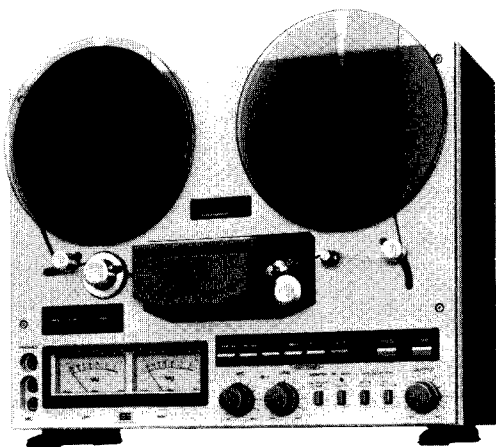




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# TEAC®

## SERVICE MANUAL

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# X-3R

Stereo Tape Deck

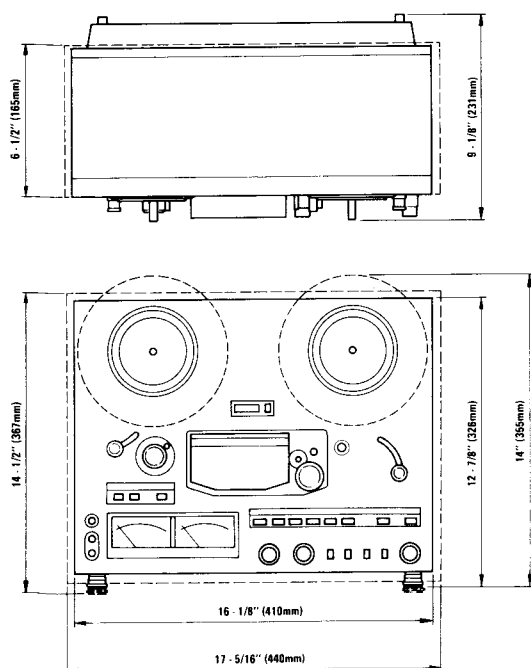
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## 1 SPECIFICATIONS AND SERVICE DATA

### 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.

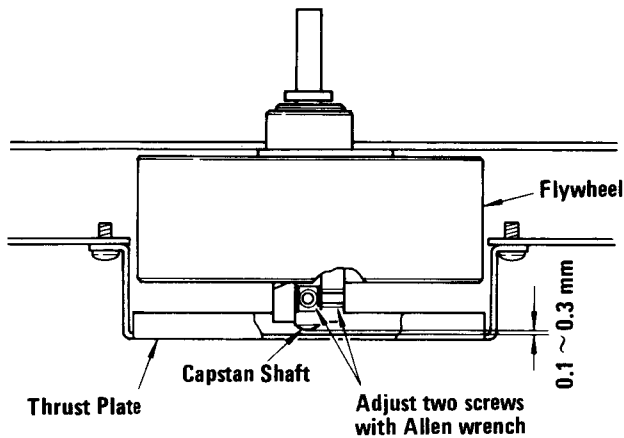


Fig. 2-1

### 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.

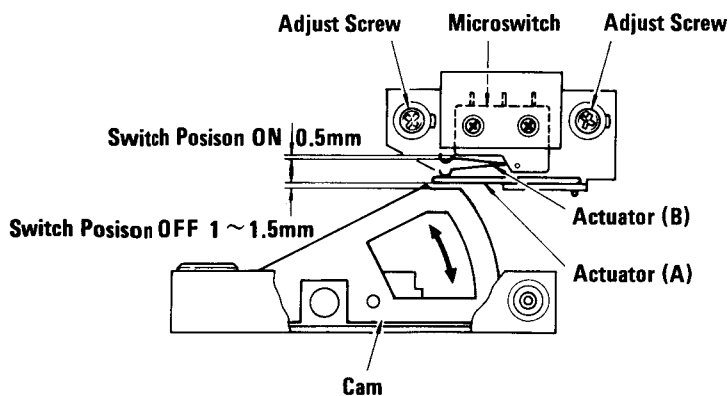


Fig. 2-2

### 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.

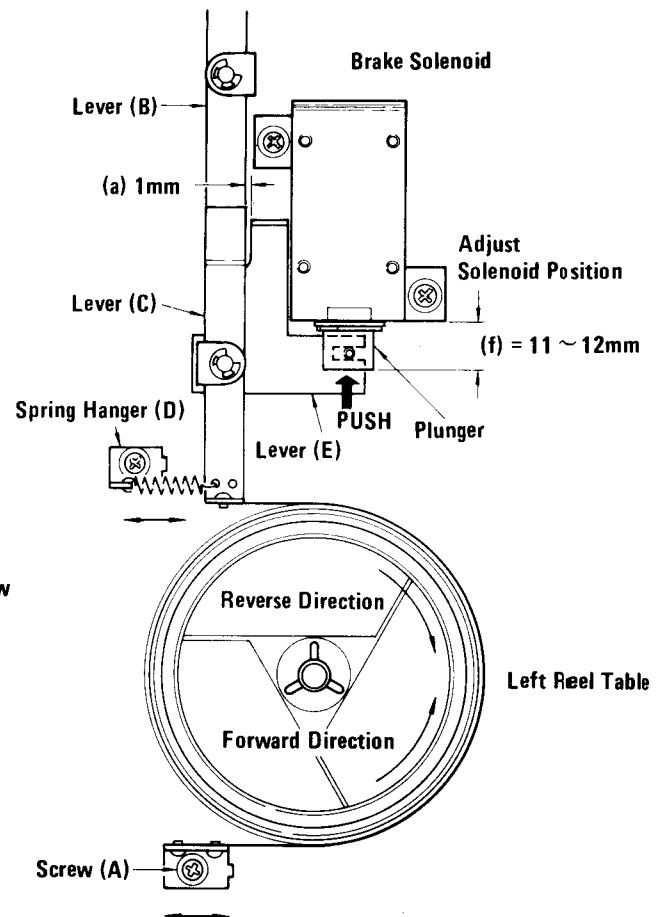


Fig. 2-3

## 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.

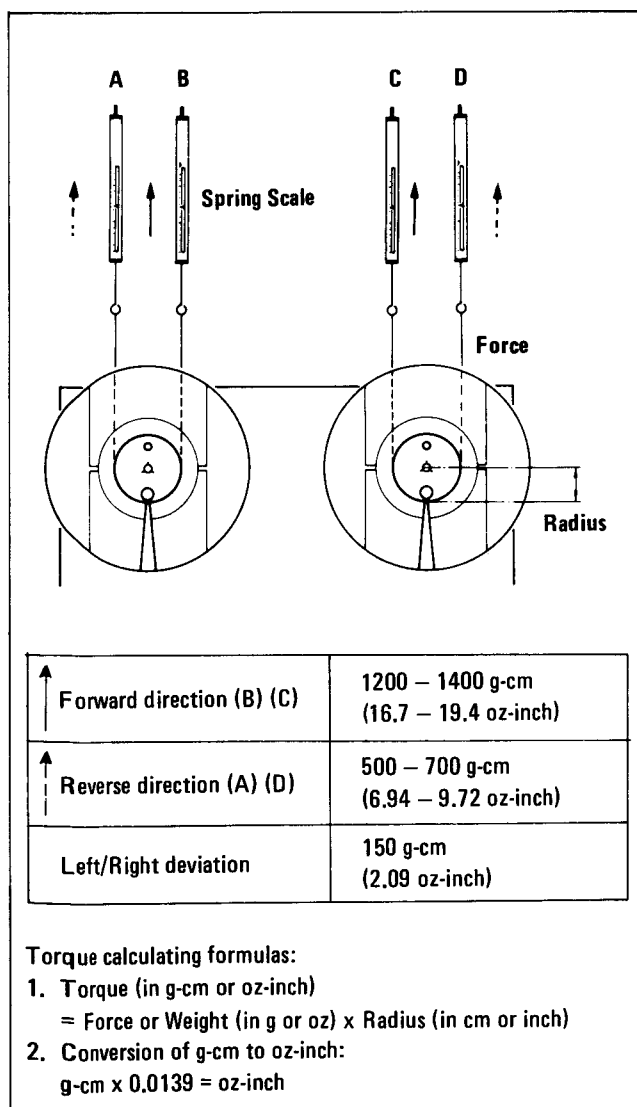


Fig. 2-4

## 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.

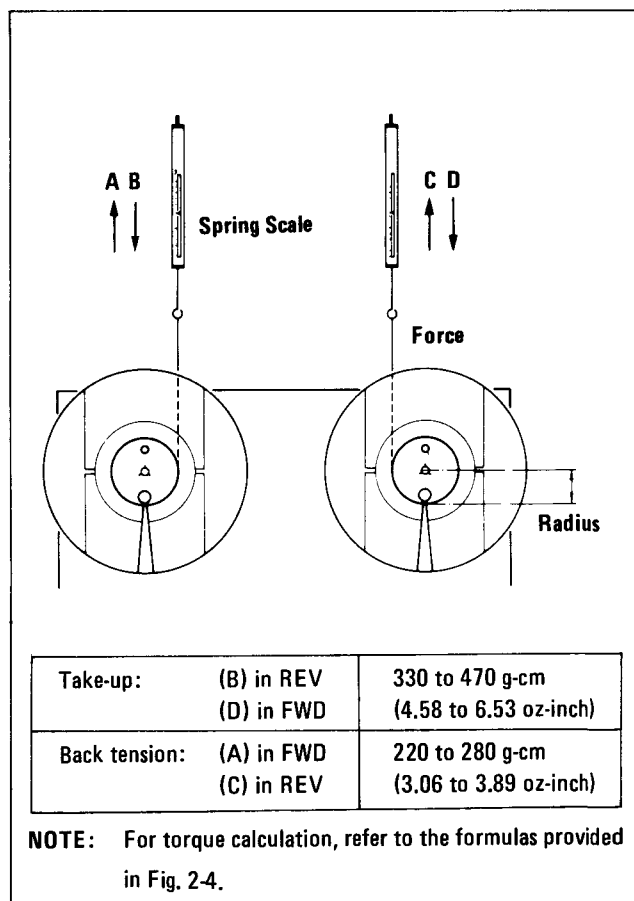


Fig. 2-5

### 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.

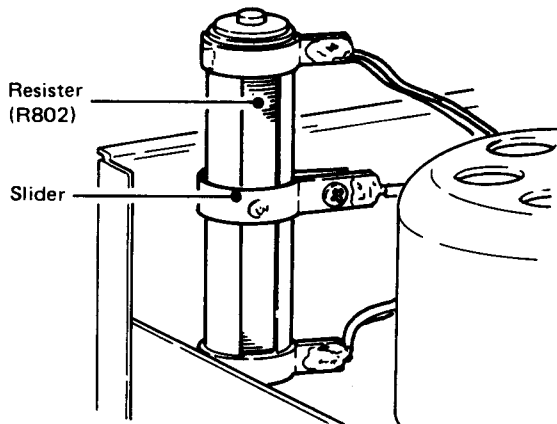


Fig. 2-6

### 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.

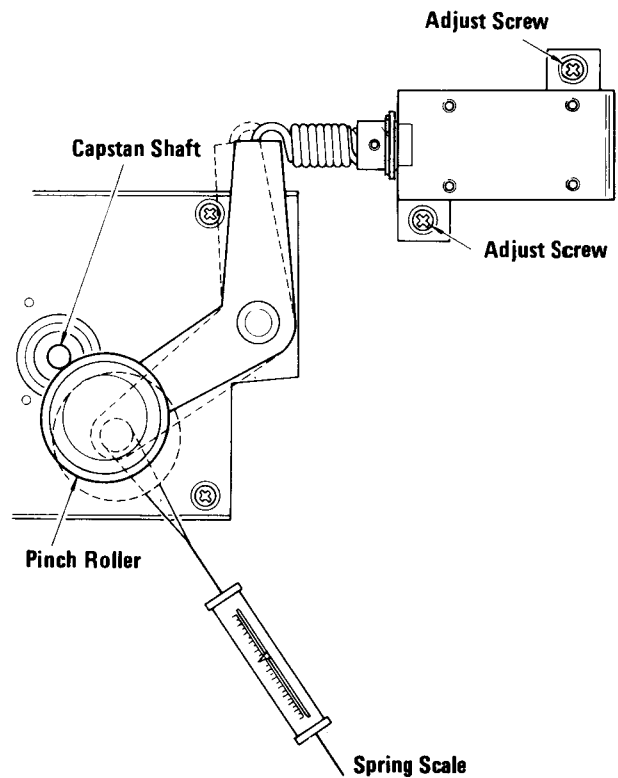


Fig. 2-7

## 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.

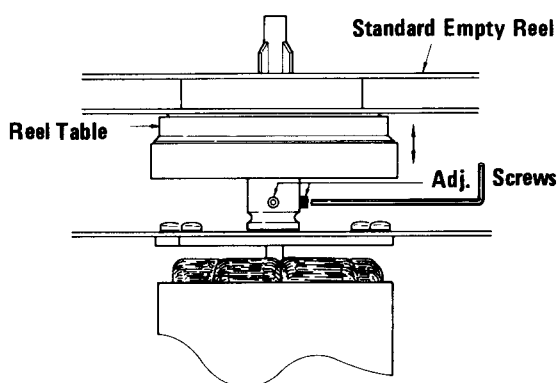


Fig. 2-8

## 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.

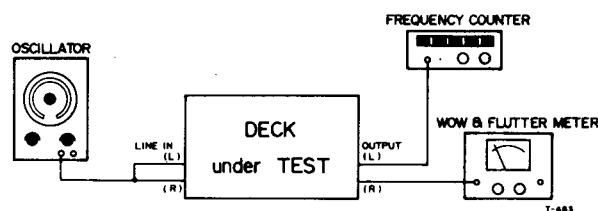


Fig. 2-9

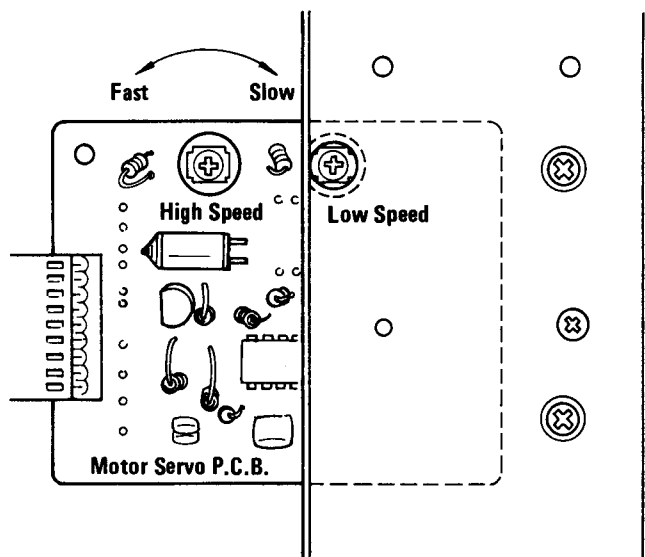


Fig. 2-10

## 2-9 WOW AND FLUTTER

### PLAYBACK

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

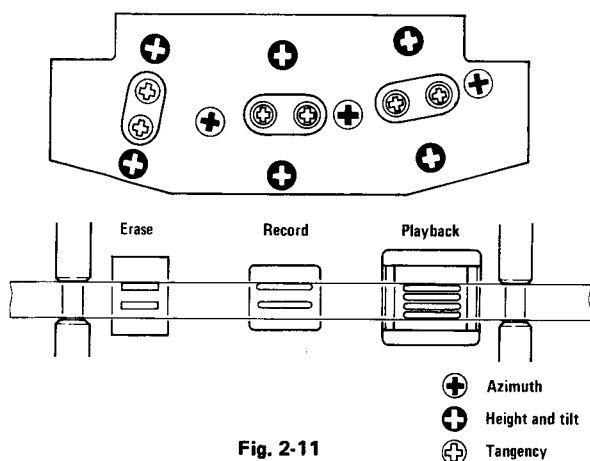
1. Connect a wow-and-flutter meter to the deck as shown in Fig. 2-9.
2. Load a TEAC YTT-2003 test tape to check the wow and flutter when the deck is set to HIGH speed, or a YTT-2002 test tape to check when set to LOW speed.
3. Play the beginning and end of the respective test tape for each speed setting.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

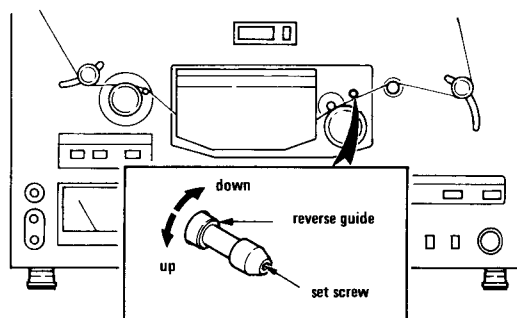


| Condition                                                                                                                                                                                                                                                                                                 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

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.



## 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.

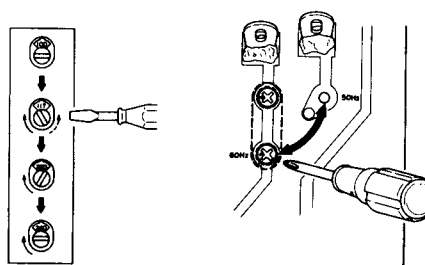
### VOLTAGE CONVERSION:

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.



## 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.

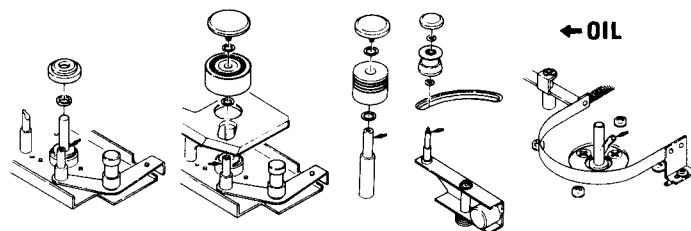


Fig. 2-15

## 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)

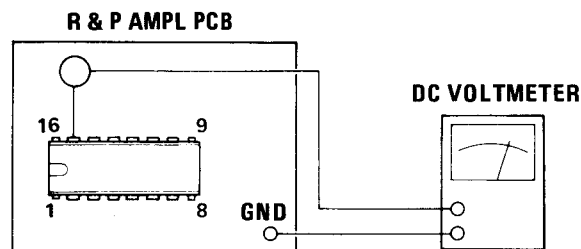


Fig. 3-1

### 3-2 MONITOR PERFORMANCE

3-2 MONITOR PERFORMANCE

Deck settings: MONITOR sw.: SOURCE

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

| ITEM                                                                                                 | CONNECTION                        | MODE/<br>INSTRUCTION                                | SIGNAL<br>SOURCE          | ADJUST<br>(or CHECK) | OUTPUT                               | REMARKS              |
|------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------------------------------|---------------------------|----------------------|--------------------------------------|----------------------|
| 2. VU meter                                                                                          | 2-1 Fig. 3-2                      | LINE cont:<br>Spec. position (1-3)                  | 400 Hz/-12 dB<br>(195 mV) | R131/R231            | 0 VU on VU meter                     |                      |
| 3. MIC input level                                                                                   | 3-1 Fig. 3-2 but<br>LINE IN → MIC | MIC cont: MAX<br>LINE cont: MIN                     | 400 Hz/-70 dB<br>(245 μV) | Check                | -5 dB ±2 dB<br>(346 mV to 548 mV)    | MIC min. input level |
| 4. PHONES output level                                                                               | 4-1 Fig. 3-3                      | LINE cont:<br>Spec. position (1-3)<br>MIC cont: MIN | 400 Hz/-12 dB<br>(195 mV) | Check                | -24 dB ±2 dB<br>(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> |                                   |                                                     |                           |                      |                                      |                      |

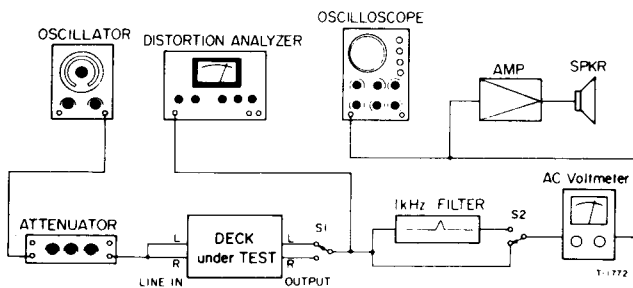


Fig. 3-2 Basic connection

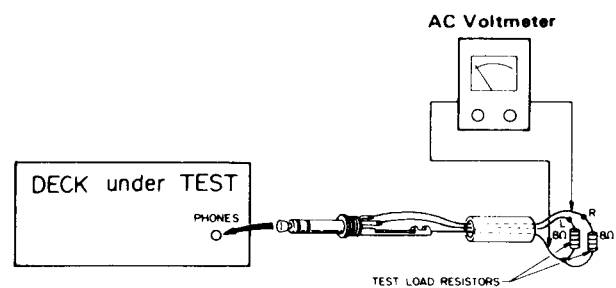


Fig. 3-3 Connection for PHONES check

### 3-3 PLAYBACK PERFORMANCE

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

| ITEM                     | CONNECTION   | MODE/<br>INSTRUCTION                                              | SIGNAL<br>SOURCE            | ADJUST<br>(or CHECK)                     | OUTPUT                                       | REMARKS                           |
|--------------------------|--------------|-------------------------------------------------------------------|-----------------------------|------------------------------------------|----------------------------------------------|-----------------------------------|
| 5. Playback head azimuth | 5-1 Fig. 3-4 | FWD direction<br>SPEED sw.: HIGH<br>TAPE SELECTOR (R): LH (I, II) | YTT-1003<br>(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 | SPEED: HIGH<br>TAPE SELECT. (R): LH (I, II)                       | FWD                         | YTT-1003<br>(400 Hz/0 dB)                | R111/R211                                    | -5 dB (436 mV)                    |
|                          | 6-2 "        |                                                                   | REV                         | "                                        | Check                                        | -5 dB ±2 dB<br>(346 mV to 548 mV) |

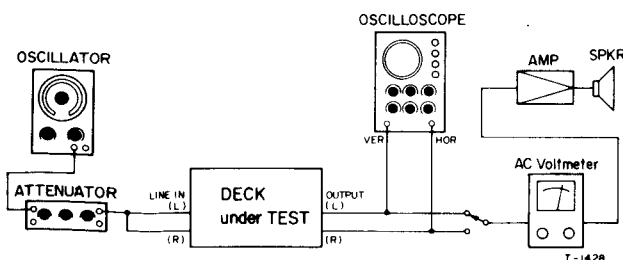


Fig. 3-4 Connection for azimuth check

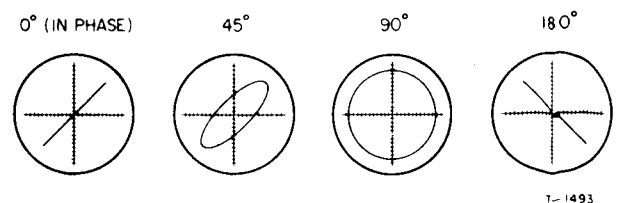


Fig. 3-5 Confirming phase relationship

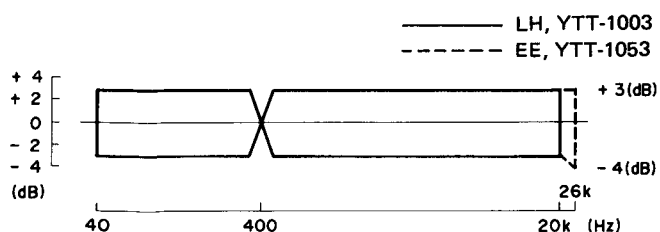
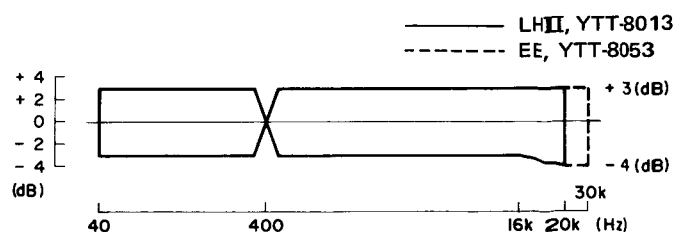
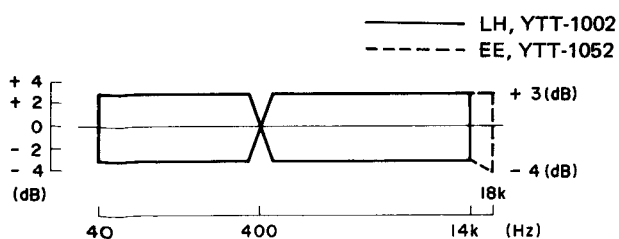
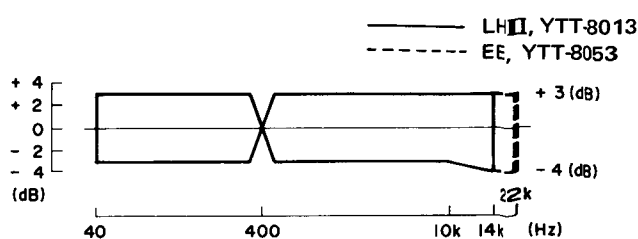
| ITEM                  | CONNECTION   | MODE/<br>INSTRUCTION                                                                                              | SIGNAL<br>SOURCE | ADJUST<br>(or CHECK)        | OUTPUT    | REMARKS                                                                                                                                                                                                                                           |
|-----------------------|--------------|-------------------------------------------------------------------------------------------------------------------|------------------|-----------------------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 7. Frequency response | 7-1 Fig. 3-2 | FWD<br>TAPE SELECT.<br>(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<br>TAPE SELECT.<br>(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<br>HIGH and LOW<br>LH (I, II) and EE<br><br>Use fully-erased<br>tape (Use bulk<br>tape eraser)        |                  | YTT-8013<br>and<br>YTT-8053 | Check     | LH (I, II)<br>{ HIGH: 49 dB<br>{ LOW: 47 dB<br>EE<br>{ HIGH: 51 dB<br>{ LOW: 49 dB<br>• Ratio of spec. OUTPUT signal (–5 dB) to inherent noise level<br>• Change-over of AC line plug polarity. The worse reading should be within specification. |

## 3-4 RECORDING PERFORMANCE

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

| ITEM                                 |      | CONNECTION                                                   | MODE/<br>INSTRUCTION                                     |      | SIGNAL<br>SOURCE                  | ADJUST<br>(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<br>SPEED sw.: LOW<br>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<br>SPEED sw.: HIGH<br>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<br>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<br>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<br>SPEED sw.: LOW<br>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<br>SPEED sw.: HIGH<br>Bias/EQ: EE    |      | 400 Hz/–12 dB (195 mV)            | R159/R259                    | –5 dB (436 mV)                                                                                 |         |

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

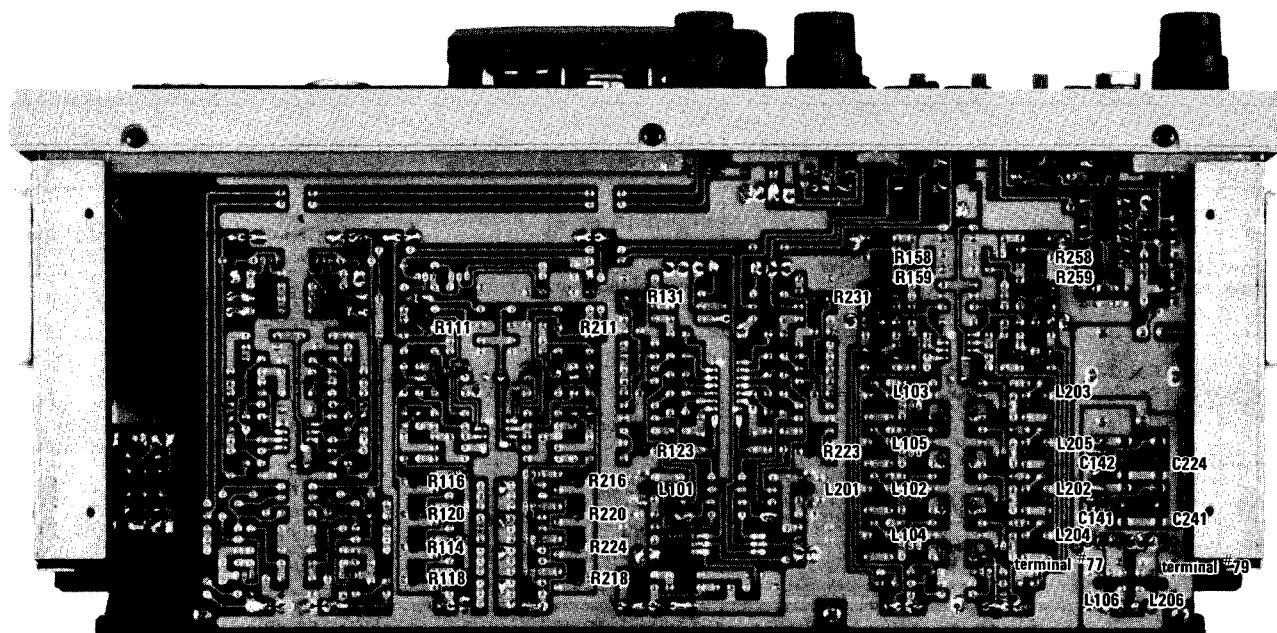
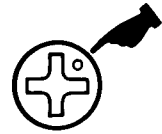


Fig. 3-10

|           |                         |
|-----------|-------------------------|
| 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)       |

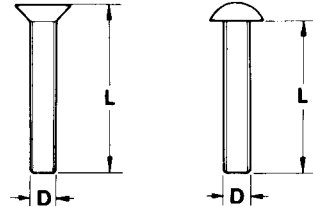
# **ASSEMBLING HARDWARD CODING LIST**

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:**

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

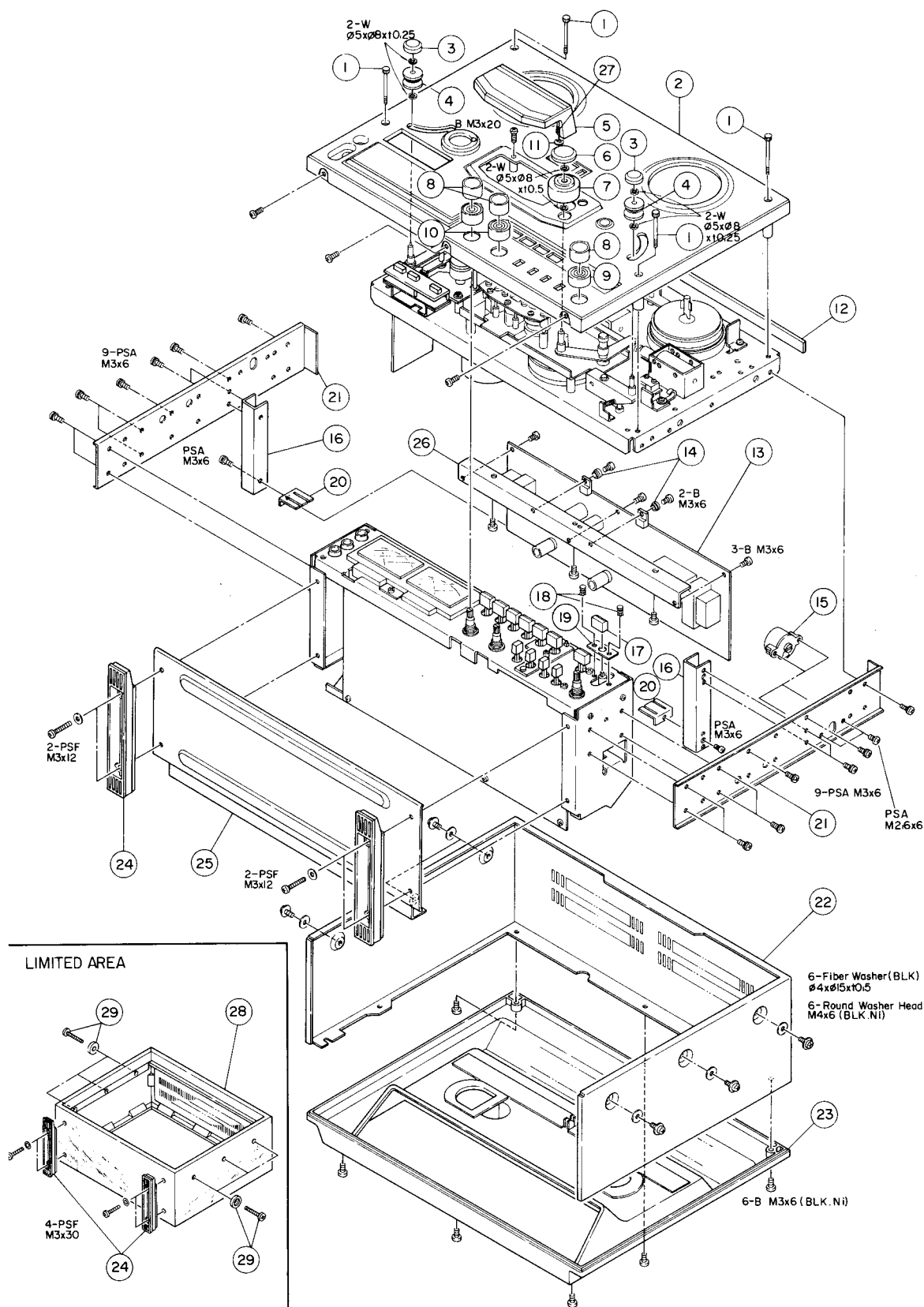


\* Inner dia. for washers and nuts

|                      | Code       | Name                            | Type |                      | Code       | Name                                | Type |
|----------------------|------------|---------------------------------|------|----------------------|------------|-------------------------------------|------|
| <b>MACHINE SCREW</b> | <b>R</b>   | Round Head Screw                |      | <b>TAPPING SCREW</b> | <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     |      | <b>SETSCREW</b>      | <b>SF</b>  | Hex Socket Setscrew(Flat Point)     |      |
|                      | <b>O</b>   | Oval Countersunk Head Screw     |      |                      | <b>SC</b>  | Hex Socket Setscrew(Cup Point)      |      |
| <b>WOOD SCREW</b>    | <b>RW</b>  | Round Head Wood Screw           |      |                      | <b>SS</b>  | Slotted Socket Setscrew(Flat Point) |      |
| <b>TAPTITE SCREW</b> | <b>PTT</b> | Pan Head Taptite Screw          |      | <b>WASHER</b>        | <b>E</b>   | E-Ring (Retaining Washer)           |      |
|                      | <b>WTT</b> | Washer Head Taptite Screw       |      |                      | <b>W</b>   | Flat Washer (Plain)                 |      |
| <b>SEMS SCREW</b>    | <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)     |      | <b>NUT</b>           | <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)         | 22-4    |
| 1 - 2    | *5800162100 | Panel Assy, Front                 |         |
| 1 - 3    | *5800066000 | Cap, Tension Roller               |         |
| 1 - 4    | 5504843000  | Roller Assy, Tension              |         |
| 1 - 5    | *5800162400 | Housing, Head                     |         |
| 1 - 6    | 5800170700  | Cap. Pinch Roller                 | X-3     |
| 1 - 7    | 5800173701  | Pinch Roller                      |         |
| 1 - 8    | 5800080600  | Knob, F                           |         |
| 1 - 9    | 5800080800  | Knob, H                           |         |
| 1 - 10   | 5800080700  | Knob, G                           | X-10R   |
| 1 - 11   | *5786106000 | Ring, CS; $\phi 6$                |         |
| 1 - 12   | *5555887001 | Cusion, Case                      |         |
| 1 - 13   | *5200018730 | PCB Assy, POWER SUPPLY [U, C]     |         |
|          | *5200018740 | PCB Assy, POWER SUPPLY [E, UK, A] |         |
|          | *5200018750 | PCB Assy, POWER SUPPLY [GE, L]    | X-3     |
| 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                       | X-3     |
| 1 - 19   | *5800019100 | Guide, Joint Bar                  |         |
| 1 - 20   | *5800079900 | Bracket, PCB; C                   |         |
| 1 - 21   | *5553366001 | Fram, Side                        |         |
| 1 - 22   | *5551047001 | Bonnet                            |         |
| 1 - 23   | *5502267001 | Cover Assy, Rear                  | X-3     |
| 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]       |         |

 [U]: U.S.A.  
 [A]: AUSTRALIA  
 [L]: LIMITED AREA

 [C]: CANADA  
 [E]: EUROPE

 [GE]: GENERAL EXPORT  
 [UK]: U.K.

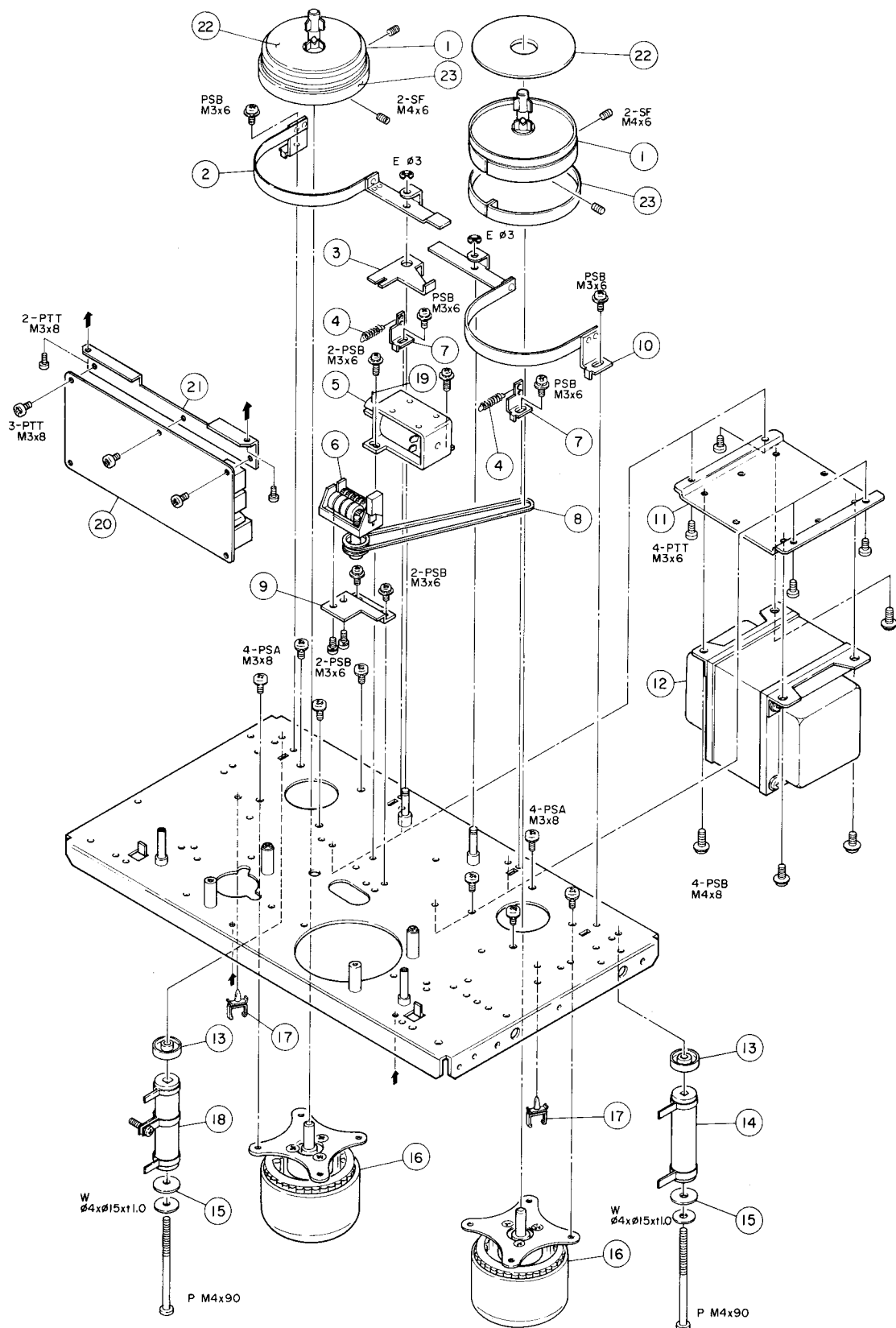


**EXPLODED VIEW - 2**

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    | *580J170400 | 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.

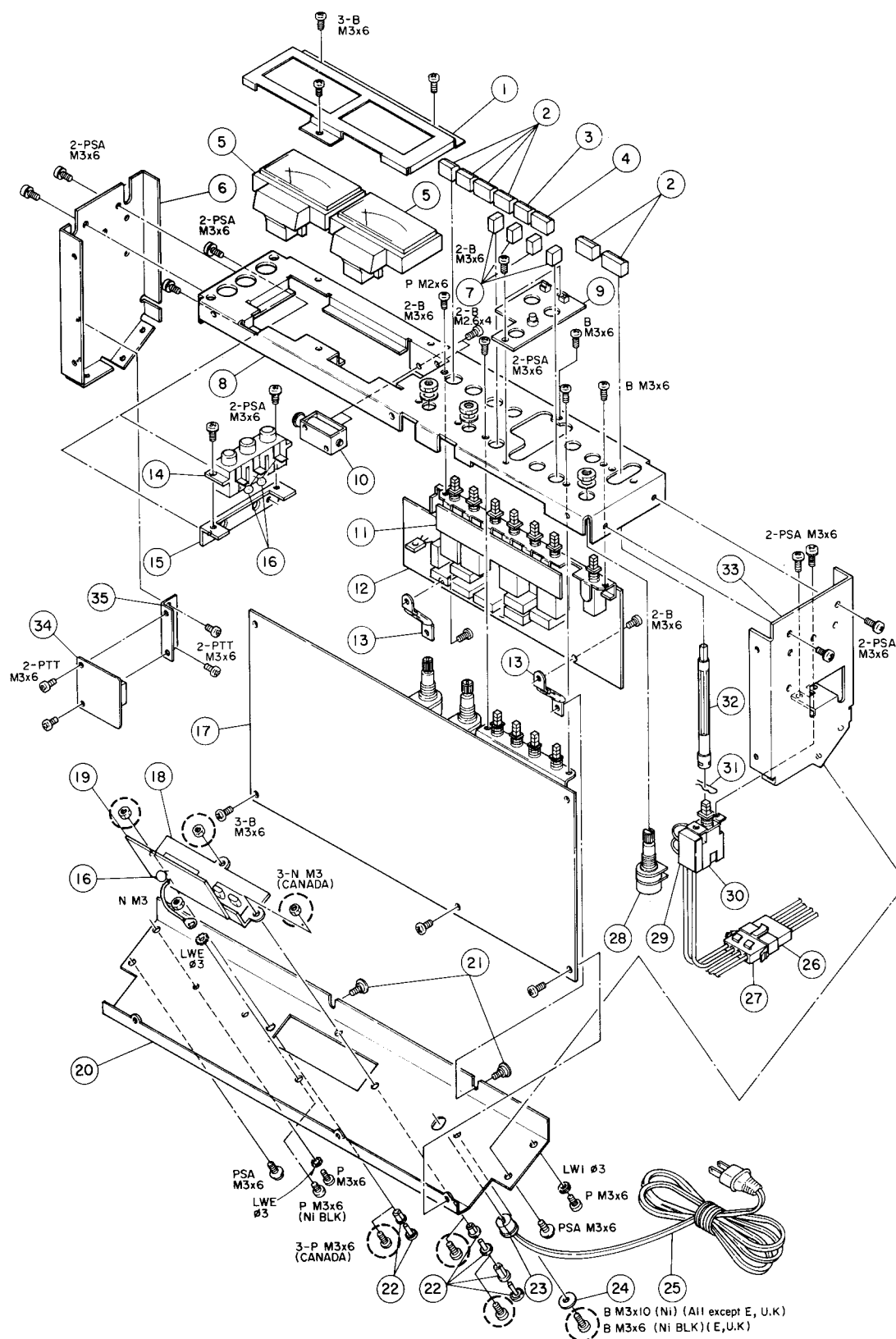
| REF. NO. | PARTS NO.    | DESCRIPTION                     | REMARKS |
|----------|--------------|---------------------------------|---------|
| 3 - 1    | *5504852000  | Table Assy, Reel                | 22-4    |
| 3 - 2    | *5504847000  | Band Assy, Brake; L             |         |
| 3 - 3    | *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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 [E]: EUROPE

 [GE]: GENERAL EXPORT  
 [UK]: U.K.

## 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                                 |         |

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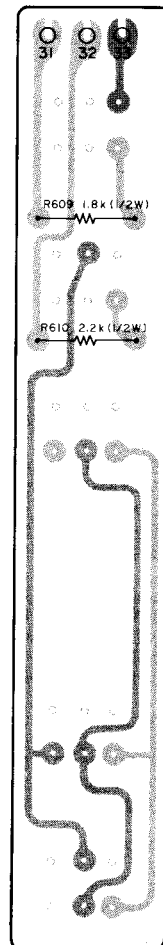
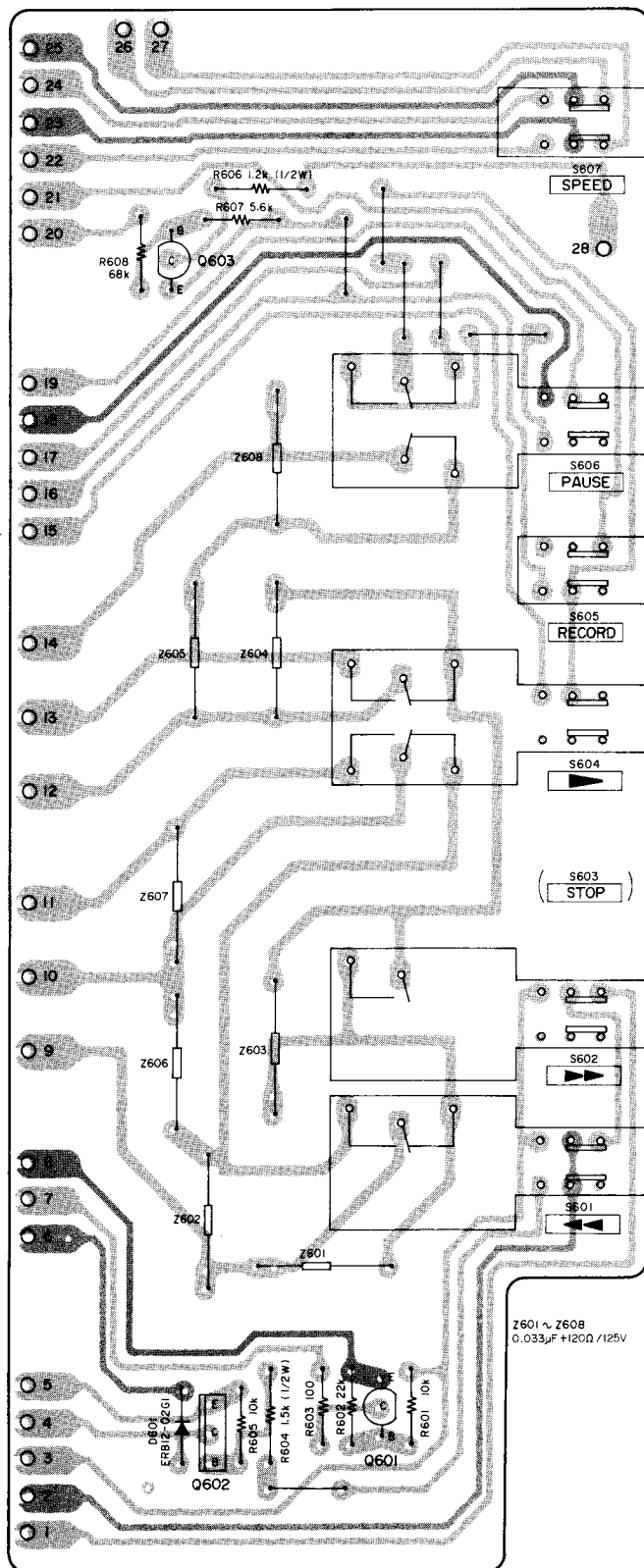
[GE]: GENERAL EXPORT  
[UK]: U.K.

# 5 PC BOARDS AND PARTS LIST

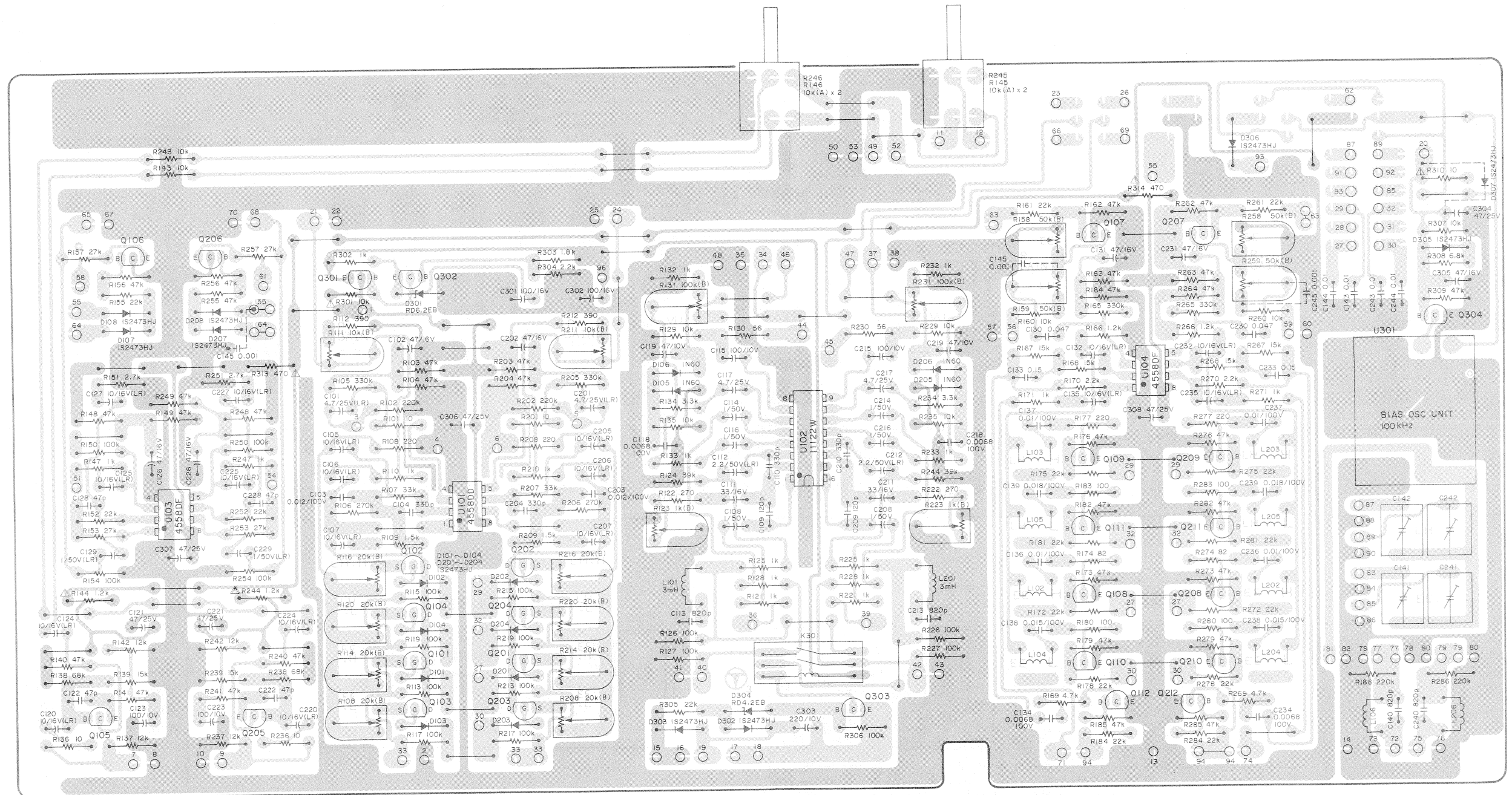
PC Boards shown viewed from foil side.

**CONTROL PCB A ASSY**

**CONTROL PCB B ASSY**



# REC/PLAY AMPL PCB ASSY



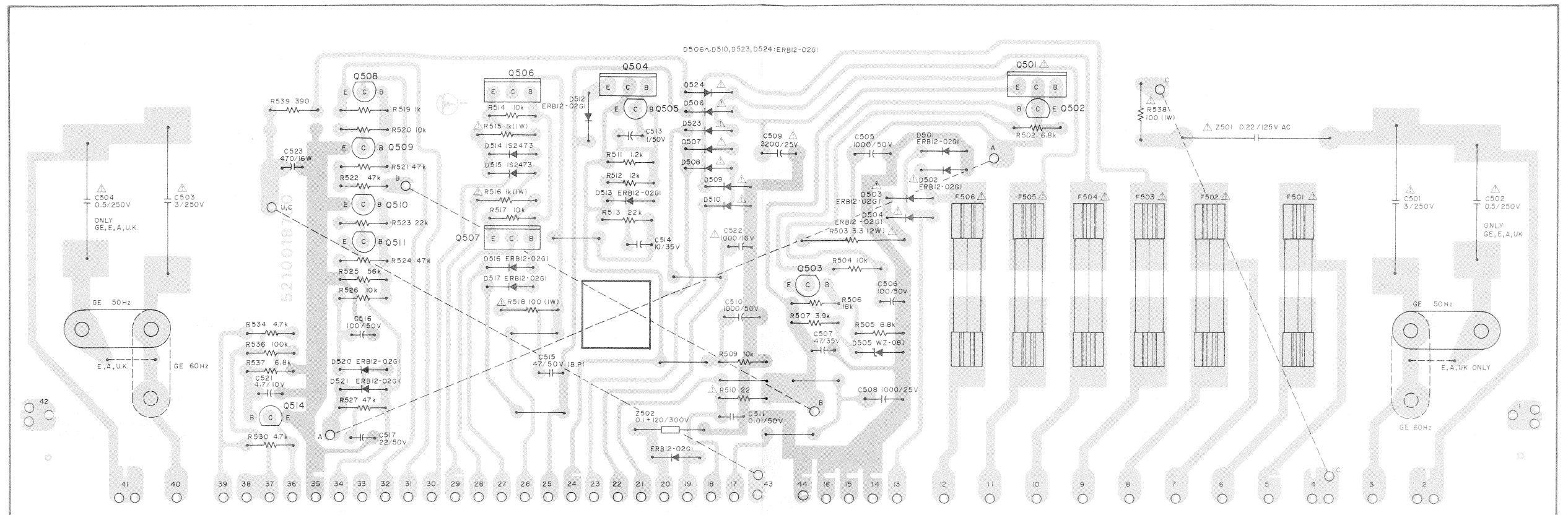
## NOTES

- 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).

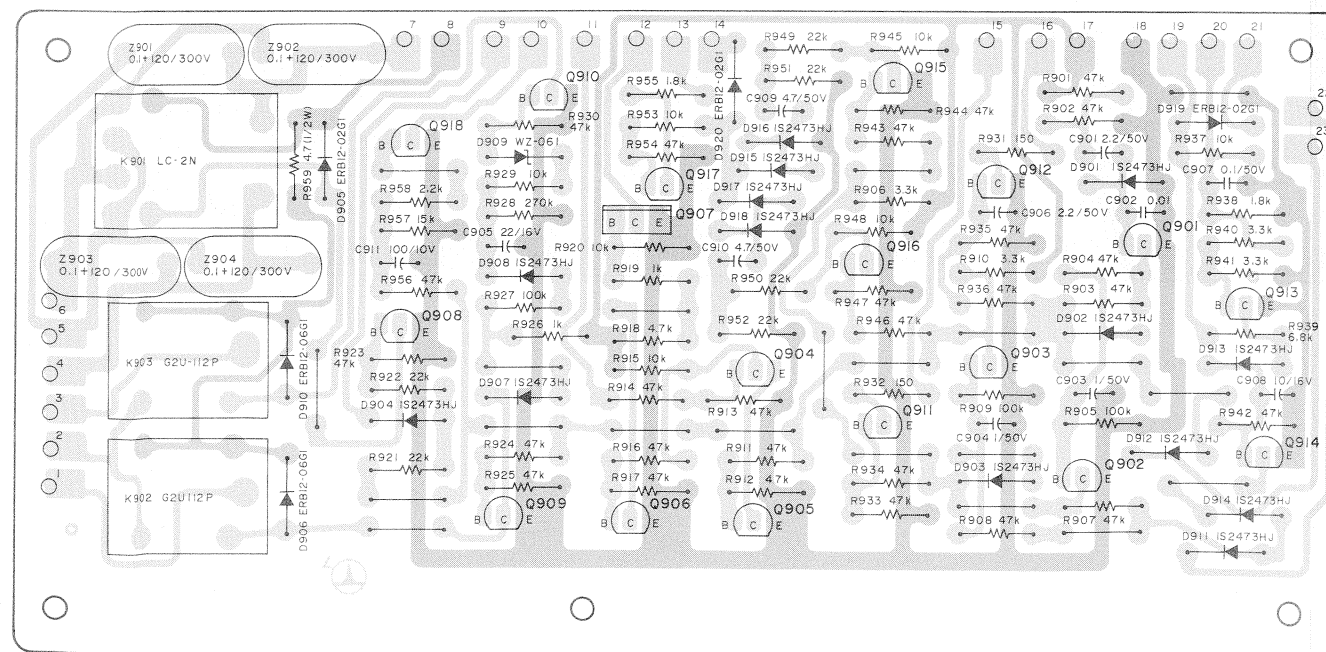
X-3R

X-3R

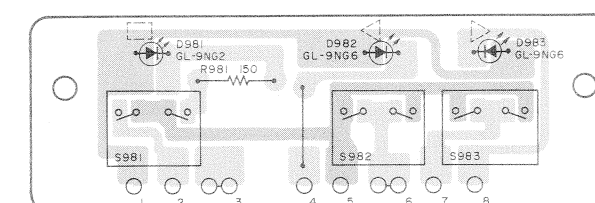
# POWER SUPPLY PCB ASSY



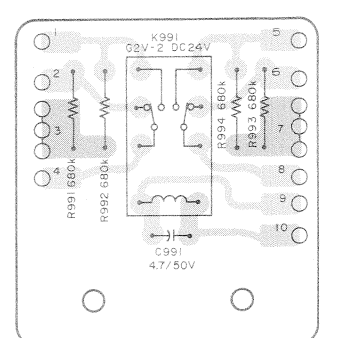
## REVERSE PCB ASSY



## 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<br>[All except C] |
| Z601 ~ Z608                                                      | 5052914000 | Spark killer 0.033 $\mu$ F+120/250V<br>[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    |
| CAPACITORS         |              |                              |
| 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% |
| VARIABLE RESISTORS |              |                              |
| 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)  |

| REF. NO.             | PARTS NO.  | DESCRIPTION                  |
|----------------------|------------|------------------------------|
| R123, R223           | 5053446000 | Semi-fixed 1k $\Omega$ (B)   |
| R131, R231           | 5150096000 | Semi-fixed 100k $\Omega$ (B) |
| R145, R245           | 5282705900 | 10k $\Omega$ (A) x 2         |
| R146, R246           | 5282705900 | 10k $\Omega$ (A) x 2         |
| R158, R258           | 5150094000 | Semi-fixed 50k $\Omega$ (B)  |
| <b>COILS</b>         |            |                              |
| L101, L201           | 5056659000 | Trap, 3mH 20%                |
| L102, L202           | 5160041000 | Record; EQ, 2.4 $\mu$ H 20%  |
| L103, L203           | 5160041000 | Record; EQ, 2.4 $\mu$ H 20%  |
| L104, L204           | 5160041000 | Record; EQ, 2.4 $\mu$ H 20%  |
| L105, L205           | 5160041000 | Record; EQ, 2.4 $\mu$ H 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                   |

## POWER SUPPLY PCB ASSY

| 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 $\pm 5\%$ tolerance and $\frac{1}{4}W$ . |              |                                |
| R502                                                             | 5183102000   | 6.8k $\Omega$                  |
| R503                                                             | △ 5184306000 | 3.3 $\Omega$ 10% 2W Cement     |
| R504                                                             | 5183106000   | 10k $\Omega$                   |
| R505                                                             | 5183102000   | 6.8k $\Omega$                  |
| R506                                                             | 5183112000   | 18k $\Omega$                   |
| R507                                                             | 5183096000   | 3.9k $\Omega$                  |
| R509                                                             | 5183106000   | 10k $\Omega$                   |
| R510                                                             | △ 5184233000 | 22 $\Omega$ Nonflammable       |
| R511                                                             | 5183084000   | 1.2k $\Omega$                  |
| R512                                                             | 5183108000   | 12k $\Omega$                   |
| R513                                                             | 5183114000   | 22k $\Omega$                   |
| R514                                                             | 5183106000   | 10k $\Omega$                   |
| R515, R516                                                       | △ 5185790000 | 1k $\Omega$ 1W Metal Film      |
| R517                                                             | 5183106000   | 10k $\Omega$                   |
| R518                                                             | △ 5184755000 | 100 $\Omega$ 1W Metal Film     |
| R519                                                             | 5183082000   | 1k $\Omega$                    |
| R520                                                             | 5183106000   | 10k $\Omega$                   |
| R521, R522                                                       | 5183122000   | 47k $\Omega$                   |
| R523                                                             | 5183114000   | 22k $\Omega$                   |
| R524                                                             | 5183122000   | 47k $\Omega$                   |
| R525                                                             | 5183124000   | 56k $\Omega$                   |
| R526                                                             | 5183106000   | 10k $\Omega$                   |
| R527                                                             | 5183122000   | 47k $\Omega$                   |
| R530, R534                                                       | 5183098000   | 47k $\Omega$                   |
| R536                                                             | 5183130000   | 100k $\Omega$                  |
| R537                                                             | 5183102000   | 6.8k $\Omega$                  |
| R538                                                             | △ 5184755000 | 100 $\Omega$ 1W Metal Film     |
| R539                                                             | 5183072000   | 390 $\Omega$                   |
| <b>CAPACITORS</b>                                                |              |                                |
| C501                                                             | 5171613000   | AC Film 3 $\mu$ F AC250V 5%    |
| C502                                                             | 5267702700   | AC Film 0.5 $\mu$ F AC250V 10% |
| C503                                                             | 5171613000   | AC Film 3 $\mu$ F AC250V 5%    |
| C504                                                             | 5267702700   | AC Film 0.5 $\mu$ F AC250V 10% |
| C505                                                             | △ 5172973800 | Elec 1000 $\mu$ F 50V          |

[U]: U.S.A.  
[A]: AUSTRALIA  
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[C]: CANADA  
[E]: EUROPE

[GE]: GENERAL EXPORT  
[UK]: U.K.

| 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                 | △ 5041151000 | 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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**HEAD RELAY PCB ASSY**

| REF. NO.             | PART 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 |

| 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**
**DIRECTION PCB ASSY**

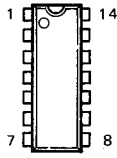
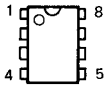
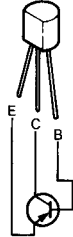
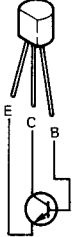
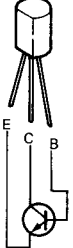
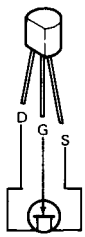
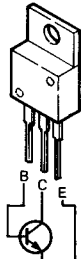
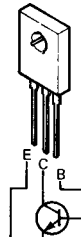
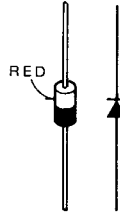
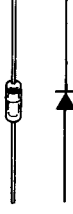
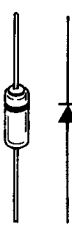
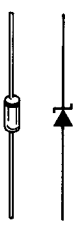
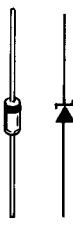
| REF. NO.   | PARTS NO.  | DESCRIPTION                                 |
|------------|------------|---------------------------------------------|
|            | 5200036800 | PCB Assy                                    |
|            | 5210036800 | PCB                                         |
| S981       | 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 |

| 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)    |

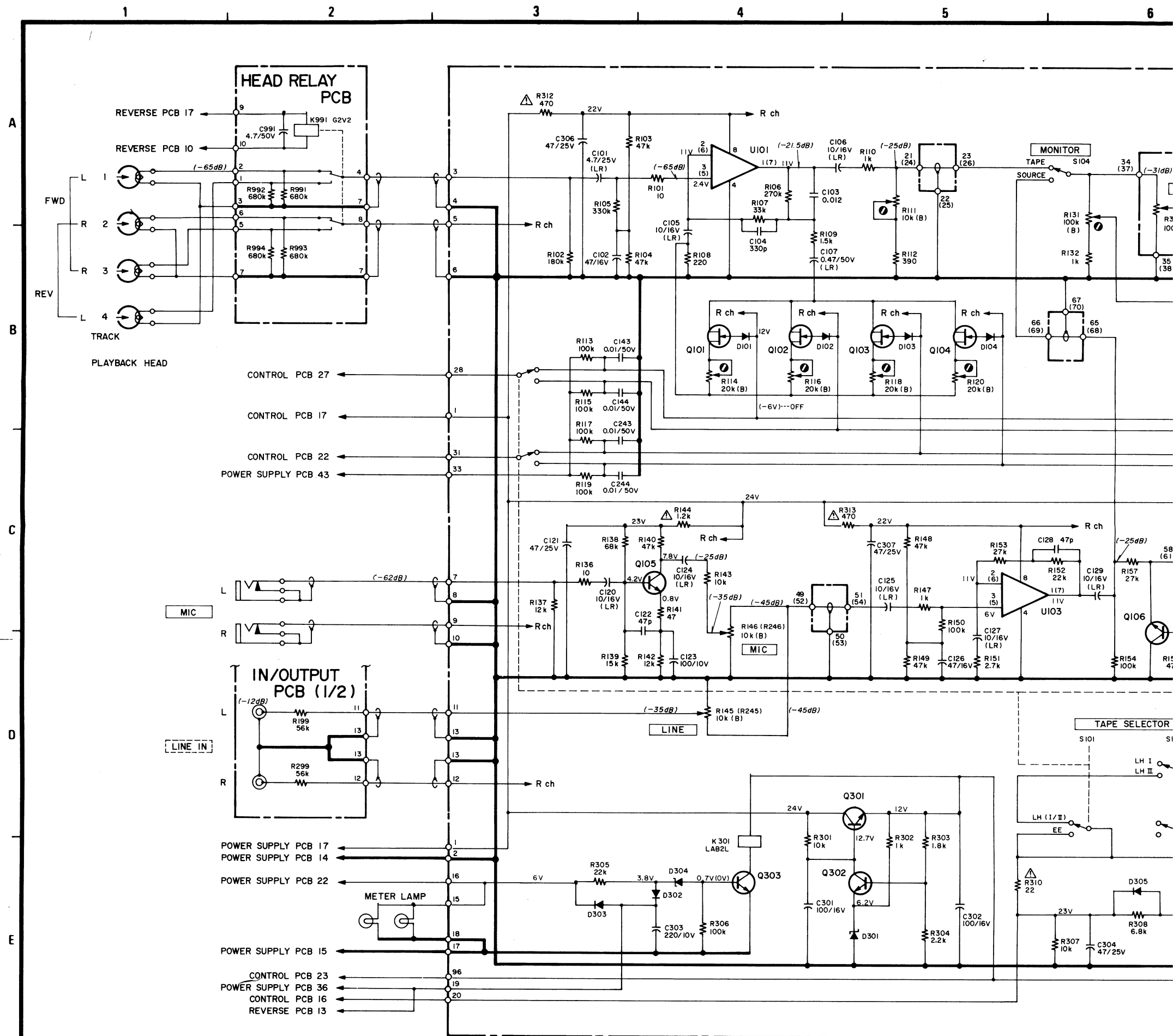
**IN/OUT PUT PCB ASSY**

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

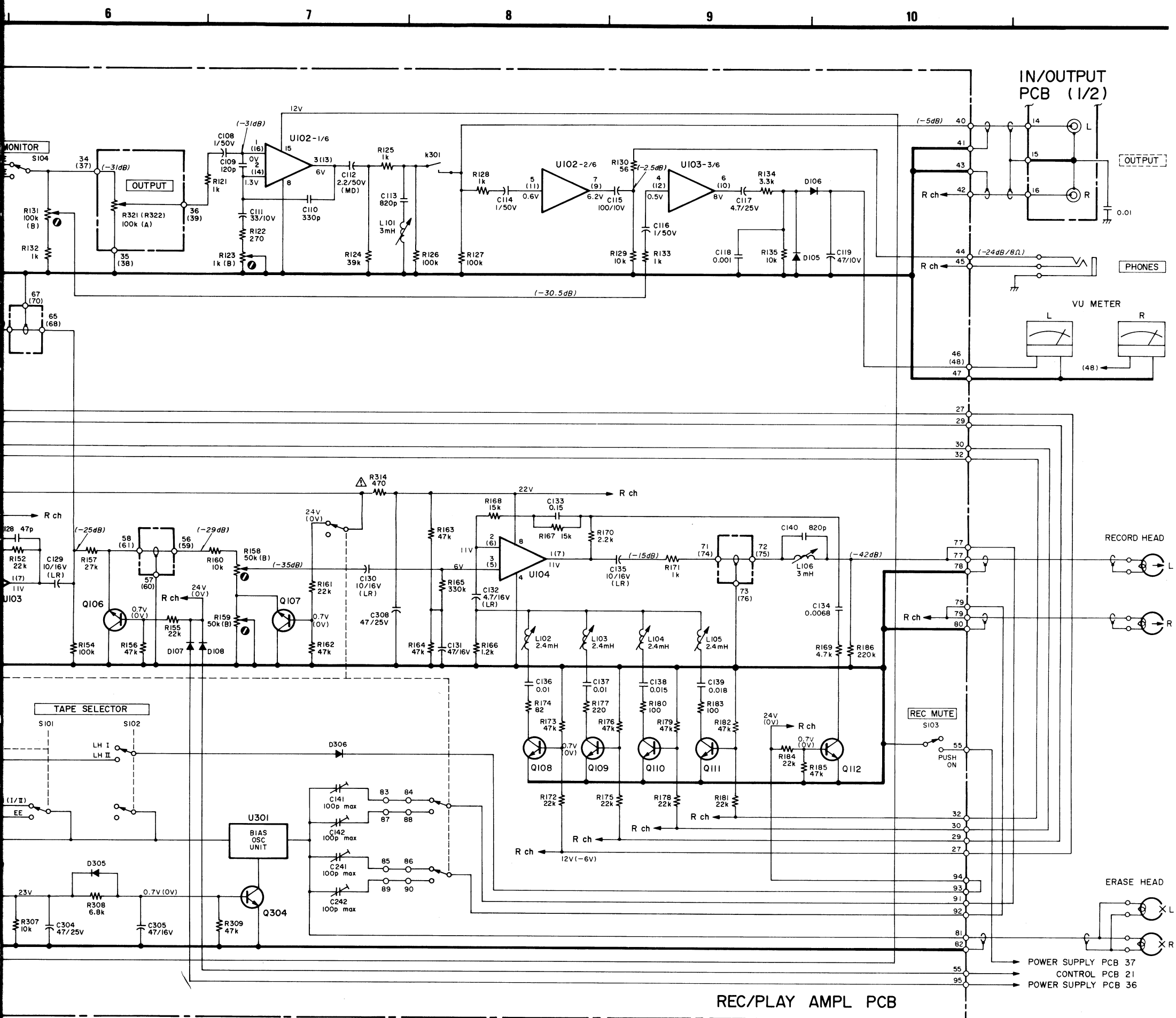
## TABLE OF SEMICONDUCTORS

|                                                                                                                        |                                                                                                                                                |                                                                                                                    |                                                                                                                                                        |                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| <p>HA - 11122W</p> <p>(TOP VIEW)</p>  | <p>JRC - 4558D - D<br/>JRC - 4558D - F</p> <p>(TOP VIEW)</p>  | <p>2SA - 720Q<br/>2SA - 733P</p>  | <p>2SC - 536F<br/>2SC - 1318S<br/>2SC - 945AK<br/>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<br/>RD - 4,7EB</p>                            | <p>WZ - 061</p>                 | <p>SLB - 26GG (GREEN)<br/>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 ( $p = \text{picofarads}$ ).
- 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

