

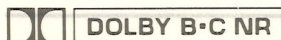
# Service Manual

Cassette Deck

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

## RS-B50

(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.

### 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  $\pm 3$ dB

CrO<sub>2</sub> tape; 20~19,000Hz  
30~18,000Hz (DIN)  
40~17,000Hz  $\pm 3$ dB

Normal tape; 20~18,000Hz  
30~17,000Hz (DIN)  
40~16,000Hz  $\pm 3$ 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; 76dB (CCIR)  
Dolby B NR in; 68dB (CCIR)  
NR out; 58dB (A weighted)  
(Signal level = max. input level, CrO<sub>2</sub>  
type tape)

Fast forward and

rewind time: Approx. 85 seconds with C-60  
cassette tape

Inputs:

MIC; sensitivity 0.25mV, applicable  
microphone impedance  
400 $\Omega$ ~10k $\Omega$

LINE; sensitivity 70mV, input  
impedance 47k $\Omega$  or more

Outputs:

LINE; output level 400mV, output  
impedance 2.2k $\Omega$  or less  
HEADPHONES; output level 80mV  
(at 8 $\Omega$ ) applicable headphone  
impedance 8 $\Omega$

Bias frequency:

80kHz

Heads:

1-AX (AMORPHOUS) head for  
rec/playback  
1-double-gap ferrite head for erasure  
3-motor system  
One for capstan drive (Electrical  
governor motor)  
One for reeltable drive (DC motor)  
One for mechanism drive (DC motor)

Motor:

Power

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

Power

consumption: 15W

Dimensions:

43.0cm(W)×9.8cm(H)×27.3cm(D)

Weight:

4.5kg

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.

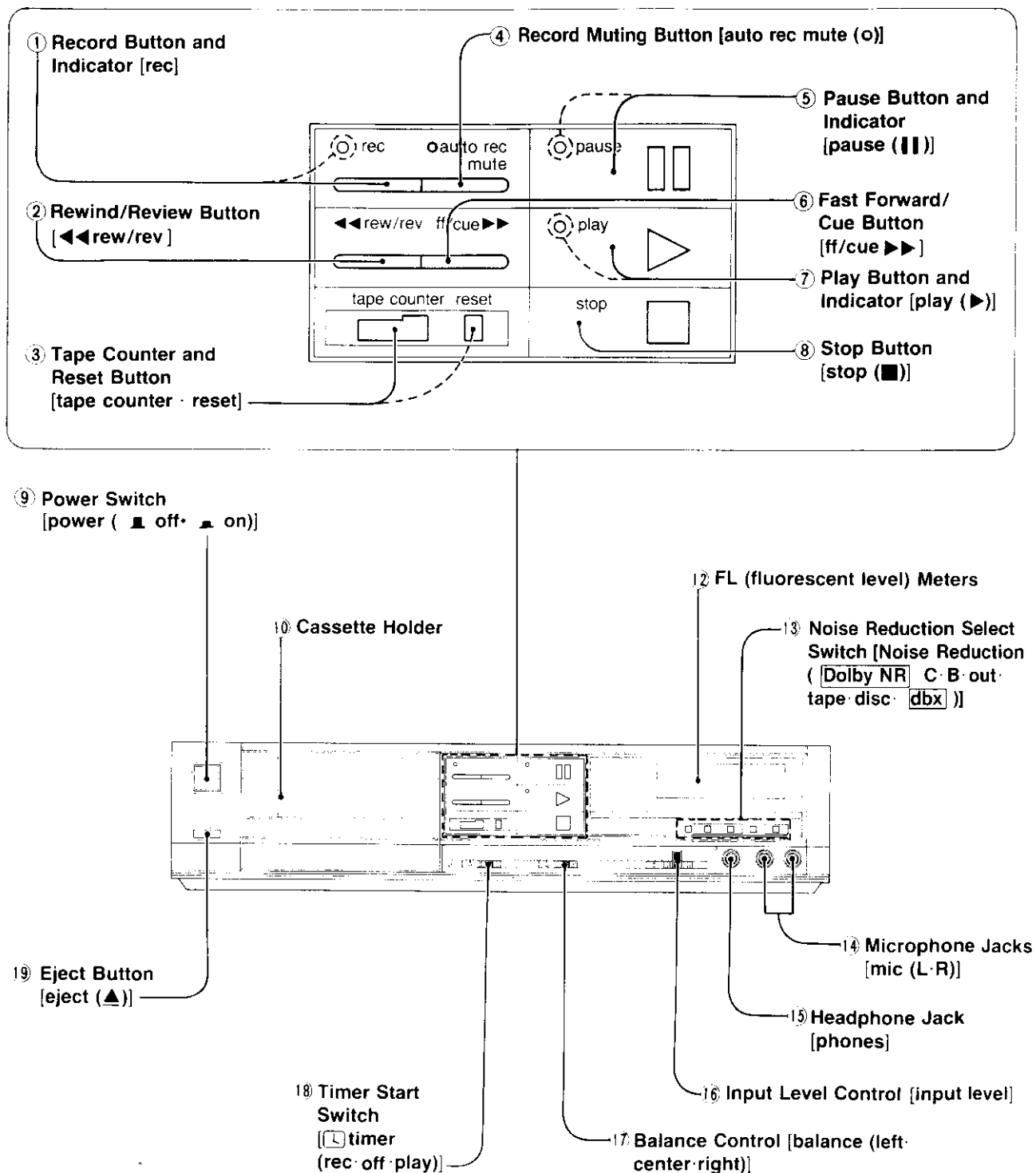
# Technics

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

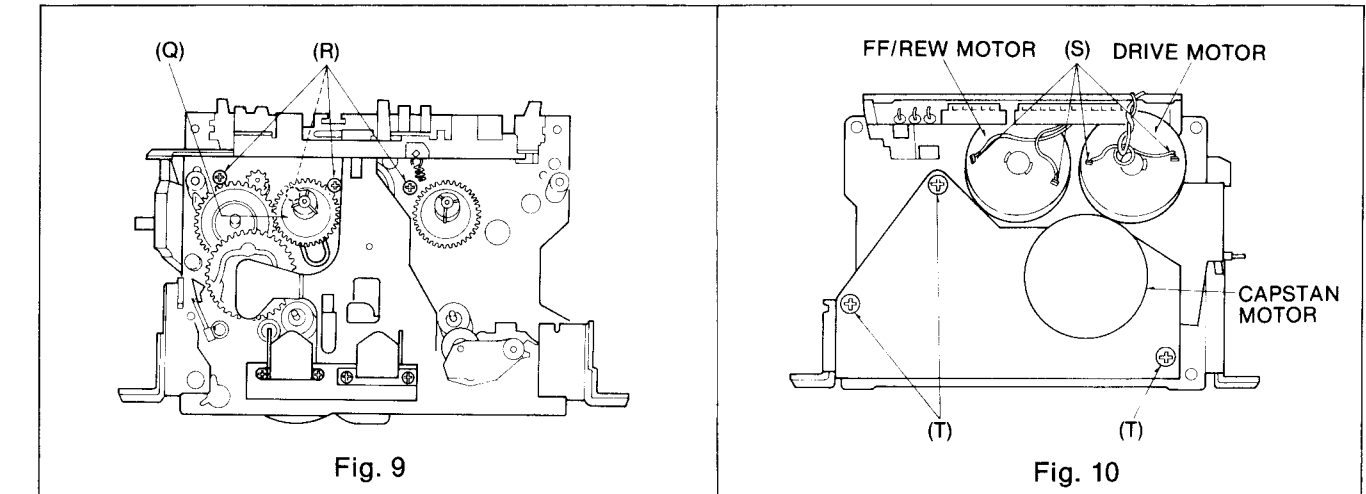
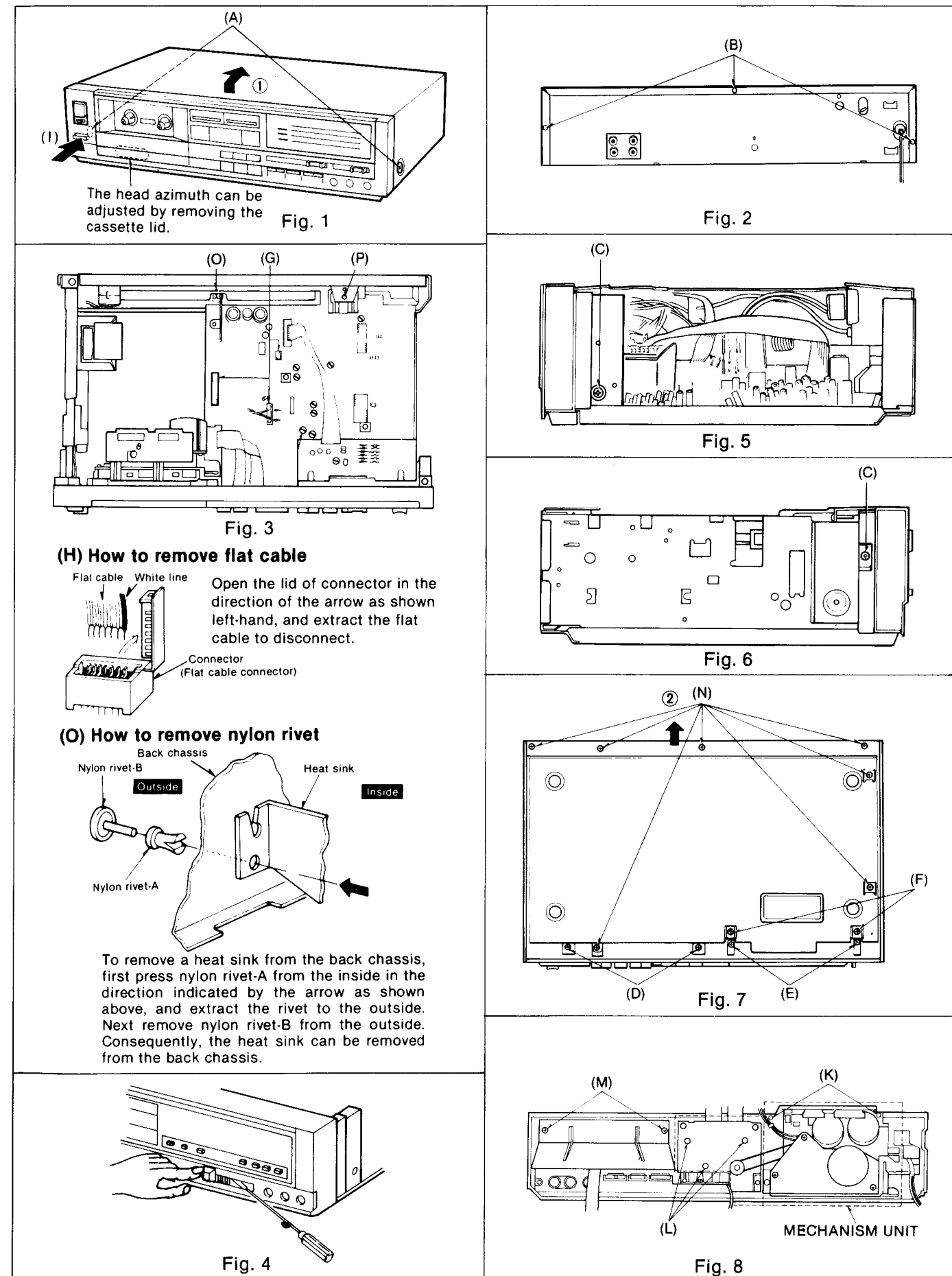
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## ■ LOCATION OF CONTROLS AND COMPONENTS



# DISASSEMBLY INSTRUCTIONS



| Ref. No. | Procedure | To remove —                             | Remove —                                                                                                                                                                                                                                                                                                                                                                                   | Shown in fig. —               |
|----------|-----------|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| 1        | 1         | Case cover                              | <ul style="list-style-type: none"> <li>• 2 ornament screws .....(A)</li> <li>• 3 screws .....(B)</li> <li>• As shown in fig. 1, pull case cover in the direction of arrow ①.</li> </ul>                                                                                                                                                                                                    | 1<br>2<br>1                   |
| 2        | 1 → 2     | Front panel assembly and mechanism unit | <ul style="list-style-type: none"> <li>• 2 screws .....(C)</li> <li>• 2 screws .....(D)</li> <li>• 2 screws .....(F)</li> <li>• Pull out the connectors <b>H</b> <b>M</b> .....(G)</li> <li>• How to remove flat cable .....(H)</li> <li>• As shown in fig. 4, hold the slide knob (A) with the fingers on one side, and releasing it by using a screwdriver on the other side.</li> </ul> | 5, 6<br>7<br>7<br>3<br>3<br>4 |
| 3        | 1 → 3     | Mechanism unit                          | <ul style="list-style-type: none"> <li>• Push the eject button .....(I)</li> <li>• 2 screws .....(E)</li> <li>• 2 screws .....(F)</li> <li>• 2 screws .....(K)</li> <li>• Pull out the connectors <b>H</b> <b>M</b> .....(G)</li> </ul>                                                                                                                                                    | 1<br>7<br>7<br>8<br>3         |
| 4        | 1 → 4     | Key board circuit board                 | • 3 screws .....(L)                                                                                                                                                                                                                                                                                                                                                                        | 8                             |
| 5        | 1 → 5     | FL meter circuit                        | • 2 screws .....(M)                                                                                                                                                                                                                                                                                                                                                                        | 8                             |
| 6        | 6         | Bottom cover                            | <ul style="list-style-type: none"> <li>• 2 screws .....(D)</li> <li>• 2 screws .....(F)</li> <li>• 7 screws .....(N)</li> <li>• Slide the bottom cover in the direction arrow ② and remove it.</li> </ul>                                                                                                                                                                                  | 7<br>7<br>7<br>7              |
| 7        | 1 → 6 → 7 | Main circuit board                      | <ul style="list-style-type: none"> <li>• How to remove nylon ribet .....(O)</li> <li>• 1 screw .....(P)</li> <li>• 1 screw .....(C)</li> </ul>                                                                                                                                                                                                                                             | 3<br>3<br>5                   |
| 8        | 1 → 3 → 8 | FF/REW motor and driver motor           | <ul style="list-style-type: none"> <li>• Remove the reel table .....(Q)</li> <li>• 4 screws .....(R)</li> <li>• Un solder the soldered portion of the FF/REW motor terminal and driver motor terminal .....(S)</li> </ul>                                                                                                                                                                  | 9<br>9<br>10                  |
| 9        | 1 → 3 → 9 | Capstan motor                           | • 3 screws .....(T)                                                                                                                                                                                                                                                                                                                                                                        | 10                            |

### Reassembling the Mechanism Unit

- 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 a 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).

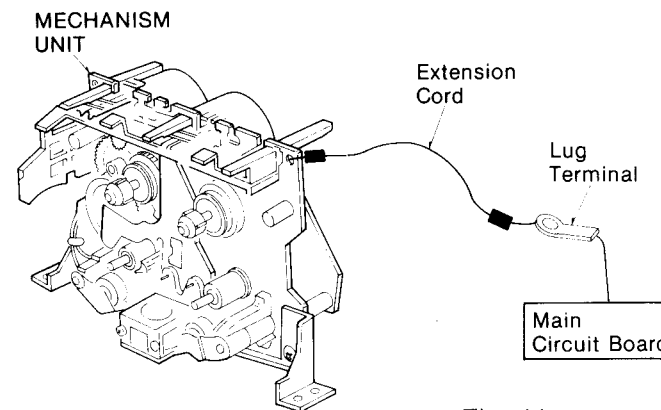


Fig. 11

## MEASUREMENT AND ADJUSTMENT METHODS

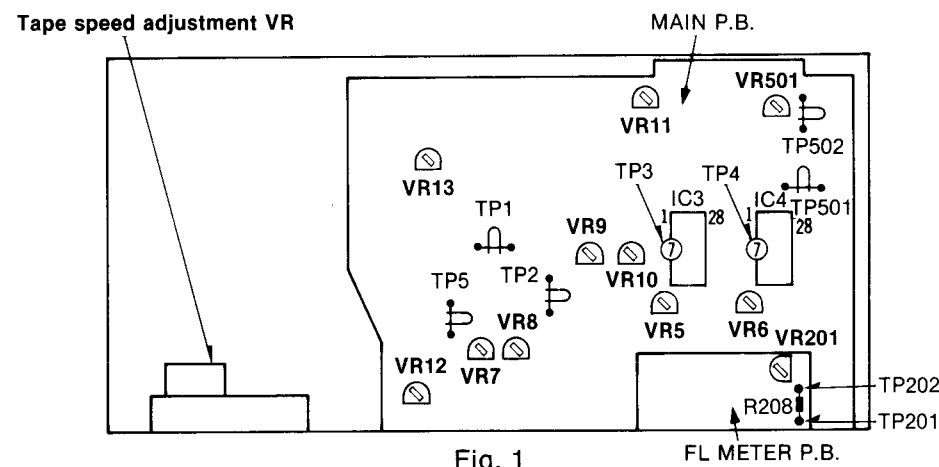


Fig. 1

**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
- Input level controls: Maximum
- Balance control: Center

### A Head azimuth adjustment

Condition:  
• Playback mode  
• Normal tape mode

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

### L-CH/R-CH output balance adjustment

- Make connections as shown in fig. 2.

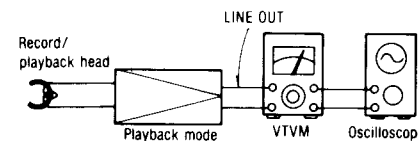


Fig. 2

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

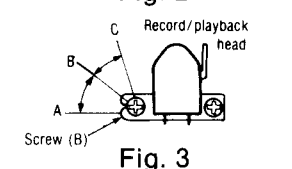


Fig. 3

### L-CH/R-CH phase adjustment

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

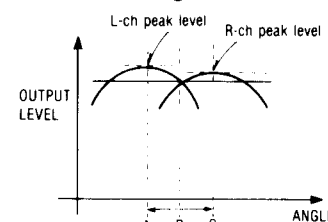


Fig. 4

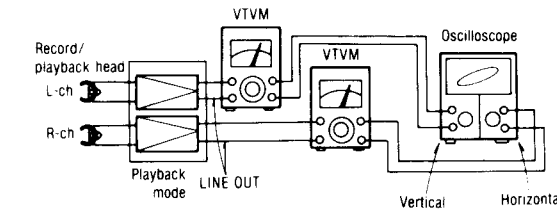


Fig. 5

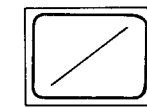


Fig. 6

### B Tape speed

Condition:  
• Playback mode

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

#### Tape speed accuracy

- Test equipment connection is shown in fig. 7.
- Playback test tape (QZZCWAT 3,000Hz), and supply playback signal to the digital frequency counter.
- Measure this frequency.
- On the basis of 3,000Hz, determine value by following formula:  
$$\text{Tape speed accuracy} = \frac{f - 3,000}{3,000} \times 100(\%)$$
 where, f = measured value
- Take measurement at middle section of tape.

**Standard value:  $\pm 1.5\%$**

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

#### 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.

### C Playback frequency response

Condition:  
• Playback mode  
• Normal tape mode

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

- Test equipment connection is shown in fig. 2.
- Playback the frequency response portion of test tape (QZZCFM).
- 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.
- Make measurements for both channels.
- Make sure that the measured values are within the range specified in the frequency response chart. (Shown in fig. 8).

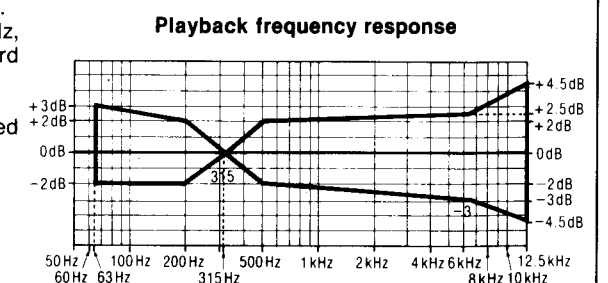


Fig. 8

### D Playback gain

Condition:  
• Playback mode  
• Normal tape mode

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

- Test equipment connection is shown in fig. 2.
- Playback standard recording level portion on test tape (QZZCFM 315Hz) and, using VTVM, measure the output level at test points [TP3 (L-CH), TP4 (R-CH)].
- Make measurements for both channels.

Standard value: 0.28 V [0.42±0.05V: at LINE OUT jack]

#### Adjustment

1. If the measured value is not within standard the adjust VR5 (L-CH) or VR6 (R-CH) (See fig. 1).
2. After adjustment, check "Playback frequency response" again.

#### Ⓔ Erase current

Condition:  
• Record mode  
• Metal tape mode

Equipment:  
• VTVM  
• Oscilloscope

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

$$\text{Erase current (A)} = \frac{\text{Voltage across resistor R73}}{1 (\Omega)}$$

Standard value: 155±15mA (Metal)

5. If the measured value is not within the standard value, adjust VR12 (See fig. 1).

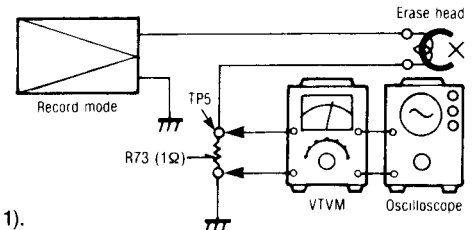


Fig. 9

#### Ⓕ Overall frequency response

Condition:  
• Record/playback mode  
• Normal tape mode  
• CrO<sub>2</sub> tape mode  
• Metal tape mode  
• Input level controls...MAX  
• Balance control...Center

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

• Test tape  
(reference blank tape)  
...QZZCRA for Normal  
...QZZCRX for CrO<sub>2</sub>  
...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. 10.
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 6, and check if the frequency response curve is within the limits shown in the overall frequency response chart for normal tapes (fig. 11).  
(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;

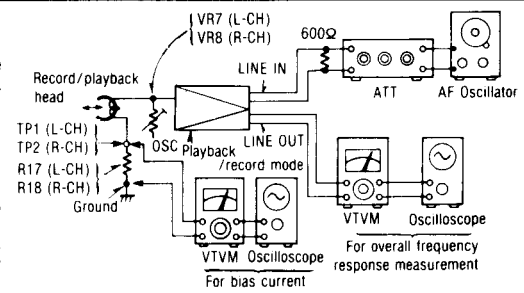


Fig. 10

#### Overall frequency response chart (Normal)

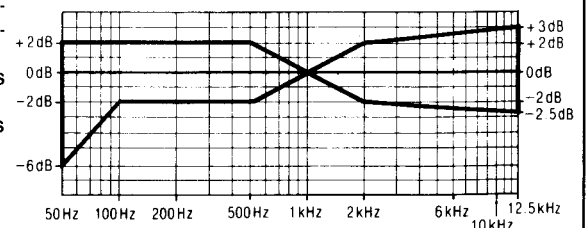


Fig. 11

#### Adjustment (A):

When the curve exceeds the overall specified frequency response chart (fig. 11) as shown in fig. 12.

- 1) Increase bias current by turning VR7 (L-CH) and VR8 (R-CH).

(See fig. 1 on page 5.)

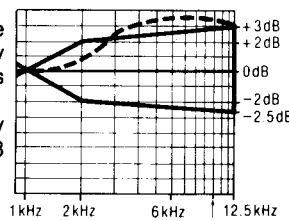


Fig. 12

#### Adjustment (B):

When the curve falls below the overall specified frequency response chart (fig. 11) as shown in fig. 13.

- 1) Reduce bias current by turning VR7 (L-CH) and VR8 (R-CH).

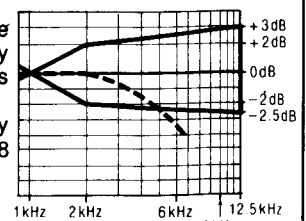


Fig. 13

- 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. 11.)
- 3) If the curve still exceeds the specifications (fig. 11), increase bias current further and repeat steps 5 and 6.

- 2) Repeat steps 5 and 6 for confirmation (Proceed to steps 7, 8 and 9 if the curve is now within the charted specifications as shown fig. 11.)
- 3) If the curve still falls below the charted specifications (fig. 11), reduce bias current further and repeat steps 5 and 6.

7. Place UNIT into CrO<sub>2</sub> tape mode.
8. Change test tape to CrO<sub>2</sub> 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 or CrO<sub>2</sub> tapes (fig. 14).
9. Place UNIT into metal tape mode and change test tape to metal reference blank test tape (QZZCRZ), and record 1kHz, 50Hz, 100Hz, 200Hz, 500Hz, 4kHz, 8kHz, 10kHz, 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. 14).
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 (TP1 for L-CH, TP2 for R-CH) and calculate bias current by following formula:

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

around 200 $\mu$ A (Normal position)  
 Reference value: around 250 $\mu$ A (CrO<sub>2</sub> position)  
 around 380 $\mu$ A (Metal position)

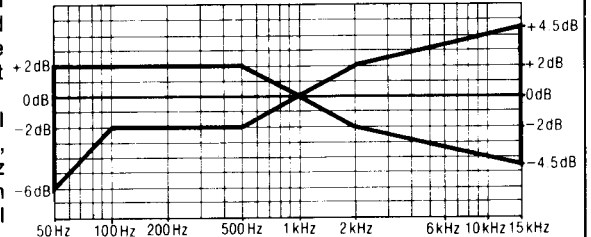
Overall frequency response chart (CrO<sub>2</sub>, Metal)

Fig. 14

### Ⓒ Overall gain

Condition:

- Record/playback mode
- Normal tape mode
- Input level controls...MAX
- Balance control...Center
- Standard input level;
  - MIC .....-69 $\pm$ 3dB
  - LINE IN .....-23 $\pm$ 3dB

Equipment:

- VTVM
- ATT
- Resistor (600 $\Omega$ )
- Test tape (reference blank tape)
  - ...QZZCRA for Normal

1. Test equipment connection is shown in fig. 15.
2. Insert the normal reference blank tape (QZZCRA).
3. Place UNIT into record mode.
4. Supply a 1kHz signal through ATT (-23dB) 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 VR9 (L-CH) or VR10 (R-CH).
8. Repeat from step (2).

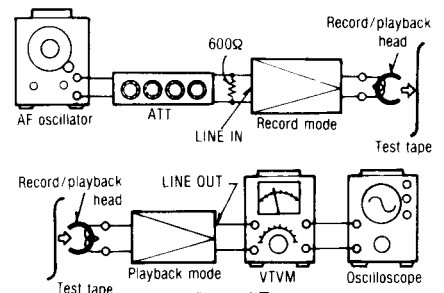


Fig. 15

### Ⓓ Fluorescent meter

Condition:

- Record mode
- Input level controls...MAX
- Balance control...Center

Equipment:

- VTVM
- ATT
- AF oscillator

#### • Check for FL meter

To check the accuracy of the FL meter, measure the output level at test point [TP3 (L-CH), TP4 (R-CH)].

1. Make connections as shown (See fig. 16).
2. Connect a wire between TP201 and TP202 terminal (See fig. 17).
3. In the recording pause mode, apply 1kHz (-24dB) to LINE IN.
4. Adjust ATT so that output level at test point [TP3 (L-CH), TP4 (R-CH)] is 0.28V.

#### Checking FL meter 0dB segment display ON/OFF

Change the output level at test point [TP3 (L-CH), TP4 (R-CH)] from 0.28V -1dB ( $\approx$ 250mV) to 0.28V +1dB ( $\approx$ 310mV) by adjusting the attenuator, and check that the FL meter 0dB segment display OFF state changes to the ON state.

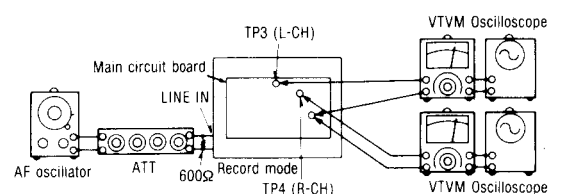


Fig. 16

**Checking FL meter -40dB segment display ON/OFF**

Lower the signal level 28dB below the standard input level ( $-24\text{dB}-28\text{dB} = -52\text{dB} \approx 2.5\text{mV}$ ) and then further lower the level 12dB ( $-52\text{dB}-12\text{dB} = -64\text{dB} \approx 0.63\text{mV}$ ) 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. 16).
2. Connect a wire between TP201 and TP202 terminal (See fig. 17).
3. In the recording pause mode, apply 1kHz ( $-24\text{dB}$ ) to LINE IN.
4. Adjust ATT so that output level at test point [TP3 (L-CH), TP4 (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. 18).
7. If the indicator is not lighted halfway as described in step 6, adjust VR11.

**0dB adjustment**

8. Restore the condition of step 4 (set output level to 0.28V at test point [TP3 (L-CH), TP4 (R-CH)]).
9. At this time, check that 0dB indicator is dimmed (intermediate brightness between full brightness and light-out (See fig. 19).
10. If improper, adjust VR201.
11. Repeat adjustments at steps 4, 5, 6, 7, 8, 9 and 10 two or three times.
12. Disconnect the wire between TP201 and TP202 terminal, which had been connected at step 2.

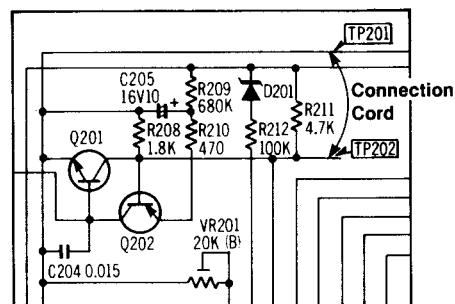


Fig. 17



Fig. 18



Fig. 19

**① Dolby NR circuit****Condition:**

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

**Equipment:**

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

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

1. Make connections as shown in fig. 20.
  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 TP3 (L-CH) and TP4 (R-CH) is 12.3mV.
  5. The output level at pin 21 should be 0dB.
  6. Set the NR select switch to B, and make sure that the output signal level at pin 21 of IC3 (L-CH) and IC4 (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 pin 21 should be 0dB.
  8. Set the NR select switch to B and make sure that the output signal level at pin 21 of IC3 (L-CH) and IC4 (R-CH) is  $+8\text{dB} \pm 2.5\text{dB}$ .
- 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 21 of IC3 (L-CH) and IC4 (R-CH) is  $+11.5\text{dB} \pm 2.5\text{dB}$ .
  11. Set the NR select switch to OUT and adjust the frequency to 5kHz. The output signal at pin 21 should be 0dB.
  12. Set the NR select switch to C and make sure that the output signal level at pin 21 of IC3 (L-CH) and IC4 (R-CH) is  $+8.5\text{dB} \pm 2.5\text{dB}$ .

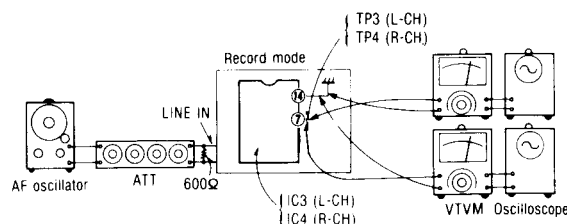


Fig. 20

**② Attack recovery time adjustment (dbx circuit)****Condition:**

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

**Equipment:**

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

1. Make the connections as shown in fig. 21 and apply 1kHz  $-27\text{dB}$  signal from LINE IN, and set the noise reduction selector to dbx tape position.
2. Set the unit to record mode, adjust ATT so that the signal level at C541 (L-CH) and C542 (R-CH) is 300mV.
3. Read voltage on DC voltmeter.

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

4. If measured value is not within reference, adjust VR501 (shown in electrical parts location).

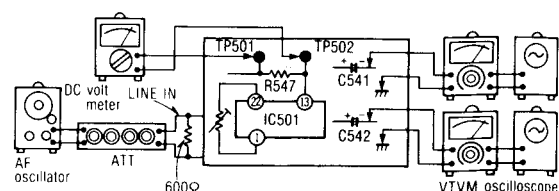
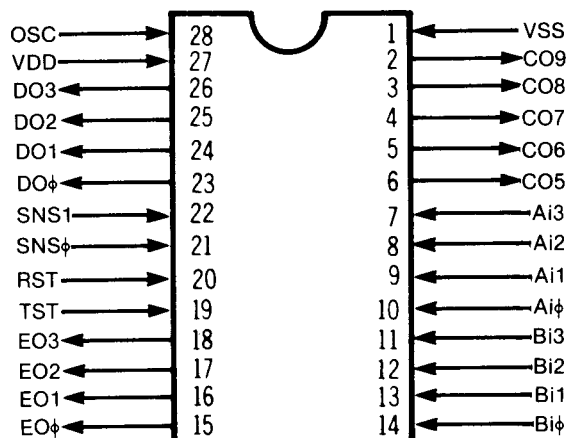


Fig. 21

# ■ MICROCOMPUTER TERMINAL FUNCTION AND WAVEFORM (IC10: MN1400RMJ)

## (BOTTOM VIEW)



| Terminal No. | Symbol        | Name                             | Function/operation                                                                                                                                                                                                                                                               |
|--------------|---------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.           | Vss           | GND                              |                                                                                                                                                                                                                                                                                  |
| 2.           | C $\bar{O}$ 9 | Muting for all amplifiers        | <ul style="list-style-type: none"> <li>• Remains in H in the FF, REW, or STOP mode.</li> <li>• Remains in L in the REC PAUSE, REC PLAY, or PLAY mode.</li> <li>• Remains in H in the PLAY → CUE, PLAY → REVIEW mode.</li> <li>• Remains in L in the CUE, REVIEW mode.</li> </ul> |
| 3.           | C $\bar{O}$ 8 | Bias oscillation ON/OFF          | <ul style="list-style-type: none"> <li>• Goes to H immediately after REC or PAUSE operation.</li> <li>• Remains in H during REC operation.</li> <li>• Goes to L approximately 15msec. after the STOP command is given.</li> </ul>                                                |
| 4.           | C $\bar{O}$ 7 | REC Indication output            | <ul style="list-style-type: none"> <li>• Goes to H when the REC command is given.</li> <li>• Goes to H immediately after power is supplied in the TIMER REC mode.</li> </ul>                                                                                                     |
| 5.           | C $\bar{O}$ 6 | Drive motor CCW rotation command | <ul style="list-style-type: none"> <li>• "High" level pulse in each mode in operation STOP → PLAY.</li> </ul>                                                                                                                                                                    |

# Technical Information

Previous Technical Information (Order No. HAD8605547T0) has been mistaken,  
Therefore please refer to following corrections.

## CORRECTION

| Model No. | Replacement of Erase Head |                                     |                                                                                                                                           | Replacement of Record/Playback Head                                              |                  |                       |
|-----------|---------------------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------------|-----------------------|
|           | Former                    | → New                               | Change to the circuit required when the erase head is replacing                                                                           | Former                                                                           | → New            | Change to the circuit |
| RS-B50    | QWY2138G                  | SJHRSB10-KE<br>[SJH96<br>ECQP1223JZ | <ul style="list-style-type: none"> <li>Capacitor (C57)<br/>0.018 → 0.022 ... [D] [B] areas.<br/>0.015 → 0.022 ... Other areas.</li> </ul> | <del>[D, B, C] areas.<br/>QXV0188</del><br><del>[Other] areas.<br/>QXV0206</del> | <del>SJH95</del> | Not change            |



Record/Playback head is not change.

| Model No. | Replacement of Erase Head |                                                                  |                                                                                                                              | Replacement of Record/Playback Heads |                  |                       |
|-----------|---------------------------|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------|-----------------------|
|           | Former                    | → New                                                            | Change to the circuit required when the erase head is replacing                                                              | Former                               | → New            | Change to the circuit |
| RS-M245X  | QWY2138Z                  | [D, B] areas.<br>SJH96                                           | Not change                                                                                                                   | <del>QWY4137Z</del>                  | <del>SJH95</del> | Not change            |
|           |                           | [Other] areas.<br>SJHRSB60-KN<br>[SJH96<br>ECQP1183JZ<br>QBW2059 | <ul style="list-style-type: none"> <li>Capacitor (C303)<br/>0.015 → 0.018</li> <li>Place a spacer under the head.</li> </ul> |                                      |                  |                       |



Record/Playback head is not change.

# Technics

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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>2) Répéter les phases 5 et 6 pour confirmation. (Passer aux phases 7, 8 et 9 si la courbe est maintenant comprise dans les spécifications du tableau de la Fig. 11).</p> <p>3) Si la courbe dépasse encore les spécifications (Fig. 11), augmenter encore le courant de polarisation et répéter les phases 5 et 6.</p> <p><b>Réglage (B):</b></p> <p>Lorsque la courbe tombe audessous des spécifications du tableau de fréquence globale (Fig. 11) comme indiqué dans la Fig. 13.</p> <p>1) Réduire le courant de polarisation en tournant VR7 (L-CH) (canal gauche) et VR8 (R-CH) (canal droit).roit).</p> <p>2) Répéter les phases 5 et 6 pour confirmation. (Passer aux phases 7, 8 et 9 si la courbe est maintenant comprise dans les spécifications du tableau de la Fig. 11).</p> <p>3) Si la courbe tombe encore au-dessous des spécifications du tableau (Fig. 11), réduire encore le courant de polarisation et répéter les phases 5 et 6.</p> <p>7. Placer l'UNITE en mode de bande CrO<sub>2</sub>.</p> <p>8. Enlever la bande étalon vierge normale et placer la bande étalon QZZCRX (bande CrO<sub>2</sub>). Enregistrer les signaux de 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 4 kHz, 8 kHz, 10 kHz et 15 kHz.</p> <p>Reproduire ensuite ces signaux et vérifier si la courbe est comprise dans les limites indiquées par le tableau de réponse de fréquence globale pour les bandes CrO<sub>2</sub> (Fig. 14).</p> <p>9. Placer l'UNITE en mode de bande métallique, changer la bande étalon pour la bande étalon vierge QZZCRZ (bande métallique), et enregistrer les signaux de 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 4 kHz, 8 kHz, 10 kHz, 12,5 kHz et 15 kHz.</p> <p>Reproduire ensuite ces signaux, et vérifier si la courbe est comprise dans les limites indiquées par le tableau de réponse de fréquence globale pour les bandes métalliques (Fig. 14).</p> <p>10. Confirmer que les courants de polarisation sont approximativement les suivants lorsque le sélecteur de bande est mis sur ses différentes positions.</p> <ul style="list-style-type: none"> <li>• Lire le voltage sur le voltmètre électronique entre la terre et le point de coupure (TP1 pour le canal gauche et TP2 pour le canal droit) et calculez le courant de polarisation selon la formule.</li> </ul> $\text{Courant de polarisation (A)} = \frac{\text{Tension lue sur voltm. élec. (V)}}{10 (\Omega)}$ <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;"><b>Autour de 200 µA (position: Normal)</b></p> <p style="text-align: center;"><b>Valeur de référence: Autour de 250 µA (position: CrO<sub>2</sub>)</b></p> <p style="text-align: center;"><b>Autour de 380 µA (position: Metal)</b></p> </div> |                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                              |
| <b>Ⓒ Gain global</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>Condition:</p> <ul style="list-style-type: none"> <li>• Mode d'enregistrement/lecture</li> <li>• Mode de bande normale</li> <li>• Contrôles de niveau d'entrée ...MAX</li> <li>• Contrôle de l'équilibre...Centre</li> <li>• Niveau d'entrée standard:</li> </ul> <p>MIC .....-69±3dB<br/>LINE IN .....-23±3dB</p> | <p>Equipement:</p> <ul style="list-style-type: none"> <li>• Voltmètre électronique</li> <li>• Oscillateur AF</li> <li>• Atténuateur</li> <li>• Oscilloscope</li> <li>• Résistance (600Ω)</li> <li>• Bande étalon vierge QZZCRA pour bande normale</li> </ul> |
| <p>1. Brancher les appareils comme indiqué dans la Fig. 15.</p> <p>2. Introduire la bande étalon vierge (QZZCRA).</p> <p>3. Placer l'UNITE en mode d'enregistrement.</p> <p>4. Appliquer le signal de 1 kHz de l'oscillateur AF à la borne LINE IN, par l'intermédiaire de l'atténuateur (-23dB).</p> <p>5. Régler l'atténuateur pour que le niveau de contrôle sur la borne LINE OUT soit de 0,42V.</p> <p>6. Lire la bande ainsi enregistrée et vérifier que le niveau de sortie sur la borne LINE OUT soit de 0,42V.</p> <p>7. Si la valeur mesurée n'est pas de 0,42V±2dB, régler au moyen de VR9 (canal gauche) ou VR10 (canal droit).</p> <p>8. Recommencer à partir de la phase (2).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                              |
| <b>Ⓓ Vumètre fluorescent</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p>Condition:</p> <ul style="list-style-type: none"> <li>• Mode d'enregistrement</li> <li>• Contrôles de niveau d'entrée ...MAX</li> <li>• Contrôles de l'équilibre...Centre</li> </ul>                                                                                                                               | <p>Equipement:</p> <ul style="list-style-type: none"> <li>• Voltmètre électronique</li> <li>• Atténuateur</li> <li>• Oscillateur AF</li> </ul>                                                                                                               |
| <p><b>• Vérification du vumètre fluorescent</b></p> <p>Pour vérifier le degré de précision du vumètre fluorescent, mesurer le niveau de sortie aux points de coupure [TP3 pour le canal gauche, TP4 pour le canal droit].</p> <p>1. Brancher les appareils comme indiqué dans la Fig. 16.</p> <p>2. Brancher un câble entre le point de coupure TP201 et la borne de mise à la terre. (Voir Fig. 17).</p> <p>3. Appliquer un signal de 1 kHz (-24dB) à la borne LINE IN, alors que l'unité est en mode de pause d'enregistrement.</p> <p>4. Régler l'atténuateur de sorte que le niveau de sortie aux points de coupure [TP3 pour le canal gauche, TP4 pour le canal droit] soit de 0,28V.</p> <p><b>Vérification de l'allumage et de l'extinction du segment 0dB du vumètre fluorescent</b></p> <p>Changer le niveau de sortie aux points de coupure [TP3 pour le canal gauche, TP4 pour le canal droit] de la valeur 0,28V - 1 dB (= 250mV) à la valeur 0,28V + 1dB (= 310mV) en réglant l'atténuateur. Vérifier que le segment 0dB du vumètre fluorescent s'allume alors.</p> <p><b>Vérification de l'allumage et de l'extinction du segment -40dB du vumètre fluorescent</b></p> <p>Abaissier le niveau de signal 28dB en-dessous du niveau d'entrée standard (-24dB-28dB = -52dB = 2,5mV); l'abaisser à nouveau d'une valeur de 12dB (-52dB-12dB = -64dB = 0,63mV) en réglant l'atténuateur. Lors de l'abaissement du niveau de signal comme indiqué ci-dessus, vérifier que seul le segment -40dB du vumètre fluorescent reste allumé et qu'il s'obscurcisse ou s'éteigne au niveau le plus bas.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                              |

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| <p><b>• Réglage du vumètre fluorescent</b></p> <p>1. Brancher les appareils comme indiqué dans la Fig. 16.</p> <p>2. Brancher un câble entre le point de coupure TP201 et TP202. (Voir Fig. 17).</p> <p>3. Appliquer un signal de 1 kHz (-24dB) à la borne LINE IN, alors que l'unité est en mode de pause d'enregistrement.</p> <p>4. Régler l'atténuateur de sorte que le niveau de sortie aux points de coupure [TP3 pour le canal gauche, TP4 pour le canal droit] soit de 0,28V.</p> <p><b>Réglage à "-40dB"</b></p> <p>5. Régler l'atténuateur de sorte que le niveau réglé à la phase 4 soit réduit de 40dB.</p> <p>6. A ce moment, vérifier que le segment -40dB s'obscurcisse (luminosité intermédiaire entre pleine luminosité et extinction: voir Fig. 18).</p> <p>7. Si la luminosité du segment n'est pas comme celle mentionnée à la phase 6 ci-dessus, régler le VR11.</p> <p><b>Réglage à "0dB"</b></p> <p>8. Rétablir les conditions de la phase 4 (niveau de sortie aux points de coupure [TP3 pour le canal gauche et TP4 pour le canal droit] de valeur 0,28V).</p> <p>9. A ce moment, vérifier que le segment 0dB s'obscurcisse (luminosité intermédiaire entre pleine luminosité et extinction: voir Fig. 19).</p> <p>10. Si la luminosité du segment n'est pas comme indiqué ci-dessus, régler le VR201.</p> <p>11. Répéter les réglages et vérifications des phases 4, 5, 6, 7, 8, 9, et 10 deux ou trois fois.</p> <p>12. Débrancher le câble entre le point de coupure TP201 et TP202 (câble que l'on avait branché à la phase 2).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                        |
| <b>① Circuit de réduction de bruit Dolby</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <p>Condition:</p> <ul style="list-style-type: none"> <li>• Mode d'enregistrement</li> <li>• Interrupteur de réduction de bruit Dolby...IN/OUT</li> <li>• Interrupteur de sélection du système de réduction de bruit Dolby...B/C</li> <li>• Contrôles de niveau d'entrée...MAX</li> <li>• Contrôle de l'équilibre...Centre</li> </ul> | <p>Equipement:</p> <ul style="list-style-type: none"> <li>• Voltmètre électronique</li> <li>• Oscillateur AF</li> <li>• Atténuateur</li> <li>• Oscilloscope</li> <li>• Résistance (600Ω)</li> </ul>                                                    |
| <p><b>Côté enregistrement</b></p> <p><b>• Vérification des caractéristiques du codeur de type Dolby-B</b></p> <p>1. Brancher les appareils comme indiqué dans la Fig. 20.</p> <p>2. Placer l'unité sur le mode d'enregistrement. (L'interrupteur de sélection du système de réduction de bruit est sur la position OUT).</p> <p>3. Appliquer un signal de 1 kHz à la borne LINE IN.</p> <p>4. Régler l'atténuateur de sorte que le niveau de sortie aux points de coupure TP3 (canal gauche) et TP4 (canal droit) soit de 12,3mV.</p> <p>5. Le niveau de sortie à la pointe 21 devrait être de 0dB.</p> <p>6. Placer l'interrupteur de sélection du système de réduction de bruit sur B et s'assurer que le niveau du signal de sortie à la pointe 21 des circuits intégrés IC3 (canal gauche) et IC4 (canal droit) est de +6dB±2,5dB.</p> <p>7. Placer l'interrupteur de sélection du système de réduction de bruit sur la position OUT et régler la fréquence sur 5kHz. Le niveau du signal de sortie à la pointe 21 devrait être de 0dB.</p> <p>8. Placer l'interrupteur de sélection du système de réduction de bruit sur la position B et s'assurer que le niveau du signal de sortie à la pointe 21 des circuits intégrés IC3 (canal gauche) et IC4 (canal droit) soit de +8dB±2,5dB.</p> <p><b>• Vérification des caractéristiques du codeur de type Dolby-C</b></p> <p>9. Répéter les phases 1 à 5 ci-dessus.</p> <p>10. Placer l'interrupteur de sélection du système de réduction de bruit Dolby sur la position C et s'assurer que le niveau de signal de sortie à la pointe 21 des circuits intégrés IC3 (canal gauche) et IC4 (canal droit) soit de +11,5dB±2,5dB.</p> <p>11. Placer l'interrupteur de sélection du système de réduction de bruit sur la position OUT et régler la fréquence sur 5kHz. Le niveau du signal de sortie à la pointe 21 devrait être de 0dB.</p> <p>12. Placer l'interrupteur de sélection du système de réduction de bruit sur la position C et s'assurer que le niveau du signal de sortie à la pointe 21 des circuits intégrés IC3 (canal gauche) et IC4 (canal droit) soit de +8,5dB±2,5dB.</p> |                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                        |
| <b>② Réglage du temps de recouvrement à l'attaque (circuit dbx)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p>Condition:</p> <ul style="list-style-type: none"> <li>• Mode d'enregistrement</li> <li>• Contrôles de niveau d'entrée...MAX</li> <li>• Contrôle de l'équilibre ...Centre</li> </ul>                                                                                                                                               | <p>Equipement:</p> <ul style="list-style-type: none"> <li>• Voltmètre électronique</li> <li>• Atténuateur</li> <li>• Oscillateur AF</li> <li>• Voltmètre CC</li> <li>• Sélecteur de réduction de bruit...position de bande dbx ("dbx tape")</li> </ul> |
| <p>1. Faire les branchements comme indiqué dans la Fig. 21 et appliquer un signal de 1 kHz -27 dB à la borne LINE IN. Placer le sélecteur de réduction de bruit sur la position de bande dbx ("dbx tape").</p> <p>2. Placer l'unité sur le mode d'enregistrement. Régler l'atténuateur de sorte que le niveau de signal à C541 (canal gauche) et à C542 (canal droit) soit de 300mV.</p> <p>3. Lire la tension, indiquée sur le voltmètre CC.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;"><b>Valeur de référence: 15±0,5mV</b></p> </div> <p>4. Si la valeur lue ne correspond pas à la valeur de référence, régler VR501 (emplacement indiqué au niveau des pièces électriques).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                        |

# MESSUNGEN UND EINSTELL METHODEN

## RS-B50 DEUTSCH

Verwenden Sie bitte diese Broschüre Zusammen mit der Service-Anleitung für das Modell Nr. RS-B50.

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:  $20 \pm 5^\circ\text{C}$  ( $68 \pm 9^\circ\text{F}$ )
- Dolby-Schalter: AUS
- Timer Schalter: AUS (OFF)
- Eingangsregler: MAX
- Abgleichkontrolle: Mitte (Zentrum)

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                           |                                                                                                                                          |
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| <b>A Senkrechtstellen des Kopfes</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Bedingung: <ul style="list-style-type: none"><li>• Wiedergabe</li><li>• Betriebsart: Normalband</li></ul> | Meßgerät: <ul style="list-style-type: none"><li>• Röhrenvoltmeter</li><li>• Oszillograph</li><li>• Testband (azimuth)...QZZCFM</li></ul> |
| <b>Ausgangsbalance-Justierung für linken und rechten Kanal</b> <ol style="list-style-type: none"><li>1. Den Meßaufbau zeigt Fig. 2.</li><li>2. 8kHz-Signal des Testbandes (QZZCFM) wiedergeben. Schraube (B) in Fig. 3 auf maximalen Ausgangspegel des linken und rechten Kanals abgleichen. Sind die Ausgangspegel des linken und rechten Kanals nicht gleichzeitig maximal, wie folgt justieren:</li><li>3. Durch Drehen der in Fig. 3 gezeigten Schraube (B) 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. 3 und 4.)</li></ol> <b>Phasenjustierung für linken und rechten Kanal</b> <ol style="list-style-type: none"><li>4. Den Meßaufbau zeigt Fig. 5.</li><li>5. 8kHz-Signal des Testbandes (QZZCFM) wiedergeben. Schraube (B), wie in Fig. 3 gezeigt, so einstellen, daß Zeiger von zwei Röhrenvoltmeter auf Maximum ausschlagen und am Oszillographen eine Wellenform wie in Fig. 6 erreicht wird.</li></ol>                                                                                   |                                                                                                           |                                                                                                                                          |
| <b>B Bandgeschwindigkeit</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Bedingung: <ul style="list-style-type: none"><li>• Wiedergabe</li></ul>                                   | Meßgerät: <ul style="list-style-type: none"><li>• Elektronischer Digitalzähler</li><li>• Testband...QZZCWAT</li></ul>                    |
| <b>Genauigkeit der Bandgeschwindigkeit</b> <ol style="list-style-type: none"><li>1. Den Meßaufbau zeigt Fig. 7.</li><li>2. Testband (QZZCWAT 3000Hz) wiedergeben und Ausgangssignal dem Zähler zuführen.</li><li>3. Frequenz messen.</li><li>4. Beträgt die auf dem Testband aufgezeichnete Frequenz 3000Hz, so ergibt sich die Genauigkeit nach folgender Formel:<math display="block">\text{Genauigkeit der Bandgeschwindigkeit} = \frac{f - 3000}{3000} \times 100(\%)</math>worin f die gemessene Frequenz ist.</li><li>5. Die Messung soll im mittleren Teil des Bandes erfolgen.<div>NORMALWERT: <math>\pm 1.5\%</math></div></li><li>6. Falls der Meßwert nicht im vorgeschriebenen Bereich liegt, bitte mit Bandgeschwindigkeitsregler VR wie in Abb. gezeigt einstellen.</li></ol> <b>Schwankung der Bandgeschwindigkeit:</b> <p>Messung, wie oben beschrieben für Anfang, mittleren Teil und Ende des Testbandes wiederholen und Schwankung wie folgt bestimmen:</p> $\text{Schwankung} = \frac{f_1 - f_2}{3000} \times 100(\%)$ <p><math>f_1</math> = Maximalwert<br/><math>f_2</math> = Minimalwert</p> <div>NORMALWERT: 1%</div> <p>Anm.: Verwenden Sie einen nichtmetallischen Schraubenzieher wenn Sie die Bandgeschwindigkeit justieren.</p> |                                                                                                           |                                                                                                                                          |

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| <b>C Frequenzgang bei Wiedergabe</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Bedingung: <ul style="list-style-type: none"><li>• Wiedergabe</li><li>• Betriebsart: Normalband</li></ul>                                                                                                                                                                           | Meßgerät: <ul style="list-style-type: none"><li>• Röhrenvoltmeter</li><li>• Oszillograph</li><li>• Testband...QZZCFM</li></ul>                                                                                                                                                                                                                                     |
| <ol style="list-style-type: none"><li>1. Den Meßaufbau zeigt Fig. 2.</li><li>2. Gerät auf Wiedergabe schalten. Frequenzgang-Testband QZZCFM wiedergeben.</li><li>3. Ausgangsspannung bei 315Hz, 12,5kHz, 8kHz, 1kHz, 250Hz, 125Hz, und 63Hz messen und jede Ausgangsspannung mit der Standardfrequenz 315Hz an der LINE OUT.</li><li>4. Messungen an beiden Kanälen durchführen.</li><li>5. Prüfen, ob die gemessenen Werte innerhalb des in der Frequenzgang-Übersicht aufgeführten Bereichs liegen. (Siehe Fig. 9).</li></ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                    |
| <b>D Wiedergabe-Verstärkung</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Bedingung: <ul style="list-style-type: none"><li>• Wiedergabe</li><li>• Betriebsart: Normalband</li></ul>                                                                                                                                                                           | Meßgerät: <ul style="list-style-type: none"><li>• Röhrenvoltmeter</li><li>• Oszillograph</li><li>• Testband...QZZCFM</li></ul>                                                                                                                                                                                                                                     |
| <ol style="list-style-type: none"><li>1. Den meßaufbau zeigt Fig. 2.</li><li>2. Standard-Frequenz (QZZCFM 315Hz) vom Testband wiedergeben und Ausgangsspannung messen. [TP3 (L-CH) TP4 (R-CH)].</li><li>3. Messung an beiden Kanälen durchflühren.</li></ol> <div>NORMALWERT: around 0,28 V [0,42<math>\pm</math>0,05 V: at LINE OUT Jack]</div> <p><b>Einstellung:</b></p> <ol style="list-style-type: none"><li>1. Abweichungen können durch Abgleich von VR5 (linker Kanal) und VR6 (rechter Kanal) korrigiert werden. (S. Fig. 1).</li><li>2. Nach erfolgtem Abgleich ist der Frequenzgang bei Wiedergabe erneut zu kontrollieren.</li></ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                    |
| <b>E Löschstrom</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Bedingung: <ul style="list-style-type: none"><li>• Aufnahme</li><li>• Betriebsart: Metallband</li></ul>                                                                                                                                                                             | Meßgerät: <ul style="list-style-type: none"><li>• Röhrenvoltmeter</li><li>• Oszillograph</li></ul>                                                                                                                                                                                                                                                                 |
| <ol style="list-style-type: none"><li>1. Den Meßaufbau zeigt Fig. 10.</li><li>2. Die Aufnahme- und Pausentaste drücken.</li><li>3. Den Bandwahlschalter auf Metallband-Position stellen.</li><li>4. Löschstrom nach folgender Formel ermitteln:<math display="block">\text{Löschstrom (A)} = \frac{\text{Die Spannung über beide Enden von R73}}{1 (\text{Ohm})}</math><div>NORMALWERT: 155<math>\pm</math>15 mA (Metal position)</div></li><li>5. Abweichungen können durch Abgleich von VR12. (S. Fig. 1).</li></ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                    |
| <b>F Gesamtfrequenzgang</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Bedingung: <ul style="list-style-type: none"><li>• Aufnahme und Wiedergabe</li><li>• Betriebsart "Normalband"</li><li>• Betriebsart "CrO<sub>2</sub> Band"</li><li>• Betriebsart "Metallband"</li><li>• Eingangsregler...MAX</li><li>• Abgleichkontrolle: Mitte (Zentrum)</li></ul> | Meßgerät: <ul style="list-style-type: none"><li>• Röhrenvoltmeter</li><li>• NF-Generator</li><li>• Abschwächer</li><li>• Oszillograph</li><li>• Testband (Leerband)<ul style="list-style-type: none"><li>...QZZCRA für Normal</li><li>...QZZCRX für CrO<sub>2</sub></li><li>...QZZCRZ für Metall</li></ul></li><li>• Widerstand (600<math>\Omega</math>)</li></ul> |
| <p>Anm.: Vor Messung und Abgleich des Gesamtfrequenzganges ist sicherzustellen, daß der Frequenzgang bei Wiedergabe korrekt ist (Vgl. entspr. Abschnitt).</p> <p>(Der Aufnahme-Entzerrer ist fest eingestellt.)</p> <ol style="list-style-type: none"><li>1. Den Meßaufbau zeigt Fig. 10.</li><li>2. Gerät auf Betriebsart "Normalband" schalten, und Testband (QZZCRA) einlegen.</li><li>3. An LINE IN ein Signal von 1kHz, -24dB zuführen. Das Gerät auf Aufnahme schalten.</li><li>4. Den Dämpfungswiderstand feineinstellen, bis die Ausgangsleistung an LINE OUT 0,4V beträgt.<ul style="list-style-type: none"><li>• Überprüfen, daß der Signalausgangspegel bei einer Ausgangs-Spannung von 0,4V -24<math>\pm</math>4dB beträgt.</li></ul></li><li>5. Mit dem NF-Oszillator Signale von 50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz, 10kHz und 12,5kHz und 10kHz zuführen, und diese Signale auf das Testband aufzeichnen.</li><li>6. Die in Schritt 6 aufgezeichneten Signale wiedergeben und überprüfen, ob die Frequenzgangkurve innerhalb des Bereichs liegt, der im Frequenzgangdiagramm für normales Band in Fig. 11 gezeigt ist. (Falls die Kurve innerhalb des vorgeschriebenen Bereichs liegt, mit den Schritten 8, 9 und 10 weiterfahren.) Falls die Kurve außerhalb des vorgeschriebenen Bereichs liegt, wie folgt justieren.</li></ol> |                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                    |

METHODES DES MEASURES ET REGLAGES

RS-B50 FRANCAIS

Ceci est à utiliser conjointement avec le manuel d'entretien du modèle No. RS-B50.

REMARQUES: Placer les interrupteurs et les contrôles dans les positions suivantes, sauf indication contraire.

- Vérifier que les têtes soient propres.
- Vérifier que le cabestan et le galet presseur soient propres.
- Température ambiante admissible: 20±5°C
- Sélecteur de réduction de bruit: OFF
- Interrupteur de démarrage de la minuterie: OFF
- Contrôles de niveau d'entrée: Maximum
- Contrôle de l'équilibre: Centre

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| <b>A Réglage de l'azimut de tête</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Condition: <ul style="list-style-type: none"><li>• Mode de lecture</li><li>• Mode de bande normale</li></ul> | Equipement: <ul style="list-style-type: none"><li>• Voltmètre électronique</li><li>• Oscilloscope</li><li>• Bande étalon (azimut) ...QZZCFM</li></ul> |
| <b>Réglage de l'équilibre de la sortie au canal gauche/canal droit</b> <ol style="list-style-type: none"><li>1. Brancher les appareils comme indiqué dans la Fig. 2.</li><li>2. Reproduire le signal de 8kHz de la bande étalon (QZZCFM). Régler la vis (B) dans la Fig. 3 pour obtenir les niveaux de sortie maximum pour les canaux gauche et droit. Lorsque les niveaux de sortie des canaux gauche et droit ne sont pas simultanément à leur maximum, les régler à nouveau de la façon suivante.</li><li>3. Faire tourner la vis indiquée dans la Fig. 3 pour trouver les angles A et C (point où les niveaux de sortie de crête pour les canaux gauche et droit sont obtenus respectivement). Situer alors l'angle B entre les angles A et C, autrement dit, en un point où les niveaux de sortie des canaux gauche et droit atteignent tous deux leur maximum. (Voir les Fig. 3 et 4).</li></ol> <b>Réglage de phase canal gauche/canal droit</b> <ol style="list-style-type: none"><li>4. Brancher les appareils comme indiqué dans la Fig. 5.</li><li>5. Reproduire le signal de 8kHz de la bande étalon (QZZCFM). Régler la vis (B) indiquée dans la Fig. 3 de sorte que les aiguilles des deux voltmètres électroniques oscillent au maximum, et qu'on obtienne sur l'oscilloscope une forme d'onde semblable à celle indiquée dans la Fig. 6.</li></ol> |                                                                                                              |                                                                                                                                                       |
| <b>B Vitesse de défilement</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Condition: <ul style="list-style-type: none"><li>• Mode de lecture</li></ul>                                 | Equipement: <ul style="list-style-type: none"><li>• Fréquencemètre numérique</li><li>• Bande étalon...QZZCWAT</li></ul>                               |
| <b>Précision de la vitesse de défilement</b> <ol style="list-style-type: none"><li>1. Brancher les appareils comme indiqué dans la Fig. 7.</li><li>2. Lire la bande étalon (QZZCWAT, 3000Hz) et appliquer le signal de lecture au fréquencemètre numérique.</li><li>3. Mesurer sa fréquence.</li><li>4. Sur la base de 3000Hz, déterminer la valeur à l'aide de la formule.<math display="block">\text{Précision de vitesse} = \frac{f - 3000}{3000} \times 100(\%)</math>avec f = valeur mesurée.</li><li>5. Effectuer la mesure sur la partie médiane de la bande.<div>Valeur standard: ±1,5%</div></li><li>6. Si la valeur mesurée ne correspond pas à la valeur standard, régler au moyen de la vis VR de réglage de la vitesse de défilement indiquée dans la Fig. 1.</li></ol> <b>Fluctuations de vitesse de défilement</b> <p>Faire les mesures de la même façon que ci-dessus (au début, au milieu et en fin de bande) et déterminer la différence entre les valeurs maximale et minimale, puis calculer comme suit.</p> $\text{Fluctuations de vitesse} = \frac{f_1 - f_2}{3000} \times 100(\%)$ <p>f<sub>1</sub> = valeur maximale<br/>f<sub>2</sub> = valeur minimale</p> <div>Valeur standard: 1%</div>                                                                                                                                                |                                                                                                              |                                                                                                                                                       |
| <b>Note:</b> <p>Utiliser un tournevis non métallique pour régler la vitesse de bande de cet appareil avec précision.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                              |                                                                                                                                                       |

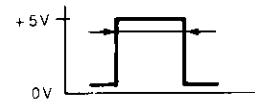
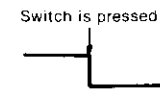
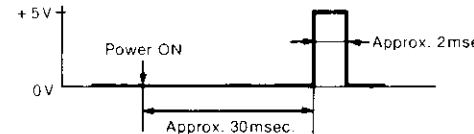
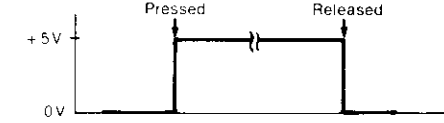
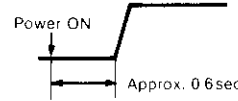
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                  |
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| <b>C Réponse en fréquence à la lecture</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Condition: <ul style="list-style-type: none"><li>• Mode de lecture</li><li>• Mode de bande normale</li></ul>                                                                                                                                                                                | Equipement: <ul style="list-style-type: none"><li>• Voltmètre électronique</li><li>• Oscilloscope</li><li>• Bande étalon...QZZCFM</li></ul>                                                                                                                                                                                                                                      |
| <ol style="list-style-type: none"><li>1. Brancher les appareils comme indiqué dans la Fig. 2.</li><li>2. Lire la portion de réponse en fréquence de la bande étalon (QZZCFM).</li><li>3. Mesurer les niveaux de sortie à 315Hz, 12,5kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz, et 63Hz et comparer chaque niveau de sortie avec celui de la fréquence standard de 315Hz sur la borne LINE OUT.</li><li>4. Effectuer les mesures sur les deux canaux.</li><li>5. Vérifier que les valeurs mesurées se situent dans la bande spécifiée de la courbe de réponse en fréquence. (Voir Fig. 9).</li></ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>D Gain à la lecture</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Condition: <ul style="list-style-type: none"><li>• Mode de lecture</li><li>• Mode de bande normale</li></ul>                                                                                                                                                                                | Equipement: <ul style="list-style-type: none"><li>• Voltmètre électronique</li><li>• Oscilloscope</li><li>• Bande étalon...QZZCFM</li></ul>                                                                                                                                                                                                                                      |
| <ol style="list-style-type: none"><li>1. Brancher les appareils comme indiqué dans la Fig. 2.</li><li>2. Lire la partie "niveau standard d'enregistrement de la bande étalon (QZZCFM 315Hz) et, au moyen du voltmètre électronique, mesurer le niveau de sortie aux points de coupure (TP3 pour le canal gauche, TP4 pour le canal droit).</li><li>3. Effectuer les mesures sur les deux canaux.<div>Valeur standard: around 0,28V (0,42±0,05V à la borne LINE OUT)</div></li></ol> <b>Réglage</b> <ol style="list-style-type: none"><li>1. Si la valeur mesurée ne correspond pas à la valeur stansard, régler VR5 (canal gauche) ou VR6 (canal droit). (Voir Fig. 1).</li><li>2. Après réglage, vérifier à nouveau la "réponse en fréquence à la lecture".</li></ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>E Courant d'effacement</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Condition: <ul style="list-style-type: none"><li>• Mode d'enregistrement</li><li>• Mode de bande métallique</li></ul>                                                                                                                                                                       | Equipement: <ul style="list-style-type: none"><li>• Voltmètre électronique</li><li>• Oscilloscope</li></ul>                                                                                                                                                                                                                                                                      |
| <ol style="list-style-type: none"><li>1. Brancher les appareils comme indiqué dans la Fig. 10.</li><li>2. Placer l'UNITE sur le mode de bande métallique.</li><li>3. Appuyer sur les boutons d'enregistrement et de pause.</li><li>4. Lire le voltage sur le voltmètre électronique et calculer le courant d'effacement au moyen de la formule suivante:<math display="block">\text{Courant d'effacement (A)} = \frac{\text{Voltage à la résistance R73}}{1 (\Omega)}</math><div>Valeur standard: 155±15mA</div></li><li>5. Si la valeur mesurée ne correspond pas à la valeur standard, régler VR12 (Voir Fig. 1).</li></ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>F Réponse de fréquence globale</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Condition: <ul style="list-style-type: none"><li>• Mode enregistrement/lecture</li><li>• Mode de bande normale</li><li>• Mode de bande CrO<sub>2</sub></li><li>• Mode de bande métallique</li><li>• Contrôles de niveau d'entrée...MAX</li><li>• Contrôle de l'équilibre...Centre</li></ul> | Equipement: <ul style="list-style-type: none"><li>• Voltmètre électronique</li><li>• Atténuateur</li><li>• Oscillateur</li><li>• Oscilloscope</li><li>• Résistant (600Ω)</li><li>• Bande étalon vierge<ul style="list-style-type: none"><li>...QZZCRA pour band normale</li><li>...QZZCRX pour bande CrO<sub>2</sub></li><li>...QZZCRZ pour bande métallique</li></ul></li></ul> |
| <b>Remarque:</b> <p>Avant de mesurer et régler la réponse de fréquence globale vérifier que la réponse en fréquence à la lecture soit correcte (pour la méthode de mesure, se reporter au paragraphe intitulé "Réponse en fréquence à la lecture").</p> <p>(Le compensateur d'enregistrement est fixe.)</p> <ol style="list-style-type: none"><li>1. Brancher les appareils comme indiqué dans la Fig. 10.</li><li>2. Placer l'UNITE en mode pour bande normale, et introduire la bande étalon vierge normale (QZZCRA).</li><li>3. Appliquer le signal de 1kHz de l'oscillateur AF à la loorne LINE IN, par l'intermédiaire de l'atténuateur.</li><li>4. Régler l'atténuateur de sorte que le niveau d'entrée soit de 20dB en-dessous du niveau d'enregistrement standard (niveau d'enregistrement standard = 0VU).</li><li>5. Régler l'oscillateur AF pour produire des signaux de 50Hz 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz, 10kHz et 12,5kHz et enregistrer ces signaux sur la bande étalon.</li><li>6. Reproduire les signaux enregistrés dans la phase 6, et vérifier si la courbe de réponse de fréquence se trouve dans les limites indiquées par la courbe de réponse de fréquence globale pour bandes normales (Fig. 11). (Si la courbe est comprise dans les spécifications, passer aux phases 7, 8 et 9). Si la courbe ne correspond pas aux spécifications du tableau, régler comme suit.</li></ol> <b>Réglage (A):</b> <p>Lorsque la courbe dépasse les spécifications du tableau de réponse de fréquence globale (Fig. 11), comme indiqué dans la Fig. 12.</p> <ol style="list-style-type: none"><li>1) Augmenter le courant de polarisation en tournant VR7 (L-CH) (canal gauche) et VR8 (R-CH) (canal droit). (Voir Fig. 1 page 5).</li></ol> |                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                  |

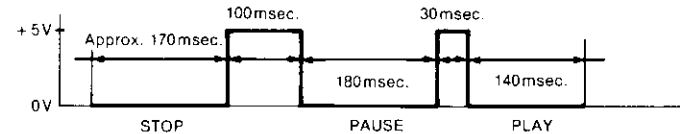
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| <p><b>Justierung (A):</b><br/>Wenn die Kurve den vorgeschriebenen Gesamtfrequenzgangbereich (Fig. 11) überschreitet, wie in Fig. 12 gezeigt.</p> <ol style="list-style-type: none"><li>1) Den Vormagnetisierungsstrom durch Abgleichen von VR7 (linker Kanal) und VR8 (rechter Kanal) erhöhen. (S. Fig. 1)</li><li>2) Die Schritte 5 und 6 zur Überprüfung wiederholen. (Wenn die Kurve dabei innerhalb des vorgeschriebenen Bereichs liegt (Fig. 11) mit den Schritten 7, 8, und 9 weiterfahren.</li><li>3) Wenn die Kurve den vorgeschriebenen Bereich (Fig. 11) noch immer überschreitet, den Vormagnetisierungsstrom weiter erhöhen, und die Schritte und wiederholen.</li></ol> <p><b>Justierung (B):</b><br/>Wenn die Kurve unter den vorgeschriebenen Bereich für den Gesamtfrequenzgang (Fig. 11) absinkt, wie in Fig. 13 gezeigt:</p> <ol style="list-style-type: none"><li>1) Den Vormagnetisierungsstrom durch abgleichen von VR7 (linker Kanal) und VR8 (rechter Kanal) reduzieren.</li><li>2) Die Schritte 5 und 6 zur Überprüfung wiederholen. (Falls die Kurve dabei innerhalb des vorgeschriebenen Bereichs in Fig. 11 liegt, mit den Schritten 7, 8, und 9 weiterfahren.)</li><li>3) Falls die Kurve noch immer unter den vorgeschriebenen Bereich (Fig. 11) absinkt, den Vormagnetisierungsstrom weiter reduzieren, und Schritte 5 und 6 wiederholen.</li></ol> <ol style="list-style-type: none"><li>7. Gerät auf Betriebsart "CrO<sub>2</sub> Band" schalten.</li><li>8. Testband QZZCRX einlegen, und Signale von 50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz, 10kHz und 15kHz und 10kHz aufzeichnen; Anschließend die Signale wiedergeben und prüfen, ob die Kurve innerhalb des Bereichs im Gesamtfrequenzgangdiagramm für CrO<sub>2</sub> band liegt. (Fig. 14).</li><li>9. Gerät auf Betriebsart "Metallband" schalten. Testband QZZCRZ einlegen und Signale von 50Hz, 100Hz, 200Hz, 500Hz, 1kHz, 4kHz, 8kHz, 10kHz, 12,5kHz und 15kHz aufnehmen. Anschließend die Signale wiedergeben und prüfen, ob die Kurve innerhalb des Bereichs im Gesamtfrequenzgangdiagramm für Metallband liegt. (Fig. 14).</li><li>10. Überprüfen, daß die Vormagnetisierungsströme ungefähr den folgenden Werten entsprechen, wenn der Bandsortenschalter in die entsprechende Position gestellt ist.<ul style="list-style-type: none"><li>• Spannung zwischen Masse und Testpunkt (TP1 für linken Kanal, TP2 für rechten Kanal) vom Röhrenvoltmeter ablesen und Vormagnetisierungsstrom nach folgender Formel berechnen:</li></ul><div>Vormagnetisierungsstrom (A) = <math>\frac{\text{Spannung am Röhrenvoltmeter (V)}}{10 (\Omega)}</math></div><div>Ungefähr 200µA (Normal position)<br/>Bezugswert: Ungefähr 250µA (CrO<sub>2</sub> position)<br/>Ungefähr 380µA (Metall position)</div></li></ol> |                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                    |
| <b>Ⓒ Gesamtverstärkung</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>Bedingung:</p> <ul style="list-style-type: none"><li>• Aufnahme und Wiedergabe</li><li>• Betriebsart: Normalband</li><li>• Eingangsregler: MAX</li><li>• Abgleichkontrolle: Mitte (Zentrum)</li><li>• Standard-Eingangsspegel: Mikrofon .....-69±3dB<br/>NF-Eingang .....-23±4dB</li></ul> | <p>Meßgerät:</p> <ul style="list-style-type: none"><li>• Röhrenvoltmeter</li><li>• NF-Generator</li><li>• Abschwächer</li><li>• Oszillograph</li><li>• Widerstand (600Ω)</li><li>• Testband (Leerband) QZZCRA für Normal</li></ul> |
| <ol style="list-style-type: none"><li>1. Den Meßaufbau zeigt Fig. 15.</li><li>2. Normales Testleerband (QZZCRA) einlegen.</li><li>3. Gerät auf "Aufnahme" schalten.</li><li>4. Über den Abschwächer ein 1kHz-Signal (-23dB) vom NF-Generator dem NF-Eingang zuführen.</li><li>5. Abschwächer so justieren, daß die Ausgangsspannung an der LINE OUT 0,42V erreicht.</li><li>6. Das aufgenommene Band abspielen und prüfen, ob der Ausgangspegel an der LINE OUT 0,42V erreicht.</li><li>7. Wenn der gemessene Wert nicht 0,42V±2dB erreicht, die folgenden VR abgleichen: VR9 (L-CH) oder VR10 (R-CH).</li><li>8. Ab Punkt 2 Wiederholen.</li></ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                    |
| <b>Ⓓ Fluoreszenzmeter</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>Bedingung:</p> <ul style="list-style-type: none"><li>• Aufnahme</li><li>• Eingangsregler...MAX</li><li>• Abgleichkontrolle: Mitte (Zentrum)</li></ul>                                                                                                                                      | <p>Meßgerät:</p> <ul style="list-style-type: none"><li>• Röhrenvoltmeter</li><li>• Abschwächer</li><li>• NF-Generator</li></ul>                                                                                                    |
| <p>• <b>Überprüfung des Fluoreszenzmeters</b><br/>Um die Genauigkeit des Fluoreszenzmeters zu überprüfen, die Ausgangsspannung an den Testpunkten [TP3 (L-K), TP4 (R-K)] messen.</p> <ol style="list-style-type: none"><li>1. Den Meßaufbau zeigt Fig. 16.</li><li>2. Einen Draht zwischen TP201 und Masse ziehen (siehe Fig. 17).</li><li>3. In Betriebsart "Aufnahme-Pause" 1kHz (-24dB) Signal an den NF-Eingang geben.</li><li>4. Abschwächer so abstimmen, daß der Ausgangspegel an den Testpunkten [TP3 (L-K), TP4 (R-K)] 0,28V ist.</li></ol> <p><b>Überprüfung des FL-Meters 0dB Segment-Anzeige ON/OFF</b><br/>Den Ausgangspegel an den Testpunkten [TP3 (L-K), TP4 (R-K)] von 0,28V -1dB (=250mV) auf 0,28V +1dB (=310mV) durch Abstimmung des Abschwächers verändern und prüfen, ob die 0dB Segment-Anzeige des FL-Meters von OFF auf ON wechselt.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                    |

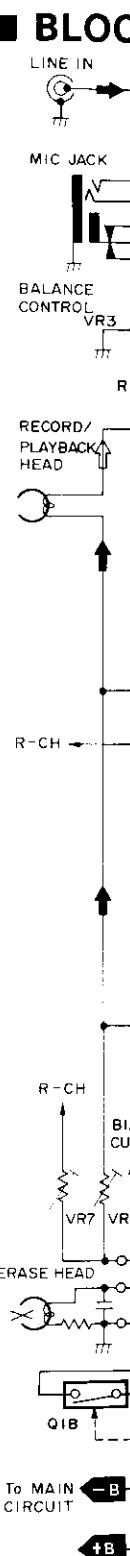
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| <p><b>Überprüfung des FL-Meters -40dB Segment-Anzeige ON/OFF</b><br/>Senken des Signalpegels von 28dB unter den Standard-Eingangsspegel (-24dB-28dB=-52dB=2,5mV) und weiterhin den Pegel 12dB (-52dB-12dB=64dB=0,63mV) durch Abstimmung des Abschwächers senken. Beim Senken des Pegels, wie oben beschrieben, sicherstellen, daß nur die -40dB-Anzeige aufleuchtet oder bei niedrigstem Stand erlischt.</p> <p>• <b>Justierung des FL-Meters</b></p> <ol style="list-style-type: none"><li>1. Den Meßaufbau zeigt Fig. 16.</li><li>2. Einen Draht zwischen TP201 und TP202 (siehe Fig. 17).</li><li>3. In Betriebsart "Aufnahme-Pause" 1kHz (-24dB) Signal an den NF-Eingang geben.</li><li>4. Abschwächer so abstimmen, daß der Ausgangspegel an den Testpunkten [TP3 (L-K), TP4 (R-K)] 0,28V beträgt.</li></ol> <p><b>Justierung auf -40dB</b></p> <ol style="list-style-type: none"><li>5. Abschwächer so abstimmen, daß der in Stufe 4 abgestimmte Pegel um 40dB vermindert wird.</li><li>6. Zu diesem Zeitpunkt prüfen, ob der -40dB Anzeiger abgeschwächt leuchtet (mittelhell, zwischen ganz hell und erlischt: siehe Fig. 18).</li><li>7. Wenn der Anzeiger nicht, wie in Stufe 6 beschrieben, abgeschwächt leuchtet, VR11 abstimmen.</li></ol> <p><b>Justierung auf 0dB</b></p> <ol style="list-style-type: none"><li>8. Den Zustand von Stufe 4 herstellen. Ausgangspegel auf 0,28V an den Testpunkten [TP3 (L-K), TP4 (R-K)] festsetzen.</li><li>9. Zu diesem Zeitpunkt prüfen, ob der 0dB Anzeiger abgeschwächt aufleuchtet (mittelhell, zwischen ganz hell und erlischt: siehe Fig. 19).</li><li>10. Wenn nicht korrekt, VR201 abstimmen.</li><li>11. Einstellungen und Prüfungen der Stufen 4, 5, 6, 7, 8, 9 und 10 zweibis dreimal wiederholen.</li><li>12. Verbindung zwischen TP201 und TP202, die in Stufe 2 hergestellt wurde, unterbrechen.</li></ol> |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                         |
| <b>Ⓐ Dolby-Schaltung</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>Bedingung:</p> <ul style="list-style-type: none"><li>• Aufnahme</li><li>• Dolby-Schalter ...IN/OUT (AN/AUS)</li><li>• Dolby-Wahlschalter ...B/C</li><li>• Eingangsregler...MAX.</li><li>• Abgleichkontrolle: Mitte (Zentrum)</li></ul> | <p>Meßgerät:</p> <ul style="list-style-type: none"><li>• Röhrenvoltmeter</li><li>• NF-Generator</li><li>• Abschwächer</li><li>• Oszillograph</li><li>• Widerstand (600Ω)</li></ul>                                      |
| <p><b>Aufnahmeseite</b></p> <p>• Überprüfung der Dolby-B-Typ Verschlüsselungsmerkmale.</p> <ol style="list-style-type: none"><li>1. Den Meßaufbau zeigt Fig. 20.</li><li>2. Gerät auf "Aufnahme" stellen. (Dolby-Wahlschalter ist OUT (AUS).)</li><li>3. Dem NF-Eingang ein 1kHz-Signal zuführen.</li><li>4. Abschwächer so abstimmen, daß die Ausgangsspannung an TP3 (L-K) und TP4 (R-K) 12,3mV beträgt.</li><li>5. Die Ausgangsspannung an Nadel 21 sollte 0dB betragen.</li><li>6. Den Dolby-Wahlschalter auf B stellen. Sicherstellen, daß das Ausgangssignalpegel an Nadel 21 von IC3 (L-K) und IC4 (R-K) +6dB±2,5dB beträgt.</li><li>7. Dolby-Wahlschalter ausschalten und die Frequenz auf 5kHz abstimmen. Das Ausgangssignal an Nadel 21 sollte 0dB betragen.</li><li>8. Dolby-Wahlschalter auf B stellen und sicherstellen, daß das Ausgangssignalpegel an Nadel 21 von IC3 (L-K) und IC4 (R-K) +8dB±2,5dB beträgt.</li></ol> <p>• Überprüfung der Dolby-C-Typ Verschlüsselungsmerkmale</p> <ol style="list-style-type: none"><li>9. Obige Stufen 1 bis 5 wiederholen.</li><li>10. Dolby-Wahlschalter auf C stellen und sicherstellen, daß das Ausgangssignalpegel an Nadel 21 von IC3 (L-K) und IC4 (R-K) +11,5dB±2,5dB beträgt.</li><li>11. Dolby-Wahlschalter ausschalten und die Frequenz auf 5kHz abstimmen. Die Ausgangsspannung an Nadel 21 sollte 0dB sein.</li><li>12. Dolby-Wahlschalter auf C stellen und sicherstellen, daß das Ausgangssignalpegel an Nadel 21 von IC3 (L-K) +8,5dB±2,5dB beträgt.</li></ol>                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                         |
| <b>Ⓐ Einsatz Ausgleichszeit-Justierung (dbx Schaltung)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <p>Meßbedingung:</p> <ul style="list-style-type: none"><li>• Betriebsart Aufnahme</li><li>• Eingangspegelregler...MAX</li><li>• Abgleichkontrolle ...Mitte (Zentrum)</li></ul>                                                            | <p>Meßgeräte:</p> <ul style="list-style-type: none"><li>• Röhrenvoltmeter</li><li>• Dämpfungsglied</li><li>• AF-Oszillator</li><li>• Gleichstromvoltmeter</li><li>• Geräuschverminderungs-Schalter...dbx Band</li></ul> |
| <ol style="list-style-type: none"><li>1. Führen Sie die in Fig. 21 gezeigten Anschlüsse durch und geben Sie ein 1kHz -27dB Signal vom LINE IN ein und stellen Sie den Lärmreduktionswähler in die Position dbx.</li><li>2. Versetzen Sie das Gerät in die Betriebsart Aufnahme und stellen Sie das Dämpfungsglied so ein, daß der Signalpegel beim C541 (linker Kanal) und beim C542 (rechter Kanal) 300mV ist.</li><li>3. Voltzahl auf DC Voltmeter ablesen</li></ol> <div>Bezugswert: 15±0,5mV</div> <ol style="list-style-type: none"><li>4. Weicht der Meßwert vom Bezugswert ab, VR501 abgleichen (bei de Elektroteilen angezeigt).</li></ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                         |

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| <p>6. Reproducir las señales grabadas en el paso 6, y comprobar si la curva de respuesta de frecuencia está dentro de los límites mostrados en el gráfico de respuesta de frecuencia total para las cintas normales (Fig. 11).<br/>(Si la curva está dentro de las especificaciones del gráfico, seguir con los pasos 7, 8 y 9).<br/>Si la curva no está dentro de las especificaciones del gráfico, ajustar de la forma siguiente:</p> <p><b>Ajuste A:</b><br/>Cuando la curva excede las especificaciones del gráfico de respuesta de frecuencia total (Fig. 11) tal como se muestra en la Fig. 12.</p> <ol style="list-style-type: none"> <li>1) Aumentar la corriente de polarización girando VR7 (L-CH) y VR8 (R-CH). (Ver la Fig. 1 de la página 5).</li> <li>2) Repetir los pasos 5 y 6 para confirmación (Seguir con los pasos 7, 8 y 9 si la curva está ahora dentro de las especificaciones del gráfico de la Fig. 11).</li> <li>3) Si la curva todavía excede las especificaciones (Fig. 11), aumentar aún más la corriente de polarización y repetir los pasos 5 y 6.</li> </ol> <p><b>Ajuste B:</b><br/>Cuando la curva está por debajo de las especificaciones del gráfico de respuesta de frecuencia total (Fig. 11) tal como se muestra en la Fig. 13.</p> <ol style="list-style-type: none"> <li>1) Reducir la corriente de polarización girando VR7 (L-CH) y VR8 (R-CH).</li> <li>2) Repetir los pasos 5 y 6 para confirmación. (Seguir con los pasos 7, 8 y 9 si la curva está ahora dentro de las especificaciones del gráfico de la Fig. 11.)</li> <li>3) Si la curva todavía cae por debajo de las especificaciones del gráfico (Fig. 11), reducir aún más la corriente de polarización y repetir los pasos 5 y 6.</li> </ol> <p>7. Poner la UNIDAD en el modo de cinta CrO<sub>2</sub>.</p> <p>8. Cambiar la cinta de prueba a QZZCRX y grabar señales de 1kHz, 50Hz, 100Hz, 200Hz, 500Hz, 4kHz, 8kHz 10kHz y 15kHz. Luego reproducir las señales y comprobar si la curva está dentro de los límites mostrados en el gráfico de respuesta de frecuencia total para las cintas de CrO<sub>2</sub> (Fig. 14).</p> <p>9. Poner la UNIDAD en modo de cinta a Metal y cambiar la cinta de prueba a QZZCRZ, y grabar señales de 1kHz, 50Hz, 100Hz, 200Hz, 500Hz, 4kHz, 8kHz, 10kHz, 12,5kHz y 15kHz. Luego, reproducir las señales y comprobar si la curva está dentro de los límites mostrados en el gráfico de respuesta de frecuencia total para las cintas de Metal (Fig. 14).</p> <p>10. Asegurarse de que las corrientes de polarización sean aproximadamente las que se indican a continuación cuando el aparato esté colocado en un modo de cinta distinto.</p> <ul style="list-style-type: none"> <li>• Leer la tensión en el VTVM entre tierra y el punto de prueba (TP1 para L-CH y TP2 para R-CH) y calcular la corriente de polarización según la siguiente fórmula:</li> </ul> $\text{Corriente de polarización} = \frac{\text{Valor leído en el VTVM (V)}}{10 (\Omega)}$ <div> <p><b>Unos 200μA (posición Normal)</b></p> <p><b>Valor de referencia: Unos 250μA (posición CrO<sub>2</sub>)</b></p> <p><b>Unos 380μA (posición Metal)</b></p> </div> |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                |
| <b>G Ganancia total</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p>Condición:</p> <ul style="list-style-type: none"> <li>• Modo de reproducción/grabación</li> <li>• Modo de cinta Normal</li> <li>• Controles del nivel de entrada...MAX</li> <li>• Control del balance...Centro</li> <li>• Nivel de entrada normal:</li> </ul> <p>MIC .....-69±3dB<br/>LINE IN .....-23±3dB</p> | <p>Equipo:</p> <ul style="list-style-type: none"> <li>• VTVM</li> <li>• Oscilador de AF</li> <li>• ATT</li> <li>• Osciloscopio</li> <li>• Resistor (600Ω)</li> <li>• Cinta de prueba (cinta en blanco de referencia)</li> <li>...QZZCRA para Normal</li> </ul> |
| <ol style="list-style-type: none"> <li>1. La conexión del equipo de prueba se muestra en la Fig. 15.</li> <li>2. Cargar la cinta normal en blanco de referencia (QZZCRA).</li> <li>3. Poner el aparato en el modo grabación.</li> <li>4. Suministrar una señal 1kHz (-23dB) desde el oscilador de AF a través de ATT a LINE IN (ENTRADA DE LINEA).</li> <li>5. Ajustar ATT hasta que el nivel del monitor en LINE OUT sea de 0,42V.</li> <li>6. Reproducir la cinta grabada, y asegurarse de que el nivel de salida en LINE OUT sea de 0,42V.</li> <li>7. Si el valor medido no es de 0,42V±2dB, ajustarlo con VR9 (L-CH), VR10 (R-CH).</li> <li>8. Repetir desde el punto (2).</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                |
| <b>H Medidor fluorescente</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p>Condición:</p> <ul style="list-style-type: none"> <li>• Modo grabación</li> <li>• Controles del nivel de entrada...MAX</li> <li>• Control del balance...Centro</li> </ul>                                                                                                                                      | <p>Equipo:</p> <ul style="list-style-type: none"> <li>• VTVM</li> <li>• Oscilador de AF</li> <li>• ATT</li> </ul>                                                                                                                                              |
| <p>• <b>Comprobación del medidor fluorescente (FL)</b><br/>Para comprobar la precisión del medidor FL, medir el nivel de salida en el punto de prueba [TP3 (L-CH), TP4 (R-CH)].</p> <ol style="list-style-type: none"> <li>1. Efectuar las conexiones tal como se muestra (ver la Fig. 16).</li> <li>2. Conectar un cable entre TP201 y TP202 (ver la Fig. 17).</li> <li>3. En el modo de pausa durante la grabación, aplicar 1kHz (-24dB) a LINE IN.</li> <li>4. Ajustar el ATT de forma que el nivel de salida en el punto de prueba [TP3 (L-CH), TP4 (R-CH)] sea de 0,28V.</li> </ol> <p><b>Comprobación del encendido/apagado del segmento 0dB del medidor FL</b><br/>Cambiar el nivel de salida en el punto de prueba [TP3 (L-CH), TP4 (R-CH)] de 0,28V-1dB (≈250mV) a 0,28V + 1dB (≈310mV) ajustando el atenuador, y comprobar si el estado de apagado del segmento 0dB del medidor FL cambia al estado de encendido.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                |

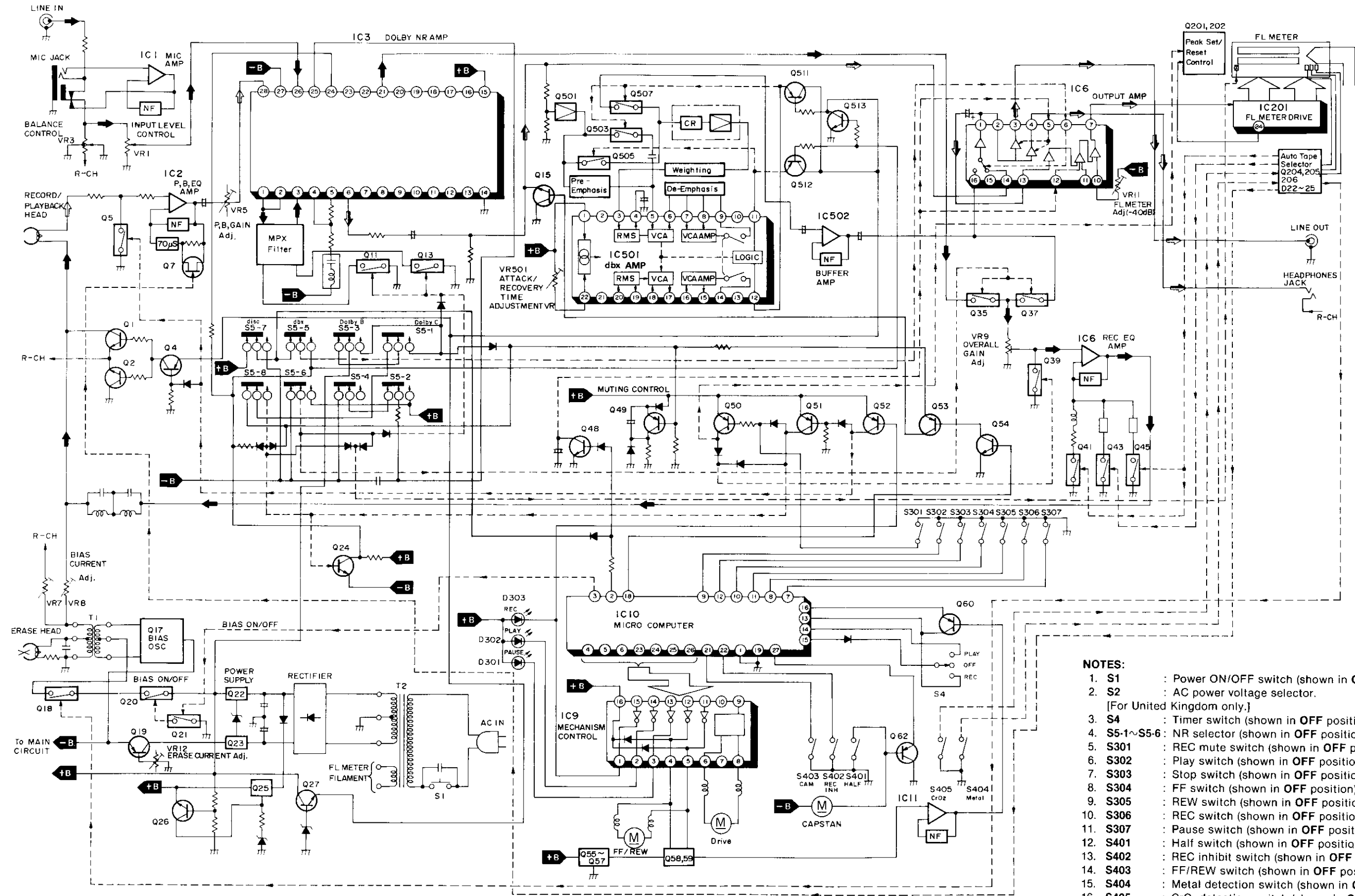
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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Comprobación del encendido/apagado del segmento -40dB del medidor FL</b><br/>Disminuir el nivel de la señal de 28dB por debajo del nivel de entrada normal (-24dB-28dB = -52dB = 2,5mV) y disminuir luego aún más el nivel de 12dB (-52dB-12dB = -64dB≈0,63mV) ajustando el atenuador. Al mismo tiempo que se baja el nivel según se ha descrito arriba, asegurarse de que solamente el segmento de -40dB permanece encendido, luego se atenúa o se apaga al nivel más bajo.</p> <p>• <b>Ajuste del medidor fluorescente</b></p> <ol style="list-style-type: none"> <li>1. Efectuar las conexiones tal como se muestra (ver la Fig. 16).</li> <li>2. Conectar un cable entre TP201 y TP202 (ver la Fig 17).</li> <li>3. En el modo de pausa durante la grabación, aplicar 1kHz (-24dB) a LINE IN (ENTRADA DE LINEA).</li> <li>4. Ajustar ATT de forma que el nivel de salida en el punto de prueba [TP3 (L-CH), TP4 (R-CH)] sea de 0,28V.</li> </ol> <p><b>Ajuste a -40dB</b></p> <ol style="list-style-type: none"> <li>5. Ajustar ATT de forma que el nivel ajustado en el paso 4 se reduzca en 40dB.</li> <li>6. En este momento, comprobar si el indicador de -40dB está iluminado a medias (intensidad luminosa intermedia entre intensidad máxima y apagado: ver la Fig. 18).</li> <li>7. Si el indicador no esta iluminado a medias tal como se ha descrito en el paso 6, ajustar VR11.</li> </ol> <p><b>Ajuste a 0dB</b></p> <ol style="list-style-type: none"> <li>8. Volver a las condiciones del paso 4 (hacer que el nivel de salida en el punto de prueba [TP3 (L-CH), TP4 (R-CH)] sea de 0,28V.</li> <li>9. En este momento, comprobar si el indicador de 0dB está iluminado a medias (intensidad luminosa intermedia entre intensidad máxima y apagado: ver la Fig. 19).</li> <li>10. Si no es así, ajustar VR201.</li> <li>11. Repetir los ajustes y comprobaciones de los pasos 4, 5, 6, 7, 8, 9, y 10, dos o tres veces.</li> <li>12. Desconectar el cable entre TP201 y TP202 que se conectó en el paso 2.</li> </ol> |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                     |
| <b>I Circuito Dolby de de ruido (NR)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p>Condición:</p> <ul style="list-style-type: none"> <li>• Modo de grabación</li> <li>• Interruptor Dolby NR...IN/OUT</li> <li>• Interruptor selector del Dolby NR...B/C</li> <li>• Controles del nivel de entrada...MAX</li> <li>• Control del balance...Centro</li> </ul> | <p>Equipo:</p> <ul style="list-style-type: none"> <li>• VTVM</li> <li>• ATT</li> <li>• Resistor (600Ω)</li> <li>• Oscilador de AF</li> <li>• Osciloscopio</li> </ul>                                |
| <p><b>Lado de grabación</b></p> <p>• Comprobación de las características del condificador tipo Dolby B.</p> <ol style="list-style-type: none"> <li>1. Efectuar las conexiones segun se muestra en la Fig. 20.</li> <li>2. Colocar la unidad en el modo de grabación (el interruptor selector NR está en OUT).</li> <li>3. Aplicar una señal de 1kHz a LINE IN.</li> <li>4. Ajustar el ATT de forma que el nivel de salida en TP3 (L-CH) y TP4 (R-CH) sea de 12,3mV.</li> <li>5. El nivel de salida en el terminal 21 deberá ser de 0dB.</li> <li>6. Colocar el interruptor selector NR en B, y asegurarse de que el nivel de la señal de salida en el terminal 21 del IC3 (L-CH) e IC4 (R-CH) sea de +6dB±2,5dB.</li> <li>7. Colocar el interruptor NR en OUT y ajustar la frecuencia a 5kHz. El nivel de la señal de salida en el terminal 21 deberá ser de 0dB.</li> <li>8. Colocar el interruptor selector NR en B y asegurarse de que el nivel de la señal de salida en el terminal 21 del IC3 (L-CH) e IC4 (R-CH) sea de +8dB±2,5dB.</li> </ol> <p>• Comprobación de las características del codificador tipo Dolby C.</p> <ol style="list-style-type: none"> <li>9. Repetir los pasos 1 a 5 anteriores.</li> <li>10. Colocar el interruptor selector NR en C y asegurarse de que el nivel de la señal de salida en el terminal 21 del IC3 (L-CH) e IC4 (R-CH) sea de +11,5dB±2,5dB.</li> <li>11. Colocar el interruptor selector NR en la posición OUT y ajustar la frecuencia a 5kHz. La señal de salida en el terminal 21 deberá ser de 0dB.</li> <li>12. Colocar el interruptor selector NR en C, y asegurarse de que el nivel de la señal de salida del terminal 21 del IC3 (L-CH) e IC4 (R-CH) sea de +8,5dB±2,5dB.</li> </ol>                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                     |
| <b>J Ajuste del tiempo de recuperación de ataque (circuito dbx)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p>Condición:</p> <ul style="list-style-type: none"> <li>• Modo de grabación</li> <li>• Controles del nivel de entrada...MAX</li> <li>• Control del balance...Centro</li> </ul>                                                                                             | <p>Equipo:</p> <ul style="list-style-type: none"> <li>• VTVM</li> <li>• ATT</li> <li>• Oscilador de AF</li> <li>• Voltímetro de CC</li> <li>• Selector de reducción de ruido...cinta dbx</li> </ul> |
| <ol style="list-style-type: none"> <li>1. Hacer las conexiones que se muestran en la Fig. 21, y suministrar una señal de 1kHz -27dB desde LINE IN. Colocar también el selector de reducción de ruido en la posición de cinta dbx.</li> <li>2. Colocar la unidad en el modo de grabación, y ajustar ATT de forma que el nivel de la señal en C541 (L-CH) y C542 (R-CH) sea de 300mV.</li> <li>3. Leer el voltaje en el voltímetro de CC.</li> </ol> <div> <p><b>Valor de referencia: 15±0,5mV</b></p> </div> <ol style="list-style-type: none"> <li>4. Si el valor medido no está dentro del valor de referencia, ajustar VR501 (ver la Fig. 1).</li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                     |

| Terminal No. | Symbol              | Name                                     | Function/operation                                                                                                                                                                                                                                              |
|--------------|---------------------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6.           | $\overline{CO5}$    | Drive motor CW rotation command          | <ul style="list-style-type: none"> <li>• "High" level pulse in each mode in operation PLAY → STOP.</li> </ul>                                                                 |
| 7.           | A13                 | PAUSE key switch                         | <ul style="list-style-type: none"> <li>• Goes to L when switch is pressed (normal H).</li> </ul>                                                                             |
| 8.           | A12                 | REC key switch                           |                                                                                                                                                                                                                                                                 |
| 9.           | A11                 | PLAY key switch                          |                                                                                                                                                                                                                                                                 |
| 10.          | A1 $\phi$           | FF key switch                            |                                                                                                                                                                                                                                                                 |
| 11.          | B13                 | REW key switch                           |                                                                                                                                                                                                                                                                 |
| 12.          | B12                 | STOP key switch                          |                                                                                                                                                                                                                                                                 |
| 13.          | B11                 | Reading of input switch state TIMER REC  |                                                                                                                                                                                                                                                                 |
| 14.          | B1 $\phi$           | Reading of input switch state TIMER PLAY |                                                                                                                                                                                                                                                                 |
| 15.          | $\overline{EO\phi}$ | Reading of output TIMER operation        | <ul style="list-style-type: none"> <li>• Goes to H (H period is approximately 2msec.) approximately 30msec. after power on.</li> </ul>                                      |
| 16.          | $\overline{EO1}$    | End-of-tape detection                    | <ul style="list-style-type: none"> <li>• Pulse output is delivered when reel motor is operated in each mode of PLAY, FF, REW, REC PLAY, CUE REVIEW.</li> </ul>                                                                                                  |
| 17.          | $\overline{EO2}$    |                                          | <ul style="list-style-type: none"> <li>• Non connection.</li> </ul>                                                                                                                                                                                             |
| 18.          | $\overline{EO3}$    | CUE/REVIEW MUTE                          | <ul style="list-style-type: none"> <li>• "High" level pulse with CUE/REVIEW button pressed during PLAY.</li> </ul>                                                          |
| 19.          | TST                 |                                          | <ul style="list-style-type: none"> <li>• Connection to GND.</li> </ul>                                                                                                                                                                                          |
| 20.          | $\overline{RST}$    | Reset terminal                           | <ul style="list-style-type: none"> <li>• Goes to H approximately 0.6sec. after power on to start computer.</li> <li>• Reset at "L" level (less than 0.8 volts).</li> </ul>  |

| Terminal No. | Symbol              | Name                              | Function/operation                                                                                                                                                                                                                                                            |
|--------------|---------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 21.          | SNS $\phi$          | Reading of input switch state CAM | <ul style="list-style-type: none"> <li>• Remains in H after input of the mechanism selection command (PLAY, PAUSE, STOP, etc.) and until mode detection leaf switch is closed.</li> </ul>  |
| 22.          | SNS1                | REC INH.                          | <ul style="list-style-type: none"> <li>• Recording is inhibited with input "H".</li> </ul>                                                                                                                                                                                    |
| 23.          | $\overline{DO\phi}$ | PAUSE Indication                  | <ul style="list-style-type: none"> <li>• "High" level during PAUSE.</li> </ul>                                                                                                                                                                                                |
| 24.          | $\overline{DO1}$    | PLAY Indication                   | <ul style="list-style-type: none"> <li>• "High" level during PLAY, REC PLAY.</li> </ul>                                                                                                                                                                                       |
| 25.          | $\overline{DO2}$    | FF/REW motor rotation select      | <ul style="list-style-type: none"> <li>• "High" level during REW.</li> </ul>                                                                                                                                                                                                  |
| 26.          | $\overline{DO3}$    | FF/REW motor rotation select      | <ul style="list-style-type: none"> <li>• "High" level during FF, PLAY.</li> </ul>                                                                                                                                                                                             |
| 27.          | VDD                 | Power supply terminal             | <ul style="list-style-type: none"> <li>• Operative on 4.5 to 6.0 volts (typically 5.5 volts).</li> </ul>                                                                                                                                                                      |
| 28.          | OSC                 | Oscillation terminal              | <ul style="list-style-type: none"> <li>• Because the connection of a probe affects the terminal, use <math>\overline{EO1}</math> in measuring the computer's velocity.</li> </ul>                                                                                             |

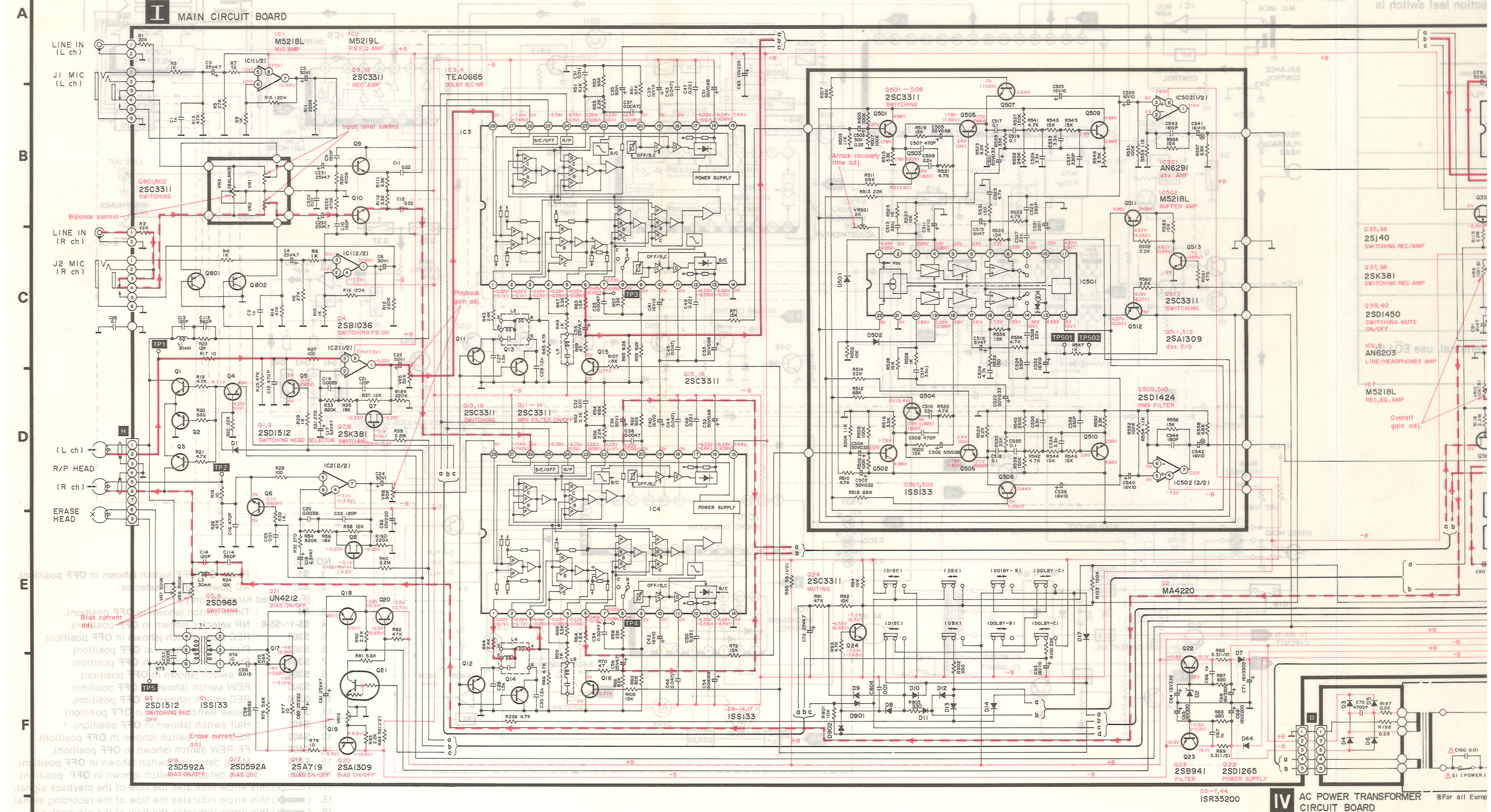


# ■ BLOCK DIAGRAM



- NOTES:**
- S1 : Power ON/OFF switch (shown in OFF position).
  - S2 : AC power voltage selector.
  - [For United Kingdom only.]
  - S4 : Timer switch (shown in OFF position).
  - S5-1~S5-6 : NR selector (shown in OFF position).
  - S301 : REC mute switch (shown in OFF position).
  - S302 : Play switch (shown in OFF position).
  - S303 : Stop switch (shown in OFF position).
  - S304 : FF switch (shown in OFF position).
  - S305 : REW switch (shown in OFF position).
  - S306 : REC switch (shown in OFF position).
  - S307 : Pause switch (shown in OFF position).
  - S401 : Half switch (shown in OFF position).
  - S402 : REC inhibit switch (shown in OFF position).
  - S403 : FF/REW switch (shown in OFF position).
  - S404 : Metal detection switch (shown in OFF position).
  - S405 : CrO<sub>2</sub> detection switch (shown in OFF position).
  - (→) this arrow indicates the flow of the playback signal.
  - (→) this arrow indicates the flow of the recording signal.
  - (→) this arrow indicates the flow of the playback and recording signal in combination.
  - (---) this arrow indicates the flow of the control signal.

## MAIN CIRCUIT BOARD



## II FL METER CIRCUIT BOARD

## III KEY BOARD CIRCUIT BOARD

## IV AC POWER TRANSFORMER CIRCUIT BOARD

\*For all European areas except United Kingdom.

\* The part No. of transistors, IC and diodes mentioned in the schematic diagram stand for production part No. Regarding the part No. with  mark, the production part No. are different from the replacement part No. Therefore, when placing an order for replacement part, please use the part No. in the replacement part list.

**NOTES:**

1. **S1** : Power ON/OFF switch (shown in **OFF** position).
2. **S2** : AC power voltage selector.  
[For United Kingdom only.]
3. **S4** : Timer switch (shown in **OFF** position).
4. **S5-1~S5-8** : NR selector (shown in **OFF** position).
5. **S301** : REC mute switch (shown in **OFF** position).
6. **S302** : Play switch (shown in **OFF** position).
7. **S303** : Stop switch (shown in **OFF** position).
8. **S304** : FF switch (shown in **OFF** position).
9. **S305** : REW switch (shown in **OFF** position).
10. **S306** : REC switch (shown in **OFF** position).
11. **S307** : Pause switch (shown in **OFF** position).
12. **S401** : Half switch (shown in **OFF** position).
13. **S402** : REC inhibit switch (shown in **OFF** position).
14. **S403** : FF/REW switch (shown in **OFF** position).
15. **S404** : Metal tape detection switch (shown in **OFF** position).
16. **S405** : CrO<sub>2</sub> tape detection switch (shown in **OFF** position).
17. **T1** : Bias oscillation coil.
18. **L1, 2** : Bias trap coil.
19. **L3, 4** : Multiplex filter.
20. **L5, 6** : Skewing network.
21. **L7, 8** : Peaking coil.
22. **L10~L14** : Choke coil.
23. Resistance are in ohms ( $\Omega$ ), 1/4 watt unless specified otherwise.  
1K = 1,000( $\Omega$ ), 1M = 1,000k( $\Omega$ )
24. Capacity are in micro-farads ( $\mu$ F) unless specified otherwise.
25. All voltage values shown in circuitry are under no signal condition.

- ( ) .....Voltage values at record mode.
- CrO<sub>2</sub> .....Voltage values at CrO<sub>2</sub> tape mode.
- Metal .....Voltage values at Metal tape mode.
- Stop .....Voltage values at Stop mode.
- FF/REW .....Voltage values at FF/REW mode.
- REC MUTE...Voltage values at REC MUTE mode.
- dbx .....Voltage values at dbx mode.
- FL .....Voltage values at which the corresponding FL meter segment is lit.

For measurement use VTVM.

26. (  ) indicates B+ (bias).  
(  ) indicates B- (bias).  
(  ) indicates the flow of the playback signal.  
(  ) indicates the flow of the recording signal.
27. Important safety notice.  
Components identified by  mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

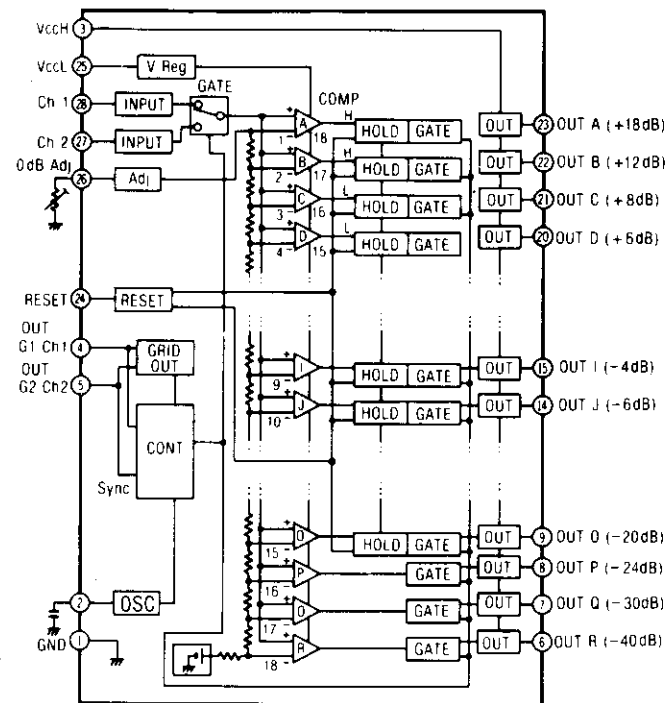
## SPECIFICATIONS

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

|                                                                                                                    |                                           |
|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| 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 4%                              |
| Overall S/N ratio<br>* Test tape...QZZCRA                                                                          | Greater than 43dB<br>(without NAB filter) |

### EQUIVALENT CIRCUIT

**IC501: AN6870N**



## ■ ELECTRICAL PARTS LIST

**NOTES: RESISTORS**

|                            |                         |
|----------------------------|-------------------------|
| ERD.....Carbon             | ECBA.....Ceramic        |
| ERG.....Metal-oxide        | ECGO.....Ceramic        |
| ERS.....Metal-oxide        | ECKO.....Ceramic        |
| ERO.....Metal-film         | ECCO.....Ceramic        |
| ERX.....Metal-film         | ECFO.....Ceramic        |
| ERQ.....Fuse type metallic | ECQM.....Polyester film |
| ERC.....Solid              | ECQE.....Polyester film |
| ERF.....Cement             | ECQF.....Polypropylene  |

## CAPACITORS

ECED.....Electrolytic  
ECEN.....Non polar electrolytic  
EQS.....Polystyrene  
EQS.....Tantalum  
QCS.....Tantalum

## REPLACEMENT PARTS LIST

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

| Ref. No.         | Part No.   | Ref. No.                       | Part No.   | Ref. No.             | Part No.   | Ref. No.         | Part No.     | Ref. No.             | Part No.    | Ref. No.                          | Part No.   |
|------------------|------------|--------------------------------|------------|----------------------|------------|------------------|--------------|----------------------|-------------|-----------------------------------|------------|
| RESISTORS        |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
| R 1, 2           | ERD25TJ223 | R 102                          | ERD25FJ151 | R 197, 198           | ERQ14LKR39 | C 13, 14         | ECKD2H121KBL | C 201, 202           | ECEA1HU010  | Q 39, 40                          | 2SD1450R   |
| R 3, 4           | ERD25FJ102 | R 103                          | ERD25TJ104 | R 201, 202           | ERD25FJ152 | C 15, 16         | ECOD1H471J   | C 203                | ECFDD473KXY | Q 41, 42                          | 2SA1115FE  |
| R 5, 6           | ERD25TJ273 | R 105, 106                     | ERD25FJ821 | R 203, 204           | ERD25TJ684 | C 17, 18         | ECEA0JU470   | C 204                | ECFDD153KXY | Q 43, 44, 45, 46                  |            |
| R 7, 8           | ERD25FJ101 | R 107, 108                     | ERD25FJ152 | R 205, 206           | ERD25FJ271 | C 19, 20         | ECQV1H392JZ  | C 205                | ECEA1HU100  |                                   | 2SC3311Q   |
| R 9, 10          | ERD25FJ102 | R 109, 110                     | ERD25FJ562 | R 207                | ERD25FJ103 |                  |              | C 251, 252           | ECEA25Z47R  | Q 48                              | 2SC3311Q   |
| R 11, 12         | ERD25TJ224 | R 111, 112                     | ERD25TJ332 | R 208                | ERD25FJ182 | C 21, 22         | ECOD1H121K   | C 503, 504           | ECEA1HUR22  | Q 49, 50                          | 2SA1115EF  |
| R 13, 14         | ERD25TJ473 | R 113, 114                     | ERD25FJ222 | R 209                | ERD25TJ684 | C 23, 24         | ECEA1HU010   | C 505, 506           | ECEA0MR68R  | Q 51, 52                          | UN4111     |
| R 15, 16         | ERD25TJ124 | R 115, 116, 117, 118           | ERD25FJ272 | R 210                | ERD25FJ471 | C 25, 26         | ECOD1H103ZF  | C 507, 508           | ECOD1H471J  | Q 53                              | 2SA1115EF  |
| R 17, 18         | ERD25FJ100 | R 119, 120                     | ERD25FJ272 | R 211                | ERD25FJ472 | C 27, 28         | ECFDD152KXY  | C 509, 510           | ECQV1H223JZ | Q 54                              | UN4211     |
| R 19             | ERD25FJ472 | R 121, 122                     | ERD25FJ682 | R 213, 214           | ERD25FJ103 | C 29, 30         | ECQV1H103JZ  | C 511, 512           | ECEA1HS100  | Q 55                              | 2SC3242EFG |
|                  |            |                                |            |                      |            | C 31, 32         | ECQV1H472JZ  | C 513, 514           | ECQV1H333JZ | Q 56                              | 2SA1115EF  |
|                  |            |                                |            |                      |            | C 33, 34         | ECEA1HU010   | C 515, 516           | ECEA0JU470  | Q 57                              | 2SC3311Q   |
|                  |            |                                |            |                      |            | C 35, 36         | ECQV1H472JZ  | C 517, 518, 519, 520 | ECQV1H104JZ | Q 58, 59                          | 2SB643     |
|                  |            |                                |            |                      |            | C 37, 38         | ECEA1CU100   | C 521, 522           | ECEA50MR33R | Q 60                              | 2SA1115EF  |
|                  |            |                                |            |                      |            | C 39, 40, 41, 42 |              | C 523, 524           | ECOD1H391J  | Q 61                              | 2SC3311Q   |
| R 20             | ERD25FJ561 | R 123, 124                     | ERD25FJ102 | R 215, 216           | ERD25TJ124 | C 43, 44, 45, 46 | ECQV1H473JZ  | C 525, 526           | ECQV1H472JZ | Q 62                              | 2SA1115EF  |
| R 21             | ERD25FJ472 | R 125, 126                     | ERD25FJ390 | R 219                | ERD25TJ563 | C 47, 48, 49, 50 | ECQV1H224JZ  | C 527, 528           | ECQV1H223JZ | Q 63                              | 2SC3311Q   |
| R 22             | ERD25TJ223 | R 127, 128                     | ERD25FJ272 | R 222                | ERD25TJ563 | C 51, 52, 53, 54 | ECQV1H224JZ  | C 529, 530           | ECQV1H332JZ | Q 201                             | 2SC3311Q   |
| R 23, 24         | ERD25TJ123 | R 129, 130                     | ERD25FJ103 | R 224                | ERD2FCJ47R |                  |              | C 531                | ECEA1HU010  | Q 202                             | 2SA1115EF  |
| R 25, 26         | ERD25TJ473 | R 131, 132                     | ERD25FJ272 | R 225                | ERD25FJ562 |                  |              | C 532                | ECEA1CU100  | Q 203                             | 2SC3311Q   |
| R 27, 28         | ERD25FJ102 | R 133, 134                     | ERD25FJ821 | R 227                | ERD25FJ103 |                  |              | C 533                | ECEA1CU100  | Q 204, 205, 206                   | UN4113     |
| R 29, 30         | ERD25FJ102 | R 135, 136                     | ERD25FJ332 | R 251, 252           | ERD25TJ474 |                  |              | C 534                | ECQV1H332JZ | Q 501, 502, 503, 504, 505, 506,   |            |
| R 31, 32         | ERD25FJ391 | R 137                          | ERD25FJ103 | R 253, 254           | ERD25FJ680 |                  |              | C 535, 536           | ECEA1CU100  | 507, 508                          | 2SC3311Q   |
| R 33, 34         | ERD25TJ824 | R 138                          | ERD25FJ472 | R 302                | ERD25FJ681 |                  |              | C 537, 538           | ECOD1H331J  | Q 509, 510                        | 2SD1199R   |
| R 35, 36         | ERD25TJ183 | R 139                          | ERD2FCG270 | R 302                | ERD25FJ821 |                  |              | C 539, 540, 541, 542 | ECEA1CU100  | Q 511, 512                        | 2SA1115EF  |
|                  |            |                                |            |                      |            |                  |              | C 543, 544           | ECOD1H181K  | Q 513                             | 2SC3311Q   |
| R 37, 38         | ERD25TJ123 | R 140                          | ERD25TJ104 | R 502                | ERD25FJ103 |                  |              | C 801, 802, 803      | ECOD1H103ZF | DIODES & RECTIFIERS               |            |
| R 39, 40         | ERD25TJ225 | R 141                          | ERD25TJ154 | R 503, 504           | ERD25FJ112 |                  |              |                      |             | D 1                               | 1SS133     |
| R 43, 44         | ERD25FJ242 | R 142                          | ERD25FJ221 | R 505, 506, 507, 508 |            |                  |              |                      |             | D 2                               | MA4220M    |
| R 45, 46         | ERD25FJ472 | R 143                          | ERD25FJ332 |                      |            |                  |              |                      |             | D 3, 4, 5, 6, 7                   |            |
| R 47, 48         | ERD25FJ332 | R 144                          | ERD25FJ103 | R 510                | ERD25TJ104 |                  |              |                      |             |                                   | SM112      |
| R 49, 50         | ERD25FJ102 | R 145                          | ERD25TJ333 | R 511, 512           | ERD25TJ683 |                  |              |                      |             | D 8, 9, 10, 11, 12, 13, 14        | 1SS133     |
| R 51, 52         | ERD25FJ512 | R 146                          | ERD25FJ681 | R 513, 514           | ERD25TJ223 |                  |              |                      |             | D 15                              | MA4075M    |
| R 53, 54         | ERD25TJ683 | R 147, 148                     | ERD25FJ103 | R 515, 516           | ERD25FJ332 |                  |              |                      |             | D 16                              | MA4056M    |
| R 55, 56         | ERD25FJ222 | R 149                          | ERD25TJ563 | R 517, 518           | ERD25TJ683 |                  |              |                      |             | D 17                              | 1SS133     |
| R 57, 58         | ERD25TJ333 | R 151, 152                     | ERD25FJ151 | R 519, 520           | ERD25TJ153 |                  |              |                      |             | D 21, 22, 23, 24, 25, 26          | 1SS133     |
|                  |            |                                |            |                      |            |                  |              |                      |             | D 30, 31, 32, 33, 34, 35, 36, 37, |            |
|                  |            |                                |            |                      |            |                  |              |                      |             | 38, 39, 40                        | 1SS133     |
|                  |            |                                |            |                      |            |                  |              |                      |             | D 41                              | MA4043H    |
| R 59, 60, 61, 62 | ERD25TJ823 | R 153, 154                     | ERD25FJ392 | R 521, 522           | ERD25FJ472 |                  |              |                      |             | D 42, 43                          | 1SS133     |
| R 63, 64         | ERD25FJ182 | R 155                          | ERD25FJ472 | R 523, 524           | ERD25FJ822 |                  |              |                      |             | D 201                             | MA4043M    |
| R 65, 66         | ERD25FJ822 | R 156                          | ERD25FJ821 | R 525, 526           | ERD25FJ102 |                  |              |                      |             | D 202, 203, 204                   |            |
| R 69, 70         | ERD25FJ470 | R 157                          | ERD25TJ473 | R 527, 528           | ERD25FJ103 |                  |              |                      |             |                                   | 1SS133     |
| R 71, 72         | ERD25TJ153 | R 158                          | ERD25TJ223 | R 529, 530           | ERD25TJ333 |                  |              |                      |             |                                   | SLR34YC    |
| R 73             | ERD25FJ1P0 | R 159                          | ERD25FJ562 | R 531, 532           | ERD25FJ151 |                  |              |                      |             |                                   | SLR34MC    |
| R 74             | ERD25FJ100 | R 160                          | ERD25FJ122 | R 533, 534           | ERD25FJ472 |                  |              |                      |             |                                   | SLR34VC    |
| R 75, 76         | ERD25FJ562 | R 161, 162                     | ERD25FJ152 | R 535, 536           | ERD25TJ153 |                  |              |                      |             |                                   | 1SS133     |
| R 77             | ERD25FJ100 | R 163                          | ERD25TJ473 | R 537, 538           | ERD25TJ154 |                  |              |                      |             |                                   |            |
| R 79             | ERD25FJ100 | R 164                          | ERD25FJ272 | R 539, 540           | ERD25TJ244 |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
| R 80             | ERD25FJ222 | R 165                          | ERD25FJ102 | R 541, 542           | ERD25FJ472 |                  |              |                      |             |                                   |            |
| R 81             | ERD25FJ562 | R 166                          | ERD25FJ103 | R 543, 544, 545, 546 |            |                  |              |                      |             |                                   |            |
| R 82             | ERD25TJ473 | R 167                          | ERD25TJ563 |                      | ERD25TJ153 |                  |              |                      |             |                                   |            |
| R 83             | ERD25FJ222 | R 168                          | ERD25FJ103 | R 547                | ERD25FJ102 |                  |              |                      |             |                                   |            |
| R 84, 85         | ERD50FJ560 | R 169                          | ERD25FJ180 | R 549, 550           | ERD25FJ332 |                  |              |                      |             |                                   |            |
| R 86             | ERD25FJ3R9 | R 170                          | ERD25FJ391 | R 551, 552           | ERD25TJ104 |                  |              |                      |             |                                   |            |
| R 87, 88         | ERD25FJ681 | R 171, 172                     | ERD25TJ223 | R 553, 554           | ERD25FJ112 |                  |              |                      |             |                                   |            |
| R 89             | ERD25FJ3R9 | R 173                          | ERD25FJ682 | R 555, 556           | ERD25TJ153 |                  |              |                      |             |                                   |            |
| R 90             | ERD25TJ564 | R 174, 175, 176, 177           |            | R 557, 558           | ERD25FJ682 |                  |              |                      |             |                                   |            |
| R 91             | ERD25TJ473 |                                |            | R 559, 560           | ERD25FJ222 |                  |              |                      |             |                                   |            |
|                  |            | R 178                          | ERD25FJ102 | R 561                | ERD25TJ473 |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
| R 92             | ERD25FJ103 | R 179                          | ERD25FJ332 | R 562                | ERD25FJ103 |                  |              |                      |             |                                   |            |
| R 93             | ERD25TJ473 | R 180                          | ERD25TJ223 | R 800                | ERD25FJ472 |                  |              |                      |             |                                   |            |
| R 94             | ERD25FJ103 | R 181                          | ERD25TJ473 |                      |            |                  |              |                      |             |                                   |            |
| R 95             | ERD25FJ102 | R 182, 183, 184, 185, 186, 187 |            |                      |            |                  |              |                      |             |                                   |            |
| R 96             | ERX2ANJ8R2 |                                |            |                      |            |                  |              |                      |             |                                   |            |
| R 97             | ERD25FJ470 | R 188                          | ERD25FJ822 |                      |            |                  |              |                      |             |                                   |            |
| R 98             | ERD25TJ153 | R 189, 190                     | ERD25TJ224 |                      |            |                  |              |                      |             |                                   |            |
| R 99             | ERD25FJ103 | R 191                          | ERD25FJ472 |                      |            |                  |              |                      |             |                                   |            |
| R 100            | ERD25TJ223 | R 192, 193                     | ERD25FJ103 |                      |            |                  |              |                      |             |                                   |            |
| R 101            | ERD25FJ102 | R 194                          | ERD25FJ472 |                      |            |                  |              |                      |             |                                   |            |
|                  |            | R 195, 196                     | ERD25TJ473 |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   |            |
|                  |            |                                |            |                      |            |                  |              |                      |             |                                   | </         |

## Areas

- \* [D] For all Europe
- \* [B] For United Kingdom

## COILS

|               |   |
|---------------|---|
| L 1, 2        | Q |
| L 3, 4        | Q |
| L 5, 6        | E |
| L 7, 8        | Q |
| L 10, 11, 12, | Q |

**TRANSFO**

|                  |   |
|------------------|---|
| T 1              | Q |
| T 2 [D] $\Delta$ | Q |
| T 2 [B] $\Delta$ | Q |

## SWITCHES

|             |       |
|-------------|-------|
| S 1         | C     |
| S 2         | (B) C |
| S 4         | C     |
| S 5         | C     |
| S 301, 302, | S     |
| S 401, 402  | Q     |
| S 403       | Q     |
| S 404, 405  |       |

## DIODES & RECTIFIERS

|                            |         |
|----------------------------|---------|
| D 1                        | 1SS133  |
| D 2                        | MA4220M |
| D 3, 4, 5, 6, 7            | SM112   |
| D 8, 9, 10, 11, 12, 13, 14 |         |

## INTEGRATED CIRCUITS

|         |           |
|---------|-----------|
| IC 1    | M5218L    |
| IC 2    | M5219L    |
| IC 3, 4 | TEA0665   |
| IC 6    | AN6203    |
| IC 7    | M5218L    |
| IC 8    | AN6203    |
| IC 9    | AN6270    |
| IC 10   | MN1400RMJ |
| IC 11   | M5218L    |
| IC 201  | AN6870N   |

## TRANSISTORS

|           |         |
|-----------|---------|
| Q 1, 2, 3 | 2SD1011 |
| Q 4       | 2SA921  |
| Q 5, 6    | 2SD965Q |
| Q 7, 8    | 2SK381D |

## VARIABLE RESISTORS

|           |             |
|-----------|-------------|
| VR 1, 2   | EWAPB6Y10A5 |
| VR 3      | QVAL5KUG15  |
| VR 5, 6   | EVNM4AA00B5 |
| VR 7, 8   | EVNK4AA00B5 |
| VR 9, 10  | EVNM4AA00B5 |
| VR 11     | EVNK4AA00B2 |
| VR 12, 13 | EVNM4AA00B5 |
| VR 201    | EVNM4AA00B5 |
| VR 501    | EVNK4AA00B2 |

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

reater than 45dB

Less than 4%

reater than 43dB  
(without NAB filter)

## 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  
ECQM.....Polyester film  
ECQE.....Polyester film  
ECQF.....PolypropyleneECEC.....Electrolytic  
ECECN.....Non polar electrolytic  
ECQS.....Polystyrene  
ECS.....Tantalum  
QCS.....Tantalum

## REPLACEMENT PARTS LIST

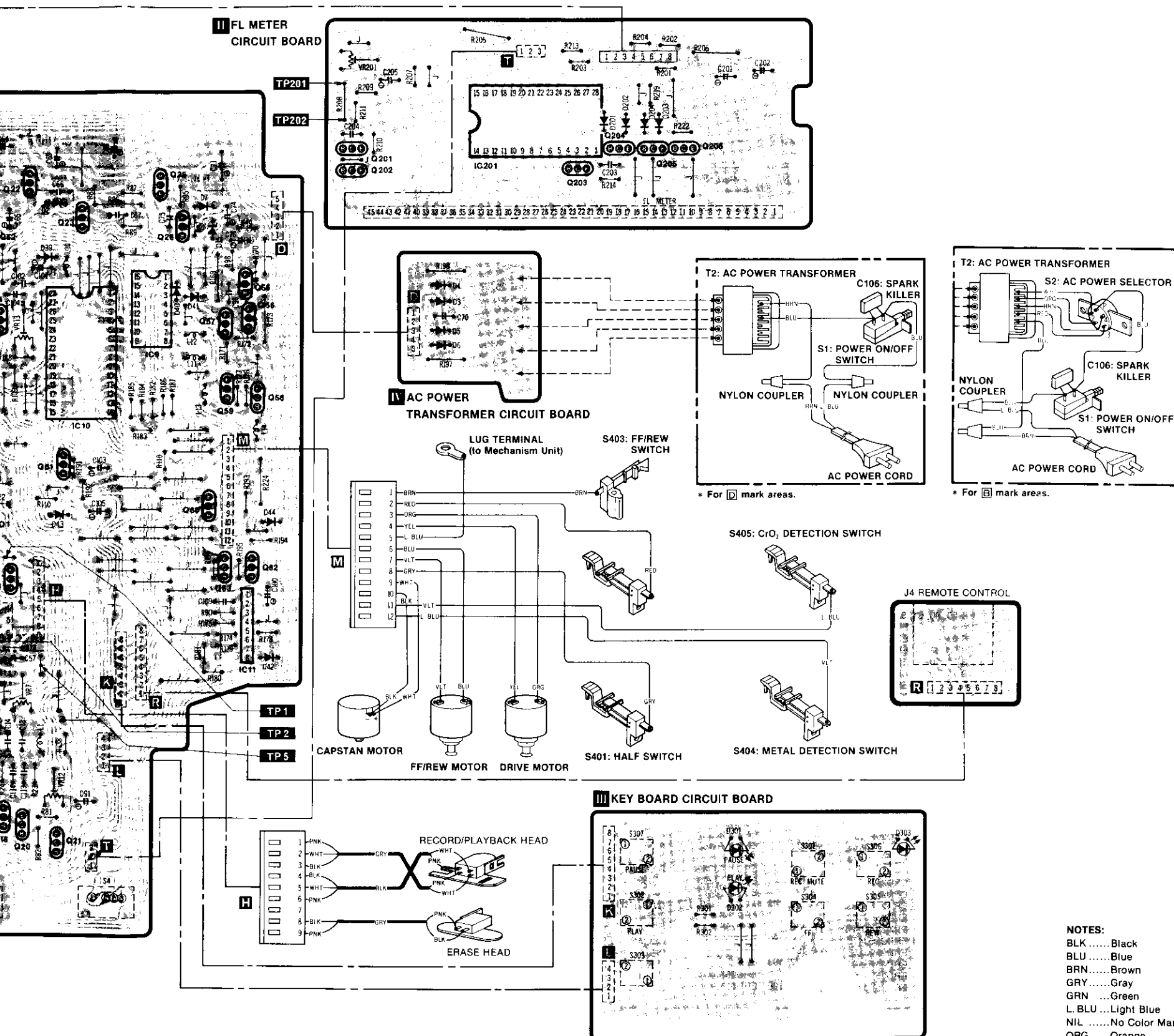
Important safety notice  
Components identified by  $\Delta$  mark have special  
characteristics important for safety.  
When replacing any of these components, use  
only manufacturer's specified parts.

## Areas

\* [D] For all European areas except United Kingdom.  
\* [B] For United Kingdom.

| 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.    | Part Name & Description   |
|------------------|------------|--------------------------------|------------|----------------------|-------------|------------------|--------------|---------------------------------|-------------|----------------------------------------------------------|------------|-------------------------------------|-------------|---------------------------|
| RESISTORS        |            |                                |            |                      |             |                  |              |                                 |             |                                                          |            |                                     |             |                           |
| R 1, 2           | ERD25TJ223 | R 102                          | ERD25FJ151 | R 197, 198           | ERQ14LKR39  | C 13, 14         | ECKD2H121KBL | C 201, 202                      | ECEA1HU010  | Q 39, 40                                                 | 2SD1450R   | COILS                               |             |                           |
| R 3, 4           | ERD25FJ102 | R 103                          | ERD25TJ104 | R 201, 202           | ERD25FJ152  | C 15, 16         | ECCD1H471J   | C 203                           | ECFDD473KXY | Q 41, 42                                                 | 2SA1115FE  | L 1, 2                              | QLQX0343KWA | Trap Coil                 |
| R 5, 6           | ERD25TJ273 | R 105, 106                     | ERD25FJ821 | R 203, 204           | ERD25TJ684  | C 17, 18         | ECEA0JU470   | C 204                           | ECFDD153KXY | Q 43, 44, 45, 46                                         |            | L 3, 4                              | QLM9210K    | MPX Coil                  |
| R 7, 8           | ERD25FJ101 | R 107, 108                     | ERD25FJ152 | R 205, 206           | ERD25FJ271  | C 19, 20         | ECQV1H392JZ  | C 205                           | ECEA1HU100  | Q 48                                                     | 2SC3311Q   | L 5, 6                              | ELM7Q306A   | Skewing Network           |
| R 9, 10          | ERD25FJ102 | R 109, 110                     | ERD25FJ562 | R 207                | ERD25FJ103  | C 21, 22         | ECCD1H121K   | C 251, 252                      | ECEA25Z4R7  | Q 49                                                     | 2SC3311Q   | L 7, 8                              | QLQX2722D   | Peaking Coil              |
| R 11, 12         | ERD25TJ224 | R 111, 112                     | ERD25TJ332 | R 208                | ERD25FJ182  | C 23, 24         | ECEA1HU010   | C 503, 504                      | ECEA1HUR22  | Q 49, 50                                                 | 2SA1115EF  | L 10, 11, 12, 13, 14                | QLQX1011Y   | Choke Coil                |
| R 13, 14         | ERD25TJ473 | R 113, 114                     | ERD25FJ222 | R 209                | ERD25TJ684  | C 25, 26         | ECKD1H103ZF  | C 505, 506                      | ECEA50MR68R | Q 51, 52                                                 | UN4111     | TRANSFORMERS                        |             |                           |
| R 15, 16         | ERD25TJ124 | R 115, 116, 117, 118           | ERD25TJ225 | R 210                | ERD25FJ471  | C 27, 28         | ECFDD152KVV  | C 507, 508                      | ECCD1H471J  | Q 53                                                     | 2SA1115EF  | T 1                                 | QLB0198K    | Bias Oscillation Coil     |
| R 17, 18         | ERD25FJ100 | R 119, 120                     | ERD25FJ272 | R 211                | ERD25FJ472  | C 29, 30         | ECFDD122KVV  | C 509, 510                      | ECQV1H223JZ | Q 54                                                     | UN4211     | T 2 [D] Δ                           | QLPD74ELX   | AC Power Transformer      |
| R 19             | ERD25FJ472 | R 121, 122                     | ERD25FJ682 | R 213, 214           | ERD25FJ103  | C 31, 32         | ECQV1H103JZ  | C 511, 512                      | ECEA1HS100  | Q 55                                                     | 2SC3242EFG | T 2 [B] Δ                           | QLPA79ELC   | AC Power Transformer      |
| R 20             | ERD25FJ561 | R 123, 124                     | ERD25FJ102 | R 215, 216           | ERD25TJ124  | C 33, 34         | ECQV1H472JZ  | C 513, 514                      | ECQV1H333JZ | Q 56                                                     | 2SA1115EF  | SWITCHES                            |             |                           |
| R 21             | ERD25FJ472 | R 125, 126                     | ERD25FJ390 | R 219                | ERD25TJ563  | C 35, 36         | ECEA1HU010   | C 515, 516                      | ECEA0JU470  | Q 57                                                     | 2SC3311Q   | S 1                                 | QSW1127     | AC Power Switch           |
| R 22             | ERD25TJ223 | R 127, 128                     | ERD25FJ272 | R 222                | ERD25TJ563  | C 37, 38         | ECQV1H472JZ  | C 517, 518, 519, 520            | ECQV1H104JZ | Q 58, 59                                                 | 2SB643     | S 2 [B]                             | QSR1407H    | AC Power Voltage Selector |
| R 23, 24         | ERD25TJ123 | R 129, 130                     | ERD25FJ103 | R 225                | ERD25FJ562  | C 39, 40, 41, 42 | ECEA1CU100   | C 521, 522                      | ECEA50MR33R | Q 60                                                     | 2SA1115EF  | S 4                                 | QSS1304H    | Slide Switch (TIMER)      |
| R 25, 26         | ERD25TJ473 | R 131, 132                     | ERD25FJ272 | R 226                | ERD25TJ472  | C 43, 44, 45, 46 | ECEA1CU100   | C 523, 524                      | ECCD1H391J  | Q 61                                                     | 2SC3311Q   | S 5                                 | QSWX508T    | Push Switch (NR Selector) |
| R 27, 28         | ERD25FJ101 | R 133, 134                     | ERD25FJ821 | R 227                | ERD25FJ103  | C 47, 48, 49, 50 | ECQV1H473JZ  | C 525, 526                      | ECQV1H472JZ | Q 62                                                     | 2SA1115EF  | S 301, 302, 303, 304, 305, 306, 307 | SSG13       | Key Board Switch          |
| R 29, 30         | ERD25FJ102 | R 135, 136                     | ERD25FJ332 | R 251, 252           | ERD25TJ474  | C 51, 52, 53, 54 | ECQV1H224JZ  | C 527, 528                      | ECQV1H223JZ | Q 201                                                    | 2SC3311Q   | S 401, 402                          | QSB0296     | Leaf Switch (ATS)         |
| R 31, 32         | ERD25FJ391 | R 137                          | ERD25FJ103 | R 253, 254           | ERD25FJ680  | C 55, 56         | ECEA50MR68R  | C 529, 530                      | ECQV1H332JZ | Q 202                                                    | 2SA1115EF  | S 403                               | QSB0315     | Leaf Switch (FF/REW)      |
| R 33, 34         | ERD25TJ824 | R 138                          | ERD25FJ472 | R 301                | ERD25FJ681  | C 57             | ECEA25Z4R7   | C 531                           | ECEA1HU010  | Q 203                                                    | 2SC3311Q   | S 404, 405                          | QSB0296     | Leaf Switch (ATS)         |
| R 35, 36         | ERD25TJ183 | R 139                          | ERD2FCG270 | R 302                | ERD25FJ821  | C 58             | ECEA25Z4R7   | C 532                           | ECEA1CU100  | Q 204, 205, 206                                          | UN4113     | JACKS                               |             |                           |
| R 37, 38         | ERD25TJ123 | R 140                          | ERD25TJ104 | R 502                | ERD25FJ103  | C 59             | ECEA25Z4R7   | C 533, 534                      | ECQV1H332JZ | Q 501, 502, 503, 504, 505, 506, 507, 508                 | 2SC3311Q   | J 1, 2                              | QJA0452     | MIC Jack                  |
| R 39, 40         | ERD25TJ225 | R 141                          | ERD25TJ154 | R 503, 504           | ERD25FJ112  | C 60             | ECQP1183JZ   | C 535, 536                      | ECEA1CU100  | Q 509, 510                                               | 2SD1199R   | J 3                                 | QJA0266     | Headphone Jack            |
| R 43, 44         | ERD25FJ242 | R 142                          | ERD25FJ221 | R 505, 506, 507, 508 | ERD25TJ104  | C 61             | ECFDD153KXY  | C 537, 538                      | ECCD1H331J  | Q 511, 512                                               | 2SA1115EF  | J 4                                 | QJS1955     | Remote Control Jack       |
| R 45, 46         | ERD25FJ472 | R 143                          | ERD25FJ332 | R 510                | ERD25FJ472  | C 62, 63         | ECFDD822KVV  | C 539, 540, 541, 542            | ECEA1CU100  | Q 513                                                    | 2SC3311Q   | CONNECTORS                          |             |                           |
| R 47, 48         | ERD25FJ332 | R 144                          | ERD25FJ103 | R 511, 512           | ERD25TJ683  | C 64, 65         | ECEA1EU220   | C 543, 544                      | ECCD1H181K  | D 1                                                      | 1SS133     | CN 1                                | QJP1923TN   | 9 Pin Post                |
| R 49, 50         | ERD25FJ102 | R 145                          | ERD25TJ333 | R 513, 514           | ERD25TJ223  | C 66, 67         | ECEA1EU470   | C 801, 802, 803                 | ECKD1H103ZF | D 2                                                      | MA4220M    | CN 2                                | QJP1924TN   | 12 Pin Post               |
| R 51, 52         | ERD25FJ512 | R 146                          | ERD25FJ681 | R 515, 516           | ERD25FJ332  | C 68             | ECEA1AU221   | IC 1                            | M5218L      | D 3, 4, 5, 6, 7                                          | SM112      | CN 3                                | QJS1987S    | Jumper Socket (4 Pin)     |
| R 53, 54         | ERD25TJ683 | R 147, 148                     | ERD25FJ103 | R 517, 518           | ERD25TJ683  | C 69             | ECEA1CU222   | IC 2                            | M5219L      | D 8, 9, 10, 11, 12, 13, 14                               | 1SS133     | CN 4                                | QJS1983S    | Jumper Socket (8 Pin)     |
| R 55, 56         | ERD25FJ222 | R 149                          | ERD25TJ563 | R 519, 520           | ERD25TJ153  | C 70             | ECEA1CU331   | IC 3, 4                         | TEA0665     | D 15                                                     | MA4075M    | CN 5                                | QJS1923TN   | 9 Pin Socket              |
| R 57, 58         | ERD25TJ333 | R 151, 152                     | ERD25FJ151 | R 521, 522           | ERD25FJ472  | C 71             | ECEA1CU332   | IC 6                            | AN6203      | D 16                                                     | MA4056M    | CN 6                                | QJS1924TN   | 12 Pin Socket             |
| R 59, 60, 61, 62 | ERD25TJ823 | R 153, 154                     | ERD25FJ392 | R 523, 524           | ERD25FJ822  | C 72             | ECEA25Z4R7   | IC 7                            | M5218L      | D 17                                                     | 1SS133     | CN 7                                | QJT1090     | Earth Plate               |
| R 63, 64         | ERD25FJ182 | R 155                          | ERD25FJ472 | R 525, 526           | ERD25FJ102  | C 73             | ECEA1CU100   | IC 8                            | AN6203      | D 20, 21, 22, 23, 24, 25, 26                             | 1SS133     | CN 8                                | QJT1054     | Contact                   |
| R 65, 66         | ERD25FJ822 | R 156                          | ERD25TJ473 | R 527, 528           | ERD25FJ103  | C 74             | ECEA1AU220   | IC 9                            | AN6270      | D 21, 22, 23, 24, 25, 26                                 | 1SS133     | CN 9                                | QJS1997S    | Jumper Socket (3 Pin)     |
| R 69, 70         | ERD25FJ470 | R 158                          | ERD25TJ223 | R 529, 530           | ERD25TJ333  | C 75             | ECKD1H102KB  | IC 10                           | MN1400RMJ   | D 22, 23, 24, 25, 26                                     | 1SS133     |                                     |             |                           |
| R 71, 72         | ERD25TJ153 | R 159                          | ERD25FJ562 | R 531, 532           | ERD25FJ151  | C 76             | ECEA1CU330   | IC 11                           | M5218L      | D 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40 | 1SS133     |                                     |             |                           |
| R 73             | ERD25FJ1R0 | R 160                          | ERD25FJ122 | R 533, 534           | ERD25FJ472  | C 77             | ECEA0JU331   | IC 201                          | AN6870N     | D 41                                                     | MA4043H    |                                     |             |                           |
| R 74             | ERD25FJ100 | R 161, 162                     | ERD25FJ152 | R 535, 536           | ERD25TJ153  | C 78             | ECKD1H102KB  | IC 501                          | AN6291      | D 42, 43                                                 | 1SS133     |                                     |             |                           |
| R 75, 76         | ERD25FJ562 | R 163                          | ERD25TJ473 | R 537, 538           | ERD25TJ154  | C 79, 80         | ECEA1HUR33   | IC 502                          | M5218L      | D 44, 45                                                 | MA4043M    |                                     |             |                           |
| R 77             | ERD25FJ100 | R 164                          | ERD25FJ272 | R 539, 540           | ERD25TJ244  | C 81, 82         | ECEA1HUR1    | Q 1, 2, 3                       | 2SD1011     | D 46, 47                                                 | 1SS133     |                                     |             |                           |
| R 79             | ERD25FJ100 | R 165                          | ERD25FJ102 | R 541, 542           | ERD25FJ472  | C 83, 84         | ECQV1H223JZ  | Q 4                             | 2SA921      | D 48, 49                                                 | 1SS133     |                                     |             |                           |
| R 80             | ERD25FJ222 | R 166                          | ERD25FJ103 | R 543, 544, 545, 546 | ERD25TJ153  | C 85, 86         | ECFDD472KXY  | Q 5, 6                          | 2SD965Q     | D 50, 51                                                 | 1SS133     |                                     |             |                           |
| R 81             | ERD25FJ562 | R 167                          | ERD25TJ563 | R 547                | ERD25FJ102  | C 87, 88         | ECEA1HU010   | Q 7, 8                          | 2SK381D     | D 52, 53                                                 | 1SS133     |                                     |             |                           |
| R 82             | ERD25TJ473 | R 168                          | ERD25FJ103 | R 549, 550           | ERD25FJ332  | C 89, 90         | ECKD1H102KB  | Q 9, 10, 11, 12, 13, 14, 15, 16 | 2SC3311Q    | D 54, 55                                                 | 1SS133     |                                     |             |                           |
| R 83             | ERD25FJ222 | R 169                          | ERD25FJ180 | R 551, 552           | ERD25TJ104  | C 91             | ECEA0JU470   | Q 17, 18                        | 2SD592      | D 56, 57                                                 | 1SS133     |                                     |             |                           |
| R 84, 85         | ERD50FJ560 | R 170                          | ERD25FJ391 | R 553, 554           | ERD25FJ112  | C 92             | ECEA1HU100   | Q 19                            | 2SA719R     | D 58, 59                                                 | 1SS133     |                                     |             |                           |
| R 86             | ERD25FJ3R9 | R 171, 172                     | ERD25TJ223 | R 555, 556           | ERD25TJ153  | C 93             | ECEA1CU221   | Q 20                            | 2SA1115EF   | D 60, 61                                                 | 1SS133     |                                     |             |                           |
| R 87, 88         | ERD25FJ681 | R 173                          | ERD25FJ8R2 | R 557, 558           | ERD25FJ682  | C 94             | ECEA1CU330   | Q 21                            | UN4212      | D 62, 63                                                 | 1SS133     |                                     |             |                           |
| R 89             | ERD25FJ3R9 | R 174, 175, 176, 177           | ERD25FJ102 | R 559, 560           | ERD25FJ222  | C 95, 96         | ECEA1CN100   | Q 22                            | 2SD1265     | D 64, 65                                                 | 1SS133     |                                     |             |                           |
| R 90             | ERD25TJ564 | R 178                          | ERD25FJ103 | R 561                | ERD25TJ473  | C 97             | ECKD1H102KB  | Q 23                            | 2SB941P     | D 66, 67                                                 | 1SS133     |                                     |             |                           |
| R 91             | ERD25TJ473 | R 179                          | ERD25FJ332 | R 562                | ERD25FJ103  | C 98             | ECKD1H102KB  | Q 24                            | 2SC3311Q    | D 68, 69                                                 | 1SS133     |                                     |             |                           |
| R 92             | ERD25FJ103 | R 180                          | ERD25TJ223 | R 800                | ERD25FJ472  | C 99             | ECEA1HU010   | Q 25                            | 2SD1275-Q   | D 70, 71                                                 | 1SS133     |                                     |             |                           |
| R 93             | ERD25TJ473 | R 181                          | ERD25TJ473 | CAPACITORS           |             |                  |              |                                 |             |                                                          |            |                                     |             |                           |
| R 94             | ERD25FJ103 | R 182, 183, 184, 185, 186, 187 | ERD25FJ562 | C 1, 2               | ECKD1H102KB | C 100            | ECEA1HU010   | Q 26, 27                        | 2SC3311Q    | D 72, 73                                                 | 1SS133     |                                     |             |                           |
| R 95             | ERD25FJ102 | R 188                          | ERD25FJ562 | C 3, 4               | ECEA1EU4R7  | C 101            | ECEA1AU101   | Q 28, 29                        | 2SC3311Q    | D 74, 75                                                 | 1SS133     |                                     |             |                           |
| R 96             | ERX2ANJ8R2 | R 189, 190                     | ERD25TJ224 | C 5, 6               | ECEA1HU010  | C 102            | ECKD1H223ZF  | Q 30, 31                        | 2SC3311Q    | D 76, 77                                                 | 1SS133     |                                     |             |                           |
| R 97             | ERD25FJ470 | R 191                          | ERD25FJ472 | C 7, 8               | ECCD1H220K  | C 103            | ECEA1HU010   | Q 32, 33                        | 2SC3311Q    | D 78, 79                                                 | 1SS133     |                                     |             |                           |
| R 98             | ERD25TJ153 | R 192, 193                     | ERD25FJ103 | C 9, 10              | ECCD1H151K  | C 104            | ECCD1H391J   | Q 34, 35                        | 2SC3311Q    | D 80, 81                                                 | 1SS133     |                                     |             |                           |
| R 99             | ERD25FJ103 | R 194                          | ERD25FJ472 | C 11, 12             | ECQV1H224JZ | C 105            | ECEA1CU100   | Q 36, 37                        | 2SC3311Q    | D 82, 83                                                 | 1SS133     |                                     |             |                           |
| R 100            | ERD25TJ223 | R 195, 196                     | ERD25TJ473 | C 106                | ECEA1CU221  | C 106            | ECEA1CU221   | Q 38, 39                        | 2SC3311Q    | D 84, 85                                                 | 1SS133     |                                     |             |                           |
| R 101            | ERD25FJ102 |                                |            | C 107                | ECCD1H220K  | C 107            | ECCD1H221K   | Q 40, 41                        | 2SC3311Q    | D 86, 87                                                 | 1SS133     |                                     |             |                           |
|                  |            |                                |            | C 108                | ECCD1H151K  | C 108            | ECCD1H561KB  | Q 42, 43                        | 2SC3311Q    | D 88, 89                                                 | 1SS133     |                                     |             |                           |
|                  |            |                                |            | C 109                | ECQV1H224JZ | C 109            | ECQV1H474JZ  | Q 44, 45                        | 2SC3311Q    | D 90, 91                                                 | 1SS133     |                                     |             |                           |
|                  |            |                                |            | C 110                |             | C 110            |              | Q 46, 47                        | 2SC3311Q    | D 92, 93                                                 | 1SS133     |                                     |             |                           |
|                  |            |                                |            | C 111                |             | C 111            |              | Q 48, 49                        | 2SC3311Q    | D 94, 95                                                 | 1SS133     |                                     |             |                           |
|                  |            |                                |            | C 112                |             | C 112            |              | Q 50, 51                        | 2SC3311Q    | D 96, 97                                                 | 1SS133     |                                     |             |                           |
|                  |            |                                |            | C 113                |             | C 113            |              | Q 52, 53                        | 2SC3311Q    | D 98, 99                                                 | 1SS133     |                                     |             |                           |
|                  |            |                                |            | C 114                |             | C 114            |              | Q 54, 55                        | 2SC3311Q    | D 100, 101                                               | 1SS133     |                                     |             |                           |
|                  |            |                                |            | C 115                |             | C 115            |              | Q 56, 57                        | 2SC3311Q    | D 102, 103                                               | 1SS133     |                                     |             |                           |
|                  |            |                                |            | C 116                |             | C 116            |              | Q 58, 59                        | 2SC3311Q    | D 104, 105                                               | 1SS133     |                                     |             |                           |
|                  |            |                                |            | C 117                |             | C 117            |              | Q 60, 61                        | 2SC3311Q    | D 106, 107                                               | 1SS133     |                                     |             |                           |
|                  |            |                                |            | C 118                |             | C 118            |              | Q 62, 63                        | 2SC3311Q    | D 108, 109                                               | 1SS133     |                                     |             |                           |
|                  |            |                                |            | C 119                |             | C 119            |              | Q 64, 65                        | 2SC3311Q    | D 110, 111                                               | 1SS133     |                                     |             |                           |
|                  |            |                                |            | C 120                |             | C 120            |              | Q 66, 67                        | 2SC3311Q    | D 112, 113                                               | 1SS133     |                                     |             |                           |
|                  |            |                                |            | C 121                |             | C 121            |              | Q 68, 69                        | 2SC3311Q    | D 114, 115                                               | 1SS133     |                                     |             |                           |
|                  |            |                                |            | C 122                |             | C 122            |              | Q 70, 71                        | 2SC3311Q    | D 116, 117                                               | 1SS133     |                                     |             |                           |
|                  |            |                                |            | C 123                |             | C 123            |              | Q 72, 73                        | 2SC3311Q    | D 118, 119                                               | 1SS133     |                                     |             |                           |
|                  |            |                                |            |                      |             |                  |              |                                 |             |                                                          |            |                                     |             |                           |





**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

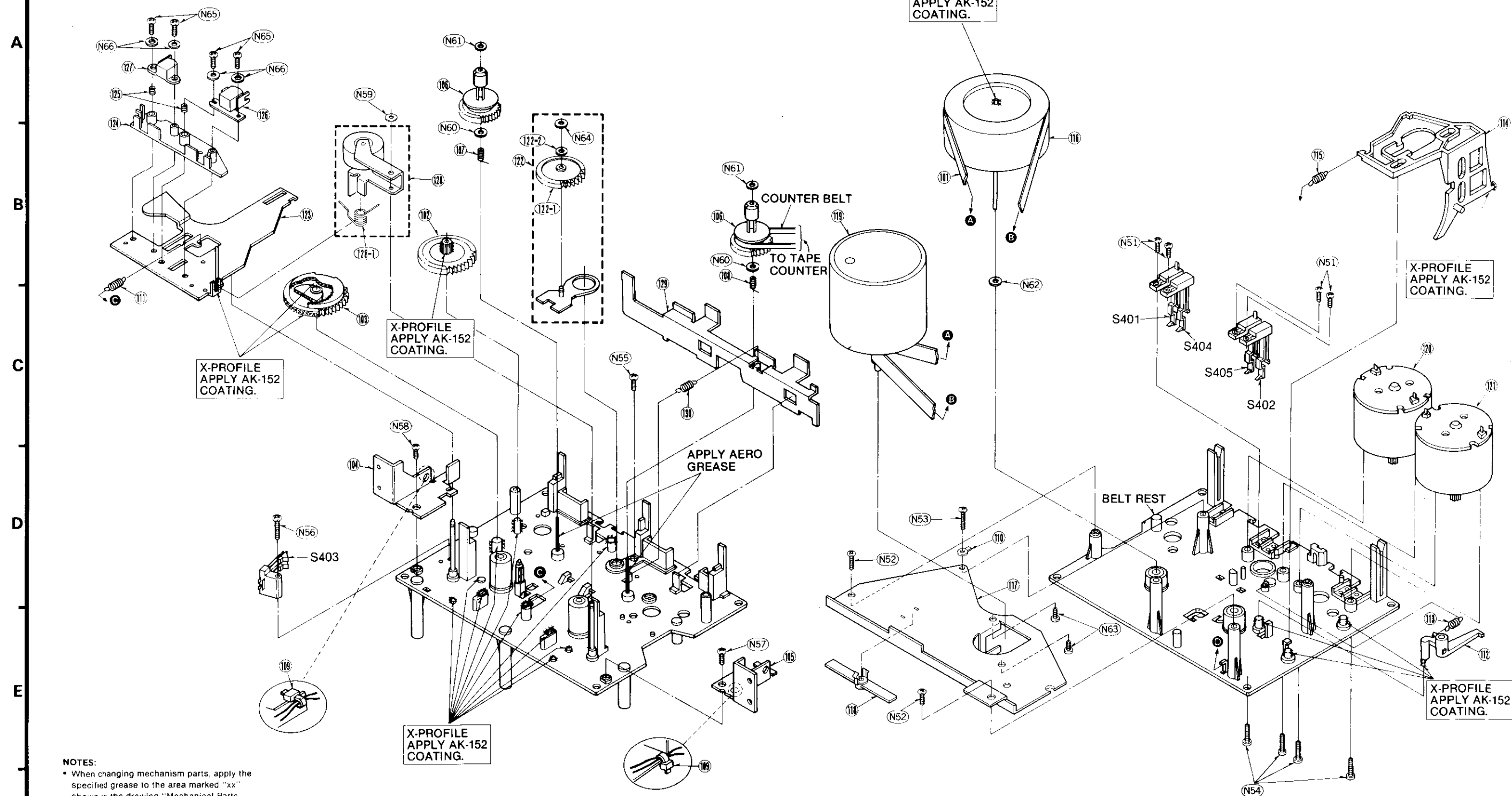
## TERMINATIONS

|                    |                                                                    |                                                                         |                      |        |
|--------------------|--------------------------------------------------------------------|-------------------------------------------------------------------------|----------------------|--------|
|                    |                                                                    |                                                                         |                      |        |
| IC1, 2, 7, 11, 502 | IC3, 4, 10                                                         | IC9                                                                     | IC201                | IC6, 8 |
|                    |                                                                    |                                                                         |                      |        |
| IC501              | Q1~6, 20, 21, 41, 42, 49~54, 56, 58~60, 62, 202, 204~206, 511, 512 | Q7~16, 24, 26, 27, 35~40, 43~46, 48, 57, 61, 63, 201, 203, 501~508, 513 | Q17~19, 55, 509, 510 |        |
|                    |                                                                    |                                                                         |                      |        |
| Q22, 23, 25        | D1, 8~14, 17, 21~25, 30~40, 42, 43, 202~204, 501, 502              | D2                                                                      | D3~7                 |        |
|                    |                                                                    |                                                                         |                      |        |
| D15, 16, 41, 201   | D301~303                                                           | L1, 2                                                                   | L3~6                 |        |
|                    |                                                                    |                                                                         |                      |        |
| T1                 | L7, 8                                                              | L10~14                                                                  | CN7                  |        |

## CONNECTORS

|     |     |     |     |     |
|-----|-----|-----|-----|-----|
|     |     |     |     |     |
| CN9 | CN3 | CN4 | CN8 | CN6 |
|     |     |     |     |     |
|     |     |     | CN5 | CN2 |

# MECHANICAL PARTS LOCATION



## NOTES:

- When changing mechanism parts, apply the specified grease to the area marked "xx" shown in the drawing "Mechanical Parts Location".
- (AK-152, AERO GREASE) The grease and/or oil shown in the parentheses function to prevent friction (lubrication).

## SPECIFICATIONS

|                                                            |                          |
|------------------------------------------------------------|--------------------------|
| Pressure of pressure roller                                | 400±50g                  |
| Takeup tension<br>* Use cassette torque meter.....QZZSRKCT | 50±10g-cm                |
| Wow and flutter; (JIS)<br>* Use test tape<br>.....QZZCWAT  | Less than<br>0.1% (WRMS) |

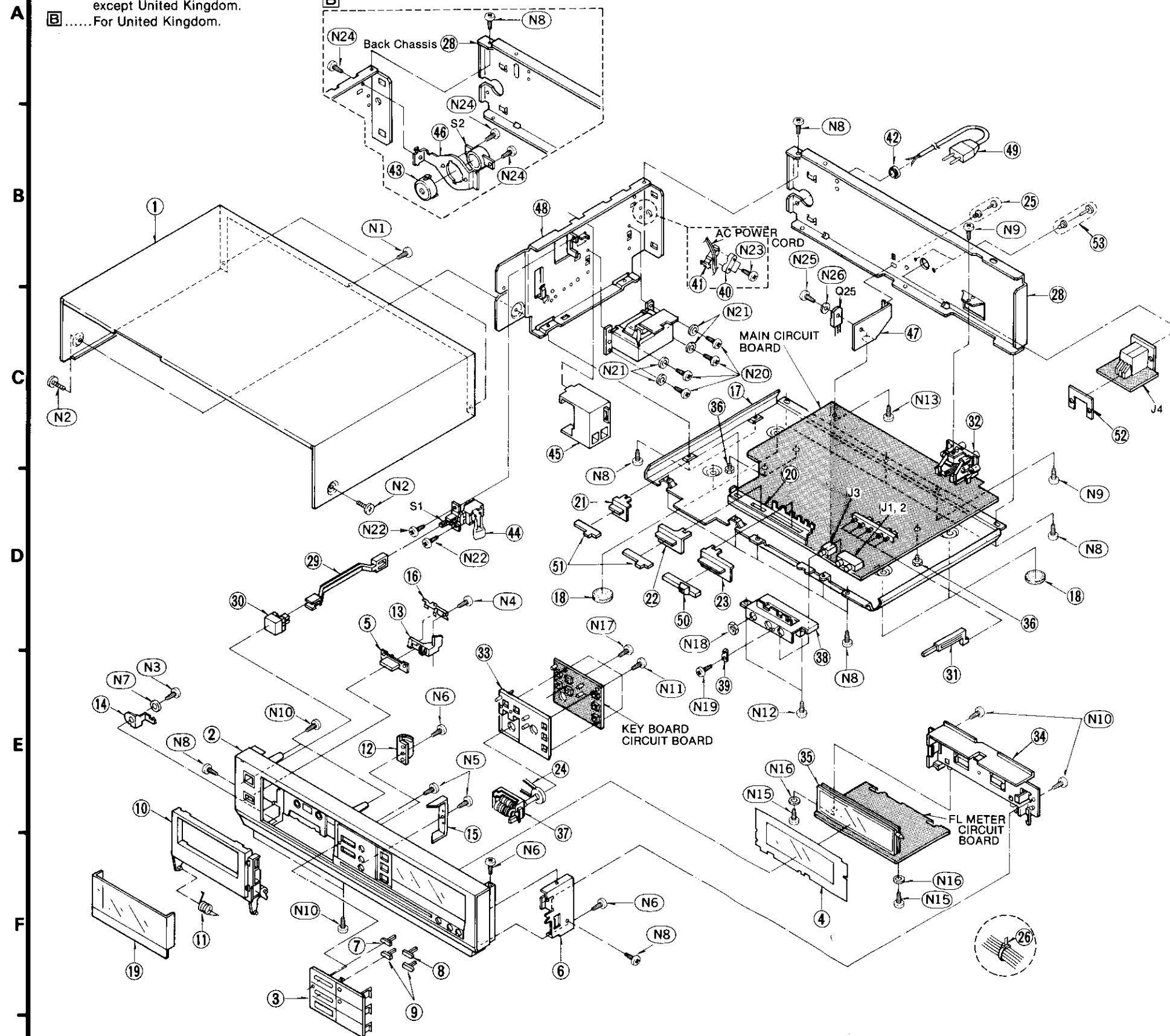
## REPLACEMENT PARTS LIST

| 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 |
|-------------------------|----------|-------------------------|----------|----------|-------------------------|----------|----------|--------------------------|----------|-----------|-------------------------|----------|----------|-------------------------|
| <b>MECHANICAL PARTS</b> |          |                         | 111      | QBT1742  | Head Base Plate Spring  | 122-1    | QDG1307  | Center Gear Spacer       | 130      | QBT2003EB | Eject Angle Spring      | N 59     | QBW2046  | Washer 3φ               |
| 101                     | QDB0333  | Flywheel Belt           | 112      | QML4026  | Stop Lever              | 122-2    | QBH0151  | Head Base Plate Assembly | N 60     | QBW2012   | Washer 2.1φ             | N 61     | QBW2008  | Washer 2φ               |
| 102                     | QDG1359  | Sub Gear Assembly       | 113      | QBT1962E | Stop Spring             | 123      | QXK2857  | Head Base Plate Assembly | N 62     | QBW2123   | Washer 2.5φ             | N 63     | XSN26+3  | Screw φ2.6×3            |
| 103                     | QDG1360  | Main Gear               | 114      | QMR2097  | Eject Rod               | 124      | QMZ1310  | Head Spacer              | N 64     | QBW2007   | Washer 2.5φ             | N 65     | XSN2DW14 | Screw φ2×14             |
| 104                     | QMA4628  | Mechanism Angle (L)     | 115      | QBT1947  | Eject Rod Spring        | 125      | QBC1103A | Head Spring              | N 51     | XTN2+8B   | Tapping Screw φ2×8      |          |          |                         |
| 105                     | QMA4627  | Mechanism Angle (R)     | 116      | QXF0245  | Flywheel Retainer       | 126      | QXV0188  | Head Assembly            | N 52     | XTN3+8B   | Tapping Screw φ3×8      |          |          |                         |
| 106                     | QDR1185  | Reel Table              | 117      | QMA4799  | Thrust Retainer         | 127      | QWY2138G | Erase Head               | N 53     | XTV3+22F  | Tapping Screw φ3×22     |          |          |                         |
| 107                     | QBC1449  | Reel Table Spring (L)   | 118      | QMZ1313  | Motor Assembly          | 128      | QXL1734  | Pinch Roller Arm (R)     | N 54     | XSN26+10  | Screw φ2.6×10           |          |          |                         |
| 108                     | QBC1450  | Reel Table Spring (R)   | 119      | QXU0364  | FF/REW Motor Assembly   | 128-1    | QBN2075  | Pinch Roller Spring      | N 55     | XTN3+6B   | Tapping Screw φ3×6      |          |          |                         |
| 109                     | QTD1315  | Cord Clamper            | 120      | QXU0332  | Center Gear Assembly    | 129      | QMA4620  | Eject Angle              | N 56     | XTN2+12B  | Tapping Screw φ2×12     |          |          |                         |
| 110                     | QJT0015  | Lug Terminal            | 121      | QXU0333  | Drive Motor Assembly    |          |          |                          | N 57     | XTN3+6B   | Tapping Screw φ3×6      |          |          |                         |
|                         |          |                         | 122      | QXG1076  | Center Gear Assembly    |          |          |                          | N 58     | QHQ1364   | Cup Screw               |          |          |                         |

# ■ CABINET PARTS LOCATION

## NOTES:

- .....For all European areas except United Kingdom.
- .....For United Kingdom.



## 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.

## Areas

- \*[D] For all European areas except United Kingdom.
- \*[B] For United Kingdom.

| Ref. No.                         | Part No.    | Part Name & Description    | Ref. No.                        | Part No.       | Part Name & Description |
|----------------------------------|-------------|----------------------------|---------------------------------|----------------|-------------------------|
| <b>CABINET AND CHASSIS PARTS</b> |             |                            |                                 |                |                         |
| 1                                | QGC1245     | Case Cover                 | 39                              | QJC0075        | Earth Plate (B)         |
| 1                                | QGC1245K    | Case Cover                 | 40                              | QTD1164        | Cord Bushing            |
| 2                                | QYP1302     | Front Panel Assembly       | 41                              | QTD1322        | Cord Clamper            |
| 2                                | QYP1302K    | Front Panel Assembly       | 42                              | QBJ1425        | Cord Bushing            |
| 3                                | QXB0829     | Operation Panel Assembly   | 43                              | [B] QTW00026   | Switch Cover (for S2)   |
| 3                                | QXB0829K    | Operation Panel Assembly   | 44                              | QTW1195        | Spark Killer Cover      |
| 4                                | QGL1203     | Meter Filter               | 45                              | QKJ0598        | Switch Cover            |
| 4                                | QGL1203Y    | Meter Filter               | 46                              | [B] QMA4603    | Switch Angle (for S2)   |
| 5                                | QGO2444     | Eject Button               | 47                              | QTH1178        | Heat Sink Plate         |
| 6                                | QMA4636     | Side Angle (R)             | 48                              | QMA4635B       | Side Angle (L)          |
| 7                                | QGO2440     | REC Button                 | 49                              | [D] Δ RJA23YAK | AC Power Cord           |
| 8                                | QGO2441     | REC Mute Button            | 49                              | [B] Δ RJA45YAK | AC Power Cord           |
| 9                                | QGO2442     | FF/REW Button              | 50                              | QGT1670        | Slide Knob (A)          |
| 10                               | QXA1479     | Cassette Holder Assembly   | 51                              | QGT1671        | Slide Knob (B)          |
| 10                               | QXA1479K    | Cassette Holder Assembly   | 52                              | QMA4645        | Remote Control Angle    |
| 11                               | QBN1961     | Holder Spring              | 53                              | QKJ0661        | Nylon Rivet             |
| 12                               | QYF0627A    | Damper Gear Assembly       | <b>SCREWS, NUTS AND WASHERS</b> |                |                         |
| 13                               | QML4063     | Eject Lever                | N 1                             | XTB3 + 8BFN    | Tapping Screw φ3×8      |
| 14                               | QMA4626     | Holder Angle (L)           | N 1                             | XTB3 + 8BFZ    | Tapping Screw φ3×8      |
| 15                               | QJC0074     | Earth Plate (A)            | N 2                             | QHQ1349        | Ornament Screw          |
| 16                               | QBP2007     | Leaf Spring                | N 2                             | QHQ1349K       | Ornament Screw          |
| 17                               | QGC1247     | Bottom Cover               | N 3                             | XTN3 + 8B      | Tapping Screw φ3×8      |
| 18                               | QKA1094     | Case Foot                  | N 4                             | XTN26 + 6B     | Tapping Screw φ2.6×6    |
| 19                               | QYF0718     | Cassette Lid Assembly      | N 5                             | XTN26 + 8B     | Tapping Screw φ2.6×8    |
| 19                               | QYF0718K    | Cassette Lid Assembly      | N 6                             | XTB3 + 10BFN   | Tapping Screw φ3×10     |
| 20                               | QGG0231     | Slide Guide                | N 7                             | XWG3           | Washer 3φ               |
| 20                               | QGG0231K    | Slide Guide                | N 8                             | XTB3 + 8BFN    | Tapping Screw φ3×8      |
| 21                               | QKJ0732     | Slide Knob (A)             | N 9                             | XTB3 + 12BFZ   | Tapping Screw φ3×12     |
| 22                               | QKJ0733     | Slide Knob (B)             | N 10                            | XTB3 + 10BFN   | Tapping Screw φ3×10     |
| 23                               | QKJ0734     | Slide Knob (C)             | N 11                            | XTB3 + 12BFN   | Tapping Screw φ3×12     |
| 24                               | QDB0169-1   | Counter Belt               | N 12                            | XTB3 + 8BFN    | Tapping Screw φ3×8      |
| 25                               | QKJ0609     | Nylon Rivet                | N 13                            | XSN3 + 6BVS    | Screw φ3×6              |
| 26                               | QTD1315     | Cord Clamper               | N 14                            | XTN26 + 8BFZ   | Tapping Screw φ2.6×8    |
| 27                               | Δ QJT1079   | Nylon Coupler              | N 15                            | XTN3 + 10B     | Tapping Screw φ3×10     |
| 28                               | [B] QMK2147 | Back Chassis               | N 16                            | XWG3           | Washer 3φ               |
| 28                               | [D] QMK2146 | Back Chassis               | N 17                            | XTN26 + 8B     | Tapping Screw φ2.6×8    |
| 29                               | QMR2059     | Power Switch Rod           | N 18                            | QNG1070        | Nut 12φ                 |
| 30                               | QGO2399     | Push Button (Power ON/OFF) | N 19                            | XTB3 + 8BFN    | Tapping Screw φ3×8      |
| 31                               | QGO2443     | Push Button (Operation)    | N 20                            | XSN3 + 6S      | Tapping Screw φ3×6      |
| 32                               | QEJ5030C    | Jack Board                 | N 21                            | XWG3           | Washer 3φ               |
| 33                               | QMK2144     | Operation Chassis          | N 22                            | XTN3 + 6B      | Tapping Screw φ3×6      |
| 34                               | QKJ0681     | Meter Holder               | N 23                            | XTV3 + 24B     | Tapping Screw φ3×24     |
| 35                               | QSFLO11F    | FL Meter                   | N 24                            | [B] XTB3 + 8B  | Tapping Screw φ3×8      |
| 36                               | QKJ0608     | Tapping Support            | N 25                            | XSN3 + 8S      | Screw φ3×8              |
| 37                               | QDC0176     | Tape Counter Assembly      | N 26                            | XWG3           | Washer 3φ               |
| 38                               | QMA4603     | Microphone Angle           | <b>ACCESSORY</b>                |                |                         |
|                                  |             |                            | A 1                             | QQT3626        | Instruction Book        |
| <b>PACKINGS</b>                  |             |                            |                                 |                |                         |
| P 1                              | QPN4604     | Inside Carton              |                                 |                |                         |
| P 2                              | QPA0701     | Cushion (A)                |                                 |                |                         |
| P 3                              | QPA0702     | Cushion (B)                |                                 |                |                         |
| P 4                              | QPS0434     | Pad                        |                                 |                |                         |
| P 5                              | QPA0712     | Spacer                     |                                 |                |                         |
| P 6                              | XZB40X60A02 | Poly Bag                   |                                 |                |                         |
| P 7                              | QPC0072     | Poly Sheet                 |                                 |                |                         |