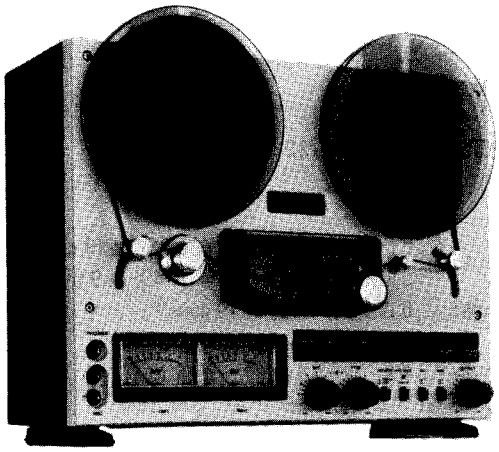
TEAC®



SERVICE MANUAL

X-3

Stereo Tape Deck

Effective: September, 1980 A00013

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1 SPECIFICATIONS AND SERVICE DATA

SPECIFICATIONS

Track System 4-Track Two-Channel Stereo
Head System 3 heads: erase, record, playback
Reel Size 7" and 5"
Tape Speed 19 cm/s (7-1/2 ips) and 9.5 cm/s (4-3/4 ips)
Inputs (level and impedance)
MIC: Specified input level: −60 dB (0.775 mV)/10 kohms
Min. input level: −70 dB (245 μV)
LINE IN: Specified input level: −12 dB (195 mV)/100 kohms
Min. input level: −22 dB (61.5 mV)
Outputs (level and impedance)
OUTPUT: Specified output level: −5 dB (436 mV)/10 kohms
Max. OUTPUT level: +1 dB (0.869 V)
PHONES: Specified OUTPUT level: −24 dB (48.9 mV)/8 ohms
Playback Equalization
19 cm/s: 3,180 μs + 50 μs (NAB)
9.5 cm/s: 3,180 μs + 90 μs (NAB)
Motors
1 DC Servo Capstan Motor
2 induction Reel Motor
Bias Frequency 100 kHz
Operating Position Vertical, horizontal
Power Requirements
100/117/220/240 V AC, 50/60 Hz, 85 W
(General Export Model)
117 V AC, 60 Hz, 70 W (USA/Canada Model)
220 V AC, 50 Hz, 85 W (Europe Model)
240 V AC, 50 Hz, 85 W (UK/AUS Model)
Weight 14 kg (30-14/16 lbs) net

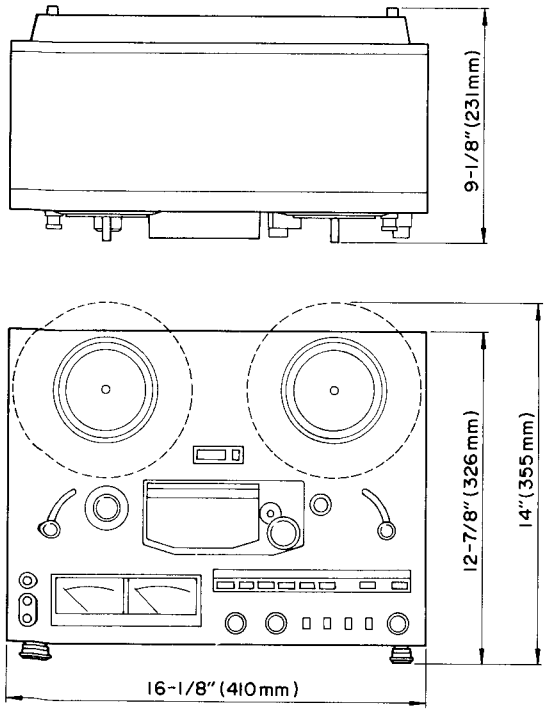


Fig. 1-1 Dimensions

SERVICE DATA

MECHANICAL

Tape Speed Deviation 3,000 Hz ±30 Hz
Tape Speed Drift 20 Hz
Wow and Flutter
Playback: 0.06% (WRMS), 0.12%(RMS) at 19 cm/s
0.10% (WRMS), 0.15% (RMS) at 9.5 cm/s
Record/Playback: 0.08% (WRMS) at 19 cm/s
0.15% (WRMS) at 9.5 cm/s
Pinch Roller Pressure 1.8 ~ 2.2 kg (3.97 ~ 4,85 (lbs)
Reel Torque (Play mode)
Take-up 330 ~ 470 g-cm (4.58 ~ 6.53 oz-inch)
Back tension 220 ~ 280 g-cm (3.06 ~ 3.89 oz-inch)
Brake Torque
Forward direction: 1000 ~ 1300 g-cm (13.9 ~ 18.1 oz-inch)
Reverse direction: 500 ~ 700 g-cm (6.94 ~ 9.72 oz-inch)
Left/right deviation: 200 g-cm (2.78 oz-inch)
Fast Winding Time 140 seconds or less for 550 m (1800 feet)

ELECTRICAL

Frequency Response
Playback:

19 cm/s	40 Hz	+3, −3 dB	9.5 cm/s	40 Hz +3, −3 dB
	400 Hz	0 dB (Ref.)		400 Hz 0 dB (Ref.)
	20 kHz	+3, −3 dB		14 kHz +3, −3 dB

Overall: (BIAS sw: 1, EQ sw: 1)

19 cm/s	40 Hz	+3, −3 dB	9.5 cm/s	40 Hz +3, −3 dB
	400 Hz	0 dB (Ref.)		400 Hz 0 dB (Ref.)
	16 kHz	+3, −3 dB		10 kHz +3, −3 dB
	20 kHz	+3, −4 dB		14 kHz +3, −4 dB

Signal to Noise Ratio
Playback: 49 dB min. at 19 cm/s
47 dB min. at 9.5 cm/s
Overall: 47 dB min. at 19 cm/s
45 dB min. at 9.5 cm/s
Erase efficiency 70 dB min. at 1 kHz (measured with input 10 dB higher than the specified input level)
Channel Separation 50 dB min. at 1 kHz
Adjacent Track Crosstalk 40 dB min. at 125 Hz
Total Harmonic Distortion 1.5% or less at 1 kHz

NOTES:
- Improvements may result in SPECIFICATIONS AND SERVICE DATA changes.
- Value of "dB" in the data refers to 0 dB (0.775 V), except where specified.

CAUTION
⚠ Parts marked with this sign are safety critical components. They must always be replaced with identical components – refer to the TEAC parts list and ensure exact replacement.

2 MECHANICAL ADJUSTMENTS AND CHECKS

2-1 CAPSTAN THRUST CLEARANCE

1. There must be a clearance of 0.1 to 0.3 mm between the capstan shaft and the thrust plate. Check to see that the clearance is within this range. If not, loosen the two screws on the flywheel, adjust the clearance, and retighten the screws.

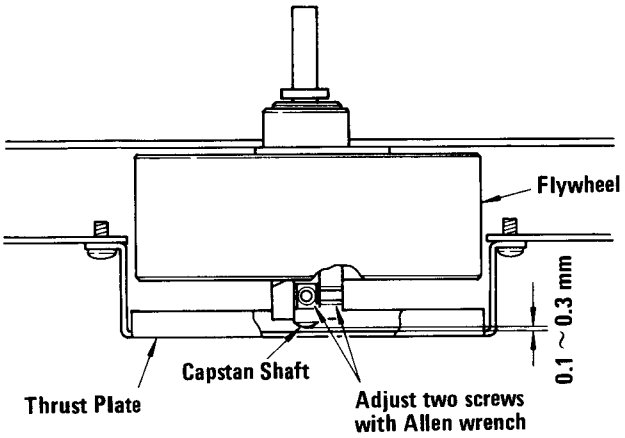


Fig. 2-1

2-2 SHUT-OFF SWITCH POSITION

1. There must be a clearance of 1 to 1.5 mm between the cam and actuator(A) when the microswitch is off, and 0.5 mm between the micro switch and actuator(B) when the microswitch is on. Check to see that the clearance is within these values. If not, adjust as necessary.

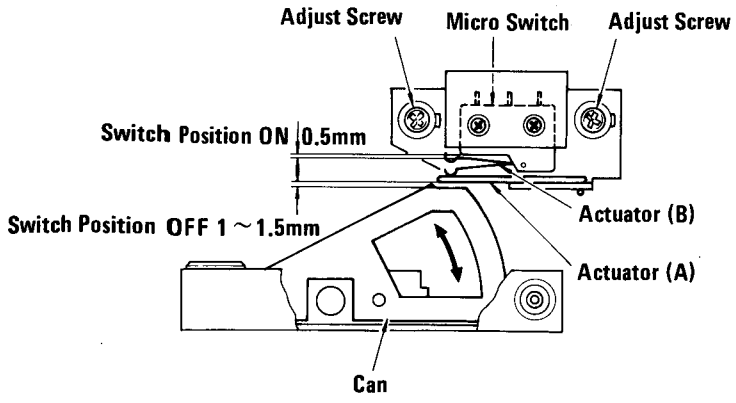


Fig. 2-2

2-3 BRAKE MECHANISM

NOTE: Be sure that the power is turned off prior to making any adjustments to the brakes.

1. Screw(A) for the left brake (as viewed from the front) must be adjusted so that there is a clearance of 1 mm between lever(C) and lever(E). Screw(A) for the right brake must then be adjusted so that lever(B) is parallel to lever(C).
2. Push the plunger until there is contact at (a); i.e., until the clearance has been eliminated, but make sure that the plunger is not pushed so strongly that the levers (E), (C), and (B) are deflected – they must remain in a horizontal plane.
3. Position the solenoid housing, while the plunger is pushed as described in step #2 above, so that the gap at (f) (the distance between the leftmost edge of the plunger and the leftmost edge of the solenoid housing) is between 11 to 12 mm. When the solenoid housing is so positioned, the plunger should be able to be deflected between 1 to 2 mm when pushed strongly.

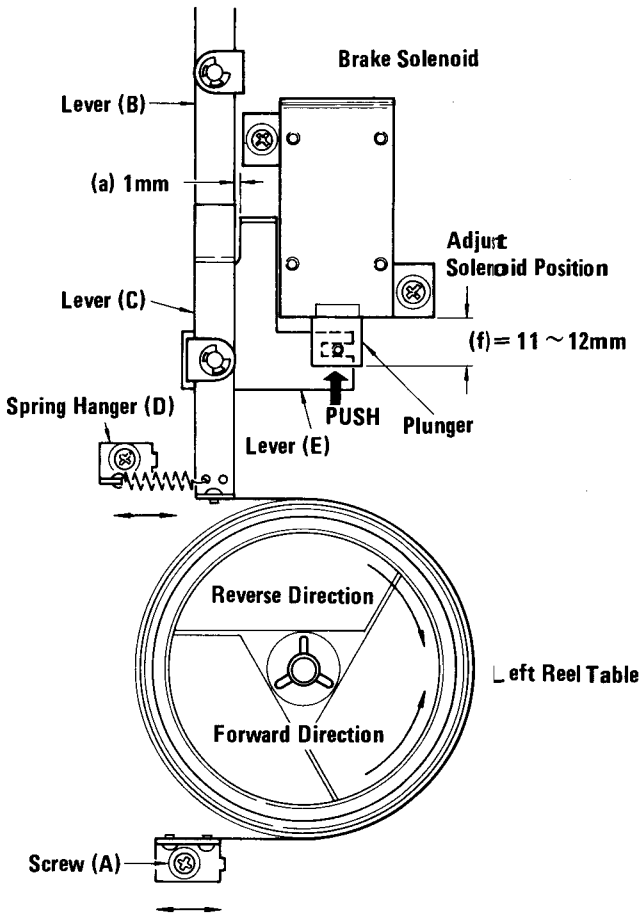
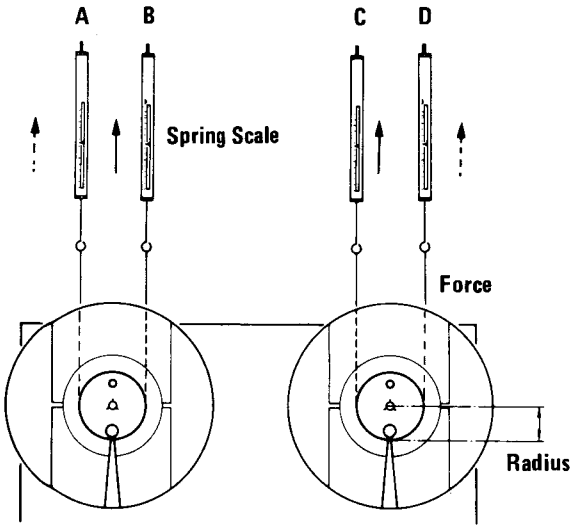


Fig. 2-3

2-4 BRAKE TORQUE

NOTE: Before making any brake adjustments or measurements, make sure the power is off.

1. Mount an empty 7" reel onto either reel table and attach a spring scale to the reel with a string.
2. Smoothly pull the scale away from the reel under test and note the torque value when the reading on the scale is steady. The proper torque values are given in the chart below.
3. Follow steps 1 and 2 for each measuring condition; i.e., (A) through (D) in Fig. 2-4.
4. If the forward-direction torque is not correct, change the hooking position of the spring hanger (reference (D) in Fig. 2-3) for the corresponding brake requiring adjustment. If, after the forward-direction torque has been properly adjusted and the reverse-direction torque is not correct, or the forward-direction torque is still not correct, check to see if the brake felt pad is worn, and also check that the brake mechanism is properly aligned as explained in Section 2-3, "Brake Mechanism". If necessary, replace the entire reel table.



↑ Forward direction (B) (C)	1000 – 1300 g-cm (13.9 – 18.1 oz-inch)
↑ Reverse direction (A) (D)	500 – 700 g-cm (6.94 – 9.72 oz-inch)
Left/Right deviation	200 g-cm (2.78 oz-inch)

Torque calculating formulas:

1. Torque (in g-cm or oz-inch)
   = Force or Weight (in g or oz) x Radius (in cm or inch)
2. Conversion of g-cm to oz-inch:
   g-cm x 0.0139 = oz-inch

Fig. 2-4

2-5 REEL MOTOR TORQUE

(See Fig. 2-5)

NOTE: For torque calculation, refer to the formulas above.

2-5-1 TAKE UP TORQUE

1. Hold the right tension arm up using a rubber band.
2. Mount an empty 7" reel onto the take-up (right) reel table, and attach a spring scale to the reel with a string.
3. Place the deck in the play mode.
4. Allow the rotation of the reel to slowly pull the scale toward the reel.
5. Hold the spring scale with enough force to allow steady reading.
6. The proper value is between 330 g-cm (4.58 oz-inch) to 470 g-cm (6.53 oz-inch).
7. There is no specially-provided adjustment for take-up torque, so if correction is needed, repair or replace the defective part and/or circuit.

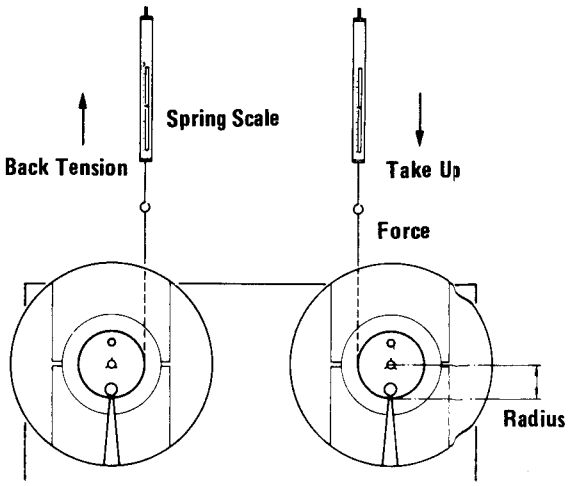


Fig. 2-5

2-5-2 BACK TENSION

1. Hold the right tension arm up using a rubber band.
2. Mount an empty 7" reel onto the supply (left) reel table, and attach a spring scale to the reel with a string.
3. Place the deck in the play mode.
4. Using a steady, smooth motion, pull against the motor torque to draw the scale away from the reel.
5. After making sure that the reel motion is smooth (the string should not be rubbing against the reel flanges), note the value indicated on the scale.
6. The proper value is between 220 g-cm (3.06 oz-inch) and 280 g-cm (3.69 oz-inch).
7. If necessary, adjust the slider of the resistor (R802) until the proper torque value is obtained. See Fig. 2-6.

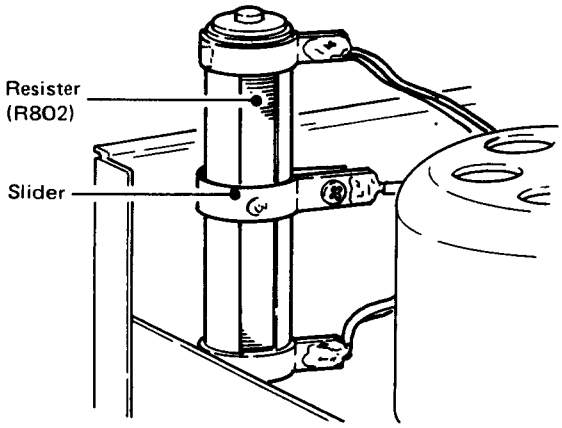


Fig. 2-6

2-6 PINCH ROLLER PRESSURE

1. Hold the right tension arm using a rubber band, string, etc.
2. Place the deck in the play mode without threading any tape.
3. Attach a spring scale to the pinch roller as shown in Fig. 2-7.
4. Pull the pinch roller away from the capstan shaft (on a plane intersecting the center of the capstan shaft and the pinch roller) until the capstan shaft and the pinch roller are separated.
5. Ease pressure on the scale until the pinch roller just begins to turn. The scale should then be read 1.8 kg to 2.2 kg (3-15/16 lbs to 4-7/8 lbs).

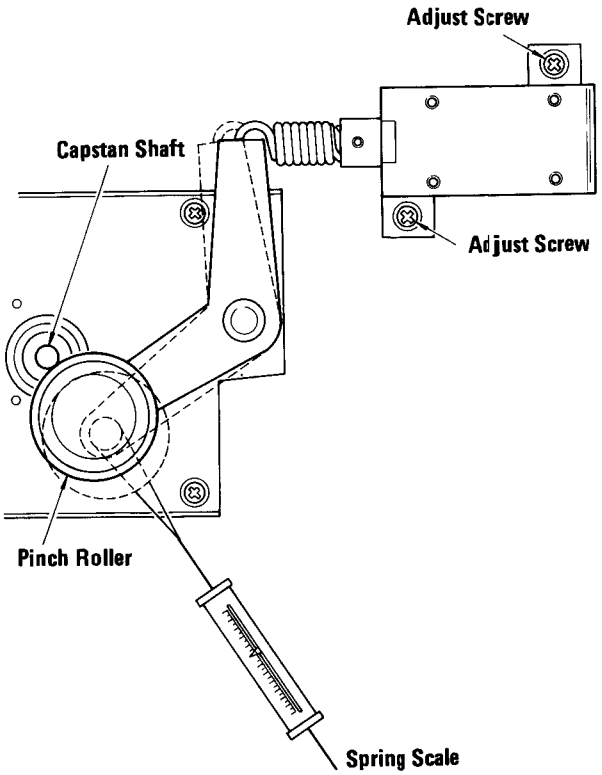


Fig. 2-7

2-7 REEL TABLE HEIGHT

1. As a general reference, the height of the reel table should roughly correspond to a distance of 38 mm (1-7/16") between the chassis of the deck and the rubber mat on the reel table. If checking reveals any large deviation from this value, loosen the two adjustment screws on the reel table, adjust the height, and retighten the screws.
2. For fine-adjustment, check that, while in fast-forward (forward direction) or rewind (reverse direction) modes starting at the beginning of the tape, the tape does not touch the upper or lower reel flanges. If it does, fine-adjust accordingly.

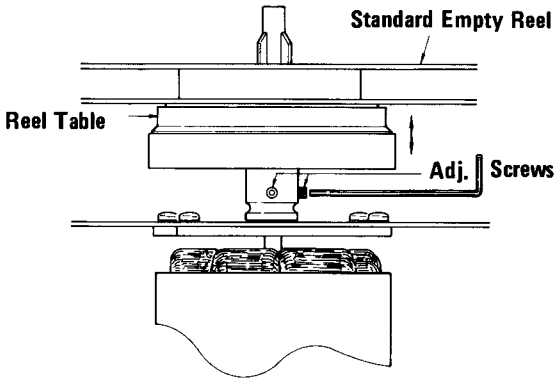


Fig. 2-8

2-8 TAPE SPEED

1. Connect a frequency counter to either OUTPUT jack. (See Fig. 2-9).
2. Load a TEAC YTT-2003 test tape containing a 3000-Hz test tone, and set the SPEED switch to HIGH (19 cm/sec or 7-1/2 ips).
3. Play the middle of the test tape and adjust the HIGH speed trimmer resistor until the frequency counter indicates a reading of 3000 Hz. See Fig. 2-10.(CAUTION: Use an insulated screwdriver to prevent shorting.)
4. Playing the tape at both the beginning and the end, check that the tape speed does not vary any more than the limits prescribed in the specifications, so that there is never a total deviation of more than ±30 Hz from the 3000-Hz test tone, nor a drift of more than 20 Hz at any given time.
5. Using a TEAC YTT-2002 test tape, repeat steps #3 and #4 above with the SPEED switch set to LOW (9.5 cm/sec or 3-3/4 ips). In step #3, the speed may be adjusted for the proper initial setting by using the LOW speed trimmer resistor.

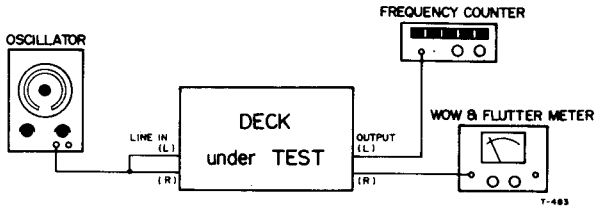


Fig. 2-9

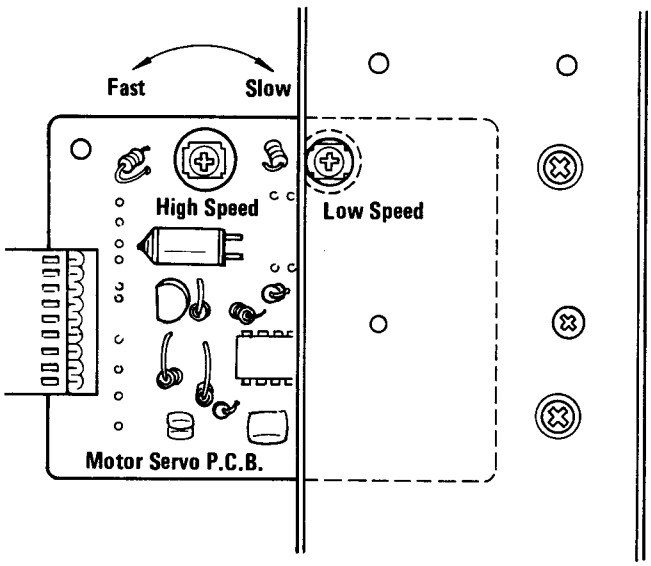


Fig. 2-10

2-9 WOW AND FLUTTER

(See Fig. 2-9)

PLAYBACK

1. Connect a wow-and-flutter meter to the deck as shown in Fig. 2-9.
2. Load a TEAC YTT-2003 test tape to check the wow and flutter when the deck is set to HIGH speed, or a YTT-2002 test tape to check when set to LOW speed.
3. Play the beginning and end of the respective test tape for each speed setting. The measured wow and flutter should be at least 0.06% (WRMS) and 0.12% (RMS) for the HIGH speed setting and at least 0.10% (WRMS) and 0.15% (RMS) for the LOW speed setting.

OVERALL

4. Load a TEAC YTT-8013 test tape and record a 3000-Hz signal on it in both HIGH and LOW speed settings and at the beginning and end of the tape, and while recording the signal, simultaneously monitor the signal from the play head by setting the MONITOR switch to the TAPE position (raised position).
5. The wow-and-flutter meter should indicate a reading of no more than 0.08% (WRMS) in the HIGH speed setting and no more than 0.15% (WRMS) in the LOW speed setting.

2-10 HEAD AND TAPE PATH ALIGNMENT

2-10-1 HEAD CONFIGURATION

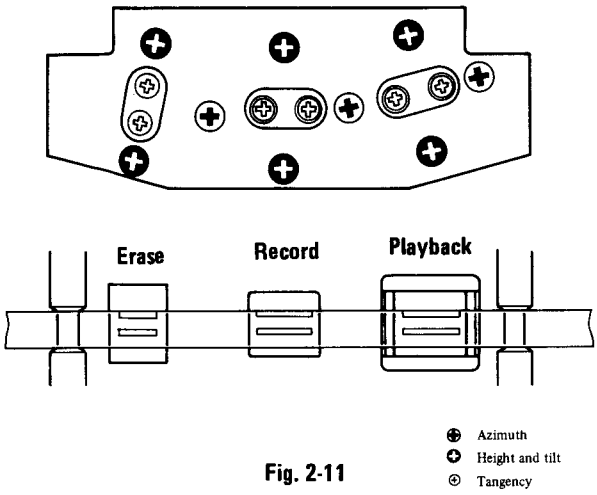


Fig. 2-11

2-10-2 ALIGNMENT CONDITIONS

Adjust each head to satisfy each of the following conditions:

Condition	Example of Mis-alignment
TILT The head surface should be parallel to the tape guide pin surface.	
AZIMUTH The gap of the head core should be perpendicular to the tape path.	
HEIGHT The upper edge of the upper core of the head should be level with the upper edge of the tape.	
TANGENCY The dotted line should be perpendicular to the surface of the tape.	

Fig. 2-12 Head regulation elements

2-10-3 ALIGNMENT PROCEDURE

1. By visual observation, align the erase, record, and playback heads so that the proper tilt is obtained for each.
2. Coarse-adjust the azimuth of the erase, record, and playback heads by observing each without a tape threaded.
3. Load a TEAC YTT-8013 test tape and play it.
4. The erase head core should protrude 0.1 mm above the tape while in motion. If not, readjust the azimuth and recheck the tilt and height. Adjust as necessary.
5. Fine-adjust the height of the record and playback heads until the brass-colored spacers appear above the moving tape. (The brass-colored spacers appear about as thin as a pencil line.) When adjusting, make sure all the screws are turned proportionately so that the tilt and azimuth previously adjusted is not altered.
6. If required, make a coarse adjustment of any head requiring tangency correction, while the tape is running.

2-11 FREQUENCY AND VOLTAGE CONVERSION

General Export Models Only:

If it is necessary to change the frequency and line voltage settings, follow the instructions below:

ALWAYS DISCONNECT THE POWER LINE CORD BEFORE MAKING THESE ADJUSTMENTS.

1. Remove the metal housing* covering the top and sides of the deck by unscrewing the three screws from each side.
2. Locate the voltage selector on the right (as seen from the front). The frequency selectors are located near each motor as illustrated.

Voltage Conversion:

3. Turn the slotted center post of the selector with a screwdriver or coin as illustrated until the proper setting is obtained.

Frequency Conversion:

4. For each reel motor, loosen the screws on the respective frequency selector bar and jumper the bar to the terminal corresponding to the AC line frequency of your area, then retighten the screws.
5. Replace the housing and retighten the screws.

* Decks in some areas have a wooden case which can be removed by unscrewing the screws on the bottom (feet) and sides.

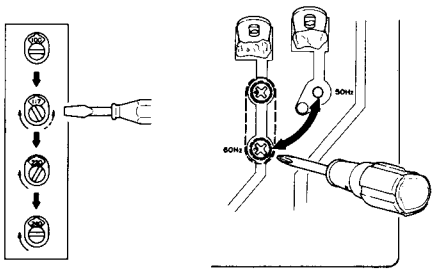


Fig. 2-13

2-12 LUBRICATION

Oiling is needed after every 1,000 hours of operation or once a year if the deck is used infrequently. TEAC spindle oil (from TEAC TZ-255 oil kit), Mobil D.T.E. Oil Light, and similar types of oil are recommended. Lubrication is normally not necessary except at the points shown.

1. Place the deck in a horizontal position.
2. Apply a few drops of oil to the respective spindles shown, except the capstan and the reel motors. Spread the oil evenly on the spindle surfaces using a cotton cloth or similar applicator.
3. For the capstan and reel motors, apply a few drops to the indicated positions but do not spread the oil.
4. After oiling all points, operate the deck for 1 to 2 hours until the oil is thoroughly absorbed.

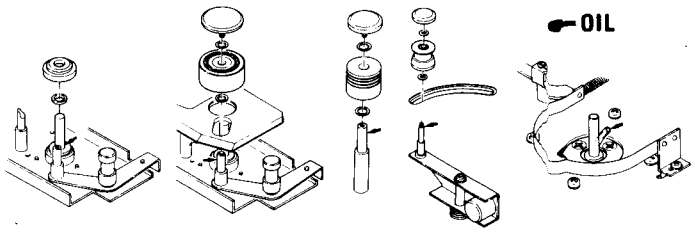


Fig. 2-14

3 ELECTRICAL ADJUSTMENTS AND CHECKS

NOTES:
1. Clean and demagnetize the entire tape path prior to making any adjustments or checks.
2. Make sure that the deck is properly set for the voltage in your area.
3. Adjustments and checks are generally done in order of L-ch, then R-ch. Double reference numbers indicate L-ch/R-ch.
   (Example: R121/R221)
4. The value of "dB" refers to 0 dB (0.775 V). If an AC voltmeter calibrated to 0 dB (1 V) is used, compensation should be made accordingly.
5. An AC voltmeter with an input impedance of 1 M ohms or more must be used.

3-1 POWER SUPPLY CHECK

1. Connect a DC voltmeter to pin 15 of U101 on the Record/Play back PCB.
2. The DC voltage should be +12 V. (See Fig. 3-1)

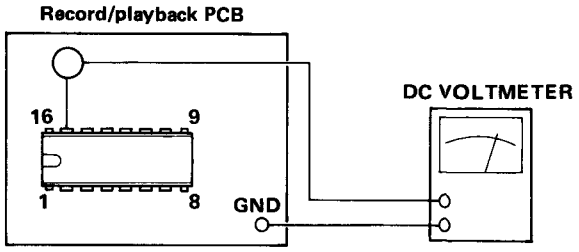


Fig. 3-1

3-2 MONITOR PERFORMANCE (1)

ITEM		CONNECTION	MODE/ INSTRUCTION	SIGNAL SOURCE	ADJUST (or CHECK)	OUTPUT	REMARKS
1. MONITOR output level	1-1	Fig. 3-2	MONITOR sw.: SOURCE OUTPUT cont.:MAX LINE cont: MAX	400 Hz/–22 dB (61.5 mV)	R121/R221	+1 dB (869 mV)	LINE min. input level
	1-2	"	"	"	OUTPUT cont. If channels do not match re-adjust R121 or R220 to correspond to the higher OUTPUT.	–5 dB (436 mV)	IMPORTANT: After setting, do not change the OUTPUT control, always leave if in this position.
2. VU meter	2-1	Fig. 3-2	MONITOR sw.: SOURCE LINE cont.: MAX	400 Hz/–22 dB (61.5 mV)	R117/R217	0 VU on VU Meter	

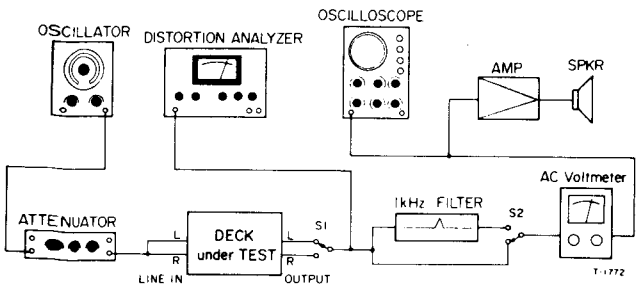


Fig. 3-2 Basic connection

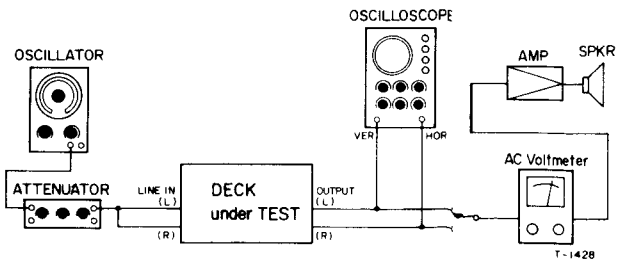


Fig. 3-3 Connection

TEAC test tape: YTT-1002: For playback alignment (9.5 cm/s or 3-3/4 ips)
YTT-1003: For playback alignment (19 cm/s or 7-1/2 ips)
YTT-8013: For recording alignment (blank)

3-3 PLAYBACK PERFORMANCE

ITEM		CONNECTION	MODE/ INSTRUCTION	SIGNAL SOURCE	ADJUST (or CHECK)	OUTPUT	REMARKS
3. Playback head azimuth	3-1	Fig. 3-3	MONITOR sw.: TAPE SPEED sw.: HIGH	YTT-1003 (16 kHz/–10 dB)	Azimuth. adjust screws on head (Fig. 2-11)	Phase: within 45° on oscilloscope (Fig. 3-4)	
4. Playback level	4-1	Fig. 3-2	OUTPUT cont.: spec. position SPEED sw.: HIGH Playback mode	YTT-1003 (400 Hz/0 dB)	R105/R205	–5 dB (436 mv)	
5. VU meter	5-1	Fig. 3-2	"	YTT-1003 (400 Hz/0 dB)	Check	0 VU ±0.5 VU	
6. Frequency response	6-1	Fig. 3-2	MONITOR sw.: TAPE SPEED sw.: HIGH	YTT-1003	R111/R211	40 Hz~20 kHz ±3 dB	
	6-2	"	" SPEED sw.: LOW	YTT-1002	R113/R213	40 Hz~14 kHz ±3 dB	
7. Signal-to-noise ratio	7-1	Fig. 3-2	Playback mode Use fully erased tape (use bulk tape eraser)	YTT-8013	Check	HIGH: 49 dB (min) ratio LOW: 47 dB (min) ratio	Ratio of specified OUTPUT signal (–5 dB) to inherent noise level.

3-4 MONITOR PERFORMANCE (2)

8. MIC Input level	8-1	Fig. 3-2 but LINE IN → MIC	LINE cont.: MIN MIC cont.: MAX	400 Hz/–70 dB (245 μV)	Check	–5 dB ±3 dB (308 mV to 615 mV)	
9. PHONES output level	9-1	Fig. 3-5	LINE cont.: MAX MIC cont.: MIN MONITOR sw.: SOURCE	400 Hz/–22 dB (61.5 mV)	Check	–24 dB ±3 dB (at PHONES jack) (35 mV to 69 mV)	8Ω load

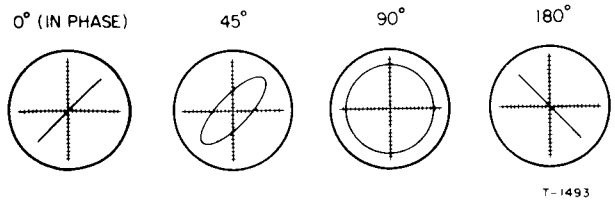


Fig. 3-4 Confirming phase relationship

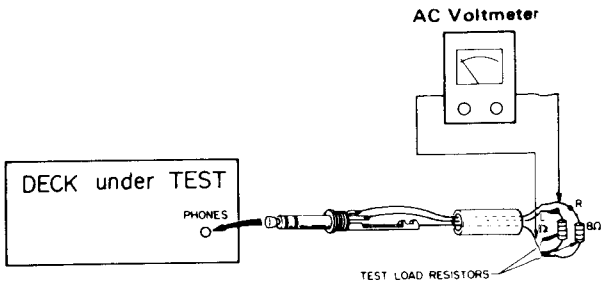


Fig. 3-5 Connection

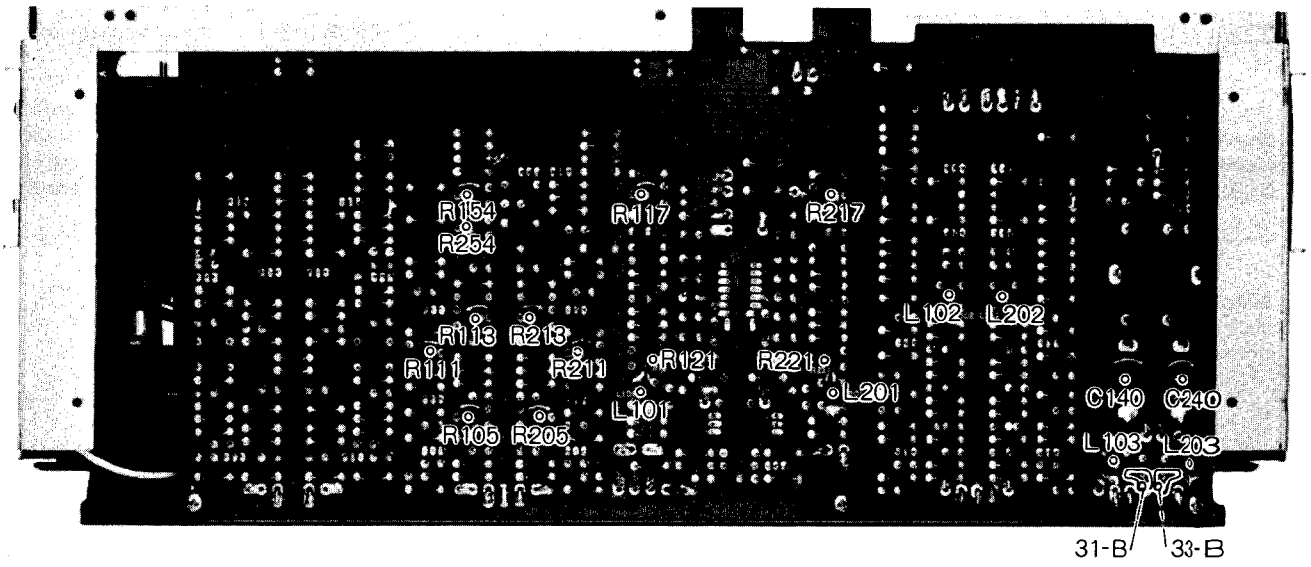
3-5 RECORDING PERFORMANCE

TEAC test tape: YTT-8013: For recording alignment (blank)

ITEM		CONNECTION	MODE/ INSTRUCTION	SIGNAL SOURCE	ADJUST (or CHECK)	OUTPUT	REMARKS
10. Bias level	10-1	AC voltmeter between BIAS TRAP TP(31-B or 33-B) & GND	Rec-pause mode.	—	L103/L203	Min. reading on VTVM	Bias Frequency: 100 kHz ±5 kHz
	10-2	Fig. 3-2	Rec-pause mode. MONITOR sw.: TAPE	—	L101/L201	Min. reading	
11. Record head azimuth	11-1	Fig. 3-3	MONITOR sw.: TAPE Record mode	10 kHz/–42 dB (6.15 mV)	Azimuth adjust screws of Head	PHASE: within 45° on oscillo-scope	Fig. 3-4
12. Record Bias	12-1	Fig. 3-2	Test Tape: YTT-8013 SPEED sw.: LOW BIAS sw.: 1 EQ sw.: 1 MONITOR sw.: TAPE	7 kHz/–22 dB (61.5 mV)	C140/C240	Overbias value 3 dB~4 dB (from peak)	
13. Record level	13-1		Test tape: YTT-8013 SPEED sw.: LOW BIAS sw.: 1 EQ sw.: 1 MONITOR sw.: TAPE	400 Hz/–22 dB (61.5 mV)	R154/R254	–5 dB (436 mV)	Spec. Record condi-tion
14. Frequency responce (BIAS. EQ sw. 1)	14-1	Fig. 3-2	SPEED sw.: LOW Spec. REC con-dition	40 Hz~14 kHz/ –42 dB (61.5 V)	L102/L202	40 Hz~10 kHz ±3 dB 10 kHz~14 kHz +3 dB, –5 dB	Reference 400 Hz
	14-2	"	SPEED sw.: HIGH "	40 Hz~20 kHz/ –32 dB (19.5 mV)	Check	40 Hz~16 kHz ±3 dB 16 kHz~20 kHz +3 dB, –5 dB	Reference 400 Hz
15. Frequency responce (BIAS, EQ SW.2)	15-1	Fig. 3-2	Spec. REC con-dition SPEED sw.: HIGH	400 Hz/–32 dB ≀ 10 kHz/–32 dB (19.5 mV)	Check	–1 dB ±0.5 dB/ 400 Hz. –3 dB ±0.5 dB/ 10 kHz	When BIAS/EQ switches are changed from "1" to "2", the OUTPUT level should be reduced.
16. Signal-to-noise ratio	16-1	Fig. 3-2	BIAS sw.: 1 EQ sw.: 1 SPEED sw.: HIGH & LOW Spec. REC condition	—	Check	HIGH: 47 dB (min.) ratio LOW: 45 dB (min.) ratio	Ratio of specified OUT-PUT signal (–5 dB) to inherent noise level.
17. Erase efficiency	17-1	Fig. 3-2 switch on the 1 kHz filter	SPEED sw.: HIGH RECORD mode	1 kHz/–12 dB (195 mV, +10 VU) then, no signal recording	Check	OUTPUT: –65 dB or more (436 μV or less) (70 dB [min.] ratio)	Reference OUTPUT level +5 dB. The worst value should be within spec.
18. REC MUTE function	18-1	Fig. 3-2 switch on the 1 kHz filter	SPEED sw.: HIGH Spec. REC condition	1 kHz/–12 dB (195 mV, +10 VU) then, record muting	Check	OUTPUT: –65 dB or more (775 μV or less) (65 dB [min.] ratio)	Reference OUTPUT level: +5 dB. The worst value should be within spec.

ITEM		CONNECTION	MODE/ INSTRUCTION	SIGNAL SOURCE	ADJUST (or CHECK)	OUTPUT	REMARKS
19. Channel separation (L→R)	19-1	Fig. 3-2 switch on the 1 kHz filter	SPEED sw.: HIGH Spec. REC condition	L: 1 kHz/–22 dB (61.5 mV) R: no signal recording	Check	R: –50 dB or more (2.45 mV or less) (45 dB [min.] ratio)	Find the difference between the 1 kHz-recorded portion (L-ch) and the no signal recorded portion (R-ch).
20. Channel separation (R→L)	20-1	Fig. 3-2 switch on the 1 kHz filter	SPEED sw.: HIGH Spec. REC condition	L: No signal recording R: 1 kHz/ –22dB (61.5mV)	Check	L: –50 dB or more (2.45 mV or less) (45 dB [min.] ratio)	Find the difference between the 1 kHz-recorded portion (R-ch) and the no signal recorded portion (L-ch).
21. Adjacent track crosstalk	21-1	Fig. 3-2	SPEED sw.: HIGH BIAS sw.: 1 EQ sw.: 1 Spec. REC condition	125 Hz/–22 dB (61.5 mV)	—	—	
	21-2	"	Switch R & L reels then playback	—	Check	At both channels, 125 Hz: –45 dB or more (4.36 mV or less) (40 dB [min.] ratio)	
22. Distortion	22-1	Fig. 3-2	SPEED sw.: HIGH Spec. REC condition	400 Hz/–22 dB (61.5 mV)	Check	1.0% or less	

3-6 ADJUSTMENT AND TEST POINT LOCATIONS

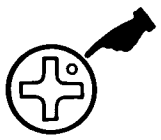


R105/R205	Playback Level	L101/L201	Bias Trap (OUTPUT)
R111/R211	Playback EQ (HIGH)	L102/L202	Record EQ
R113/R213	Playback EQ (LOW)	L103/L203	Bias Trap (record)
R117/R217	VU Meter Level	C140/C240	Record Bias
R121/R221	Monitor Output Level	31-B/33-B	Bias Trap Test Point
R154/R254	Record Level		

Fig. 3-6

ASSEMBLING HARDWARE CODING LIST

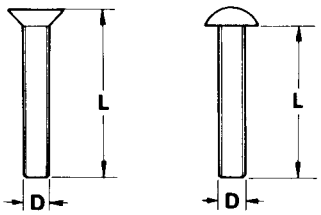
All screws conform to ISO standards, and have crossrecessed heads, unless otherwise noted.
ISO screws have the head inscribed with a point as in the figure to the right.



FOR EXAMPLE:

B M 3 x 6

- B — Nomenclature
- M — Metric System
- 3 — Diameter in mm (D) *
- 6 — Length in mm (L)



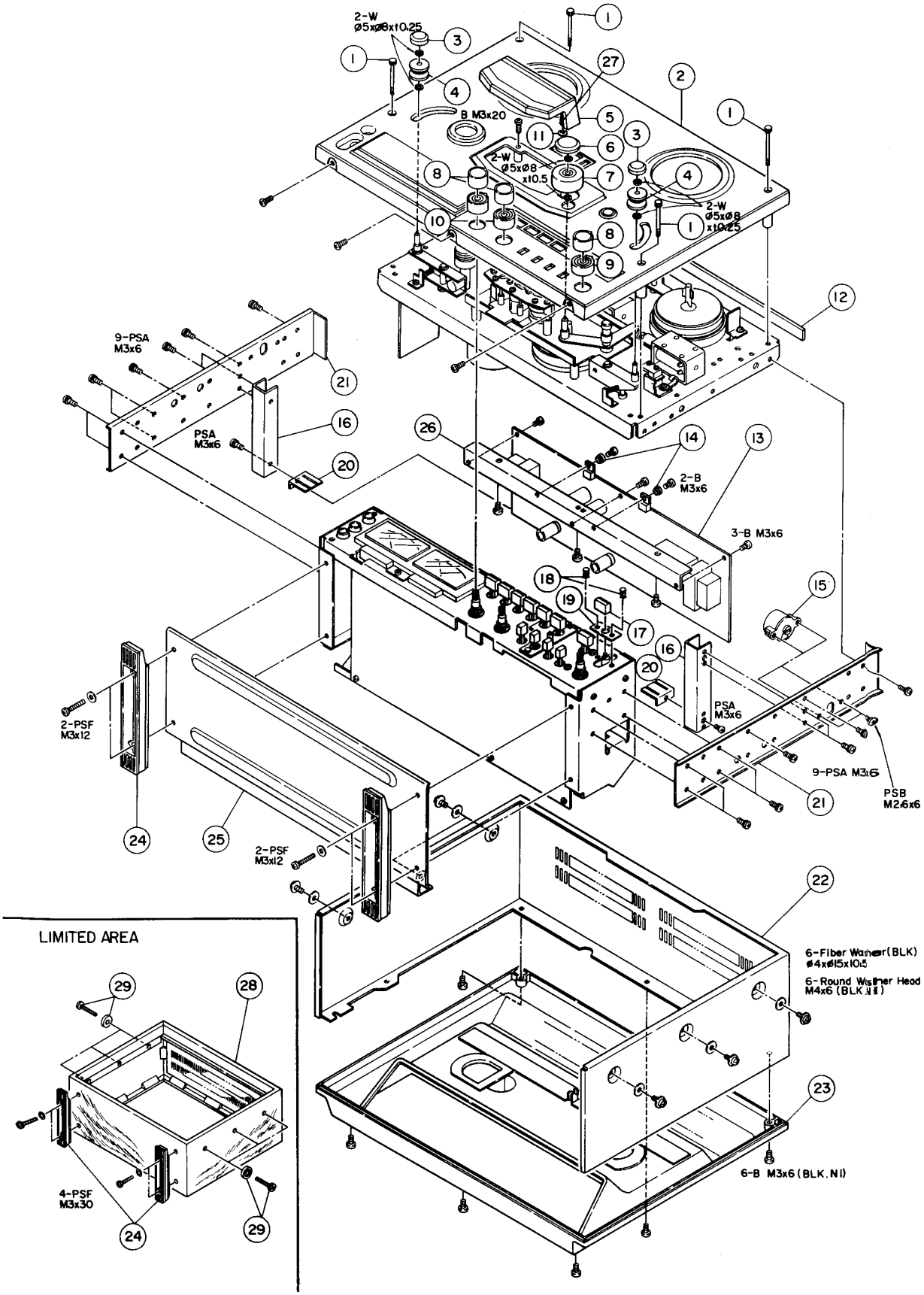
* Inner dia. for washers and nuts

	Code	Name	Type
MACHINE SCREW	R	Round Head Screw	
	P	Pan Head Screw	
	T	Stove Head Screw (Truss)	
	B	Binding Head Screw	
	F	Flat Countersunk Head Screw	
	O	Oval Countersunk Head Screw	
WOOD SCREW	RW	Round Head Wood Screw	
TAPTITE SCREW	PTT	Pan Head Taptite Screw	
	WTT	Washer Head Taptite Screw	
SEMS SCREW	BSA	Binding Head SEMS Screw(A Type)	
	BSB	Binding Head SEMS Screw(B Type)	
	BSF	Binding Head SEMS Screw(F Type)	
	PSA	Pan Head SEMS Screw(A Type)	
	PSB	Pan Head SEMS Screw(B Type)	

	Code	Name	Type
TAPPING SCREW	BTA	Binding Head Tapping Screw(A Type)	
	BTB	Binding Head Tapping Screw(B Type)	
	RTA	Round Head Tapping Screw(A Type)	
	RTB	Round Head Tapping Screw(B Type)	
SETSCREW	SF	Hex Socket Setscrew(Flat Point)	
	SC	Hex Socket Setscrew(Cup Point)	
	SS	Slotted Socket Setscrew(Flat Point)	
WASHER	E	E-Ring (Retaining Washer)	
	W	Flat Washer (Plain)	
	SW	Lock Washer (Spring)	
	LWI	Lock Washer (Internal Teeth)	
	LWE	Lock Washer (External Teeth)	
	TW	Trim Washer (Countersunk)	
NUT	N	Hex Nut	

6 EXPLODED VIEWS AND PARTS LIST

EXPLODED VIEW - 1



*** Parts marked with require longer delivery time than regular parts.**

EXPLODED VIEW - 1

REF. NO.	PARTS NO.	DESCRIPTION
1 - 1	* 5781703035	Screw, Trim; M3 x 35 (Ni)
1 - 2	* 5800081401	Panel Assy, Front
1 - 3	* 5800066000	Cap, Tension Roller
1 - 4	5504843000	Roller Assy, Tension
1 - 5	* 5800080900	Housing, Head
1 - 6	5800066200	Cap, Pinch Roller
1 - 7	5014175100	Pinch Roller
1 - 8	5800080600	Knob, F
1 - 9	5800080800	Knob, H
1 - 10	5800080700	Knob, G
1 - 11	* 5786106000	Ring, CS
1 - 12	* 5555948000	Cushion, Bonnet
1 - 13	* 5200018700	PCB Assy, POWER SUPPLY [U, C]
	* 5200018711	PCB Assy, POWER SUPPLY [E, UK, A]
	* 5200018720	PCB Assy, POWER SUPPLY [GE, L]
1 - 14	* 5033295000	Tube, Insulating
1 - 15	* 5131007000	Selector, Voltage
1 - 16	* 5555943000	Support, Chassis
1 - 17	* 5800080200	Button, A
1 - 18	* 5534118000	Rivet, Push
1 - 19	* 5800019100	Guide, Joint Bar
1 - 20	* 5800079900	Bracket, PCB; C
1 - 21	* 5553366001	Frame, Side
1 - 22	* 5551047001	Bonnet
1 - 23	* 5502267001	Cover Assy, Rear
1 - 24	* 5533260000	Leg, Case
1 - 25	* 5504850000	Cover Assy, Bottom
1 - 26	* 5553362000	Bracket, POWER SUPPLY PCB
1 - 27	* 5800081200	Cabinet Assy [L]
1 - 28	* 5504549000	Screw Assy, Cabinet [L]

INCLUDED ACCESSORIES

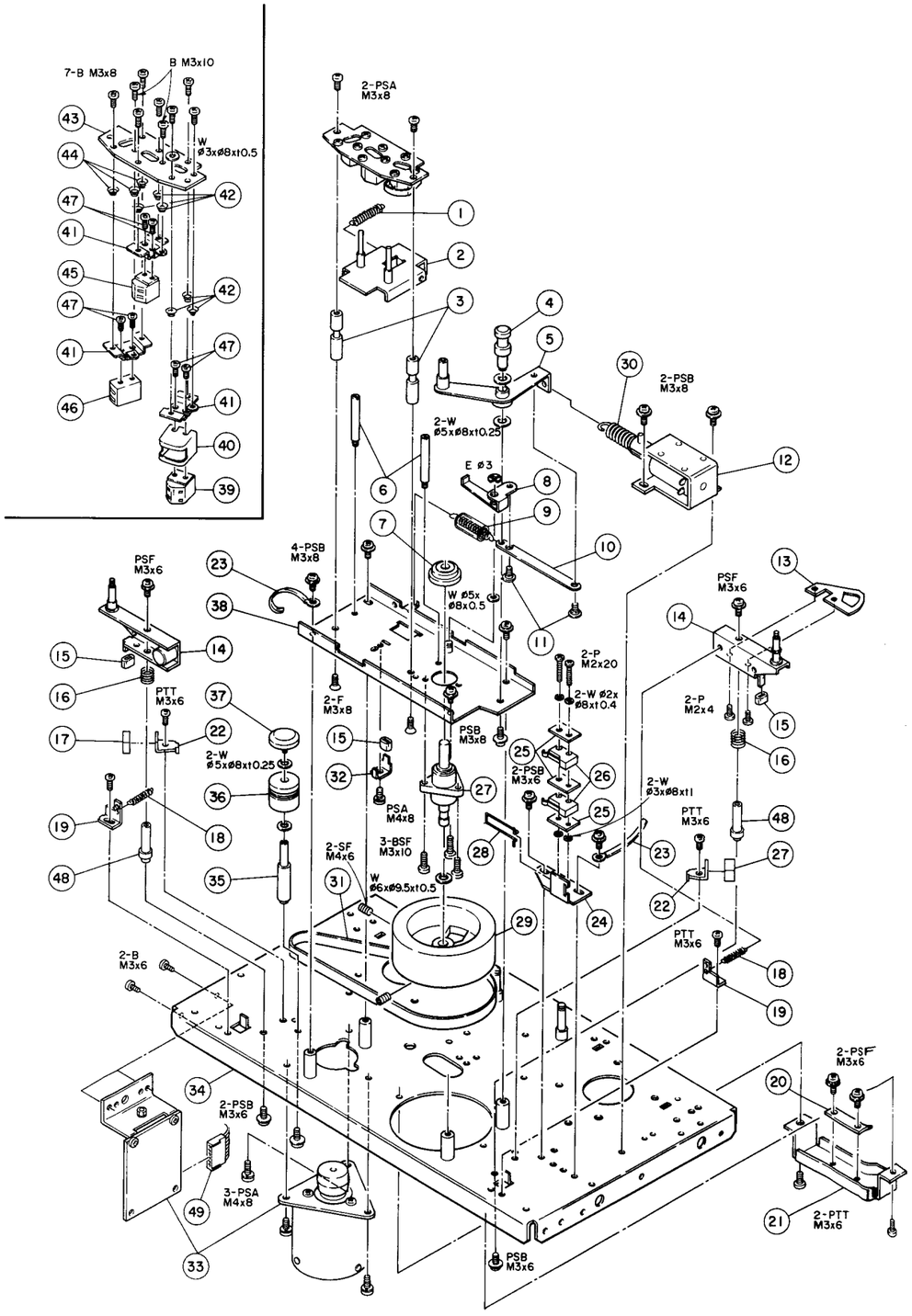
REF. NO.	PARTS NO.	DESCRIPTION
	5350008500	Cord Assy, In-output Connection
	5085008300	Empty Reel, 7 inch
	5062962000	Spling Tape
	5101337100	Open Reel Supplement [U]
	5101708000	Open Reel Supplement [All except U]
	5700008100	X-3 Owner's Manual [U, UK, A]
	5700008200	X-3 Owner's Manual [C, GE, E, L]

EXPLODED VIEW - 2

REF. NO.	PARTS NO.	DESCRIPTION
2 - 1	* 5524287000	Spring, Lifter Return
2 - 2	* 5504836001	Plate Assy, Lifter Base
2 - 3	* 5545181000	Guide, Tape
2 - 4	* 5545178000	Pole, Guide
2 - 5	* 5504835000	Arm Assy, Pinch Roller
2 - 6	* 5545190000	Stud, Housing
2 - 7	5545175000	Cap, Dust
2 - 8	* 5555925000	Arm, Joint; A
2 - 9	* 5524288000	Spring, Return
2 - 10	* 5555926000	Arm, Joint; B
2 - 11	* 5581056000	Screw, Shoulder
2 - 12	* 5163048000	Solenoid
2 - 13	* 5555928000	Cam, Micro Switch Actuating
2 - 14	* 5504842000	Arm Assy, Tension
2 - 15	* 5534850000	Cushion, Stopper
2 - 16	* 5524289000	Spring, Bias
2 - 17	* 5534851000	Damper, Arm
2 - 18	5524106000	Spring, Return
2 - 19	* 5555929000	Hook, Spring
2 - 20	* 5555921000	Plate, Thrust
2 - 21	* 5555920000	Angle, Thrust Plate
2 - 22	* 5555930000	Stopper, Arm
2 - 23	* 5581038000	Clamper, Cord; A
2 - 24	* 5555932000	Bracket Micro Switch
2 - 25	* 5550025100	Plate, Insulating
2 - 26	5130003000	Switch, Micro
2 - 27	5504832000	Capstan Assy
2 - 28	* 5524290000	Bar, Actuating
2 - 29	* 5534849000	Flywheel
2 - 30	* 5524286000	Spring, Pressure
2 - 31	5534468000	Belt, Capstan Drive
2 - 32	* 5555924000	Stopper, Lifter
2 - 33	7105020000	Motor Assy, Capstan
2 - 34	* 5502265003	Chassis, Main
2 - 35	* 5545182000	Shaft, Guide Roller
2 - 36	* 5504839000	Roller Assy, Guide
2 - 37	* 5800066100	Cap, Guide Roller
2 - 38	* 5504831000	Plate Assy, Capstan Base
2 - 39	5569203000	Head, Playback
2 - 40	5554949000	Case, shield; B
2 - 41	5013437100	Bracket, Head
2 - 42	5520182000	Spring, D
2 - 43	* 5555927000	Plate, Head Base
2 - 44	5022050000	Spring, B
2 - 45	5569202000	Head, Record
2 - 46	5569209000	Head, Erase
2 - 47	* 5581058000	Screw, Binding Head; M2 x 4
2 - 48	* 5800048300	Shaft, Tension Arm
2 - 49	* 5122172000	Connector, Socket; 10P

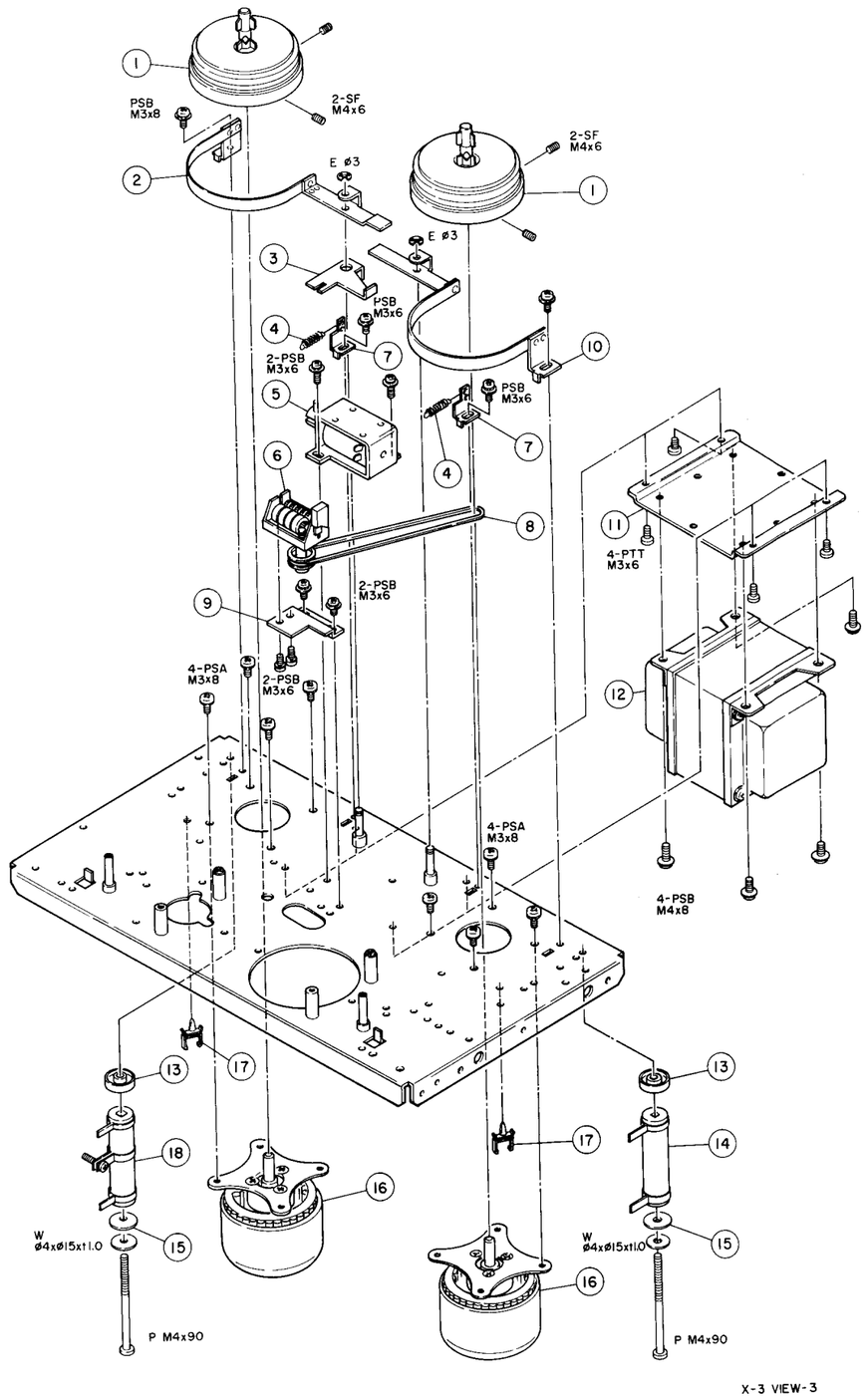
[U]: U.S.A.
[A]: AUSTRALIA
[L]: LIMITED AREA
[C]: CANADA
[E]: EUROPE
[GE]: GENERAL EXPORT
[UK]: U.K.

EXPLODED VIEW - 2



X-3 VIEW-2

EXPLODED VIEW - 3



X-3 VIEW-3

* Parts marked with required longer delivery time than regular parts.

EXPLODED VIEW - 3

REF. NO.	PARTS NO.	DESCRIPTION
3 - 1	*5600018100	Table Assy, Reel; A
3 - 2	*5504847000	Band Assy, Brake; L
3 - 3	*5555939000	Lever, Brake Actuating
3 - 4	*5524291000	Spring, Brake
3 - 5	5163048000	Solenoid
3 - 6	*5058509000	Counter
3 - 7	*5555929000	Hook, Spring
3 - 8	5534853000	Belt, Counter
3 - 9	*5555940000	Bracket, Counter
3 - 10	*5504848000	Band Assy, Brake; R
3 - 11	*5555919000	Bracket, Transformer
3 - 12	⚠ 5152240000	Transformer, Power [U, C]
	⚠ 5320002400	Transformer, Power [E, UK, A]
	⚠ 5320002500	Transformer, Power [GE, L]
3 - 13	*5534585000	Holder, Resistor
3 - 14	⚠ 5181581000	Resistor, Non Flammable 1kΩ 30W
3 - 15	*5785254000	Washer, Bakelite; ϕ4 x ϕ17 x t1
3 - 16	7104601000	Motor, Reel
3 - 17	*5033258000	Clamper, Cord; E
3 - 18	⚠*5181597000	Resistor, Non Flammable 250Ω 30W

EXPLODE VIEW - 4

REF. NO.	PARTS NO.	DESCRIPTION
4 - 1	*5800080500	Plate, Motor
4 - 2	5800080200	Button, A
4 - 3	5800080300	Button, B
4 - 4	5800080400	Button, C
4 - 5	5165068000	Meter, VU
4 - 6	*5553364000	Chassis, Side; L
4 - 7	5800080000	Button
4 - 8	*5552489001	Chassis, Amplifier
4 - 9	*5200008500	PCB Assy, LED
4 - 10	5163049000	Solenoid
4 - 11	*5158110000	PCB Assy, CONTROL B
4 - 12	*5200019500	PCB Assy, CONTROL A [All except C]
	*5200019510	PCB Assy, CONTROL A [C]
4 - 13	*5555945000	Bracket, PCB; B
4 - 14	*5124063000	Jack Assy, 3-gang
4 - 15	*5555946000	Bracket, Jack
4 - 16	*5054204000	Capacitor, Ceramic; 0.01μF 50V
4 - 17	*5200024510	PCB Assy, REC/PLAY AMPL
4 - 18	*5126038000	Terminal Assy, IN/OUTPUT
4 - 19	*5158104000	PCB Assy, IN/OUT PUT
4 - 20	*5552488001	Chassis, Rear
4 - 21	*5581056000	Screw, Shoulder; A
4 - 22	5534118000	Rivet, Push
4 - 23	*5534660000	Strain Relief, AC Power Cord [All except UK]
	*5534661000	Strain Relief, AC Power Cord [UK]
4 - 24	*5555063000	Washe, GND
4 - 25	⚠*5128083000	Cord, AC Power [U, C]
	⚠*5127246000	Cord, AC Power [GE, L]
	⚠*5128077000	Cord, AC Power [E]
	⚠*5128095000	Cord, AC Power [A]
	⚠*5350008400	Cord, AC Power [UK]
4 - 26	*5122261000	Connector, Plug; 4P
4 - 27	*5122262000	Connector, Plug; 4P
4 - 28	5282705800	Var. Res., 100kΩ (A) x 2
4 - 29	⚠*5052910000	Spark Killer, 0.033μF + 120Ω/125V [U]
	⚠*5052914000	Spark Killer, 0.033μF + 120Ω/250V [C]
	⚠*5052907000	Spark Killer, 0.01μF + 300Ω/300V [GE, L]
	⚠*5267702500	Spark Killer, 0.0047μF/250V
4 - 30	⚠*5300019400	Switch, Power [All except U, C]
	⚠*5134122000	Switch, Power [U, C]
4 - 31	*5786360500	R-Pin, ϕ5
4 - 32	*5534855000	Bar, Joint
4 - 33	*5553365001	Chassis, Side; R

[U]: U.S.A.
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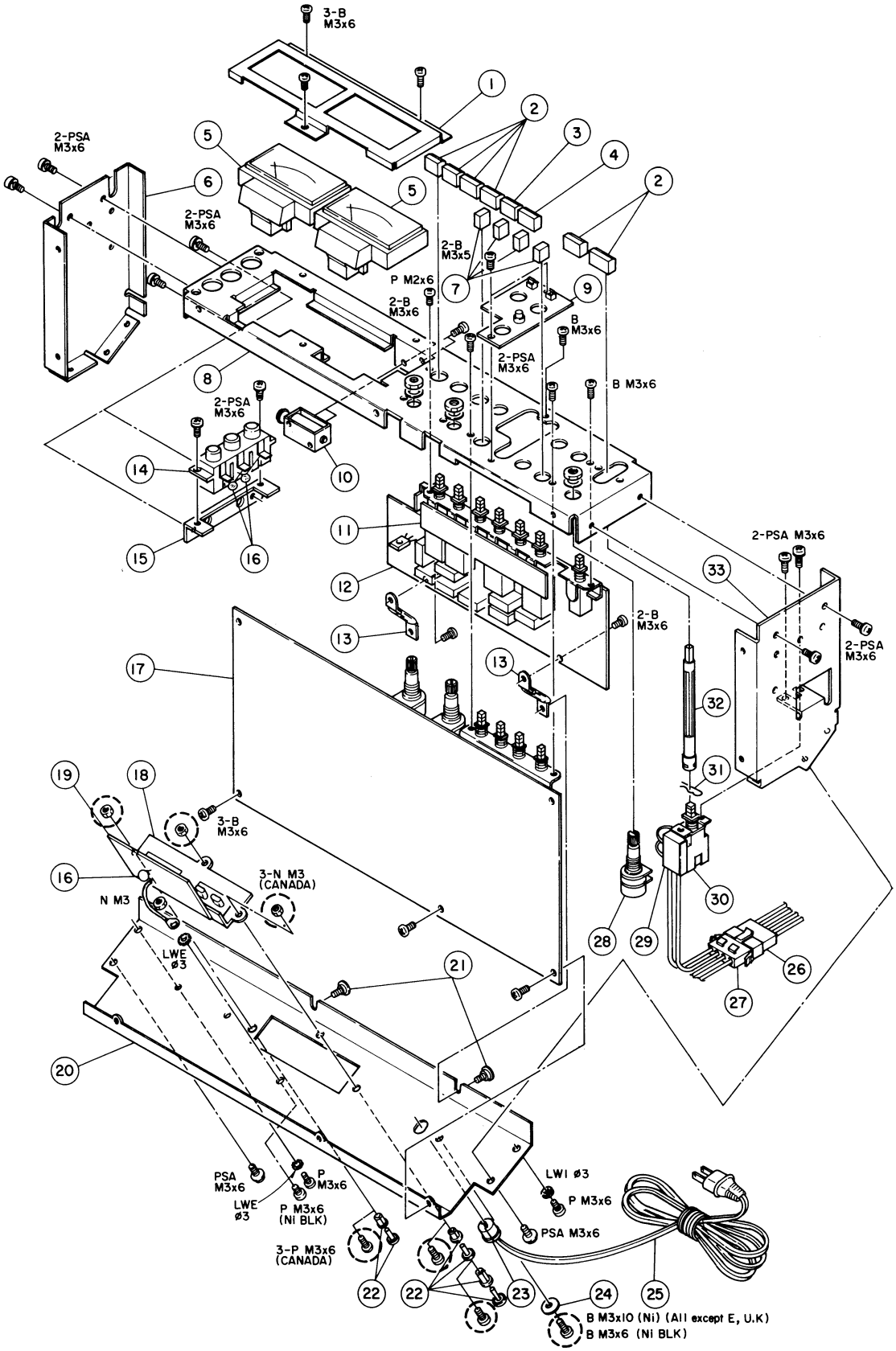
EXPLODED VIEW - 4

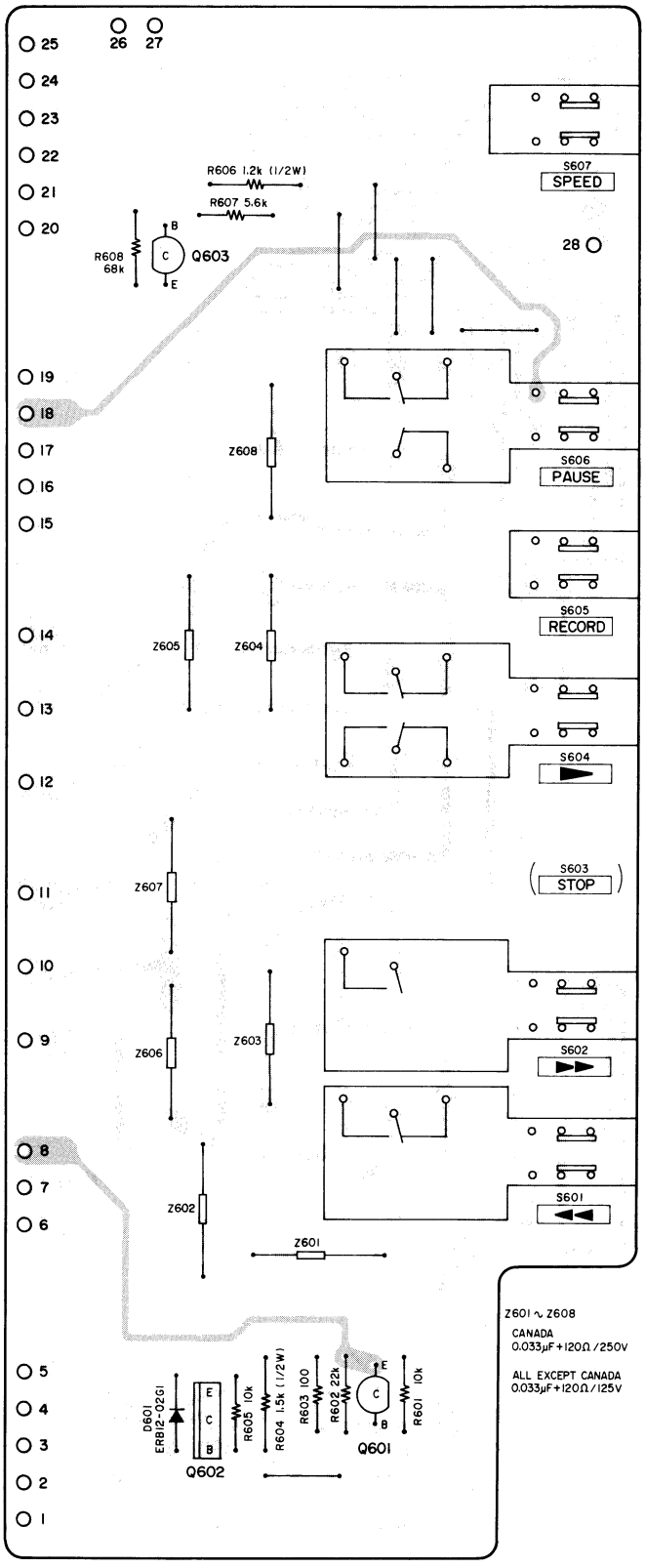


X-3 VIEW-4

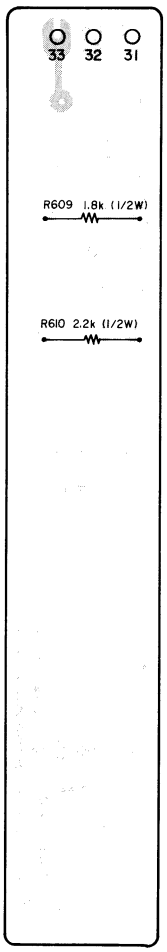
7 PC BOARDS AND PARTS LIST

PC Boards shown viewed from foil side except CONTROL PCB B ASSY.

CONTROL PCB A ASSY

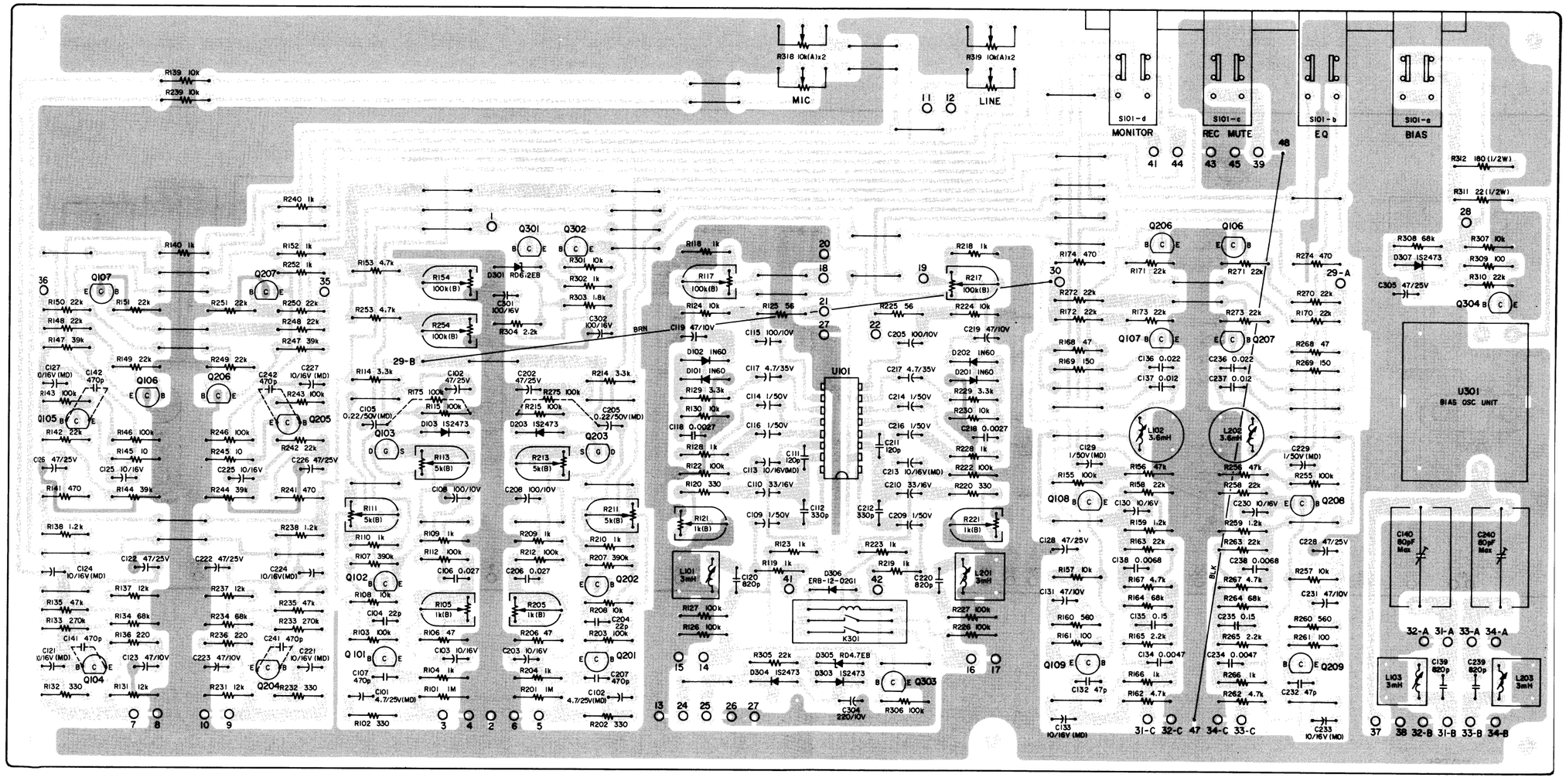


CONTROL PCB B ASSY

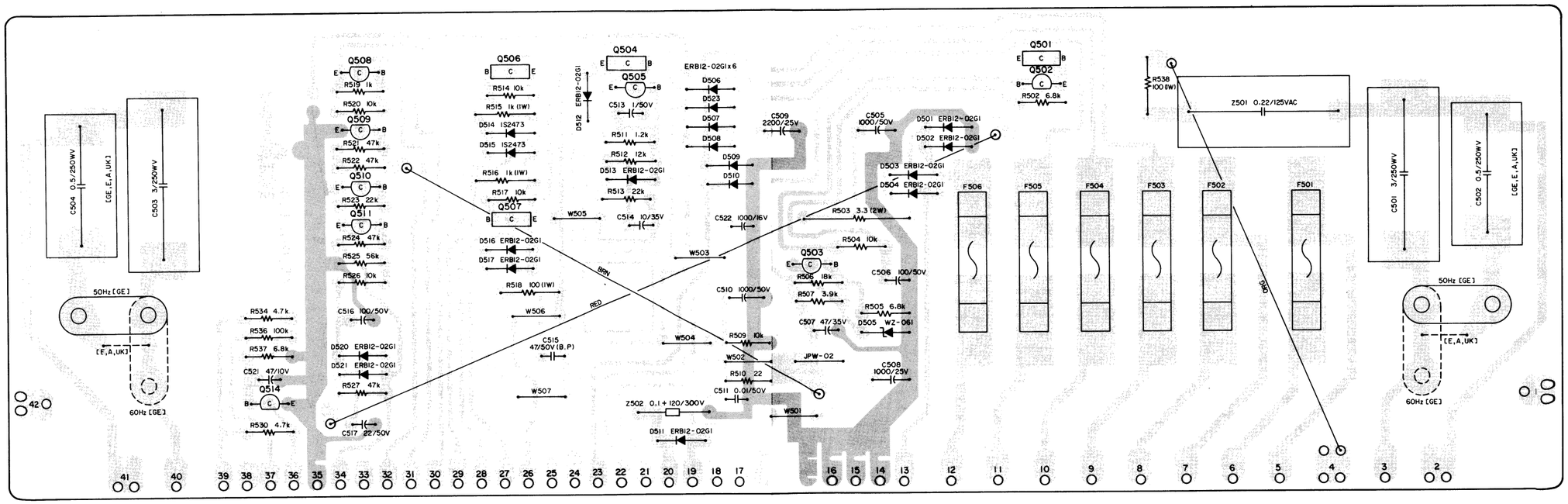


PC Board shown viewed from component side.

REC/PLAY AMPL PCB ASSY



POWER SUPPLY PCB ASSY



NOTES

1. The colors used on the PCB illustrations have the following significance:
   - ▭ +B power supply circuit
   - ▭ : GND
   - ▭ : Other
2. Resistor values are in ohms (k = 1,000 ohms, M = 1,000,000 ohms).
3. All capacitor values are in microfarads (p = picofarads).

CONTROL PCB A ASSY

REF. NO.	PARTS NO.	DESCRIPTION
	5200019500	PCB Assy [All except C]
	5200019510	PCB Assy [C]
	5157109000	PCB A
	TRANSISTORS	
Q601	5042625000	2SC1318S
Q602	5145078000	2SD600F
Q603	5042553000	2SA733P
	DIODE	
D501	5143243000	ERB12-02G1
	RESISTORS	
	All resistors are rated ±5% tolerance, ¼ watt and of carbon type unless otherwise noted.	
R601	5183106000	10kΩ
R602	5183114000	22kΩ
R603	5183058000	100Ω
R604	5180086000	1.5kΩ ½W
R605	5183106000	10kΩ
R606	5180084000	1.2kΩ ½W
R607	5183100000	5.6kΩ
R608	5183126000	68kΩ
	MISCELLANEOUS	
Z601~Z608	⚠5052910000	Spark Killer 0.033μF + 120/125V [All except C]
Z601~Z608	⚠5052914000	Spark Killer 0.033μF + 120/250V [C]
S601~S607	⚠5134123000	Switch, Push; 7-gang

CONTROL PCB B ASSY (PC Board omitted)

REF. NO.	PARTS NO.	DESCRIPTION	
	5158110000	PCB B Assy	
	5157110000	PCB B	
	RESISTORS		
R609	5180088000	1.8kΩ ½W	5%
R610	5180090000	2.2kΩ ½W	5%

REC/PLAY AMPL PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
	5200024510	PCB Assy
	5157103001	PCB
	IC	
U101	5147053000	HA-11122W
	TRANSISTORS	
Q101, Q201	5042461000	2SC1327T
Q102, Q202	5145092000	2SC1740LNS
Q103, Q203	5145103000	FET, 2SK68AM
Q104, Q204	5042461000	2SC1327T
Q105, Q205	5042495000	2SC1222E
Q106, Q206	5145185000	2SD655E
Q107, Q207	5145185000	2SD655E
Q108, Q208	5042495000	2SC1222E
Q109, Q209	5145094000	2SA826LNR
Q110, Q210	5145092000	2SC1740LNS
Q111, Q211	5145092000	2SC1740LNS
Q301	5042475000	2SC1384Q
Q302~Q304	5145092000	2SC1740LNS
	DIODES	
D101, D201	5042213000	1N60
D102, D202	5042213000	1N60
D103, D203	5143118000	1S2473HJ
D301	5042554000	Zener, RD6.2EB 3%
D303, D304	5143118000	1S2473HJ
D305	5143121000	Zener, RD4.7EB
D306	5143243000	ERB12-02G1
D307	5143118000	1S2473HJ
	RESISTORS	
	All resistors are rated ±5% tolerance, ¼ watt and of carbon type unless otherwise noted.	
R101, R201	5181554000	1MΩ
R102, R202	5181470000	330Ω
R103, R203	5181530000	100kΩ
R104, R204	5181482000	1kΩ
R106, R206	5181450000	47Ω
R107, R207	5181544000	390kΩ
R108, R208	5181506000	10kΩ
R109, R209	5181482000	1kΩ
R110, R210	5181482000	1kΩ
R112, R212	5181530000	100kΩ
R114, R214	5181494000	3.3kΩ
R115, R215	5181530000	100kΩ
R118, R218	5181482000	1kΩ
R119, R219	5181482000	1kΩ
R120, R220	5181470000	330Ω
R122, R222	5181530000	100kΩ
R123, R223	5181482000	1kΩ
R124, R224	5181506000	10kΩ
R125, R225	5181458000	100Ω
R126, R226	5181530000	100kΩ
R127, R227	5181530000	100kΩ
R128, R228	5181482000	1kΩ
R129, R229	5181494000	3.3kΩ
R130, R230	5181506000	10kΩ
R131, R231	5181508000	12kΩ

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[UK]: U.K.

REF. NO.	PARTS NO.	DESCRIPTION	
R132. R232	5181470000	330Ω	
R133, R233	5181540000	270kΩ	
R134, R234	5181526000	68kΩ	
R135, R235	5181522000	47kΩ	
R136, R236	5181466000	220Ω	
R137, R237	5181508000	12kΩ	
R138, R238	⚠5184175000	1.2kΩ	Non Flammable
R139, R239	5181506000	10kΩ	
R140, R240	5181482000	1kΩ	
R141, R241	⚠5184165000	470Ω	Non Flammable
R142, R242	5181514000	22kΩ	
R143, R243	5181530000	100kΩ	
R144, R244	5181520000	39kΩ	
R145, R245	5181434000	10Ω	
R146, R246	5181530000	100kΩ	
R147, R247	5181520000	39kΩ	
R148, R248	5181514000	22kΩ	
R149, R249	5181514000	22kΩ	
R150, R250	5181514000	22kΩ	
R151, R251	5181514000	22kΩ	
R152, R252	5181482000	1kΩ	
R153, R253	5181498000	4.7kΩ	
R155, R255	5181530000	100kΩ	
R156, R256	5181522000	47kΩ	
R157, R257	5181506000	10kΩ	
R158, R258	5181514000	22kΩ	
R159, R259	5181484000	1.2kΩ	
R160, R260	5181476000	560Ω	
R161, R261	5181458000	100Ω	
R162, R262	5181498000	4.7kΩ	
R163, R263	5181514000	22kΩ	
R164, R264	5181526000	68kΩ	
R165, R265	5181490000	2.2kΩ	
R166, R266	5181482000	1kΩ	
R167, R267	5181498000	4.7kΩ	
R168, R268	5181450000	47Ω	
R169, R269	5181466000	220Ω	
R170, R270	5181514000	22kΩ	
R171, R271	5181514000	22kΩ	
R172, R272	5181514000	22kΩ	
R173, R273	5181514000	22kΩ	
R174, R274	⚠5181465000	470Ω	Non Flammable
R175, R275	5181330000	100kΩ	
R176	5181330000	100kΩ	
R270	5181330000	100kΩ	
R301	5181506000	10kΩ	
R302	5181482000	1kΩ	
R303	5181488000	1.8kΩ	
R304	5181490000	2.2kΩ	
R305	5181514000	22kΩ	
R306	5181530000	100kΩ	
R307	5181506000	10kΩ	
R308	5181502000	6.8kΩ	
R309	5181458000	100Ω	
R310	5181514000	22kΩ	
R311	⚠5181982000	22Ω	½W Non Flammable
R312	⚠5182004000	180Ω	½W Non Flammable

REF. NO.	PARTS NO.	DESCRIPTION			
		CAPACITORS			
C101, C201	5173564800	Elec.	4.7μF	25V	(MD)
C102, C202	5173037800	Elec.	47μF	25V	(USM)
C103, C203	5173010800	Elec.	10μF	16V	(USM)
C104, C204	5172304000	Ceramic	22pF	50V	10%
C105, C205	5173552800	Elec.	0.22μF	50V	(MD)
C106, C206	5154899500	Mylar	0.027μF	100V	5%
C107, C207	5172320000	Ceramic	470pF	50V	10%
C108, C208	5173044800	Elec.	100μF	10V	(USM)
C109, C209	5172992800	Elec.	1μF	50V	(USM)
C110, C210	5173027800	Elec.	33μF	16V	(USM)
C111, C211	5172320000	Ceramic	470pF	50V	10%
C112, C212	5172318000	Ceramic	330pF	50V	10%
C113, C213	5173571800	Elec.	10μF	16V	(MD)
C114, C214	5172992800	Elec.	1μF	50V	(USM)
C115, C215	5173044800	Elec.	100μF	10V	(USM)
C116, C216	5172992800	Elec.	1μF	50V	(USM)
C117, C217	5173005800	Elec.	4.7μF	35V	(USM)
C118, C218	5154893500	Mylar	0.0068μF	100V	5%
C119, C219	5173044800	Elec.	100μF	10V	(USM)
C120, C220	5054312000	Polyst.	820pF	250V	10%
C121, C221	5173571800	Elec.	10μF	16V	(MD)
C122, C222	5173037800	Elec.	47μF	25V	(USM)
C123, C223	5173035800	Elec.	47μF	10V	(USM)
C124, C224	5173571800	Elec.	10μF	16V	(MD)
C125, C225	5173010800	Elec.	10μF	16V	(USM)
C126, C226	5173037800	Elec.	47μF	25V	(USM)
C127, C227	5173571800	Elec	10μF	16V	(MD)
C128, C228	5173037800	Elec.	47μF	25V	(USM)
C129, C229	5172992800	Elec.	1μF	50V	(USM)
C130, C230	5173010800	Elec.	10μF	16V	(USM)
C131, C231	5173035800	Elec.	47μF	10V	(USM)
C132, C232	5172308000	Ceramic	47pF	50V	10%
C133, C233	5173571800	Elec.	10μF	16V	(MD)
C134, C234	5054891500	Mylar	0.0047μF	100V	5%
C135, C235	5170453000	Mylar	0.15μF	100V	5%
C136, C236	5170431000	Mylar	0.018μF	100V	5%
C137, C237	5170425000	Mylar	0.01μF	100V	5%
C138, C238	5170421000	Mylar	0.0068μF	100V	5%
C139, C239	5054312000	Polyst.	820pF	250V	10%
C141, C241	5172320000	Ceramic	470pF	50V	10%
C142, C242	5172320000	Ceramic	470pF	50V	10%
C301, C302	5173045800	Elec.	100μF	16V	(USM)
C304	5173053800	Elec.	220μF	10V	(USM)
C305	5173037800	Elec.	47μF	25V	(USM)
C306	5054204000	Ceramic	0.01μF	50V	10%
C307, C308	5054204000	Ceramic	0.001μF	50V	10%

REF. NO.	PARTS NO.	DESCRIPTION
	VARIABLE RESISTORS	
R105, R205	5053446000	Semifixed 1kΩ(B)
R111, R211	5150097000	Semifixed 5kΩ(B)
R113, R213	5150097000	Semifixed 5kΩ(B)
R117, R217	5150096000	Semifixed 100kΩ(B)
R121, R221	5053446000	Semifixed 1kΩ(B)
R154, R254	5150096000	Semifixed 100kΩ(B)
R317, R318	5282705900	10kΩ(A) x 2
	COILS	
L101, L201	5056659000	Trap, 3mH 20%
L102, L202	5160042000	Rec EQ, 3.6mH 20%
	MISCELLANEOUS	
C140, C240	5054707000	Trimmer Capacitor 5-80pF
K301	5061137000	Relay, Lead; 12V LAB21
U301	5040090000	Bias Oscillator Unit
S101	5134124000	Switch, Push; 4-gang

POWER SUPPLY PCB ASSY

REF. NO.	PARTS NO.	DESCRIPTION
	5200018700	PCB Assy [U, C]
	5200018710	PCB Assy [E, UK, A]
	5200018720	PCB Assy [GE, L]
	5210018700	PCB
	TRANSISTORS	
Q501	5145087000	2SD313E
Q502	5042625000	2SC1318S
Q503	5042383000	2SC536F
Q504	5145087000	2SD313E
Q505	5145043000	2SA720Q
Q506, Q507	5145078000	2SD600F
Q508	5145043000	2SA720Q
Q509, Q510	5145091000	2SC945AK
Q511	5042553000	2SA733P
Q514	5145091000	2SC945AK
	DIODES	
D501 ~ D504	5143243000	ERB12-02G1
D505	5042514000	Zener, WZ-061
D506 ~ D513	5143243000	ERB12-02G1
D514, D515	5143118000	1S2473HJ
D516, D517	5143243000	ERB12-02G1
D520, D521	5143243000	ERB12-02G1
D523	5143243000	ERB12-02G1
	RESISTORS **All resistors are rated ±5% tolerance, ¼ watt and of carbon type unless otherwise noted.**	
R502	5183102000	6.8kΩ
R503	⚠5184306000	3.3Ω10% 2W, Cement
R504	5183106000	10kΩ
R505	5183102000	6.8kΩ
R506	5183112000	18kΩ
R507	5183096000	3.9kΩ
R509	5183106000	10kΩ
R510	⚠5184233000	22ΩNon Flammable
R511	5183084000	1.2kΩ
R512	5183108000	12kΩ
R513	5183114000	22kΩ
R514	5183106000	10kΩ
R515, R516	⚠5185790000	1kΩ1W Metal Film, Non Flammable
R517	5183106000	10kΩ
R518	⚠5184755000	100Ω1W Metal Film, Non Flammable
R519	5183082000	1kΩ
R520	5183106000	10kΩ
R521, R522	5183122000	47kΩ
R523	5183114000	22kΩ
R524	5183122000	47kΩ
R525	5183124000	56kΩ
R526	5183106000	10kΩ
R527	5183122000	47kΩ
R530	5183098000	4.7kΩ
R534	5183098000	4.7kΩ
R536	5183130000	100kΩ
R537	5183102000	6.8kΩ
R538	⚠5184755000	100Ω 1W Metal Film Non Flammable

[U]: U.S.A.
[A]: AUSTRALIA
[L]: LIMITED AREA
[C]: CANADA
[E]: EUROPE
[GE]: GENERAL EXPORT
[UK]: U.K.

REF.NO.	PARTS NO.	DESCRIPTION
	CAPACITORS	
C501	⚠5171613000	AC Film 3μF 250V
C502	⚠5267702700	AC Film 0.5μF 250V
C503	⚠5171613000	AC Film 3μF 250V
C504	⚠5267702700	AC Film 0.5μF 250V
C505	5172973800	Elec. 1000μF 50V (USM)
C506	5172936800	Elec. 100μF 35V (USM)
C507	5172927800	Elec. 47μF 35V
C508	5172971800	Elec. 1000μF 25V (USM)
C509	5172978800	Elec. 2200μF 25V (USM)
C510	5172973800	Elec. 1000μF 50V (USM)
C511	5054802000	Mylar 0.01μF 100V 10%
C513	5172882800	Elec. 1μF 50V (USM)
C514	5172902800	Elec. 10μF 35V (USM)
C515	5055949000	Elec. 47μF 50V (BP)
C516	5172937800	Elec. 100μF 50V (USM)
C517	5172911800	Elec. 22μF 50V (USM)
C521	5172924800	Elec. 47μF 10V (USM)
C522	5172970800	Elec. 1000μF 16V (USM)
Z501	5171615000	Polypro. 0.22μF 125V
Z502	⚠5052905000	Spark Killer 0.1μF + 120/300V
	FUSES	
F501, F502	⚠5307003600	Fuse, 1A 250V [U, C]
F501, F502	⚠5041140000	Fuse, 1A 250V [E, UK, A]
F501, F502	⚠5041101000	Fuse, 1A 250V [GE, L]
F503	⚠5307004300	Fuse, 3A 250V [U, C]
F503	⚠5142191000	Fuse, 3.15A 250V [E, UK, A]
F503	⚠5142211000	Fuse, 3A 250V [GE, L]
F504	⚠5307003600	Fuse, 1A 250V [U, C]
F504	⚠5041140000	Fuse, 1A 250V [E, UK, A]
F504	⚠5041101000	Fuse, 1A 250V [GE, L]
F505	⚠5307004100	Fuse, 2A 25V [U, C]
F505	⚠5142189000	Fuse, 2A 250V [E, UK, A]
F505	⚠5041114000	Fuse, 2A 250V [GE, L]
F506	⚠5307004000	Fuse, 1.6A 250V [U, C]
F506	⚠5142188000	Fuse, 1.6A 250V [E, UK, A]
F506	⚠5041151000	Fuse, 1.5A 250V [GE, L]
	MISCELLANEOUS	
	5033291000	Sheet, Insulating
	5033295000	Tube, Insulating
	5041237000	Fuse Holder [U, C, GE, L]
	5142087000	Fuse Holder [E, UK, A]

[U]: U.S.A. [C]: CANADA [GE]: GENERAL EXPORT
[A]: AUSTRALIA [E]: EUROPE [UK]: U.K.
[L]: LIMITED AREA

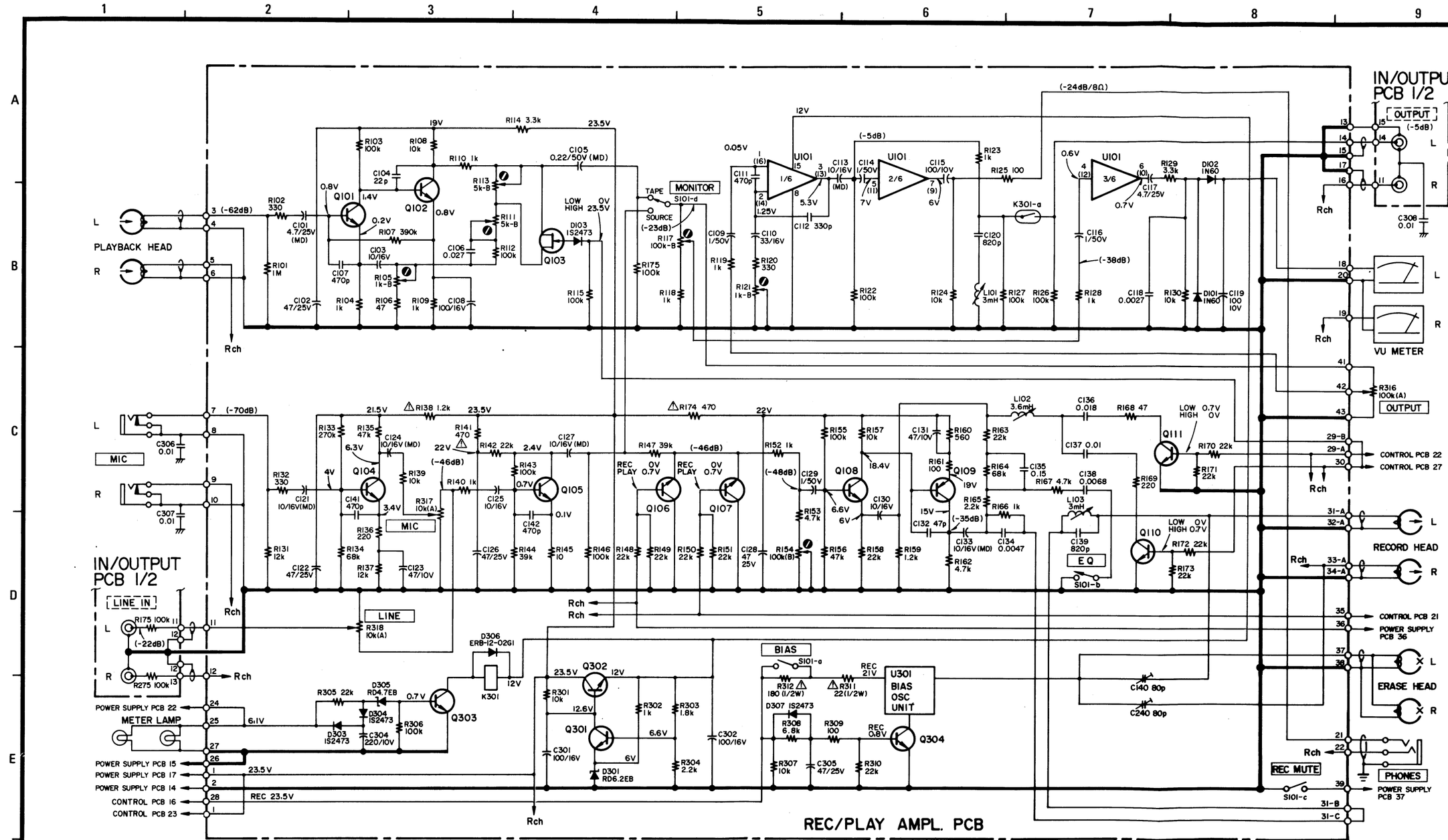
LED PCB ASSY (PC Board omitted)

REF. NO.	PARTS NO.	DESCRIPTION
	5200008500	PCB Assy
	5210008500	PCB
	DIODES	
D701	5143139000	LED, SLB-26GG1 (GREEN)
D702	5143140000	LED, SLB-26UR1 (RED)
D703	5143314000	LED, AR31370 (RED)
	MISCELLANEOUS	
	5043038000	Connector Pin M (4 used)

IN/OUTPUT PCB ASSY (PC Board omitted)

REF. NO.	PARTS NO.	DESCRIPTION
	5158104000	PCB Assy
	5157104000	PCB
R175, R275	5183130000	Carbon Resistor 100kΩ 5% ¼W

TEAC SCHEMATIC DIAGRAM (AMPLIFIER)

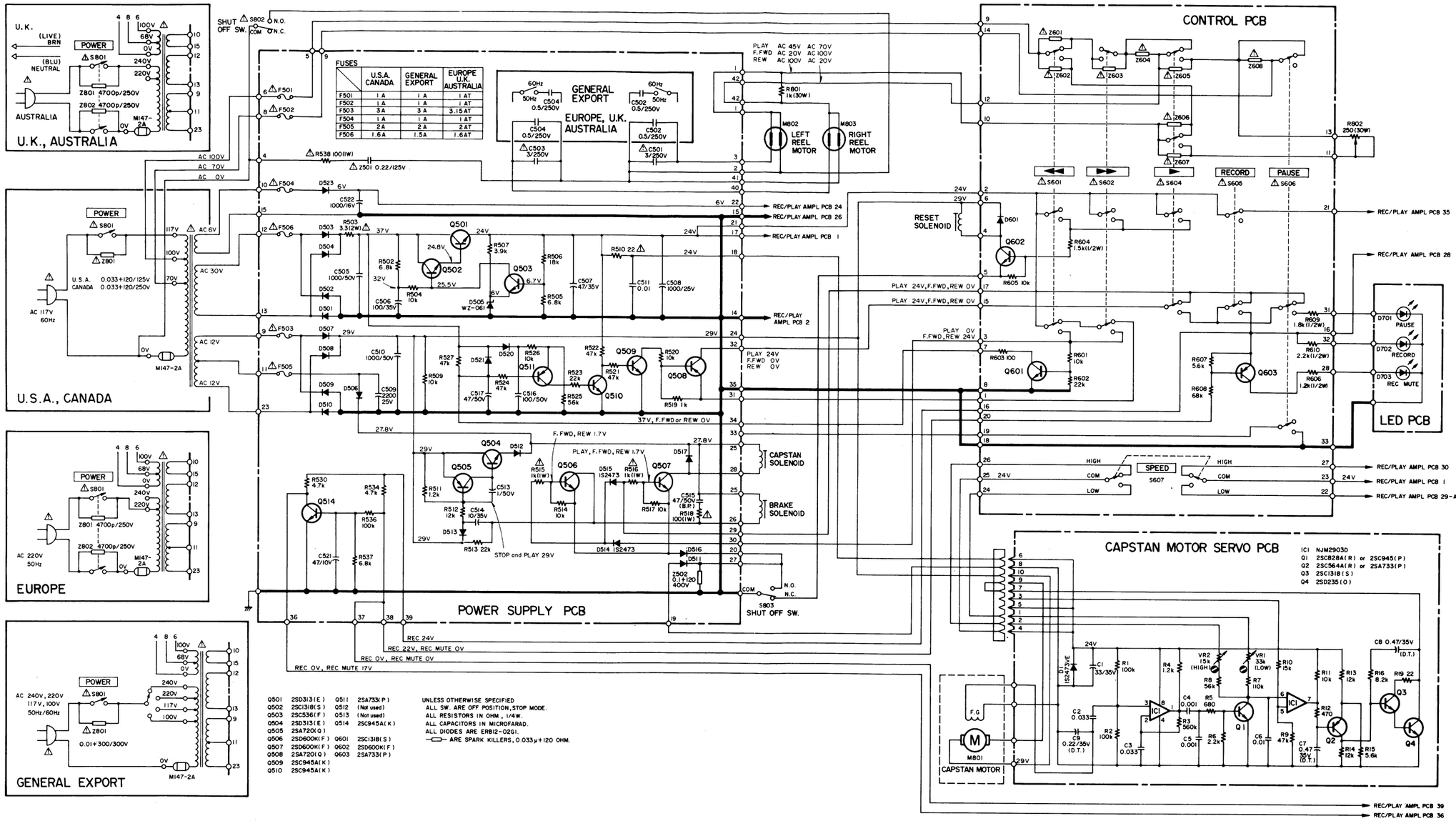


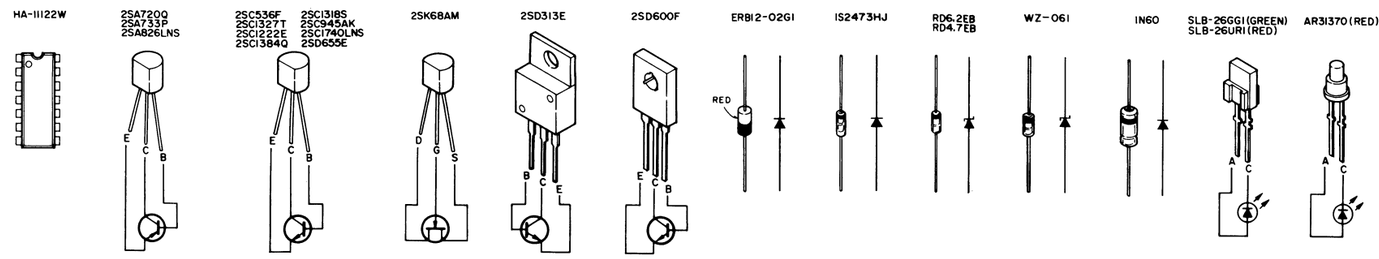
U101	HA1122W	Q301	2SC1384(Q)
U301	BIAS OSC UNIT	Q302 ~ Q304	2SC1740LN(S)
Q101/Q201	2SC1327LN(T)	D101/D201	1N60
Q102/Q202	2SC1740LN(S)	D102/D202	1N60
Q103/Q203	2SK68(M)	D103/D203	1S2473
Q104/Q204	2SC1327(T)		
Q105/Q205	2SC1222(E)	D301	RD6.2EB
		D302	(Not used)
Q106/Q206	2SD655(E)	D303, D304	1S2473
Q107/Q207	2SD655(E)	D305	RD4.7EB
Q108/Q208	2SC1222(E)	D306	ERB-12-02GI
Q109/Q209	2SA826LN(S)	D307	1S2473
Q110/Q210	2SC1740LN(S)		
Q111/Q211	2SC1740LN(S)		

NOTES

1. Schematic diagram shown for left channel except for some of the components.
2. All resistors are ¼ watt, ±5%, unless marked otherwise.
   Resistor values are in ohms (k = 1,000 ohms, M = 1,000,000 ohms).
3. All capacitor values are in microfarads (p = picofarads).
4. ⚠ Parts marked with this sign are safety critical components. They must always be replaced with identical components-refer to the TEAC parts list and ensure exact replacement.
5. Voltage and level values are for reference only.
6. DC voltages were measured during REC/PAUSE mode unless otherwise noted.
7. 0 dB = 0.775V
8. ——— +B power supply circuit
9. ▭ : front panel indication
   ▭ : rear panel indication

TEAC SCHEMATIC DIAGRAM (CONTROL)





NOTES

1. All resistors are ¼ watt, ±5%, unless marked otherwise. Resistor values are in ohms (k = 1,000 ohms, M = 1,000,000 ohms).
2. All capacitor values are in microfarads (p = picofarads).
3. All diodes are ERB12-02GI unless otherwise specified.
4. ⚠ Parts markedwith this sign are safety critical components. They must always be replaced with identical components-refer to the TEAC parts list and ensure exact replacement.
5. DC voltages were measured during REC/PAUSE mode unless otherwise noted.
6. ——— +B power supply circuit
7. ▭ : front panel indication
   ▭ : rear panel indication