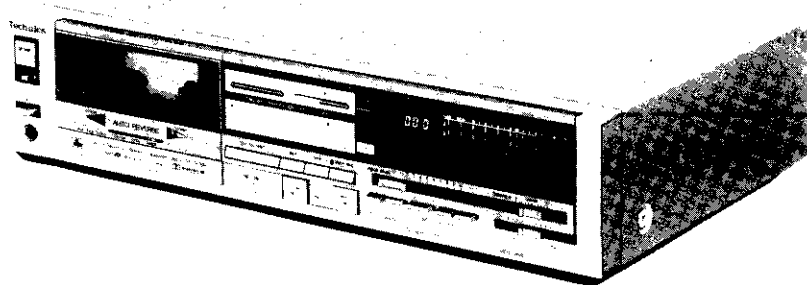


Service Manual

Cassette Deck

RS-B78R

(Silver Face)
(Black Face)dbx/Dolby B-C NR, Auto-Reverse
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-8R MECHANISM SERIES

Specifications

Track system: 4-track 2-channel stereo recording
and playback

Tape speed: 4.8cm/s

Wow and flutter: 0.045% (WRMS), $\pm 0.14\%$ (DIN)

Frequency
response: Metal tape; 20~20,000Hz
30~19,000Hz (DIN)
40~18,000Hz ± 3 dB
CrO₂ tape; 20~19,000Hz
30~18,000Hz (DIN)
40~17,000Hz ± 3 dB
Normal tape; 20~18,000Hz
30~17,000Hz (DIN)
40~16,000Hz ± 3 dB

Dynamic range: 110dB (at 1kHz) with dbx in

Max. input level
improvement: 10dB or more improved with dbx in
(at 1kHz)

Signal-to-noise
ratio: dbx in; 92dB (A weighted)
Dolby C NR in; 75dB (CCIR)
Dolby B NR in; 68dB (CCIR)
NR out; 58dB (A weighted)
(Signal level = max. input level CrO₂
type tape)

Fast forward and
rewind time: Approx. 90 seconds with C-60
cassette tape

Inputs: MIC; sensitivity 0.25mV, applicable
microphone impedance
400 Ω ~10k Ω
LINE; sensitivity 60mV, input
impedance 47k Ω or more

Outputs: LINE; output level 700mV, output
impedance 800 Ω or less
HEADPHONES; output level 125mV
(at 8 Ω) applicable headphone
impedance 8 Ω ~600 Ω

Bias frequency: 80kHz

Heads: 1-AX (AMORPHOUS) head for
rec/playback
2-double-gap ferrite head for erasure

Motor: 3-motor system
One for capstan drive (Electrical
governor motor)
One for reeltable drive (DC motor)
One for mechanism drive (DC motor)

Technics

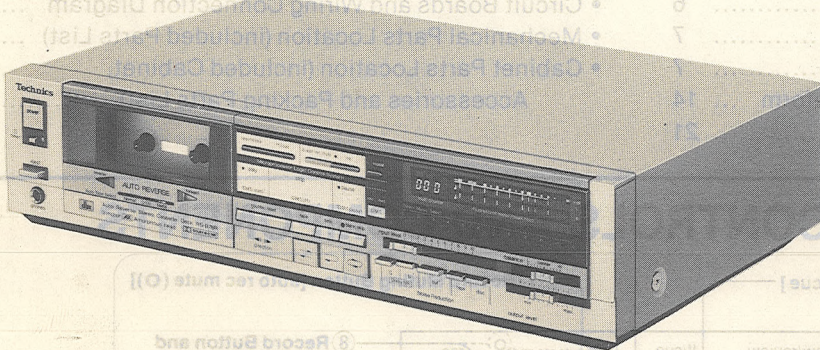
Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

Service Manual

**dbx/Dolby B-C NR, Auto-Reverse
Cassette Deck**

**Cassette Deck
RS-B78R
(Silver Face)
(Black Face)**

DOLBY B-C NR



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-8R MECHANISM SERIES

Specifications

Track system:	4-track 2-channel stereo recording and playback	Fast forward and rewind time:	Approx. 90 seconds with C-60 cassette tape
Tape speed:	4.8cm/s	Inputs:	MIC; sensitivity 0.25mV, applicable microphone impedance 400Ω~10kΩ
Wow and flutter:	0.045% (WRMS), ±0.14% (DIN)	Outputs:	LINE; sensitivity 60mV, input impedance 47kΩ or more impedance 800Ω or less
Frequency response:	Metal tape; 20~20,000Hz 30~19,000Hz (DIN) 40~18,000Hz ±3dB CrO ₂ tape; 20~19,000Hz 30~18,000Hz (DIN) 40~17,000Hz ±3dB Normal tape; 20~18,000Hz 30~17,000Hz (DIN) 40~16,000Hz ±3dB	HEADPHONES; output level 125mV (at 8Ω) applicable headphone impedance 8Ω~600Ω	
Dynamic range:	110dB (at 1kHz) with dbx in	Bias frequency:	80kHz
Max. input level improvement:	10dB or more improved with dbx in (at 1kHz)	Heads:	1-AX (AMORPHOUS) head for rec/playback 2-double-gap ferrite head for erasure
Signal-to-noise ratio:	dbx in; 92dB (A weighted) Dolby C NR in; 75dB (CCIR) Dolby B NR in; 68dB (CCIR) NR out; 58dB (A weighted) (Signal level = max. input level CrO ₂ type tape)	Motor:	3-motor system One for capstan drive (Electrical governor motor) One for reeltable drive (DC motor) One for mechanism drive (DC motor)

Technics

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

Power

requirements: AC; 110/125/220/240V, 50-60Hz

[D]...Pre-set power voltage 220V

[B][N][A]...Pre-set power voltage 240V

Power

consumption: 25W

Dimensions: 43cm(W)×9.8cm(H)×27.3cm(D)

Weight: 5.3kg

Design and specifications are subject to change without notice.

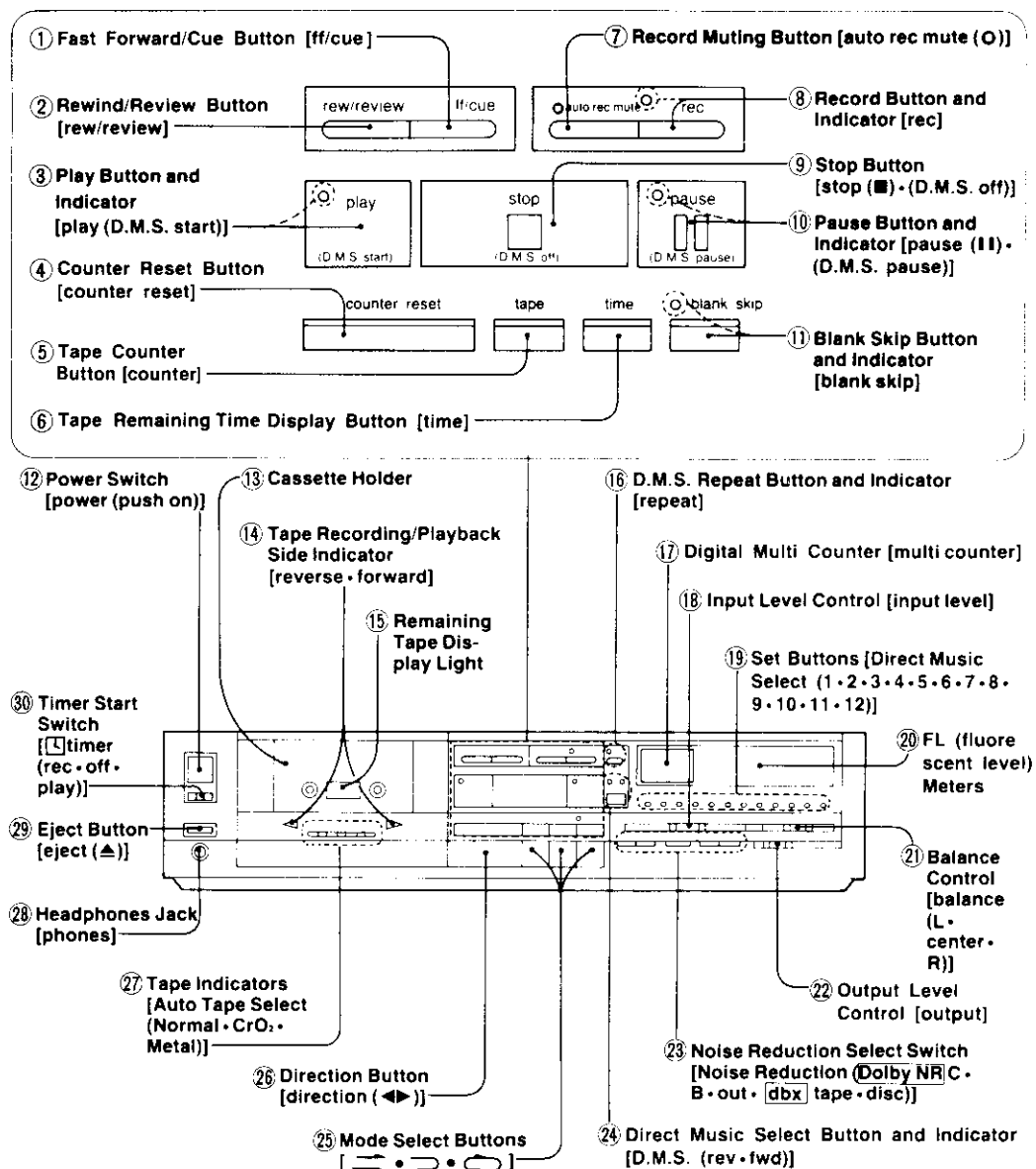
*The term dbx is a registered trademark of dbx Inc.

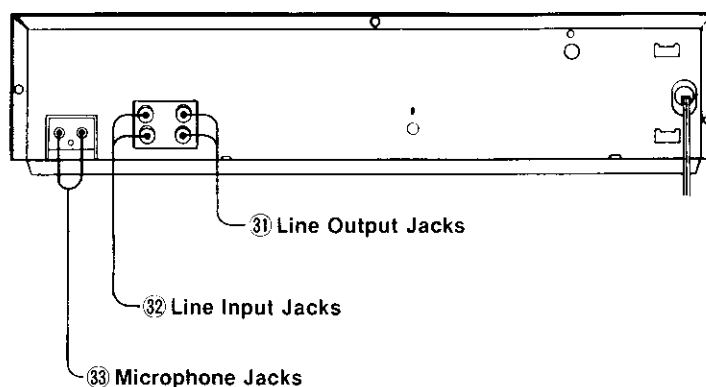
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ITEM	PAGE	ITEM	PAGE
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LOCATION OF CONTROLS AND COMPONENTS





OPERATING INSTRUCTION

About direct music select function

After searching for the beginning of your desired programs, the unit will begin playback automatically.

1. Select the playback side

Each time the Direct Music Select Button is pressed, the unit will switch between forward and reverse playback. (The Forward or Reverse Indicator will light in the respective modes).

2. Select the programs

Press the Set Buttons of the programs you wish to hear (the buttons pressed will light).

- Programs are always counted from the beginning of the tape, first program, second program... etc.
- If the first program is set, the tape will automatically rewind to the beginning and enter the stop mode.
- If a button is pressed by mistake, pressing it once more will release it (its light goes out).

To listen to the 5th, 9th, and 2nd programs from the tape's beginning:

Press Set Button 5, 9, and 2 in that order.

To listen to set programs repeatedly:

If the D.M.S. Repeat Button is pressed, the set programs will be played back repeatedly (the D.M.S. Repeat Indicator will light, indicating that the D.M.S. repeat function is operating).

3. Begin playback

When the Play Button is pressed, the set programs will begin playback. (Programs not set will be skipped over automatically by the fast forward and rewind functions).

To cancel direct music select:

Press the Stop Button.

To cancel D.M.S. repeat:

Press the D.M.S. Repeat Button once again (the D.M.S. Repeat Indicator goes out).

Notes:

- During D.M.S. repeat playback, the unit will playback repeatedly a maximum of 16 times unless the Stop Button is pressed earlier.
- Playback in the direct music select mode is in the order in which the Set Buttons are pressed.
- Use the cassette tape's index card to note the names and order of programs recorded; this makes use of the Set Buttons more convenient.
- This may not operate correctly with the following kinds of tape: programs with passages of extremely low volume level, music tapes with non-recorded passages, recordings with sections of fade-in or fade-out recording.
- Unrecorded blanks of about 4 seconds in length between the program must be created in order for the music selector function to work properly.
The function may not work if the blanks are too short.
The function may not work properly with prerecorded music tapes which have passages where the sound level is particularly low or which have passage of unrecorded sound.
- In cases such as classic music, when a low level of sound continues in the program.
- Do not use pause between music pieces during D.M.S. operation. (This may cause erroneous operation for counting of the number of music pieces.)
- On a music tape to be played back with direct music select, there has to be an unrecorded space of at least four seconds between the end of the last tune on the tape and the beginning of the leader tape; if there is not, an operational error may occur.
- Additional settings of song numbers not yet used can be made while D.M.S. playback is in progress.
However, numbers of songs already played-back by D.M.S. should not be re-entered during D.M.S. playback because the next D.M.S. song number will be cancelled each time the select key of a previously played song is pressed.
- Do not cancel D.M.S. playback during about the first 8 seconds of a song to prevent an erroneous operation when D.M.S. playback is used again.
- Check the total number of songs on a cassette before entering song numbers for D.M.S. playback.
If a non-existent song number is entered (for example, song 6 for a cassette side having only 5 songs), the D.M.S. function may not operate properly.
If this occurs, press the stop Button.

DISASSEMBLY INSTRUCTIONS

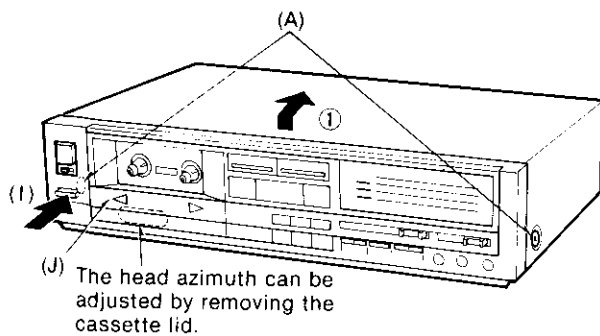


Fig. 1

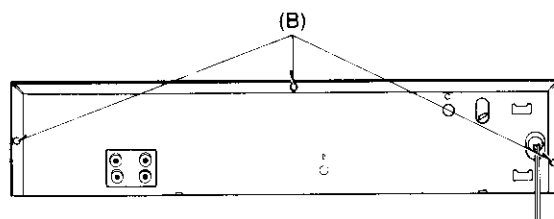


Fig. 2

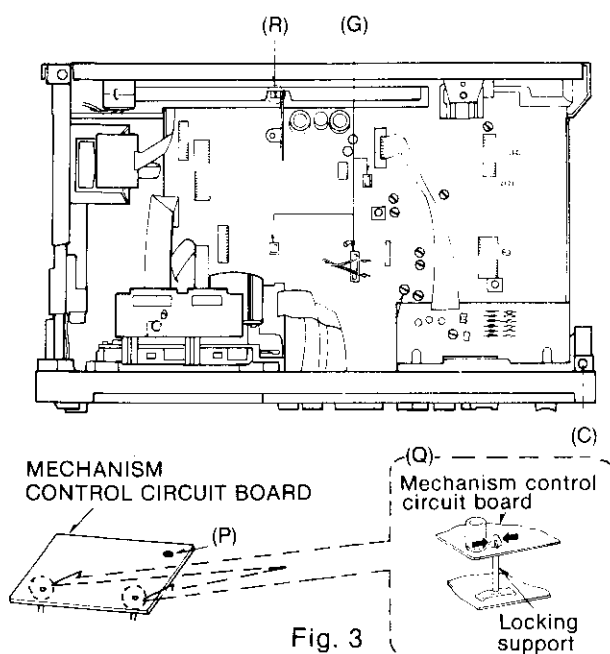
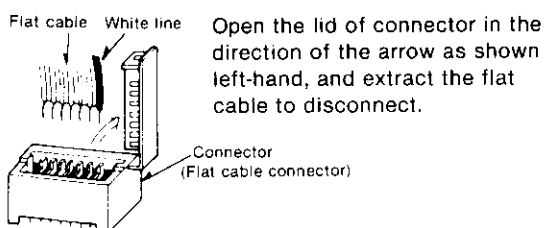
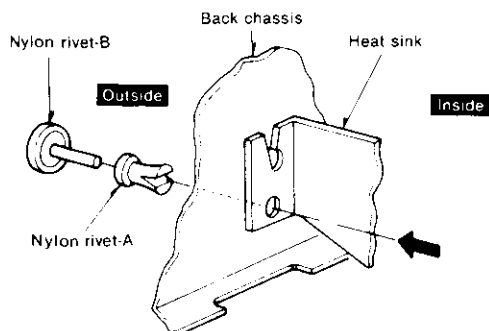


Fig. 3

(H) How to remove flat cable



(R) 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 above, 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.

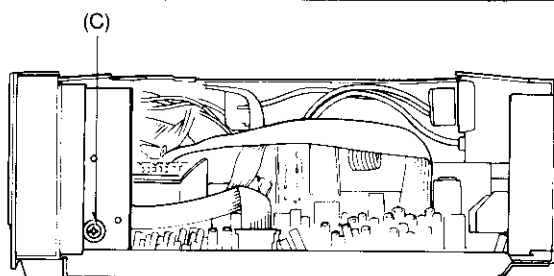


Fig. 4

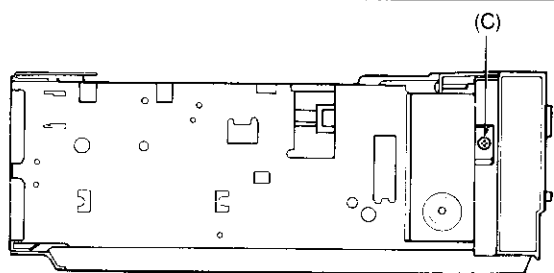


Fig. 5

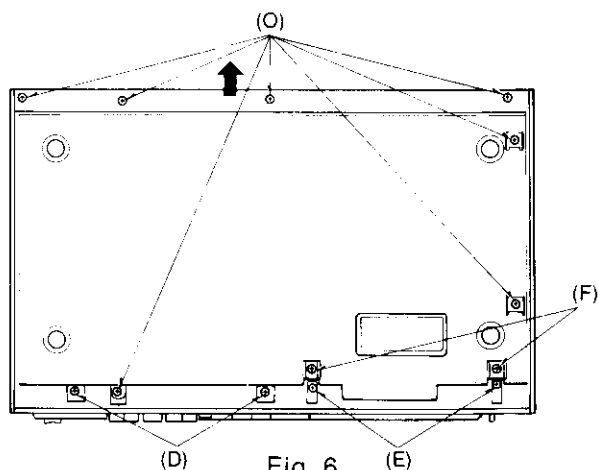


Fig. 6

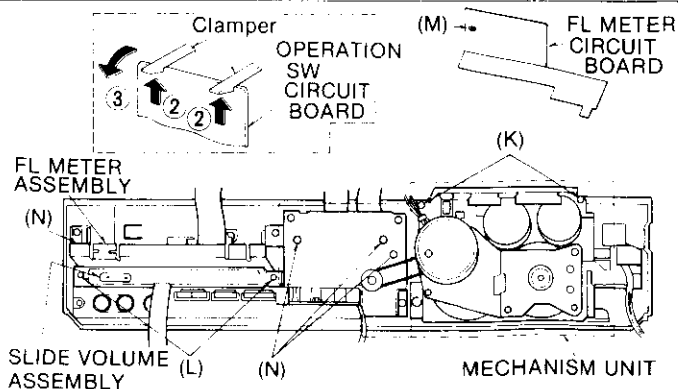


Fig. 7

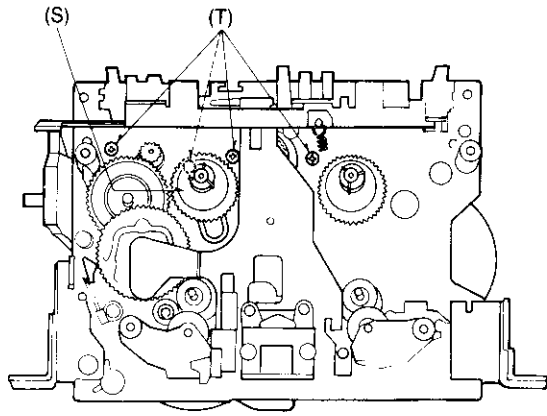


Fig. 8

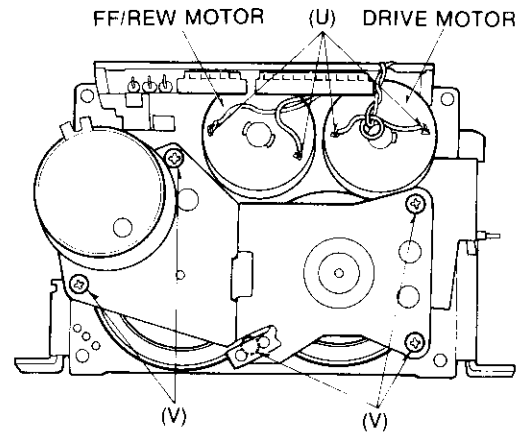


Fig. 9

Ref. No.	Procedure	To remove —.	Remove —.	Shown in fig. —.
1	1	Case cover	• 2 ornament screws(A) • 3 screws(B) • As shown in fig. 1, pull case cover in the direction of arrow ①.	1 2 1
2	1 → 2	Front panel assembly and mechanism unit	• 3 screws(C) • 2 screws(D) • 2 screws(E) • 2 screws(F) • Pull out the connectors A B F G H N O P Q R W I(G) • How to remove flat cable(H)	3, 4, 5 6 6 6 3 3
3	1 → 3	Mechanism unit	• Push the eject button(I) • Cassette lid(J) • 2 screws(E) • 2 screws(F) • 2 screws(K)	1 1 6 6 7
4	1 → 4	Slide volume assembly	• 2 screws(L)	7
5	1 → 4 → 5	FL meter circuit	• 1 screw(M) • 4 screws(N) • As shown in fig. 7, raise the clumper in the direction of arrow ② and remove the FL meter circuit in the direction of arrow ③.	7 7 7
6	6	Bottom cover	• 2 screws(D) • 2 screws(F) • 7 screws(O) • Slide the bottom cover in the direction arrow ④ and remove it.	6 6 6 6
7	1 → 6 → 7	Mechanism control circuit board	• 1 screw(C) • 1 screw(P) • How to remove flat cable(H) • Remove the locking support from the board while pushing its tip in the direction of arrow.(Q)	4 3 3 3
8	1 → 6 → 7 → 8	Main circuit board	• How to remove nylon ribet(R)	3
9	1 → 3 → 9	FF/REW motor and driver motor	• Remove the reel table(S) • 4 screws(T) • Un solder the soldered portion of the FF/REW motor terminal and driver motor terminal(U)	8 8 9
10	1 → 3 → 10	Capstan motor	• 5 screws(V)	9

PRECAUTIONS IN DISASSEMBLY AND REASSEMBLY

Removing the Mode Select Button

The Mode Select Buttons are press-fit with the Button Bushings, as shown in Fig. 10, with the Front Panel Assembly and Button Springs between them. Remove the Button Bushings using pliers to disassemble these parts. Be careful not to lose the Button Springs as they will pop out.

Reassembling the Mechanism Unit

1. For repair, measurement or adjustment with the mechanism removed from the unit be sure to ground the lower base plate of the mechanism.

For grounding, connect an extension cord to the mechanism's lower base plate and the lug terminal from amplifier printed circuit board.

Without grounding, the mechanism does not operate properly. (Refer to Fig. 11).

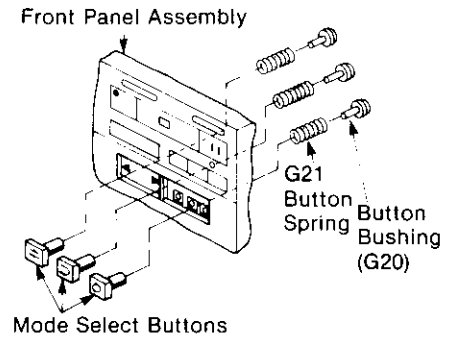


Fig. 10

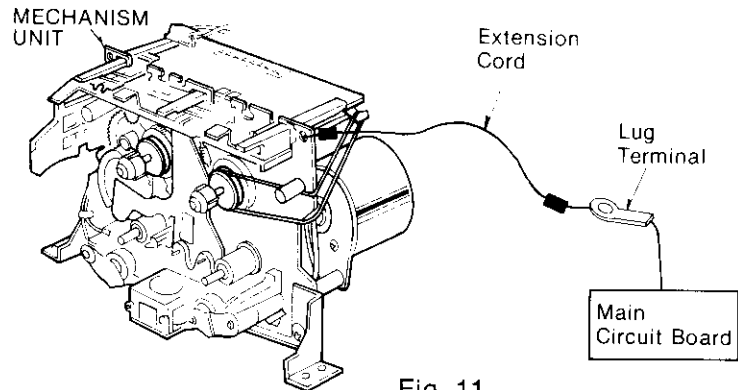


Fig. 11

PRECAUTIONS FOR PARTS REPLACEMENT

Replacement of the Blank Skip/Time/Tape, Counter Reset and DMS (1—12) Buttons.

The Blank Skip, Time Count and Tape Count Buttons are a one-piece resin molded part (It is supplied as a single part.).

As shown in Fig. 1, this buttons are fixed in such a manner that the Front Panel Assembly is sandwiched between the Ornament Plate (G5-1) and the buttons and five pins (A) are melted by heat. (Five pins (B) are used to fix the Ornament Plate. Refer to Fig. 2.)

To remove this part, first, remove the two lugs on the Ornament Plate from the Front Panel. Then, while pulling part (C) of the Ornament Plate toward the front, heat the ten pins (A) and (B) with a soldering iron. (Refer to the Fig. 2.) When the button retainer plate is removed at this time, buttons DMS 1 to 12 can be replaced.

As mentioned above, this part is fixed by melting the pins by heat, both the Ornament Plate and button must be replaced when replacement is required.

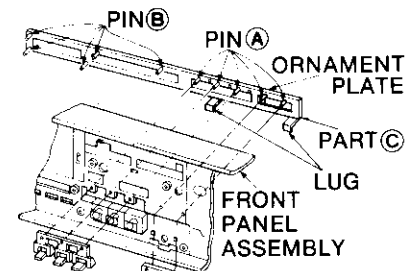
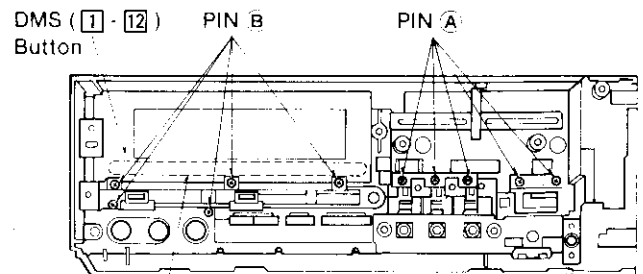


Fig. 1



Button Retainer Plate Fig. 2

Replacement of Parts on the Keyboard Circuit

To replace the parts on the keyboard circuit, first, remove the eight screws (F), and then desolder two terminals (G) of LED's (D519). The Operation Chassis can then be removed from the Base Plate and the parts be replaced. (Refer to Fig. 3).

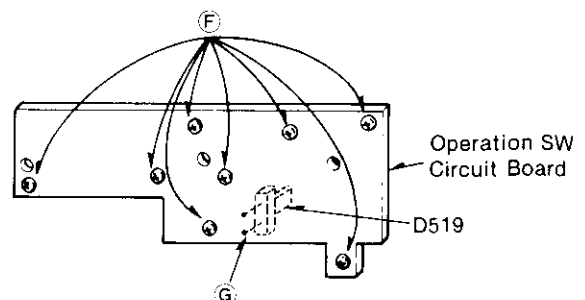


Fig. 3

REPLACING ROTARY HEAD ASSEMBLY

Considerations in mounting the rotary head assembly

1. This recorder requires a record/playback head of extremely precise head height. In replacing the rotary head, install a factory-adjusted full rotary head assembly.

[Never attempt to disassemble the rotary head assembly by removing screws (A).]

2. In installing the replacement rotary head assembly, make certain that the change gear is placed at location (B) on the change rod. (See Fig. 1.)

3. Trace the record/playback head lead-wire as follows (Refer to Fig. 2):

- Set the record/playback head in its forward stop direction.
- At this time, hook the head wire to the clamber of the pinch roller R, and press the head wire in the direction of the arrow as shown in Fig. 2 so that it is bent approximately 90 degrees. Then secure the wire on the mechanism unit using a cord clamber.

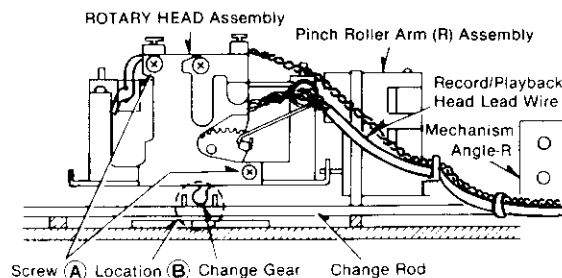


Fig. 1

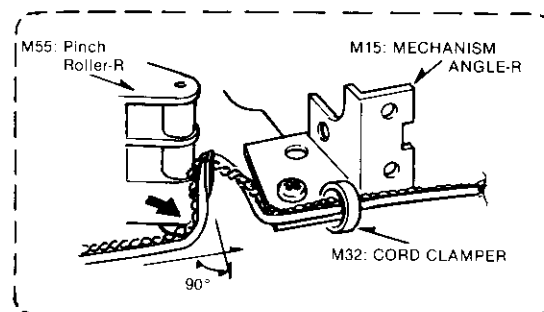


Fig. 2

MEASUREMENT AND ADJUSTMENT METHODS

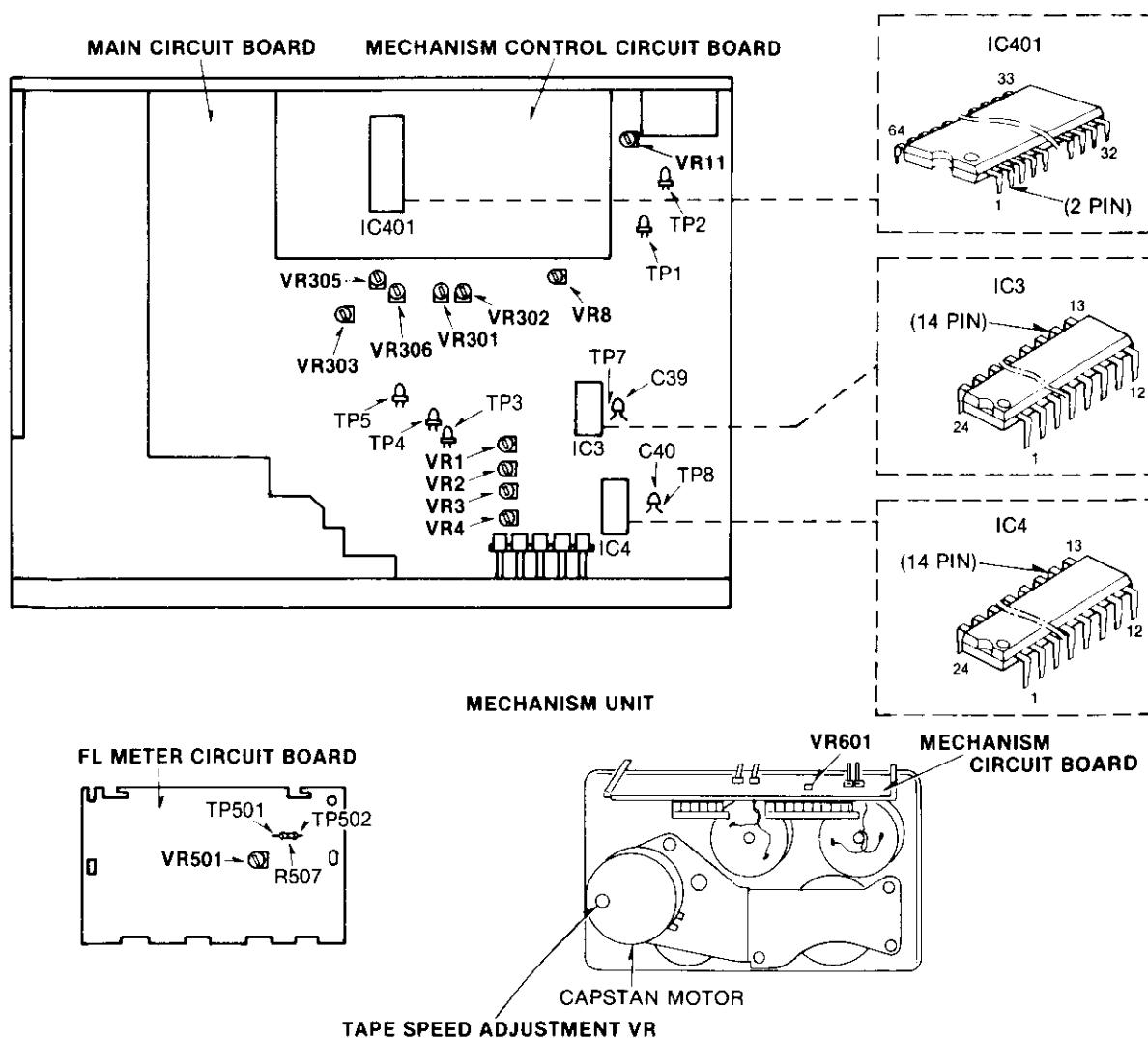


Fig. 1

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 $20 \pm 5^\circ\text{C}$ ($68 \pm 9^\circ\text{F}$)
- NR switch: OUT
- Timer start switch: OFF
- Balance control: Center
- Input level control: Maximum
- Output level control: Maximum
- Mode switch: mode
- Blank skip switch: OFF
- Music select switch: OFF
- Music repeat switch: OFF

A Head adjustment

Condition:

- Playback mode
- (Forward • Reverse)
- Normal tape mode

Equipment:

- VTVM
- Oscilloscope
- Test tape (azimuth)...QZZCFM
- Test tapeQZZCRD

HEAD HEIGHT ADJUSTMENT

1. Turn the erase head height adjustment screws on the rotary head assembly counterclockwise until the upper end face of the erase heads is aligned on the same plane as the top face of their respective guide pins. (Refer to figs. 2 and 3.)
2. Put a point ink-mark on the head of each adjustment screw.
3. With the marks as guides, turn the erase head height adjustment screw 3.2 turns clockwise.
4. Install a test tape (tape with mirror: QZZCRD) on the recorder; place the recorder in the FORWARD PLAY mode. Make fine adjustments of the erase head height as necessary, to attain on the record/playback head face the tape position shown in fig. 4.
5. Run the tape in the forward play mode and check it for zigzag running. (Shown in fig. 4) If zigzag tape running occurs, repeat step 4.
6. Place the recorder in the reverse play mode and perform the above steps 4 and 5.
7. Repeat steps 5 and 6 two or three times and verify that the tape position shown in fig. 4 is ensured.

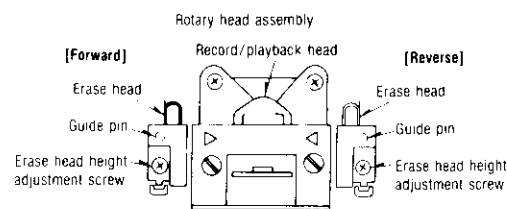


Fig. 2

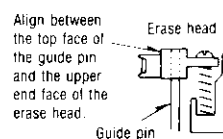


Fig. 3

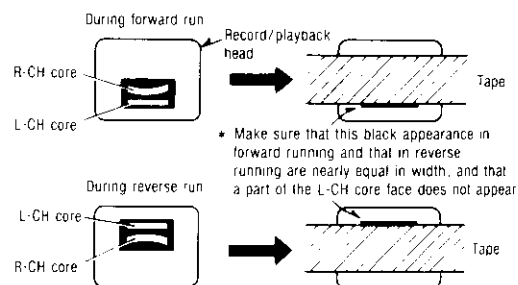


Fig. 4

L-CH/R-CH output balance adjustment

8. Make connections as shown in fig. 5.
9. In the forward playback mode, playback the 8kHz signal from the test tape (QZZCFM). Adjust the azimuth screw (Forward) shown in fig. 6 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.
10. Turn the azimuth screw (Forward) shown in fig. 6 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. 6 and 7.)
11. In the reverse playback mode, adjust the azimuth screw (reverse) in the same way described above.

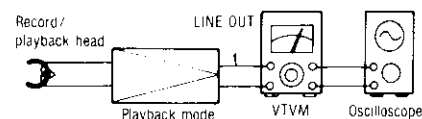


Fig. 5

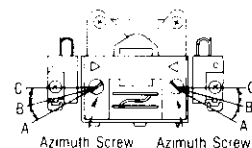


Fig. 6

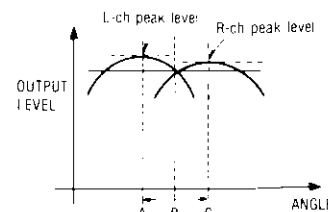


Fig. 7

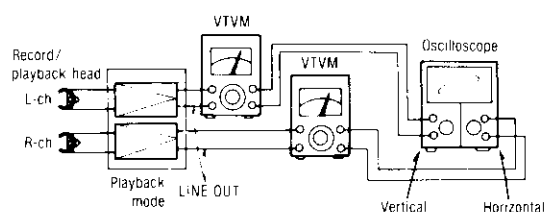


Fig. 8

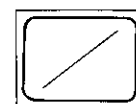


Fig. 9

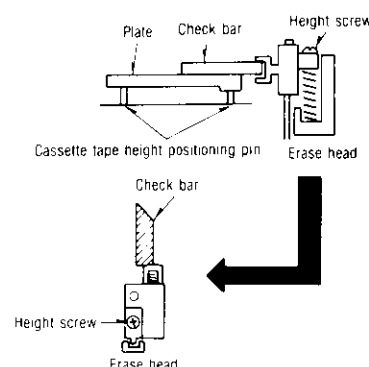
Checking the difference in level between forward and reverse running

15. Reproduce the playback level adjustment signal (315 Hz at 0 dB) on the standard playback adjustment tape; and check that the difference between the level in forward running and that in reverse running is within 1.0 dB.
16. After adjustment, lock the erase head height and angle adjustment screws.

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. Place the plate onto the mechanism.
- b. Set the mechanism to the PLAY mode.
- c. Place the check bar onto the plate.
- d. Pass the check bar through each erase head.
- e. Adjust the height screw so that the check bar does not touch any of the erase heads.
- f. Run a mirror tape (QZZCRD) and check to see that the tape does not touch (twist around, etc.) the erase heads.
- g. After that, adjust items 4 thru 13 in the adjustment procedure.

**㊦ Takeup torque**

Condition:
• Playback mode

Equipment:
• DC voltmeter
• Test tape...QZZSRKCT

1. Set the test tape (or RT-60) into the cassette holder.
2. Adjust the takeup torque adjusting potentiometer VR601 in the forward playback mode for 3.5 volts between the FF/REW motor terminals.
3. Run the QZZSRKCT takeup torque measurement tape in the forward playback mode and check that the torque is within quoted tolerance.

Standard value: 50±10gr-cm

㊦ Tape speed

Condition:
• Playback mode

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

Tape speed accuracy

1. Test equipment connection is shown in fig. 10.
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: ±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.

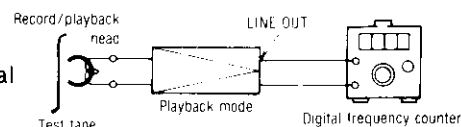


Fig. 10

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%

NOTE:

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

㊦ Playback frequency response

Condition:

- Playback mode (Forward • Reverse)
- Normal tape mode

Equipment:

- VTVM
- Oscilloscope
- Test tape...QZZCFM

1. Test equipment connection is shown in fig. 5.
2. Playback the frequency response portion of test tape (QZZCFM).
3. Measure output level at 315Hz, 12.5kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz and 63Hz, and compare each output level with the standard frequency 315Hz, at LINE OUT.
4. Make measurements for both channels.
5. Make sure that the measured values are within the range specified in the frequency response chart. (Shown in fig. 11).

Playback frequency response (Forward • Reverse)

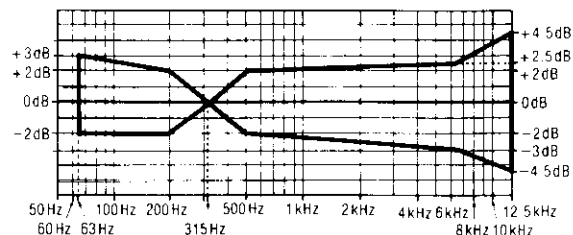


Fig. 11

㊦ Playback gain

Condition:

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

Equipment:

- VTVM
- Oscilloscope
- Test tape...QZZCFM

1. Test equipment connection is shown in fig. 5.
2. Playback standard recording level portion on test tape (QZZCFM 315Hz) and, using VTVM, measure the output level at test points [TP7 (L-CH), TP8 (R-CH)].
3. Make measurements for both channels.

Standard value: 0.42±0.05V [around 0.28V: at test points TP7 (L-CH) and TP8 (R-CH)]

Adjustment

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

㊦ Erase current

Condition:

- Record mode (Forward • Reverse)
- Metal tape mode

Equipment:

- VTVM
- Oscilloscope

1. Test equipment connection is shown in fig. 12.
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:

$$\text{Erase current (A)} = \frac{\text{Voltage across resistor R201}}{1 (\Omega)}$$

Standard value: 155±15mA (Metal)

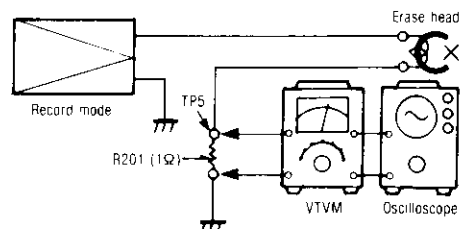


Fig. 12

Adjustment

- If the measured value is not within standard value, adjust VR305 (Forward) or VR306 (Reverse) (See fig. 1).

㊦ Overall frequency response

Condition:

- Record/playback mode (Forward • Reverse)
- Normal tape mode
- CrO₂ tape mode
- Metal tape mode
- Input level control...MAX
- Output level control...MAX
- 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 and 12.5kHz signals, and record these signals on the test tape.
6. Playback the signals recorded in step 5, and check if the frequency response curve is within the limits shown in the overall frequency response chart for normal tapes (fig. 14). (If the curve is within the charted specifications, proceed to steps 7, 8 and 9.)
If the curve is not within the charted specifications, adjust as follows;

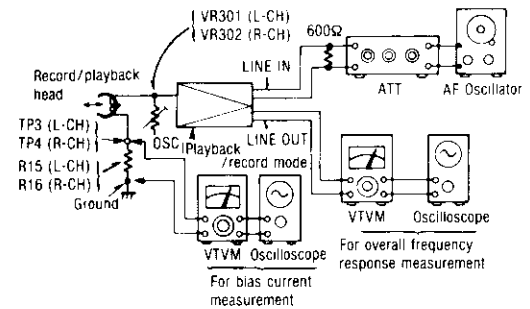


Fig. 13

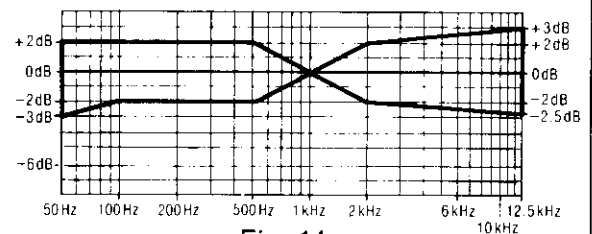
Overall frequency response chart (Normal)

Fig. 14

Adjustment (A):

When the curve exceeds the overall specified frequency response chart (fig. 14) as shown in fig. 15.

- 1) Increase bias current by turning VR301 (L-CH) and VR302 (R-CH). (See fig. 1 on page 7.)
- 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. 14.)
- 3) If the curve still exceeds the specifications (fig. 14), increase bias current further and repeat steps 5 and 6.

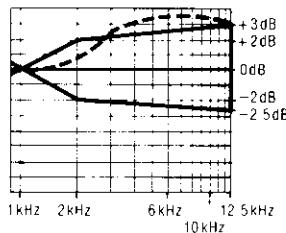


Fig. 15

Adjustment (B):

When the curve falls below the overall specified frequency response chart (fig. 14) as shown in fig. 16.

- 1) Reduce bias current by turning VR301 (L-CH) and VR302 (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 specification as shown fig. 14.)
- 3) If the curve still falls below the charted specifications (fig. 14), reduce bias current further and repeat steps 5 and 6.

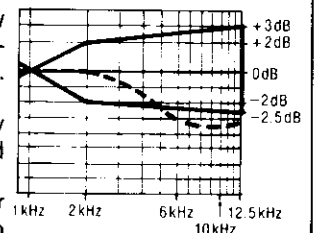


Fig. 16

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 and 15kHz 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. 17).
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 and 15kHz 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. 17).
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 (TP3 for L-CH, TP4 for R-CH) and calculate bias current by following formula:

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

around 200μA (Normal position)
Standard value: around 250μA (CrO₂ position)
around 430μA (Metal position)

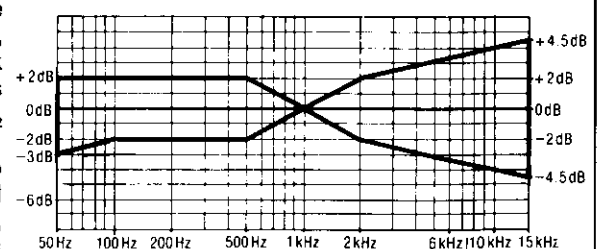
Overall frequency response chart (CrO₂, Metal)

Fig. 17

H Overall gain
Condition:

- Record/playback mode (Forward • Reverse)
- Normal tape mode
- Input level control...MAX
- Output level control...MAX
- Balance control...Center
- Standard input level;

MIC $-72 \pm \frac{4}{2}$ dB

LINE IN $-24 \pm \frac{4}{2}$ dB

Equipment:

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

1. Test equipment connection is shown in fig. 18.
2. Insert the normal reference blank tape (QZZCRA).
3. Place UNIT into record mode.
4. Supply a 1kHz signal through ATT (-24dB) from AF oscillator, to LINE IN.
5. Adjust ATT until monitor level at LINE OUT becomes 0.42V.
6. Playback recorded tape, and make sure that the output level at LINE OUT becomes 0.42V.
7. If measured value is not $0.42V \pm 2dB$, adjust it by using VR3 (L-CH) or VR4 (R-CH).
8. Repeat from step (2).

Standard value: $0.42V \pm 2dB$

[around 0.28V: at test points TP7 (L-CH) and TP8 (R-CH)]

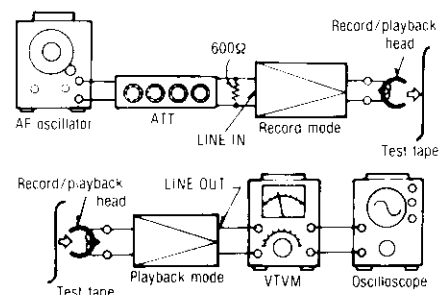


Fig. 18

I Dolby NR circuit
Condition:

- Record mode
- Dolby NR switch...IN/OUT
- Dolby NR select switch...B/C
- Input level control...MAX
- Output level control...MAX
- Balance control...Center

Equipment:

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

Record side
• Check of the Dolby-B type encoder characteristics

1. Make connections as shown in fig. 19.
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 TP7 (L-CH) and TP8 (R-CH) is 12.3mV.
5. The output level at pin 14 should also be 12.3mV. (Let $12.3mV \approx 0dB$ for this adjustment.)
6. Set the NR select switch to B, and make sure that the output signal level at pin 14 of IC3 (L-CH) and IC4 (R-CH) is $+6dB \pm 2.5dB$.
7. Set the NR select switch to OUT, and adjust the frequency to 5kHz. The output signal level at pin 14 should be 0dB.
8. Set the NR select switch to B and make sure that the output signal level at pin 14 of IC3 (L-CH) and IC4 (R-CH) is $+8dB \pm 2.5dB$.

• Check to Dolby-C type encoder characteristics

9. Repeat steps 1-5 above.
10. Set the NR select switch to C and make sure that the output signal level at pin 14 of IC3 (L-CH) and IC4 (R-CH) is $+11.5dB \pm 2.5dB$.
11. Set the NR select switch to OUT and adjust the frequency to 5kHz. The output signal at pin 14 should be 0dB.
12. Set the NR select switch to C and make sure that the output signal level at pin 14 of IC3 (L-CH) and IC4 (R-CH) is $+8.5dB \pm 2.5dB$.

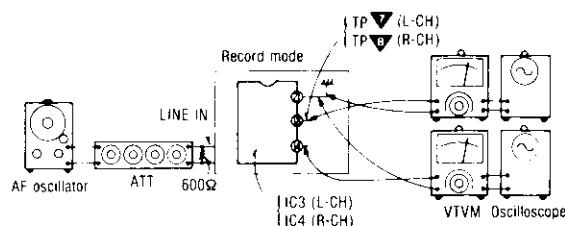


Fig. 19

④ Attack recovery time adjustment (dbx circuit)

Condition:
 • Record mode
 • Input level control...MAX
 • Noise reduction selector ...dbx tape

Equipment:
 • VTVM
 • ATT
 • AF oscillator
 • DC voltage

1. Make the connections as shown in fig. 20 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 C107 (L-CH) and C108 (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 VR11 (shown in fig. 1).

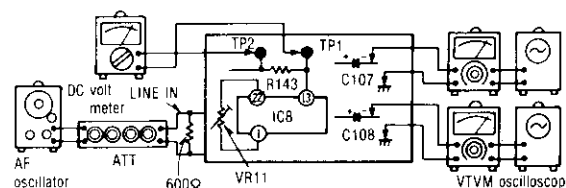


Fig. 20

⑤ Input scanning time adjustment

Condition:
 • Stop mode

Equipment:
 • Oscilloscope

1. Place the recorder in the stop mode.
2. Connect an oscilloscope to pin 2 of IC401, as shown in fig. 21.
3. Make sure that the measured values are within the reference value.

Reference value: Approx. 4.6msec.

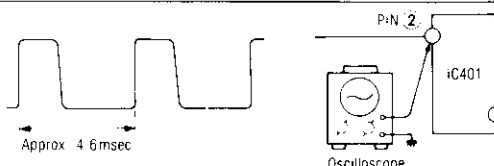


Fig. 21

⑥ Fluorescent meter

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

Equipment:
 • VTVM
 • ATT
 • AF oscillator

• Check for FL meter

To check the accuracy of the FL meter, measure the output level at test point [TP7 (L-CH), TP8 (R-CH)].

1. Make connections as shown (See fig. 22).
2. Connect a wire between TP501 and TP502 terminal (See fig. 23).
3. In the recording pause mode, apply 1kHz (-24dB) to LINE IN.
4. Adjust ATT so that output level at test point [TP7 (L-CH), TP8 (R-CH)] is 0.28V.

Checking FL meter 0dB segment display ON/OFF

Change the output level at test point [TP7 (L-CH), TP8 (R-CH)] from 0.28V -1dB ($\approx 250\text{mV}$) to 0.28V +1dB ($\approx 310\text{mV}$) by adjusting the attenuator, and check that the FL meter 0dB segment display OFF state changes to the ON state.

Checking FL meter -40dB segment display ON/OFF

Lower the signal level 28dB below the standard input level (-24dB-28dB=-52dB $\approx 2.5\text{mV}$) and then further lower the level 12dB (-52dB-12dB=-64dB $\approx 0.63\text{mV}$) by adjusting the attenuator. While lowering the level as described above, make sure that only the -40dB display remains lit the dims or goes off at the lowest level.

• Adjustment for FL meter

1. Make connections as shown (See fig. 22).
2. Connect a wire between TP501 and TP502 terminal (See fig. 23).
3. In the recording pause mode, apply 1kHz (-24dB) to LINE IN.
4. Adjust ATT so that output level at test point [TP7 (L-CH), TP8 (R-CH)] is 0.28V.

-40dB adjustment

5. Adjust ATT so that the level adjusted at step 4 is reduced by 40dB.
6. At this time, check that -40dB indicator is dimmed (intermediate brightness between full brightness and light-out; See fig. 24).
7. If the indicator is not lighted halfway as described in step 6, adjust VR8.

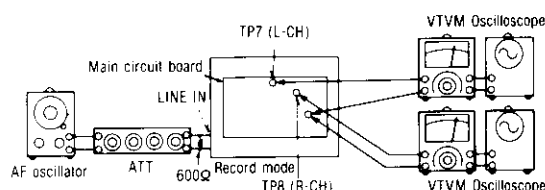


Fig. 22

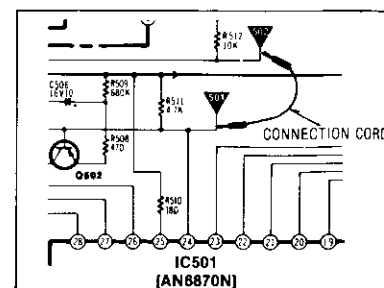


Fig. 23

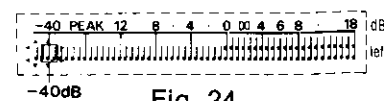


Fig. 24

0dB adjustment

8. Restore the condition of step 4 (set output level to 0.28V at test point [TP7 (L-CH), TP8 (R-CH)]).
9. At this time, check that 0dB indicator is dimmed (intermediate brightness between full brightness and light-out (See fig. 25)).
10. If improper, adjust VR501.
11. Repeat adjustments at steps 4, 5, 6, 7, 8, 9 and 10 two or three times.
12. Disconnect the wire between TP501 and TP502 terminal, which had been connected at step 2.

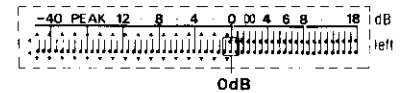


Fig. 25

Photo sensor circuit

Condition:
• Playback mode

NOTE:

When adjusting the photo sensor circuit, leave the front panel, cassette lid and indication plate in place. (External light can cause the photo sensor in the cassette holder to malfunction and makes accurate adjustment impossible.)

Sensitivity adjustment

Some malfunctions, such as tape reverse or auto stop, may sometimes occur during tape travel according to type and make of tape. If the trouble is caused only by tape wrinkles, perform the following adjustments.

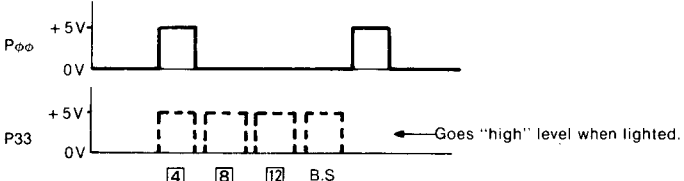
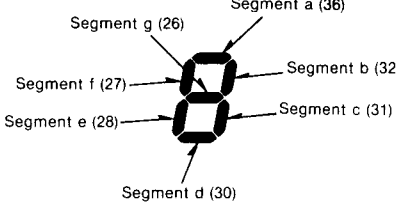
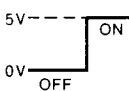
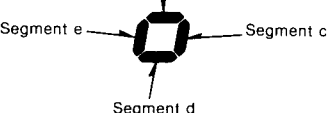
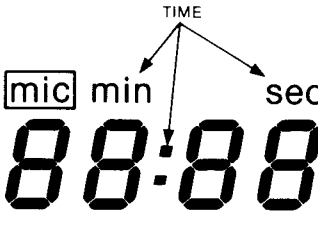
1. While playing the section causing malfunction, adjust VR303 so that normal operation is obtained. (Shown in fig. 1).
2. Then play the leader tape section and check for normal operation (that tape reverse and auto stop are eliminated).

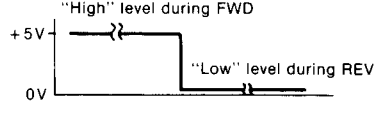
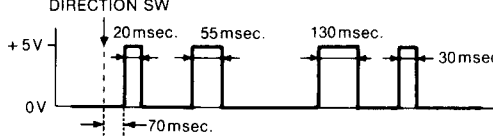
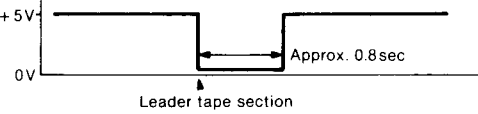
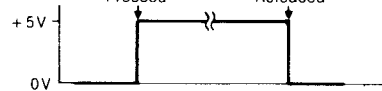
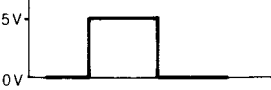
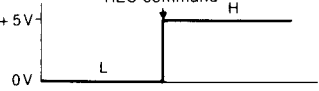
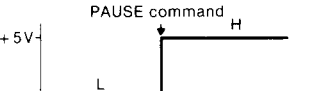
MICROCOMPUTER TERMINAL FUNCTION AND WAVEFORM (IC401: MN1564RME)

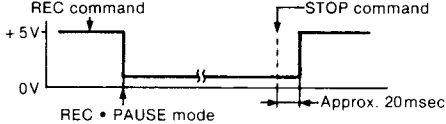
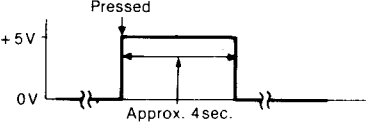
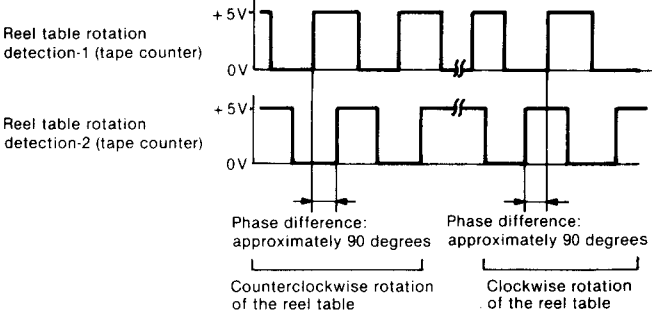
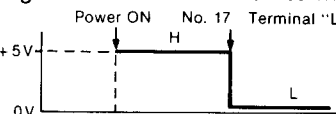
Terminal No.	Symbol	Name	Function/operation
1.	VSS	GND	
2.	$P\phi\phi$	FL grid & input switch scanning	Pulse width: T_a = Approx. 1.0msec, T_b = Approx. 60μsec.
3.	$P\phi 1$		
4.	$P\phi 2$		
5.	$P\phi 3$		
6.	ST0	_____	• Non connection.
7.	$P1\phi$	Reading of input switch state REW • STOP • TIME	• Reads switch inputs corresponding to scanning of $P\phi\phi$ to $P\phi 3$.

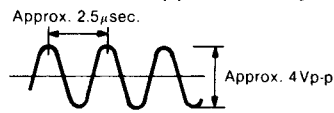
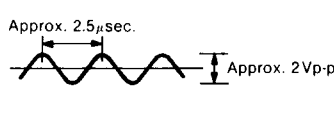
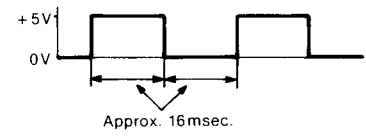
Terminal No.	Symbol	Name	Function/operation
8.	P11	Reading of input switch state FF • PAUSE • TAPE	Reads switch inputs corresponding to scanning of P$\phi\phi$ to Pϕ3.
9.	P12	Reading of input switch state REC • PLAY • TIMER • PLAY • COUNTER • RESET	Reads switch inputs corresponding to scanning of P$\phi\phi$ to Pϕ3.
10.	P13	Reading of input switch state DIR • TIMER REC	
11.	ST1	_____	Non connection. SYNC: Output waveforms during operation.
12.	SYNC	_____	
13.	SIRQ	_____	
14.	IRQ	_____	
15.	SBT	_____	
16.	SBD	_____	
17.	RST	Reset terminal	- Terminal for reset signal to computer. - Automatically reset at not more than 3.5 to 4.0V.
18.	P2 ϕ	Reading of input switch state AUTO REC MUTE • ① • ⑤ • ⑨	Reads switch inputs corresponding to scanning of P$\phi\phi$ to Pϕ3.

Terminal No.	Symbol	Name	Function/operation
19.	P21	Reading of input switch state DMS • ② • ⑥ • ⑩	Reads switch inputs corresponding to scanning of P$\phi\phi$ to Pϕ3.
20.	P22	Reading of input switch state REPEAT • ③ • ⑦ • ⑪	Reads switch inputs corresponding to scanning of P$\phi\phi$ to Pϕ3.
21.	P23	Reading of input switch state B.S • ④ • ⑧ • ⑫	Reads switch inputs corresponding to scanning of P$\phi\phi$ to Pϕ3.
22.	P3 ϕ	Dynamic lighting indication FWD • ① • ⑤ • ⑨ LED	Four corresponding LEDs light one at a time in accordance with the scanning of P$\phi\phi$ to Pϕ3.
23.	P31	Dynamic lighting indication REV • ② • ⑥ • ⑩ • LED	Four corresponding LEDs light one at a time in accordance with the scanning of P$\phi\phi$ to Pϕ3.
24.	P32	Dynamic lighting indication REPEAT • ③ • ⑦ • ⑪ • LED	Four corresponding LEDs light one at a time in accordance with the scanning of P$\phi\phi$ to Pϕ3.

Terminal No.	Symbol	Name	Function/operation
25.	P33	Dynamic lighting indication B.S • [4] • [8] • [12]	Four corresponding LEDs light one at a time in accordance with the scanning of P$\phi\phi$ to Pϕ3. 
26.	P4 ϕ	FL counter Segment g	   Counter number changes when takeup reel table rotates two turns. Each segment of running indication changes when the reel table rotates a half turn. Waveforms change since dynamic lighting is used. •“min”, “sec”, and “:” are displayed when the TIME signal is given. 
27.	P41	FL counter Segment f	
28.	P42	FL counter Segment e	
29.	P43	TIME	
30.	P5 ϕ	FL counter Segment d	
31.	P51	FL counter Segment c	
32.	P52	FL counter Segment b	
33.	VDD	Power supply terminal	• Operative on 4.5 to 5.5 volts (typically 5.4 volts).
34.	VMM	Power supply terminal for the memory	• Operative on 4.5 to 5.5 volts (typically 5.4 volts).
35.	HLD $\overline{M}$	Power hold instruction terminal for the memory	• Operative on 4.5 to 5.5 volts (typically 5.4 volts).
37.	P6 ϕ	Reading of input switch state FWD REC INH	•“High” level when a tape not prepared with miserase prevention masking is loaded. •“Low” level with the cassette lid open.
38.	P61	Reading of input switch state REV REC INH	•“High” level when a tape not prepared with miserase prevention masking is loaded. •“Low” level with the cassette lid open.

Terminal No.	Symbol	Name	Function/operation
39.	P62	Reading of input switch state CAM A (S607)	
40.	P63	Reading of input switch state CAM B (S606)	• Input in switching-over from FWD PLAY to REV PLAY. 
41.	P7 ϕ	Reading of input switch state Half det. (S603)	• Goes “low” level when a cassette tape is loaded and the cassette lid is closed. • “High” level with the cassette lid open.
42.	P71	Leader tape det	• “Low” level pulses are generated between the leader tape section and the magnetic section. 
43.	P72	Detection of music intervals	• Goes low during a portion between music pieces (no signal portion).
44.	P73		• Non connection.
45.	P80	Muting for all amplifiers	• “High” level during FF, REW and STOP. • “Low” level during REC, PLAY and CUE/REV.
46.	P81	CUE/REVIEW MUTE	• “High” level pulse with CUE/REVIEW button pressed during PLAY. 
47.	P82	Drive motor CCW rotation command	• “High” level pulse in each mode in operational sequence REV PLAY → PAUSE → STOP → FOW PLAY. • During switching between REV PLAY → FOW PLAY. 
48.	P83	Drive motor CW rotation command	• “High” level pulse in each mode in operational sequence FOW PLAY → PAUSE → STOP → REV PLAY. • During switching between FWD PLAY → REV PLAY. 
49.	P9 ϕ	REC indication output	• “High” level concurrently with REC command. • In TIMER REC mode, “High” level just after power on. 
50.	P91	PAUSE indication output	• “High” level concurrently with PAUSE command. 

Terminal No.	Symbol	Name	Function/operation
51.	P92	Reel takeup torque selection and PLAY indication output	• "High" level during PLAY. • "Low" level during FF, REW and STOP.
52.	P93	DIRECTION indication output	• "Low" level during FORWARD. • "High" level during REVERSE.
53.	PA ϕ	Bias oscillation ON/OFF	• Goes to "Low" immediately after REC/PAUSE operation. • Remains in "Low" during REC/PLAY operation. • Goes to "Low" approximately 20msec after the STOP command is given.  REC • PAUSE mode
54.	PA1	REC MUTE	• "High" level pulse with REC MUTE button pressed during REC PLAY.  Pressed
55.	PA2	FF/REW motor rotation select (FF/REW motor CCW rotation command)	• "High" level during: - FWD PLAY - FWD F.F - REV REW
56.	PA4	FF/REW motor rotation select (FF/REW motor CW rotation command)	• "High" level during: - REV PLAY - REV F.F - FWD REW
57.	PB ϕ	Reel table rotation detection-1 (tape counter)	• Rotation pulses are generated according to the rotation speed of the take-up reel table in the FWD mode. • Two pulses are generated per reel table rotation.  Reel table rotation detection-1 (tape counter) Reel table rotation detection-2 (tape counter) Phase difference: approximately 90 degrees Counterclockwise rotation of the reel table Clockwise rotation of the reel table
58.	PB1	Reel table rotation detection-2 (tape counter)	
59.	PB2	Output mute during power on	• Goes "high" level when power is on. • This terminal goes "low" level when terminal 17 goes "high" level.  Power ON No. 17 Terminal "L"
60.	PB3	Input switch reading Head rotation direction detection (S608)	• "High" level during FORWARD.

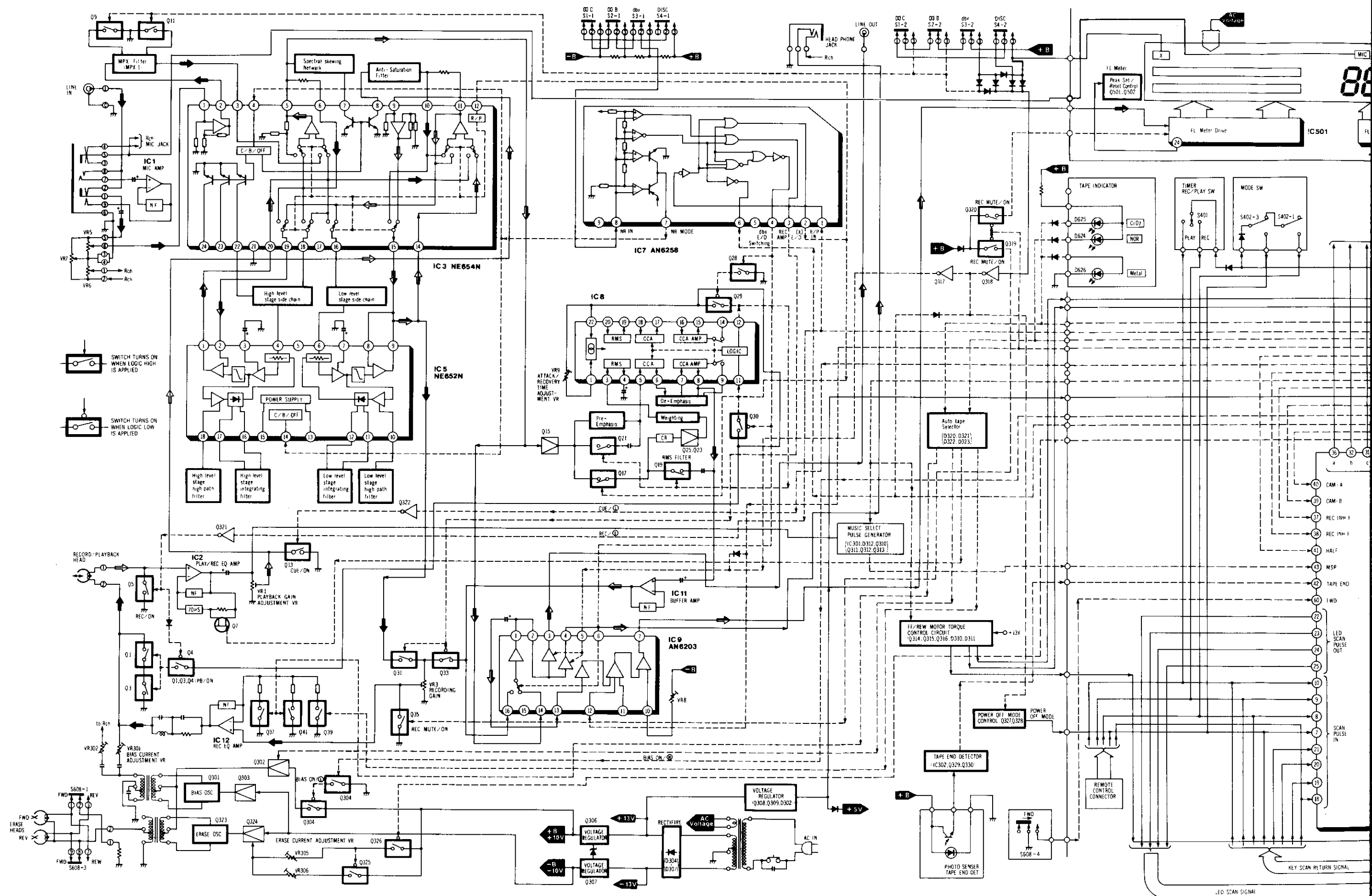
Terminal No.	Symbol	Name	Function/operation
61.	OSC2	Terminals for connecting the oscillator device of a clock	Generates oscillation at approximately 4MHz. 
62.	OSC1	Terminals for connecting the oscillator device of a clock	
63.	TC1	_____	Non connection.
64.	TC ϕ	_____	Non connection. 

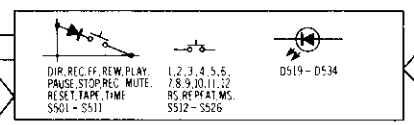
NOTES (for Block diagram)

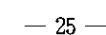
- S1-1, S1-2.....
Dolby-C IN/OUT switch (shown in OUT position).
- S2-1, S2-2.....
Dolby-B IN/OUT switch (shown in OUT position).
- S3-1, S3-2.....
dbx "Tape" IN/OUT switch (shown in OUT position).
- S4-1, S4-2.....
dbx "Disc" IN/OUT switch (shown in OUT position).
- S301.....
Power ON/OFF switch (shown in OFF position).
- S302.....
AC power voltage select switch.
- S401.....
Timer REC/PLAY switch (shown in Timer REC position).
- S402-1, S402-2.....
Mode select switch (⌚ / ⏮).
- S501.....
Direction switch (shown in OFF position).
- S502.....
Record switch (shown in OFF position).
- S503.....
F.F switch (shown in OFF position).
- S504.....
Rewind switch (shown in OFF position).
- S505.....
Play switch (shown in OFF position).
- S506.....
Pause switch (shown in OFF position).
- S507.....
Stop switch (shown in OFF position).
- S508.....
Auto-Rec mute switch (shown in OFF position).
- S509.....
Counter Reset switch (shown in OFF position).
- S510.....
Tape counter switch (shown in OFF position).
- S511.....
Time counter switch (shown in OFF position).
- S512.....
D.M.S. [1] switch (shown in OFF position).
- S513.....
D.M.S. [2] switch (shown in OFF position).
- S514.....
D.M.S. [3] switch (shown in OFF position).
- S515.....
D.M.S. [4] switch (shown in OFF position).
- S516.....
D.M.S. [5] switch (shown in OFF position).
- S517.....
D.M.S. [6] switch (shown in OFF position).
- S518.....
D.M.S. [7] switch (shown in OFF position).
- S519.....
D.M.S. [8] switch (shown in OFF position).
- S520.....
D.M.S. [9] switch (shown in OFF position).
- S521.....
D.M.S. [10] switch (shown in OFF position).
- S522.....
D.M.S. [12] switch (shown in OFF position).
- S523.....
D.M.S. [13] switch (shown in OFF position).
- S524.....
Blank Skip switch (shown in OFF position).
- S525.....
Repeat switch (shown in OFF position).
- S526.....
D.M.S. FWD/REV switch.
- S601.....
Auto tape select switch (for Metal tape).
- S602.....
Auto tape select switch (for CrO₂ tape).
- S603.....
Cassette half switch (shown in OFF position).
- S604.....
FWD Rec inhibit switch (shown in OFF position).
- S605.....
REV Rec inhibit switch (shown in OFF position).
- S606.....
FWD/REV changing switch (shown in OFF position).
- S607.....
Mode changing switch (shown in OFF position).
- S608.....
FWD/REV detection switch (shown in FWD position).

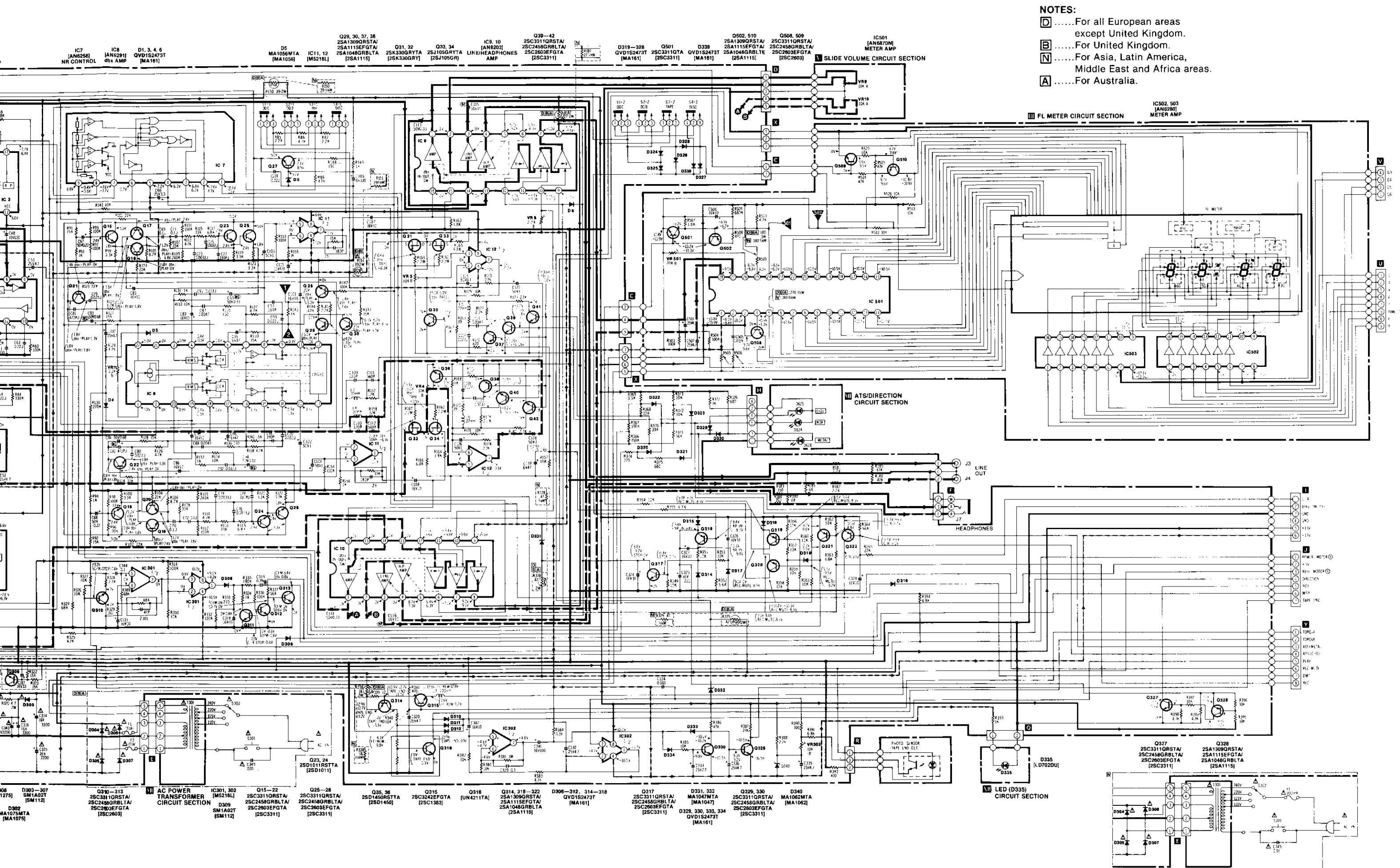
BLOCK DIAGRAM

RS-B78R RS-B78R

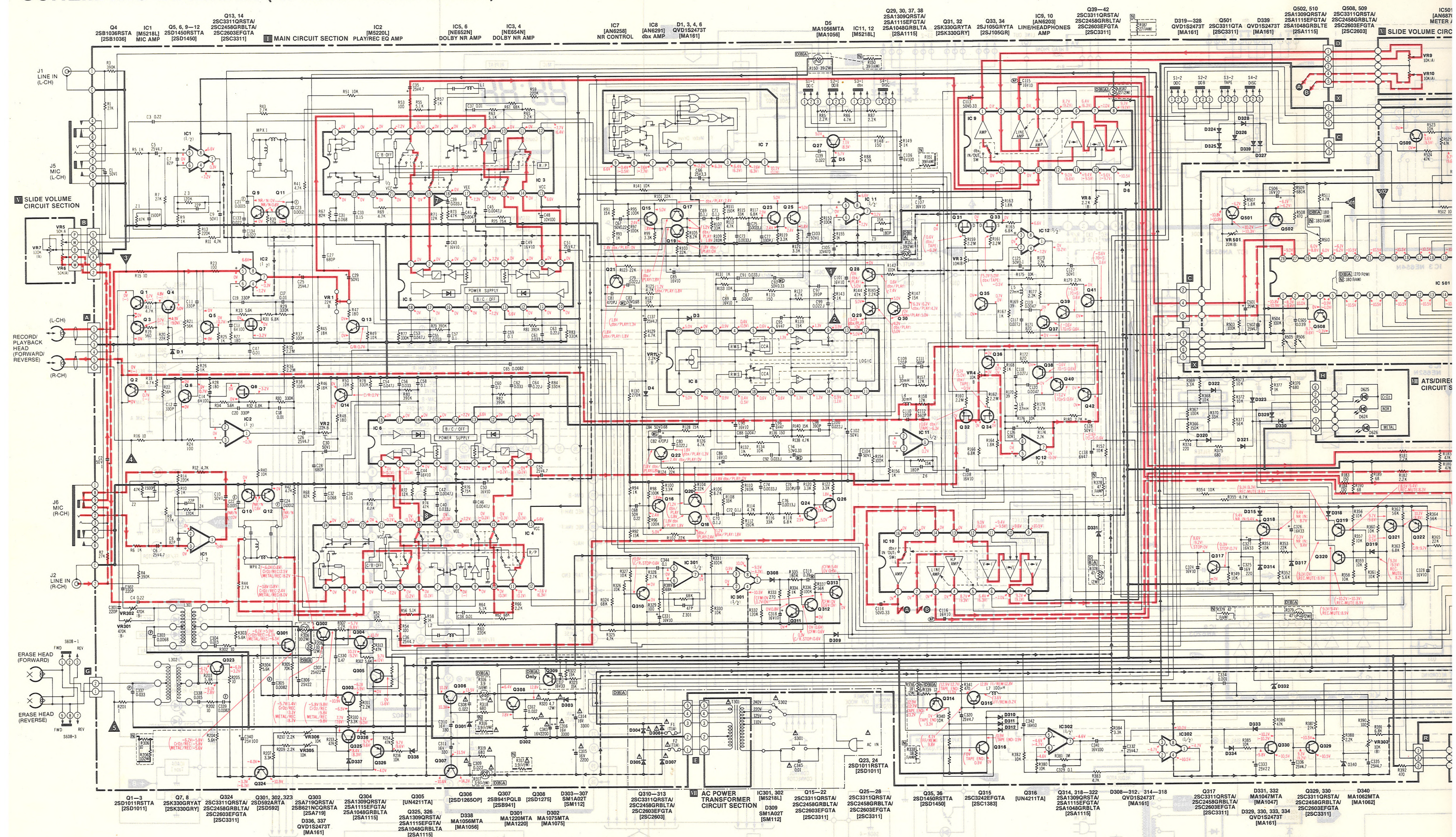




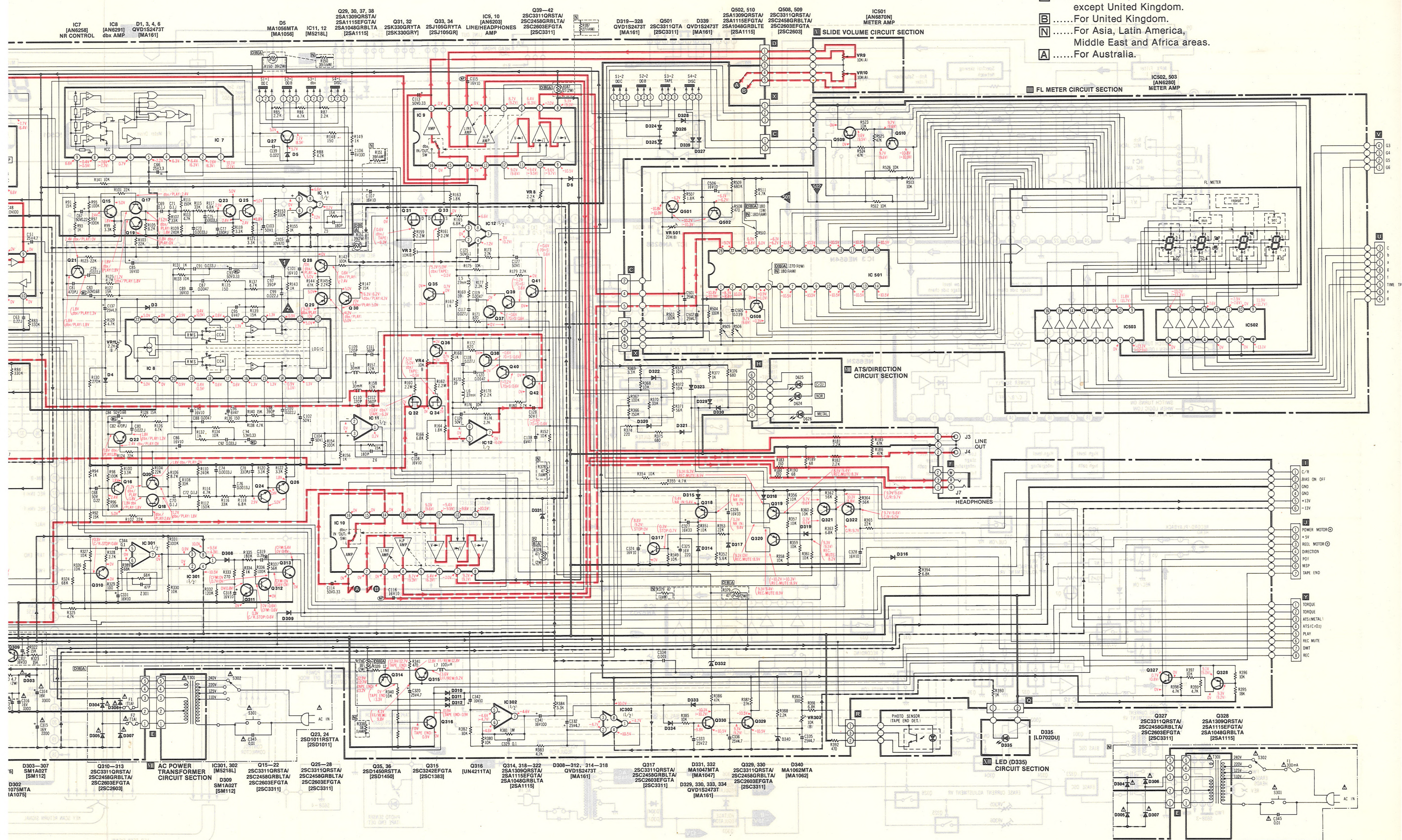




SCHEMATIC DIAGRAM (for Main/FL Meter Section)



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.



NOTES:

- S1-1, S1-2.....Dolby-C IN/OUT switch (shown in OUT position).
- S2-1, S2-2.....Dolby-B IN/OUT switch (shown in OUT position).
- S3-1, S3-2.....dbx "Tape" IN/OUT switch (shown in OUT position).
- S4-1, S4-2.....dbx "Disc" IN/OUT switch (shown in OUT position).
- S301.....Power ON/OFF switch (shown in OFF position).
- S302.....AC power voltage select switch.
- S401.....Timer REC/PLAY switch (shown in Timer REC position).
- S402-1, S402-3.....Mode select switch (○ / →).
- S501.....Direction switch (shown in OFF position).
- S502.....Record switch (shown in OFF position).
- S503.....F.F switch (shown in OFF position).
- S504.....Rewind switch (shown in OFF position).
- S505.....Play switch (shown in OFF position).
- S506.....Pause switch (shown in OFF position).
- S507.....Stop switch (shown in OFF position).
- S508.....Auto-Rec mute switch (shown in OFF position).
- S509.....Counter Reset switch (shown in OFF position).
- S510.....Tape counter switch (shown in OFF position).
- S511.....Time counter switch (shown in OFF position).
- S512.....D.M.S. 1 switch (shown in OFF position).
- S513.....D.M.S. 2 switch (shown in OFF position).
- S514.....D.M.S. 3 switch (shown in OFF position).
- S515.....D.M.S. 4 switch (shown in OFF position).
- S516.....D.M.S. 5 switch (shown in OFF position).
- S517.....D.M.S. 6 switch (shown in OFF position).
- S518.....D.M.S. 7 switch (shown in OFF position).
- S519.....D.M.S. 8 switch (shown in OFF position).
- S520.....D.M.S. 9 switch (shown in OFF position).
- S521.....D.M.S. 10 switch (shown in OFF position).
- S522.....D.M.S. 11 switch (shown in OFF position).
- S523.....D.M.S. 12 switch (shown in OFF position).
- S524.....Blank Skip switch (shown in OFF position).
- S525.....Repeat switch (shown in OFF position).
- S526.....D.M.S. FWD/REV switch.
- S601.....Auto tape select switch (for Metal tape).
- S602.....Auto tape select switch (for CrO₂ tape).
- S603.....Cassette half switch (shown in OFF position).
- S604.....FWD Rec inhibit switch (shown in OFF position).
- S605.....REV Rec inhibit switch (shown in OFF position).
- S606.....FWD/REV changing switch (shown in OFF position).
- S607.....Mode changing switch (shown in OFF position).
- S608.....FWD/REV detection switch (shown in FWD position).
- VR1, 2.....Playback gain adjustment VR.
- VR3, 4.....Overall gain adjustment VR.
- VR5, 6.....Input level controls.
- VR7.....Balance control.
- VR8.....FL meter adjustment VR (-40dB indication).
- VR9, 10.....Output level controls.
- VR11.....Attack recovery time adjustment VR.
- VR301, 302.....Bias current adjustment VR.
- VR303.....Photo sensor sensitivity adjustment VR.
- VR305, 306.....Erase current adjustment VR.
- VR501.....FL meter adjustment VR (0dB indication).
- VR601.....Takeup torque adjustment VR.
- L1, L2.....Skewing Network.
- L3, L4.....Bias Trap Coil.
- L5, L6.....Peaking Coil.
- L7.....Check Coil.
- L301, L302.....Bias Oscillation Coil.
- L401.....Choke Coil.
- L601—L604.....Choke Coil.
- MPX1, 2.....Multiplex Filter.
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
1K = 1,000(Ω), 1M = 1,000K(Ω).
- Capacity are in micro-farads (μF) unless specified otherwise.
- The mark (▼) shows test point. e.g. ▼ = Test point 1.
- All voltage values shown in circuitry are under no signal condition and playback mode with volume control at minimum position otherwise specified.
- ().....Voltage values at record mode.
- dbx/PLAY.....Voltage values at dbx encode mode.
- dbx/TAPE.....Voltage values at dbx encode or decode mode.
- CrO₂.....Voltage values at CrO₂ tape mode.
- Metal.....Voltage values at Metal tape mode.
- Stop.....Voltage values at Stop mode.
- C/R.....Voltage values at CUE/REV mode.
- FF/REW.....Voltage values at FF/REW mode.
- REC MUTE.....Voltage values at AUTO REC MUTE mode.
- 70μs.....Voltage values at CrO₂ or Metal tape mode.
- NR IN.....Voltage value at which the noise reduction switch is turned on.
- CFM.....Voltage value at which the test tape QZZCFM (315Hz/0dB) is played.
- TAPE END.....Voltage at the end of the cassette tape.
- 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 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.

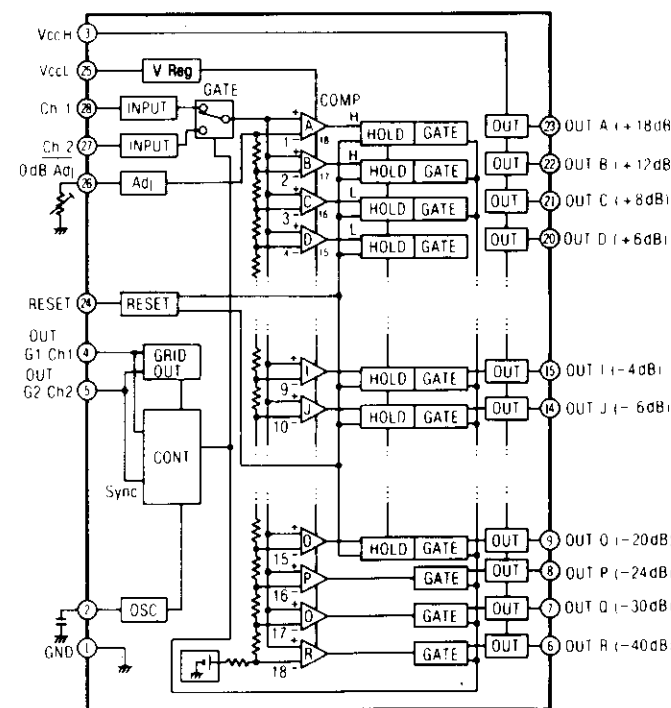
- * Output level control...MAX
- * Input level control...MAX
- * Balance control.....Center

SPECIFICATIONS

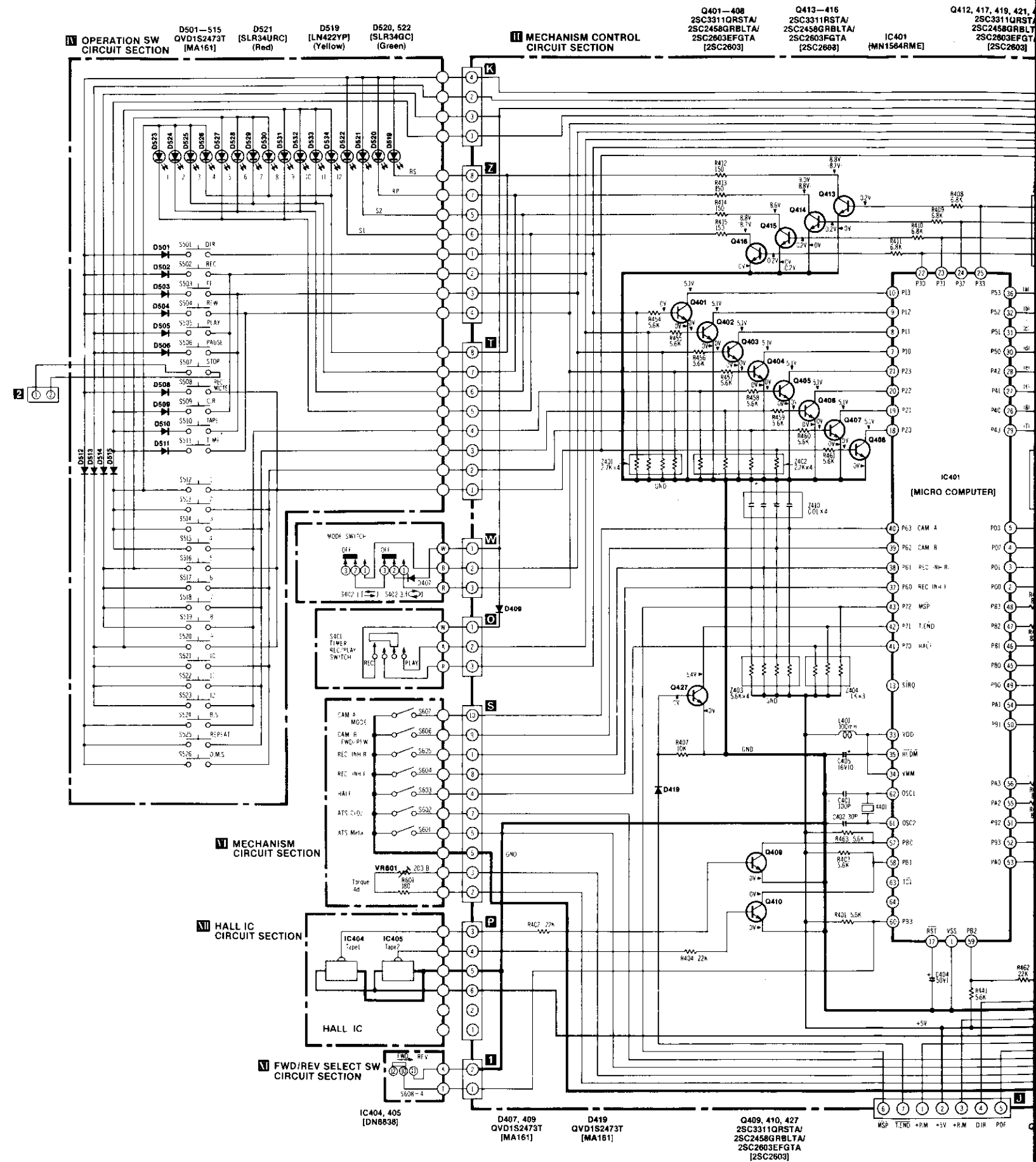
Playback S/N ratio * Test tape...QZZCFM	Greater than 45dB
Overall distortion * Test tape ...QZZCRA for Normal ...QZZCRX for CrO ₂ ...QZZCRZ for Metal	Less than 4%
Overall S/N ratio * Test tape...QZZCRA	Greater than 43dB (without NAB filter)

EQUIVALENT CIRCUIT

IC501: AN6870N



SCHEMATIC DIAGRAM (for Mechanism/Mechanism Control Section)



SCHEMATIC DIAGRAM (for Mechanism/Mechanism Control Section)

characteristics important
ponents, use only

pes of numbers: the supply
or transistors and diodes.
number and production parts

number
number

number
numbers
the replacement parts list.

modified at any time
ology.

control...MAX
control...MAX
control...Center

water than 45dB

less than 4%

water than 43dB
hout NAB filter)

UIT

ATE OUT A (+18dB)

ATE OUT B (+12dB)

ATE OUT C (+8dB)

ATE OUT D (+6dB)

ATE OUT I (-4dB)

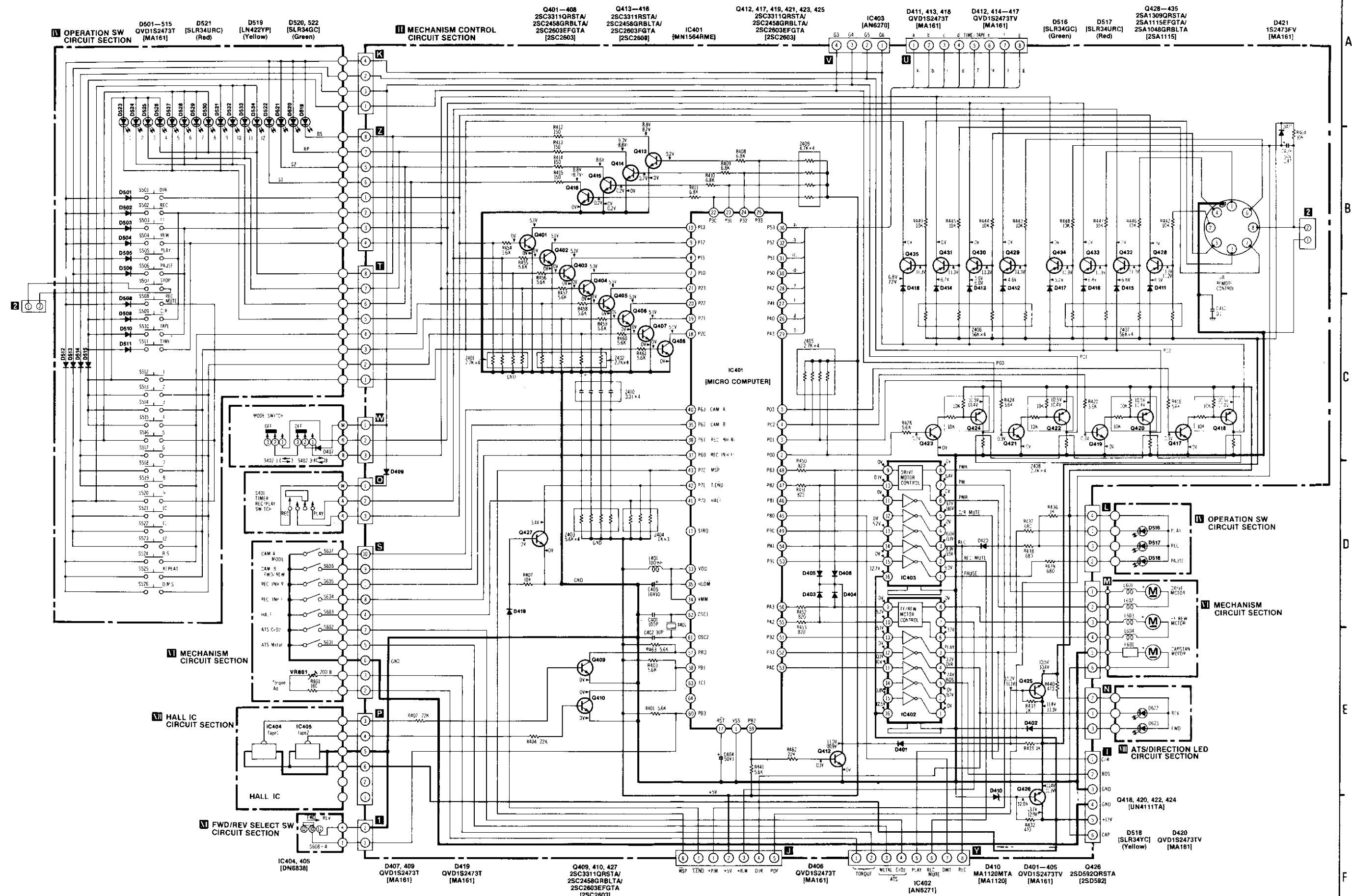
ATE OUT J (-6dB)

ATE OUT O (-20dB)

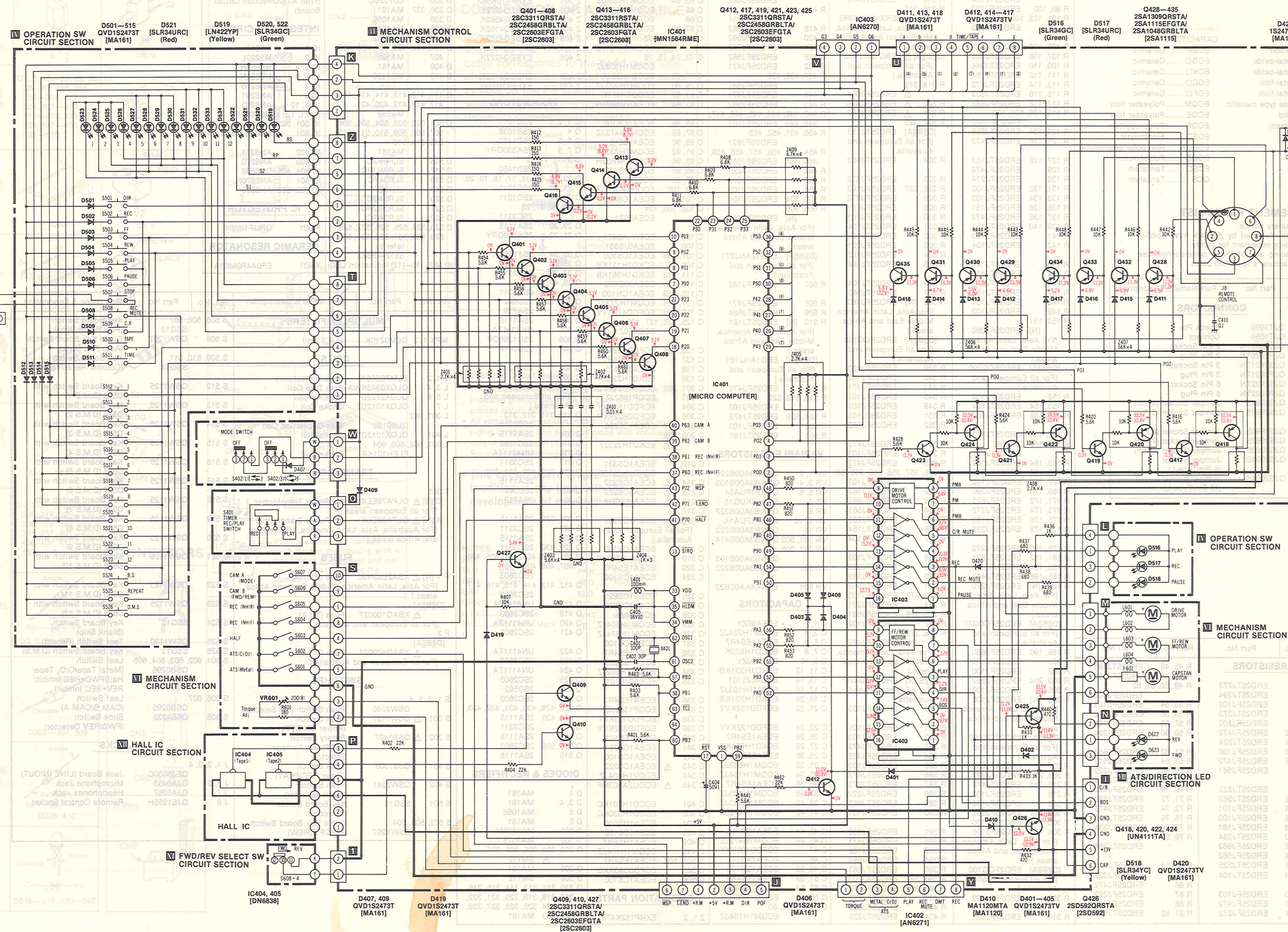
ATE OUT P (-24dB)

ATE OUT Q (-30dB)

ATE OUT R (-40dB)



SCHEMATIC DIAGRAM (for Mechanism/Mechanism Control Section)



ELECTRICAL PARTS LIST

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
ECQ.....Polyester film
ECQE.....Polyester film
ECQF.....Polypropylene
ECE.....Electrolytic
ECEDN.....Non polar electrolytic
ECQS.....Polystyrene
ECS.....Tantalum
QCS.....Tantalum

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
CONNECTORS		
CN 1	QJT1090	Check Pin
CN 2	QJT1054	Contact
CN 3	QJS1920TN	2 Pin Socket
CN 4	QJP1920TN	2 Pin Plug
CN 5	QJS1921TN	3 Pin Socket
CN 6	QJP1921TN	3 Pin Plug
CN 7	QJS1922TN	6 Pin Socket
CN 8	QJP1922TN	6 Pin Plug
CN 9	QJS1987S	Jumper Socket (4 Pin)
CN 10	QJS1961S	Jumper Socket (5 Pin)
CN 11	QJS1993S	Jumper Socket (6 Pin)
CN 12	QJS1962S	Jumper Socket (7 Pin)
CN 13	QJS1983S	Jumper Socket (8 Pin)
CN 14	QJS1994S	Jumper Socket (6 Pin/Type-L)
CN 15	QJS2004S	Jumper Socket (10 Pin/Type-L)

Ref. No.	Part No.	Ref. No.	Part No.
RESISTORS			
R 1, 2	ERD25J273	R 45, 46	ERD25J183
R 3, 4	ERD25J394	R 47, 48	ERD25J181
R 5, 6	ERD25J102	R 49, 50, 51, 52	ERD25J103
R 7, 8	ERD25J273	R 53, 54	ERD25J101
R 9, 10	ERD25J102	R 55, 56	ERD25J102
R 11, 12	ERD25J472	R 57, 58	ERD25J102
R 13, 14	ERD25J224	R 59, 60	ERD25J224
R 15, 16	ERD25J100	R 61, 62	ERD25J683
R 17, 18	ERD25J472	R 63, 64	ERD25J512
R 19	ERD25J561	R 65, 66	ERD25J222
R 20	ERD25J223	R 67, 68	ERD25J823
R 21, 22	ERD25J563	R 69, 70	ERD25J472
R 23, 24	ERD25J101	R 71, 72	ERD25J123
R 25, 26	ERD25J102	R 73, 74	ERD25J473
R 27, 28	ERD25J181	R 75, 76	ERD25J753
R 29, 30	ERD25J334	R 77, 78	ERD25J334
R 31, 32	ERD25J682	R 79, 80, 81, 82	ERD25J394
R 33, 34	ERD25J562	R 83, 84	ERD25J334
R 35, 36	ERD25J225	R 85	ERD25J222
R 37, 38	ERD25J104	R 86	ERD25J472
R 39, 40	ERD25J103	R 87	ERD25J222
R 41, 42	ERD25J472	R 88	ERD25J472
R 43, 44	ERD25J272	R 91, 92	ERD25J153

Ref. No.	Part No.	Ref. No.	Part No.
R 93, 94	ERD25FJ102	R 311	ERD25FJ222
R 95, 96, 97, 98	ERD25FJ562	R 312	ERD25FJ562
R 99, 100	ERD25FJ332	R 313	ERD25FJ473
R 101, 102, 103, 104	ERD25J223	R 316, 317	ERX12ANJ3R9
R 105, 106	ERD25FJ822	[N] Δ	ERX12ANJ3R9
R 107, 108	ERD25J333	[For Asia, Latin America, Middle East and Africa areas.]	
R 109, 110	ERD25J244	[D][B][A] Δ	ERQ12HJ3R9
R 111, 112	ERD25J154	[For all European and Australia.]	
R 113, 114	ERD25FJ472	R 318, 319	ERD25FJ681
R 115, 116	ERD25J333	R 320	ERX2ANJ4R7
R 117, 118	ERD25FJ682	R 321	ERD25FJ102
R 119, 120, 121, 122	ERD25FJ332	R 322, 323	ERD25J153
R 123, 124	ERD25J223	[D][B][A] Δ	ERD25J153
R 125, 126	ERD25FJ472	[For all European and Australia.]	
R 127, 128	ERD25J153	R 324	ERD25J683
R 129	ERD25FJ472	R 325	ERD25FJ472
R 130	ERD25J274	R 326, 327	ERD25FJ103
R 131, 132	ERD25FJ102	R 328	ERD25FJ272
R 133, 134	ERD25FJ103	R 329	ERD25FJ101
R 135, 136	ERD25FJ151	R 330	ERD25FJ103
R 137, 138	ERD25FJ472	R 331	ERD25J104
R 139, 140	ERD25J153	R 332	ERD25J124
R 141	ERD25FJ103	R 333	ERD25FJ221
R 142	ERD25J104	R 334	ERD25FJ102
R 143	ERD25FJ102	R 335	ERD25J184
R 144	ERD25J473	R 336	ERD25J104
R 145	ERD25FJ222	R 337	ERD25J563
R 147	ERD25J153	R 338 [N]	ERD25FJ180
R 148	ERD25FJ151	[For Asia, Latin America, Middle East and Africa areas.]	
R 149	ERD25FJ102	[D][B][A] Δ	ERD2FCG180
R 150, 151	ERD25FJ390	[For all European and Australia.]	
[N] Δ	ERD25FJ390	R 339	ERD25FJ120
[For Asia, Latin America, Middle East and Africa areas.]		R 340	ERD25FJ103
[D][B][A] Δ	ERD2FCG390	R 341	ERD25FJ471
[For all European and Australia.]		R 345	ERD25FJ103
R 152	ERD25FJ103	R 349	ERD25FJ103
R 153, 154	ERD25J104	R 351	ERD25FJ103
R 155, 156	ERD25FJ102	R 352	ERD25FJ562
R 157, 158	ERD25J123	R 353	ERD25J473
R 159, 160, 161, 162	ERD25J225	R 354	ERD25FJ103
R 163, 164	ERD25FJ182	R 355	ERD25FJ472
R 165, 166	ERD25FJ682	R 356, 357, 358, 359, 360, 361	ERD25FJ103
R 167, 168	ERD25FJ102	R 362	ERD25FJ103
R 169, 170	ERD25FJ390	R 363	ERD25FJ682
R 171, 172	ERD25FJ821	R 364	ERD25FJ563
R 173, 174	ERD25FJ272	R 365	ERD25J223
R 175, 176	ERD25FJ103	R 366	ERD25J154
R 177, 178	ERD25FJ222	R 367	ERD25J104
R 179, 180	ERD25FJ272	R 368	ERD25FJ103
R 181, 182	ERD25FJ821	R 369	ERD25FJ332
R 183, 184	ERD25FJ101	R 370	ERD25J333
R 185, 186	ERD25J473	R 371	ERD25J563
R 187 [N]	ERD25FJ270	R 372, 373	ERD25FJ103
[For Asia, Latin America, Middle East and Africa areas.]		R 374	ERD25J221
[D][B][A] Δ	ERD25FCG270	R 375, 376	ERD25FJ681
[For all European and Australia.]		R 377	ERD25FJ102
R 189, 190	ERD25FJ680	R 378, 379	ERD25FJ470
R 201	ERD25FJ180	[For Asia, Latin America, Middle East and Africa areas.]	
R 202	ERD25FJ100	[D][B][A] Δ	ERD2FCG470
R 203, 204	ERD25FJ562	[For all European and Australia.]	
R 205	ERD25FJ100	R 380	ERD25FJ103
R 206 [N]	ERD25FJ100	R 381	ERD25J105
[For Asia, Latin America, Middle East and Africa areas.]		R 382	ERD25FJ103
[D][B][A] Δ	ERD2FCG100	R 383	ERD25FJ472
[For all European and Australia.]		R 384	ERD25FJ332
R 207	ERD25FJ332	R 385	ERD25FJ103
R 209, 210	ERD25FJ222	R 386	ERD25J473
R 213, 214	ERD25J473	R 387	ERD25J273
R 216	ERD25FJ103	R 388	ERD25FJ222
R 302	ERD25FJ100	R 389	ERD25J683
R 303, 304	ERD25FJ562	R 390	ERD25FJ101
R 305	ERD25FJ100	R 391	ERD25FJ682
R 306 [N]	ERD25FJ100	R 392	ERD25FJ471
[For Asia, Latin America, Middle East and Africa areas.]		R 393	ERD25FJ102
[D][B][A] Δ	ERD2FCG100	R 394	ERD25FJ682
[For all European and Australia.]		R 395	ERD25J183
R 307	ERD25FJ222	R 396, 397	ERD25FJ103
R 310	ERD25FJ332	R 398, 399	ERD25FJ472
R 391	ERD25FJ682	R 402	ERD25J223
R 392	ERD25FJ471	R 403	ERD25FJ562
R 393	ERD25FJ102	R 404	ERD25J223

Ref. No.	Part No.	Ref. No.	Part No.
R 407	ERD25J103	R 408, 409, 410, 411	ERD25FJ682
R 412, 413, 414, 415	ERD25FJ151	R 416	ERD25FJ562
R 420	ERD25FJ562	R 424	ERD25FJ562
R 428	ERD25FJ562	R 432	ERD25FJ471
R 437, 438, 439	ERD25FJ681	R 440	ERD25FJ471
R 441	ERD25FJ562	R 442, 443, 444, 445, 446, 447, 448, 449	ERD25J103
R 450, 451, 452, 453	ERD25FJ821	R 454, 455, 456, 457, 458, 459, 460, 461	ERD25FJ562
R 462	ERD25J223	R 463	ERD25FJ562
R 464	ERD25FJ103	R 503, 504	ERD25J104
R 505, 506	ERD25J181	[N] Δ	ERD25J181
[For Asia, Latin America, Middle East and Africa areas.]		[D][B][A] Δ	ERG12ANJ271
[For all European and Australia.]		R 507	ERD25FJ182
R 508	ERD25FJ471	R 509	ERD25J684
R 510 [N]	ERD25J181	[For Asia, Latin America, Middle East and Africa areas.]	
[D][B][A] Δ	ERG12ANJ181	[For all European and Australia.]	
R 511	ERD25FJ472	R 512, 513, 523	ERD25FJ103
R 524, 525	ERD25J473	R 526	ERD25FJ103
R 601	ERD25J181	R 602	ERD25J181
VARIABLE RESISTORS			
VR 1, 2	QVNB3A00B223	VR 3, 4	QVNB3A00B103
VR 5, 6	QVBP1PUA54	VR 7	QVAL5KUG15
VR 8	QVNB3A00B222	VR 9, 10	QVBF1PUA14
VR 11	QVNB3A00B222	VR 301, 302	QVNB3A00B474
VR 303, 305, 306	QVNB3A00B103	VR 501	QVNB3A00B223
VR 601	EVNK4A00B22	CAPACITORS	
C 1, 2	ECEA50Z1	C 3, 4	ECQM1H224JZ
C 5, 6	ECEA1ES4R7	C 7, 8	ECOD1H820K
C 9, 10	ECEA50Z1	C 11, 12	ECKD1H331KB
C 13, 14	ECEA0JS101	C 17, 18	ECQM1H103JZ
C 19, 20	ECKD1H331KB	C 21, 22	ECFDD152KVY
C 23, 24	ECFDD122KVY	C 25, 26	ECEA1ES4R7
C 27, 28	ECKD1H681KB	C 29, 30	ECEA50Z1
C 31, 32	ECQM1H683JZ	C 33, 34	ECQM1H154JZ
C 35, 36	ECEA1ES4R7	C 37, 38	ECQM1H103JZ
C 39, 40	ECQM1H333JZ	C 41, 42	ECQM1H472JZ
C 43, 44	ECEA1CS100	C 45, 46	ECQM1H472JZ
C 47	ECFDD103KXY	C 48	ECEA1AS101
C 49, 50	ECEA1ES4R7	C 51, 52	ECEA1ES4R7
C 53, 54	ECQM1H473JZ	C 55, 56	ECQM1H333JZ
C 57, 58, 59, 60	ECQM1H104JZ	COMBINATION PARTS	
Z 1, 2	EXRP152K473	DIODES & RECTIFIERS	
Z 3, 4	EXRP220K124	Z 5, 6	EXRP181K163
Z 301	EXRP470K683	Z 401, 402	EXBEQ4272K
Z 403	EXBEQ4562K	Z 404	EXBEQ4102K
Z 405	EXBEQ4272K	Z 406, 407	EXBEQ4563K
Z 408	EXBEQ4272K	Z 409	EXBEQ4472K
Z 410	EXFP4103ZW	TRANSISTORS	
Q 1, 2, 3	2SD1011	Q 4	2SB1038
Q 5, 6	2SD1450	Q 7, 8	2SK330GRY
Q 9, 10, 11, 12	2SD1450	Q 13, 14, 15, 16, 17, 18, 19, 20, 21, 22	2SC3311
Q 23, 24	2SD1011	Q 25, 26, 27, 28	2SC3311
Q 29, 30	2SA1115	Q 31, 32	2SK330GRY
Q 33, 34	2SJ105GR	Q 35, 36	2SD1450
Q 37, 38	2SA1115	Q 39, 40, 41, 42	2SC3311
Q 301, 302	2SD592	Q 303	2SA719
Q 304	2SA1115	Q 305	UN4211TA
Q 306	2SD1265OP	Q 307	2SB941P
Q 308	2SD1275	Q 309	2SC3311
[D][B][A] Δ	2SC3311	[For all European and Australia.]	
Q 310, 311, 312, 313	2SC3311	Q 314	2SA1115
Q 315	2SC1383	Q 316	UN4211TA
Q 317	2SC3311	Q 318, 319, 320, 321, 322	2SA1115
Q 323	2SD592	Q 324	2SA719
Q 325, 326	2SA1115	Q 327	2SC3311
Q 328	2SC3311	Q 329	2SA1115
Q 329, 330	2SC3311	Q 401, 402, 403, 404, 405, 406, 407, 408, 409, 410	2SC2603
Q 412, 413, 414, 415, 416, 417	2SC2603	Q 418	UN4111TA
Q 419	2SC2603	Q 420	UN4111TA
Q 421	2SC2603	Q 422	UN4111TA
Q 423	2SC2603	Q 424	UN4111TA
Q 425	2SC2603	Q 426	2SD592
Q 427	2SC2603	Q 428, 429, 430, 431, 432, 433, 434, 435	2SA1115
Q 501	2SC3311	Q 502	2SA1115
Q 508, 509	2SC2603	Q 510	2SA1115
SWITCHES			
S 1, 2, 3, 4	QSW2240	Push Switch (NR Selector)	
S 301	QSW1127	Push Switch (Power ON/OFF)	
S 302	QSR1407	Rotary Switch (AC Power Voltage Selector)	
S 401	QSS1306	Slide Switch (Timer REC/PLAY)	
S 402	QSW2241	Push Switch (Mode Selector)	
S 501	SSG13	Key Board Switch (Direction)	
S 502, 503, 504	QSWY207	Duble Key Board Switch (REC/F.F./REW)	

Ref. No.	Part No.	Ref. No.	Part No.
Z 3, 4	EXRP220K124	D 331, 332	MA1047
Z 5, 6	EXRP181K153	D 333, 334	MA161
Z 301	EXRP470K683	D 335	LD702DU
Z 401, 402	EXBEQ4272K	D 336, 337	MA161
Z 403	EXBEQ4562K	D 338	MA1056
Z 404	EXBEQ4102K	D 339	MA161
Z 405	EXBEQ4272K	D 340	MA1062
Z 406, 407	EXBEQ4563K	D 401, 402, 403, 404, 405, 407	MA161
Z 408	EXBEQ4272K	D 409	MA161
Z 409	EXBEQ4472K	D 410	MA1120
Z 410	EXFP4103ZW		
TRANSISTORS			
Q 1, 2, 3	2SD1011	D 411, 412, 413, 414, 415, 417, 418, 419, 420, 421	MA161
Q 4	2SB1036	D 501, 502, 503, 504, 505, 507, 508, 509, 510, 511, 513, 514, 515	MA161
Q 5, 6	2SD1450	D 516	SLR34GC
Q 7, 8	2SK330GRY	D 517	SLR34JRC
Q 9, 10, 11, 12	2SD1450	D 518	SLR34YC
Q 13, 14, 15, 16, 17, 18, 19, 20, 21, 22	2SC3311	D 519	LN422YP
Q 23, 24	2SD1011	D 520	SLR34GC
Q 25, 26, 27, 28	2SC3311	D 521	SLR34URC
Q 29, 30	2SA1115	D 522	SLR34GC
Q 31, 32	2SK330GRY	D 523, 524, 525, 526, 527, 529, 530, 531, 532, 533, refer to S512—S523	(D.M.S. [1]—[12] Indication)
Q 33, 34	2SJ105GR		
Q 35, 36	2SD1450		
Q 37, 38	2SA1115		
Q 39, 40, 41, 42	2SC3311		
Q 301, 302	2SD592		
Q 303	2SA719		
Q 304	2SA1115		
Q 305	UN4211TA		
Q 306	2SD1265OP		
Q 307	2SB941P		
Q 308	2SD1275		
Q 309	[D][B][A] 2SC3311 [For all European and Australia.]		
Q 310, 311, 312, 313	2SC3311		
Q 314	2SA1115		
Q 315	2SC1383		
Q 316	UN4211TA		
Q 317	2SC3311		
Q 318, 319, 320, 321, 322	2SA1115		
Q 323	2SD592		
Q 324	2SA719		
Q 325, 326	2SA1115		
Q 327	2SC3311		
Q 328	2SA1115		
Q 329, 330	2SC3311		
Q 401, 402, 403, 404, 405, 406, 407, 408, 409, 410	2SC2603		
Q 412, 413, 414, 415, 416, 417	2SD2603		
Q 418	UN4111TA		
Q 419	2SC2603		
Q 420	UN4111TA		
Q 421	2SC2603		
Q 422	UN4111TA		
Q 423	2SC2603		
Q 424	UN4111TA		
Q 425	2SC2603		
Q 426	2SD592		
Q 427	2SC2603		
Q 428, 429, 430, 431, 432, 433, 434, 435	2SA1115		
Q 501	2SC3311		
Q 502	2SA1115		
Q 508, 509	2SC2603		
Q 510	2SA1115		
DIODES & RECTIFIERS			
D 1	MA161		
D 3, 4	MA161		
D 5	MA1056		
D 6	MA161		
D 301	MA1220M		
D 302	MA1075		
D 303, 304, 305, 306, 307	SM112		
D 308	MA161		
D 309	SM112		
D 310, 311, 312, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, MA161			

Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.	Ref. No.	Part No.
ERD25TJ103 410, 411	C 61, 62	ECQM1H333JZ	Z 3, 4	EXRP220K124	D 331, 332	MA1047	D 622, 623, 624, 625, 626	QVDSL0050
ERD25FJ682	C 63, 64	ECQM1H224JZ	Z 5, 6	EXRP181K153	D 333, 334	MA161	(With ATS/Direction Circuit Board)	
414, 415	C 65	ECQM1H222JZ	Z 301	EXRP470K683	D 335	LD702DU		
ERD25FJ151	C 66	ECQA1EN3R3	Z 401, 402	EXBEQ4272K	D 336, 337	MA161		
ERD25FJ562	C 67, 68	ECEA50ZR22	Z 403	EXBEQ4562K	D 338	MA1056		
ERD25FJ562	C 69, 70, 71, 72	ECQM1H104JZ	Z 404	EXBEQ4102K	D 340	MA161		
ERD25FJ562	C 73, 74, 75, 76	ECQM1H332JZ	Z 405	EXBEQ4272K	D 401, 402, 403, 404, 405, 406, 407	MA1062		
ERD25FJ471	C 77, 78	ECQM1H331K	Z 406, 407	EXBEQ4563K	D 409	MA161		
439	C 79, 80	ECQM1H223JZ	Z 408	EXBEQ4272K	D 410	MA1120		
ERD25FJ681	C 81, 82	ECQM1H223JZ	Z 409	EXBEQ4472K	D 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421	MA161		
ERD25FJ471	C 83, 84	ECQA1H471K	Z 410	EXFP4103ZW	D 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515	MA161		
ERD25FJ562	C 85, 86	ECEA1CS100	Q 1, 2, 3	2SD1011	D 516	SLR34GC		
444, 445, 446, 447	C 87, 88	ECQM1H472JZ	Q 4	2SB1036	D 517	SLR34URC		
ERD25TJ103	C 89, 90	ECEA16210	Q 5, 6	2SD1450	D 518	SLR34YC		
452, 453	C 91, 92	ECQM1H333JZ	Q 7, 8	2SK330GRY	D 519	LN422YP		
ERD25FJ821	C 93, 94	ECQA50MR33R	Q 9, 10, 11, 12		D 520	SLR34GC		
456, 457, 458, 459	C 95, 96	ECEA0J5470	Q 13, 14, 15, 16, 17, 18, 19, 20, 21, 22	2SD1450	D 521	SLR34URC		
ERD25FJ562	C 97, 98	ECQA1H391J	Q 23, 24	2SC3311	D 522	SLR34GC		
ERD25TJ223	C 99, 100	ECQM1H223JZ	Q 25, 26, 27, 28	2SC3311	D 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534	refer to S512—S523		
ERD25FJ562	C 101	ECEA1CS100	Q 29, 30	2SA1115				
ERD25TJ104	C 102, 103, 104	ECEA50Z1	Q 31, 32	2SK330GRY				
ERD25TJ181	C 105	ECEA1AS471	Q 33, 34	2SJ105GR				
a, Latin America, East and Africa	C 106	ECEA0J5331	Q 35, 36	2SD1450				
ERG12ANJ271	C 107, 108	ECEA1CS100	Q 37, 38	2SA1115				
European and Africa	C 109, 110	ECKD2H121KB	Q 39, 40, 41, 42					
ERG12ANJ181	C 111, 112	ECKD1H561KB	Q 301, 302	2SD592				
European and Africa	C 113, 114	ECEA50ZR33	Q 303	2SA719				
ERG12ANJ181	C 115, 116	ECEA1CN100	Q 304	2SA1115				
European and Africa	C 117, 118	ECQM1H273JZ	Q 305	UN4211TA				
ERG12ANJ181	C 119, 120	ECFDD472KVV	Q 306	2SD1265OP				
European and Africa	C 125, 126, 127, 128	ECEA50Z1	Q 307	2SB941P				
ERG12ANJ181	C 133, 134	ECFDD223KXY	Q 308	2SD1275				
European and Africa	C 137	ECEA1ES4R7	Q 309					
ERG12ANJ181	C 138	ECEA0J5470	Q 310, 311, 312, 313	2SC3311				
European and Africa	C 139	ECKD1H223ZF	Q 314	2SA1115				
ERG12ANJ181	C 301, 302	ECQM1H221KD	Q 315	2SC1383				
European and Africa	C 303	ECQP1682JZ	Q 316	UN4211TA				
ERG12ANJ181	C 304	ECFDD153KXY	Q 317	2SC3311				
European and Africa	C 305	ECFDD822KVV	Q 318, 319, 320, 321, 322	2SA1115				
ERG12ANJ181	C 306, 307	ECEA1ES220	Q 323	2SD592				
European and Africa	C 308, 309	ECKD1H223ZF	Q 324	2SA719				
ERG12ANJ181	C 310, 311	ECEA1CS331	Q 325, 326	2SA1115				
European and Africa	C 312	ECKD1H223ZF	Q 327	2SC3311				
ERG12ANJ181	C 314	ECEA1CS332	Q 328	2SA1115				
European and Africa	C 315	ECEA1CS222	Q 329, 330	2SC3311				
ERG12ANJ181	C 316	ECEA1CS332	Q 401, 402, 403, 404, 405, 406, 407, 408, 409, 410	2SC2603				
European and Africa	C 317	ECEA1CS330	Q 412, 413, 414, 415, 416, 417	2SC2603				
ERG12ANJ181	C 318	ECEA1CS100	Q 418	UN4111TA				
European and Africa	C 319	ECQM1H394JZ	Q 419	2SC2603				
ERG12ANJ181	C 320	ECEA1ES4R7	Q 420	UN4111TA				
European and Africa	C 324	ECEA1CS100	Q 421	2SC2603				
ERG12ANJ181	C 325	ECEA1CS221	Q 422	UN4111TA				
European and Africa	C 326, 327	ECEA1CS330	Q 423	2SC2603				
ERG12ANJ181	C 328	ECEA50Z1	Q 424	UN4111TA				
European and Africa	C 329	ECQM1H104JZ	Q 425	2SC2603				
ERG12ANJ181	C 330	ECQM1H474JZ	Q 426	2SD592				
European and Africa	C 331	ECQA1CS100	Q 427	2SC2603				
ERG12ANJ181	C 332	ECEA1ES4R7	Q 428, 429, 430, 431, 432, 433, 434, 435	2SA1115				
European and Africa	C 333	ECEA1ES220	Q 501	2SC3311				
ERG12ANJ181	C 334	ECQM1H102JZ	Q 502	2SA1115				
European and Africa	C 335	ECEA0J5101	Q 508, 509	2SC2603				
ERG12ANJ181	C 336	ECEA1ES4R7	Q 510	2SA1115				
European and Africa	C 337	ECQP1333JZ						
ERG12ANJ181	C 338	ECFDD153KXY						
European and Africa	C 339	ECFDD822KVV						
ERG12ANJ181	C 340	ECEA1ES101						
European and Africa	C 341	ECEA1CS101						
ERG12ANJ181	C 342	ECEA1CS100						
European and Africa	C 343	ECEA1CS222						
ERG12ANJ181	C 344	ECQV1H104JZ						
European and Africa	C 345	ECQU2A103MF						
ERG12ANJ181	C 401	ECDD1H101KC						
European and Africa	C 402	ECDD1H330KC						
ERG12ANJ181	C 404	ECEA1HS010						
European and Africa	C 405	ECEA1CS100						
ERG12ANJ181	C 409	ECEA1HSR47						
European and Africa	C 410	ECQM1H104JZ						
ERG12ANJ181	C 501, 502	ECEA1ES4R7						
European and Africa	C 505	ECFDD393KXD						
ERG12ANJ181	C 506	ECEA1CS100						
European and Africa								

TRANSISTORS

INTEGRATED CIRCUITS

IC PROTECTOR

CERAMIC RESONATOR

E RESISTORS

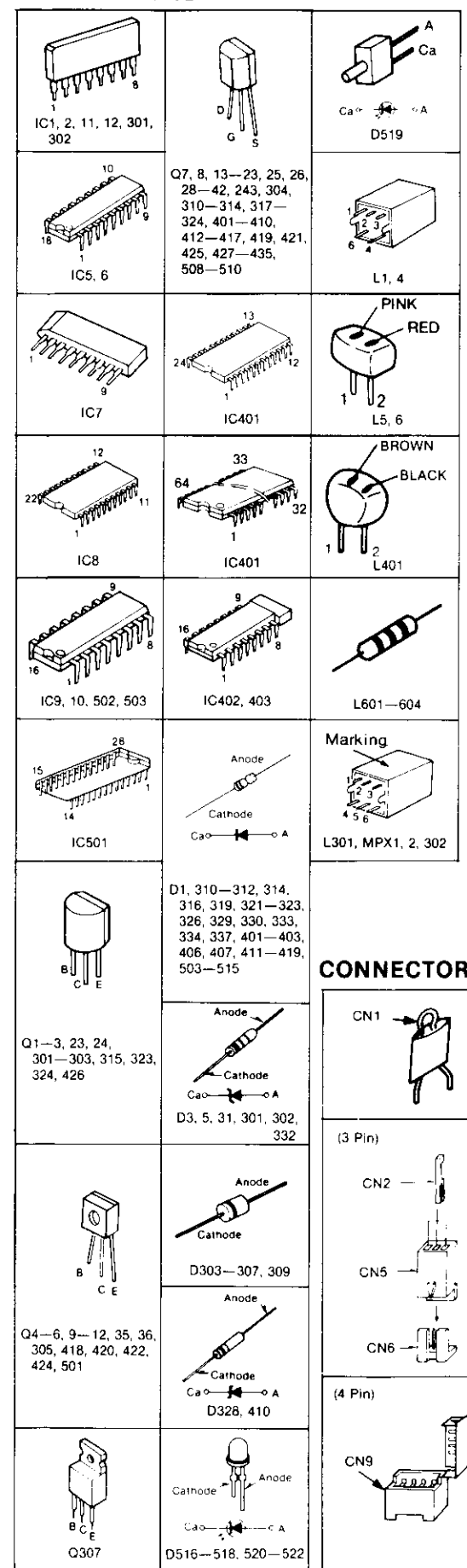
ACITORS

DIODES & RECTIFIERS

COMBINATION PARTS

Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
MULTIPLEX FILTERS					
MPX 1, 2	QLM9Z10K	M.P.X. Coil	S 505, 506, 507	SSG13	Key Board Switch (Play/Pause/Stop)
COILS					
L 1, 2	ELM7Q306A	Skewing Network	S 508	QSWY207	Duple Key Board Switch (Auto Rec Muto)
L 3, 4	QLQX0343KWA	Bias Trap Coil	S 509, 510, 511	SSG13	Key Board Switch (Counter Reset/Tape/Time)
L 5, 6	QLQX2722D	Peaking Coil	S 512	QSW1125	Key Board Switch with D523 (D.M.S. 1)
L 7	QLQX1012DT	Choke Coil	S 513	QSW1125	Key Board Switch with D524 (D.M.S. 2)
L 301, 302	QLB0198	Bias Oscillation Coil	S 514	QSW1125	Key Board Switch with D525 (D.M.S. 3)
L 401	QLQX1012DT	Choke Coil	S 515	QSW1125	Key Board Switch with D526 (D.M.S. 4)
L 601, 602, 603, 604	ELEH101KA	Choke Coil	S 516	QSW1125	Key Board Switch with D527 (D.M.S. 5)
TRANSFORMER					
T 301	[D][B][A] QLP476ELX	AC Power Transformer [For all European areas.]	S 517	QSW1125	Key Board Switch with D528 (D.M.S. 6)
	[A][N] QLP488ELX	AC Power Transformer [For Australia, Asia, Latin America, Middle East and Africa areas.]	S 518	QSW1125	Key Board Switch with D529 (D.M.S. 7)
FUSES					
F 1 [N]	XBA2E03NS5	Fuse (300mA) [For Asia, Latin America, Middle East and Africa areas.]	S 519	QSW1125	Key Board Switch with D530 (D.M.S. 8)
	[D][B][A] XBAQ100027	Fuse (T 1A) [For all European and Australia.]	S 520	QSW1125	Key Board Switch with D531 (D.M.S. 9)
F 2	[D][B][A] XBAQ100027	Fuse (T 1A) [For all European and Australia.]	S 521	QSW1125	Key Board Switch with D532 (D.M.S. 10)
SWITCHES					
S 1, 2, 3, 4	QSW2240	Push Switch (NR Selector)	S 522	QSW1125	Key Board Switch with D533 (D.M.S. 11)
S 301	QSW1127	Push Switch (Power ON/OFF)	S 523	QSW1125	Key Board Switch with D534 (D.M.S. 12)
S 302	QSR1407	Rotary Switch (AC Power Voltage Selector)	S 524	SSG13	Key Board Switch (Blank Skip)
S 401	QSS1306	Slide Switch (Timer REC/PLAY)	S 525	QSW1130	Tact Switch (Repeat)
S 402	QSW2241	Push Switch (Mode Selector)	S 526	SSG13	Key Board Switch (D.M.S.)
S 501	SSG13	Key Board Switch (Direction)	S 601, 602, 603, 604, 605	QSB0296	Leaf Switch [Metal Tape/CrO ₂ Tape/ Half/FWD•REC Inhibit/ REV•REC Inhibit]
S 502, 503, 504	QSWY207	Duple Key Board Switch (REC/F.F./REW)	S 606, 607	QSB0295	Leaf Switch (CAM B/CAM A)
JACKS					
J 1, 2, 3, 4	QJ5030C	Jack Board (LINE IN/OUT)	S 608	QSS4223	Slide Switch (FWD/REV Detector)
J 5, 6	QJA0453	Microphone Jack			
J 7	QJA0267	Headphones Jack			
J 8	QJS1955H	Remote Control Socket			

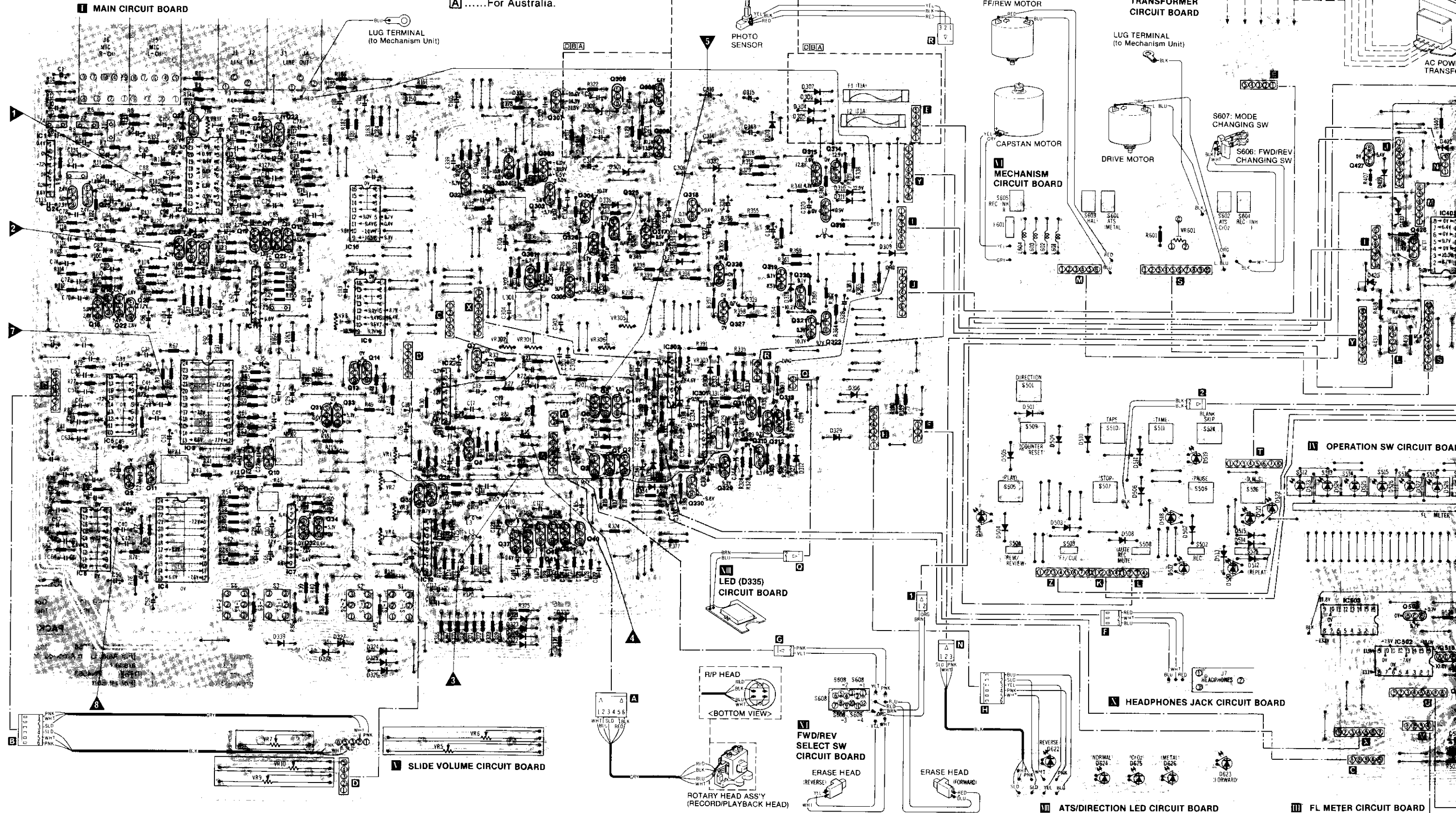
TERMINATIONS



CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

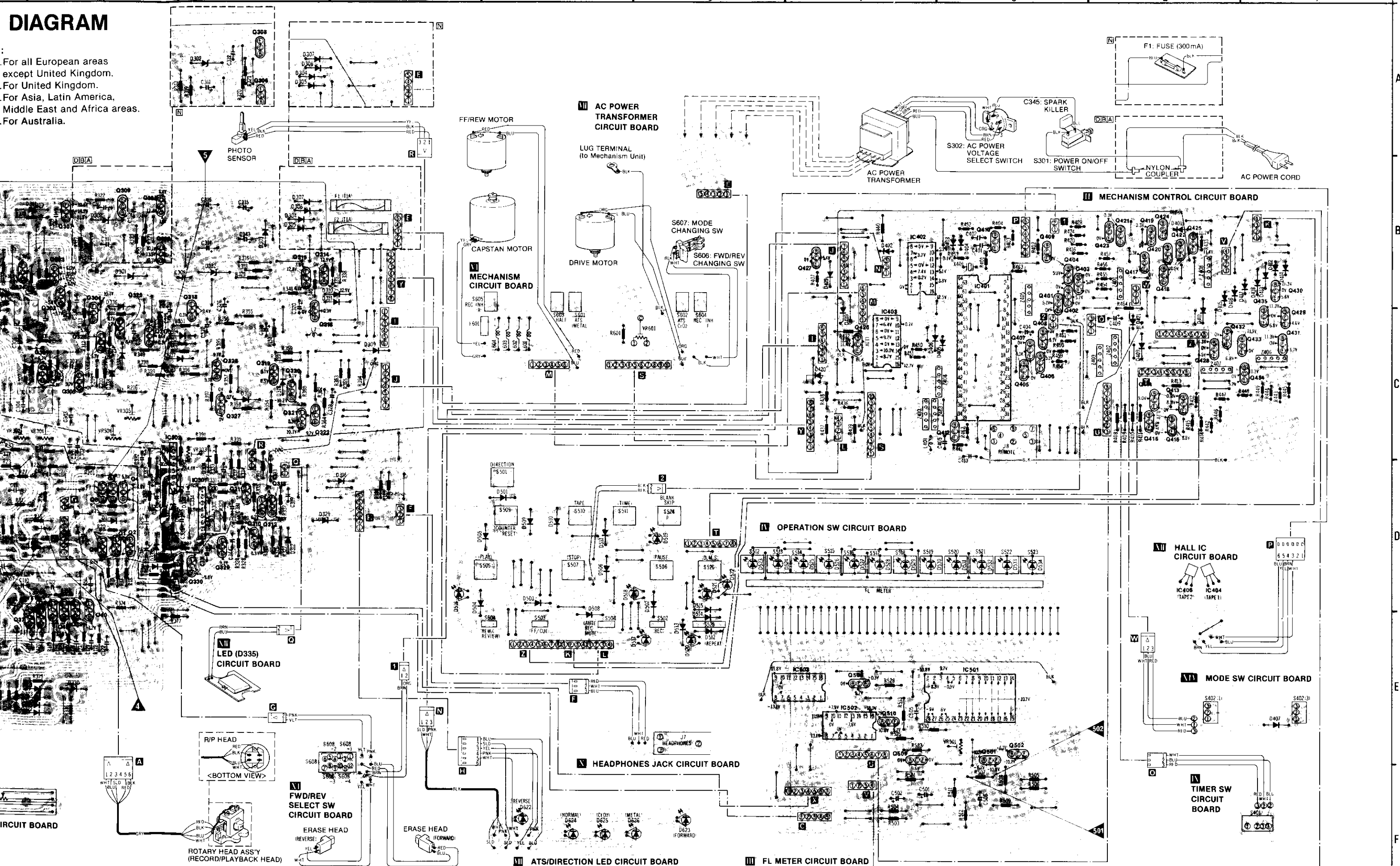
NOTES:

- 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.



DIAGRAM

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



CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

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.

I MAIN CIRCUIT BOARD

LUG TERMINAL
(to Mechanism Unit)

PHOTO
SENSOR

VII AC POWER TRANSFORMER CIRCUIT BOARD

LUG TERMINAL
(to Mechanism Unit)

FF/REW MOTOR

CAPSTAN MOTOR

DRIVE MOTOR

S607: MODE
CHANGING SW

S606: FWD/REV
CHANGING SW

S605: REC INH
(R)

S604: FWD INH
(F)

S603: REV INH
(R)

S602: FWD INH
(F)

S601: REV INH
(R)

S600: FWD INH
(F)

S599: REV INH
(R)

S598: FWD INH
(F)

S597: REV INH
(R)

S596: FWD INH
(F)

S595: REV INH
(R)

S594: FWD INH
(F)

S593: REV INH
(R)

S592: FWD INH
(F)

S591: REV INH
(R)

S590: FWD INH
(F)

S589: REV INH
(R)

S588: FWD INH
(F)

S587: REV INH
(R)

S586: FWD INH
(F)

S585: REV INH
(R)

S584: FWD INH
(F)

S583: REV INH
(R)

S582: FWD INH
(F)

S581: REV INH
(R)

S580: FWD INH
(F)

S579: REV INH
(R)

S578: FWD INH
(F)

S577: REV INH
(R)

S576: FWD INH
(F)

S575: REV INH
(R)

S574: FWD INH
(F)

S573: REV INH
(R)

S572: FWD INH
(F)

S571: REV INH
(R)

S570: FWD INH
(F)

S569: REV INH
(R)

S568: FWD INH
(F)

S567: REV INH
(R)

S566: FWD INH
(F)

S565: REV INH
(R)

S564: FWD INH
(F)

S563: REV INH
(R)

S562: FWD INH
(F)

S561: REV INH
(R)

S560: FWD INH
(F)

S559: REV INH
(R)

S558: FWD INH
(F)

S557: REV INH
(R)

S556: FWD INH
(F)

S555: REV INH
(R)

S554: FWD INH
(F)

S553: REV INH
(R)

S552: FWD INH
(F)

S551: REV INH
(R)

S550: FWD INH
(F)

S549: REV INH
(R)

S548: FWD INH
(F)

S547: REV INH
(R)

S546: FWD INH
(F)

S545: REV INH
(R)

S544: FWD INH
(F)

S543: REV INH
(R)

S542: FWD INH
(F)

S541: REV INH
(R)

S540: FWD INH
(F)

S539: REV INH
(R)

S538: FWD INH
(F)

S537: REV INH
(R)

S536: FWD INH
(F)

S535: REV INH
(R)

S534: FWD INH
(F)

S533: REV INH
(R)

S532: FWD INH
(F)

S531: REV INH
(R)

S530: FWD INH
(F)

S529: REV INH
(R)

S528: FWD INH
(F)

S527: REV INH
(R)

S526: FWD INH
(F)

S525: REV INH
(R)

S524: FWD INH
(F)

S523: REV INH
(R)

S522: FWD INH
(F)

S521: REV INH
(R)

S520: FWD INH
(F)

S519: REV INH
(R)

S518: FWD INH
(F)

S517: REV INH
(R)

S516: FWD INH
(F)

S515: REV INH
(R)

S514: FWD INH
(F)

S513: REV INH
(R)

S512: FWD INH
(F)

S511: REV INH
(R)

S510: FWD INH
(F)

S509: REV INH
(R)

S508: FWD INH
(F)

S507: REV INH
(R)

S506: FWD INH
(F)

S505: REV INH
(R)

S504: FWD INH
(F)

S503: REV INH
(R)

S502: FWD INH
(F)

S501: REV INH
(R)

S500: FWD INH
(F)

S499: REV INH
(R)

S498: FWD INH
(F)

S497: REV INH
(R)

S496: FWD INH
(F)

S495: REV INH
(R)

S494: FWD INH
(F)

S493: REV INH
(R)

S492: FWD INH
(F)

S491: REV INH
(R)

S490: FWD INH
(F)

S489: REV INH
(R)

S488: FWD INH
(F)

S487: REV INH
(R)

S486: FWD INH
(F)

S485: REV INH
(R)

S484: FWD INH
(F)

S483: REV INH
(R)

S482: FWD INH
(F)

S481: REV INH
(R)

S480: FWD INH
(F)

S479: REV INH
(R)

S478: FWD INH
(F)

S477: REV INH
(R)

S476: FWD INH
(F)

S475: REV INH
(R)

S474: FWD INH
(F)

S473: REV INH
(R)

S472: FWD INH
(F)

S471: REV INH
(R)

S470: FWD INH
(F)

S469: REV INH
(R)

S468: FWD INH
(F)

S467: REV INH
(R)

S466: FWD INH
(F)

S465: REV INH
(R)

S464: FWD INH
(F)

S463: REV INH
(R)

S462: FWD INH
(F)

S461: REV INH
(R)

S460: FWD INH
(F)

S459: REV INH
(R)

S458: FWD INH
(F)

S457: REV INH
(R)

S456: FWD INH
(F)

S455: REV INH
(R)

S454: FWD INH
(F)

S453: REV INH
(R)

S452: FWD INH
(F)

S451: REV INH
(R)

S450: FWD INH
(F)

S449: REV INH
(R)

S448: FWD INH
(F)

S447: REV INH
(R)

S446: FWD INH
(F)

S445: REV INH
(R)

S444: FWD INH
(F)

S443: REV INH
(R)

S442: FWD INH
(F)

S441: REV INH
(R)

S440: FWD INH
(F)

S439: REV INH
(R)

S438: FWD INH
(F)

S437: REV INH
(R)

S436: FWD INH
(F)

S435: REV INH
(R)

S434: FWD INH
(F)

S433: REV INH
(R)

S432: FWD INH
(F)

S431: REV INH
(R)

S430: FWD INH
(F)

S429: REV INH
(R)

S428: FWD INH
(F)

S427: REV INH
(R)

S426: FWD INH
(F)

S425: REV INH
(R)

S424: FWD INH
(F)

S423: REV INH
(R)

S422: FWD INH
(F)

S421: REV INH
(R)

S420: FWD INH
(F)

S419: REV INH
(R)

S418: FWD INH
(F)

S417: REV INH
(R)

S416: FWD INH
(F)

S415: REV INH
(R)

S414: FWD INH
(F)

S413: REV INH
(R)

S412: FWD INH
(F)

S411: REV INH
(R)

S410: FWD INH
(F)

S409: REV INH
(R)

S408: FWD INH
(F)

S407: REV INH
(R)

S406: FWD INH
(F)

S405: REV INH
(R)

S404: FWD INH
(F)

S403: REV INH
(R)

S402: FWD INH
(F)

S401: REV INH
(R)

S400: FWD INH
(F)

S399: REV INH
(R)

S398: FWD INH
(F)

S397: REV INH
(R)

S396: FWD INH
(F)

S395: REV INH
(R)

S394: FWD INH
(F)

S393: REV INH
(R)

S392: FWD INH
(F)

S391: REV INH
(R)

S390: FWD INH
(F)

S389: REV INH
(R)

S388: FWD INH
(F)

S387: REV INH
(R)

S386: FWD INH
(F)

S385: REV INH
(R)

S384: FWD INH
(F)

S383: REV INH
(R)

S382: FWD INH
(F)

S381: REV INH
(R)

S380: FWD INH
(F)

S379: REV INH
(R)

S378: FWD INH
(F)

S377: REV INH
(R)

S376: FWD INH
(F)

S375: REV INH
(R)

S374: FWD INH
(F)

S373: REV INH
(R)

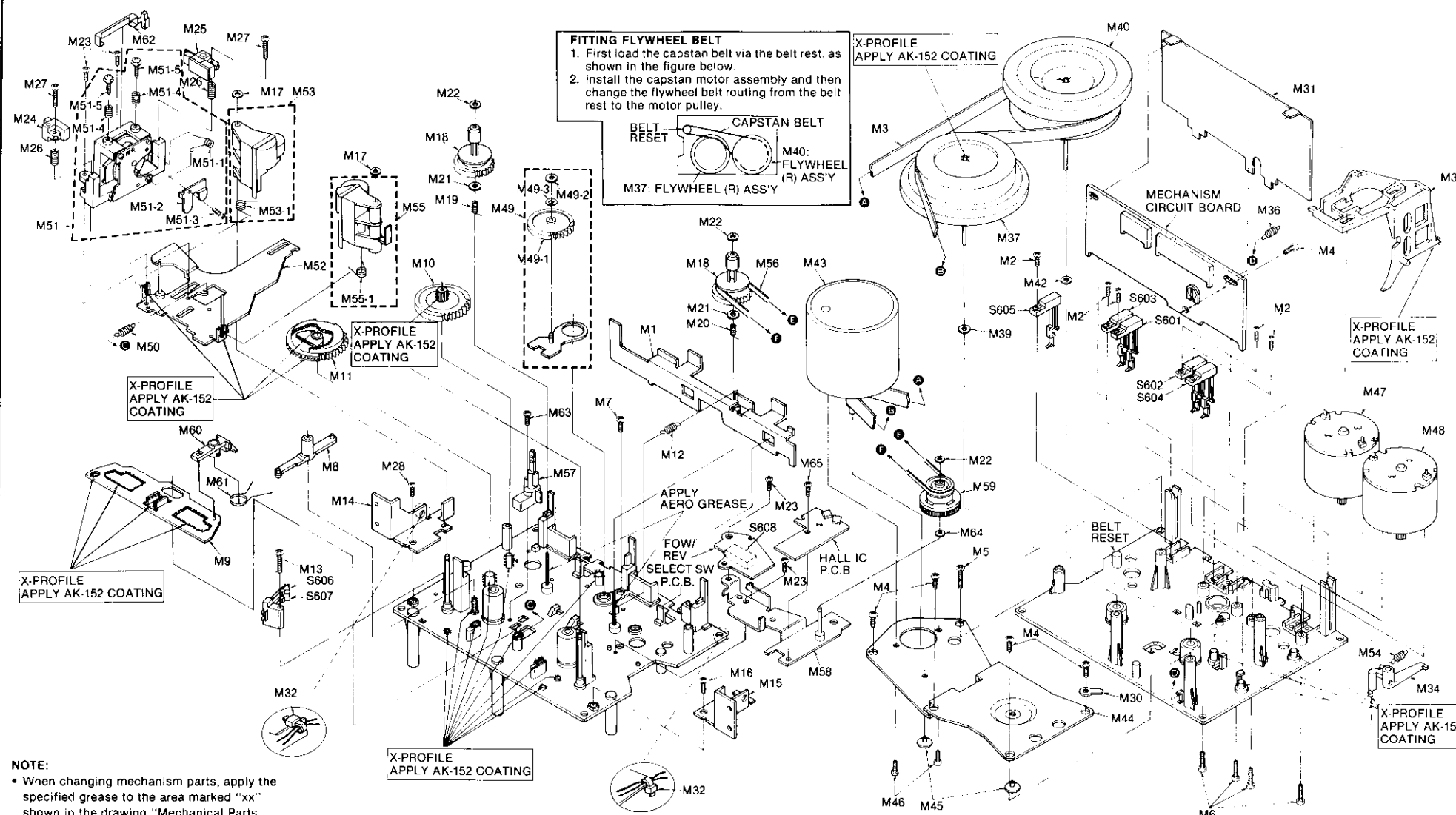
S372: FWD INH
(F)

S3

CUIT BOARD



MECHANICAL PARTS LOCATION



SPECIFICATIONS

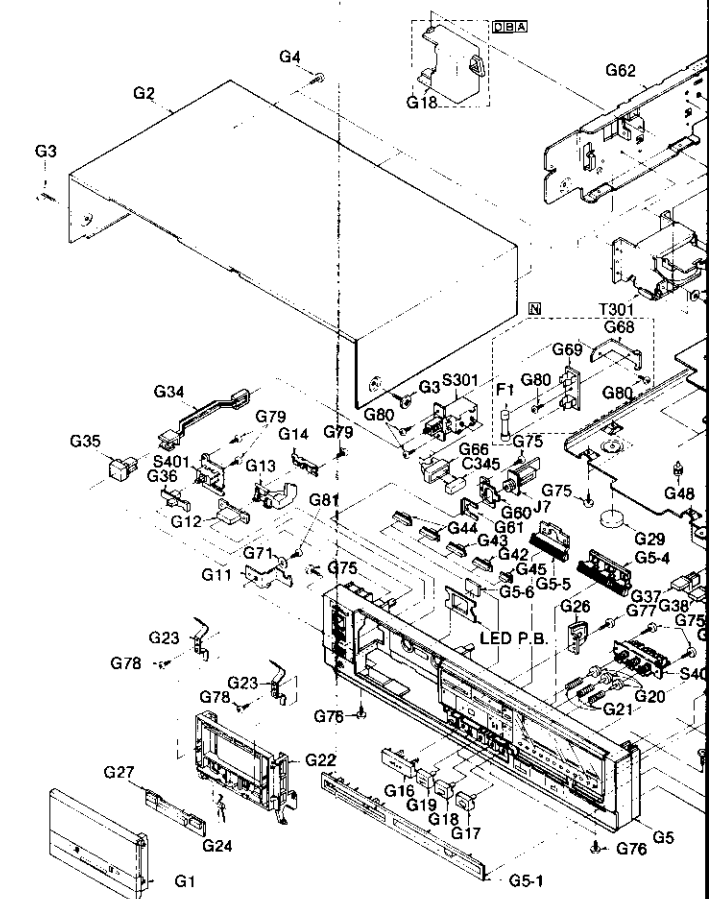
Pressure of pressure roller	400±50g
Takeup tension * Use cassette torque meter.....QZZSRKCT	50±10g-cm (FWD & REV mode)
Wow and flutter; (JIS) * Use test tapeQZZCWAT	Less than 0.1% (WRMS)

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description
MECHANICAL PARTS		
M 1	QMA4620	Eject Angle
M 2	XTN2+8B	Tapping Screw $\varnothing 2 \times 8$
M 3	QDB0347	Flywheel Belt
M 4	XTN3+8B	Tapping Screw $\varnothing 3 \times 8$
M 5	XTN3+22B	Tapping Screw $\varnothing 3 \times 22$
M 6	XSN26+10	Screw $\varnothing 2.6 \times 10$
M 7	XTN3+6B	Tapping Screw $\varnothing 3 \times 6$
M 8	QML4025	Change Lever

Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
M 9	QXR0963	Change Rod Assembly	M 32	QTD1315	Cord Clamper	M 51-1	QBN1994	Click Spring
M 10	QDG1325	Sub Gear	M 34	QML4026	Obstruction Lever	M 51-2	QBP1993	Head Thrust Spring
M 11	QDG1309	Main Gear	M 35	QMR2097	Eject Rod	M 51-3	XTN2+4B	Tapping Screw $\varnothing 2 \times 4$
M 12	QBT2003	Eject Angle Spring	M 36	QBT1947	Eject Rod Spring	M 51-4	QBC1470	Head Spring
M 13	XTN2+14B	Tapping Screw $\varnothing 2 \times 14$	M 37	QXF0221	Flywheel (R) Assembly	M 51-5	QHQ1352	Screw
M 14	QMA4628	Mechanism Angle-L	M 39	QBW2116	Washer (2.4 ϕ)	M 52	QXX2855	Head Base Plate
M 15	QMA4627	Mechanism Angle-R	M 40	QXF0220	Flywheel (L) Assembly	M 53	QXL1654	Assembly
M 16	XTN3+6B	Tapping Screw $\varnothing 3 \times 6$	M 42	QBW2117	Washer (2.7 ϕ)	M 53-1	QBN1992	Pinch Roller Spring (L)
M 17	QBW2046	Washer (3 ϕ)	M 43	QXU0331	Capstan Motor Assembly (with Motor Governor P.C.B.)	M 54	QBT1962	Obstruction Lever Spring
M 18	QDR1173	Reel Table	M 44	QMA4619	Flywheel Holding Plate	M 55	QXL1655	Pinch Roller Arm (R) Assembly
M 19	QBC1449	Reel Table Spring-L	M 45	QZM1315	Flywheel Thrust Retainer	M 55-1	QBN1993	Pinch Roller Spring (R)
M 20	QBC1450	Reel Table Spring-R	M 46	XSN26+3	Screw $\varnothing 2.6 \times 3$	M 56	QDB0253	Pulley Belt
M 21	QBW2012	Washer (2.1 ϕ)	M 47	QXU0332	FF/REW Motor Assembly	M 57	QZE0063	End Sensor
M 22	QBW2008	Washer (2 ϕ)	M 48	QXU0333	Drive Motor Assembly	M 58	QXA1432	Magnet Pulley Angle
M 23	XTN26+6B	Tapping Screw $\varnothing 2.6 \times 6$	M 49	QXG1076	Center Gear Assembly	M 59	QXP0632	Magnet Pulley Assembly
M 24	QWY2148YC	Erase Head (FWD)	M 49-1	QDG1307	Center Gear	M 60	QML4078	Switch Lever
M 25	QWY2148W	Erase Head (REV)	M 49-2	QBW2007	Washer (2.5 ϕ)	M 61	QBN2030	Switch Lever Spring
M 26	QBC1448	Erase Head Spring	M 49-3	QHO151	Spacer	M 62	QMH2107	Wire Clamper
M 27	XSN2+18	Screw $\varnothing 2 \times 18$	M 50	QBT1742	Head Base Plate Spring	M 63	XTN26+8B	Tapping Screw $\varnothing 2.6 \times 8$
M 28	QHQ1364	Cup Screw	M 51	QXV0195	Rotary Head Assembly (Record/Playback Head)	M 64	QBW2059	Poly Washer $\phi 2.1$
M 30	QJT0015	Lug Terminal				M 65	XTN26+4B	Tapping Screw $\varnothing 2.6 \times 4$
M 31	QTW1342	Insulator Sheet						

CABINET PARTS LOCATION

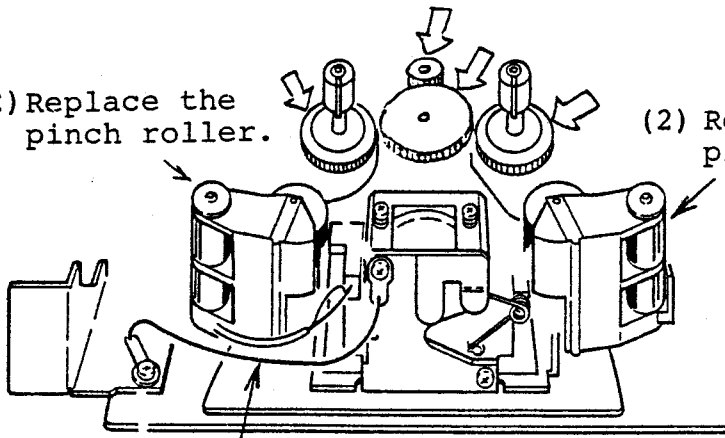


REPLACEMENT PARTS LIST

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	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
CABINET PARTS								
G 1	[N] QYF0692	Cassette Lid	G 7	QGL1190K	Meter Filter	G 27	refer to D622-626	
	[For Asia, Latin America, Middle East and Africa areas.]		G 8	QGG0227	Slide Guide-A	G 28	QGC1247	
	"Silver Type"			QGG0229	Slide Guide-B	G 29	QKA1094	
	[N] QYF0692K	Cassette Lid		QGG0229K	Slide Guide-B	G 30	QMA4645	
	[For Asia, Latin America, Middle East and Africa areas.]			QYT0657	Slide Knob-A Assembly (Output/Balance)	G 31	QKJ0609	
	"Black Type"			QYT0658	Slide Knob-B Assembly (Input)	G 32	QKJ0661	
	[D][B][A] QYF0702	Cassette Lid	G 10	QYT0658	Slide Knob-B Assembly (Input)	G 33	QMK2130	
	[For all European and Australia.]		G 11	QMA4626	Holder Angle-L	G 34	QMR2059	
	"Silver Type"		G 12	QGO2306	Eject Button	G 35	QGO2142	
	[D][B] QYF0702K	Cassette Lid	G 13	QML4063	Eject Lever	G 36	QGT1642	
	[For all European areas.]		G 14	QBP2007	Eject Lever Spring	G 37	QGO2310	
G 2	QGC1245	Case Cover	G 15	QJC0064	Earth Plate	G 38	QGO2311	
	"Silver Type"		G 16	QGO2309	Direction Button	G 39	QGO2312	
	QGC1245K	Case Cover		"Silver Type"		G 40	QGO2313	
G 3	QHO1349	Ornament Screw		QGO2309K	Direction Button	G 41	QGO2314	
	"Silver Type"			"Black Type"		G 42	QGO2307R	
	QHO1349K	Ornament Screw	G 17	QGO2315	Mode Select Button-A	G 43	QGO2307D	
G 4	XTB3+8BFN	Tapping Screw $\varnothing 3 \times 8$		"Silver Type"		G 44	QGO2307H	
	"Silver Type"			QGO2315K	Mode Select Button-A	G 45	QGO2346	
	XTB3+8BFZ	Tapping Screw $\varnothing 3 \times 8$	G 18	QGO2316	Mode Select Button-B (for S301) ()	G 46	QTS1635	
	"Black Type"			"Silver Type"		G 47	QMA4613	
G 5	QYP1212	Front Panel Assembly		QGO2316K	Mode Select Button-B (for S301) ()	G 48	QKJ0608	
	"Silver Type"			"Black Type"		G 49	QKJ0725	
	QYP1212K	Front Panel Assembly	G 19	QGO2317	Mode Select Button-C	G 50	QKJ3355	
	"Black Type"			QGO2317K	Mode Select Button-C	G 51	QTH1184	
G 5-1	QKG3467	Ornament Plate		"Silver Type"		G 52	QTS1629	
	"Silver Type"		G 20	QMB1429	Button Bushing	G 53	QSiFM008F	
	QKG3467K	Ornament Plate	G 21	QBC1473	Button Spring	G 54	QMK2100	
	"Black Type"		G 22	QYF0697	Cassette Holder	G 55	QMA4741	
G 5-2	QMF2327	Button Retainer Plate		"Silver Type"		G 56	QMA4740	
G 5-3	QGO2344	D.M.S ([1]—[12]) Button		QYF0697K	Cassette Holder	G 57	QKJ0683	
G 5-4	QGO2308	Function Button		"Black Type"		G 58	QMA4742	
G 5-5	QGO2345	Counter Reset Button	G 23	QBP1925	Holder Spring	G 59	QTS1625	
G 5-6	refer to D335	Mechanism Illuminate L.E.D.	G 24	QBN1961	Eject Spring	G 60	QMA4614	
G 6	QGL1190	Meter Filter				G 61	QMA4624	
	"Silver Type"		G 25	QJT1079	Nylon Coupler	G 62	QMA4679	
			G 26	QYF0627	Dumper Gear Assembly			

Nr.: 318	Datum: 25.Februar 1985 WK/MM	4/85
THEMA	TEXT	
RS-B 58 R RS-B 78 R Statik-Geräusche	Symptom: Beanstandung von lauten Knackgeräuschen bei Wiedergabe im Abstand von 3 - 10 Minuten oder Knistergeräuschen. Grund: Während z.B. der Heizperiode oder geringer Luftfeuchtigkeit kann es vorkommen, daß laute Knackgeräusche bzw. ein Knistern hörbar wird bei der Wiedergabe. Statische Aufladung bzw. Entladung entstehen beim Bandtransport: a) A/W-Kopf b) an der Bandandruckrolle c) Vermittlungsrädchen Abhilfe: 1. Lt. Skizze eine Drahtverbindung herstellen. 2. Erneuerung der Bandandruckrolle durch die geänderte Version ET-Nr. pinch roller links QXL1809 pinch roller rechts QXL1808 3. Fetten der Vermittlungsrädchen ET-Nr. QZZ0118	
Zu Nr. 2 pinch roller links QXL1809		
pinch roller rechts QXL1808		
Zu Nr. 3 QZZ0118	(1) Add the Lead wire	
Panasonic Service Deutschland GmbH		