ORDER NO. ARD-8006057C

Service Manual

Cassette Deck

RS-M5

(Silver Face)

Metal-Tape Compatible Stereo Cassette Deck
with Dolby NR and Full Auto-Stop

DOLBY SYSTEM

RS-631 MECHANISM SERIES

Specifications

Power requirements:	AC; 120V, 50-60Hz
Power consumption:	10 W
Motor:	Electronic control DC motor
Track system:	4-track 2-channel stereo recording and playback
Tape speed:	4.8cm/s (1-7/8ips)
Wow and flutter:	0.07% (WRMS)
Frequency response:	Metal tape; 20—17,000Hz CrO_2 tape; 20—16,000Hz Normal tape; 20—15,000Hz
Signal-to-noise ratio:	Dolby* NR in; 66dB (above 5kHz) Dolby NR out; 56dB (signal level=max. recording level, CrO_2 type tape)
Fast forward and rewind time:	Approx. 86 seconds with C-60 cassette tape
Inputs:	MIC; sensitivity 0.25mV, input impedance 10kΩ over applicable microphone impedance 400Ω—10kΩ LINE; sensitivity 60mV, input impedance 47kΩ
Outputs:	LINE; output level 420mV, output impedance 1.4kΩ or less, load impedance 22kΩ over HEADPHONE; output level 60mV, load impedance 8Ω
Bias frequency:	80kHz
Heads:	2-head system; 1-MX head for record/playback 1-double-gap ferrite head for erasure
Dimensions:	41.0cm(W)×14.2cm(H)×20.5cm(D) [16-1/8"(W)×5-9/16"(H)×8-1/16"(D)]
Weight:	4.0kg (8 lbs. 13oz)

Specifications are subject to change without notice.

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

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LOCATION OF CONTROLS AND COMPONENTS

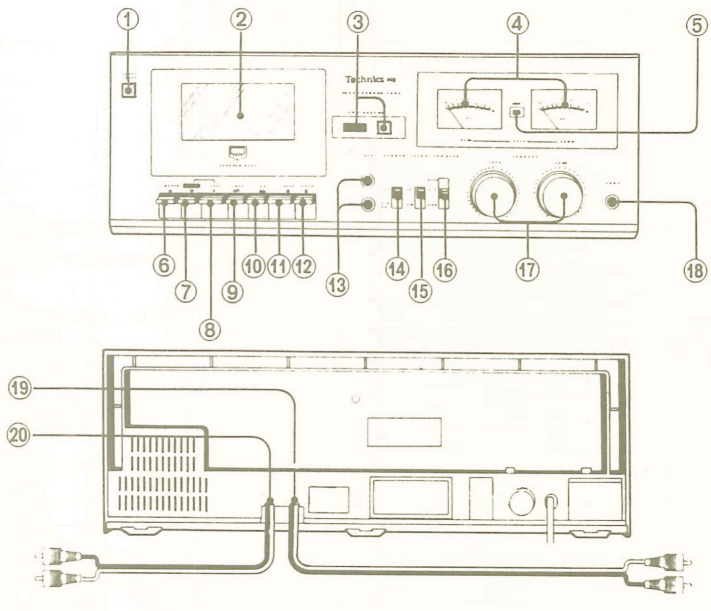


Fig. 1

① **Power switch** (power)
② **Cassette holder**
③ **Tape counter and Reset button** (tape counter)
④ **VU meters** (left-level-right)
⑤ **Recording indication lamp** (rec)
⑥ **Pause button** (pause) (❚❚)
⑦ **Record button** (record) (○)
⑧ **Play button** (play) (▶)
⑨ **Rewind button** (rew) (◀◀)
⑩ **Fast forward button** (ff) (▶▶)
⑪ **Stop button** (stop) (■)
⑫ **Eject button** (eject) (▲)
⑬ **Microphone jacks** (mic) (left/right)
⑭ **Input selector** (input select)
⑮ **Dolby noise-reduction switch** (Dolby NR)
⑯ **Tape selector** (tape select)
⑰ **Input level controls** (left/input level/right)
⑱ **Headphones jack** (phones)
⑲ **Line input cord** (LINE IN)
⑳ **Line output cord** (LINE OUT)

DISASSEMBLY INSTRUCTIONS

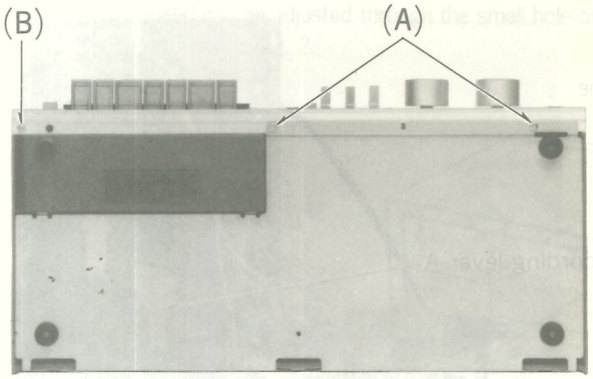


Fig. 2

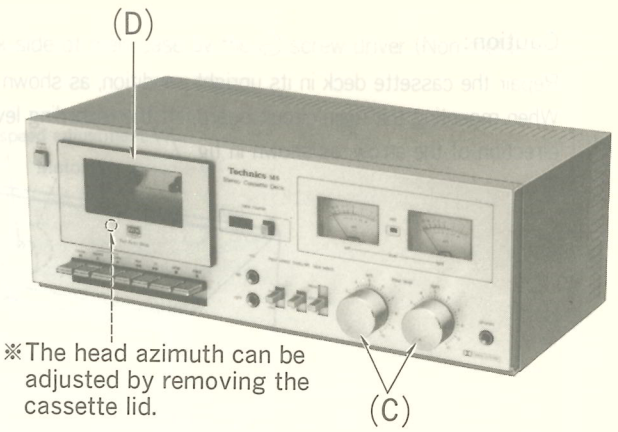


Fig. 3

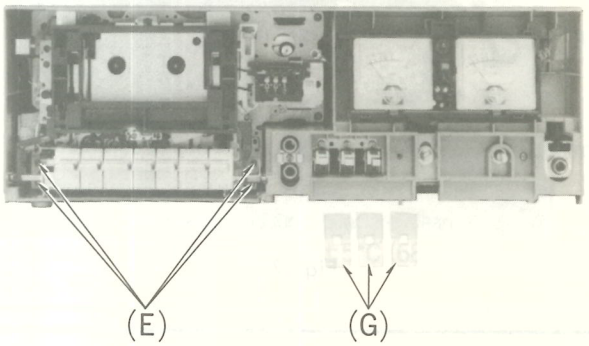


Fig. 4

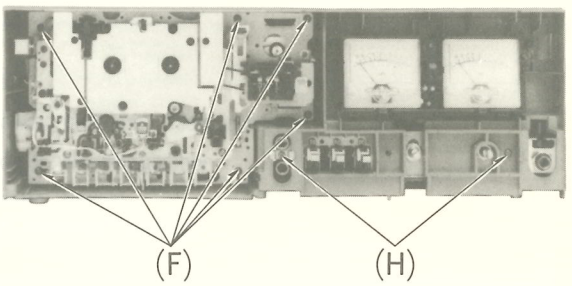


Fig. 5

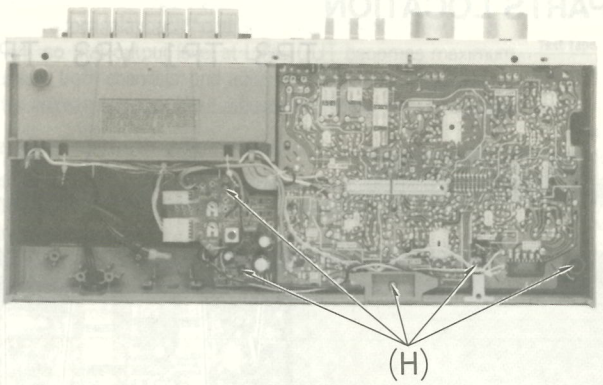


Fig. 6

Ref. No.	Procedure	To remove ——.	Remove ——.	Shown in fig. ——.
1	1	Bottom cover	• 2 screws ····· (A)	2
2	1→2	Front panel	• 1 screw ····· (B) • 2 control knobs ····· (C) • Cassette lid ····· (D)	2 3 3
3	1→2→3	Operation button assembly and cassette holder	• 4 red screws ····· (E)	4
4	1→2→3→4	Mechanism unit	• 6 red screws ····· (F)	5
5	1→2→5	Main circuit board and oscillation circuit board	• 3 switch shelters ····· (G) • 7 screws ····· (H)	4 5, 6

ASSEMBLY INSTRUCTIONS

Caution:

Repair the cassette deck in its upright condition, as shown in fig. 7. When mounting the main circuit board, lift the recording lever-A in the direction of the arrow, as shown in fig. 7.

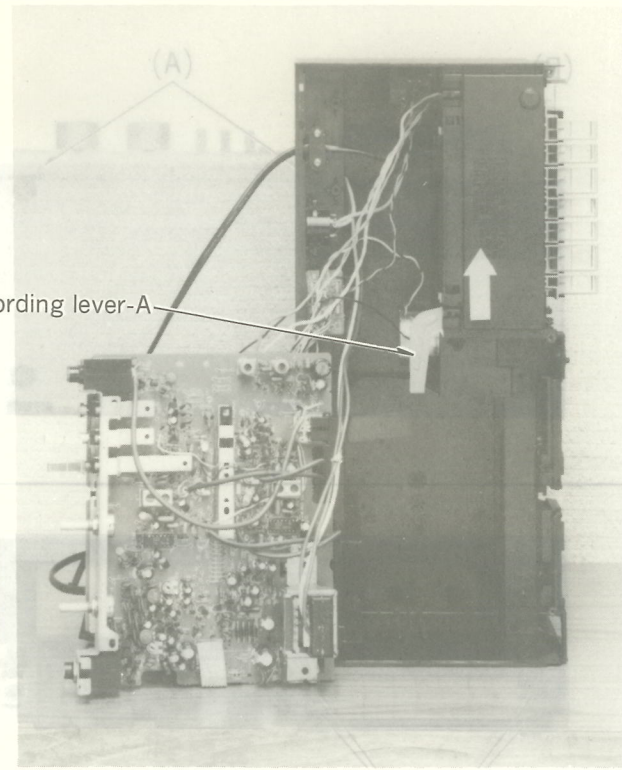


Fig. 7

MEASUREMENT AND ADJUSTMENT METHODS

ADJUSTMENT PARTS LOCATION

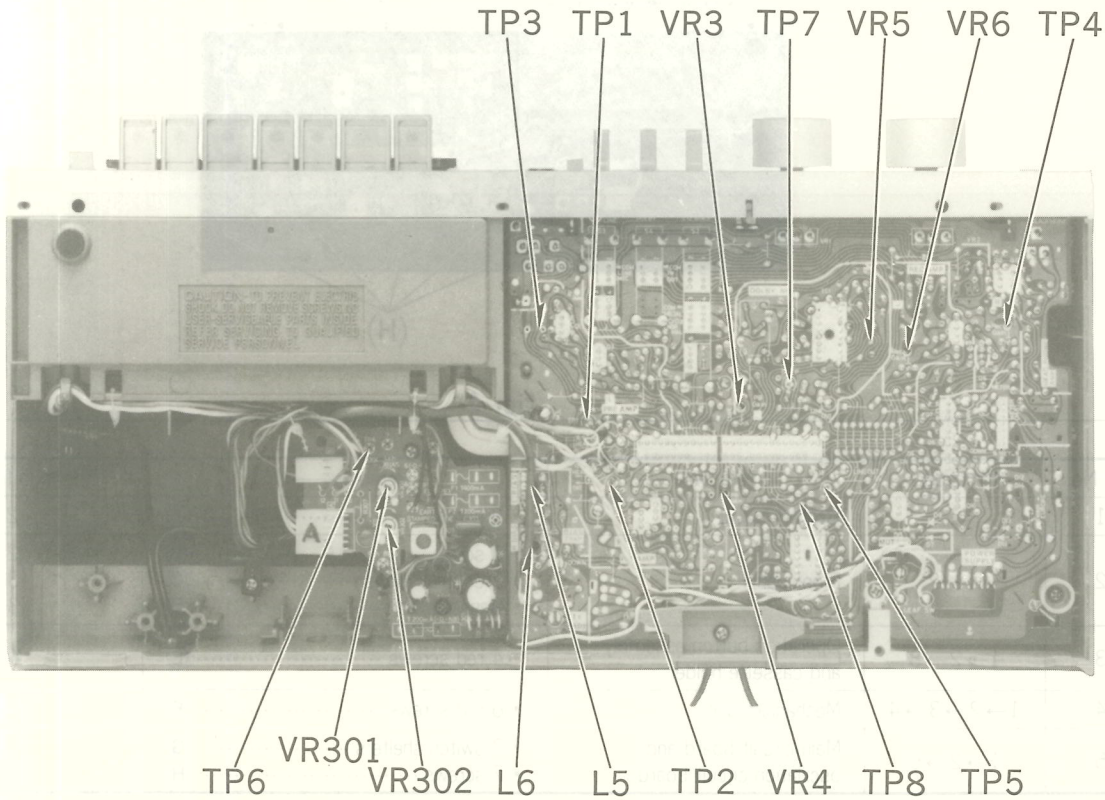


Fig. 1

NOTE 1: Tape speed can be adjusted through the small hole on the back-side of main case by the ⊖ screw driver (Non metal type) as shown in fig. 2.

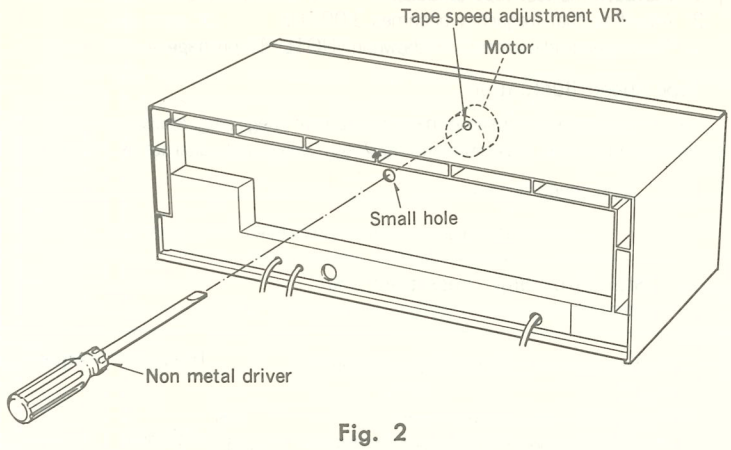
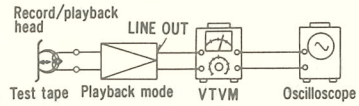
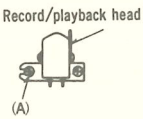
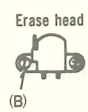
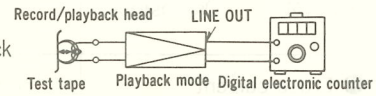
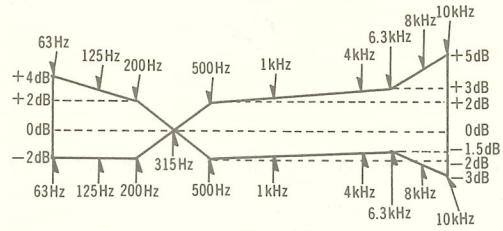
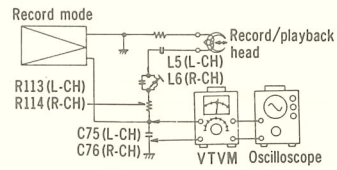
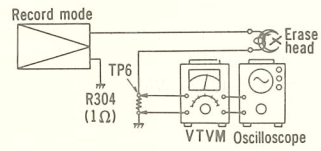


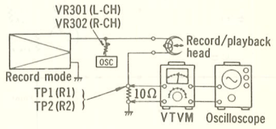
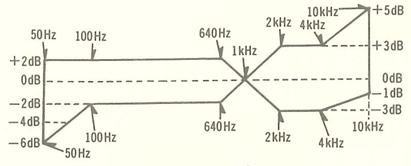
Fig. 2

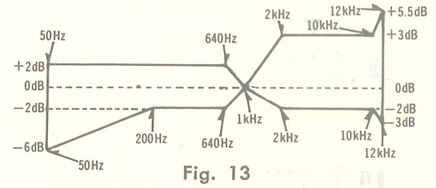
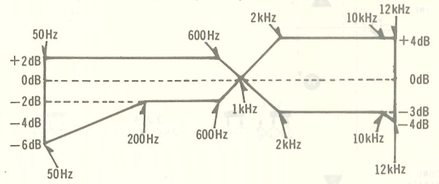
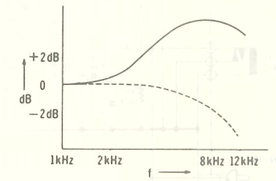
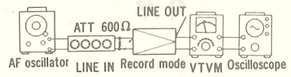
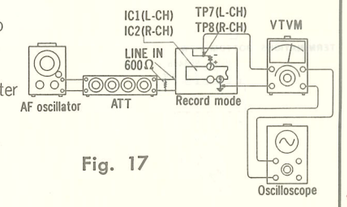
NOTES 2: Keep good condition, set lever switches and controls in the following positions, unless otherwise specified.

- Make sure heads are clean.
- Make sure capstan and pressure roller are clean.
- Judgeable room temperature: 20±5°C (68±9°F)
- Dolby NR switch: OUT
- Tape selector: Normal position
- Input selector: Line in
- Input level controls: Maximum

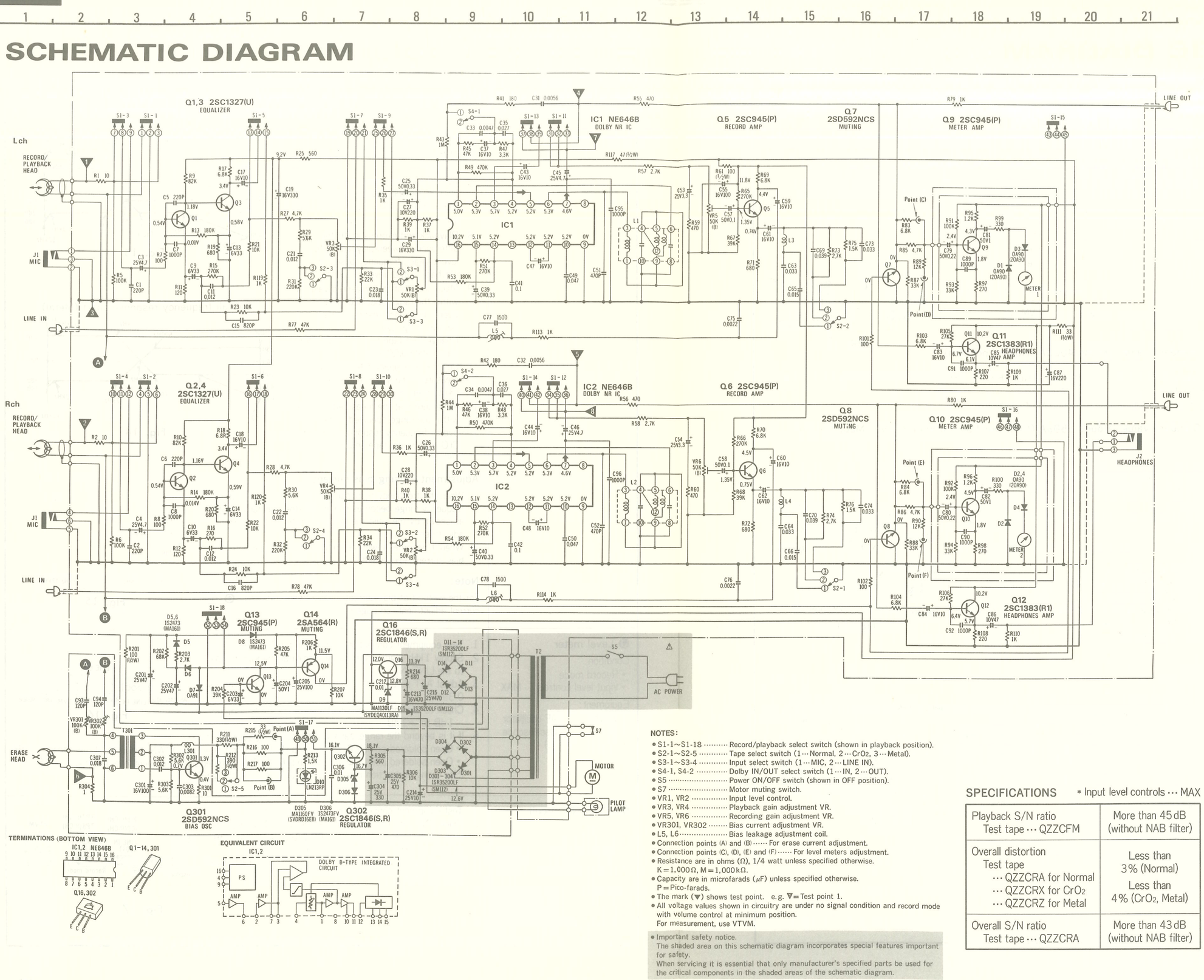
ITEM	MEASUREMENT & ADJUSTMENT
Ⓐ Head azimuth adjustment Condition: * Playback mode Equipment: * VTVM * Oscilloscope * Test tape (azimuth) ··· QZZCFM * Test tape (tape path viewer) ··· QZZCRD	**Record/playback head azimuth adjustment** 1. Test equipment connection is shown in fig. 3. 2. Playback azimuth tape (QZZCFM 8kHz). 3. Adjust record/playback head angle adjustment screw (A) in fig. 4 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 (A) with lacquer.  Fig. 3 **Erase head azimuth adjustment** 1. Test equipment connection is the same above but use the tape path viewer (QZZCRD) instead of test tape (QZZCFM). 2. Playback this tape. 3. Adjust screw (B) shown in fig. 5 so that the tape may not get curled or malformed by tape guide of the erase head. 4. After adjustment, lock head adjust screw (B) with lacquer.  Fig. 4  Fig. 5
Ⓑ Tape speed Condition: * Playback mode Equipment: * Digital electronic counter or frequency counter * Test tape ··· QZZCWAT	**Tape speed accuracy** 1. Test equipment connection is shown in fig. 6. 2. Playback test tape (QZZCWAT 3,000Hz), and supply playback signal to digital electronic 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%  Fig. 6

ITEM	MEASUREMENT & ADJUSTMENT
	Adjustment method 1. Playback the test tape (middle). 2. Adjust so that frequency becomes 3,000 Hz. 3. Tape speed adjustment VR shown in "NOTE 1" on page 4. **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: $\text{Tape speed fluctuation} = \frac{f_1 - f_2}{3{,}000} \times 100\ (\%)$ f_1 = maximum value, f_2 = minimum value **Standard value: Less than 1%**
Ⓒ Playback frequency response Condition: * Playback mode * Tape selector ··· Normal position Equipment: * VTVM * Oscilloscope * Test tape ··· QZZCFM	1. Test equipment connection is shown in fig. 3. 2. Place UNIT into playback mode. 3. Playback frequency response test tape (QZZCFM). 4. Measure output level at 315 Hz, 12.5 kHz, 8 kHz, 4 kHz, 250 Hz, 125 Hz and 63 Hz, and compare each output level with standard frequency 315 Hz, at LINE OUT. 5. Make measurement for both channels. 6. Make sure that the measured value is within the range specified in the playback frequency response chart. (shown in fig. 7). Playback frequency response chart  Fig. 7
Ⓓ Playback gain Condition: * Playback mode * Tape selector ··· Normal position Equipment: * VTVM * Oscilloscope * Test tape ··· QZZCFM	1. Test equipment connection is shown in fig. 3. 2. Playback standard recording level portion on test tape (QZZCFM 315 Hz), and using VTVM measure the output level at LINE OUT. 3. Make measurement for both channels. **Standard value: around 0.39 V** **Adjustment** 1. If measured value is not within standard, adjust VR3 (L-CH), VR4 (R-CH) (See fig. 1 on page 3). 2. After adjustment, check "Playback frequency response" again.
Ⓔ Bias leakage Condition: * Record mode * Input level controls ··· MAX * Tape selector ··· Metal position Equipment: * VTVM * Oscilloscope	1. Test equipment connection is shown in fig. 8. 2. Place UNIT into record mode. 3. Adjust trap coils L5 (L-CH), L6 (R-CH), so that measured value becomes minimum. 4. Make adjustment for both channels.  Fig. 8
Ⓕ Erase current Condition: * Record mode * Tape selector ··· Metal position Equipment: * VTVM * Oscilloscope	1. Test equipment connection is shown in fig. 9. 2. Place UNIT into record mode and measure voltage at test point 6. 3. Determine erase current with the following formula: $\text{Erase current (A)} = \frac{\text{Voltage across both ends of R304}}{1\ (\Omega)}$ **Standard value: around 155 mA (Tape selector ··· Metal)** 4. If measured value is not within standard, adjust as follows.  Fig. 9

ITEM	MEASUREMENT & ADJUSTMENT
	Adjustment 1. Open the point (A) and short the point (B) on the main circuit board in the wiring connection diagram (See page 8). 2. Make measurement for erase current. 3. Make sure that the measured value is within the erase current of 145 mA to 165 mA. 4. If it is beyond the value, carry out the following adjustments: • If the erase current is less than 145 mA, short the point (A). • If the erase current is more than 165 mA, open the points (A) and (B).
Ⓖ Bias current Condition: * Record mode * Tape selector ··· Normal position ··· CrO_2 position ··· Metal position Equipment: * VTVM * Oscilloscope	1. Test equipment connection is shown in fig. 10. 2. Place UNIT into record mode, and tape selector to normal position. 3. Read voltage on VTVM and calculate bias current by following formula: $\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10\ (\Omega)}$ **Standard value: around 400μA (Normal position)** 4. If measured value is not within standard, adjust VR301 (L-CH) and VR302 (R-CH) (See fig. 1 on page 3). 5. Set the tape selector to each position. 6. Make sure that the measured value is within standard. **Standard value: around 550μA (CrO_2 position), around 830μA (Metal position)**  Fig. 10
Ⓗ Overall gain Condition: * Record/playback mode * Input level controls ··· MAX * Standard input level; MIC ····· −72±4 dB LINE IN ··· −24±3 dB Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Resistor (600 Ω) * Test tape (reference blank tape) ··· QZZCRA for Normal	1. Test equipment connection is shown in fig. 11. 2. Place UNIT into record mode, and tape selector to normal position. 3. Supply 1 kHz signal (−24 dB) from AF oscillator, through ATT to LINE IN. 4. Adjust ATT until monitor level at LINE OUT becomes 0.39 V. 5. Using test tape, make recording. 6. Playback recorded tape, and make sure the value at LINE OUT on VTVM becomes 0.39 V (−7 dB). 7. If measured value is not 0.39 V, adjust VR5 (L-CH), VR6 (R-CH) (See fig. 1 on page 3). 8. Repeat from step (2). Fig. 11
Ⓘ Overall frequency response Condition: * Record/playback mode * Tape selector ··· Normal position ··· CrO_2 position ··· Metal position * Input level controls ··· MAX Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Resistor (600 Ω) * Test tape (reference blank tape) ··· QZZCRA for Normal ··· QZZCRX for CrO_2 ··· QZZCRZ for Metal	**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. 11. 2. Place the normal test tape (QZZCRA) in the cassette holder. 3. Place UNIT into record mode, and tape selector to normal position. 4. Supply 1 kHz signal from AF oscillator through ATT to LINE IN. Overall frequency response chart (Normal)  Fig. 12

ITEM	MEASUREMENT & ADJUSTMENT
	5. Adjust ATT so that input level is −20 dB below standard recording level (standard recording level = 0 VU). 6. At this time, LINE OUT level indicates 0.039 V. 7. Record each frequency 1 kHz, 50 Hz, 200 Hz, 640 Hz (600 Hz for metal), 2 kHz, 8 kHz, 10 kHz (12 kHz for CrO_2 and metal). 8. Playback and express in dB the difference between playback output level of each frequency based on playback output level of 1 kHz. 9. Make sure that the measured value is within the range specified in the overall frequency response chart (shown in fig. 12). 10. Change test tape to CrO_2 (QZZCRX) and metal (QZZCRZ). 11. Set the tape selector to each position. 12. Measure in the same manner from step (3) to step (8). 13. Make sure that the measured value is within the range specified in the overall frequency response chart for CrO_2 and metal tape shown in fig. 13 and 14. Overall frequency response chart (CrO_2)  Fig. 13 Overall frequency response chart (Metal)  Fig. 14 **Adjustment — 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. 15, refer to bias current adjustment. 2. When it becomes lower, as shown by dotted line, refer to bias current adjustment. **Note:** For the method of bias current measurement, refer to "Ⓖ Bias current adjustment" on page 6.  Fig. 15
Ⓙ Level meter Condition: * Record mode * Input level controls ··· MAX Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Resistor (600 Ω)	1. Test equipment connection is shown in fig. 16. 2. Supply 1 kHz signal from the AF oscillator, through the ATT to the LINE IN. 3. Adjust ATT so that the monitor level at LINE OUT becomes 0.39 V. 4. Check to see that the level meter stays within the range of −1 dB to +1 dB. 5. If it is beyond the range, carry out the following adjustments: • Open soldered points (C) (L-CH) and (E) (R-CH) indicated as "DOWN" where level more than +1 dB. • Open soldered points (D) (L-CH) and (F) (R-CH) indicated as "UP" where level less than −1 dB. (See wiring connection diagram and circuit boards on page 8.)  Fig. 16
Ⓚ Dolby NR circuit Condition: * Record mode * Dolby NR switch ··· IN/OUT * Input level controls ··· MAX Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Resistor (600 Ω)	1. Test equipment connection is shown in fig. 17. 2. Place UNIT into record mode, set the Dolby NR switch to OUT position and supply to LINE IN to obtain −34.5 dB at TP7 (L-CH), TP8 (R-CH) (frequency 5 kHz). 3. Confirm that the value at IN position is 8 (±2.5) dB greater than the value at OUT position of Dolby NR switch.  Fig. 17

SCHEMATIC DIAGRAM



NOTES:
- S1-1~S1-18 ····· Record/playback select switch (shown in playback position).
- S2-1~S2-5 ····· Tape select switch (1···Normal, 2···CrO_2, 3···Metal).
- S3-1~S3-4 ····· Input select switch (1···MIC, 2···LINE IN).
- S4-1, S4-2 ····· Dolby IN/OUT select switch (1···IN, 2···OUT).
- S5 ····· Power ON/OFF switch (shown in OFF position).
- S7 ····· Motor muting switch.
- VR1, VR2 ····· Input level control.
- VR3, VR4 ····· Playback gain adjustment VR.
- VR5, VR6 ····· Recording gain adjustment VR.
- VR301, VR302 ····· Bias current adjustment VR.
- L5, L6 ····· Bias leakage adjustment coil.
- Connection points (A) and (B) ····· For erase current adjustment.
- Connection points (C), (D), (E) and (F) ····· For level meters adjustment.
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise. K=1,000Ω, M=1,000kΩ.
- Capacity are in microfarads (μF) unless specified otherwise. P=Pico-farads.
- The mark (▼) shows test point. e.g. ▼=Test point 1.
- All voltage values shown in circuitry are under no signal condition and record mode with volume control at minimum position. For measurement, use VTVM.

- Important safety notice.
  The shaded area on this schematic diagram incorporates special features important for safety.
  When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic diagram.

SPECIFICATIONS

* Input level controls ··· MAX

Playback S/N ratio Test tape ··· QZZCFM	More than 45 dB (without NAB filter)
Overall distortion Test tape ··· QZZCRA for Normal ··· QZZCRX for CrO_2 ··· QZZCRZ for Metal	Less than 3% (Normal) Less than 4% (CrO_2, Metal)
Overall S/N ratio Test tape ··· QZZCRA	More than 43 dB (without NAB filter)

NOTES: RESISTORS
- ERD ··· Carbon
- ERG ··· Metal-oxide
- ERO ··· Metal-film
- ERX ··· Metal-film
- ERQ ··· Fuse type metallic
- ERC ··· Solid
- ERF ···· Cement

CAPACITORS
- ECG□ ····· Ceramic
- ECK□ ····· Ceramic
- ECC□ ····· Ceramic
- ECF□ ····· Ceramic
- ECQM ····· Polyester film
- ECQE ····· Polyester film
- ECQF ····· Polypropylene
- ECE□ ····· Electrolytic
- ECE□N ··· Non polar electrolytic
- ECQS ····· Polystyrene
- ECS□ ····· Tantalum

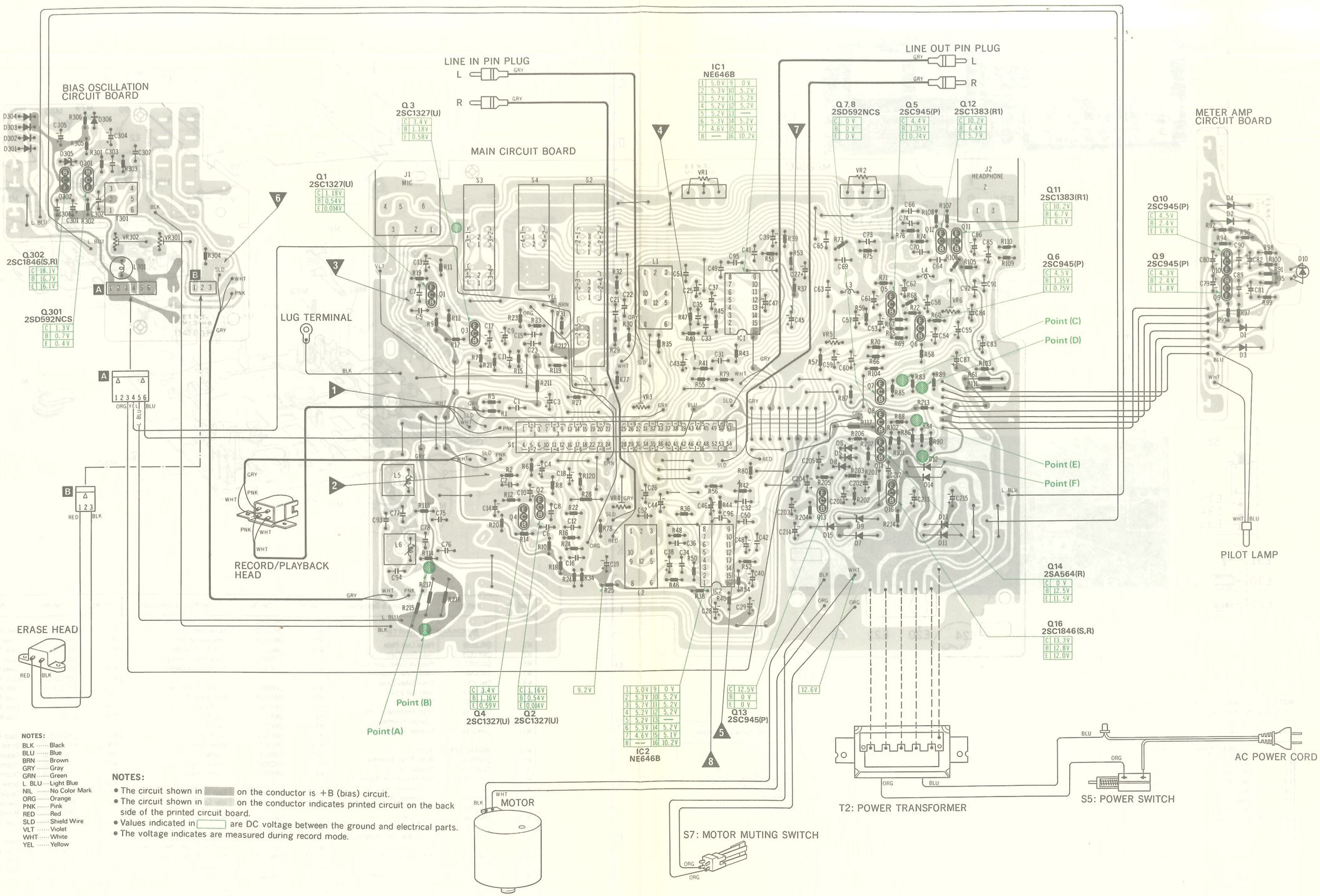
NOTE: △ indicates that only parts specified by the manufacturer be used for safety.

Ref. No.	Part No.	Ref. No.	Part No.
	RESISTORS		
R1, 2	ERD25FJ100	R95, 96	ERD25FJ122
R5, 6	ERD25TJ104	R97, 98	ERD25FJ271
R7, 8	ERD25FJ101	R99, 100	ERD25FJ331
R9, 10	ERD25TJ823	R101, 102	ERD25FJ101
R11, 12	ERD25FJ121	R103, 104	ERD25FJ682
R13, 14	ERD25TJ184	R105, 106	ERD25TJ273
R15, 16	ERD25TJ274	R107, 108	ERD25FJ221
R17, 18	ERD25FJ682	R109, 110	ERD25FJ102
R19, 20	ERD25FJ681	R111	ERG12ANJ330
R21, 22, 23, 24	ERD25FJ103	R113, 114	ERD25FJ102
		R117	ERD50FJ470
R25	ERD25FJ561	R119, 120	ERD25FJ102
R27, 28	ERD25FJ472	R201	ERD50FJ101
R29, 30	ERD25FJ562	R202	ERD25TJ683
R31, 32	ERD25TJ224	R203	ERD25FJ272
R33, 34	ERD25TJ223	R204	ERD25TJ393
R35, 36, 37, 38, 39, 40	ERD25FJ102	R205	ERD25TJ473
		R206	ERD25FJ102
R41, 42	ERD25FJ181	R207	ERD25FJ103
R43, 44	ERD25TJ105	R211	ERD50FJ331
R45, 46	ERD25TJ473	R212	ERD50FJ391
R47, 48	ERD25FJ332	R213	ERD25FJ152
		R214 △	ERD25FJ681
R49, 50	ERD25TJ474	R215	ERG12ANJ330
R51, 52	ERD25TJ274	R216, 217	ERD25FJ101
R53, 54	ERD25TJ184	R301	ERD25FJ100
R55, 56	ERD25FJ471	R302, 303	ERD25FJ562
R57, 58	ERD25FJ272	R304	ERD25FJ1R0
R59, 60	ERD25FJ471	R305 △	ERD25FJ561
R61	ERD25FJ101		
R65, 66	ERD25TJ274	R306 △	ERD25FJ103
R67, 68	ERD25TJ393		
R69, 70	ERD25FJ682		**VARIABLE RESISTORS**
R71, 72	ERD25FJ681	VR1, 2	QVH3AA067A54
R73, 74	ERD25FJ272	VR3, 4, 5, 6	EVNK4AA00B54
R75, 76	ERD25FJ152	VR301, 302	EVNK4AA00B15
R77, 78	ERD25TJ473		
R79, 80	ERD25FJ102		**CAPACITORS**
R83, 84	ERD25FJ682	C1, 2	ECCD1H221K
R85, 86	ERD25FJ472	C3, 4	ECEA25M4R7
R87, 88	ERD25TJ333	C5, 6	ECCD1H221K
R89, 90	ERD25TJ123	C7, 8	ECFWD102KVY
R91, 92	ERD25TJ104	C9, 10	ECEA1CS330
		C11, 12	ECFDD123KVY
R93, 94	ERD25TJ333		

Ref. No.	Part No.	Part Name & Description
	TRANSFORMERS	
T2 △	QLPW11EKC	Power Transformer
T301	QLB0198K	Bias Oscillation Transformer
	COILS	
L1, 2	QLM9Z7	MPX Filter
L3, 4	QLQX0332K	Peaking Coil
L5, 6	QLQC2721K	Bias Trap Coil
L301	QLQX2421Y	RF Trap Coil
	SWITCHES	
S1	QSSI205T	Slide Switch (Record/Playback Selector)
S2	QES1490	Lever Switch (Tape Selector)
S3	QES1491	Lever Switch (Input Selector)
S4	QES1492	Lever Switch (Dolby IN/OUT Selector)
S5 △	QSW1115AU	Push Switch (Power ON/OFF)
S7	QSB0247	Leaf Switch (Motor ON/OFF)
	JACKS	
J1	QJA0257H	Microphone Jack
J2	QJA0249C	Headphone Jack

WIRING CONNECTION DIAGRAM AND CIRCUIT BOARDS

Ref. No.	Part No.
C13, 14	ECEA1CS330
C15, 16	ECKD1H821KB
C17, 18	ECEA1HS100
C19	ECEA1CS331
C21, 22	ECFDD123KVY
C23, 24	ECFDD183KVY
C25, 26	ECEA50MR33R
C27, 28	ECEA1AS221
C29	ECEA1CS331
C31, 32	ECQM1H562JZ
C33, 34	ECQM1H472JZ
C35, 36	ECQM1H273JZ
C37, 38	ECEA1HS100
C39, 40	ECEA50MR33R
C41, 42	ECFWD104MXY
C43, 44	ECEA1HS100
C45, 46	ECEA1JS4R7
C47, 48	ECEA1HS100
C49, 50	ECFDD473KXY
C51, 52	ECKD1H471KB
C53, 54	ECEA2AS3R3
C55	ECEA1ES101
C57, 58	ECEA1HSR1
C59, 60	ECEA2AS010
C61, 62	ECEA1HS100
C63, 64	ECFDD333KXY
C65, 66	ECFDD153KVY
C69, 70	ECFDD393KXY
C73, 74	ECFDD333KXY
C75, 76	ECFDD222KVY
C77, 78	ECQP1152JZ
C79, 80	ECEA1HSR22
C81, 82	ECEA2AS010
C83, 84	ECEA1HS100
C85, 86	ECEA1AS470
C87	ECEA1CS221
C89, 90, 91, 92	ECKD1H102ZF
C93, 94	ECCD1H121K
C95, 96	ECKD1H102ZF
C201, 202	ECEA1ES470
C203	ECEA1CS330
C204	ECEA2AS010
C205	ECEA1ES101
C212	ECKD1H103ZF
C213 △	ECEA1CS471
C214 △	ECEA1HS100
C215 △	ECEA1ES471
C301	ECEA1ES101
C302	ECFDD123KVY
C303	ECFDD822KVY
C304 △	ECEA1ES331
C305 △	ECEA1ES471
C306	ECFDD103KVY
C307	ECQP1183JZ
TRANSISTORS	
Q1, 2, 3, 4	2SC1327
Q5, 6	2SC945
Q7, 8	2SD592NCS
Q9, 10	2SC945
Q11, 12	2SC1383
Q13	2SC945
Q14	2SA564
Q16	2SC1846
Q301	2SD592NCS
Q302	2SC1846
DIODES & RECTIFIERS	
D1, 2, 3, 4	2OA90
D5, 6	MA161
D7	OA91
D8	MA161
D9	SVDEQA0113RA
D10	LN213RP
D11, 12, 13, 14, 15 △	SM112
D301, 302, 303, 304 △	SM112
D305	SVDRD16EB
D306	MA161
INTEGRATED CIRCUITS	
IC1, 2	NE646B



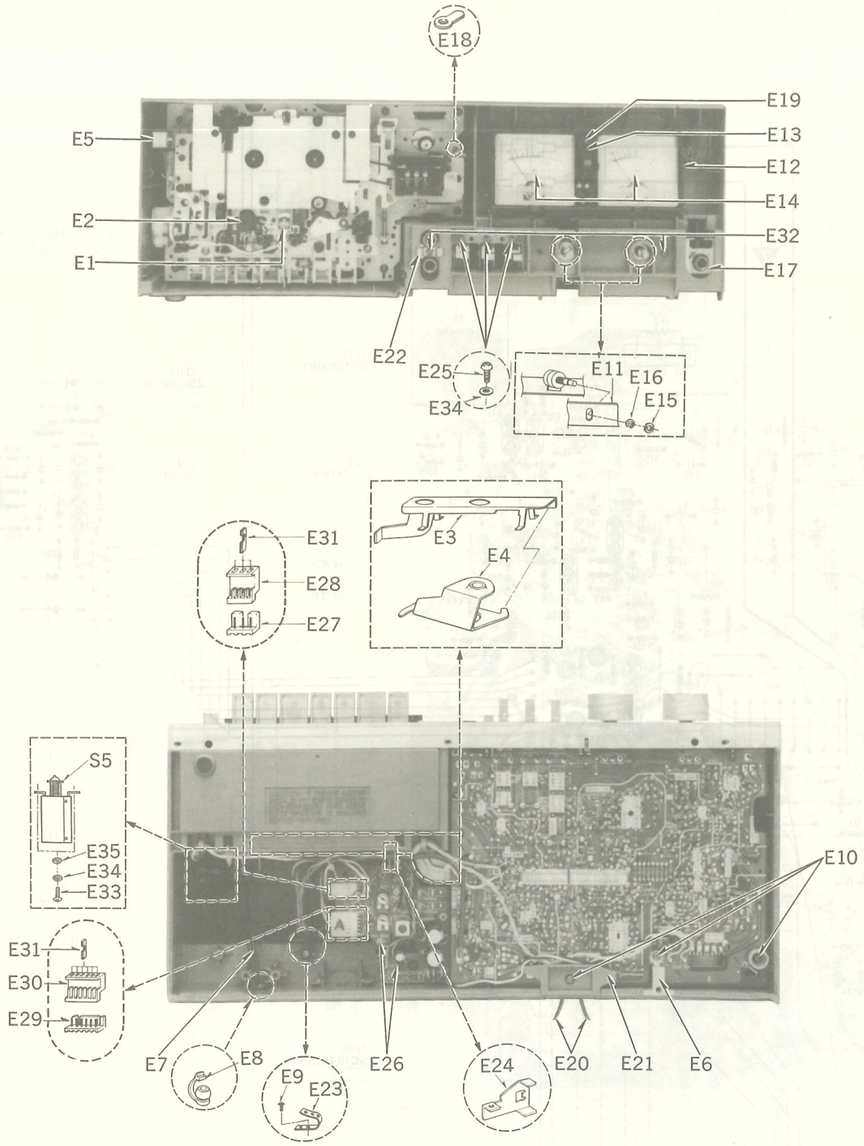
NOTES:

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

NOTES:

- The circuit shown in ▭ on the conductor is +B (bias) circuit.
- The circuit shown in ▭ on the conductor indicates printed circuit on the back side of the printed circuit board.
- Values indicated in ▭ are DC voltage between the ground and electrical parts.
- The voltage indicates are measured during record mode.

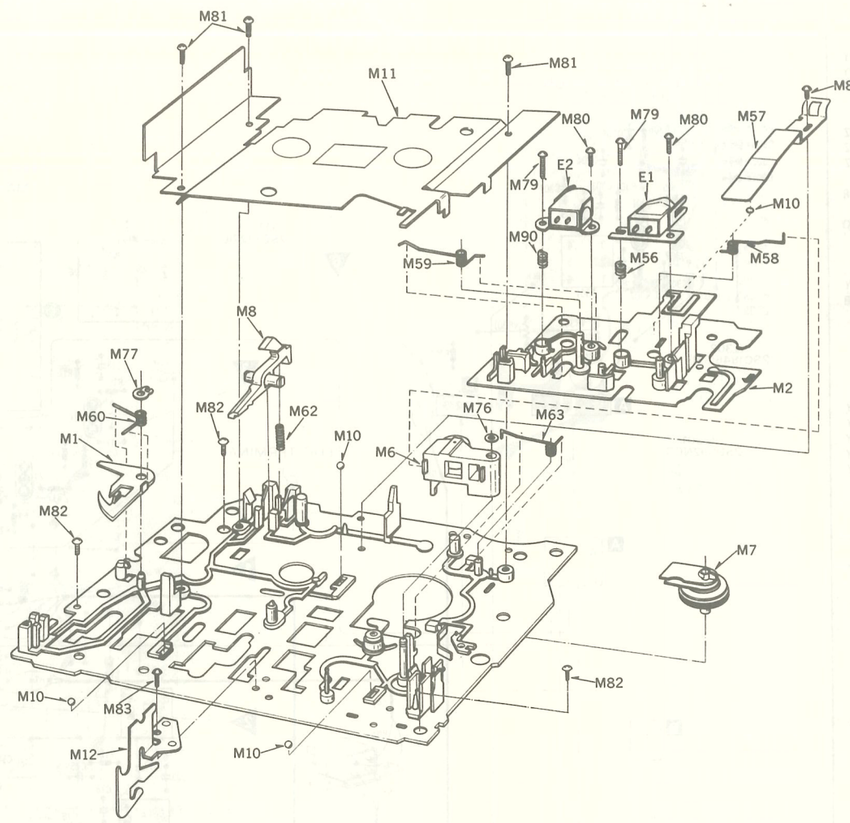
ELECTRICAL PARTS LOCATION



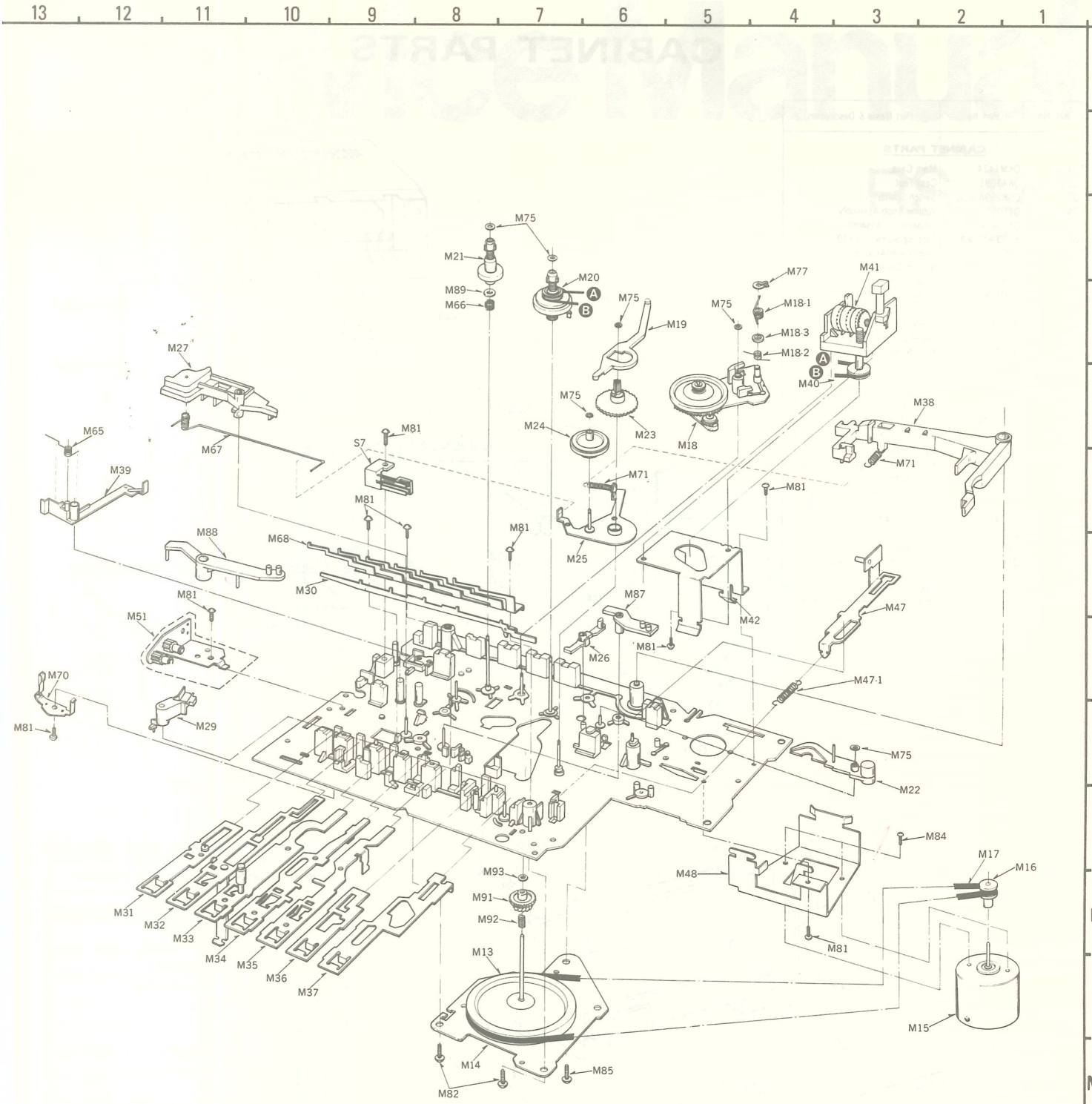
NOTE: ⚠ indicates that only parts specified by the manufacturer be used for safety.

Ref. No.	Part No.	Part Name & Description
	ELECTRICAL PARTS	
E1	QWY4122Z	Record/Playback Head
E2	QWY2138Z	Erase Head
E3	QML3568	Recording Lever-A
E4	QML3569	Recording Lever-B
E5	QXR0667	Power Button Assembly
E6	QMA3840	Earth Plate
E7 ⚠	QFC1201MA	AC Power Cord
E8	QTD1129	Cord Bushing
E9	XTN3+10B	Tapping Screw ⊕3×10
E10	XTN3+16B	Tapping Screw ⊕3×16
E11	QMA3893	Volume Angle
E12	QKJ0381	Level Meter Holder
E13	QBG1366	Rubber Bush
E14	QSL1113RNM	Level Meter
E15	QNQ1004	Nut 8φ
E16	QWQ2002	Washer
E17	QNQ1070	Nut 12φ
E18	QJT0015	Lug Terminal
E19	XAMQ21P100N	Pilot Lamp
E20	QFC2133	Pin Cord
E21	QKJ0382H	Cord Clamper
E22	QMA3841	Microphone Holder
E23	RME144ZA	Cord Clamper
E24	QMA3960	Circuit Board Angle
E25	XSN3+6S	Screw ⊕3×6
E26	QJT1067	Check Pin
E27	QJP1921TNL	3 Pin Post
E28	QJS1921TN	3 Pin Socket
E29	QJP1922TNL	6 Pin Post
E30	QJS1922TN	6 Pin Socket
E31	QJT1054	Contact
E32	XTN3+8B	Tapping Screw ⊕3×8
E33	XSN3+8S	Screw ⊕3×8
E34	XWA3B	Washer
E35	XWG3	〃

MECHANISM EXPLODED VIEWS



Ref. No.	Part No.	Part Name & Description
	MECHANICAL PARTS	
M1	QML2898	Pause Lock Plate
M2	QMK1829	Head Base Plate
M6	QXL1057	Pressure Roller Lever Assembly
M7	QXI0098	Takeup Idler Assembly
M8	QML3051	Erase Safety Lever
M10	QDK1012	Steel Ball 2.5φ
M11	QGK2997	Chassis Cover
M12	QMA3169	Shaft Reinforcement Angle
M13	QXF0163	Flywheel Assembly
M14	QXH0239	Flywheel Retainer Assembly
M15	MMI6A2LKPA	Motor
M16	QXP0513	Motor Pulley Assembly
M17	QDB0219	Flywheel Belt
M18	QXL1136	Fast Forward Arm Assembly
M18-1	QBN1517	Fast Forward Spring
M18-2	QBN1559	Fast Forward Arm Spring
M18-3	QMC0080	Collar
M19	QML3040	Cam Lever
M20	QXD0067	Takeup Reel Table Assembly
M21	QXD0084	Supply Reel Table Assembly
M22	QXL1384	Auto-Stop Lever Assembly
M23	QDG1096	Cam Gear
M24	QXG1026	Auto-Stop Gear Assembly
M25	QXL1037	Gear Lever Assembly
M26	QML3042	Auto-Stop Obstruction Lever
M27	QML3217	Pause Lever
M29	QML3124	Lock Release Arm
M30	QMR1735	Lock Rod Assembly
M31	QXR0342	Pause Rod Assembly
M32	QXR0465	Record Rod Assembly
M33	QXR0344	Playback Rod Assembly
M34	QMR1624	Rewind Rod-A
M35	QMR1623	Fast Forward Rod-A
M36	QMR1622	Stop Rod-A
M37	QMR1621	Eject Rod-A
M38	QML3038	Switch Arm
M39	QML3287	Brake Lever
M40	QDB0240	Counter Belt
M41	QXC0049	Tape Counter
M42	QMA3676	Counter Angle
M47	QXR0403	Eject Rod-B
M47-1	QBT1619	Idler Spring
M48	QMA3414	Motor Angle
M51	QXG1031	Damper Gear Assembly
M56	QBC1278	Head Spring
M57	QBP1841	Head Base Plate Pressure Spring
M58	QBN1488	Pressure Roller Spring
M59	QBN1733	Playback Spring
M60	QBN1480	Pause Lock Spring
M62	QBC1350	Safety Lever Spring
M63	QBN1513	Idler Spring
M65	QBN1574	Brake Spring
M66	QBC1344	Back Tension Spring
M67	QBN1555	Pause Spring
M68	QBP1664	Operation Rod Spring
M70	QBP1662	Lock Rod Spring
M71	QBT1682	Lock Holding Spring
M75	QBW2008	Snap Ring 2φ
M76	QBW2046	Snap Ring 3φ
M77	XUB4FT	Stop Ring C4φ
M79	QHQ1226	Head Adjustment Screw
M80	XSN2+10	Screw ⊕2×10
M81	XTN26+6B	Tapping Screw ⊕2.6×6
M82	XTN3+10B	Tapping Screw ⊕3×10
M83	XTN26+8B	Tapping Screw ⊕2.6×8
M84	XSN26+3	Screw ⊕2.6×3
M85	XTN3+25B	Tapping Screw ⊕3×25
M87	QML3504	Cue Lever
M88	QML3207	Muting Lever
M89	QBW2012	Snap Ring
M90	QBC1103	Head Spring
M91	QDG1116	Capstan Gear
M92	QBC1301	Capstan Spring
M93	QBW2049	Snap Ring

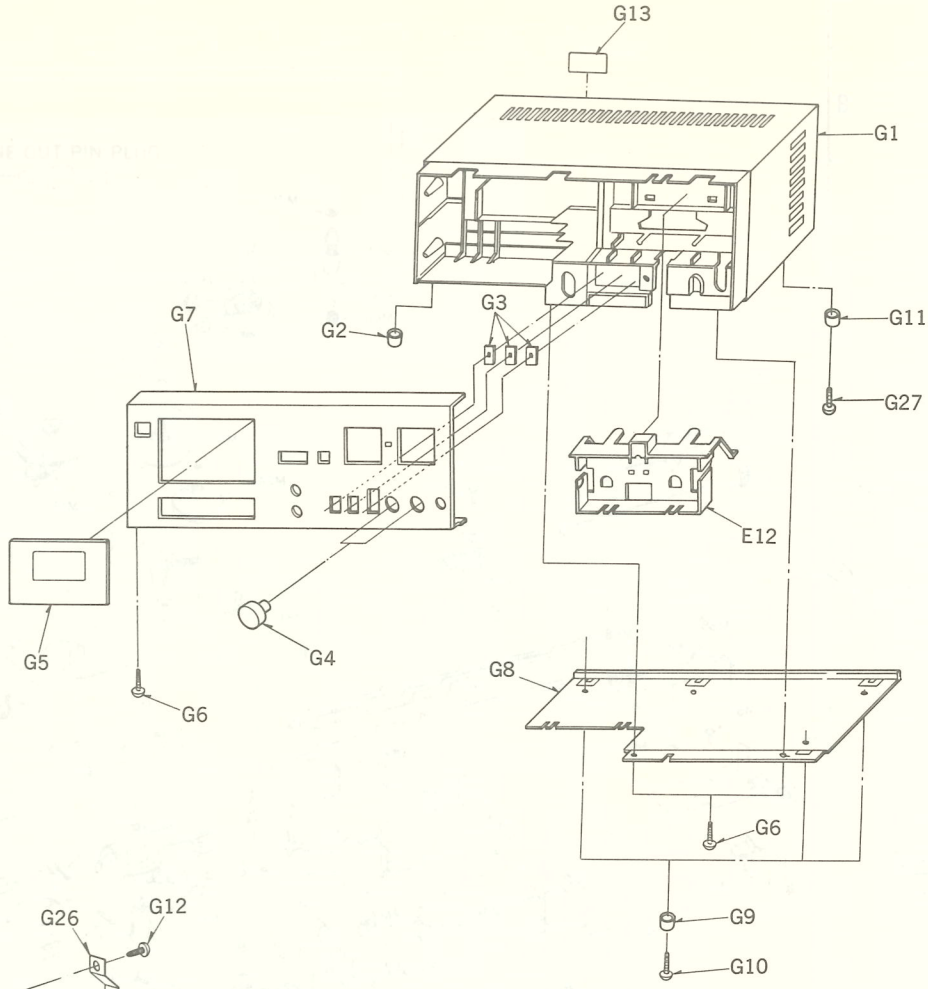


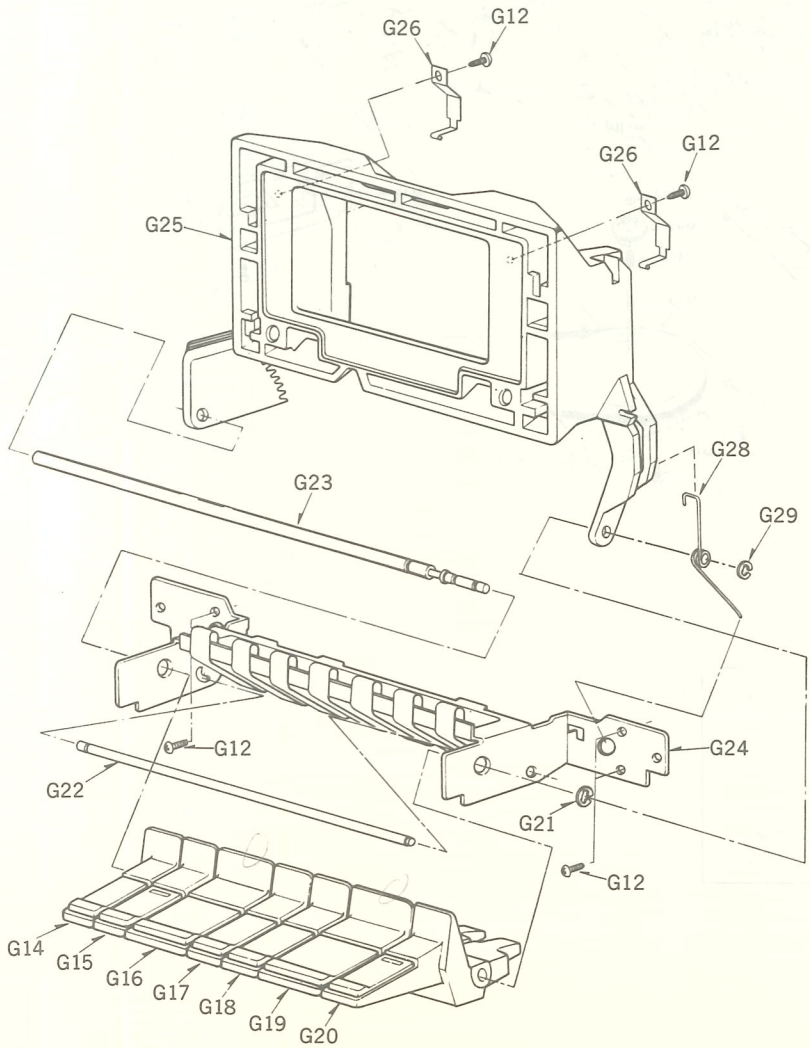
SPECIFICATIONS

Pressure of pressure roller	350±50 g
Takeup tension * Use cassette torque meter ··· QZZSRKCT	50±15 g-cm
Wow and flutter (JIS) * Use test tape ··· QZZCWAT	Less than 0.12% (WRMS)

CABINET PARTS

Ref. No.	Part No.	Part Name & Description
	CABINET PARTS	
G1	QKM1424	Main Case
G2	QKA1081	Case Foot
G3	QGK2998	Switch Shelter
G4	QYT0572	Volume Knob Assembly
G5	QYF0434	Cassette Lid Assembly
G6	XTB3+10BFN	Tapping Screw ⊕3×10
G7	QYP0968	Front Panel Assembly
G8	QGC1176	Bottom Cover
G9	QKA1083	Rubber Foot
G10	QHQ1299	Screw ⊕3×8
G11	QKJ0385	Spacer
G12	XTN26+6B	Tapping Screw ⊕2.6×6
G13 P	QGS2826	Main Name Plate
※For U.S.A.		
C	QGS2827	〃
※For Canada.		
G14	QGO1580	Pause Button
G15	QGO1579	Record Button
G16	QGO1578	Playback Button
G17	QGO1577	Rewind Button
G18	QGO1576	Fast Forward Button
G19	QGO1575	Stop Button
G20	QGO1574	Eject Button
G21	XUC4FT	Stop Ring 4φ
G22	QMN1861	Push Button Shaft-B
G23	QMN2535	Push Button Shaft-A
G24	QXA0720	Push Button Holding Angle Assembly
G25	QKF6011	Cassette Holder





Ref. No.	Part No.	Part Name & Description
G26	QBP1818	Holder Spring
G27	XTN3+16B	Tapping Screw ⊕3×16
G28	QBN1641	Lid Spring
G29	XUC3FT	Stop Ring 3φ
	ACCESSORIES	
A1 P	QQT2851	Instruction Book
※For U.S.A.		
C	QQT2852	〃
※For Canada.		
	PACKINGS	
P1 P	QPN4046	Inside Carton
※For U.S.A.		
C	QPN4006	〃
※For Canada.		
P2	QPA0516	Cushion
P3	XZB40X60A02	Poly Bag
P4	QPS0477	Pad
P5	QPS0432	Spacer

ARD Y.M PC Printed in Japan.