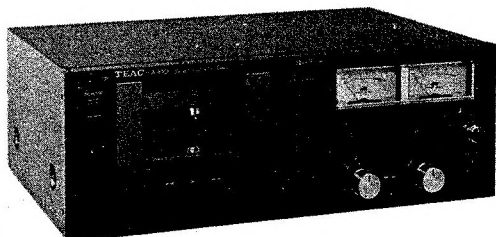


# TEAC®



## SERVICE MANUAL

---

# A-430

Stereo Cassette Deck

---

### CONTENTS

|   |                                              |    |
|---|----------------------------------------------|----|
| 1 | Specifications and service data . . . . .    | 2  |
| 2 | Parts location . . . . .                     | 3  |
| 3 | Case and front panel removal . . . . .       | 4  |
| 4 | Mechanical adjustments and checks . . . . .  | 5  |
| 5 | Lubrication and voltage conversion . . . . . | 6  |
| 6 | Electrical adjustments and checks . . . . .  | 7  |
| 7 | Exploded views and parts list . . . . .      | 14 |
| 8 | PC boards and parts list . . . . .           | 22 |

## 1 SPECIFICATIONS & SERVICE DATA

### SPECIFICATIONS

**Track System** 1/4-track, 2-channel stereo

**Heads** Three: Erase, Record and Playback

**Type of Tape** Cassette tape, C-60 and C-90 (Philips type)

**Tape Speed** 4.8 cm/s (1-7/8 ips)

**Inputs (level and impedance)**

**MIC:** Specified input level: -57 dB (1.09 mV)/  
10 kohms

**LINE IN:** Min. input level: -67 dB (346  $\mu$ V)  
Specified input level: -9 dB (275 mV)/  
50 kohms

**DIN IN\*:** Min. input level: -19 dB (86.9 mV)  
Min. input level: -35 dB (13.8 mV)

**Outputs (level and impedance)**

**OUTPUT:** Specified output level: -5 dB (436 mV)/  
50 kohms

**Headphones:** Specified output level: -21 dB (69 mV)/  
8 ohms

**Equalization**

**METAL and Co (CrO<sub>2</sub>):** 3,180  $\mu$ s + 70  $\mu$ s

**NORMAL:** 3,180  $\mu$ s + 120  $\mu$ s

**Head Configuration** 1/2-track, 1-channel Erase Head

1/4-track, 2-channel Dual-gap Record and Playback Heads

**Motor** DC servo motor (FG type)

**Bias Frequency** 100 kHz

**Built-in Frequency** 10 kHz (for Auto Bias function)

**Operating Position** Horizontal

**Power Requirements**

100/117/220/240 V, AC 50/60 Hz, 15 W  
(General Export Model)

220 V AC 50 Hz, 15 W (Europe Model)

240 V AC 50 Hz, 15 W (U.K./Australia Model)

117 V AC 60 Hz, 16 W (U.S.A./Canada Model)

**Weight** 8.3 kg (18.3 lbs) net

8.0 kg (17.6 lbs) net (Some General Exp. Models  
have wood side panels.)

\* Pursuant to DIN Standards

### NOTE:

- Improvements may result in Specifications and Service Data changes.
- dB values in the Specifications and Service Data are based on 0 dB = 0.775 V.

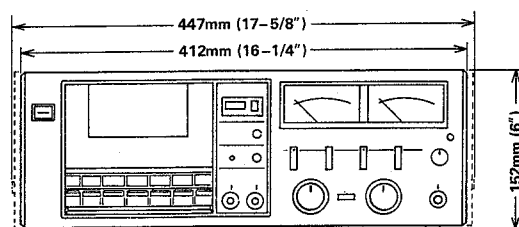


Fig. 1-1 Dimensions

### SERVICE DATA

#### MECHANICAL

**Tape Speed Deviation** 3,000 Hz  $\pm$  45 Hz

**Tape Speed Drift** 45 Hz

**Wow and Flutter**

Playback: 0.10% (WRMS)

Record/Playback: 0.25% (RMS)

**Pinch Roller Pressure** 400 g  $\pm$  50 g (12.3 to 15.9 oz)

**Reel Torque**

Take Up: 45 to 65 g.cm (0.6 to 0.9 oz.-inch)

Supply: 3 to 8 g.cm (0.04 to 0.11 oz.-inch)

Fast Forward: 80 to 150 g.cm (1.1 to 2.1 oz.-inch)

Rewind: 100 to 150 g.cm (1.4 to 2.1 oz.-inch)

**Fast Winding Time** 90 seconds for C-60

#### ELECTRICAL

**Frequency Response**

Playback: Ref. 315 Hz

Overall: Ref. 400 Hz

40 Hz: +2, -4 dB

40 Hz: +4, -4 dB

63 Hz: +2, -4 dB

63 Hz: +4, -4 dB

125 Hz: +2, -2 dB

125 Hz: +4, -2 dB

2 kHz: +2, -2 dB

250 Hz: +2, -2 dB

4 kHz: +4, -2 dB

6.3 kHz: +2, -2 dB

6.3 kHz: +4, -2 dB

8 kHz: +3, -2.5 dB

10 kHz: +4, -5 dB

10 kHz: +3, -3 dB (NORMAL)

12.5 kHz: +3, -3 dB (Co (CrO<sub>2</sub>)  
and METAL)

**Signal to Noise Ratio**

Playback method: 47 dB min.

Record/Playback method:

METAL and Co (CrO<sub>2</sub>) 45 dB min.

NORMAL 44 dB min.

With Dolby Noise Reduction used for recording and playback,  
S/N ratio is improved by up to 5 dB at 1 kHz and up to 10 dB  
at frequencies over 5 kHz.

**Erase Efficiency** 65 dB min.

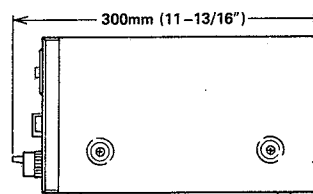
**Channel Separation** 30 dB min. (at 1 kHz)

**Crosstalk between Adjacent Tracks** 40 dB min. (at 125 Hz)

**Total Harmonic Distortion** Co (CrO<sub>2</sub>): 2.2% (max.)

NORMAL: 2.5% (max.)

METAL: 2.0% (max.)



\* Dolby noise reduction: Noise reduction circuit made under license from Dolby Laboratories. The word "Dolby" and the Double-D symbol are trademarks of Dolby Laboratories.

## 2 PARTS LOCATION

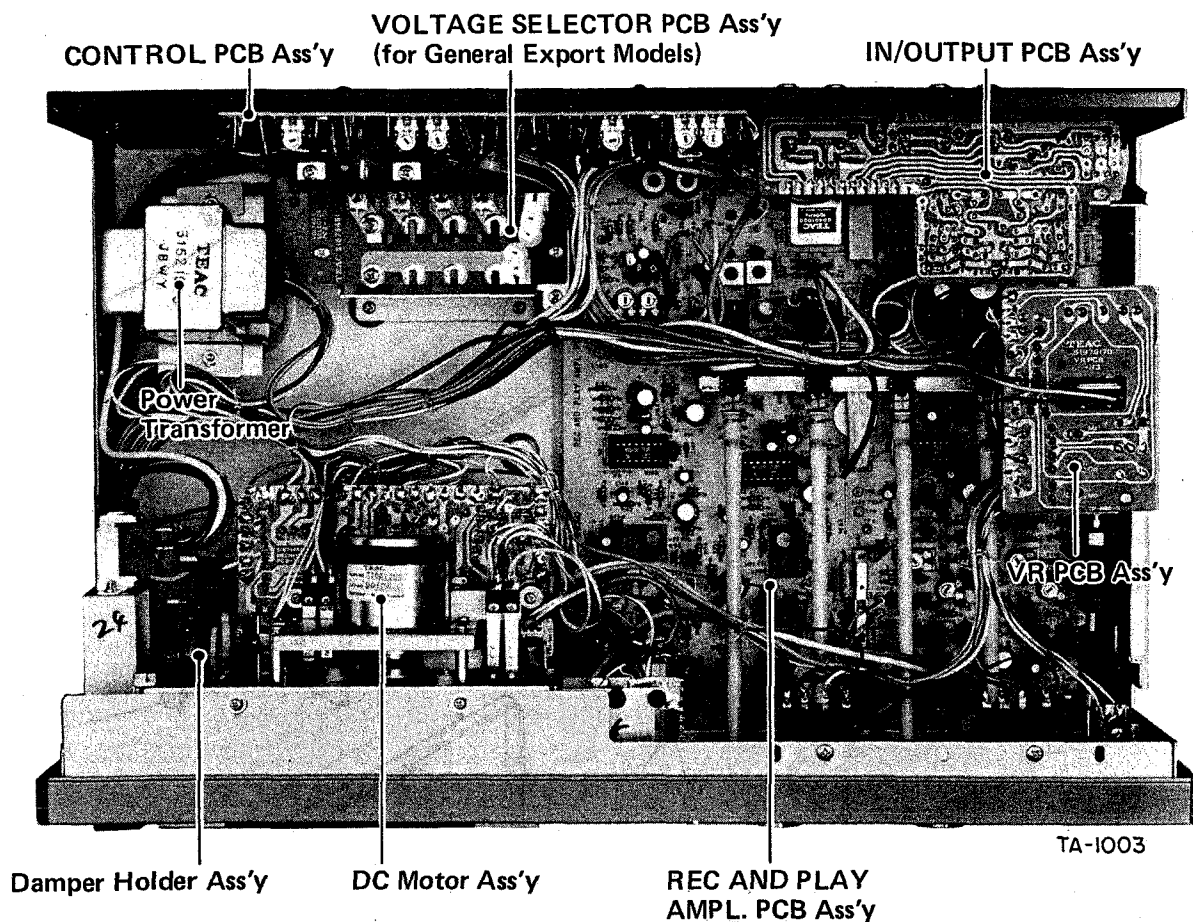


Fig. 2-1

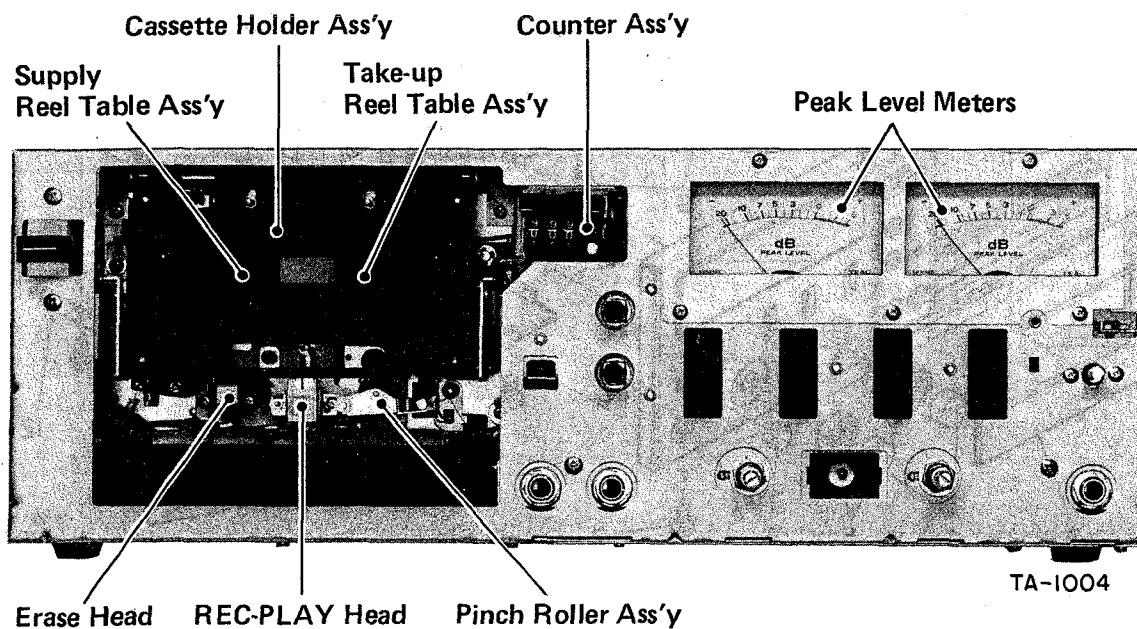
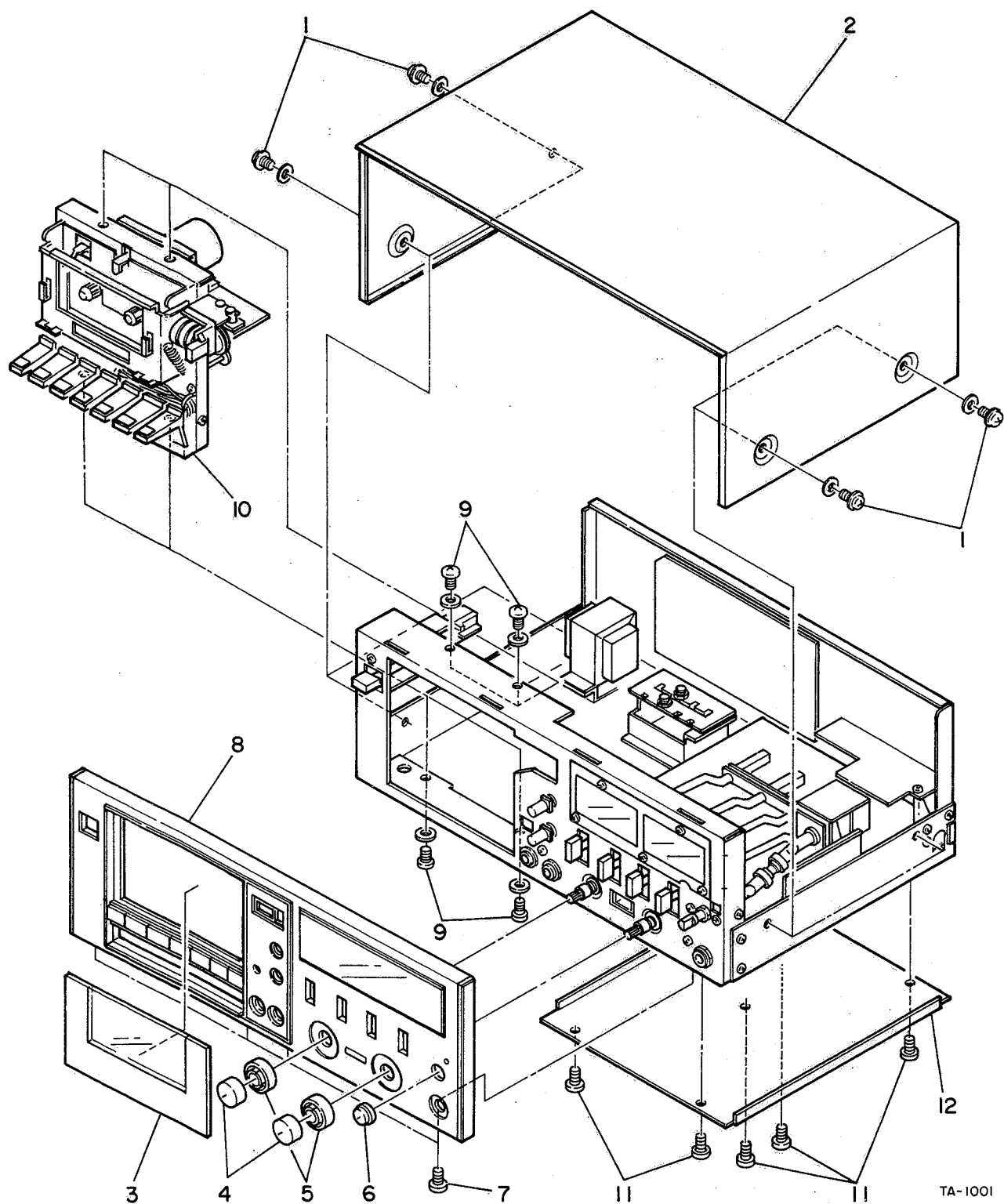


Fig. 2-2

### 3 CASE AND FRONT PANEL REMOVAL

Disassemble in number-order



TA-1001

Fig. 3-1

## 4 MECHANICAL ADJUSTMENTS AND CHECKS

### 4-1 TEST EQUIPMENT

**NOTE:** When ordering special tapes indicated by\*, allow for the longer delivery time that is required for them.

1. Spring scale: For pinch roller pressure check, 0 to 500 g (17.6 oz)
2. Wow/flutter meter:
3. Frequency counter: Digital type, capable of 10 Hz to 100 kHz indication
4. Cleaner: TEAC TZ-261 tape recorder cleaner kit or pure alcohol
5. Test tape\*: TEAC MTT-111 (for tape speed and wow/flutter test, 3,000 Hz is recorded)
6. Cassette torque meter\*: For take-up and supply torque checks, 0 to 100g.cm (0 to 1.4 oz.-inch)  
For fast forward and rewind torque checks, 0 to 160g.cm (0 to 2.2 oz.-inch)
7. Compact Cassette Tape Path Checker\*: MTT-901; C-60, 30m  
MTT-902; C-90, 45m

### 4-2 REEL TORQUE

Load the cassette torque meter on the deck and read the pointer indication on the dial scale for each tape movement operation.

**Specifications:**

|               |                                      |
|---------------|--------------------------------------|
| Take-up:      | 45 to 65g.cm (0.6 to 0.9 oz.-inch)   |
| Supply:       | 3 to 8g.cm (0.04 to 0.11 oz.-inch)   |
| Fast Forward: | 80 to 150g.cm (1.1 to 2.1 oz.-inch)  |
| Rewind:       | 100 to 150g.cm (1.4 to 2.1 oz.-inch) |

### 4-3 PINCH ROLLER PRESSURE

1. Place the deck in the PLAY mode with no tape loaded.
2. Attach the spring scale to the pinch roller shaft.
3. Draw the pinch roller away from the capstan shaft in a directly downward direction until the capstan shaft and the pinch roller are separated.
4. Return the scale back until the pinch roller just begins to rotate. The scale should then be reading as per spec.  
**Specification:** 400 g  $\pm$  50 g (12.3 oz. to 15.9 oz.)
5. If the reading is out of the specified range, replace the Pinch Roller Ass'y or the Pressure Spring, or adjust the Spring Arm as shown.

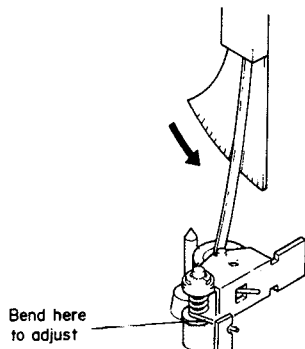


Fig. 4-1

### 4-4 TAPE SPEED

1. Connect test equipment to the deck.
2. Load and play a TEAC MTT-111 test tape.
3. Using a common slotted screwdriver with a handle completely insulated from the screwdriver blade, adjust the control on the motor for a reading of 3,000  $\pm$  10 Hz.

**NOTE:** This tape speed setting should be done after about 20 seconds of operating time.

4. Check the followings at any portation of the tape run.

**Specifications:**

Tape speed deviation . . . . . 3,000 Hz  $\pm$  45 Hz

Tape speed drift. . . . . 45 Hz

5. If the tape speed is out of spec., check the pinch roller pressure and the tape driving function for correctness, and make sure the tape path is clean.

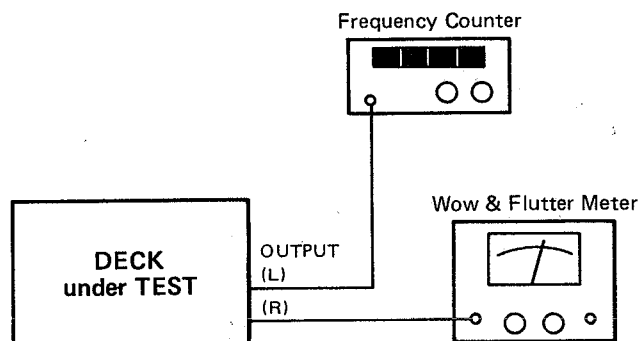
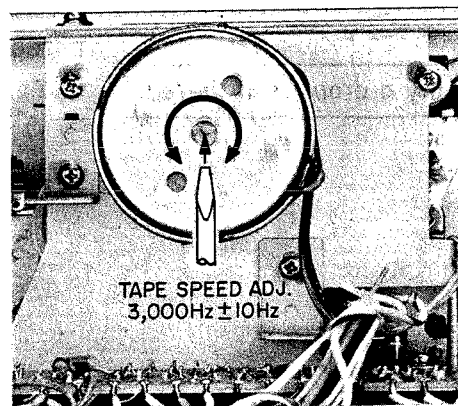


Fig. 4-2 Connection



T-1679

Fig. 4-3 Tape Speed Adjustment Location

## 5 LUBRICATION AND VOLTAGE CONVERSION

### 5-1 LUBRICATION

Lubrication is only required when parts are replaced. For this purpose, use oil and grease specified below.

Oil: TEAC Spindle Oil (from TEAC TZ-255 Oil Kit), Mobil D.T.E. Oil Light, or equivalent

Grease: ORE-LUBE G 1/3 or equivalent

1. Apply a drop of oil with an oil applicator to a point about 1/3 the way down the shaft (from the free end) of the flywheel, then insert the shaft into the capstan housing.
2. Apply a suitable amount of light grease to the well of the flywheel bearing.

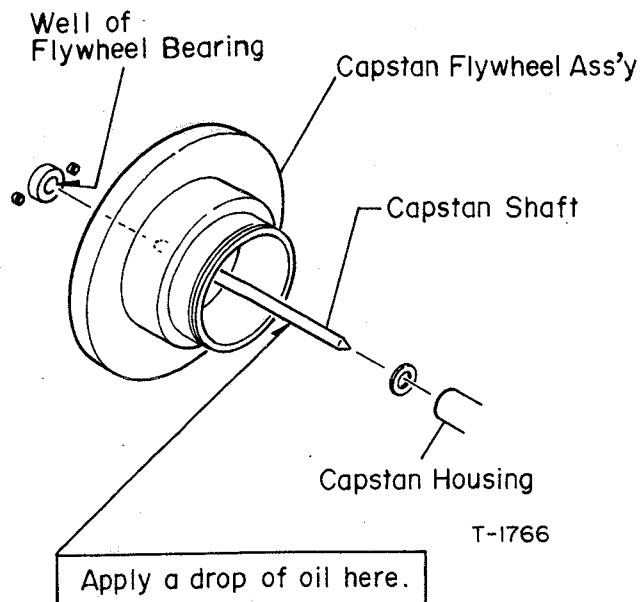


Fig. 5-1

### 5-2 VOLTAGE SELECTOR SETTING PROCEDURE (FOR GENERAL EXPORT MODELS)

1. Always disconnect the power line cord before making these adjustments.
2. Remove the top cover of the deck by removing the two screws from the sides.

**NOTE:** Decks sold in some limited areas only have wooden sideboards which must be removed by two screws on each side of the deck before setting the voltage selector.

3. Locate the voltage selector, shown in the illustration, near the power transformer.
4. Loosen the two screws in the shorting bar and move the bar so that it short across the terminals marked with the required voltage (100, 117, 220 or 240).
5. Retighten the screws and replace the top cover.

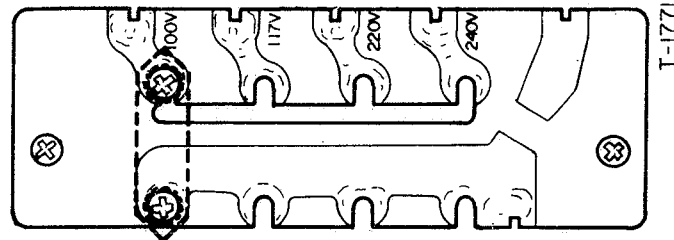


Fig. 5-2

### 5-3 AC POWER LINE FREQUENCY ADAPTATION

Since the A-430 employs a DC servo motor, 50 Hz or 60 Hz operation is permitted without power line frequency adaptation.

## 6 ELECTRICAL ADJUSTMENTS AND CHECKS

### 6-1 GENERAL NOTICE

1. Before performing adjustments and checks, clean and demagnetize the entire tape path.
2. Make sure the deck is properly set for the voltage in your locality.
3. In general, adjustments and checks are done in the order of L-ch then R-ch. Double REF. Nos. indicate L-ch/R-ch. (Example: R10/R20)
4. The value of "dB" refers to 0 dB (0.775 V). If an AC voltmeter calibrated to 0 dB (1 V) is to be used, appropriate compensation should be made.
5. The AC voltmeter used in the procedures must have an input impedance of 1 M-ohms or more.

### 6-2 TEST EQUIPMENT

**NOTE:** When ordering test tapes, allow for the longer delivery time required for them.

1. TEAC test tapes  
 MTT-150: For Dolby level calibration  
 MTT-316: For playback frequency response check for EQ, METAL, Co (CrO<sub>2</sub>).  
 MTT-216: For playback frequency response check for EQ, NORMAL  
 MTT-506 or similar: For record test with BIAS/EQ, Co (CrO<sub>2</sub>).  
 MTT-501 or similar: For record test with BIAS/EQ, NORMAL  
 METAL tape: For record test with BIAS/EQ, METAL
2. AF oscillator: 10 Hz to 100 kHz
3. AC voltmeter: 0.1 mV to 300 V
4. DC voltmeter
5. Attenuator: General purpose
6. Distortion analyzer: Basic frequency 400 Hz/1 kHz
7. Oscilloscope: General purpose
8. Band-pass filter: 1 kHz narrow band-pass type
9. Test load resistor: Non inductive type 8 ohm/1 W
10. Plastic alignment tool
11. Head demagnetizer: TEAC E-3 or equivalent
12. Cleaner: TEAC TZ-261 or pure alcohol
13. Bulk tape eraser: TEAC E-2 or equivalent

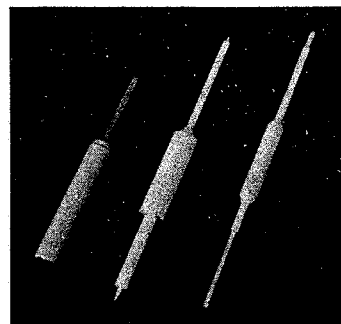


Fig. 6-1 Plastic Alignment Tools



Fig. 6-2 TEAC Test Tapes

### 6-3 PREPARATIONS

1. Make the basic test set-up and the switch/control setting. Unless showed otherwise in the procedures, 1 kHz filter should be by-passed.

| Switch/control | Position |
|----------------|----------|
| MEMORY         | OFF      |
| REC MUTE       | OFF      |
| AUTO BIAS      | OFF      |
| METAL          | OFF      |
| DOLBY NR       | OUT      |
| MONITOR        | TAPE     |
| MIC            | MIN      |
| LINE           | MIN      |

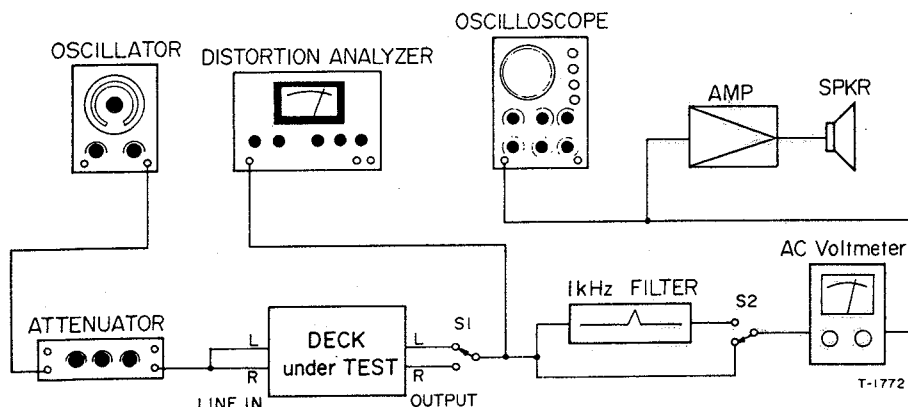


Fig. 6-3 Basic Test Setup

## 6-4 PLAYBACK PERFORMANCE

| ITEM                      | CONNECTION                                                       | SIGNAL SOURCE                         | ADJUST (or CHECK)                     | OUTPUT                                                                                                                                                            | REMARKS                           |
|---------------------------|------------------------------------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 1. REC/PLAY head azimuth  | Fig. 6-4                                                         | MTT-150 tape                          | Check                                 | Phase: within 45° on oscilloscope (Fig. 6-6)                                                                                                                      |                                   |
|                           |                                                                  | MTT-316 tape, 10 kHz section          | Azimuth adjustment of head (Fig. 6-5) | Max. output on AC voltmeter                                                                                                                                       |                                   |
| 2. Specified output level | Connect AC voltmeter between DOLBY TP L (R) and TP E<br>Fig. 6-3 | MTT-150 tape                          | R10/R20                               | 580 mV (−2.5 dB)                                                                                                                                                  | ● Specified level                 |
|                           |                                                                  | "                                     | Check                                 | −5 dB ±2 dB (346 mV to 548mV)                                                                                                                                     |                                   |
| 3. Peak level meter       | Fig. 6-3                                                         | MTT-150 tape                          | R70/R80                               | 0 dB on peak level meter                                                                                                                                          |                                   |
| 4. Frequency response     | Fig. 6-3                                                         | MTT-316 tape, 40 Hz to 10 kHz section | R11/R21                               | Reference 315 Hz:<br>40 Hz: +2, −4 dB<br>63 Hz: +2, −4 dB<br>125 Hz: +2, −2 dB<br>2 kHz: +2, −2 dB<br>4 kHz: +4, −2 dB<br>6.3 kHz: +4, −2 dB<br>10 kHz: +4, −5 dB |                                   |
| 5. Signal to noise ratio  | Fig. 6-3                                                         | MTT-501 tape                          | Check                                 | 47 dB (min.) ratio                                                                                                                                                | ● Ratio of spec. −5 dB and noise. |
| 6. Headphone output level | Fig. 6-7                                                         | MTT-150 tape                          | Check                                 | −21 dB ±3 dB (48.9 mV to 97.5 mV)                                                                                                                                 | ● At PHONES jack                  |

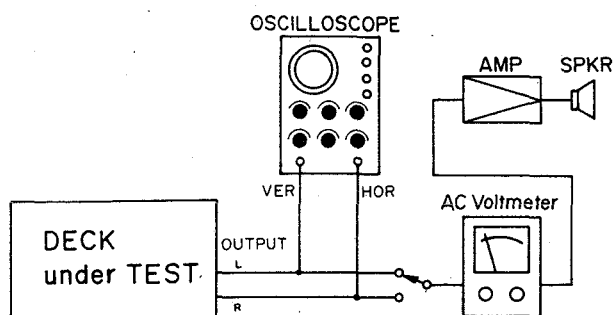


Fig. 6-4 Connection

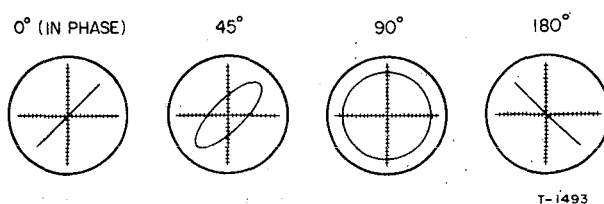


Fig. 6-6 Confirming Phase Relationship

Azimuth Adjusting Nut

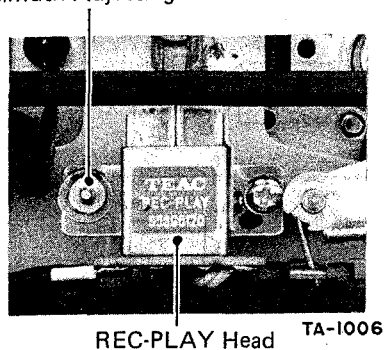


Fig. 6-5 Head Azimuth Adj. Location

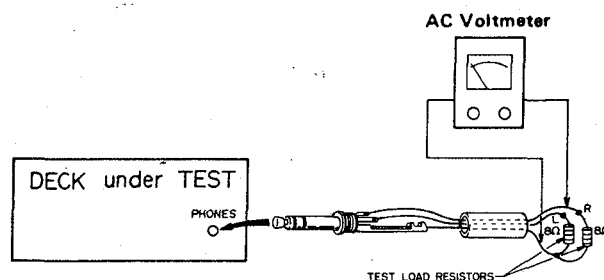


Fig. 6-7 Connection

**6-5 MONITOR PERFORMANCE (In the record-pause mode with MONITOR sw. to SOURCE)**

| ITEM                                   | CONNECTION                                                                            | SIGNAL SOURCE                                            | ADJUST (or CHECK)            | OUTPUT                          | REMARKS                                                                                                    |
|----------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------|------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------|
| <b>1. Min. input level</b>             | Fig. 6-3, but LINE IN → MIC                                                           | Test tone, 400 Hz/<br>-67 dB ± 3 dB (245 μV to 489 μV)   | MIC cont. to Max.            | -5 dB (436 mV)                  | ● For MIC check                                                                                            |
|                                        | Fig. 6-3, but LINE IN → DIN IN                                                        | Test tone, 400 Hz/<br>-35 dB ± 3 dB (9.75 mV to 19.5 mV) | "                            | "                               | ● For DIN IN check                                                                                         |
|                                        | Connect OSC → ATT to LINE IN (L) only, and AC voltmeter between DOLBY TP (L) and TP E | Test tone, 400 Hz/<br>-19 dB ± 3 dB (61.5 mV to 123 mV)  | LINE cont. to MAX. and check | 580 mV (-2.5 dB)                | ● For LINE IN check                                                                                        |
|                                        | Connect OSC → ATT to LINE IN (R) only, and AC voltmeter between DOLBY TP (R) and TP E | "                                                        | LINE cont. to MAX. and (R61) | "                               | NOTE: To prevent mis-measurements, any connection cords except those for each input check must be removed. |
| <b>2. Specified LINE cont. setting</b> | Connect OSC → ATT to LINE IN (L) only, and AC voltmeter between DOLBY TP (L) and TP E | Test tone, 400 Hz/<br>-9 dB (275 mV)                     | LINE cont.                   | 580 mV (-2.5 dB)                |                                                                                                            |
|                                        | Connect OSC → ATT to LINE IN (R) only, and AC voltmeter between DOLBY TP (R) and TP E | "                                                        | R61                          | "                               |                                                                                                            |
|                                        | Fig. 6-3                                                                              | "                                                        | Check                        | -5 dB ± 1 dB (388 mV to 489 mV) | IMPORTANT: After this, do not move LINE cont. for all later process.                                       |
| <b>3. Peak level meter</b>             | Fig. 6-3                                                                              | Test tone, 400 Hz/<br>-9 dB (275 mV)                     | Check                        | 0 dB ± 1 dB on peak level meter |                                                                                                            |

**6-6 RECORDING PERFORMANCE**

| ITEM                   | CONNECTION                                                                                                                          | SIGNAL SOURCE                         | ADJUST (or CHECK)           | OUTPUT                                                         | REMARKS                                                  |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------|----------------------------------------------------------------|----------------------------------------------------------|
| <b>1. Bias trap</b>    | Connect AC voltmeter between BIAS TRAP TP L (R) and TP E                                                                            | No signal recording                   | L103/L203                   | Min. reading                                                   | ● Set in REC-PAUSE mode.                                 |
| <b>2. Manual bias</b>  | See 6-7-1 MANUAL BIAS ADJUSTMENTS on page 11.  |                                       |                             |                                                                |                                                          |
| <b>3. Record level</b> | Fig. 6-3                                                                                                                            | Test tone, 400 Hz/<br>-12 dB (195 mV) | R16/R26 ....<br>Check ..... | -8 dB (308 mV) ....<br>-8 dB ± 1 dB (275 mV to 346mV) }        | .... Co (CrO <sub>2</sub> )<br>.... NORMAL<br>.... METAL |
| <b>4. Distortion</b>   | Fig. 6-3                                                                                                                            | Test tone, 400 Hz/<br>-12 dB (195 mV) | Check                       | 2.2% or less .....<br>2.5% or less .....<br>2.0% or less ..... | .... Co (CrO <sub>2</sub> )<br>.... NORMAL<br>.... METAL |

Continued on page 10

Continued from page 9

| ITEM                         | CONNECTION                                                                                                                        | SIGNAL SOURCE                                                           | ADJUST (or CHECK) | OUTPUT                                                                                                                                                                                               | REMARKS                                                                                                                                                                                                           |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5. Frequency response        | Fig. 6-3                                                                                                                          | Test tone required w/spec./-42 dB (6.15 mV)                             | L104/L204         | Reference 400 Hz:<br>40 Hz; +4, -4 dB<br>63 Hz; +4, -4 dB<br>125 Hz; +4, -2 dB<br>250 Hz; +2, -2 dB<br>6.3 kHz; +2, -2 dB<br>8 kHz; +3, -2.5 dB<br>10 kHz; +3, -3 dB ....<br>12.5 kHz; +3, -3 dB ... | .... NORMAL<br>.... Co (CrO <sub>2</sub> ) and METAL                                                                                                                                                              |
| 6. Signal to noise ratio     | Fig. 6-3                                                                                                                          | Test tone, 1 kHz/<br>-9 dB (275 mV) then<br>No signal recording         | Check             | 45 dB (min.) ratio ...<br>44 dB (min.) ratio ...                                                                                                                                                     | ● Ratio of 1 kHz portion and no signal portion<br>.... Co (CrO <sub>2</sub> ) and METAL<br>.... NORMAL                                                                                                            |
| 7. Erase efficiency          | Fig. 6-3, switch on 1 kHz filter                                                                                                  | Test tone, 1 kHz/<br>+1 dB (0.869 V) then<br>No signal recording        | Check             | 65 dB (min.) ratio                                                                                                                                                                                   | ● METAL only<br>● Record 1 kHz. Rewind tape to mid point of recorded portion. Do no signal recording. Get difference between 1 kHz portion and its erased portion.                                                |
| 8. REC MUTE function         | Fig. 6-3, switch on 1 kHz filter                                                                                                  | Test tone, 1 kHz/<br>+1 dB (0.869 V) then<br>No signal recording        | Check             | 65 dB (min.) ratio                                                                                                                                                                                   | ● Co (CrO <sub>2</sub> ) only<br>● Record 1 kHz. Then push REC MUTE button for several sec. Rewind and play tape. Get difference between 1 kHz portion and the created no signal portion.                         |
| 9. Channel separation        | Fig. 6-3, connect OSC → ATT to LINE IN (L) only, switch on 1 kHz filter                                                           | Test tone, 1 kHz/<br>-9 dB (275 mV) for L-ch and<br>No signal for R-ch. | Check             | 30 dB (min.) ratio                                                                                                                                                                                   | ● Co (CrO <sub>2</sub> ) only<br>● Set deck in record mode. Find differences between 1 kHz recorded portion (L-ch) and no signal portion (R-ch).                                                                  |
| 10. Adjacent track crosstalk | Fig. 6-3, connect OSC → ATT to LINE IN (R) only, and AC voltmeter to OUTPUT (R) only.                                             | Test tone, 125 Hz/<br>-9 dB (275 mV)                                    | Check             | 40 dB (min.) ratio                                                                                                                                                                                   | ● Co (CrO <sub>2</sub> ) only<br>● Record 125 Hz on R-ch. Note output level of its recorded portion. Invert tape and play R-ch track. Check leakage level against the output ref. of previously recorded portion. |
| 11. Dolby NR effect          | Fig. 6-3                                                                                                                          | Test tone:<br>1 kHz/-29 dB (27.5 mV) and<br>10 kHz/-39 dB (8.69 mV)     | Check             | Variation from ref.<br>At 1 kHz: 5.5 dB<br>±2.5 dB<br>At 10 kHz: 10 dB<br>± 2 dB                                                                                                                     | ● Co (CrO <sub>2</sub> ) only<br>● Record 1 kHz w/DOLBY NR sw. to OUT. Play its portion w/DOLBY NR, OUT and IN. Get the output level difference between OUT and IN.<br>● Repeat the above process for 10 kHz.     |
| 12. Auto bias                | See 6-7-2 AUTO BIAS ADJUSTMENTS on page 12.  |                                                                         |                   |                                                                                                                                                                                                      |                                                                                                                                                                                                                   |

## 6-7 RECORDING BIAS ADJUSTMENTS

### 6-7-1 MANUAL BIAS ADJUSTMENTS

**NOTE:** The adjustments in these paragraphs should be done before conducting "6-6 RECORDING PERFORMANCE , 3. Record level" on page 9. When conducting "3. Record level" and after, BIAS knob setting should always be done by hand for each item on the chart.

#### (1) Cam adjustment

1. The power switch on the deck should be switched off.
2. Select the resistance range of the tester, then connect one test lead to TP 1 and TP 3 (on VR PCB) alternately, with the other test lead connected to TP 2 (on VR PCB) in order to look for the ineffective portion of the 360 degree control (R55), then to find its mid-point. At this time, the adjusting screw on the cam should be loosened beforehand.

3. Fix the screw so that the mid-point of the cam's OFF-section (Switch S510, OFF) aligns with the mid-point of the control as established in step 2.

4. Check that the relationship between the effective and ineffective sections of R55 and ON-OFF of S510 are as in Fig. 6-10. If not re-do steps 2 and 3.

#### (2) BIAS knob adjustments

1. Loosen the adjusting screw on the coupling ring (either A or B) and retighten it so that the requirement below can be satisfied.
  - a. When the resistance between TP 2 and TP 4 on VR PCB is as near 0 ohms as possible, the knob index points to the METAL range mid-point.
  - b. When the resistance between TP 2 and TP 5 is as near 0 ohms as possible, the index points to the Co (CrO<sub>2</sub>) range mid-point.

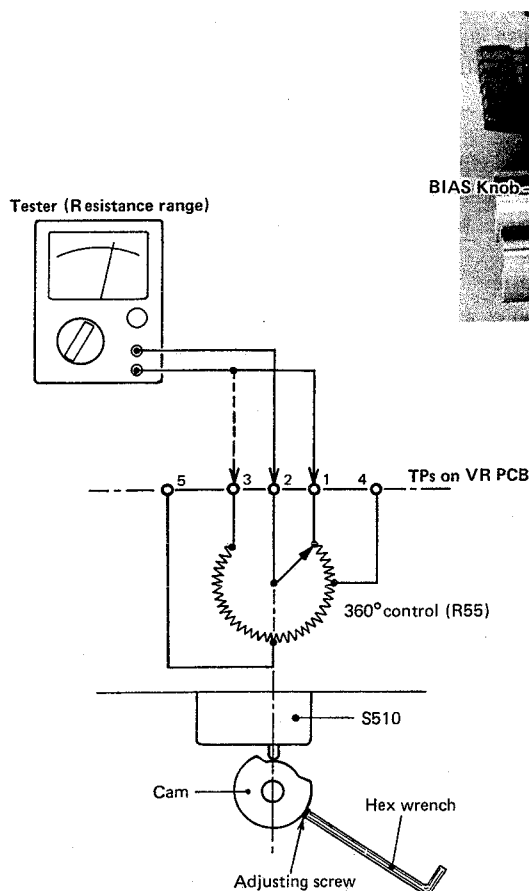


Fig. 6-9 Cam Adjustment

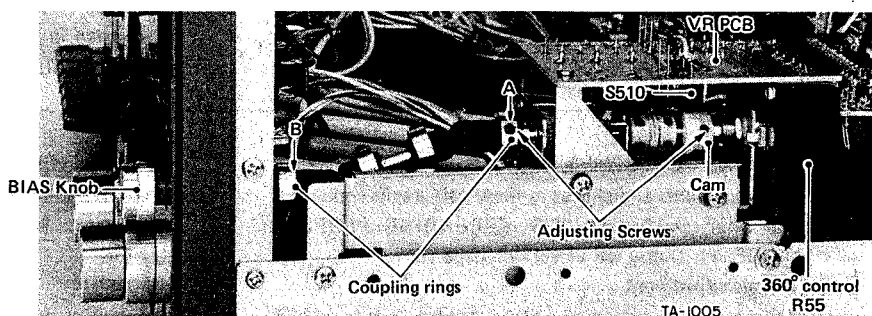


Fig. 6-8 Location of Auto Bias Components

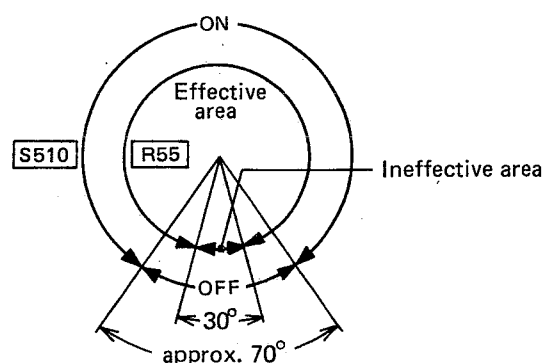


Fig. 6-10 Relationship of R55 to S510

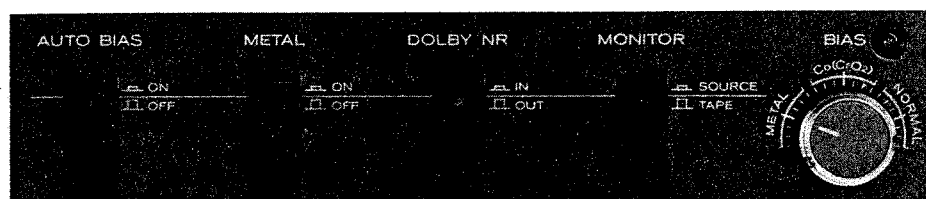


Fig. 6-11

## (3) Manual bias adjustment

**NOTE:** Be sure to make manual bias adjustments in the order of METAL tape → Co (CrO<sub>2</sub>) tape → NORMAL tape.

1. Set the deck in the record mode.
2. Connect the DC voltmeter between TP 1 and TP 6 (ground) on the CONTROL PCB, then adjust R64 for +24 V DC.  
(Adjustment for power supply voltage of the 100 kHz oscillator)
3. Connect the deck and test equipment as shown in Fig. 6-3.
4. Set R50 fully clockwise (CW); R51 and R52 at mid-point; R53 and R54 fully counterclockwise (CCW).

### For METAL tape

5. Load the METAL test tape, set the METAL switch to ON.
6. Apply and record 1 kHz/-39 dB (8.69 mV).
7. During recording operation, turn the knob with the index line in the vicinity of the METAL range mid-point and locate the position producing the maximum output from the deck's OUTPUT terminal.
8. Note this output level as a reference level, then point the knob index to the METAL range mid-point.

9. Turn R53 (for R-ch) then R54 (for L-ch) clockwise until the output level decreases by 1.5 dB from the reference level.

**NOTE:** If finding the 1.5 dB over-bias position is impossible even though R53 and/or R54 are turned fully clockwise, turn R50 slightly CCW then readjust R53 and/or R54. R50 should be moved as little as possible to prevent channel separation deterioration.

### For Co (CrO<sub>2</sub>) and NORMAL tapes

10. With the following setting, record 1 kHz/-39 dB (8.69 mV) to get 0.5 dB over-bias, adjusting R51 and R52 in a similar way as "For METAL tape".

| Test tape | METAL switch | BIAS knob                        | Adjustment |
|-----------|--------------|----------------------------------|------------|
| MTT-506   | OFF          | Co (CrO <sub>2</sub> ) mid-point | R51        |
| MTT-501   | OFF          | NORMAL mid-point                 | R52        |

11. Load any of the three test tapes above and check that the L- and R-ch output levels indicate the same level changes when R55 is adjusted in both the CW and CCW directions. If not, re-adjust R53 and/or R54.

## 6-7-2 AUTO BIAS ADJUSTMENTS

**NOTE:** The adjustments and checks in these paragraphs should be done after conducting "6-6 RECORDING PERFORMANCE, 11. Dolby NR effect" on page 10.

### (1) Motor voltage adjustment

1. Load any blank tape, then with the AUTO BIAS switch depressed during the record operation (this mode is hereafter referred to as the auto bias mode), adjust R63 so that the BIAS knob makes one rotation per 3 seconds.
2. To make the above adjustment easier, the following is recommended.
3. Connect DC voltmeter between TP 2 and TP 6 (ground) on the CONTROL PCB.
4. During auto bias mode, adjust R63 for a DC voltmeter indication of about +5 V, then fine-adjust the motor speed using R63 too.

### (2) Built-in 10 kHz oscillating frequency adjustment

1. Connect a frequency counter between TP 3 and TP 6 (ground) on the CONTROL PCB.
2. In the auto bias mode, adjust R62 so that the counter reads 10 kHz.

### (3) 10 kHz output level adjustment

1. Connect a AC voltmeter to the R-ch OUTPUT.
2. Set the MONITOR switch to SOURCE.
3. In the auto bias mode, adjust R65 so that 10 kHz (from the built-in oscillator) output level of R-ch is -35 dB (13.8 mV).

### (4) Detecting level adjustment

1. Set the METAL switch to OFF and the MONITOR switch to TAPE, then load the MTT-506 test tape.
2. In the auto bias mode, adjust R60 so that the BIAS knob stops at the Co (CrO<sub>2</sub>) range mid-point.

3. In the condition below, check the stop position of the BIAS knob using the same procedure as above.

| Test tape | METAL switch | BIAS knob's stop position |
|-----------|--------------|---------------------------|
| METAL     | ON           | METAL mid-point           |
| MTT-501   | OFF          | NORMAL mid-point          |

4. Connect an AC voltmeter to the R-ch OUTPUT.

5. Check that when the BIAS knob stops in the auto bias mode, the 10 kHz output level is the same with the MONITOR switched between SOURCE and TAPE.

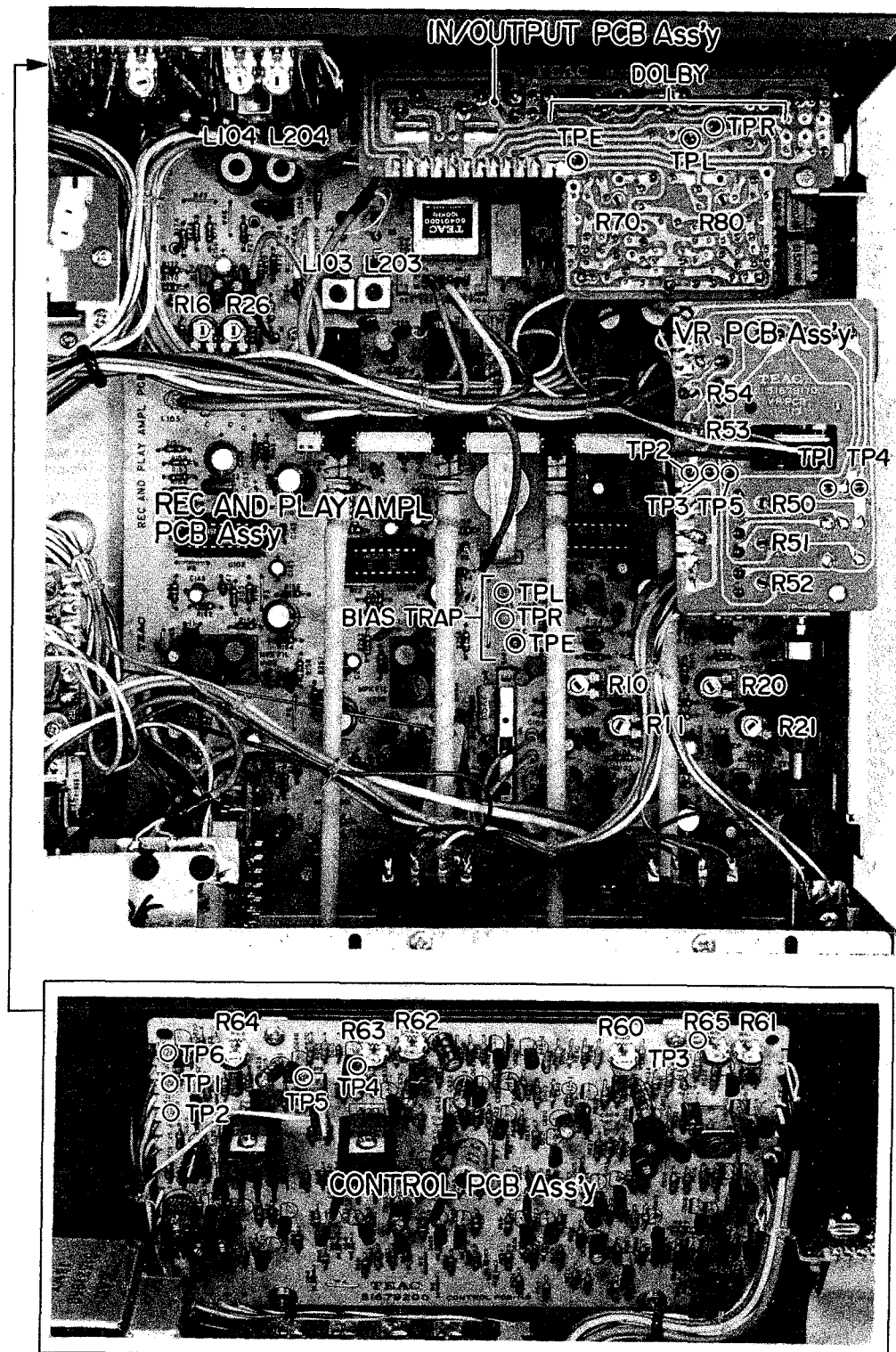
### (5) BIAS knob's two rotation check

1. Connect an AC voltmeter to the R-ch OUTPUT.
2. Load an MTT-506 test tape.
3. While recording, push the AUTO BIAS and REC MUTE switches together to let the BIAS knob turn beyond the NORMAL range.
4. Continuously let the knob turn, and just before the knob enters the Co (CrO<sub>2</sub>) area, release the REC MUTE switch.
5. After the knob index has entered the Co (CrO<sub>2</sub>) range, check that it stops within first half of the range.
6. After the knob has stopped, check that, when changing the MONITOR switch from SOURCE to TAPE, the 10 kHz output level of R-ch is reduced by 3 dB.

### (6) Malfunction prevention check

1. Connect the deck and test equipment as shown in Fig. 6-3, but do not use both LINE and OUTPUT of L-ch.
2. Load a METAL test tape then set the METAL switch to ON.
3. After getting the optimum bias using the auto bias mode, apply and record 1 kHz/+1 dB (0.869 V) to the R-ch LINE IN for about ten seconds.
4. Rewind the tape to the beginning of the recording.
5. Check that, during auto bias mode, the knob stops at the METAL range mid-point.

## 6-8 ADJUSTMENT AND TEST POINT LOCATIONS

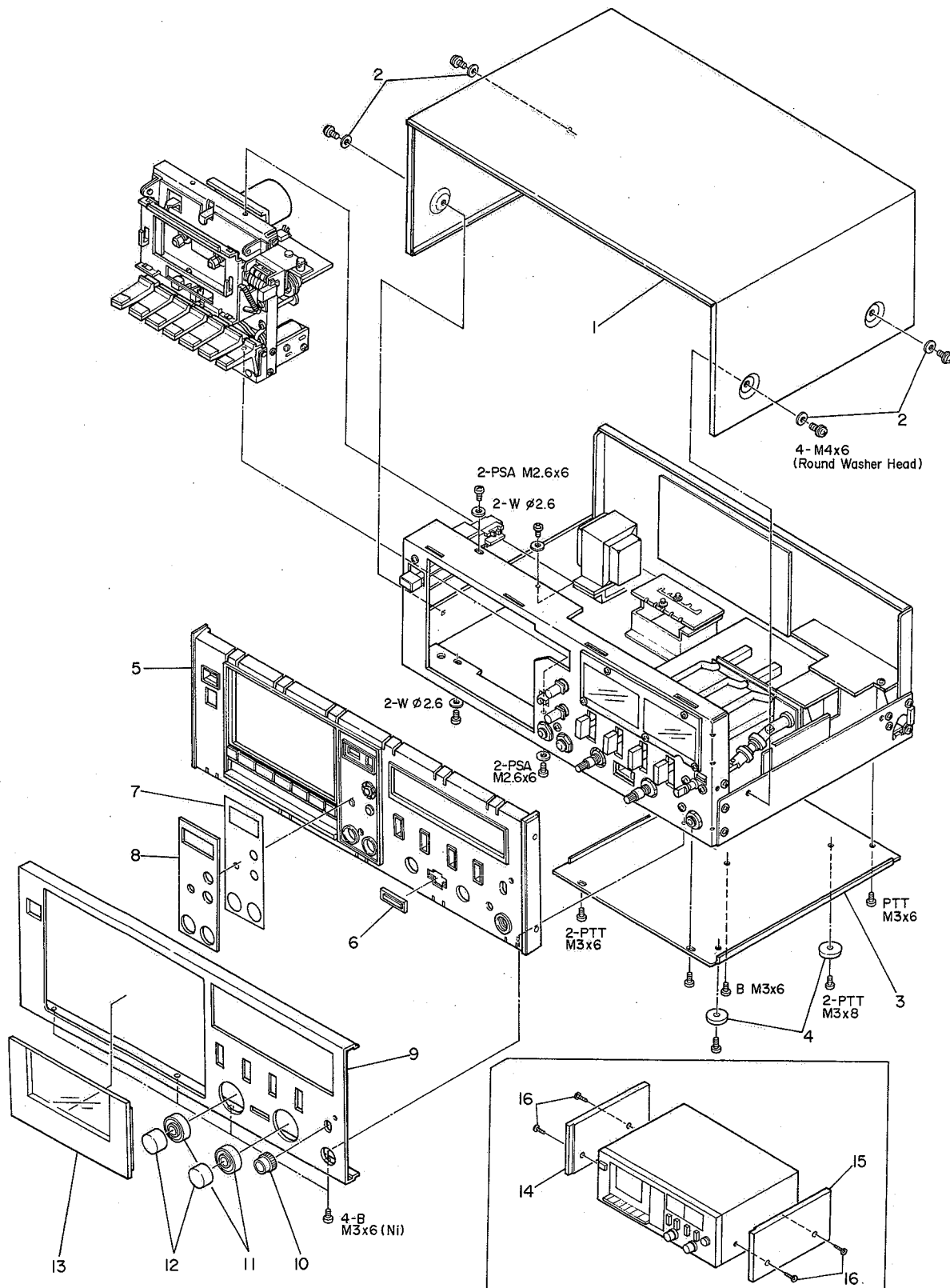


TA-1008

Fig. 6-12

## 7 EXPLODED VIEWS AND PARTS LIST

EXPLODED VIEW-1



E-1001

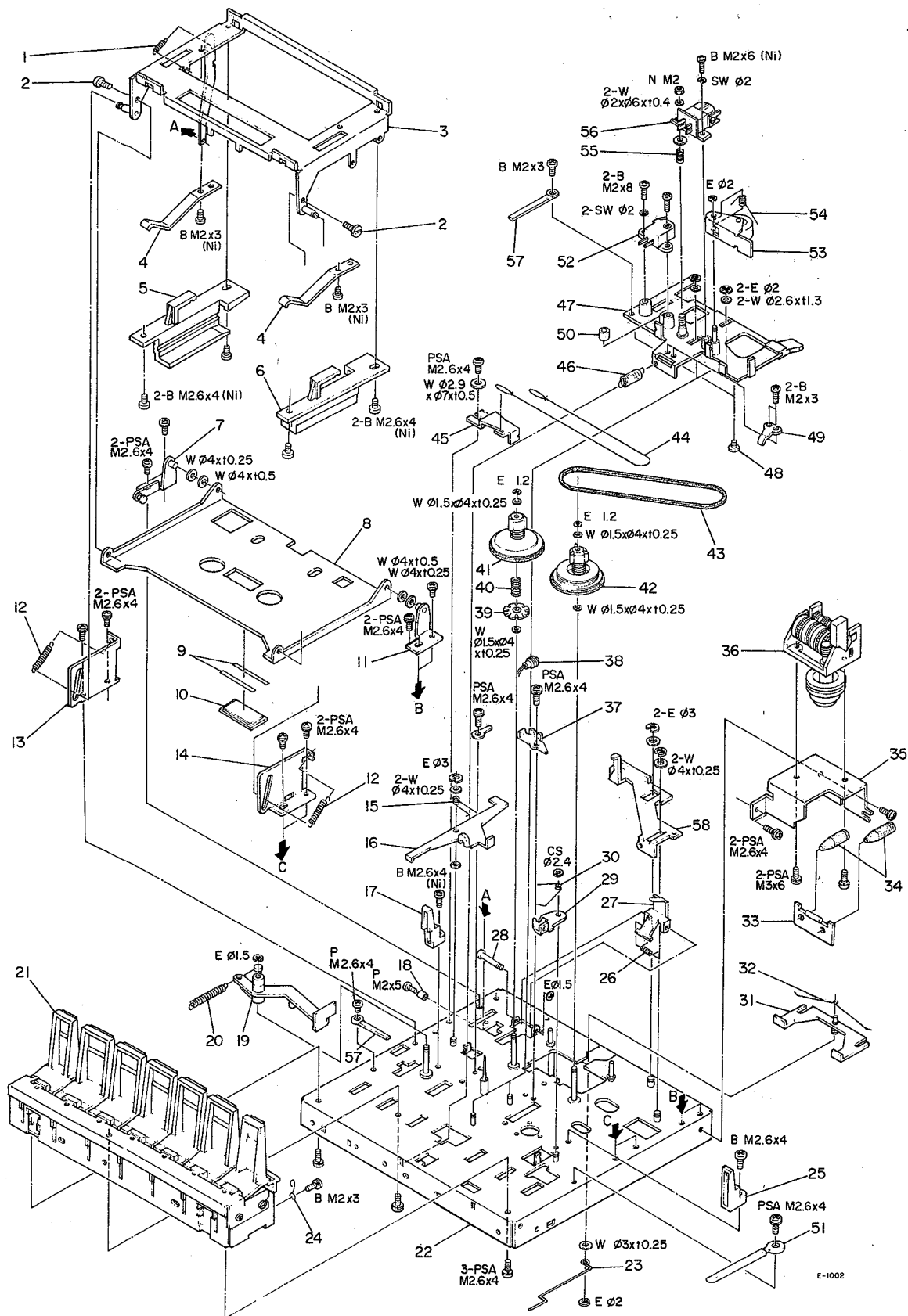
Parts marked with \*require longer delivery time than regular parts.

| REF. NO. | PARTS NO. | DESCRIPTION                  | REMARKS      |
|----------|-----------|------------------------------|--------------|
| 1 - 1    | *55522020 | Cover, Top                   |              |
| 1 - 2    | *55800050 | Washer, Fiber                |              |
| 1 - 3    | *55522010 | Cover, REC AND PLAY AMPL PCB |              |
| 1 - 4    | *55346710 | Foot                         |              |
| 1 - 5    | *55022300 | Front Panel Assy; C          |              |
| 1 - 6    | *55346320 | Lens, Lamp                   |              |
| 1 - 7    | *55556290 | Tape, Adhesive               |              |
| 1 - 8    | *55557170 | Panel, Indication; C         |              |
| 1 - 9    | *55523980 | Panel Assy, Front; D         |              |
| 1 - 10   | 55047460  | Knob Assy, D                 |              |
| 1 - 11   | 55346440  | Knob, C                      |              |
| 1 - 12   | 55346430  | Knob, B                      |              |
| 1 - 13   | 55031970  | Cover Assy, Cassette; E      |              |
| 1 - 14   | *55420080 | Board, Side; L               | LIMITED AREA |
| 1 - 15   | *55420090 | Board, Side; R               | LIMITED AREA |
| 1 - 16   | *55045490 | Screw Assy, C                | LIMITED AREA |

## INCLUDED ACCESSORIES

| REF. NO. | PARTS NO. | DESCRIPTION                      | REMARKS           |
|----------|-----------|----------------------------------|-------------------|
|          | 51280650  | Cord, Input-output Connection    |                   |
|          | 51013450  | Information Supplement, Cassette | U.S.A.            |
|          | 51014950  | Information Supplement, Cassette | All except U.S.A. |
|          | 51017190  | A-430 Owner's Manual             | U.S.A.            |
|          | 51017200  | A-430 Owner's Manual             | All except U.S.A. |

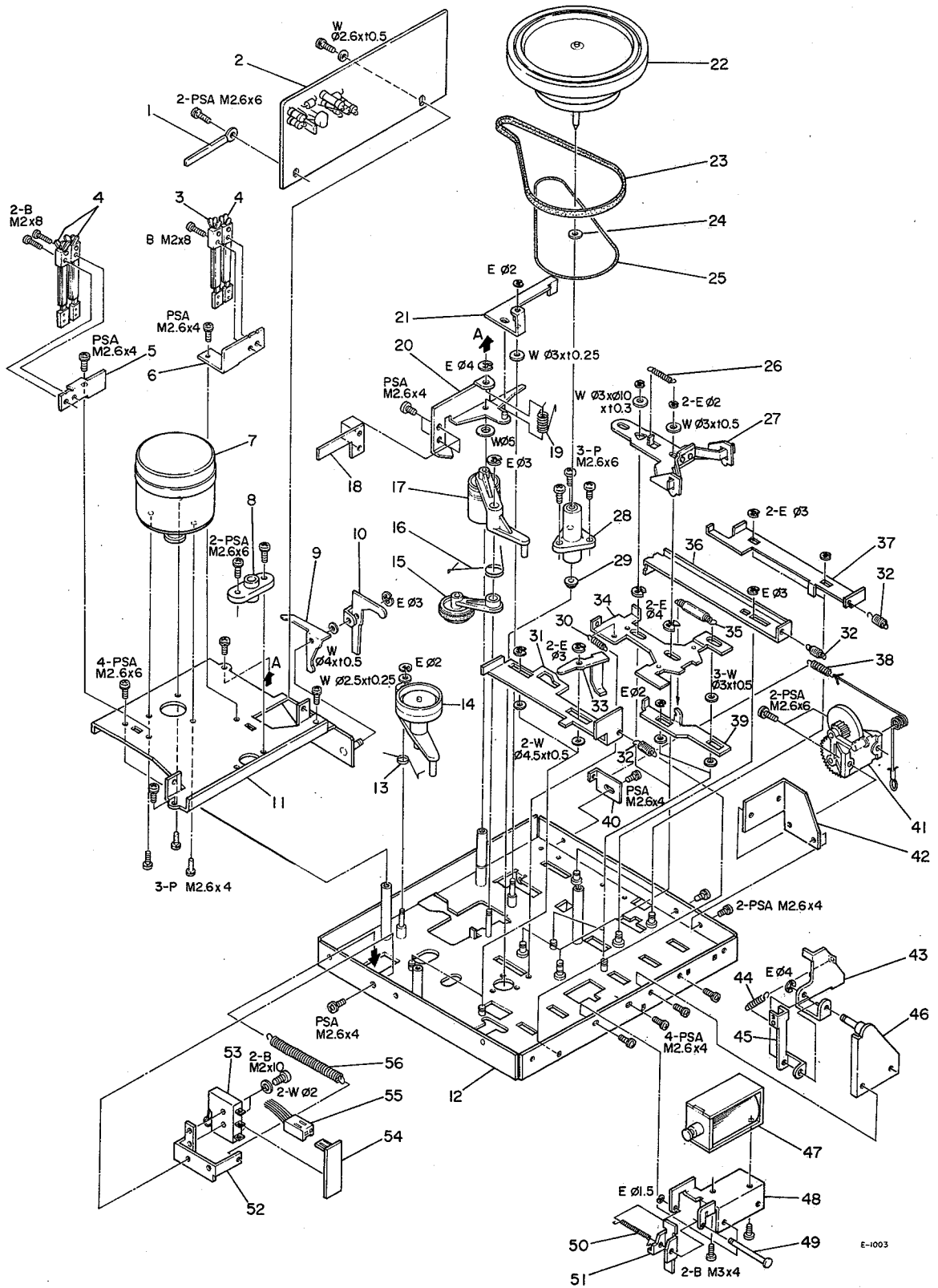
### EXPLODED VIEW-2



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

| REF. NO. | PARTS NO. | DESCRIPTION               | REMARKS        |
|----------|-----------|---------------------------|----------------|
| 2 - 1    | *55203380 | Spring, Hook              |                |
| 2 - 2    | *55810570 | Screw, Cassette Holder    |                |
| 2 - 3    | *55044763 | Holder Assy, Cassette; A  |                |
| 2 - 4    | 55550870  | Spring, Plate             |                |
| 2 - 5    | 55344512  | Cassette Guide, Left      |                |
| 2 - 6    | 55344502  | Cassette Guide, Right     |                |
| 2 - 7    | *55044780 | Bracket Assy, Holder; B   |                |
| 2 - 8    | *55533030 | Holder, Cassette; C       |                |
| 2 - 9    | *55555820 | Tape, Adhesive            |                |
| 2 - 10   | *55346380 | Lens, Lamp                |                |
| 2 - 11   | *55044770 | Bracket Assy, Holder; A   |                |
| 2 - 12   | *55203370 | Spring, Eject             |                |
| 2 - 13   | *55550920 | Guide Plate, Holder; B    |                |
| 2 - 14   | *55550910 | Guide Plate, Holder; A    |                |
| 2 - 15   | *55203350 | Spring, Arm               |                |
| 2 - 16   | *55555830 | Arm, Preventing           |                |
| 2 - 17   | 55346410  | Guide, Cassette; L        |                |
| 2 - 18   | *55446980 | Collar, Stopper           |                |
| 2 - 19   | *55331740 | Arm, Tension              |                |
| 2 - 20   | *55242080 | Spring, Tension Arm       |                |
| 2 - 21   | 55021644  | Button Assy               |                |
| 2 - 22   | *55022310 | Chassis Assy, Mechanism   |                |
| 2 - 23   | *55203340 | Rod, Brake Actuating      |                |
| 2 - 24   | *55203420 | Clamper, Cord             |                |
| 2 - 25   | 55344441  | Guide, Cassette           |                |
| 2 - 26   | *55203490 | Spring, Preventing; A     |                |
| 2 - 27   | *55550811 | Lever, Safety, C          |                |
| 2 - 28   | *55446560 | Shaft, Safety Lever       |                |
| 2 - 29   | 50846432  | Plate, Pause Lock         |                |
| 2 - 30   | 50845502  | Spring, Pause Lock        |                |
| 2 - 31   | *55044720 | Plate Assy, Brake         |                |
| 2 - 32   | *55203330 | Spring, Brake             |                |
| 2 - 33   | *51685490 | PCB Assy, REED SWITCH     |                |
|          | *51380060 | PCB, REED SWITCH          | Part of 2 - 33 |
|          | 51675490  | Switch, Reed              | Part of 2 - 33 |
| 2 - 34   | 55344480  | Cushion, Rubber           |                |
| 2 - 35   | *55550710 | Bracket, Counter          |                |
| 2 - 36   | 55031300  | Counter Assy              |                |
| 2 - 37   | *55555810 | Bracket, Lamp             |                |
| 2 - 38   | *51422010 | Lamp, w/Holer             |                |
| 2 - 39   | *55343040 | Plate, Friction           |                |
| 2 - 40   | *55242070 | Spring, Friction Plate    |                |
| 2 - 41   | 55046880  | Reel Table Assy, Supply   |                |
| 2 - 42   | 55044640  | Reel Table Assy, Take-up  |                |
| 2 - 43   | 55344470  | Belt, Counter             |                |
| 2 - 44   | *55046840 | String Assy, Brake        |                |
| 2 - 45   | *55555840 | Plate, Adjusting          |                |
| 2 - 46   | 55203260  | Spring, Lever; A          |                |
| 2 - 47   | *55046860 | Plate Assy, Head Base     |                |
| 2 - 48   | *55346400 | Spacer, Head Base Plate   |                |
| 2 - 49   | *55449760 | Plate, Head Base Pressure |                |
| 2 - 50   | *55348440 | Cushion, Button; B        |                |
| 2 - 51   | *55810380 | Clamper, Cord; A          |                |
| 2 - 52   | 55696130  | Head, Erase               |                |
| 2 - 53   | 55044590  | Pinch Roller Assy         |                |
| 2 - 54   | 55203271  | Spring, Pinch Roller      |                |
| 2 - 55   | 55200021  | Spring, Head              |                |
| 2 - 56   | 55696120  | Head, REC-PLAY; Dual Gap  |                |
| 2 - 57   | *50279870 | Clamper, Cord; D          |                |
| 2 - 58   | *55557080 | Lever, Detecting          |                |

## EXPLODED VIEW-3

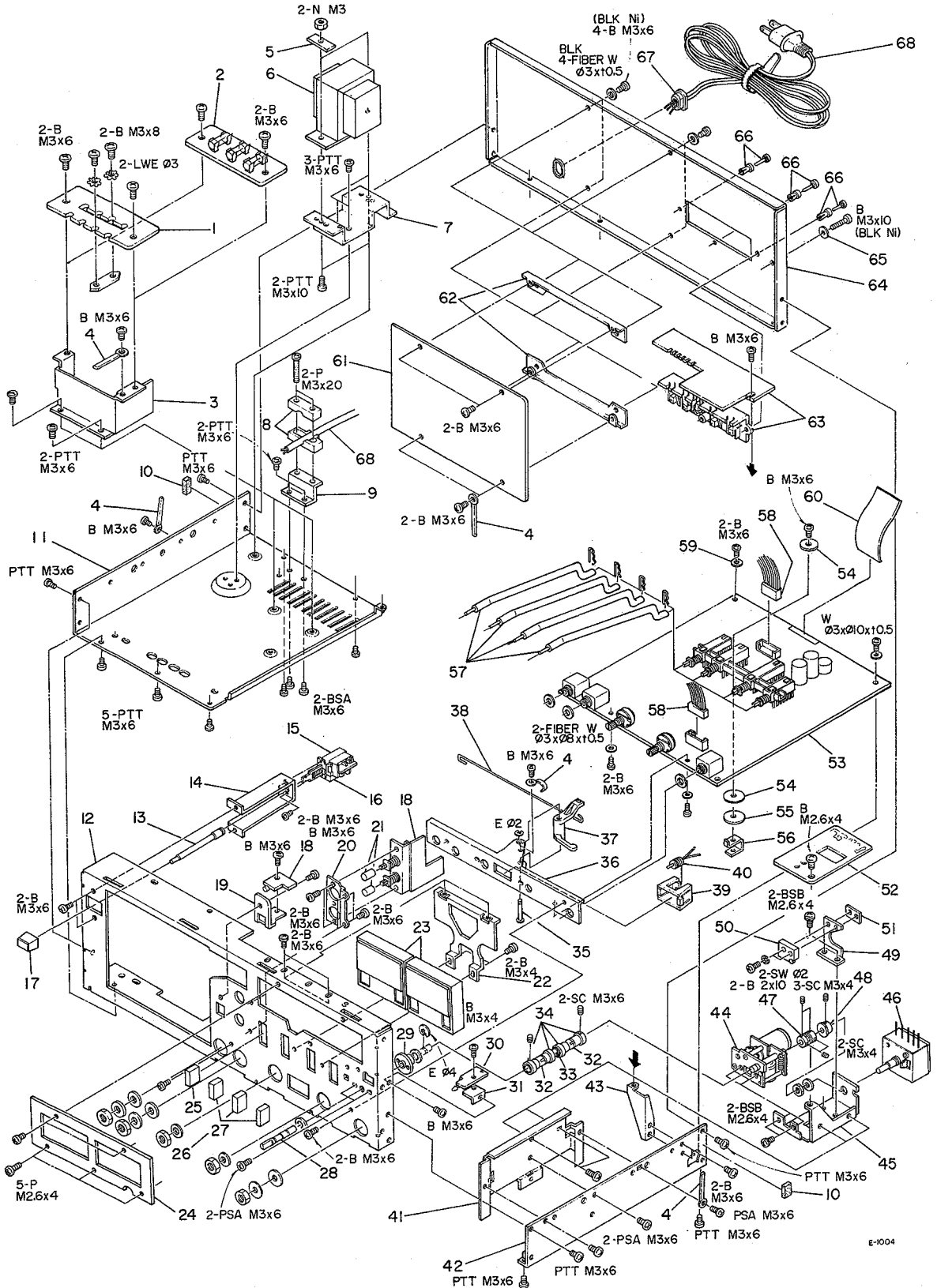


E-1003

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

| REF. NO. | PARTS NO. | DESCRIPTION                        | REMARKS        |
|----------|-----------|------------------------------------|----------------|
| 3 - 1    | *55810380 | Clamper, Cord; A                   |                |
| 3 - 2    | *51689190 | PCB Assy, MECHANISM (Power Supply) |                |
| 3 - 3    | 51350010  | Switch, Leaf; 2A                   |                |
| 3 - 4    | 51350020  | Switch, Leaf; 1A                   |                |
| 3 - 5    | *55550690 | Bracket, Switch; A                 |                |
| 3 - 6    | *55550700 | Bracket, Switch; B                 |                |
| 3 - 7    | 71051260  | Motor Assy, DC                     |                |
| 3 - 8    | *55342770 | Bearing, Flywheel                  |                |
| 3 - 9    | *55550670 | Lever, Slide Switch                |                |
| 3 - 10   | *55550680 | Arm, Record                        |                |
| 3 - 11   | *55044630 | Plate Assy, Motor                  |                |
| 3 - 12   | *55022310 | Chassis Assy, Mechanism            |                |
| 3 - 13   | 55203300  | Spring, Tension                    |                |
| 3 - 14   | 55044660  | Pulley Assy, Tension               |                |
| 3 - 15   | 55044690  | Idler Assy, Fast Wind; B           |                |
| 3 - 16   | 55203310  | Spring, Idler Assy                 |                |
| 3 - 17   | 55044670  | Idler Assy, A                      |                |
| 3 - 18   | *55557130 | Lever, Release                     |                |
| 3 - 19   | *55203360 | Spring, Pressure                   |                |
| 3 - 20   | *55044752 | Arm Assy, Cassette Pressure; A     |                |
| 3 - 21   | *55550850 | Arm, Cassette Pressure; B          |                |
| 3 - 22   | 55044610  | Flywheel Assy, Capstan             |                |
| 3 - 23   | 55344460  | Belt, Capstan Drive                |                |
| 3 - 24   | 55500310  | Washer, Thrust                     |                |
| 3 - 25   | 55344160  | Belt, Fast Wind                    |                |
| 3 - 26   | *55203480 | Spring, Lever; D                   |                |
| 3 - 27   | *55044710 | Lever Assy, Fast Wind              |                |
| 3 - 28   | 55040910  | Housing Assy, Capstan              |                |
| 3 - 29   | 55341300  | Washer, Oil Retaining              |                |
| 3 - 30   | *55203320 | Spring, Lever; B                   |                |
| 3 - 31   | *55044731 | Lever Assy, Pause                  |                |
| 3 - 32   | 55203260  | Spring, Lever; A                   |                |
| 3 - 33   | *55550770 | Arm, Pause                         |                |
| 3 - 34   | *55550740 | Plate, Brake Actuating             |                |
| 3 - 35   | *55203460 | Spring, Lever; C                   |                |
| 3 - 36   | *55550800 | Lever, Record                      |                |
| 3 - 37   | *55550820 | Lever, Eject                       |                |
| 3 - 38   | *55203390 | Spring, Damper                     |                |
| 3 - 39   | *55551630 | Lever, FF; C                       |                |
| 3 - 40   | *55550950 | Angle Plate, Spring                |                |
| 3 - 41   | 55044940  | Holder Assy, Damper; B             |                |
| 3 - 42   | *55550940 | Bracket, Damper                    |                |
| 3 - 43   | *55550790 | Arm, Record; B                     |                |
| 3 - 44   | *55203511 | Spring, Record                     |                |
| 3 - 45   | *55551990 | Arm, Record; C                     |                |
| 3 - 46   | *55044740 | Holder Assy, Record Arm            |                |
| 3 - 47   | *55044811 | Solenoid                           |                |
| 3 - 48   | *55551001 | Bracket, Solenoid                  |                |
| 3 - 49   | *55446650 | Shaft, Release Arm; A              |                |
| 3 - 50   | *55203430 | Spring, Release Arm                |                |
| 3 - 51   | *55551020 | Arm, Release; B                    |                |
| 3 - 52   | *55557071 | Holder, Switch                     |                |
| 3 - 53   | 51300030  | Switch, Micro                      |                |
| 3 - 54   | *51689180 | PCB Assy, SW                       |                |
|          | *51679180 | PCB, SW-138                        | Part of 3 - 54 |
| 3 - 55   | *51221650 | Connector Socket, 3P               |                |
| 3 - 56   | *55242260 | Spring, Switch                     |                |

### EXPLODED VIEW-4



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

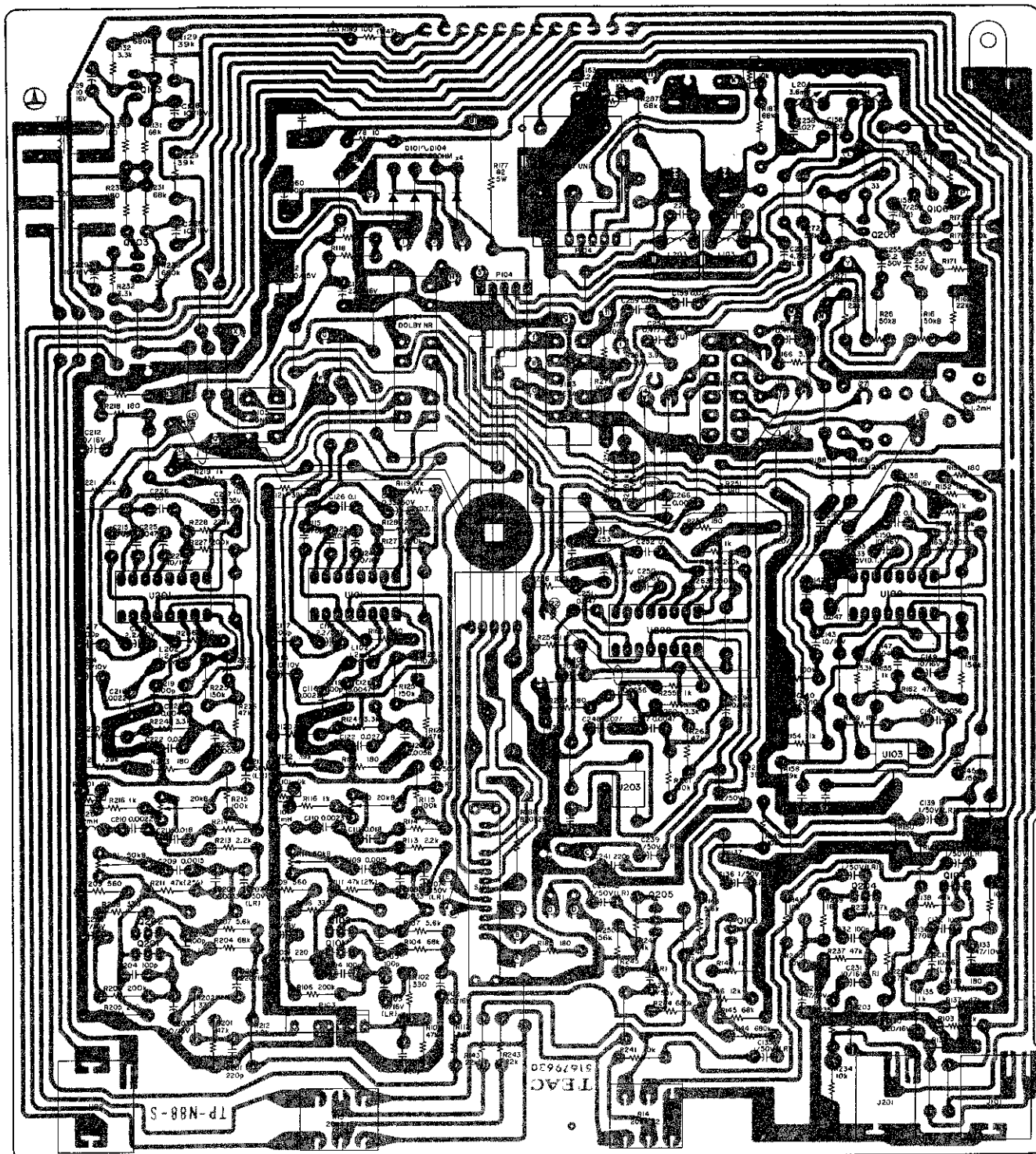
| REF. NO. | PARTS NO. | DESCRIPTION                               | REMARKS                      |
|----------|-----------|-------------------------------------------|------------------------------|
| 4 - 1    | *51685481 | PCB Assy, VOLTAGE SELECTOR                | GENERAL EXPORT               |
|          | *51675481 | PCB, VOLTAGE SELECTOR                     | Part of 4 - 1                |
|          | *55550620 | Plate, Selector; A                        | Part of 4 - 1                |
| 4 - 2    | *51689150 | PCB Assy, FUSE                            | EUROPE, U.K.                 |
|          | *51679150 | PCB, FUSE                                 | Part of 4 - 2                |
|          | *51420870 | Holder, FUSE                              | Part of 4 - 2                |
|          | 51421830  | Fuse, 315 mA T                            | F502, F502                   |
|          | 51421860  | Fuse, 800 mA T 250V                       | F503                         |
| 4 - 3    | *55555950 | Bracket, PCB                              | EUROPE, U.K., GENERAL EXPORT |
| 4 - 4    | *55810380 | Clamper, Cord; A                          |                              |
| 4 - 5    | *55556260 | Washer, Transformer                       |                              |
| 4 - 6    | 51521930  | Transformer, Power                        | U.S.A., CANADA               |
|          | 51521950  | Transformer, Power                        | EUROPE, AUSTRALIA, U.K.      |
|          | 51521960  | Transformer, Power                        | GENERAL EXPORT               |
| 4 - 7    | *55559091 | Bracket, Transformer; B                   |                              |
| 4 - 8    | *55340841 | Clamper, AC Power Cord                    | EUROPE, U.K.                 |
| 4 - 9    | *55550640 | Bracket, Clamper                          |                              |
| 4 - 10   | *55550550 | Cushion                                   |                              |
| 4 - 11   | *55521991 | Chassis, Bottom                           |                              |
| 4 - 12   | *55510370 | Chassis, Front                            |                              |
| 4 - 13   | *55344221 | Rod, Power Switch                         |                              |
| 4 - 14   | *55550611 | Bracket, Power Switch                     |                              |
| 4 - 15   | 51340440  | Switch, Power                             | EUROPE, U.K.                 |
|          | 51340360  | Switch, Power                             | GENERAL EXPORT, AUSTRALIA    |
|          | 51340370  | Switch, Power                             | U.S.A.                       |
|          | 51340180  | Switch, Power                             | CANADA                       |
| 4 - 16   | 50529060  | Spark Killer, 0.033 mfd + 120 ohm 125V AC | U.S.A.                       |
|          | 50529110  | Spark Killer, 0.033 mfd + 120 ohm 250V AC | CANADA                       |
|          | 51890010  | Spark Killer, 4700 pfd MAX                | EUROPE, U.K.                 |
|          | 50529070  | Spark Killer, 0.01 mfd + 300 ohm 400V AC  | GENERAL EXPORT, AUSTRALIA    |
| 4 - 17   | 55346340  | Button, F                                 |                              |
| 4 - 18   | *51689160 | PCB Assy, SW                              |                              |
|          | *51678210 | PCB, SW - 123                             | Part of 4 - 18               |
|          | *51678230 | PCB, LED                                  | Part of 4 - 18               |
|          | 51340850  | Switch, Push ; 2-gang                     | Part of 4 - 18               |
|          | *51831060 | Carbon Res., 10 k ohm 1/4W                | Part of 4 - 18               |
|          | 51430470  | LED                                       | Part of 4 - 18               |
| 4 - 19   | *55557150 | Holder, LED                               |                              |
| 4 - 20   | *55555740 | Bracket, Switch                           |                              |
| 4 - 21   | *55346350 | Button, Push                              |                              |
| 4 - 22   | *55532820 | Bracket, Meter; A                         |                              |
| 4 - 23   | 51650590  | Meter, Peak                               |                              |
| 4 - 24   | *55557120 | Plate, Meter; C                           |                              |
| 4 - 25   | 55347180  | Button, H                                 |                              |
| 4 - 26   | 55346330  | Button, E                                 |                              |
| 4 - 27   | 55346510  | Button, G                                 |                              |
| 4 - 28   | *55450480 | Shaft, BIAS Var. Res.                     |                              |
| 4 - 29   | *55450470 | Bearing, Shaft                            |                              |
| 4 - 30   | *51689250 | PCB Assy, LED-2                           |                              |
|          | *51679250 | PCB, LED - 2                              | Part of 4 - 30               |
|          | 51430470  | LED                                       | Part of 4 - 30               |
| 4 - 31   | *55555730 | Bracket, LED PCB                          |                              |
| 4 - 32   | *55347190 | Joint, Universal                          |                              |
| 4 - 33   | *55450440 | Shaft, Joint                              |                              |
| 4 - 34   | *55450460 | Ring, Joint                               |                              |
| 4 - 35   | *55446270 | Shaft, Record Lever                       |                              |
| 4 - 36   | *55532750 | Bracket, Record Lever                     |                              |
| 4 - 37   | *55344240 | Lever, Record                             |                              |
| 4 - 38   | *55203520 | Link, Record Lever                        |                              |
| 4 - 39   | *55346290 | Holder, Lamp                              |                              |
| 4 - 40   | 51420860  | Lamp, w/Holder                            |                              |

(Continued on page 30)

## 8 PC BOARDS AND PARTS LIST

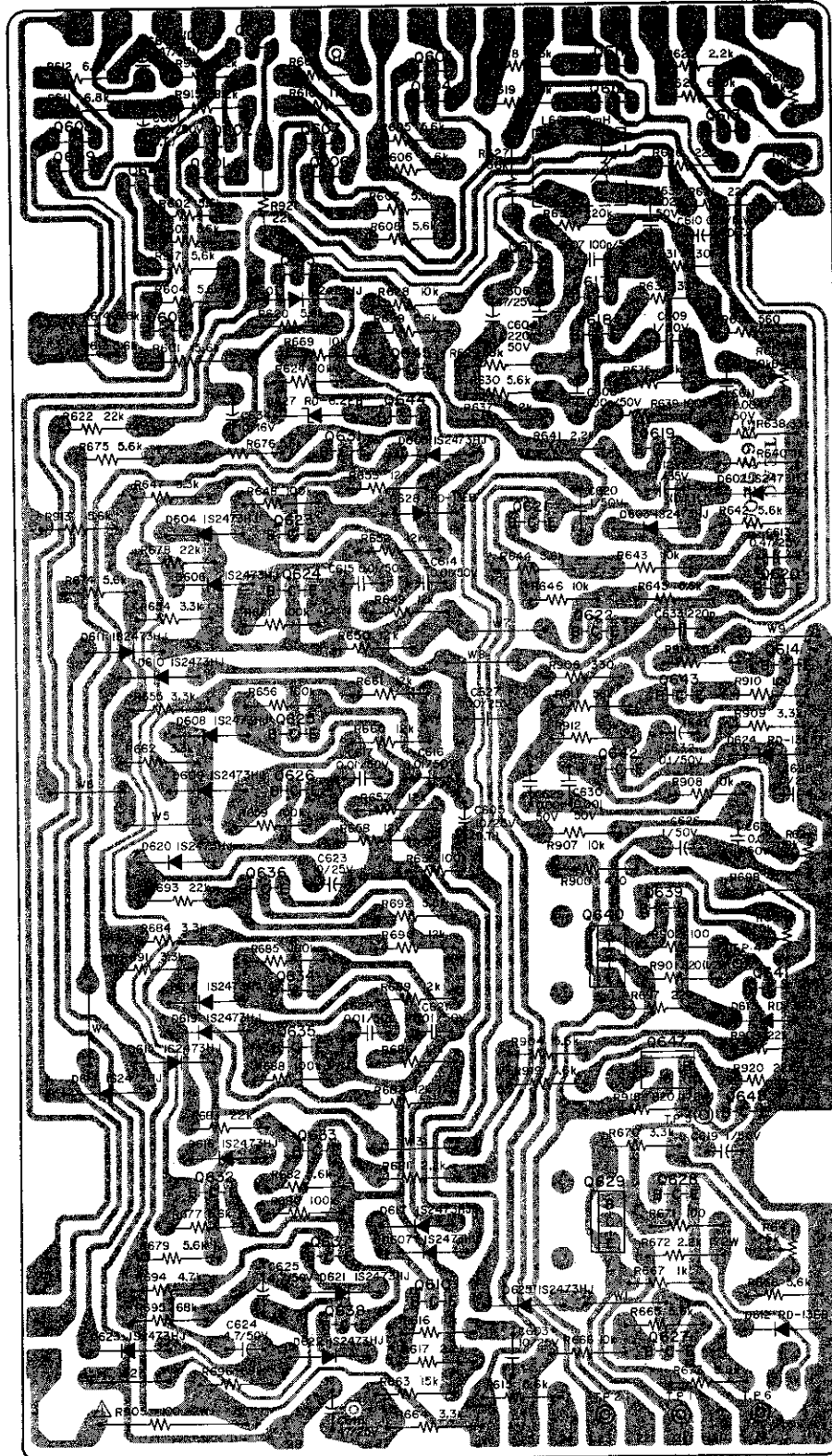
PC Boards shown viewed from foil side.

### REC AND PLAY AMPL PCB ASSY



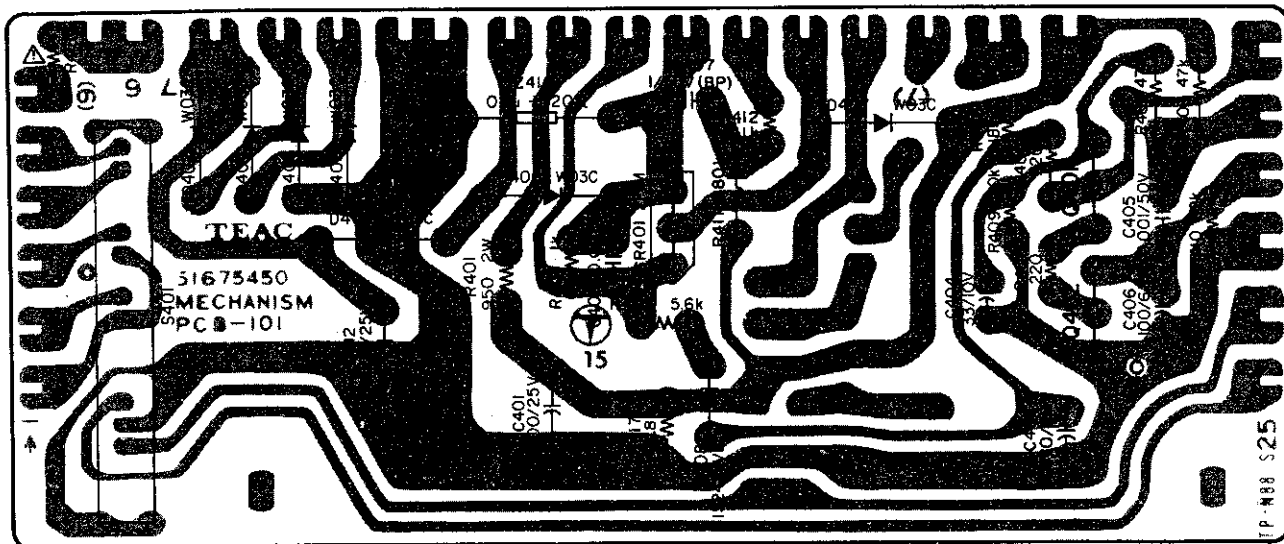
P-1001

CONTROL PCB ASSY



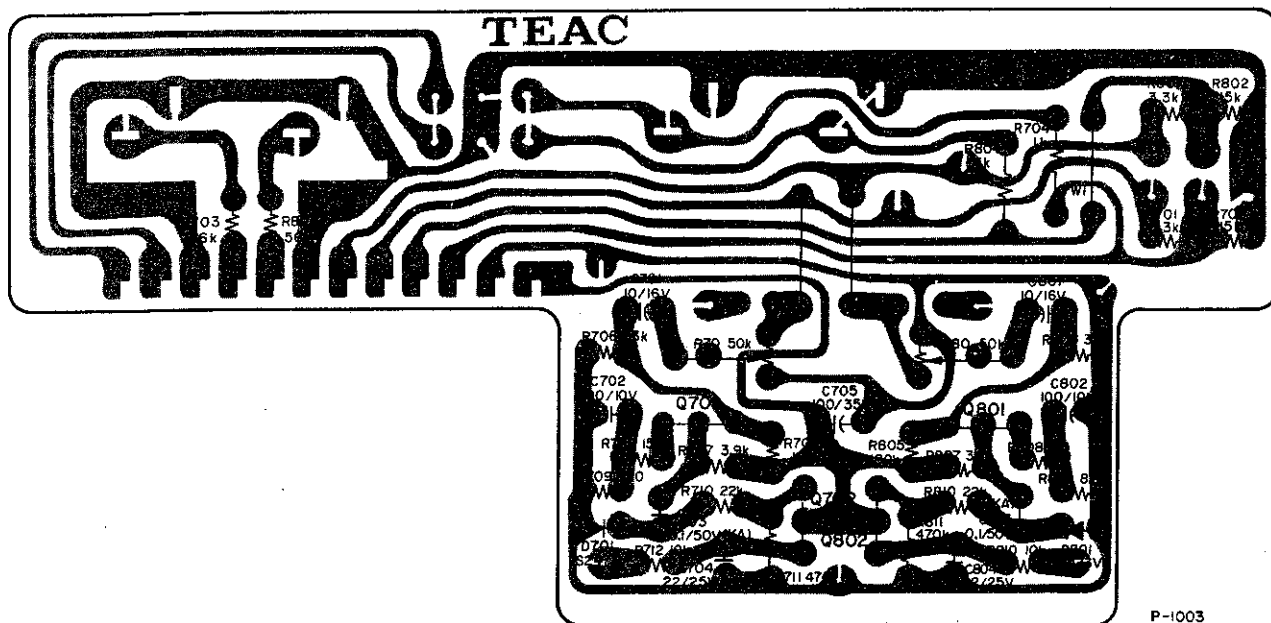
P-1002

## MECHANISM PCB ASSY (POWER SUPPLY)



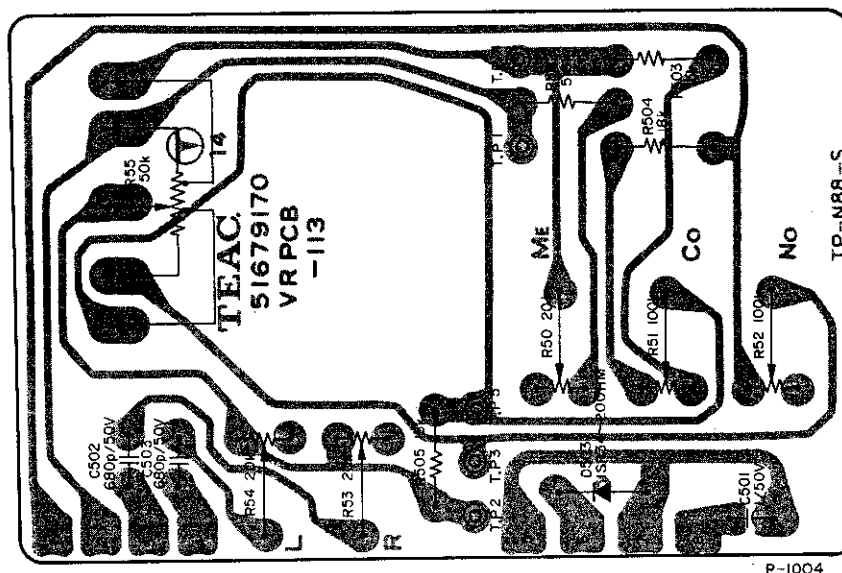
P-324

## IN/OUTPUT PCB ASSY



P-1003

## VR PCB ASSY



## REC AND PLAY AMPL PCB ASSY

| REF. NO.                                                                                                   | PARTS NO.          | DESCRIPTION |
|------------------------------------------------------------------------------------------------------------|--------------------|-------------|
|                                                                                                            | 51689630           | PCB Assy    |
|                                                                                                            | 51679630           | PCB         |
|                                                                                                            | <b>ICs</b>         |             |
| U101, U201                                                                                                 | 51470400           | NE645B      |
| U102, U202                                                                                                 | 51470400           | NE645B      |
|                                                                                                            | <b>TRANSISTORS</b> |             |
| Q101, Q201                                                                                                 | 51450340           | 2SC900UA    |
| Q102, Q202                                                                                                 | 51450340           | 2SC900UA    |
| Q103, Q203                                                                                                 | 50424860           | 2SC536G     |
| Q104, Q204                                                                                                 | 51450340           | 2SC900UA    |
| Q105, Q205                                                                                                 | 51450340           | 2SC900UA    |
| Q106, Q206                                                                                                 | 50424860           | 2SC536G     |
|                                                                                                            | <b>DIODES</b>      |             |
| D101~D104                                                                                                  | 51431130           | 1SR34-200HM |
|                                                                                                            | <b>RESISTORS</b>   |             |
| All resistors are rated $\pm 5\%$ tolerance, $\frac{1}{4}$ watt and of carbon type unless otherwise noted. |                    |             |
| R101, R201                                                                                                 | 51815220           | 47 k ohm    |
| R102, R202                                                                                                 | 51814700           | 330 ohm     |
| R103, R203                                                                                                 | 51814980           | 2.2 k ohm   |
| R104, R204                                                                                                 | 51815260           | 68 k ohm    |

| REF. NO.   | PARTS NO. | DESCRIPTION |
|------------|-----------|-------------|
| R105, R205 | 51814660  | 220 ohm     |
| R106, R206 | 51815370  | 200 k ohm   |
| R107, R207 | 51815000  | 5.6 k ohm   |
| R108, R208 | 51814700  | 330 ohm     |
| R109, R209 | 51815480  | 560 ohm     |
| R111, R211 | 51849710  | 47 k ohm 2% |
| R112, R212 | 51814960  | 3.9 k ohm   |
| R113, R213 | 51814900  | 2.2 k ohm   |
| R114, R214 | 51814940  | 3.3 k ohm   |
| R115, R215 | 51815300  | 100 k ohm   |
| R116, R216 | 51814820  | 1 k ohm     |
| R117, R217 | 51814640  | 180 ohm     |
| R118, R218 | 51814640  | 180 ohm     |
| R119, R219 | 51814820  | 1 k ohm     |
| R120, R220 | 51814820  | 1 k ohm     |
| R121, R221 | 51815200  | 39 k ohm    |
| R122, R222 | 51815200  | 39 k ohm    |
| R123, R223 | 51814640  | 180 ohm     |
| R124, R224 | 51814940  | 3.3 k ohm   |
| R125, R225 | 51815340  | 150 k ohm   |
| R126, R226 | 51815220  | 47 k ohm    |
| R127, R227 | 51815370  | 200 k ohm   |
| R128, R228 | 51815400  | 270 k ohm   |
| R129, R229 | 51815200  | 39 k ohm    |
| R130, R230 | 51815500  | 680 k ohm   |
| R131, R231 | 51815260  | 68 k ohm    |
| R132, R232 | 51814940  | 3.3 k ohm   |
| R133, R233 | 51814640  | 180 ohm     |
| R134, R234 | 51815060  | 10 k ohm    |
| R135, R235 | 51814820  | 1 k ohm     |
| R136, R236 | 51815400  | 270 k ohm   |

| REF. NO.   | PARTS NO. | DESCRIPTION              |
|------------|-----------|--------------------------|
| R137, R237 | 51815220  | 47 k ohm                 |
| R138, R238 | 51815220  | 47 k ohm                 |
| R139, R239 | 51814640  | 180 ohm                  |
| R140, R240 | 51815060  | 10 k ohm                 |
| R141, R241 | 51815060  | 10 k ohm                 |
| R142       | 51815080  | 12 k ohm                 |
| R143, R243 | 51815140  | 22 k ohm                 |
| R144, R244 | 51815500  | 680 k ohm                |
| R145, R255 | 51815260  | 68 k ohm                 |
| R146, R246 | 51815080  | 12 k ohm                 |
| R147, R247 | 51814820  | 1 k ohm                  |
| R148       | 51815000  | 5.6 k ohm                |
| R149       | 51815060  | 10 k ohm                 |
| R150       | 51815300  | 100 k ohm                |
| R151, R251 | 51814640  | 180 ohm                  |
| R152, R252 | 51814640  | 180 ohm                  |
| R153, R253 | 51814820  | 1 k ohm                  |
| R154, R254 | 51814820  | 1 k ohm                  |
| R155, R255 | 51814820  | 1 k ohm                  |
| R156, R256 | 51815300  | 100 k ohm                |
| R157, R257 | 51815200  | 39 k ohm                 |
| R158, R258 | 51815200  | 39 k ohm                 |
| R159, R259 | 51814640  | 180 ohm                  |
| R160, R260 | 51814940  | 3.3 k ohm                |
| R161, R261 | 51815340  | 150 k ohm                |
| R162, R262 | 51815220  | 47 k ohm                 |
| R163, R263 | 51815370  | 200 k ohm                |
| R164, R264 | 51815400  | 270 k ohm                |
| R165, R265 | 51849480  | 4.7 k ohm                |
| R166, R266 | 51814960  | 3.9 k ohm                |
| R169, R269 | 51815140  | 22 k ohm                 |
| R170, R270 | 51815400  | 270 k ohm                |
| R171, R271 | 51815200  | 39 k ohm                 |
| R172, R272 | 51815000  | 5.6 k ohm                |
| R173, R273 | 51814460  | 33 ohm                   |
| R174, R274 | 51814820  | 1 k ohm                  |
| R176, R276 | 51815300  | 100 k ohm                |
| R177       | 51844270  | 82 ohm 5W Cement         |
| R178       | 51814340  | 10 ohm                   |
| R180       | 51848130  | 820 ohm 2W Non Flammable |
| R185       | 51814640  | 180 ohm                  |
| R186, R286 | 51814760  | 560 ohm                  |
| R187, R287 | 51815260  | 68 k ohm                 |
| R188, R288 | 51814820  | 1 k ohm                  |
| R189       | 51818480  | 100 ohm Non Flammable    |
| R250       | 51815240  | 56 k ohm                 |

## THERMISTORS

|              |          |          |       |
|--------------|----------|----------|-------|
| RT101, RT201 | 51431270 | 10 k ohm | S5C14 |
| RT102, RT202 | 51431270 | 10 k ohm | S5C14 |

## CAPACITORS

|            |          |         |            |          |
|------------|----------|---------|------------|----------|
| C101, C201 | 51722160 | Ceramic | 220 pfd.   | 50V 5%   |
| C102, C202 | 50554390 | Elec.   | 220 mfd    | 16V      |
| C103, C203 | 51715650 | Elec.   | 10 mfd     | 16V (LR) |
| C104, C204 | 51722120 | Ceramic | 100 pfd    | 50V 10%  |
| C105, C205 | 51722120 | Ceramic | 100 pfd    | 50V 10%  |
| C106, C206 | 51713460 | Elec.   | 47 mfd     | 10V      |
| C107, C207 | 51715590 | Elec.   | 1 mfd      | 50V (LR) |
| C108, C208 | 51703640 | Mylar   | 0.0033 mfd | 50V 5%   |

| REF. NO.   | PARTS NO. | DESCRIPTION             |
|------------|-----------|-------------------------|
| C109, C209 | 51703560  | Mylar 0.0015 mfd 50V 5% |
| C110, C210 | 51703600  | Mylar 0.0022 mfd 50V 5% |
| C111, C211 | 51718620  | Mylar 0.018 mfd 50V 5%  |
| C112, C212 | 50554390  | Elec. 220 mfd 16V       |
| C113, C213 | 51715590  | Elec. 1 mfd 50V (LR)    |
| C114, C214 | 51719880  | Elec. 220 mfd 10V       |
| C115, C215 | 51722200  | Ceramic 470 pfd 50V 10% |
| C116, C216 | 51703600  | Mylar 0.0022 mfd 50V 5% |
| C117, C217 | 51722120  | Ceramic 100 pfd 50V 10% |
| C118, C218 | 51712900  | Elec. 2.2 mfd 50V       |
| C119, C219 | 51722120  | Ceramic 100 pfd 50V 10% |
| C120, C220 | 51703700  | Mylar 0.0056 mfd 50V 5% |
| C121, C221 | 51703680  | Mylar 0.0047 mfd 50V 5% |
| C122, C222 | 51718660  | Mylar 0.027 mfd 50V 5%  |
| C123, C223 | 51713140  | Elec. 10 mfd 16V        |
| C124, C224 | 51713140  | Elec. 10 mfd 16V        |
| C125, C225 | 51718720  | Mylar 0.047 mfd 50V 5%  |
| C126, C226 | 51719020  | Mylar 0.1 mfd 50V 10%   |
| C127, C227 | 51720240  | Dip. Tant. 0.33 mfd 35V |
| C128, C228 | 51713140  | Elec. 10 mfd 16V        |
| C129, C229 | 51713140  | Elec. 10 mfd 16V        |
| C130       | 50554390  | Elec. 220 mfd 16V       |
| C131, C231 | 51715650  | Elec. 10 mfd 16V (LR)   |
| C132, C232 | 51722120  | Ceramic 100 pfd 50V 10% |
| C133, C233 | 51713460  | Elec. 47 mfd 10V        |
| C134, C234 | 51715590  | Elec. 1 mfd 50V (LR)    |
| C135, C235 | 51715590  | Elec. 1 mfd 50V (LR)    |
| C136, C236 | 51715590  | Elec. 1 mfd 50V (LR)    |
| C137       | 50554390  | Elec. 220 mfd 16V       |
| C138, C238 | 50554390  | Elec. 220 mfd 16V       |
| C139, C239 | 51715590  | Elec. 1 mfd 50V (LR)    |
| C140, C240 | 51719860  | Elec. 220 mfd 10V       |
| C141       | 51722200  | Ceramic 470 pfd 50V 10% |
| C142, C242 | 51722120  | Ceramic 100 pfd 50V 10% |
| C143, C243 | 51713140  | Elec. 10 mfd 16V        |
| C144, C244 | 51722200  | Ceramic 100 pfd 50V 10% |
| C145, C245 | 51712900  | Elec. 2.2 mfd 50V       |
| C146, C246 | 51703700  | Mylar 0.0056 mfd 50V 5% |
| C147, C247 | 51703680  | Mylar 0.0047 mfd 50V 5% |
| C148, C248 | 51718660  | Mylar 0.027 mfd 50V 5%  |
| C149, C249 | 51713140  | Elec. 10 mfd 16V        |
| C150, C250 | 51713140  | Elec. 10 mfd 16V        |
| C151, C251 | 51718720  | Mylar 0.047 mfd 50V 5%  |
| C152, C252 | 51719020  | Mylar 0.1 mfd 50V 10%   |
| C153, C253 | 51720240  | Dip. Tant. 0.33 mfd 35V |
| C154, C254 | 51713700  | Elec. 0.47 mfd 25V (KU) |
| C155, C255 | 51712900  | Elec. 2.2 mfd 50V       |
| C156, C256 | 51715630  | Elec. 47 mfd 25V (LR)   |
| C157, C257 | 51728120  | Polyst. 220 pfd 50V 5%  |
| C158, C258 | 51718660  | Mylar 0.027 mfd 50V 5%  |
| C159, C259 | 51718640  | Mylar 0.022 mfd 50V 5%  |
| C160       | 51700110  | Elec. 1000 mfd 35V      |
| C161       | 50554420  | Elec. 470 mfd 25V       |
| C162       | 50555580  | Elec. 1000 mfd 25V      |
| C163       | 51720700  | Dip. Tant. 2.2 mfd 35V  |
| C166, C266 | 51703680  | Mylar 0.0047 mfd 50V 5% |
| C241       | 51722160  | Ceramic 220 pfd 50V     |

## VARIABLE RESISTORS

|          |          |                       |
|----------|----------|-----------------------|
| R10, R20 | 51502330 | Semi-fixed 20 k ohm-B |
| R11, R21 | 51500940 | Semi-fixed 50 k ohm-B |
| R14, R15 | 51502270 | 20 k ohm-A x 2        |
| R16, R26 | 62600950 | Semi-fixed 50 k ohm-B |

| REF. NO.                  | PARTS NO. | DESCRIPTION                   |
|---------------------------|-----------|-------------------------------|
| <b>COILS/TRANSFORMERS</b> |           |                               |
| L101, L201                | 50566611  | Coil, Choke; 1.2 mH           |
| L102, L202                | 50566611  | Coil, Choke; 1.2 mH           |
| L103, L203                | 50566550  | Coil, Trap; 12 mH             |
| L104, L204                | 51600420  | Coil, Rec. EQ; 3.6 mH         |
| L105                      | 50566611  | Coil, Choke; 1.2mH            |
| T101, T201                | 51520740  | Transformer, Output 3k: 8 ohm |

**MISCELLANEOUS**

|            |          |                          |
|------------|----------|--------------------------|
| U103, U203 | 51600400 | Filter, Low-pass; 19 kHz |
| U104       | 50401000 | OSC Unit, 100 kHz        |
| J101, J201 | 51240390 | Jack, MIC                |
| J102       | 51240400 | Jack, PHONES             |
| S101       | 51310300 | Switch, Slide; 6PDT      |
| S102~S105  | 51340960 | Switch, Push; 4-gang     |
| P103, P104 | 51220100 | Connector Plug, 6P       |
|            | 51470160 | Socket, IC; 16P          |
|            | 51274570 | Wire                     |
|            | 51274580 | Wire, Ribbon             |
|            | 55447500 | Pin, Test Point          |
|            | 55555900 | Plate, GND; A            |

**CONTROL PCB ASSY**

| REF. NO.           | PARTS NO. | DESCRIPTION  |
|--------------------|-----------|--------------|
|                    | 51689200  | PCB Assy     |
|                    | 51679200  | PCB          |
| <b>TRANSISTORS</b> |           |              |
| Q601, Q602         | 51450920  | 2SC1740LN(S) |
| Q603               | 50424860  | 2SC536G      |
| Q604~Q609          | 51450920  | 2SC1740LN(S) |
| Q610               | 50424860  | 2SC536G      |
| Q611~Q614          | 51450920  | 2SC1740LN(S) |
| Q615               | 50425530  | 2SA733(P)    |
| Q616~Q619          | 51450920  | 2SC1740LN(S) |
| Q620               | 50424860  | 2SC536G      |
| Q621               | 50425530  | 2SA733(P)    |
| Q623~Q628          | 50424860  | 2SC536G      |
| Q629               | 51450870  | 2SD313(E)    |
| Q631~Q639          | 50424860  | 2SC536G      |
| Q640               | 51450870  | 2SD313(E)    |
| Q641               | 50424860  | 2SC536G      |
| Q642, Q643         | 51450920  | 2SC1740LN(S) |
| Q644               | 50424860  | 2SC536G      |
| Q645               | 50425530  | 2SA733P      |
| Q646               | 50424860  | 2SC536G      |
| Q647               | 51450870  | 2SD313(E)    |
| Q648               | 50424860  | 2SC536G      |
| Q649               | 51450920  | 2SC1740LN(S) |

| REF. NO.      | PARTS NO. | DESCRIPTION     |
|---------------|-----------|-----------------|
| <b>DIODES</b> |           |                 |
| D601~D611     | 51431180  | 1S2473HJ        |
| D612          | 51430590  | Zener, RD-13EB  |
| D613          | 51431410  | Zener, RD-3.6E  |
| D614~D623     | 51431180  | 1S2473HJ        |
| D624          | 51430590  | Zener, RD-13EB  |
| D625          | 51431180  | 1S2473HJ        |
| D627          | 50425540  | Zener, RD-6.2EB |
| D628          | 51430590  | Zener, RD-13EB  |

**RESISTORS**

All resistors are rated  $\pm 5\%$  tolerance,  $\frac{1}{4}$  watt and of carbon type unless otherwise noted.

|            |          |              |
|------------|----------|--------------|
| R601~R608  | 51815000 | 5.6 k ohm    |
| R609, R610 | 51814820 | 1 k ohm      |
| R611, R612 | 51849520 | 6.8 k ohm 2% |
| R613~R615  | 51815000 | 5.6 k ohm    |
| R616       | 51815060 | 10 k ohm     |
| R617       | 51814900 | 2.2 k ohm    |
| R618~R620  | 51815000 | 5.6 k ohm    |
| R621, R622 | 51815140 | 22 k ohm     |
| R623       | 51815500 | 680 k ohm    |
| R624       | 51815060 | 10 k ohm     |
| R625       | 51814900 | 2.2 k ohm    |
| R626       | 51815140 | 22 k ohm     |
| R627       | 51815240 | 56 k ohm     |
| R628       | 51815060 | 10 k ohm     |
| R629       | 51815260 | 68 k ohm     |
| R630       | 51815000 | 5.6 k ohm    |
| R631       | 51814700 | 330 ohm      |
| R632       | 51815380 | 220 k ohm    |
| R633       | 51814760 | 560 ohm      |
| R634       | 51814700 | 330 ohm      |
| R635       | 51815120 | 18 k ohm     |
| R636       | 51815300 | 100 k ohm    |
| R637       | 51814900 | 2.2 k ohm    |
| R638       | 51815180 | 33 k ohm     |
| R639       | 51815300 | 100 k ohm    |
| R640       | 51814820 | 1 k ohm      |
| R641       | 51814900 | 2.2 k ohm    |
| R642       | 51815000 | 5.6 k ohm    |
| R643       | 51815060 | 10 k ohm     |
| R644, R645 | 51815000 | 5.6 k ohm    |
| R646       | 51815060 | 10 k ohm     |
| R647       | 51814940 | 3.3 k ohm    |
| R648       | 51815300 | 100 k ohm    |
| R649, R650 | 51815080 | 12 k ohm     |
| R651       | 51815300 | 100 k ohm    |
| R652, R653 | 51815080 | 12 k ohm     |
| R654, R655 | 51814940 | 3.3 k ohm    |
| R656       | 51815300 | 100 k ohm    |
| R657, R658 | 51815080 | 12 k ohm     |
| R659       | 51815300 | 100 k ohm    |
| R660, R661 | 51815080 | 12 k ohm     |
| R662       | 51814940 | 3.3 k ohm    |
| R663       | 51815100 | 15 k ohm     |
| R664       | 51814940 | 3.3 k ohm    |
| R665       | 51815000 | 5.6 k ohm    |
| R666       | 51815060 | 10 k ohm     |
| R667       | 51814820 | 1 k ohm      |

| REF. NO.   | PARTS NO. | DESCRIPTION              |
|------------|-----------|--------------------------|
| R668       | 51815000  | 5.6 k ohm                |
| R669       | 51815060  | 10 k ohm                 |
| R670       | 51814940  | 3.3 k ohm                |
| R671       | 51814580  | 100 ohm                  |
| R672       | 51800900  | 2.2 k ohm ½W             |
| R673~R677  | 51815000  | 5.6 k ohm                |
| R678       | 51815140  | 22 k ohm                 |
| R679       | 51815000  | 5.6 k ohm                |
| R680       | 51815300  | 100 k ohm                |
| R681       | 51814900  | 2.2 k ohm                |
| R682       | 51815000  | 5.6 k ohm                |
| R683       | 51815140  | 22 k ohm                 |
| R684       | 51814940  | 3.3 k ohm                |
| R685       | 51815300  | 100 k ohm                |
| R686, R687 | 51815080  | 12 k ohm                 |
| R688       | 51815300  | 100 k ohm                |
| R689, R690 | 51815080  | 12 k ohm                 |
| R691       | 51814940  | 3.3 k ohm                |
| R692       | 51815000  | 5.6 k ohm                |
| R693       | 51815140  | 22 k ohm                 |
| R694       | 51814980  | 4.7 k ohm                |
| R695, R696 | 51815260  | 68 k ohm                 |
| R697       | 51815380  | 220 ohm                  |
| R698       | 51814980  | 4.7 k ohm                |
| R699       | 51815000  | 5.6 k ohm                |
| R900       | 51814740  | 470 ohm                  |
| R901       | 51800800  | 820 ohm ½W               |
| R902       | 51814580  | 100 ohm                  |
| R903       | 51815140  | 22 k ohm                 |
| R904       | 51815000  | 5.6 k ohm                |
| R905       | 51847910  | 100 ohm 2W Non Flammable |
| R906       | 51814700  | 330 ohm                  |
| R907, R908 | 51815060  | 10 k ohm                 |
| R909       | 51814940  | 3.3 k ohm                |
| R910       | 51814580  | 100 ohm                  |
| R911       | 51815240  | 56 k ohm                 |
| R912       | 51814940  | 3.3 k ohm                |
| R913, R914 | 51815000  | 5.6 k ohm                |
| R915, R916 | 51815040  | 8.2 k ohm                |
| R917       | 51815000  | 5.6 k ohm                |
| R918       | 51800800  | 820 ohm ½W               |
| R919       | 51815000  | 5.6 k ohm                |
| R920, R921 | 51815140  | 22 k ohm                 |

## CAPACITORS

|            |          |            |            |        |
|------------|----------|------------|------------|--------|
| C601, C602 | 51720900 | Dip. Tant. | 0.47 mfd   | 25V    |
| C603       | 51712860 | Elec.      | 10 mfd     | 25V    |
| C604       | 51728120 | Polyst.    | 220 pfd    | 50V 5% |
| C605       | 51720940 | Dip. Tant. | 10 mfd     | 25V    |
| C606       | 51713500 | Elec.      | 47 mfd     | 25V    |
| C607, C608 | 51722120 | Ceramic    | 100 pfd    | 50V    |
| C609       | 51712840 | Elec.      | 1 mfd      | 50V    |
| C610       | 51720261 | Dip. Tant. | 0.15 mfd   | 35V    |
| C611       | 51703680 | Mylar      | 0.0047 mfd | 50V 5% |
| C612       | 51720220 | Dip. Tant. | 0.1 mfd    | 35V    |
| C613       | 51720900 | Dip. Tant. | 0.47 mfd   | 25V    |
| C614~C617  | 51718560 | Mylar      | 0.01 mfd   | 50V 5% |
| C618       | 51713500 | Elec.      | 47 mfd     | 25V    |
| C619, C620 | 51712840 | Elec.      | 1 mfd      | 50V    |
| C621, C622 | 51718560 | Mylar      | 0.01 mfd   | 50V 5% |
| C623       | 51713160 | Elec.      | 10 mfd     | 25V    |

| REF. NO.   | PARTS NO. | DESCRIPTION            |
|------------|-----------|------------------------|
| C624, C625 | 51713080  | Elec. 4.7 mfd 50V      |
| C626       | 5171284Q  | Elec. 1 mfd 50V        |
| C627       | 51719790  | Elec. 100 mfd 25V      |
| C628       | 51713100  | Elec. 10 mfd 25V       |
| C629, C630 | 51703520  | Mylar 0.001 mfd 50V 5% |
| C631       | 51718640  | Mylar 0.022 mfd 50V 5% |
| C632       | 51714300  | Elec. 0.1 mfd 50V (KA) |
| C633       | 51722160  | Ceramic 220 pfd 50V    |
| C634       | 51713140  | Elec. 10 mfd 16V       |
| C635       | 51718640  | Mylar 0.022 mfd 50V 5% |

## VARIABLE RESISTORS

|          |          |                        |
|----------|----------|------------------------|
| R60, R61 | 51501560 | Semi-fixed 50 k ohm-B  |
| R62      | 51501540 | Semi-fixed 10 k ohm-B  |
| R63, R64 | 51501530 | Semi-fixed 5 k ohm-B   |
| R65      | 51501570 | Semi-fixed 100 k ohm-B |

## MISCELLANEOUS

|         |          |                   |
|---------|----------|-------------------|
| TP1~TP6 | 55447500 | Pin, Test Point   |
| L601    | 50566550 | Coil, Trap; 12 mH |
|         | 55531320 | Heat Sink         |

## MECHANISM PCB ASSY (POWER SUPPLY)

| REF. NO.           | PARTS NO. | DESCRIPTION |
|--------------------|-----------|-------------|
|                    | 51689190  | PCB Assy    |
|                    | 51675450  | PCB         |
| <b>TRANSISTORS</b> |           |             |
| Q401, Q402         | 50424860  | 2SC536G     |
| <b>SCR</b>         |           |             |
| SCR401             | 51430900  | 2P1M        |
| <b>DIODES</b>      |           |             |
| D401~D407          | 51430890  | W03C        |
| D408               | 50425170  | 1S2473VE    |

## RESISTORS

All resistors are rated ±5% tolerance, ¼ watt and of carbon type unless otherwise noted.

|            |          |                       |
|------------|----------|-----------------------|
| R401       | 50527410 | 950 ohm 2W Metal Film |
| R402       | 50571120 | 18 k ohm              |
| R403       | 50571000 | 5.6 k ohm             |
| R404       | 50570820 | 1 k ohm               |
| R405, R406 | 50570660 | 220 ohm               |
| R407, R408 | 50571220 | 47 k ohm              |
| R409       | 50571300 | 100 k ohm             |
| R410       | 50571140 | 22 k ohm              |
| R411       | 50571500 | 680 k ohm             |

| REF. NO.             | PARTS NO. | DESCRIPTION                               |
|----------------------|-----------|-------------------------------------------|
| R412                 | 50570820  | 1 k ohm                                   |
| R417                 | 50571020  | 6.8 k ohm                                 |
| R418                 | 51818080  | 2.2 ohm Non Flammable                     |
| <b>CAPACITORS</b>    |           |                                           |
| C401                 | 50555580  | Elec. 1000 mfd 25V                        |
| C402                 | 50548020  | Mylar 0.01 mfd 50V 10%                    |
| C403                 | 50554600  | Elec. 470 mfd 6.3V                        |
| C404                 | 50554240  | Elec. 33 mfd 10V                          |
| C405                 | 50548320  | Mylar 0.001 mfd 50V 10%                   |
| C406                 | 50554230  | Elec. 100 mfd 6.3V                        |
| C407                 | 50559420  | Elec. 1 mfd 50V (B.P.)                    |
| C412                 | 50555580  | Elec. 1000 mfd 25V                        |
| <b>MISCELLANEOUS</b> |           |                                           |
| S401                 | 51310300  | Switch, Slide; 6PDT                       |
| Z410                 | 50529050  | Spark Killer 0.1 mfd + 120 ohm<br>400V AC |

## IN/OUTPUT PCB ASSY

| REF. NO.                                                            | PARTS NO. | DESCRIPTION |
|---------------------------------------------------------------------|-----------|-------------|
|                                                                     | 51689140  | PCB Assy    |
|                                                                     | 51679140  | PCB         |
| <b>TRANSISTORS</b>                                                  |           |             |
| Q701, Q801                                                          | 50424860  | 2SC536G     |
| Q702, Q802                                                          | 50425490  | 2SC1636I    |
| <b>DIODES</b>                                                       |           |             |
| D701, D801                                                          | 50425170  | 1S2473VE    |
| <b>CARBON RESISTORS</b>                                             |           |             |
| All resistors are rated $\pm 5\%$ tolerance and $\frac{1}{4}$ watt. |           |             |
| R701, R801                                                          | 50570940  | 3.3 k ohm   |
| R702, R802                                                          | 50571100  | 15 k ohm    |
| R703, R803                                                          | 50571240  | 56 k ohm    |
| R704, R804                                                          | 50570820  | 1 k ohm     |
| R705, R805                                                          | 50571360  | 180 k ohm   |
| R706, R806                                                          | 50571180  | 33 k ohm    |
| R707, R807                                                          | 50570960  | 3.9 k ohm   |
| R708, R808                                                          | 50570620  | 150 ohm     |
| R709, R809                                                          | 50570800  | 820 ohm     |
| R710, R810                                                          | 50571140  | 22 k ohm    |
| R711, R811                                                          | 50571460  | 470 k ohm   |
| R712, R812                                                          | 50571060  | 10 k ohm    |

| REF. NO.                  | PARTS NO. | DESCRIPTION            |
|---------------------------|-----------|------------------------|
| <b>CAPACITORS</b>         |           |                        |
| C701, C801                | 50554050  | Elec. 10 mfd 16V       |
| C702, C802                | 50554570  | Elec. 100 mfd 10V      |
| C703, C803                | 51703140  | Elec. 0.1 mfd 50V (KA) |
| C704, C804                | 50554950  | Elec. 22 mfd 25V       |
| C705                      | 50554170  | Elec. 100 mfd 35V      |
| <b>VARIABLE RESISTORS</b> |           |                        |
| R70, R80                  | 51500570  | Semi-fixed 50 k ohm-B  |
| <b>MISCELLANEOUS</b>      |           |                        |
| J501                      | 51260301  | Terminal Assy          |
|                           | 55447500  | Pin, Test Point        |
|                           | 51679220  | PCB, SHIELD            |

## VR PCB ASSY

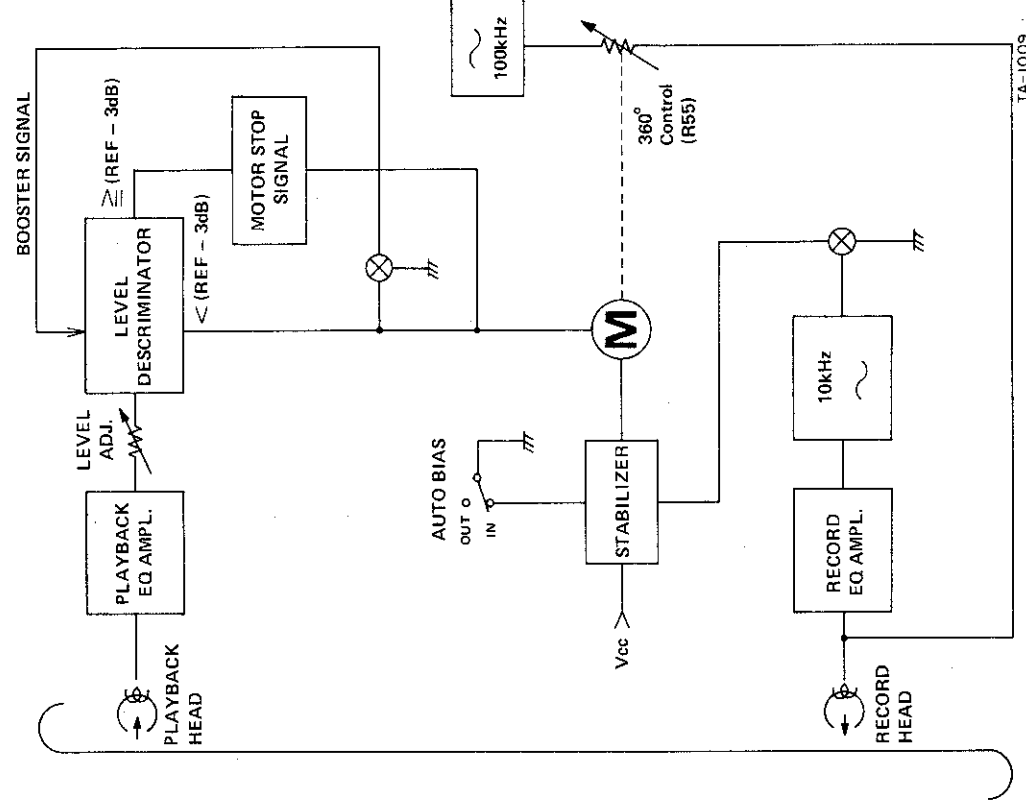
| REF. NO.                                                            | PARTS NO. | DESCRIPTION           |
|---------------------------------------------------------------------|-----------|-----------------------|
|                                                                     | 51689170  | PCB Assy              |
|                                                                     | 51679170  | PCB                   |
| <b>DIODE</b>                                                        |           |                       |
| D503                                                                | 51431130  | 1SR34-200HM           |
| <b>CARBON RESISTORS</b>                                             |           |                       |
| All resistors are rated $\pm 5\%$ tolerance and $\frac{1}{4}$ watt. |           |                       |
| R502                                                                | 51831000  | 5.6 k ohm             |
| R503                                                                | 51831100  | 15 k ohm              |
| R504                                                                | 51831120  | 18 k ohm              |
| R505                                                                | 51831100  | 15 k ohm              |
| <b>CAPACITORS</b>                                                   |           |                       |
| C501                                                                | 50554540  | Elec. 1mfd 50V        |
| C502, C503                                                          | 51728240  | Polyst. 680pfd 50V 5% |
| <b>VARIABLE RESISTORS</b>                                           |           |                       |
| R50                                                                 | 51502330  | Semi-fixed 120 k ohm  |
| R51, R52                                                            | 51500960  | Semi-fixed 100 k ohm  |
| R53, R54                                                            | 51502330  | Semi-fixed 20 k ohm   |
| R55                                                                 | 51502410  | 360° Control 50 k ohm |
| <b>MISCELLANEOUS</b>                                                |           |                       |
| TP1~TP5                                                             | 55447500  | Pin, Test Point       |

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

(Continued from page 21)

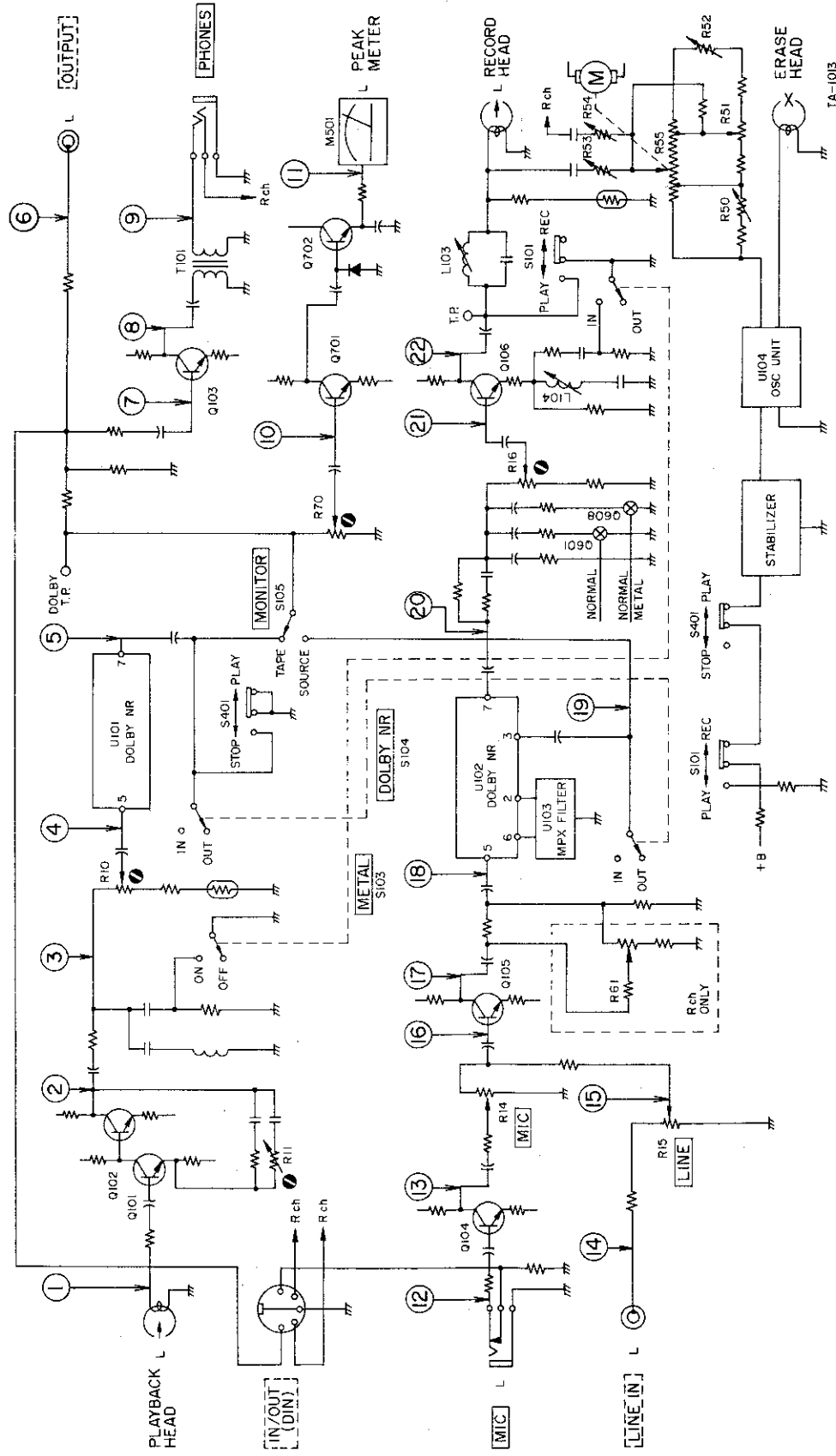
| REF. NO. | PARTS NO. | DESCRIPTION                    | REMARKS                        |
|----------|-----------|--------------------------------|--------------------------------|
| 4 - 41   | *55533020 | Holder, Gear Block             |                                |
| 4 - 42   | *55533570 | Chassis, Right                 |                                |
| 4 - 43   | *55557140 | Bracket, IN/OUTPUT PCB         |                                |
| 4 - 44   | 55031980  | Gear Block Assy                |                                |
| 4 - 45   | *55558410 | Bracket, Gear Block            |                                |
| 4 - 46   | *51502410 | Var. Res., 360° Control        |                                |
| 4 - 47   | *55348010 | Coupling, Universal            |                                |
| 4 - 48   | *55047930 | Cam Assy                       |                                |
| 4 - 49   | *55558440 | Holder, Cam Switch             |                                |
| 4 - 50   | *51300090 | Switch, Micro; Cam             |                                |
| 4 - 51   | *55544470 | Plate, Switch                  |                                |
| 4 - 52   | *51689170 | PCB Assy, VR                   |                                |
| 4 - 53   | *51689630 | PCB Assy, REC AND PLAY AMPL    |                                |
| 4 - 54   | *55800060 | Washer, Fiber                  |                                |
| 4 - 55   | *55800070 | Washer                         |                                |
| 4 - 56   | *55550591 | Bracket, REC AND PLAY AMPL PCB |                                |
| 4 - 57   | *55346490 | Rod, Push Switch; C            |                                |
| 4 - 58   | *50438480 | Connector Socket, 6P           |                                |
| 4 - 59   | *55555900 | Plate, GND; A                  | Part of 4 - 53                 |
| 4 - 60   | *51274580 | Wire, Ribbon                   | Part of 4 - 53                 |
| 4 - 61   | *51689200 | PCB Assy, CONTROL              |                                |
| 4 - 62   | *55557110 | Holder, PCB                    |                                |
| 4 - 63   | *51689140 | PCB Assy, IN/OUTPUT            |                                |
|          | 51260301  | Terminal Assy                  | Part of 4 - 63                 |
| 4 - 64   | *55524001 | Panel, Rear                    |                                |
| 4 - 65   | *55550630 | Washer, GND                    |                                |
| 4 - 66   | 55341180  | Push Rivet                     |                                |
| 4 - 67   | *55300470 | Strain Relief, AC Power Cord   | U.S.A., CANADA, GENERAL EXPORT |
|          | *55342690 | Strain Relief, AC Power Cord   | AUSTRALIA                      |
| 4 - 68   | 51280340  | Cord, AC Power                 | GENERAL EXPORT                 |
|          | 51280750  | Cord, AC Power                 | U.S.A., CANADA                 |
|          | *51280180 | Cord, AC Power                 | EUROPE                         |
|          | *51280360 | Cord, AC Power                 | U.K.                           |
|          | *51280310 | Cord, AC Power                 | AUSTRALIA                      |

# BLOCK DIAGRAM — AUTO BIAS —

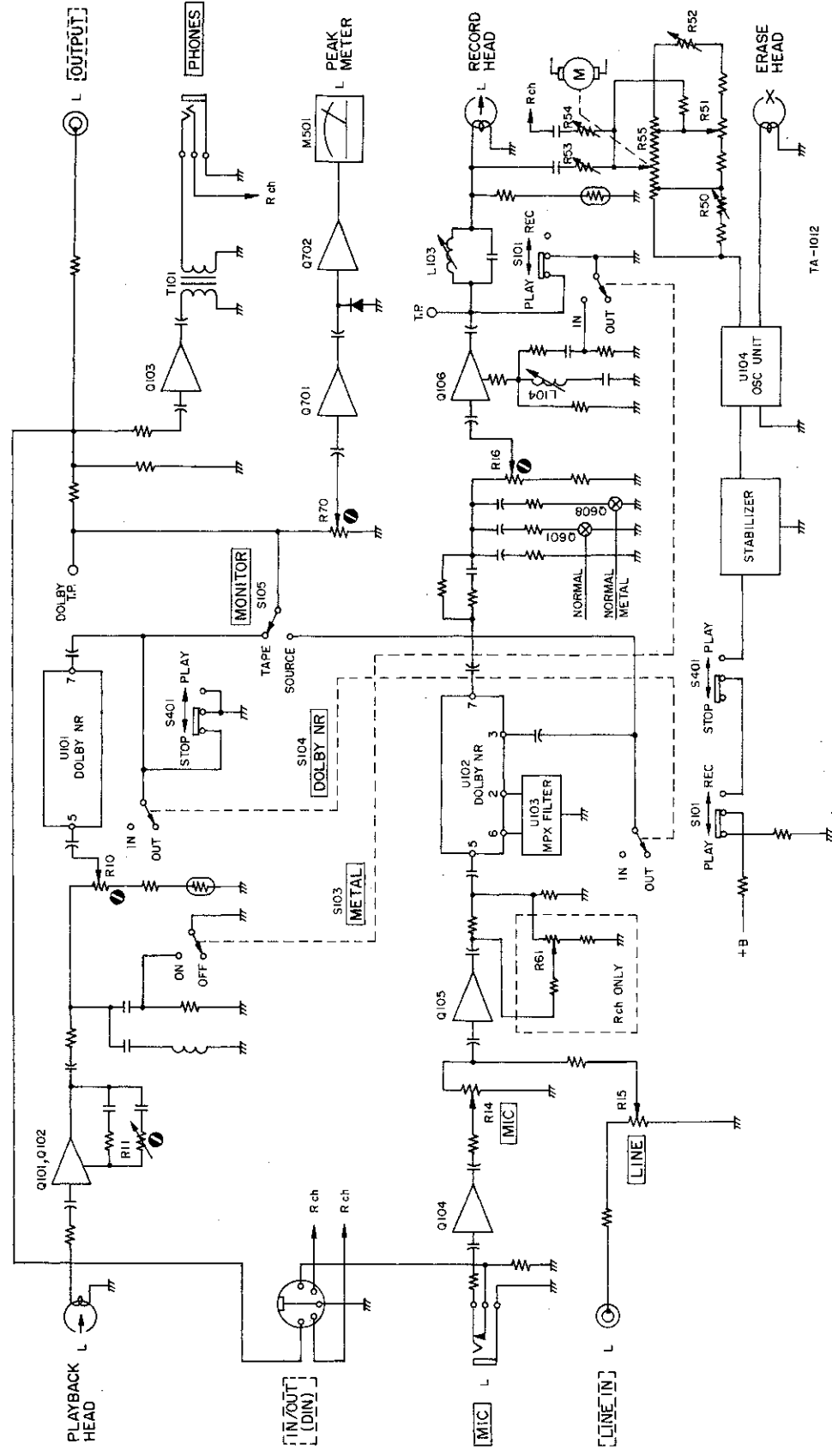


TA-1009

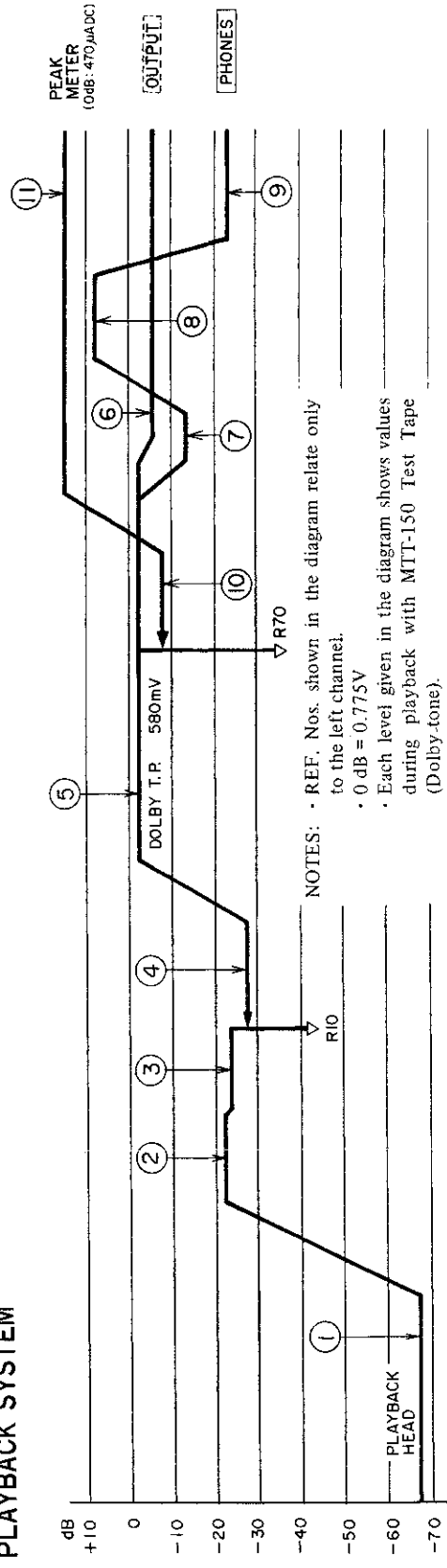
# BLOCK DIAGRAM — AMPLIFIER —



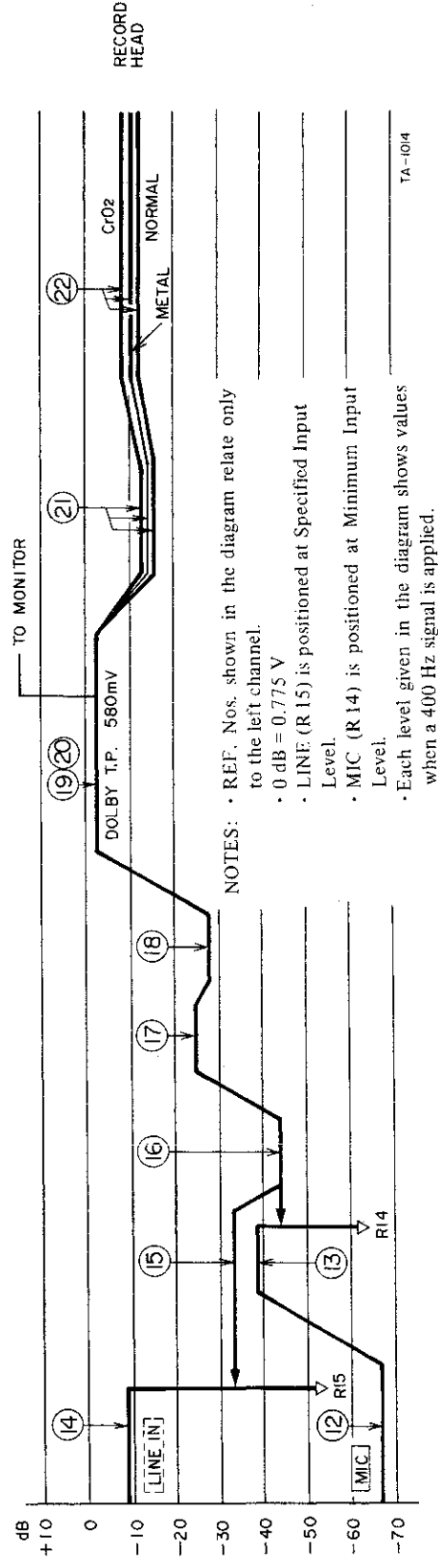
## LEVEL DIAGRAM



## PLAYBACK SYSTEM



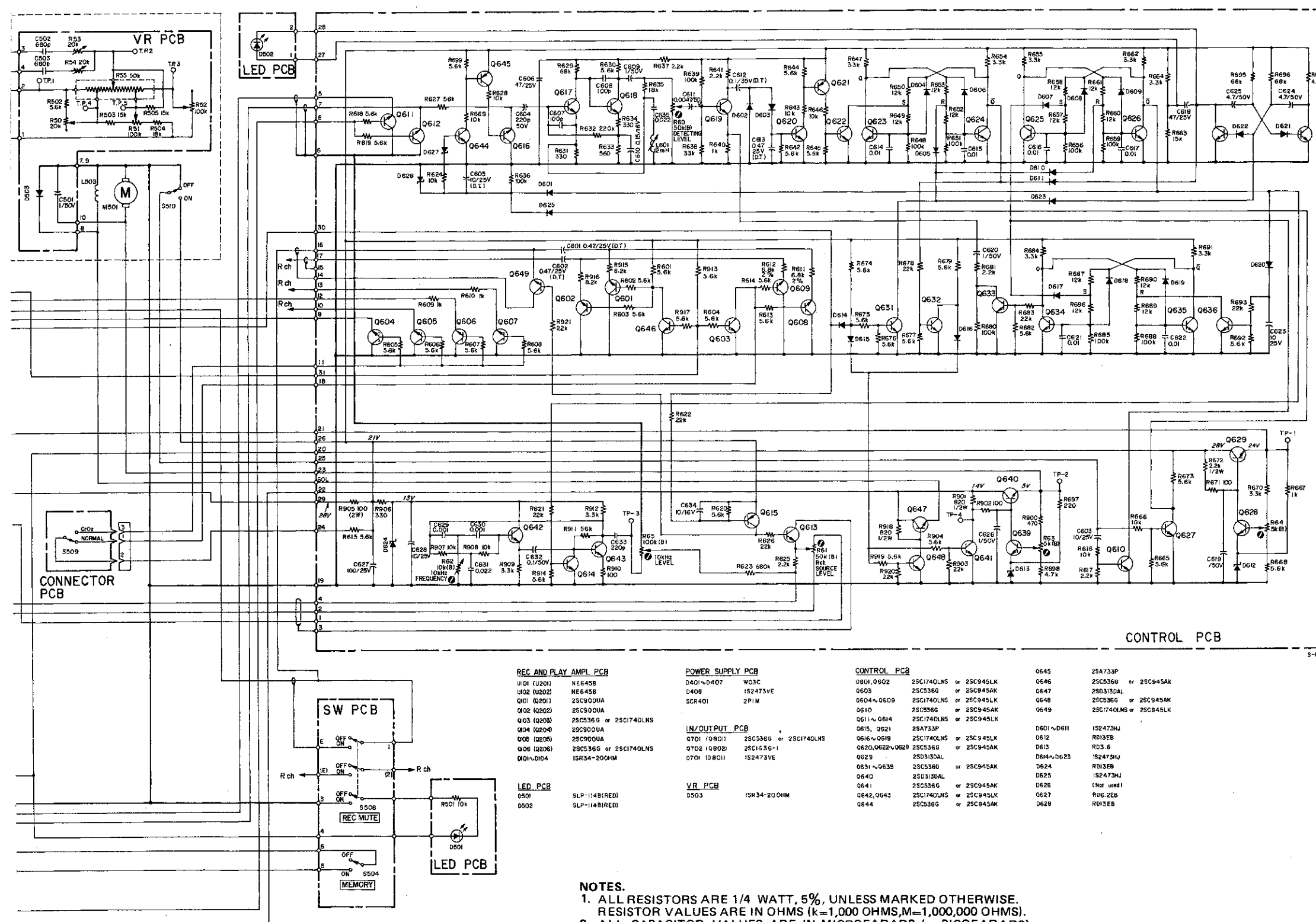
## RECORDING SYSTEM



The schematic diagram is divided into several main sections:

- REC AND PLAY AMPL PCB:** This section contains two NE645B Dolby NR integrated circuits (U101 and U102). It includes a recording amplifier (U101) and a playback amplifier (U102). The circuit is powered by a 18.6V supply and includes various resistors (R101-R150) and capacitors (C101-C150). It also features a microphone input (MIC) and a line input (LINE IN).
- IN/OUTPUT PCB (1/2):** This section includes a microphone input (MIC) and a line input (LINE IN). It also features a line output (LINE OUT) and a speaker output (SPEAKER). The circuit includes various resistors (R101-R150) and capacitors (C101-C150).
- POWER SUPPLY PCB:** This section shows the power transformer, rectifier, filter, and motor control circuitry. It includes a power transformer (T101) and a rectifier (D101-D104). The circuit is powered by a 240V AC supply and includes various resistors (R101-R150) and capacitors (C101-C150).
- PEAK METER:** This section includes a peak meter (M501) and a speaker (S501).
- DOLBY NR:** This section includes a Dolby NR (Noise Reduction) circuit (U101 and U102).

The diagram also includes a cassette tape deck with various controls and components, including a cassette tape (T101), a cassette deck (D101-D104), and a cassette deck (D101-D104).



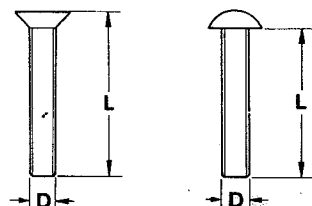
## ASSEMBLING HARDWARE CODING LIST

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



FOR EXAMPLE:

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



\* Inner dia. for washers and nuts

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