

Service Manual

Cassette Deck

RS-M13

(Silver Face)
(Black Face)

Metal Tape Compatible Stereo Cassette Deck with
Soft-Touch Tape Transport Controls



This is the Service Manual for the following areas.

☐ For all European areas except United Kingdom.

RS-M24 MECHANISM SERIES

Specifications

Track system:	4-track 2-channel stereo recording and playback	Outputs:	LINE; output level 420mV, output impedance 1.5k Ω or less, load impedance 22k Ω over HEADPHONE; output level 80mV, load impedance 8 Ω
Tape speed:	4.8cm/s		
Wow and flutter:	0.05% (WRMS), $\pm 0.14\%$ (DIN)		
Frequency response:	Metal tape; 20–18,000Hz 30–17,000Hz (DIN) CrO ₂ /Fe-Cr tape; 20–18,000Hz 30–16,000Hz (DIN) Normal tape; 20–17,000Hz 30–15,000Hz (DIN)	Rec/Pb connection:	5P DIN type; input sensitivity 0.25mV, impedance 5.3k Ω output level 420mV, impedance 5.2k Ω
Signal-to-noise ratio:	Dolby* NR in; 67dB (above 5kHz) Dolby NR out; 57dB (signal level=max. recording level, Fe-Cr/CrO ₂ type tape)	Bias frequency:	80kHz
Fast forward and rewind time:	Approx. 90 seconds with C-60 cassette tape	Motor:	Electrical DC governor motor
Inputs:	MIC; sensitivity 0.25mV, input impedance 60k Ω over applicable microphone impedance 400 Ω –10k Ω LINE; sensitivity 60mV, input impedance 40k Ω	Heads:	2-head system; 1-MX head for record/playback 1-double-gap ferrite head for erasure
		Power requirements:	AC; 110/125/220/240V, 50-60Hz
		Power consumption:	12W
		Dimensions:	43.0cm(W) $\times$ 11.9cm(H) $\times$ 24.6cm(D)
		Weight:	4.3kg

Specifications are subject to change without notice.

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

Technics

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LOCATION OF CONTROLS AND COMPONENTS

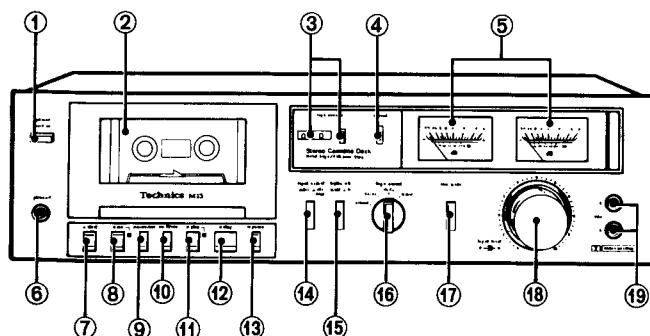


Fig. 1

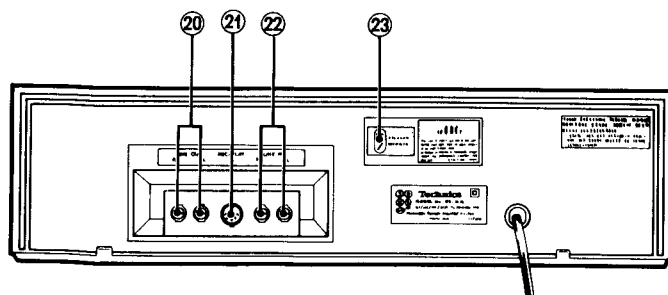


Fig. 2

- ① Power switch (power)
- ② Cassette holder
- ③ Tape counter and Reset button (tape counter)
- ④ Record indicator lamp (record)
- ⑤ VU meters (left-level-right)
- ⑥ Headphone jack (phones)
- ⑦ Eject button (▲ eject)
- ⑧ Record button (○ rec)
- ⑨ Rewind/Review button (◀◀ rew/rev)
- ⑩ Fast forward/Cue button (▶▶ ff/cue)
- ⑪ Play button (▶ play)
- ⑫ Stop button (■ stop)
- ⑬ Pause button (|| pause)
- ⑭ Input selector (input select)
- ⑮ Dolby noise-reduction switch (Dolby NR)
- ⑯ Tape selector (tape select-normal/Fe-Cr/CrO₂/Metal)
- ⑰ Record-muting button (rec mute)
- ⑱ Input level controls (input level) (L → R)
- ⑲ Microphone jacks (L mic R)
- ⑳ Line output jacks (LINE OUT) (R•L)
- ㉑ Record/Playback connection socket (REC/PLAY)
- ㉒ Line input jacks (LINE IN) (R•L)
- ㉓ Voltage selector (VOLTAGE SELECTOR)

DISASSEMBLY INSTRUCTIONS

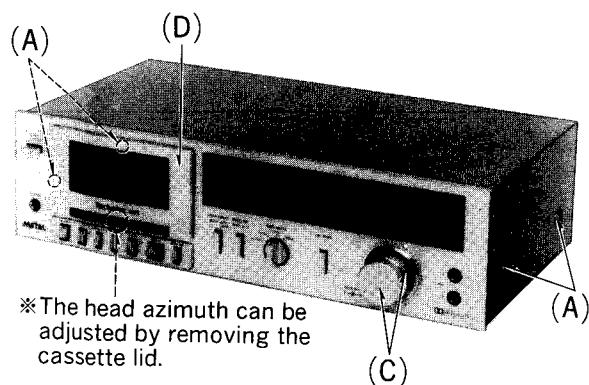


Fig. 3

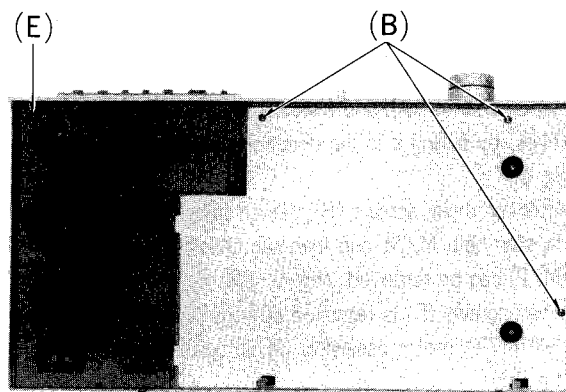


Fig. 4

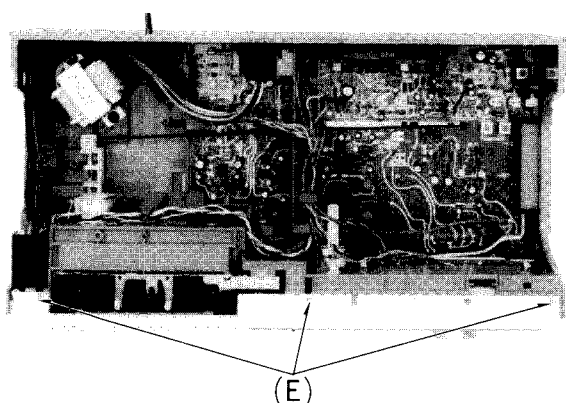


Fig. 5

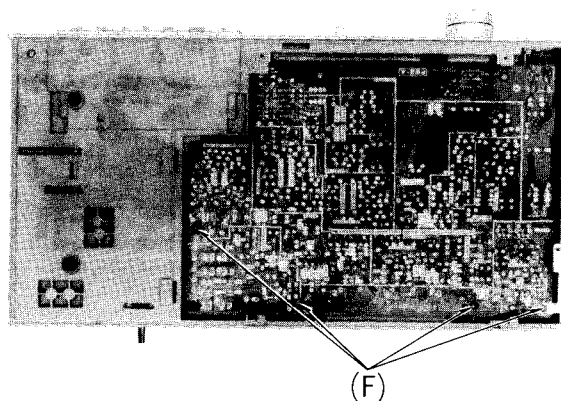


Fig. 6

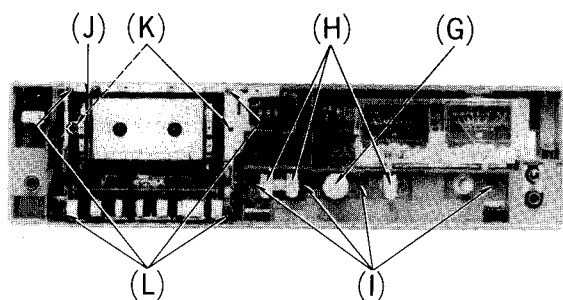


Fig. 7

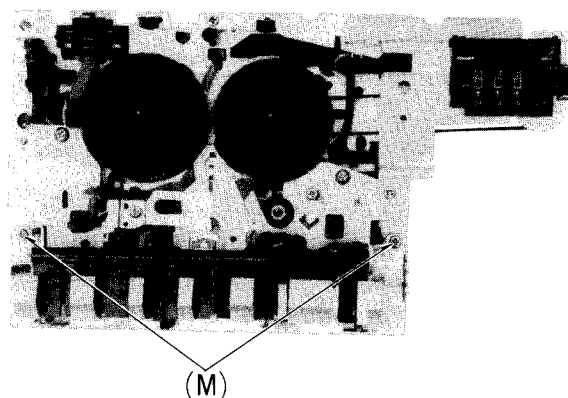


Fig. 8

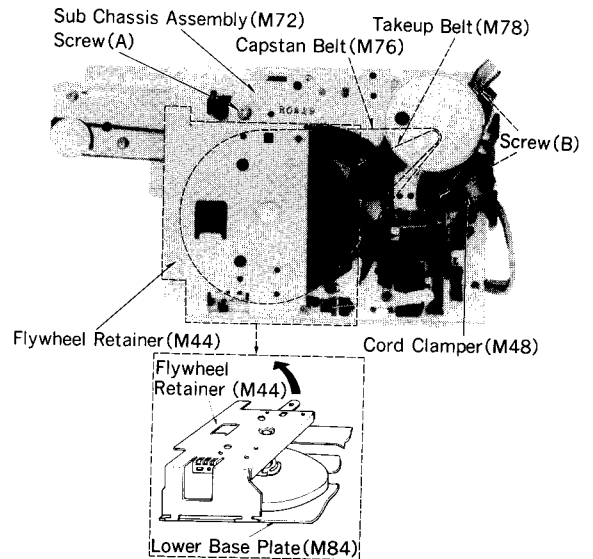
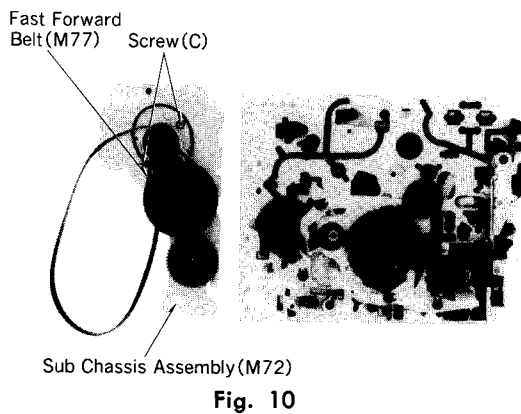
Procedure	To remove —	Remove —	Shown in fig. —
1	Case cover	• 4 screws (A)	3
2	Bottom cover	• 3 screws (B)	4
3	Front panel	• 2 control knobs (C) • Cassette lid (D) • 4 screws (E)	3 3 4, 5
4	Main circuit board	• 4 red screws (F) • Tape select knob (G) • 3 push buttons (H) • 4 screws (I)	6 7 7 7
4	Chassis cover assembly and mechanism unit	• Cassette holder (J) • 2 black screws (K) • 4 screws (L)	7 7 7
5	Operation button assembly	• 2 screws (M)	8

DISASSEMBLY NOTES (MECHANISM UNIT)

• Precautions for removal of the motor

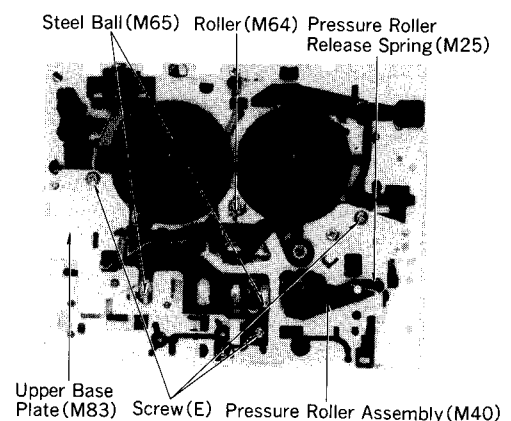
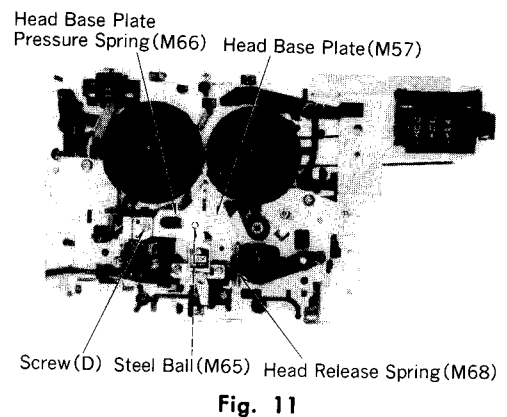
When removing the motor, follow the procedure given below.

1. Remove screw (A), and then detach flywheel retainer (M44) by pulling it in the direction of the arrow as in fig. 9.
2. After removing screws (B), detach takeup belt (M78) and capstan belt (M76), and then sub chassis assembly (M72) can be removed. (fig. 9, 10)
3. When screws (C) is removed after detaching fast forward belt (M77), motor assembly (M71) can be removed. (fig. 10)



• Head base plate (M57) and upper base plate (M83) removing procedure

1. With screw (D) removed, head base plate pressure spring (M66) can be detached.
In this case, take care not to lose steel ball (M65). (fig. 11)
2. With head release spring (M68) removed, head base plate (M57) can be detached. (fig. 11, 12)
In this case, take care not to lose steel ball (M65) and roller (M64).
3. After removing pressure roller release spring (M25), remove pressure roller assembly (M40). (fig. 12)
4. Remove screw (E), and then upper base plate (M83) can be detached. (fig. 12)



MECHANISM SECTION

1. For repair, measurement or adjustment with the mechanism removed from the unit be sure to ground the lower base plate of the mechanism.
2. For grounding, connect a extension cord to the mechanism's lower base plate and the lug terminal from main circuit board.
3. Without grounding, the amplifier does not operate properly.

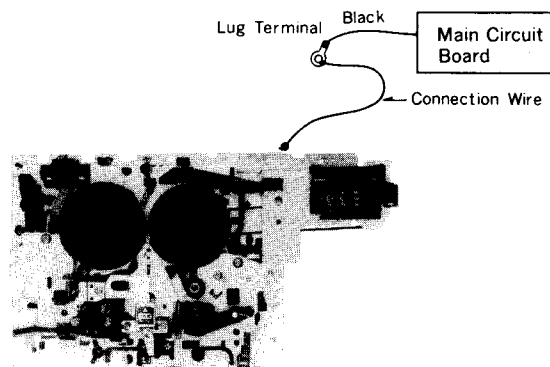


Fig. 13

ASSEMBLY INSTRUCTIONS

• Belt mounting

Check that each belt is free of damage or grease on the surface, after that, set the belt as illustrated, and mount it on the lower base plate (M84) after that, set the takeup belt (M78) on the fast forward connection pulley assembly (M82).

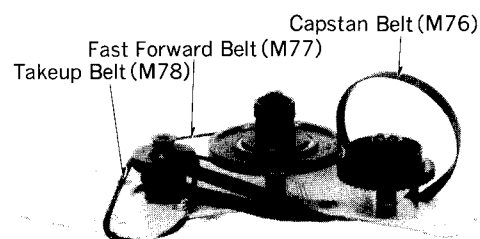


Fig. 14

• Positioning the takeup reel table assembly

When installing the takeup reel table assembly, be sure to mount the auto-stop friction hub (shown in fig. 16), as illustrated in fig. 15.

If the takeup reel table is positioned incorrectly at any place other than that shown in fig. 15, the auto-stop mechanism remains operative at all times.

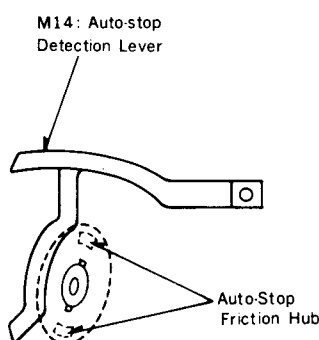


Fig. 15

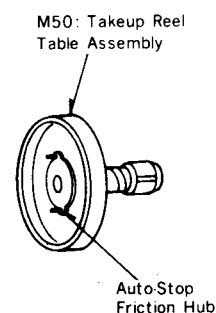


Fig. 16

• How to install the flywheel retainer

1. Insert the thrust retainer into the hole (A) of the flywheel retainer as shown in fig. 17.
2. Hold the thrust retainer with the thumb as shown in fig. 18.

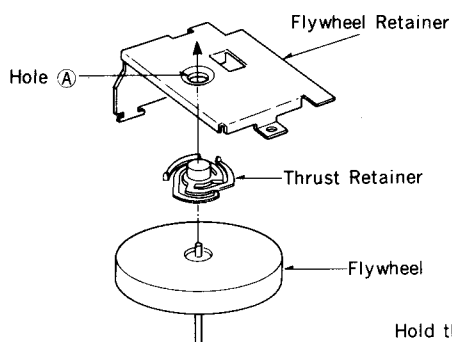


Fig. 17

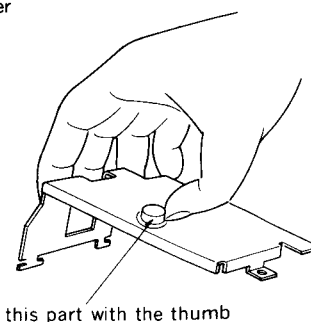
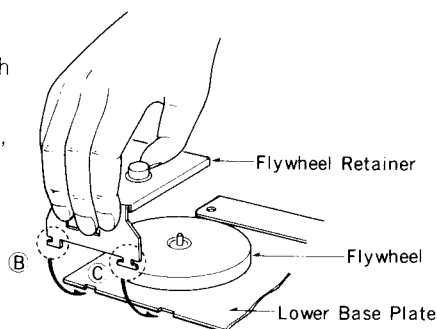
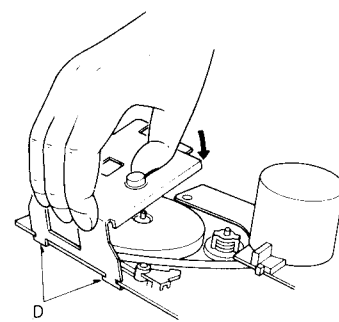


Fig. 18

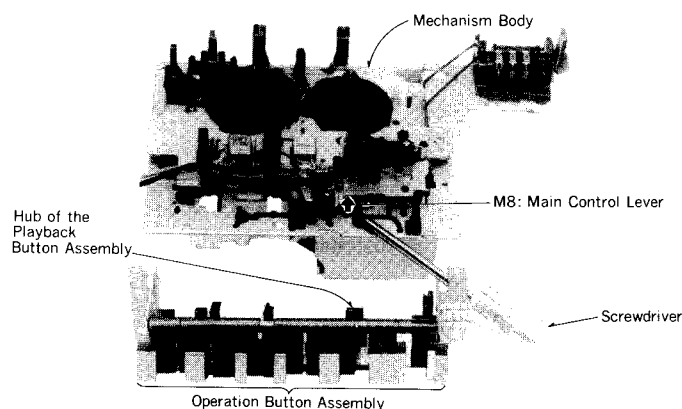
3. Engage the parts ⑥ and ⑦ of the flywheel retainer with the lower base plate as shown in fig. 19.
4. Shift down the flywheel retainer, supported at points ⑧, in the direction of the arrow as illustrated. (fig. 20)
5. Attach the screw (A) in the position as shown in fig. 9.


Fig. 19

Fig. 20

• Mounting the operation button assembly

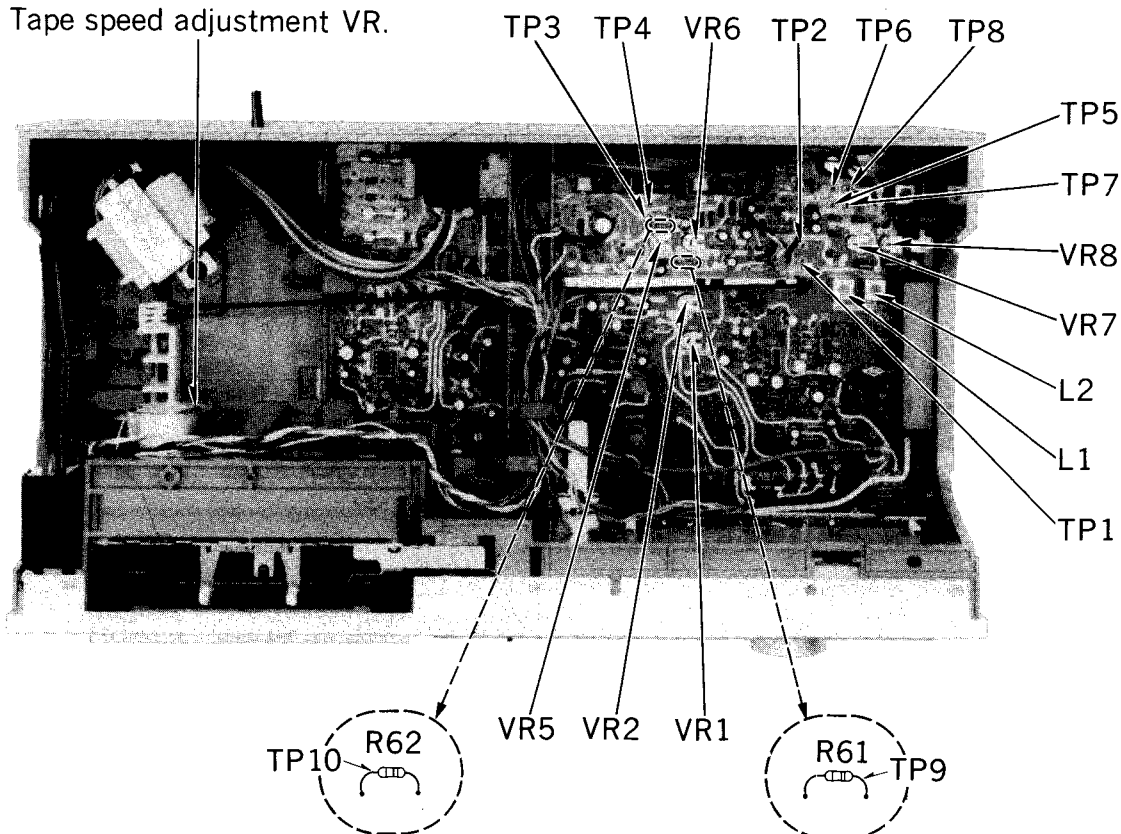
Before mounting the operation button assembly on the mechanism body, be sure to lift the main control lever in the direction of the arrow using a screwdriver, as shown in fig. 21, until it locks in place.

If it is not mounted in this manner, the hub of the playback button assembly during playback catches on the main control lever, making it impossible to release playback mode.


Fig. 21

ADJUSTMENT PARTS LOCATION

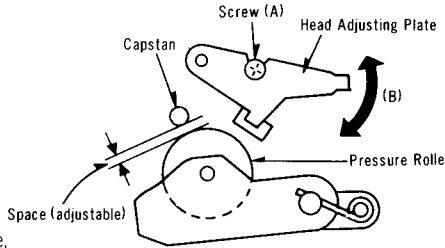
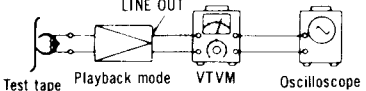
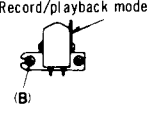
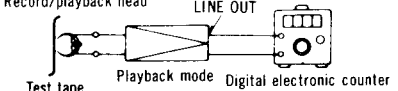
Tape speed adjustment VR.


Fig. 22

MEASUREMENT AND ADJUSTMENT METHODS

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.
- Judgable room temperature: $20 \pm 5^{\circ}\text{C}$ ($68 \pm 9^{\circ}\text{F}$)
- Dolby NR switch: OUT
- Tape selector: Normal position
- Input selector: Line in
- Input level controls: Maximum

ITEM	MEASUREMENT & ADJUSTMENT
A 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 pinch roller and the capstan. Standard value: $0.5 \pm 0.3\text{mm}$ 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. 23
B 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. 24. 2. Playback azimuth tape (QZZCFM 8 kHz). 3. Adjust record/playback head angle adjustment screw (B) in fig. 25 so that output level at LINE OUT becomes maximum. 4. Measure both channels, and adjust levels for equal output. 5. After adjustment lock head adjustment screw with lacquer.  Fig. 24 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 (C) shown in fig. 26 so that the tape may not get curled or malformed by tape guide of the erase head. 4. After adjustment, lock head adjust screw with lacquer.   Fig. 25 Fig. 26
C 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. 27. 2. Playback test tape (QZZCWAT 3,000 Hz), and supply playback signal to frequency counter. 3. Measure this frequency. 4. On the basis of 3,000 Hz, determine value by following formula: $\text{Tape speed accuracy} = \frac{f - 3,000}{3,000} \times 100 (\%) \quad \text{where, } f = \text{measured value}$ 5. Take measurement at middle section of tape. Standard value: $\pm 1.5\%$ 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. 22.  Fig. 27

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: $\text{Tape speed fluctuation} = \frac{f_1 - f_2}{3,000} \times 100 (\%) \quad f_1 = \text{maximum value, } f_2 = \text{minimum value}$ Standard value: Less than 1% Note: Please use non metal type screwdriver when you adjust tape speed accuracy on this unit.
D Playback frequency response Condition: • Playback mode • Tape selector ... Normal position Equipment: • VTVM • Oscilloscope • Test tape ... QZZCFM	1. Test equipment connection is shown in fig. 24. 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. 28). Playback frequency response chart Fig. 28
E Playback gain Condition: • Playback mode • Tape selector ... Normal position Equipment: • VTVM • Oscilloscope • Test tape ... QZZCFM	1. Test equipment connection is shown in fig. 24. 2. Playback standard recording level portion on test tape (QZZCFM 315 Hz, 0 dB), 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 VR1 (L-CH), VR2 (R-CH) (See fig. 22 on page 5). 2. After adjustment, check "Playback frequency response" again.
F Bias leakage Condition: • Record mode • Input level controls ... MAX • Tape selector ... Metal position Equipment: • VTVM • Oscilloscope	1. Test equipment connection is shown in fig. 29. 2. Place UNIT into record mode. 3. Adjust trap coil L1 (L-CH), L2 (R-CH) so that measured value on VTVM becomes minimum. 4. Take adjustment for both channels. Fig. 29
G Erase current Condition: • Record mode • Tape selector ... Metal position Equipment: • VTVM • Oscilloscope	1. Test equipment connection is shown in fig. 30. 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: $\text{Erase current (A)} = \frac{\text{Voltage across both ends of R301}}{1 (\Omega)}$ Standard value: 155 ± 15 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 10). Fig. 30

ITEM	MEASUREMENT & ADJUSTMENT
	- Make measurement for erase current. - Make sure that the measured value is within the erase current of 140mA to 170mA. - If it is beyond the value, carry out the following adjustments: - If the erase current is less than 140mA, short the point (A). - If the erase current is more than 170mA, open the points (A) and (B).
H Bias current Condition: * Record mode * Tape selector ... Normal position ... Fe-Cr position ... CrO ₂ position ... Metal position Equipment: * VTVM * Oscilloscope	- Test equipment connection is shown in fig. 31. - Place UNIT into record mode, and tape selector to normal position. - 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 410μA (Normal position) - If measured value is not within standard, adjust VR7 (L-CH) and VR8 (R-CH) (See fig. 22 on page 5). - Set the tape selector to each position. - Make sure that the measured value is within standard. Standard value: around 440μA (Fe-Cr position), around 545μA (CrO₂ position), around 800μA (Metal position)
I 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 (600Ω) * Test tape (reference blank tape) ... QZZCRA for Normal	- Test equipment connection is shown in fig. 32. - Place UNIT into record mode, and tape selector to normal position. - Supply 1 kHz signal (-24 dB) from AF oscillator, through ATT to LINE IN. - Adjust ATT until monitor level at LINE OUT becomes 0.39V. - Using test tape, make recording. - Playback recorded tape, and make sure the value at LINE OUT on VTVM becomes 0.39V (-7 dB). - If measured value is not 0.39V, adjust VR5 (L-CH), VR6 (R-CH) (See fig. 22 on page 5). - Repeat from step (2).
Overall frequency response Condition: * Record/playback mode * Tape selector ... Normal position ... Fe-Cr position ... CrO ₂ position ... Metal position * Input level controls... MAX Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Resistor (600Ω) * Test tape (reference blank tape) ... QZZCRA for Normal ... QZZCRY for Fe-Cr ... QZZCRX for CrO ₂ ... QZZCRZ for Metal	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. 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. 34. Former type New type QZZCRA QZZCRA 3

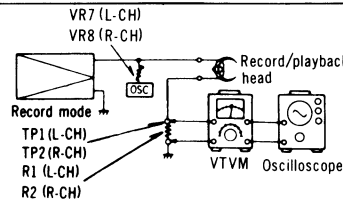


Fig. 31

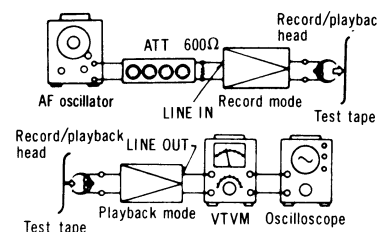


Fig. 32

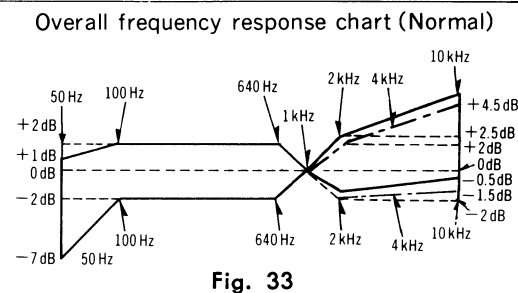


Fig. 33

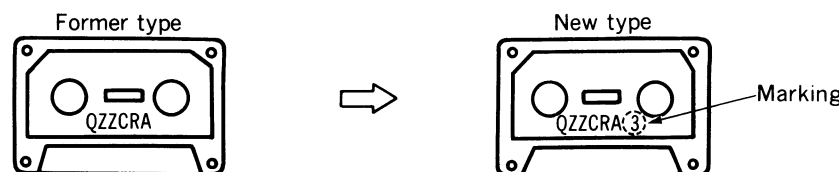


Fig. 34

ITEM	MEASUREMENT & ADJUSTMENT
	Measurement - Test equipment connection is shown in fig. 32. - Place the normal test tape (QZZCRA) in the cassette holder. - Place UNIT into record mode, and the selector to normal position. - Supply 1 kHz signal from AF oscillator through ATT to LINE IN. - Adjust ATT so that input level is -20 dB below standard recording level (standard recording level = 0 VU). - At this time, LINE OUT level indicates 0.039V. - Record each frequency 1 kHz, 50 Hz, 200 Hz, 4 kHz, 8 kHz and 10 kHz (12 kHz for Fe-Cr, CrO₂ and metal). - Playback and express in dB the difference between playback output level of each frequency based on playback output level of 1 kHz. - Make sure that the measured value is within the range specified in the overall frequency response chart (Shown in fig. 33). - Change test tape to Fe-Cr (QZZCRY), CrO₂ (QZZCRX) and metal (QZZCRZ). - Set the tape selector to each position. - Measure in the same manner from step (3) to step (8). - Make sure that the measured value is within the range specified in the overall frequency response chart for Fe-Cr, CrO₂ and metal tape (Shown in fig. 35).
	Adjustment—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. 36, increases the bias current by turning VR7 (L-CH), VR8 (R-CH). - When it becomes lower, as shown by dotted line, reduce the bias current by turning VR7 (L-CH), VR8 (R-CH). Note: For the method of bias current measurement, refer to "H Bias current adjustment" on page 8.
K Level meter Condition: * Record mode * Input level controls... MAX Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Resistor (600Ω)	- Test equipment connection is shown in fig. 37. - Supply 1 kHz signal from the AF oscillator, through the ATT to the LINE IN. - Adjust ATT so that the monitor level at LINE OUT becomes 0.39V. - Check to see that the level meter stays within the range of -1 dB to +1 dB. - If it is beyond the range, carry out the following adjustments: - Short soldered points (D) (L-CH) and (F) (R-CH) indicated as "DOWN" where level more than +1 dB. - Short soldered points (C) (L-CH) and (E) (R-CH) indicated as "UP" where level less than -1 dB. (See wiring connection diagram on page 10.)
L Dolby NR circuit Condition: * Record mode * Dolby NR switch... IN/OUT * Input level controls... MAX Equipment: * VTVM * AF oscillator * ATT * Oscilloscope * Resistor (600Ω)	- Test equipment connection is shown in fig. 38. - Place UNIT into record mode, set the Dolby NR switch to OUT position and supply to LINE IN to obtain -34.5 dB at TP9 (L-CH), TP10 (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.

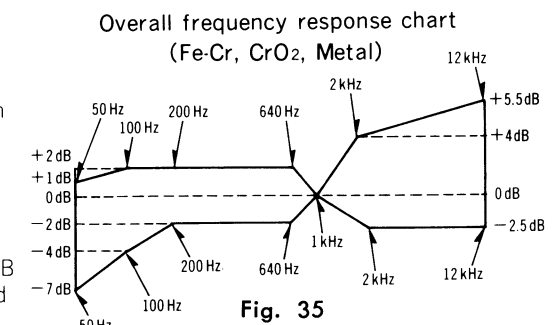


Fig. 35

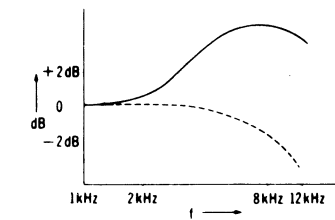


Fig. 36

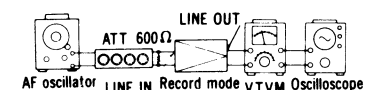


Fig. 37

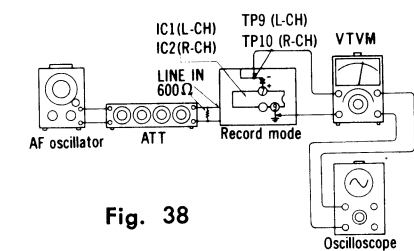
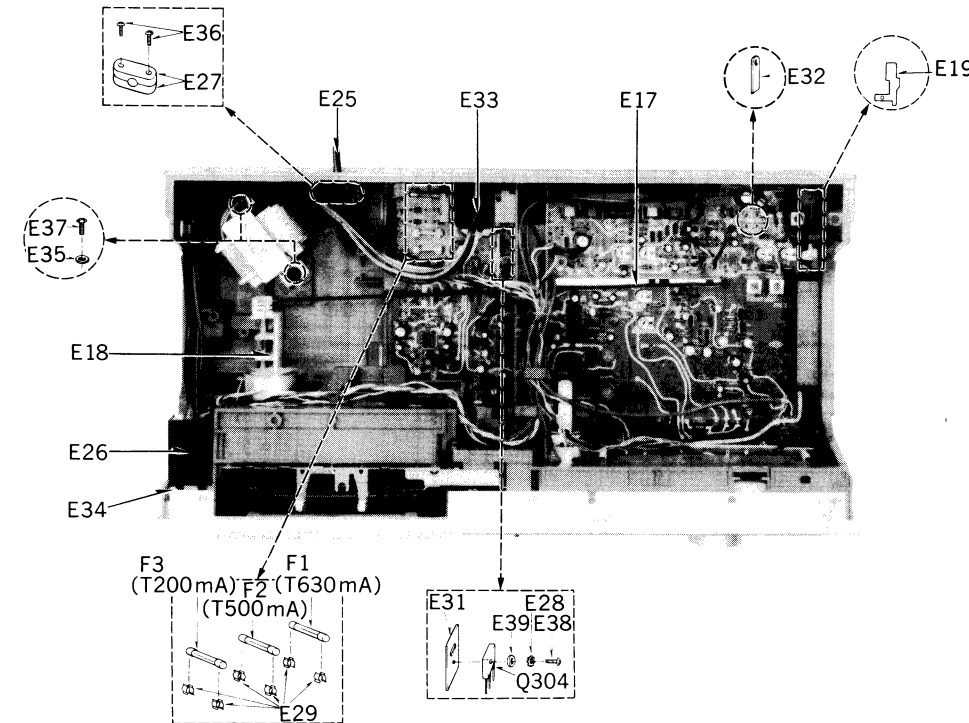
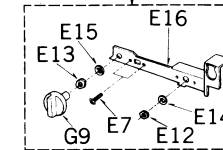
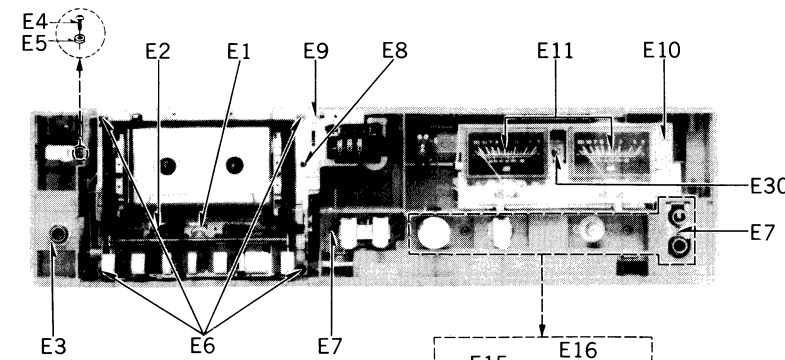


Fig. 38

ELECTRICAL PARTS LOCATION



NOTE: Δ 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	QNQ1070	Nut 12 ϕ
E4	XSN3+8S	Screw +3 $\times$ 8
E5	XWA3B	Washer
E6	XTN3+10B	Tapping Screw +3 $\times$ 10
E7	XTN3+8B	Tapping Screw +3 $\times$ 8
E8	XTN26+6B	Tapping Screw +2.6 $\times$ 6
E9	QJT0015	Lug Terminal
E10	QKJ0405	Level Meter Holder
E11	QSL1111RNM	Level Meter
E12	QNQ1039	Nut 9 ϕ
E13	QNQ1004	Nut 8 ϕ
E14	QWQ1133	Spring Washer 9 ϕ
E15	QWQ2002	Spring Washer 8 ϕ
E16	QMA3956	Volume Angle
E17	QBS1130	Recording Wire
E18	QML3664	Recording Lever
E19	QJC0034	Earth Plate
E20	QJP1921TN	3 Pin Post
E21	QJP1922TN	6 Pin Post
E22	QJS1921TN	3 Pin Socket
E23	QJS1922TN	6 Pin Socket
E24	QJT1054	Contact
E25	Δ SJA88	AC Power Cord
E26	QKJ0407	Insulation Plate
E27	QTD1164	Cord Clamper
E28	XWG26	Washer 2.6 ϕ
E29	Δ QTF1054	Fuse Holder
E30	XAMQ46P100	Pilot Lamp (for Level Meter)
E31	QTH1118	Heat Sink
E32	QJT1041	Check Pin
E33	QTW0026	Rotary Switch Cover
E34	XTS3+10B	Tapping Screw +3 $\times$ 10
E35	XWA4B	Washer 4 ϕ
E36	XTN3+16B	Tapping Screw +3 $\times$ 16
E37	XSN4+10	Screw +4 $\times$ 10
E38	XSN26+8	Screw +2.6 $\times$ 8
E39	XWA26B	Washer 2.6 ϕ

ITEM	MEASUREMENT & ADJUSTMENT
	Measurement - Test equipment connection is shown in fig. 32. - Place the normal test tape (QZZCRA) in the cassette holder. - Place UNIT into record mode, and thpe selector to normal position. - Supply 1kHz signal from AF oscillator through ATT to LINE IN. - Adjust ATT so that input level is -20dB below standard recording level (standard recording level=0VU). - At this time, LINE OUT level indicates 0.039V. - Record each frequency 1kHz, 50Hz, 200Hz, 4kHz, 8kHz and 10kHz (12kHz for Fe-Cr, CrO₂ and metal). - Playback and express in dB the difference between playback output level of each frequency based on playback output level of 1 kHz. - Make sure that the measured value is within the range specified in the overall frequency response chart (Shown in fig. 33). - Change test tape to Fe-Cr (QZZCRY), CrO₂ (QZZCRX) and metal (QZZCRZ). - Set the tape selector to each position. - Measure in the same manner from step (3) to step (8). - Make sure that the measured value is within the range specified in the overall frequency response chart for Fe-Cr, CrO₂ and metal tape (Shown in fig. 35). Adjustment—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. 36, increases the bias current by turning VR7 (L-CH), VR8 (R-CH). - When it becomes lower, as shown by dotted line, reduce the bias current by turning VR7 (L-CH), VR8 (R-CH). Note: For the method of bias current measurement, refer to "Bias current adjustment" on page 8.
Level meter Condition: - Record mode - Input level controls... MAX Equipment: - VTVM - AF oscillator - ATT - Oscilloscope - Resistor (600Ω)	1. Test equipment connection is shown in fig. 37. 2. Supply 1kHz signal from the AF oscillator, through the ATT to the LINE IN. 3. Adjust ATT so that the monitor level at LINE OUT becomes 0.39V. 4. Check to see that the level meter stays within the range of -1dB to +1dB. 5. If it is beyond the range, carry out the following adjustments: - Short soldered points (D) (L-CH) and (F) (R-CH) indicated as "DOWN" where level more than +1dB. - Short soldered points (C) (L-CH) and (E) (R-CH) indicated as "UP" where level less than -1dB. (See wiring connection diagram on page 10.)
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. 38. 2. Place UNIT into record mode, set the Dolby NR switch to OUT position and supply to LINE IN to obtain -34.5dB at TP9 (L-CH), TP10 (R-CH) (frequency 5kHz). 3. Confirm that the value at IN position is 8($\pm$2.5) dB greater than the value at OUT position of Dolby NR switch.

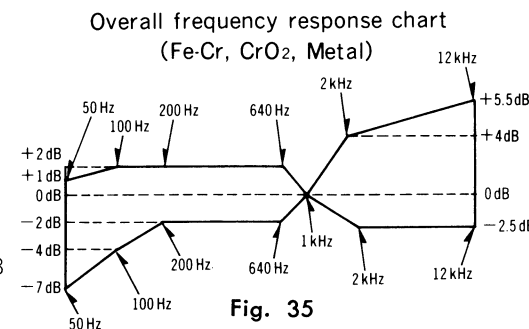


Fig. 35

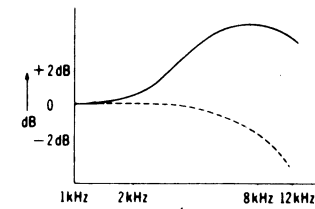


Fig. 36

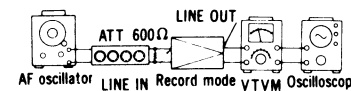


Fig. 37

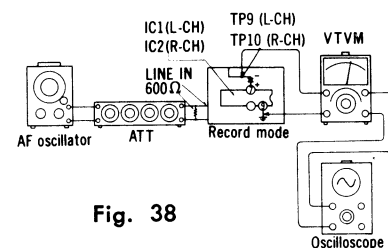


Fig. 38

Note:

When replacing parts (Ref. No. D304), mount them so that they are raised 3 to 5 mm from the printed circuit board, as shown in Fig. A.

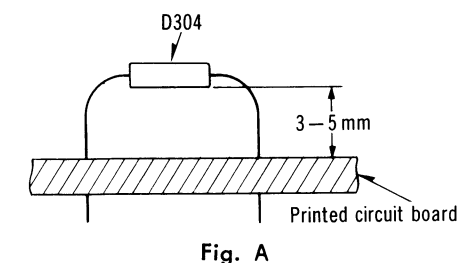
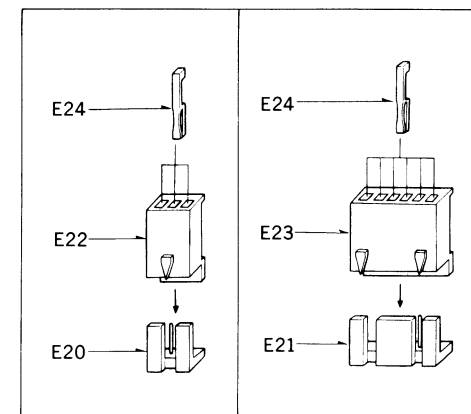
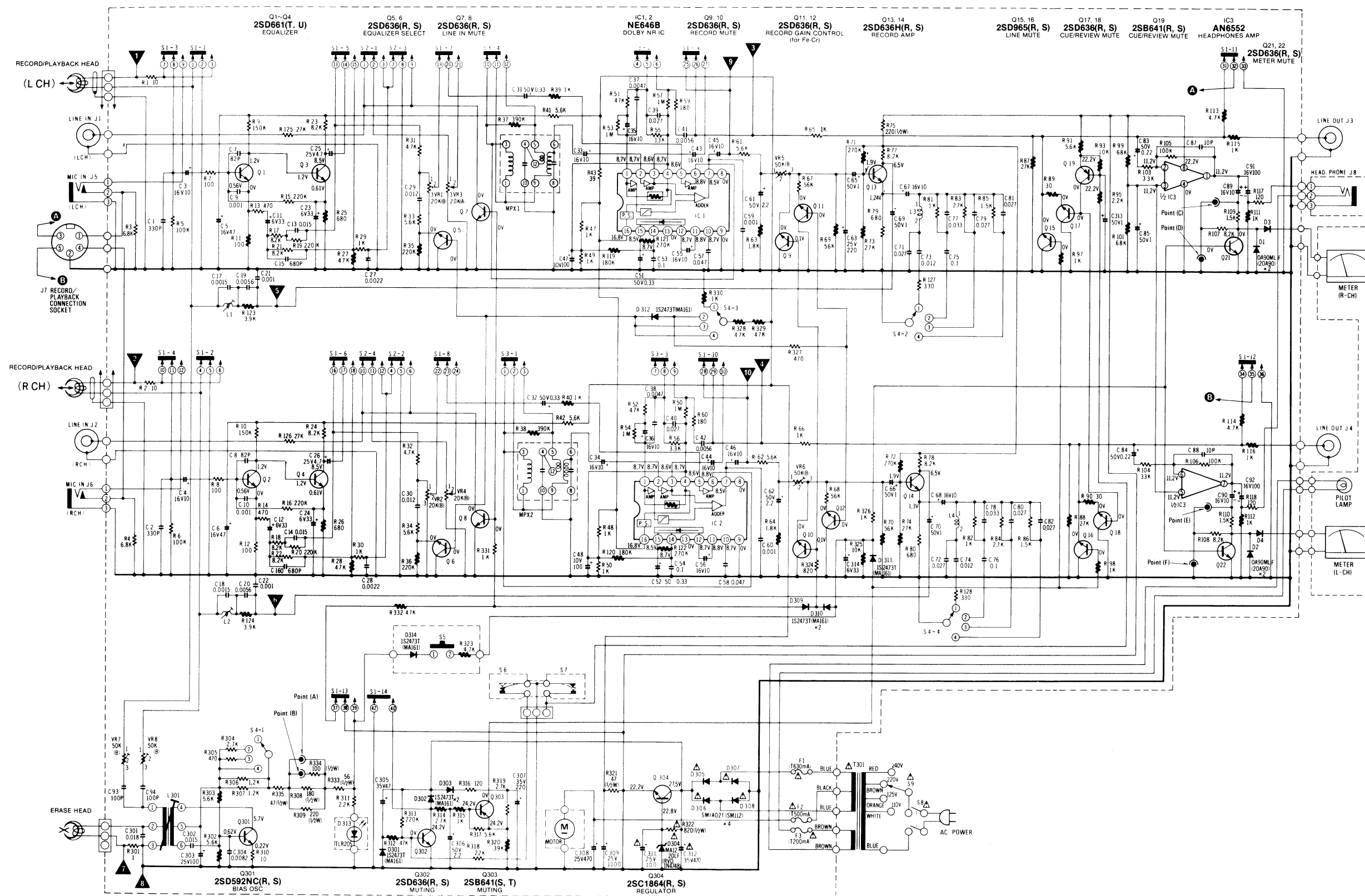


Fig. A



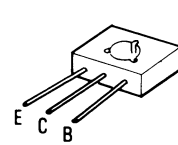
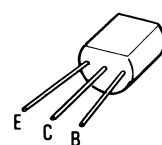
SCHEMATIC DIAGRAM



TERMINATIONS (SIDE VIEW)

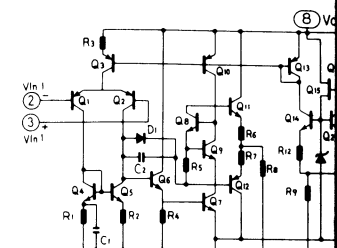
Q15, 16, 301

Q304

Q1-14, 17-19
302, 303

EQUIVALENT

IC3 AN6552

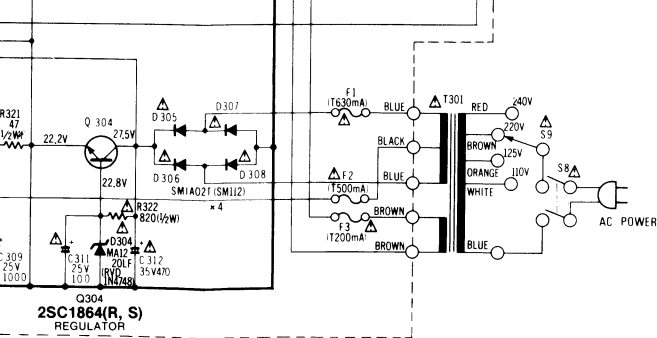


NOTES:

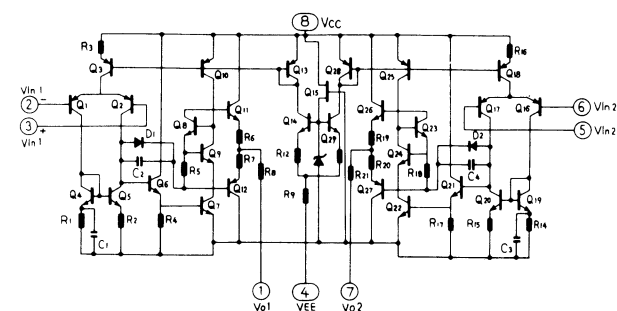
- S1-1 - S1-14 Record/playback select
- S2-1 - S2-4 Input select switch (sh)
- S3-1 - S3-4 Dolby NR IN/OUT sele
- S4-1 - S4-4 Tape select switch (1-
- S5 Record muting switch
- S6 Playback muting swit
- S7 Cue and review muting
- S8 Power ON/OFF switch
- S9 AC voltage select swit
- VR1, 2 Playback gain adjustm
- VR3, 4 Input level control.
- VR5, 6 Record gain adjustmen
- VR7, 8 Bias current adjustmen
- Connection points (A) and (B) For er
- Connection points (C), (D), (E) and (F) For lev
- L1, 2 Bias leakage adjustme
- Resistance are in ohms (Ω), 1/4 watt unless
- K=1,000 Ω , M=1,000 k Ω .
- Resistors indicated thickly show printed type
- Capacity are in microfarads (μ F) unless spec
- P=Pico-farads.
- The mark (∇) shows test point. e.g. ∇ =Te
- All voltage values shown in circuitry are und
- volume control at minimum position.
- For measurement, use VTVM.

SPECIFICATIONS • Input

Playback S/N ratio	Test tape ... QZZCFM
Overall distortion	Test tape
	... QZZCRA for Normal
	... QZZCRX for CrO ₂
	... QZZCRY for Fe-Cr
	... QZZCRZ for Metal
Overall S'N ratio	Test tape ... QZZCRA



IC3 AN6552



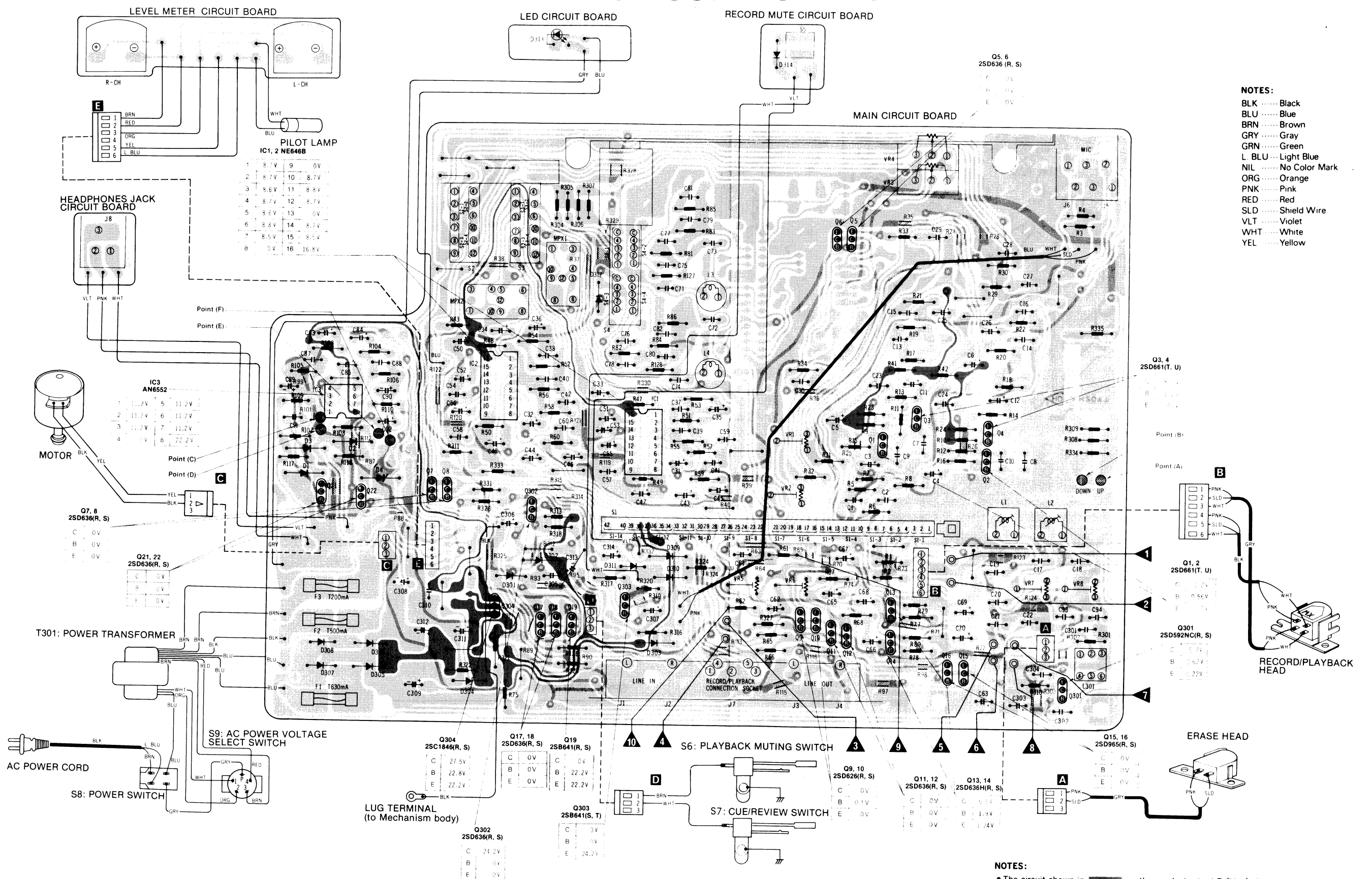
- S1-1 – S1-14 Record/playback select switch (shown in playback position).
 - S2-1 – S2-4 Input select switch (shown in LINE position).
 - S3-1 – S3-4 Dolby NR IN/OUT select switch (shown in OUT position).
 - S4-1 – S4-4 Tape select switch (1... Normal, 2... Fe-Cr, 3... CrO₂, 4... Metal).
 - S5 Record muting switch (shown in OFF position).
 - S6 Playback muting switch (close at playback or record mode).
 - S7 Cue and review muting switch (close at cue/review mode).
 - S8 Power ON/OFF switch (shown in OFF position).
 - S9 AC voltage select switch.
 - VR1, 2 Playback gain adjustment VR.
 - VR3, 4 Input level control.
 - VR5, 6 Record gain adjustment VR.
 - VR7, 8 Bias current adjustment VR.
 - Connection points (A) and (B) For erase current adjustment.
 - Connection points (C), (D), (E) and (F) ... For level meter adjustment.
 - L1, 2 Bias leakage adjustment coil.
- Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
 $K = 1,000 \Omega$, $M = 1,000 k\Omega$.
- Resistors indicated thickly show printed type resistor.
- 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.

Playback S/N ratio Test tape... QZZCFM	Greater than 45 dB (without NAB filter)
Overall distortion Test tape ... QZZCRA for Normal ... QZZCRX for CrO ₂ ... QZZCRY for Fe-Cr ... QZZCRZ for Metal	Less than 4%
Overall S/N ratio Test tape... QZZCRA	Greater than 43 dB (without NAB filter)

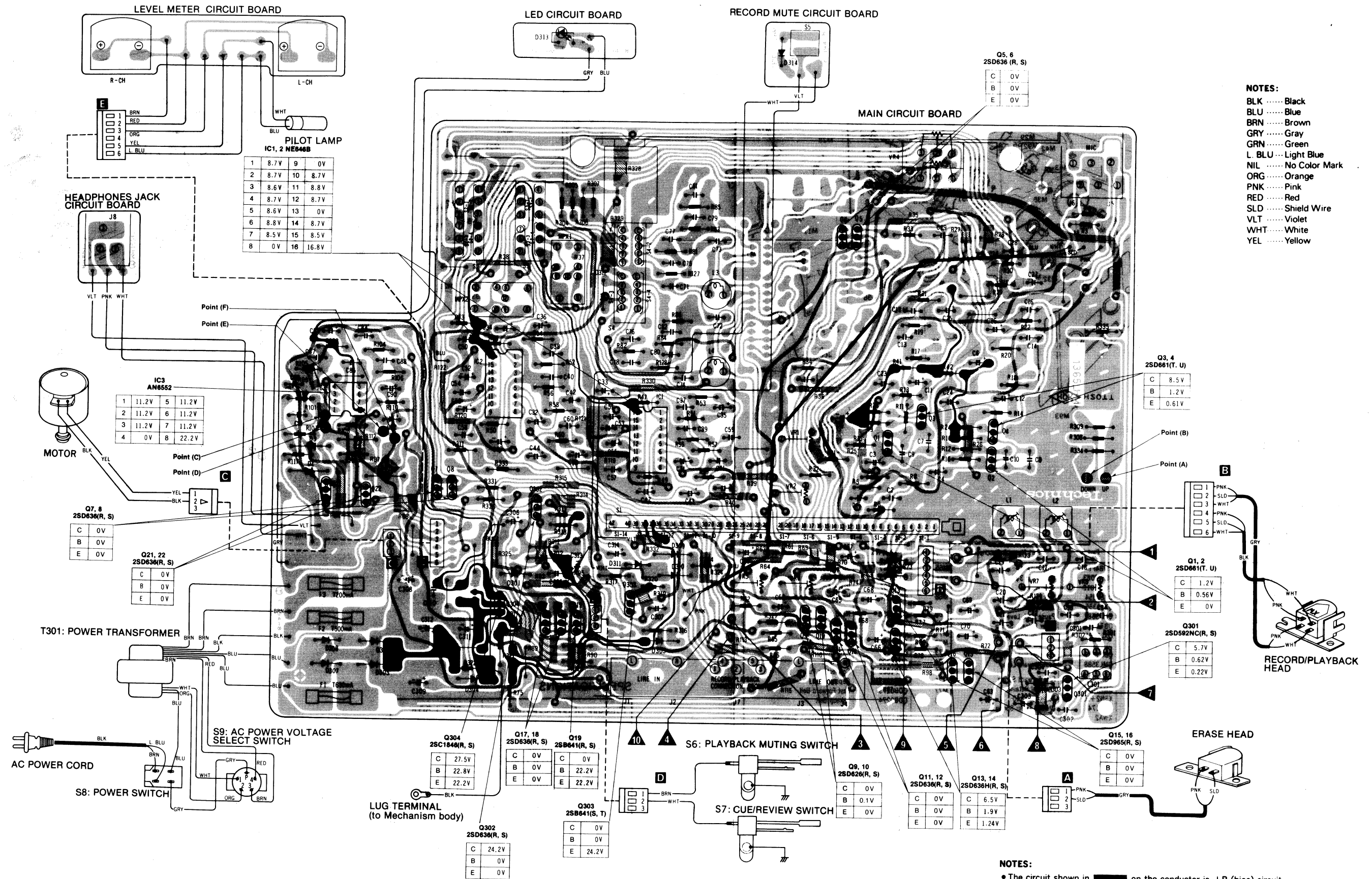
NOTE: Δ indicates that only parts specified by the manufacturer be used for safety.

Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
<u>TRANSFORMER</u>					
T301	Δ QLPD45EL	Power Transformer	S6	QSB02511	Leaf Switch (Playback Muting Switch)
			S7	QSB02511	Leaf Switch (Fast Wind Muting Switch)
L1.2	QLQC0331	Bias Trap Coil	S8	Δ QSW2214	Push Switch (Power ON/OFF)
L3.4	QLQX0332K	Peaking Coil	S9	Δ QSR1407H	Rotary Switch (AC Power Voltage Selector)
MPX1.2	QLM927	MPX Filter			
L301	QLB0198K	Bias Oscillation Coil			
<u>COILS</u>					
					<u>FUSES</u>
			F1	Δ XBAQ0008	Fuse (T 630 mA)
			F2	Δ XBAQ050026	Fuse (T 500 mA)
			F3	Δ XBAQ00113	Fuse (T 200 mA)
<u>SWITCHES</u>					
S1	QSSE203	Slide Switch (Record/Playback Selector)			<u>JACKS</u>
S2	QSW4209T	Push Switch (LINE IN/MIC Selector)	J1. 2. 3. 4. 7	QEJ5002S	Jack Board Assembly (LINE IN/OUT and DIN Jack)
S3	QSW4209T	Push Switch (Dolby ON/OFF)			
S4	QSR4403A	Rotary Switch (Tape Selector)	J5. 6	QJA0257H	Microphone Jack
S5	QSW2103A	Push Switch (Record Muting ON/OFF)	J8	QJA0249C	Headphones Jack

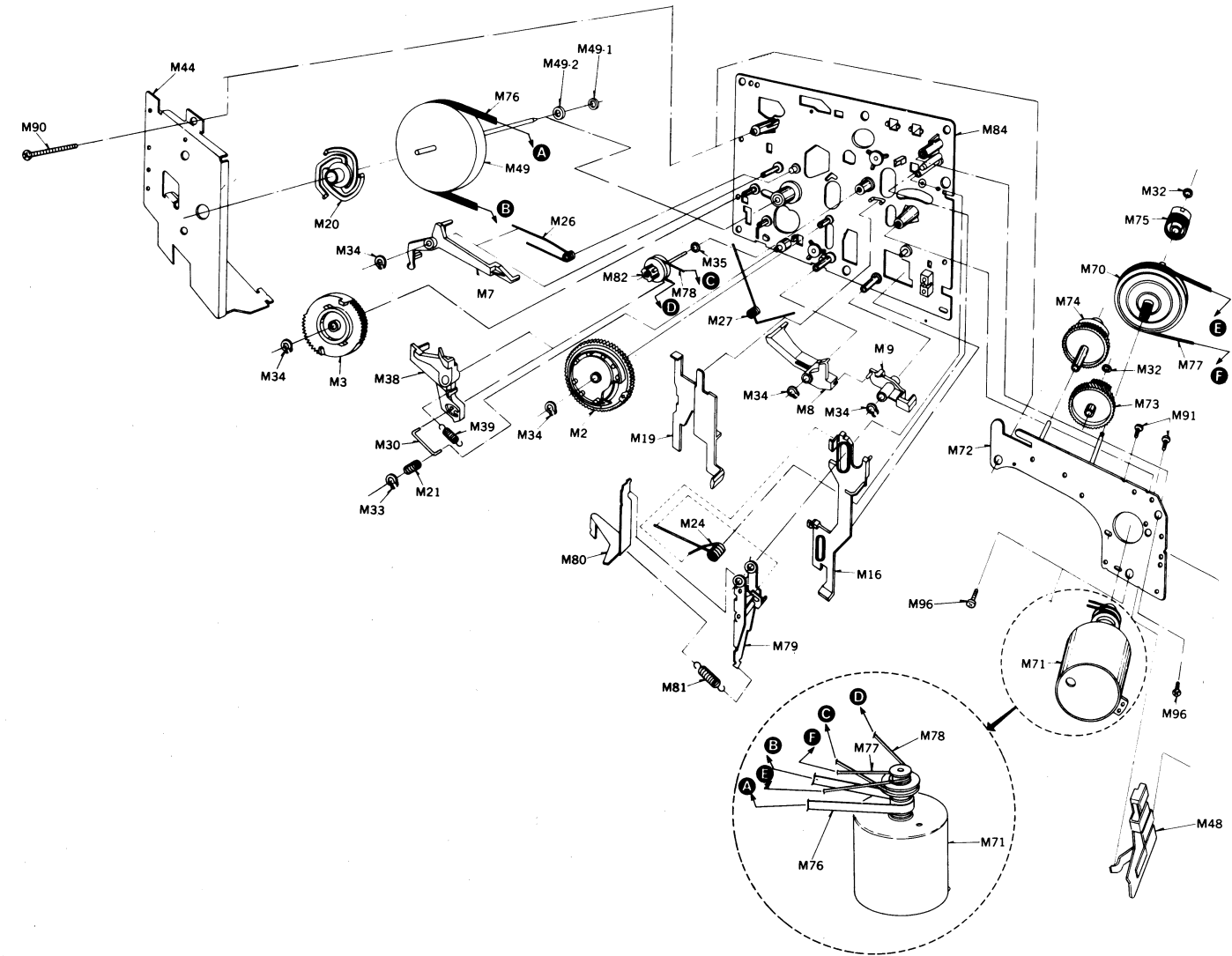
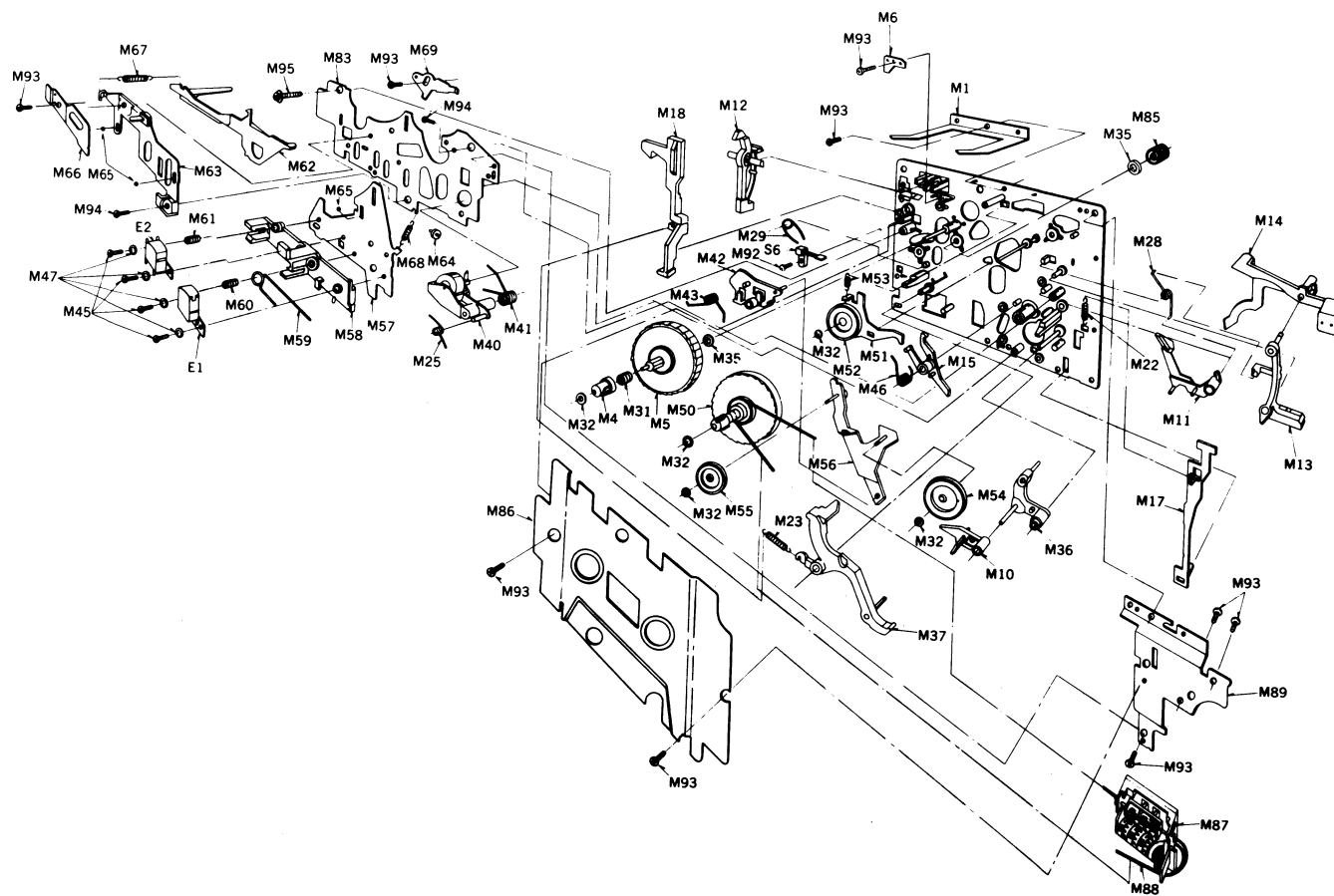
WIRING CONNECTION DIAGRAM AND CIRCUIT BOARDS



WIRING CONNECTION DIAGRAM AND CIRCUIT BOARDS



MECHANICAL PARTS LOCATION

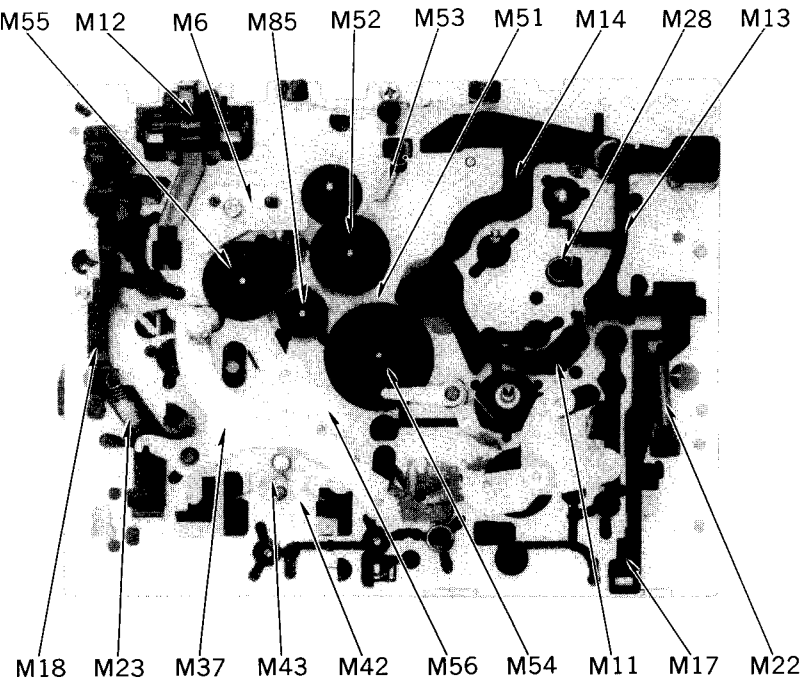
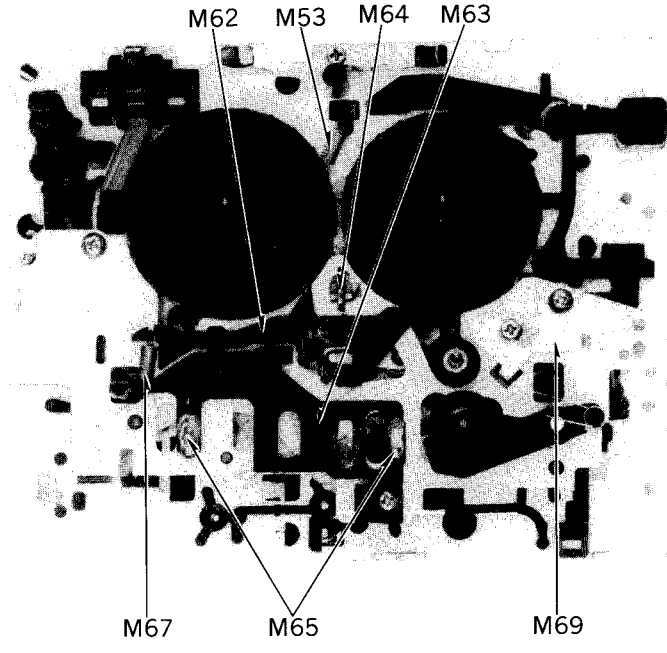
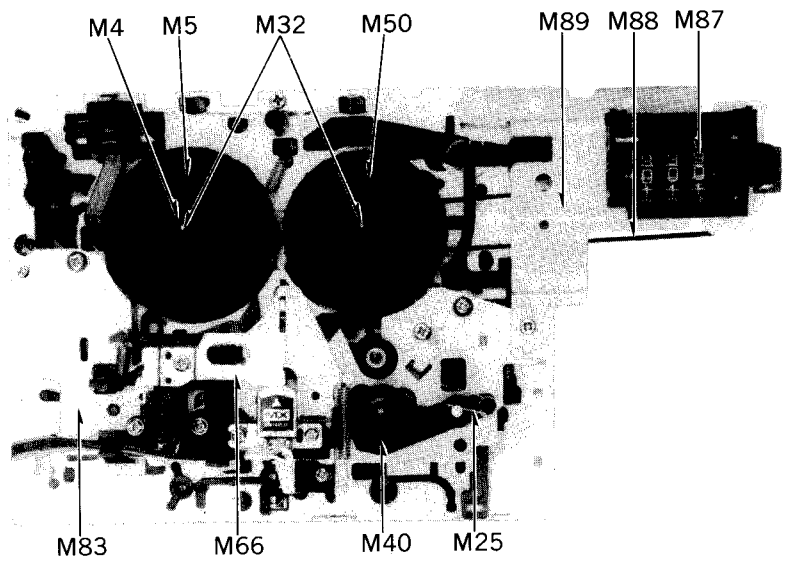
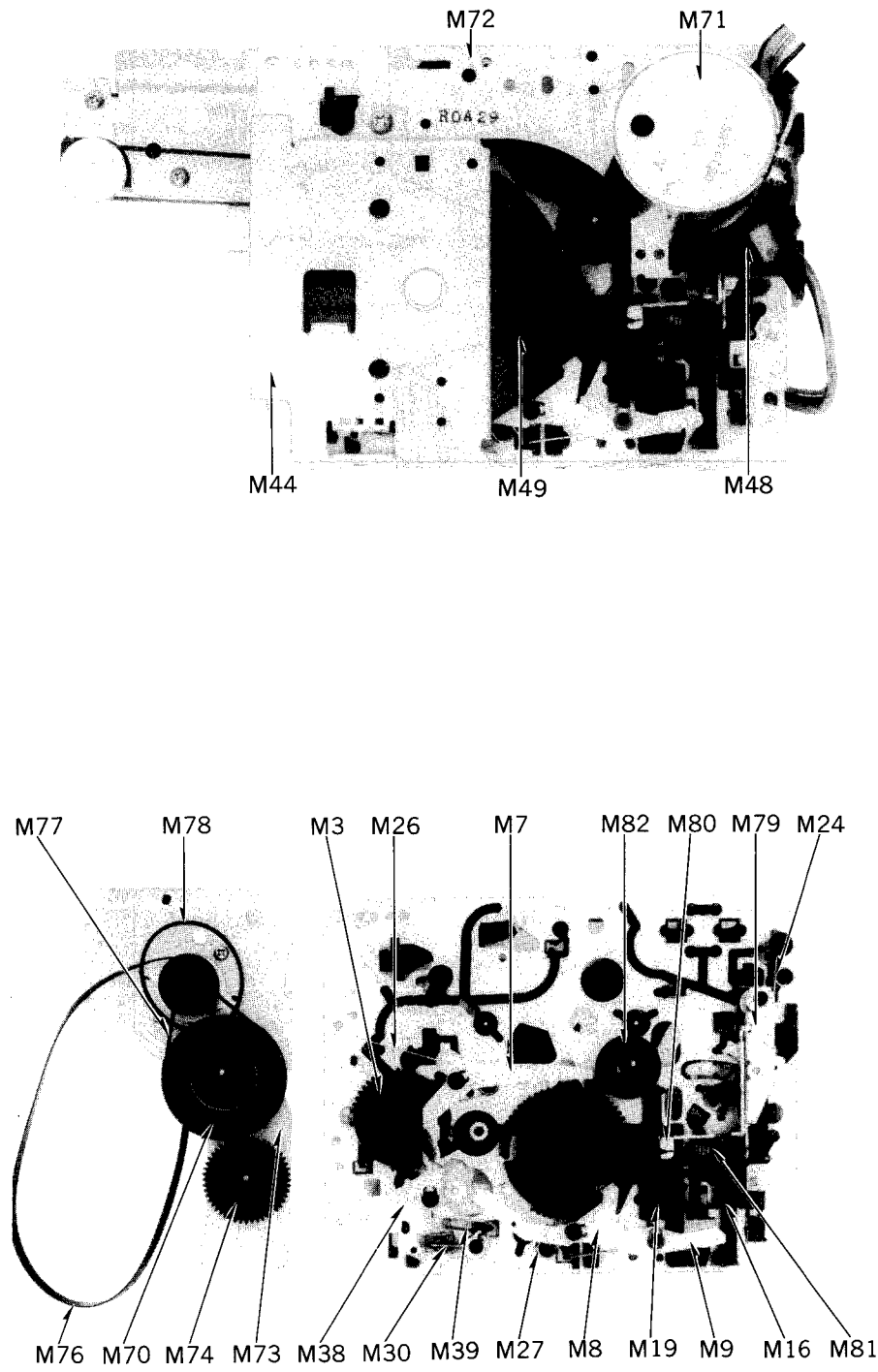


Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description	Ref. No.	Part No.	Part Name & Description
MECHANICAL PARTS								
M1	QBP1874	Cassette Pressure Spring	M33	XUB4FT	Stop Ring 4φ	M65	QDK1017	Steel Ball 2φ
M2	QDG1201	Main Gear	M34	QBW2083	Snap Ring 3φ	M66	QBP1873	Head Base Plate Pressure Spring
M3	QDG1202	Sub Gear	M35	QBW2012	Poly Washer	M67	QBT1597	Brake Arm Spring
M4	QMB1336	Supply Reel Table Hub	M36	QXL1354	Sub Lever Assembly	M68	QBT1892	Head Release Spring
M5	QDR1139	Supply Reel Table	M37	QXL1355	Main Lever Assembly	M69	QMA3858	Head Adjustment Plate
M6	QMF2118	Fast Forward Arm Bracket	M38	QML3582	Pause Lock Lever	M70	QXG1047	Takeup Gear Assembly
M7	QML3581	Sub Control Lever	M39	QBT1896	Lever Release Spring	M71	QXU0170	Motor Assembly
M8	QML3583	Main Control Lever	M40	QXL1381	Pressure Roller Assembly	M72	QXK2286	Sub Chassis Assembly
M9	QML3584	Record Operation Lever	M41	QBN1743	Pressure Roller Spring	M73	QDG1199	Auto-Stop Gear
M10	QML3586	Head Base Plate Lift Lever	M42	QML3588	Fast Forward Lever	M74	QDG1200	Cam Gear
M11	QML3594	Auto-Stop Release Arm	M43	QBN1748	Fast Forward Spring	M75	QDP1823	Connection Pulley
M12	QML3603	Erase Safety Lever	M44	QMA3861	Flywheel Retainer	M76	QDB0281	Capstan Belt
M13	QML3604	Auto-Stop Driving Lever	M45	XSN2+10	Screw 2×10	M77	QDB0273	Fast Forward Belt
M14	QML3605	Auto-Stop Detection Lever	M46	QBN1741	Change Lever Spring	M78	QDB0274	Takeup Belt
M15	QML3592	Change Lever	M47	XWA2	Washer 2φ	M79	QXL1360	Record/Playback Selection Arm Assembly
M16	QMR1820	Record Rod	M48	QXZ1254	Cord Clamper	M80	QML3580	Record/Playback Selection Lever
M17	QMR1821	Auto-Stop Connection Rod	M49	QXF0164	Flywheel Assembly	M81	QBT1895	Record/Playback Selection Lever Spring
M18	QMR1822	Eject Rod	M49-1	QBW2049	Poly Washer	M82	QXP0607	Fast Forward Connection Pulley Assembly
M19	QMR1824	Control Rod	M49-2	QBW2026	Snap Ring	M83	QMK1838	Upper Base Plate
M20	QMZ1239	Flywheel Thrust Retainer	M50	QXD1143	Takeup Reel Table Assembly	M84	QXK2276	Lower Base Plate
M21	QBC1357	Lock Pin Pressure Spring	M51	QXL1382	Idler Lever Assembly	M85	QDP1828	Fast Forward Pulley
M22	QBT1682	Auto-Stop Connection Rod Spring	M52	QX10111	Takeup Idler Assembly	M86	QXH0327	Chassis Cover Assembly
M23	QBT1894	Main Lever Spring	M53	QBT1893	Takeup Idler Spring	M87	QXA1060	Tape Counter
M24	QBN1739	Selection Lever Spring	M54	QX10113	Fast Forward Idler Assembly	M88	QDB0240	Counter Belt
M25	QBN1742	Pressure Roller Release Spring	M55	QX10112	Rewind Idler Assembly	M89	QMA3860	Counter Angle
M26	QBN1744	Sub Gear Spring	M56	QXL1383	Fast Forward Arm Assembly	M90	XTN3+24B	Tapping Screw 3×24
M27	QBN1745	Main Gear Spring	M57	QMK1840	Head Base Plate	M91	XSN26+3	Screw 2.6×3
M28	QBN1746	Auto-Stop Lever Spring	M58	QMZ1241	Head Spacer	M92	XTN2+6B	Tapping Screw 2×6
M29	QBN1747	Connection Spring	M59	QBN1740	Head Pressure Spring	M93	XTN26+6B	Tapping Screw 2.6×6
M30	QBS1128	Lock Pin	M60	QBC1278	Head Spring	M94	XTN26+10B	Tapping Screw 2.6×10
M31	QBC1372	Reel Table Spring	M61	QBCA0008	"	M95	XTN26+12B	Tapping Screw 2.6×12
M32	QBW2008	Poly Washer 2φ	M62	QML3591	Brake Arm	M96	XTN3+10B	Tapping Screw 3×10
			M63	QMZ1240	Sub Head Base Plate			
			M64	QMN2550	Roller			

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)

MECHANICAL PARTS LOCATION



This exploded view diagram illustrates the assembly of a car stereo unit. The components are labeled as follows:

- Front Panel (G1):** The main faceplate of the unit, featuring a display screen (G2) and various control buttons and knobs.
- Mounting Bracket (G3):** A large rectangular plate that serves as the base for the unit's installation in a car's dashboard.
- Internal Chassis (G19):** The main structural frame that houses the electronic components.
- Top Cover (G12):** The uppermost protective plate of the unit.
- Control Components:**
 - G4, G5, G6:** Various knobs and buttons for volume, tuning, and other functions.
 - G7, G8, G9, G10, G11, G13, G14, G15, G16, G17:** A collection of smaller components, including switches, connectors, and mounting hardware.
- Mounting Hardware:**
 - G30, G31, G32, G33, G34, G35, G36, G37, G38, G39:** A variety of screws, bolts, and brackets used to secure the unit and its internal components.
- Other Labels:**
 - S7:** A small component, possibly a switch or indicator.
 - E16, E19:** Labels for specific mounting points or components.

The diagram shows the spatial relationship between these parts, indicating how they are assembled into the final car stereo unit.

Ref. No.	Part No.	Part Name & Description
<u>CABINET PARTS</u>		
G1	QYP0950 "Silver Type" QYP0961 "Black Type"	Front Panel Assembly "
G2	QYF0432 "Silver Type" QYF0461 "Black Type"	Cassette Lid Assembly "
G3	QGC1189	Bottom Cover
G4	QKA1083	Rubber Foot
G5	QYT0586 "Silver Type"	Volume Knob-A Assembly
G6	QYT0586K "Black Type"	Volume Knob-A Assembly
	QYT0587 "Silver Type"	Volume Knob-B Assembly
G7	QYT0587K "Black Type"	"
	QGO1728 "Silver Type"	Push Button (Power ON/OFF)
G8	QGO1728K "Black Type"	"
	QGO1727 "Silver Type"	Push Button (Input Select, Tape Select and Rec Mute)
G9	QGO1727K "Black Type"	"
	QGT1495 "Silver Type"	Tape Select Knob
G10	QGT1495K "Black Type"	"
	QK33043 "Silver Type"	Meter Cover
G11	QK33043K "Black Type"	"
	XTN2+6B	Tapping Screw + 2×6
G12	QGC1188 "Silver Type"	Case Cover
G13	QGC1188K "Black Type"	"
	QKA1081	Case Foot
G14	XTB4+10BFN "Silver Type"	Tapping Screw + 4×10
G15	XTB4+10BFZ "Black Type"	"
	XTS3+10B	Tapping Screw + 3×10
G16	XTN3+10B	"
G17	QH01299	Screw
G18	QGS2838	Main Name Plate
G19	QKM1419H "Silver Type"	Main Case
	QKM1419K "Black Type"	"
G20	QXL1363	Eject Button Assembly
G21	QXL1364	Record Button Assembly
G22	QXL1365	Rewind/Review Button Assembly
G23	QXL1366	Fast Forward/Cue Button Assembly
G24	QXL1367	Playback Button Assembly
G25	QXL1368	Stop Button Assembly
G26	QXL1369	Pause Button Assembly
G27	QMN2554	Operation Lever Shaft
G28	QBT1597	Obstruction Rod Spring
G29	QMR1823	Obstruction Rod
G30	QBP1875	Operation Lever Spring
G31	QXA1044	Operation Button Angle Assembly
G32	QDG1102	Holder Gear
G33	XUC4FT	Stop Ring 4φ
G34	QML3593	Lock Arm
G35	QBP1771	Holder Spring
G36	QBN1749	Eject Spring
G37	XUB5FT	Stop Ring 5φ
G38	QKF6015K	Cassette Holder
G39	XTN26+6B	Tapping Screw + 2.6×6
<u>ACCESSORIES</u>		
A1	RP023A	Connection Cord
A2	QQT2884	Instruction Book
<u>PACKINGS</u>		
P1	QPN4055	Inside Carton
P2	QPA0558	Cushion-A
P3	QPA0559	Cushion-B
P4	QPS0434	Pad
P5	XZB40X60A02	Poly Bag
P6	QCD0072	Poly Bag ("Cushion Type")