Lock Lever-B Spring     |
| M 2                     | QBP1894  | Head Base Plate Spring   | M 17     | QBT1725     | Lock Lever Spring       |          |           |                          | M 48     | QXP0621   | Takeup Pulley Assembly   | M 62     | QXF0219   | Flywheel Assembly       | M 75     | QBT2000    | Lock Lever-C Spring     |
| M 3                     | QBP1979  | Cassette Pressure Spring | M 18     | QBT1927     | Head Base Plate Spring  | M 33     | XSN2 + 14 | Screw @2×14              | M 49     | XSN26 + 3 | Screw @2.6×3             | M 62-1   | QBW2099   | Poly Washer             | M 76     | QMA4554    | Mechanism Angle-R       |
| M 4                     | QXG1059  | Main Gear Assembly       | M 19     | QBT1920     | Idler Spring            | M 34     | XWG2      | Washer 2φ                | M 50     | QXU0334   | Reel Motor Assembly      | M 63     | QJ11776RR | Leaf Switch P.C.B.      | M 77     | QML3972    | Auto Tape Select Lever  |
| M 5                     | QXD0147  | Takeup Reel Table        | M 20     | QBC1373     | Reel Table Spring       | M 35     | QXA1232   | Brake Plunger Assembly   | M 51     | XWG26     | Washer 2.6φ              | M 64     | QTW1315   | Insulating Plate        | M 80     | XTN26 + 8B | Tapping Screw @2.6×8    |
| M 6                     | QMB1336  | Reel Table Hub           | M 21     | XTN2 + 6B   | Tapping Screw @2×6      | M 36     | QML3865   | Plunger Lever            | M 52     | XWG3      | Washer 3φ                | M 65     | QXL1600   | Lock Lever-C Assembly   | M 81     | XTN3 + 6B  | Tapping Screw @3×6      |
| M 7                     | QML3655  | Cam Follower             | M 22     | XTN26 + 6B  | Tapping Screw @2.6×6    | M 37     | QBT1955   | Plunger Spring           | M 53     | QXL1550   | Pressure Roller Assembly | M 66     | QXL1601   | Lock Lever-B Assembly   | M 82     | XTN2 + 8B  | Tapping Screw @2×8      |
| M 8                     | QML3660  | Idler Select Lever       | M 23     | XTN3 + 24B  | Tapping Screw @3×24     | M 39     | QXA1076   | Trigger Plunger Assembly | M 53-1   | QBN1771   | Pressure Roller Spring   | M 67     | QMA4623   | Mechanism Angle-L       | M 83     | XAMQ50512  | Pilot Lamp              |
| M 9                     | QMA4543  | Mechanism Upper Angle    | M 24     | XUB4FT      | Stop Ring 4φ            | M 40     | QML3651   | Trigger Plunger Lever    | M 54     | QXI0113   | Takeup Idler Assembly    | M 68     | QML3976   | Eject Lever             | M 84     | QBN1981    | Spring (for Erase Head) |
| M 10                    | QMZ1293  | Flywheel Thrust Retainer | M 25     | XTN3 + 10B  | Tapping Screw @3×10     | M 41     | QML3653   | Control Lever            | M 55     | QXL1603   | Idler Lever Assembly     | M 69     | QML3978   | Mechanism Lever-A       | M 85     | QXH0437    | Erase Head Base Plate   |
| M 11                    | QDB0333  | Flywheel Belt            | M 26     | XTN26 + 12B | Tapping Screw @2.6×12   | M 42     | QBT1278   | Record Lock Lever Spring | M 56     | XTN3 + 6B | Tapping Screw @3×6       | M 70     | QHQ1161   | Step Screw              | M 86     | XSN2 + 4   | Screw @2×4              |
| M 12                    | QDB0287  | Changing Belt            | M 27     | XTN26 + 8B  | Tapping Screw @2.6×8    | M 43     | QWY4148Z  | Record/Playback Head     | M 57     | QXL1408   | Swing Gear Assembly      | M 71     | QHQ1168   | Step Screw              | M 87     | QNQ1094    | Nut                     |
| M 13                    | QDK1012  | Steel Ball 2.5φ          | M 29     | QDR1164     | Supply Reel Table       | M 44     | QWY2133Z  | Erase Head               | M 58     | QXL1604   | Fast Wind Gear Assembly  | M 72     | QBT2001   | Eject Lever Spring      | M 88     | QXH0434    | Pad Cradle Assembly     |
|                         |          |                          | M 30     | QXK2765     | Head Base Plate         | M 45     | QXU0322   | Capstan Motor Assembly   | M 59     | QML3659   | Brake Lever              |          |           |                         |          |            |                         |

# CABINET PARTS LOCATION

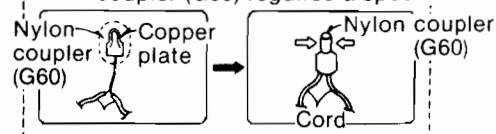


## NOTES:

- [D] .....For all European areas except United Kingdom.
- [B] .....For United Kingdom.
- [N] .....For Asia, Latin America, Middle East and Africa areas.
- [A] .....For Australia.

## DBA

Note: Cord connection using this nylon coupler (G60) requires a special tool.



## REPLACEMENT PARTS LIST

Important safety notice  
Components identified by Δ 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 |
|----------------------|--------------------------|-------------------------|
| <b>CABINET PARTS</b> |                          |                         |
| G 1                  | QYF0641<br>"Silver Type" | Cassette Lid Assembly   |
|                      | QYF0641K<br>"Black Type" | Cassette Lid Assembly   |

| Ref. No.           | Part No.                                                 | Part Name & Description                                                     | Ref. No.        | Part No.                 | Part Name & Description                                                   |
|--------------------|----------------------------------------------------------|-----------------------------------------------------------------------------|-----------------|--------------------------|---------------------------------------------------------------------------|
| G 2                | QGC1239<br>"Silver Type"                                 | Case Cover                                                                  | G 60            | [DBA] Δ QJT1079          | Nylon Coupler<br>[For all European areas and Australia.]                  |
|                    | QGC1239<br>"Black Type"                                  | Case Cover                                                                  | G 61            | XSN3 + 8S                | Screw Φ3×8                                                                |
| G 3                | XTB3 + 8BFN<br>"Silver Type"                             | Tapping Screw Φ3×8                                                          | G 63            | QKJ0608                  | Spacer (for P.C.B)                                                        |
|                    | XTB3 + 8BFZ<br>"Black Type"                              | Tapping Screw Φ3×8                                                          | G 65            | QTD1315                  | Nylon Binder                                                              |
| G 4                | QH01349<br>"Silver Type"                                 | Ornament Screw                                                              | G 67            | XTN3 + 6B                | Tapping Screw Φ3×6                                                        |
|                    | QH01349K<br>"Black Type"                                 | Ornament Screw                                                              | G 69            |                          |                                                                           |
| G 5                | QYP1189<br>"Silver Type"                                 | Front Panel Assembly                                                        |                 | [D] Δ SJA88              | AC Power Cord<br>[For all European areas except United Kingdom.]          |
|                    | QYP1189K<br>"Black Type"                                 | Front Panel Assembly                                                        |                 | [B] Δ QFC1205M           | AC Power Cord<br>[For United Kingdom.]                                    |
| G 6                | QGL1181<br>"Silver Type"                                 | FL Meter Cover                                                              |                 | [N] Δ RJA522B-K          | AC Power Cord<br>[For Asia, Latin America, Middle East and Africa areas.] |
|                    | QGL1181K<br>"Black Type"                                 | FL Meter Cover                                                              |                 | [A] Δ QFC1208M           | AC Power Cord<br>[For Australia.]                                         |
| G 7                | QYT0657                                                  | Slide Knob-A Assembly                                                       | G 70            | QK3355                   | MIC Cover                                                                 |
| G 8                | QYT0658                                                  | Slide Knob-B Assembly                                                       | G 71            | QTW1195                  | Spark Killer Cover                                                        |
| G 9                | QGG0208<br>"Silver Type"                                 | Slide Guide-A                                                               | G 72            | QGG0218                  | Slide Guide-B                                                             |
|                    | QGG0208K<br>"Black Type"                                 | Slide Guide-A                                                               |                 | QGG0218K<br>"Black Type" | Slide Guide-B                                                             |
| G 10               | QKJ0596                                                  | Damper Gear Holding Angle                                                   | G 73            | QMA4624                  | Headphones Holding Plate                                                  |
| G 11               | QMA4636                                                  | Side Angle-R                                                                | G 74            | QMA4614                  | Headphones Angle                                                          |
| G 12               | QMA4610                                                  | Meter Holding Angle                                                         | G 75            | QTW1336                  | Insulator Sheet                                                           |
| G 13               | QMA4552                                                  | Cassette Holder Angle-L                                                     | G 76            | QKJ0648                  | Cord Clamper                                                              |
| G 14               | QDG1254                                                  | Damper Gear                                                                 | G 77            | QGO2211                  | Push Button (Repeat)                                                      |
| G 15               | QMH2098<br>"Silver Type"                                 | Cassette Holder                                                             | G 78            | QGO2214                  | Push Button<br>(Music Select)                                             |
|                    | QMH2098K<br>"Black Type"                                 | Cassette Holder                                                             | G 79            | QGO2213                  | Push Button<br>(Time Counter)                                             |
| G 16               | QBP1946                                                  | Cassette Pressure Spring                                                    | G 80            | QGO2212                  | Push Button<br>(Tape Counter)                                             |
| G 17               | XUB04FT                                                  | Stop Ring                                                                   | G 81            | QGO2210                  | Push Button<br>(Counter Reset)                                            |
| G 18               | QBN1961                                                  | Holder Spring                                                               | G 82            | XTN26 + 6B               | Tapping Screw Φ2.6×6                                                      |
| G 19               | XTN26 + 5BFZ                                             | Screw Φ2.6×5                                                                | G 83            | QMA4613                  | P.B Holding Angle (A)                                                     |
| G 20               | XTN3 + 8B                                                | Tapping Screw Φ3×8                                                          | G 84            | QMA4645                  | Remote Control Angle                                                      |
| G 21               | XSN26 + 10                                               | Screw Φ2.6×10                                                               | G 85            | QKJ0661                  | Nylon Rivet                                                               |
| G 22               | XNG26E                                                   | Nut 2.6φ                                                                    | G 86            | QBM1333                  | Rubber Cushion                                                            |
| G 23               | XTB3 + 10BFN                                             | Tapping Screw Φ3×10                                                         | G 87            | QBM1332                  | Cap                                                                       |
| G 24               | XTN26 + 8B                                               | Tapping Screw Φ2.6×8                                                        | G 88            | QKJ0637                  | Locking Support                                                           |
| G 25               | QMR2059                                                  | Power Rod                                                                   | G 89            | QMA4615                  | P.B Holding Angle (B)                                                     |
| G 26               | QGO2142                                                  | Push Button<br>(Power ON/OFF)                                               | G 90            | QKJ0633                  | LED Holding                                                               |
| G 27               | QGO2140                                                  | Push Button (STOP)                                                          | G 91            | QTH1179                  | Heat Sink                                                                 |
| G 28               | QGO2141                                                  | Push Button (for Eject)                                                     | G 92            | QGT1643                  | Bias Adjustment Knob                                                      |
| G 29               | QGT1642                                                  | Timer Switch Knob                                                           | G 93            | QGO2215                  | Push Button (Monitor)                                                     |
| G 30               | QGO2145                                                  | Push Button-A                                                               | G 94            | QMA4603                  | Switch Angle (for S852)                                                   |
| G 31               | QGO2146                                                  | Push Button-B                                                               | G 95            | QTM0026                  | Switch Cover (for S852)                                                   |
| G 32               | QGO2147                                                  | Push Button-C                                                               | G 96            | XSN + 6BVD               | Screw Φ3×6                                                                |
| G 33               | QKJ0609                                                  | Nylon Rivet                                                                 |                 |                          |                                                                           |
| G 34               | XTB3 + 8BFN                                              | Tapping Screw Φ3×8                                                          | G 97            | [DBA] QTD1164            | Cord Clamper-A<br>[For all European areas and Australia.]                 |
| G 35               | XTB3 + 12BFZ                                             | Tapping Screw Φ3×12                                                         | G 98            | [DBA] QTD1322            | Cord Clamper-B<br>[For all European areas and Australia.]                 |
| G 36               | XTB3 + 12BFN                                             | Tapping Screw Φ3×12                                                         | G 99            | [DBA] XTN3 + 24B         | Tapping Screw Φ3×24<br>[For all European areas and Australia.]            |
| G 37               | QGC1240                                                  | Bottom Cover                                                                | G 100           | [N] QMA3418              | Fuse Angle<br>[For Asia, Latin America, Middle East and Africa areas.]    |
| G 38               | QKA1086                                                  | Case Foot                                                                   | G 101           | [N] Δ QTF1032            | Fuse Holder<br>[For Asia, Latin America, Middle East and Africa areas.]   |
| G 39               | [D] QMK2054                                              | Back Chassis                                                                |                 |                          |                                                                           |
|                    | [BA] QMK2055                                             | Back Chassis                                                                |                 |                          |                                                                           |
|                    | [N] QMK2056                                              | Back Chassis                                                                |                 |                          |                                                                           |
|                    | [For Asia, Latin America, Middle East and Africa areas.] |                                                                             |                 |                          |                                                                           |
| G 40               | QMA4611                                                  | Volume Angle                                                                |                 |                          |                                                                           |
| G 41               | XSN2 + 3                                                 | Screw Φ2×3                                                                  |                 |                          |                                                                           |
| G 42               | QMK2036                                                  | Operation Chassis                                                           |                 |                          |                                                                           |
| G 43               | QMA4558                                                  | P.C.B Angle                                                                 |                 |                          |                                                                           |
| G 44               | XWA3B                                                    | Washer 3φ                                                                   |                 |                          |                                                                           |
| G 45               | QSI0006F                                                 | FL Meter                                                                    |                 |                          |                                                                           |
| G 46               | QKJ0632                                                  | Meter Holder                                                                |                 |                          |                                                                           |
| G 47               | QTS1602                                                  | FL Meter Shield Plate                                                       |                 |                          |                                                                           |
| G 48               | XTN3 + 10B                                               | Tapping Screw Φ3×10                                                         |                 |                          |                                                                           |
| G 49               | QMA4635                                                  | Side Angle-L                                                                |                 |                          |                                                                           |
| G 50               |                                                          |                                                                             |                 |                          |                                                                           |
| G 51               | [DBA] QKJ0598                                            | Switch Cover (for S851)<br>[For all European areas and Australia.]          |                 |                          |                                                                           |
| G 53               | XTN3 + 6B                                                | Tapping Screw Φ3×6                                                          |                 |                          |                                                                           |
| G 54               | XWG26                                                    | Washer 2.6φ                                                                 |                 |                          |                                                                           |
| G 55               | XWG3                                                     | Washer 3φ                                                                   |                 |                          |                                                                           |
| G 56               | QKJ0634                                                  | LED Cover-A                                                                 |                 |                          |                                                                           |
| G 57               | QKJ0635                                                  | LED Cover-B                                                                 |                 |                          |                                                                           |
| G 58               | QTH1178                                                  | Heat Sink                                                                   |                 |                          |                                                                           |
| G 59               |                                                          |                                                                             |                 |                          |                                                                           |
|                    | [DBA] QBJ1425                                            | Cord Bushing<br>[For all European areas and Australia.]                     |                 |                          |                                                                           |
|                    | [N] QTD1129                                              | Cord Bushing<br>[For Asia, Latin America, Middle East and Africa areas.]    |                 |                          |                                                                           |
| <b>ACCESSORIES</b> |                                                          |                                                                             | <b>PACKINGS</b> |                          |                                                                           |
| A 1                | QEB0125                                                  | Connection Cord                                                             | P 1             | [DBA] QPN4455            | Inner Carton<br>[For all European areas and Australia.]                   |
| A 2                | XZB24X34A04                                              | Poly Bag (for A3)                                                           |                 | [N] QPN4458              | Inner Carton<br>[For Asia, Latin America, Middle East and Africa areas.]  |
| A 3                | QQT3475                                                  | Instruction Book                                                            |                 |                          |                                                                           |
| A 4                | [N] Δ QJP0603S                                           | AC Plug Adaptor<br>[For Asia, Latin America, Middle East and Africa areas.] | P 2             | QPA0701                  | Cushion-R                                                                 |
|                    |                                                          |                                                                             | P 3             | QPA0702                  | Cushion-L                                                                 |
|                    |                                                          |                                                                             | P 4             | QPS0434                  | Pad                                                                       |
|                    |                                                          |                                                                             | P 5             | QPA0712                  | Spacer                                                                    |
|                    |                                                          |                                                                             | P 6             | XZB40X60A02              | Poly Bag (for UNIT)                                                       |
|                    |                                                          |                                                                             | P 7             | QPC0072                  | Poly Sheet (for AC Power Cord)                                            |

# Service Manual

Cassette Deck

## RS-M253X

(Silver Face)  
(Black Face)

**Supplement-1**

dbx\* /Dolby B-C 2 Motor 3 Head  
Cassette Deck

\*\*



DOLBY B-C NR

### RS-M250 MECHANISM SERIES

Please use this manual together with the service manual for model No. RS-M253X (Original) order No. ARD83040230C8-19.

This is the Service Manual for the following areas.

**D** ...For all European areas except United Kingdom.

**B** ...For United Kingdom.

**A** ...For Australia.

### PARTS COMPARISON TABLE:

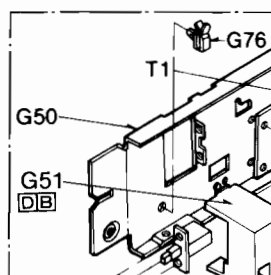
Please revise the original parts list in the Service Manual (RS-M253X) to conform to the changes shown herein.

If new part numbers are shown, be sure to use them when ordering parts.

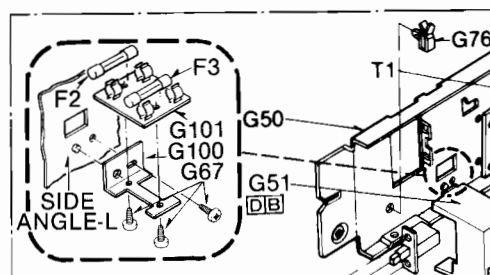
• Important safety notice  
Components identified by  $\Delta$  mark have special characteristics important for safety.  
When replacing any of these components, use only manufacturer's specified parts.

| Ref. No.                                           | Part Name & Description  | Part Numbers                        |                  | Remarks |
|----------------------------------------------------|--------------------------|-------------------------------------|------------------|---------|
|                                                    |                          | Former Type                         | New Type         |         |
| IC104, 105, 106,<br>130, 203, 204<br>205, 206, 302 | Integrated Circuits      | M5220L                              | M5218L           |         |
| F2, 3 $\Delta$                                     | Fuse                     | —                                   | XBAQ100027 (T1A) | Added   |
| G2                                                 | Case Cover "Silver Type" | QGC1239                             | QGC1245          |         |
| G2 <b>D</b> <b>B</b>                               | Case Cover "Black Type"  | QGC1239<br>↓ Correction<br>QGC1239K | QGC1245K         |         |
| ※ For all European areas.                          |                          |                                     |                  |         |
| G100                                               | Fuse Angle               | —                                   | QMA4729          | Added   |
| G101 $\Delta$                                      | Fuse Holder              | —                                   | QFF1020          | Added   |

### CABINET PARTS LOCATION (ADDITION)



Former Type



New Type

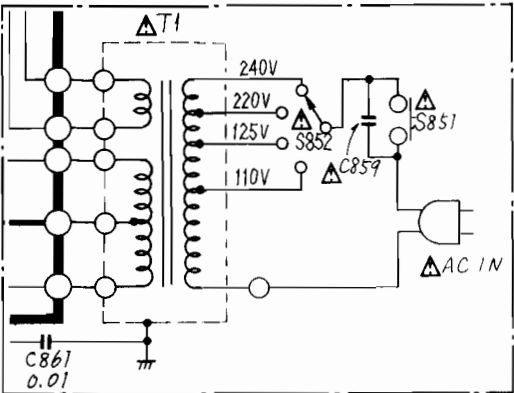
\* The term dbx is a registered trademark of dbx Inc.

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

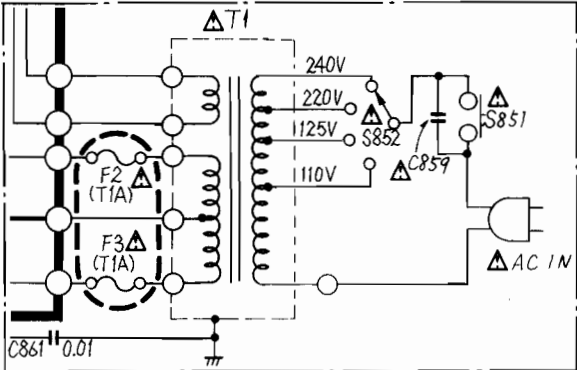
# Technics

Matsushita Electric Trading Co., Ltd.  
P.O. Box 288, Central Osaka Japan

**SCHEMATIC DIAGRAM (Power Supply Circuit Section)**  
**(ADDITION)**



Former Type

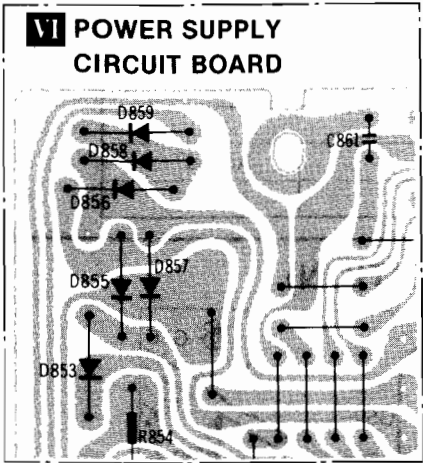


New Type

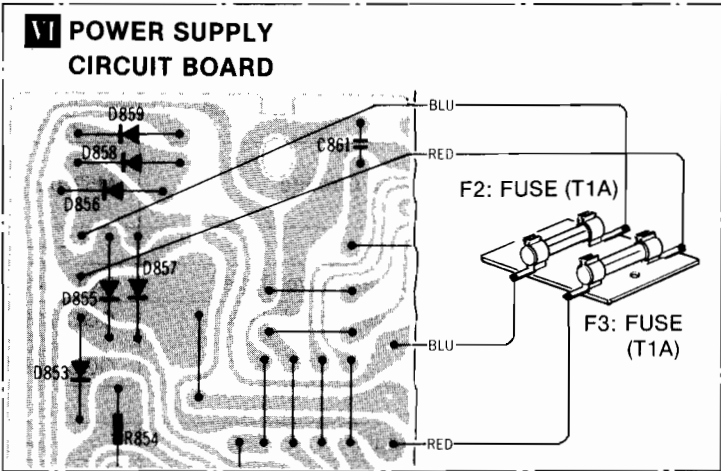
**CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM**

**NOTES:** Former Type.....This product with serial numbers to RH303950.  
New Type .....This product with serial number RH303951 and after.  
•The serial number plate of this product is attached to the bottom cover.

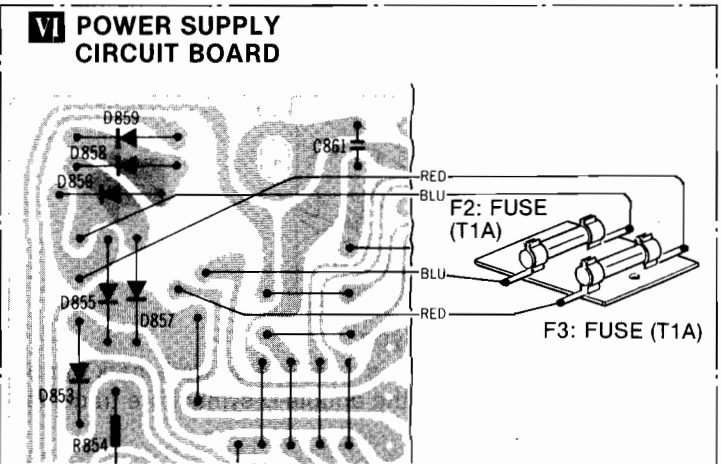
**(ADDITION)**



Former Type



New Type



New Type

# MESSUNGEN UND EINSTELL METHODEN

## RS-M253X DEUTSCH

Verwenden Sie bitte diese Broschüre Zusammen mit der Service-Anleitung für das Modell Nr. RS-M253X.

**Anm.:** Wenn nicht anders vorgeschrieben, Drehschalter und Steuereinrichtungen auf die folgenden Positionen stellen.

- Für saubere Köpfe sorgen.
- Für saubere Tonwelle und Andruckrolle sorgen.
- Auf normale Raumtemperatur achten:  $20 \pm 5^\circ\text{C}$  ( $68 \pm 9^\circ\text{F}$ )
- Monitorschalter: Band-Position
- Eingangsregler: MAX
- Ausgangsregler: MAX
- Dolby-Schalter: AUS
- Vormagnetisierungsfeineinstellung: Mitte
- Balanceregler: Mitte

### A Einstellung der Löschkopfhöhe

Bedingung:  
• Wiedergabe

Meßgerät:  
• Testband (Bandlaufweg-Betrachtungsvorrichtung mit Spiegel)...QZZCRD

#### Vorsicht:

1. Die Schrauben (A) und (B) lösen und den Löschkopf ersetzen.  
(Die Mutter (C) dient zur Einstellung der Löschkopfhöhe und darf nicht gelöst werden.)
2. Nachdem der Löschkopf ausgewechselt wurde, das Testband QZZCRD abspielen.
3. Sollten irgendwelche Probleme beim Bandtransport auftreten, ist auf unten beschriebene Weise die Einstellung vorzunehmen.

#### Einstellung:

1. Die Mutter (C) (siehe Fig. 2) so justieren, daß das Band sich nicht verwickelt oder von der Bandführung des Löschkopfes verzogen wird.

#### Kopfhöheneinstellung mit der Kopfeinstellungsvorrichtung (QZZ0207)

Die Kopfeinstellungsvorrichtung (QZZ0207) ermöglicht schnelles und genaues Einstellen der Kopfhöhe, wie im Folgenden beschrieben:

- a. Die Grundplatte auf den Mechanismus aufsetzen.
- b. Auf Wiedergabe (Play) schalten.
- c. Prüfstab auf die Grundplatte setzen.
- d. Den Prüfungsstab durch die Bandführungen führen.
- e. Den Nut so justieren, dass der Prüfstab die Bandführungen nicht berührt.
- f. Mit dem Testband (QZZCRD) überprüfen, ob das Band die Bandführungen nicht berührt.  
(z.B.: Das Band darf nicht verdreht werden).

### B Justierung des Aufnahme/ Wiedergabekopfes

Bedingung:  
• Wiedergabe  
• Betriebsart: Normalband  
• Ausgangsregler: MAX

Meßgerät:  
• Röhrenvoltmeter  
• Oszillograph  
• Testband (azimuth)...QZZCFM

#### Ausgangsbalance-Justierung für linken und rechten Kanal

1. Den Meßaufbau zeigt Fig. 4.
2. 8kHz-Signal des Testbandes (QZZCFM) wiedergeben.  
Schraube (D) in Fig. 5 auf maximalen Ausgangspegel des linken und rechten Kanals abgleichen.  
Sind die Ausgangspegel des linken und rechten Kanals nicht gleichzeitig maximal, wie folgt justieren:
3. Durch Drehen der in Fig. 5 gezeigten Schraube (D) die Winkel A und C (Punkte, wo Spitzenausgangspegel für den linken und rechten Kanal erreicht werden) ermitteln. Anschließend den Winkel B zwischen dem Winkel A und C ermitteln, d.h. den Punkt, wo die Ausgangspegel des linken und rechten Kanals ausbalanciert (ausgeglichen) sind. (Siehe Fig. 5 und 6.)

#### Phasenjustierung für linken und rechten Kanal

4. Den Meßaufbau zeigt Fig. 7.
5. 8kHz-Signal des Testbandes (QZZCFM) wiedergeben.  
Schraube (D), wie in Fig. 5 gezeigt, so einstellen, daß Zeiger von zwei Röhrenvoltmeter auf Maximum ausschlagen und am Oszillographen eine Wellenform wie in Fig. 8 erreicht wird.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                |                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| <b>Ⓒ Bandgeschwindigkeit</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Bedingung:</b><br>• Wiedergabe<br>• Ausgangsregler: MAX                                                                     | <b>Meßgerät:</b><br>• Elektronischer Digitalzähler<br>• Testband...QZZCWAT     |
| <b>Genauigkeit der Bandgeschwindigkeit</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                |                                                                                |
| 1. Den Meßaufbau zeigt Fig. 9.<br>2. Testband (QZZCWAT 3000Hz) wiedergeben und Ausgangssignal dem Zähler zuführen.<br>3. Frequenz messen.<br>4. Beträgt die auf dem Testband aufgezeichnete Frequenz 3000Hz, so ergibt sich die Genauigkeit nach folgender Formel:<br>$\text{Genauigkeit der Bandgeschwindigkeit} = \frac{f - 3000}{3000} \times 100(\%)$ worin f die gemessene Frequenz ist.<br>5. Die Messung soll im mittleren Teil des Bandes erfolgen.                                               |                                                                                                                                |                                                                                |
| <b>NORMALWERT: ±1,5%</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                |                                                                                |
| 6. Falls der Meßwert nicht im vorgeschriebenen Bereich liegt, bitte mit Bandgeschwindigkeitsregler VR wie in Abb. 1 gezeigt einstellen.                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                |                                                                                |
| <b>Anmerkung:</b> Bitte bei dieser Einheit zum Justieren der Bandgeschwindigkeit keinen Metallschraubenzieher benutzen.<br>Schwankung der Bandgeschwindigkeit:<br>Messung, wie oben beschrieben für Anfang, mittleren Teil und Ende des Testbandes wiederholen und Schwankung wie folgt bestimmen:                                                                                                                                                                                                        |                                                                                                                                |                                                                                |
| $\text{Schwankung} = \frac{f_1 - f_2}{3000} \times 100(\%)$ $f_1 = \text{Maximalwert}$ $f_2 = \text{Minimalwert}$                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                |                                                                                |
| <b>NORMALWERT: 1,0%</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                |                                                                                |
| <b>Ⓓ Frequenzgang bei Wiedergabe</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Bedingung:</b><br>• Wiedergabe<br>• Betriebsart: Normalband<br>• Ausgangsregler: MAX                                        | <b>Meßgerät:</b><br>• Röhrenvoltmeter<br>• Oszillograph<br>• Testband...QZZCFM |
| 1. Den Meßaufbau zeigt Fig. 4.<br>2. Gerät auf Wiedergabe schalten. Frequenzgang-Testband QZZCFM wiedergeben.<br>3. Ausgangsspannung bei 315 Hz, 12,5 kHz, 8 kHz, 1 kHz, 250 Hz, 125 Hz und 63 Hz messen und jede Ausgangsspannung mit der Standardfrequenz 315 Hz am Testpunkt [TP201 (L-CH), TP202 (R-CH)] vergleichen.<br>4. Messungen an beiden Kanälen durchführen.<br>5. Prüfen, ob die gemessenen Werte innerhalb des in der Frequenzgang-Übersicht aufgeführten Bereichs liegen. (Siehe Fig. 10.) |                                                                                                                                |                                                                                |
| <b>Ⓔ Wiedergabe-Verstärkung</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Bedingung:</b><br>• Wiedergabe<br>• Betriebsart: Normalband<br>• Ausgangsregler: MAX                                        | <b>Meßgerät:</b><br>• Röhrenvoltmeter<br>• Oszillograph<br>• Testband...QZZCFM |
| 1. Den Meßaufbau zeigt Fig. 4.<br>2. Standard-Frequenz (QZZCFM 315 Hz) vom Testband wiedergeben und Ausgangsspannung messen. [TP201 (L-CH), TP202 (R-CH)].<br>3. Messung an beiden Kanälen durchführen.                                                                                                                                                                                                                                                                                                   |                                                                                                                                |                                                                                |
| <b>NORMALWERT: 0,28 V [0,4±0,05 V: at LINE OUT Jack]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                |                                                                                |
| <b>Einstellung:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                |                                                                                |
| 1. Abweichungen können durch Abgleich von VR1 (linker Kanal) und VR2 (rechter Kanal) korrigiert werden. (S. Fig. 1.)<br>2. Nach erfolgtem Abgleich ist der Frequenzgang bei Wiedergabe erneut zu kontrollieren.                                                                                                                                                                                                                                                                                           |                                                                                                                                |                                                                                |
| <b>Ⓕ Löschstrom</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Bedingung:</b><br>• Aufnahme<br>• Betriebsart: Metallband<br>• Vormagnetisierungs-<br>Feineinstellregler:<br>Mittelstellung | <b>Meßgerät:</b><br>• Röhrenvoltmeter<br>• Oszillograph                        |
| 1. Den Meßaufbau zeigt Fig. 11.<br>2. Die Aufnahme- und Pausentaste drücken.<br>3. Den Bandwahlschalter auf Metallband-Position stellen.<br>4. Löschstrom nach folgender Formel ermitteln:<br>$\text{Löschstrom (A)} = \frac{\text{Die Spannung über beide Enden von R903}}{1 \text{ (Ohm)}}$                                                                                                                                                                                                             |                                                                                                                                |                                                                                |