

# ONKYO SERVICE MANUAL

## STEREO CASSETTE TAPE DECK MODEL TA-2056



Black and silver models

|              |                         |
|--------------|-------------------------|
| UDN, UDC, UD | 120V AC, 60Hz           |
| UG           | 220V AC, 50Hz           |
| UW           | 120 or 220V AC, 50/60Hz |
| UQA, UQB     | 240V AC, 50Hz           |

### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  $\Delta$  ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

### SPECIFICATIONS

|                        |                                                                                                                                                                                                     |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Track Format:          | 4 tracks, 2 channels                                                                                                                                                                                |
| Erasing System:        | AC erase                                                                                                                                                                                            |
| Tape Speed:            | 4.8cm/sec. (1-7/8 i.p.s.)                                                                                                                                                                           |
| Wow & Flutter:         | 0.045%(WRMS)                                                                                                                                                                                        |
| Frequency Response:    | 20-17,000Hz(30-16,000Hz $\pm$ 3dB)<br>(normal position tape)<br>20-18,000Hz<br>(30-17,000Hz $\pm$ 3dB)<br>(high position tape)<br>20-19,000Hz<br>(30-18,000Hz $\pm$ 3dB)<br>(metal position tape)   |
| Signal-to-Noise Ratio: | 60 dB (metal position tape, Dolby NR out)<br>A noise reduction of 10 dB above 5 kHz and 5 dB at 1 kHz is possible with Dolby B NR. A noise reduction of 20 dB at 5 kHz is possible with Dolby C NR. |
| Input Jacks:           | Mic Jacks: 2<br>Input Sensitivity:<br>0.3mV/600 ohms<br>Input impedance: 5.6 kohms<br>Line IN: 2<br>Input Sensitivity: 60mW<br>Input impedance: 50 kohms                                            |
| Outputs:               | Line Out: 2<br>Std output level: 500mV(0dB)<br>Opt load impedance:<br>over 50 kohms<br>Headphone Jack: 1<br>Opt load impedance:<br>8-200 ohms                                                       |

**ONKYO**  
AUDIO COMPONENTS

|                    |                                                                           |
|--------------------|---------------------------------------------------------------------------|
| Motors:            | DC servo motor: 1<br>DC motor: 2                                          |
| Heads:             | Rec/PB head: Special Hard<br>Permalloy Combination<br>Erase head: Ferrite |
| Semiconductors:    | TR: 84 Diodes: 24 IC: 18<br>LED: 24                                       |
| Power Supply:      | AC120V/60 Hz                                                              |
| Power Consumption: | 34 watts                                                                  |
| Dimensions:        | 435(W)×112(H)×372(D)mm<br>(17-1/8"×4-3/8"×14-5/8")                        |
| Weight:            | 6.5kg.(14.3lbs.)                                                          |

Specifications and external appearance are subject to change without notice because of product improvements.

## SERVICE PROCEDURES

### 1. Insulation resistance measurement

Connect the insulating-resistance tester between the plug of power supply cord and chassis.

Specifications;500 V more than 10 MΩ

### 2. Replacing the lamps

This unit used the lamps listed below.

| Circuit No.       | Parts No. | Description    |
|-------------------|-----------|----------------|
| Mechanism<br>145a | 24606173  | 50mA,14V.Lamp  |
| PL601             | 210090    | 150mA,14V.Lamp |
| PL-902            | 210172    | 0.06A 14V.Lamp |

CAUTION:Before replacing the lamps,be sure to unplug the power supply cable.

### 3. Replacing the Dolby ICs

Because the TA-2056 is 3-head deck,it is equipped with a 4-channel Dolby processor.Two channels are used exclusively for encoding and the other two exclusively for decoding. If there is a difference between the performance of the encode and decode sides,both Dolby B and C NR will not operate properly. To prevent this, the TA-2056 employs the HA-12058-01. The appearance is the same as the standard HA-12058 with colored markings on the top surface of the IC. When replacing the HA-12058-01, the four ICs (109,Q110, Q215,Q219) in the new one should all have the same color markings.If ICs with the same color markings are not available, the Q109-Q215 and Q110-Q216 colors should be matched. That is,the two encode ICs and the two decode ICs must always be of the same color although it is possible to use different colors on the encode and decode sides when necessary.

## FEATURES

### Three Heads with Special Hard Permalloy For Superior Metal Tape Performance

Having three heads you means you can monitor the actual recorded signal as you record instead of rewinding the tape to check your recording afterward. The 3-head system also has the advantage of making possible the use of separate record and playback gaps, each optimized for its own task. The special hard permalloy head formulation boasts the high saturation flux density and abrasion resistance needed for true metal

tape compatibility.

### ACCUBIAS for the Best Performance With Any Tape

The ACCUBIAS system fine tunes the recording bias to get optimum performance with any kind of tape (not necessary with metal tapes). By setting precisely the correct bias level, you are assured of obtaining the flattest frequency response and highest signal-to-noise ratio that each is capable of producing.

### Dual Sensor Real Time Tape Counter

The tape counter circuit measures the speed of both tape reels and compares them by microcomputer to provide precise remaining of readings of time. This dual sensor technique eliminates small errors in time calculations caused by slight variations in tape thicknesses between different manufacturers to give the most accurate time indications possible.

### 2-Motor Tape Transport with Separate Head Assembly Motor

The tape transports system,along with the heads,determines the level of performance of a cassette deck. To guarantee extremely stable and accurate transport this unit uses a DC servo controlled capstan motor. This motor is unaffected by fluctuations in the power supply voltage and frequency or instantaneous changes in load. A highly reliable,simple drive transmission system and precision vertical cassette holder further enhance overall accuracy and stability. As a result, wow and flutter is under 0.045%. In addition, separate DC motors drive the reel tables and head base and the head assembly is constructed to move silently with no annoying clicks.

### Dolby B and C Noise Reduction

Along with standard Dolby B NR, this unit also has the even more effective Dolby C NR system. Dolby C NR reduces tape background noise by 20 dB at 5 kHz, about 3 times more than Dolby B NR. In addition to its wide band noise reduction, Dolby C NR uses a sliding band tech technique that varies the band width of noise reduction according to the input level, thereby avoiding noise "pumping." Dolby C NR also has an anti-saturation effect to reduce the chance of tape saturation in the high range. All these features combine to eliminate the adverse effects on tape sound that other noise reduction systems can cause.

### Remote Control Unit Terminal

With an optional remote control unit (such as the RC-5T), this unit can be controlled even while you are relaxing in your favorite chair. All transport modes are included: record,play,fast forward,rewind,stop and pause.

### Sensitive 2-Color 12-Segment LED Level Meter with Peak Hold

This easy-to-read meter has a peak hold function to make it easy to determine the highest output level in a program to be recorded so that the recording input level can be set to the correct point.

# INPUT PORT EXPANDER IC

Q718 LC-7800

The equivalent circuit of the LC7800 used to expand input ports is shown in Figure 1. This IC includes four 4-bit input ports, one 4-bit output port, and one 4-bit selector input port. When BA of the selector input is set to LOW and the other bits to HIGH, the AO" A1" A2" A3 input port is connected to the O0" O1" O2" O3 output port. And if only the SB bit is set to LOW, the B0" B1" B2" B3 input is selected. Hence, a LOW level signal is applied to the selector port bits in cyclic order, and the operation indicator LEDs are switched on and off dynamically in combination with the # 13, # 14, and # 15 LED output ports while input port data is being read out.

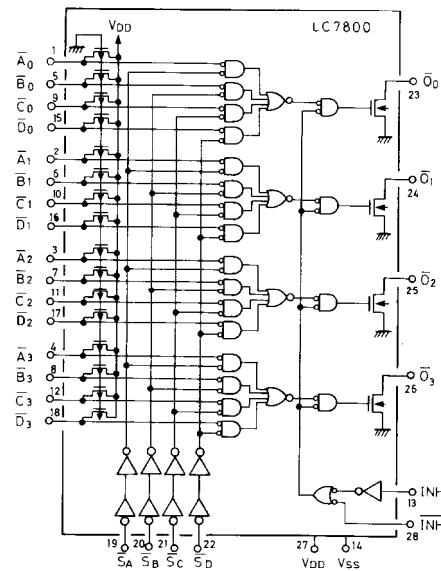


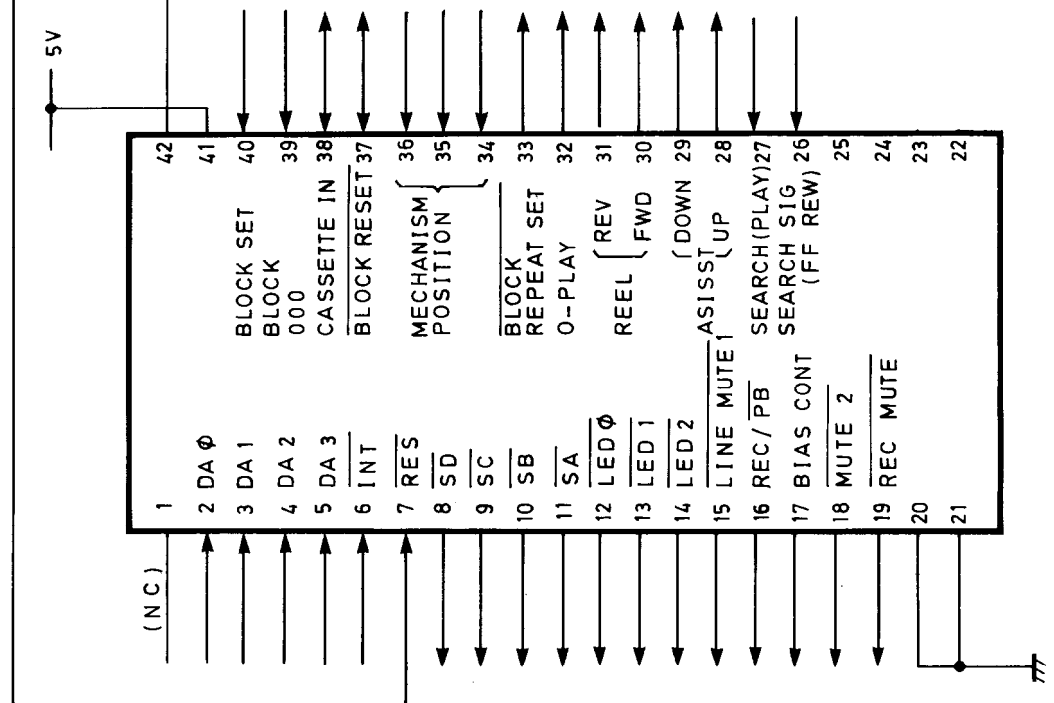
Fig. 1 LC7800 equivalent circuit

## LM6402H-425 PIN ALLOCATION

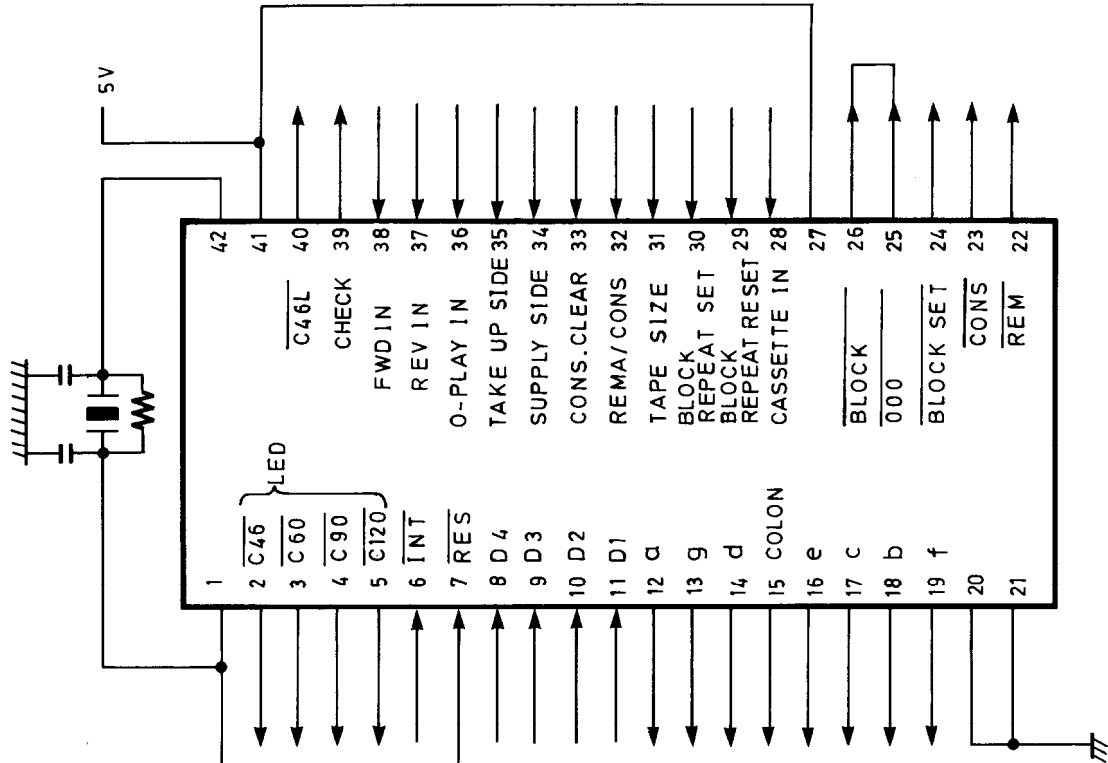
| Pin no. | Name                                                 | Function                                                                                                                              | Classification |
|---------|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------|
| 2~5     | DA0~DA3                                              | Reading of data from the inport port expander IC                                                                                      | IN             |
| 6       | $\overline{\text{INT}}$                              | Rotation signal input (for auto-stop operation)                                                                                       | IN             |
| 8~11    | $\overline{\text{SA}} \sim \overline{\text{SD}}$     | Input port expander IC and dynamic LED selector IC                                                                                    | OUT            |
| 12~14   | $\overline{\text{LED0}} \sim \overline{\text{LED3}}$ | Operation display dynamic LED data output                                                                                             | OUT            |
| 15      | LINE MUTE 1                                          | Line muting output signal generated when the power is switched on, and during ACCU BIAS operation.                                    | OUT            |
| 16      | REC/PB                                               | Output signal for muting DIN outputs when recording                                                                                   | OUT            |
| 17      | BIAS CONT.                                           | Output signal for control of bias oscillator                                                                                          | OUT            |
| 18      | $\overline{\text{MUTE2}}$                            | Signal for switching muting off during playback                                                                                       | OUT            |
| 19      | $\overline{\text{REC. MUTE}}$                        | Signal for muting the recording amplifier output                                                                                      | OUT            |
| 22      |                                                      | } NO CONNECTION                                                                                                                       |                |
| 23      |                                                      |                                                                                                                                       |                |
| 24      |                                                      |                                                                                                                                       |                |
| 25      |                                                      |                                                                                                                                       |                |
| 26      | SEARCH SIG (HIGH)                                    | Input signal from high-speed travel tune-selector amplifier                                                                           | IN             |
| 27      | SEARCH SIG (LOW)                                     | Input signal from low-speed travel tune-selector amplifier                                                                            | IN             |
| 28      | UP                                                   | Output signal for driving the assist motor towards the PLAY position.                                                                 | OUT            |
| 29      | DOWN                                                 | Output signal for driving the assist motor towards the FF/REW position.                                                               | OUT            |
| 30      | FWD                                                  | Output signal for driving the reel motor towards the FF position.                                                                     | OUT            |
| 31      | REW                                                  | Output signal for driving the reel motor towards the REV position.                                                                    | OUT            |
| 32      | O-PLAY                                               | Reel motor torque switching output                                                                                                    | OUT            |
| 33      | $\overline{\text{BLOCK SET}}$                        | Output which informs the counter IC that the BLOCK SET key has been pressed.                                                          | OUT            |
| 34~36   | a.b.c                                                | Input ports for signal from the mechanism position switches                                                                           | IN             |
| 37      | BLOCK RESET                                          | Output which informs the counter IC that the BLOCK RESET key, or any other key apart from the BLOCK SET key has been pressed.         | OUT            |
| 38      | CASSETTE IN                                          | Input involved in detection of cassette half, and output which stops the capstan motor when an abnormal mechanism status is detected. | I/O            |
| 39      | $\overline{\text{BLOCK MATCHINO \& 000 INPUT}}$      | Input of 000 input signal and BLOCK matching signal from the counter IC.                                                              | IN             |
| 40      | $\overline{\text{BLOCK SET}}$                        | Input which accepts signals from the counter IC during BLOCK SET.                                                                     | IN             |

**MICRO COMPUTER**

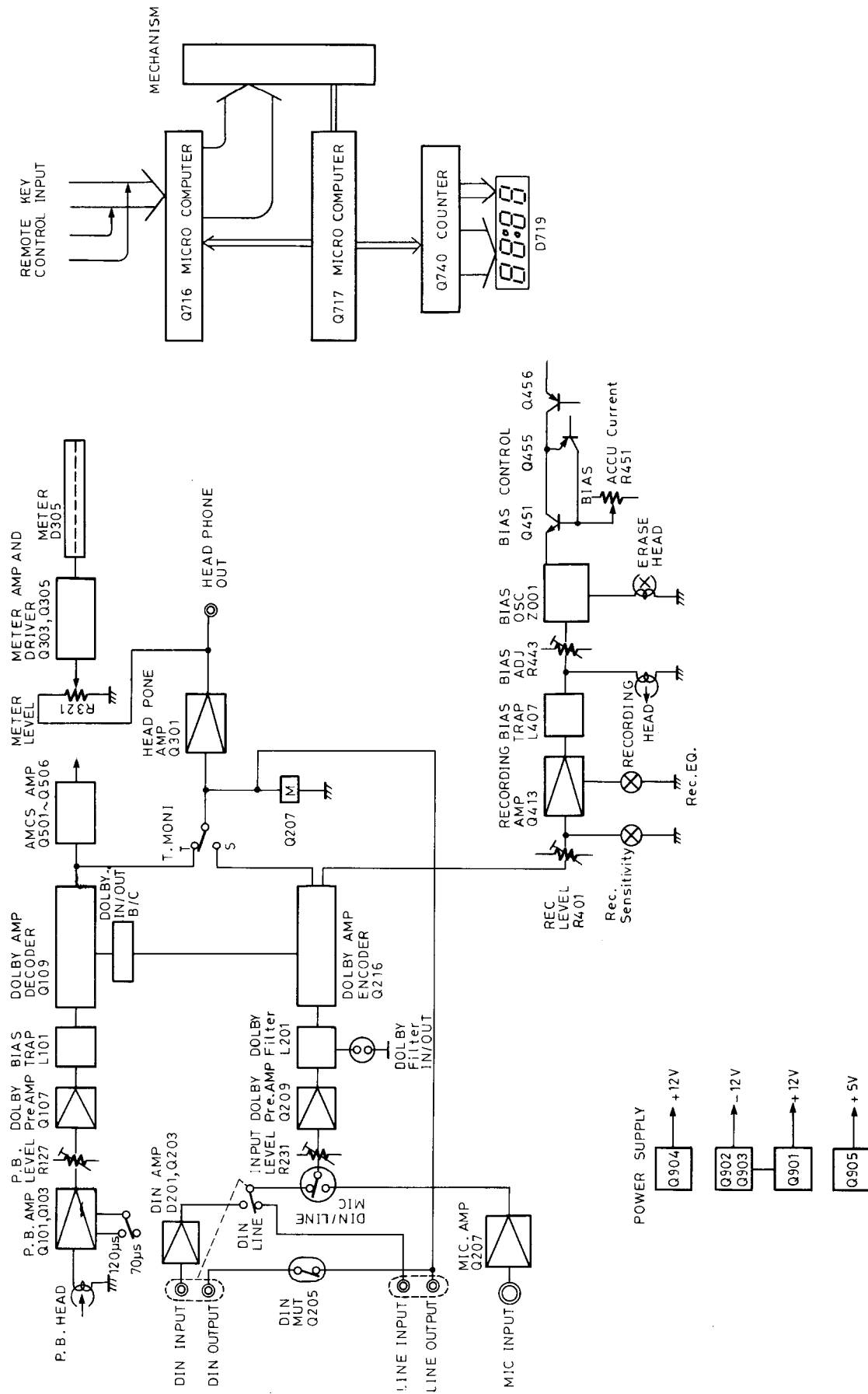
**Q716 LM6402H-425**



**Q717 LM6402H-424**



# BLOCK DIAGRAM

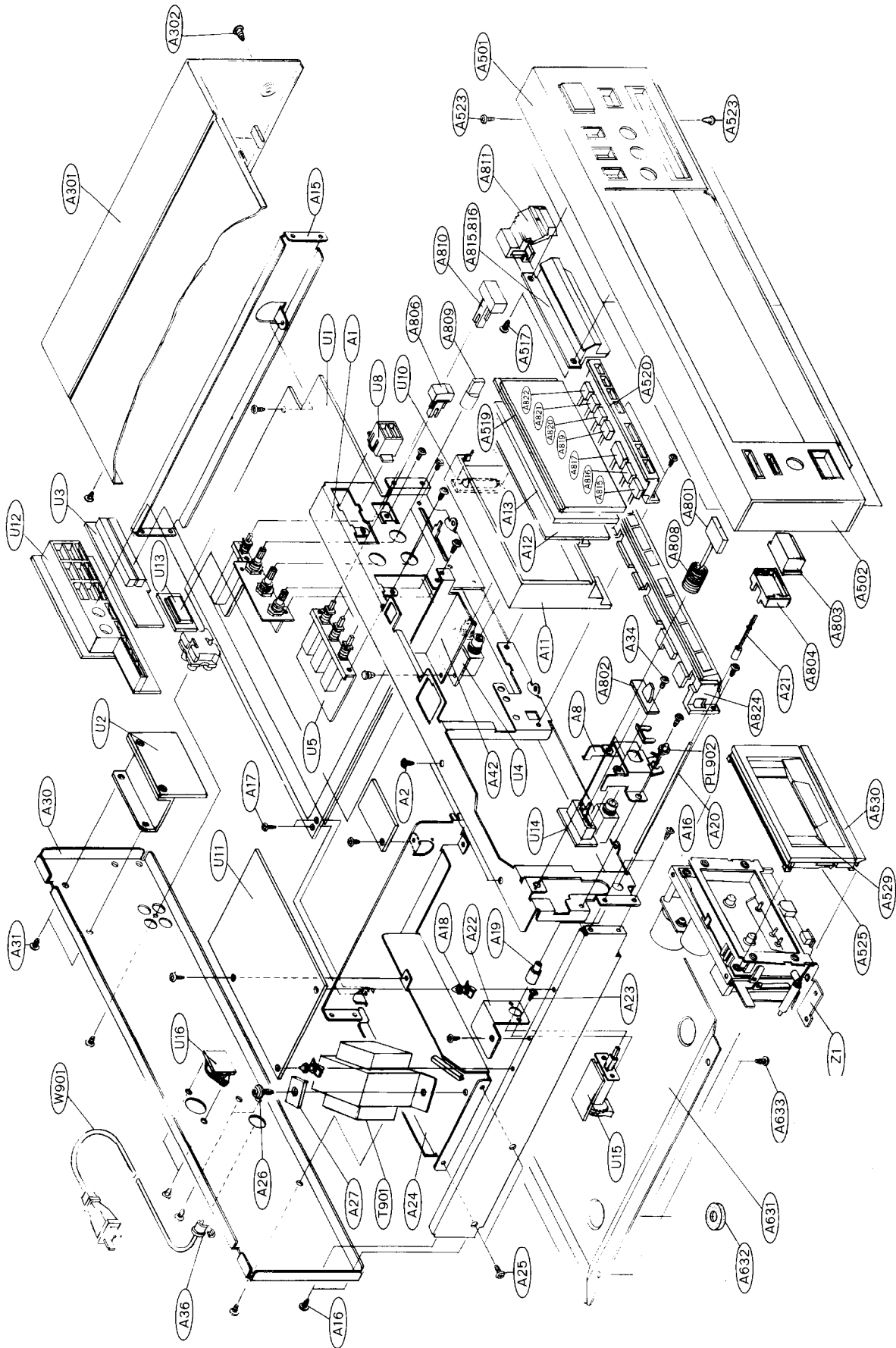


## CHASSIS-EXPLODED VIEW PARTS LIST

Note: The components identified by mark  $\Delta$  are cri for risk of fire and electric shock. Replace o with parts number specified.

| REF.NO. | PART NO.  | DESCRIPTION                                     | REF.NO.        | PART NO.  | DESCRIPTION                                        |
|---------|-----------|-------------------------------------------------|----------------|-----------|----------------------------------------------------|
| A1      | 27110222A | Front bracket                                   | A524           | 838430088 | 3TTB+ 8B(BC),Tapping screw                         |
| A2      | 834426068 | 2.6TTS+ 6B(BC),Tapping screw                    | A525           | 27300697  | Cassette lid                                       |
| A3      | 28175103  | Insulating plate                                | A526           | 28191175B | Clear plate                                        |
| A4      | 82143006  | 3P+ 6FN(BC),Pan head screw                      | A529           | 27300701  | Window                                             |
| A5      | 82142604  | 2.6P+ 4F(BC),Pan head scerw                     | A530           | 27300699A | Window,decoration(S)                               |
| A6      | 82142003  | 2P+ 3F(BC),Pan head screw                       |                | 27300700A | Window,decoration(B)                               |
| A7      | 27140940  | Bracket FL                                      | A533           | 27262296  | Plate,decoration(S)                                |
| A8      | 27140909  | Bracket HT                                      |                | 27262297A | Plate,decoration(B)                                |
| A9      | 834430068 | 3TTS+ 6B(BC),Tapping screw                      | A535           | 833420068 | 2TTP+ 6B(BC),Tapping screw                         |
| A10     | 27140943  | Bracket FR                                      | A631           | 27170250  | Bottom board                                       |
| A11     | 27190285A | Holder                                          | A632           | 27175011C | Leg                                                |
| A12     | 28133104A | Back plate                                      | A633           | 838430068 | 3TTB+ 6B(BC),Tapping screw                         |
| A13     | 28191256A | Clear plate B                                   | A801           | 28321027  | Knob ass'y,eject(S)                                |
| A15     | 27115139B | Side bracket                                    |                | 28321028  | Knob ass'y,eject(B)                                |
| A16     | 834430068 | 3TTS+ 6B(BC),Tapping screw                      | A802           | 28321035  | Knob,timer(S)                                      |
| A17     | 831430088 | 3TTW(BC),Tapping screw                          |                | 28321036  | Knob,timer(B)                                      |
| A18     | 27190009  | Holder                                          | A803           | 28321023  | Knob,power(S)                                      |
| A19     | 28320135  | Connector                                       |                | 28321024  | Knob,power(B)                                      |
| A20     | 27260156  | Shaft                                           | A804           | 28320828C | Base,knob                                          |
| A21     | 27273016  | Joint                                           | A806           | 28321148  | Knob,select(S)                                     |
| A22     | 27140910  | Bracket,power                                   |                | 28321722  | Knob,select(B)                                     |
| A23     | 82143006  | 3P+ 6FN(BC),Pan head screw                      | A808           | 27180179  | Spring                                             |
| A24     | 27130331E | Bracket PT                                      | A809           | 28321154  | Knob M (S)                                         |
| A25     | 834430068 | 3TTS+ 6B(BC),Tapping screw                      |                | 28321721  | Knob M (B)                                         |
| A26     | 830440109 | 4TTC+ 10C(BC),Tapping screw                     | A810           | 28321605A | Knob M(S)                                          |
| A27     | 870065    | Special washer                                  |                | 28321606A | Knob M(B)                                          |
| A28     | 831430088 | 3TTW+ 8B(BC),Tapping screw                      | A811           | 28321623A | Knob ass'y,volume(S)                               |
| A29     | 86414010  | FWN4 $\times$ 10FN,Flange nut                   |                | 28321624A | Knob ass'y,volume(B)                               |
| A30     | 27120603A | Back panel(D)                                   | A815           | 28321609A | Knob,tape(S)                                       |
|         | 27120604A | Back panel(G)                                   |                | 28321616A | Knob,tape(B)                                       |
|         | 27120605A | Backpanel(W)                                    | A816           | 28321610A | Knob,modet(S)                                      |
| A31     | 834430068 | 3TTS+ 6 B(BC),Tapping screw                     |                | 28321617A | Knob,modet(B)                                      |
| A32     | 834430108 | 3TTS+ 10B(BC),Tapping screw                     | A817           | 28321611A | Knob,preset(S)                                     |
| A33     | 801230    | 3TTS+ 8BQ(BC),Tapping screw                     |                | 28321618A | Knob,preset(B)                                     |
| A34     | 82142604  | 2.6P+ 4F(BC),Pan head screw                     | A819           | 28321612A | Knob,singlet(S)                                    |
| A36     | 270025    | SR-3P-4,Strainrelief(D)                         |                | 28321619A | Knob,singlet(B)                                    |
|         | 270280    | SR-4K-4,Strainrelief(G/W)                       | A820           | 28321613A | Knob,full(S)                                       |
| A38     | 28140553  | 10 $\times$ 30 $\times$ 13t,Cushion             |                | 28321620A | Knob,full(B)                                       |
| A39     | 28170014  | Bushing                                         | A821           | 28321614A | Knob,block(S)                                      |
| A40     | 28140373  | 7 $\times$ 30 $\times$ 10,Cushion               |                | 28321621A | Knob,block(B)                                      |
| A41     | 223004-1  | Terminal                                        | A822           | 28321615A | Knob,preset(S)                                     |
| A42     | 27150185  | Shielded plate                                  |                | 28321622A | Knob,preset(B)                                     |
| A43     | 880009    | Rivert                                          | A823           | 28140560  | 0.9 $\times$ 5 $\times$ 120,Cushion                |
| A44     | 27150187  | Shielded plate SW                               | A824           | 28321585A | Knob ass'y,base(S)                                 |
| A45     | 87643008  | W3 $\times$ 8F(BC),Flat washer                  |                | 28321586A | Knob ass'y,base(B)                                 |
| A50     | 27140577  | Bracket DIN(G/W)                                | P1             | 260208    | Binder                                             |
| A51     | 82143006  | 3P+ 6F(BC),Pan head screw for terminal DIN(G/W) | $\Delta$ PL902 | 210172    | PL14VO.06AW-2.0,Lamp                               |
| A301    | 28184235  | Top cover(S)                                    | $\Delta$ S902  | 25065123  | NSS-1258P,Voltage selector switch(W)               |
|         | 28184236  | Top cover(B)                                    | T901           | 230819    | NPT-845D,Power transformerRec                      |
| A302    | 838440089 | 4TTB+ 8C(BC),Tapping screw                      |                | 230820    | NPT-845G,Power transformer(G)                      |
| A303    | 83843088  | 3TTB+ 8B(BC),Tapping screw                      |                | 230821    | NPT-845DG,Power transformer(W)                     |
| A304    | 28140408  | 3 $\times$ 10 $\times$ 36,Cushion               | U1             | 11348556  | NAAF-2056,Rec/pb amplifier pc board ass'y(D)       |
| A501    | 11348121  | Front panel ass'y(S)                            |                | 11354556A | NAAF-2056a,Rec/pb amplifier pc board ass'y(G/W)    |
|         | 11368121  | Front panel ass'y(B)                            | U2             | 11348557  | NAPS-2057,Power supply pc board ass'y              |
| A502    | 28125133  | End cap L(S)                                    | U3             | 11348558  | NADIS-2058,Meter LED pc board ass'y                |
|         | 28125135A | End cap L(B)                                    | U4             | 11348559  | NAMC-2059,Mic.amplifier pc board ass'y             |
| A503    | 28125134  | End cap R(S)                                    | U5             | 11348560  | NASW-2060,Tape monitor switch pc board ass'y(D)    |
|         | 28125136A | End cap R(B)                                    |                | 11354560A | NASW-2060a,Tape monitor switch pc board ass'y(G/W) |
| A505    | 27267238A | Guide,eject(S)                                  | U6             | 11348561  | NAVR-2061,Main volume pc boad ass'y                |
|         | 27267239A | Guide,eject(B)                                  | U7             | 11348562  | NASW-2062,Dolby switch pc board ass'y              |
| A506    | 27267339  | Guide,timer(S)                                  | U8             | 11348563  | NADIS-2063,Monitor indicator pc board ass'y        |
|         | 27267340  | Guide,timer(B)                                  | U9             | 11348564  | NAHP-2064,Headphone terminal pc board ass'y        |
| A507    | 27267206B | Guide,power(S)                                  | U10            | 11348565  | NAPL-2065,Edge light pc board ass'y                |
|         | 27267235B | Guide,power(B)                                  | U11            | 11348566  | NACOC-2066,Control circuit pc board ass'y          |
| A508    | 28198577  | Facet, power                                    | U12            | 11348567  | NADIS-2067,LED pc board ass'y                      |
| A509    | 27267264A | Guide,selector(S)                               | U13            | 11348568  | NADIS-2068,Counter indicator pc board ass'y        |
|         | 27267255  | Guide,selector(B)                               | $\Delta$ U14   | 11348569  | NASW-2069,Timer switch pc board ass'y              |
| A510    | 27267341  | Guide M(S)                                      | U15            | 11348570  | NASW-2070,Power switch pc board ass'y              |
|         | 27267342  | Guide M(B)                                      | U16            | 11348571  | NARM-2071,Remote control terminal pc board ass'y   |
| A511    | 28191257A | Clear plate M(S)                                | U17            | 11348572  | NASW-2055,Operation switch pc board ass'y          |
|         | 28191259A | Clear plate M(B)                                | $\Delta$ W901  | 253099B   | AS-UC-3,Power supply cord(D)                       |
| A512    | 27267343  | Guide,volume(S)                                 |                | 253083-1  | AS-CEE,Power supply cord(G/W)                      |
|         | 27267344  | Guide,volume(B)                                 | Z1             | 244065    | NDM-57,Tape mechanism ass'y                        |
| A515    | 27300696  | Rail,volume                                     |                |           |                                                    |
| A516    | 27262292  | Plate,volume(S)                                 |                |           |                                                    |
|         | 27262293  | Plate,volume(B)                                 |                |           |                                                    |
| A517    | 833430080 | 3TTP+ 8P(BC),Tapping screw                      |                |           |                                                    |
| A519    | 28191260  | Clear plate                                     |                |           |                                                    |
| A520    | 27267345  | Guide,knob(S)                                   |                |           |                                                    |
|         | 27267346  | Guide,knob(B)                                   |                |           |                                                    |
| A521    | 834430108 | 3TTS+ 10B(BC),Tapping screw                     |                |           |                                                    |
| A523    | 838430068 | 3TTB+ 6B(BC),Tapping screw                      |                |           |                                                    |

# CHASSIS-EXPLODED VIEW



## TAPE MECHANISM-PARTS LIST

| REF.NO.        | PART NO.            | DESCRIPTION                   | REF.NO. | PART NO.  | DESCRIPTION                    |
|----------------|---------------------|-------------------------------|---------|-----------|--------------------------------|
| 1              | 24611042            | Chassis                       | 94e     | 24610969  | 1.3×3.4×0.5mm,Washer           |
| 11             | 24611043            | Brake plate ass'y             | 94f     | 24610970  | Felt                           |
| 11a            | 24611053            | Brake plate                   | 94g     | 24602237  | Wheel,motor                    |
| 11b            | 24610999            | Brake rubber                  | 94h     | 24610981  | 1.7×4×0.25mm,Washer            |
| 11c            | 24605500            | Spring                        | 94i     | 24610374  | Washer                         |
| 13             | 24606294            | Sensor pc board ass'y         | 94j     | 24611048  | Holder,spring                  |
| 21             | 24611044            | Head base ass'y               | 95      | 352942206 | 22μF,16V,Elect.capacitor       |
| 21a            | 24611045            | Head base                     | 105     | 24602268  | Flywheel                       |
| 21b            | 24611046            | Head block                    | 107     | 24605452  | Spring,thrust                  |
| 21c            | 24605502            | Spring                        | 110     | 24602269  | Flat belt                      |
| 21d            | 82512012            | 2×12mm,Binding screw          | 112     | 24610673  | Flat washer                    |
| 21e            | 801250              | 2×4mm,Pan head screw          | 115     | 24610965  | Holder,flwheel                 |
| 21f            | 24600037A           | Rec/pb.head                   | 115a    | 24610971  | Plate,flwheel                  |
| 21g            | 24600041            | Erase head                    | 115b    | 24610671  | Holder,thrust                  |
| 21h            | 24605462            | Spring                        | 115c    | 24601113  | <del>Motor ass'y,capstan</del> |
| 21i            | 24611052            | Binder                        | 115d    | 24601085  | Motor,capstan                  |
| 21j            | 24611054            | Stopper                       | 115e    | 24601107  | Pulley,motor                   |
| 21k            | 24611055            | Washer                        | 115f    | 24610451  | Cushion                        |
| 21l            | 82112002            | 2×2mm,Pan head srew           | 115g    | 801261    | Pan head screw with washer     |
| 21m            | 801251              | Screw                         | 115h    | 24610807  | Spacer                         |
| 21n            | 24610652            | Shaft                         | 121     | 24602270  | Arm,pinch roller               |
| 21o            | 24610495            | Adjustment nut                | 123     | 24605370  | Spring                         |
| 21p            |                     | Connector ass'y               | 125     | 833125069 | 2.5×8mm,Pan head screw         |
| 21q            |                     | Connector ass'y               | 126     | 833125059 | 2.5×5mm,Pan head scerw         |
| 21r            |                     | Connector ass'y               | 129     | 801250    | 2×4mm,Pan head screw           |
| 21s            | 24604061            | Spacer                        | 131     | 82512614  | 2.6×14mm,Binding screw         |
| 21t            | 24604062            | Spacer                        | 133     | 833426105 | 2.6×10mm,Tapping screw         |
| 22             | 893030              | E3,Circlip                    | 134     | 833126055 | 2.6×5mm,Tapping screw          |
| 46             | 24610943            | φ3mm,Steelball                | 136     | 837120058 | 2×5, Truss screw               |
| 47             | 24610963            | Plate,head holding            | 137     | 801292    | 2×3mm, Truss screw             |
| 53             | 24610964            | Spring holder                 | 139     | 24610349  | 1.8×3.2×0.5mm,Washer           |
| 54             | 24605501            | Spring                        | 140     | 24610515  | 2.6×4.7×0.25mm,Washer          |
| 55             | 24605505            | Spring                        | 141     | 24610972  | 2.6×4.7×0.13mm,Washer          |
| 56             | 24602267            | Reel stand ass'y              | 142     | 24610973  | 2.7×6×0.5mm,Washer             |
| 63             | 24606203            | Sensor switch ass'y           | 150     | 14605481  | Spring                         |
| 63a            | 24611056            | Plate switch holding          | 151     | 24611018  | Panel ass'y                    |
| 63b            | 24606205            | Leafswitch                    | 152     | 24602271  | Belt                           |
| 63c            | 24611057            | Washer                        | 155     | 24611079  | Break                          |
| 63d            | 82112030            | 2×30mm,Pan head screw         | 156     | 833130049 | Pan head screw                 |
| 63e            |                     | Connector ass'y               | 158     | 24610939  | Plate,right side               |
| 63f            | 24611058            | Washer                        | 164     | 24605188  | Spring,cassette                |
| 70             | 24603281            | Lever,switch                  | 168     | 24610940  | Holder ass'y                   |
| 71             | 24603282            | Lever,switch,metal            | 168a    | 24610949  | Plate,holder                   |
| 72             | 24611049            | Plate,lock                    | 168b    | 24610849  | Holder,right                   |
| 73             | 24605503            | Spring                        | 168c    | 24610848  | Holder,left                    |
| 74             | 891030              | CS3,Circlip                   | 168d    | 24605463  | Spring,cassette                |
| 76             | 24601167            | Pulley ass'y                  | 168e    | 835426082 | 2.6×8mm,Flat head screw        |
| 77             | <del>24611047</del> | <del>2.1×4.5×0.1,Washer</del> | 172     | 24611050  | Plate ass'y,left side          |
| 78             | 24611003            | 1.8×3.8×0.5,Washer            | 172a    | 24611059  | Plate,left                     |
| 80             | 24601144            | PAD unit ass'y                | 172b    | 24603283  | Lever,cancel                   |
| 80a            | 24610968            | Plate                         | 172c    | 24605504  | Spring                         |
| 80b            | 24601103            | Motor PAD                     | 172d    | 893030    | E3,Circlip                     |
| <del>80c</del> | 24606182            | Leaf switch                   | 172e    | 24610452  | Flat washer                    |
| 80d            | 24602133            | Cam gear                      | 179     | 24611051  | Damper unit                    |
| 80e            | 82112003            | 2×3mm,Pan head screw          | 180     | 24605456  | Spring                         |
| 80f            | 833125209           | 2.5×20mm,Pan head scerew      | 181     | 891025    | CS2.4, Circlip                 |
| 80g            | 24606181            | Pc board                      | 184     | 24606168  | Holder ass'y,lamp              |
| 80h            | 25055106            | Post with base                | 184a    | 24610498  | Holder,lamp                    |
| 80i            | 352942206           | 22μF,16V,Elect.capacitor      | 184b    | 24606173  | 14V,50mA,Lamp                  |
| 90             | 24611052            | Binder                        |         |           |                                |
| 94             | 24601168            | Reel motor ass'y              |         |           |                                |
| 94a            | 24601169            | Reel motor                    |         |           |                                |
| 94b            | 24605467            | Spring                        |         |           |                                |
| 94c            | 24602235            | Lever ass'y,wheel             |         |           |                                |
| 94d            | 24602236            | Wheel                         |         |           |                                |

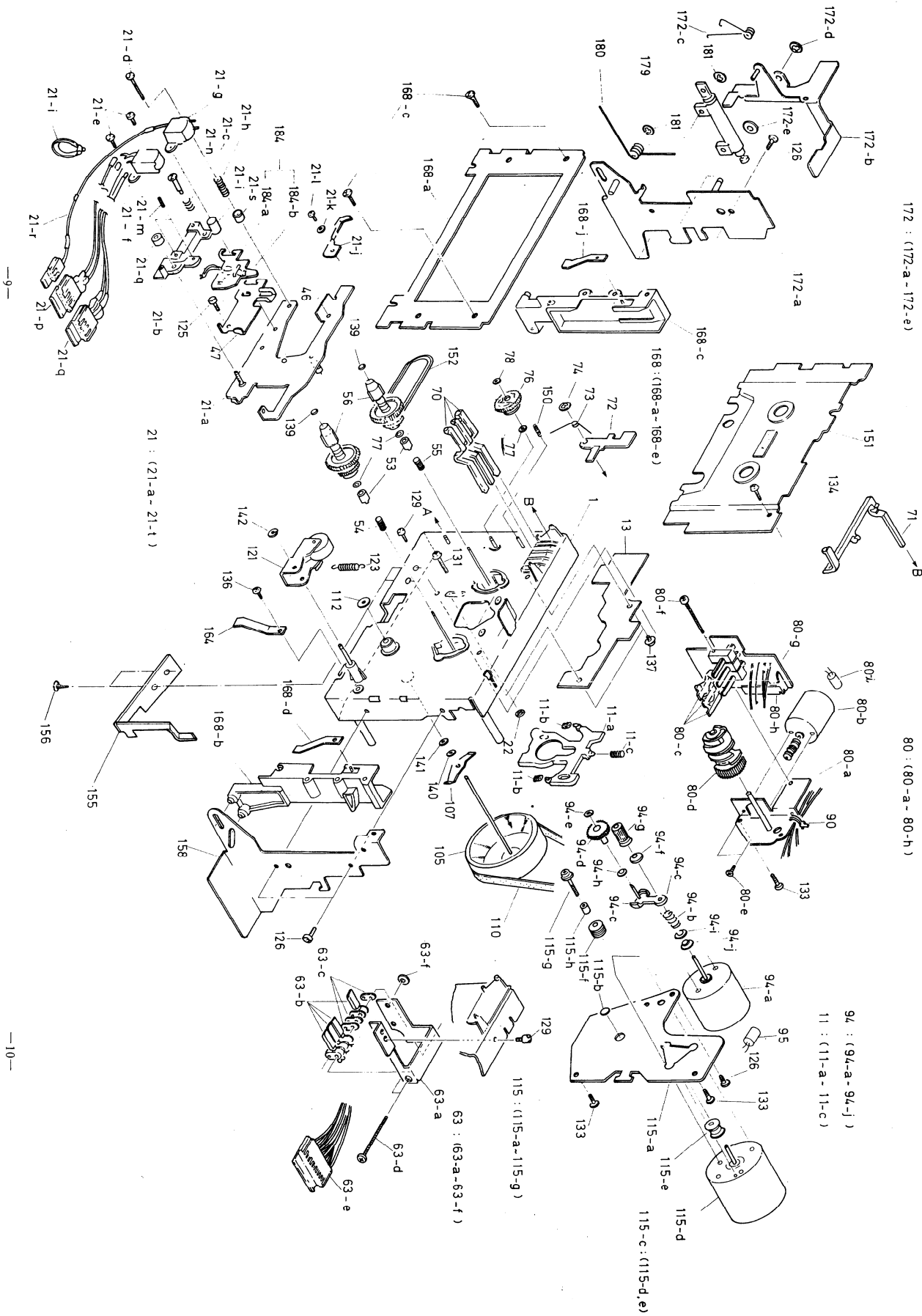


# TAPE MECHANISM-EXPLODED VIEW

172 : (172-a-172-e)

80 : (80-a-80-h)

94 : (94-a-94-j)  
11 : (11-a-11-c)



# ADJUSTMENT PROCEDURES

## PRECAUTIONS

1. Before adjustment, clean the following parts with an alcohol moistend swab.

- \* record/playback head                      \* erase head
- \* pinch roller                                      \* capstan

2. Do not use magnetized screwdriver for adjustments.

3. Demagnetize record/playback head with a head demagnetizer.

Blank tapes (completely erased)

- NORMAL.....NEW UD 90
- HIGH.....NEW XL-II 90
- METAL.....NEW MX 60

Test tapes

- VTT-658 : 10 kHz, -15 dB
- MTT-111 : 3 kHz, -10 dB
- MTT-150 : Dolby level calibration  
400 Hz tone 200 nWb/m

## TEST EQUIPMENT/TOOLS REQUIRED:

- Audio oscillator
- Digital frequency counter
- Oscilloscope
- Attenuator
- AC voltmeter DC voltmeter                      voltmeter

| Item | Connection of instrument | Line input                                         | Test tape                    | Mode         | Output indicator  | Adjustment point            | Adjust                                      | Remarks                                                                     |                                                                 |
|------|--------------------------|----------------------------------------------------|------------------------------|--------------|-------------------|-----------------------------|---------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------|
| 1    | Playback torque          |                                                    | TW-2111                      | PB           | TW-2111           | R-711                       | 35 to 55gcm                                 |                                                                             |                                                                 |
| 2    | Tape speed               | Frequency counter to LINE output terminal          | MTT-111                      | PB           | Frequency counter | Semi-fixed on the moter     | 3,000 to 3,010 Hz                           |                                                                             |                                                                 |
| 3    | Heed azimuth             | AC voltmeter and oscilloscope LINE output terminal | VTT-658                      | PB           | AC voltmeter      | Head azimuth screws         | Maximum and same phase at channels L and R. | See fig.1<br>Set the semi-fixed resistors R127 and R128 to center position. |                                                                 |
| 4    | Playback level           | AC voltmeter terminals TP-101 and TP-102           | MTT-150                      | PB           | AC voltmeter      | R-127(R)<br>R-128(R)        | 580mV                                       |                                                                             |                                                                 |
| 5    | Meter                    |                                                    | MTT-150                      | PB           | Level meter       | R-321(L)<br>R-322(R)        | 0dB indicator lights on                     |                                                                             |                                                                 |
| 6    | Bias current             | Fig. 2                                             | 1kHz, -20dB and 12kHz, -20dB | NEW XL-II 90 | REC/<br>PB        | AC voltmeter                | R-443(L)<br>R-444(R)                        | Same level at REC/PB                                                        | INPUT VOLUME.....maximum<br>AUU BIAS VOLUME.....<br>.....center |
| 7    | Record level             | Fig. 2                                             | 1kHz                         | REC<br>PAUSE | AC voltmeter      | Attenuator or AF OSC output |                                             | INPUT VOLUME.....<br>.....maximum<br>ACCU BIAS VOLUME<br>.....Center        |                                                                 |
|      |                          |                                                    |                              | REC/<br>PB   | AC voltmeter      | R-401(R)<br>R-402(R)        | Same level at REC/PB.                       |                                                                             |                                                                 |

- PLAY TORQUE.....30~60g/cm
- FF REW TORQUE.....70~140g/cm
- BACK TENSION.....3.5~6.5g/cm

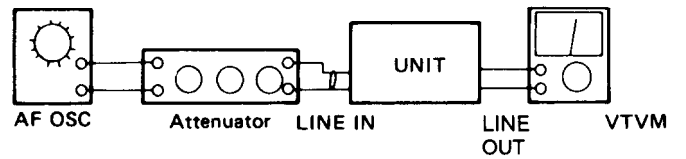
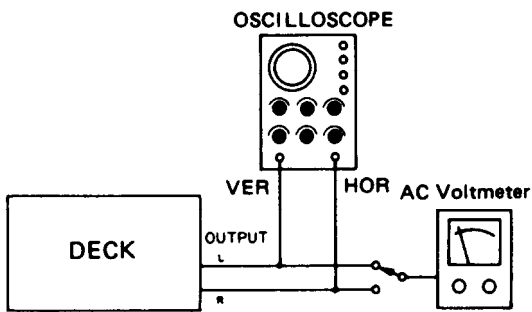
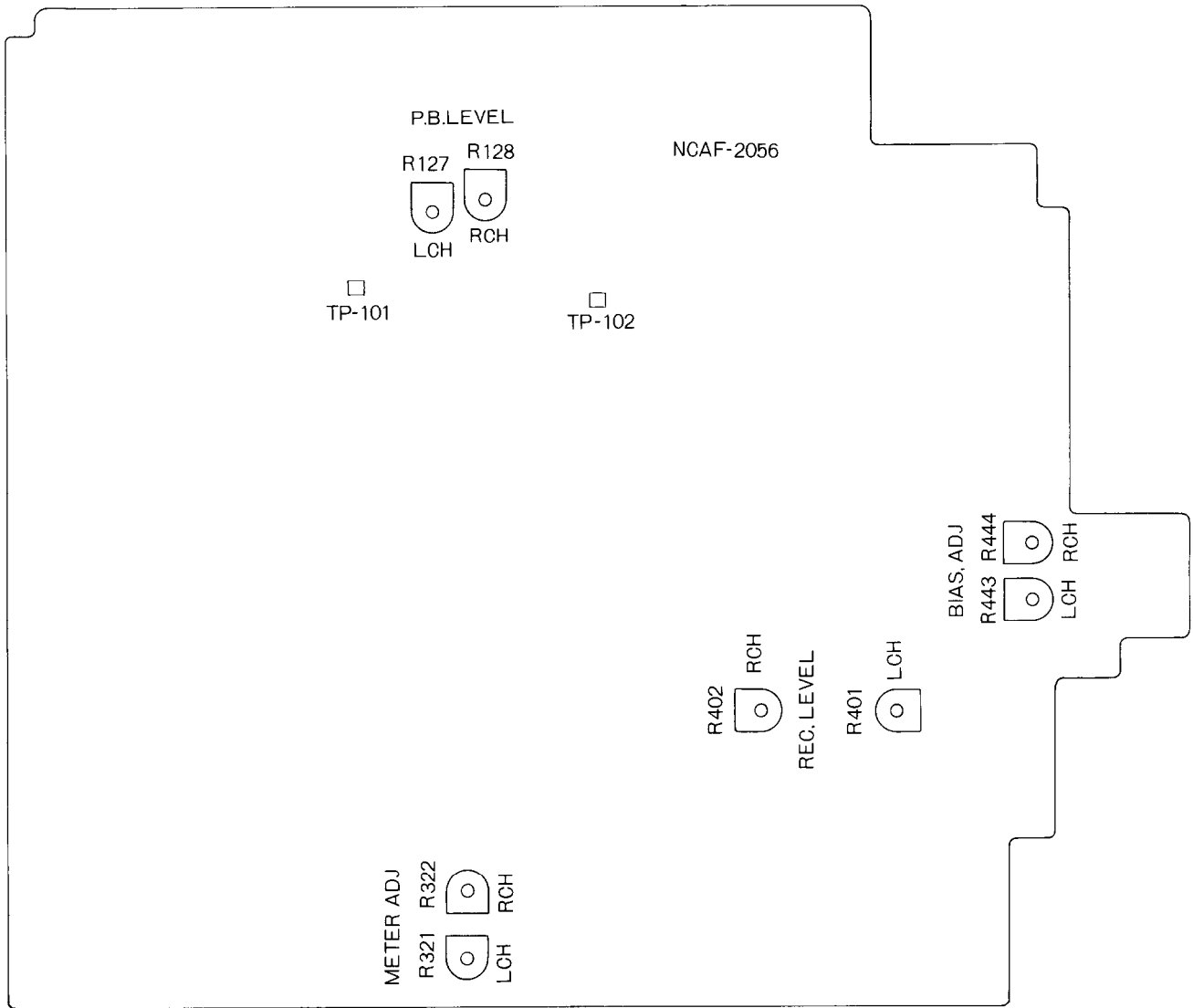
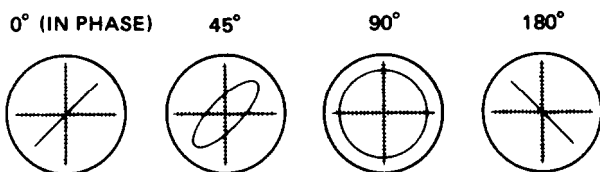


fig-2



Confirming phase relationship

fig-1

# PRINTED CIRCUIT BOARD PARTS LIST

## Control circuit pc board (NACOC—2066)

| CIRCUIT NO. | PARTS NO.   | DESCRIPTION                               |
|-------------|-------------|-------------------------------------------|
|             | ICs         |                                           |
| Q716        | 222777      | LM6402H-425                               |
| Q717        | 222776      | LM6402H-424                               |
| Q718        | 222810      | LC7800                                    |
| Q731—Q736   | 222840692   | TC4069UBP                                 |
| Q740        | 222639      | LB1275                                    |
|             | Transistors |                                           |
| Q701        | 2201074,    | 2SD880 (Y),                               |
|             | 2201385 or  | 2SD330 (E),                               |
|             | 2201035     | 2SD325 (E),                               |
| Q702, Q703  | 2211563     | 2SB562 (C)                                |
| Q704, Q705  | 2211254,    | 2SC1815 (Y),                              |
|             | 2212114,    | 2SC2458 (Y),                              |
|             | 2210747 or  | 2SC945A (Q1) or                           |
|             | 2212484     | JC501 (P)                                 |
| Q706, Q707  | 2211682 or  | 2SD468 (B) or                             |
|             | 2211683     | 2SD468 (C)                                |
| Q708, Q712  | 2201060,    | 2SD549,                                   |
| Q713        | 2201292 or  | 2SD985 (L) or                             |
|             | 2201291     | 2SD985 (K)                                |
| Q709        | 2211255,    | 2SC1815 (GR),                             |
|             | 2212115,    | 2SC2458 GR),                              |
|             | 2210746 or  | 2SC945A (P) or                            |
|             | 2212485     | JC501 (Q)                                 |
| Q710, Q711  | 2211554     | 2SA562TM (Y)                              |
| Q714        | 2211951 or  | 2SC1472K (A) or                           |
|             | 2211952     | 2SC1472K (B)                              |
| Q715, Q724  | 2211254,    | 2SC1815 (Y),                              |
| Q725—Q730   | 2212114,    | 2SC2458 (Y),                              |
| Q738        | 2210747 or  | 2SC945A (Q1) or                           |
|             | 2212484     | JC501 (P)                                 |
| Q719, Q720  | 2211454,    | 2SA1015 (Y),                              |
| Q746—Q750   | 2212124 or  | 2SA1048 (Y) or                            |
|             | 2212494     | JA101 (P)                                 |
| Q721—Q723   | 2211255,    | 2SC1815 (GR),                             |
| Q739        | 2212114,    | 2SC2458 (GR),                             |
|             | 2210746 or  | 2SC945A (P) or                            |
|             | 2212485     | JC501 (Q)                                 |
| Q741        | 2211544     | 2SC1959 (Y)                               |
| Q742—Q745   | 2211706     | 2SD655 (F)                                |
|             | Diodes      |                                           |
| D701        | 2239552,    | RD8.2EB2,                                 |
|             | 2242866 or  | EQA02-08C or                              |
|             | 2243192     | MTZ8.2B                                   |
| D702—D705   | 223105,     | 1S1555,                                   |
|             | 223133,     | DS442X,                                   |
|             | 223145 or   | 1S2076TD or                               |
|             | 223150      | US1040                                    |
|             | X'tal       |                                           |
|             | 3010069     | CSB800A                                   |
|             | Capacitors  |                                           |
| C703—C705   | 352780109   | 1 $\mu$ F, 50V, Elect.                    |
| C706, C707  | 352782299   | 0.22 $\mu$ F, 50V, Elect.                 |
| C710        | 352780109   | 1 $\mu$ F, 50V, Elect.                    |
| C713        | 352781599   | 0.15 $\mu$ F, 50V, Elect.                 |
|             | Resistors   |                                           |
| R711        | 5215045 or  | NO8HR10KBC,                               |
|             | 5215021     | Semi-fixed                                |
| R714        | 441722704   | 27 $\Omega$ , 2W, Metal oxide film        |
| R721—R731   | 49163392411 | 3.9k $\Omega$ $\times$ 11, 1/10W, Network |
| R738—R748   |             |                                           |
| R734—R737   | 49163392404 | 3.9k $\Omega$ $\times$ 4, 1/10W, Network  |
| R751—R755   | 49163392405 | 3.9k $\Omega$ $\times$ 5, 1/10W, Network  |
| R771—R774   | 49121392404 | 3.9k $\Omega$ $\times$ 4, 1/10W, Network  |

| CIRCUIT NO. | PARTS NO.   | DESCRIPTION                               |
|-------------|-------------|-------------------------------------------|
| R788—R800   | 49163392413 | 3.9k $\Omega$ $\times$ 13, 1/10W, Network |
|             | Sockets     |                                           |
| P702A       | 2000265A    | NSAS-18P-203                              |
| P705A       | 2000315     | NSAS-6P-274                               |
|             | Plugs       |                                           |
| P703        | 25055046    | NPLG-10P-34                               |
| P704        | 25055137    | NPLG-7P-121                               |
| P706        | 25055152    | NPLG-8P-136                               |
| P707        | 25055149    | NPLG-5P-133                               |
| P708        | 25055148    | NPLG-4P-132                               |
| P709        | 25055147    | NPLG-3P-131                               |
| P710        | 25055154    | NPLG-10P-138                              |
| P711        | 25055148    | NPLG-4P-132                               |
| P712        | 25055109    | NPLG-12P-93                               |

## Led pc board (NADIS—2067)

| CIRCUIT NO. | PART NO.  | DESCRIPTION  |
|-------------|-----------|--------------|
|             | LEDs      |              |
| D409—D411   | 225137    | SEL-2413E    |
| D605, D606  | 225137    | SEL-2413E    |
| D714—D716   | 225142    | SEL-2913K    |
| D717, D718  | 225142    | SEL-2913K    |
| D720—D724   | 225137    | SEL-2413K    |
|             | Switches  |              |
| S711—S717   | 25035389  | NPS-111-S353 |
|             | Sockets   |              |
| P706A       | 2000328   | NSAS-16P-287 |
| P707A       | 2000327   | NSAS-10P-286 |
| P708A       | 2000326   | NSAS-8P-285  |
| P709A       | 2000325   | NSAS-6P-284  |
| P713A       | 2000321   | NSAS-14P-280 |
|             | Holder    |              |
|             | 27190287A | LED          |

## Counter indicator pc board (NADIS—2068)

| CIRCUIT NO. | PART NO. | DESCRIPTION          |
|-------------|----------|----------------------|
| D719        | 225094   | LED                  |
|             | 2000322  | NSAS-12P-281, Socket |

## Timer switch pc board (NASW—2069)

| CIRCUIT NO. | PART NO. | DESCRIPTION            |
|-------------|----------|------------------------|
|             | 25065224 | NSS-2398, Slide switch |

## Power switch pc board (NASW—2070)

| CIRCUIT NO. | PART NO. | DESCRIPTION                  |
|-------------|----------|------------------------------|
| C931        | 3500065A | DE7150FZ103PA, Capacitor 1S  |
| S901        | 25035375 | NPS-111P L339P, Power switch |
| C931a       | 27300601 | SB-1925, Cover, capacitor    |

## Remote control pc board (NARM—2071)

| CIRCUIT NO. | PART NO. | DESCRIPTION |
|-------------|----------|-------------|
| P701        | 25050070 | NSCT-7P20   |

## Operation switch pc board (NASW—2055)

| CIRCUIT NO. | PART NO. | DESCRIPTION               |
|-------------|----------|---------------------------|
| D711        | 225134   | 3NG1, LED                 |
| D712, D713  | 225126   | 3PR1, LED                 |
| S702, S704  | 25035408 | NPS-111-S372, Push switch |
| S703        | 25035389 | NPS-111-S353, Push switch |
| S705—S710   | 25035389 | NPS-111-S353, Push switch |
|             | 2000324  | NSAS-4P-283, Socket       |
|             | 2000323  | NSAS-10P-282, Socket      |

# PRINTED CIRCUIT BOARD PARTS LIST

Rec./pb. amplifier pc board (NAAF-2056a)

| CIRCUIT NO. | PARTS NO.   | DESCRIPTION        | CIRCUIT NO. | PARTS NO.  | DESCRIPTION                  |
|-------------|-------------|--------------------|-------------|------------|------------------------------|
|             | ICs         |                    | D902        | 223868     | 2w02                         |
| Q109, Q110  | 222815,     | H A12058NT-01Y     | D903        | 223842     | GP-15B                       |
| Q215, Q216  | 2222814 or  | HA12058NT-01G or   |             | Coils      |                              |
|             | 222813      | HA12058NT-01V      | L101, L102  | 233327     | NCH-6100                     |
| Q209, Q210  | 222534,     | NJM4559DX,         | L103, L104  | 23345      | NMC-2029                     |
|             | 222502 or   | NJM4558DX or       | L201, L202  | 233328     | NMC-6051                     |
|             | 222811      | NJM4558DD          | L203, L204  | 233245     | NMC-2029                     |
| Q301, Q302  | 222652      | M5218L             | L401, L402  | 233194     | NCH-1039                     |
| Q303, Q304  | 222465 or   | NJM4558D or        | L403, L404  | 24606070   | NCH-1008                     |
| Q413, Q414  | 222808      | M5218P             | L405, L406  | 24606069   | NCH-1007                     |
| Q503-Q506   | 222695 or   | LA6324 or          | L407, L408  | 233329     | NCH-6101                     |
|             | 222681      | IR3702             | L409, L401  | 231025     | NCH-1064                     |
| Q905        | 222780050   | 7805               |             | Osc. block |                              |
|             | Transistors |                    | Z001        | 24606198   | NOB-029                      |
| Q101-Q104   | 2211896,    | 2SC1815 (LL)       |             | Capacitors |                              |
|             | 2212256 or  | 2SC2458 (LL) or    | C103, C104  | 392880337  | 3.3 $\mu$ F, 50V, LL         |
|             | 2211406     | 2SC2240 (BL)       | C109-C112   | 352741009  | 10 $\mu$ F, 16V, Elect.      |
| Q105-Q108   | 2211255,    | 2SC1815 (GR) ,     | C131, C132  | 352741009  | 10 $\mu$ F, 16V, Elect.      |
| Q401, Q402  | 2212115,    | 2SC2458 (GR) ,     | C151, C152  | 352741009  | 10 $\mu$ F, 16V, Elect.      |
| Q603, Q604  | 2210766 or  | 2SC945A (P) or     | C153, C154  | 352732219  | 220 $\mu$ F, 10V, Elect.     |
|             | 2212485     | JC501 (Q)          | C159, C160  | 392850477  | 4.7 $\mu$ F, 25V, LL         |
| Q201, Q202  | 2211896,    | 2SC1815 (LL) ,     | C163, C164  | 352783399  | 0.33 $\mu$ F, 50V, Elect.    |
|             | 2212256 or  | 2SC2458 (LL) or    | C165, C166  | 352781599  | 0.15 $\mu$ F, 50V, Elect.    |
|             | 2211406     | 2SC2240 (BL) <G/W> | C167, C168  | 352784799  | 0.47 $\mu$ F, 50V, Elect.    |
| Q203, Q204  | 2211255     | 2SC1815 (GR),      | C169, C170  | 352786899  | 0.68 $\mu$ F, 50V, Elect.    |
|             | 2212115,    | 2SC2458 (GR),      | C171, C172  | 352742209  | 22 $\mu$ F, 16V, Elect.      |
|             | 2210746 or  | 2SC945A (P) or     | C183, C184  | 392850477  | 4.7 $\mu$ F, 50V, LL         |
|             | 2212485     | JC501 (Q) <G/W>    | C187, C188  | 352781599  | 0.15 $\mu$ F, 50V, Elect.    |
| Q205, Q206  | 2212304,    | 2SK381 (D),        | C189, C190  | 352784799  | 0.47 $\mu$ F, 50V, Elect.    |
|             | 2212303     | 2SK381 (C),        | C191, C192  | 352750479  | 4.7 $\mu$ F, 25V, Elect.     |
|             | 2211945 or  | 2SK246 (GR) or     | C201-C204   | 352780109  | 1 $\mu$ F, 50V, Elect. <G/W> |
|             | 2211944     | 2SK246 (Y) <G/W>   | C231, C232  | 352741009  | 10 $\mu$ F, 16V, Elect.      |
| Q211-Q214   | 2211254,    | 2SC1815 (Y),       | C253, C254  | 352732219  | 220 $\mu$ F, 10V, Elect.     |
| Q403-Q412   | 2212114,    | 2SC2458 (Y),       | C259, C260  | 392850477  | 4.7 $\mu$ F, 25V, LL         |
| Q452, Q454  | 2210747 or  | 2SC945A (Q1) or    | C263, C264  | 352783399  | 0.33 $\mu$ F, 50V, Elect.    |
| Q501, Q502  | 2212484     | JC501 (P)          | C265, C266  | 352781599  | 0.15 $\mu$ F, 50V, Elect.    |
| Q217, Q218  | 2211706 or  | 2SD655 (F) or      | C267, C268  | 352784799  | 0.47 $\mu$ F, 50V, Elect.    |
|             | 2211705     | 2SD655 (E)         | C269, C270  | 352786899  | 0.68 $\mu$ F, 50V, Elect.    |
| Q451        | 2201060,    | 2SD549,            | C271, C272  | 352742209  | 22 $\mu$ F, 16V, Elect.      |
|             | 2201292 or  | 2SD985 (L) or      | C283, C284  | 392850477  | 4.7 $\mu$ F, 25V, LL         |
|             | 2201291     | 2SD985 (K)         | C287, C288  | 352781599  | 0.15 $\mu$ F, 50V, Elect.    |
| Q455-Q458   | 2211454,    | 2SA1015 (Y),       | C289, C290  | 352784799  | 0.47 $\mu$ F, 50V, Elect.    |
| Q507, Q508  | 2212114 or  | 2SA1048 (Y) or     | C291, C292  | 352750479  | 4.7 $\mu$ F, 25V, Elect.     |
| Q602        | 2212494     | JA101 (P)          | C301, C302  | 352750479  | 4.7 $\mu$ F, 25V, Elect.     |
| Q601        | 2211254,    | 2SC1815 (Y),       | C401, C402  | 352741009  | 10 $\mu$ F, 16V, Elect.      |
|             | 2212114,    | 2SC2458 (Y),       | C415, C416  | 352782299  | 0.22 $\mu$ F, 50V, Elect.    |
|             | 2210747 or  | 2SC945A (Q1) or    | C417, C418  | 352750479  | 4.7 $\mu$ F, 25V, Elect.     |
|             | 2212484     | JC501 (P) <G/W>    | C451        | 352780109  | 1 $\mu$ F, 50V, Elect.       |
|             | Diodes      |                    | C452        | 352722219  | 220 $\mu$ F, 16V, Elect.     |
| D201, D202  | 223105,     | 1S1555,            | C505        | 352741009  | 10 $\mu$ F, 16V, Elect.      |
|             | 223133,     | DS442X,            | C506        | 352782299  | 0.22 $\mu$ F, 50V, Elect.    |
|             | 223145 or   | 1S2076TD or        | C507        | 352780109  | 1 $\mu$ F, 50V, Elect.       |
|             | 223150      | US1040 <G/W>       | C508        | 352780339  | 3.3 $\mu$ F, 50V, Elect.     |
| D301-D304   | 223105,     | 1S1555,            | C508        | 352750479  | 4.7 $\mu$ F, 25V, Elect.     |
| D401, D403  | 223133,     | DS442X,            | C512, C513  | 352780109  | 1 $\mu$ F, 50V, Elect.       |
| D407, D408  | 223145 or   | 1S2076TD or        | C514        | 352750339  | 3.3 $\mu$ F, 25V, Elect.     |
| D501, D502  | 223150      | US1040             | C601, C602  | 352780109  | 1 $\mu$ F, 50V, Elect.       |
| D607, D609  |             |                    | C621, C622  | 352740479  | 4.7 $\mu$ F, 25V, Elect.     |
| D404, D406  | 2239673,    | RD15EB3,           | C901, C902  | 352751029  | 1,000 $\mu$ F, 25V, Elect.   |
|             | 2239691,    | RD16EB1,           | C903        | 352752229  | 2,200 $\mu$ F, 25V, Elect.   |
|             | 2242922 or  | EQA02-14B or       | C909, C910  | 352744709  | 47 $\mu$ F, 16V, Elect.      |
|             | 2243253     | MTZ15C             | C911        | 3504168    | 13,000 $\mu$ F, 25V, Elect.  |
| D608        | 223132      | 1K60               | C912        | 352783399  | 0.33 $\mu$ F, 50V, Elect.    |
| D901        | 223862      | WL01               | C913        | 352781099  | 0.1 $\mu$ F, 50V, Elect.     |

| CIRCUIT NO. | PARTS NO.  | DESCRIPTION                            |
|-------------|------------|----------------------------------------|
| C915, C916  | 352731019  | 100 $\mu$ F, 10V, Elect.               |
| C917, C918  | 352744709  | 47 $\mu$ F, 16V, Elect.                |
| C919        | 352742219  | 220 $\mu$ F, 16V, Elect.               |
| C923        | 352742219  | 220 $\mu$ F, 16V, Elect.               |
|             | Resistors  |                                        |
| R127, R128  | 5215046 or | N08HR50K BC,                           |
| R443, R444  | 5215023    | Semi-fixed                             |
| R321, R322  | 5215022 or | N08HR20K BC,                           |
|             | 5215003    | Semi-fixed                             |
| R401, R402  | 5215044 or | N08HR5K BC,                            |
|             | 5215020    | Semi-fixed                             |
| R453        | 441521004  | 10 $\Omega$ , 1/2W, Metal oxide film   |
| R901        | 441524794  | 0.47 $\Omega$ , 1/2W, Metal oxide film |
| R908        | 441721004  | 10 $\Omega$ , 2W, Metal oxide film     |
|             | Terminals  |                                        |
| P201        | 25045120   | NPJ4PDBL49, Tape inpnt/output          |
| P202        | 25050064   | NSCT-5P18, DI <G/W>                    |
|             | Plugs      |                                        |
| P101, P401  | 25055045   | NPLG-4P33                              |
| P402        | 25055038   | NPLG-2P29                              |
| P705        | 25055133   | NPLG-3P-117                            |
|             | Socket     |                                        |
| P704A       | 2000321    | NSAS-14P-280                           |

### Power supply pc board (NAPS—2057)

| CIRCUIT NO. | PART NO.    | DESCRIPTION                           |
|-------------|-------------|---------------------------------------|
|             | IC          |                                       |
| Q901        | 222780120   | 7812                                  |
|             | Transistors |                                       |
| Q902        | 2201275 or  | 2SD772 (Q) or                         |
|             | 2201276     | 2SD772 (P)                            |
| Q903        | 2211454,    | 2SA1015 (GR),                         |
|             | 2212125 or  | 2SA1048 (GR) or                       |
|             | 2212495     | JA101 (Q)                             |
| Q904        | 2201340 or  | 2SD1128 or                            |
|             | 2201350     | 2DS687                                |
|             | Diodes      |                                       |
| D904        | 223105,     | 1S1555,                               |
|             | 223133,     | DS442X,                               |
|             | 223145 or   | 1S2076TD or                           |
|             | 223150      | US1040                                |
| D905        | 2239653,    | RD13EB3,                              |
|             | 2242911 or  | EQA02-13A or                          |
|             | 2243243     | MTZ13C                                |
|             | Capacitors  |                                       |
| C904        | 352783399   | 0.33 $\mu$ F, 50V, Elect.             |
| C905, C906  | 352781099   | 0.1 $\mu$ F, 50V, Elect.              |
| C907        | 352742219   | 220 $\mu$ F, 16V, Elect.              |
| C908        | 352744709   | 47 $\mu$ F, 16V, Elect.               |
| C924        | 352741019   | 100 $\mu$ F, 16V, Elect.              |
|             | Resistors   |                                       |
| R902, R903  | 441520224   | 2.2 $\Omega$ , 1/2W, Metal oxide film |
|             | Radiator    |                                       |
|             | 27160075A   |                                       |
|             | Spacers     |                                       |
|             | 223019      | Transistor                            |
|             | Bushing     |                                       |
|             | 223017      | AC-310                                |

### Meter LED pc board (NADIS—2058)

| CIRCUIT NO. | PART NO.    | DESCRIPTION             |
|-------------|-------------|-------------------------|
|             | IC          |                         |
| Q305, Q306  | 222809      | IR2E20                  |
|             | Transistors |                         |
| Q307—Q310   | 2211554     | 2SA562TM (Y)            |
|             | LED array   |                         |
| D305, D306  | 225091      | GL-112M13               |
|             | Capacitor   |                         |
| C351        | 352741009   | 10 $\mu$ F, 16V, Elect. |

### Mic. amplifier pc board (NAMC—2059)

| CIRCUIT NO. | PART NO.   | DESCRIPTION                |
|-------------|------------|----------------------------|
|             | IC         |                            |
| Q207, Q208  | 22534,     | NJM4559DX,                 |
|             | 222502 or  | NJM4558DX or               |
|             | 222811     | NJM4588DD                  |
|             | Capacitors |                            |
| C221, C222  | 392883397  | 0.33 $\mu$ F, 50V, 50V, LL |
| C223, C224  | 352780109  | 1 $\mu$ F, 50V, Elect.     |
|             | Terminal   |                            |
| P203, P204  | 25045157   | HJ-4337-01-3010, Mic.      |

### Tape monior switch pc board (NASW—2060/a)

| CIRCUIT NO.           | PART NO.           | DESCRIPTION                               |
|-----------------------|--------------------|-------------------------------------------|
| <del>R239, R240</del> | <del>5104146</del> | <del>N09RL1KB25, Variable resistor</del>  |
| <del>R451</del>       | <del>5104147</del> | <del>N09RLC5K5B5, Variable resistor</del> |
| S601                  | 25035433           | NPS-162-L397, Tape monitor switch         |
|                       | 27140911A          | Bracket SW                                |
|                       | 880009             | Rivert                                    |
| D601                  | 2239673,           | RD15EB3,                                  |
|                       | 2239691,           | RD16EB1,                                  |
|                       | 2242922 or         | EQA02-14B or                              |
|                       | 2243253            | MTZ15C <G/W>                              |

### Main volume pc board (NAVR—2061)

| CIRCUIT NO. | PART NO. | DESCRIPTION                      |
|-------------|----------|----------------------------------|
| R231, R232  | 6142034  | N60LGL50KA10Z, Variable resistor |

### Dolby switch pc board (NASW—2062)

| CIRCUIT NO. | PART NO. | DESCRIPTION               |
|-------------|----------|---------------------------|
| S602—S604   | 25035379 | NPS-322-L343, Push switch |
| P713        | 25055137 | NPLG-7P-121, Plug         |

### Monitor indicator led pc board (NADIS—6073)

| CIRCUIT NO. | PART NO.  | DESCRIPTION   |
|-------------|-----------|---------------|
| D602        | 225157    | SEL1413E, LED |
| D603        | 225158    | SEL1913K      |
|             | 27190286A | Holder M      |

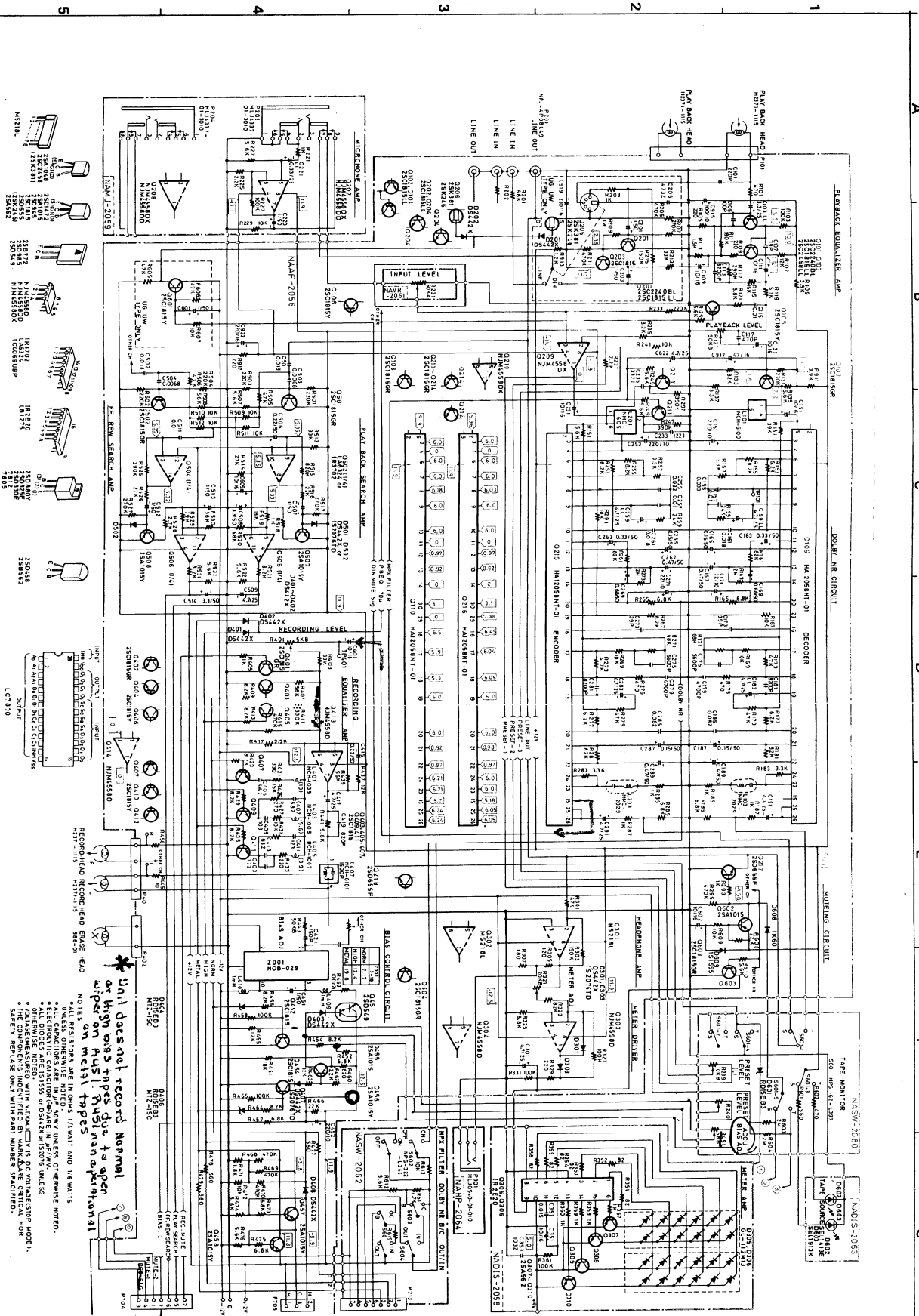
### Headphone terminal pc board (NAHP—2064)

| CIRCUIT NO. | PART NO. | DESCRIPTION                       |
|-------------|----------|-----------------------------------|
| P301        | 25045139 | HLJ0540-01-010, Headhone terminal |

### Edge light pc board (NAPL—2065)

| CIRCUIT NO. | PART NO. | DESCRIPTION      |
|-------------|----------|------------------|
| PL601       | 210090   | PL14V150mA, Lamp |

# SCHEMATIC DIAGRAM-AMPLIFIER SECTION



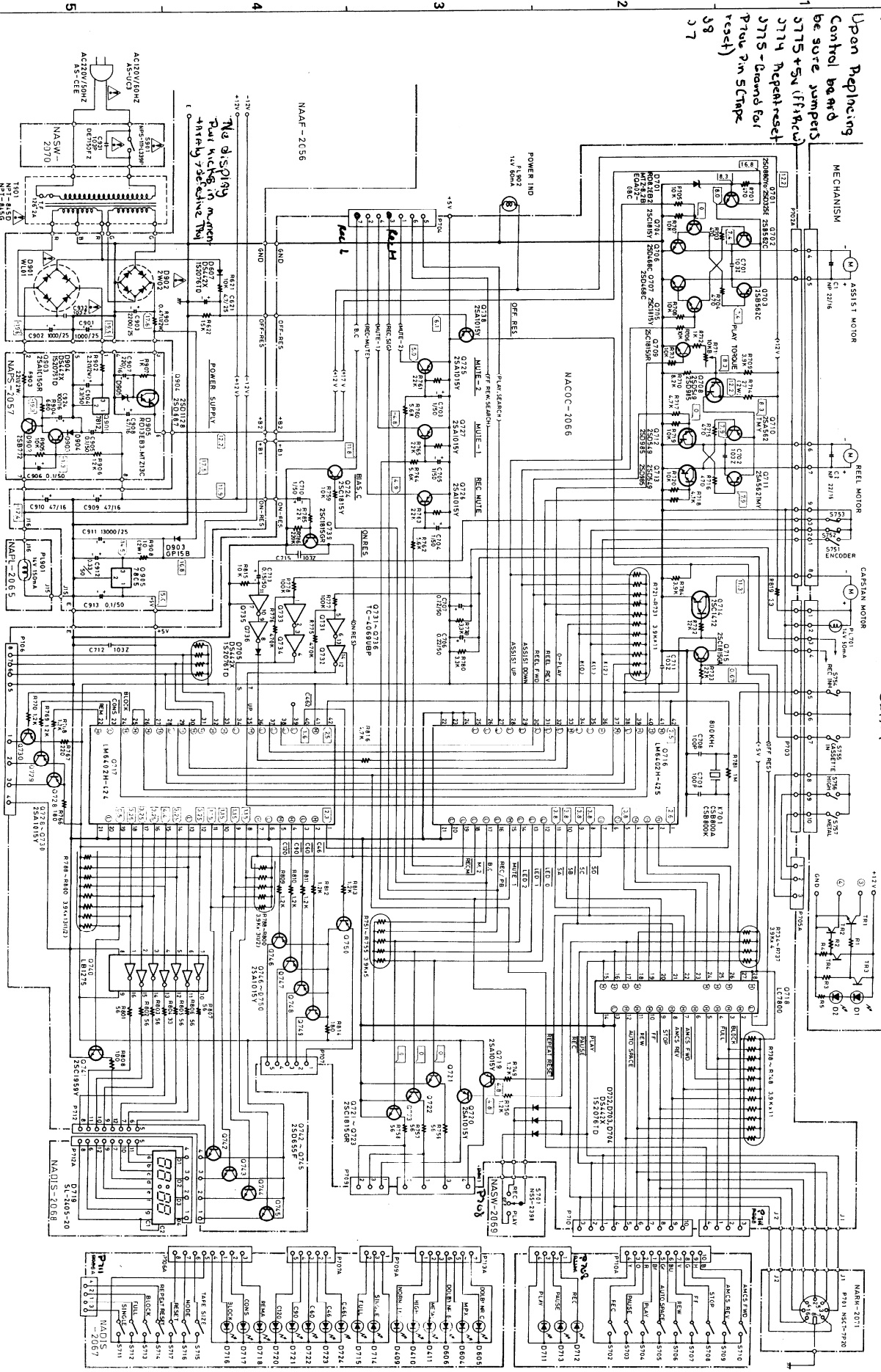
**Unit does not record Normal**  
**or when tape is open to open**  
**on metal tapes**

NOTES:  
 \* ALL COMPONENTS IDENTIFIED BY MARKING OR CIRCUIT NUMBER.  
 \* ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED.  
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# SCHEMATIC DIAGRAM-CONTROL SECTION

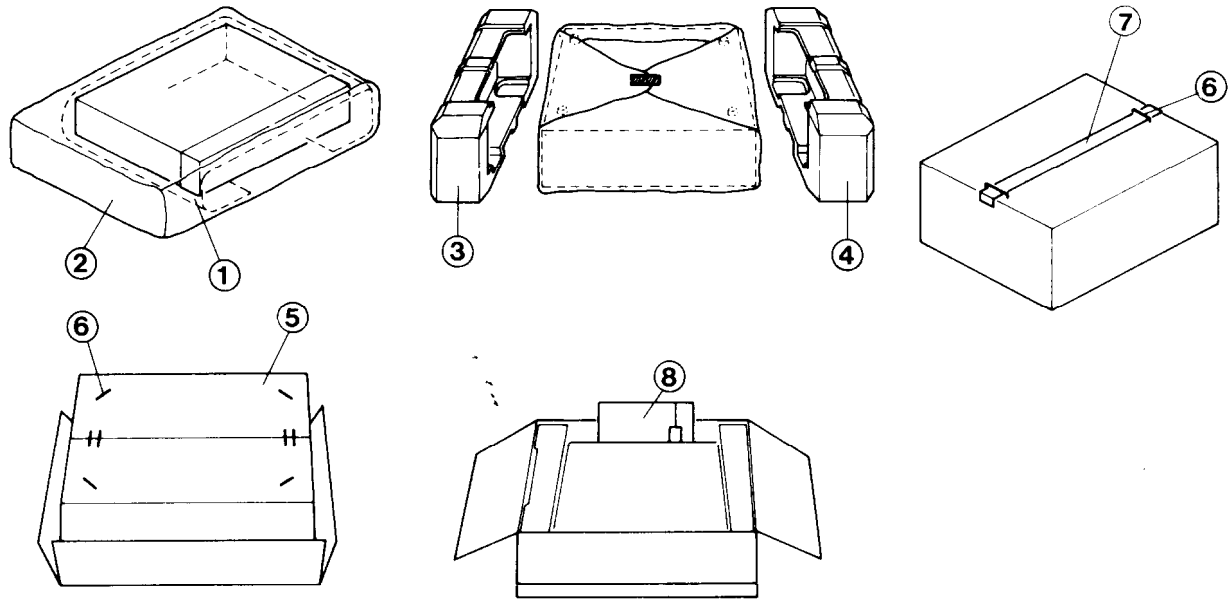
Unit starts down intermit. poss noisy assock in switch

Upon Replacing Control board be sure jumpers 3775 + 5N (if fit) 3714 Repeat reset 3775 - Ground for P746 Pm 5 (Strike reset) 37 37





# PACKING VIEW



## D model

| REF.NO. | PARTS NO.  | DESCRIPTION                 |
|---------|------------|-----------------------------|
| 1       | 29095012-1 | 500x800 Protection sheet(B) |
| 2       | 290311A    | 620x550 Poly bag            |
| 3       | 29090770A  | Pad(L)                      |
| 4       | 29090769A  | Pad(R)                      |
| 5       | 29050976   | Master carton box           |
|         | 29050977   | Master carton box(B)        |
| 6       | 282301     | Sealing hook                |
| 7       | 260012     | Dampson tape                |
| 8       |            | Accessory bag ass'y         |
|         | 29340795   | Instruction manual          |
|         | 2010095    | Connection cable            |
|         | 29365006-5 | Waranty card(N)             |
|         | 29358002A  | Service station list(N)     |
|         | 29100005   | 220x330 Poly bag            |

## G/W Model

| REF.NO. | PARTS NO.  | DESCRIPTION                 |
|---------|------------|-----------------------------|
| 1       | 29095012-1 | 500x800 Protection sheet(B) |
| 2       | 290311A    | 500x750 Poly bag            |
| 3       | 29090770A  | Pad(L)                      |
| 4       | 29090769A  | Pad(R)                      |
| 5       | 29050976   | Master carton box           |
|         | 29050977   | Master carton box(B)        |
| 6       | 282301     | Sealing hook                |
| 7       | 260012     | Dampson tape                |
| 8       |            | Accessory bag ass'y         |
|         | 29340796   | Instruction manual(G)       |
|         | 2010095    | Connection cable            |
|         | 25055040   | Conversion plug CV-K-2(G)   |
|         | 29100005   | 220x330 Poly bag            |

## NOTE

- (N): Only U. S.A. Model
- (W): Only 120/220V Model
- (B): Black Model