ORDER NO. ARD81030032C8-10

Service Manual

Cassette Deck

RS-M205

(Silver Face
Black Face)

Metal Tape Compatible Stereo Cassette Deck with Soft-Touch Controls and Rewind Auto-Play Convenience

DOLBY SYSTEM

This is the Service Manual for the following areas.
- [D] ..... For all European areas except United Kingdom.
- [N] ..... For Asia, Latin America, Middle East and Africa areas.
- [A] ..... For Australia.

RS-M24 MECHANISM SERIES

Specifications

Track system:	4-track 2-channel stereo recording and playback
Tape speed:	4.8 cm/s (1-7/8 ips.)
Wow and flutter:	0.05% (WRMS)
Frequency response:	Metal tape; 20 – 17,000 Hz 30 – 15,000 Hz (DIN) CrO_2 tape; 20 – 16,000 Hz 30 – 15,000 Hz (DIN) Normal tape; 20 – 15,000 Hz 30 – 13,000 Hz (DIN)
Signal-to-noise ratio:	Dolby* NR in; 66 dB (above 5 kHz) Dolby NR out; 56 dB (signal level = max. recording level, CrO_2 type tape)
Fast forward and rewind time:	Approx. 90 seconds with C-60 cassette tape
Inputs:	MIC; sensitivity 0.25 mV, input impedance 60 kΩ applicable microphone impedance 400Ω – 10 kΩ LINE; sensitivity 60 mV, input impedance 47 kΩ
Outputs:	LINE; output level 400 mV, output impedance 1.5 kΩ or less, load impedance 22 kΩ over HEADPHONES; output level 80 mV, load impedance 8Ω
Rec/pb connection:	5P DIN type; input sensitivity 0.25 mV, impedance 5.6 kΩ output level 400 mV, impedance 1.5 kΩ
Bias frequency:	80 kHz
Motor:	Electrical DC governor motor
Heads:	2-head system; 1-MX head for record/playback 1-double-gap ferrite head for erasure
Power requirements:	[D] ··· AC; 110/220 V, 50-60 Hz [N] ··· AC; 110/125/220/240 V, 50-60 Hz [A] ··· AC; 240 V
Power consumption:	10 W
Dimensions:	43.0 cm(W) × 12.2 cm(H) × 20.6 cm(D)
Weight:	3.9 kg

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

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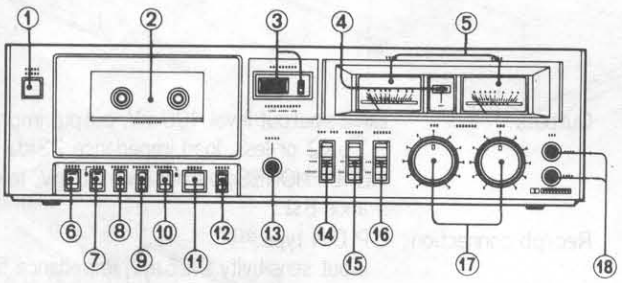
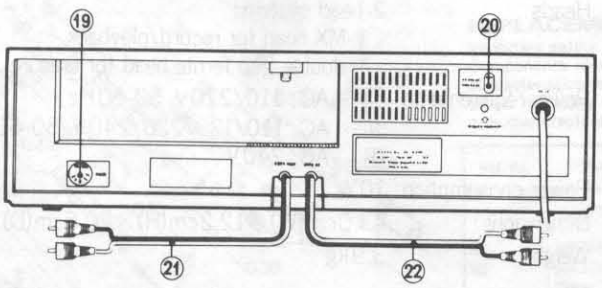
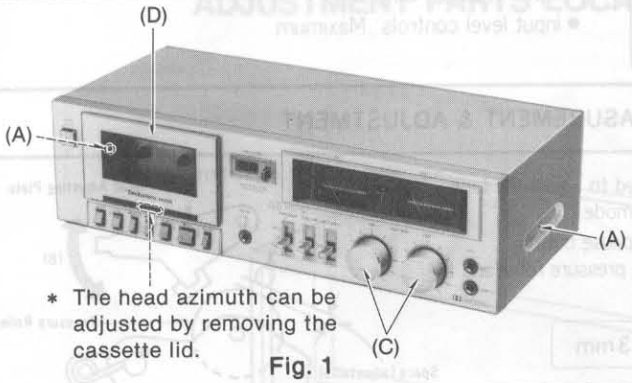
LOCATION OF CONTROLS AND COMPONENTS





① Power switch [power (push on)]
② Cassette holder
③ Tape counter and Reset button (tape counter)
④ Recording indication lamp (rec)
⑤ VU meters (left-level-right)
⑥ Eject button (▲ eject)
⑦ Record button (○ rec-◳)
⑧ Rewind/Review button (◀◀ rew/rev)
⑨ Fast forward/Cue button (▶▶ ff/cue)
⑩ Play button (▶ play-◳)
⑪ Stop button (■ stop)
⑫ Pause button (❙❙ pause)
⑬ Headhones jack (phones)
⑭ Tape selector [tape select (Metal•CrO_2•Normal)]
⑮ Dolby noise-reduction switch [Dolby NR (in•out)]
⑯ Input selector [input select (line•mic (DIN))]
⑰ Input level controls [input level (left•right)]
⑱ Microphone jacks [mic (left•right)]
⑲ Record/Playback connection socket (REC/PLAY)
⑳ Voltage selector (VOLTAGE SELECTOR)
* For all European areas except United Kingdom
* For Asia, Latin America, Middle East and Africa areas
㉑ Line output cord (LINE OUT)
㉒ Line input cord (LINE IN)

DISASSEMBLY INSTRUCTIONS



* The head azimuth can be adjusted by removing the cassette lid.

Fig. 1

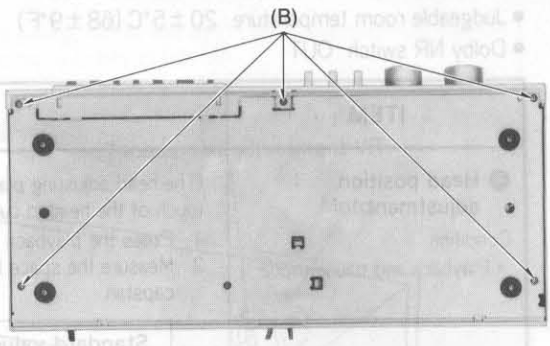


Fig. 2

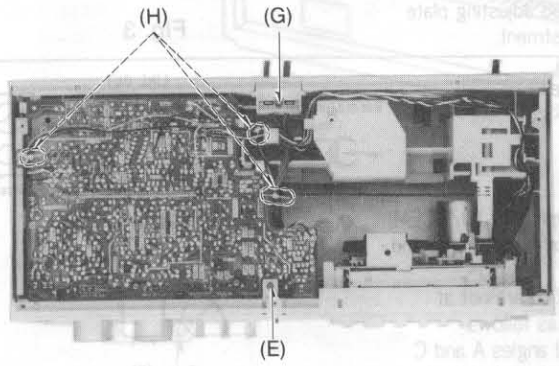


Fig. 3

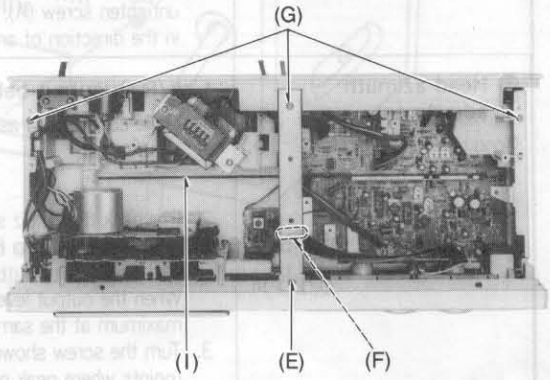


Fig. 4

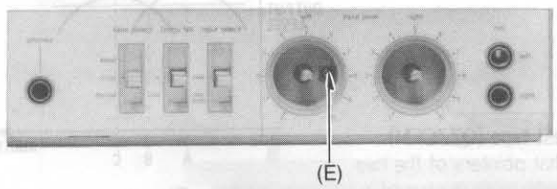


Fig. 5

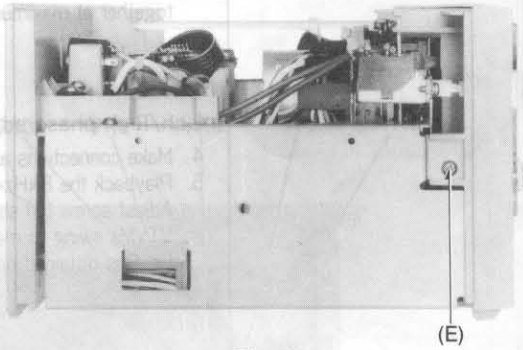


Fig. 6

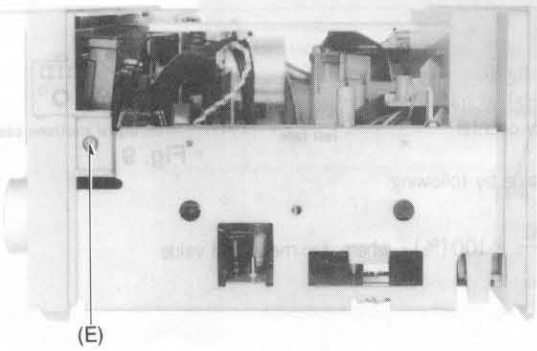


Fig. 7

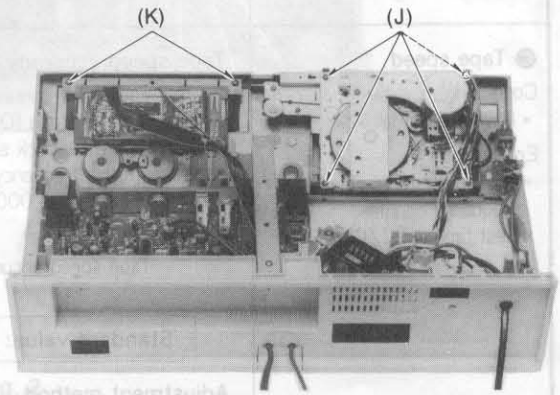


Fig. 8

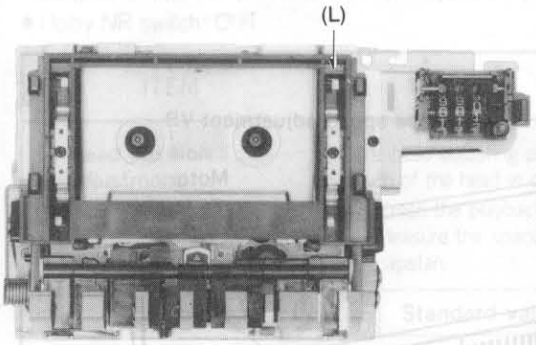


Fig. 9

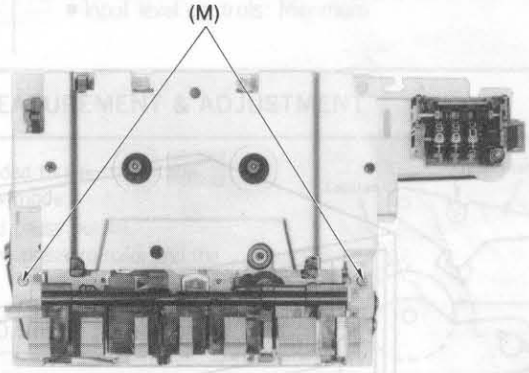


Fig. 10

Ref. No.	Procedure	To remove ——	Remove ——	Shown in fig. ——
1	1	Case cover	• 2 screws ····· (A)	1
2	2	Bottom cover	• 5 screws ····· (B)	2
3	1 → 2 → 3	Front panel	• 2 control knobs ····· (C) • Cassette lid ····· (D) • 5 screws ····· (E) • Binder ····· (F)	1 1 3, 4, 5, 6, 7 4
4	1 → 2 → 4	Back chassis	• 4 screws ····· (G) • 3 binders ····· (H) • Recording wire ····· (I)	3, 4 3 4
5	1 → 2 → 3 → 5	Mechanism unit	• 4 screws ····· (J)	8
6	1 → 2 → 3 → 6	Level meter	• 2 screws ····· (K)	8
7	1 → 2 → 3 → 5 → 7	Operation button unit	• Cassette holder ····· (L) • 2 screws ····· (M)	9 10

MEASUREMENT AND ADJUSTMENT METHODS

ADJUSTMENT PARTS LOCATION

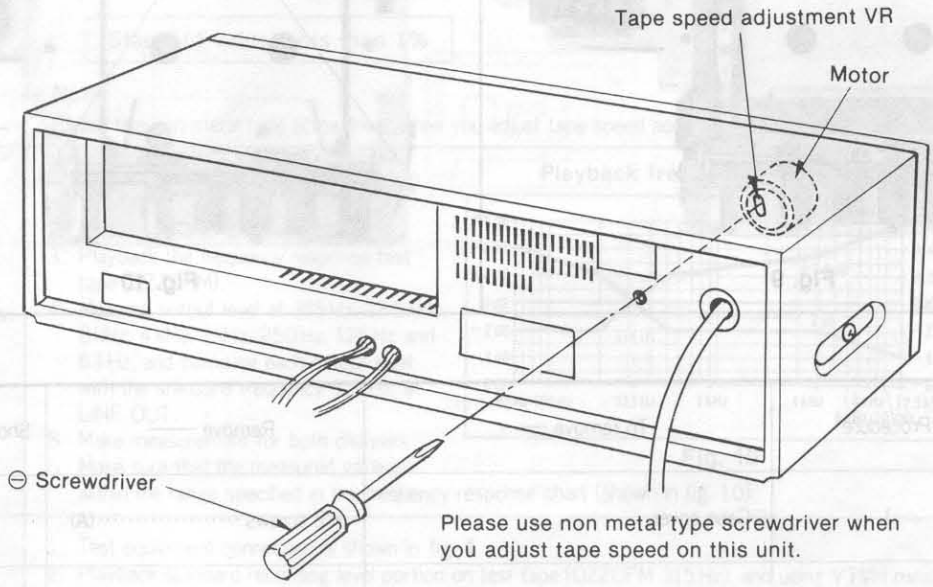


Fig. 1

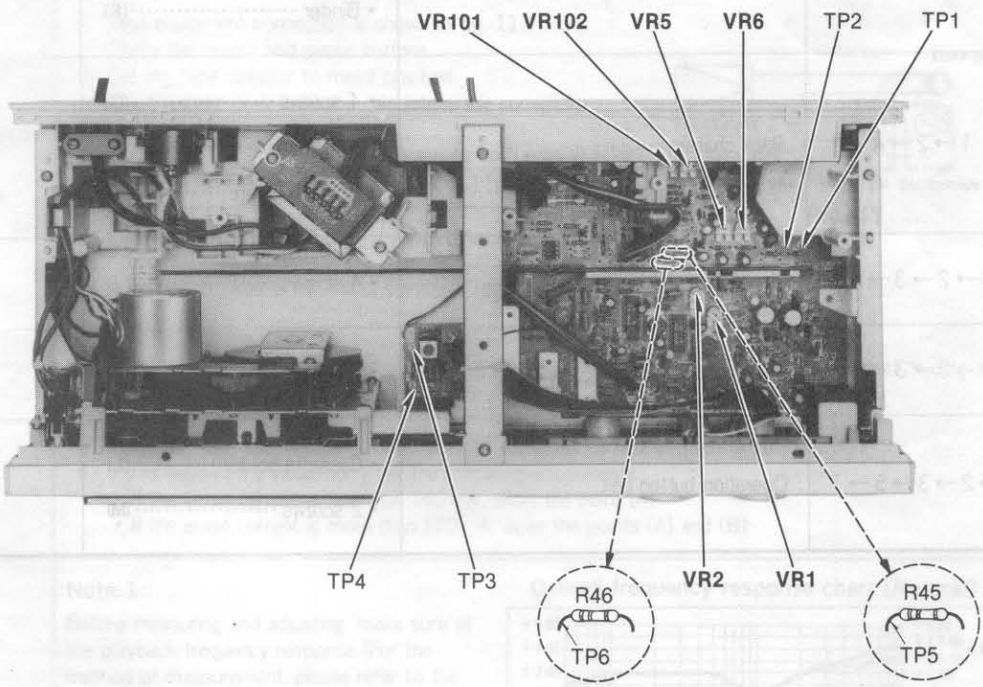
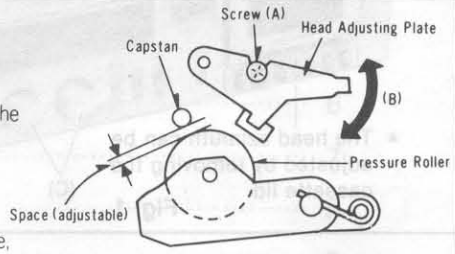
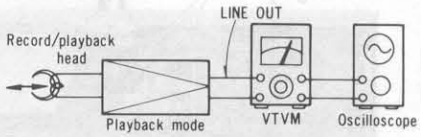
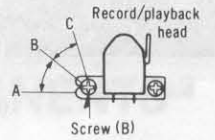
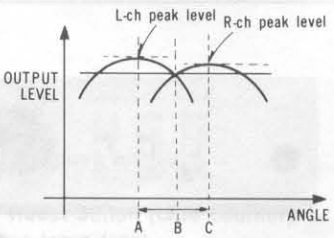
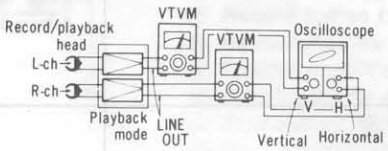
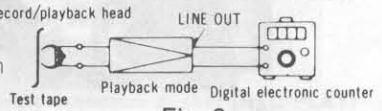
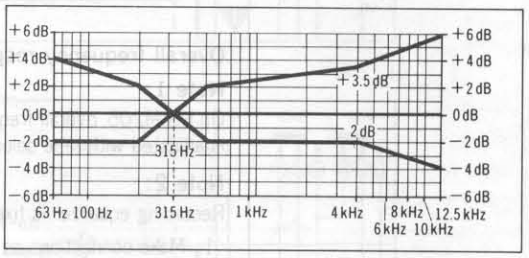
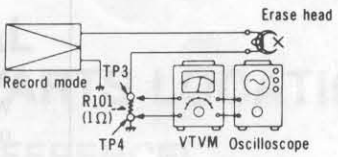
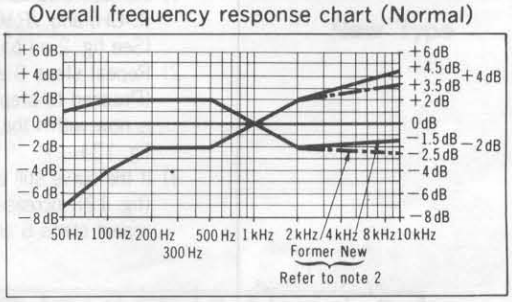


Fig. 2

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

- Make sure heads are clean.
- Make sure capstan and pressure roller are clean.
- Judgeable room temperature: 20 ± 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 position adjustment Condition: • Playback and pause mode	(The head adjusting plate is provided to adjust the tape touch of the head in cue or review mode.) 1. Press the playback button and pause button. 2. Measure the space between the pressure roller and the capstan. **Standard value: 0.5 ± 0.3 mm** 3. If the measured value is not within the standard value, untighten screw (A), and slide the head adjusting plate in the direction of arrow (B) for adjustment.  Fig. 3
Ⓑ Head azimuth adjustment Condition: • Playback mode Equipment: • VTVM • Oscilloscope • Test tape (azimuth) ··· QZZCFM	**L-ch/R-ch output balance adjustment** 1. Make connections as shown in fig. 4.  Fig. 4 2. Playback the 8 kHz signal from the test tape (QZZCFM). Adjust screw (B) in fig. 5 for maximum output L-ch and R-ch levels. When the output levels of L-ch and R-ch are not at maximum at the same time, readjust as follows. 3. Turn the screw shown in fig. 5 to find angles A and C (points where peak output levels for left and right channels are obtained). Then, locate the angle B between angles A and C, i.e., a point where L-ch and R-ch output levels come together at maximum. (Refer to figs. 5 and 6.)  Fig. 5  Fig. 6 **L-ch/R-ch phase adjustment** 4. Make connections as shown in fig. 7. 5. Playback the 8 kHz signal from the test tape (QZZCFM). Adjust screw (B) shown in fig. 5 so that pointers of the two VTVMs swing to maximum and a waveform as illustrated in fig. 8 is obtained on the oscilloscope.  Fig. 7  Fig. 8
Ⓒ 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. 9. 2. Playback test tape (QZZCWAT 3,000 Hz) at middle section and supply playback signal to frequency counter. 3. Measure this frequency. 4. On the basis of 3,000 Hz, determine value by following formula:  Fig. 9 $\text{Tape speed accuracy} = \frac{f - 3{,}000}{3{,}000} \times 100\,(\%)$ where, f = measured value **Standard value: ± 1.5%** **Adjustment method** 1. Playback the test tape (middle). 2. Adjust so that frequency becomes 3,000 Hz. 3. Tape speed adjustment VR shown in fig. 1.

ITEM	MEASUREMENT & ADJUSTMENT
	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: 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%** **Note:** Please use non metal type screwdriver, when you adjust tape speed accuracy on this unit.
Ⓓ Playback frequency response Condition: • Playback mode • Tape selector ··· Normal position Equipment: • VTVM • Oscilloscope • Test tape ··· QZZCFM	1. Test equipment connection is shown in fig. 4. 2. Place UNIT into playback mode. 3. Playback the frequency response test tape (QZZCFM). 4. Measure output level at 315 Hz, 12.5 kHz, 8 kHz, 4 kHz, 1 kHz, 250 Hz, 125 Hz and 63 Hz, and compare each output level with the 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 frequency response chart (shown in fig. 10). **Playback frequency response chart**  **Fig. 10**
Ⓔ Playback gain Condition: • Playback mode • Tape selector ··· Normal position Equipment: • VTVM • Oscilloscope • Test tape ··· QZZCFM	1. Test equipment connection is shown in fig. 4. 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: 0.4 V ± 1 dB [around 0.42 V: at test points TP5 (L-CH) and TP6 (R-CH)]** **Adjustment** 1. If measured value is not within standard, adjust VR1 (L-CH), VR2 (R-CH) (See fig. 2 on page 3). 2. After adjustment, check "Playback frequency response" again.
Ⓕ Erase current Condition: • Record mode • Tape selector ··· Metal position Equipment: • VTVM • Oscilloscope	1. Test equipment connection is shown in fig. 11. 2. Press the record and pause buttons. 3. Set the tape selector to metal position. 4. Read voltage on VTVM and calculate erase current by following formula: Erase current (A) $= \frac{\text{Voltage across both ends of R101}}{1\,(\Omega)}$  **Fig. 11** **Standard value: 160^{+10}_{-20} mA (Metal position)** 5. If measured value is not within standard, adjust as follows. **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 140 mA to 170 mA. 4. If it is beyond the value, carry out the following adjustments: • If the erase current is less than 140 mA, short the point (A). • If the erase current is more than 170 mA, open the points (A) and (B).
Ⓖ Overall frequency response Condition: • Record/playback mode • Tape selector ··· Normal position ··· CrO_2 position ··· Metal position • Input level controls ··· MAX	**Note 1:** Before measuring and adjusting, make sure of the playback frequency response (For the method of measurement, please refer to the playback frequency response). **Note 2:** Test tape QZZCRA to be supplied after July 1980 has higher recording sensitivity in the middle and high frequency range. **Overall frequency response chart (Normal)**  **Fig. 12**

ITEM	MEASUREMENT & ADJUSTMENT

Equipment:
- VTVM
- AF oscillator
- ATT
- Oscilloscope
- Resistor (600 Ω)
- Test tape
  (reference blank tape)
  ···QZZCRA for Normal
  ···QZZCRX for CrO_2
  ···QZZCRZ for Metal

-  This chart indicates the standard values for the new type of QZZCRA when in use.
-  This chart indicates the standard values for the former type of QZZCRA when in use.

The new type of QZZCRA is marked as shown in fig. 13.

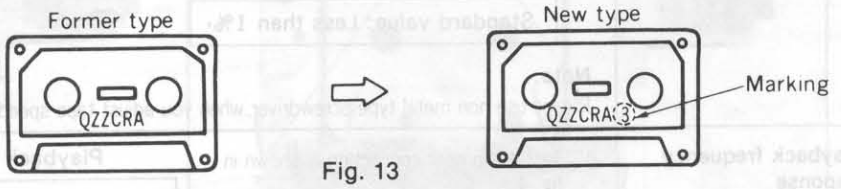


Fig. 13

Overall frequency response adjustment by recording bias current

Note 1:
On RS-M205, overall frequency response is adjusted with tape selector set at Normal.

Note 2:
Recording equalizer is fixed.

1. Make connections as shown in fig 14.
2. Input a 1 kHz, −24 dB signal through LINE IN. Place the set in record mode.
3. Fine adjust the attenuator to obtain 0.4 V LINE OUT output.
   * Make sure that the input signal level is −24 ± 4 dB with 0.4 V output voltage.
4. Set the tape selector to Normal, and load the test tape (QZZCRA).
5. Adjust the attenuator to reduce the input signal level by 20 dB.
6. Adjust the AF oscillator to generate 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 4 kHz, 8 kHz and 10 kHz signals, and record these signals on the test tape.
7. Playback the signals recorded in step 6, and check if the frequency response curve is within the limits shown in the overall frequency response chart for normal tapes (fig. 12).
   (If the curve is within the charted specifications, proceed to steps 8, 9 and 10.)
   If the curve is not within the charted specifications, adjust as follows;

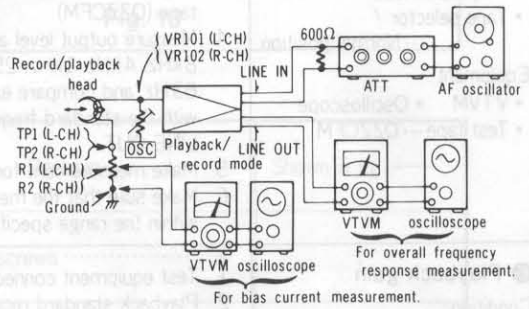


Fig. 14

Adjustment Ⓐ:
When the curve exceeds the overall frequency response chart specifications (fig. 12) as shown in fig. 15.

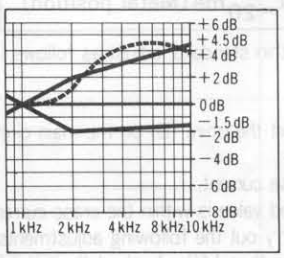


Fig. 15

1) Increase bias current by turning VR101 (L-CH) and VR102 (R-CH).
   (See fig. 2 on page 3.)
2) Repeat steps 6 and 7 to confirm.
   (Proceed to steps 8, 9 and 10 if the curve is now within the charted specifications in fig. 12.)
3) If the curve still exceeds the specifications (fig. 12), increase bias current further and repeat steps 6 and 7.

Adjustment Ⓑ:
When the curve falls below the overall frequency response chart specifications (fig. 12) as shown in fig. 16.

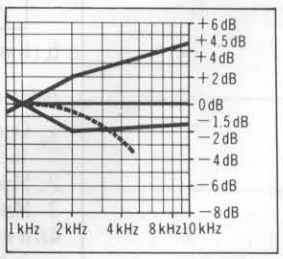


Fig. 16

1) Reduce bias current by turning VR101 (L-CH) and VR102 (R-CH).
2) Repeat steps 6 and 7 to confirm.
   (Proceed to steps 8, 9 and 10 if the curve is now within the charted specifications in fig. 12.)
3) If the curve still falls below the charted specifications (fig. 12), reduce bias current further and repeat steps 6 and 7.

ITEM	MEASUREMENT & ADJUSTMENT

8. Switch the tape selector to CrO_2, change test tape to QZZCRX, and record 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 4 kHz, 8 kHz, 10 kHz and 12.5 kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for CrO_2 tapes (fig. 17).

Overall frequency response chart (CrO_2, Metal)

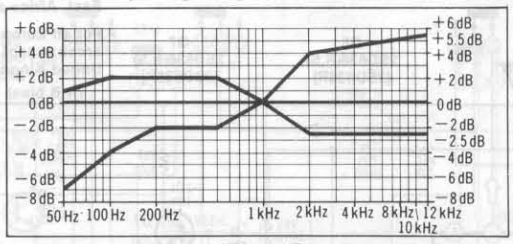


Fig. 17

9. Switch the tape selector to Metal, change test tape to QZZCRZ, and record 50 Hz, 100 Hz, 200 Hz, 500 Hz, 1 kHz, 4 kHz, 8 kHz, 10 kHz and 12.5 kHz signals. Then, playback the signals and check if the curve is within the limits shown in the overall frequency response chart for metal tapes (fig. 17).
10. Confirm that bias currents are approximately as follows when the tape selector is set at different positions.

* Read voltage on VTVM and calculate bias current by following formula:

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

around 410μA (Normal position)
around 545μA (CrO_2 position)
around 800μA (Metal position)
} **: measured at TP1 (L-CH) and TP2 (R-CH)**

❽ Overall gain

Condition:
* Record/playback mode
* Input level controls ··· MAX
* Standard input level;
  MIC ····· −72 ± 4 dB
  LINE IN ··· −24 ± 4 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. 18.
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 0.4 V.
5. Using test tape, make recording.
6. Playback recorded tape, and make sure the value at LINE OUT on VTVM becomes 0.4 V.
7. If measured value is not 0.4 V, adjust VR5 (L-CH), VR6 (R-CH) (See fig. 2 on page 3).
8. Repeat from step (2).

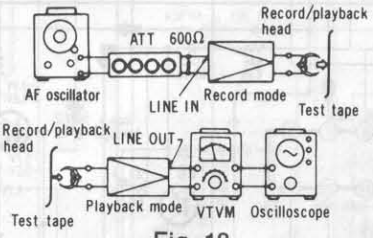


Fig. 18

❶ Level meter

Condition:
* Record mode
* Input level control ··· MAX

Equipment
* VTVM * AF oscillator
* ATT * Oscilloscope
* Resistor (600Ω)

1. Test equipment connection is shown in fig. 19.
2. Supply 1 kHz signal (−24 dB) to the LINE IN then press the record button.
3. Adjust the ATT so that the output level at LINE OUT becomes 0.4 V (The input level at this condition is termed the standard input level).
4. At this time, confirm that the level meter reading is within a range of −1.5 dB to +1.5 dB (shown in fig. 20). (Confirm this for both for L and R channels.)

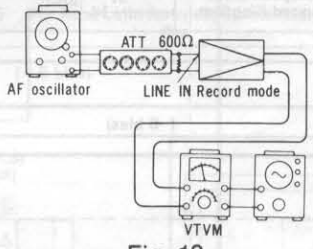


Fig. 19

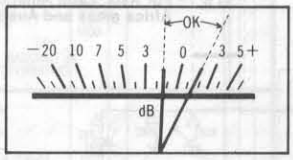


Fig. 20

❷ Dolby NR circuit

Condition:
* Record mode
* Dolby NR switch ··· IN/OUT
* Input level controls ··· MAX

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

1. Test equipment connection is shown in fig. 21.
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 TP5 (L-CH), TP6 (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.

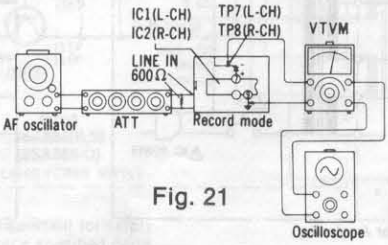
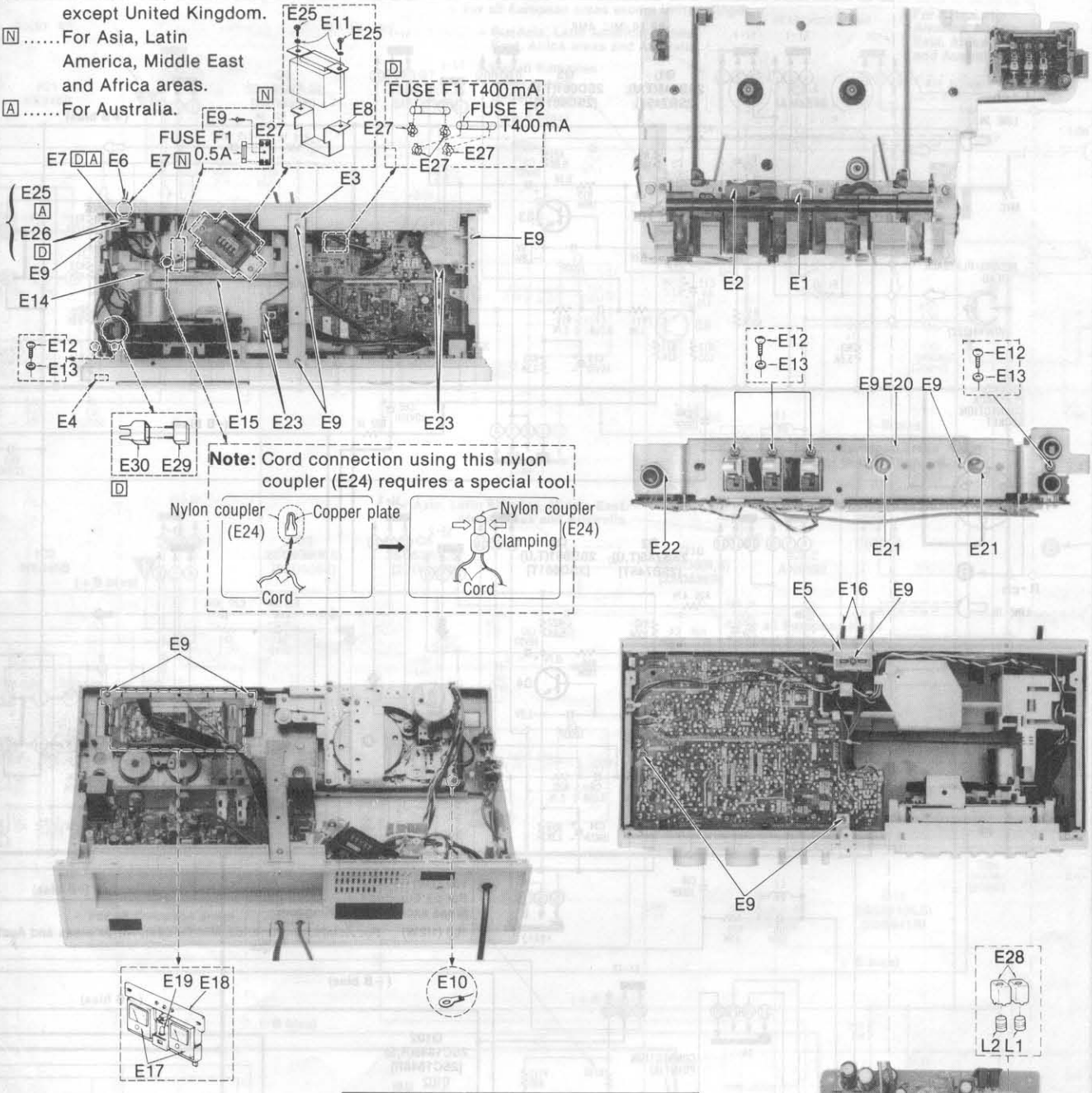


Fig. 21

ELECTRICAL PARTS LOCATION

NOTES:

D .....For all European areas except United Kingdom.
N .....For Asia, Latin America, Middle East and Africa areas.
A .....For Australia.



Note: Cord connection using this nylon coupler (E24) requires a special tool.

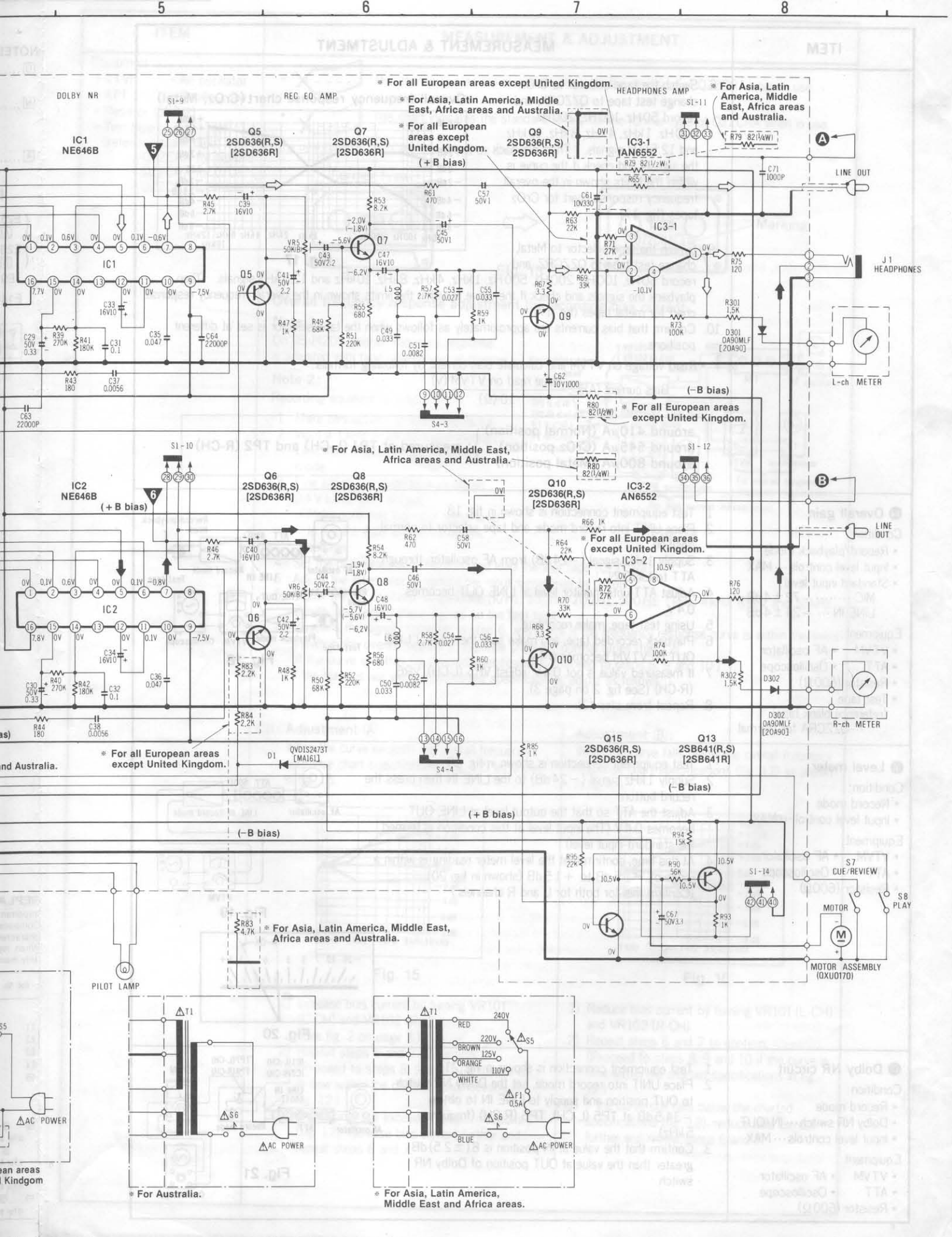
REPLACEMENT PARTS LIST

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

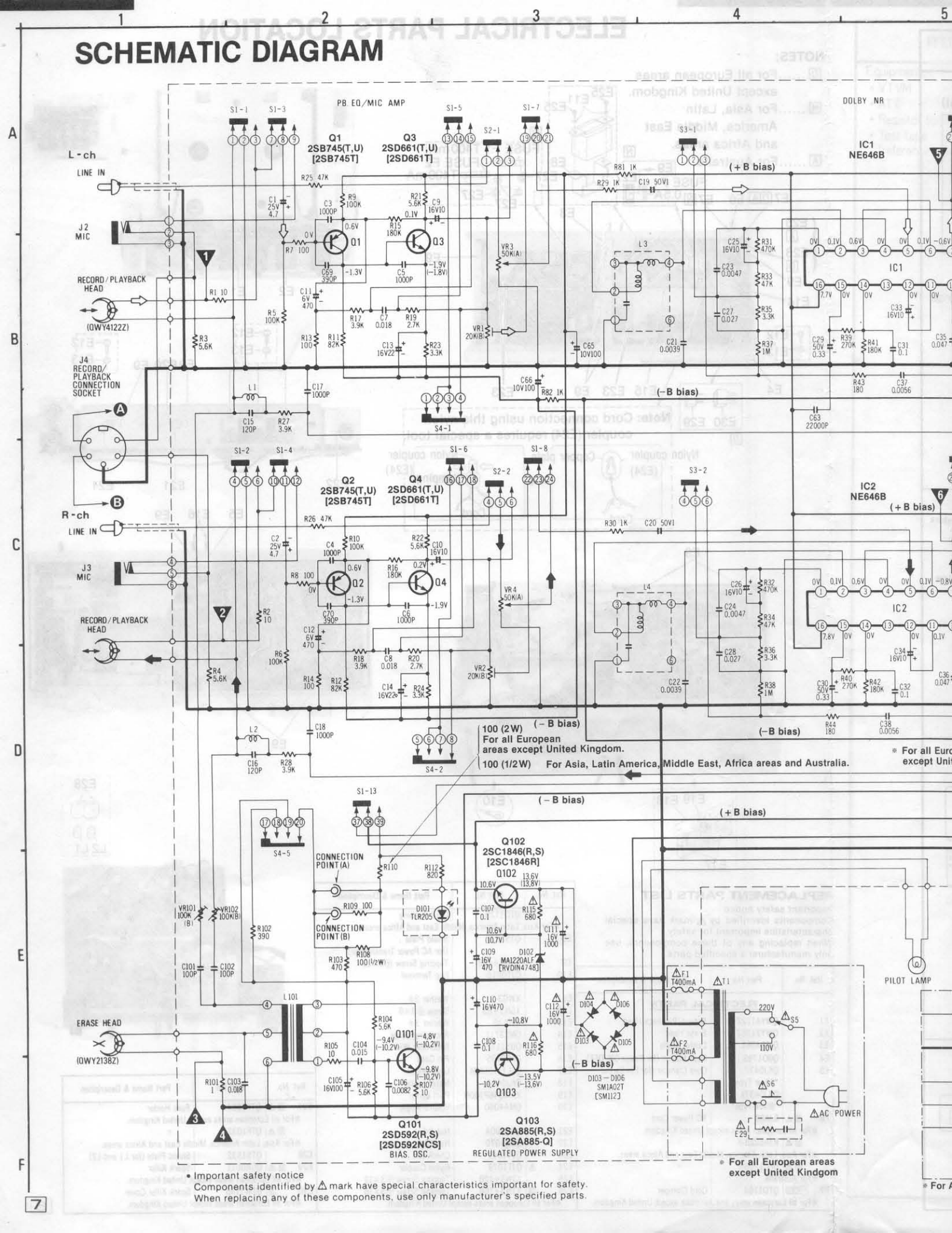
Ref. No.	Part No.	Part Name & Description
		ELECTRICAL PARTS
E1	QWY4122Z	Record/Playback Head
E2	QWY2138Z	Erase Head
E3	QMA4061	Center Angle
E4	QGO1798	Push Button (for Power ON/OFF)
E5	QKJ0437	Cord Clamper (for Pin Cords)
	"Silver Type"	
	QKJ0437K	"
	"Black Type"	
E6 D ⚠	SJA88	AC Power Cord
※For all European areas except United Kingdom.		
N ⚠	RJA52ZB-K	"
※For Asia, Latin America, Middle East and Africa areas.		
A ⚠	QFC1208M	"
※For Australia.		
E7 D A	QTD1164	Cord Clamper
※For all European areas and Australia except United Kingdom.		

Ref. No.	Part No.	Part Name & Description
N	QTD1129	Cord Bushing
※For Asia, Latin America, Middle East and Africa areas.		
E8	QTS1531	Shield Plate (for AC Power Transformer)
E9	XTN3+10B	Tapping Screw ⊕3×10
E10	QJT0015	Lug Terminal
E11	XWG3	Washer 3φ
E12	XSN3+6S	Screw ⊕3×6
E13	XWA3B	Washer 3φ
E14	QML3711	Recording Lever
E15	QBS1132	Recording Wire
E16	QFC2135	Pin Cord
E17	QSL1115RNM	Level Meter
E18	QKJ0464	Meter Holder
E19	XAMQ46P100N	Pilot Lamp
E20	QMA4060	Volume Angle
E21	QNQ1004	Nut 8φ
E22	QNQ1070	Nut 12φ
E23	QJT1041	Check Pin
E24 ⚠	QJT1079	Nylon Coupler
E25	XTN3+12B	Tapping Screw ⊕3×12
E26 D	XTN3+16B	Tapping Screw ⊕3×16
※For all European areas except United Kingdom.		

Ref. No.	Part No.	Part Name & Description
E27 D ⚠	QTF1054	Fuse Holder
※For all European areas except United Kingdom.		
N ⚠	QTF1032	"
※For Asia, Latin America, Middle East and Africa areas.		
E28	QTS1532	Shield Plate (for L1 and L2)
E29 D ⚠	QCR0011	Spark Killer
※For all European areas except United Kingdom.		
E30 D	QTW1195	Spark Killer Cover
※For all European areas except United Kingdom.		


DOLBY NR
REC EQ AMP
HEADPHONES AMP
IC1
NE646B
IC2
NE646B
IC3-1
AN6552
IC3-2
AN6552
Q5
2SD636(R,S)
[2SD636R]
Q6
2SD636(R,S)
[2SD636R]
Q7
2SD636(R,S)
[2SD636R]
Q8
2SD636(R,S)
[2SD636R]
Q9
2SD636(R,S)
2SD636R]
Q10
2SD636(R,S)
[2SD636R]
Q15
2SD636(R,S)
[2SD636R]
Q13
2SB641(R,S)
[2SB641R]
* For all European areas except United Kingdom.
* For Asia, Latin America, Middle East, Africa areas and Australia.
* For all European areas except United Kingdom.
(+B bias)
* For Asia, Latin America, Middle East, Africa areas and Australia.
* For Asia, Latin America, Middle East, Africa areas and Australia.
LINE OUT
J1 HEADPHONES
L-ch METER
R-ch METER
(−B bias)
* For all European areas except United Kingdom.
* For Asia, Latin America, Middle East, Africa areas and Australia.
(+B bias)
* For all European areas except United Kingdom.
LINE OUT
(−B bias)
(+B bias)
(−B bias)
S7 CUE/REVIEW
S8 PLAY
MOTOR
MOTOR ASSEMBLY (QXU0170)
PILOT LAMP
* For Asia, Latin America, Middle East, Africa areas and Australia.
AC POWER
* For Australia.
RED
BROWN
ORANGE
WHITE
BLUE
240V
220V
125V
110V
AC POWER
* For Asia, Latin America, Middle East and Africa areas.

SCHEMATIC DIAGRAM



NOTE:

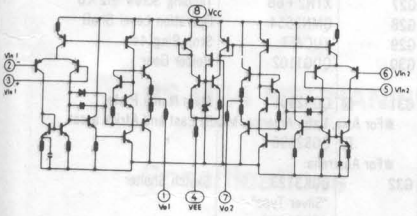
- S1-1—S1-14.....Record/Playbask select switch (shown in playback position).
- S2-1—S1-2 .....Input select switch (shown in LINE IN position).
- S3-1—S3-2 .....Dolby IN/OUT select switch (shown in OUT position).
- S4-1—S4-5 .....Tape select switch (shown in normal position).
- S5.....AC Power voltage select switch.
  - * For all European areas except United Kingdom.
  - * For Asia, Latin America, Middle Ease and Africa areas.
- S6.....Power ON/OFF switch (shown in OFF position).
- S7.....Cue/Review muting switch (shown in off position).
- S8.....Playback muting switch (shown in off position).
- VR1, 2 .....Playback gain adjustment VR.
- VR3, 4 .....Input level controls.
- VR5, 6 .....Recording gain adjustment VR.
- VR101, 102 .....Bias current adjustment VR.
- Connection points (A) and (B).....For erase current 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.
- (⇨) this arrow indicates the flow of the playback signal.
- (➡) this arrow indicates the flow of the recording signal.
- All voltage values shown in circuitry are under no signal condition and record mode with volume control at minimum position.
  For mfeasurement, use VTVM.
  However, the voltage in playback mode is indicates in ( ) when it differs from that in record mode.
- Described in the schematic diagram are two types of numbers; the supply parts number and production parts number for transistors and diodes. One type of number is used for supply parts number and production parts number when they are identical.

e.g. Q1
2SB745(T,U) ←Production parts number
[2SB745T] ←Supply parts number
D1
QVD1S2473T←Production parts number
[MA161] ←Supply parts number

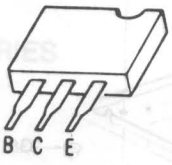
The supply parts number is described alone in the replacement parts list.

EQUIVALENT CIRCUIT

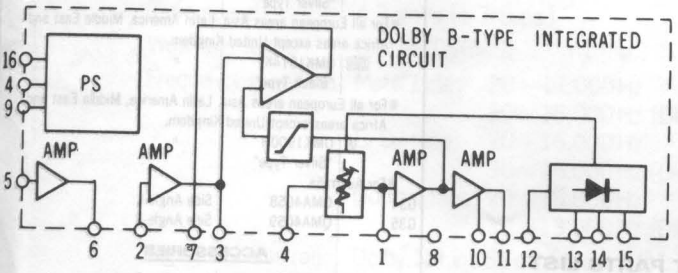
IC3-1, 3-2 AN6552



TRANSISTORS (SIDE VIEW)



IC1, 2 NE646B



SPECIFICATIONS * Input level controls···MAX.

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

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

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

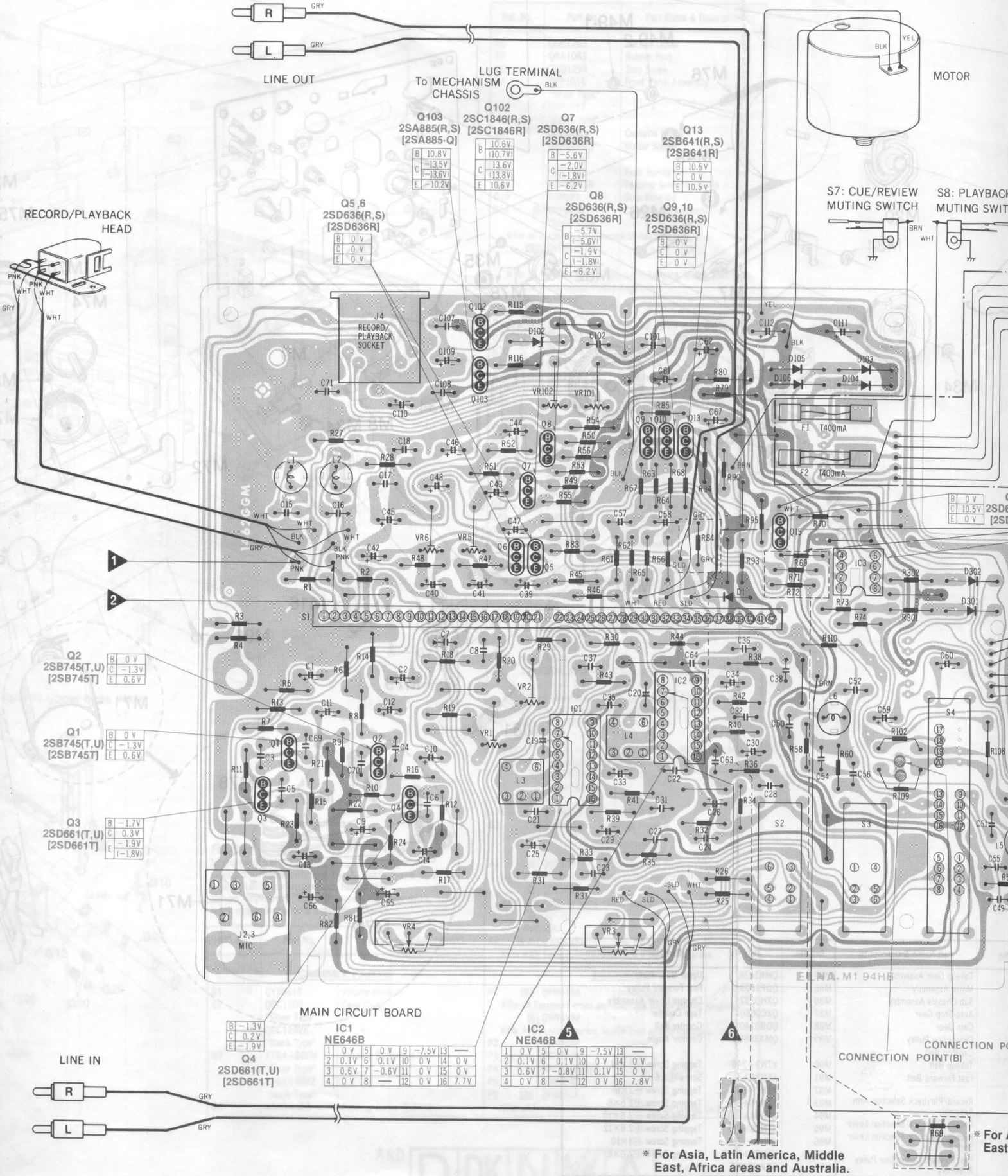
REPLACEMENT PARTS LIST

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

Ref. No.	Part No.
RESISTORS	
R1, 2	ERD25FJ100
R3, 4	ERD25FJ562
R5, 6	ERD25TJ104
R7, 8	ERD25FJ101
R9, 10	ERD25TJ104
R11, 12	ERD25TJ823
R13, 14	ERD25FJ101
R15, 16	ERD25TJ184
R17, 18	ERD25FJ392
R19, 20	ERD25FJ272
R21, 22	ERD25FJ562
R23, 24	ERD25FJ332
R25, 26	ERD25TJ473
R27, 28	ERD25FJ392
R29, 30	ERD25FJ102
R31, 32	ERD25TJ474
R33, 34	ERD25TJ473
R35, 36	ERD25FJ332
R37, 38	ERD25TJ105
R39, 40	ERD25TJ274
R41, 42	ERD25TJ184
R43, 44	ERD25FJ181
R45, 46	ERD25FJ272
R47, 48	ERD25FJ102
R49, 50	ERD25TJ683
R51, 52	ERD25TJ224
R53, 54	ERD25FJ822
R55, 56	ERD25FJ681
R57, 58	ERD25FJ272
R59, 60	ERD25FJ102
R61, 62	ERD25FJ471
R63, 64	ERD25TJ223
R65, 66	ERD25FJ102
R67, 68	ERD25FJ3R3
R69, 70	ERD25TJ333
R71, 72 D	ERD25TJ273
※For all European areas except United Kingdom.	
R73, 74	ERD25TJ104
R75, 76	ERD25FJ121
R79, 80 D	ERG12ANJ820
※For all European areas except United Kingdom.	
NA	ERD25FJ820
※For Asia, Latin America, Middle East, Africa areas and Australia.	
R81, 82	ERD25FJ102
R83 D	ERD25FJ222
※For all European areas except United Kingdom.	
NA	ERD25FJ472
※For Asia, Latin America, Middle East, Africa areas and Australia.	
R84 D	ERD25FJ222
※For all European areas except United Kingdom.	
R85	ERD25FJ102
R90	ERD25TJ563
R93	ERD25FJ102
R94	ERD25TJ153
R95	ERD25TJ223
R101	ERD25FJ1R0
R102	ERD25FJ391
R103	ERD25FJ471
R104	ERD25FJ562
R105	ERD25FJ100
R106	ERD25FJ562
R107	ERD25FJ100
R108	ERD50FJ101
R109	ERD25FJ101
R110 D	ERG2ANJ101
※For all European areas except United Kingdom.	
NA	ERD50FJ101
※For Asia, Latin America, Middle East, Africa areas and Australia.	
R112	ERD25FJ821
R115. 116 ⚠	ERD25FJ681
R301, 302	ERD25FJ152
VARIABLE RESISTORS	
VR1, 2	EVNM4AA00B24
VR3, 4	QVH3AA067A54
VR5, 6	EVNM4AA00B54
VR101, 102	EVNM4AA00B15
CAPACITORS	
C1, 2	ECEA25M4R7R
C3, 4, 5, 6	ECFDD102KVY
C7, 8	ECQM1H183KZ
C9, 10	ECEA1HS100
C11, 12	ECEA0JS471
C13, 14	ECEA1ES220
C15, 16	ECKD2H121KBL
C17, 18	ECFDD102KVY
C19, 20	ECEA1HN010
C21, 22	ECFDD392KVY
C23, 24	ECQM1H472JZ
C25, 26	ECEA1HS100
C27, 28	ECQM1H273JZ
C29, 30	ECEA50MR33R
C31, 32	ECQV05104JZ
C33, 34	ECEA1HS100
C35, 36	ECFDD473KXY
C37, 38	ECQM1H562JZ
C39, 40	ECEA1HS100
C41, 42, 43, 44	ECEA50Z2R2
C45, 46	ECEA50Z1
C47, 48	ECEA1HS100
C49, 50	ECQM1H333JZ
C51, 52	ECFDD822KVY
C53, 54	ECFDD273KXY
C55, 56	ECFDD333KXY
C57, 58	ECEA1HN010
C61	ECEA1AS331
C62	ECEA1AS102
C63, 64	ECKD1H223ZF
C65, 66	ECEA1AS101
C67	ECEA50Z3R3
C69, 70	ECKD1H391KB
C71	ECKD1H102MD
C101, 102	ECCD1H121KD
C103	ECQP1183JZ
C104	ECFDD153KXY
C105	ECEA1ES101
C106	ECFDD822KVY
C107, 108	ECQV05104JZ
C109, 110	ECEA1CS471
C111, 112 ⚠	ECEA1CS102
TRANSISTORS	
Q1, 2	2SB745T
Q3, 4	2SD661T
Q5, 6, 7, 8, 9, 10	2SD636R
Q13	2SB641R
Q15	2SD636R
Q101	2SD592NCS
Q102	2SC1846R
Q103	2SA885Q
DIODES	
D1	MA161
D101	TLR205
D102	RVD1N4748
D103, 104, 105, 106 ⚠	SM112
D301, 302	20A90
INTEGRATED CIRCUITS	
IC1, 2	NE646B
IC3	AN6552

Ref. No.	Part No.	Part Name & Description
		SWITCHES
S1	QSSE203	Slide Switch (Record/Playback Selector)
S2, 3	QES1544	Lever Switch (Input Selector and Dolby IN/OUT)
S4	QES1490	Lever Switch (Tape Selector)
S5 D ⚠	QSR1409H	Rotary Switch (AC Power Voltage Selector)
※For all European areas except United Kingdom.		
N ⚠	QSR1407H	〃
※For Asia, Latin America, Middle East and Africa areas.		
S6 ⚠	QSW1117AS	Push Switch (Power ON/OFF)
S7, 8	QSB0251i	Leaf Switch (Cue/Review and Playback Muting)
		TRANSFORMER
T1 D ⚠	QLPD52EKC	AC Power Transformer
※For all European areas except United Kingdom.		
N ⚠	QLPN64EKC	〃
※For Asia, Latin America, Middle East and Africa areas.		
A ⚠	QLPA61EKC	〃
※For Australia.		
		COILS
L1, 2	QLQX0343K	Bias Trap Coil
L3, 4	SLM1Z19	MPX Filter
L5, 6	QLQX0332K	Peaking Coil
L101	QLB0198K	Bias Oscillation Coil
		FUSES
F1 D ⚠	XBAQ0007	Fuse (T400mA)
※For all European areas except United Kingdom.		
N ⚠	XBA1E05NR1	Fuse (0.5A)
※For Asia, Latin America, Middle East and Africa areas.		
F2 D ⚠	XBAQ0007	Fuse (T400mA)
※For all European areas except United Kingdom.		
		JACKS
J1	QJA0249	Headphones Jack
J2, 3	QJA0257	Microphone Jack
J4	QJS1954H	Record/Playback Connection Socket (DIN Socket)

CIRCUIT BOARDS AND WIRING CONNECTION



9 8 7 6 5

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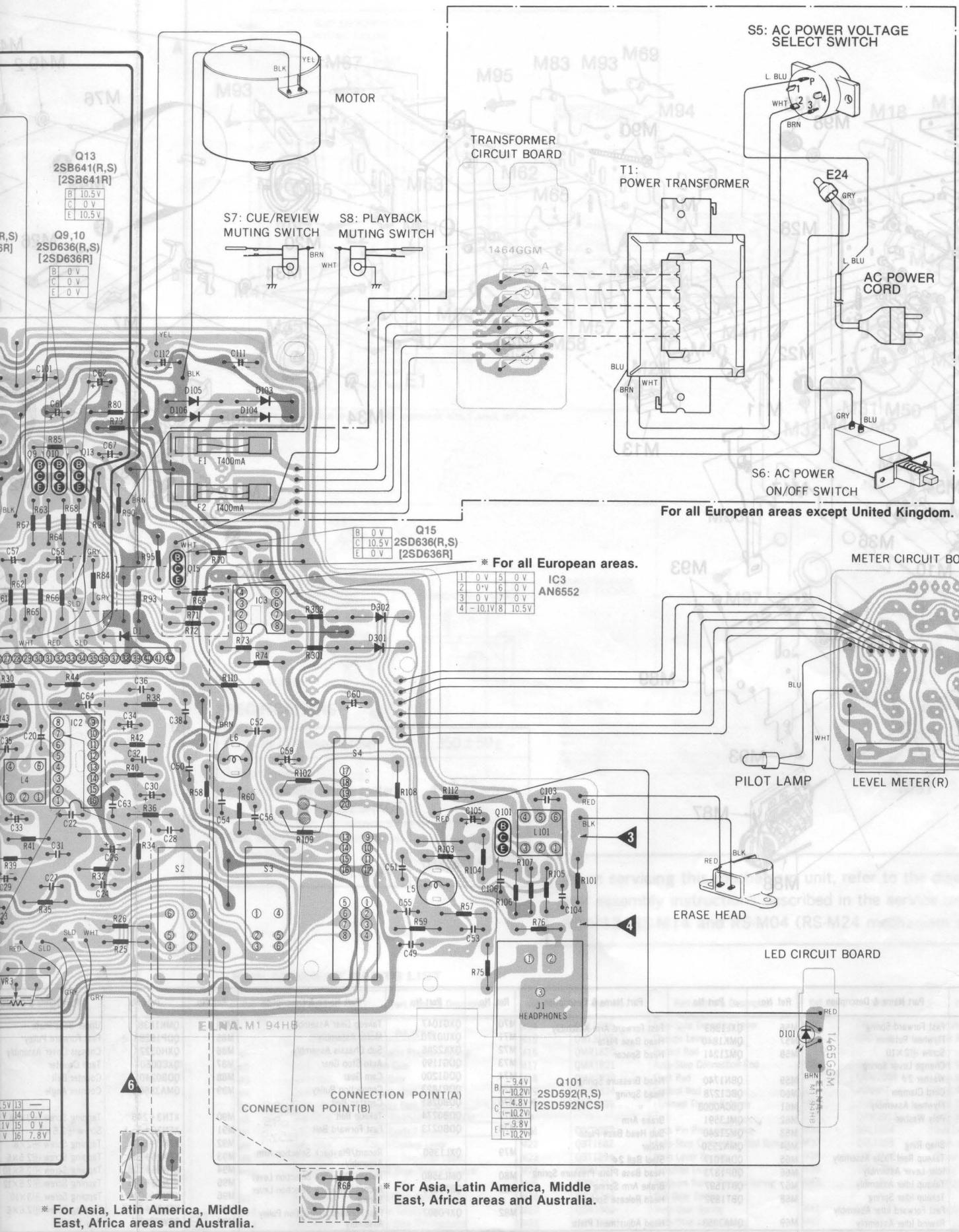
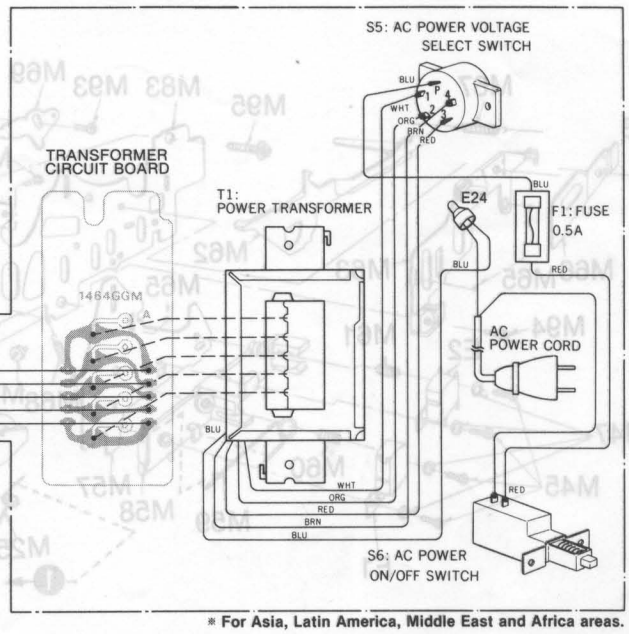
MECHANISM PARTS LOCATION

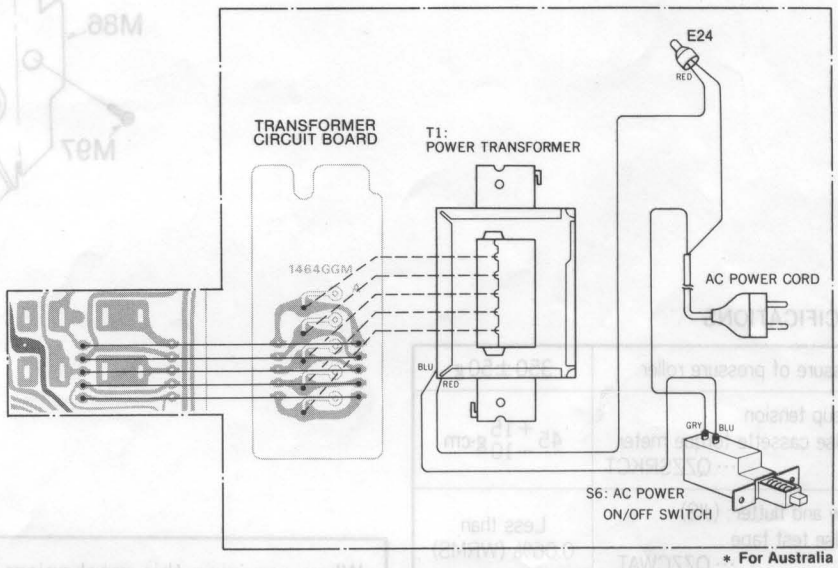


NOTES:

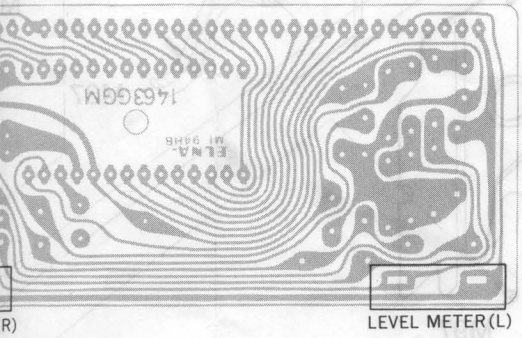
- The circui
- The circui
- The circui back side
- Values inc
- The voltag
- However, that in rec



* For Asia, Latin America, Middle East and Africa areas.



* For Australia



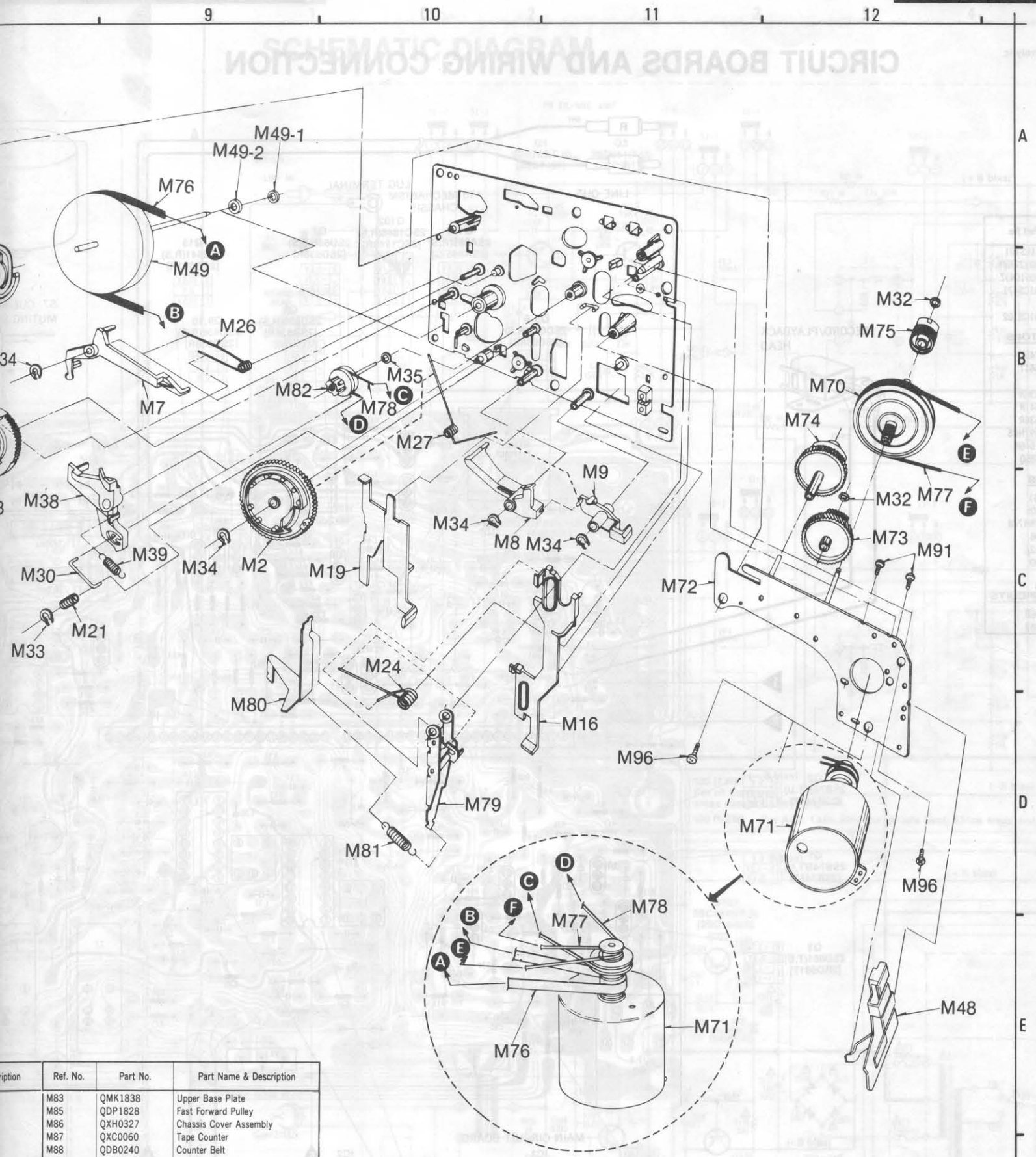
NOTES:

- The circuit shown in ▬ on the conductor is +B (bias) circuit.
- The circuit shown in ▬ on the conductor is −B (bias) circuit.
- The circuit shown in ▬ on the conductor side 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.
- However, the voltage in playback mode is indicates in ( ) when it differs from that in record mode.

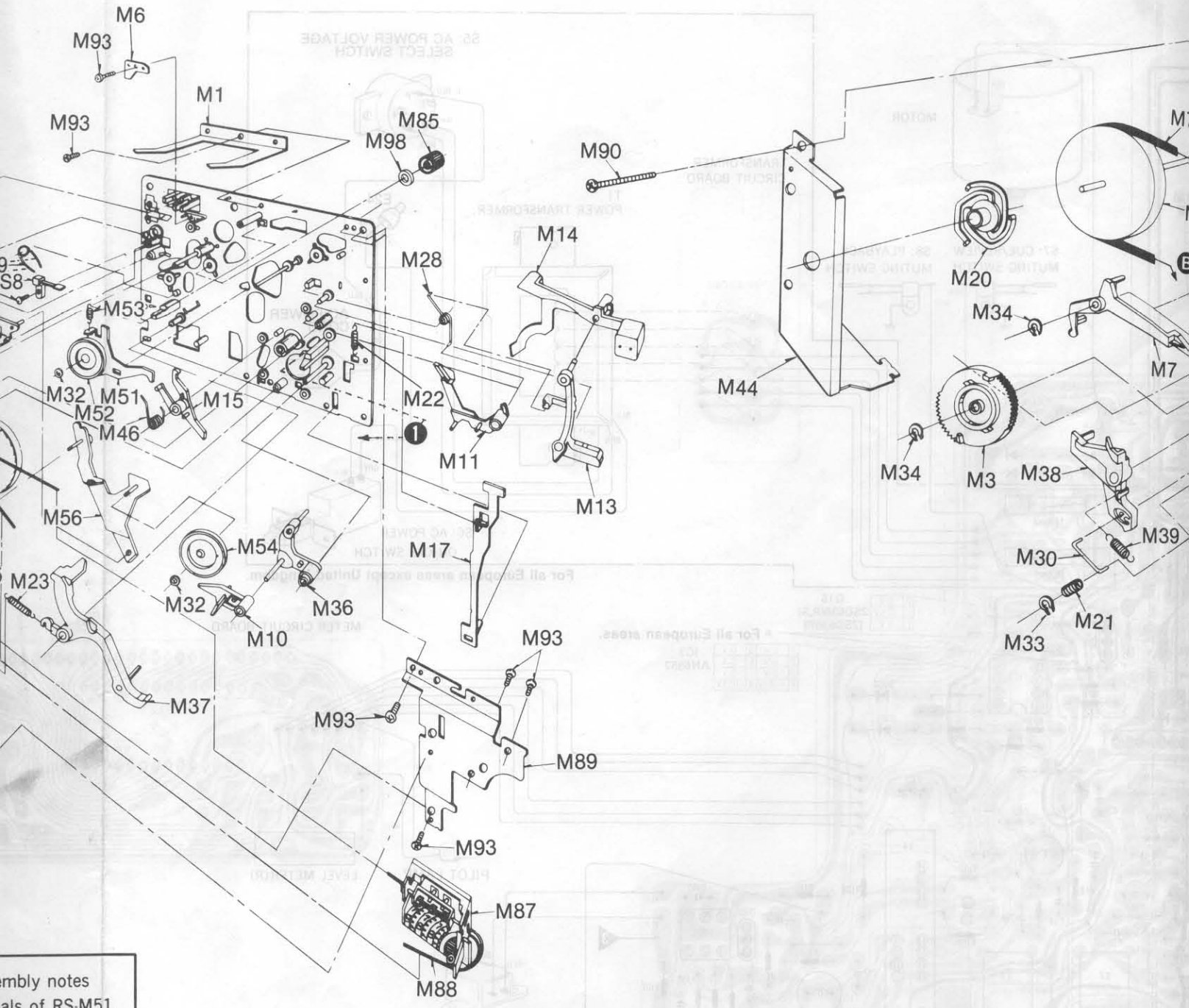
- Described in the circuit board diagram are two types of numbers; the supply parts number and production parts number for transistors. One type of number is used for supply parts number and production parts number when they are identical.

  e.g. Q1
  2SB745(T,U) —— Production parts number
  [2SB745T] —— Supply parts number

- **The supply parts number is described alone in the replacement parts list.**



ription	Ref. No.	Part No.	Part Name & Description
	M83	QMK1838	Upper Base Plate
	M85	QDP1828	Fast Forward Pulley
	M86	QXH0327	Chassis Cover Assembly
	M87	QXC0060	Tape Counter
	M88	QDB0240	Counter Belt
	M89	QMA3860	Counter Angle
898.			
895.	M90	XTN3+24B	Tapping Screw ⊕3×24
529.	M91	XSN26+3	Screw ⊕2.6×3
on Arm	M92	XTN2+6B	Tapping Screw ⊕2×6
	M93	XTN26+6B	Tapping Screw ⊕2.6×6
on Lever	M94	XTN26+10B	Tapping Screw ⊕2.6×10
on Lever	M95	XTN26+12B	Tapping Screw ⊕2.6×12
	M96	XTN3+10B	Tapping Screw ⊕3×10
Pulley	M97	XTN26+6BFZ	Tapping Screw ⊕2.6×6
	M98	QBW2085	Poly Washer



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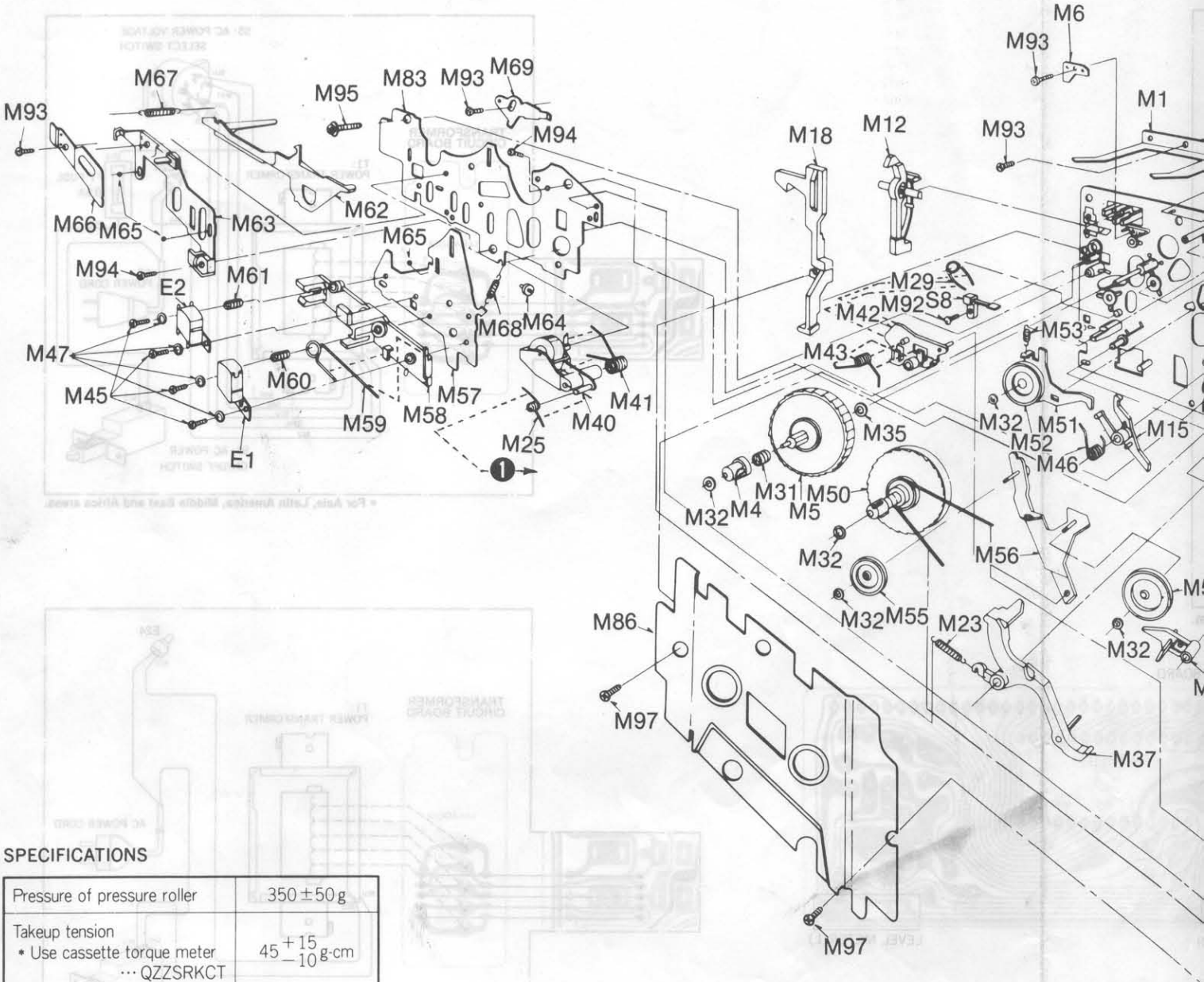
als of RS-M51,
es).

Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.
Spring	M43	QBN1748	Fast Forward Spring	M56	QXL1383	Fast Forward Arm Assembly	M70	QXG1047	Takeup Gear Assembly	M83	QMK1838
	M44	QMA4063	Flywheel Retainer	M57	QMK1840	Head Base Plate	M71	QXU0170	Motor Assembly	M85	QDP1828
	M45	XSN2+10	Screw ⊕2×10	M58	QMZ1241	Head Spacer	M72	QXK2286	Sub Chassis Assembly	M86	QXH0327
pring	M46	QBN1741	Change Lever Spring				M73	QDG1199	Auto-Stop Gear	M87	QXC0060
	M47	XWG2	Washer 2φ	M59	QBN1740	Head Bressure Spring	M74	QDG1200	Cam Gear	M88	QDB0240
	M48	QMZ1254	Cord Clamper	M60	QBC1278	Head Spring	M75	QDP1823	Connection Pulley	M89	QMA3860
	M49	QXF0164	Flywheel Assembly	M61	QBCA0008	" *	M76	QDB0281	Capstan Belt 3898.		
ssembly	M49-1	QBW2049	Poly Washer	M62	QML3591	Brake Arm *	M77	QDB0274	Takeup Belt 3895.	M90	XTN3+24B
ssembly				M63	QMZ1240	Sub Head Base Plate *	M78	QDB0273	Fast Forward Belt 12529.	M91	XSN26+3
Lever	M49-2	QBW2026	Snap Ring	M64	QMN2550	Roller				M92	XTN2+6B
e Spring	M50	QXD1143	Takeup Reel Table Assembly	M65	QDK1017	Steel Ball 2φ	M79	QXL1360	Record/Playback Selection Arm Assembly	M93	XTN26+6B
ler Assembly 4645	M51	QXL1382	Idler Lever Assembly	M66	QBP1873	Head Base Plate Pressure Spring	M80	QML3580	Record/Playback Selection Lever	M94	XTN26+10B
	M52	QXi0111	Takeup Idler Assembly	M67	QBT1597	Brake Arm Spring	M81	QBT1895	Record/Playback Selection Lever Spring	M95	XTN26+12B
ler Spring	M53	QBT1893	Takeup Idler Spring	M68	QBT1892	Head Release Spring				M96	XTN3+10B
Lever	M54	QXi0113	Fast Forward Idler Assembly				M82	QXP0607	Fast Forward Connection Pulley Assembly	M97	XTN26+6BFZ
	M55	QXi0112	Rewind Idler Assembly	M69	QMA3858	Head Adjustment Plate				M98	QBW2085

MECHANISM PARTS LOCATION



SPECIFICATIONS

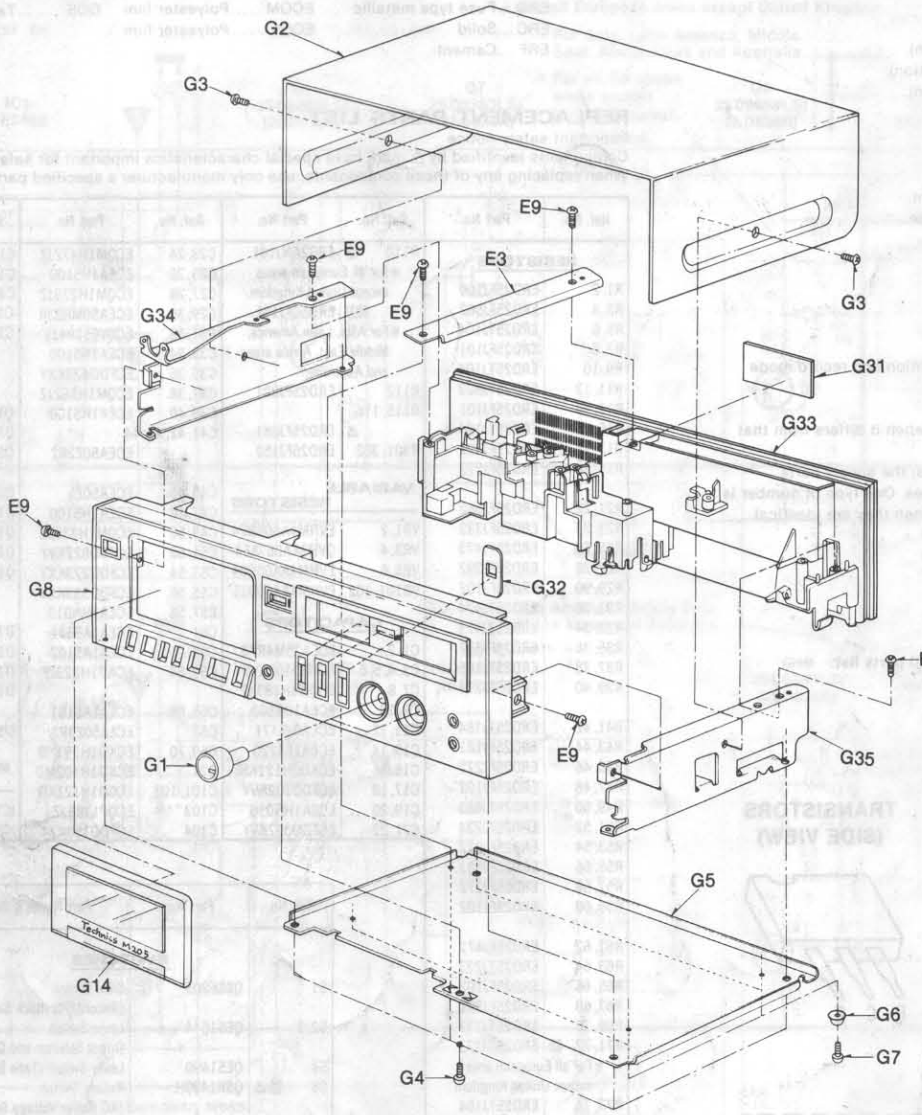
Pressure of pressure roller	350 ± 50 g
Takeup tension • Use cassette torque meter ··· QZZSRKCT	45^{+15}_{-10} g-cm
Wow and flutter; (JIS) • Use test tape ··· QZZCWAT	Less than 0.06% (WRMS)

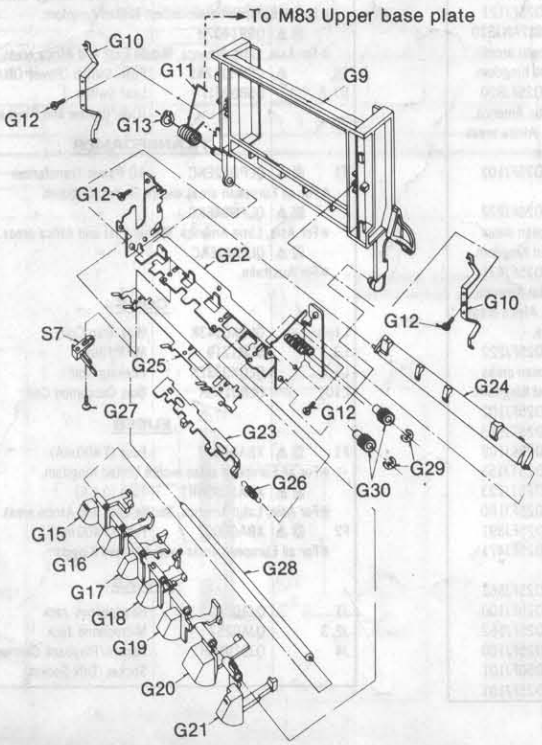
When servicing this mechanism unit, refer to the disassembly notes and assembly instructions described in the service manuals of RS-M51, RS-M13, RS-M14 and RS-M04 (RS-M24 mechanism series).

REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description
		MECHANICAL PARTS
M1	QBP1874	Cassette Pressure Spring
M2	QDG1201	Main Gear
M3	QDG1202	Sub Gear
M4	QMB1336	Supply Reel Table Hub
M5	QDR1139	Supply Reel Table
M6	QMF2118	Fast Forward Arm Bracket
M7	QML3581	Sub Control Lever
M8	QML3583	Main Control Lever
M9	QML3584	Record Operation Lever
M10	QML3586	Head Base Plate Lift Lever
M11	QML3594	Auto-Stop Release Arm
M12	QML3603	Erase Safety Lever
M13	QML3604	Auto-Stop Driving Lever
M14	QML3605	Auto-Stop Detection Lever
M15	QML3592	Change Lever
M16	QMR1820	Record Rod
M17	QMR1821	Auto-Stop Connection Rod
M18	QMR1822	Eject Rod
M19	QMR1824	Control Rod
M20	QMZ1239	Flywheel Thrust Retainer
M21	QBC1357	Lock Pin Pressure Spring
M22	QBT1682	Auto-Stop Connection Rod Spring
M23	QBT1894	Main Lever Spring
M24	QBN1739	Selection Lever Spring
M25	QBN1742	Pressure Roller Release Spring
M26	QBN1744	Sub Gear Spring
M27	QBN1802	Main Gear Spring
M28	QBN1746	Auto-Stop Lever Spring
M29	QBN1747	Connection Spring
M30	QBS1128	Lock Pin
M31	QBC1372	Reel Table Spring
M32	QBW2008	Poly Washer
M33	XUB4FT	Stop Ring 4φ
M34	XUB3FT	Stop Ring 3φ
M35	QBW2012	Poly Washer
M36	QXL1354	Sub Lever Assembly
M37	QXL1355	Main Lever Assembly
M38	QML3582	Pause Lock Lever
M39	QBT1896	Lever Release Spring
M40	QXL1381	Pressure Roller Assembly
M41	QBN1743	Pressure Roller Spring
M42	QML3588	Fast Forward Lever
M43	QBN1748	
M44	QMA4063	
M45	XSN2+10	
M46	QBN1741	
M47	XWG2	
M48	QMZ1254	
M49	QXF0164	
M49-1	QBW2049	
M49-2	QBW2026	
M50	QXD1143	
M51	QXL1382	
M52	QXi0111	
M53	QBT1893	
M54	QXi0113	
M55	QXi0112	

CABINET PARTS LOCATION





REPLACEMENT PARTS LIST

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

Ref. No.	Part No.	Part Name & Description
	CABINET PARTS	
G1	QYT0612	Volume Knob
G2	QGC1202	Case Cover
	"Silver Type"	
	QGC1202K	"
	"Black Type"	
G3	XTB4+8BFN	Tapping Screw ⊕4×8
	"Silver Type"	
	XTB4+8BFZ	"
	"Black Type"	
G4	XTN3+10B	Tapping Screw ⊕3×10

Ref. No.	Part No.	Part Name & Description
G5	QGC1203	Bottom Cover
G6	QKA1083	Rubber Foot
G8	QHQ1299	Step Screw
G8	QYP1016	Front Panel Assembly
	"Silver Type"	
	QYP1017	"
	"Black Type"	
G9	QKF2092K	Cassette Holder
G10	QBP1771	Holder Spring
G11	QBN1749	Eject Spring
G12	XTN26+6B	Tapping Screw ⊕2.6×6
G13	XUB5FT	Stop Ring 5φ
G14 [D]	QYF0488	Cassette Lid Assembly
	"Silver Type"	
※For all European areas except United Kingdom.		
[DN]	QYF0489	"
	"Black Type"	
※For all European areas Asia, Latin America, Middle East and Africa areas except United Kingdom.		
[NA]	QYF0487	"
	"Silver Type"	
※For Asia, Latin America, Middle East, Africa areas and Australia.		
G15	QXL1363	Eject Button Assembly
G16	QXL1364	Record Button Assembly
G17	QXL1365	Rewind Button Assembly
G18	QXL1366	Fast Forward Button Assembly
G19	QXL1367	Playback Button Assembly
G20	QXL1368	Stop Button Assembly
G21	QXL1369	Pause Button Assembly
G22	QXA1044	Operation Button Angle
G23	QMR1823	Obstruction Rod
G24	QML3593	Lock Arm
G25	QBP1875	Operation Lever Spring
G26	QBT1597	Obstruction Rod Spring
G27	XTN2+6B	Tapping Screw ⊕2×6
G28	QMN2554	Operation Lever Shaft
G29	XUC4FT	Stop Ring 4φ
G30	QDG1102	Holder Gear
G31 [N]	QGS2905	Main Name Plate
※For Asia, Latin America, Middle East and Africa areas.		
[A]	QGS2896	"
※For Australia.		
G32	QGK3123	Switch Shelter
	"Silver Type"	
	QGK3123K	"
	"Black Type"	
G33 [DN]	QMK1914H	Back Chassis
	"Silver Type"	
※For all European areas Asia, Latin America, Middle East and Africa areas except United Kingdom.		
[DN]	QMK1914K	"
	"Black Type"	
※For all European areas Asia, Latin America, Middle East and Africa areas except United Kingdom.		
[A]	QMK1900H	"
	"Silver Type"	
※For Australia.		
G34	QMA4058	Side Angle-L
G35	QMA4059	Side Angle-R
	ACCESSORIES	
A1 [D]	QQT3027	Instruction Book
※For all European areas except United Kingdom.		
[N]	QQT3030	"
※For Asia, Latin America, Middle East and Africa areas.		
[A]	QQT3031	"
※For Australia.		
A2 [N⚠]	QJP0603S	AC Plug Adaptor
※For Asia, Latin America, Middle East and Africa areas.		
	PACKINGS	
P1 [DA]	QPN4156	Inside Carton
※For all European areas and Australia except United Kingdom.		
[N]	QPN4157	"
※For Asia, Latin America, Middle East and Africa areas.		
P2	QPA0602	Cushion-A
P3	QPA0603	Cushion-B
P4	XZB40X60A02	Poly Bag
P5	QPC0072	Sheet
P6 [DA]	QPS0434	Pad
※For all European areas and Australia except United Kingdom.		

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Printed in Japan

ORDER NO. ARD82100032S8-01

Service Manual

Supplement-1

Cassette Deck

RS-M205

(Silver Face / Black Face)

Metal Tape Compatible Stereo Cassette Deck with Soft-Touch Controls and Rewind Auto-Play Convenience

RS-M24 MECHANISM SERIES

* DOLBY SYSTEM

Please use this manual together with the service manual for model No. RS-M205 (Original) order No. ARD81030032C8-10 and RS-M205 (For United Kingdom) order No. ARD81070069A2-01.

This is the Service Manual for the following areas.
- [D] ..... For all European areas except United Kingdom.
- [B] ..... For United Kingdom.
- [N] ..... For Asia, Latin America, Middle East and Africa areas.
- [A] ..... For Australia.

PARTS COMPARISON TABLE:

Please revise the original parts list in the Service Manual (RS-M205) to conform to the changes shown herein.
If new part numbers are shown, be sure to use them when ordering parts.

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

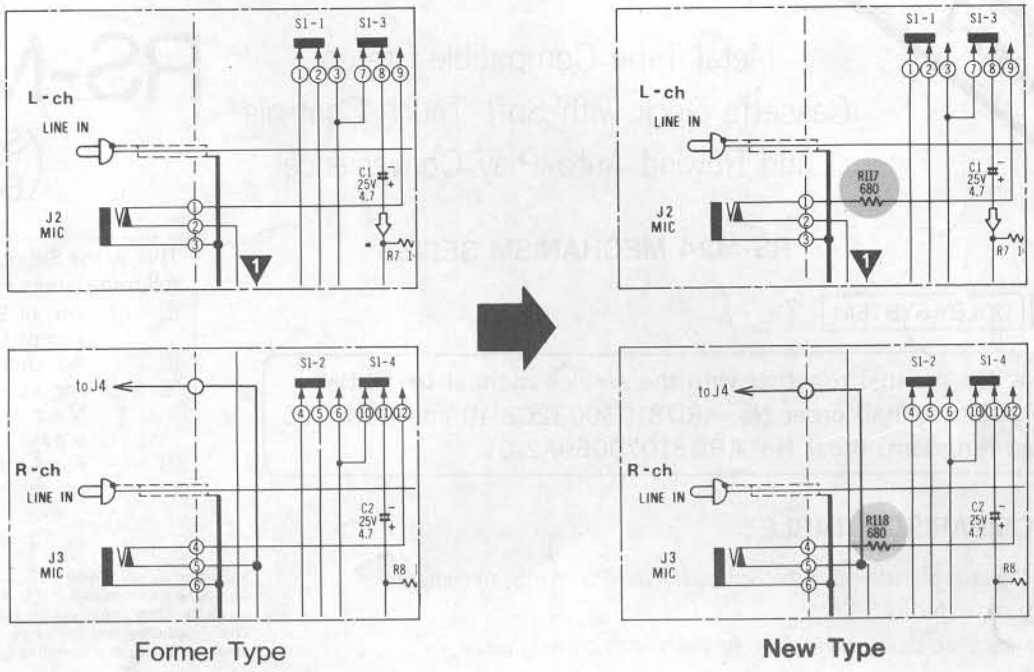
Ref. No.	Part Name & Description	Part Numbers		Remarks
		Former Type	New Type	
M70	Takeup Gear Assembly	QXG1047	QZK0241 (M70)	
M75	Connection Pulley	QDP1823		
R117, 118 [D][N][A]	Resistors	———	ERD25FJ681 (680Ω)	Added
※For all European areas except United Kingdom, Australia, Asia, Latin America, Middle East and Africa areas.				
C107, 108	Capacitors	ECQV05104JZ (0.1μF)	ECKD1H223ZF (22000pF)	
IC1, 2	Integrated Circuits	NE646B	NE646N	
E6 [B] ⚠	AC Power Cord	SJA88	QFC1205M	
※For United Kingdom.				
G7 [D][N][A]	Step Screw	QHQ1299	QHQ1313	
※For all European areas except United Kingdom, Australia, Asia, Latin America, Middle East and Africa areas.				
G10 [D][N][A]	Holder Spring	QBP1771	QBP1923	
※For all European areas except United Kingdom, Australia, Asia, Latin America, Middle East and Africa areas.				
G15 [D][N][A]	Eject Button Assembly	QXL1363	QXL1463	
※For all European areas except United Kingdom, Australia, Asia, Latin America, Middle East and Africa areas.				
G16 [D][N][A]	Record Button Assembly	QXL1364	QXL1464	
※For all European areas except United Kingdom, Australia, Asia, Latin America, Middle East and Africa areas.				
G17 [D][N][A]	Rewind Button Assembly	QXL1365	QXL1465	
※For all European areas except United Kingdom, Australia, Asia, Latin America, Middle East and Africa areas.				
G18 [D][N][A]	Fast Forward Button Assembly	QXL1366	QXL1466	
※For all European areas except United Kingdom, Australia, Asia, Latin America, Middle East and Africa areas.				
G19 [D][N][A]	Playback Button Assembly	QXL1367	QXL1467	
※For all European areas except United Kingdom, Australia, Asia, Latin America, Middle East and Africa areas.				
G20 [D][N][A]	Stop Button Assembly	QXL1368	QXL1468	
※For all European areas except United Kingdom, Australia, Asia, Latin America, Middle East and Africa areas.				
G21 [D][N][A]	Pause Button Assembly	QXL1369	QXL1469	
※For all European areas except United Kingdom, Australia, Asia, Latin America, Middle East and Africa areas.				
A1 [B][A]	Instruction Book	QQT3031	QQT3161	
※For United Kingdom and Australia.				

Technics

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

SCHEMATIC DIAGRAM

(ADDITION)



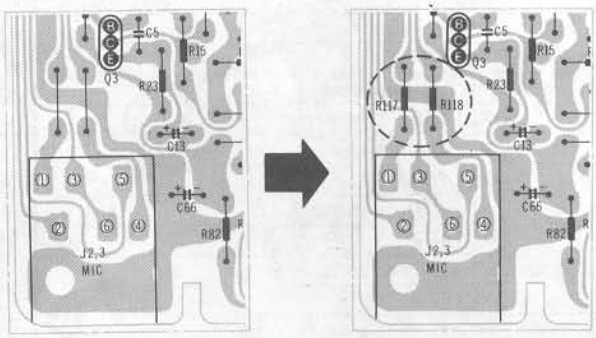
Former Type

New Type

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

CIRCUIT BOARD

(ADDITION)



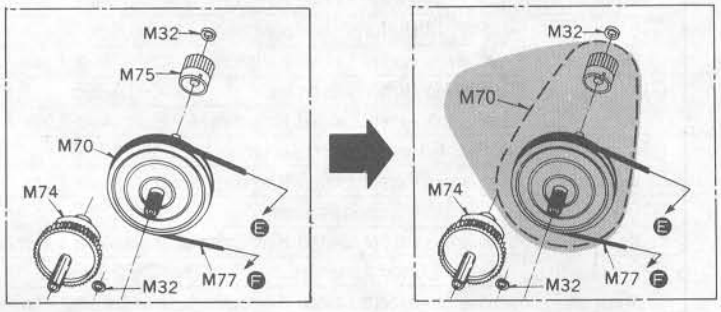
Former Type

New Type

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

MECHANICAL PARTS LOCATION

(DIFFERENCE)



Former Type

New Type

ARD
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Printed in Japan