RS-631 MECHANISM SERIES

Specifications (Catalog specifications for sales)

Power requirement: AC: 110/125/220/240 V, 50/60 Hz
Power consumption: 30 W (for European areas and Australia)
11 W (for PX and other area without European areas and Australia)
Motor: FG servo DC motor
Track system: 4-track 2-channel stereo recording and playback
Tape speed: 4.8 cm/s (1/7 8ips.)
Wow and flutter: 0.05% (WRMS), 0.15% (DIN)
Frequency response: CrO₂/FeCr tape; 25 ~ 16,000 Hz
30 ~ 15,000 Hz (DIN)
40 ~ 14,000 Hz ±3 dB
Normal tape: 25 ~ 14,000 Hz
30 ~ 13,000 Hz (DIN)
40 ~ 12,000 Hz ±3 dB
Signal-to-noise ratio: Dolby* NR in: 67 dB (above 5kHz)
Dolby NR out: 57 dB
Input: MIC: sensitivity 0.25 mV, input impedance 10 KΩ
applicable microphone impedance 400Ω ~ 20 KΩ
LINE: sensitivity 60 mV, input impedance 33 KΩ
Output: LINE: output level 420 mV, output impedance
1 KΩ or less, load impedance 47 KΩ over
HEADPHONE: output level 60 mV, load impedance 8Ω
Rec/pb connection: 5P DIN type; input sensitivity 0.26 mV, impedance
1.5 KΩ output level 420 mV, impedance 10 KΩ
Bias frequency: 83 KHz
Head: 2-head system
1-HPF head for record/playback
1-dual gap ferrite head for erasure
Dimensions: 43.0 cm(W) x 14.9 cm(H) x 26.7 cm(D)
[17"(W) x 5-7/8"(H) x 10-1/2"(D)]
for all of areas without PX
15.8 cm(H) x 46.6 cm(W) x 26.7 cm(D)
[6-1/2"(H) x 18-3/8"(W) x 10-1/2"(D)] for PX
Weight: 7.6 kg for European areas
7.8 kg (16 lbs 5 oz) for other area without European areas
9 kg (19 lbs 14 oz) for PX

Specifications are subject to change without notice.
"Dolby" and the double-D symbol are trademarks of Dolby Laboratories.
LOCATION OF CONTROLS
AND COMPONENTS

1. Power switch
2. Music selector
3. Headphones jack
4. Cassette compartment door
5. Tape counter and reset button
6. Memory indication lamp
7. Memory switch
8. Recording indication lamp
9. Fluorescent level meters
10. Meter brightness switch
11. Bias adjustment control
12. Pause button
13. Record button
14. Playback button
15. Rewind/review button
16. Fast forward/cue button
17. Stop button
18. Eject button
19. Timer stand-by button
20. Peak-signal-check switch
21. Dolby noise-reduction switch
22. Bias selector
23. Equalization selector
24. Output level control
25. Line input level controls
26. Microphone level controls
27. Microphone jacks
28. Line output jacks
29. Record/playback connection socket
30. Line input jacks

Fig. 1
DISASSEMBLY INSTRUCTIONS

Fig. 2
Fig. 3
Fig. 4

Fig. 5
Fig. 6
Fig. 7

Fig. 8
Fig. 9
Fig. 10

<table>
<thead>
<tr>
<th>Procedure</th>
<th>To remove</th>
<th>Remove</th>
<th>Shown in fig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Case cover</td>
<td>• 6 black screws (A)</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Bottom cover</td>
<td>• 6 screws (B)</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Front panel</td>
<td>• 4 lever knobs (C)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 3 control knobs (D)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cassette lid (E)</td>
<td>2, 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 3 red screws (F)</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Rear board</td>
<td>• 11 black screws (G)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 2 red screws (H)</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>Control button assembly and cassette holder</td>
<td>• Headphones jack cover (I)</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 4 red screws (J)</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Stop ring (K)</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Cassette holder spring (L)</td>
<td>7</td>
</tr>
<tr>
<td>6</td>
<td>Mechanism</td>
<td>• 2 headphones jack holding screw (M)</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• 6 red screws (N)</td>
<td>9</td>
</tr>
<tr>
<td>6</td>
<td>Main amplifier</td>
<td>• 10 red screws (O)</td>
<td>7, 10</td>
</tr>
</tbody>
</table>

* The head azimuth can be adjusted by removing the cassette lid (E) as shown in fig. 3.
TECHNICAL EXPLANATION FOR MUSIC SELECTOR CIRCUIT

The tune selector circuit serves to automatically find the starting point of the desired tune on the tape. When the music selector button is pressed during CUE or REVIEW operation, the first unrecorded portion of the tape is accurately detected and the playback of the selected tune is automatically started at the beginning of the music signal part.

Operation
1. Set the tune selector to ON.
2. Depress the PLAYBACK button and REVIEW/REWIND (or FF/CUE) button simultaneously.
3. When the tape reaches a portion where there is no signal, the REWIND/REVIEW (or FF/CUE) button is released and the tape is automatically played back.

Principle of operation
1. When CUE or REVIEW is operated, the signal from the pre-amplifier is applied to the base of TR501. (The signal is taken out as a monaural signal.)
2. The voltage is amplified by TR501, 502, 503.
3. The signal from the emitter of TR503 is rectified by D502 and D503.
4. Therefore, the voltage applied to the base of TR504 increases during presence of signal, and decreases during absence of signal.
5. TR504, 505 form the schmitt trigger circuit.
   1) TR504 and TR505
      TR504, 505 use R515 as their common emitter resistor.
   2) During presence of signal, the potential at ③ increases, therefore TR504 turns ON and TR505 turns OFF because of Low potential at ④, and the potential at ④ increases.
   3) During absence of signal, the potential at ③ decreases. When the potential at ③ becomes higher than that at ⑤, TR505 turns ON and TR504 turns OFF, and the potential at ④ decreases.
   4) Therefore, when the playback signal condition changes from presence to “absence” during CUE or REVIEW mode, the potential at ④ changes from “H” to “L”.
5. TR506, 507, 508 serve to control and drive the plunger.

When the potential at ④ is "High", the potential at ⑤ increases and TR506 turns ON, and the potential at ⑥ decreases. Therefore TR507 and TR508 turns OFF.

When the potential at ④ changes from "High" to "Low", the potential at ⑤ decreases and TR506 turns OFF and the potential at ⑥ increases. Then the charging of C509 is started. At that time, the potential at ⑦ also increases. Therefore, TR507 turns ON, followed by TR508, thus causing the plunger to be attracted.

The plunger is attracted only while C509 is being charged. When C509 has been completely charged, the potential at ⑦ decreases and the plunger will be released.
# MEASUREMENT AND ADJUSTMENT METHOD

**NOTE:**
1. Make sure heads are clean.
2. Make sure capstan and pressure roller are clean.
4. Dolby NR switch: OUT.
5. Bias selector: LOW
6. Equalizer selector: 120μS
7. Bias adjustment control: Center.
8. Peak check switch: OUT.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MEASUREMENT &amp; ADJUSTMENT</th>
<th>REMARKS</th>
</tr>
</thead>
</table>
| Pressure of pressure roller | 1. Place UNIT into playback mode  
2. Hook the tension gauge to pressure roller lever and pull it in the direction of the arrow as shown in fig. 12  
3. Measure the tension at the moment when the pressure roller moves away from the capstan.  

   **Standard value: 400±50 gr** | *Playback mode* |
| **Fig. 11** |  
| Takeup tension | 1. Mount cassette torque meter on UNIT.  
2. Place UNIT into playback mode and read takeup torque.  
3. Measure several times and determine the mean value.  

   **Standard value: 50±15 gr-cm** | *Playback mode* |
| **Fig. 12** |  
| Head azimuth adjustment | Record/playback head adjustment  
1. Test equipment connection is shown below.  

![Fig. 13](image)  

2. Play azimuth tape (QZZCFM 8kHz)  
3. Adjust record/playback head angle adjustment screw (B) in fig. 14 so that output level at LINE OUT becomes maximum  
4. Measure both channels, and adjust levels for equal output  
5. After adjustment lock head adjustment screw with lacquer  

| **Fig. 14** |  
| Tape speed | Tape speed accuracy  
1. Test equipment connection is shown below.  

![Fig. 15](image)  

| **Fig. 15** |  

<table>
<thead>
<tr>
<th>ITEM</th>
<th>MEASUREMENT &amp; ADJUSTMENT</th>
<th>REMARKS</th>
</tr>
</thead>
</table>
|                          | 2. Play test tape (QZZCWAT 3,000Hz), and supply playback signal to frequency counter.  
3. Measure this frequency.  
4. On the basis of 3,000Hz, determine value by following formula:  
   \[ \text{Tape speed accuracy} = \frac{f - 3,000}{3,000} \times 100 \, (\%) \]  
   where, \( f \) = measured value  
5. Take measurement at middle section of tape.  
   Standard value: ±1.5%  

Adjustment method  
1. Play the test tape (middle).  
2. Adjust VR201 so that frequency becomes 3,000Hz.  

Tape speed fluctuation  
Make measurements in same manner as above (beginning, middle and end of tape), and determine difference between maximum and minimum values and calculate as follows:  
\[ \text{Tape speed fluctuation} = \frac{f_1 - f_2}{3,000} \times 100 \, (\%) \]  
   \( f_1 \) = maximum value  
   \( f_2 \) = minimum value  
   Standard value: 1%  

Wow and flutter  
Equipment:  
   • Wow meter  
   • Test tape ... QZZCWAT  

1. Test equipment connection is shown below.  
![Diagram of equipment connections](image)  
2. Use wow test tape (3,000Hz) and measure its playback signal on wow meter.  
3. Wow and flutter is expressed in percentage and that measurement can be weighted by JIS network (WRMS).  
4. Measure at middle section of test tape.  
   Standard value: 0.1% (WRMS)  

Playback frequency response  
Equipment:  
   • VTVM  
   • Oscilloscope  
   • Test tape ... QZZCFM  

1. Test equipment connection is as same as "Head azimuth adjustment" but use the test tape instead of head azimuth tape (See fig. 17).  
2. Place UNIT into playback mode.  
3. Playback frequency response test tape.  
4. Measure output level at 8kHz, 4kHz, 1kHz, 315Hz, 250Hz, 125Hz, and 63Hz, and compare each output level with standard frequency 315Hz, at LINE OUT.  
5. Make measurement for both channels.  
6. Make sure that the measured value is within the range specified in the frequency response chart.  

   • Playback mode  
   • Output level control ... MAX
<table>
<thead>
<tr>
<th>ITEM</th>
<th>MEASUREMENT &amp; ADJUSTMENT</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Playback frequency response chart</strong></td>
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<tr>
<td></td>
<td><img src="chart.png" alt="Frequency Response Chart" /></td>
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</tr>
<tr>
<td></td>
<td><strong>Fig. 17</strong></td>
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<tr>
<td></td>
<td>Adjustment method</td>
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<tr>
<td></td>
<td>If the measured value is not standard, adjust VR1 (L-CH), VR2 (R-CH)</td>
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<td></td>
<td><strong>Playback gain</strong></td>
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<td></td>
<td>Equipment:</td>
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</tr>
<tr>
<td></td>
<td>- VTVM</td>
<td></td>
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<tr>
<td></td>
<td>- Oscilloscope</td>
<td></td>
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<tr>
<td></td>
<td>- Test tape: QZZCFM</td>
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<tr>
<td></td>
<td>1. Test equipment connection is shown in fig. 13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Play standard recording level portion on test tape (QZZCFM 315 Hz) and using VTVM measure the output level at LINE OUT jack</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Make measurement for both channels</td>
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<tr>
<td></td>
<td><strong>Standard value: 0.39V</strong></td>
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<tr>
<td></td>
<td><strong>Adjustment method</strong></td>
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</tr>
<tr>
<td></td>
<td>1. If measured value is not standard, adjust VR3 (L-CH), VR4 (R-CH) (See fig. 28 on page 12)</td>
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<td></td>
<td>2. After adjustment, check &quot;Playback frequency response&quot; again</td>
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<td></td>
<td><strong>Playback S/N ratio</strong></td>
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<td></td>
<td>Equipment:</td>
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<td></td>
<td>- VTVM</td>
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<td></td>
<td>- Oscilloscope</td>
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<tr>
<td></td>
<td>- Test tape: QZZCFM</td>
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<tr>
<td></td>
<td>- Empty cassette</td>
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<tr>
<td></td>
<td>1. Test equipment connection is shown in fig. 13</td>
<td></td>
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<tr>
<td></td>
<td>2. Play standard recording level test tape (QZZCFM 315 Hz) and read output level on VTVM</td>
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<tr>
<td></td>
<td>3. Refer to &quot;Playback gain adjustment&quot;</td>
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<tr>
<td></td>
<td>4. Place empty cassette (which has been cut) and playback again</td>
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<td></td>
<td>4. Measure noise level at this time using VTVM and determine ratio of this level to test tape output signal voltage (315 Hz)</td>
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<td></td>
<td><strong>Standard value: Greater than 43dB</strong></td>
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<td></td>
<td><strong>Bias leak</strong></td>
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<td></td>
<td>Equipment:</td>
<td></td>
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<tr>
<td></td>
<td>- VTVM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Oscilloscope</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. Test equipment connection is shown below</td>
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<td></td>
<td><img src="diagram.png" alt="Bias Leak Diagram" /></td>
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<tr>
<td></td>
<td><strong>Fig. 18</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Place UNIT into record mode</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Adjust trap coil L1 (L-CH), L2 (R-CH), so that measured value on VTVM becomes minimum</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Take adjustment for both channels</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Record mode</strong></td>
<td></td>
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<tr>
<td></td>
<td><img src="mode.png" alt="Record Mode" /></td>
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<tr>
<td>ITEM</td>
<td>MEASUREMENT &amp; ADJUSTMENT</td>
<td>REMARKS</td>
</tr>
<tr>
<td>------</td>
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</tr>
</tbody>
</table>
| Bias current | 1. Test equipment connection is shown below. | • Record mode  
When bias current is adjusted on one channel only, note that bias current on the other channel may vary. |
| Equipment: | • VTVM  
• Oscilloscope | ![Diagram](image) |
| | 2. Place UNIT into record mode, and bias selector to “LOW”.  
3. Read voltage on VTVM and calculate bias current by following formula:  
$$\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10 (\Omega)}$$ | ![Diagram](image) |
| | 4. Adjust VR15 (L-CH) and VR16 (R-CH) (See adjustment part location on page 12).  
5. Then, change bias selector to “HIGH” and measure bias current.  
6. If measured value is not within standard, adjust VR605. | Standard value:  
190μA (LOW position)  
195μA ± 20μA (MED position)  
255μA ± 30μA (HIGH position) |
| Erase current | 1. Test equipment connection is shown below. | • Record mode  
• Bias selector...LOW |
| Equipment: | • VTVM  
• Oscilloscope | ![Diagram](image) |
| | 2. Place UNIT into record mode and set the bias selector to LOW position.  
3. Read voltage on VTVM and calculate erase current by following formula:  
$$\text{Erase current (A)} = \frac{\text{Value read on VTVM (V)}}{1 (\Omega)}$$ | ![Diagram](image) |
| | Standard value:  
More than 40 mA (Normal)  
More than 45 mA (FeCr)  
More than 55 mA (C-O2) | ![Diagram](image) |
<table>
<thead>
<tr>
<th>ITEM</th>
<th>MEASUREMENT &amp; ADJUSTMENT</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall gain</td>
<td>1. Test equipment connection is shown in fig. 21.</td>
<td>- Record/playback mode &lt;br&gt; - LINE IN level control: MAX &lt;br&gt; - Output level control: MAX &lt;br&gt; - Standard input level: &lt;br&gt; MIC: -72 ± 3 dB &lt;br&gt; LINE IN: -24 ± 3 dB &lt;br&gt; DIN: -36 ± 3 dB &lt;br&gt; - Bias adjustment control: Center</td>
</tr>
<tr>
<td>Equipment:</td>
<td>- AF oscillator &lt;br&gt; - VTVM &lt;br&gt; - ATT &lt;br&gt; - Oscilloscope &lt;br&gt; - Test tape (reference blank tape) ...QZCRA for Normal</td>
<td></td>
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<tr>
<td></td>
<td>Fig. 21</td>
<td></td>
</tr>
<tr>
<td>2. Place UNIT into record mode, and equalizer selector to 120 μS, bias selector to LOW (for normal tape).</td>
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<tr>
<td>3. Supply 1 kHz signal (−24 dB) from AF oscillator, through ATT, to LINE IN.</td>
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</tr>
<tr>
<td>4. Adjust ATT until monitor level at LINE OUT becomes 0.39 V.</td>
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</tr>
<tr>
<td>5. Using test tape, make recording.</td>
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<tr>
<td>6. Playback recorded tape, and make sure the value at LINE OUT on VTVM becomes 0.39 V.</td>
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<tr>
<td>7. If measured value is not 0.39 V, adjust VR9 (L-CH), VR10 (R-CH) (See fig. 28 on page 12).</td>
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<tr>
<td>8. Repeat from step (2).</td>
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</tr>
<tr>
<td>Fluorescent meter</td>
<td>1. Test equipment connection is shown in fig. 21.</td>
<td>- Record mode</td>
</tr>
<tr>
<td>Equipment:</td>
<td>- VTVM &lt;br&gt; - AF oscillator &lt;br&gt; - ATT</td>
<td>- Mic level control: MIN. &lt;br&gt; - LINE IN level control: MAX.</td>
</tr>
<tr>
<td></td>
<td>Fig. 22</td>
<td>- Output level control: MAX.</td>
</tr>
<tr>
<td>2. Set the meter brightness switch to “BRIGHT” position.</td>
<td>- Tape selectors: normal position</td>
<td></td>
</tr>
<tr>
<td>3. Supply 1 kHz signal (−24 dB) to the LINE IN jack, then press the record button.</td>
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<tr>
<td>4. Adjust the ATT so that the output level at LINE OUT jack becomes 0.66 V (=standard input level).</td>
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</tr>
<tr>
<td>5. Adjustment at “0 dB”.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Adjust VR603 (L-CH) and VR604 (R-CH) so that the Fluorescent meters show an illuminated indication up to “0 dB” when the input signal level is 0.9 dB higher than the standard input level.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Then confirm that the Fluorescent meters show an illuminated indication up to “+1 dB” when the input signal level is 1.0 dB higher than the standard input level.</td>
<td></td>
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</tr>
<tr>
<td>6. Adjustment at “−20 dB”</td>
<td></td>
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<tr>
<td></td>
<td>Fig. 22-1</td>
<td></td>
</tr>
</tbody>
</table>
### Overall distortion

Equipment:
- Distortion meter
- AF oscillator
- ATT
- Oscilloscope
- Test tape (reference blank tape)
  - QZZCRA for Normal
  - QZZCRX for CrO₂

1. Test equipment connection is shown in Fig. 23.

2. Supply 1kHz signal to LINE IN and adjust ATT so that output level at LINE OUT indicates 0.39V.
3. Make recording.
4. Playback and measure distortion factor of output signal.
5. When the distortion factor does not satisfy the standard, check the bias current. When the bias current is lower than standard, distortion will increase.

Care should be exercised in the adjustment because the bias current also has an influence on the overall frequency response. Refer to "The overall frequency response" and "The bias current adjustment".

**Standard value:**
- Less than 2.5% (Normal)
- Less than 4.0% (CrO₂)

### Overall frequency response

Equipment:
- VTM
- AF oscillator
- ATT
- Test tape (reference blank tape)
  - QZZCRA for Normal
  - QZZCRX for CrO₂
  - QZZCRY for FeCr

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

1. Test equipment connection is shown in Fig. 21.
2. Load reference blank test tape and place UNIT into record mode.
3. Supply 1kHz signal from AF oscillator through ATT to LINE IN.
4. Adjust ATT so that input level is −20dB below standard recording level (standard recording level = 0VU).
5. At this time, LINE OUT level indicates 0.039V.
6. Record each frequency 50Hz, 100Hz, 200Hz, 1kHz, 2kHz, 4kHz, and 10kHz (12kHz for CrO₂ tape) at the same level.
7. Playback and express in dB the difference between playback output level of each frequency based on playback output level of 1kHz.
8. Make sure that the measured value is within the range specified in the overall frequency response chart.

**Overall frequency response chart (Normal)**

![Diagram](Fig. 24)
<table>
<thead>
<tr>
<th>ITEM</th>
<th>MEASUREMENT &amp; ADJUSTMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.</td>
<td>Set the bias selector to CrO₂ position.</td>
</tr>
<tr>
<td>10.</td>
<td>Measure as same as manner above.</td>
</tr>
<tr>
<td>11.</td>
<td>Make sure that the measured value is within the range specified in the overall frequency response chart for CrO₂ tape below.</td>
</tr>
</tbody>
</table>

![Overall frequency response chart (CrO₂, FeCr)](image)

**Fig. 25**

**Overall frequency response adjustment**  
(As a standard for adjustment)

**Adjustment 1 — Using bias current**

1. When the frequency response between the middle- and high-frequency range becomes higher than the standard value, as shown by the solid line in fig. 26, increase the bias current by turning VR15 (L-CH), VR16 (R-CH) for normal tape and VR605 for CrO₂ tape.

2. When it becomes lower, as shown by dotted line, reduce the bias current by turning VR15 (L-CH), VR16 (R-CH) for normal tape and VR605 for CrO₂ tape.

**Note:**

1. For adjustment when the bias current is lower than the standard value use the procedure indicated in adjustment 2, because reducing the bias current beyond this point may worsen the distortion factor.

2. For the method of bias current measurement, refer to "Bias current adjustment" on page 6.

![Bias current adjustment](image)

**Fig. 26**

**Adjustment 2 — Using the peaking coil for recording equalization**

When the frequency response is flat in the middle-frequency range and makes a sharp rise or drop in the high-frequency range, as shown in fig. 27, adjust by turning the peaking coil L3 (L-CH), L4 (R-CH) for normal tape recording equalization.

![Peaking coil for recording equalization](image)

**Fig. 27**

**Dolby NR circuit**

**Equipment:**
- VTVM
- AF oscillator
- ATT
- Oscilloscope

1. Place UNIT into record mode, set the Dolby NR switch to OUT position and supply to LINE IN to obtain $-34.5\, \text{dB}$ at TP3 (L-CH), TP4 (R-CH) (frequency 5kHz).

2. Confirm that the value at IN position is $8\pm2.5\, \text{dB}$ greater than the value at OUT position of Dolby NR switch.

**Remarks:**
- Record mode
- LINE IN level control
- MAX
### Measurement & Adjustment

**Item**
- Overall S/N ratio
- Equipment: VFM, AF oscillator, ATT, Oscilloscope, Test tape (reference blank tape)
- Standard value: Greater than 43 dB (without NAB filter)

**Remarks**
1. Test equipment connection is shown in fig. 21.
2. Supply 1 kHz signal to LINE IN and adjust ATT so that output level at LINE OUT indicates 0.1 dB.
3. Make recording.
4. Make another recording without supplying signal (disconnect input plug to LINE IN).
5. Rewind to recorded part and playback.
6. Measure output signal level and no signal level (noise), and determine the ratio in decibels (dB).
7. The value is difference between 'Playback S/N and overall S/N', but for decibel calculation refer to 'Playback S/N measurement' on page 5.

### Adjustment Parts Location

<table>
<thead>
<tr>
<th>PART LOCATION</th>
<th>PARTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP203</td>
<td>L3</td>
</tr>
<tr>
<td>TP202</td>
<td>VR9, VR10, VR15, VR16, TP6, TP5</td>
</tr>
<tr>
<td>VR4</td>
<td>TP4, TP2, TP1, VR1, VR605, VR603, VR602, VR601</td>
</tr>
<tr>
<td>VR2</td>
<td>VR2, L2, TP7, L1, TP1, TP1</td>
</tr>
<tr>
<td>VR1</td>
<td>VR201</td>
</tr>
</tbody>
</table>

**Electrical Parts Location**

- For PX and other areas without European.

**Part No.**
- E1: W1010
- E2: W1010
- E3: W1010
- E4: W1010
- E5: W1010
- E6: W1010
- E7: W1010
- E8: W1010
- E9: W1010
- E10: W1010

**Part Name & Description**
- Power Switch Button (Power Switch)
- Filter Cap (Filter Cap)
- Fuse Holder (Fuse Holder)
- Switch Cover (Switch Cover)
- Fuse (Fuse)
- Motor Housing Cap (Motor Housing Cap)
- Motor Housing (Motor Housing)
- Control (Control)
- Base (Base)

**How to Install the Record-Muting Switch**

1. Look the record button, and then mount it with screw (B) so that the cap and micro switch (A) do not contact each other.
2. Then play the music tape. During the playback, press the record button lightly several times, confirm whether the playback sound is interrupted or not.
NOTE:
The circuit shown in red on the conductor is B circuit.
Values indicated in... are DC voltages between the
chassis and electrical parts.