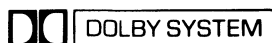


Service Manual

Cassette Deck
RS-M22

Front-Loading Vertical Hold Stereo Cassette Deck with
FL Bar Graph Peak Meters, Rewind Auto-Play,
and Separate 3-Position Bias and Equalization Selectors



This is the Service Manual for the following areas.

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

RS-631 MECHANISM SERIES

Specifications (Catalog specifications for sales)

Power requirement:	AC; 110/125/220/240V, 50/60 Hz Preset power voltage; 220V 240V, 50Hz only for England	Input:	MIC; sensitivity 0.25 mV, input impedance 7.2 K Ω , applicable microphone impedance 400 Ω ~10 K Ω LINE; sensitivity 60 mV, input impedance 47 K Ω
Power consumption:	13 W	Output:	LINE; output level 650 mV, output impedance 2.2 K Ω or less, load impedance 22 K Ω over HEADPHONE; output level 100 mV, load impedance 8 Ω
Motor:	Electronic control DC motor	Rec/pb connection:	5 P DIN type; input sensitivity 0.21 mV, impedance 5.7 K Ω , output level 650 mV, impedance 6 K Ω
Track system:	4-track 2-channel stereo recording and playback	Bias frequency:	83 kHz
Tape speed:	4.8 cm/s (1-7/8 ips.)	Head:	2-head system 1-SP head for record/playback 1-double-gap ferrite head for erasure
Wow and flutter:	0.05% (WRMS), $\pm$ 14% (DIN)	Dimensions:	43.0cm(W) $\times$ 14.2cm(H) $\times$ 26.7cm(D) [16-7/8"(W) $\times$ 5-5/8"(H) $\times$ 10-1/2"(D)]
Frequency response:	CrO ₂ /FeCr tape; 25~16,000 Hz 30~15,000 Hz (DIN) Normal tape; 25~14,000 Hz 30~13,000 Hz (DIN)	Weight:	7.1 kg (15 lbs. 11 oz)
Signal-to-noise ratio:	Dolby* NR in; 67 dB (above 5 kHz) Dolby NR out; 57 dB (signal level = max. record- ing level, FeCr/CrO ₂ type tape)		
Fast forward and rewind time:	Approx. 90 seconds with C-60 cassette tape		

Specifications are subject to change without notice.

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

Technics

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

LOCATION OF CONTROLS AND COMPONENTS

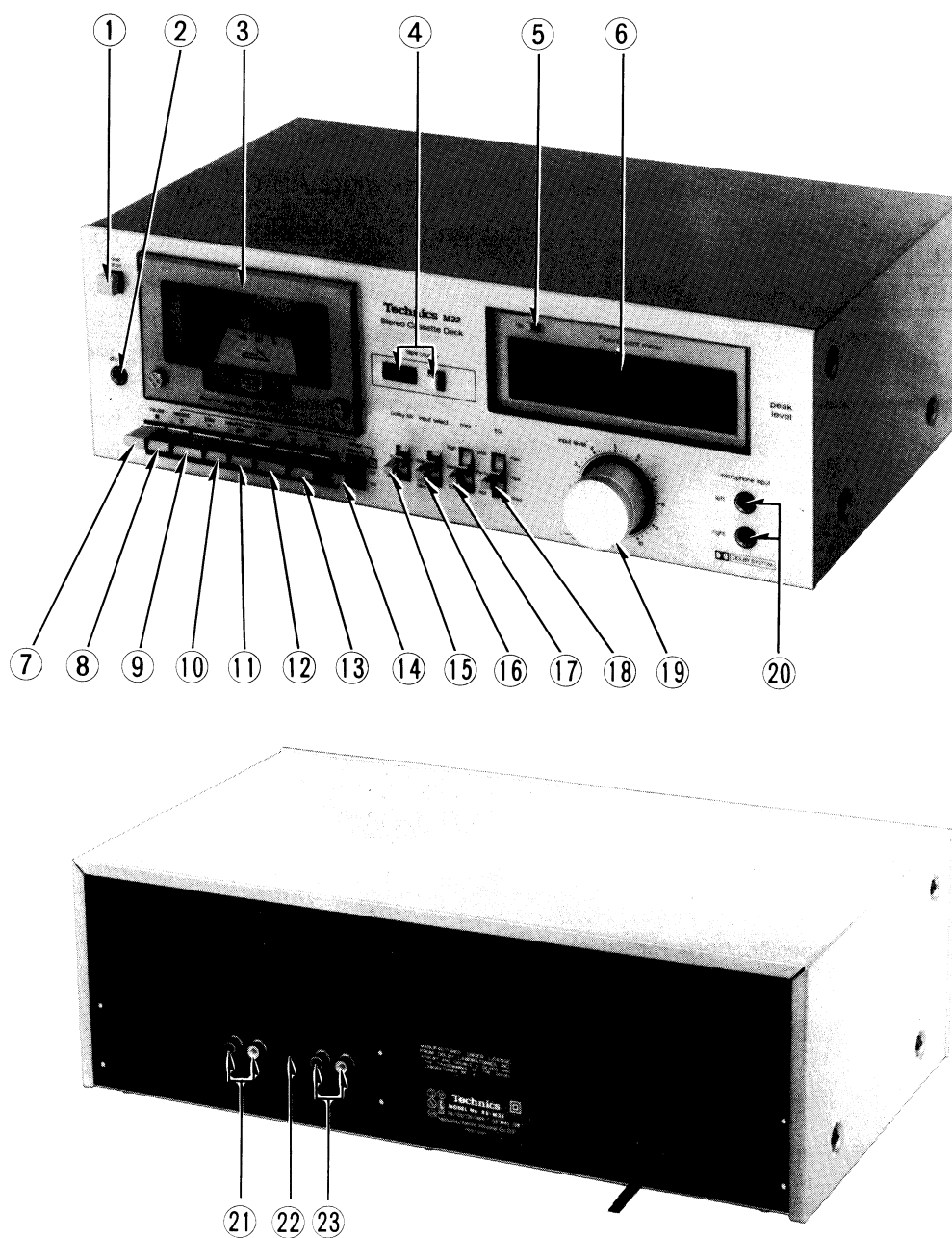


Fig. 1

- | | | |
|---------------------------------|--------------------------------|-------------------------------------|
| ① Power switch | ⑨ Playback button | ⑰ Bias selector |
| ② Headphones jack | ⑩ Rewind/review button | ⑱ Equalization selector |
| ③ Cassette holder | ⑪ Fast forward/cue button | ⑲ Input level controls |
| ④ Tape counter and reset button | ⑫ Stop button | ⑳ Microphone jacks |
| ⑤ Recording indication lamp | ⑬ Eject button | ㉑ Line output jacks |
| ⑥ Fluorescent level meters | ⑭ Timer start-by button | ㉒ Record/playback connection socket |
| ⑦ Pause button | ⑮ Dolby noise-reduction switch | ㉓ Line input jacks |
| ⑧ Record button | ⑯ Input selector | |

DISASSEMBLY INSTRUCTIONS

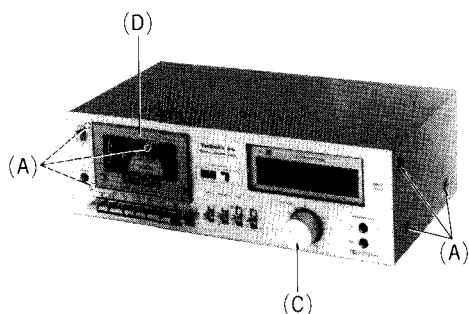


Fig. 2

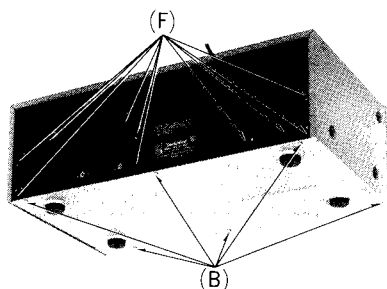


Fig. 3

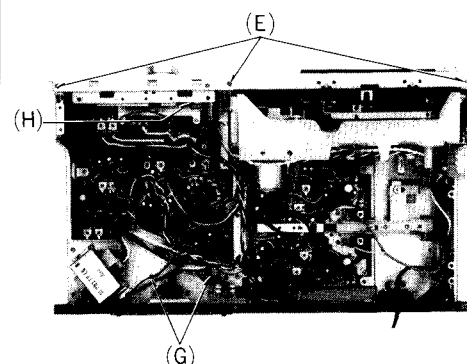


Fig. 4

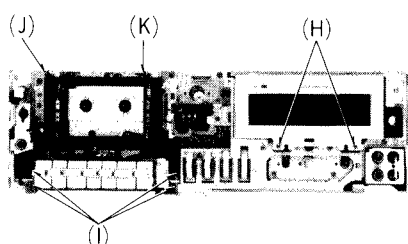


Fig. 5

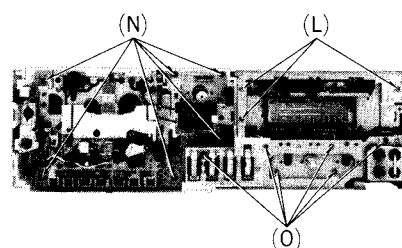


Fig. 6

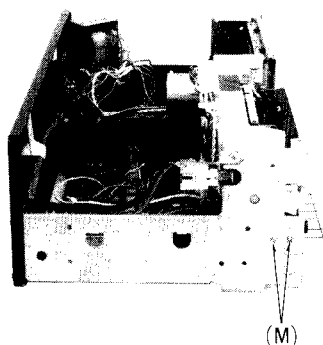


Fig. 7

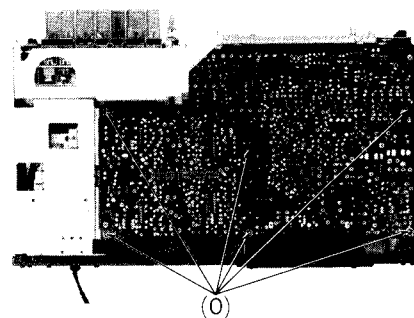


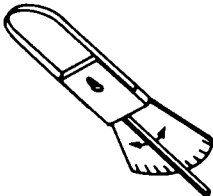
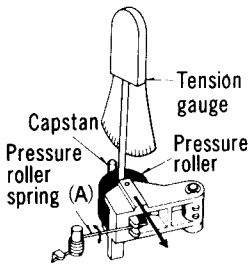
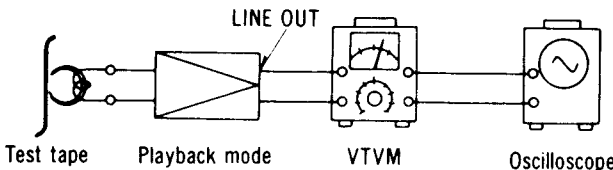
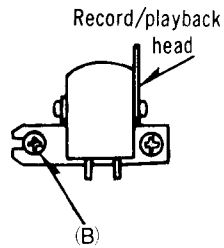
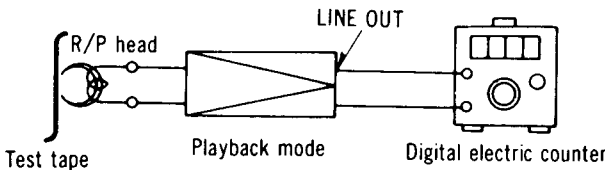
Fig. 8

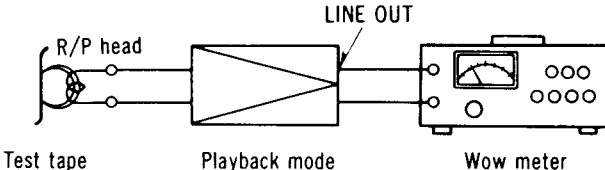
Procedure	To remove —	Remove —	Shown in fig. —
1	Case cover	• 6 black screws (A)	2
2	Bottom cover	• 6 screws (B)	3
3	Front panel	• 2 control knobs (C) • Cassette lid (D) • 3 red screws (E)	2 2 4
3	Rear board	• 10 black screws (F) • 2 red screws (G)	3 4
5	Meter cover	• 3 red screws (H)	4, 5
5	Control button assembly and cassette holder	• 4 red screws (I) • Stop ring (J) • Cassette holder spring (K)	5 5 5
7	Meter unit	• 3 red screws (L)	6
8	Mechanism	• 2 headphones jack holding screw ... (M) • 6 red screws (N)	7 6
8	Main circuit board	• 12 red screws (O)	6, 8

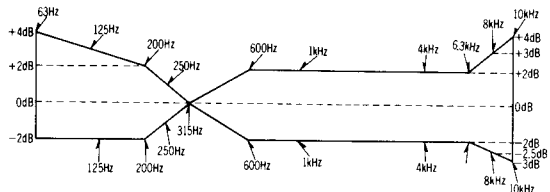
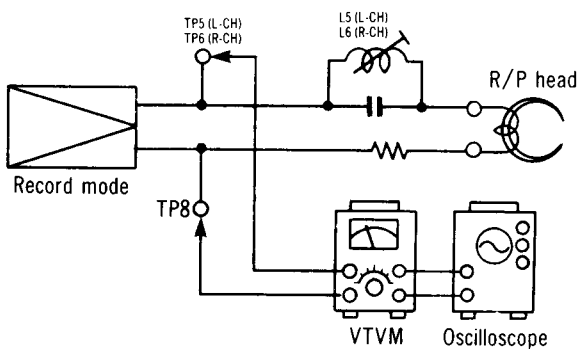
MEASUREMENT AND ADJUSTMENT METHOD

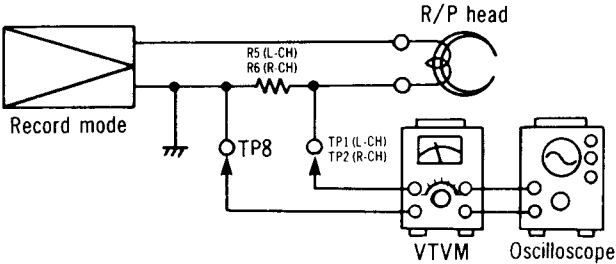
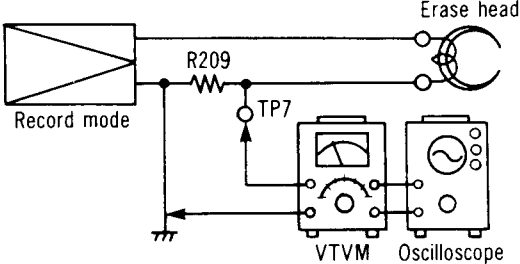
NOTE:

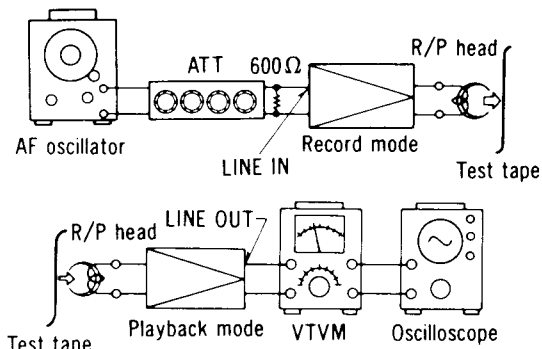
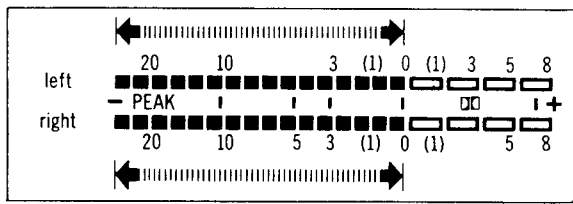
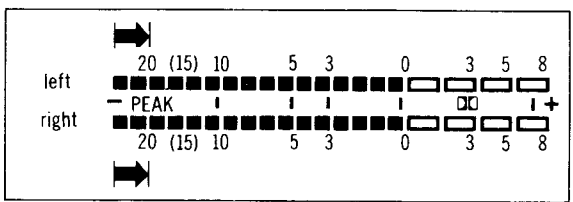
1. Make sure heads are clean.
2. Make sure capstan and pressure roller are clean.
3. Judgeable room temperature: $20 \pm 5^{\circ}\text{C}$ ($68 \pm 9^{\circ}\text{F}$).
4. Dolby NR switch: OUT.
5. Bias selector: LOW.
6. Equalizer selector: $120\mu\text{S}$.
7. Input selector: LINE.

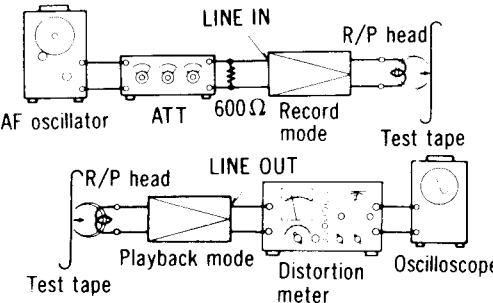
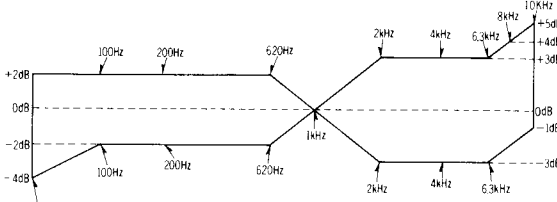
ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
Pressure of pressure roller Equipment: • Tension gauge (max. 500 gr)  Fig. 9	1. Place UNIT into playback mode. 2. Hook the tension gauge to pressure roller lever and pull it in the direction of the arrow as shown in fig. 10. 3. Measure the tension at the moment when the pressure roller moves away from the capstan. Standard value: 350 ± 50 gr Adjustment method Bend the part (A) of the pressure roller spring in either direction shown by the arrow until the correct pressure is attained.	• Playback mode  Fig. 10
Takeup tension Equipment: • Cassette torque meter ... QZZSRKCT	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
Head azimuth adjustment Equipment: • VTVM • Oscilloscope • Test tape (azimuth) ... QZZCFM	Record/playback head adjustment 1. Test equipment connection is shown below.  Fig. 11 2. Play azimuth tape (QZZCFM 8 kHz). 3. Adjust record/playback head angle adjustment screw (B) in fig. 12 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.	• Playback mode  Fig. 12
Tape speed Equipment: • Digital electronic counter or frequency counter • Test tape ... QZZCWAT	Tape speed accuracy 1. Test equipment connection is shown below.  Fig. 13	• Playback mode

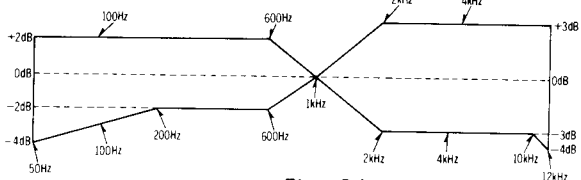
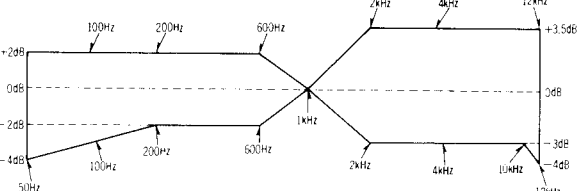
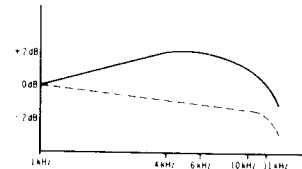
ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
	2. Play test tape (QZZCWAT 3,000Hz), and supply playback signal to frequency counter. 3. Measure this frequency. 4. On the basis of 3,000Hz, determine value by following formula: $\text{Tape speed accuracy} = \frac{f - 3,000}{3,000} \times 100 (\%)$ where, f = measured value 5. Take measurement at middle section of tape. Standard value: $\pm 1.5\%$ Adjustment method 1. Play the test tape (middle). 2. Adjust tape speed adjustment VR (shown in fig. 28) 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.  Fig. 14 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: 0.07% (WRMS)	• Playback mode
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. 11). 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

ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
	Playback frequency response chart  Fig. 15 Adjustment method If the measured value is not standard, adjust VR1 (L-CH), VR2 (R-CH).	
Playback gain Equipment: • VTVM • Oscilloscope • Test tape... QZZCFM	- Test equipment connection is shown in fig. 11. - Play standard recording level portion on test tape (QZZCFM 315Hz), and using VTVM measure the output level at LINE OUT jack. - Make measurement for both channels. Standard value: 0.65V Adjustment method - If measured value is not standard, adjust VR3 (L-CH), VR4 (R-CH) (See fig. 28 on page 10). - After adjustment, check "Playback frequency response" again.	• Playback mode
Playback S/N ratio Equipment: • VTVM • Oscilloscope • Test tape... QZZCFM • Empty cassette	- Test equipment connection is shown in fig. 11. - Play standard recording level test tape (QZZCFM 315Hz) and read output level on VTVM. Refer to "Playback gain adjustment". - Place empty cassette (which has been cut) and playback again. - Measure noise level at this time using VTVM, and determine ratio of this level to test tape output signal voltage (315Hz). Standard value: Greater than 45dB	• Playback mode
Bias leak Equipment: • VTVM • Oscilloscope	- Test equipment connection is shown below.  Fig. 16 - Place UNIT into record mode. - Adjust trap coil L5 (L-CH), L6 (R-CH), so that measured value on VTVM becomes minimum. - Take adjustment for both channels.	• Record mode

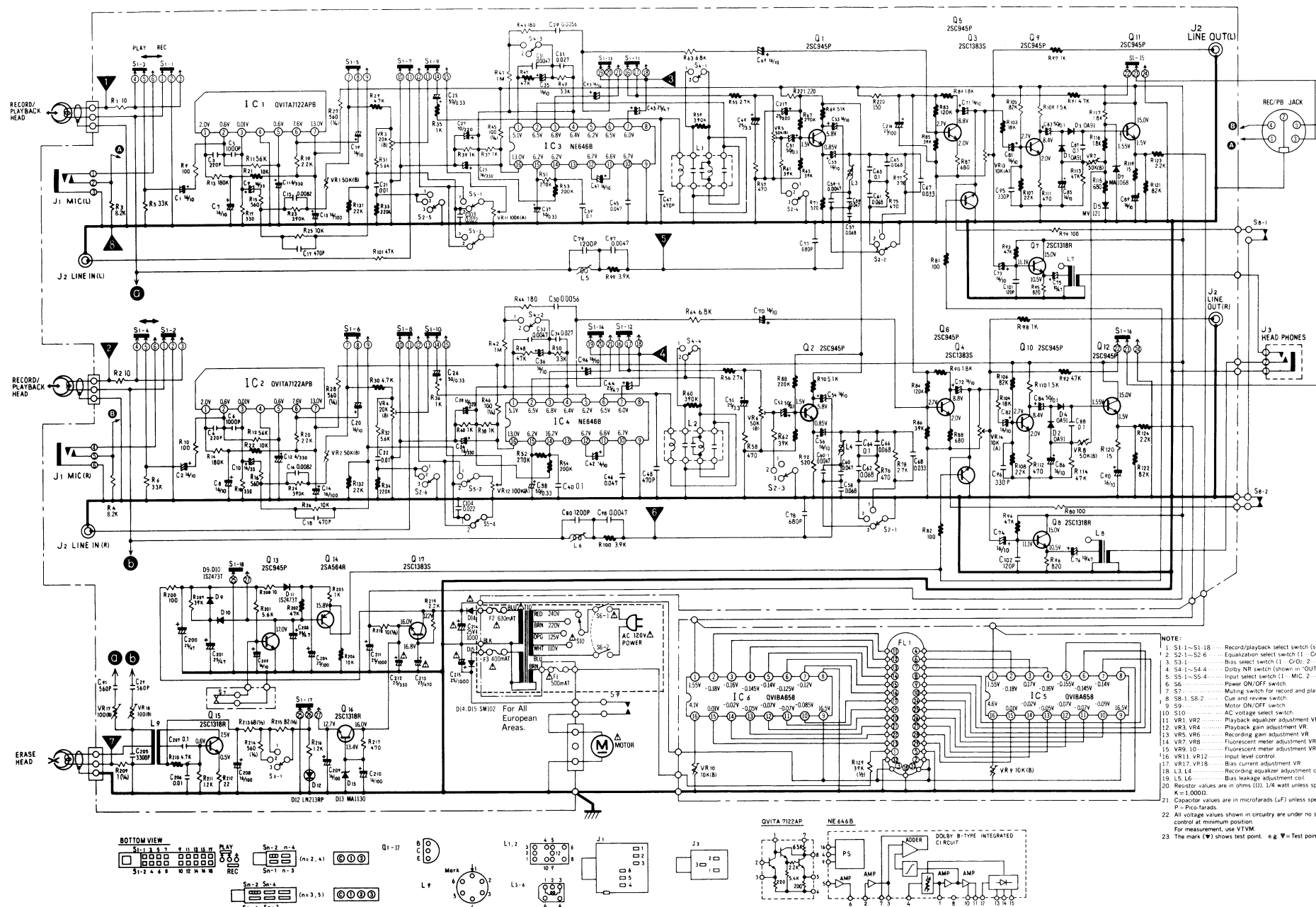
ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
Bias current Equipment: • VTVM • Oscilloscope	1. Test equipment connection is shown below.  Fig. 17 $\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10 (\Omega)}$ 2. Place UNIT into record mode, and bias selector to "LOW". 3. Read voltage on VTVM and calculate bias current by following formula: Standard value: 300μA (LOW position) 310μA (MED position) 365μA (HIGH position) 4. Adjust VR17 (L-CH) and VR18 (R-CH) (See adjustment part location on page 10)	• Record mode • When bias current is adjusted on one channel only, note that bias current on the other channel may vary.
Erase current Equipment: • VTVM • Oscilloscope	1. Test equipment connection is shown below.  Fig. 18 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: $\text{Erase current (A)} = \frac{\text{Value read on VTVM (V)}}{1 (\Omega)}$ Standard value: More than 40mA (LOW position) More than 45mA (MED position) More than 55mA (HIGH position)	• Record mode • Bias selector ... LOW

ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
Overall gain Equipment: * AF oscillator * VTVM * ATT * Oscilloscope * Test tape (reference blank tape) ... QZZCRA for Normal	- Test equipment connection is shown in fig. 19.  Fig. 19 - Place UNIT into record mode, and equalizer selector to 120μS, bias selector to LOW (for normal tape). - Supply 1 kHz signal (−24 dB) from AF oscillator, through ATT, to LINE IN. - Adjust ATT until monitor level at LINE OUT becomes 0.65 V. - Using test tape, make recording. - Playback recorded tape, and make sure the value at LINE OUT on VTVM becomes 0.65 V. - If measured value is not 0.65 V, adjust VR5 (L-CH), VR6 (R-CH) (See fig. 28 on page 10) - Repeat from step (2)	* Record/playback mode * Input level control MAX * Standard input level: MIC −72 ± 4 dB LINE IN ... −24 ± 3 dB
Fluorescent meter Equipment: * VTVM * AF oscillator * ATT	- Test equipment connection is shown in fig. 19. - Supply 1 kHz signal (−24 dB) to the LINE IN jack, then press the record button. - Adjust the ATT so that the output level at LINE OUT jack becomes 0.65 V. (= standard input level). - Adjustment at "0 dB".  Fig. 20 - Adjust VR9 (L-CH) and VR10 (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. - 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. - Adjustment at "−20 dB"  Fig. 21	* Record mode * Input level control.....MAX * Tape selectors ... Normal position

ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
	A. Adjust VR7 (L-CH) and VR8 (R-CH) so that the Fluorescent meters show an illuminated indication up to "−20dB" when the input signal level is 15.1 dB lower than the standard input level. B. Then confirm that the Fluorescent meters show an illuminated indication up to "−15dB" when the input signal level is 15.0 dB lower than the standard input level.	
Overall distortion Equipment: • Distortion meter • AF oscillator • ATT • Oscilloscope • Test tape (reference blank tape) ... QZZCRA for Normal ... QZZCRX for CrO₂ ... QZZCRY for FeCr	1. Test equipment connection is shown in fig. 22.  Fig. 22 2. Supply 1kHz signal to LINE IN and adjust ATT so that output level at LINE OUT indicates 0.65 V. 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 % (FeCr, CrO₂)	* Record/playback mode * Input level control MAX
Overall frequency response Equipment: • VTVM • 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. 19. 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 −20 dB below standard recording level (standard recording level = 0 VU). 5. At this time, LINE OUT level indicates 0.065 V. 6. Record each frequency 50 Hz, 100 Hz, 200 Hz, 1 kHz, 4 kHz, 8 kHz and 10 kHz (12 kHz for CrO₂ tape or FeCr 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 1 kHz. 8. Make sure that the measured value is within the range specified in the overall frequency response chart. Overall frequency response chart (Normal)  Fig. 23	* Record/playback mode * Input level control MAX

ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
	9. Set the bias selector to CrO₂ position. 10. Measure as same as manner above. 11. Make sure that the measured value is within the range specified in the overall frequency response chart for CrO₂ tape below. Overall frequency response chart (CrO₂)  Fig. 24 12. Set the bias selector to FeCr position. 13. Measure as same as manner above. 14. Make sure that the measured value is within the range specified in the overall frequency response chart for FeCr tape below. Overall frequency response chart (FeCr)  Fig. 25	
Overall frequency response adjustment (As a standard for adjustment)	Adjustment 1—Using bias current - 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 VR17 (L-CH), VR18 (R-CH). - When it becomes lower, as shown by dotted line, reduce the bias current by turning VR17 (L-CH), VR18 (R-CH). Note: - 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. - For the method of bias current measurement, refer to "Bias current adjustment" on page 6.  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.	

SCHEMATIC DIAGRAM MODEL RS-M22

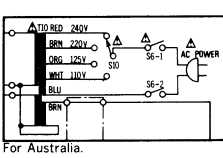
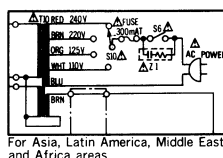


- NOTE: RESISTORS**
- ERG... Carbon
 - ERG... Metal-oxide
 - ERO... Metal-film
 - ERX... Metal-film
 - ERQ... Fuse type metallic
 - ERC... Solid
 - ERF... Cement
- CAPACITORS**
- ECG... Ceramic
 - ECK... Ceramic
 - ECC... Ceramic
 - ECF... Ceramic
 - ECQ... Polyester
 - ECQE... Polyester
 - ECQF... Polypropylene
 - ECE... Electrolytic
 - ECE... Non polar electrolytic
 - EQS... Polystyrene
 - ECS... Tantalum

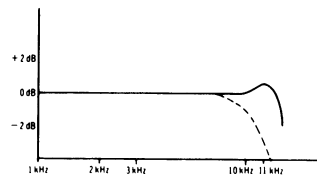
Ref. No.	Part No.	Ref. No.	Part No.
RESISTORS		VARIABLE RESISTORS	
R1, 2	ERD25TJ100	VR1, 2	EVLS3AA00B54
R3, 4	ERD25TJ822	VR3, 4	EVLS3AA00B24
R5, 6	ERD25TJ333	VR5, 6, 7, 8	EVLS3AA00B54
R9, 10	ERD25TJ101	VR9, 10	EVLS3AA00B14
R11, 12	ERD25TJ563	VR11, 12	EKWN3AF21A15
R13, 14	ERD25TJ184	VR17, 18	EVLS3AA00B15
R15, 16	ERD25TJ561	CAPACITORS	
R17, 18	ERD25TJ331	C1, 2	ECEA16Z10
R19, 20	ERD25TJ222	C3, 4	ECCD1H221K
R23, 24	ERD25TJ394	C5, 6	ECKD1H102MD
R25, 26	ERD25TJ103	C7, 8	ECEA1CS100
R27, 28	ERD25TJ561	C9, 10	ECEA1CS330
R31, 32	ERD25TJ562	C11, 12	ECEA0JS331
R37, 38, 39, 40	ERD25TJ102	C13, 14	ECEA1ES101
R41, 42	ERD25TJ105	C15, 16	ECFTD822KVY
R43, 44	ERD25TJ181	C17, 18	ECKD1H471KB
R45, 46	ERD25TJ101	C19, 20	ECEA1CS100
R49, 50	ERD25TJ332	C21, 22	ECFTD103KVY
R57, 58	ERD25TJ471	C23, 24	ECEA1CS331
R61, 62	ERD25TJ393	C25, 26	ECEA50MR33
R63, 64	ERD25TJ682	C27, 28	ECEA1AS221
R75, 76	ERD25TJ471	C29, 30	ECQM05562JZ
R77, 78	ERD25TJ272	C31, 32	ECQM05472JZ
R79, 80	ERD25TJ101	C33, 34	ECQM05273JZ
R95, 96	ERD25TJ821	C35, 36	ECEA1CS100
R101, 102	ERD25TJ473	C37, 38	ECEA50ZR33
R103, 104	ERD25TJ183	C39, 40	ECQM05104MZ
R109, 110	ERD25TJ152	C41, 42	ECEA1CS100
R111, 112	ERD25TJ471	C43, 44	ECEA1ES4R7
R113, 114	ERD25TJ473	C45, 46	ECFTD473MXY
R117	ERD25TJ182	C47, 48	ECKD1H471KB
R119, 120	ERD25TJ150	C49, 50	ECEA50ZR33
R129	ERG12ANJ390	C51, 52	ECEA50ZR1
R200	ERG12ANJ101	C53, 54, 55, 56	ECEA1CS100
*For All European areas	ERG12ANJ101	C57, 58	ECQM05683KZ
R200	ERG12ANJ101	C59, 60	ECFTD473KXY
R200	ERG12ANJ101	C61, 62	ECQM05683KZ
*For Asia, Latin America, Middle East, Africa and Australia areas	ERG12ANJ101	C63, 64	ECQM05104KZ
R201	ERD25TJ562	C65, 66	ECQM05683KZ
R205	ERD25TJ102	C67, 68	ECFTD473KXY
R208	ERD25TJ100	C69, 70, 71, 72, 73, 74	ECEA1CS100
R209	ERD25TJ181	C75, 76	ECEA1AS470
R211	ERD25TJ122	C77, 78	ECKD1H681KB
R212	ERD25TJ220	C79, 80	EQS1122KZ
R213	ERG12ANJ680	C81, 82	ECEA1CS100
R214	ERD25TJ561	C83, 84	ECEA50MR1
R215	ERG12ANJ820	C85, 86	ECEA1CS100
R216	ERD25TJ122	C87, 88	ECQM05104MZ
R217	ERD25TJ471	C89, 90	ECEA1CS100
R218	ERG12ANJ100	C91, 92	ECKD1H561KB
R219	ERD25TJ222	C93, 94	ECEA1CS100
R220	ERD25TJ151	C95, 96	ECCD1H331K
*For All European areas	ERD25TJ151	C97, 98	ECFTD472KVY
R220	ERD25TJ101	C101, 102	ECCD1H121K
*For Asia, Latin America, Middle East, Africa and Australia areas	ERD25TJ101	C103, 104	ECQM05223KZ
R221	ERD25TJ221	C200, 201	ECEA1ES470
*For All European areas	ERD25TJ221	C202	ECEA1CS100
R221	ERD25TJ101	C203	ECEA25Z4R7
*For Asia, Latin America, Middle East, Africa and Australia areas	ERD25TJ101	C204	ECEA1ES101
R401, 402	ERD25TJ103	C205	EQS1332KZ
		C206	ECFTD103KVY
		C207	ECQM05104MZ
		C208, 209, 210	ECEA1ES101
		C211	ECEA1VS102
		C212	ECEA1ES331
		C213	ECEA1ES471
		C214, 215	ECEA1VS102
		C216	ECEA1ES101
		C217	ECEA1ES221

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

Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
COMBINATION PART			DIODES			COILS		
Z1	QCR0008T	Spark Killer	D1, 2, 3, 4	OA91	Diode	L1, 2	QLM926K	MPX Filter Coil
*For Asia, Latin America, Middle East and Africa areas			D5	MV121	"	L3, 4, 5, 6	QLQM0333	Coil
TRANSISTORS			D7	MA1068	Zener Diode	L7, 8	QLT2D26X	Headphone Transformer
Q1, 2	2SC945P	Transistor	D9, 10, 11	1S2473T	Diode	L9	QLB0155	Oscillator Coil
Q3, 4	2SC1383S	"	D12	LN213RP	Light Emitting Diode	SWITCHES		
Q5, 6	2SC945P	"	D13	MA1130	Zener Diode	S1	QSS1203	Slide Switch
Q7, 8	2SC1318R	"	D14, 15	SM102	Diode	S2	QST6314	Lever Switch
Q9, 10, 11, 12, 13	2SC945P	"	TRANSFORMERS			S3	QST2305	"
Q14	2SA564R	"	T10	QLPD27ELCB	Power Transformer	S4, 5	QST4220	"
Q15, 16	2SC1318R	"	*For All European areas except United Kingdom			S6	QSW2214	Push Switch
Q17	2SC1383S	"	T10	QLPA42ELCA	Power Transformer	*For All European areas and Australia		
INTEGRATED CIRCUITS			*For Asia, Latin America, Middle East, Africa, Australia and United Kingdom areas			S6	QSW1206A	Push Switch
IC1, 2	QVITA7122AQB	Integrated Circuit				*For Asia, Latin America, Middle East and Africa areas		
IC3, 4	NE646B	"				S7	QSB0178	Leaf Switch
						S8	QSB0186	"
						S9	QSB0178	"
						S10	QSR1407H	Rotary Switch



ELECTRICAL PARTS LOCATION

ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
	 Fig. 27	
Dolby NR circuit Equipment: * VTVM * AF oscillator * ATT * Oscilloscope	- Place UNIT into record mode, set the Dolby NR switch to OUT position and supply to LINE IN to obtain -34.5 dB at TP3 (L-CH), TP4 (R-CH) (frequency 5 kHz). - Confirm that the value at IN position is 8(±2.5)dB greater than the value at OUT position of Dolby NR switch.	* Record mode * Input level control MAX
Overall S/N ratio Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Test tape (reference blank tape) ... QZZCRA	- Test equipment connection is shown in fig. 19. - Supply 1kHz signal to LINE IN and adjust ATT so that output level at LINE OUT indicates 0.65V. - Make recording. - Make another recording without supplying signal (disconnect input plug to LINE IN). - Rewind to recorded part and playback. - Measure output signal level and no signal level (noise), and determine the ratio in decibels (dB). - 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. Standard value: Greater than 43dB (without NAB filter)	* Record/playback mode * Input level control MAX * Erase the tape with a bulk tape eraser.

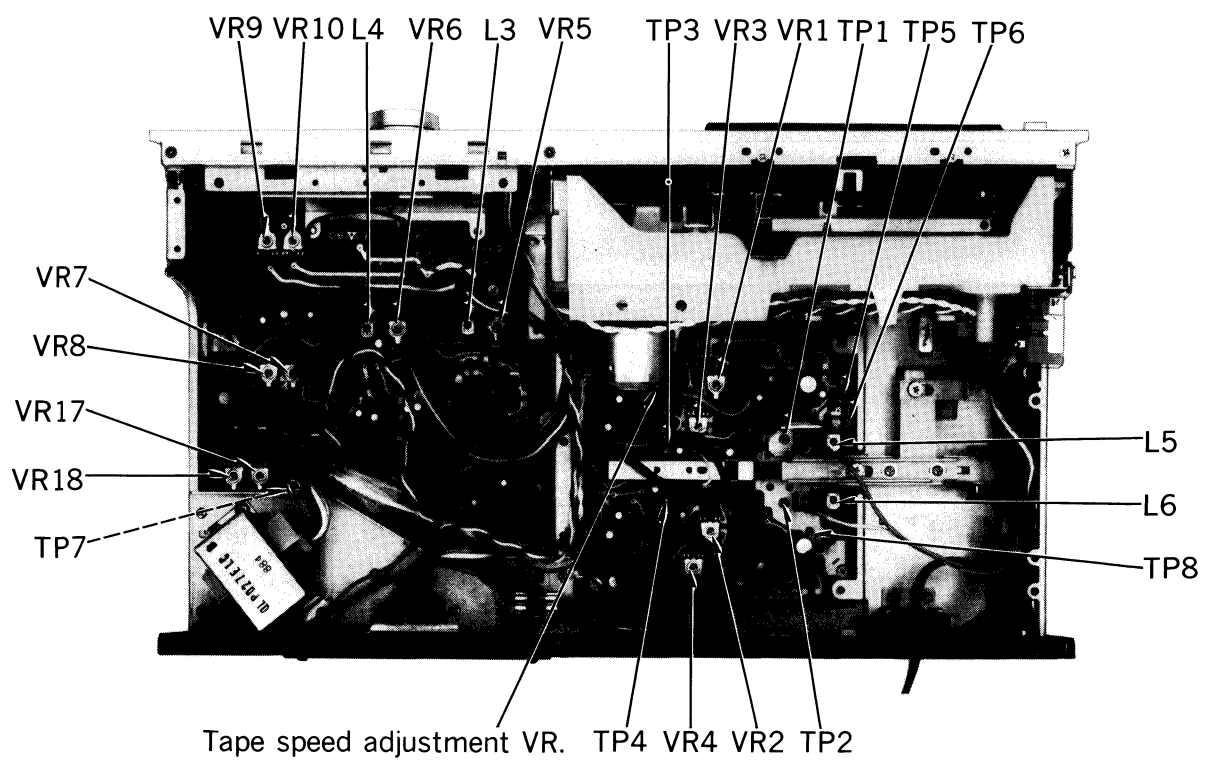
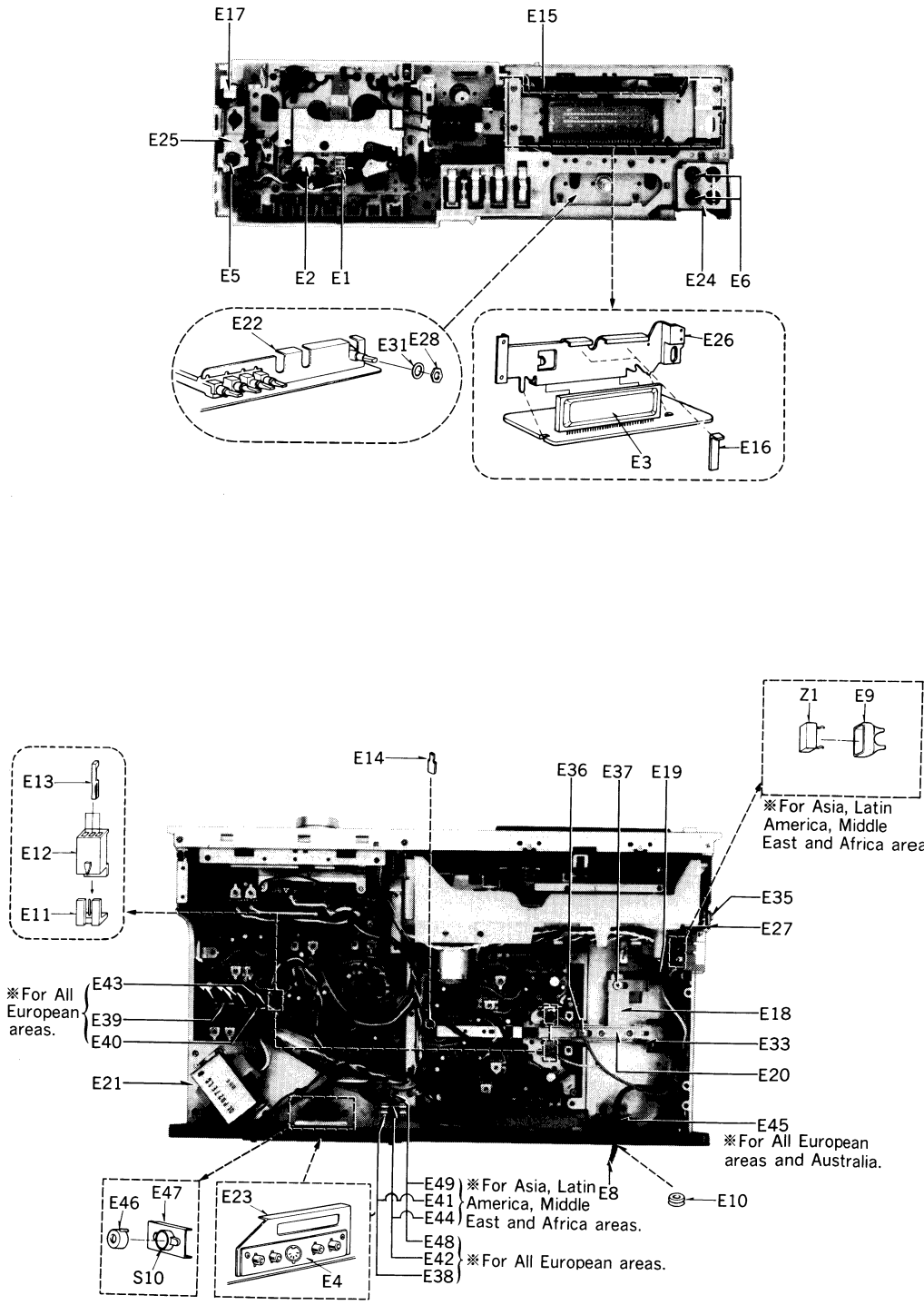


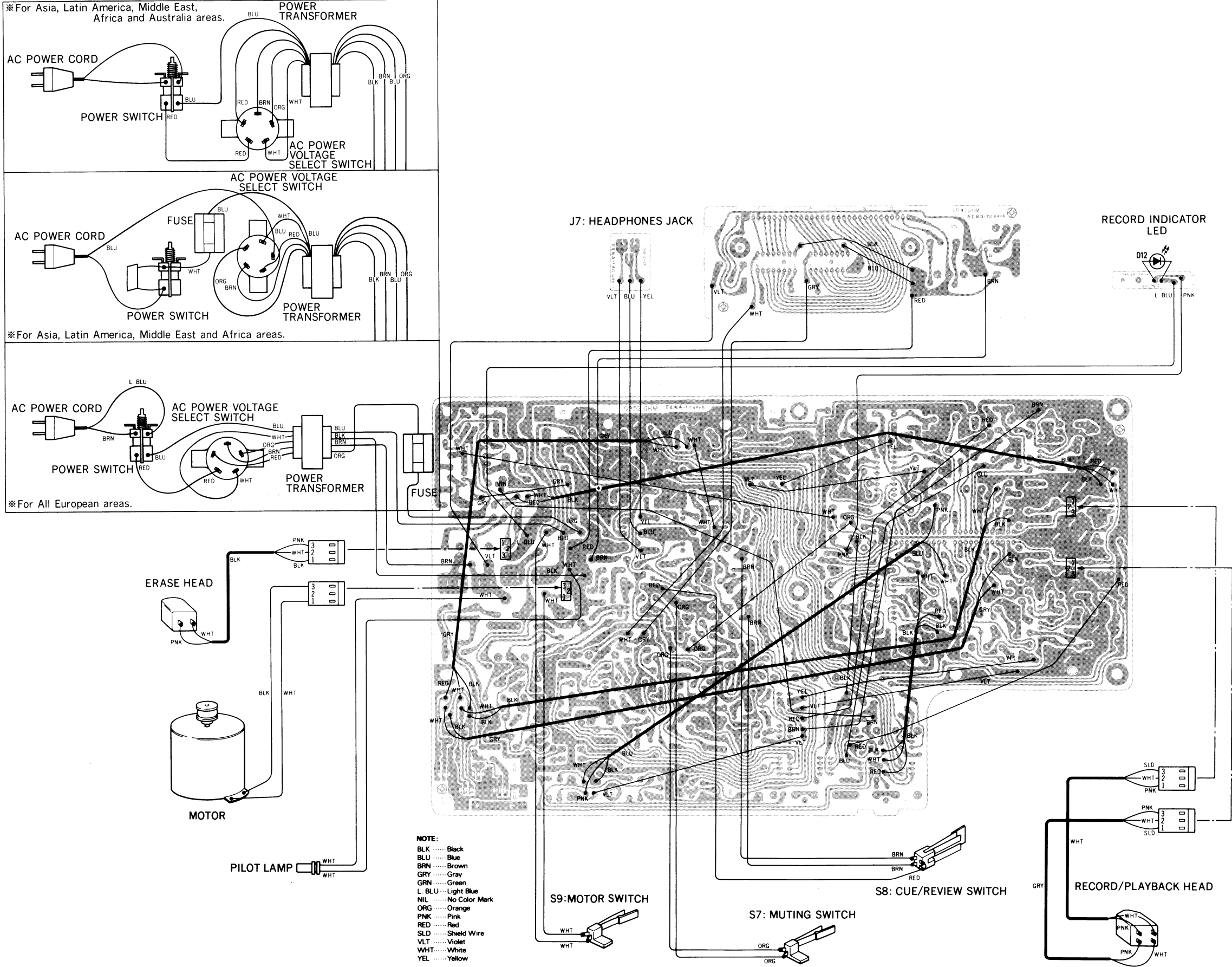
Fig. 28

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

Ref. No.	Part No.	Part Name & Description
ELECTRICAL PARTS		
E1	QWY4113Z	Record/Playback Head
E2	QWY2122ZA	Erase Head
E3	QSL5001RF	Fluorescent Level Meter
E4	QEJ5002S	Pin Jack Board Assembly
E5	QJA0249	Headphones Jack
E6	QJA0444H	Microphone Jack
E8	QFC1204M	AC Power Cord
*For All European areas except United Kingdom		
E8	QFC1205M	AC Power Cord
*For United Kingdom		
E8	QFC1203M	AC Power Cord
*For Asia, Latin America, Middle East and Africa areas		
E8	QFC1208M	AC Power Cord
*For Australia		
E9	QTW1118	Spark Killer Cover
*For Asia, Latin America, Middle East and Africa areas		
E10	QBJ1425	Cord Bushing
*For All European areas and Australia		
E10	QTD1129	Cord Bushing
*For Asia, Latin America, Middle East and Africa areas		
E11	QJP1921TN	3 Pin Plug
E12	QJS1921TN	3 Pin Socket
E13	QJT1054	Contact
E14	QJT0055	Connector Terminal
E15	QBG1506	LED Holder
E16	QBM1251	Cushion
E17	QXB0600	Power Switch Button
*Silver Type		
*Black Type		
*For All European areas and Australia		
E17	QXB0558	Power Switch Button
*Silver Type		
*For Asia, Latin America, Middle East and Africa areas		
E18	QMA3470	Switch Lever
E19	QMA3471	Record Lever
E20	QMA3500	Adjustment Angle
E21	QMA3472	Transformer Angle
E22	QMA3477	Volume Angle
E23	QMA3469	Jack Board Angle
E24	QMA3479	Microphone Jack Angle
E25	QMA3328	Headphone Jack Angle
E26	QMA3478	Meter Holding Angle
E27	QMA3204	Power Switch Angle
E28	QNQ1039	Nut 9φ
E29	QNQ1004	Nut 8φ
E30	QNQ1070	Nut 10φ
E31	QWQ1133	Washer 9φ
E32	QWQ2002	Washer 8φ
E33	QBT1787	Lock Lever Spring
E35	XSNQ0004S	Screw
E36	QHQ1188S	"
E37	QHQ1165S	"
E38	Δ XBAQ0007	Fuse—400mAT
*For All European areas		
E39	Δ XBAQ0003	Fuse—500mAT
*For All European areas		
E40	Δ XBAQ0008	Fuse—630mAT
*For All European areas		
E41	Δ XBA2E03NS5	Fuse—300mAT
*For Asia, Latin America, Middle East and Africa areas		
E42	Δ QTF1027	Fuse Holder
*For All European areas		
E43	Δ QTF1054	Fuse Holder
*For All European areas		
E44	Δ QTF1049	Fuse Holder
*For Asia, Latin America, Middle East and Africa areas		
E45	QTD1164	Cord Clamper
*For All European areas and Australia		
E46	RUV3872B	Voltage Selector Cover
E47	QMA3558	Voltage Selector Angle
E48	QMA3669	Fuse Holder Angle
*For All European areas		
E49	QMA3418	Fuse Holder Angle
*For Asia, Latin America, Middle East and Africa areas		

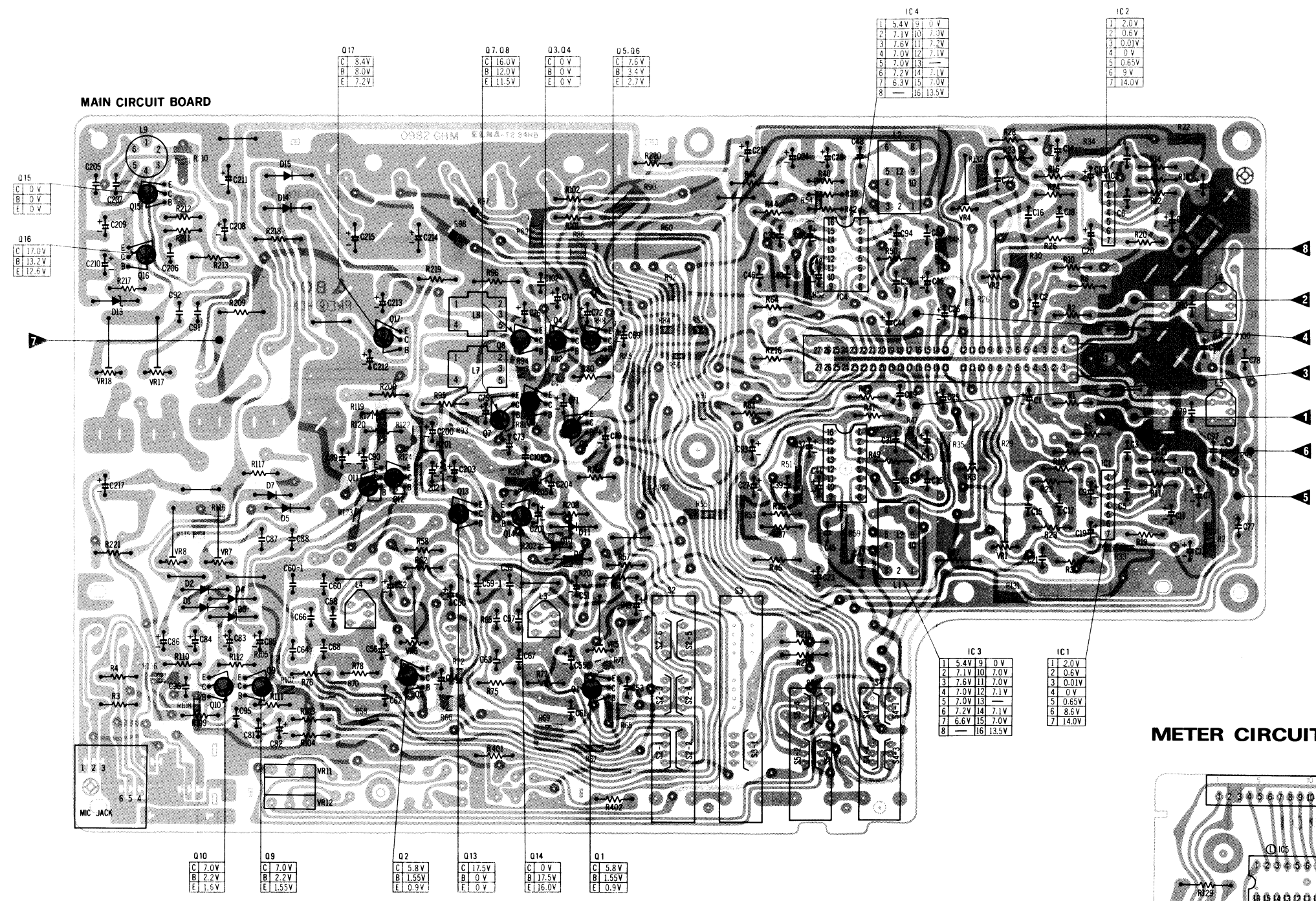


WIRING CONNECTION DIAGRAM MODEL RS-M22



CIRCUIT BOARD

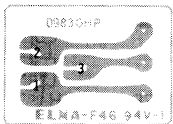
MAIN CIRCUIT BOARD



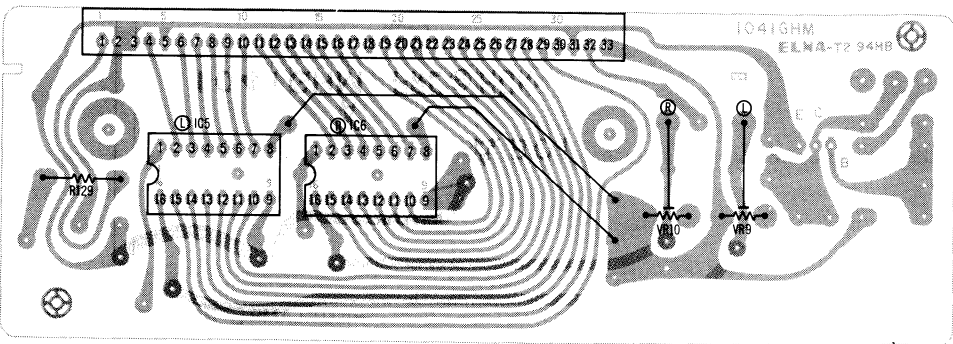
RECORD INDICATION
CIRCUIT BOARD



HEADPHONES
CIRCUIT BOARD



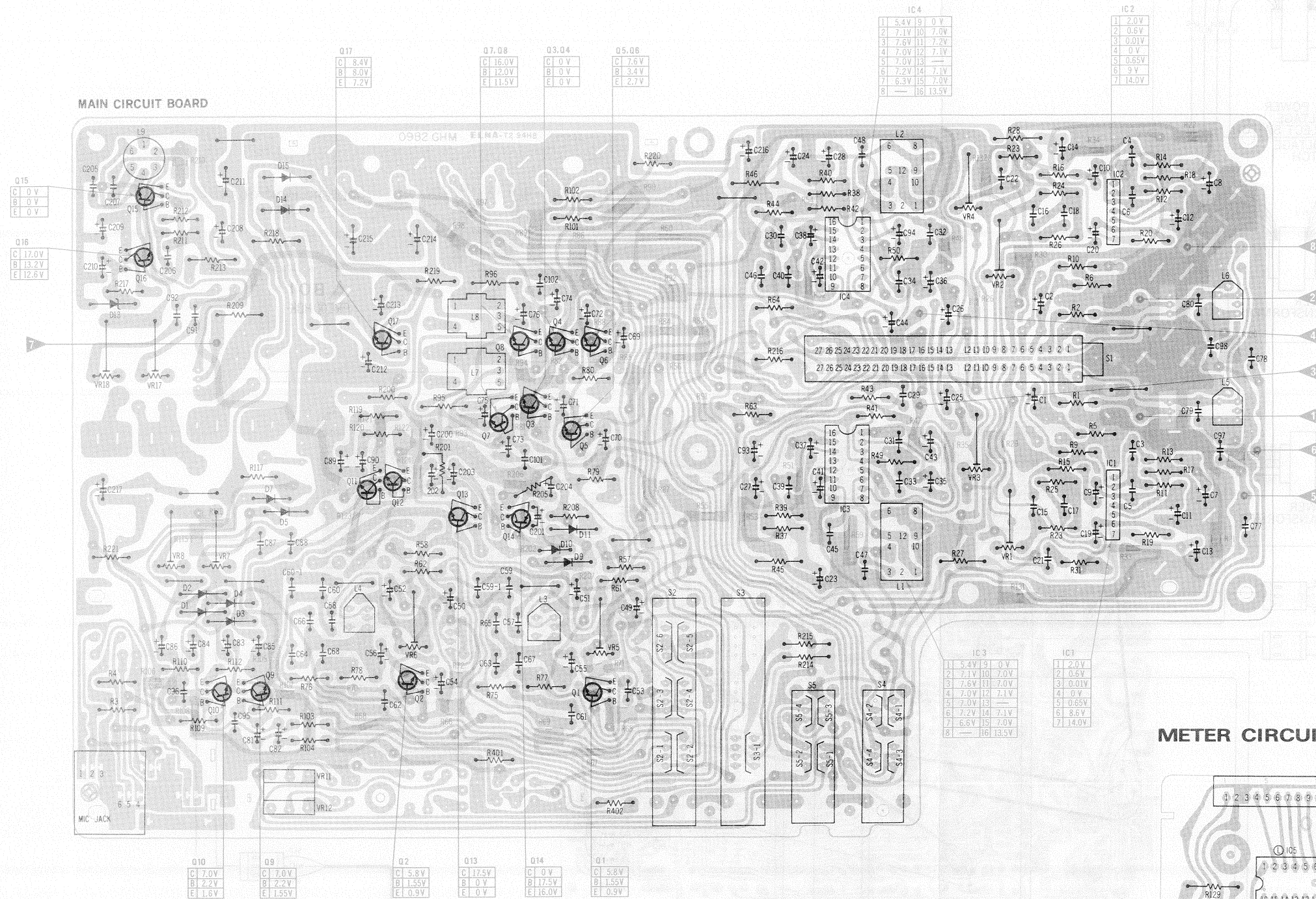
METER CIRCUIT BOARD



NOTE:
The circuit shown in red on the conductor is B circuit.
Values indicated in are DC voltages between the chassis and electrical parts.

CIRCUIT BOARD

MAIN CIRCUIT BOARD



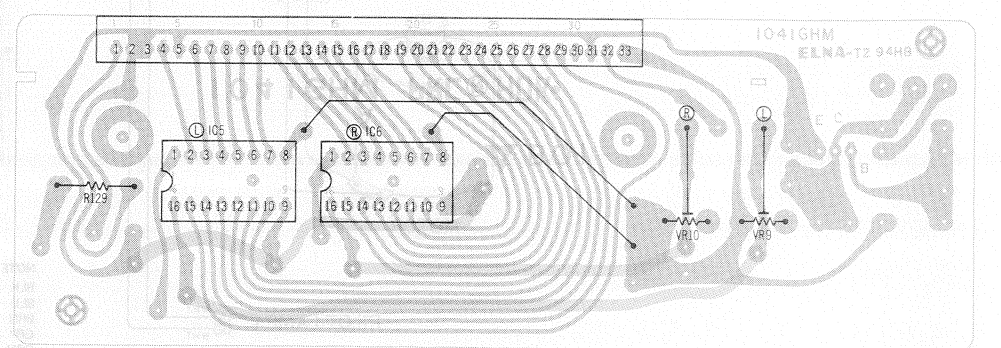
RECORD INDICATION CIRCUIT BOARD



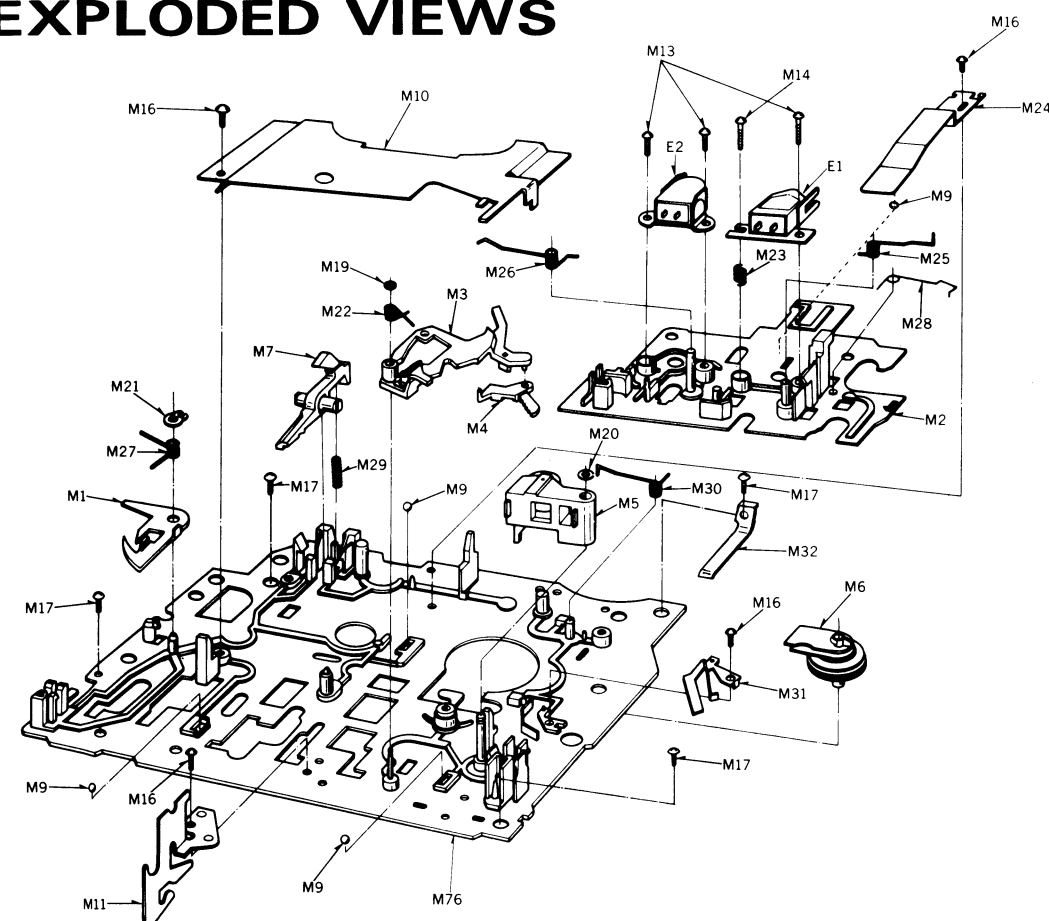
HEADPHONES CIRCUIT BOARD



METER CIRCUIT BOARD

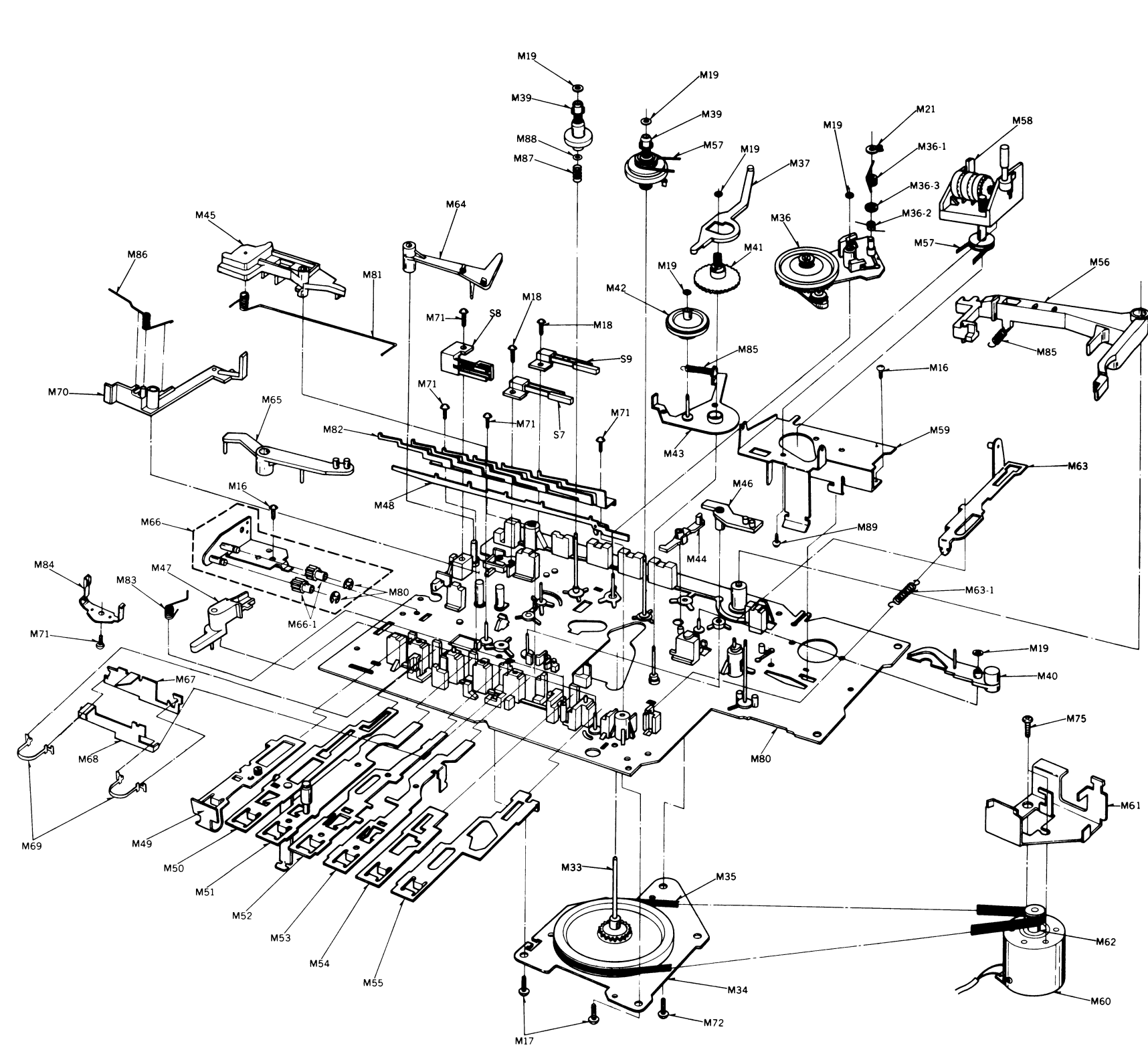


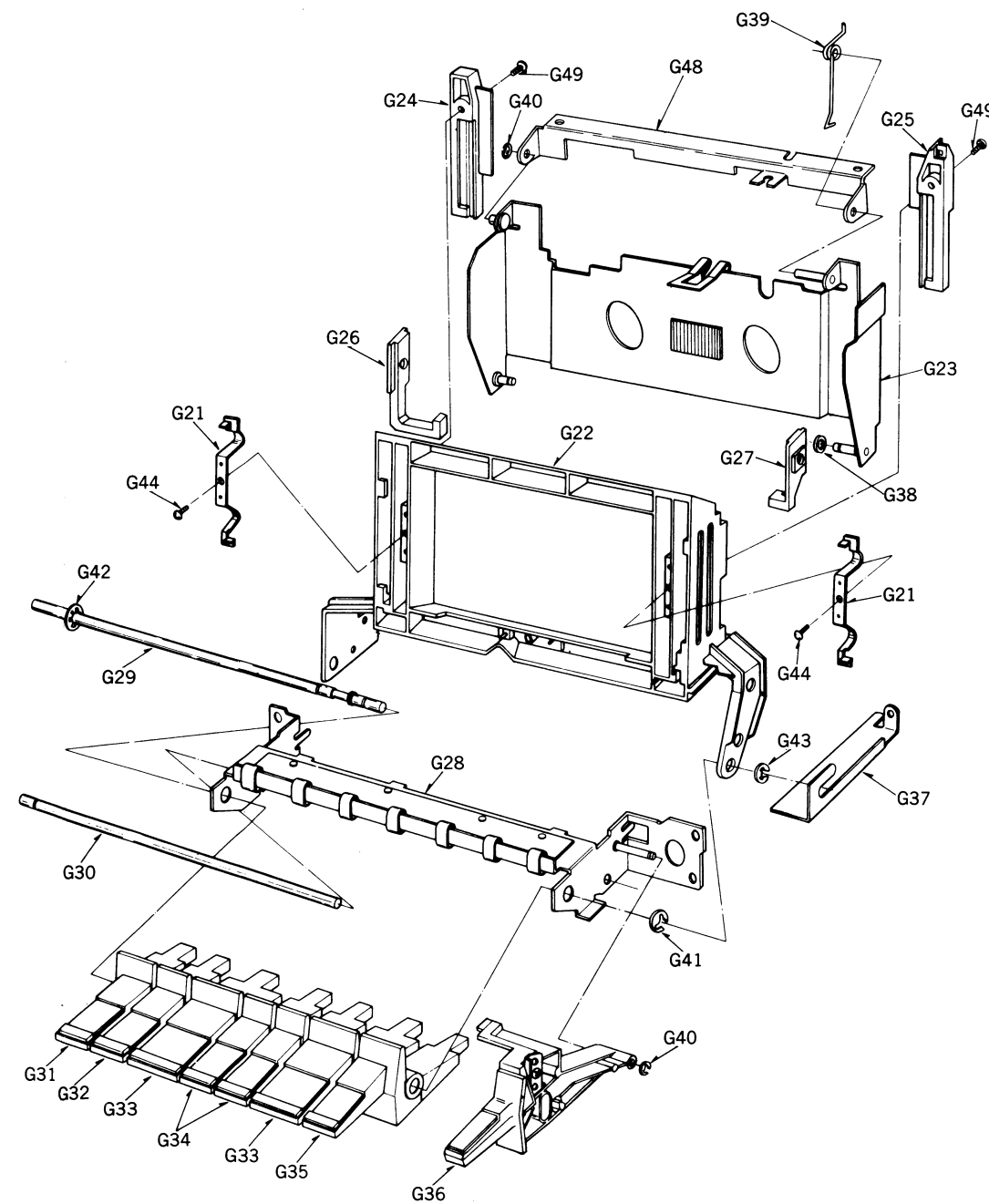
EXPLODED VIEWS



Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
MECHANICAL PARTS					
M1	QML2898	Pause Lock Plate	M43	QXL1037	Gear Lever Assembly
M2	QMK1612	Head Base Plate	M44	QML3042	Auto-Stop Obstruction Lever
M3	QML3047	Obstruction Lever	M45	QML3217	Pause Lever
M4	QML3048	Driving Lever	M46	QML3295	Cue Lever
M5	QXL1057	Pressure Roller Lever Assembly	M47	QML3124	Lock Release Arm
M6	QX10098	Takeup Idler Assembly	M48	QXR0275	Lock Rod Assembly
M7	QML3051	Erase Safety Lever	M49	QXR0342	Pause Rod Assembly
M9	QDK1012	Steel Ball	M50	QXR0343	Record Rod Assembly
M10	QMF1939	Chassis Cover-A			
M11	QMA3169	Shaft Reinforcement Angle			
M13	XSN2+10	Screw $\varnothing 2 \times 10$	M51	QXR0344	Playback Rod Assembly
M14	QH1226	Screw	M52	QMR1624	Rewind Rod-A
M16	XTN26+5B	Screw $\varnothing 2.6 \times 5$	M53	QMR1623	Fast Forward Rod-A
M17	XTN3+10B	Screw $\varnothing 3 \times 10$	M54	QMR1622	Stop Rod-A
M18	XTN26+8B	Screw $\varnothing 2.6 \times 8$	M55	QMR1621	Eject Rod-A
M19	QBW2008	Snap Washer	M56	QML3038	Switch Arm
M20	QBW2046	"	M57	QDB0240	Counter Belt
M21	XUC4FT	Stop Ring 4 ϕ	M58	QXC0028	Tape Counter
M22	QBN1515	Connection Spring		"Silver Type"	
M23	QBC1278	Head Spring		QXC0043	"
				"Black Type"	
M24	QBP1773	Head Base Plate Pressure Spring	M59	QMA3171	Counter Angle
M25	QBN1448	Pressure Roller Spring	M60	MMC6A2HYA	DC Motor
M26	QBN1481	Playback Spring			
M27	QBN1480	Pause Lock Spring	M61	QMA3414	Motor Angle
M28	QBN1514	Timer Spring	M62	QXP0572	Motor Pulley Assembly
M29	QBC1193	Safety Lever Spring	M63	QXR0345	Sub-Eject Rod Assembly
M30	QBN1513	Idler Spring	M63-1	QBT1619	Idler Spring
M31	QBP1723	Click Spring	M64	QML3206	Muting Arm
M32	QBP1777	Holder Reinforcement Spring	M65	QML3207	Muting Lever
M33	QXF0131	Flywheel Assembly	M66	QXG1031	Damper Gear Assembly
			M66-1	QDG1102	Holder Gear
M34	QXH0239	Flywheel Retainer Assembly	M67	QMR1628	Obstruction Rod-A
M35	QDB0236	Capstan Belt	M68	QMR1629	Obstruction Rod-B
M36	QXL1136	Fast Forward Arm Assembly			
M36-1	QBN1517	Fast Forward Spring	M69	QBP1770	Obstruction Rod Spring
M36-2	QBN1559	Fast Forward Arm Spring	M70	QML3287	Brake Lever
M36-3	QMC0080	Collar	M71	XTN26+6B	Screw $\varnothing 2.6 \times 6$
M37	QML3040	Cam Lever	M72	XTN3+25B	Screw $\varnothing 3 \times 25$
M38	QXD0067	Takeup Reel Table Assembly	M75	XSN26+4	Screw $\varnothing 2.6 \times 4$
M39	QXD0084	Supply Reel Table Assembly	M76	QXK1951	Upper Base Plate Assembly
M40	QXL1055	Auto-Stop Lever Assembly	M80	QXK2052	Lower Base Plate Assembly
			M81	QBN1555	Pause Lever Spring
M41	QDG1096	Cam Gear	M82	QBP1664	Operation Rod Spring
M42	QXG1026	Auto-Stop Gear Assembly	M83	QBN1531	Lock Release Arm Spring
			M84	QBP1662	Lock Rod Spring
			M85	QBT1682	Lock Holding Spring
			M86	QBN1574	Brake Spring

Ref. No.	Part No.	Part Name & Description
M87	QBC1338	Back Tension Spring
M88	QBW2018	Poly Washer
M89	XTN26+6B	Screw $\varnothing 2.6 \times 6$





Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
G44 G45	XTN26+SBFV QKG2866 "Silver Type" QKG2866K "Black Type"	Tapping Screw $\pm 2.6 \times 5$ Meter Cover-A " " Meter Cover-B	A2 [D]	QQT2477	Instruction Book *For All European areas except United Kingdom
G46 G47 G48	QKG2868 QKJ0287 QMA3186	Meter Cover-C Fulcrum Angle	A2 [B/A]	QQT2478	Instruction Book *For United Kingdom and Australia
G49	XTN26+8B	Tapping Screw $\pm 2.6 \times 8$	A2 [A]	QQT2504	Instruction Book *For Asia, Latin America, Middle East and Africa areas
<u>ACCESSORIES</u>			<u>PACKINGS</u>		
A1	RP023A	Connection Cord	P1	QPN3784	Inside Carton
			P2	QPA0429	Inner Cushion-L
			P3	QPA0430	Inner Cushion-R
			P4	XZB50X65A02	Poly Bag
			P5	QPS0285	Pad

Ref. No.	Part No.	Part Name & Description
	<u>CABINET PARTS</u>	
G1	QGC1104 "Silver Type"	Case Cover
	QGC1110 "Black Type"	"
G2	QGC1106	Bottom Cover
G3	QKA1076	Rubber Foot
G4	QYP0832 "Silver Type"	Front Panel Assembly
	QYP0832K "Black Type"	"
G4-1	QKJ0286	Stopper
G4-2	XTS3+8B	Screw $\phi 3 \times 8$
G5	QYF0348 "Silver Type"	Cassette Lid Assembly
	QYF0364 "Black Type"	"
G6	QYT0488 "Silver Type"	Volume Knob-A
	QYT0526 "Black Type"	"
G7	QYT0489 "Silver Type"	Volume Knob-B
	QYT0527 "Black Type"	"
G9	QYT0491 "Silver Type"	Lever Knob-A
	QYT0491K "Black Type"	"
G10	QYT0492 "Silver Type"	Lever Knob-B
	QYT0492K "Black Type"	"
G12	QGC1122	Back Cover
G13	QKG2865	Jack Board Ornament
G14	QBW2066	Spacer
G15	QGS2629	Name Plate
	*For All European areas except	United Kingdom
G15	QGS2630	Name Plate
	*For United Kingdom and Australia	
G15	QGS2634	Name Plate
	*For Asia, Latin America, Middle East and Africa areas	
G16	XTS3+10B	Screw $\phi 3 \times 10$
G17	XTN3+10B	Tapping Screw $\phi 3 \times 10$
G18	XSN4+8BVS	Screw $\phi 4 \times 8$
G19	XWC4BFN	Lock Washer 4 ϕ
G20	XTN4+10B	Tapping Screw $\phi 4 \times 10$
G21	QBP1771	Holder Spring
G22	QKF6008	Cassette Holder
G23	QXH0285	Chassis Cover Assembly
G24	QKF6010	Holder Piece-L
G25	QKF6009	Holder Piece-R
G26	QMG0050	Holder Slider-L
G27	QMG0049	Holder Slider-R
G28	QXA0637	Push Button Holding Angle
G29	QMN2240	Push Button Shaft-A
G30	QXA01861	Push Button Shaft-B
G31	QGO1473 "Silver Type"	Push Button (PAUSE)
	QGO1551 "Black Type"	"
G32	QGO1474 "Silver Type"	Push Button (RECORD)
	QGO1552 "Black Type"	"
G33	QGO1476 "Silver Type"	Push Button (PLAY, STOP)
	QGO1554 "Black Type"	"
G34	QGO1477 "Silver Type"	Push Button (FF, REW)
	QGO1555 "Black Type"	"
G35	QGO1475 "Silver Type"	Push Button (EJECT)
	QGO1553 "Black Type"	"
G36	QXB0556 "Silver Type"	Timer Button Assembly
	QXB0616 "Black Type"	"
G37	QMA3576	Shaft Retainer Angle
G38	QBW2017	Washer
G39	QBN1554	Chassis Cover Spring
G40	XUC25FT	Stop Ring 2.5 ϕ
G41	XUC4FT	Stop Ring 4 ϕ
G42	QNQ1080	Stop Ring
G43	XUC3FT	Stop Ring 3 ϕ

Service Manual

Cassette Deck
RS-M22
 (Silver Face)

Supplementary

Front-Loading Vertical Hold Stereo Cassette Deck with
 FL Bar Graph Peak Meters, Rewind Auto-Play,
 and Separate 3-Position Bias and Equalization Selectors

For additional information, please refer to the service manual for Model No. RS-M22.

Notes:

1. This service manual indicates the main differences between; original RS-M22 for (D/B/N/A) and RS-M22 for PX.
2. Please file this manual with the service manual for Model No. RS-M22 (original), order No. ARD-7812089C.

PARTS COMPARISON TABLE:

Ref. No.	Description	Parts Number		Remarks
		Original	for PX	
R3, 4	Resistor	ERD25TJ822	ERD25TJ681	
C103, 104	Capacitor	ECQM05223KZ	—	Deleted
E4	Pin Jack Board Assembly	QEJ5002S	QEJ5003S	
G4	Front Panel Assembly	QYP0832	QYP0752	
G15	Name Plate	QGS2629	QGS2710	
A2	Instruction Book	QQT2477	QQT2657	
P1	Inside Carton	QPN3784	QPN3781	

※ Other parts are just same as parts for Asia, Latin America, Middle East and Africa areas.

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Printed in Japan.