KEY TO ILLUSTRATIONS

1. HEADPHONE JACK
2. AUTO-REWIND SWITCH
3. TIMER SWITCH
4. POWER (MAINS) SWITCH
5. MONITOR INDICATOR
6. COUNTER RESET BUTTON
7. VU METER (LEFT)
8. PEAK INDICATORS
9. VU METER (RIGHT)
10. RECORDING LEVEL CONTROLS
11. INPUT SELECTOR
12. MICROPHONE JACK (RIGHT)
13. MICROPHONE JACK (L/mo)
14. OUTPUT LEVEL CONTROL
15. MONITOR SWITCH
16. DOLBY NR SWITCH
17. REC CALIBRATION KNOB
18. TAPE SELECT SWITCH
19. BIAS FINE ADJUSTMENT KNOB
20. TAPE COUNTER
21. EJECT BUTTON
22. REC MUTE BUTTON
23. PAUSE INDICATOR
24. PAUSE BUTTON
25. RECORD BUTTON
26. RECORD INDICATOR
27. STOP BUTTON
28. FAST FORWARD BUTTON
29. PLAYBACK BUTTON
30. REWIND BUTTON
31. PLAYBACK INDICATOR

SAFETY PRECAUTION

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety related characteristics, always use genuine Hitachi's replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers. Critical parts are marked with △ in the schematic diagram and circuit board diagram.

2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.

Note:

W.........General Area
FS........Switzerland and Scandinavia
BS.........Great Britain
AU.........Australia
C...........Canada
U............USA

STEREO CASSETTE TAPE DECK

November 1979
# SPECIFICATIONS

**Semi-conductors:**
- IC's: 5
- Transistors: 43 (For U, C), 45 (For W, BS, FS, AU)
- Diodes: 38 (For U, C), 40 (For W, BS, FS, AU)
- LED's: 10

**Track System:**
- 4 track 2 channel

**Tape:**
- Cassette tape (C-30, 60, 90)

**Tape Speed:**
- 4.75cm/s

**Recording System and Bias Frequency:**
- AC bias, 85 kHz

**Erasing System:**
- AC erase

**Erase Ratio:**
- 65 dB or more (at 1 kHz)

**Frequency Response:**
- UD-ER (Normal):
  - 20 Hz to 18 kHz
  - 30 Hz to 17 kHz (±3 dB)
  - 30 Hz to 17 kHz
- UD-EX (CrO₂):
  - 20 Hz to 20 kHz
  - 30 Hz to 18 kHz (±3 dB)
  - 30 Hz to 18 kHz
- FeCr:
  - 20 Hz to 18 kHz
  - 30 Hz to 17 kHz (±3 dB)
  - 30 Hz to 17 kHz
- METAL:
  - 20 Hz to 21 kHz
  - 30 Hz to 19 kHz (±3 dB)
  - 30 Hz to 19 kHz

**S/N (Signal to Noise Ratio):**
- Dolby NR OFF: 60 dB (A weighted, Reference 3% T.H.D. metal Tape)
- Dolby NR ON: 68 dB (A weighted, Reference 3% T.H.D. metal Tape)

**Wow and Flutter:**
- 0.04% (WRMS)
- 0.13%*

**Input Sensitivity and Impedance:**
- Microphone: 0.3mV, 300 ohms to 5 kohms
- Line in: 60mV, 50 kohms or more
- DIN (Record/Playback): 0.3mV, 5 kohms (For W, BS, FS, AU)

**Output Level:**
- 500mV or more

**Output Load Impedance:**
- Line out: 50 kohms or more
- DIN (Record/Playback): 470 kohms or more (For W, BS, FS, AU)
- Headphone: 8 ohms to 2 kohms

**Distortion:**
- Less than 1.2% (1 kHz, 0VU)

**Cross Talk:**
- Between tracks: 60 dB or more (at 1 kHz)
- Between channels: 30 dB or more (at 1 kHz)

**Power Supply:**
- AC 220V, 50 Hz (For FS)
- AC 120V, 60 Hz (For U, C)
- AC 240V, 50 Hz (For BS, AU)
- AC 100 to 110V/115 to 127V/200 to 220V/230 to 250V, 50/60 Hz (For W)
- 25W

**Power Consumption:**
- 110(H)×435(W)×267(D)mm

**Weight:**
- 7.0kg

**Motor:** Electronically controled DC motor

**Heads:**
- Record/Playback head ×1
- Erase head ×1

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* According to DIN 45 500

Specifications and Schematic diagram are subject to change for performance improvement without notice.
1. Cassette lid

2. Top cover
   1) 6 screws

3. Front panel
   1) Remove the cassette lid (See item 1)
   2) Remove the top cover (See item 2)
   3) (2-1) 3 screws
   4) (2-2) 3 screws

4. Chassis
   1) Remove the front panel
   2) (3) 2 screws
   3) (4) 2 screws
   (See item 3)

5. Bottom cover
   1) (5-1) 4 screws
   2) (5-2) 1 screw

6. Main PC board
   1) Remove the chassis assembly (See item 4)
   2) (6) 1 screw
   3) 1 stopper
7. Cassette chassis
   1) Remove the chassis assembly (See item 4)
   2) (5—2) 1 screw (See item 5)
   3) 3 screws

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ADJUSTMENT

Perform the following adjustments in the sequence stated after cleaning the head, pressure roller, and capstan with a head cleaning stick moistened in alcohol. Also, unless specially indicated otherwise, set the switches and controls to the positions indicated in the table.

<table>
<thead>
<tr>
<th>Symbol No.</th>
<th>Switches and Control</th>
<th>Position</th>
<th>Symbol No.</th>
<th>Switches and Control</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>S 1</td>
<td>Tape monitor switch</td>
<td>TAPE</td>
<td>S18</td>
<td>Power switch</td>
<td>ON</td>
</tr>
<tr>
<td>S 2</td>
<td>Tape select switch</td>
<td>UD-ER</td>
<td>RV1L, R</td>
<td>Record level controls</td>
<td>MAX</td>
</tr>
<tr>
<td>S 3</td>
<td>Input select switch</td>
<td>LINE</td>
<td>RV2L, R</td>
<td>Output level control</td>
<td>MAX</td>
</tr>
<tr>
<td>S 5</td>
<td>Dolby NR switch</td>
<td>OFF</td>
<td>RV3L, R</td>
<td>Rec calibration controls</td>
<td>CENTRE</td>
</tr>
<tr>
<td>S 9</td>
<td>Timer switch</td>
<td>OFF</td>
<td>RV4</td>
<td>Bias fine controls</td>
<td>CENTRE</td>
</tr>
<tr>
<td>S10</td>
<td>Auto rewind switch</td>
<td>OFF</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

1. Tape speed adjustment
   Setting: Playback mode
   Connection:

   ![Diagram](image)

   **Adjustment:** Warm up the unit for approximately 20 minutes; then playback test tape MTT-111, 3000 Hz (3150 Hz*) and measure the speed deviation with a frequency counter. If required, adjust the semi-variable resistor on the motor for a reading of 3000 Hz ±30 Hz (3150 Hz*). Carry out the measurement at the middle of the tape.

   * According to DIN 45 500.
2. Head azimuth adjustment

1) Rough adjustment
   
   **Setting:** Playback mode
   
   **Connection:**

   ![Diagram of Head Azimuth Adjustment](image)

   **Adjustment:**
   
   Use the HITACHI head adjusting jig and instructions. (Consult nearest HITACHI office.)
   
   To obtain the correct head height, tilt and azimuth. This adjustment has to be done alternately. Then, use test tape (Azimuth adjusting tape) to adjust the azimuth of Record/Playback head by means of the adjusting screw “a” for maximum output.

2) Fine adjustment
   
   **Setting:** Playback mode
   
   **Connection:**

   ![Diagram of Fine Azimuth Adjustment](image)

   **Adjustment:**
   
   Adjust the head azimuth screw “a” so that the phase difference between both channels is within 10% at 10 kHz when the test tape (Azimuth adjusting tape) is played back.

3. Playback output and VU meter adjustment
   
   **Setting:** Playback mode
   
   **Connection:**

   ![Diagram of VU Meter Adjustment](image)

   **Adjustment:** Playback a Dolby calibration tape (MTT-150, 400 Hz 20m Maxwell) and adjust RT1L, R so that the voltage of Line out jack becomes 0 dBm (0.775V).
   
   Then, adjust RT2L, R so that the meter indicators deflect to the Dolby marks (0%).
4. Bias trap adjustment
   Setting: Recording mode
   Connection:

   Adjustment: Connect a VTVM between TP1L, R and ground and adjust T2 so that the voltage becomes minimum.

5. Bias current, record level adjustment
   Setting: Recording/Playback mode
   • Dolby NR switch: ON
   Connection:

   Adjustment:
   1) Use HITACHI UD-ER C-90 tape.
   2) Set the monitor switch to the SOURCE position and feed 1 kHz signal into LINE IN and adjust the attenuator of the signal generator so that the VU meters of the set indicate 0VU.
      Then, set the monitor switch to TAPE position and adjust RT4L, R so that the VU meters indicate 0VU±0.3VU. (This indication is the standard recording level: AdB)
   3) Next, record 1 kHz and 13 kHz signals at the level of AdB—20dB. Playback the recorded tape and adjust RT3L, R for an output difference within ±1.0 dB.
ADJUSTMENT PARTS LOCATION

LUBRICATION
Lubricate one or two drops of machine oil to rotating point or lubricate grease to sliding point. Lubricate the respective parts listed below once every 1000 hours or once a year under normal conditions of use. Avoid oiling them excessively, or rotation may become irregular because of oil splashes.

<table>
<thead>
<tr>
<th>Lubrication</th>
<th>Oil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor shaft bearing</td>
<td></td>
</tr>
<tr>
<td>Capstan shaft bearing</td>
<td></td>
</tr>
<tr>
<td>Pressure roller bearing</td>
<td></td>
</tr>
</tbody>
</table>

Inspection of mechanism

<table>
<thead>
<tr>
<th>Check item</th>
<th>Reference value</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pressure of pressure roller</td>
<td>$P_1 : 350\pm 50 \text{ gr}$</td>
<td>Note 1</td>
</tr>
<tr>
<td></td>
<td>$P_2 : 195\pm 28 \text{ gr}$</td>
<td></td>
</tr>
<tr>
<td>2. Pressure of take-up roller</td>
<td>200 to 250 gr</td>
<td>Note 2</td>
</tr>
<tr>
<td>3. Turntable torque</td>
<td>FF</td>
<td>Note 3</td>
</tr>
<tr>
<td></td>
<td>Rewind</td>
<td></td>
</tr>
<tr>
<td>4. Torque</td>
<td>Take-up</td>
<td>Measure in Playback mode</td>
</tr>
<tr>
<td></td>
<td>35 to 65 gr-cm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FF</td>
<td>Measure in Fast Forward mode</td>
</tr>
<tr>
<td></td>
<td>75 to 120 gr-cm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rewind</td>
<td>Measure in Rewind mode</td>
</tr>
<tr>
<td></td>
<td>75 to 120 gr-cm</td>
<td></td>
</tr>
<tr>
<td>5. Back tension</td>
<td>Take-up side</td>
<td>Less than 6 gr-cm</td>
</tr>
<tr>
<td></td>
<td>Supply side</td>
<td>1 to 3 gr-cm</td>
</tr>
<tr>
<td>6. Brake torque</td>
<td>More than 15 gr-cm</td>
<td></td>
</tr>
<tr>
<td>7. Flywheel thrust gap</td>
<td>0.05 to 0.5 mm</td>
<td></td>
</tr>
</tbody>
</table>
Installation adjustment of head plate solenoid

As shown in Fig. D, push up the head plate fully in the direction of arrow A. Push up the head plate solenoid fully in the direction of arrow B while pulling the iron core of the head plate solenoid and fix it using 2 adjusting screws.
CIRCUIT BOARD DIAGRAM

Note
1. Voltage measured at home of chassis with minimum volume control and no signal.
2. Nomenclature of Resistors and Capacitors

<table>
<thead>
<tr>
<th>Value</th>
<th>Tolerance</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>10K</td>
<td>±1%</td>
</tr>
<tr>
<td>C1</td>
<td>10uF</td>
<td>±5%</td>
</tr>
</tbody>
</table>

3. Be sure to make your order of resistors and capacitors with value, voltage, temperature and type.
4. When replacing capacitors marked with X, use specified ones stated on parts list since required temperature characteristics.

Note (For W, FS, BS, AU)

Using the DIN jack of this unit, monitoring the SOURCE sound is not possible with the TAPE switch set to SOURCE (in all modes—STOP, PLAY, REC). Monitoring the sound immediately after it has been recorded is also not possible. (Monitoring is not possible during recording with the TAPE switch set to either TAPE or SOURCE.) When the user wants to perform SOURCE MONITOR, change as shown below.

Details of the change
1) Connect the emitter and collector (between (d) and (g) shown in the diagram on the left) of Q56 (2SC1449) to the pattern.
2) When the above change is made, oscillations may occur depending on the equipment connected (Amplifier, speaker, etc.); rubber casing...
<table>
<thead>
<tr>
<th>Type of head</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Pan head screw</td>
</tr>
<tr>
<td>F</td>
<td>Flat countersunk head screw</td>
</tr>
<tr>
<td>B</td>
<td>Binding head screw</td>
</tr>
<tr>
<td>T</td>
<td>Round head tapping screw</td>
</tr>
<tr>
<td>BY</td>
<td>Binding head tapping screw</td>
</tr>
<tr>
<td>BL</td>
<td>Bolt</td>
</tr>
<tr>
<td>W</td>
<td>Washer</td>
</tr>
<tr>
<td>E</td>
<td>&quot;E&quot; ring</td>
</tr>
<tr>
<td>Length (L mm)</td>
<td></td>
</tr>
<tr>
<td>Diameter (D mm)</td>
<td></td>
</tr>
</tbody>
</table>

When ordering hardware excluding stated on these lists, be sure to make your orders with type and size.

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**FOR CANADA**

**CAUTION AGAINST FUSE REPLACEMENT**

For continued protection against fire hazard, replace only with same type and same rating fuse in accordance with the fuse symbol label.

The following is indication of the fuse symbol label which is affixed adjacent to the fuse in the equipment.

*Example*

- 1.25A 1250V 1A
- 0.8A 1250V 1A

This symbol indicates Fast Operating Type 1.25A, 250V Fuse.

This symbol indicates Fast Operating Type 0.8A, 250V Fuse.
HITACHI SALES CORPORATION OF AMERICA
Eastern Regional Office
1200 Wall Street West, Lyndhurst, New Jersey 07071
Tel. 201-935-8980

Mid-Western Regional Office
1400 Morse Ave., Elk Grove Village, Ill. 60007
Tel. 312-593-1559

Southern Regional Office
510 Plaza Drive College Park, Georgia 30349
Tel. 404-763-0360

Western Regional Office
401 West Artesia Boulevard, Compton, California 90220
Tel. 213-537-8383

HITACHI SALES CORPORATION OF HAWAII, INC
743-G Waiakamilo Rd., Honolulu, Hawaii 96817
Tel. 808-841-0431

HITACHI SALES CORP. OF CANADA Ltd.
3300 Trans Canada Highway Pointe Claire, Quebec, H9R1B1, Canada
Tel. 514-697-9150

HITACHI SALES EUROPA GmbH
2 Hamburg 54, Kleine Bahnstraße 8, West Germany
Tel. 850 60 71-75

HITACHI SALES (U.K.) Ltd.
Hitachi House, Station Road, Hayes, Middlesex UB3 4DR, England
Tel. 01-848-8787 (Service Centre: 01-848-3551)

HITACHI SALES SCANDINAVIA AB
Rissneleden 8, Sundbyberg, Box 7138, S-172-07 Sundbyberg 7,
Sweden
Tel. 08-98 52 80

HITACHI SALES NORWAY A/S
Orebeerke 1620 Gressvik P.O. Box 46 N-1601 Fredrikstad, Norway
Tel. 039-28050

SUOMEN HITACHI OY
Box 151, SF-15100 Lahti 10, Finland
Tel. Lahti 44 241

HITACHI SALES A/S
Kudysan 13, DK-2630 Taastrup, Denmark
Tel. 02-999200

HITACHI SALES A.G.
5600 Lenzburg, Switzerland
Tel. 064-513621

HITACHI-FRANCE (Radio-Télévision Electro-Ménager) S.A.
9, Boulevard Ney 75018, Paris, France
Tel. 201-25-00

HITACHI SALES WARENHANDELS GMBH
A-1180/Wien, Kreuzgasse 27
Tel. (0043222) 439367/8

HITACHI SALES AUSTRALIA Pty Ltd.
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Tel. 95-8722

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