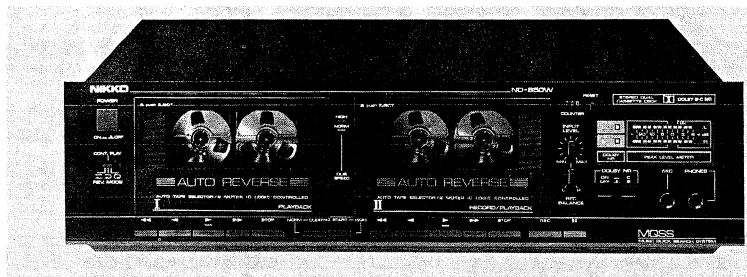


# NIKKO

# DECK

# ND-850W

## STEREO CASSETTE DECK



### TYPE AND VOLTAGE

|         |               |         |
|---------|---------------|---------|
| W-TYPE: | UL & CSA type | 120V AC |
| E-TYPE: | NK-STD type   | 220V AC |

## SERVICE MANUAL

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# SAFETY INSTRUCTIONS

## PRECAUTIONS DURING SERVICING

1. Parts identified by the  $\triangle$  symbol parts are critical for safety. Replace only with same parts number specified.

2. Other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation.

These must also be replaced only with specified replacements.

Examples: RF converters, tuner units, RF cables, noise blocking capacitors, noise blocking filters, etc.

2. Use specified internal wiring
  - a) Primary leads
  - b) Wires covered with PVC tubing
  - c) Double insulated wire
4. Use specified insulating materials for hazardous live parts.
  - a) Insulation Tape
  - b) Insulated Barriers (Spacers)
  - c) PVC tubing
  - d) Plastic screws for fixing microswitch (Especially in turntable)
  - e) Terminal strips

5. When replacing the primary components (transformer, power supply cord switch, by-pass capacitor, etc.), wrap ends of wires securely about the terminals before soldering.

Where hand soldering is involved, a minimum spacing below between terminals of uninsulated live parts of primary or supply circuitry through air or over surface is to be maintained.

120V appliance : 3 mm spacing min.

220V and 240V appliance : 6 mm spacing min.

6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal resistance, rectifiers, etc.)
7. Check that replaced wires do not contact sharp edges or pointed parts.
8. Do not leave electric conductive parts (screws, droplets, etc.) inside the appliance.

## SAFETY RECHECK AFTER SERVICING

Confirm the specified insulation resistance between power plug prongs and externally exposed parts of the appliance is greater than 10Mohms, however, for equipment with external antenna terminals (tuner, receiver, etc.) specified insulation resistance should be more than 2.2Mohms (ground terminals, in-output jacks etc.).

# SPECIFICATIONS

|                                      |                                                                                                                                                          |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Heads:</b>                        | Hard permalloy playback and record-2-gap ferrite erasing head x 1<br>Hard permalloy playback head x 1                                                    |
| <b>Drive system:</b>                 | 2-motor IC logic control                                                                                                                                 |
| <b>Motors:</b>                       | DC servo motor for capstan drive x 2<br>DC motor for reel drive x 2                                                                                      |
| <b>Tape speed:</b>                   | 4.8 cm/sec.                                                                                                                                              |
| <b>Wow &amp; flutter:</b>            | 0.06% W.RMS (TA, TC, AY)<br>0.06% W.RMS $\pm$ 0.15% (DIN) (TE, TU)                                                                                       |
| <b>Fast forward and rewind time:</b> | Approx. 95 sec. (C-60 tape)                                                                                                                              |
| <b>Frequency response:</b>           | 30 — 18000 Hz with metal and —20 dB input<br>30 — 16000 Hz with chrome position tape and —20 dB input<br>30 — 15000 Hz with normal tape and —20 dB input |

|                          |                                                                                       |
|--------------------------|---------------------------------------------------------------------------------------|
| <b>Total distortion:</b> | 0.8% (400 Hz, 0 dB chrome position tape)                                              |
| <b>Bias frequency:</b>   | 105 kHz                                                                               |
| <b>Input terminals:</b>  | MIC: 0.7mV (600 $\Omega$ — 10k $\Omega$ )<br>LINE: 70mV (50k $\Omega$ )               |
| <b>Output terminals:</b> | LINE: 360mV (50k $\Omega$ )<br>Headphones: 0.1mW (8 ohm)                              |
| <b>Major dimensions:</b> | 420(W) x 115(H) x 270(D) mm<br>(including front panel knobs etc. and rubber supports) |
| <b>Weight:</b>           | 4.6 kg                                                                                |

Specifications are subject to change without notice.

# DISASSEMBLY INSTRUCTIONS

## TOP COVER REMOVAL

1. Remove two screws (A) from side boards and three screws (B) from back side, and the top cover will be removed.

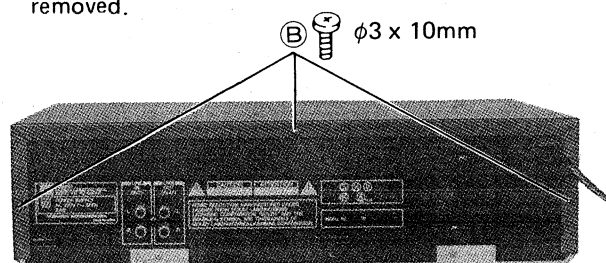


Figure 3

## BOTTOM PLATE REMOVAL

1. Remove top cover.
2. Remove two screws (C) and (D) from bottom side and two screws (E) from back side.
3. Remove two hooks (F) of P.C. Board holder, and the bottom plate will be removed.

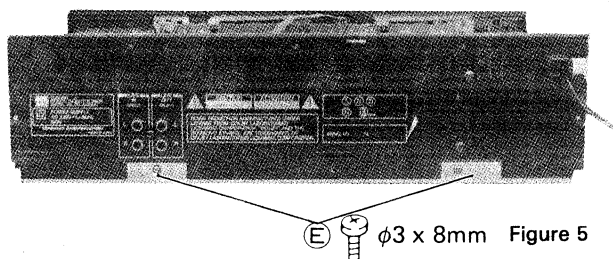


Figure 5

## MAIN P.C. BOARD REMOVAL

1. Remove top cover and bottom plate.
2. Remove one screw (G) from back side and one screw (H) from bottom side, and the Main P.C. Board will be removed.

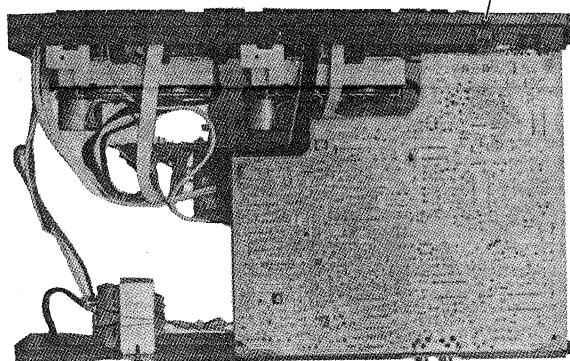
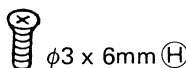


Figure 7

Note:

## CASSETTE TAPE REMOVAL

1. If power cord is disconnected while a tape is being played back with the cassette cover removed, the tape will stop in play mode (head is up and keeps in contact with the tape). In this case the cassette holder may not be opened, even if eject (cassette holder) is pushed. To open cassette holder, push eject lever (J)

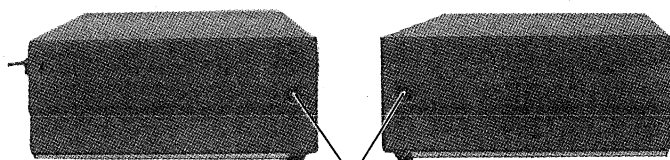


Figure 1

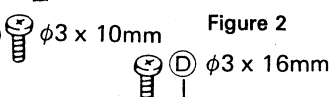


Figure 2

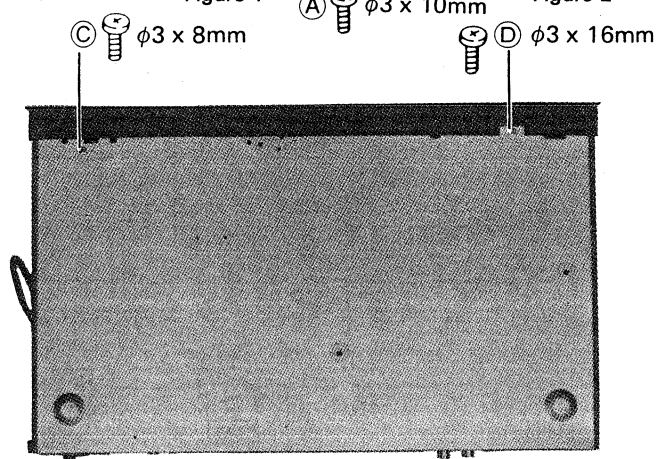


Figure 4

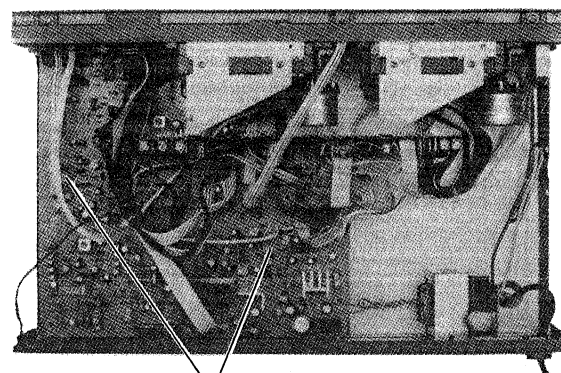


Figure 6

(F) Hooks

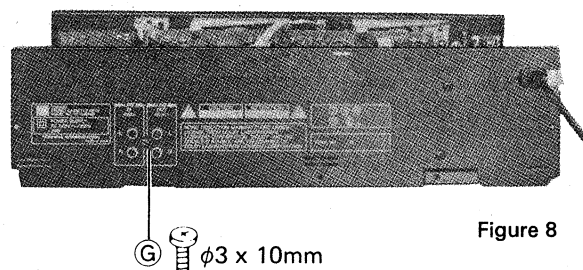


Figure 8

(G) φ3 x 10mm

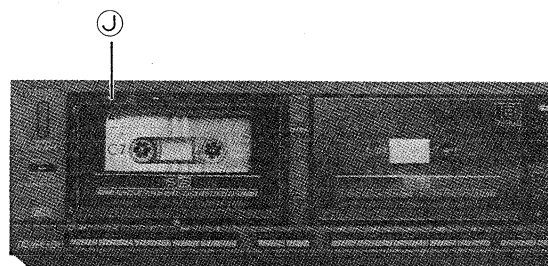


Figure 9

## BLOCK DIAGRAM

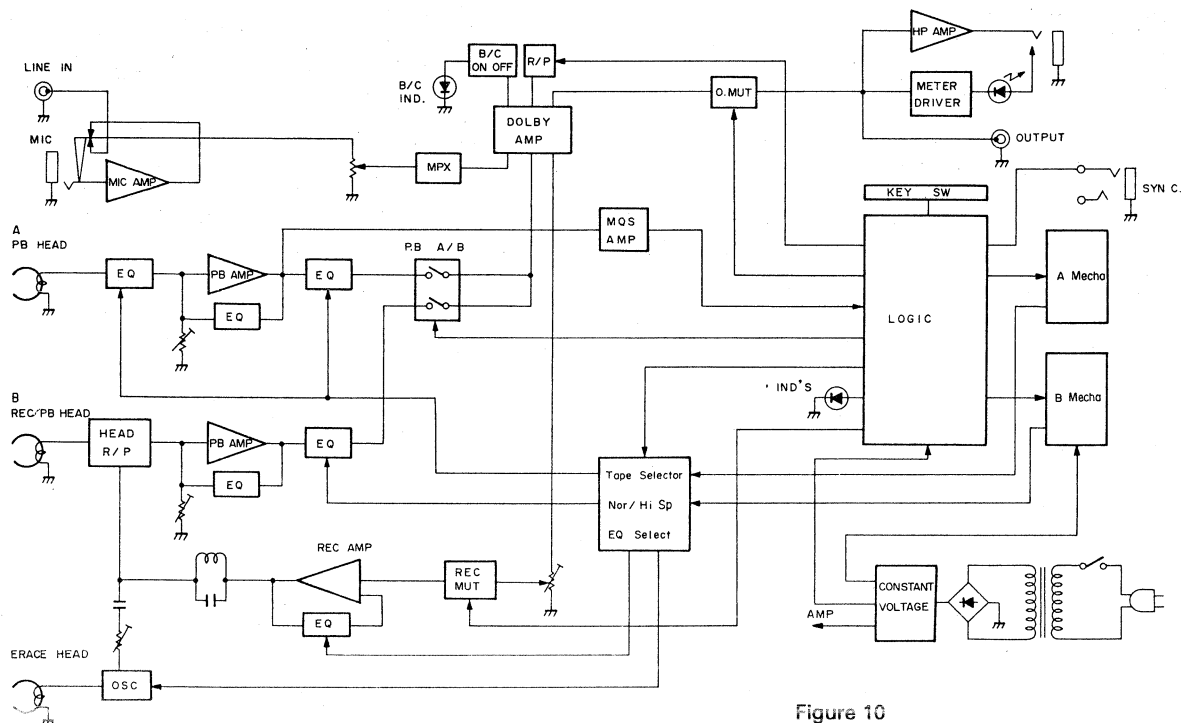


Figure 10

## ADJUSTMENTS

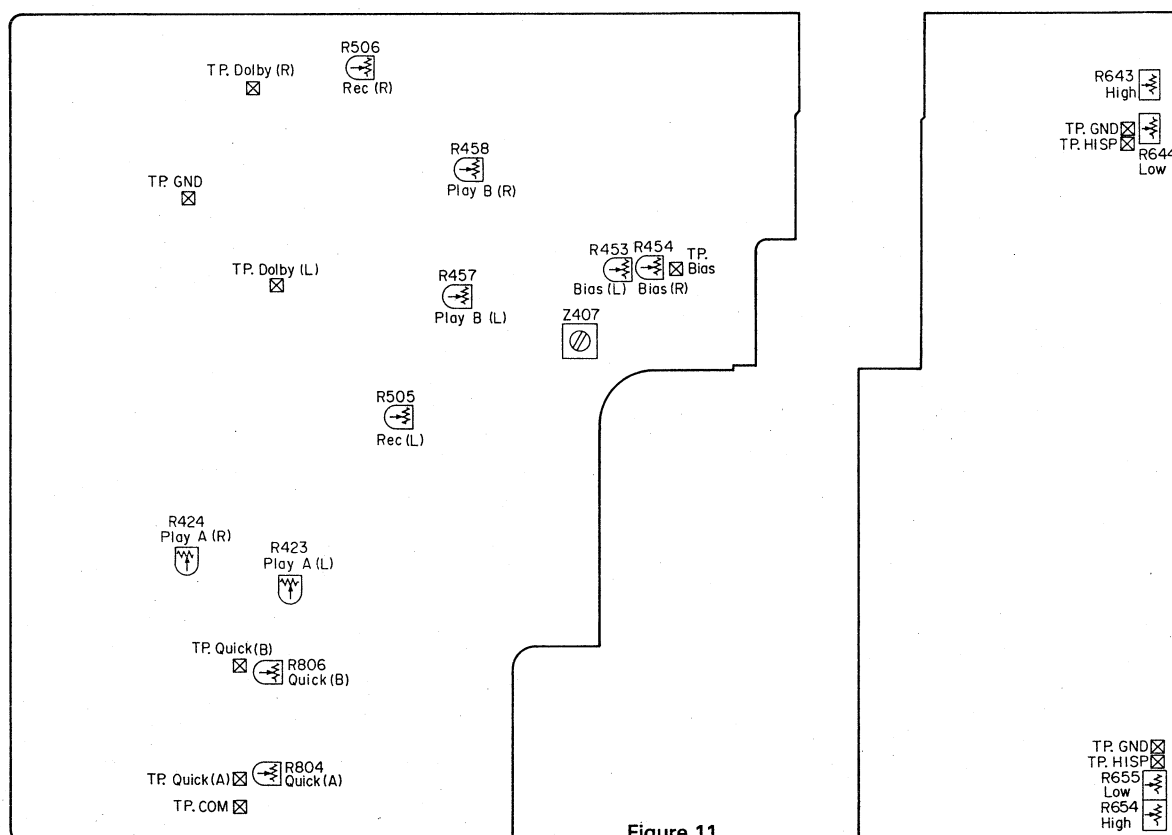


Figure 11

# TEST EQUIPMENTS

1. AC VOLTMETER
2. Signal Generator
3. Oscilloscope
4. Screwdriver
5. Test Tapes:
  - ATT-111 (Speed 3 KHz – 5 dB)
  - ATT-114 (Azimuth 10 KHz)
  - ATT-150 (Dolby 400 Hz Modulation)
  - AC-512 (Chrome Tape)
6. Frequency Counter

## (Tape Head Height Adjustment)

### 1. Coarse Alignment of Tape Guides

Temporarily adjust both left and right tape guide height adjusting nuts so that they are positioned flush with the top of the shafts as shown in the upper figure (A).

### 2. Azimuth Alignment

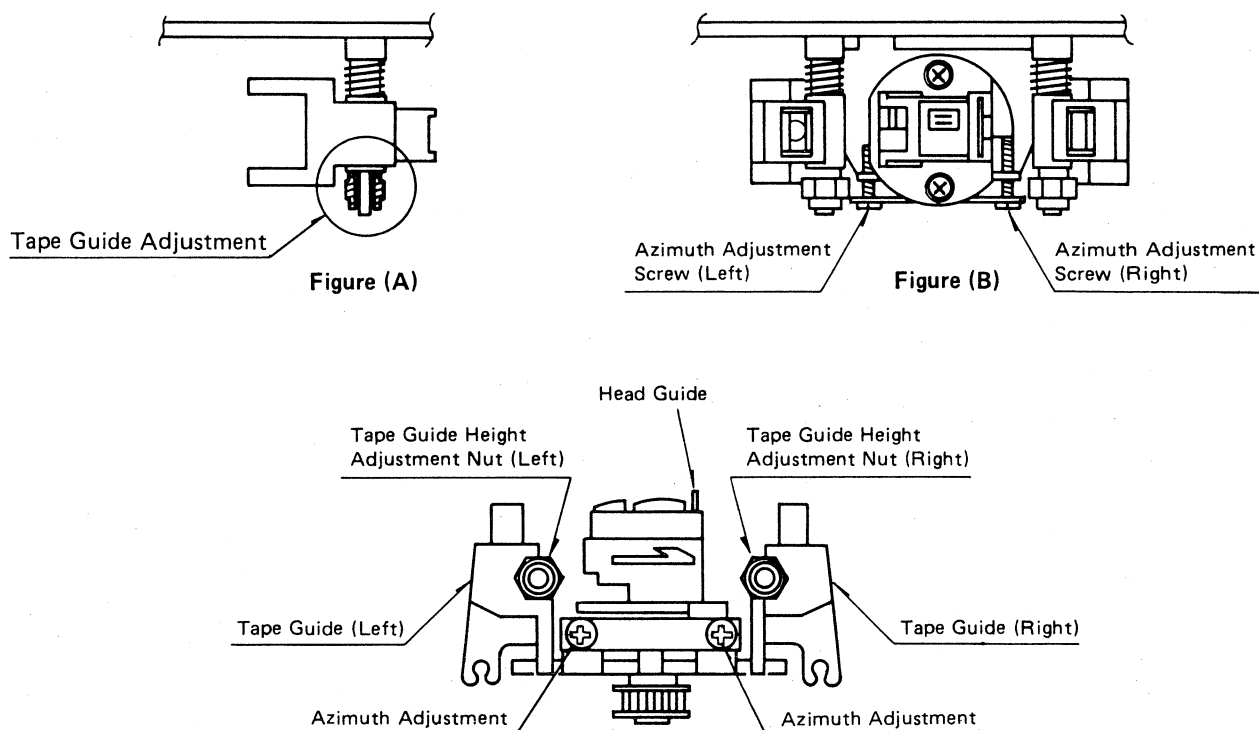
Refer to No. 1 (2) of alignment method on next page.

### 3. Tape Running Alignment

Inspect status of tape travels in both forward and reverse directions using the mirror cassette and make sure no tape curling is occurred at the head guides in both directions of the tape travel.

### 4. Realignment

If tape curling is observed, readjust both tape guide adjusting nuts precisely until the curling is disappeared, by repeating the adjustment 2 ~ 3 times.



| Step                       | Item                         | Input Setting                                      | Output Setting                             | Cassette Deck Setting                                                                                                                                                     | Adjustment Point                                  | Adjustment Procedure                                                                                                                                                                                                                                                                             |
|----------------------------|------------------------------|----------------------------------------------------|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| I REC/PLAY HEAD ADJUSTMENT |                              |                                                    |                                            |                                                                                                                                                                           |                                                   |                                                                                                                                                                                                                                                                                                  |
| (1)                        | Demagnetization and Cleaning | —                                                  | —                                          | Demagnetization Power: OFF<br>Cleaning<br>PLAY                                                                                                                            | Rec head<br>Erase head<br>Capstan<br>Pinch roller | Demagnetize Rec/Play head with head eraser. Clean Rec/Play head, erase head, capstan, and pinch roller using applicator moist with alcohol.                                                                                                                                                      |
| (2)                        | Head Azimuth Adjustment      | ATT-114                                            | LINE OUT<br>L, R<br>Ⓐ                      | PLAY<br>(Forward direction)                                                                                                                                               | Head azimuth adjusting screw<br>(Right side)      | First adjust L ch. and R ch for max. output, then readjust until Lissajous's figure of 45° line is obtained on scope display in FWD mode. Next, perform the same adjustment in REV mode. Finally, set the mode to FWD and make sure the adjustment has been not upset for both tape (A) and (B). |
|                            |                              |                                                    |                                            | PLAY<br>(Reverse direction)<br>(Tape B side)                                                                                                                              | Head azimuth adjusting screw<br>(Left side)       |                                                                                                                                                                                                                                                                                                  |
| II P.C. BOARD ADJUSTMENT   |                              |                                                    |                                            |                                                                                                                                                                           |                                                   |                                                                                                                                                                                                                                                                                                  |
| (1)                        | Tape Speed<br>(High Speed)   | ATT-111                                            | Ⓑ                                          | PLAY                                                                                                                                                                      | (A) R654<br>(B) R643                              | Short-circuit across GND and TP. HISP for (A) and (B) respectively and set frequency to 6 kHz ± 30 Hz at tape center.                                                                                                                                                                            |
|                            | Tape Speed<br>(Normal)       | ATT-111                                            | Ⓑ                                          | PLAY                                                                                                                                                                      | (A) R655<br>(B) R644                              | After High speed adjustment is completed, set frequency to 3 kHz ± 30 Hz at tape center.                                                                                                                                                                                                         |
| (2)                        | Playback Level Adjustment    | ATT-150                                            | LINE OUT<br>L, R<br>Ⓐ                      | PLAY                                                                                                                                                                      | (A) R423, 424<br>(B) R457, 458                    | −3.8 dBs (500 ± 10mV)                                                                                                                                                                                                                                                                            |
| (3)                        | Bias Adjustment              | —                                                  | GND—TP<br>BIAS                             | REC/PAUSE<br>METAL position                                                                                                                                               | Z407                                              | Set frequency to 105 kHz ± 0.5.                                                                                                                                                                                                                                                                  |
| (4)                        | Bias Current                 | Ⓒ<br>1 kHz,<br>−37.5 dBs<br>12.5 kHz,<br>−37.5 dBs | Ⓐ                                          | 1. REC BAL VR R406 is center position.<br>2. Adjust REC-VR R405 so that Rec monitor output becomes −27 dBs at 1kHz and repeat recording and playback of 1kHz and 12.5kHz. | R453 (L)<br>R454 (R)                              | Record 1 kHz and 12.5 kHz alternately and adjust bias current adjusting resistor so that same playback levels are obtained.                                                                                                                                                                      |
| (5)                        | Rec Level                    | 1 kHz, −17.5 dBs                                   | Ⓐ                                          | Under condition of step (4), record and play back 1 kHz.                                                                                                                  | R505 (L)<br>R506 (R)                              | Adjust semi-fixed resistors so that playback output level obtains −7 dBs.                                                                                                                                                                                                                        |
| (6)                        | Quick Adjustment             | AC-512                                             | TP. COM-TP.Quick(A)<br>TP. COM—TP.Quick(B) | PLAY                                                                                                                                                                      | (A) R804<br>(B) R806                              | Adjust so that DC voltages across TP.QUICK(A) and across TP. COM and TP.QUICK(B) obtain 500 ± 10mV when leader tape section of AC-512 is played back.                                                                                                                                            |

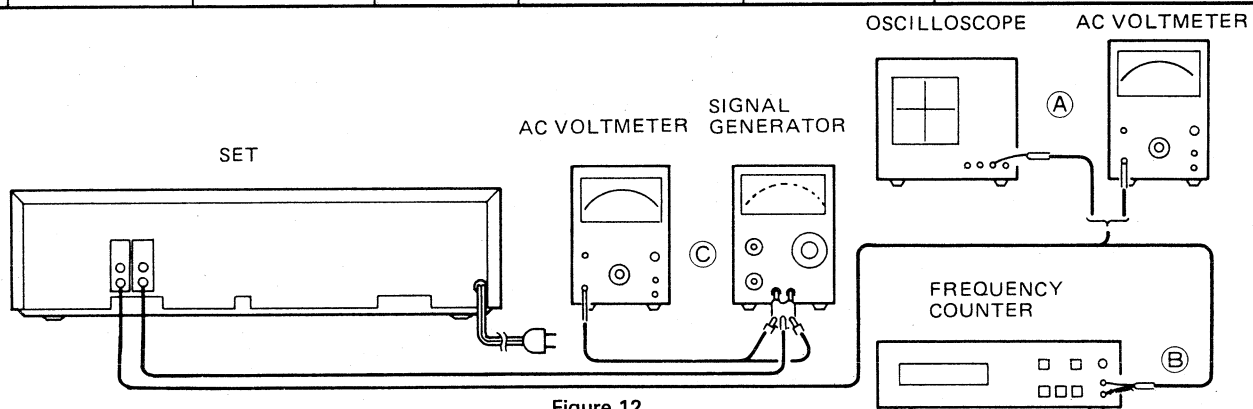
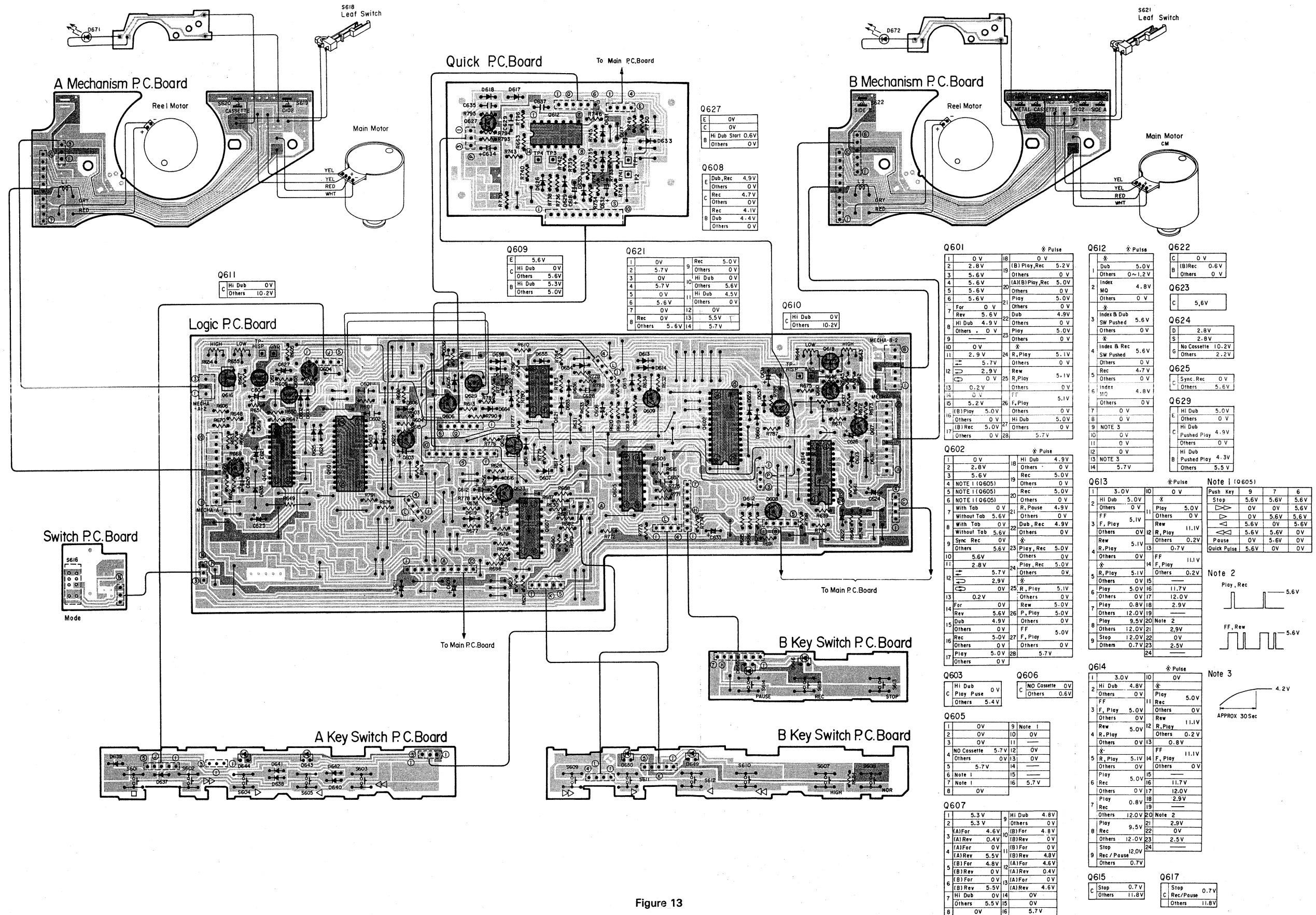


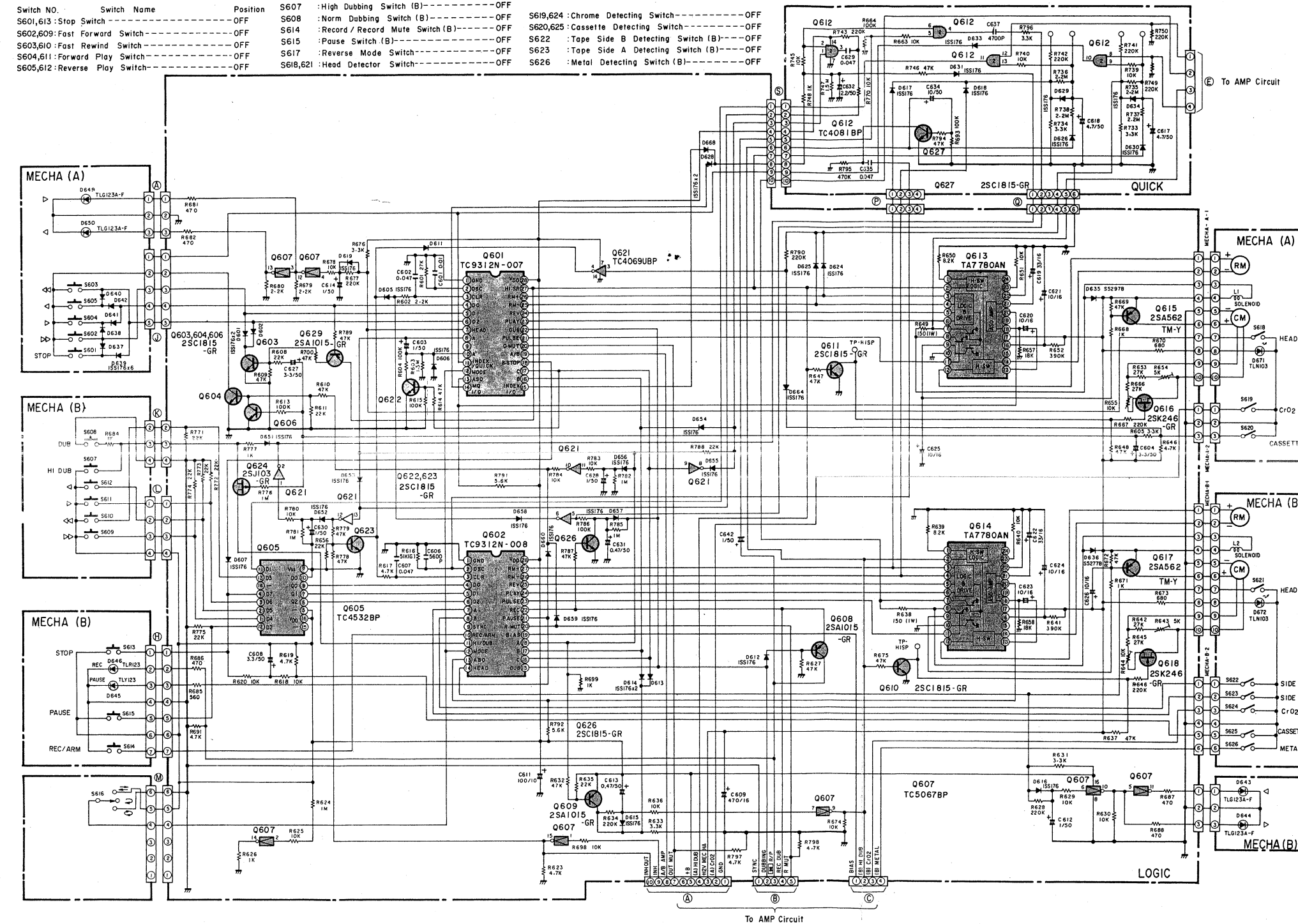
Figure 12

# ELECTRICAL PARTS LOCATIONS



# SCHEMATIC DIAGRAM

| Switch NO. | Switch Name         | Position | S607 : High Dubbing Switch (B)-----OFF | S608 : Norm Dubbing Switch (B)-----OFF | S609,610 : Fast Forward Switch-----OFF | S611 : Fast Rewind Switch-----OFF | S612 : Reverse Play Switch-----OFF | S619,624 : Chrome Detecting Switch-----OFF | S620,625 : Cassette Detecting Switch-----OFF | S622 : Tape Side B Detecting Switch (B)-----OFF | S623 : Tape Side A Detecting Switch (B)-----OFF | S626 : Metal Detecting Switch (B)-----OFF |
|------------|---------------------|----------|----------------------------------------|----------------------------------------|----------------------------------------|-----------------------------------|------------------------------------|--------------------------------------------|----------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------|
| S601,613   | Stop Switch         | OFF      |                                        |                                        |                                        |                                   |                                    |                                            |                                              |                                                 |                                                 |                                           |
| S602,609   | Fast Forward Switch | OFF      |                                        |                                        |                                        |                                   |                                    |                                            |                                              |                                                 |                                                 |                                           |
| S603,610   | Fast Rewind Switch  | OFF      |                                        |                                        |                                        |                                   |                                    |                                            |                                              |                                                 |                                                 |                                           |
| S604,611   | Forward Play Switch | OFF      |                                        |                                        |                                        |                                   |                                    |                                            |                                              |                                                 |                                                 |                                           |
| S605,612   | Reverse Play Switch | OFF      |                                        |                                        |                                        |                                   |                                    |                                            |                                              |                                                 |                                                 |                                           |



TC4069UBP  
TC4081BP

TC4532BP  
TC5067BP  
TC9305P-O17

TA7780AN

TC9312N-007  
TC9312N-008

2SA562  
2SA1015  
2SJ1015

2SK246  
2SJ103

| Q601 | Q602 | Q603 | Q604 | Q605 | Q606  | Q607 | Q608 | Q609 | Q610 | Q611 | Q612 | Q613 | Q614  | Q615 | Q616 | Q617 | Q618 | Q619 | Q620 | Q621 | Q622  | Q623 | Q624 | Q625 | Q626 | Q627 | Q628 | Q629 | Q630  | Q631 | Q632 | Q633 | Q634 | Q635 | Q636 | Q637 | Q638  | Q639 | Q640 | Q641 | Q642 | Q643 | Q644 | Q645 | Q646  | Q647 | Q648 | Q649 | Q650 | Q651 | Q652 | Q653 | Q654  | Q655 | Q656 | Q657 | Q658 | Q659 | Q660 | Q661 | Q662  | Q663 | Q664 | Q665 | Q666 | Q667 | Q668 | Q669 | Q670  | Q671 | Q672 | Q673 | Q674 | Q675 | Q676 | Q677 | Q678  | Q679 | Q680 | Q681 | Q682 | Q683 | Q684 | Q685 | Q686  | Q687 | Q688 | Q689 | Q690 | Q691 | Q692 | Q693 | Q694  | Q695 | Q696 | Q697 | Q698 | Q699 | Q700 | Q701 | Q702  | Q703 | Q704 | Q705 | Q706 | Q707 | Q708 | Q709 | Q710  | Q711 | Q712 | Q713 | Q714 | Q715 | Q716 | Q717 | Q718  | Q719 | Q720 | Q721 | Q722 | Q723 | Q724 | Q725 | Q726  | Q727 | Q728 | Q729 | Q730 | Q731 | Q732 | Q733 | Q734  | Q735 | Q736 | Q737 | Q738 | Q739 | Q740 | Q741 | Q742  | Q743 | Q744 | Q745 | Q746 | Q747 | Q748 | Q749 | Q750  | Q751 | Q752 | Q753 | Q754 | Q755 | Q756 | Q757 | Q758  | Q759 | Q760 | Q761 | Q762 | Q763 | Q764 | Q765 | Q766  | Q767 | Q768 | Q769 | Q770 | Q771 | Q772 | Q773 | Q774  | Q775 | Q776 | Q777 | Q778 | Q779 | Q780 | Q781 | Q782  | Q783 | Q784 | Q785 | Q786 | Q787 | Q788 | Q789 | Q790  | Q791 | Q792 | Q793 | Q794 | Q795 | Q796 | Q797 | Q798  | Q799 | Q800 | Q801 | Q802 | Q803 | Q804 | Q805 | Q806  | Q807 | Q808 | Q809 | Q810 | Q811 | Q812 | Q813 | Q814  | Q815 | Q816 | Q817 | Q818 | Q819 | Q820 | Q821 | Q822  | Q823 | Q824 | Q825 | Q826 | Q827 | Q828 | Q829 | Q830  | Q831 | Q832 | Q833 | Q834 | Q835 | Q836 | Q837 | Q838  | Q839 | Q840 | Q841 | Q842 | Q843 | Q844 | Q845 | Q846  | Q847 | Q848 | Q849 | Q850 | Q851 | Q852 | Q853 | Q854  | Q855 | Q856 | Q857 | Q858 | Q859 | Q860 | Q861 | Q862  | Q863 | Q864 | Q865 | Q866 | Q867 | Q868 | Q869 | Q870  | Q871 | Q872 | Q873 | Q874 | Q875 | Q876 | Q877 | Q878  | Q879 | Q880 | Q881 | Q882 | Q883 | Q884 | Q885 | Q886  | Q887 | Q888 | Q889 | Q890 | Q891 | Q892 | Q893 | Q894  | Q895 | Q896 | Q897 | Q898 | Q899 | Q900 | Q901 | Q902  | Q903 | Q904 | Q905 | Q906 | Q907 | Q908 | Q909 | Q910  | Q911 | Q912 | Q913 | Q914 | Q915 | Q916 | Q917 | Q918  | Q919 | Q920 | Q921 | Q922 | Q923 | Q924 | Q925 | Q926  | Q927 | Q928 | Q929 | Q930 | Q931 | Q932 | Q933 | Q934  | Q935 | Q936 | Q937 | Q938 | Q939 | Q940 | Q941 | Q942  | Q943 | Q944 | Q945 | Q946 | Q947 | Q948 | Q949 | Q950  | Q951 | Q952 | Q953 | Q954 | Q955 | Q956 | Q957 | Q958  | Q959 | Q960 | Q961 | Q962 | Q963 | Q964 | Q965 | Q966  | Q967 | Q968 | Q969 | Q970 | Q971 | Q972 | Q973 | Q974  | Q975 | Q976 | Q977 | Q978 | Q979 | Q980 | Q981 | Q982  | Q983 | Q984 | Q985 | Q986 | Q987 | Q988 | Q989 | Q990  | Q991 | Q992 | Q993 | Q994 | Q995 | Q996 | Q997 | Q998  | Q999 | Q1000 |   |     |    |     |   |       |    |     |   |     |    |     |   |       |    |     |   |     |    |     |   |       |    |     |   |     |    |     |   |       |    |     |     |
|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|------|------|------|------|------|------|-------|------|-------|---|-----|----|-----|---|-------|----|-----|---|-----|----|-----|---|-------|----|-----|---|-----|----|-----|---|-------|----|-----|---|-----|----|-----|---|-------|----|-----|-----|
| 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V  | 1    | 0 V  | 18   | 0 V  | 1    | 3.0 V | 10   | 0 V   | 1 | 0 V | 18 | 0 V | 1 | 3.0 V | 10 | 0 V | 1 | 0 V | 18 | 0 V | 1 | 3.0 V | 10 | 0 V | 1 | 0 V | 18 | 0 V | 1 | 3.0 V | 10 | 0 V | 1 | 0 V | 18 | 0 V | 1 | 3.0 V | 10 | 0 V | 1</ |

**CAUTION:**  
The  $\Delta$  mark, the symbol No. circled with oval in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.

Figure 14

ELECTRICAL PARTS LOCATIONS

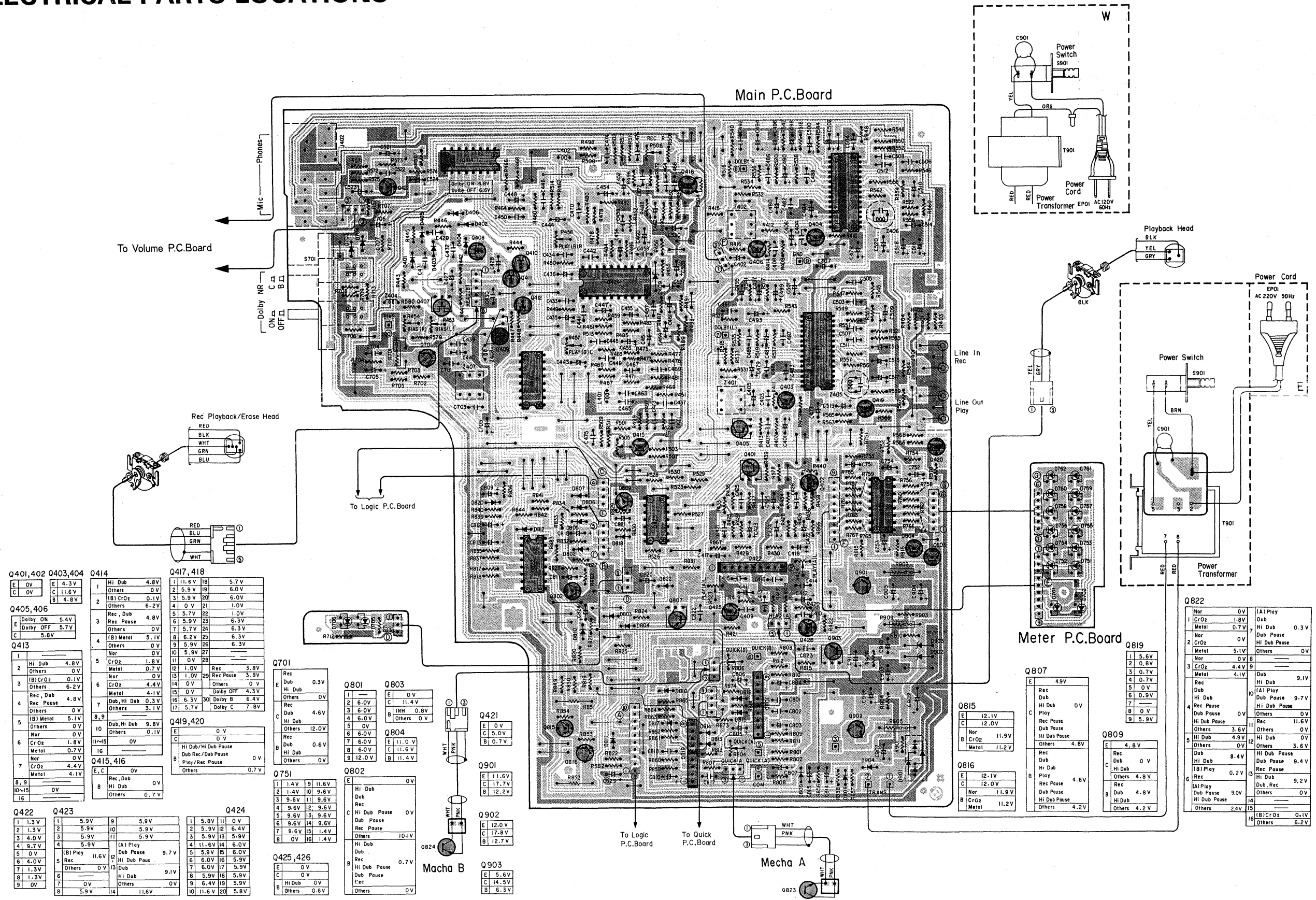


Figure 15

# SCHEMATIC DIAGRAM

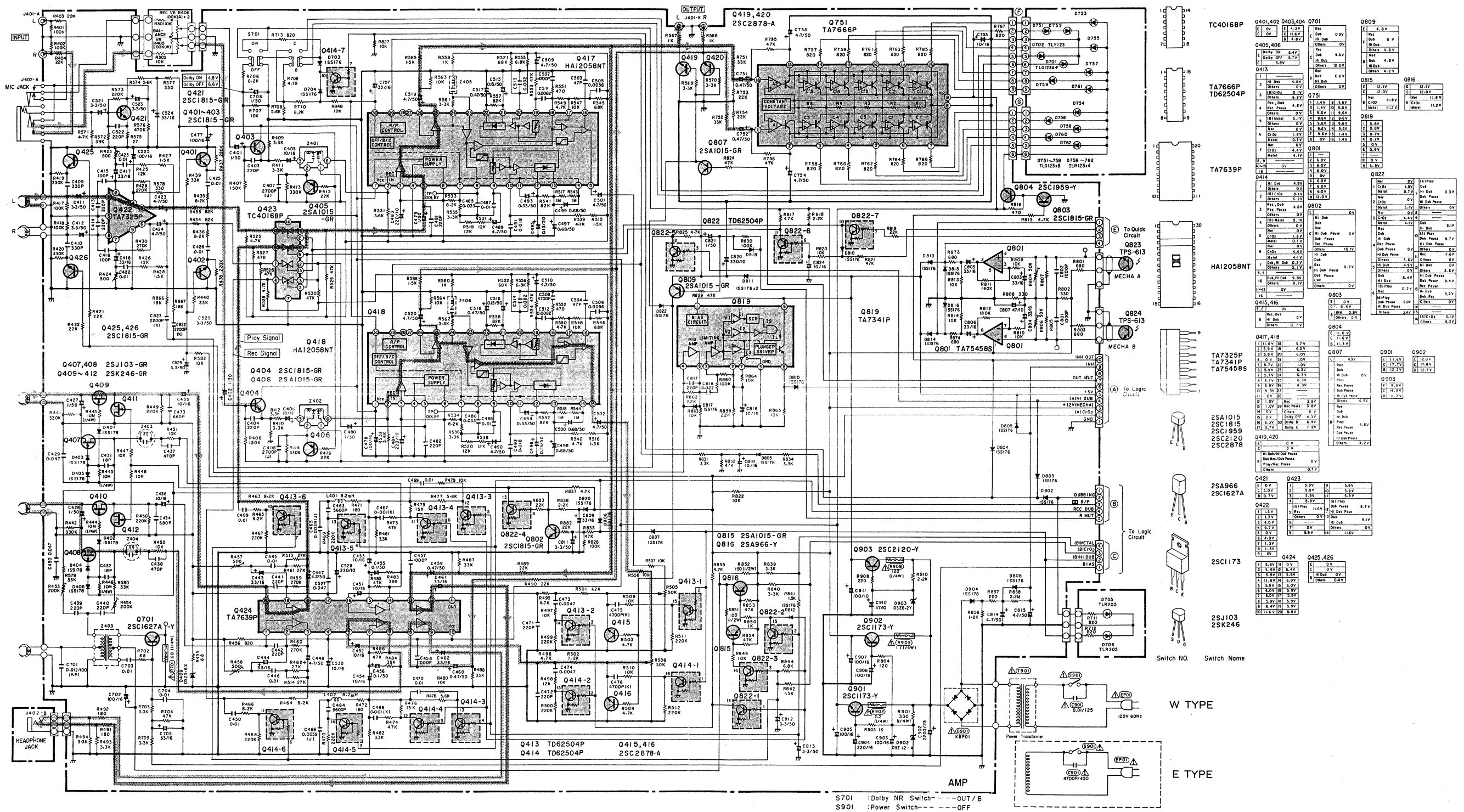
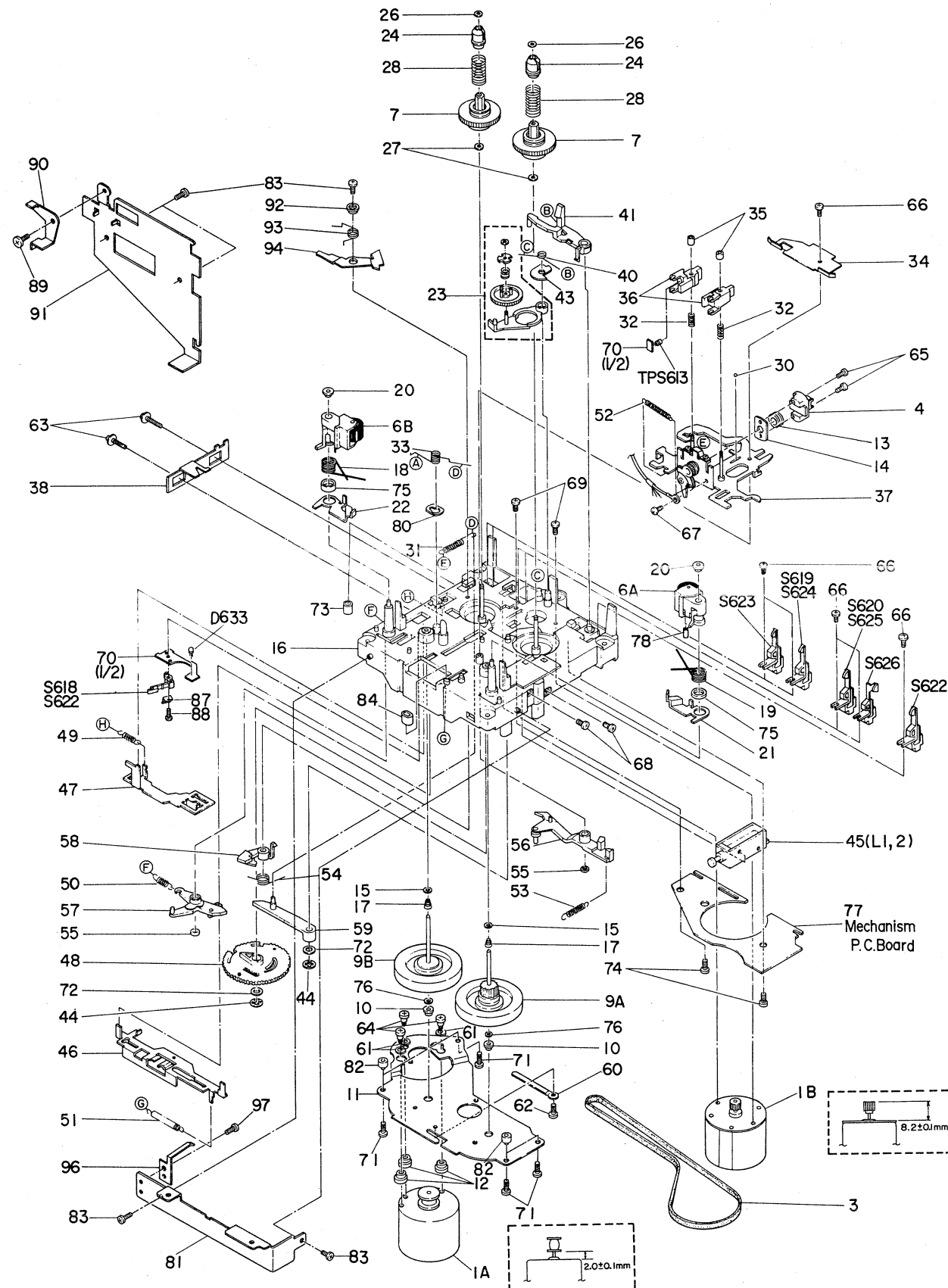


Figure 16

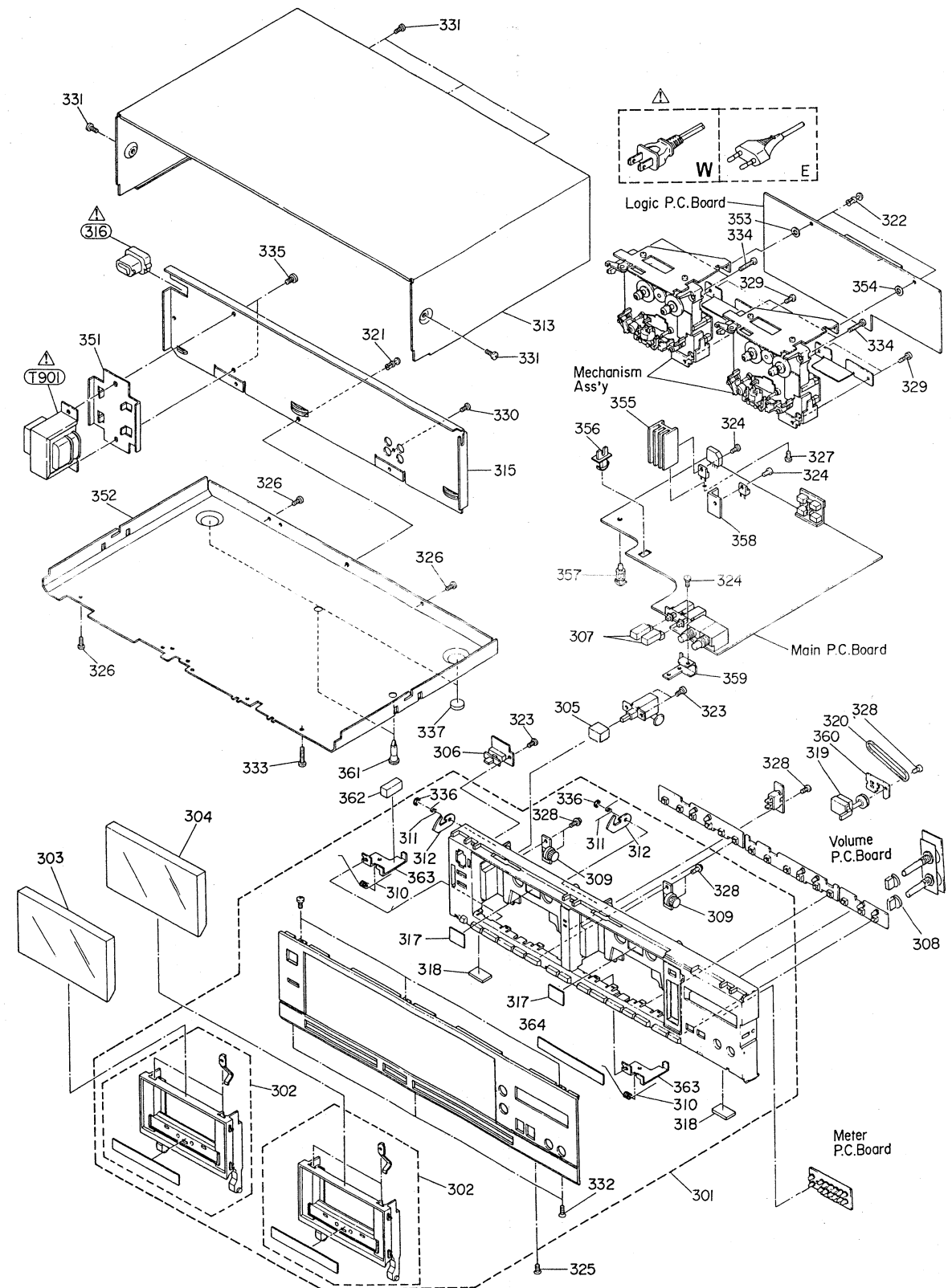
## EXPLODED VIEW MECHANISM



**NOTE:** Parts excluded in the parts are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Figure 17

## EXPLODED VIEW CABINET



**NOTE:** Parts excluded in the parts are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Figure 18

# CABINET PARTS LIST

## CAUTION:

The  $\Delta$  mark, the symbol No. circled with oval in the schematic diagram and the shaded area in the parts list designate components which have special characteristics for safety and should only be replaced with types identical to those in the original circuit of specified in the parts list.

| Symbol No. | Part No. | Description                                       |
|------------|----------|---------------------------------------------------|
| 301        | 95899059 | Front Panel Ass'y                                 |
| 302        | 25872121 | Cassette Holder Ass'y                             |
| 303        | 95872216 | Cassette Cover, A,                                |
| 304        | 95872217 | Cassette Cover, B,<br>(TC, TE, TU, AY)            |
| 305        | 95886654 | Knob, Power                                       |
| 306        | 25886521 | Knob, Timer, Reverse                              |
| 307        | 25886543 | Knob, Dolby, , A, Black                           |
| 308        | 95886475 | Knob, Volume, B, Silver                           |
| 309        | 25883246 | Damper                                            |
| 310        | 25775301 | Spring, Eject                                     |
| 311        | 25775305 | Spring                                            |
| 312        | 25756435 | Push Cam                                          |
| 313        | 95864505 | Top Cover, (N)                                    |
| 315        | 95864492 | Jack Plate ( E)                                   |
| 315        | 95864491 | Jack Plate (W)                                    |
| 316        | 25844322 | Cord Bush                                         |
| 317        | 25808372 | Reflector                                         |
| 318        | 22758390 | Cushion, Foot                                     |
| 319        | 25873307 | Tape Counter                                      |
| 320        | 25755581 | Counter Belt                                      |
| 321        | 22705021 | Plastic Rivet, $\phi 3 \times 3.5\text{mm}$       |
| 322        | 22705022 | Plastic Rivet, $\phi 3 \times 5.5\text{mm}$       |
| 323        | 22708207 | Screw, $\phi 2.6 \times 10\text{mm}$ , BID<br>TAP |
| 324        | 22707445 | Screw, $\phi 3 \times 6\text{mm}$ , BID           |

| Symbol No. | Part No. | Description                                             |
|------------|----------|---------------------------------------------------------|
| 325        | 22707439 | Screw, $\phi 3 \times 6\text{mm}$ , FLT, Silver         |
| 325        | 22707051 | Screw, $\phi 3 \times 6\text{mm}$ , FLT, Black          |
| 326        | 22707842 | Screw, $\phi 3 \times 8\text{mm}$ , BID TAP             |
| 327        | 22707327 | Screw, $\phi 3 \times 8\text{mm}$ , BID TAP,<br>Chrome  |
| 328        | 22707826 | Screw, $\phi 3 \times 10\text{mm}$ , BID TAP            |
| 329        | 22707844 | Screw, $\phi 3 \times 10\text{mm}$ , BID TAP,<br>RED    |
| 330        | 22708033 | Screw, $\phi 3 \times 10\text{mm}$ , BID TAP,<br>BLK    |
| 331        | 22707886 | Screw, $\phi 3 \times 10\text{mm}$ , BID TAP,<br>Chrome |
| 331        | 22708374 | Screw, $\phi 3 \times 10\text{mm}$ , BID TAP,<br>BLK    |
| 332        | 22708292 | Screw, $\phi 3 \times 10\text{mm}$ , FLT TAP            |
| 332        | 22708309 | Screw, $\phi 3 \times 10\text{mm}$ , FLT<br>TAP, BLK    |
| 333        | 22707835 | Screw, $\phi 3 \times 16\text{mm}$ , BID TAP            |
| 334        | 22708406 | Screw, $\phi 3 \times 18\text{mm}$ , BID TAP,<br>BLK    |
| 335        | 22707519 | Screw, $\phi 4 \times 10\text{mm}$ , DTBID,<br>BLK      |
| 336        | 22703119 | E Ring, $\phi 2.5$                                      |
| 337        | 25762424 | Foot                                                    |
|            | 92922561 | Carton box ND 850 W                                     |
|            | 92936252 | Styrol Pad (L)                                          |
|            | 92936253 | (R)                                                     |

# MECHANISM PARTS LIST

| Symbol No. | Part No. | Description                               |
|------------|----------|-------------------------------------------|
| 1A         | 25791900 | Main Motor Ass'y                          |
| 1B         | 25792007 | Reel Motor Ass'y                          |
| 3          | 25759043 | Drive Belt                                |
| 4          | 22219011 | REC. PB/Erase Head,<br>HRPET-11 (Mecha B) |
| 4          | 22217473 | REC. PB Head, HRPT-473<br>(Mecha A)       |
| 6A         | 25717600 | Pressure Roller Ass'y, R                  |
| 6B         | 25797022 | Pressure Roller Ass'y, L                  |
| 7          | 25754483 | Reel Drum, A                              |
| 9A         | 25797069 | Flywheel Ass'y, R                         |
| 9B         | 25797070 | Flywheel Ass'y, L                         |
| 10         | 25725456 | Holder                                    |
| 12         | 25761238 | Cushion, Motor                            |
| 13         | 25761450 | Cushion, Head                             |
| 14         | 25761481 | Cushion Plate, Head                       |
| 15         | 25764486 | Washer, $\phi 2.5$                        |
| 16         | 25791869 | Main Chassis Ass'y                        |
| 17         | 25777071 | Spring                                    |
| 18         | 25778190 | Spring, Pressure Roller L                 |
| 19         | 25778198 | Spring, Pressure Roller R                 |
| 20         | 25783226 | Bushing                                   |
| 23         | 25756486 | Center Gear Kit                           |
| 24         | 25754436 | Reel Collar                               |
| 26         | 25766050 | Washer, $\phi 1.6$                        |
| 27         | 25766223 | Washer, $\phi 2.1$                        |
| 28         | 25777418 | Spring, Reel                              |
| 30         | 25757132 | Steel Ball, $\phi 1.5$                    |
| 31         | 25776721 | Spring, Assist                            |
| 32         | 25777404 | Spring, Tape Guide                        |
| 33         | 25778211 | Spring, Play Lever                        |
| 34         | 25779427 | Spring, Holder                            |
| 35         | 25783258 | Nut, Adjust                               |
| 36         | 25783391 | Tape Guide                                |
| 37         | 25797037 | Head Slider Ass'y                         |
| 38         | 25749097 | Eject Slider                              |
| 40         | 25778199 | Spring, Holder                            |
| 41         | 25784206 | Holder Lever                              |
| 43         | 25734532 | Stopper, Take-up                          |
| 44         | 20798033 | Ring                                      |
| 45         | 22147282 | Solenoid Coil                             |
| 48         | 25756501 | Cam Gear Ass'y                            |
| 49         | 25776769 | Spring, MQS                               |

| Symbol No. | Part No. | Description                                       |
|------------|----------|---------------------------------------------------|
| 50         | 25776771 | Spring, Reverse Lever                             |
| 51         | 25776772 | Spring, Reverse                                   |
| 52         | 25776773 | Spring, Shift                                     |
| 53         | 25776793 | Spring, Cam Lock                                  |
| 54         | 25778192 | Spring, Play Lock                                 |
| 55         | 25783239 | Bushing                                           |
| 56         | 25791936 | Cam Lock Lever Ass'y                              |
| 57         | 25784192 | Reverse Lever                                     |
| 58         | 25784208 | Play Lock Lever                                   |
| 59         | 25784209 | Play Lever                                        |
| 61         | 22703143 | Washer, $\phi 4$                                  |
| 62         | 22707350 | Screw, $\phi 2.6 \times 5\text{mm}$ , DTBID       |
| 63         | 22707825 | Screw, $\phi 2.6 \times 6\text{mm}$ , TPAN        |
| 64         | 22707429 | Screw, $\phi 2.6 \times 1.8 \times 4.9\text{mm}$  |
| 65         | 22702173 | Screw, $\phi 1.4 \times 6\text{mm}$ , PAN         |
| 66         | 22708040 | Screw, $\phi 2 \times 5\text{mm}$ , BID TAP       |
| 67         | 22701467 | Screw, $\phi 2 \times 3\text{mm}$ , BID           |
| 68         | 22707475 | Screw, $\phi 2.6 \times 4\text{mm}$ , BID         |
| 69         | 22708484 | Screw, $\phi 2.6 \times 6\text{mm}$ , PAN         |
| 70         | 22192702 | LED PC Board                                      |
| 71         | 22707786 | Screw, $\phi 2.6 \times 12\text{mm}$ , BID<br>TAP |
| 72         | 22703269 | Washer, $\phi 3$                                  |
| 73         | 25761459 | Cushion                                           |
| 74         | 22707301 | Screw, $\phi 2.6 \times 8\text{mm}$ , BID TAP     |
| 75         | 25726762 | Spacer                                            |
| 76         | 25766043 | Washer, $\phi 2.5$                                |
| 78         | 25726665 | Spacer, ASO                                       |
| 80         | 25726753 | Spacer                                            |
| 82         | 25726757 | Spacer, Mecha Mount                               |
| 83         | 22707913 | Screw, $\phi 2.6 \times 6\text{mm}$ , BID TAP     |
| 84         | 25761535 | Cushion                                           |
| 85         | 22708382 | Screw, $\phi 2.6 \times 3\text{mm}$ , PAN         |
| 87         | 25732380 | Wire Guide                                        |
| 88         | 22708423 | Screw, $\phi 2 \times 6\text{mm}$ , PAN TAP       |
| 89         | 22708477 | Screw, $\phi 2.6 \times 3\text{mm}$ , FLT         |
| 90         | 25747250 | Release Lever                                     |
| 92         | 25753384 | Collar, Eject Spring                              |
| 93         | 25778270 | Spring, Eject                                     |
| 94         | 25747251 | Slider Lever                                      |
| 95         | 22708399 | Screw, $\phi 2.6 \times 6\text{mm}$ , BID         |
| 96         | 25779532 | Spring                                            |
| 97         | 22707366 | Screw, $\phi 2.6 \times 6\text{mm}$               |

# PARTS LIST

## CAUTION:

The  $\triangle$  mark, the symbol No. circled with oval in the schematic diagram and the shaded area in the parts list designate components which have special characteristics for safety and should only be replaced with types identical to those in the original circuit of specified in the parts list.

| Symbol No.                            | Part No.  | Description                |
|---------------------------------------|-----------|----------------------------|
| <b>TRANSISTORS, IC'S &amp; DIODES</b> |           |                            |
| Q401, 402, 403, 404                   | 512107 S  | Transistor, 2SC1815 GR     |
| Q405, 406                             | 51 0102 S | Transistor, 2SA1015-GR     |
| Q407, 408                             | A6040910  | Transistor, 2SJ103-GR-Y/GR |
| Q409, 410, 411, 412                   | 5160 43 S | Transistor, 2SK246-GR      |
| Q413, 414                             | B0275020  | IC, TD62504P               |
| Q415, 416                             | A6342200  | Transistor, 2SC2878-A-A/B  |
| Q417, 418                             | 22117220  | IC, HA12058NT              |
| Q419, 420                             | A6342200  | Transistor, 2SC2878-A-A/B  |
| Q421                                  | A6317480  | Transistor, 2SC1815NEW-BL  |
| Q422                                  | B0325080  | IC, TA7325P                |
| Q423                                  | B0470162  | IC, TC4016BP               |
| Q424                                  | B0356360  | IC, TA7639P                |
| Q425, 426                             | 512 107 S | Transistor, 2SC1815 GR     |
| Q601                                  | 22117672  | IC, TC9312N-007            |
| Q602                                  | 22117673  | IC, TC9312N-008            |
| Q603, 604                             | 512 107 S | Transistor, 2SC1815 GR     |
| Q605                                  | B0475322  | IC, TC4532BP               |
| Q606                                  | 512107 S  | Transistor, 2SC1815 GR     |
| Q607                                  | B0480672  | IC, TC5067BP               |
| Q608, 609                             | 510102 S  | Transistor, 2SA1015-GR     |
| Q610, 611                             | 512107 S  | Transistor, 2SC1815 GR     |
| Q612                                  | B0470813  | IC, TC4081BP               |
| Q613, 614                             | B0358315  | IC, TA7780AN               |
| Q615                                  | A6509140  | Transistor, 2SA562TM-Y     |
| Q616                                  | 516 043 S | Transistor, 2SK246-GR      |
| Q617                                  | A6509140  | Transistor, 2SA562TM-Y     |
| Q618                                  | 516043 S  | Transistor, 2SK246-GR-     |
| Q621                                  | B0470693  | IC, TC4069UBP              |
| Q622, 623                             | 512107 S  | Transistor, 2SC1815 GR     |
| Q624                                  | A6040910  | Transistor, 2SJ103-GR-Y/GR |
| Q626 627                              | 5121 07 S | Transistor, 2SC1815 GR     |
| Q629                                  | 510102 S  | Transistor, 2SA1015-GR     |
| Q701                                  | A6314470  | Transistor, 2SC1627A-O/Y   |
| Q751                                  | B0356660  | IC, TA7666P                |

| Symbol No.                                                                                                         | Part No. | Description              |
|--------------------------------------------------------------------------------------------------------------------|----------|--------------------------|
| Q801                                                                                                               | B0350010 | IC, TA75458S             |
| Q802, 803                                                                                                          | 512107 S | Transistor, 2SC1815 GR   |
| Q804                                                                                                               | A6319300 | Transistor, 2SC1959NEW-Y |
| Q807, 809, 815                                                                                                     | 510102 S | Transistor, 2SA1015-GR   |
| Q816                                                                                                               | A6533240 | Transistor, 2SA966-Y     |
| Q819                                                                                                               | B0325320 | IC, TA7341P              |
| Q822                                                                                                               | B0275020 | IC, TD62504P             |
| Q823, 824                                                                                                          | A8650230 | Photo Sensor, TPS-613    |
| Q901, 902                                                                                                          | 512146 S | Transistor, 2SC1173-Y, X |
| Q903                                                                                                               | A6321240 | Transistor, 2SC2120-Y    |
| D401, 402, 403, 404, 405, 406                                                                                      | A7160610 | Diode, 1SS178            |
| D409                                                                                                               | 502157 S | Diode, 05Z5.6-X/-X/Y     |
| D601, 602, 605, 606, 607, 611, 612, 613, 614, 615, 616, 617, 618, 619, 624, 625, 626, 628, 629, 630, 631, 633, 634 | A7160570 | Diode, 1SS176            |
| D635, 636                                                                                                          | A7978380 | Diode, S5277B            |
| D637, 638, 639, 640, 641, 642                                                                                      | A7160570 | Diode, 1SS176            |
| D643, 644                                                                                                          | A8606170 | Diode, TLG123A-F-E/F     |
| D645                                                                                                               | A8608450 | Diode, TLY123            |
| D646                                                                                                               | A8601100 | Diode, TLR123            |
| D649, 650                                                                                                          | A8606170 | Diode, TLG123A-F-E/F     |
| D651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 664                                                             | A7160570 | Diode, 1SS176            |
| D671, 672                                                                                                          | A8610100 | Diode, TLN103            |
| D701                                                                                                               | A8606170 | Diode, TLG123A-F-E/F     |
| D702                                                                                                               | A8608450 | Diode, TLY123            |
| D703, 704                                                                                                          | A7160570 | Diode, 1SS176            |
| D705, 706                                                                                                          | 5060420  | Diode, TLR205            |

| Symbol No.                                                                           | Part No. | Description                                                     |
|--------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------|
| D751, 752, 753, 754, 755, 756, 757, 758                                              | A8606170 | Diode, TLG123A-F-E/F                                            |
| D759, 760, 761, 762                                                                  | A8601100 | Diode, TLR123                                                   |
| D802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818 | A7160570 | Diode, 1SS176                                                   |
| D820 822                                                                             | 5 01021S | Diode, 1S1555V                                                  |
| △ D901                                                                               | 22115737 | Diode, KBP01                                                    |
| D902                                                                                 | A7110410 | Diode, 05Z12-X                                                  |
| D903                                                                                 | 502158S  | Diode, 05Z6.2-Y-X/Y                                             |
| D904                                                                                 | A7160610 | Diode, 1SS178                                                   |
| ELECTRICAL PARTS                                                                     |          |                                                                 |
| L1, 2                                                                                | 22147282 | Solenoid Coil                                                   |
| L401, 402                                                                            | 22232278 | Choke Coil, 8.2mH                                               |
| △ T901                                                                               | 22224505 | Power Transformer (W)                                           |
| △ T901                                                                               | 22224504 | Power Transformer (E)                                           |
| S601, 602                                                                            | 22196490 | Key Switch, Stop/▶▶                                             |
| S603, 604                                                                            | 22196490 | Key Switch, ◀◀/▶                                                |
| S605, 607                                                                            | 22196490 | Key Switch, ◀/HI DUB                                            |
| S608, 609                                                                            | 22196490 | Key Switch, DUB/▶▶                                              |
| S610, 611                                                                            | 22196490 | Key Switch, ◀◀/▶                                                |
| S612, 613                                                                            | 22196490 | Key Switch, ◀/Stop                                              |
| S614, 615                                                                            | 22196490 | Key Switch, REC. ARM/Pause                                      |
| S617                                                                                 | 22196628 | Slide Switch, Reverse/Mode                                      |
| S618                                                                                 | 22196643 | Leaf Switch, Head (Mecha A)                                     |
| S619, 620                                                                            | 22196538 | Leaf Switch, CrO <sub>2</sub> /Cassette (Mecha A)               |
| S621                                                                                 | 22196643 | Leaf Switch, Head (Mecha B)                                     |
| S622, 623, 624, 625                                                                  | 22196538 | Leaf Switch, Side B/Side A (Mecha B) CrO <sub>2</sub> /Cassette |
| S626                                                                                 | 22196539 | Leaf Switch, Metal (Mecha B)                                    |
| S701                                                                                 | 22196630 | Leaf Switch, Dolby                                              |
| △ S901                                                                               | 22196243 | Push Switch, Power                                              |
| J401a-b                                                                              | 22163887 | Pin Jack, US4P                                                  |
| J402a-b                                                                              | 22198181 | Jack, Mic./Headphone                                            |

| Symbol No.                                                                                                    | Part No. | Description          |
|---------------------------------------------------------------------------------------------------------------|----------|----------------------|
| Z401, 402                                                                                                     | 22153367 | Dolby Filter         |
| Z403, 404                                                                                                     | 22153366 | Bias Trap Coil       |
| Z405, 406                                                                                                     | 22153277 | Dolby Filter, C      |
| Z407                                                                                                          | 22235263 | Bias OSC Coil        |
| △ EP01                                                                                                        | 606007A  | Plug Cord DP70 (W)   |
| △ EP01                                                                                                        | 600510A  | Plug Cord (E)        |
| CAPACITORS                                                                                                    |          |                      |
| J = ±5%, K = ±10%, M = ±20%, Z = -20 + 80%,<br>P = -0 + 100%                                                  |          |                      |
| ABBREVIATIONS: EL = Electrolytic, CD = Ceramic Disc,<br>MY = Mylar, PP = Polypropylene,<br>NP = Non Polarized |          |                      |
| C401, 402                                                                                                     | 22488109 | EL, 1mfd, 50V        |
| C403, 404                                                                                                     | 22349221 | CD, 220pF, 50V, K    |
| C405, 406                                                                                                     | 22485100 | EL, 10mfd, 16V       |
| C407, 408                                                                                                     | 22371272 | MY, 2700pF, 50V, J   |
| C409, 410                                                                                                     | 22349331 | CD, 330pF, 50V, K    |
| C411, 412                                                                                                     | 22488339 | EL, 3.3mfd, 50V      |
| C413, 414                                                                                                     | 22349221 | CD, 220pF, 50V, K    |
| C415, 416                                                                                                     | 22362101 | CD, 100pF, 50V, K    |
| C417, 418                                                                                                     | 22485330 | EL, 33mfd, 16V       |
| C421, 422                                                                                                     | 22371103 | MY, 0.01mfd, 50V, J  |
| C423, 424                                                                                                     | 22488479 | EL, 4.7mfd, 50V      |
| C425, 426                                                                                                     | 22371103 | MY, 0.01mfd, 50V, J  |
| C427, 428                                                                                                     | 22488109 | EL, 1mfd, 50V        |
| C429                                                                                                          | 22360484 | CD, 0.047mfd, 50V, Z |
| C430                                                                                                          | 22342473 | CD, 0.047mfd, 50V, Z |
| C431, 432                                                                                                     | 22361180 | CD, 18pF, 50V, J     |
| C433, 434                                                                                                     | 22349681 | CD, 680pF, 50V, K    |
| C435, 436                                                                                                     | 22485100 | EL, 10mfd, 16V       |
| C437, 438                                                                                                     | 22349471 | CD, 470pF, 50V, K    |
| C439, 440                                                                                                     | 22349221 | CD, 220pF, 50V, K    |
| C441, 442                                                                                                     | 22349221 | CD, 220pF, 50V, K    |
| C443, 444                                                                                                     | 22485330 | EL, 33mfd, 16V       |
| C445, 446                                                                                                     | 22371103 | MY, 0.01mfd, 50V, J  |
| C447, 448                                                                                                     | 22488479 | EL, 4.7mfd, 50V      |
| C449, 450                                                                                                     | 22371103 | MY, 0.01mfd, 50V, J  |
| C451, 452                                                                                                     | 22485100 | EL, 10mfd, 16V       |
| C453, 454                                                                                                     | 22485100 | EL, 10mfd, 16V       |

| Symbol No. | Part No. | Description          |
|------------|----------|----------------------|
| C455, 456  | 22488108 | EL, 0.1mfd, 50V      |
| C457, 458  | 22349102 | CD, 1000pF, 50V, K   |
| C459, 460  | 22488478 | EL, 0.47mfd, 50V     |
| C461, 462  | 22485330 | EL, 33mfd, 16V       |
| C463, 464  | 22371562 | MY, 5600pF, 50V, J   |
| C465, 466  | 22371392 | MY, 3900pF, 50V, J   |
| C467, 468  | 22349103 | CD, 0.01mfd, 50V, K  |
| C469, 470  | 22349103 | CD, 0.01mfd, 50V, K  |
| C471, 472  | 22349221 | CD, 220pF, 50V, K    |
| C473, 474  | 22349472 | CD, 4700pF, 50V, K   |
| C475, 476  | 22349472 | CD, 4700pF, 50V, K   |
| C477, 478  | 22485101 | EL, 100mfd, 16V      |
| C479, 480  | 22488109 | EL, 1mfd, 50V        |
| C481, 482  | 22349221 | CD, 220pF, 50V, K    |
| C483, 484  | 22483221 | EL, 220mfd, 10V      |
| C485, 486  | 22371333 | MY, 0.033mfd, 50V, J |
| C487, 488  | 22371103 | MY, 0.01mfd, 50V, J  |
| C489, 490  | 22488479 | EL, 4.7mfd, 50V      |
| C491, 492  | 22371183 | MY, 0.018mfd, 50V, J |
| C493, 494  | 22480006 | EL, 0.33mfd, 50V     |
| C495, 496  | 22488158 | EL, 0.15mfd, 50V     |
| C497, 498  | 22480008 | EL, 0.68mfd, 50V     |
| C499, 500  | 22480008 | EL, 0.68mfd, 50V     |
| C501, 502  | 22488479 | EL, 4.7mfd, 50V      |
| C503, 504  | 22361470 | CD, 47pF, 50V, J     |
| C505, 506  | 22371562 | MY, 5600pF, 50V, J   |
| C507, 508  | 22349472 | CD, 4700pF, 50V, K   |
| C509, 510  | 22488479 | EL, 4.7mfd, 50V      |
| C511, 512  | 22371822 | MY, 8200pF, 50V, J   |
| C513, 514  | 22371823 | MY, 0.082mfd, 50V, J |
| C515, 516  | 22488158 | EL, 0.15mfd, 50V     |
| C517, 518  | 22488478 | EL, 0.47mfd, 50V     |
| C519, 520  | 22488479 | EL, 4.7mfd, 50V      |
| C521       | 22488339 | EL, 3.3mfd, 50V      |
| C522       | 22349221 | CD, 220pF, 50V, K    |
| C523       | 22488339 | EL, 3.3mfd, 50V      |
| C524       | 22485330 | EL, 33mfd, 16V       |
| C525       | 22485101 | EL, 100mfd, 16V      |
| C527       | 22360484 | CD, 0.047mfd, 50V, Z |
| C528       | 22483221 | EL, 220mfd, 10V      |
| C529       | 22488339 | EL, 3.3mfd, 50V      |
| C530       | 22485101 | EL, 100mfd, 16V      |
| C601       | 22371103 | MY, 0.01mfd, 50V, J  |
| C602       | 22342473 | CD, 0.047mfd, 50V, Z |
| C603       | 22488109 | EL, 1mfd, 50V        |
| C604       | 22488339 | EL, 3.3mfd, 50V      |
| C606       | 22371103 | MY, 0.01mfd, 50V, J  |
| C607       | 22342473 | CD, 0.047mfd, 50V, Z |
| C608       | 22488339 | EL, 3.3mfd, 50V      |
| C609       | 22485101 | EL, 100mfd, 16V      |
| C611       | 22485471 | EL, 470mfd, 16V      |
| C612       | 22488109 | EL, 1mfd, 50V        |

| Symbol No. | Part No. | Description              |
|------------|----------|--------------------------|
| C613       | 22488478 | EL, 0.47mfd, 50V         |
| C614       | 22488109 | EL, 1mfd, 50V            |
| C617, 618  | 22488479 | EL, 4.7mfd, 50V          |
| C619       | 22485330 | EL, 33mfd, 16V           |
| C620, 621  | 22485100 | EL, 10mfd, 16V           |
| C622       | 22485330 | EL, 33mfd, 16V           |
| C623, 624  | 22485100 | EL, 10mfd, 16V           |
| C625, 626  | 22485100 | EL, 10mfd, 16V           |
| C627       | 22488339 | EL, 3.3mfd, 50V          |
| C628       | 22488109 | EL, 1mfd, 50V            |
| C629       | 22371473 | MY, 0.047mfd, 50V, J     |
| C630       | 22488109 | EL, 1mfd, 50V            |
| C631       | 22488478 | EL, 0.47mfd, 50V         |
| C632, 634  | 22488229 | EL, 2.2mfd, 50V          |
| C635       | 22342473 | CD, 0.047mfd, 50V, Z     |
| C637       | 22349472 | CD, 4700pF, 50V, K       |
| C640       | 22349221 | CD, 220pF, 50V, K        |
| C641       | 22349471 | CD, 470pF, 50V, K        |
| C642       | 22488109 | EL, 1mfd, 50V            |
| C701       | 22321275 | PP, 0.012mfd, 100V, J    |
| C702       | 22485101 | EL, 100mfd, 16V          |
| C703, 704  | 22349103 | CD, 0.01mfd, 50V, K      |
| C705       | 22485330 | EL, 33mfd, 16V           |
| C706       | 22488109 | EL, 1mfd, 50V            |
| C707       | 22485330 | EL, 33mfd, 16V           |
| C751, 752  | 22488478 | EL, 0.47mfd, 50V         |
| C753, 754  | 22488479 | EL, 4.7mfd, 50V          |
| C755       | 22485100 | EL, 10mfd, 16V           |
| C801, 802  | 22349102 | CD, 1000pF, 50V, K       |
| C803, 804  | 22485330 | EL, 33mfd, 16V           |
| C805, 806  | 22485330 | EL, 33mfd, 16V           |
| C807       | 22483470 | EL, 47mfd, 10V           |
| C809       | 22485330 | EL, 33mfd, 16V           |
| C810       | 22485100 | EL, 10mfd, 16V           |
| C811, 812  | 22488339 | EL, 3.3mfd, 50V          |
| C813       | 22488339 | EL, 3.3mfd, 50V          |
| C814, 815  | 22488479 | EL, 4.7mfd, 50V          |
| C816       | 22485100 | EL, 10mfd, 16V           |
| C817       | 22349221 | CD, 220pF, 50V, K        |
| C818       | 22372223 | MY, 0.022mfd, 50V, K     |
| C820       | 22483331 | EL, 330mfd, 10V          |
| C821       | 22488109 | EL, 1mfd, 50V            |
| C822, 823  | 22349222 | CD, 2200pF, 50V, K       |
| C824       | 22485100 | EL, 10mfd, 16V           |
| △ C901     | 22340228 | CD, 0.01mfd, 125V, P (W) |
| △ C901     | 22340226 | CD, 4700pF, 400V, M (E)  |
| C902       | 22486222 | EL, 2200mfd, 25V         |

| Symbol No.                                                            | Part No. | Description                         |
|-----------------------------------------------------------------------|----------|-------------------------------------|
| C903                                                                  | 22485101 | EL, 100mfd, 16V                     |
| C904                                                                  | 22485221 | EL, 220mfd, 16V                     |
| C905, 906                                                             | 22485101 | EL, 100mfd, 16V                     |
| C907                                                                  | 22485101 | EL, 100mfd, 16V                     |
| C910                                                                  | 22483470 | EL, 47mfd, 10V                      |
| C911                                                                  | 22485101 | EL, 100mfd, 16V                     |
| <b>RESISTORS</b>                                                      |          |                                     |
| All resistors are carbon film 1/6W, $\pm 5\%$ unless otherwise noted. |          |                                     |
| R401, 402                                                             | 22584104 | 100K ohm                            |
| R403, 404                                                             | 22584223 | 22K ohm                             |
| R405,                                                                 | 92614001 | 100Kohm, Variable, REC              |
| R406                                                                  | 92614002 | 200K ohm, Variable, BAL             |
| R407, 408                                                             | 22584154 | 150K ohm                            |
| R409, 410                                                             | 22584332 | 3.3K ohm                            |
| R411, 412                                                             | 22584332 | 3.3K ohm                            |
| R413, 414                                                             | 22584334 | 330K ohm                            |
| R415, 416                                                             | 22584223 | 22K ohm                             |
| R417, 418                                                             | 22584104 | 100K ohm                            |
| R419, 420                                                             | 22584334 | 330K ohm                            |
| R421, 422                                                             | 22584223 | 22K ohm                             |
| R423, 424                                                             | 22658756 | 500 ohm, B, Semi-fixed<br>Variable  |
| R425, 426                                                             | 22584123 | 12K ohm                             |
| R427, 428                                                             | 22584152 | 1.5K ohm                            |
| R429, 430                                                             | 22584274 | 270K ohm                            |
| R433, 434                                                             | 22584822 | 8.2K ohm                            |
| R435, 436                                                             | 22584822 | 8.2K ohm                            |
| R437, 438                                                             | 22584224 | 220K ohm                            |
| R439, 440                                                             | 22584333 | 33K ohm                             |
| R441, 442                                                             | 22584334 | 330K ohm                            |
| R443, 444                                                             | 22555106 | 10M ohm, 1/4W                       |
| R445, 446                                                             | 22555106 | 10M ohm, 1/4W                       |
| R447, 448                                                             | 22584103 | 10K ohm                             |
| R449, 450                                                             | 22584224 | 220K ohm                            |
| R451, 452                                                             | 22584103 | 10K ohm                             |
| R453, 454                                                             | 22658766 | 200K ohm, B, Semi-fixed<br>Variable |
| R455                                                                  | 22584680 | 68 ohm                              |
| R456                                                                  | 22584821 | 820 ohm                             |
| R457, 458                                                             | 22658756 | 500 ohm, B, Semi-fixed<br>Variable  |
| R459, 460                                                             | 22584274 | 270K ohm                            |
| R461, 462                                                             | 22584273 | 27K ohm                             |
| R463, 464                                                             | 22584822 | 8.2K ohm                            |
| R465, 466                                                             | 22584822 | 8.2K ohm                            |
| R467, 468                                                             | 22584224 | 220K ohm                            |
| R469, 470                                                             | 22584224 | 220K ohm                            |

| Symbol No. | Part No. | Description                        |
|------------|----------|------------------------------------|
| R471, 472  | 22584181 | 180 ohm                            |
| R473, 474  | 22584473 | 47K ohm                            |
| R475, 476  | 22584153 | 15K ohm                            |
| R477, 478  | 22584562 | 5.6K ohm                           |
| R479, 480  | 22584103 | 10K ohm                            |
| R481, 482  | 22584332 | 3.3K ohm                           |
| R483, 484  | 22584393 | 39K ohm                            |
| R485, 486  | 22584473 | 47K ohm                            |
| R487, 488  | 22584333 | 33K ohm                            |
| R489, 490  | 22584223 | 22K ohm                            |
| R491, 492  | 22584181 | 180 ohm                            |
| R493, 494  | 22584332 | 3.3K ohm                           |
| R495, 496  | 22584472 | 4.7K ohm                           |
| R497, 498  | 22584103 | 10K ohm                            |
| R499, 500  | 22584224 | 220K ohm                           |
| R501, 502  | 22584122 | 1.2K ohm                           |
| R503, 504  | 22584472 | 4.7K ohm                           |
| R505, 506  | 22658764 | 50K ohm, B, Semi-fixed<br>Variable |
| R507, 508  | 22584103 | 10K ohm                            |
| R509, 510  | 22584103 | 10K ohm                            |
| R511, 512  | 22584224 | 220K ohm                           |
| R513, 514  | 22584273 | 27K ohm                            |
| R515, 516  | 22584152 | 1.5K ohm                           |
| R517, 518  | 22584105 | 1M ohm                             |
| R519, 520  | 22584123 | 12K ohm                            |
| R521, 522  | 22584683 | 68K ohm                            |
| R525, 526  | 22584473 | 47K ohm                            |
| R527, 528  | 22584473 | 47K ohm                            |
| R529, 530  | 22584473 | 47K ohm                            |
| R531, 532  | 22584562 | 5.6K ohm                           |
| R533, 534  | 22584822 | 8.2K ohm                           |
| R535, 536  | 22584332 | 3.3K ohm                           |
| R537, 538  | 22584123 | 12K ohm                            |
| R539, 540  | 22584472 | 4.7K ohm                           |
| R541, 542  | 22584823 | 82K ohm                            |
| R543, 544  | 22584105 | 1M ohm                             |
| R545, 546  | 22584683 | 68K ohm                            |
| R547, 548  | 22584103 | 10K ohm                            |
| R549, 550  | 22584472 | 4.7K ohm                           |
| R551, 552  | 22584471 | 470 ohm                            |
| R553, 554  | 22584473 | 47K ohm                            |
| R555, 556  | 22584682 | 6.8K ohm                           |
| R557, 558  | 22584823 | 82K ohm                            |
| R559, 560  | 22584102 | 1K ohm                             |
| R561, 562  | 22584332 | 3.3K ohm                           |
| R563, 564  | 22584103 | 10K ohm                            |
| R565, 566  | 22584152 | 1.5K ohm                           |
| R567, 568  | 22584102 | 1K ohm                             |
| R569, 570  | 22584332 | 3.3K ohm                           |
| R571       | 22584472 | 4.7K ohm                           |
| R572       | 22584393 | 39K ohm                            |
| R573       | 22584224 | 220K ohm                           |

| Symbol No. | Part No. | Description                     |
|------------|----------|---------------------------------|
| R574       | 22584562 | 5.6K ohm                        |
| R575       | 22584270 | 27 ohm                          |
| R576       | 22584474 | 470K ohm                        |
| R577, 578  | 22584331 | 330 ohm                         |
| R579, 580  | 22555683 | 68K ohm, 1/4W                   |
| R582       | 22584103 | 10K ohm                         |
| R601       | 22550597 | 27K ohm, 1/4W, G = $\pm 2\%$    |
| R602       | 22584222 | 2.2K ohm                        |
| R603       | 22584155 | 1.5M ohm                        |
| R604       | 22584104 | 100K ohm                        |
| R605       | 22584332 | 3.3K ohm                        |
| R606       | 22584472 | 4.7K ohm                        |
| R608       | 22584223 | 22K ohm                         |
| R609, 610  | 22584473 | 47K ohm                         |
| R611       | 22584223 | 22K ohm                         |
| R613       | 22584104 | 100K ohm                        |
| R614       | 22584473 | 47K ohm                         |
| R615       | 22584104 | 100K ohm                        |
| R616       | 22550597 | 27K ohm, 1/4W, G = $\pm 2\%$    |
| R617       | 22584472 | 4.7K ohm                        |
| R618       | 22584103 | 10K ohm                         |
| R619       | 22584472 | 4.7K ohm                        |
| R620       | 22584103 | 10K ohm                         |
| R623       | 22584472 | 4.7K ohm                        |
| R624       | 22584105 | 1M ohm                          |
| R625       | 22584103 | 10K ohm                         |
| R626       | 22584102 | 1K ohm                          |
| R627       | 22584473 | 47K ohm                         |
| R628       | 22584224 | 220K ohm                        |
| R629, 630  | 22584103 | 10K ohm                         |
| R631       | 22584332 | 3.3K ohm                        |
| R632       | 22584473 | 47K ohm                         |
| R633       | 22584332 | 3.3K ohm                        |
| R634       | 22584224 | 220K ohm                        |
| R635       | 22584223 | 22K ohm                         |
| R636       | 22584103 | 10K ohm                         |
| R637       | 22584473 | 47K ohm                         |
| R638       | 22570264 | 150 ohm, 1W, Metal Oxide Film   |
| R639       | 22584822 | 8.2K ohm                        |
| R640       | 22584103 | 10K ohm                         |
| R641       | 22584394 | 390K ohm                        |
| R642       | 22584273 | 27K ohm                         |
| R643       | 22658853 | 5K ohm, B, Semi-fixed Variable  |
| R644       | 22658854 | 10K ohm, B, Semi-fixed Variable |
| R645       | 22584273 | 27K ohm                         |
| R646       | 22584224 | 220K ohm                        |
| R647, 648  | 22584473 | 47K ohm                         |
| R649       | 22570264 | 150 ohm, 1W, Metal Oxide Film   |
| R650       | 22584822 | 8.2K ohm                        |

| Symbol No.    | Part No. | Description                     |
|---------------|----------|---------------------------------|
| R651          | 22584103 | 10K ohm                         |
| R652          | 22584394 | 390K ohm                        |
| R653          | 22584273 | 27K ohm                         |
| R654          | 22658853 | 5K ohm, B, Semi-fixed Variable  |
| R655          | 22658854 | 10K ohm, B, Semi-fixed Variable |
| R656          | 22555223 | 22K ohm, 1/4W                   |
| R657, 658     | 22555183 | 18K ohm, 1/4W                   |
| R663          | 22584103 | 10K ohm                         |
| R664          | 22584104 | 100K ohm                        |
| R666          | 22584273 | 27K ohm                         |
| R667          | 22584224 | 220K ohm                        |
| R668          | 22584102 | 1K ohm                          |
| R669          | 22584473 | 47K ohm                         |
| R670          | 22584681 | 680 ohm                         |
| R671          | 22584102 | 1K ohm                          |
| R672          | 22584473 | 47K ohm                         |
| R673          | 22584681 | 680 ohm                         |
| R674          | 22584103 | 10K ohm                         |
| R675          | 22584473 | 47K ohm                         |
| R676          | 22584332 | 3.3K ohm                        |
| R677          | 22584224 | 220K ohm                        |
| R678          | 22584103 | 10K ohm                         |
| R679, 680     | 22584222 | 2.2K ohm                        |
| R681, 682     | 22584471 | 470 ohm                         |
| R684          | 22584102 | 1K ohm                          |
| R685          | 22584561 | 560 ohm                         |
| R686, 687     | 22584471 | 470 ohm                         |
| R691          | 22584102 | 1K ohm                          |
| R698          | 22584103 | 10K ohm                         |
| R699          | 22555102 | 1K ohm, 1/4W                    |
| R700          | 22555473 | 47K ohm, 1/4W                   |
| $\Delta$ R701 | 22500276 | 6.8 ohm, 1/4W, Fusible          |
| R702          | 22584680 | 68 ohm                          |
| R688          | 22584471 | 470 ohm                         |
| R703          | 22584332 | 3.3K ohm                        |
| R704          | 22584473 | 47K ohm                         |
| R705          | 22584332 | 3.3K ohm                        |
| R706          | 22584822 | 8.2K ohm                        |
| R707          | 22584103 | 10K ohm                         |
| R708          | 22584472 | 4.7K ohm                        |
| R709          | 22584562 | 5.6K ohm                        |
| R710          | 22584822 | 8.2K ohm                        |
| R711, 712     | 22584821 | 820 ohm                         |
| R713          | 22584821 | 820 ohm                         |
| R733, 734     | 22584332 | 3.3K ohm                        |
| R735, 736     | 22584225 | 2.2M ohm                        |
| R737, 738     | 22584225 | 2.2M ohm                        |
| R739, 740     | 22584103 | 10K ohm                         |
| R741, 742     | 22584224 | 220K ohm                        |
| R743          | 22584224 | 220K ohm                        |
| R745          | 22584103 | 10K ohm                         |
| R746          | 22584473 | 47K ohm                         |

| Symbol No. | Part No. | Description                        |
|------------|----------|------------------------------------|
| R747       | 22584155 | 1.5M ohm                           |
| R748       | 22584102 | 1K ohm                             |
| R749, 750  | 22584224 | 220K ohm                           |
| R751, 752  | 22584333 | 33K ohm                            |
| R753, 754  | 22584223 | 22K ohm                            |
| R755, 756  | 22584473 | 47K ohm                            |
| R757, 758  | 22584821 | 820 ohm                            |
| R759, 760  | 22584821 | 820 ohm                            |
| R761, 762  | 22584821 | 820 ohm                            |
| R763, 764  | 22584821 | 820 ohm                            |
| R765, 766  | 22584821 | 820 ohm                            |
| R767       | 22584821 | 820 ohm                            |
| R770       | 22584103 | 10K ohm                            |
| R771, 772  | 22584223 | 22K ohm                            |
| R773, 774  | 22584223 | 22K ohm                            |
| R775       | 22584223 | 22K ohm                            |
| R776       | 22584105 | 1M ohm                             |
| R777       | 22584102 | 1K ohm                             |
| R778, 779  | 22584473 | 47K ohm                            |
| R780       | 22584103 | 10K ohm                            |
| R781, 782  | 22584105 | 1M ohm                             |
| R783       | 22584103 | 10K ohm                            |
| R784       | 22584104 | 100K ohm                           |
| R785       | 22584105 | 1M ohm                             |
| R786       | 22584104 | 100K ohm                           |
| R787       | 22584473 | 47K ohm                            |
| R788       | 22584223 | 22K ohm                            |
| R789       | 22584473 | 47K ohm                            |
| R790       | 22584224 | 220K ohm                           |
| R791, 792  | 22584562 | 5.6K ohm                           |
| R793       | 22584104 | 100K ohm                           |
| R794       | 22584473 | 47K ohm                            |
| R795       | 22584474 | 470K ohm                           |
| R796       | 22584332 | 3.3K ohm                           |
| R797, 798  | 22584472 | 4.7K ohm                           |
| R801       | 22584681 | 680 ohm                            |
| R802       | 22584331 | 330 ohm                            |
| R803       | 22584681 | 680 ohm                            |
| R804       | 22658764 | 50K ohm, B, Semi-fixed<br>Variable |
| R805       | 22584473 | 47K ohm                            |
| R806       | 22658764 | 50K ohm, B, Semi-fixed<br>Variable |
| R807       | 22584473 | 47K ohm                            |
| R808       | 22584331 | 330 ohm                            |
| R809, 810  | 22584103 | 10K ohm                            |
| R811, 812  | 22584184 | 180K ohm                           |
| R813, 814  | 22584104 | 100K ohm                           |
| R815       | 22584472 | 4.7K ohm                           |
| R816       | 22584471 | 470 ohm                            |
| R817       | 22584473 | 47K ohm                            |
| R818       | 22584222 | 2.2K ohm                           |
| R819       | 22584223 | 22K ohm                            |

| Symbol No.  | Part No. | Description             |
|-------------|----------|-------------------------|
| R820        | 22584103 | 10K ohm                 |
| R821        | 22584473 | 47K ohm                 |
| R822        | 22584103 | 10K ohm                 |
| R824        | 22584473 | 47K ohm                 |
| R825        | 22584472 | 4.7K ohm                |
| R827        | 22584103 | 10K ohm                 |
| R828        | 22584104 | 100K ohm                |
| R829        | 22584473 | 47K ohm                 |
| R830        | 22584104 | 100K ohm                |
| R831        | 22584332 | 3.3K ohm                |
| R832, 833   | 22584473 | 47K ohm                 |
| R834        | 22584332 | 3.3K ohm                |
| R836        | 22555222 | 2.2K ohm, 1/4W          |
| R837        | 22584472 | 4.7K ohm                |
| R839, 840   | 22584332 | 3.3K ohm                |
| R841, 842   | 22584152 | 1.5K ohm                |
| R844        | 22584682 | 6.8K ohm                |
| R848, 849   | 22584103 | 10K ohm                 |
| R850        | 22584102 | 1K ohm                  |
| R851        | 22547101 | 100 ohm, 1/2W           |
| R852        | 22547151 | 150 ohm, 1/2W           |
| R853, 854   | 22584473 | 47K ohm                 |
| R855        | 22584472 | 4.7K ohm                |
| R856        | 22584182 | 1.8K ohm                |
| R857        | 22584221 | 220 ohm                 |
| R858        | 22584225 | 2.2M ohm                |
| R859        | 22584223 | 22K ohm                 |
| R860        | 22584104 | 100K ohm                |
| R861        | 22584102 | 1K ohm                  |
| R862        | 22584823 | 82K ohm                 |
| R863, 864   | 22584103 | 10K ohm                 |
| R865        | 22584103 | 10K ohm                 |
| R866, 867   | 22584183 | 18K ohm                 |
| R873, 874   | 22584681 | 680 ohm                 |
| R882, 883   | 22584223 | 22K ohm                 |
| R901        | 22555331 | 330 ohm, 1/4W           |
| △ R902      | 22500167 | 2.2 ohm, 1/4W, Fusible  |
| R903        | 22584102 | 1K ohm                  |
| R904        | 22584121 | 120 ohm                 |
| △ R905      | 22500404 | 1 ohm, 1/4W, Fusible    |
| R908        | 22584221 | 220 ohm                 |
| △ R909      | 22500181 | 120 ohm, 1/4W, Fusible  |
| R910        | 22584222 | 2.2K ohm                |
| R 301, 302  | 22584103 | 10K ohm                 |
| ACCESSORIES |          |                         |
| AC01        | 960463H  | Owner's Manual ND 850 W |
| AC02        | 22164775 | Connector Cord          |
| AC03        | 22990983 | Head Cleaner            |