

# TEAC®



## SERVICE MANUAL

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# X-3R

Stereo Tape Deck

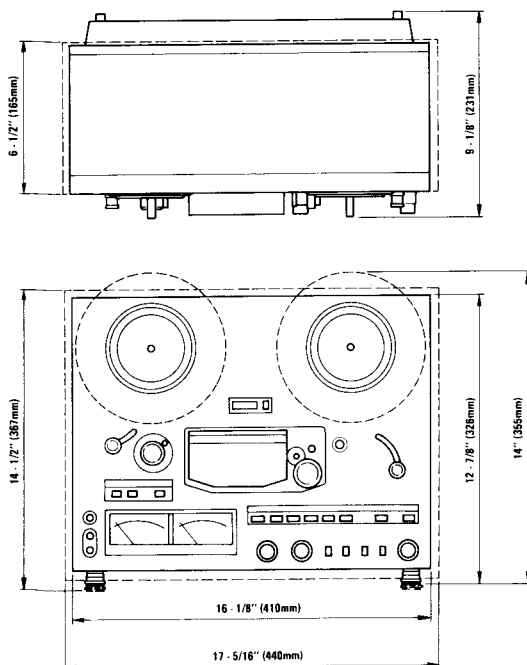
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## 1 SPECIFICATIONS AND SERVICE DATA

### 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 (3-3/4 ips)
- Inputs (level and impedance)**
- MIC:** Specified input level: -60 dB (0.775 mV)/10 kohms  
Min. input level: -70 dB (245  $\mu$ V)
- LINE IN:** Specified input level: -12 dB (195 mV)/50 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**
- "LH" tape: 19 cm/s: 3,180  $\mu$ s + 50  $\mu$ s (NAB)  
9.5 cm/s: 3,180  $\mu$ s + 90  $\mu$ s (NAB)
- "EE" tape: 19 cm/s: 3,180  $\mu$ s + 35  $\mu$ s  
9.5 cm/s: 3,180  $\mu$ s + 50  $\mu$ s
- Motors** 1 DC servo capstan motor  
2 Induction reel motors
- Bias frequency** 100 kHz
- Operating position** Vertical, horizontal
- Power requirements**
- 100/120/220/240 V AC, 50/60 Hz, 85 W (General export model)  
120 V AC, 60 Hz, 70 W (USA/Canada)  
220 V AC, 50 Hz, 85 W (Europe)  
240 V AC, 50 Hz, 85 W (UK/AUS)
- Weight** 15 kg (33-1/16 lbs) net

### Dimensions



Broken line indicates some General Export models.

Fig. 1-1

### SERVICE DATA

#### MECHANICAL

- Tape speed deviation** 3,000 Hz  $\pm$  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** 1.5 to 1.7 kg (3.31 to 3.75 lbs)
- Reel torque (play mode)**
- Take-up:** 330 to 470 g-cm (4.58 to 6.53 oz-inch)
- Back tension:** 220 to 280 g-cm (3.06 to 3.89 oz-inch)
- Brake torque**
- Forward direction:** 1200 to 1400 g-cm (16.7 to 19.4 oz-inch)
- Reverse direction:** 500 to 700 g-cm (6.94 to 9.72 oz-inch)
- Left/right deviation:** 150 g-cm (2.09 oz-inch)
- Fast winding time** 140 seconds or less for 550 m (1800 feet)

#### ELECTRICAL

- Frequency response**  
See Figs. 3-6 to 3-9.
- Signal-to-noise ratio**

##### Playback

	19 cm/s	9.5 cm/s
LH	$\geq$ 49 dB	$\geq$ 47 dB
EE	$\geq$ 51 dB	$\geq$ 49 dB

##### Overall

	19 cm/s	9.5 cm/s
LH (II)	$\geq$ 47 dB	$\geq$ 45 dB
EE	$\geq$ 48 dB	$\geq$ 46 dB

- 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** 1.0% or less at 1 kHz with "LH (II)" tape  
1.5% or less at 1 kHz with "EE" tape

#### NOTES:

- Improvements may result in changes in the SPECIFICATIONS AND SERVICE DATA.
- 0 dB is referenced to 0.775 V, unless otherwise specified.
- Playback performance specifications refer to operation in both forward and reverse play modes.

#### CAUTION

- ⚠** Parts marked with this sign are safety critical components. they must always be replaced with identical components - refer to the appropriate parts list and ensure exact replacement.

## 2 MECHANICAL ADJUSTMENT 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.

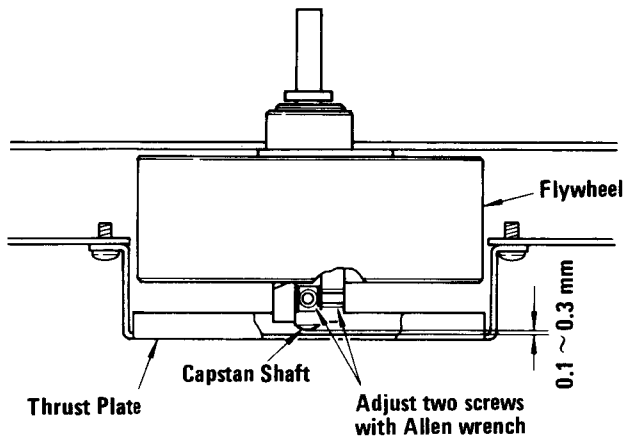


Fig. 2-1

### 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 microswitch and actuator(B) when the microswitch is on. Check to see that the clearance is within these values. If not, adjust as necessary.

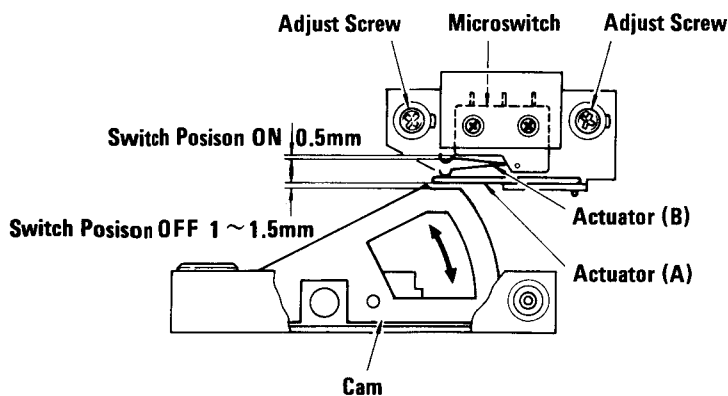


Fig. 2-2

### 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.

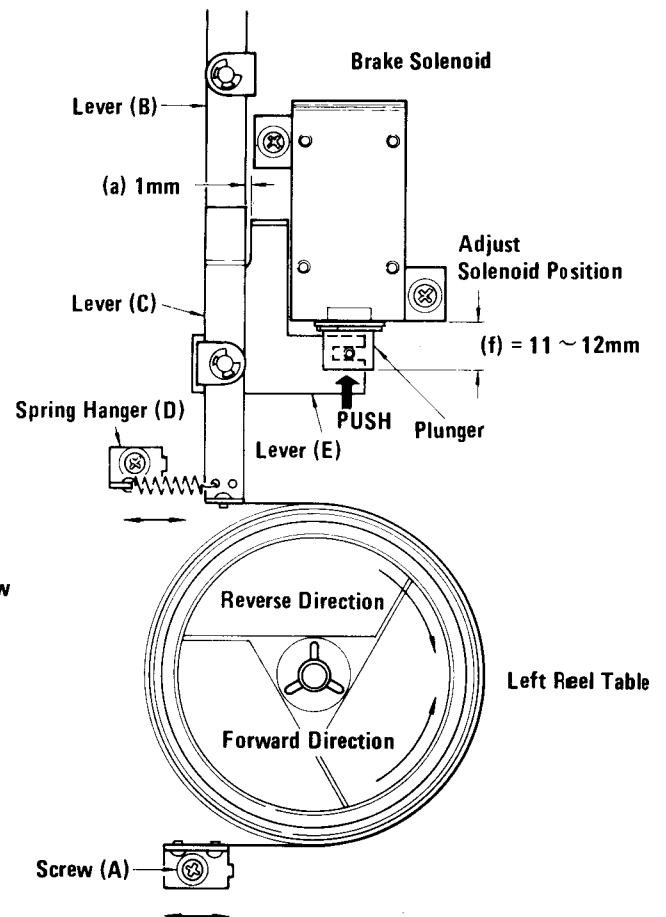


Fig. 2-3

## 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.

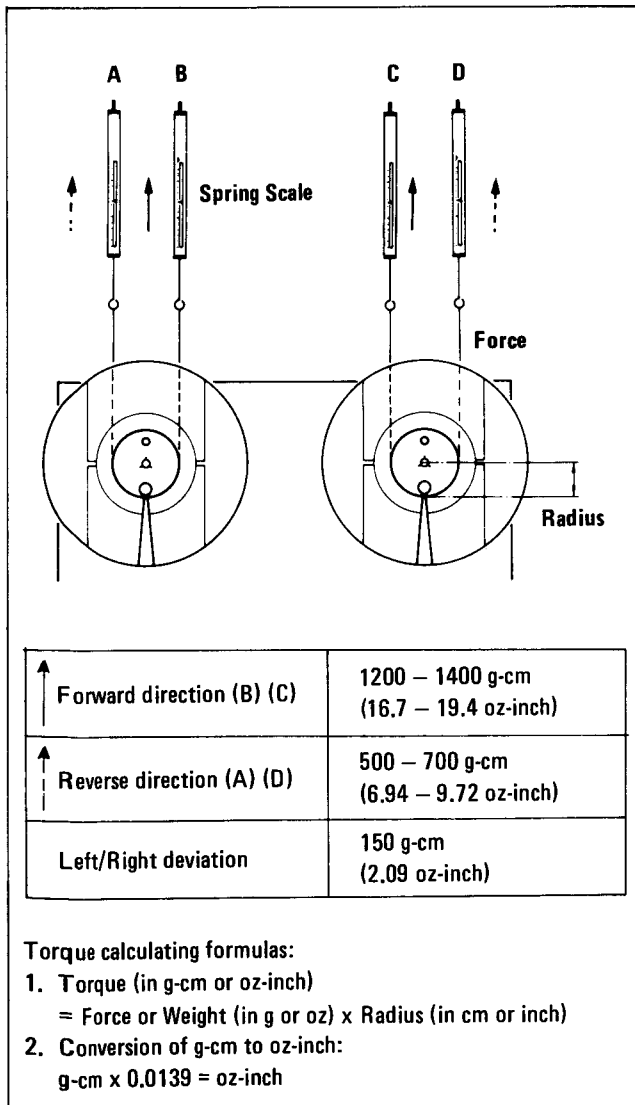


Fig. 2-4

## 2-5 REEL MOTOR TORQUE

### TAKE-UP TORQUE

1. Hold the right tension arm up using a rubber band.
2. Mount an empty 7" reel onto the right (left) reel table, and attach a spring scale to the reel with a string.
3. Place the deck in the forward (reverse) 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 a steady reading.
6. Measure the take-up torque. The proper values are given in the chart below.
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.

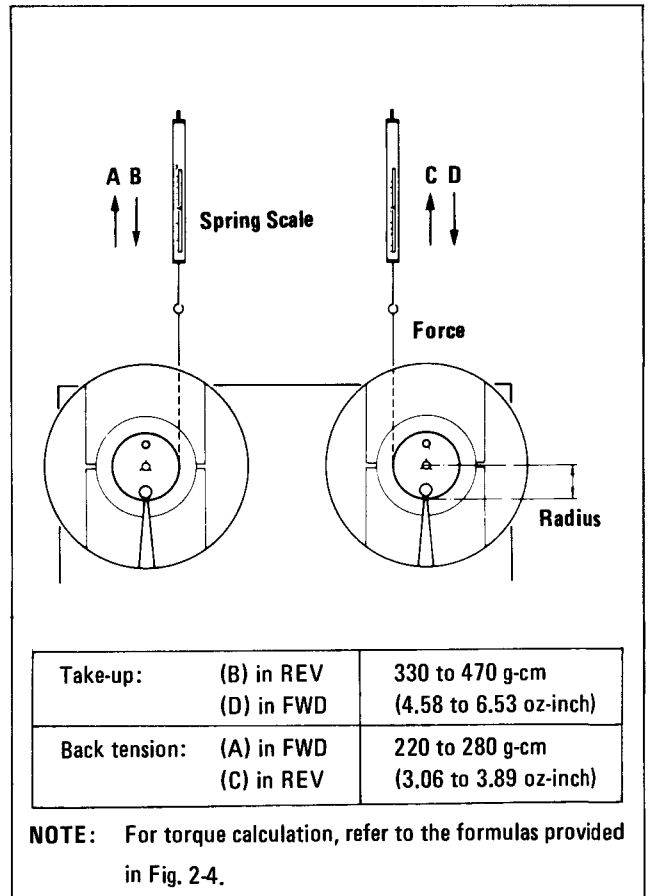
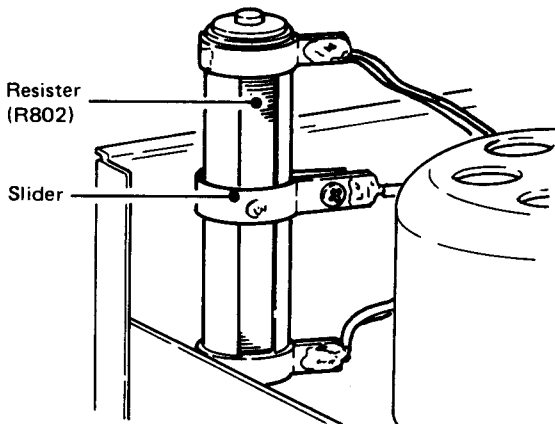


Fig. 2-5

**BACK TENSION**

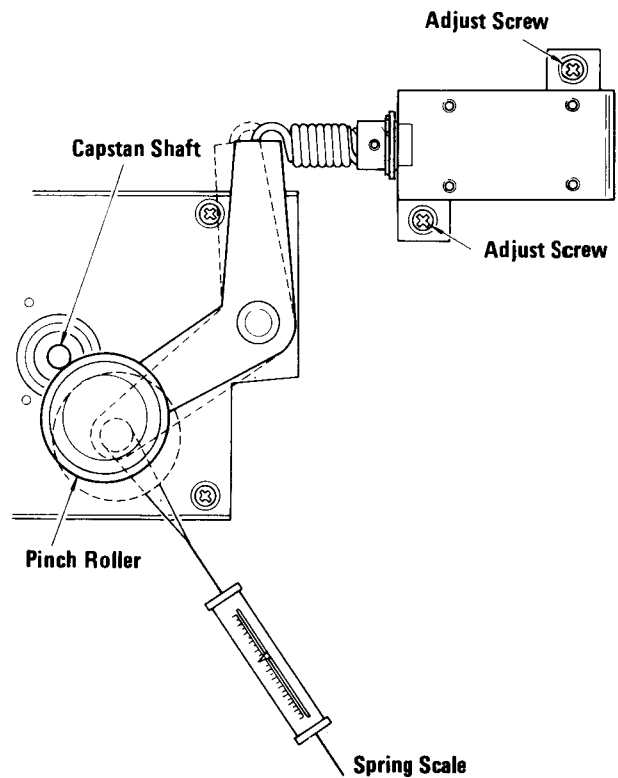
8. Place the deck in reverse (forward) play mode.
9. Using a steady, smooth motion, pull against the motor torque to draw the scale away from the reel.
10. After making sure that the reel motion is smooth (the string should not be rubbing against the reel flanges), note the value indicated on the scale.
11. The proper values are given in Fig. 2-5.
12. If necessary, adjust the slider of resistor (R802) until the proper torque values in both forward and reverse play modes are obtained. See Fig. 2-6.



**Fig. 2-6**

**2-6 PINCH ROLLER PRESSURE**

1. Hold the right tension arm up using a rubber band, string, etc.
2. Place the deck in the forward 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 read 1.5 kg to 1.7 kg (3.31 lbs to 3.75 lbs).
6. By pressing the DIRECTION switch, change play mode to reverse direction and measure in the same way as previously described. Specification is the same as that for forward play mode.



**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 or rewind 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.

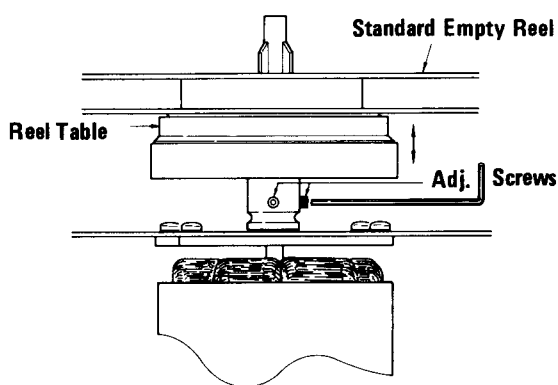


Fig. 2-8

## 2-8 TAPE SPEED

**NOTE:** Conduct the following steps in both forward and reverse play modes.

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 ( $\pm 5$  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  $\pm 30$  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.

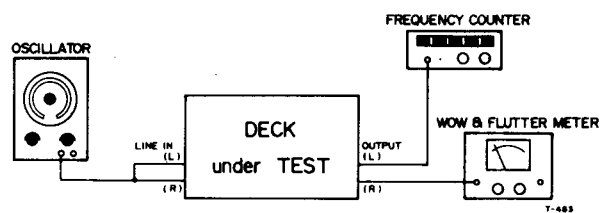


Fig. 2-9

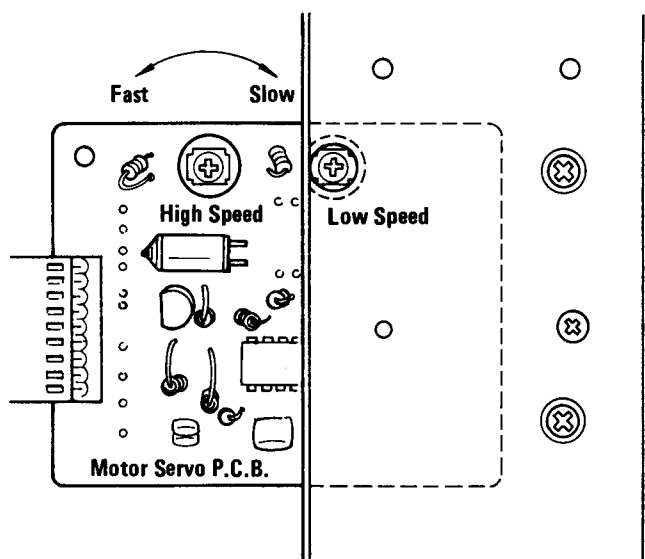


Fig. 2-10

## 2-9 WOW AND FLUTTER

### PLAYBACK

**NOTE:** This paragraph applies to both forward and reverse play modes.

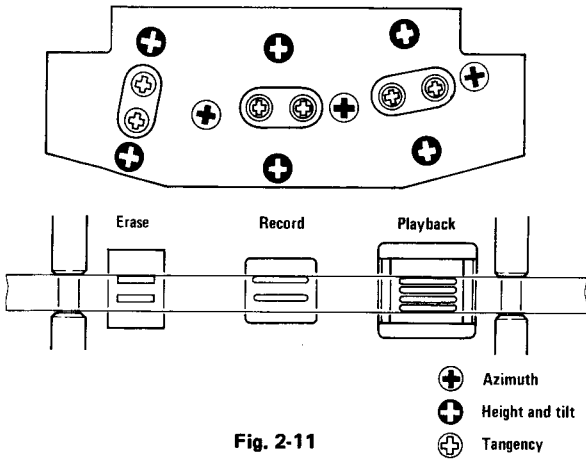
1. Connect a wow-and-flutter meter to the deck as shown in Fig. 2-9.
2. Load a TEAC YTT-2003 test tape to check the wow and flutter when the deck is set to HIGH speed, or a YTT-2002 test tape to check when set to LOW speed.
3. Play the beginning and end of the respective test tape for each speed setting. 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 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**

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 in the forward direction.
4. Fine-adjust the height of each head as shown in Fig. 2-12. When adjusting, make sure all the screws are turned proportionately so that the tilt and azimuth previously adjusted is not altered.
5. If required, coarse adjust any head requiring tangency correction.



Condition	Example of misalignment
<p><b>TILT</b> The head surface should be parallel to the tape guide pin surface.</p>	
<p><b>AZIMUTH</b> The gap of the head core should be perpendicular to the tape path.</p>	
<p><b>HEIGHT</b> (A) Erase head The upper edge of the upper core of the head should protrude 0.1 mm above the upper edge of the tape. (B) Record head The brass-colored spacer of the head should appear about as thin as a pencil line above the tape. (C) Playback head The distance from the top head core to the top edge of the tape and from the bottom head core to the bottom edge of the tape should be equal.</p>	
<p><b>TANGENCY</b> The dotted line should be perpendicular to the surface of the tape.</p>	

Fig. 2-12 Head alignment conditions

**2-11 REVERSE GUIDE HEIGHT**

1. Check, and if necessary, align head and tape path mentioned in 2-10.
2. Thread a TEAC YTT-8013 test tape on the deck, and in the reverse direction run the tape at the beginning and the end of the tape.
3. Check that tape moves exactly on the center of the playback head, i.e., that playback head height (refer to Fig. 2-12) is also maintained in reverse play mode.
4. If not, loosen the set screw and turn the reverse guide clockwise or counterclockwise for adjustment, then retighten set screw.

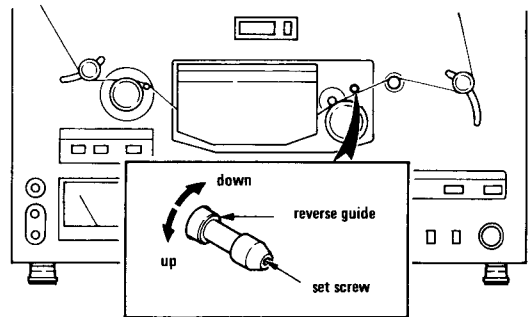


Fig. 2-13

**2-12 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.

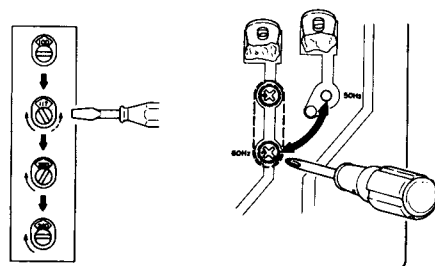


Fig. 2-14

## 2-13 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.

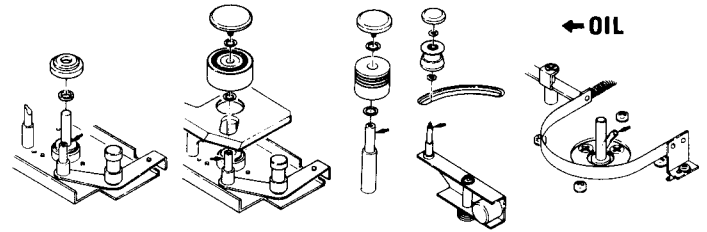


Fig. 2-15

## 3 ELECTRICAL ADJUSTMENT 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. 0 dB is referenced to 0.775 V. If an AC voltmeter is used which references 0 dB to 1 V, appropriate compensation must be made.
  5. An AC voltmeter with an input impedance of 1 M ohms or more must be used.
  6. In the charts, instruction in the MODE/INSTRUCTION column at each step is continued from previous step indication unless specified here.

### 3-1 POWER SUPPLY CHECK

1. Connect a DC voltmeter to pin 15 of U102 on the R & P AMPL PCB.
2. The DC voltage should be +12 V. (See Fig. 3-1)

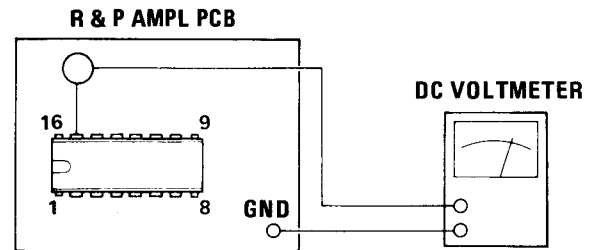


Fig. 3-1

### 3-2 MONITOR PERFORMANCE

		Deck settings:		MONITOR sw.: SOURCE			
ITEM	CONNECTION	MODE/ INSTRUCTION	SIGNAL SOURCE	ADJUST (or CHECK)	OUTPUT	REMARKS	
1. MONITOR output level	1-1	Fig. 3-2	MIC cont: MIN LINE cont: MAX OUTPUT cont: MAX	400 Hz/-22 dB (61.5 mV)	R123/R223	+1 dB (0.869 V)	LINE min. input level
	1-2	"	"	"	OUTPUT cont. (L/R) If channels do not match, re- adjust R123/ R223 to corres- pond to the lower OUTPUT.	-5 dB (436 mV)	Specified position for OUTPUT control
	<b>IMPORTANT: After setting OUTPUT control (L/R), always leave in specified position.</b>						
	1-3	"	OUTPUT cont: Spec. position	400 Hz/-12 dB (195 mV)	LINE cont.	-5 dB	Specified position for LINE control



ITEM	CONNECTION	MODE/ INSTRUCTION	SIGNAL SOURCE	ADJUST (or CHECK)	OUTPUT	REMARKS
2. VU meter	2-1 Fig. 3-2	LINE cont: Spec. position (1-3)	400 Hz/-12 dB (195 mV)	R131/R231	0 VU on VU meter	
3. MIC input level	3-1 Fig. 3-2 but LINE IN → MIC	MIC cont: MAX LINE cont: MIN	400 Hz/-70 dB (245 μV)	Check	-5 dB ± 2 dB (346 mV to 548 mV)	MIC min. input level
4. PHONES output level	4-1 Fig. 3-3	LINE cont: Spec. position (1-3) MIC cont: MIN	400 Hz/-12 dB (195 mV)	Check	-24 dB ± 2 dB (38.8 mV to 61.5 mV)	
<b>IMPORTANT: After step 4-1 is completed, do not alter any of the controls during later checks.</b>						

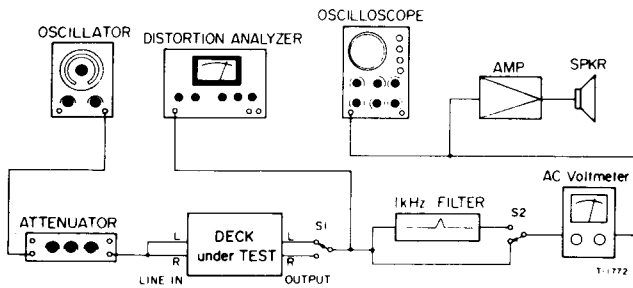


Fig. 3-2 Basic connection

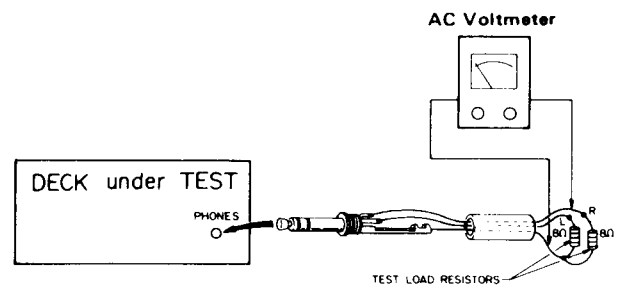


Fig. 3-3 Connection for PHONES check

**3-3 PLAYBACK PERFORMANCE**

<b>Deck settings:</b>	<b>MONITOR sw.:</b>	<b>TAPE</b>	<b>YTT-1052:</b>	For 9.5 cm/s or 3-3/4 ips, EE
	<b>MIC controls (L/R):</b>	Minimum level position	<b>YTT-1053:</b>	For 19 cm/s or 7-3/4 ips, EE
	<b>LINE controls (L/R):</b>	Specified position (step 1-3)	For recording alignment (blank)	
	<b>OUTPUT controls (L/R):</b>	Specified position (step 1-2)	<b>YTT-8013:</b>	For LH (I, II)
			<b>YTT-8053:</b>	For EE
<b>TEAC test tapes:</b>	For playback alignment		<b>NOTE: TAPE SELECTOR (left) switch has no effect on playback mode.</b>	
	<b>YTT-1002:</b>	For 9.5 cm/s or 3-3/4 ips, LH (I, II)		
	<b>YTT-1003:</b>	For 19 cm/s or 7-3/4 ips, LH (I, II)		

ITEM	CONNECTION	MODE/ INSTRUCTION	SIGNAL SOURCE	ADJUST (or CHECK)	OUTPUT	REMARKS
5. Playback head azimuth	5-1 Fig. 3-4	FWD direction SPEED sw.: HIGH TAPE SELECTOR (R): LH (I, II)	YTT-1003 (16 kHz/-10 dB)	Azimuth adjust screw on head (Fig. 2-11)	Phase: within 45° on oscilloscope (Fig. 3-5)	
6. Playback level	6-1 Fig. 3-2	FWD	YTT-1003 (400 Hz/0 dB)	R111/R211	-5 dB (436 mV)	
	6-2 "	SPEED: HIGH TAPE SELECT. (R): LH (I, II) REV	"	Check	-5 dB ± 2 dB (346 mV to 548 mV)	

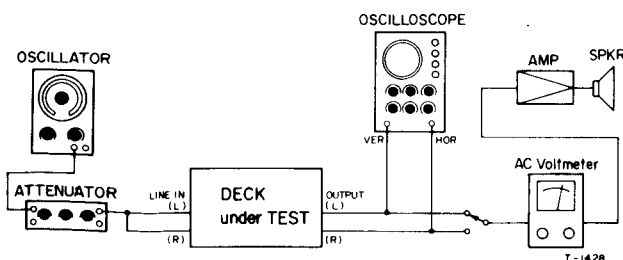


Fig. 3-4 Connection for azimuth check

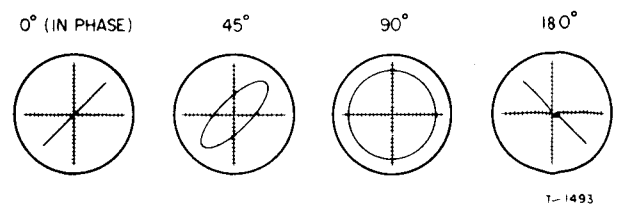


Fig. 3-5 Confirming phase relationship

ITEM	CONNECTION	MODE/ INSTRUCTION	SIGNAL SOURCE	ADJUST (or CHECK)	OUTPUT	REMARKS	
7. Frequency response	7-1	Fig. 3-2	FWD TAPE SELECT. (R): LH (I, II)	HIGH	YTT-1003	R116/R216	Fig. 3-6
	7-2	"		LOW	YTT-1002	R120/R220	Fig. 3-7
	7-3	Changing play mode to REV direction, check whether the frequency response specs are met according to 7-1 and 7-2.					
	7-4	"	FWD TAPE SELECT. (R): EE	HIGH	YTT-1053	R114/R214	Fig. 3-6
	7-5	"		LOW	YTT-1052	R118/R218	Fig. 3-7
	7-6	Changing play mode to REV direction, check whether the frequency response specs are met according to 7-4 and 7-5.					
8. Signal-to-noise	8-1	Fig. 3-2	FWD and REV HIGH and LOW LH (I, II) and EE  Use fully-erased tape (Use bulk tape eraser)	YTT-8013 and YTT-8053	Check	LH (I, II) { HIGH: 49 dB { LOW: 47 dB EE { HIGH: 51 dB { LOW: 49 dB	<ul style="list-style-type: none"> <li>Ratio of spec. OUTPUT signal (-5 dB) to inherent noise level</li> <li>Change-over of AC line plug polarity. The worse reading should be within specification.</li> </ul>

**3-4 RECORDING PERFORMANCE**

Deck settings:	MONITOR sw.:	TAPE	TEAC test tapes:	For recording alignment (blank)
	MIC controls (L/R):	Minimum level position	YTT-8013:	For LH II
	LINE controls (L/R):	Specified position (step 1-3)	YTT-8053:	For EE
	OUTPUT controls (L/R):	Specified position (step 1-2)		

ITEM	CONNECTION	MODE/ INSTRUCTION	SIGNAL SOURCE	ADJUST (or CHECK)	OUTPUT	REMARKS	
9. Bias trap	9-1	AC voltmeter between terminals #77 and #79 on R & P AMPL PCB	Rec-pause mode	-	L106/L206	Min. reading on AC voltmeter	
	9-2	Fig. 3-2	"	-	L101/L201	Min. reading [-40 dB or more (7.75 mV or less)]	
10. Record bias (LH II)	10-1	Fig. 3-2	Test tape: YTT-8013 SPEED sw.: LOW Bias/EQ: LH II	7 kHz/-32 dB (19.5 mV)	Azimuth adjust screw of head	Maximum output level	
	10-2	Fig. 3-2	"	"	C141/C241	Over bias value 2 dB ~ 4 dB (from peak)	
11. Record level (LH II)	11-1	Fig. 3-2	Test tape: YTT-8013 SPEED sw.: HIGH Bias/EQ: LH II	400 Hz/-12 dB (195 mV)	R158/R258	-5 dB (436 mV)	
12. Frequency response (LH I, LH II)	12-1	Fig. 3-2	YTT-8013 Bias/EQ: LH II	HIGH	Required signal/-22dB (61.5mV)	L102/L202	Fig. 3-8
	12-2	"		LOW	Required signal/-32 dB (19.5 mV)	L104/L204	Fig. 3-9
	12-3	"	SPEED sw.: LOW Bias/EQ: LH I	10 kHz/-32 dB (19.5 mV)	Check	When Bias/EQ are changed from LH II to LH I, output level should be raised by +3 dB at 10 kHz.	
13. Record bias (EE)	13-1	Fig. 3-2	Test tape: YTT-8053 SPEED sw.: LOW Bias/EQ: EE	7 kHz and 400 Hz/-32 dB (19.5 mV)	C142/C242	Nearly equal output level at both frequencies	
14. Record level (EE)	14-1	Fig. 3-2	Test tape: YTT-8053 SPEED sw.: HIGH Bias/EQ: EE	400 Hz/-12 dB (195 mV)	R159/R259	-5 dB (436 mV)	

ITEM	CONNECTION	MODE/ INSTRUCTION	SIGNAL SOURCE	ADJUST (or CHECK)	OUTPUT	REMARKS	
15. Frequency response (EE)	15-1	Fig. 3-2	YTT-8053 Bias/EQ: EE	HIGH	Required signal/ -22 dB (61.5 mV)	L103/L203	Fig. 3-8
				LOW	Required signal/ -32 dB (19.5 mV)	L105/L205	Fig. 3-9
16. Signal-to noise ratio	16-1	Fig. 3-2	YTT-8013 and YTT-8053 HIGH and LOW LH (II) and EE	1 kHz/-12 dB (195 mV) then no-signal recording	Check	LH II { HIGH: 47 dB LOW: 45 dB EE { HIGH: 48 dB LOW: 46 dB	Ratio of specified OUTPUT signal (-5 dB) to inherent noise level
17. Erase efficiency	17-1	Fig. 3-2 Switch ON 1 kHz filter	Test tape: YTT-8053 SPEED sw.: HIGH Bias/EQ: EE	1 kHz/-2 dB (615 mV, +10 VU) then no-signal recording	Check	OUTPUT: -65 dB or more (436 μV or less) (70 dB min. ratio)	Ref. OUTPUT level: +5 dB The worst value should be within specification.
18. REC MUTE function	18-1	Fig. 3-2 Switch ON 1 kHz filter	Test tape: YTT-8053 SPEED sw.: HIGH Bias/EQ: EE	1 kHz/-2 dB (615 mV, +10 VU) then record muting	Check	OUTPUT: -60 dB or more (0.775 mV or less (65 dB min ratio)	Ref. OUTPUT level: +5 dB The worst value should be within specification.
19. Channel separation	19-1	Fig. 3-2 Switch ON 1 kHz filter	Test tape: YTT-8053 SPEED sw.: HIGH Bias/EQ: EE	L: 1 kHz/-12 dB (195 mV) R: No signal record.	Check	R: -55 dB or more (1.38 mV or less) (50 dB min. ratio)	Find the difference between the 1 kHz recorded portion and the no-signal- recorded portion
	19-2	"	"	L: No signal record. R: 1 kHz/-12 dB (195 mV)	"	L: "	
20. Adjacent track crosstalk	20-1	Fig. 3-2	Same as 19-1	125 Hz/-12 dB (195 mV)	-	-	
	20-2	"	Interchange R and L reels then playback	-	Check	At both channels: 125 Hz: -45 dB or more (4.36 mV or less) (40 dB min. ratio)	
21. Distortion	21-1	Fig. 3-2	YTT-8013 and YTT-8053 SPEED sw.: HIGH LH (II) and EE	1 kHz/-12 dB (195 mV)	Check	1.0% or less w/ LH (II) 1.5% or less w/ EE	

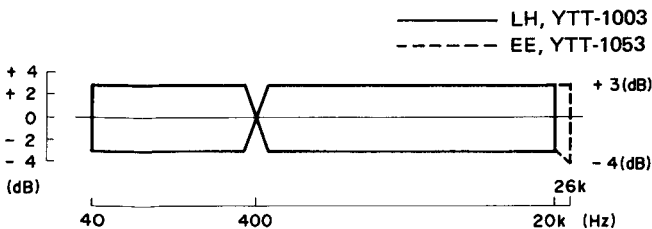


Fig. 3-6 Playback frequency response (HIGH)

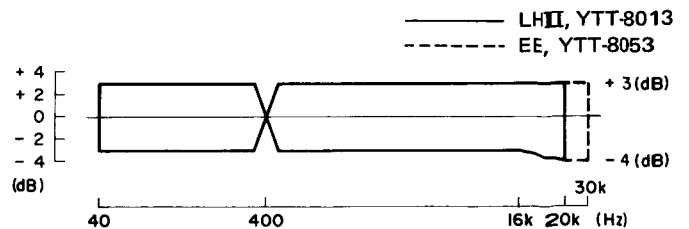


Fig. 3-8 Overall frequency response (HIGH)

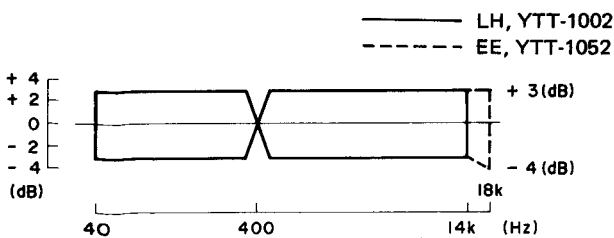


Fig. 3-7 Playback frequency response (LOW)

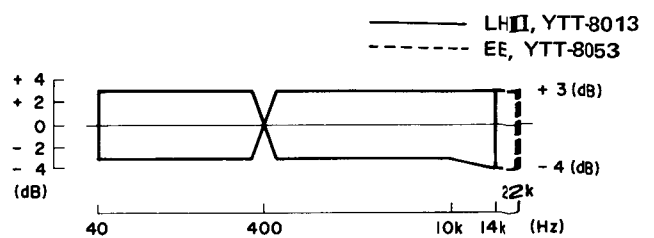
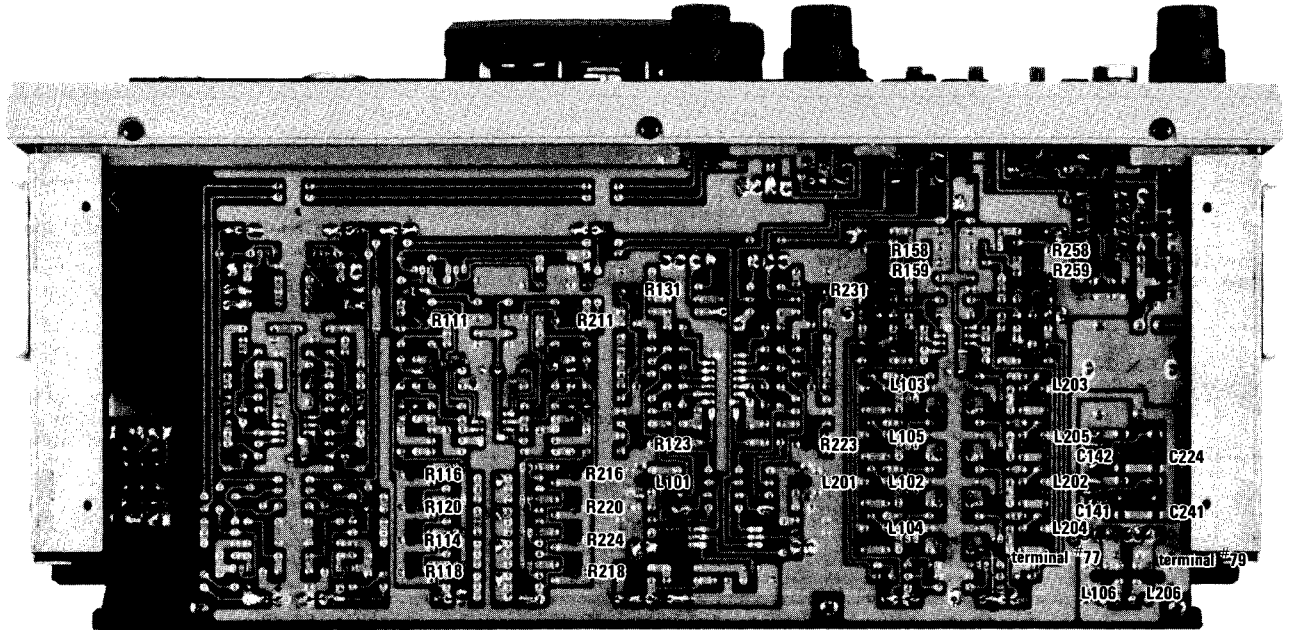


Fig. 3-9 Overall frequency response (LOW)

**3-5 ADJUSTMENT AND TEST POINT LOCATIONS**



**Fig. 3-10**

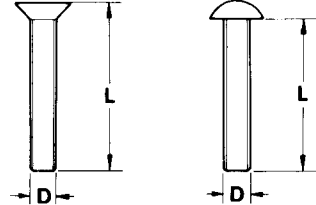
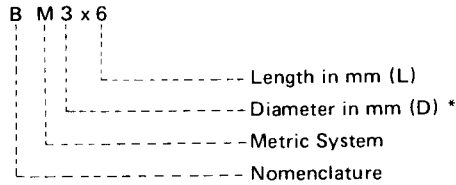
C141/C241	Record bias (LH II)
C142/C242	Record bias (EE)
L101/L201	Bias trap (OUTPUT)
L102/L202	Record EQ (HIGH, LH II)
L103/L203	Record EQ (HIGH, EE)
L104/L204	Record EQ (LOW, LH II)
L105/L205	Record EQ (LOW, EE)
L106/L206	Bias trap
R111/R211	Playback level
R114/R214	Playback EQ (HIGH, EE)
R116/R216	Playback EQ (HIGH, LH)
R118/R218	Playback EQ (LOW, EE)
R120/R220	Playback EQ (LOW, LH)
R123/R223	MONITOR output level
R131/R231	VU meter level
R158/R258	Record level (LH II)
R159/R259	Record level (EE)

**ASSEMBLING HARDWARD 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:

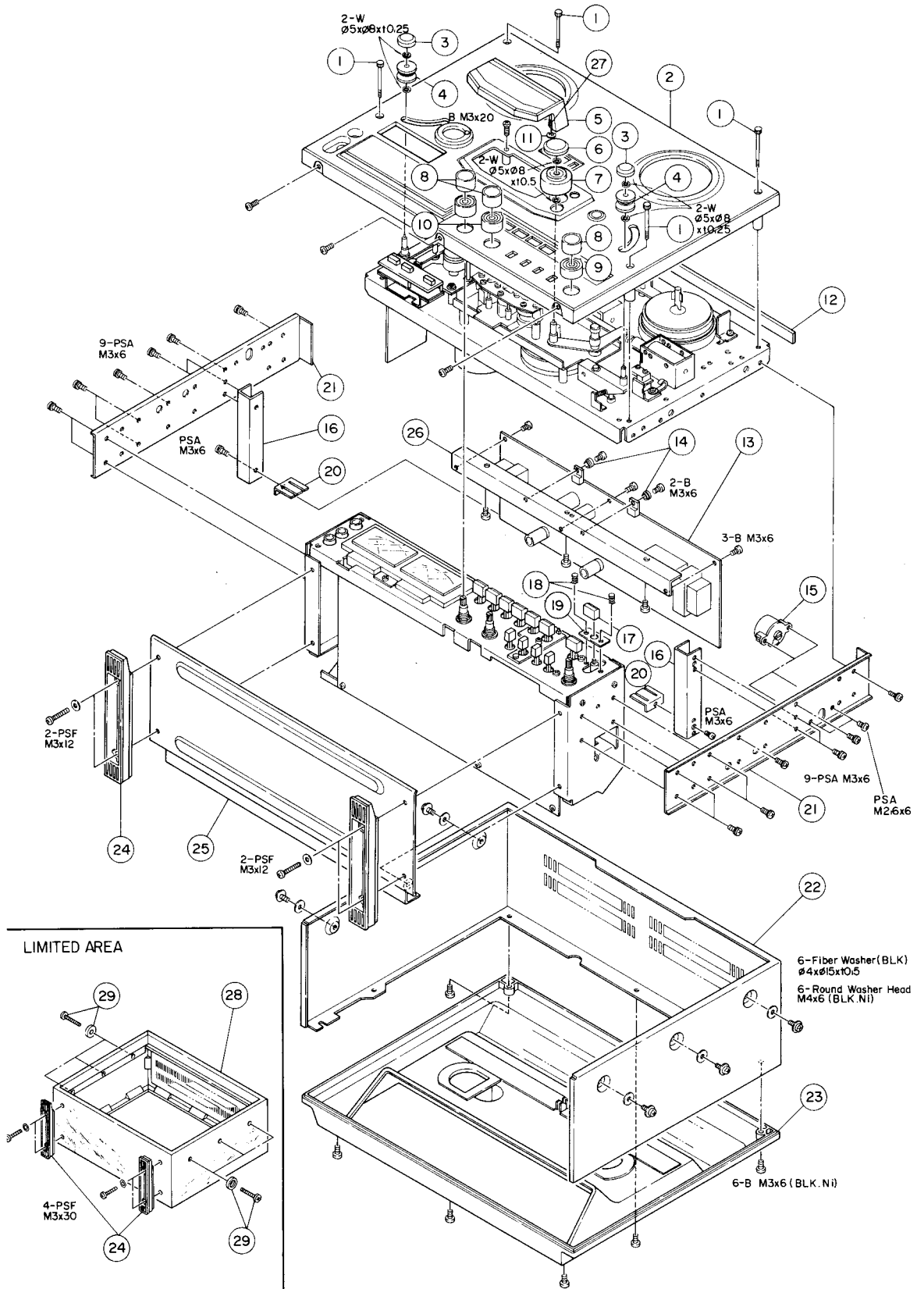


\* Inner dia. for washers and nuts

	Code	Name	Type		Code	Name	Type
MACHINE SCREW	<b>R</b>	Round Head Screw		TAPPING SCREW	<b>BTA</b>	Binding Head Tapping Screw(A Type)	
	<b>P</b>	Pan Head Screw			<b>BTB</b>	Binding Head Tapping Screw(B Type)	
	<b>T</b>	Stove Head Screw (Truss)			<b>RTA</b>	Round Head Tapping Screw(A Type)	
	<b>B</b>	Binding Head Screw			<b>RTB</b>	Round Head Tapping Screw(B Type)	
	<b>F</b>	Flat Countersunk Head Screw		SETSCREW	<b>SF</b>	Hex Socket Setscrew(Flat Point)	
	<b>O</b>	Oval Countersunk Head Screw			<b>SC</b>	Hex Socket Setscrew(Cup Point)	
WOOD SCREW	<b>RW</b>	Round Head Wood Screw		<b>SS</b>	Slotted Socket Setscrew(Flat Point)		
TAPTITE SCREW	<b>PTT</b>	Pan Head Taptite Screw		WASHER	<b>E</b>	E-Ring (Retaining Washer)	
	<b>WTT</b>	Washer Head Taptite Screw			<b>W</b>	Flat Washer (Plain)	
SEMS SCREW	<b>BSA</b>	Binding Head SEMS Screw(A Type)			<b>SW</b>	Lock Washer (Spring)	
	<b>BSB</b>	Binding Head SEMS Screw(B Type)			<b>LWI</b>	Lock Washer (Internal Teeth)	
	<b>BSF</b>	Binding Head SEMS Screw(F Type)			<b>LWE</b>	Lock Washer (External Teeth)	
	<b>PSA</b>	Pan Head SEMS Screw(A Type)		<b>TW</b>	Trim Washer (Countersunk)		
	<b>PSB</b>	Pan Head SEMS Screw(B Type)		NUT	<b>N</b>	Hex Nut	

# 4 EXPLODED VIEWS AND PARTS LIST

## EXPLODED VIEW - 1



**EXPLODED VIEW - 1**

Parts marked with \*require longer delivery time.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
1 - 1	*5781703035	Screw, Trim; M3 x 35 (Ni)	
1 - 2	*5800162100	Panel Assy, Front	
1 - 3	*5800066000	Cap, Tension Roller	22-4
1 - 4	5504843000	Roller Assy, Tension	
1 - 5	*5800162400	Housing, Head	
1 - 6	5800170700	Cap. Pinch Roller	
1 - 7	5800173701	Pinch Roller	
1 - 8	5800080600	Knob, F	X-3
1 - 9	5800080800	Knob, H	X-3
1 - 10	5800080700	Knob, G	X-3
1 - 11	*5786106000	Ring, CS; $\phi$ 6	
1 - 12	*5555887001	Cusion, Case	X-10R
1 - 13	*5200018730	PCB Assy, POWER SUPPLY [U, C]	
	*5200018740	PCB Assy, POWER SUPPLY [E, UK, A]	
	*5200018750	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	X-3
1 - 18	*5534118000	Rivet, Push	A-400
1 - 19	*5800019100	Guide, Joint Bar	
1 - 20	*5800079900	Bracket, PCB; C	X-3
1 - 21	*5553366001	Fram, 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	*5524292001	Spring, Stud	
1 - 28	*5800081200	Cabinet Assy [L]	X-3
1 - 29	*5504549000	Screw Assy, Cabinet [L]	

**INCLUDED ACCESSORIES**

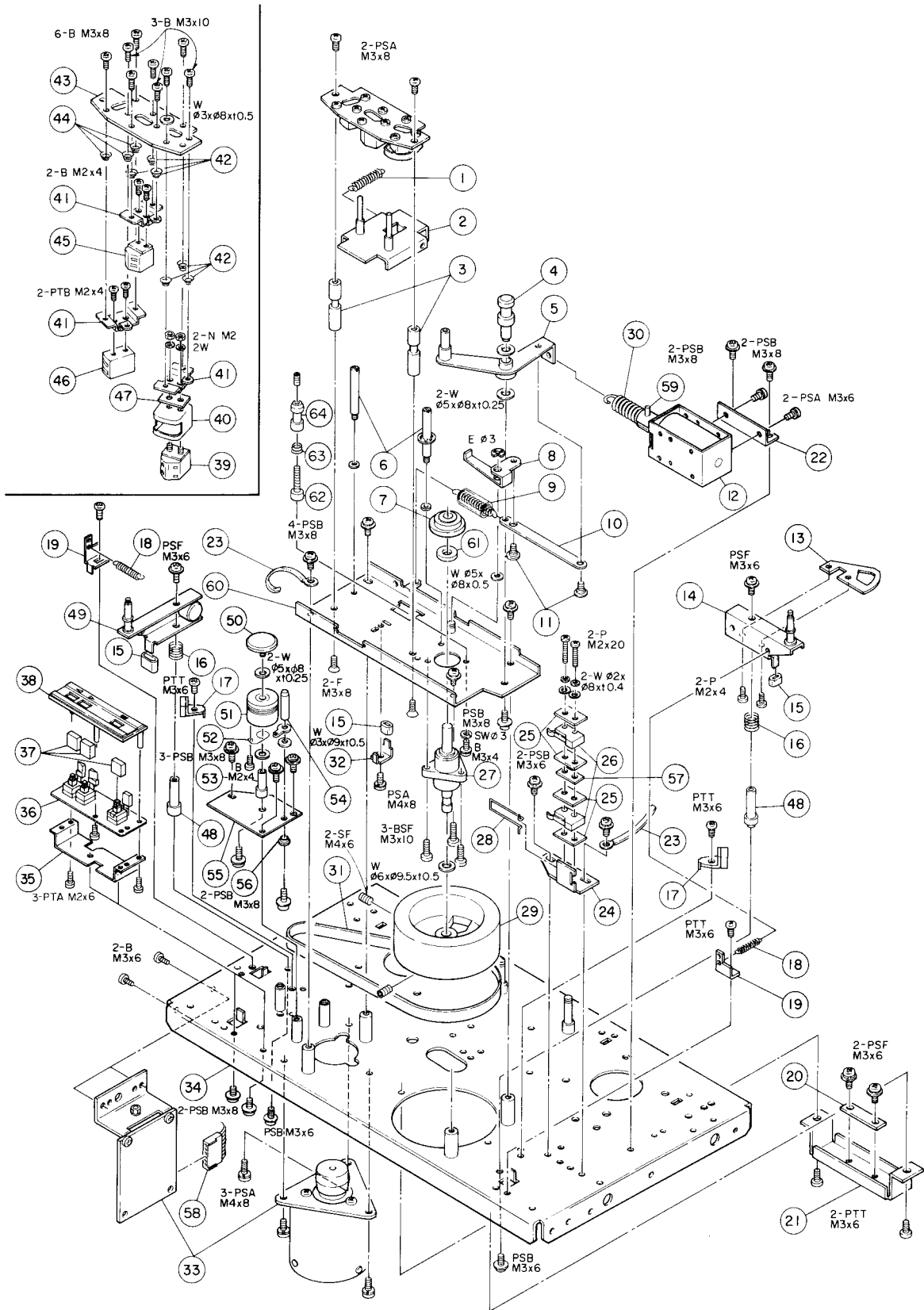
REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
	5350008500	Cord Assy, In-Output Connection	X-3
	5085008300	Empty Reel, 7 inch	
	5062962000	Splicing Tape	
	5101337100	Open Reel Supplement [U]	
	5101708000	Open Reel Supplement [All except U]	
	5700018200	Owner's Manual [U]	
	5700018300	Owner's Manual [All except U]	

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## EXPLODED VIEW - 2



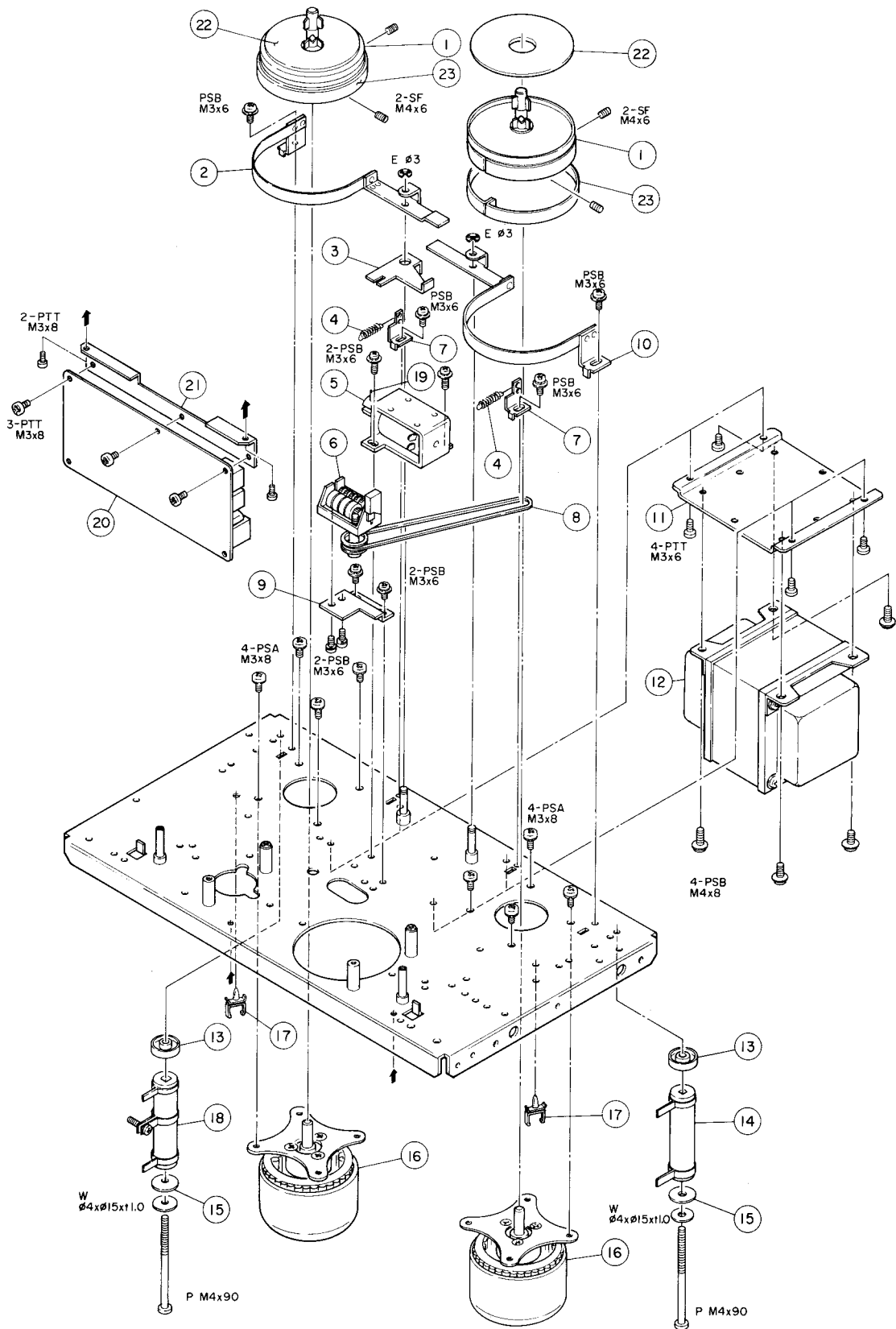


**EXPLODED VIEW - 2**

Parts marked with \*require longer delivery time.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
2 - 1	*5524287000	Spring, Lifter Return	
2 - 2	*5504836001	Plate Assy, Lifter Base	
2 - 3	*5545181000	Guide, Tape	
2 - 4	*5800170400	Pole, Guide; (B)	
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	A-304
2 - 12	5313000700	Solenoid	
2 - 13	*5555928000	Cam, Micro Switch Actuating	
2 - 14	*5504842000	Arm Assy, Tension	X-3
2 - 15	*5534850000	Cushion, Stopper	
2 - 16	*5524289000	Spring, Bias	
2 - 17	*5504844000	Stopper Assy, Arm	
2 - 18	*5524106000	Spring, Return	A-6700
2 - 19	*5555929000	Hook, Spring	
2 - 20	*5555921000	Plate, Thrust	
2 - 21	*5555920000	Angle, Thrust Plate	
2 - 22	*5800171000	Bracket, Solenoid	
2 - 23	*5581038000	Clamper, Cord; A	
2 - 24	*5555932000	Bracket, Micro Switch	
2 - 25	*5800208900	Plate, Insulating	
2 - 26	*5301455500	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	A-6100M
2 - 32	*5555924000	Stopper, Lifter	
2 - 33	7105020001	Motor Assy, Capstan	
2 - 34	*5800173601	Chassis Assy, Main	
2 - 35	*5800170300	Base, Direction	
2 - 36	*5200036800	PCB Assy, Direction	
2 - 37	*5800080000	Button	X-3
2 - 38	*5800162600	Escutcheon, Direction	
2 - 39	5378901200	Head, Playback	
2 - 40	*5554949000	Case, Shield; B	A-6600
2 - 41	*5013437100	Bracket, Head	A-2300
2 - 42	*5520182000	Spring, D	A-5300
2 - 43	*5555927000	Plate, Head Base	
2 - 44	*5022050000	Spring, B	
2 - 45	5378300000	Head, Record	
2 - 46	5378300800	Head, Erase	
2 - 47	*5550151100	Spacer, Head; A	A-4300
2 - 48	*5800048300	Shaft, Tension	
2 - 49	*5504842000	Arm Assy. Tension	X-3
2 - 50	*5800066100	Cap, Roller	22-4
2 - 51	5800171101	Roller Assy, Sensing	
2 - 52	*5524225000	Spring, Eeath	X-10R
2 - 53	*5800171300	Shaft, Guide Roller	
2 - 54	*5800171700	Pole, Guide	
2 - 55	*5800171501	Base, Roller	
2 - 56	*5033295000	Tube, Insulating	
2 - 57	*5800209000	Spacer, Micro Switch	
2 - 58	*5122172000	Connector Socket, 10P	
2 - 59	*5786303012	Pin, Spring $\phi 3 \times 12$	
2 - 60	*5504831001	Plate Assy, Capstan Base	
2 - 61	*5012390000	Oil Shield	A-2300
2 - 62	*5800170601	Base, Guide	
2 - 63	*5022050000	Spring, B	
2 - 64	*5800170501	Guide, REV	

**EXPLODED VIEW - 3**



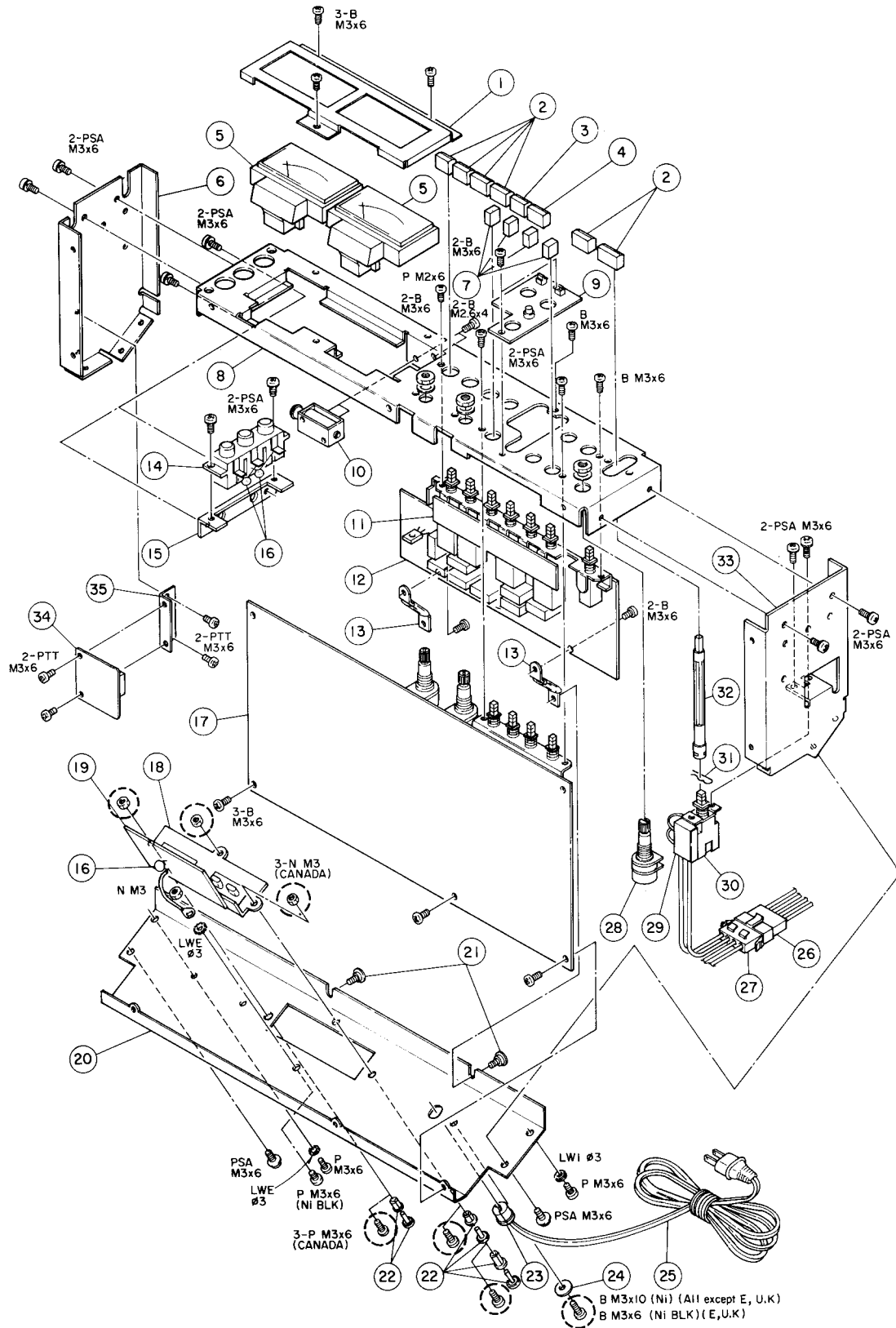
**EXPLODED VIEW - 3**

Parts marked with \*require longer delivery time.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
3 - 1	*5504852000	Table Assy, Reel	22-4
3 - 2	*5504847000	Band Assy, Brake; L	
3 - 3	*5555939000	Lever, Brake Actuating	
3 - 4	*5524291000	Spring, Brake	
3 - 5	5313000600	Solenoid, Brake	
3 - 6	5058515000	Counter	A-4300
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	A-6600
3 - 12	△*5320011800	Transformer, Power [U, C]	
	△*5320011900	Transformer, Power [GE, L]	
	△*5320012000	Transformer, Power [E, UK, A]	
3 - 13	*5534585000	Holder, Resistor	
3 - 14	△*5241832500	Resistor, Nonflammable; 1.5kΩ	A-450
3 - 15	*5785254000	Washer, Bakelite; φ4 x φ17 x t1	
3 - 16	7104601001	Motor, Reel	
3 - 17	*5033258000	Clamper, Cord; E	
3 - 18	△*5181597000	Resistor, Nonflammable; 250Ω	
3 - 19	*5786303012	Pin, Spring; φ3 x 12	
3 - 20	*5200036700	PCB Assy, REVERSE	
3 - 21	*5800170900	Bracket, REVERSE PCB	
3 - 22	*5800080100	Sheet, Reel	
3 - 23	*5534852000	Felt, Brake	

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**EXPLODED VIEW - 4**



**EXPLODED VIEW - 4**

Parts marked with \*require longer delivery time.

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
4 - 1	*5800080500	Plate, Meter	X-3
4 - 2	5800080200	Button, A	X-3
4 - 3	5800080300	Button, B	X-3
4 - 4	5800080400	Button, C	X-3
4 - 5	5165068000	Meter, VU	
4 - 6	*5553364001	Chassis, Side; L	
4 - 7	*5800080000	Button	X-3
4 - 8	*5552489001	Chassis, Amplifier	
4 - 9	*5200008500	PCB Assy, LED	X-3
4 - 10	5313000800	Solenoid	
4 - 11	*5158110000	PCB Assy, CONTROL; B	
4 - 12	*5200019500	PCB Assy, CONTROL; A [All except C]	X-3
	*5200019510	PCB Assy, CONTROL; A [C]	X-3
4 - 13	*5555945000	Bracket, PCB; B	
4 - 14	*5124063000	Jack Assy, 3-gang	
4 - 15	*5555946000	Bracket, Jack	
4 - 16	*5054204000	Capacitor, Selamic; 0.01 $\mu$ F 50V	
4 - 17	*5200056000	PCB Assy, REC/PLAY AMPL	
4 - 18	*5126038000	Terminal Assy, IN/OUTPUT	
4 - 19	*5200031400	PCB Assy, IN/OUTPUT	22-2
4 - 20	*5552488001	Chassis, Rear	
4 - 21	*5581056000	Screw, Shoulder; A	A-304
4 - 22	*5534118000	Rivet, Push [All except C]	
4 - 23	*5534660000	Strain Relief, AC Power Cord [All except UK]	
	*5534661000	Strain Relief, AC Power Cord [UK]	
4 - 24	*5555063000	Washer, GND [All except E, UK]	
4 - 25	△*5128083000	Cord, AC Power [U, C]	
	△*5127246000	Cord, AC Power [GE, L]	
	△*5128077000	Cord, AC Power [E]	
	△*5128095000	Cord, AC Power [UK]	
	△*5350008400	Cord, AC Power [A]	
4 - 26	*5122261000	Connector Plug, 4P	
4 - 27	*5122262000	Connector Plug, 4P	
4 - 28	*5282705800	Variable Resistor, 100k $\Omega$ (A) x 2	
4 - 29	△ 5052907000	Spark Killer, 0.01 $\mu$ F + 300 $\Omega$ /125V [GE, L]	
	△ 5052910000	Spark Killer, 0.033 $\mu$ F + 120 $\Omega$ /125V [U]	
	△ 5292002600	Spark Killer, 0.033 $\mu$ F + 120 $\Omega$ /125V [C]	
	△ 5267702500	Spark Killer, 0.0047 $\mu$ F/250V [E, UK, A]	
4 - 30	△ 5134122000	Switch, Power [U, C]	
	△ 5300019400	Switch, Power [All except U, C]	
4 - 31	*5786360500	R-Pin, $\phi$ 5	
4 - 32	*5534855000	Bar, Joint	
4 - 33	*5553365001	Chassis, Side; R	
4 - 34	*5200036900	PCB Assy, HEAD RELAY	
4 - 35	*5800170800	Bracket, HEAD RELAY PCB	

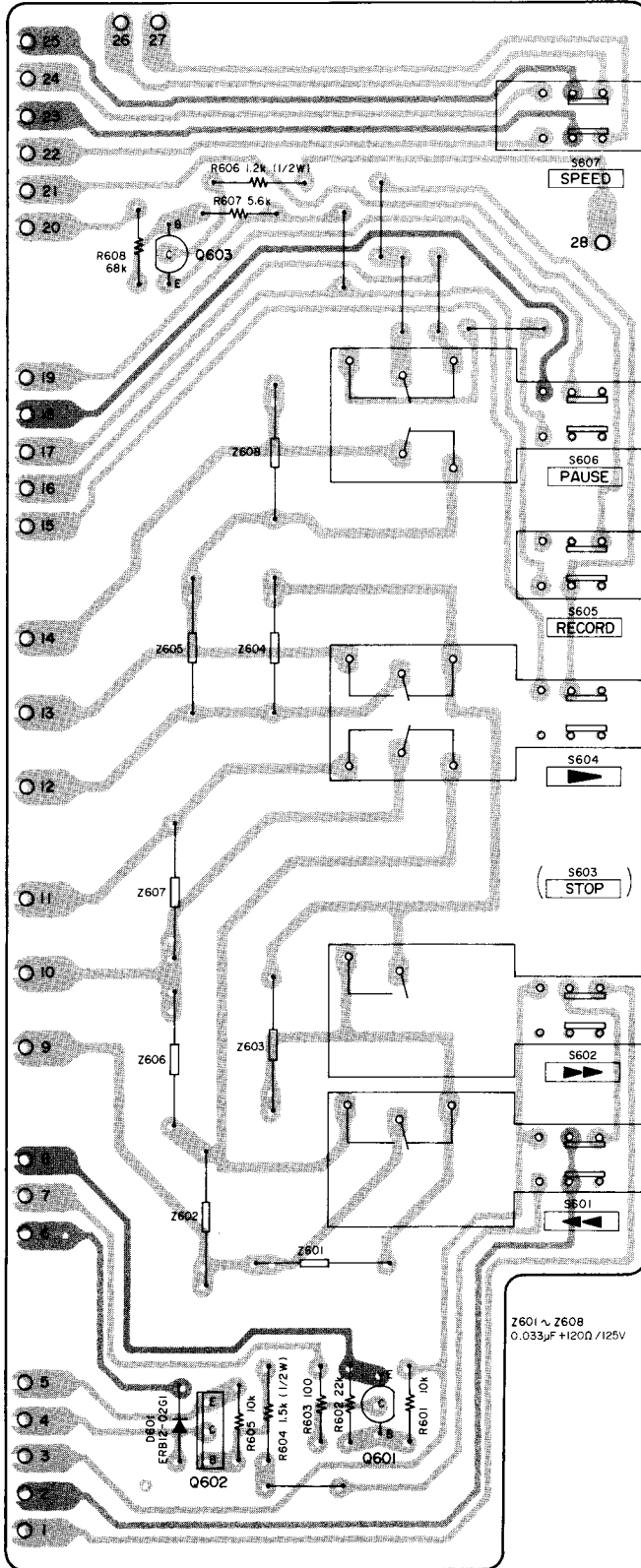
[U]: U.S.A.                      [C]: CANADA                      [GE]: GENERAL EXPORT  
 [A]: AUSTRALIA                [E]: EUROPE                      [UK]: U.K.  
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# 5 PC BOARDS AND PARTS LIST

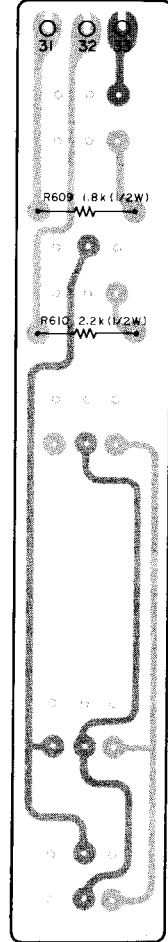
PC Boards shown viewed from foil side.

**CONTROL PCB A ASSY**

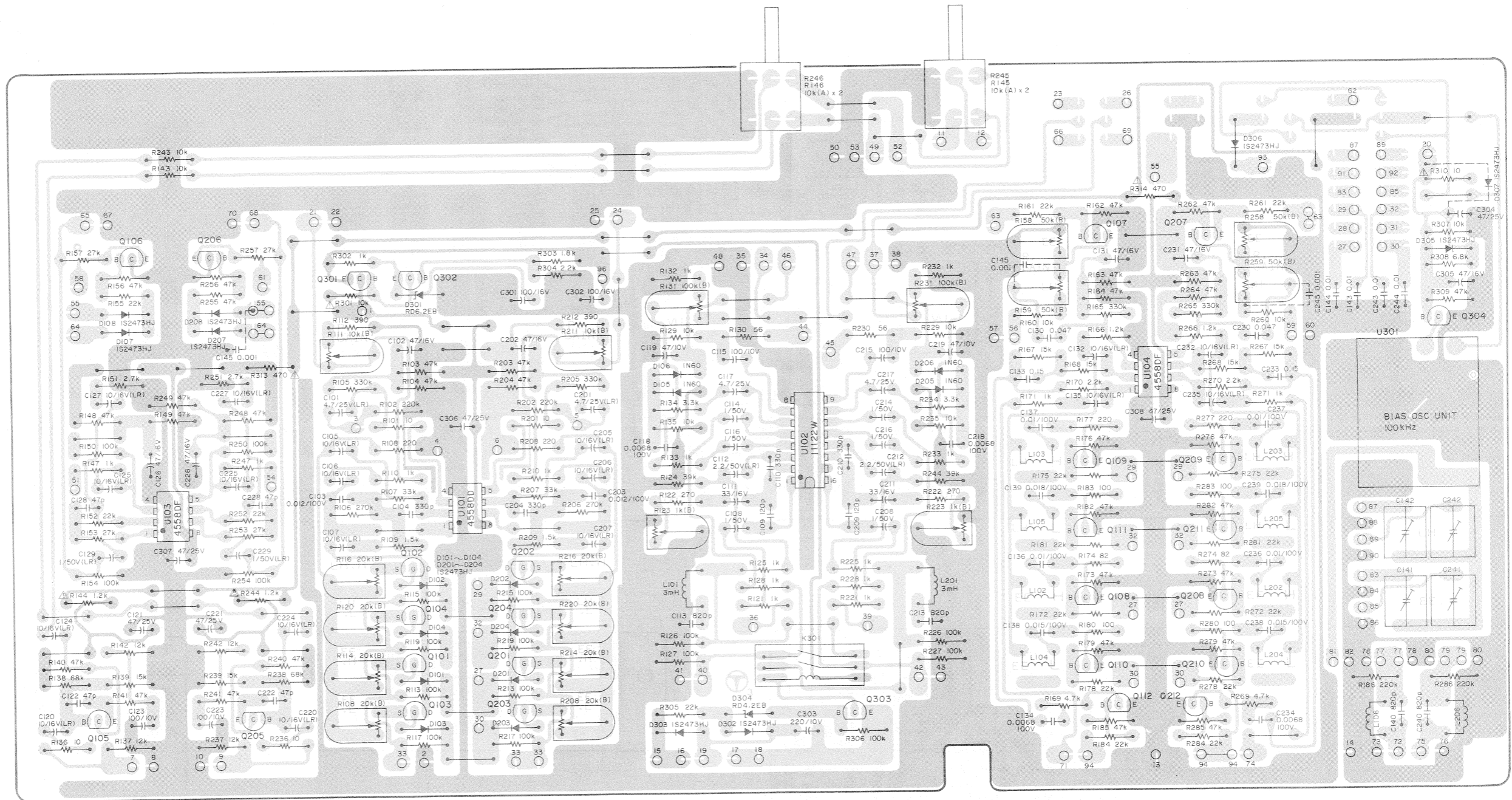
**CONTROL PCB B ASSY**



Z601 ~ Z608  
0.033µF +120Ω /125V



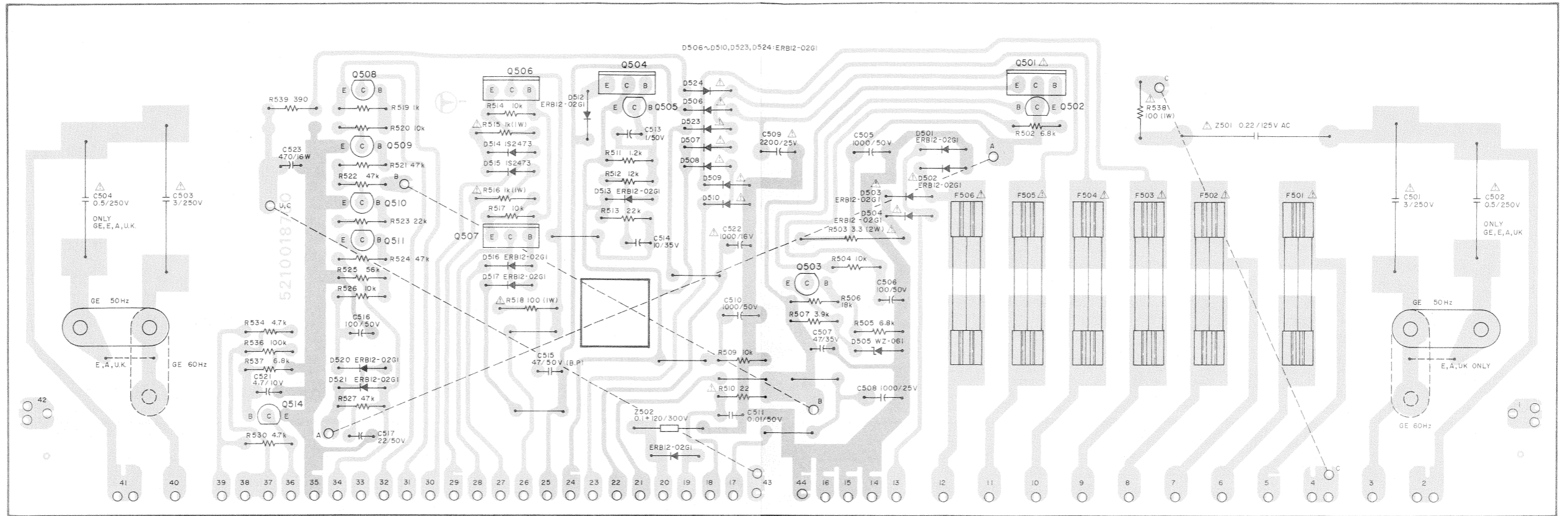
# REC/PLAY AMPL PCB ASSY



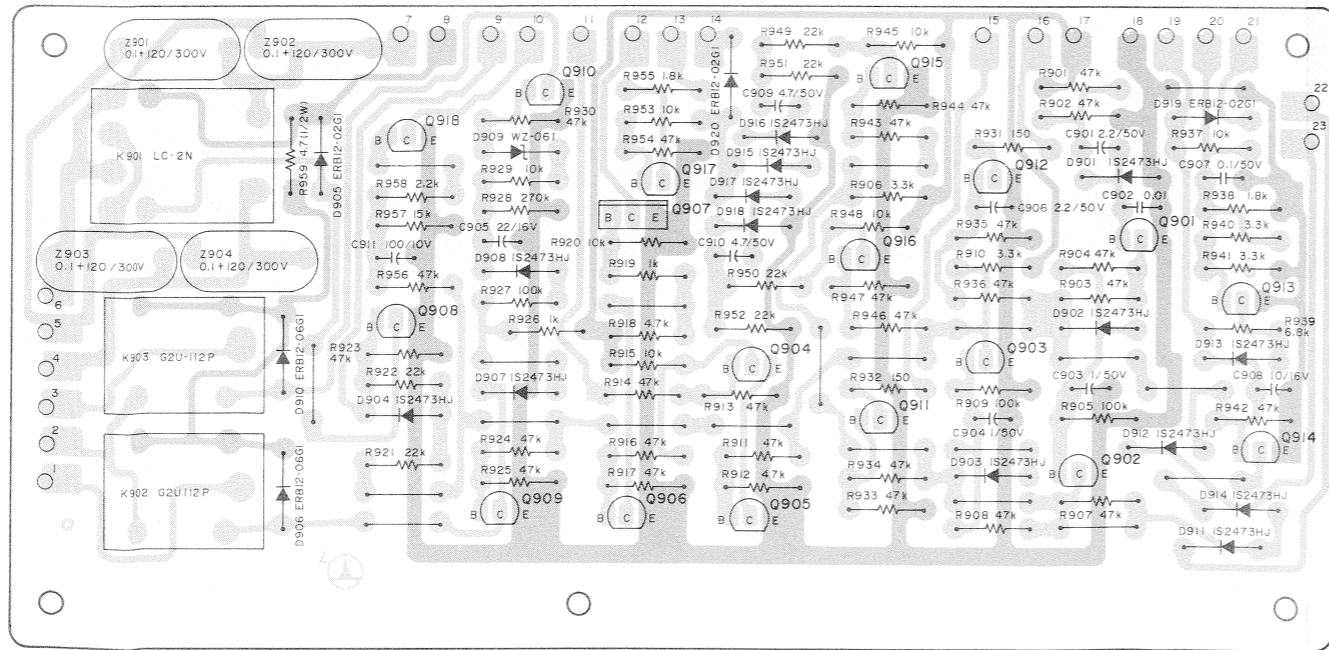
## NOTES

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

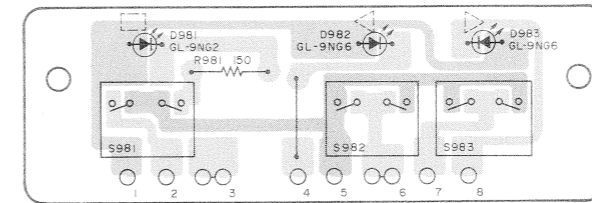
POWER SUPPLY PCB ASSY



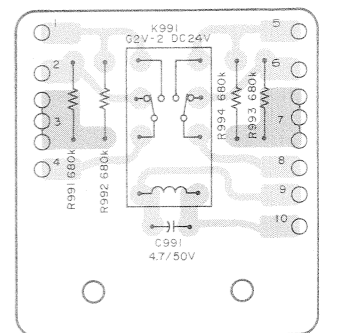
REVERSE PCB ASSY



DIRECTION PCB ASSY



HEAD RELAY PCB ASSY





**CONTROL PCB A ASSY**

REF. NO.	PARTS NO.	DESCRIPTION
	5200019500	PCB Assy [All except C]
	5200019510	PCB Assy [C]
	5157109000	CONTROL PCB A
<b>TRANSISTORS</b>		
Q601	5042625000	2SC-1318S
Q602	5145078000	2SD-600F
Q603	5042553000	2SA-733P
<b>DIODE</b>		
D601	5143243000	ERB12-02G1
<b>CARBON RESISTORS</b>		
All resistors are rated $\pm 5\%$ tolerance and $\frac{1}{4}W$ .		
R601	5183106000	10k $\Omega$
R602	5183114000	22k $\Omega$
R603	5183058000	100 $\Omega$
R604	5180086000	1.5k $\Omega$ $\frac{1}{2}W$
R605	5183106000	10k $\Omega$
R606	5180084000	1.2k $\Omega$ $\frac{1}{2}W$
R607	5183100000	5.6k $\Omega$
R608	5183126000	68k $\Omega$
<b>MISCELLANEOUS</b>		
Z601 ~ Z608	5052910000	Spark killer 0.033 $\mu F$ +120/125V [All except C]
Z601 ~ Z608	5052914000	Spark killer 0.033 $\mu F$ +120/250V [C]
S601 ~ S607	5134123000	Switch, Push; 7-gang

**CONTROL PCB B ASSY**

REF. NO.	PARTS NO.	DESCRIPTION
	5158110000	PCB Assy
	5157110000	PCB
R609	5180088000	Carbon resistor 1.8k $\Omega$ $\frac{1}{4}W$ 5%
R610	5180090000	Carbon resistor 2.2k $\Omega$ $\frac{1}{4}W$ 5%

**REC/PLAY AMPL PCB ASSY**

REF. NO.	PARTS NO.	DESCRIPTION
	5200056000	PCB Assy
	5210056000	PCB
<b>IC'S</b>		
U101	5147028000	JRC-4558D-D
U102	5147053000	HA-11122W
U103, U104	5147024000	JRC-4558D-F
<b>TRANSISTORS</b>		
Q101, Q201	5145103000	FET, 2SK-68AM
Q102, Q202	5145103000	FET, 2SK-68AM
Q103, Q203	5145103000	FET, 2SK-68AM
Q104, Q204	5145103000	FET, 2SK-68AM
Q105, Q205	5230770100	2SC-2240BL
Q106, Q206	5145185000	2SD-655E
Q107, Q207	5145091000	2SC-945AK
Q108, Q208	5145091000	2SC-945AK
Q109, Q209	5145091000	2SC-945AK
Q110, Q210	5145091000	2SC-745AK
Q111, Q211	5145091000	2SC-945AK
Q112, Q212	5145091000	2SC-945AK
Q301	5042450910	2SC-1384Q
Q302	5145091000	2SC-945AK
Q303	5145091000	2SC-945AK
Q304	5145091000	2SC-945AK
<b>DIODES</b>		
D101, D201	5143118000	1S2473HJ
D101, D202	5143118000	1S2473HJ
D103, D203	5143118000	1S2473HJ
D104, D204	5143118000	1S2473HJ
D105, D205	5042213000	IN60
D106, D206	5042213000	IN60
D107, D207	5143118000	1S2473HJ
D108, D208	5143118000	1S2473HJ
D109	5143118000	1S2473HJ
D301	5042554000	Zener, RD6.2EB 3%
D302, D303	5143118000	1S2473HJ
D304	5143121000	Zener, RD4.7EB
D305 ~ D307	5143118000	1S2473HJ
<b>CARBON RESISTORS</b>		
All resistors are rated $\pm 5\%$ tolerance and $\frac{1}{4}W$ .		
R101, R201	5183034000	10 $\Omega$
R102, R202	5183138000	220k $\Omega$
R103, R203	5183122000	47k $\Omega$
R104, R204	5183122000	47k $\Omega$
R105, R205	5183142000	330k $\Omega$
R106, R206	5183140000	270k $\Omega$
R107, R207	5183118000	33k $\Omega$
R108, R208	5183066000	220 $\Omega$
R109, R209	5183086000	1.5k $\Omega$
R110, R210	5183082000	1.0k $\Omega$
R112, R212	5183072000	390 $\Omega$
R113, R213	5183130000	100k $\Omega$
R115, R215	5183130000	100k $\Omega$
R117, R217	5183130000	100k $\Omega$
R119, R219	5183130000	100k $\Omega$
R121, R221	5183082000	1k $\Omega$
R122, R222	5183068000	270 $\Omega$
R124, R224	5183120000	39k $\Omega$
R125, R225	5183082000	1k $\Omega$
R126, R226	5183130000	100k $\Omega$

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REF. NO.	PARTS NO.	DESCRIPTION
R127, R227	5183130000	100k $\Omega$
R128, R228	5183082000	1k $\Omega$
R129, R229	5183106000	10k $\Omega$
R130, R230	5183052000	56 $\Omega$
R132, R232	5183082000	1k $\Omega$
R133, R233	5183082000	1k $\Omega$
R134, R234	5183094000	3.3k $\Omega$
R135, R235	5183106000	10k $\Omega$
R136, R236	5183034000	10 $\Omega$
R137, R237	5183108000	12k $\Omega$
R138, R238	5183126000	68k $\Omega$
R139, R239	5183110000	15k $\Omega$
R140, R240	5183122000	47k $\Omega$
R141, R241	5183050000	47 $\Omega$
R142, R242	5183108000	12k $\Omega$
R143, R243	△ 5183106000	10k $\Omega$
R144, R244	5183084000	1.2k $\Omega$
R147, R247	5183082000	1k $\Omega$
R148, R248	5183122000	47k $\Omega$
R149, R249	5183122000	47k $\Omega$
R150, R250	5183130000	100k $\Omega$
R151, R251	5183092000	2.7k $\Omega$
R152, R252	5183114000	22k $\Omega$
R153, R253	5183116000	27k $\Omega$
R154, R254	5183130000	100k $\Omega$
R155, R255	5183122000	47k $\Omega$
R156, R256	5183116000	27k $\Omega$
R157, R257	5183116000	27k $\Omega$
R160, R260	5183106000	10k $\Omega$
R161, R261	5183114000	22k $\Omega$
R162, R262	5183122000	47k $\Omega$
R163, R263	5183122000	47k $\Omega$
R164, R264	5183114000	22k $\Omega$
R165, R265	5183142000	330k $\Omega$
R166, R266	5183084000	1.2k $\Omega$
R167, R267	5183110000	15k $\Omega$
R168, R268	5183110000	15k $\Omega$
R169, R269	5183098000	4.7k $\Omega$
R170, R270	5183090000	2.2k $\Omega$
R171, R271	5183082000	1k $\Omega$
R172, R272	5183114000	22k $\Omega$
R173, R273	5183122000	47k $\Omega$
R174, R274	5183056000	82 $\Omega$
R175, R275	5183114000	22k $\Omega$
R176, R276	5183122000	47k $\Omega$
R177, R277	5183066000	220 $\Omega$
R178, R278	5183114000	22k $\Omega$
R179, R279	5183122000	47k $\Omega$
R180, R280	5183058000	100 $\Omega$
R181, R281	5183114000	22k $\Omega$
R182, R282	5183122000	47k $\Omega$
R183, R283	5183058000	100 $\Omega$
R184, R284	5183114000	22k $\Omega$
R185, R285	5183122000	47k $\Omega$
R186, R286	5183138000	220k $\Omega$
R301	5183106000	10k $\Omega$
R302	5183082000	1k $\Omega$
R303	5183088000	1.8k $\Omega$
R304	5183090000	2.2k $\Omega$
R305	5183114000	22k $\Omega$
R306	5183130000	100k $\Omega$
R307	5183106000	10k $\Omega$
R308	5183102000	6.8k $\Omega$

REF. NO.	PART NO.	DESCRIPTION
R309	5183122000	47k $\Omega$
R310	△ 5183034000	10 $\Omega$
R312~R314	△ 5184265000	470 $\Omega$ Nonflammable
<b>CAPACITORS</b>		
C101, C201	5170081000	Elec 4.7 $\mu$ F 25V
C102, C202	5173036800	Elec 47 $\mu$ F 10V
C103, C203	5170427000	Mylar 0.012 $\mu$ F 100V 5%
C104, C204	5172318000	Ceramic 330pF 50V 10%
C105, C205	5171590000	Elec 10 $\mu$ F 16V 20%
C106, C206	5171585000	Elec 2.2 $\mu$ F 50V 20%
C107, C207	5171590000	Elec 10 $\mu$ F 16V 20%
C108, C208	5172992800	Elec 1 $\mu$ F 50V
C109, C209	5172313000	Ceramic 120pF 50V 10%
C110, C210	5172318000	Ceramic 330pF 50V 10%
C111, C211	5173027800	Elec 33 $\mu$ F 16V
C112, C212	5171585000	Elec 2.2 $\mu$ F 50V 20%
C113, C213	5173731000	Polyst. 820pF 100V 5%
C114, C214	5172992800	Elec 1 $\mu$ F 50V
C115, C215	5173044800	Elec 100 $\mu$ F 10V
C116, C216	5172992800	Elec 1 $\mu$ F 50V
C117, C217	5173564800	Elec 47 $\mu$ F 25V
C118, C218	5170401000	Mylar 0.001 $\mu$ F 100V 5%
C119, C219	5173035800	Elec 47 $\mu$ F 10V
C120, C220	5171590000	Elec 10 $\mu$ F 16V 20%
C121, C221	5173037800	Elec 47 $\mu$ F 25V
C122, C222	5172308000	Ceramic 47pF 50V 10%
C123, C223	5173044800	Elec 100 $\mu$ F 10V
C124, C224	5171590000	Elec 10 $\mu$ F 16V 20%
C125, C225	5171590000	Elec 10 $\mu$ F 16V 20%
C126, C226	5173036800	Elec 47 $\mu$ F 16V
C127, C227	5171590000	Elec 10 $\mu$ F 16V 20%
C128, C228	5172308000	Ceramic 47pF 50V 10%
C129, C229	5170086000	Elec 1 $\mu$ F 50V
C130, C230	5170441000	Mylar 0.047 $\mu$ F 100V 5%
C131, C231	5173036800	Elec 47 $\mu$ F 16V
C132, C232	5171590000	Elec 10 $\mu$ F 16V 20%
C133, C233	5170453000	Mylar 0.15 $\mu$ F 100V 5%
C134, C234	5170421000	Mylar 0.0068 $\mu$ F 100V 5%
C135, C235	5171590000	Elec 10 $\mu$ F 16V 20%
C136, C236	5170425000	Mylar 0.01 $\mu$ F 100V 5%
C137, C237	5170425000	Mylar 0.01 $\mu$ F 100V 5%
C138, C238	5170429000	Mylar 0.015 $\mu$ F 100V 5%
C139, C239	5170431000	Mylar 0.018 $\mu$ F 100V 5%
C140, C240	5173731000	Polyst 820pF 100V 5%
C141, C241	5267205600	Trimmer 100pF
C142, C242	5267205600	Trimmer 100pF
C143, C243	5054204000	Ceramic 0.01 $\mu$ F 50V 10%
C144, C244	5054204000	Ceramic 0.01 $\mu$ F 50V 10%
C145, C245	5170401000	Mylar 0.001 $\mu$ F 100V 5%
C146	5170401000	Mylar 0.001 $\mu$ F 100V 5%
C301, C302	5173045800	Elec 100 $\mu$ F 16V
C303	5173053800	Elec 220 $\mu$ F 10V
C304	5173037800	Elec 47 $\mu$ F 25V
C305	5173036800	Elec 47 $\mu$ F 16V
C306 ~ C308	5173053800	Elec 220 $\mu$ F 10V
C309 ~ C311	5054204000	Ceramic 0.01 $\mu$ F 50V 10%
<b>VARIABLE RESISTORS</b>		
R111, R211	5150092000	Semi-fixed 10k $\Omega$ (B)
R114, R214	5150233000	Semi-fixed 20k $\Omega$ (B)
R116, R216	5150233000	Semi-fixed 20k $\Omega$ (B)
R118, R218	5150233000	Semi-fixed 20k $\Omega$ (B)
R120, R220	5150233000	Semi-fixed 20k $\Omega$ (B)

**POWER SUPPLY PCB ASSY**

REF. NO.	PARTS NO.	DESCRIPTION
R123, R223	5053446000	Semi-fixed 1kΩ(B)
R131, R231	5150096000	Semi-fixed 100kΩ(B)
R145, R245	5282705900	10kΩ(A) x 2
R146, R246	5282705900	10kΩ(A) x 2
R158, R258	5150094000	Semi-fixed 50kΩ(B)
<b>COILS</b>		
L101, L201	5056659000	Trap, 3mH 20%
L102, L202	5160041000	Record; EQ, 2.4μH 20%
L103, L203	5160041000	Record; EQ, 2.4μH 20%
L104, L204	5160041000	Record; EQ, 2.4μH 20%
L105, L205	5160041000	Record; EQ, 2.4μH 20%
L106, L206	5056659000	Trap, 3mH 20%
<b>MISCELLANEOUS</b>		
U301	5040090000	BIAS OSC Unit
K301	5061137000	Relay, Reed; LAB 2L 12V
S101, S104	5300023500	Switch, Push; 4-gang
	5210037800	Switch PCB

REF. NO.	PARTS NO.	DESCRIPTION
	5200018730	PCB Assy U, C
	5200018740	PCB Assy E, UK, A
	5200018750	PCB Assy GE, L
	5210018700	PCB U, C, GE, L
	5210031200	PCB E, UK, A
<b>TRANSISTORS</b>		
Q501	△ 5145087000	2SD-313E
Q502	5042625000	2SC-1318S
Q503	5042383000	2SC-536F
Q504	5145087000	2SD-313E
Q505	5145043000	2SA-720Q
Q506, Q507	5145078000	2SD-600F
Q508	5145043000	2SA-720Q
Q509, Q510	5145091000	2SC-945AK
Q511	5042553000	2SA-733P
Q514	5145091000	2SC-945K
<b>DIODES</b>		
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, D524	△ 5143243000	ERB12-02G1
<b>CARBON RESISTORS</b>		
All resistors are rated ±5% tolerance and ¼W.		
R502	5183102000	6.8kΩ
R503	△ 5184306000	3.3Ω 10% 2W Cement
R504	5183106000	10kΩ
R505	5183102000	6.8kΩ
R506	5183112000	18kΩ
R507	5183096000	3.9kΩ
R509	5183106000	10kΩ
R510	△ 5184233000	22Ω Nonflammable
R511	5183084000	1.2kΩ
R512	5183108000	12kΩ
R513	5183114000	22kΩ
R514	5183106000	10kΩ
R515, R516	△ 5185790000	1kΩ 1W Metal Film
R517	5183106000	10kΩ
R518	△ 5184755000	100Ω 1W Metal Film
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, R534	5183098000	47kΩ
R536	5183130000	100kΩ
R537	5183102000	6.8kΩ
R538	△ 5184755000	100Ω 1W Metal Film
R539	5183072000	390Ω
<b>CAPACITORS</b>		
C501	5171613000	AC Film 3μF AC250V 5%
C502	5267702700	AC Film 0.5μF AC250V 10%
C503	5171613000	AC Film 3μF AC250V 5%
C504	5267702700	AC Film 0.5μF AC250V 10%
C505	△ 5172973800	Elec 1000μF 50V

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REF. NO.	PARTS NO.	DESCRIPTION
C506	5172936800	Elec 100μF 35V
C507	5172927800	Elec 47μF 35V
C508	5172971800	Elec 1000μF 25V
C509	△ 5172978800	Elec 2200μF 25V
C510	△ 5172973800	Elec 1000μF 25V
C511	5054802000	Malar 0.01μF 100V 10%
C513	5172882800	Elec 1μF 50V
C514	5172902800	Elec 10μF 35V
C515	5055949000	Elec 47μF 50V 20%
C516	5172937800	Elec 100μF 50V
C517	5172911800	Elec 22μF 50V
C521	5172924800	Elec 47μF 10V
C522	△ 5172970800	Elec 1000μF 16V
C523	5172961800	Elec 470μF 16V
Z501	△ 5171615000	Polypro 0.22mF 125V 20%
Z502	5052905000	Spark killer 0.1μF+120/300V
<b>FUSES</b>		
F501, F502	△ 5307003600	Fuse 1A 250V U, C
F501, F502	△ 5041140000	Mini Fuse 1A 250V E, UK, A
F501, F502	△ 5041101000	Fuse 1A 250V GE, L
F503	△ 5307003600	Fuse 3A 250V U, C
F503	△ 5142191000	Mini Fuse 3.15A 250V E, UK, A
F503	△ 5142211000	Fuse 3A 250V GE, L
F504	△ 5307003600	Fuse 1A 250V U, C
F504	△ 5041140000	Mini Fuse 1A 250V E, UK, A
F504	△ 5041101000	Fuse 1A 250V GE, L
F505	△ 5307004100	Fuse 2A 250V V, C
F505	△ 5142189000	Mini Fuse 2A 250V E, UK, A
F505	△ 5041114000	Fuse 2A 250V GE, L
F506	△ 5307004000	Fuse 1.6A 250V U, C
F506	△ 5142188000	Mini Fuse 1.6A 250V E, UK, A
F506	△ 50411151000	Fuse 1.5A 250V GE, L
<b>MISCELLANEOUS</b>		
	5041237000	Fuse Holder U, C, GE, L
	5142087000	Fuse Holder E, UK, A

**REVERSE PCB ASSY**

REF. NO.	PART NO.	DESCRIPTION
	5200036700	PCB Assy
	5210036700	PCB
<b>TRANSISTORS</b>		
Q901 ~ Q906	5145091000	2SC-945AK
Q907	5145078000	2SD-600F
Q908 ~ Q918	5145091000	2SC-945AK
<b>DIODES</b>		
D901 ~ D904	5143118000	1S2473HJ
D905, D906	5143243000	ERB12-02G1
D907, D908	5143118000	1S2473HJ
D909	5042514000	Zener, WZ-061
D910	5143243000	ERB12-02G1
D911 ~ D918	5143118000	1S2473HJ
D919, D920	5143243000	ERB12-02G1
<b>CARBON RESISTORS</b>		
All resistors are rated ±5% tolerance and ¼W.		
R901 ~ R904	5183122000	47kΩ
R905	5183130000	100kΩ
R906	5183094000	3.3kΩ
R907, R908	5183122000	47kΩ
R909	5183130000	100kΩ
R910	5183094000	3.3kΩ
R911 ~ R914	5183122000	47kΩ
R915	5183106000	10kΩ
R916, R917	5183122000	47kΩ
R918	5183098000	47kΩ
R919	5183082000	1kΩ
R920	5183106000	10kΩ
R921, R922	5183114000	22kΩ
R923 ~ R927	5183122000	47kΩ
R928	5183140000	270kΩ
R929	5183106000	10kΩ
R930	5183122000	47kΩ
R931, R932	5183062000	150Ω
R933 ~ R936	5183122000	47kΩ
R937	5183106000	10kΩ
R938	5183088000	1.8kΩ
R939	5183102000	6.8kΩ
R940, R941	5183094000	3.3kΩ
R942 ~ R944	5183122000	47kΩ
R945	5183106000	10kΩ
R946, R947	5183122000	47kΩ
R948	5183106000	10kΩ
R949 ~ R952	5183114000	22kΩ
R953	5183106000	10kΩ
R954	5183122000	47kΩ
R955	5183088000	1.8kΩ
R956	5183122000	47kΩ
R957	5183110000	15kΩ
R958	5183090000	2.2kΩ
R959	5180026000	4.7Ω
<b>CAPACITORS</b>		
C901	5172886000	Elec 2.2μF 50V
C902	5172236000	Ceramic 0.01μF 50V 20%
C903, C904	5172882000	Elec 1μF 50V
C905	5172908000	Elec 22μF 16V
C906	5172886000	Elec 2.2μF 50V
C907	5170519000	Mylar 0.1μF 100V 10%
C908	5172900000	Elec 10μF 16V
C909, C910	5172896000	Elec 4.7μF 50V
C911	5172933000	Elec 100μF 10V

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REF. NO.	PARTS NO.	DESCRIPTION
<b>MISCELLANEOUS</b>		
K901	5061131000	Relay, 24V LC2N
K902, K903	5290008500	Relay, 24V G2U-112P
Z901 ~ Z904	5052905000	Spark killer 0.1 $\mu$ F+120/300V

**HEAD RELAY PCB ASSY**

REF. NO.	PARTS NO.	DESCRIPTION
	5200036900	PCB Assy
	5210036900	PCB
R991 ~ R994	5183150000	Carbon resistors 680k $\Omega$ $\pm$ 5% 1/2W
K991	5290008900	Relay 24V G2V-2
C991	5172896000	Elec 47 $\mu$ F 50V

**LED PCB ASSY**

REF. NO.	PARTS NO.	DESCRIPTION
	5200008500	PCB Assy
	5210008500	PCB
D701	5143139000	LED SLB-26GG (GREEN)
D702	5143140000	LED SLB-26UR (RED)
D703	5143314000	LED AR3137D (RED)

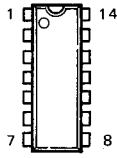
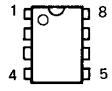
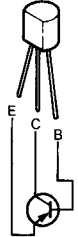
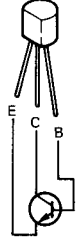

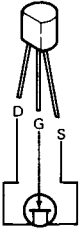


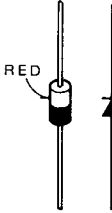
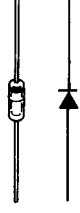
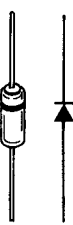
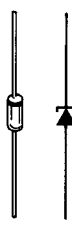
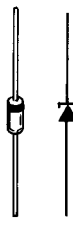


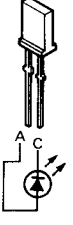

**DIRECTION PCB ASSY**

REF. NO.	PARTS NO.	DESCRIPTION
	5200036800	PCB Assy
	5210036800	PCB
S981	5300022100	Push Switch
S982, S983	5300022200	Push Switch, (Non Rock)
D981	5225007100	LED, GL-9NG2 (GREEN)
D982, D983	5225007200	LED, GL-9NG6 (GREEN)
R981	5183062000	Carbon resistors 150 $\Omega$ $\pm$ 5% 1/2W

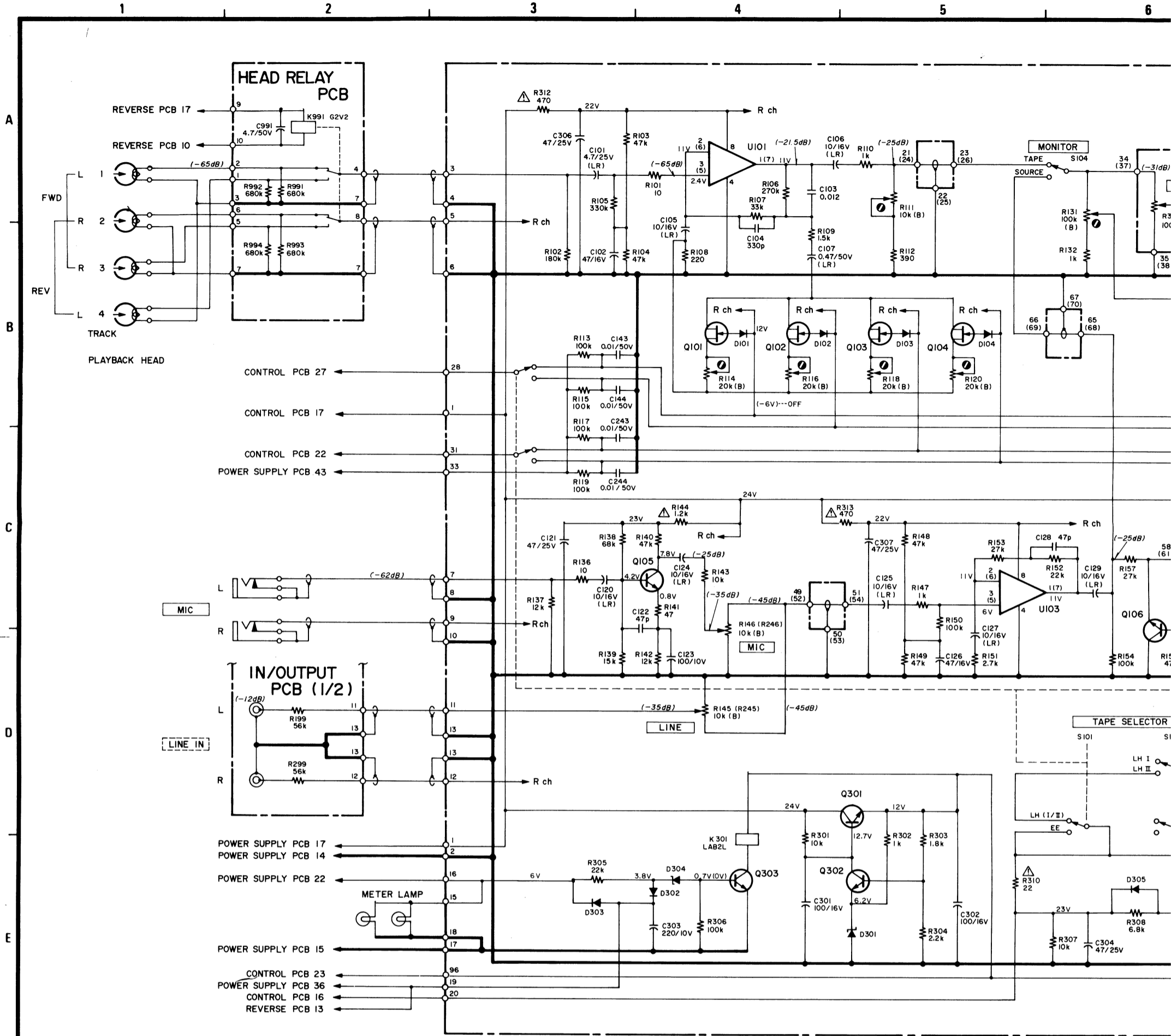
**IN/OUT PUT PCB ASSY**

REF. NO.	PARTS NO.	DESCRIPTION
	5200031400	PCB Assy
	5257104001	PCB
R199, R299	5183124000	Carbon resistors 56k $\Omega$ $\pm$ 5% 1/2W

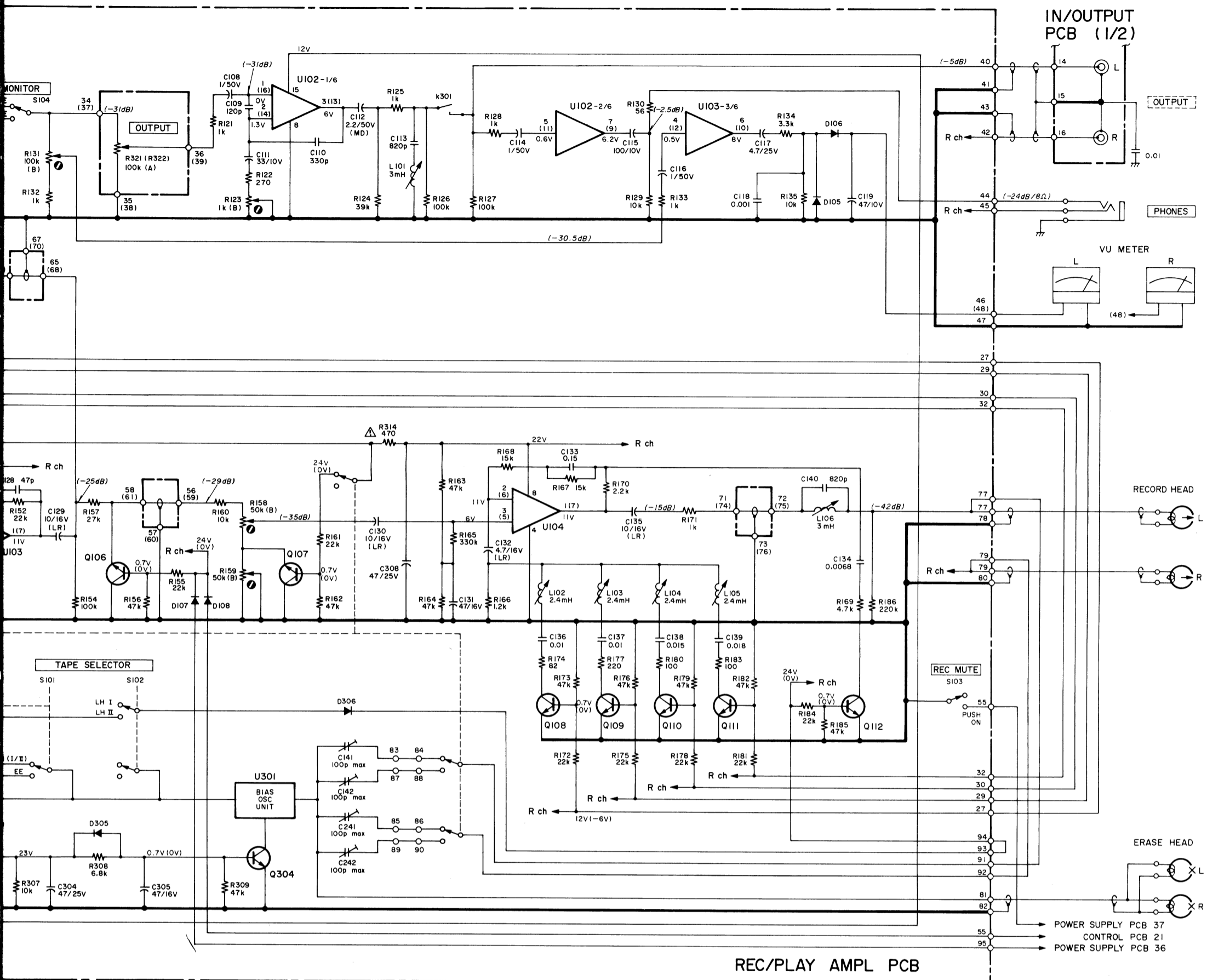
**TABLE OF SEMICONDUCTORS**

<p>HA - 11122W</p> <p>(TOP VIEW)</p> 	<p>JRC - 4558D - D JRC - 4558D - F</p> <p>(TOP VIEW)</p> 	<p>2SA - 720Q 2SA - 733P</p> 	<p>2SC - 536F 2SC - 1318S 2SC - 945AK 2SC - 2240BL</p> 	<p>2SC - 1384Q</p> 
<p>2SK - 68AM</p> 	<p>2SD - 313E</p> 	<p>2SD - 600K(F)</p> 	<p>ERB12 - D2G1</p> 	<p>1S2473HJ</p> 
<p>IN - 60</p> 	<p>RD - 6,2EB RD - 4,7EB</p> 	<p>WZ - 061</p> 	<p>SLB - 26GG (GREEN) SLB - 26UR (RED)</p> 	<p>AR3137D (RED)</p> 
<p>GL - 9NG2 (GREEN)</p> 	<p>GL - 9NG6 (GREEN)</p> 			

# TEAC SCHEMATIC DIAGRAM (AMPLIFIER) X-3R



U101	JRC4558DD	Q101 (Q201)	2SK68AM	Q110 (Q210)	2SC945AK	D101 (D201)	IS2473HJ	D301
U102	HA11122W	Q102 (Q202)	2SK68AM	Q112 (Q212)	2SC945AK	D102 (D202)	IS2473HJ	D302
U103	4558DF	Q103 (Q203)	2SK68AM			D103 (D203)	IS2473HJ	D303
U104	4558DF	Q104 (Q204)	2SK68AM			D104 (D204)	IS2473HJ	D304
		Q105 (Q205)	2SC2240BL			D105 (D205)	IN60	D305
		Q106 (Q206)	2SD655E	Q301	2SC1384 (R)	D106 (D206)	IN60	D306
		Q107 (Q207)	2SC945AK	Q302	2SC945AK	D107 (D207)	IS2473HJ	
		Q108 (Q208)	2SC945AK	Q303	2SC945AK	D108 (D208)	IS2473HJ	
		Q109 (Q209)	2SC945AK	Q304	2SC945AK			
		Q110 (Q210)	2SC945AK					



IS2473HJ	D301	RD6.2EB
IS2473HJ	D302	IS2473HJ
IS2473HJ	D303	IS2473HJ
IS2473HJ	D304	RD4.2EB
IN60	D305	IS2473HJ
IN60	D306	IS2473HJ
IS2473HJ		
IS2473HJ		

#### NOTES

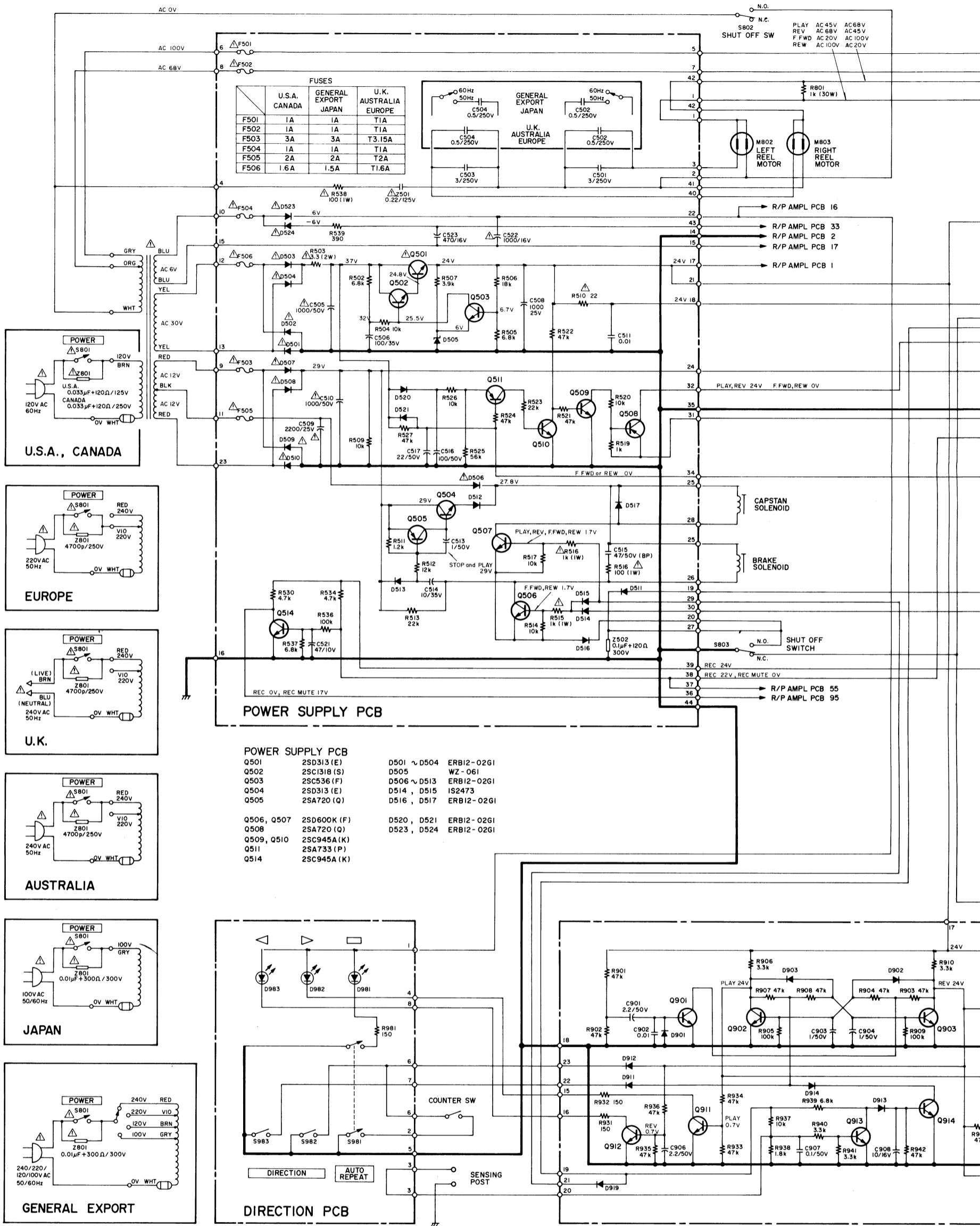
- Schematic diagram shown for left channel except for some of the components.
- All resistors are 1/4 watt,  $\pm 5\%$ , unless marked otherwise.  
Resistor values are in ohms ( $k = 1,000$  ohms).
- All capacitor values are in microfarads ( $p =$  picofarads).
- Parts marked with this sign are safety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

**X-3R**  
Stereo Tape Deck



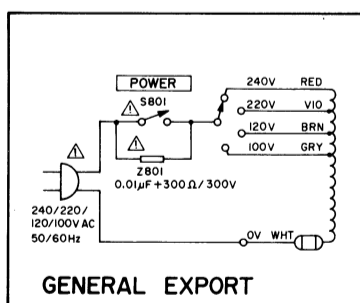
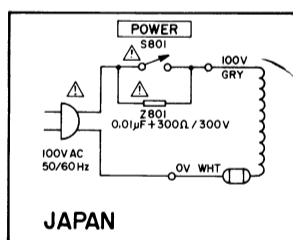
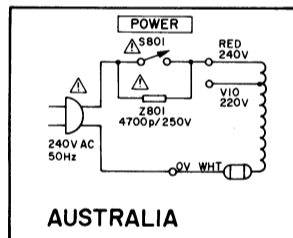
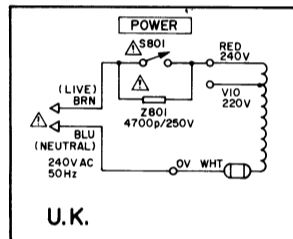
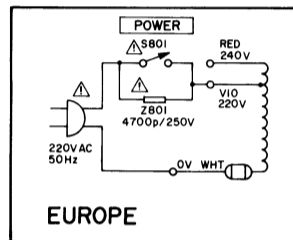
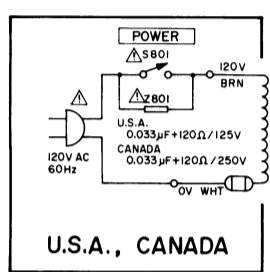
1 2 3 4 5

A  
B  
C  
D  
E  
F  
G  
H

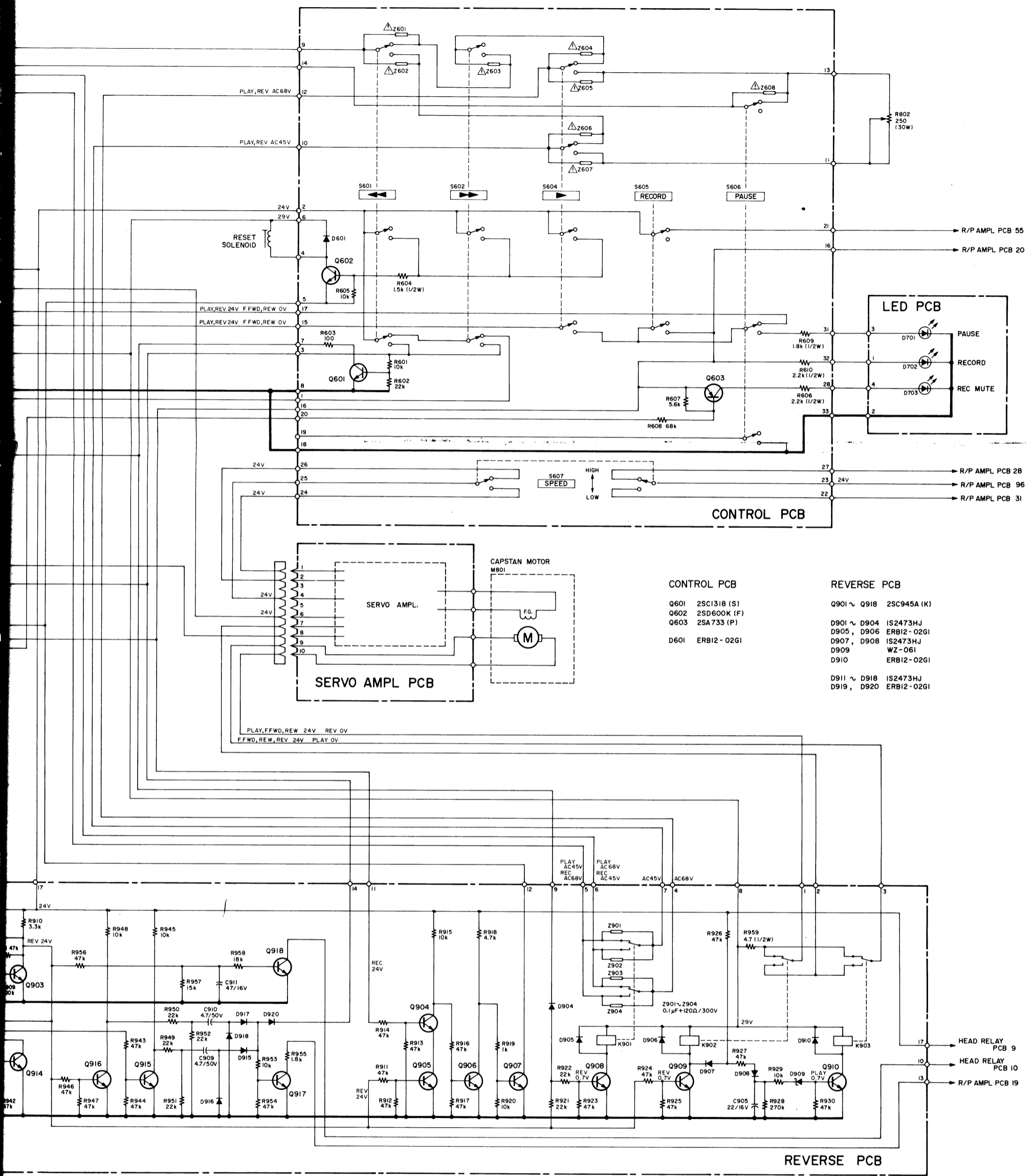


FUSES

	U.S.A. CANADA	GENERAL EXPORT JAPAN	U.K. AUSTRALIA EUROPE
F501	1A	1A	T1A
F502	1A	1A	T1A
F503	3A	3A	T3.15A
F504	1A	1A	T1A
F505	2A	2A	T2A
F506	1.6A	1.5A	T1.6A



- POWER SUPPLY PCB**
- |            |             |             |            |
|------------|-------------|-------------|------------|
| Q501       | 2SD313 (E)  | D501 ~ D504 | ERB12-02G1 |
| Q502       | 2SC1318 (S) | D505        | WZ-061     |
| Q503       | 2SC536 (F)  | D506 ~ D513 | ERB12-02G1 |
| Q504       | 2SD313 (E)  | D514, D515  | IS2473     |
| Q505       | 2SA720 (Q)  | D516, D517  | ERB12-02G1 |
| Q506, Q507 | 2SD600K (F) | D520, D521  | ERB12-02G1 |
| Q508       | 2SA720 (Q)  | D523, D524  | ERB12-02G1 |
| Q509, Q510 | 2SC945A (K) |             |            |
| Q511       | 2SA733 (P)  |             |            |
| Q514       | 2SC945A (K) |             |            |



CONTROL PCB

- Q601 2SC1318 (S)
- Q602 2SD600K (F)
- Q603 2SA733 (P)
- D601 ERB12-02G1

REVERSE PCB

- Q901 ~ Q918 2SC945A (K)
- D901 ~ D904 IS2473HJ
- D905, D906 ERB12-02G1
- D907, D908 IS2473HJ
- D909 WZ-061
- D910 ERB12-02G1
- D911 ~ D918 IS2473HJ
- D919, D920 ERB12-02G1

NOTES

1. All resistors are 1/4 watt, ±5%, unless marked otherwise. Resistor values are in ohms (k = 1,000 ohms).
2. All capacitor values are in microfarads (µ = picofarads).
3. † 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.
4. DC voltages were measured during REC/PAUSE mode unless otherwise noted.
5. —+B power supply circuit
6. □ : front panel indication  
 □ : rear panel indication