ORDER NO. ARD-7907058C

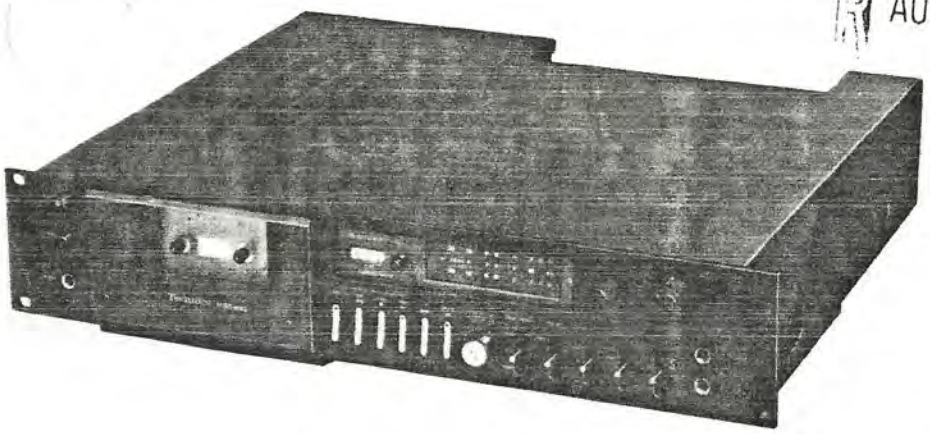
Service Manual

Cassette Deck

RS-M85MK2
(Black Face)

Quartz-Locked Direct-Drive Cassette Deck
with Metal Tape Recording Capability

DOLBY SYSTEM



Professional Series

RS-M85 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:	0.035% (WRMS)
Frequency response:	Metal tape; 20 — 20,000 Hz 30 — 17,000 Hz ±3 dB
	CrO_2/Fe-Cr tape; 20 — 18,000 Hz 30 — 16,000 Hz ±3 dB
	Normal tape; 20 — 16,000 Hz 30 — 14,000 Hz ±3 dB
Signal-to-noise ratio:	Dolby* NR in; 69 dB (above 5 kHz) Dolby NR out; 59 dB (signal level = max. recording level, Fe-Cr/CrO_2 type tape)
Fast forward and rewind time:	Approx. 80 seconds with C-60 cassette tape
Inputs:	MIC; sensitivity 0.25 mV, applicable microphone impedance 400Ω — 10 kΩ LINE; sensitivity 60 mV, input impedance 68 kΩ
Outputs:	LINE; output level 700 mV, load impedance 22 kΩ over HEADPHONE; output level 140 mV, load impedance 8Ω
Bias frequency:	85 kHz
Motors:	2-motor system Capstan; 1-quartz control phase-locked DC brushless direct-drive motor Reel table; 1-DC coreless motor
Heads:	2-head system 1-SX (Sendust Extra) head for rec/playback 1-sendust/ferrite double-gap head for erasure
Power requirements:	AC; 120 V, 50-60 Hz
Power consumption:	40 W
Dimensions:	9.7 cm(H) × 48.3 cm(W) × 40.3 cm(D) [3-7/8"(H) × 19"(W) × 15-7/8"(D)]
Weight:	10.5 kg (23 lbs 1 oz)

Specifications are subject to change without notice.
* 'Dolby' and the double-D symbol are trademarks of Dolby Laboratories.

Technics

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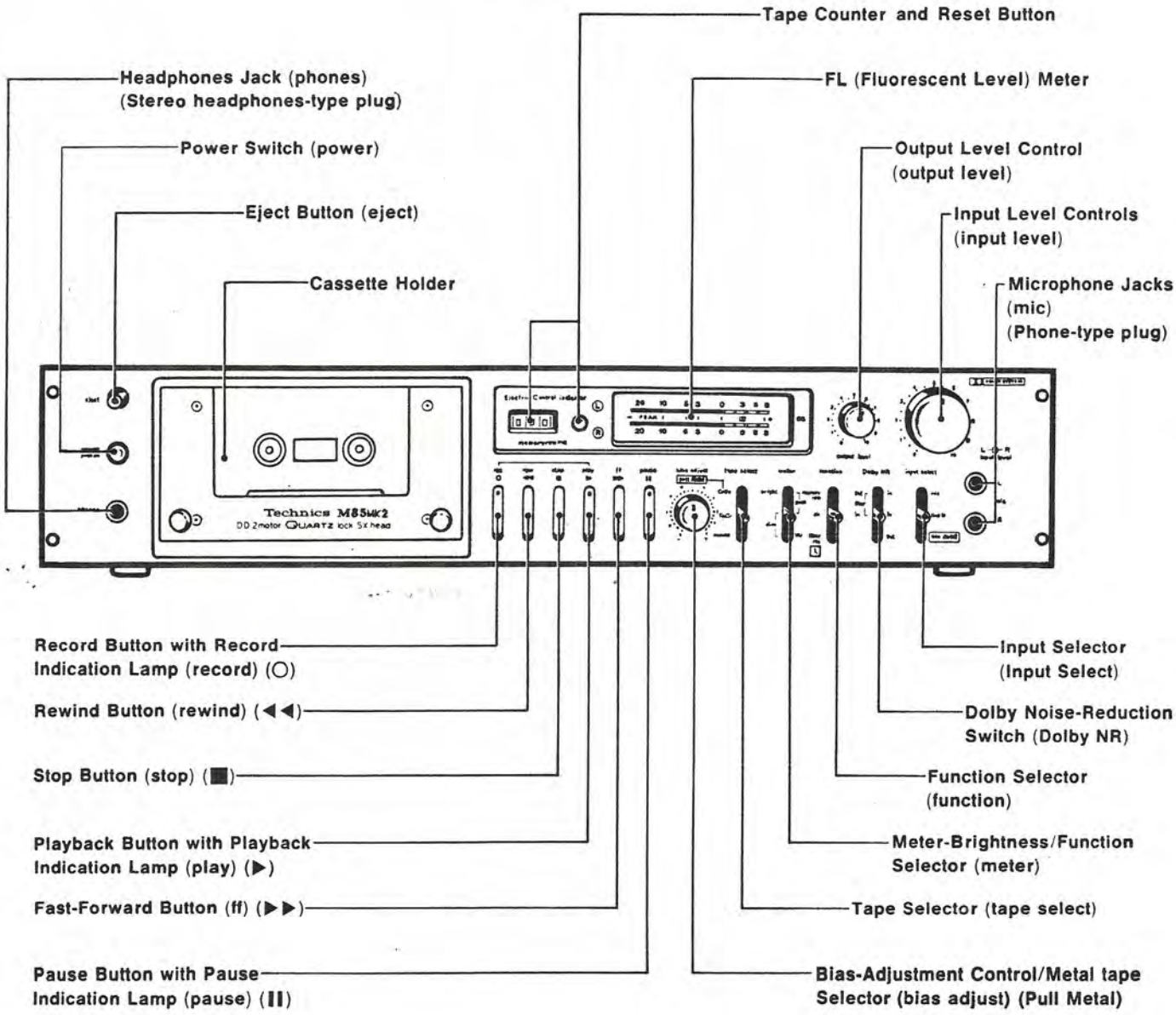
LOCATION OF CONTROLS AND COMPONENTS



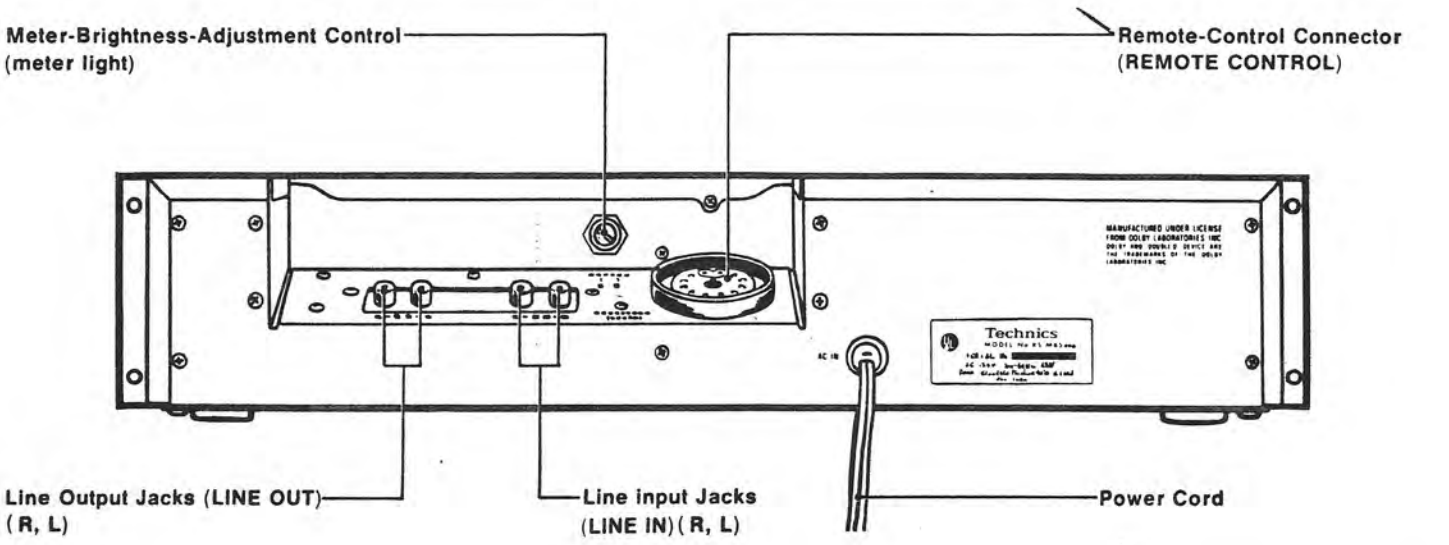


Fig. 1

DISASSEMBLY INSTRUCTIONS

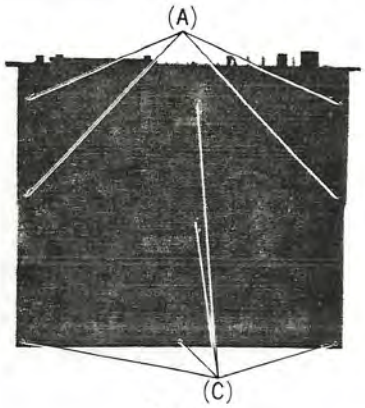


Fig. 2

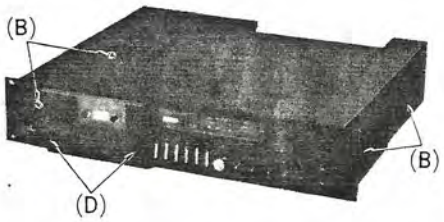


Fig. 3

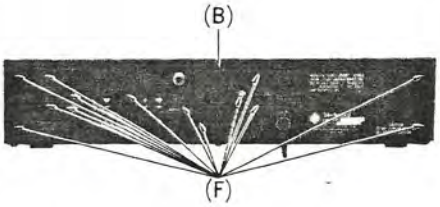


Fig. 4

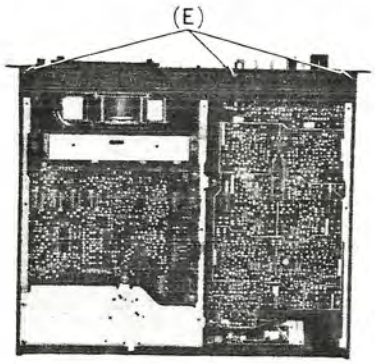


Fig. 5

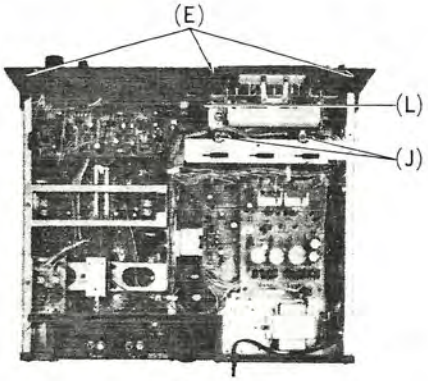


Fig. 6

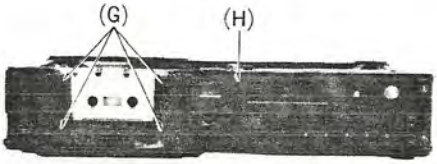


Fig. 7

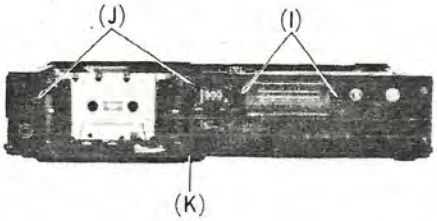


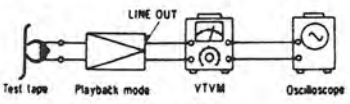
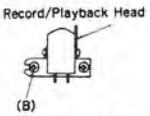
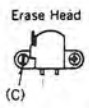
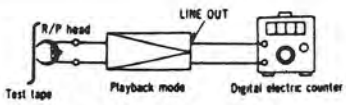
Fig. 8

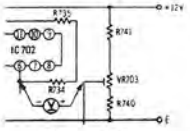
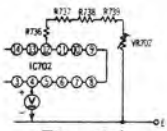
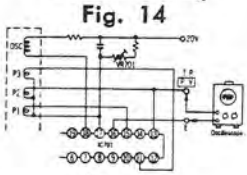
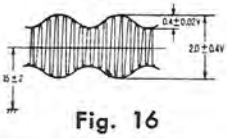
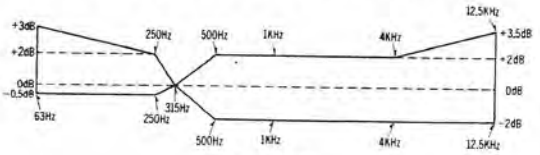
Procedure	To remove —.	Remove —.	Shown in fig. —.
1	Case cover	• 4 red screws ..... (A) • 5 black screws ..... (B)	2 3, 4
2	Bottom cover	• 5 red screws ..... (C)	2
3	Front panel	• 2 cassette lid holding screws ..... (D) • 6 red screws ..... (E)	3 5, 6
4	Back cover	• 14 black screws ..... (F)	4, 6
5	Cassette holder	• 4 screws ..... (G)	7
5	FL level meter	• Meter cover ..... (H) • 2 meter holders ..... (I)	7 8
5	Mechanism	• 4 red screws ..... (J) • 1 black screw ..... (K) • Tape counter belt ..... (L)	6, 8 8 6

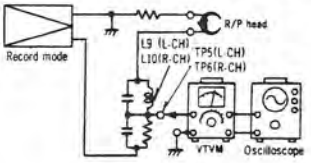
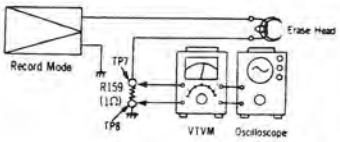
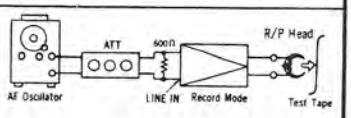
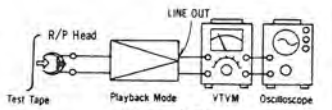
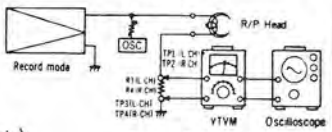
MEASUREMENT AND ADJUSTMENT METHODS

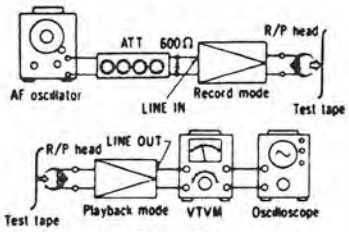
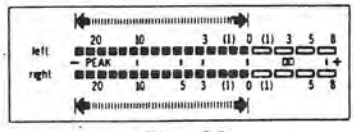
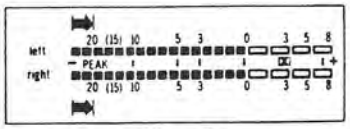
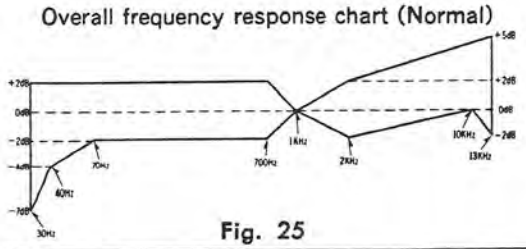
NOTE:

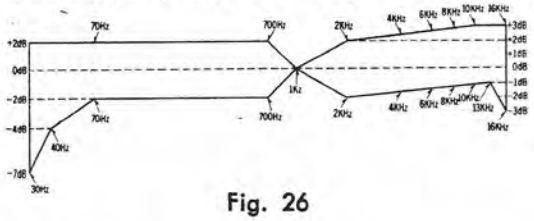
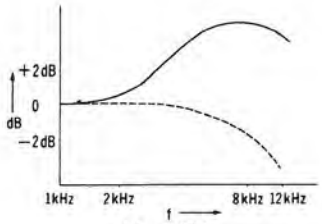
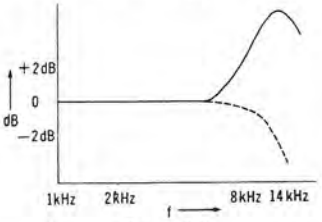
1. Make sure heads are clean.
2. Make sure capstan and pressure roller are clean.
3. Judgeable room temperature: 20±5°C (68±9°F)
4. Meter selector: Peak, dim
5. Dolby NR switch: OUT
6. Tape selector: Normal
7. Input selector: Line in
8. Bias adjustment control: Center
9. Output level control: Maximum
10. Input level control: Maximum

ITEM	MEASUREMENT & ADJUSTMENT
Ⓐ Power supply adjustment	**+20V adjustment** 1. Connect voltmeter to the test point ▼ on the power circuit board and read voltage. Standard value: +20±0.5V 2. If measured value is not in standard, adjust VR401 as shown in fig. 29. **+5V adjustment** 1. Connect DC voltmeter to the test point ▼ on the power circuit board and read voltage. Standard value: +5±0.4V 2. If measured value is not in standard, connect the point [A] on the power circuit board as shown on page 14.
Ⓑ Takeup tension Condition: • Playback mode Equipment: • Cassette torque meter (QZZSRKCT)	1. Mount cassette torque meter on UNIT. 2. Place UNIT into playback mode and read takeup torque. 3. Measure several times and determine the mean value. Standard value: 34±6 gr-cm 4. If measured value is not in standard, adjust VR601.
Ⓒ Head azimuth adjustment Condition: • Playback mode Equipment: • VTVM • Oscilloscope • Test tape (azimuth) ··· QZZCFM • Tape path viewer ··· QZZCRD	**Record/playback head adjustment** 1. Test equipment connection is shown in fig. 9. 2. Playback azimuth tape (QZZCFM 8kHz). 3. Adjust record/playback head angle adjustment screw (B) in fig.10 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. 9 **Erase head 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. 11 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. 10  Fig. 11
Ⓓ Tape speed Condition: • Playback mode Equipment: • Digital electronic counter • Test tape ··· QZZCWAT	**Tape speed accuracy** 1. Test equipment connection is shown in fig. 12. 2. Playback test tape (QZZCWAT 3,000Hz), and supply playback signal to frequency counter. 3. Measure this frequency. 4. On the basis of 3,000Hz, determine value by following formula: $\text{Tape speed accuracy} = \frac{f - 3{,}000}{3{,}000} \times 100\ (\%)$ where, f = measured value 5. Take measurement at middle section of tape. Standard value: ±0.4%  Fig. 12

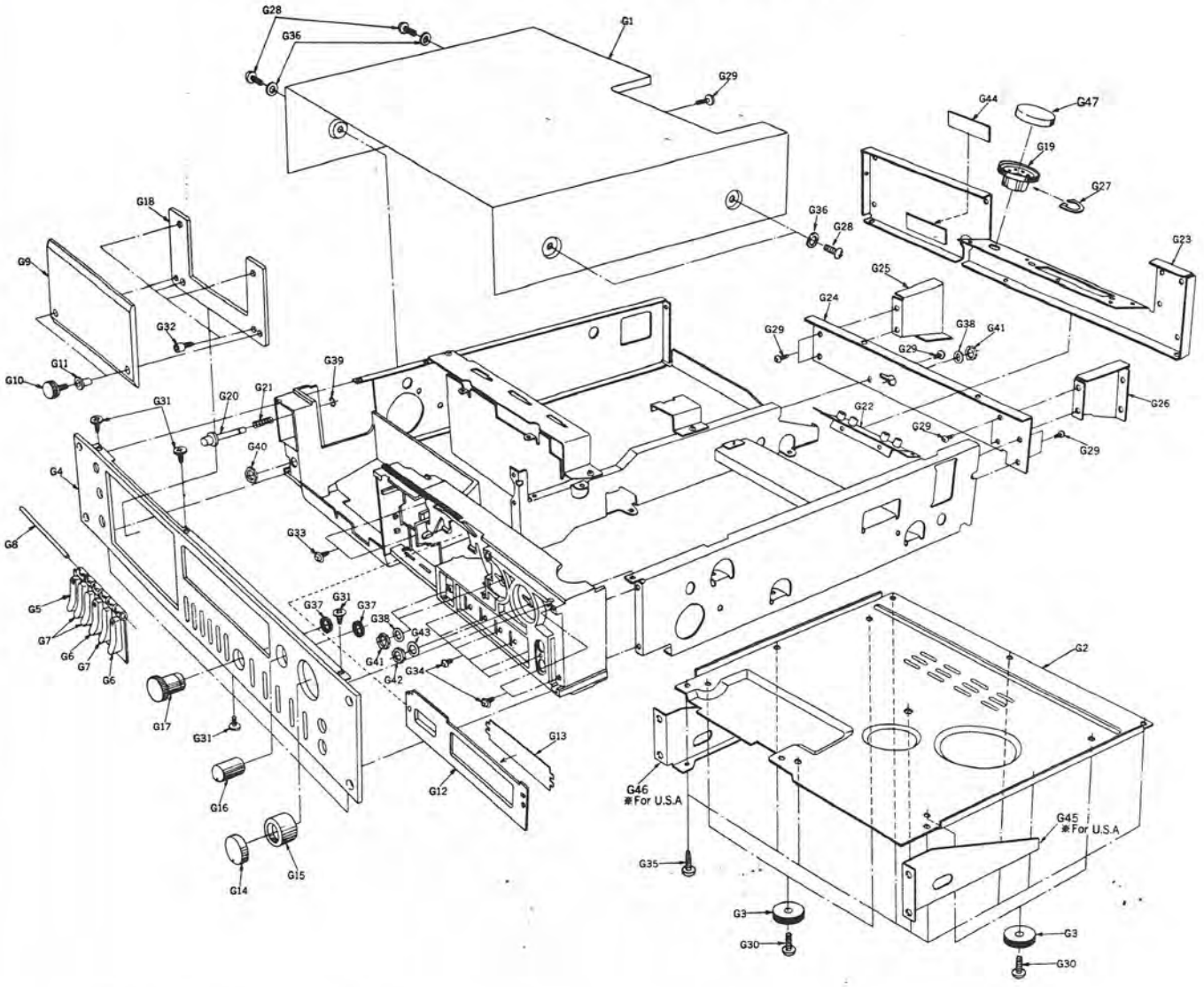
ITEM	MEASUREMENT & ADJUSTMENT
	Tape speed fluctuation Make measurements in same manner as above (beginning, middle and end of tape), and determine the difference between maximum and minimum values and calculate as follows: $\text{Tape speed fluctuation} = \frac{f_1 - f_2}{3{,}000} \times 100\ (\%)$ f_1 = maximum value, f_2 = minimum value **Standard value: Less than 0.3%**
Ⓔ Capstan motor circuit adjustment Condition: • Playback mode Equipment: • VTVM • Oscilloscope	**A. Standard DC power supply voltage adjustment** 1. Measure the DC voltage between central point of VR703 and ⑥ terminal of IC702 as shown below. **Standard voltage: 0±0.05V** 2. If measured voltage is not within standard, adjust VR703. **B. Phase lock point adjustment** 1. Measure the DC voltage between ④ terminal of IC702 and ground as shown in fig. 13. **Standard voltage: 5.2±0.1V** 2. If measured voltage is not within standard, adjust VR702. **C. Position detecting signal output level adjustment** 1. Connect oscilloscope to test point (T.P P-V). 2. Measure the peak-to-peak voltage of position detection signal of test point with the oscilloscope. 3. If the measured signal voltage is markedly different from the voltage shown below, make the necessary adjustment with the VR701.  Fig. 13  Fig. 14  Fig. 15  Fig. 16
Ⓕ Playback frequency response Condition: • Playback mode • Output level control ··· MAX Equipment: • VTVM • Oscilloscope • Test tape ··· QZZCFM	1. Test equipment connection is as same as "Head azimuth adjustment" but use the test tape (QZZCFM) instead of head azimuth tape (See fig. 9). 2. Place UNIT into playback mode. 3. Playback the frequency response test tape (QZZCFM). 4. Measure output level at 12.5kHz, 8kHz, 4kHz, 1kHz, 250Hz, 125Hz and 63Hz, and compare each output level with the standard frequency 315Hz, at LINE OUT. 5. Make measurement for both channels. 6. Make sure that the measured value is within the range specified in the frequency response chart. 7. If measured value is not in standard, adjust VR1 (L-CH), VR2 (R-CH) (See fig. 29). **Playback frequency response chart**  Fig. 17
Ⓖ Playback gain Condition: • Playback mode • Output level control ··· MAX Equipment: • VTVM • Oscilloscope • Test tape ··· QZZCFM	1. Test equipment connection is shown in fig. 9. 2. Playback standard recording level portion on test tape (QZZCFM 315Hz), and using VTVM measure the output level at LINE OUT jack. 3. Make measurement for both channels. **Standard value: 0.66±0.05V** **Adjustment** 1. If measured value is not standard, adjust VR3 (L-CH), VR4 (R-CH) (See fig. 29). 2. After adjustment, check "Playback frequency response" again.

ITEM	MEASUREMENT & ADJUSTMENT
H Bias leak Condition: • Record mode • Input level control ··· MAX Equipment: • VTVM • Oscilloscope	1. Test equipment connection is shown in fig. 18 (See AMP circuit board on page 10). 2. Place UNIT into record mode. 3. Adjust trap coils L9 (L-CH), L10 (R-CH), so that measured value becomes minimum (See fig. 29). 4. Make adjustment for both channels.  **Fig. 18**
I Erase current Condition: • Record mode • Bias adjustment control ··· Center Equipment: • VTVM • Oscilloscope	1. Test equipment connection is shown in fig. 19. 2. Place UNIT into record mode and measure voltage at test point 7. 3. Determine erase current with the following formula. $\text{Erase current (A)} = \frac{\text{Voltage across both ends of R159}}{1\ (\Omega)}$ **Standard value: 95±5mA (Tape selector ··· Metal)**  **Fig. 19** 4. If measured value is not within standard, adjust VR803.
J Bias current Condition: • Record mode • Bias adjustment control ··· Center Equipment: • VTVM • Oscilloscope	**A. Adjustment of metal tape**  1. Test equipment connection is shown in fig. 20. 2. Place the test tape (QZZCRZ) in the cassette holder. 3. Press the record and pause buttons. 4. Set the tape selector to metal position. 5. Supply 1kHz signal from AF oscillator through ATT to LINE IN. 6. Adjust ATT so that input level is −20dB below standard recording level. 7. At this time, LINE OUT level indicates 0.066V. 8. Record 1kHz and 13kHz signals. 9. Playback and express in dB the difference between output levels of 13kHz and 1kHz. 10. Make sure output level of 13kHz is not within +1±2dB compared with output level of 1kHz. 11. If measured value is not within +1±2dB, adjust VR13 (L-CH only).  **Fig. 20**  **Fig. 21** **B. Adjustment of normal tape** 12. Set the tape selector to normal position (Test tape QZZCRA). 13. Change test tape to normal tape (QZZCRA). 14. Press the record and playback buttons. 15. Record 1kHz and 8kHz signals. 16. Playback and express in dB the difference between output levels of 8kHz and 1kHz. 17. Make sure output level of 8kHz is not within +2±2dB compared with output level of 1kHz. 18. If measured value is not within +2±2dB, adjust VR12 (L-CH), VR14 (R-CH). **C. Adjustment of Fe-Cr tape and CrO_2 tape** 19. Set the tape selector to Fe-Cr position. 20. Change test tape to Fe-Cr tape (QZZCRY). 21. Press the record and playback buttons. 22. Record 1kHz and 8kHz signals. 23. Playback and express in dB the difference between output levels of 8kHz and 1kHz. 24. Make sure output level of 8kHz is not within +1±1dB, compared with output level of 1kHz. 25. If measured value is not within +1±1dB, adjust VR15. 26. Set the tape selector to CrO_2 position. 27. Change test tape to CrO_2 tape (QZZCRX). 28. Make the same measurements and adjustments described in steps 21 to 24 above. 29. If measured value is not within +1±1dB, adjust VR16.

ITEM	MEASUREMENT & ADJUSTMENT
	Measurement 1. Test equipment connection is shown in fig. 21. 2. Place UNIT into record mode. 3. Read voltage on VTVM and calculate bias current by following formula. $\text{Bias current (A)} = \frac{\text{Value read on VTVM (V)}}{10\ (\Omega)}$ **Standard value: around 600μA (Metal position), around 310μA (Normal position), around 350μA (Fe-Cr position), around 420μA (CrO_2 position)**
Ⓚ Overall gain Condition: • Record/playback mode • Input level control ··· MAX • Standard input level: MIC····· −72±3dB LINE IN ··· −24±3dB • Bias adjustment control ··· Center • Output level control ··· MAX Equipment: • VTVM • AF oscillator • ATT • Oscilloscope • Test tape (reference blank tape) ··· QZZCRA for Normal ··· QZZCRX for CrO_2 ··· QZZCRY for Fe-Cr ··· QZZCRZ for Metal	1. Test equipment connection is shown in fig. 22. 2. Place UNIT into record mode. 3. Supply 1kHz signal (−24dB) from AF oscillator, through ATT to LINE IN. 4. Adjust ATT until monitor level at LINE OUT becomes 0.66V. 5. Using test tape, make recording. 6. Playback recorded tape, and measure the output level at LINE OUT on VTVM. **Standard value: 0.66±0.05V**  **Fig. 22** 7. If measured value is not within standard, adjust the following VR. Normal ····· VR9 (L-CH), VR10 (R-CH) Fe-Cr ····· VR7 (L-CH), VR8 (R-CH) CrO_2 ····· VR5 (L-CH), VR6 (R-CH) Metal ····· VR801 (L-CH), VR802 (R-CH)
Ⓛ Fluorescent meter Condition: • Record mode • Input level control ··· MAX • Output level control ··· MAX • Tape selectors ··· Normal position Equipment: • VTVM • AF oscillator • ATT	1. Test equipment connection is shown in fig. 23. 2. Set the meter function selector to the "bright" position. 3. Supply 1kHz signal (−24dB) to the LINE IN jack, then press the record button. 4. Adjust the ATT so that the output level at LINE OUT jack becomes 0.66V (=standard input level).  **Fig. 23** 5. Adjustment at "0dB": A. Adjust VR303 (L-CH) and VR304 (R-CH) so that the Fluorescent meters show an illuminated indication up to "0dB" when the input signal level is 0.9dB higher than the standard input level. B. Then confirm that the Fluorescent meters show an illuminated indication up to "+1dB" when the input signal level is 1dB higher than the standard input level.  **Fig. 24** 6. Adjustment at "−20dB": A. Adjust VR301 (L-CH) and VR302 (R-CH) so that the Fluorescent meters show an illuminated indication up to "−20dB" when the input signal level is 15.1dB lower than the standard input level. B. Then confirm that the Fluorescent meters show an illuminated indication up to "−15dB" when the input signal level is 15dB lower than the standard input level. 7. Repeat twice between steps 3 and 6 above.
Ⓜ Overall frequency response Condition: • Record/playback mode • Input level control ··· MAX • Bias adjustment control ··· Center	**Note:** Before measuring and adjusting, make sure of the playback frequency response (For the method of measurement, please refer to the playback frequency response). 1. Test equipment connection is shown in fig. 22. 2. Load reference blank test tape and place UNIT into record mode. **Overall frequency response chart (Normal)**  **Fig. 25**

ITEM	MEASUREMENT & ADJUSTMENT
Equipment: • VTVM • AF oscillator • ATT • Test tape (reference blank tape) ··· QZZCRA for Normal ··· QZZCRX for CrO_2 ··· QZZCRY for Fe-Cr ··· QZZCRZ for Metal	3. Supply 1kHz signal from AF oscillator through ATT to LINE IN. 4. Adjust ATT so that input level is −20dB below standard recording level (standard recording level = 0VU). 5. At this time, LINE OUT level indicates 0.066V. 6. Record each frequency 30Hz, 40Hz, 70Hz, 700Hz, 1kHz, 2kHz, 7kHz, 10kHz and 13.5kHz (16kHz for CrO_2, Fe-Cr and Metal) at the same level. 7. Playback and express in dB the difference between playback output level of each frequency based on playback output level of 1kHz. 8. Make sure that the measured value is within the range specified in the overall frequency response chart. Overall frequency response chart (CrO_2, Fe-Cr, Metal)  Fig. 26 **Adjustment-1** 1. When the frequency response between the middle and high frequency range becomes higher than the standard value, as shown by the solid line in fig. 27 increase, refer to bias current adjustment. 2. When it becomes lower, as shown by dotted line, refer to bias current adjustment.  Fig. 27 **Note:** 1. For adjustment when the bias current is lower than the standard value use the procedure indicated in adjustment 2, because reducing the bias current beyond this point may worsen the distortion factor. 2. For the method of bias current measurement, refer to "Bias current adjustment" on page 5. **Adjustment-2** When the frequency response is flat in the middle frequency range and makes a sharp rise or drop in the high frequency range, as shown in fig. 28, adjust by turning the following peaking coils. Normal ····· L3 (L-CH), L4 (R-CH) Fe-Cr ····· L5 (L-CH), L6 (R-CH) CrO_2 ····· L7 (L-CH), L8 (R-CH) Metal ····· L801 (L-CH), L802 (R-CH)  Fig. 28
Ⓝ Dolby NR circuit Condition: • Record mode • Input level control ··· MAX Equipment: • VTVM • AF oscillator • ATT • Oscilloscope	1. 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). 2. Confirm that the value at IN position is 8dB greater than the value at OUT position of Dolby NR switch. 3. When it is not in condition above, adjust as follows. 4. Set the VR201 to maximum. 5. Set the Dolby NR switch to IN position. 6. At this time adjust VR202 so that the reading of VTVM becomes 10dB greater than the value in step (1) above. 7. Adjusting VR201 make the reading of VTVM becomes 2dB smaller than the value obtained through the adjustment in step (6) above.

CABINET PARTS



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

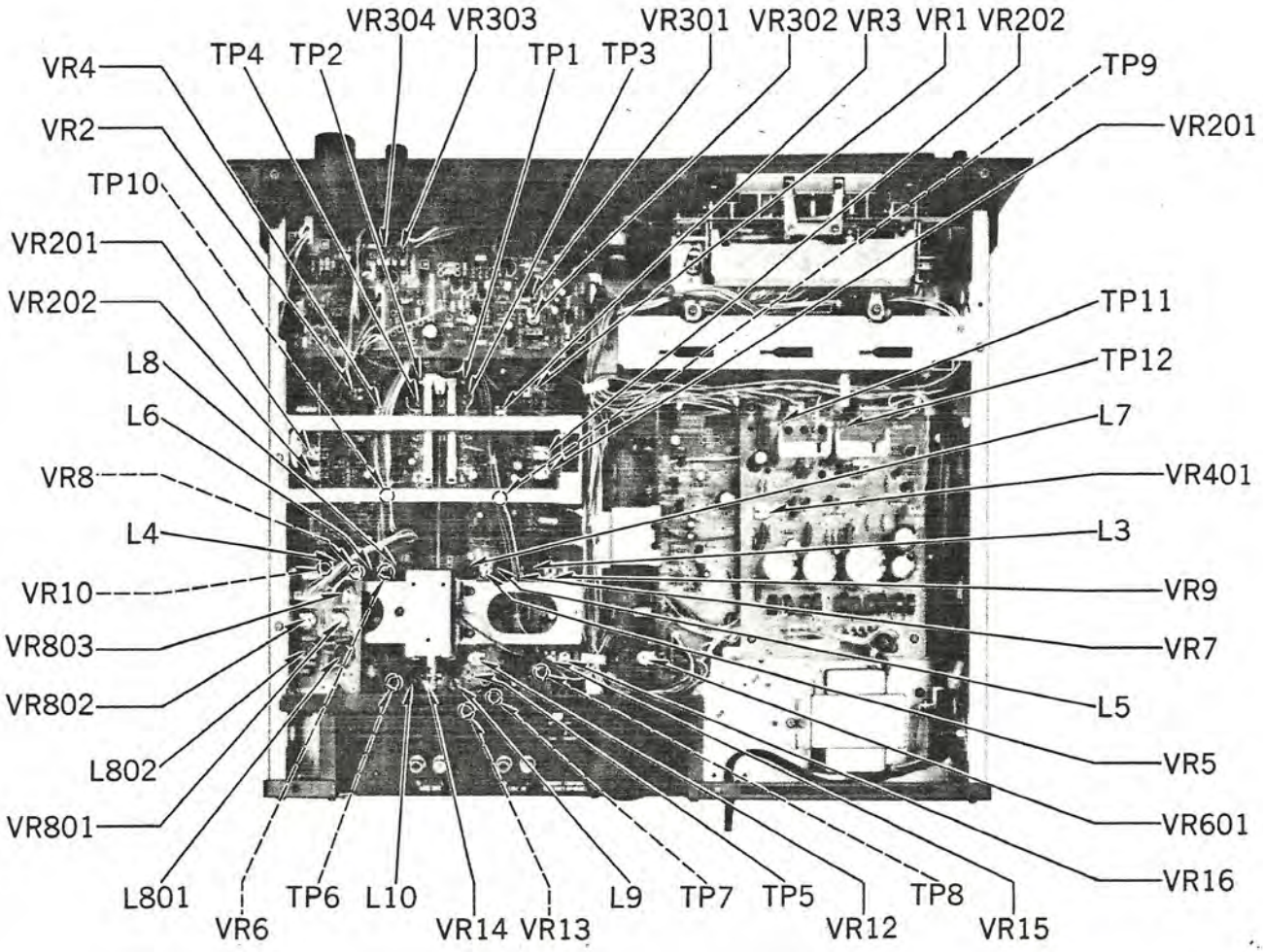
Ref. No.		Part No.	Part Name & Description
			CABINET PARTS
G1		QGC1102	Case Cover
G2		QGC1089A	Bottom Cover
G3		QKA1076	Rubber Foot
G4	P	QYP0890	Front Panel Assembly
*For U. S. A.			
	K	QYP0835	"
*For Canada.			
G5		QXB0528	Control Button (REC)
G6		QXB0529	Control Button (PLAY, PAUSE)
G7		QGO1416	Control Button (FF, REW, STOP)
G8		QMN2266	Button Shaft
G9		QGK2804	Cassette Lid
G10		QHQ1272	Cassette Lid Holder
G11		QBG1551	Rubber Cushion
G12		QKJ0246	Meter Cover-A
G13		QGL1130	Meter Cover-B
G14		QYT0465	Volume Knob-A Assembly
G15		QYT0466	Volume Knob-B Assembly
G16		QYT0456	Volume Knob Assembly
G17		QYT0522	Volume Knob-C Assembly
G18		QGK3000	Cassette Lid Holding Plate
G19		QJS0803X	Remote Control Socket
G20		QXB0527	Eject Button Assembly
G21		QBC1216	Eject Button Spring

Ref. No.		Part No.	Part Name & Description
G22		QEJ5003H	Jack Board Assembly
G23		QMK1716	Back Cover-A
G24		QMA3305	Back Cover-B
G25		QMA3306A	Back Cover Holder-R
G26		QMA3307A	Back Cover Holder-L
G27		QMA3445	Socket Angle
G28		XSB4+8BVS	Screw ⊕4×8
G29		XTN3+8B	Tapping Screw ⊕3×8
G30		XSN4+6S	Screw ⊕4×6
G31		XSS3+8S	Screw ⊕3×8
G32		XVE26C4FZ	Screw
G33		XTN3+6B	Tapping Screw ⊕3×6
G34		XSN3+6BVS	Screw ⊕3×6
G35		XTN4+8B	Tapping Screw ⊕4×8
G36		XWG4FZ	Flat Washer 4φ
G37		QBH0115	Button Cover
G38		XWS8AW	Washer 8φ
G39		XUC25FT	Stop Ring 2.5φ
G40		QNQ1070	Nut
G41		QNQ1004	"
G42		QNQ1039	"
G43		XWS9AW	Washer 9φ

Ref. No.		Part No.	Part Name & Description
G44	P	QGS2724	Name Plate
*For U. S. A.			
	K	QGS2733	"
*For Canada.			
G45	P	QMA3501	Rack Angle-R
*For U. S. A.			
G46	P	QMA3502	Rack Angle-L
*For U. S. A.			
G47		QBG1640	Remote Control Cap
			ACCESSORIES
A1		RP023P	Connection Cord
A2	P	QQT2672	Instruction Book
*For U. S. A.			
	K	QQT2684	"
*For Canada.			
			PACKINGS
P1	P	QPN3903	Inside Carton
*For U. S. A.			
	K	QPN3913	"
*For Canada.			
P2		QPA0376	Inner Cushion-A (Left)
P3		QPA0377	Inner Cushion-A (Right)
P4		QPA0378	Inner Cushion-B (Left)
P5		QPA0379	Inner Cushion-B (Right)
P6		QPA0380	Spacer (Bottom Side)
P7		QPA0381	Spacer (Top Side)
P8		XZB50X65A02	Poly Bag

QJP0958 PLUG

ADJUSTMENT PARTS LOCATION



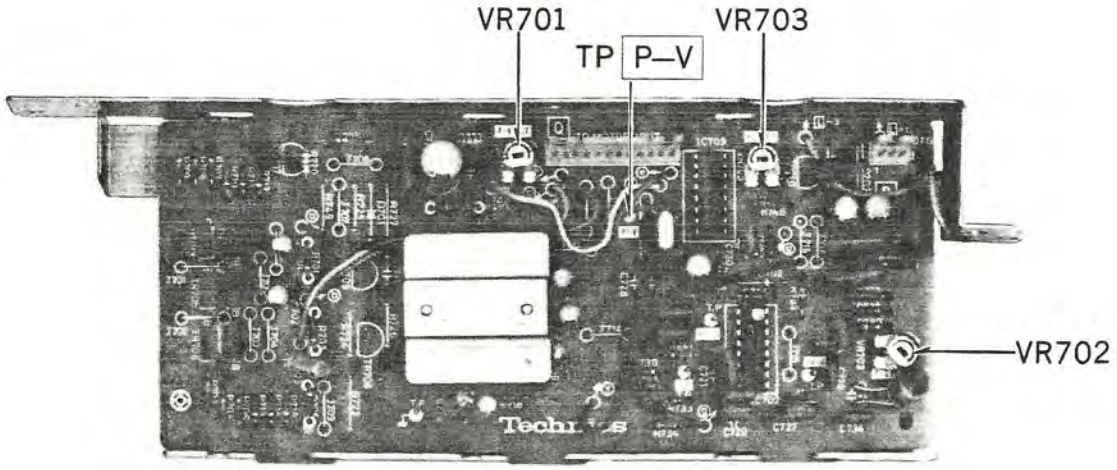
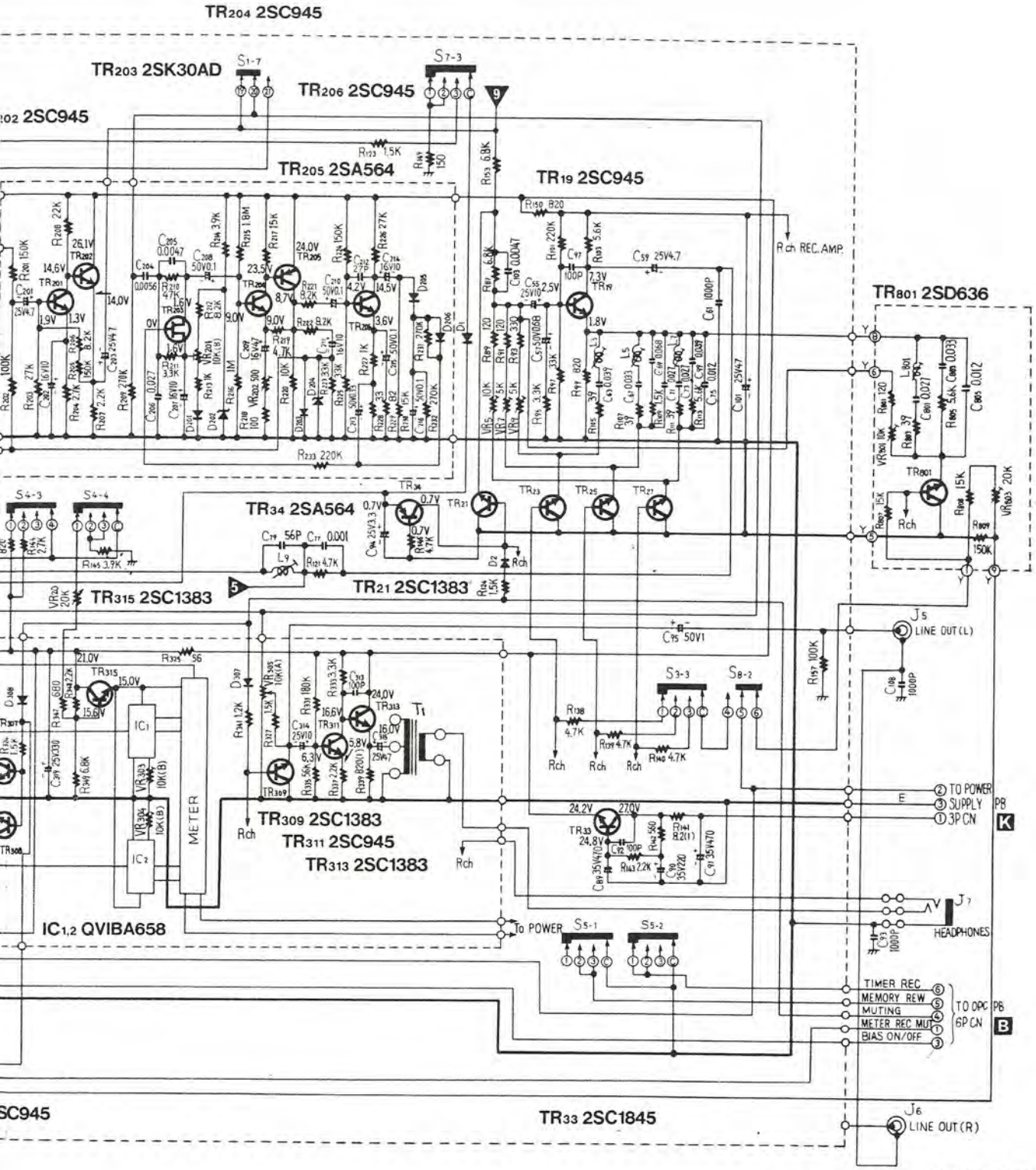


Fig. 29



26. VR803 ..... Erase current adjustment VR (for metal tape).
27. L3, 4 ..... Recording equalizer adjustment coil (for normal tape).
28. L5, 6 ..... Recording equalizer adjustment coil (for Fe-Cr tape).
29. L7, 8 ..... Recording equalizer adjustment coil (for CrO_2 tape).
30. L801, 802 ..... Recording equalizer adjustment coil (for metal tape).
31. Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
    K=1,000Ω.
32. Capacity are in microfarads (μF) unless specified otherwise.
    P=Pico-farads.
33. All voltage values shown in circuitry under no signal condition with volume control at minimum position.
    For measurement, use VTVM.

0dB indication).
3 indication).
tal tape).

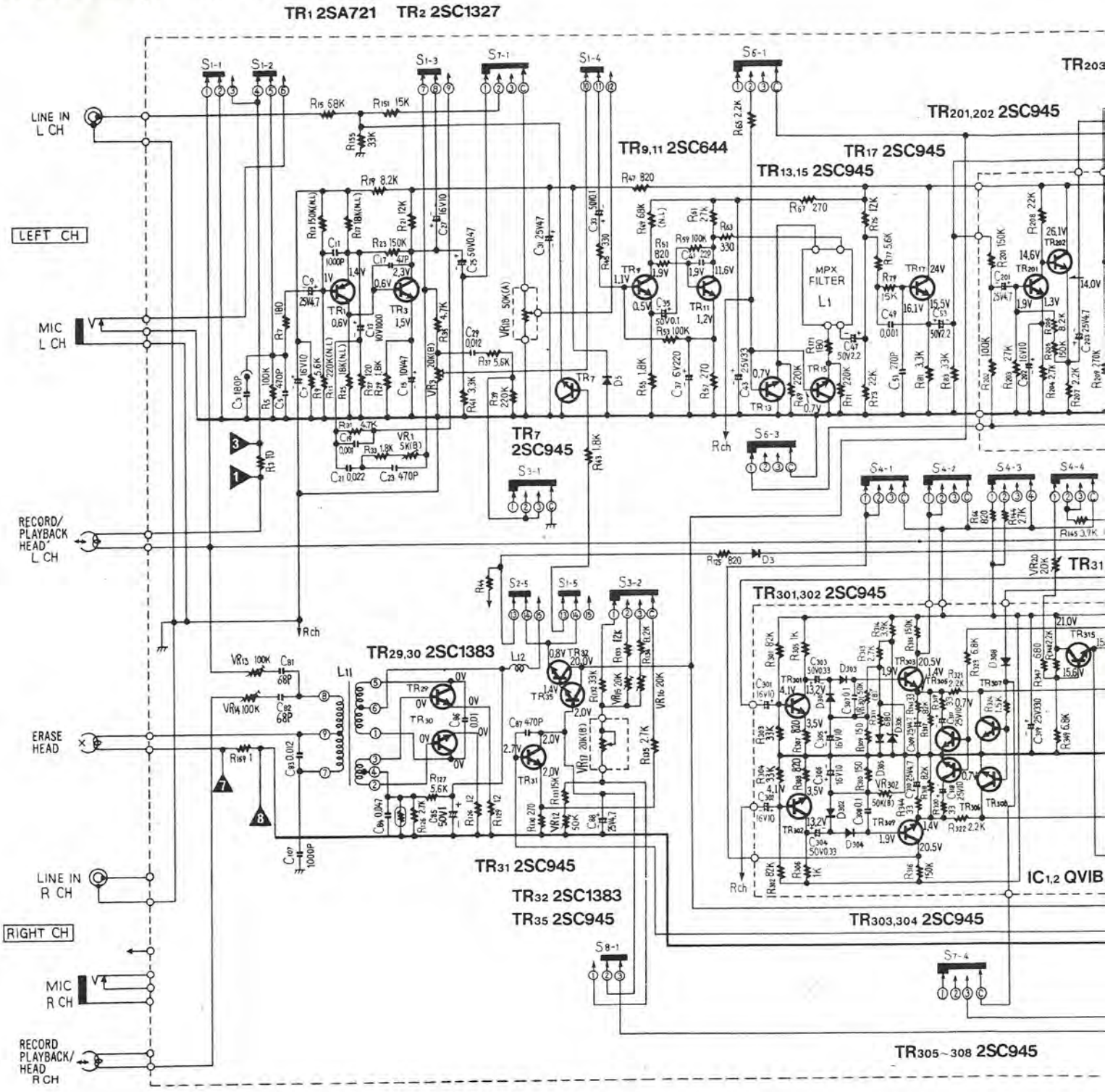
SPECIFICATIONS

* Input level control ··· MAX
* Output level control ··· MAX

Playback S/N ratio Test tape ··· QZZCFM	Greater than 47 dB
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 45 dB (without NAB filter)

SCHEMATIC DIAGRAM

Main Amp Section

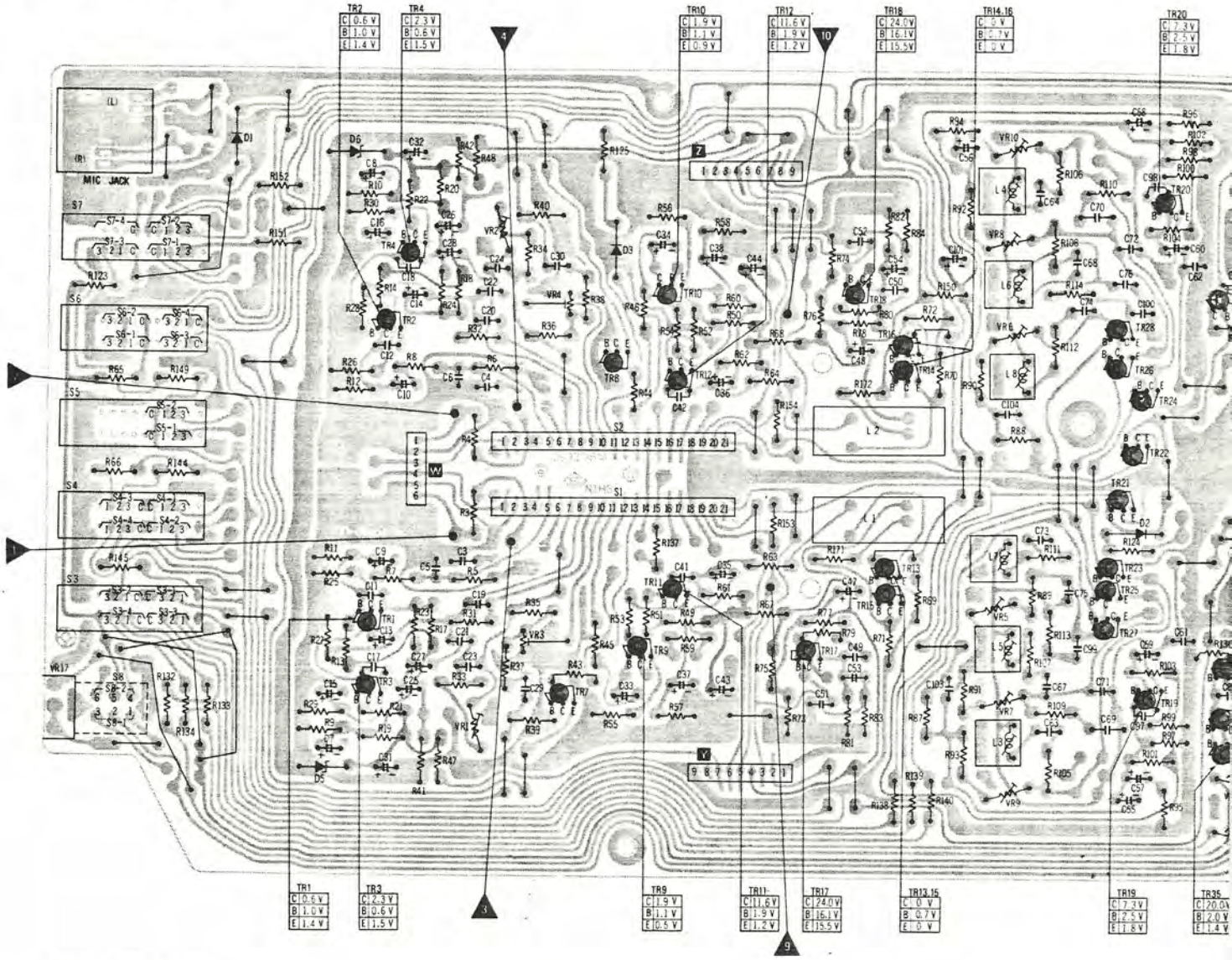


NOTE:

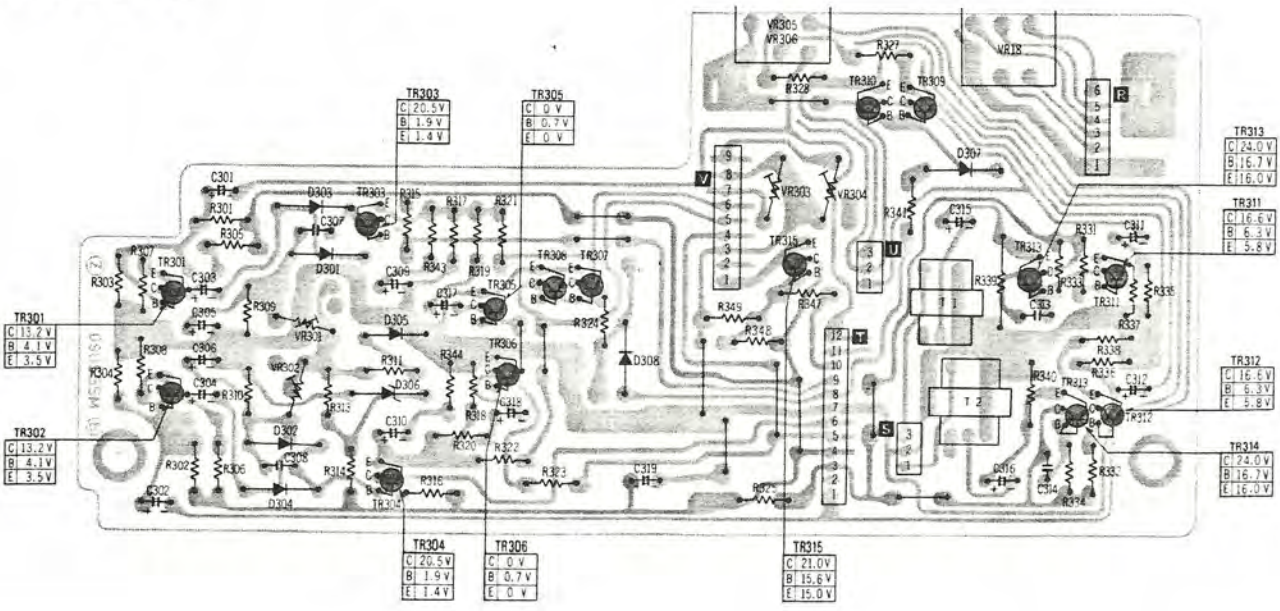
1. S1-1~S1-7, S2-1~S2-7 ..... Record/playback select switch (shown in playback position).
2. S3-1~S3-4 ..... Tape select switch (shown in "normal" position).
3. S4-1~S4-4 ..... Meter select switch (shown in "peak/bright" position).
4. S5-1, S5-2 ..... Function switch (shown in "memory rew" position).
5. S6-1~S6-4 ..... Dolby NR select switch (shown in "out" position).
6. S7-1~S7-4 ..... Input select switch (shown in "mic" position).
7. S8-1, S8-2 ..... Tape select switch for metal tape (shown in metal position).
8. VR1, 2 ..... Playback equalizer. adjustment VR.
9. VR3, 4 ..... Playback level adjustment VR.
10. VR5, 6 ..... Standard recording level adjustment VR (for CrO_2 tape).
11. VR7, 8 ..... Standard recording level adjustment VR (for Fe-Cr tape).
12. VR9, 10 ..... Standard recording level adjustment VR (for normal tape).
13. VR12 ..... Bias current adjustment VR (for normal tape).
14. VR13 ..... Bias current adjustment VR (for metal tape).
15. VR14 ..... Bias current adjustment VR (for normal tape).
16. VR15 ..... Bias current adjustment VR (for Fe-Cr tape).
17. VR16 ..... Bias current adjustment VR (for CrO_2 tape).
18. VR17 ..... Bias current adjustment control.
19. VR18, 19 ..... Input level control.
20. VR20 ..... Meter brightness adjustment control.
21. VR201, 202 ..... Dolby NR adjustment VR.
22. VR301, 302 ..... Fluorescent level meter adjustment VR (for −20dB indication).
23. VR303, 304 ..... Fluorescent level meter adjustment VR (for 0dB indication).
24. VR305, 306 ..... Output level control.
25. VR801, 802 ..... Standard recording level adjustment VR (for metal tape).

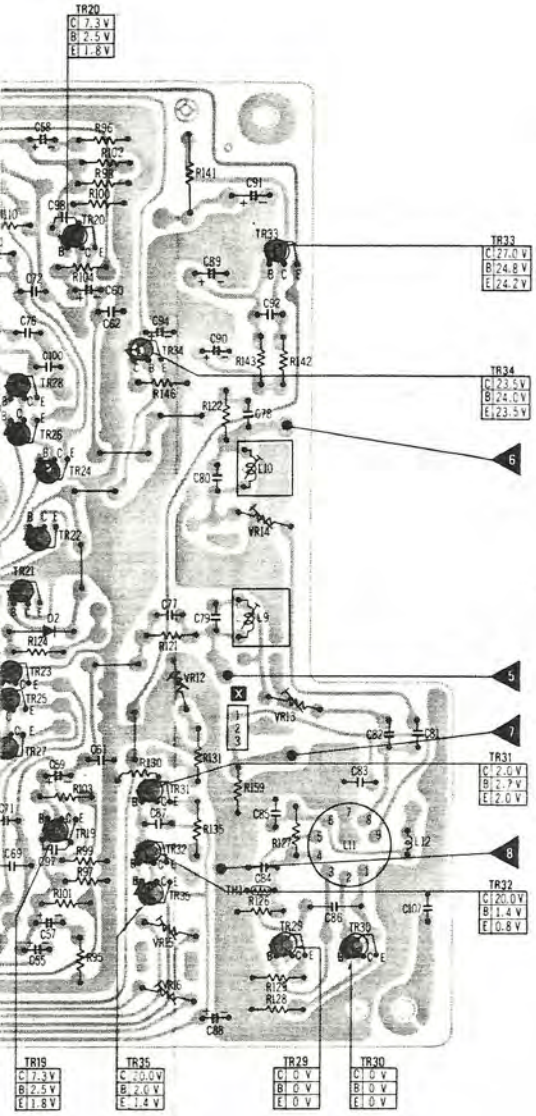
CIRCUIT BOARD

Main Amp

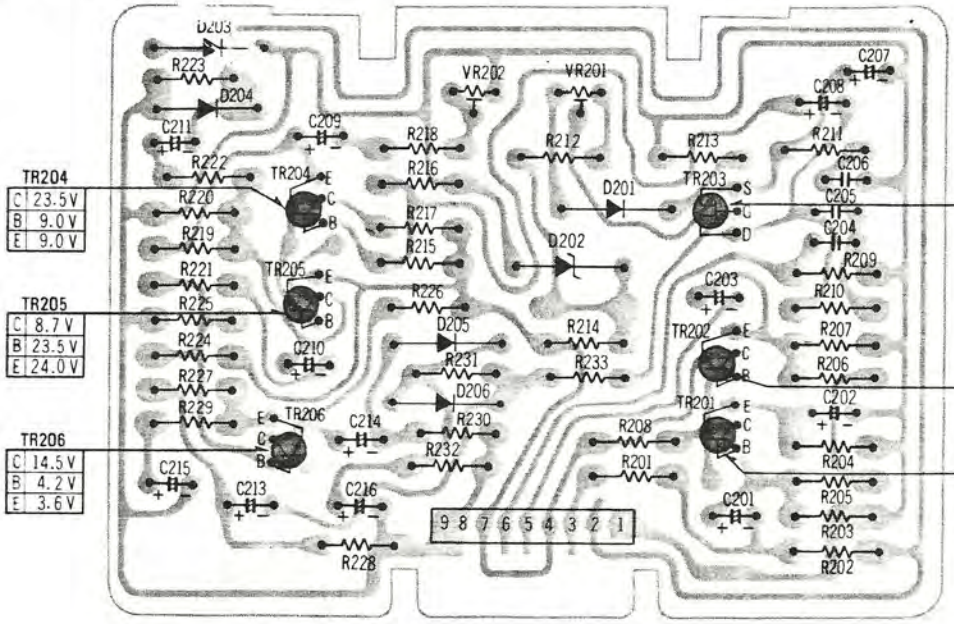


Out Put

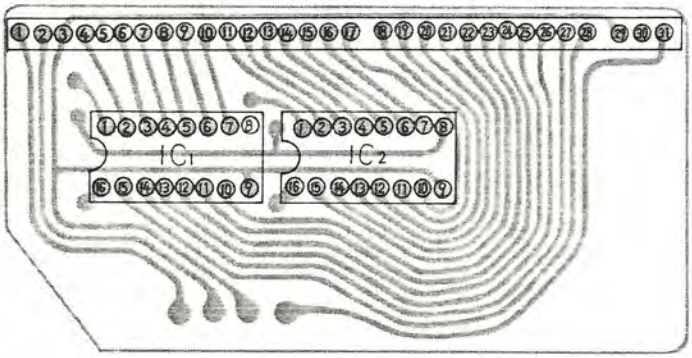




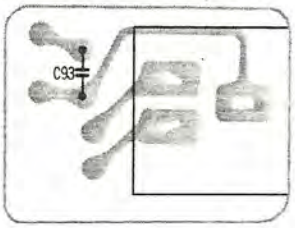
Dolby



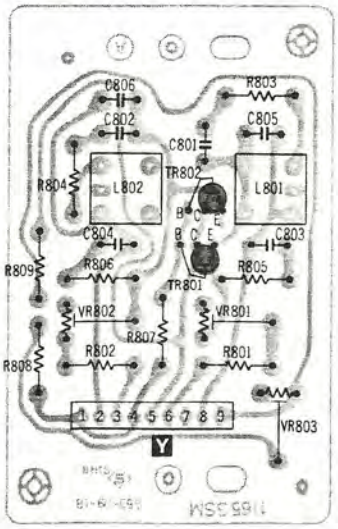
FL Meter



Headphones Jack



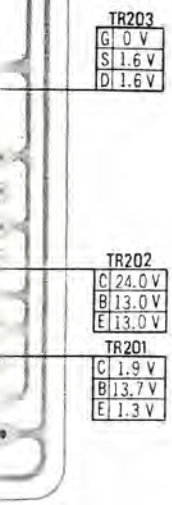
Equalizer



Jack

NOTE:

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



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

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

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

Ref. No.	Part No.
RESISTORS	
R1, 2 ⚠	ERD25FJ682
※For Canada.	
R3, 4	ERD25FJ100
R5, 6	ERD25TJ104
R7, 8	ERD25FJ181
R9, 10	ERD25FJ562
R11, 12	ERD25TJ224
R13, 14	ERD25TJ154
R15, 16	ERD25TJ683
R17, 18	ERD25TJ183
R19, 20	ERD25TJ822
R21, 22	ERD25TJ123
R23, 24	ERD25TJ154
R25, 26	ERD25TJ183
R27, 28	ERD25TJ121
R29, 30	ERD25TJ182
R31, 32	ERD25TJ472
R33, 34	ERD25TJ182
R35, 36	ERD25TJ472
R37, 38	ERD25TJ562
R39, 40	ERD25TJ224
R41, 42	ERD25TJ333
R43, 44	ERD25TJ182
R45, 46	ERD25TJ331
R47, 48	ERD25TJ821
R49, 50	ERD25TJ683
R51, 52	ERD25TJ821
R53, 54	ERD25TJ104
R55, 56	ERD25TJ182
R57, 58	ERD25TJ271
R59, 60	ERD25TJ184
R61, 62	ERD25TJ272
R63, 64	ERD25TJ331
R65	ERD25TJ222
R66	ERD25TJ821
R67, 68	
Ⓟ	ERD25TJ271
※For U. S. A.	
⚠	ERG12ANJ271
※For Canada.	
R69, 70, 71, 72	ERD25TJ224
R73, 74	ERD25TJ273
R75, 76	ERD25TJ123
R77, 78	ERD25TJ562
R79, 80	ERD25TJ153
R81, 82	ERD25TJ332
R83, 84	ERD25TJ333
R87, 88	ERD25TJ682
R89, 90, 91, 92	ERD25TJ121
R93, 94	ERD25TJ331
R95, 96	ERD25TJ332
R97, 98	ERD25TJ333
R99, 100	ERD25TJ821
R101, 102	ERD25TJ224
R103, 104	ERD25TJ562
R105, 106, 107, 108	ERD25TJ390
R109, 110	ERD25TJ152
R111, 112	ERD25TJ390
R113, 114	ERD25TJ562
R121, 122	ERD25TJ472
R123, 124	ERD25TJ152
R125	ERD25TJ821
R126	ERD25TJ272
R127	ERD25TJ562
R128, 129	
Ⓟ	ERD25TJ120
※For U. S. A.	
⚠	ERQ12HJ100
※For Canada.	
R130	ERD25TJ271
R131	ERD25TJ153
R132	ERD25TJ333
R133	ERD25TJ123
R134	ERD25TJ822
R135	ERD25TJ272
R138, 139, 140	ERD25TJ472
R141	ERX1ANJ8R2
R142	ERD25TJ222
R143	ERD25TJ561
R144	ERD25TJ272
R145	ERD25TJ392
R146	ERD25TJ472
R149	ERD25TJ151
R150	ERD25TJ821
R151, 152	ERD25TJ153
R153, 154	ERD25TJ682
R155, 156	ERD25TJ333
R157, 158	ERD25TJ104
R159	ERD25TJ1R0
R171, 172	ERD25TJ391
R201×2	ERD25TJ154
R202×2	ERD25TJ104
R203×2	ERD25TJ273
R204×2	ERD25TJ272
R205×2	ERD25TJ154
R206×2	ERD25TJ822
R207×2	ERD25TJ222
R208×2	ERD25TJ223
R209×2	ERD25TJ274
R210×2	ERD25TJ473
R211×2	ERD25TJ332
R212×2	ERD25TJ822
R213×2	ERD25TJ102
R214×2	ERD25TJ392
R215×2	ERD25TJ185
R216×2	ERD25TJ105
R217×2	ERD25TJ153
R218×2	ERD25TJ101
R219×2	ERD25TJ472
R220×2	ERD25TJ103
R221×2, 222×2	ERD25TJ822
R223×2	ERD25TJ333
R224×2	ERD25TJ154
R225×2	ERD25TJ333
R226×2	ERD25TJ272
R227×2	ERD25TJ102
R228×2	ERD25TJ560
R229×2	ERD25TJ820
R230×2	ERD25TJ153
R231×2, 232×2	ERD25TJ274
R233×2	ERD25TJ224
R301, 302	ERD25TJ823
R303, 304	ERD25TJ333
R305, 306	ERD25TJ102
R307, 308	ERD25TJ821
R309, 310	ERD25TJ154
R311	ERD25TJ681
R313	ERD25TJ272
R314	ERD25TJ392
R315, 316	ERD25TJ154
R317, 318	ERD25TJ823
R319, 320	ERD25TJ330
R321, 322	ERD25TJ222
R323	ERD25TJ682
R324	ERD25TJ152
R325 Ⓟ	ERD25TJ560
※For U. S. A.	
⚠	ERQ12HJ560
※For Canada.	
R327, 328	ERD25TJ152
R331, 332	ERD25TJ184
R333, 334	ERD25TJ332
R335, 336	ERD25TJ563
R337, 338	ERD25TJ222
R339, 340	ERD25TJ821
R341	ERD25TJ122
R343, 344	ERD25TJ330
R347	ERD25TJ681
R348	ERD25TJ222
R349	ERD25TJ682
R401	ERX1ANJ2R2
R402	ERG1ANJ471
R403	ERD25TJ472
R404	ERD25TJ121
R405	ERD25TJ272
R406	ERD25TJ103
R407	ERD25TJ472
R408	ERD25TJ272
R409	ERD25TJ273
R410, 411	ERD25TJ102
R412	ERD25TJ153
R413	ERD25TJ471
R414	ERD25TJ473
R415	ERX1ANJ1R0
R416	ERG1ANJ681
R417	ERD25TJ391
R418	ERD25TJ221
R419	ERD25TJ152
R420 Ⓟ	ERD25TJ391
※For U. S. A.	
⚠	ERG1ANJ391
※For Canada.	
R421	ERD25TJ471
R422, 423	⚠ ERD25TJ121
R424	⚠ ERD25TJ471
R425	ERG12ANJ220
R426	ERD25TJ121
R427	ERX1ANJ120
R428 Ⓟ	ERG1ANJ120
※For U. S. A.	
R429	ERD25TJ270
R430	ERG12ANJ220
R501	ERD25TJ562
R502	ERD25TJ101
R503	ERD25TJ562
R504	ERD25TJ101
R505	ERD25TJ562
R506	ERD25TJ101
R507	ERD25TJ562
R508	ERD25TJ101
R509	ERD25TJ562
R510	ERD25TJ101
R511	ERD25TJ562
R512	ERD25TJ101
R513	ERD25TJ222
R514	ERD25TJ471
R515	ERD25TJ222
R516	ERD25TJ681
R517	ERD25TJ102
R518	ERD25TJ562
R519, 520	ERD25TJ153
R521	ERD25TJ271
R522	ERD25TJ562
R523	ERD25TJ473
R524	ERD25TJ562
R525	ERD25TJ104
R526	ERD25TJ562
R527	ERD25TJ153
R528	ERD25TJ563
R529	ERD25TJ562
R530	ERD25TJ472
R531	ERD25TJ122
R532	ERD25TJ102
R533	ERD25TJ474
R534	ERD25TJ101
R535	ERD25TJ334
R536, 537	ERD25TJ101
R538	ERD25TJ471
R539	ERD25TJ101
R540	ERD25TJ562
R541	ERD25TJ153
R542, 543	ERD25TJ473
R544, 545	ERD25TJ562
R546	ERD25TJ473
R547	ERD25TJ562
R548	ERD25TJ474
R549	ERD25TJ101
R550	ERD25TJ182
R551	ERD25TJ562
R552	ERD25TJ153
R553	ERD25TJ681
R554	ERD25TJ182
R556, 558	ERD25TJ681
R559	ERD25TJ153
R560, 561	ERD25TJ562
R562	ERD25TJ473
R563	ERD25TJ182
R564	ERD25TJ153
R565	ERD25TJ331
R566	ERD25TJ182
R567, 568	ERD25TJ473
R569	ERD25TJ562
R570	ERD25TJ681
R571	ERD25TJ392
R572	ERD25TJ123
R573	ERD25TJ472
R574	ERD25TJ182
R575	ERD25TJ562
R576	ERD25TJ182
R577	ERG1ANJ820
R590	ERD25TJ151
R592, 593	ERD25TJ331
R595	ERD25TJ473
R596	ERD25TJ102
R601	ERD25TJ153
R602	ERD25TJ561
R603	ERD25TJ153
R604	ERD25TJ122
R605	ERD25TJ221
R606	ERD25TJ2R2
R607	ERD25TJ151
R608	ERD25TJ102
R609	ERD25TJ103
R610	ERD25TJ2R2
R611	ERD25TJ221
R612	ERD25TJ561
R613	ERD25TJ122
R614	ERD25TJ153
R615	ERD25TJ561
R617	ERD25TJ682
R618	ERD25TJ153
R619	ERG1ANJ271
R620	ERD25TJ562
R621	ERD25TJ331
R622	ERD25TJ682
R623	ERD25TJ153
R624	ERG1ANJ271
R625	ERD25TJ562
R626	ERD25TJ331
R627	ERD25TJ562
R628	ERD25TJ473
R629	ERD25TJ122
R630	ERD25TJ562
R631	ERD25TJ682
R632	ERD25TJ153
R634	ERG1ANJ271
R635	ERD25TJ562
R636	ERD25TJ682
R638	ERD25TJ272
R639	ERD25TJ103
R640	ERG12ANJ181
R641	ERD25TJ272
R642	ERD25TJ103
R644	ERD25TJ272
R645	ERD25TJ153
R646	ERD25TJ102
R647	ERX12ANJ4R7
R701	ERD25TJ560
R702	ERD25TJ103
R703	ERD25TJ560
R704	ERD25TJ103
R705	ERD25TJ560
R706, 707, 708, 709	ERD25TJ103
R710, 711, 712, 713, 714, 715	ERD25TJ102
R716	ERD25TJ272
R717, 718	ERD25TJ103
R719 Ⓟ	ERG12ANJ100
※For U. S. A.	
⚠	ERQ12HJ5R6
※For Canada.	
R720	ERD25TJ182
R721	ERX12ANJ5R6
R722	ERD25TJ182
R728	ERD25TJ183
R729	ERD25TJ121
R730	ERD25TJ823
R731	ERD25TJ473
R732	ERD25TJ272
R733	ERD25TJ103
R734	ERD25TJ472
R735	ERD25TJ104
R736	ERO25CKF8202
R737	ERD25TJ153
R738	ERD25TJ822
R739	ERD25TJ392
R740	ERD25TJ102
R741	ERD25TJ821
R742	ERD25TJ225
R743	ERD25TJ121
R744	ERD25TJ273
R745	ERD25TJ821
R746	ERD25TJ152
R747	ERG12ANJ181
R748	ERD25TJ152
R801, 802	ERD25TJ121
R803, 804	ERD25TJ390
R805, 806	ERD25TJ562
R807, 808	ERD25TJ153
R809	ERD25TJ154
VARIABLE RESISTORS	
VR1, 2	EVNK4AA00B53
VR3, 4	EVNK4AA00B24
VR5, 6	EVNK4AA00B14
VR7, 8, 9, 10	EVNK4AA00B53
VR12	EVNK4AA00B54
VR13, 14	EVNK4AA00B15
VR15, 16	EVNK4AA00B24
VR17	EVHCWF20B24
VR18	EWKNXAF22A54
VR20	EVHG3AS15B24
VR201×2	EVNK0AA00B14
VR202×2	EVNK0AA00B52
VR301, 302	EVNK4AA00B54
VR303, 304	EVNK4AA00B14
VR305	EWKEUA033A14
VR401	EVNK4AA00B53
VR601	EVNK0AA00B52
VR701, 702	EVNK4AA00B53
VR703	EVNK4AA00B52
VR801, 802	EVNK4AA00B14
VR803	EVNK4AA00B54
CAPACITORS	
C3, 4	ECCD1H181K
C5, 6	ECKD1H471KB
C7, 8	ECEA1HS100
C9, 10	ECEA25M4R7
C11, 12	ECQM05102KZ
C13, 14	ECEA1AS101
C15, 16	ECEA1AS470
C17, 18	ECCD1H470KC
C19, 20	ECQM05102KZ

Ref. No.	Part No.
C21, 22	ECQM05223KZ
C23, 24	ECKD1H471KB
C25, 26	ECEA50MR47
C27, 28	ECEA1HS100
C29, 30	ECQM05123KZ
C31, 32	ECEA1ES470
C33, 34	ECEA50MR1
C35, 36	ECEA50ZR1
C37, 38	ECEA1AS221
C41, 42	ECCD1H220KC
C43, 44	ECEA1VS330
C47, 48	ECEA1HS100
C49, 50	ECQM05102KZ
C51, 52	ECCD1H271K
C53, 54	ECEA1JS4R7
C55, 56	ECEA1HS100
C57, 58	ECEA50ZR68
C59, 60	ECEA25M4R7
C61, 62	ECKD1H102KB
C63, 64	ECQM05393KZ
C67, 68	ECQM05273KZ
C69, 70	ECQM05683KZ
C71, 72, 73, 74	ECQM05273KZ
C75, 76	ECQM05123KZ
C77, 78	ECQM05102KZ
C79, 80	ECQS1561
C81, 82	ECCD1H680KC
C83	ECQF4123KZH
C84	ECQM05473KZ
C85	ECEA50Z1
C86	ECQF4103KZH
C87	ECKD1H471KB
C88	ECEA1JS4R7
C89	ECEA1VS471
C90	ECEA1VS221
C91	ECEA1VS471
C92	ECCD1H101K
C93	ECKD1H102KB
C94	ECEA25Z3R3
C95, 96	ECEA50Z1
C97, 98	ECCD1H101K
C99, 100	ECQM05333KZ
C101	ECEA1ES470
C103, 104	ECQM05472KZ
C107, 108	ECKD1H102KB
C201×2	ECEA25Z4R7
C202×2	ECEA1HS100
C203×2	ECEA25Z4R7
C204×2	ECQM05562KZ
C205×2	ECQM05472KZ
C206×2	ECQM05273KZ
C207×2	ECEA1HS100
C208×2	ECEA50MR1
C209×2	ECEA1ES470
C210×2	ECEA50ZR1
C211×2	ECEA1HS100
C212×2	ECCD1H270KC
C213×2	ECEA50ZR33
C214×2	ECEA1HS100
C215×2	ECEA50ZR1
C216×2	ECEA50ZR1
C301, 302	ECEA1HS100
C303, 304	ECEA50ZR33
C305, 306	ECEA1HS100
C307, 308	ECQM05104KZ
C309, 310	ECEA25Z4R7
C311, 312	ECEA1HS100
C313, 314	ECCD1H101K
C315, 316	ECEA1ES470
C317, 318	ECEA1HS100
C319	ECEA1ES331
C401 △	ECET35R2200S
C402	ECEA1VS101
C404	ECEA1ES221
C405 △	ECET16R2200S
C406	ECEA1HS100
C407	ECKD1H102KB
C408 △	ECET25R4700S
C409, 410	ECEA1AS472 △
C411	ECQM05473KZ
C501, 502, 503, 504, 505, 506	ECKD1H103ZF
C507	ECEA1AS470
C508	ECEA16Z10
C509	ECEA1HS100
C510	ECEA16Z10
C511	ECEA50Z1
C512	ECEA16Z10
C513	ECEA50Z2R2
C514	ECEA16N10
C515	ECEA1HS100
C517, 518	ECKD1H472KB
C519	ECEA1AS221
C521	ECKD1H103ZF
C522	ECEA16Z10
C523	ECEA50Z1
C524, 525	ECEA1HS100
C526	ECEA1CS471
C530	ECEA50ZR47
C590	ECEA25Z4R7
C601, 602	ECEA1CS330
C603, 604, 605	ECEA16Z10
C606	ECEA16Z33
C610	ECEA50Z2R2
C701, 702, 703	ECEA25Z3R3
C704	ECEA50ZR47
C705, 706, 707	ECEA50ZR22
C708	ECQM05103KZ
C709	ECQM05473KZ
C710	ECQM05393KZ
C711	ECEA50ZR68
C712	ECQM05104KZ
C713	ECEA25Z100
C714	ECQM05393KZ
C715	ECQM05683KZ
C716	ECQM05104KZ
C717	ECQM05103KZ
C718	ECQM05223KZ
C719	ECEA50ZR22
C720	ECQM05562KZ
C721	ECQM05153KZ
C722	ECQM05562KZ
C723	ECKD1H471KB
C724	ECQM05123KZ
C725	ECQM05182KZ
C726	ECQS1682JZ
C727	ECQM05223KZ
C728, 729	ECCD1H220KC
C730	ECQM05562KZ
C731, 732, 733	ECEA1CS330
C734	ECQM05332KZ
C801, 802	ECQM05273KZW
C803, 804	ECQM05333KZW
C805, 806	ECQM05123KZW

COMBINATION PARTS

Z401 P △	ECQJ0187A
*For U. S. A.	
K △	ECQJ0187C
*For Canada.	

TRANSISTORS

Tr1, 2	2SA721
Tr3, 4	2SC1327
Tr7, 8	2SC945
Tr9, 10, 11, 12	2SC644
Tr13, 14, 15, 16, 17, 18, 19, 20	2SC945
Tr21, 22	2SC1383
Tr23, 24, 25, 26, 27, 28	2SC945
Tr29, 30	2SC1383
Tr31	2SC945
Tr32 P	2SC1383
*For U. S. A.	
K	2SC1847
*For Canada.	
Tr33	2SC1846
Tr34	2SA564
Tr35, 201×2, 202×2	2SC945
Tr203×2	2SK30AD
Tr204×2	2SC945
Tr205×2	2SA564
Tr206×2, 301, 302, 303, 304, 305, 306, 307, 308	2SC945
Tr309, 310	2SC1383
Tr311, 312	2SC945
Tr313, 314, 315	2SC1383
Tr401	2SC1226
Tr402, 403, 404, 405	2SC1684
Tr406	2SA564
Tr407	2SD389
Tr408, 409	2SC1684
Tr501, 502, 503	2SC1317
Tr504	2SC1684
Tr505	2SA564
Tr506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 518, 519, 520, 521, 522	2SC1684
Tr523	2SA564
Tr601	2SA719
Tr602	2SC1846
Tr603	2SA719
Tr604, 605	2SC1684
Tr606	2SC1317
Tr607	2SC1684
Tr608	2SC1383
Tr609, 610, 611	2SC1684
Tr612	2SA886
Tr613	2SC1684
Tr614	2SA886
Tr615	2SA564
Tr616	2SC1684
Tr617	2SA886
Tr618	2SC1684
Tr619	2SC1847
Tr620	2SC1684
Tr621	2SC1847
Tr622	2SC1684
Tr623	2SC1847
Tr624 P	2SC1383
*For U. S. A.	
Tr701, 702, 703	2SC1846
Tr704, 705, 706	2SA885
Tr707	2SC1318
Tr710	2SC1318
Tr801, 802	2SD636R

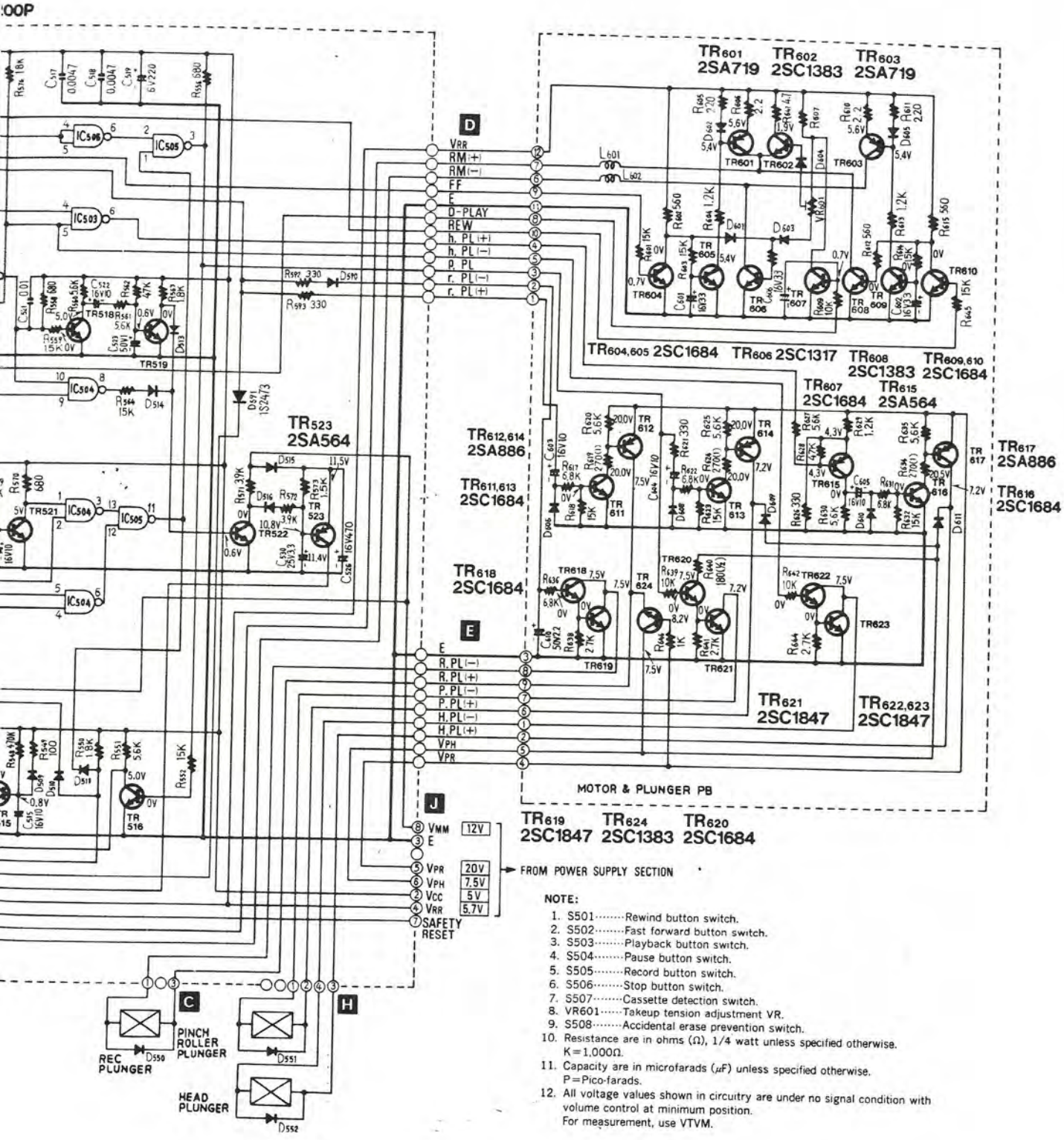
INTEGRATED CIRCUITS

IC1, 2	QVIBA658
IC501	AN6251
IC502, 503, 504, 505	M53200P
IC506	DN835
IC701	AN640
IC702	AN660
IC703	M58432P

DIODES

D1, 2, 3	MA150
D5, 6	MA1190
D201×2	OA90M
D202×2	MA1082
D203×2, 204×2	MA150
D205×2	OA90
D206×2	MA150
D301, 302, 303, 304	OA91
D305	MV121
D306	MA1068
D307	MA150
D308	1S2473T
D401 △	RVD10DC1
D402 △	RVD10DC1R
D403	MA1075
D404	MA1051
D405 △	RVD10DC1
D406 △	RVD10DC1R
D407	MA150
D408	MA1056
D409 △	RVD10DC1
D410 △	RVD10DC1R
D411 △	RVD10DC1
D412 △	RVD10DC1R
D413	SM102
D414 △	RVD10DC1R
D415 △	RVD10DC1
D501, 502, 503, 504, 505, 506, 507, 508	MA150
D509	OA91
D510, 511, 513, 514	MA150
D515	SM102
D516	MV121
D517	MA150
D550, 551, 552	SM102
D590	MA150
D591	1S2473
D601, 602, 603, 604, 605	MA150
D606, 608	OA90M
D609	SM102
D610	OA90M
D611	SM102
D701, 702	MA150
D703	MA1120

Ref. No.	Part No.	Part Name & Description
		TRANSFORMERS
T1, 2	QLT2D26X	Headphone Transformer
T401 P △	QLPP29EMX	Power Transformer
*For U. S. A.		
K △	QLPC20EMX	"
*For Canada.		
		COILS
L1, 2	QLM9Z4K	MPX Filter
L3, 4, 5, 6, 7, 8	QLQX0331W	3mH Coil
L9, 10	QLQX0731W	7mH Coil
L11	QLB0189	Bias Oscillator Coil
L12 P	QLQX2421Y	Choke Coil
*For U. S. A.		
L401, 601, 602	QLQZ1014D	"
L801, 802	QLQX0331W	3mH Coil
		SWITCHES
S1, 2	QSS7203	Slide Switch (Record/Playback Selector)
S3, 4, 5, 6, 7	QST4311A	Lever Switch
S401 △	QSW1206AA	Push Switch (Power ON/OFF)
S501, 502, 503, 504, 505, 506	QSW1111H	Control Key Switch
S507, 508	QSM0067	Micro Switch
		PILOT LAMPS
PL501, 502, 503	XAMQ34S600W	Pilot Lamp
PL504	XAMQ41S400	"

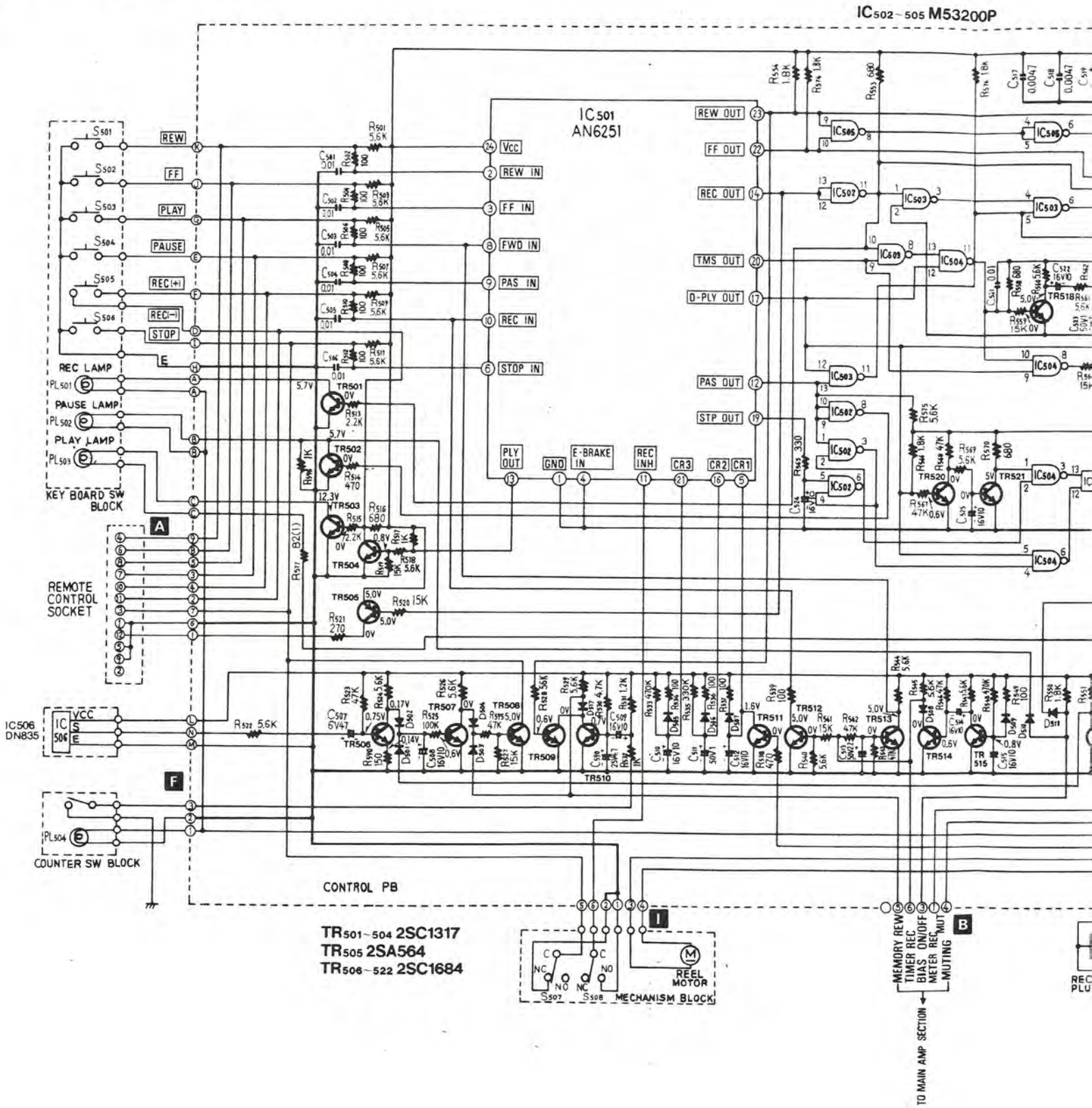


NOTE:

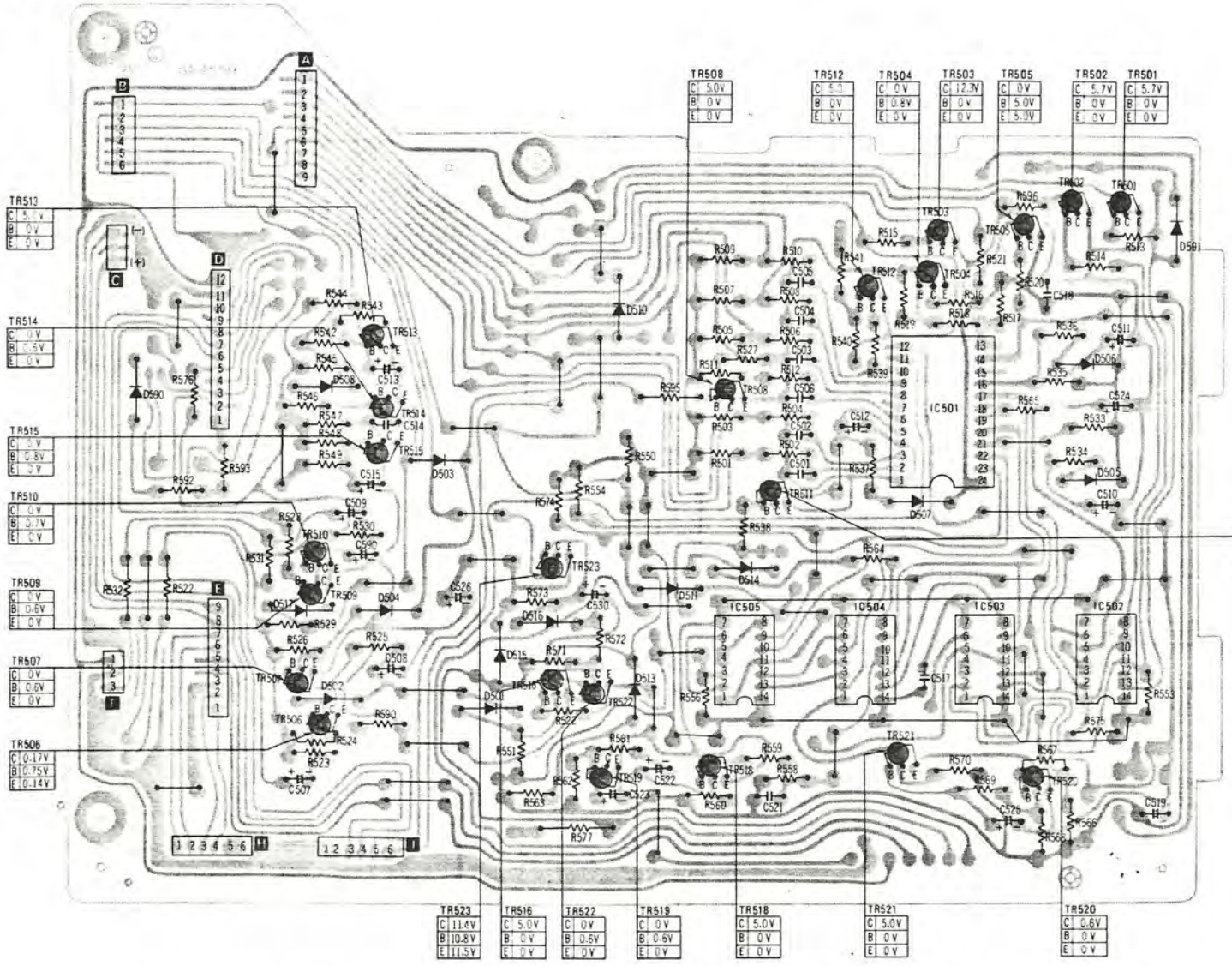
1. S501·····Rewind button switch.
2. S502·····Fast forward button switch.
3. S503·····Playback button switch.
4. S504·····Pause button switch.
5. S505·····Record button switch.
6. S506·····Stop button switch.
7. S507·····Cassette detection switch.
8. VR601·····Takeup tension adjustment VR.
9. S508·····Accidental erase prevention switch.
10. Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
    K=1,000Ω.
11. Capacity are in microfarads (μF) unless specified otherwise.
    P=Pico-farads.
12. All voltage values shown in circuitry are under no signal condition with volume control at minimum position.
    For measurement, use VTVM.

SCHEMATIC DIAGRAM

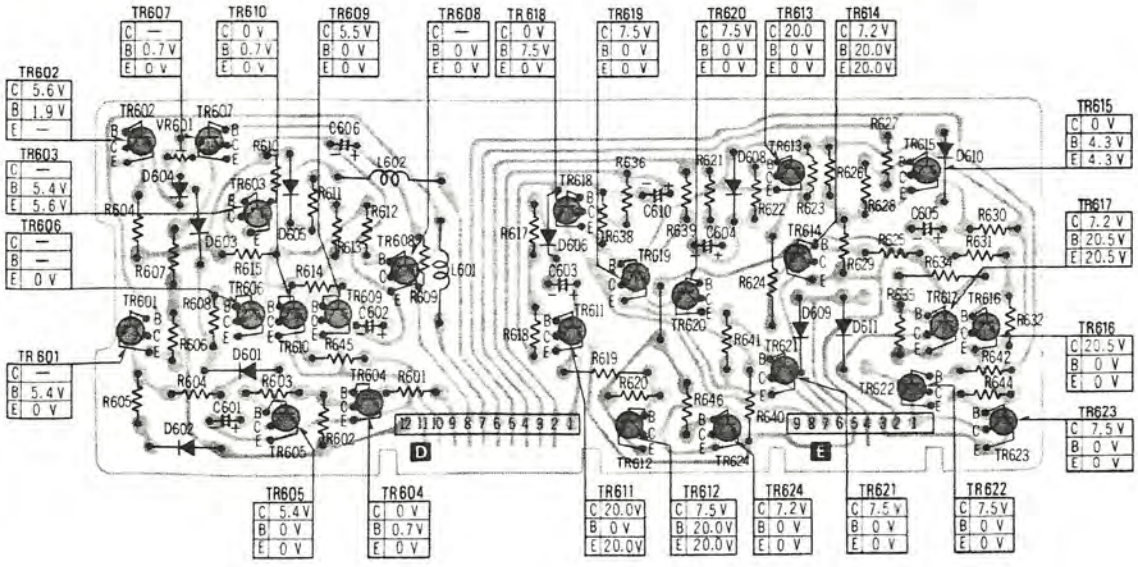
Main Control Section



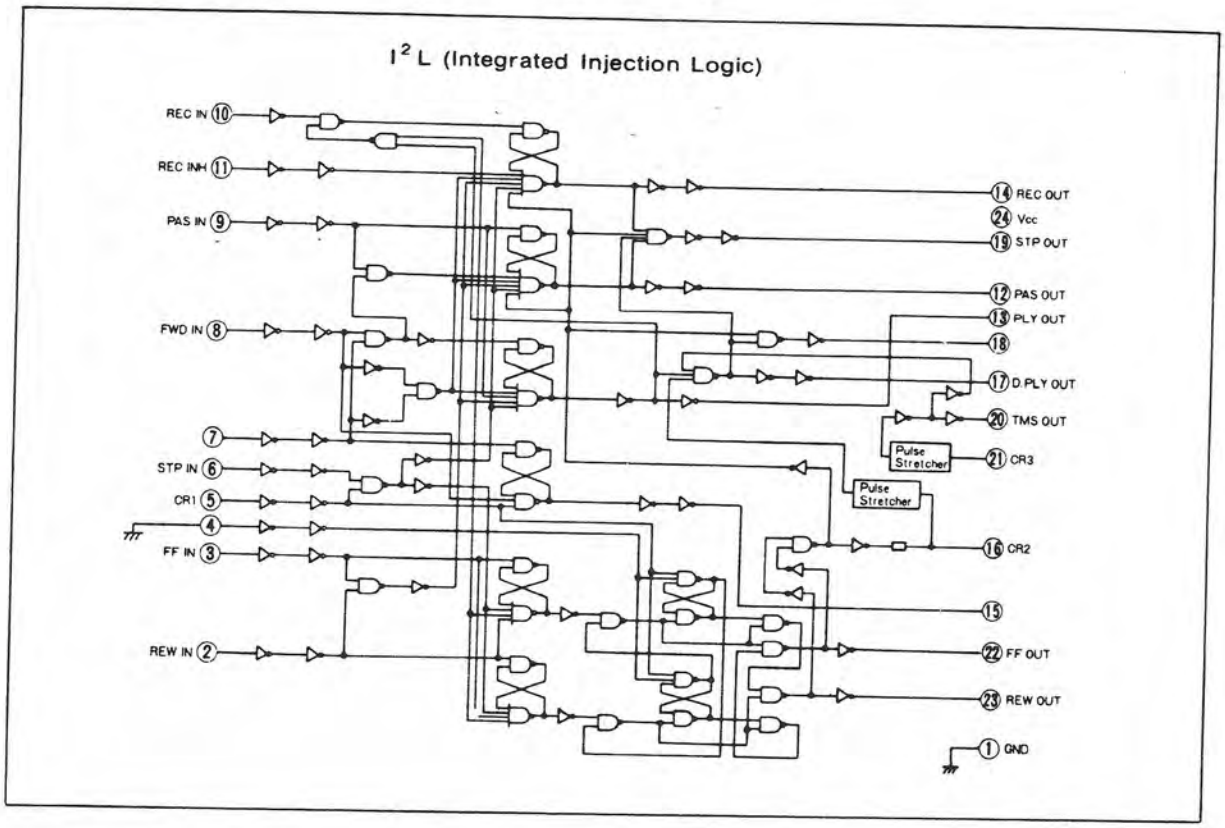
CIRCUIT BOARD
Main Control



Plunger Driving



IC (AN6251) equivalent circuitry

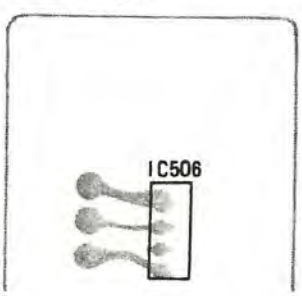


Relationship of each operation mode with input/output

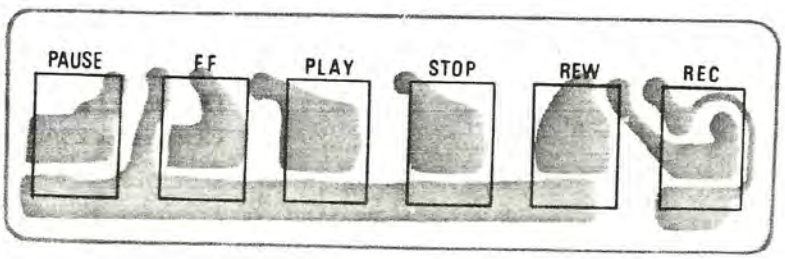
Operation mode	Input terminal	IC (AN6251) Output terminal							
		(12) PAUSE OUT	(13) PLAY OUT	(14) REC OUT	(17) D-PLAY OUT	(19) STOP OUT	(20) TMS OUT	(22) FF OUT	(23) REW OUT
REW	(2) REW IN	Ⓗ	Ⓗ	Ⓗ	Ⓗ	Ⓗ	Ⓗ	Ⓗ	Ⓛ
FF	(3) FF IN	Ⓗ	Ⓗ	Ⓗ	Ⓗ	Ⓗ	Ⓗ	Ⓛ	Ⓗ
PLAY	(8) FWD IN	Ⓗ	Ⓛ	Ⓗ	*Ⓛ	Ⓗ	Ⓗ	Ⓗ	Ⓗ
PAUSE	(9) PAS IN	Ⓛ	Ⓗ	Ⓗ	Ⓗ	Ⓗ	Ⓗ	Ⓗ	Ⓗ
REC	(10) REC IN	Ⓗ	Ⓗ	Ⓛ	Ⓗ	Ⓗ	Ⓗ	Ⓗ	Ⓗ
STOP	(6) STOP IN	Ⓗ	Ⓗ	Ⓗ	Ⓗ	Ⓛ	Ⓗ	Ⓗ	Ⓗ

* Doesn't become "L" immediately even if playback button pushed; becoming "L" after a slight delay.

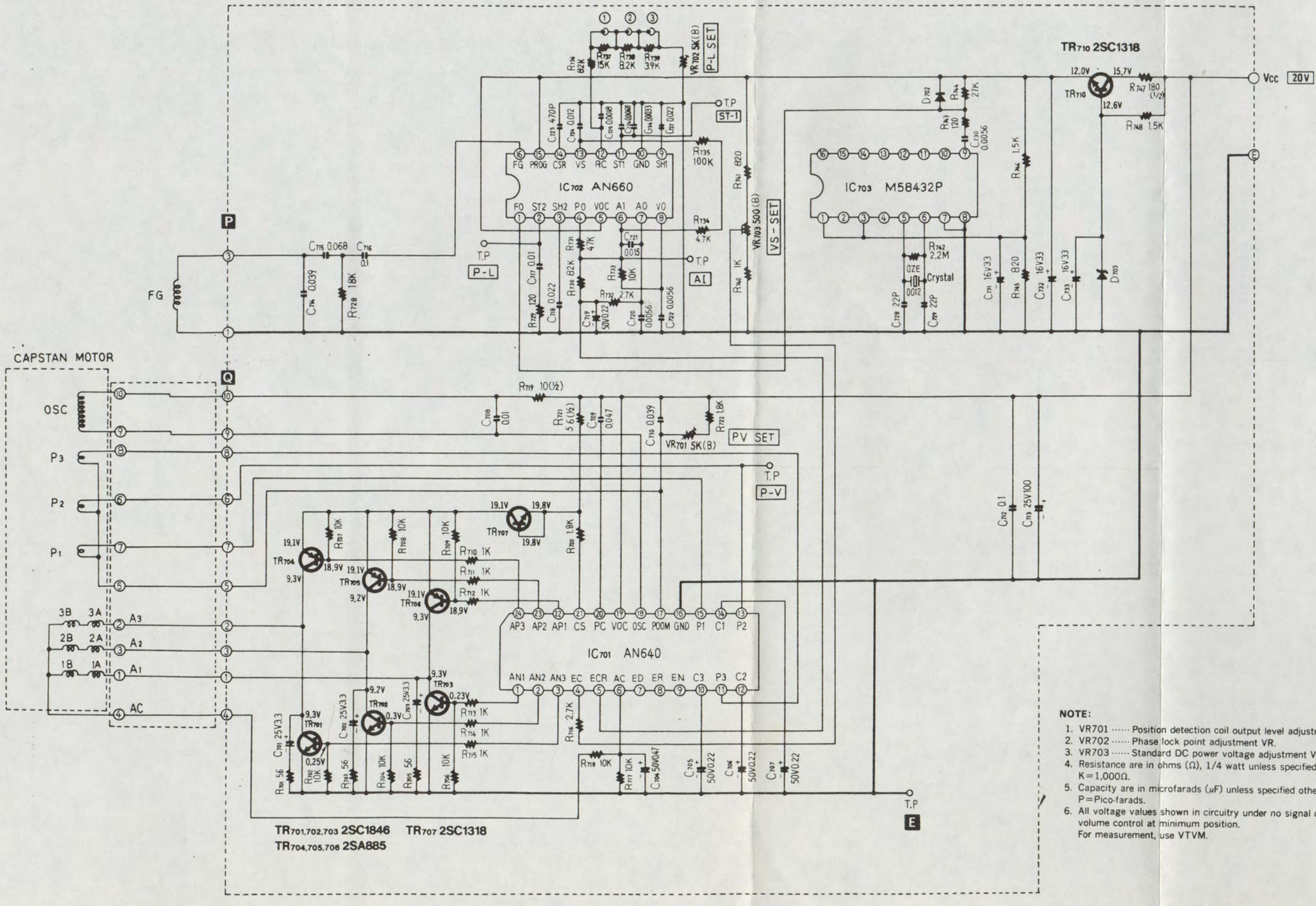
Hall IC



Control Key Switch



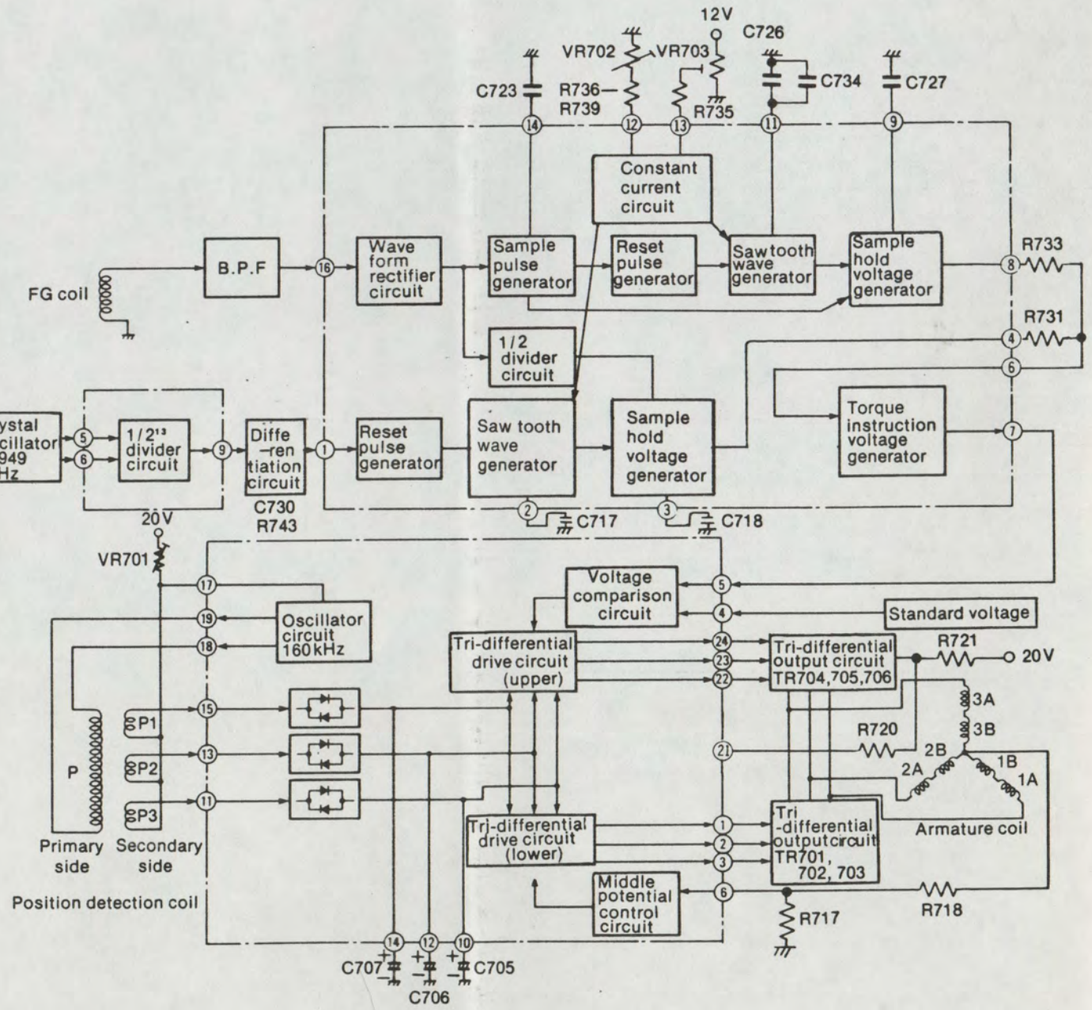
SCHEMATIC DIAGRAM
Capstan Driving Section



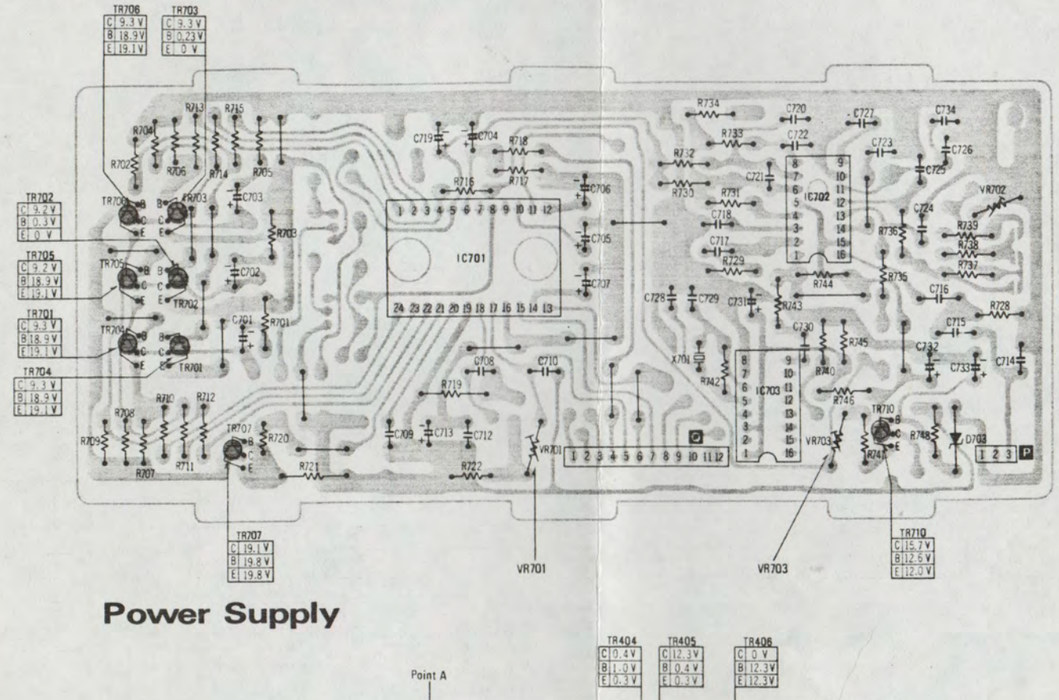
NOTE:

1. VR701 ····· Position detection coil output level adjustment VR.
2. VR702 ····· Phase lock point adjustment VR.
3. VR703 ····· Standard DC power voltage adjustment VR.
4. Resistance are in ohms (Ω), 1/4 watt unless specified otherwise. K=1,000Ω.
5. Capacity are in microfarads (μF) unless specified otherwise. P=Pico-farads.
6. All voltage values shown in circuitry under no signal condition with volume control at minimum position. For measurement, use VTVM.

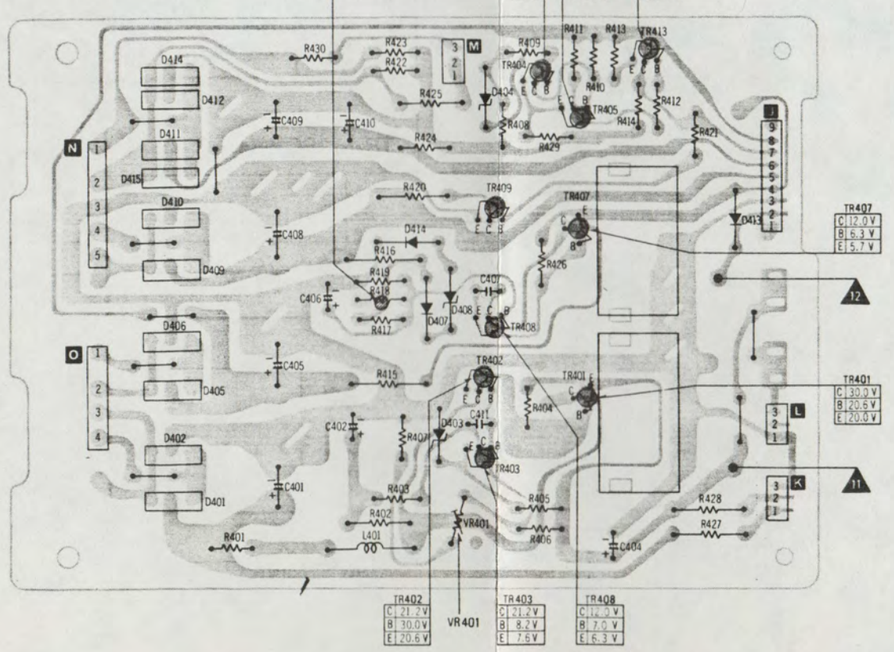
BLOCK DIAGRAM
Capstan Motor Section



CIRCUIT BOARD
Capstan Driving



Power Supply

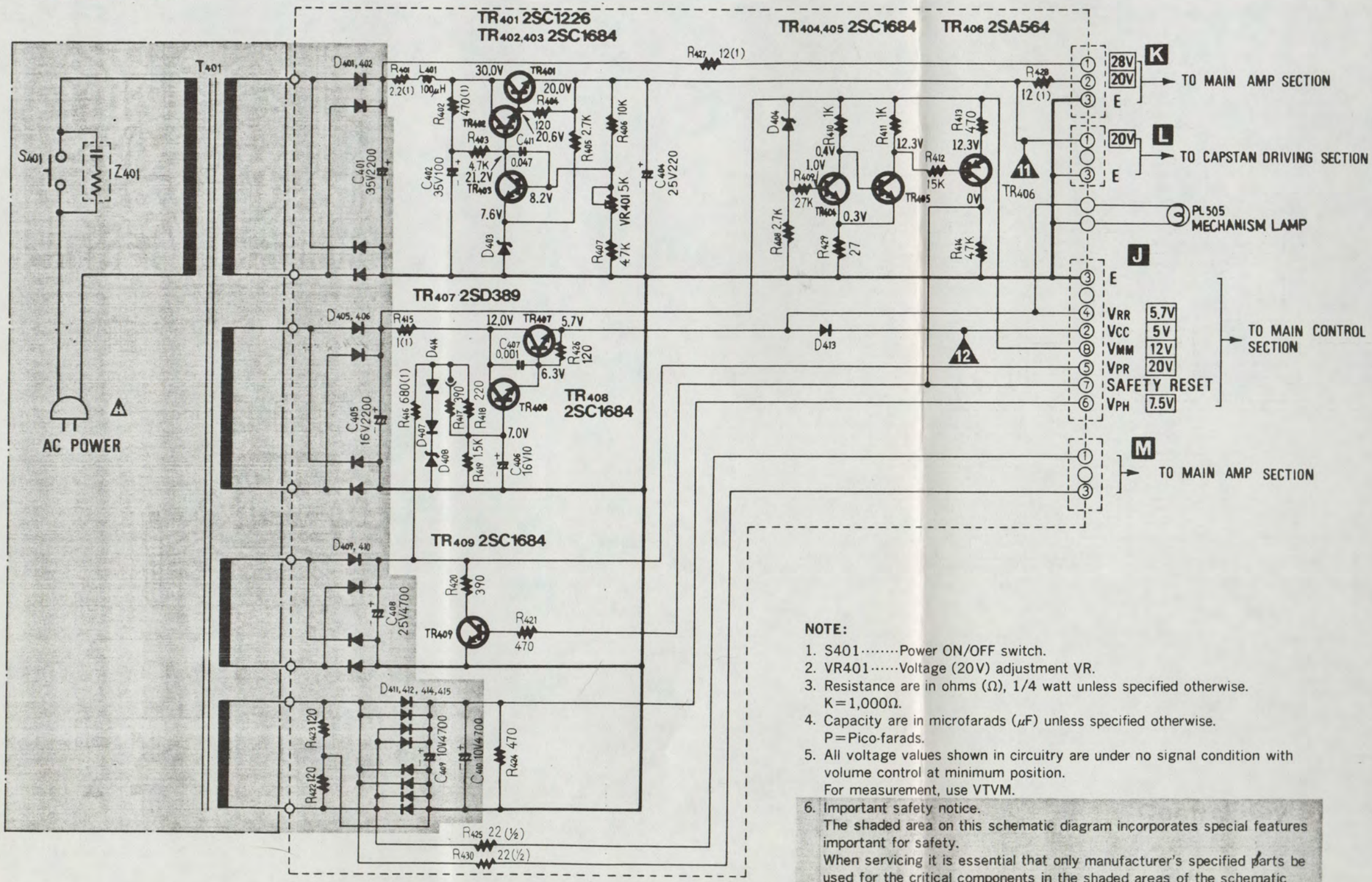


NOTE:

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

SCHEMATIC DIAGRAM

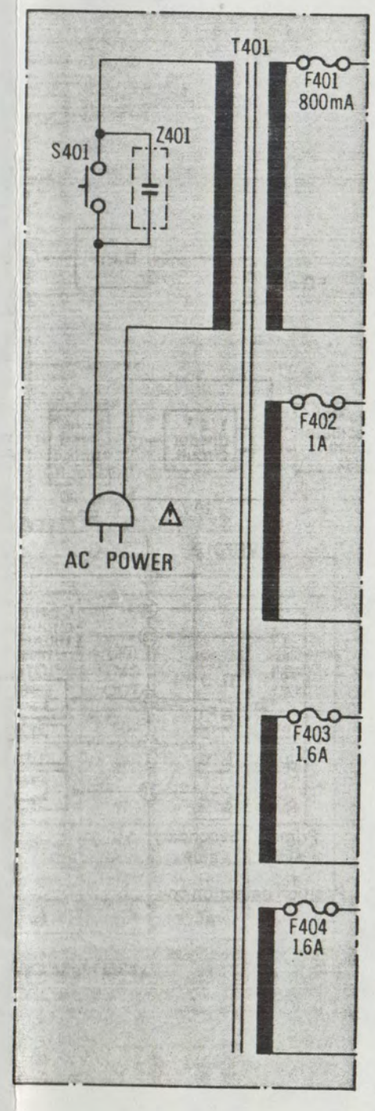
For U.S.A.



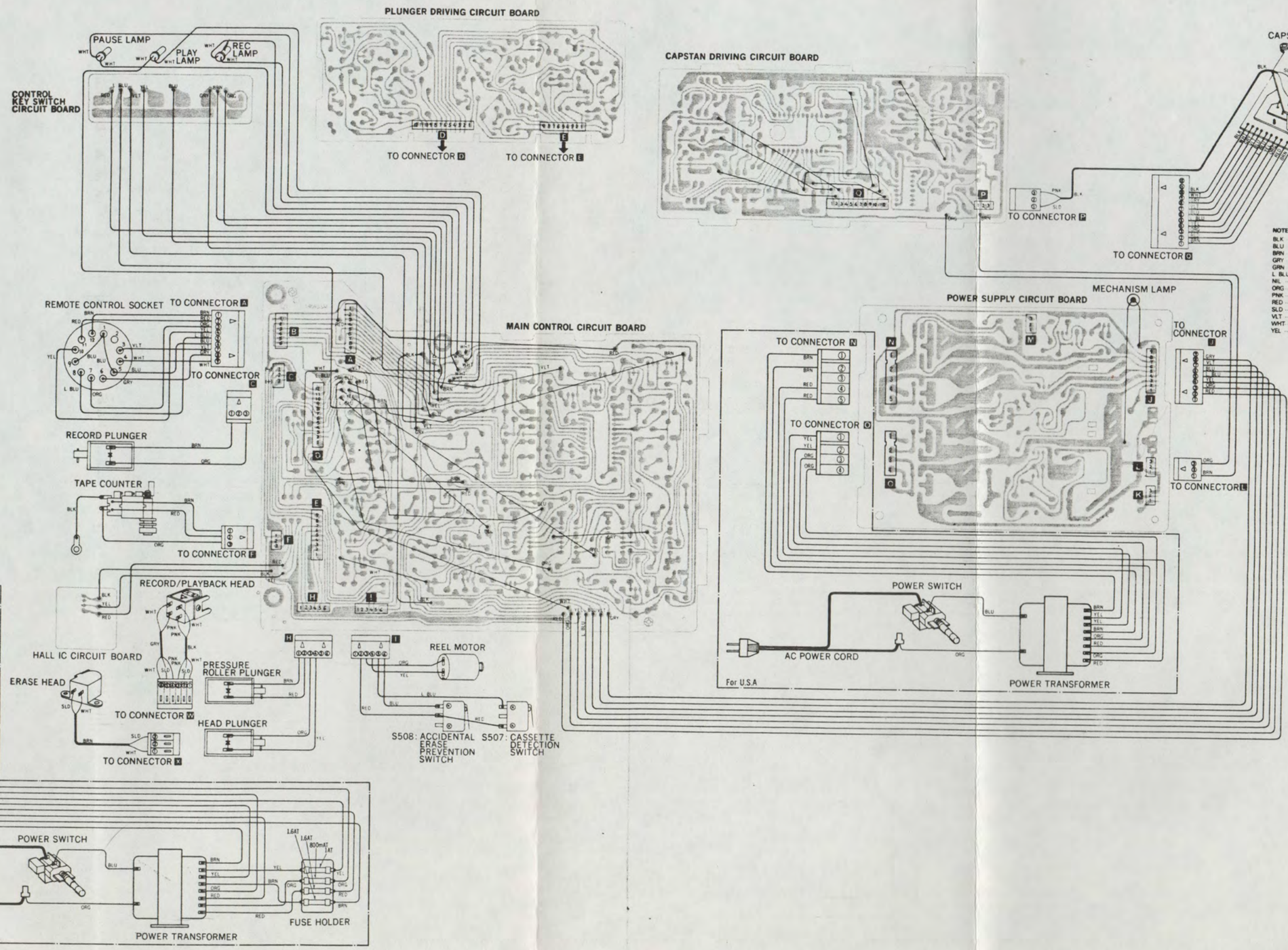
NOTE:

1. S401·····Power ON/OFF switch.
2. VR401·····Voltage (20V) adjustment VR.
3. Resistance are in ohms (Ω), 1/4 watt unless specified otherwise.
   K=1,000Ω.
4. Capacity are in microfarads (μF) unless specified otherwise.
   P=Pico-farads.
5. All voltage values shown in circuitry are under no signal condition with volume control at minimum position.
   For measurement, use VTVM.
6. Important safety notice.
   The shaded area on this schematic diagram incorporates special features important for safety.
   When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic diagram.

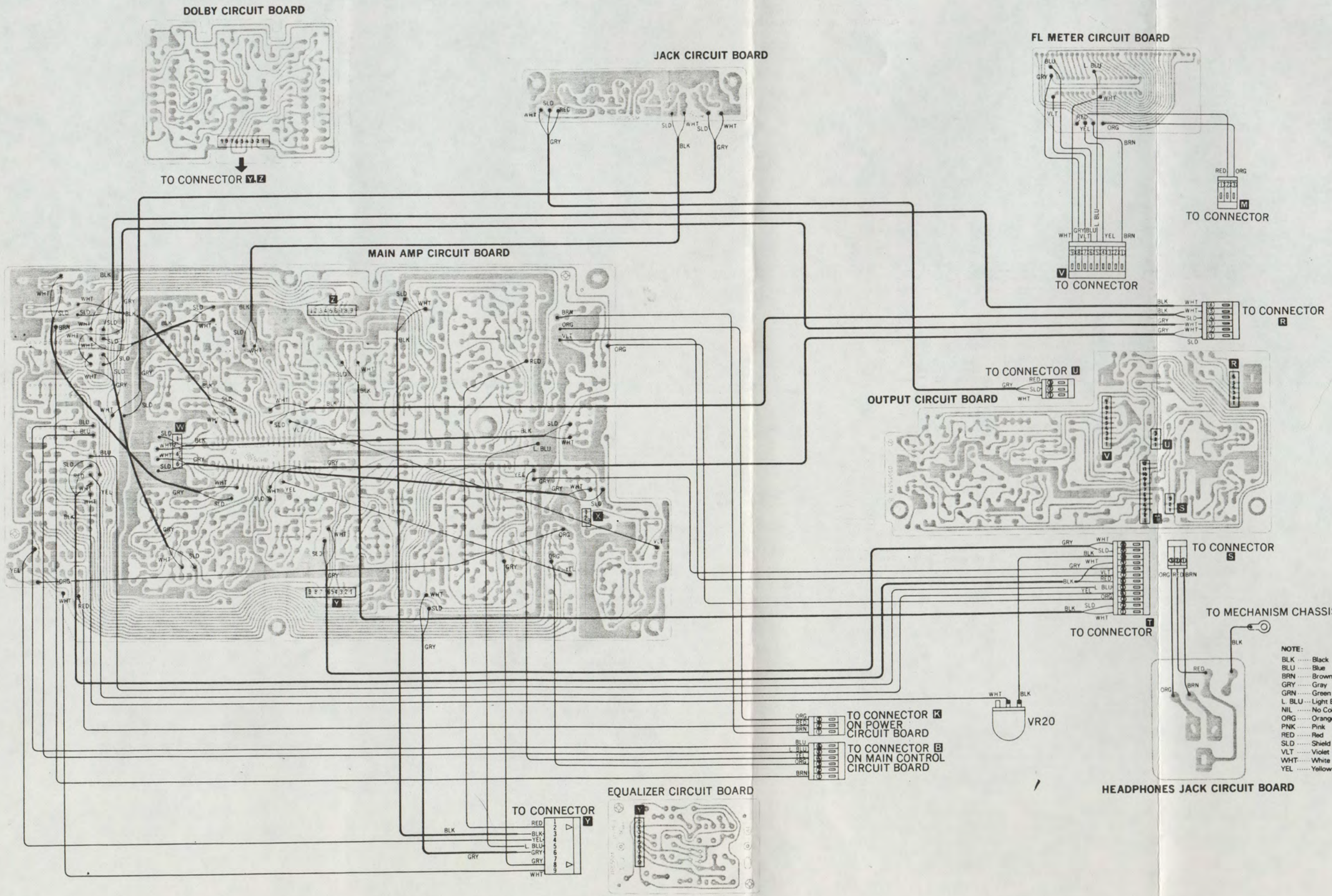
For Canada



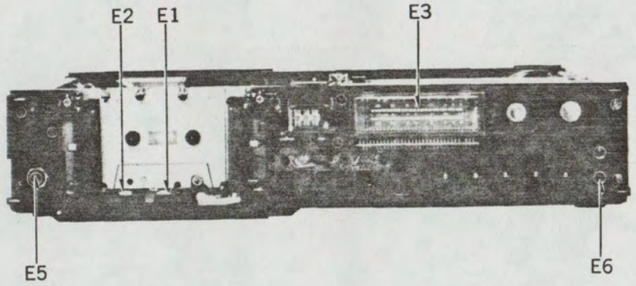
WIRING CONNECTION DIAGRAM

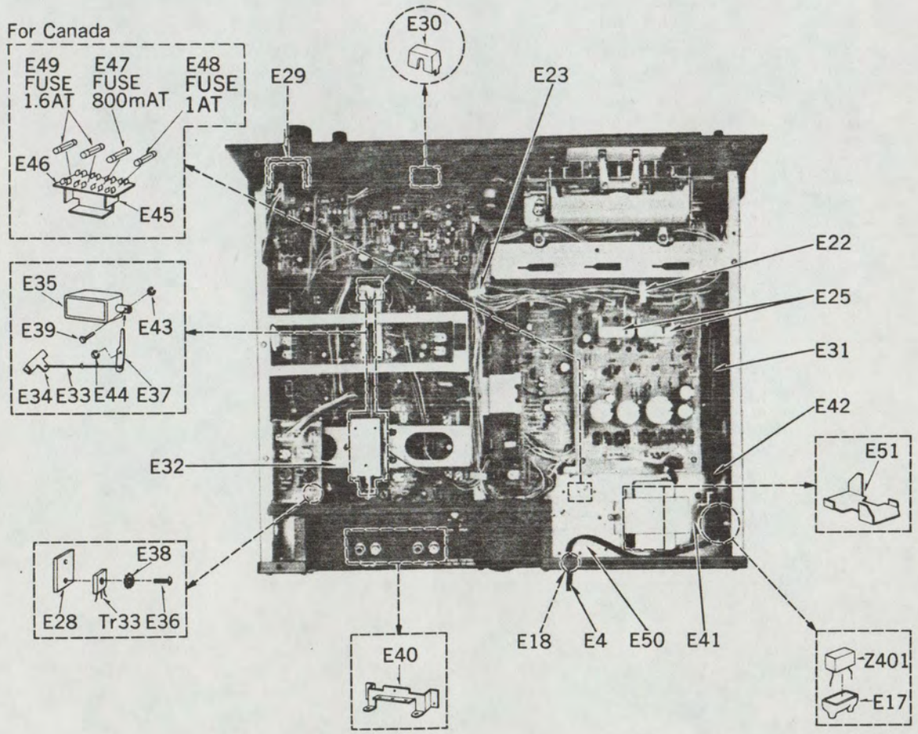


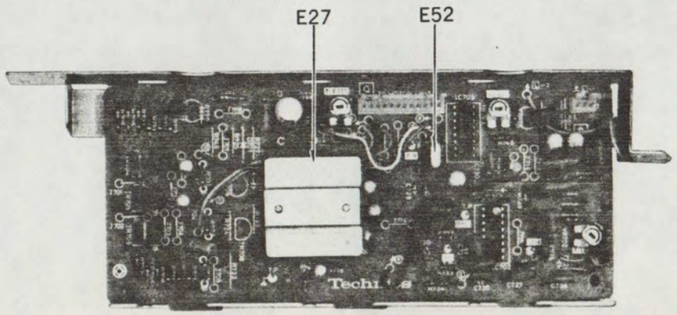
WIRING CONNECTION DIAGRAM

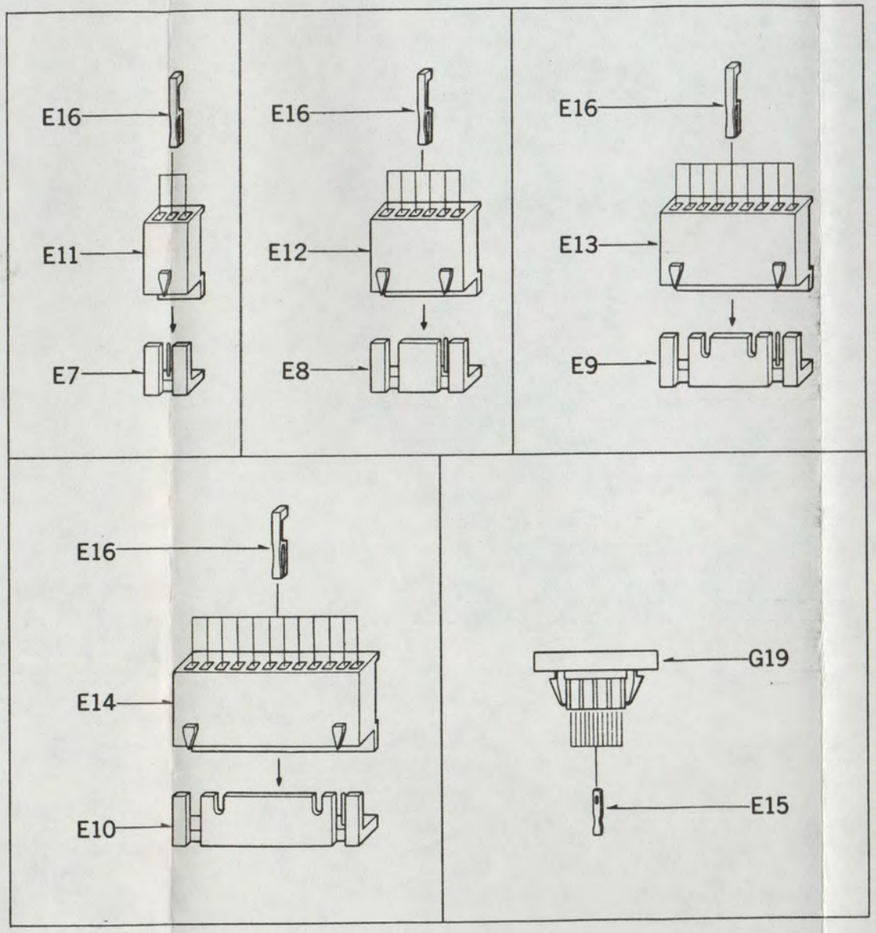


ELECTRICAL PARTS LOCATION



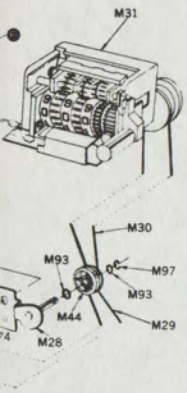


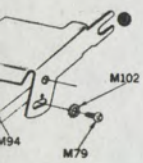


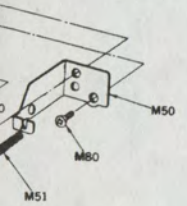


NOTE: ⚠ indicates that only parts specified by the manufacturer be used for safety.

Ref. No.		Part No.	Part Name & Description
		ELECTRICAL PARTS	
E1		WY1402AZ	Record/Playback Head
E2		QWY2133Z	Erase Head
E3		QSLS002RF	Fluorescent Level Meter
E4	⊠ ⚠	QFC1201M	AC Power Cord
※For U. S. A.			
	⊠ ⚠	QFC1201MA	〃
※For Canada.			
E5		QJA0249H	Headphones Jack
E6		QJA0444H	Microphone Jack
E7		QJP1921TN	3 Pin Post
E8		QJP1922TN	6 Pin Post
E9		QJP1923TN	9 Pin Post
E10		QJP1924TN	12 Pin Post
E11		QJS1921TN	3 Pin Connector
E12		QJS1922TN	6 Pin Connector
E13		QJS1923TNL	9 Pin Connector
E14		QJS1924TNL	12 Pin Connector
E15		QJT1053	Contact-A
E16		QJT1054	Contact-B
E17		QTW1118	Spark Killer Cover
E18		QTD1129	AC Cord Bushing
E22		QTD1244XN	Wire Clamper-R
E23		QTD1250XN	Wire Clamper-L
E25		QTH1088	Heat Sink
E27		QTH1136	〃
E28		QTH1118	〃
E29		QTS1423	Shield Plate
E30		QTS1424	〃
E31		QXR0385	Power Switch Rod Assembly
E32		QXA0661	Record/Playback Angle Assembly
E33		QBS1116	Record/Playback Rod
E34		QML3283	Record/Playback Lever
E35		QME0141	Record Plunger
E36		XSN26+8	Screw ⊕2.6×8
E37		QML3281	Record Lever
E38		XWC26	Lock Washer
E39		QMN2095	Plunger Pin
E40		QMA3300	Jack Angle
E41		QMA3297	Power Switch Angle
E42		QKJ0242A	Cap
E43		XUC25FT	Stop Ring 2.5φ
E44		XUC3FT	Stop Ring 3φ
E45	⊠	QMA3404	Fuse Angle
※For Canada.			
E46	⊠	QTF1039A	Fuse Holder
※For Canada.			
E47	⊠ ⚠	XBAQ0009	Fuse (800mAT)
※For Canada.			
E48	⊠ ⚠	XBAQ0004	Fuse (1AT)
※For Canada.			
E49	⊠ ⚠	XBAQ0010	Fuse (1.6AT)
※For Canada.			
E50		QMA3296A	Transformer Angle
E51		QMA2864	Transformer Reinforcement Angle
E52		QZE0012	X'tal







M81

Ref. No.	Part No.	Part Name & Description
		MECHANICAL PARTS
M1	QXK2029	Head Base Plate Assembly
M2	QBCA0008	Head Spring
M3	QTD1261	Head Wires Clamper
M4	QBP1733	Steel Ball Holder-A
M5	QDK1012	Steel Ball 2.5φ
M6	QMA3321	Lamp Cover
M7	QXL1168	Pressure Roller Lever Assembly
M8	QBT1490	Eject Lever Spring
M9	QBT1441	Pressure Roller Spring
M10	QXL1166	Pressure Roller Assembly
M11	QML3267	Pressure Roller Lever-1
M12	QXD0087	Reel Table
M13	QBC1272	Back Tension Spring
M14	QMG0054	Cassette Guide
M15	QMH2009	Steel Ball Holder-B
M16	QDK1006	Steel Ball 3φ
M17	QXL1189	Idler Lever Assembly
M18	QBF1260	Idler Felt
M19	QXI0101	Idler Assembly
M20	QBC1308	Idler Spring
M21	QXL1164	Brake Lever Assembly
M22	QML3273	Brake
M23	QBG1132	Stopper Rubber
M24	QXA0714	Detection Angle Assembly
M25	QBN1573	Detection Lever Spring
M26	QML3285	Detection Lever
M27	QXL1172	Lever-A Assembly
M28	QXA0712	Pulley Angle Assembly
M29	QDB0218	Counter Belt-A
M30	QDB0234	Counter Belt-B
M31	QXC0021	Tape Counter Assembly
M32	QXA0703	Angle-L Assembly
M33	QXL1191	Link Lever-A Assembly
M34	QXL1190	Link Lever-B Assembly
M35	QXA0706	Holder Angle-L Assembly
M36	QMH2027	Cassette Holder-L
M37	QXA0705	Holder Angle-R Assembly
M38	QMH2028	Cassette Holder-R
M39	QXA0704	Angle-R Assembly
M40	QKJ0245	Spacer-A
M41	QXH0286	Mechanism Cover
M42	QMZ1213	Spacer-B
M43	QBP1135	Spring Washer
M44	QDP1753	Connection Pulley
M45	QXL1165	Lever-B Assembly
M46	QXL1188	Eject Lever Assembly
M47	QDP1758	Roller
M48	QXA0713	Angle Assembly
M49	QML3284	Release Lever
M50	QMA3314	Connector Angle
M51	QBT1753	Playback Lever Spring
M52	QMA3311	Plunger Angle-L
M53	QME0141	Plunger
M54	QMN2095	Plunger Pin
M55	QXL1171	Plunger Lever-L Assembly
M56	QML3276	Plunger Lever
M57	QMA3322	Reinforcement Angle
M58	QXK2010	Capstan Motor Assembly
M59	MKCN22AE5	Reel Motor
M60	QXP0574	Motor Pulley Assembly

Ref. No.	Part No.	Part Name & Description
M60-1	XXE26D3FZ	Set Screw
M61	QMA3313	Motor Angle
M62	QXE0243	Plunger
M63	QMA3312	Plunger Angle-R
M64	QXH0276	Cassette Holding Cushion
M65	QXL1173	Lock Lever Assembly
M66	QML3282	Connector Lever
M67	QBT1553	Holder Spring-R
M68	QBT1405	Lever Spring
M69	QBT1713	Record Spring
M70	QXA0702	Connector Angle-R Assembly
M71	XSN2+6	Screw ⊕2×6
M72	QHQ1211	Head Adjustment Screw
M74	XSN26+4	Screw ⊕2.6×4
M75	XSN26+4BVS	Screw ⊕2.6×4
M76	XSS2+4	Screw ⊕2×4
M77	XSS3+4S	Screw ⊕3×4
M78	QHQ1185	Step Screw
M79	XSN3+5S	Screw ⊕3×5
M80	XSS3+6S	Screw ⊕3×6
M81	QHQ1182	Step Screw
M82	XSN2+3	Screw ⊕2×3
M83	XSN3+8S	Screw ⊕3×8
M84	XWA2	Spring Washer 2φ
M85	XWA26	Spring Washer 2.6φ
M86	XWA3	Spring Washer 3φ
M87	QBW2016	Poly Washer
M88	QBW2012	〃
M89	QBW2008	〃
M90	QBW2015	〃
M91	QBW2017	〃
M93	QBW2016	〃
M94	QBW2019	〃
M95	QBK7123	Fiber Washer
M96	XUC3FT	Stop Ring 3φ
M97	XUC25FT	Stop Ring 2.5φ
M98	XUC5FT	Stop Ring 5φ
M99	XUC2FT	Stop Ring 2φ
M100	XSN26+6	Screw ⊕2.6×6
M101	XWG26	Flat Washer
M102	XWC3	Lock Washer

SPECIFICATIONS

Pressure of pressure roller	400±30gr
Wow and flutter (Test tape ····· QZZCWAT)	Less than 0.04% (WRMS)

PC

Printed in Japan

Panasonic

Service Bulletin

Tape Recorder

Number: 82-1

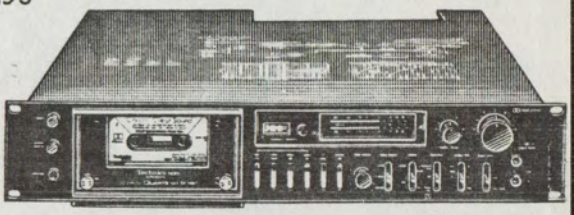
Date: January, 1982

PANASONIC COMPANY, DIVISION OF
MATSUSHITA ELECTRIC CORPORATION OF AMERICA
ONE PANASONIC WAY SECAUCUS NJ 07094

Model:

RS-M85, RS-M85MK2, RS-M95

Cassette Deck

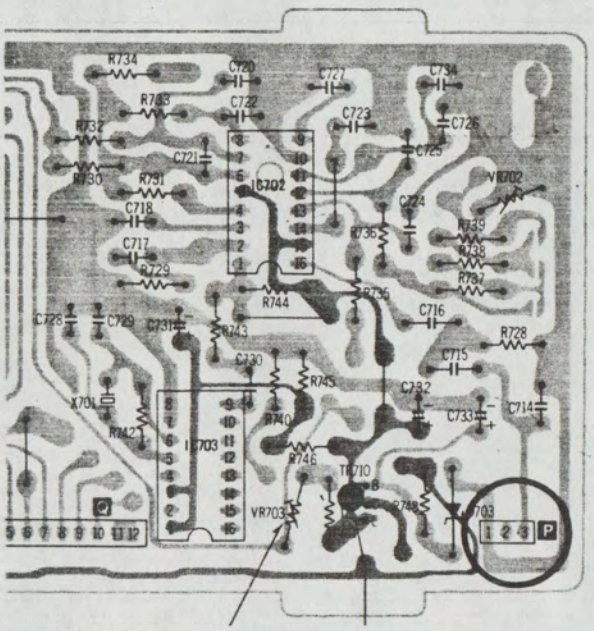


FILE THIS BULLETIN WITH YOUR SERVICE MANUAL.

SYMPTOM: Speed trouble. Capstan runs fast or erratic, trouble can be intermittent.

CAUSE: The 3-pin connector (labeled P) on the capstan motor circuit board becomes oxidized and makes poor contact.

REMEDY: Clean the pins of oxidation and clean the plug contacts/or you can replace the plug, Part No. QJP1921TN) and the socket, Part No. QJS1921TN.

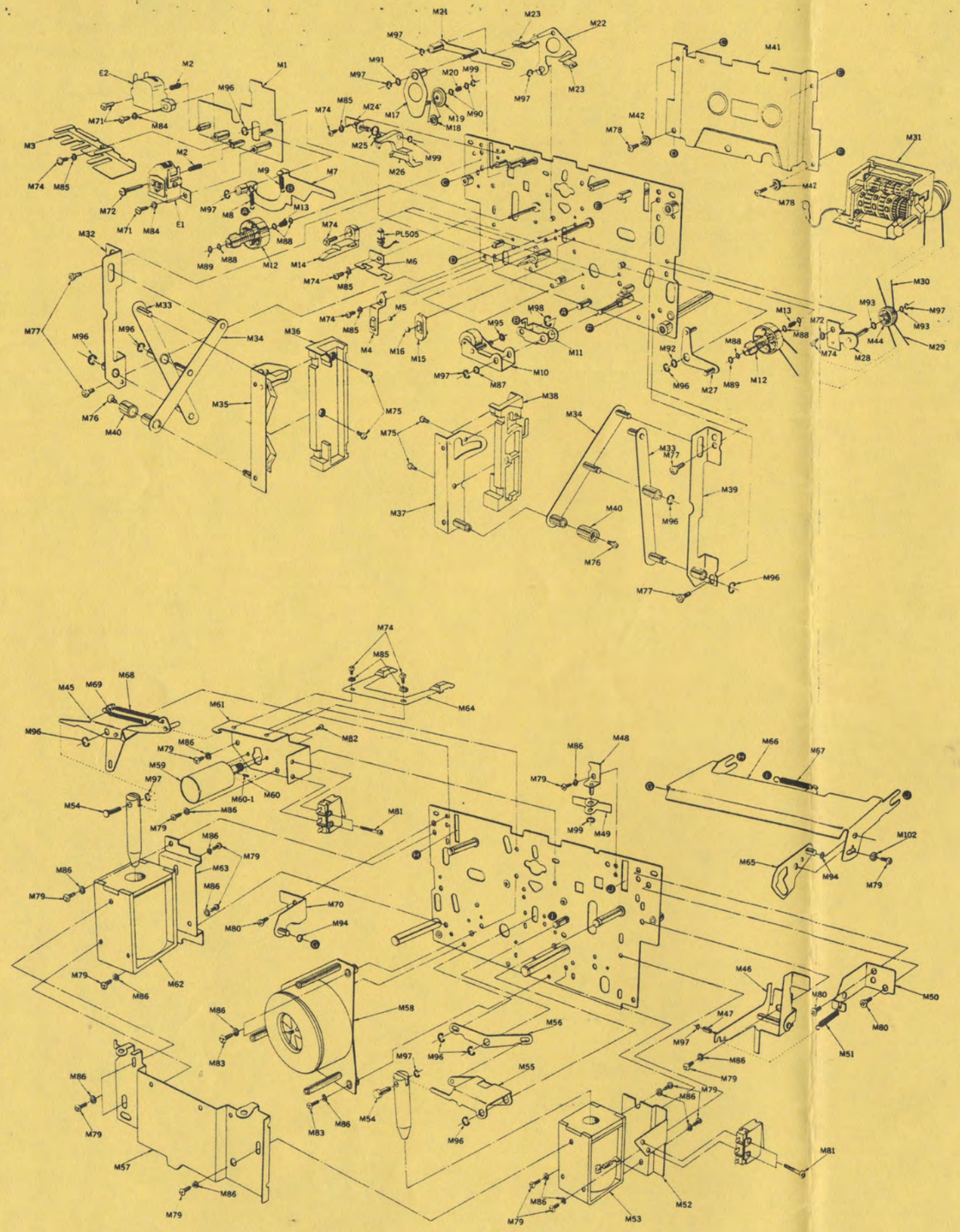


# # #

Dist: A,B1,12,W-453

RS-M85MK2

EXPLODED VIEWS



Ref. No.	Part No.	Part Name & Description
		MECHANICAL PARTS
M1	QXK2029	Head Base Plate Assembly
M2	QBCA0008	Head Spring
M3	QTD1261	Head Wires Clamper
M4	QBP1733	Steel Ball Holder-A
M5	QDK1012	Steel Ball 2.5φ
M6	QMA3321	Lamp Cover
M7	QXL1168	Pressure Roller Lever Assembly
M8	QBT1490	Eject Lever Spring
M9	QBT1441	Pressure Roller Spring
M10	QXL1166	Pressure Roller Assembly
M11	QML3267	Pressure Roller Lever-1
M12	QXD0087	Reel Table
M13	QBC1272	Back Tension Spring
M14	QMG0054	Cassette Guide
M15	QMH2009	Steel Ball Holder-B
M16	QDK1006	Steel Ball 3φ
M17	QXL1189	Idler Lever Assembly
M18	QBF1260	Idler Felt
M19	QXI0101	Idler Assembly
M20	QBC1308	Idler Spring
M21	QXL1164	Brake Lever Assembly
M22	QML3273	Brake
M23	QBG1132	Stopper Rubber
M24	QXA0714	Detection Angle Assembly
M25	QBN1573	Detection Lever Spring
M26	QML3285	Detection Lever
M27	QXL1172	Lever-A Assembly
M28	QXA0712	Pulley Angle Assembly
M29	QDB0218	Counter Belt-A
M30	QDB0234	Counter Belt-B
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M32	QXA0703	Angle-L Assembly
M33	QXL1191	Link Lever-A Assembly
M34	QXL1190	Link Lever-B Assembly
M35	QXA0706	Holder Angle-L Assembly
M36	QMH2027	Cassette Holder-L
M37	QXA0705	Holder Angle-R Assembly
M38	QMH2028	Cassette Holder-R
M39	QXA0704	Angle-R Assembly
M40	QKJ0245	Spacer-A
M41	QXH0286	Mechanism Cover
M42	QMZ1213	Spacer-B
M43	QBP1135	Spring Washer
M44	QDP1753	Connection Pulley
M45	QXL1165	Lever-B Assembly
M46	QXL1188	Eject Lever Assembly
M47	QDP1758	Roller
M48	QXA0713	Angle Assembly
M49	QML3284	Release Lever
M50	QMA3314	Connector Angle
M51	QBT1753	Playback Lever Spring
M52	QMA3311	Plunger Angle-L
M53	QME0141	Plunger
M54	QMN2095	Plunger Pin
M55	QXL1171	Plunger Lever-L Assembly
M56	QML3276	Plunger Lever
M57	QMA3322	Reinforcement Angle
M58	QXK2010	Capstan Motor Assembly
M59	MKCN22AE5	Reel Motor
M60	QXP0574	Motor Pulley Assembly

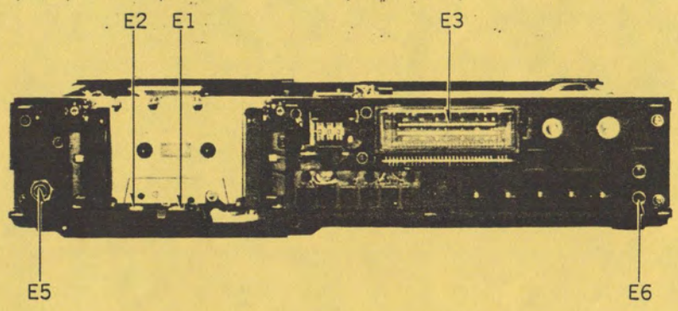
Ref. No.	Part No.	Part Name & Description
M60-1	XXE26D3FZ	Set Screw
M61	QMA3313	Motor Angle
M62	QXE0243	Plunger
M63	QMA3312	Plunger Angle-R
M64	QXH0276	Cassette Holding Cushion
M65	QXL1173	Lock Lever Assembly
M66	QML3282	Connector Lever
M67	QBT1553	Holder Spring-R
M68	QBT1405	Lever Spring
M69	QBT1713	Record Spring
M70	QXA0702	Connector Angle-R Assembly
M71	XSN2+6	Screw ⊕2×6
M72	QHQ1211	Head Adjustment Screw
M74	XSN26+4	Screw ⊕2.6×4
M75	XSN26+4BVS	Screw ⊕2.6×4
M76	XSS2+4	Screw ⊕2×4
M77	XSS3+4S	Screw ⊕3×4
M78	QHQ1185	Step Screw
M79	XSN3+5S	Screw ⊕3×5
M80	XSS3+6S	Screw ⊕3×6
M81	QHQ1182	Step Screw
M82	XSN2+3	Screw ⊕2×3
M83	XSN3+8S	Screw ⊕3×8
M84	XWA2	Spring Washer 2φ
M85	XWA26	Spring Washer 2.6φ
M86	XWA3	Spring Washer 3φ
M87	QBW2016	Poly Washer
M88	QBW2012	〃
M89	QBW2008	〃
M90	QBW2015	〃
M91	QBW2017	〃
M93	QBW2016	〃
M94	QBW2019	〃
M95	QBK7123	Fiber Washer
M96	XUC3FT	Stop Ring 3φ
M97	XUC25FT	Stop Ring 2.5φ
M98	XUC5FT	Stop Ring 5φ
M99	XUC2FT	Stop Ring 2φ
M100	XSN26+6	Screw ⊕2.6×6
M101	XWG26	Flat Washer
M102	XWC3	Lock Washer

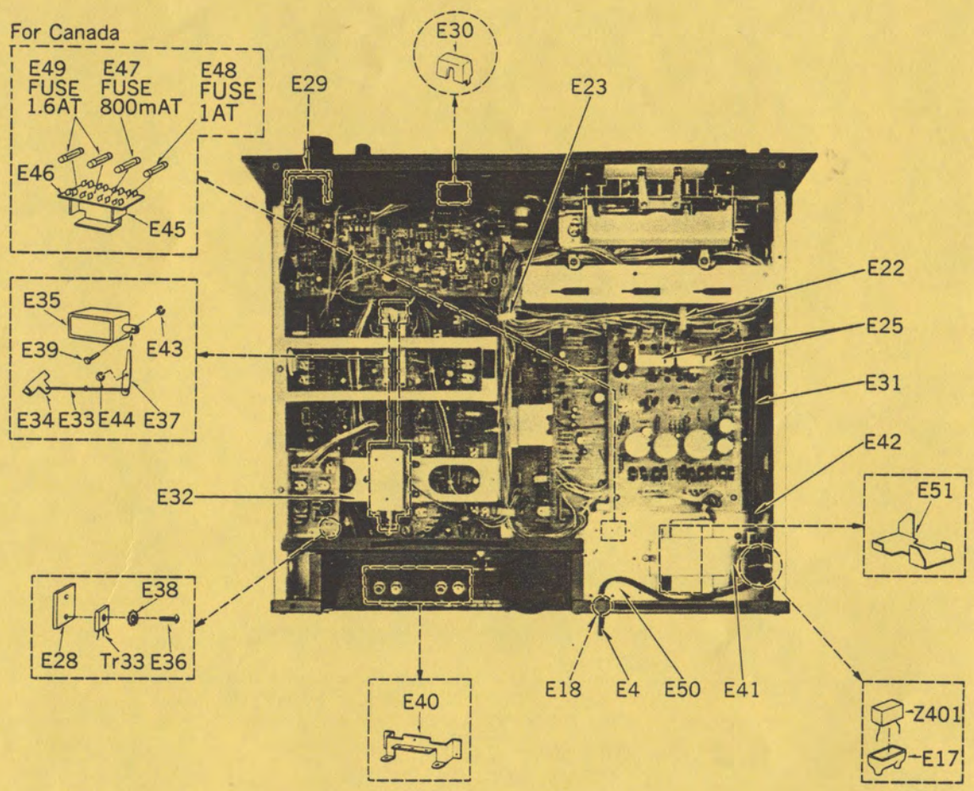
SPECIFICATIONS

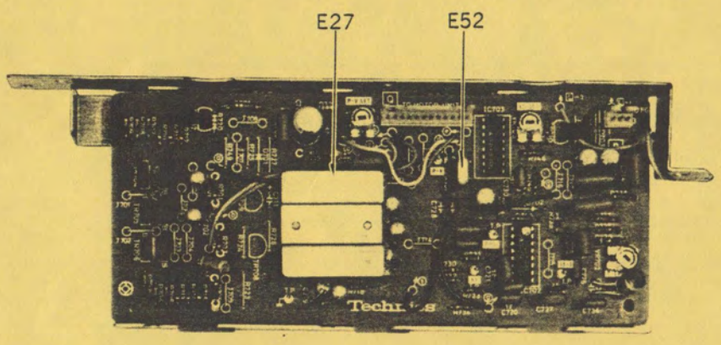
Pressure of pressure roller	400±30gr
Wow and flutter (Test tape ····· QZZCWAT)	Less than 0.04% (WRMS)

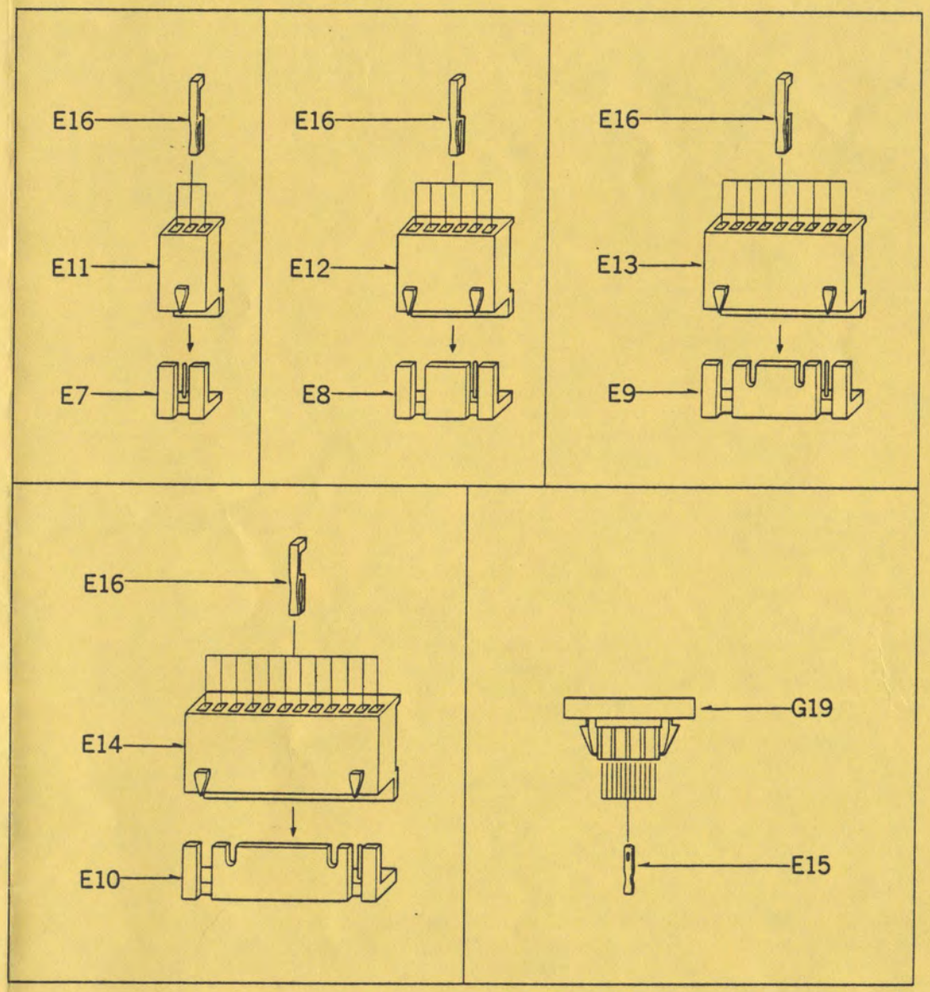
PC
Printed in Japan

ELECTRICAL PARTS LOCATION









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E2		QWY2133Z	Erase Head
E3		QSLS002RF	Fluorescent Level Meter
E4	Ⓟ ⚠	QFC1201M	AC Power Cord
※For U. S. A.			
	Ⓚ ⚠	QFC1201MA	〃
※For Canada.			
E5		QJA0249H	Headphones Jack
E6		QJA0444H	Microphone Jack
E7		QJP1921TN	3 Pin Post
E8		QJP1922TN	6 Pin Post
E9		QJP1923TN	9 Pin Post
E10		QJP1924TN	12 Pin Post
E11		QJS1921TN	3 Pin Connector
E12		QJS1922TN	6 Pin Connector
E13		QJS1923TNL	9 Pin Connector
E14		QJS1924TNL	12 Pin Connector
E15		QJT1053	Contact-A
E16		QJT1054	Contact-B
E17		QTW1118	Spark Killer Cover
E18		QTD1129	AC Cord Bushing
E22		QTD1244XN	Wire Clamper-R
E23		QTD1250XN	Wire Clamper-L
E25		QTH1088	Heat Sink
E27		QTH1136	〃
E28		QTH1118	〃
E29		QTS1423	Shield Plate
E30		QTS1424	〃
E31		QXR0385	Power Switch Rod Assembly
E32		QXA0661	Record/Playback Angle Assembly
E33		QBS1116	Record/Playback Rod
E34		QML3283	Record/Playback Lever
E35		QME0141	Record Plunger
E36		XSN26+8	Screw ⊕2.6×8
E37		QML3281	Record Lever
E38		XWC26	Lock Washer
E39		QMN2095	Plunger Pin
E40		QMA3300	Jack Angle
E41		QMA3297	Power Switch Angle
E42		QKJ0242A	Cap
E43		XUC25FT	Stop Ring 2.5ø
E44		XUC3FT	Stop Ring 3ø
E45	Ⓒ	QMA3404	Fuse Angle
※For Canada.			
E46	Ⓒ	QTF1039A	Fuse Holder
※For Canada.			
E47	Ⓒ ⚠	XBAQ0009	Fuse (800mAT)
※For Canada.			
E48	Ⓒ ⚠	XBAQ0004	Fuse (1AT)
※For Canada.			
E49	Ⓒ ⚠	XBAQ0010	Fuse (1.6AT)
※For Canada.			
E50		QMA3296A	Transformer Angle
E51		QMA2864	Transformer Reinforcement Angle
E52		QZE0012	X'tal